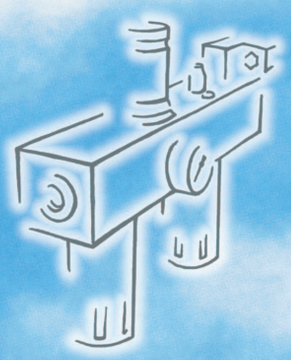
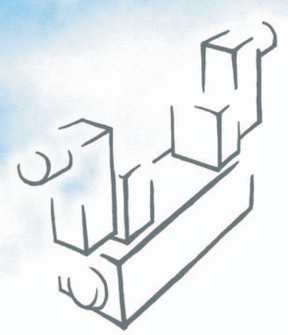
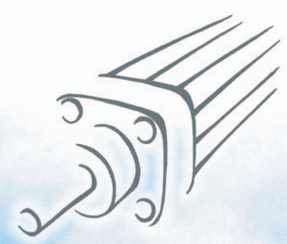
METAL WORK®

PNEUMATIC









GENERAL CATALOGUE

QUALITY MANAGEMENT ISO 9001:2000 DEKRA INTERTEK CERTIFICATION

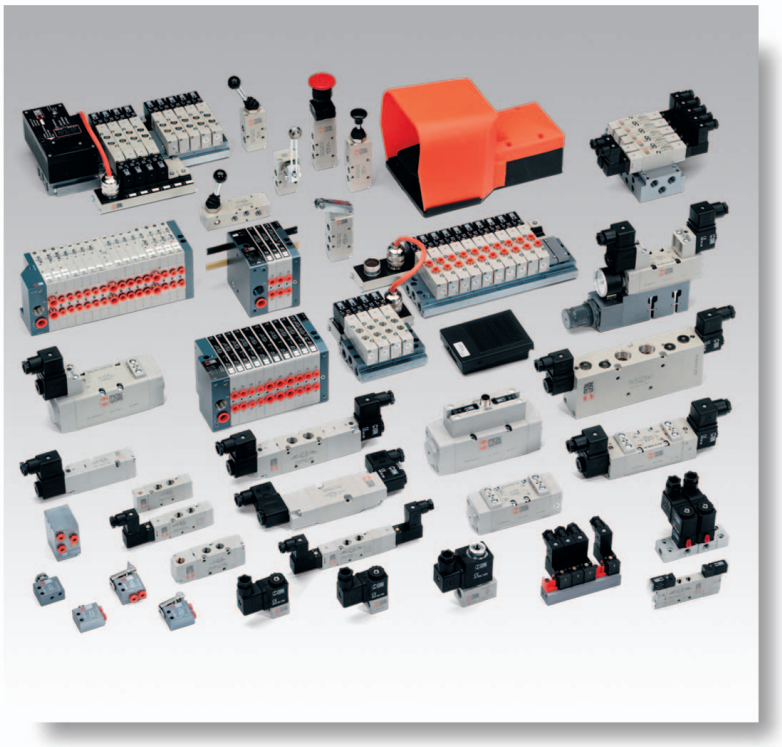
ENVIRONMENTAL MANAGEMENT ISO 14001 DEKRA INTERTEK CERTIFICATION

METAL WORK®
PNEUMATIC



“Our team works together, towards a common goal: there is nothing we have done yesterday that cannot be improved today.”

METAL WORK®
PNEUMATIC



Valves



Units



Actuators



Fittings and accessories

Contents

Introduction	
Actuators	**1**
Cylinders	1.1
Grippers	1.2
Rotary actuators	1.3
Guide and slide units	1.4
Distributors	**2**
Valves	2.1
Fieldbus	2.2
Units	**3**
Skillair	3.1
Bit	3.2
New Deal	3.3
One	3.4
Fittings and accessories	**4**
Fittings	4.1
Line on line	4.2
Accessories	4.3
Europea Directive 99/9/EC (Atex)	**5**
Technical documentation	**6**
Alphanumeric index	

METAL WORK®
PNEUMATIC



A global company

Metal Work was set up in 1967 for the production of push-in fittings for compressed air systems.

The company gradually extended its production and sales structure to become a leader in pneumatic systems for automation.

Now the production unit in Concesio has a staff of about 350, while the national and international sales organisation staff number around 450.

Metal Work obtained ISO 9001 certification in 1992 and environment management system certification in 2000 in compliance with ISO 14001.

Both certifications were granted by the German certifying body DEKRA ITS, approved by the TGA.

Products are distributed through 36 branches in Italy and abroad, which offer an efficient capillary before- and after-sales service.

The product quality and an efficient sales organisation are the basis on which Metal Work firmly stands and enable the company to meet all possible requirements in pneumatic systems for automation.



One of P Services, the Italian subsidiaries.



The main Metal Work production unit in Concesio.



One of Metal Work subsidiaries abroad.



METAL WORK PNEUMATIC



Quality in design, production and distribution



Metal Work is a fully integrated manufacturing company. This system guarantees the customer a fully monitored production process and a consistently top quality product.

Process engineering and product engineering come together in the constant quest for perfection.

Virtually all the products are manufactured at the company's own production site allowing the company to monitor the entire process from the selection of raw materials to final assembly, thus cutting wastage and lead times.

Production data and test results undergo critical analysis to enable the company to upgrade the products and the manufacturing process. Company-wide quality control is a permanent feature at Metal Work.

Total quality



Metal Work obtained ISO 9001 certification in 1992 and ISO 14001 certification in 2000, ample proof of our way of working and daily mission. Particular care is taken at all levels, from design to energy saving, and we can safely state that, compared with conventional products, the electrical power required to operate our valves has been cut by 75% over the last few years.

Certification covers not only the holding company but also the other companies in the Group, allowing both our products and our philosophy to gain world-wide recognition.

All Metal Work products meet EC and other standards including electromagnetic compatibility (EMC certificate).

Metal Work engineers are on ISO, UNI and ASSOFLUID committees as product standardisation is always a guarantee of product quality.



A customer-oriented policy

The product is not Metal Work's only strong point. Great care is taken over customer service, with the aim of providing the best possible solution for a specific requirement within the allotted time and with the utmost safety.

The Metal Work or P Service sales personnel work in close co-operation with the customer, providing the necessary backup to solve any technical problems, and search for new materials or information.

Metal Work invests heavily in providing the customers with the necessary training.

Our range includes all types of special products suitable for use in a wide variety of applications.







QUALITY MANAGEMENT ISO 9001:2000 DEKRA INTERTEK CERTIFICATION

ENVIRONMENTAL MANAGEMENT ISO 14001 DEKRA INTERTEK CERTIFICATION

METAL WORK S.p.A.
Head Office
Via Segni, 5-7-9 25062 - Concesio BS Italy
Tel. 030 21 87 11 - Fax 030 21 80 569
www.metalwork.it - metalwork@metalwork.it



ITALIAN SUBSIDIARIES

ARCORE
P SERVICE s.r.l.
Via Altiero Spinelli, 57
20043 Arcore MI
Tel. 039 61 80 056
039 61 50 064
Fax 039 60 120 29
www.pservice.it
pservmz@pservice.it

BARI
P SERVICE s.r.l.
Via S. Magno km 0,400
(zona industriale)
70033 Corato BA
Tel. 080 898 73 94 r.a.
Fax 080 898 71 45
www.pservice.it
pservba@pservice.it

BERGAMO
P SERVICE s.r.l.
Via Vienna, 28
Loc. Verdellino Zingonia
24040 Verdellino BG
Tel. 035 88 53 79
Fax 035 48 20 492
www.pservice.it
pservbg@pservice.it

BOLOGNA
P SERVICE s.r.l.
Via dell'Arcoveggio, 190/d
40129 Bologna BO
Tel. 051 70 27 11
Fax 051 70 31 14
www.pservice.it
pservbo@pservice.it

BRESCIA
P SERVICE S.p.A.
Via del Mella, 37 - Z.I. Fornaci
25131 Brescia BS
Tel. 030 35 855 r.a.
Fax 030 35 81 256
www.pservice.it
pservbs@pservice.it

CREMONA
P SERVICE s.r.l.
Via Sesto, 62
26100 Cremona CR
Tel. 0372 27 64 8 - 32 26 7
Fax 0372 45 71 42
www.pservice.it
pservcr@pservice.it

LECCO
P SERVICE s.r.l.
Via Provinciale, 39
23848 Oggiono LC
Tel. 0341 26 67 11
Fax 0341 26 67 12
www.pservice.it
pservlc@pservice.it

FILIALE DI VARESE
Via Gasparoli, 197
21012 Cassano Magnago VA
Tel. 0331 28 09 20
Fax 0331 28 09 21
www.pservice.it
pservva@pservice.it

MANTOVA
P SERVICE s.r.l.
Viale d/Libertà, 9 - 46030
San Giorgio di Mantova MN
Tel. 0376 37 41 81
Fax 0376 37 47 27
www.pservice.it
pservmn@pservice.it

MILANO - ARESE
P SERVICE s.r.l.
Via Montegrappa 40/44
20020 Arese MI
Tel. 02 93 58 17 48 r.a.
Fax 02 93 58 17 55
www.pservice.it
pservar@pservice.it

MILANO - TREZZANO
P SERVICE s.r.l.
Via Copernico, 54/56 Stabile 36
20090 Trezzano sul Naviglio MI
Tel. 02 44 50 235
Fax 02 44 50 635
www.pservice.it
pservtz@pservice.it

MODENA
P SERVICE s.r.l.
Via S. Giovanni Bosco, 267
41100 Modena MO
Tel. 059 23 98 06
Fax 059 23 98 76
www.pservice.it
pservmo@pservice.it

NOVARA
P SERVICE s.r.l.
Via Nibbia, 4A
28060 S. Pietro Mosezzo
Fr. Nibbia NO
Tel. 0321 43 79 86
Fax 0321 43 79 93
www.pservice.it
pservno@pservice.it

PARMA
P SERVICE s.r.l.
Pza Lunardi 27/A
43100 Parma PR
Tel. 0521 24 09 64
Fax 0521 24 28 47
www.pservice.it
pservpr@pservice.it

PAVIA
P SERVICE s.r.l.
Via F.lli Cagnoni, 7/9
27029 Vigevano PV
Tel. 0381 83 333
Fax 0381 82 733
www.pservice.it
pservpv@pservice.it

RIMINI
P SERVICE s.r.l.
Via Piane, 23/A
47853 Coriano RN
Tel. 0541 65 87 15
0541 65 81 36
Fax 0541 65 68 69
www.pservice.it
pservrn@pservice.it

TORINO
METAL WORK s.r.l.
Via Bruino, 22/2
10040 Rivalta TO
Tel. 011 90 32 666
Fax 011 90 03 632
www.pservice.it
metalwto@pservice.it

FILIALE DI GENOVA
Via Isola del Vescovo, 65/67
16138 Genova GE
Tel. 010 83 58 088
Fax 010 83 65 643
www.pservice.it
pservge@pservice.it

TREVISO
P SERVICE s.r.l.
Via P. A. Gemelli, 34
31040 Postioma di Paese TV
Tel. 0422 48 45 78 r.a.
Fax 0422 48 45 79
www.pservice.it
pservtv@pservice.it

VERONA
P SERVICE s.r.l.
Via Del Perlar, 92
37135 Verona VR
Tel. 045 50 31 23
Fax 045 82 50 038
www.pservice.it
pservvr@pservice.it

VICENZA
P SERVICE s.r.l.
Via Progresso, 70
36035 Marano Vicentino VI
Tel. 0445 56 05 90
Fax 0445 56 01 33
www.pservice.it
pservvi@pservice.it

FILIALE DI PADOVA
Via Pelosa, 78
35030 Caselle di Selvazzano PD
Tel. 049 89 78 997
Fax 049 89 86 966
www.pservice.it
pservpd@pservice.it

FILIALE DI ALTE CECCATO
Via Milano SS.11
36041 Alte di Montecchio
Maggiore VI
Tel. 0444 69 85 95
Fax 0444 69 87 23



ITALY AUTHORISED DEALER

NORTH

PADOVA
ATI s.a.s.
Via Facca, 58
SS Valsugana
35013 Cittadella PD
Tel. 049 94 01 777
Fax 049 94 00 665
www.aticompressori.it
ati@aticompressori.it

TRENTO
TRE.F.IN s.r.l.
Via Maccani, 197
38100 Trento TN
Tel. 0461 82 55 75
Fax 0461 82 48 02
www.trefin-tn.it
info@trefin-tn.it

UDINE
M.P. A. s.r.l.
Via IV Novembre, 86
33010 Feletto Umberto UD
Tel. 0432 57 52 56
Fax 0432 57 50 31
mail@mpautomazioni.191.it

CENTRE

FIRENZE
TECHNOTEAM s.r.l.
Via Baldanzese, 241
50041 Calenzano FI
Tel. 055 88 25 157
Fax 055 88 77 836
technoteam@technoteamsrl.it

MACERATA
TORRESI RAFFAELE & C s.n.c.
Via Sandro Pertini, 51
Zona Industriale A
62012 Civitanova Marche MC
Tel. 0733 81 11 20 r.a.
Fax 0733 81 11 30
torresisrl@tiscali.it

ROMA
CASA DEL CUSCINETTO s.r.l.
Via Casilina, 57/57A
00182 Roma RM
Tel. 06 70 70 031
Fax 06 70 27 217
casacuscinetto.roma@skf.it

SOUTH

AVELLINO E PROVINCIA
A.R.A. s.a.s.
di C. Argenziano & C.
Via Appia, 123/125
83042 Atripalda AV
Tel. 0825 62 56 03
Fax 0825 62 47 19
www.araforniture.it
info@araforniture.it

CASERTA E PROVINCIA
TECNOUTENSILI s.r.l.
V.le Carlo III P.co Matilde 45/47
81020 San Nicola La Strada CE
Tel. 0823 45 91 57
Fax 0823 45 98 77
tecnoute2@virgilio.it

NAPOLI E PROVINCIA
OLEODINAMICA & PNEUMATICA s.a.s.
di Ardolino G. & Co.
Via M.le Manfredi, 24
80039 Saviano NA
Tel. 081 82 11 468
Fax 081 82 11 181
oleod.e.pneum@libero.it

NAPOLI CITTÀ E PROVINCIA
R.C.P. s.a.s.
di Casale Aniello & C.
Via Nuova delle brecce, 176
80147 Napoli NA
Tel. 081 75 24 238
Fax 081 75 22 067
www.rcpcasale.it
info@rcpcasale.it

ITALY AGENCY

CAMPANIA
VINCENZO ESPOSITO
Via F. Imparato, 198
80141 Napoli NA
Tel. 081 75 20 125
Fax 081 55 90 889
esposito.vincen@libero.it

LAZIO
MARCO BARROVECCHIO
Via P. Marchisio, 251
00173 Roma RM
Tel. 06 72 20 060
Fax 06 72 10 980
Cell. 336 614307
barrovecchio.m@tiscali.it

SARDEGNA
G.CARLO LAI
Via Ranieri Sampante, 6
09121 Cagliari CA
Tel./Fax 070 280235
Cell. 328 3517832
lai.gianc@tiscali.it

SICILIA
OTTOLENGHI FEDERICO
di Ferrari Gabriella
Via Nazionale, 95
95020 Cannizzaro CT
Tel./Fax 095 27 17 54
ottolenghi@tin.it

METAL WORK PNEUMATIC



FOREIGN SUBSIDIARIES

EUROPE

AUSTRIA
Metal Work Pneumatic GmbH
Josef - Wilberger - Strasse 1
A - 6020 Innsbruck - Austria
Tel. 0043 512 26 22 61
Fax 0043 512 26 22 62
metalwork@metalwork.at

BELGIUM
Metal Work België/Belgique
Mechelse Steenweg 277
B-1800 Vilvoorde - Belgium
Tel. 02 75 16 120
Fax 02 75 16 161
metalwork@metalworkpneumatic.be

DENMARK
Metal Work Danmark A/S
Korskildelund 1
2670 Greve - Denmark
Tel. 70 22 23 11
Fax 70 22 27 59
metalwork@metalwork.dk

FINLAND
Metal Work Finland OY
Läkkisepäntie 4
00620 Helsinki - Finland
Tel. 09 731 38 270
Fax 09 272 2712
metalwork@metalwork.fi

FRANCE
Metal Work France SARL
Parc d'Activités de
l'Esplanade
14 Rue Enrico Fermi
77462 Saint Thibault des Vignes
France
Tel. 01 60 94 00 00
Fax 01 60 94 01 94
metalwork@metalwork.fr
AGENCE SUD-EST
Parc du Chêne - BP 50
7/9 Rue du 35ième
Régiment d'Aviation
69672 Bron Cedex - France
Tel. 04 72 15 00 00
Fax 01 60 94 01 94

GERMANY
Metal Work Deutschland GmbH
Keltenstrasse 3a
85095 Denkendorf
Germany
Tel. 08466 9514-0
Fax 08466 9514-26
metalwork@metalwork.de

HOLLAND
Metal Work Nederland B.V.
Postbus 90 - 6710 BB EDE
Voltastraat 9 - 6716 AJ EDE
Holland
Tel. 0031 0318 66 51 11
Fax 0031 0318 66 51 15
metalwork@metalwork.nl

POLSKA
Metal Work Polska Sp Z.o.o.
Ul. Bystra 15 A - 61-366
Poznan - Polska
Tel. 0 61 65 01 840
Fax 0 61 65 01 849
metalwork@metalwork.pl

PORTUGAL
Metal Work Portugal Lda
Estrada Nacional, 1
P.C. Emiauto Pav-D Sobreiro Torio
3850 - Albergaria a Velha
Portugal

SPAIN
Metal Work Iberica S.A.
Pol. Ind. Can Magí
c/Can Magí, 9
08210 Barbera del Valles
(Barcelona) Spain
metalwork@metalwork.es
Tel. 937 180 244
Fax 937 188 070
DELEGACION NORTE
Tel. 946 203 999
Fax 946 202 642
48220 Abadiño (Bizkaia)
DELEGACION CENTRO
Tel. 91 658 60 48
Fax 91 658 63 51
28700 Sebastian de los
Reyes (Madrid)
DELEGACION LEVANTE
Tel. 96 510 62 92
Fax 96 510 62 93
03113 Alicante

SWEDEN
Metal Work Sverige AB
Modemgatan, 7
235 39 Vellinge - Sweden
Tel. 040 42 07 00
Fax 040 42 07 20
metalwork@metalwork.se

UK
Metal Work Uk Ltd
Blackhill drive - Wolverton Mill
Milton Keynes - MK 12 5TS
Tel. 01908 22 22 88
Fax 01908 22 28 24
sales@metalwork.co.uk

AMERICAS

BRAZIL
Metal Work Dover do Brasil
RIO GRANDE DO SUL
Av. Thomaz Edison, 2648
Scharlau CEP. 93125 - 140
São Leopoldo/RS - Brazil
Tel. 0055 51 3590 - 7100
Fax 0055 51 3590 - 7111
metalwork@metalwork.com.br

USA
Metal Work Pneumatic USA, Inc.
1120 Eden Road, Suite 106
Arlington, TX 76001
Tel. 817 - 701 - 4000
Fax 817 - 701 - 4004
metalwork@metalwork.org

ASIA - OCEANIA

AUSTRALIA
Metal Work AUSTRALASIA PTY Ltd
P.O. Box 2638
North Parramatta 1750
Unit 1/6 Hume Road
Smithfield NSW 2164
Tel. 61 2 97 25 35 99
Fax 61 2 97 25 23 61
metalworksydney@optusnet.com.au
VICTORIA BRANCH
N 10 Mickle Street
Dandenong VIC 3175
Australia
Tel. 03 97 06 67 18
Fax 03 97 06 67 19

CHINA
Metal Work Pneumatic Components
(Shanghai) Co., Ltd.
Block C1, N°3, Fulian third
Road
201906 - Baoshan District,
Shanghai - China
Tel. 0086-21-36043088
Fax 0086-21-36043077

MALAYSIA
Metal Work Pneumatic
(Malaysia) Sdn Bhd
52 Jalan TPJ 5 - Taman
Perindustrian Jaya
47200 Petaling Jaya
Selangor - Malaysia
Tel. 0060 37 84 54 228
Fax 0060 37 84 50 228
mwpmal@streamyx.com

THAILAND
Metal Work Pneumatic
(Thailand) Co. Ltd
29/67 Moo 2, 345 Road
Lumpo, Bangbuatong,
Nonthaburi 11110
Thailand
Tel. 00662 961 7000
Fax 00662 961 7227
metalwork@metalwork.co.th



FOREIGN AUTHORISED DEALER

EUROPE

BULGARIA
TechnoKom Co Ltd
4, Naycho Tsanov str.
4000 Plovdiv - Bulgaria
Tel. 00359 32 665 088
Fax 00359 32 665 099
www.technokom.bg
info@technokom.bg

CYPRUS
Andreas Chr. - Demetriades Ltd.
Eakos Street n°3 - Pallouriotissa
P.O. Box 29068
1620 Nicosia - Cyprus
Tel. 00357 22 43 14 50 (4 lines)
Fax 00357 22 43 73 15
a.c.demetriades@cytanet.com.cy

EIRE
Pneumatics Ltd
Old Naas Road - Bluebell
Dublin 12 - Eire
Tel. 003531 45 68 111
Fax 003531 45 68 108

GREECE
Har. E. Akritidis & Co.
26 Str. Monastiriou
P.O. Box 1284 - PC 57022
Thessaloniki - Grecia
Tel. 0030 23 10 52 24 11
Fax 0030 23 10 53 59 92
akritidi@otenet.gr

MACEDONIA
Devit Compressor and
Pneumatic Systems
Ul. Razlovecko Vostante 24/13
MK - 1000 SKOPJE - Macedonia
Tel. 0038 97 02 25 674
Fax 0038 92 36 15 48
devit@unet.com.mk

NORWAY
SERVI MOTION CONTROL AS
Org. nr. 936 370 446
Haugenvn 2, Pb. 3230,
1402 SKi - Norway
Tel. 64 97 97 97
Fax 64 97 98 99
www.servi.no
servi@servi.no

TESS ENGROS AS
Postboks 1540
N-3007 Drammen - Norway
Tel. 32 84 40 00
Fax 32 84 40 01
www.tess.no
ts@tess.no

CZECH REPUBBLIC and SLOVAKIA
VT-FLEX s.r.o.
Stranislavskeho 582
721 00 Ostrava
Czech Repubblic
Tel. 00420 59 67 48 577
Fax 00420 59 67 28 010
www.vt-flex.com
sales@vt-flex.com

ROMANIA
Novo trade s.r.l.
Str. Libertaii, 315
Apahida, Cluj - Romania
Tel. 00 40 264-434100
Fax 00 40 264-406613
novotech@novotech.ro

SLOVENIA, CROATIA and SERBIA
Lipro d.o.o.
Smarska C. 18 - 06000 Koper
Capodistria - Slovenia
Tel. 0038 65 62 51 343
Fax 0038 65 62 51 344
lipro@siol.net

SWITZERLAND
Tri-Matic AG
Bösch 82 - CH 6331
Hünenberg - Switzerland
Tel. 0041 41 780 22 22
Fax 0041 41 780 03 60
www.tri-matic.ch
info@tri-matic.ch

TURKEY
HPA Teknoloji Geliştirme Makina ve
Yedek Parça Imalat
San. Iç ve Diş Tic. Ltd. Şti.
1201/1 Sokak No: 4/A
P21 Yenisehir - Izmir - Turkey
Tel. 0090 232 469 7961
449 33 92
449 0962
449 36 01
Fax 0090 232 433 9625
457 17 89

HUNGARY
ENTRA-SYS KFT
H-6724 Szeged - Hungary
Tel. 0036 62 468 478
62 547 267
62 547 268
Fax 0036 62 421 403
www.entra-sys.hu
entra-sys@vnet.hu

AFRICA

ALGERIA
SARL DELTA CONTROL
Rue Yahia Belhayat, 09
16035 Hydra Alger - Algeria
Tel. 0021 32 16 92 557
Fax 0021 32 16 04 250
delta_control@hotmail.com

EGYPT
El Masry for Industrial Services Ltd
5 El Wakkad Str.
Abbassia - 11371 Cairo
Egypt
Tel. 00202 27 45 716
Fax 00202 27 42 916
t.elmasry@menanet.net

MAROCCO
Afric Roulement
125 - 129, Bd. Ibn Tachfine
Casablanca - Marocco
Tel. 022 40 70 10 - 13
Fax 022 40 70 14
www.aroulement.com
roulement@iam.net.ma

SOUTH AFRICA
CB Pneumatics (Pty) Ltd
Unit 14, Southern Life Ind.
Village Crocker Street
Wedeville Ext 6 - Germiston
South Africa
Tel. 0027 11 90 25 448
Fax 0027 11 90 24 656
cbpneu@netactive.co.za

AMERICAS

CHILE
Tecnica Thomas C.SargenT S.A.C.I.
Av. Presidente Bulnes, 205
Santiago - Chile
Tel. 00562 5103043
Fax 00562 6983989

ECUADOR
Ecuatoriana Industrial
Termoval Cia Ltda
Concepcion 676 Y Valparasio
Quito - Ecuador
Tel. 0059 32 22 81 921
Fax 0059 32 29 52 888
e_industrial@hotmail.com
www.ecuatorianaindustrial.com

URUGUAY
Fidemar S.A.
Minas 1634 - CP 11200
Montevideo - Uruguay
Tel. 598 2 40 21 717
Fax 598 2 40 21 719
www.fidermar.com.uy
info@fidemar.com.uy

VENEZUELA
Neumatica Rotonda c.a.
Prolongacion Av. Michelena
C.C. Atlas, Local B-9
Valencia, Edo. Carabobo
Venezuela
Tel. 0058 241 83 26 464
Fax 0058 241 83 26 283
www.neumaticarotonda.com
ventas@neumaticarotonda.com

ASIA - OCEANIA

UNITED ARAB EMIRATES
ACME Industrial Hardware
Trading L.L.C.
P.O. Box 3636
Dubai United UAE
Tel. 009714 22 38 897
Fax 009714 22 16 698
acmedxb@eim.ae

SOUTH KOREA
Seowon Corporation
1001 Ilsan Technotown
1141-1 Beksuk-Dong
Ilsandong-Gu, Goyang City
Gyunggi-Do 410-722
South Korea
Tel. 0082 31 90 61 100
Fax 0082 31 90 61 101
mail@seowoncorp.com
www.seowoncorp.com

ISRAEL
Conlog Ltd
7 Leshem St.
49134 Petach Tikva - Israel
Tel. 00972 3 92 69 595
Fax 00972 3 92 33 367
www.conlog.co.il
conlog@conlog.co.il

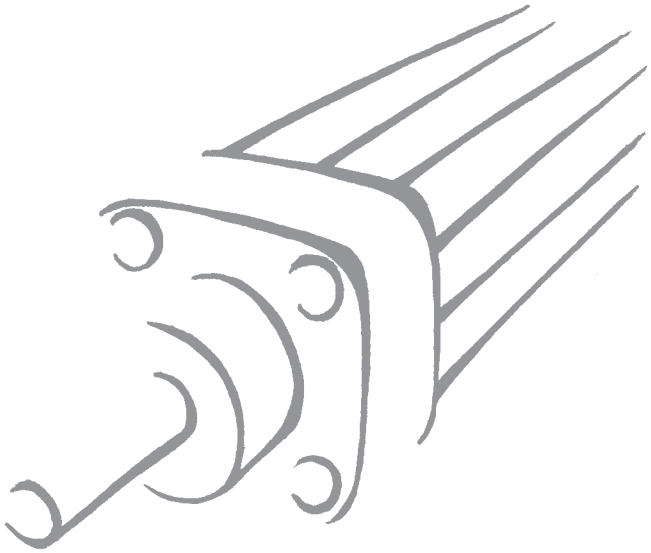
NEW ZELAND
Valves & Fittings Ltd
J1/138 Plunket Ave -
Manukau City Auckland
New Zeland
Tel. 64 9 261 11 11
Fax 64 9 261 11 12
www.valves.co.nz
sales@valves.co.nz

TAIWAN
Century Automatiom Corporation
5F-8, no.1 Wu-Chuan 1
St.Road Hsin
Taipei Hsien- Taiwan
Tel. 00886222988436
Fax 00886222988436
century@cenauto.com.tw

METAL WORK®
PNEUMATIC

1

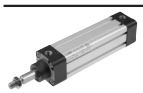
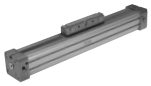
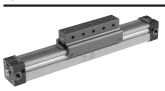
CYLINDER
GRIPPERS
ROTARY ACTUATORS
GUIDE UNITS AND SLIDES



ACTUATORS

PNEUMATIC ACTUATORS

CHAPTER 1.1

	GENERAL TECHNICAL DATA	PAGE 1.1/02
	MICRO-CYLINDER SERIES ISO 6432 Ø 8-25 mm AND ACCESSORIES	PAGE 1.1/08
	ROUND CYLINDER SERIES RNDC Ø 32-50 mm AND ACCESSORIES	PAGE 1.1/19
	CARTRIDGE MICRO-CYLINDER SERIES CRTC Ø 6-16 mm	PAGE 1.1/24
	SHORT-STROKE CYLINDERS SERIES SSCY Ø12-100 mm AND ACCESSORIES	PAGE 1.1/26
	COMPACT CYLINDER Ø 12-100 MM AND ACCESSORIES	PAGE 1.1/34
	COMPACT STOPPER CYLINDER Ø 20-30-50-80 mm AND ACCESSORIES	PAGE 1.1/54
	CYLINDERS SERIES ISO 6431 VDMA Ø 32-125 mm AND ACCESSORIES	PAGE 1.1/63
	CYLINDERS SERIES ISO 6431 VDMA Ø 32-125 mm TYPE A RETRACTABLE SENSOR AND ACCESSORIES	PAGE 1.1/72
	CYLINDER SERIES ISO 6431 VDMA Ø 32-63 TWO-FLAT AND ACCESSOIRES	PAGE 1.1/89
	CYLINDER SERIES ISO 6431 VDMA TYPE A RETRACTABLE SENSOR TWO-FLAT AND ACCESSOIRES	PAGE 1.1/94
	CYLINDERS SERIES ISO 6431 VDMA Ø 160-200 mm AND ACCESSORIES	PAGE 1.1/103
	TWIN-ROD CYLINDER SERIES TWNC Ø 32-100 mm AND ACCESSORIES	PAGE 1.1/110
	RODLESS CYLINDER Ø 16-63 MM AND ACCESSORIES	PAGE 1.1/117
	RODLESS CYLINDER DOUBLE SERIES Ø 16-32 AND ACCESSORIES	PAGE 1.1/125
	RODLESS CYLINDER Ø 16-40 WITH BALL CIRCULATION GUIDE	PAGE 1.1/127
	RODLESS CYLINDER WITH GUIDE "V" Ø 25-63 AND ACCESSOIRES	PAGE 1.1/135
	COMPACT GUIDED CYLINDER Ø 12-100 MM AND ACCESSORIES	PAGE 1.1/143
	STAINLESS STELL CYLINDER AND ACCESSOIRES	PAGE 1.1/149
	HYDRAULIC BRAKE SERIES BRK FOR ISO CYL. Ø 40-80 MM AND ACCESSORIES	PAGE 1.1/165
	TESTER FOR MAGNETIC SENSORS	PAGE 1.1/171

GENERALE TECHNICAL DATA

Compressed air
The cylinders have been designed for use with unlubricated air, in which case no maintenance is required. If lubricated air is used, lubrication must be continuous because the additional lubrication removes the lubricant applied at the factory.
With reference to ISO/DIN 8573-1, the compressed air to use is class 3-4-3, i.e.:
• oil residue: 1 mg/m^3
• powder residue: filtering 40 um, 10 mg/m^3
• water residue: dew point -20°C, 0.88 mg/m^3.

Gasket material
Some families of Metal Work cylinders are available with gaskets made of different materials.
Polyurethane: the best in terms of long-life, resistance to wear and reduced friction.
Chemically compatible with:
• Pure aliphatic hydrocarbons (butane, propane, gasoline). Any impurities (moisture, alcohol, acid or alkaline compounds) can chemically attack polyurethane.
• Mineral oil and grease (some additives can chemically attack the material)
• Silicone oil and grease
• Water up to +50°C
• Resistance to ozone and ageing
Not compatible with:
• Ketones, esters, ethers
• Alcohos, glycols
• Hot water, steam, alkali, amines, acids.
• Good elasticity down to –35°C (for low temperature PU version only).
NBR: These gaskets have a shorter life than polyurethane gaskets. However, they are recommended for use in environments causing the formation of water condensate, such as tropical climates, where polyurethane gaskets may tend to deteriorate quickly due to hydrolysis.
Chemically compatible with:
• Methane, butane, propane, oily acids
• Aliphatic hydrocarbons
• Lubrication oils
• Gasoline
Not compatible with:
• Ozone and exposure to sunlight.
• Good elasticity down to –35°C (for low temperature NBR version only).
FKM/FPM: Can withstand temperatures as high as 150°C. This makes them ideal for use on rodless cylinders, high-speed applications, involving high temperatures at the sliding lips.
Chemically compatible with:
• Mineral oil and grease, slight swelling with oil grade ASTM no. 1 and 3.
• Silicon oil and grease
• Animal and vegetable oil and fat
• Aliphatic hydrocarbons (gasoline, butane, propane, natural gas)
• Aromatic hydrocarbons (benzol, toluene)
• Chlorinated hydrocarbons (tetrachloroethylene)
• Fuels
• Ozone, atmospheric agents, ageing
Not compatible with:
• Polar solvents (acetone, methylethylchetone, diethyl ether, dioxane)
• Glycol-based brake fluids
• Ammonia gas, amines, alkali
• Superheated water vapour
• Low molecular organic acids (formic and acetic acid)

No-stick-slip cylinders:
Standard cylinders are designed to ensure trouble-free operation under any conditions, particularly at high speed. Operation tends to be irregular and jerky at very low speeds in the presence of side loads. In this case, no-stick-slip cylinders are recommended as they allow smooth operation. These versions feature specific tribological properties and polyurethane gaskets.

Radial oscillation of the piston rod
These cylinders have been designed to apply forces in the direction of the axis and not to withstand side loads. If you intend to use the cylinder piston rod with side loads, the play between the piston rod and guide bushing must be taken into account. Indicatively, each 100-mm stroke corresponds to 1-mm radial oscillation measured at the end of the piston rod.

Cylinder operating life
The life of cylinders depends on numerous factors including axial and radial loads, speed, frequency of use, temperature, shocks, air loss (limits). Below are a few factors that must be taken purely as a reference. They are not binding or guaranteed due to the variability of different factors.
Without radial load:
ISO 6431 cylinders and round cylinders with polyurethane gaskets: 15,000 km.
ISO 6431 cylinders and round cylinders with NBR gaskets: 8,000 km.
ISO 6432 cylinders, SSC cylinders and compact cylinders with polyurethane gaskets: 30 million cycles.
ISO6432 cylinders and SSC cylinders with NRB gaskets: 15 million cycles
Rodless cylinders: 5,000 km

Stroke tolerances
The actual cylinder stroke has a tolerance with respect to the nominal stroke, in compliance with any applicable laws, within the following ranges:

• ISO 6431 cylinders	32-50	-0	+2	mm
	63-200	-0	+2.5	mm
• ISO 6432 6432	8-25	-1	+1	mm
• Round cylinders	32-50	-0,5	+1.5	mm
• SSC cylinders	12-50	-1	+1	mm
	63-100	-1	+1.5	mm
• Compact cylinders	12-100	-0,5	+1.5	mm
• Rodless cylinders	16-40	-1	+2	mm

Strokes exceeding the maximum value specified in the catalogue
Metal Work can supply cylinders with strokes greater than those specified in the catalogue, considering the production technological limits. The Metal Work Sales Department can provide you will full details. However, it is up to the end user to use these special cylinders properly, by guiding the piston rod, avoiding peak loads, etc.

Magnetic sensors
The magnetic field generated by permanent magnets housed in the piston assembly changes in shape and intensity depending on the presence of magnetic metal masses in the vicinity of the cylinder. These masses may prevent the sensors from switching correctly, in which case non-magnetic materials should be used. In particular, the tie rods of short-stroke and compact cylinders should preferably be made of stainless steel.

CALCULATING PEAK LOAD ON THE PISTON ROD

During operation, the piston rod of the cylinder behaves like a rod subjected to peak load (bending + compression). In the case of long strokes, it is necessary to make sure the diameter of the piston rod is correct for the load applied and the type of cylinder and piston rod mounting. The following formulae can be used to do this.

A. Calculating the maximum force with a given stroke and piston rod diameter:

$$F \leq \frac{20.350\ \varnothing^4}{C^2 .\ K^2}$$

B. Calculating the minimum acceptable piston rod diameter with a given stroke and force:

$$S \geq \sqrt[4]{\frac{F\ .\ C^2 .\ K^2}{20.350}}$$

Where:

- F force applied [N]
- ∅ diameter of the piston rod [mm]
- C stroke [mm]
- K free length coefficient depending on the mounting – see diagrams

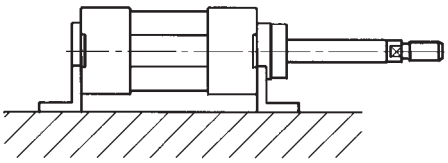
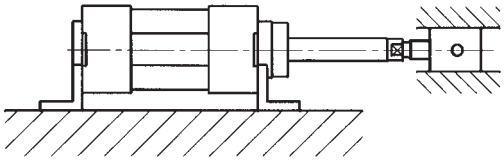
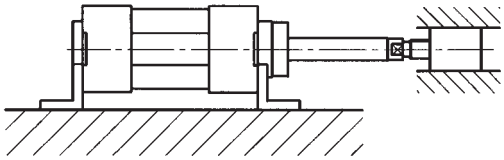
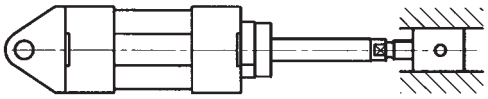
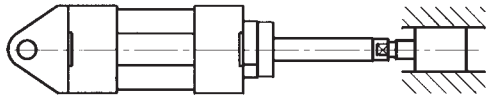
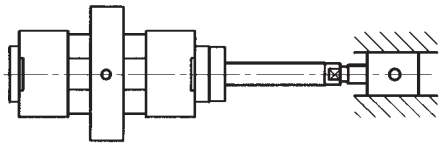
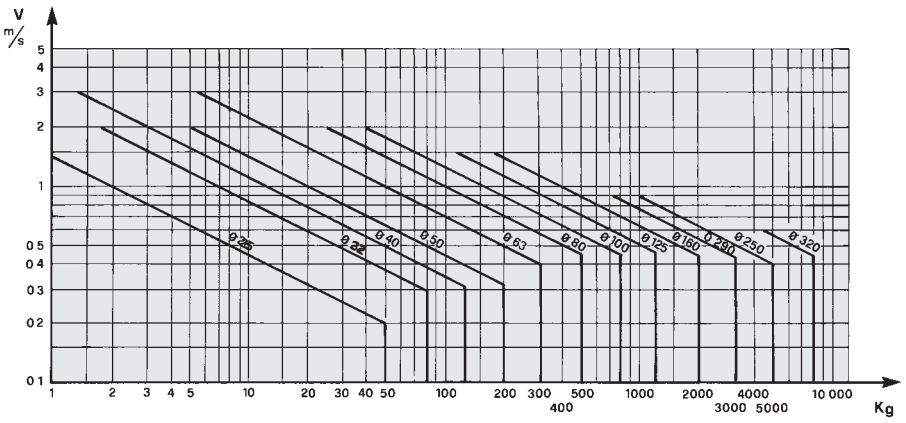
CONSTRAINT	K
	2
	0.7
	0.5
	2
	1
	1.5

CHART OF SPEED / MAXIMUM ABSORBABLE LOAD

For the cylinder to reach the end-of-stroke position without suffering damaging impact due to intensity and repetition, it is necessary to annul the kinetic energy of the moving mass and the relative work generated. The maximum absorbable load depends on the transference speed and the absorption capacity of the standard pneumatic cushion in the various cylinders. The chart gives the speed and absorbable mass in various diameters at a pressure of 6 bar.



CONSUMPTION OF AIR IN THE CYLINDERS

Cylinder bore D mm	Piston rod diameter d mm	Motion	Useful area cm²	Air consumption during thrust and traction in Nl/cm of stroke, depending on the working pressure P in bar at 20°C.									
				1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
12	4	thrust traction	1,13 1,00	0,0023 0,0020	0,0034 0,0030	0,0045 0,0040	0,0057 0,0050	0,0068 0,0060	0,0079 0,0070	0,0090 0,0080	0,0102 0,0090	0,0113 0,0100	0,0124 0,0110
16	6	thrust traction	2,01 1,73	0,0040 0,0035	0,0060 0,0052	0,0080 0,0069	0,0100 0,0086	0,0121 0,0104	0,0141 0,0121	0,0161 0,0138	0,0181 0,0156	0,0202 0,0173	0,0221 0,0190
20	8	thrust traction	3,14 2,64	0,0063 0,0053	0,0094 0,0079	0,0126 0,0106	0,0157 0,0132	0,0188 0,0158	0,0220 0,0185	0,0251 0,0211	0,0283 0,0238	0,0314 0,0264	0,0346 0,0290
25	12	thrust traction	4,91 3,78	0,0098 0,0076	0,0147 0,0113	0,0196 0,0151	0,0245 0,0189	0,0295 0,0227	0,0344 0,0264	0,0393 0,0302	0,0442 0,0340	0,0491 0,0378	0,0540 0,0415
32	12	thrust traction	8,04 6,91	0,016 0,014	0,024 0,021	0,032 0,028	0,040 0,035	0,048 0,042	0,056 0,049	0,064 0,058	0,072 0,063	0,080 0,070	0,088 0,076
40	16	thrust traction	12,56 10,55	0,025 0,021	0,038 0,032	0,050 0,042	0,063 0,053	0,076 0,063	0,088 0,074	0,100 0,088	0,113 0,095	0,126 0,106	0,138 0,116
50	20	thrust traction	19,63 16,49	0,039 0,033	0,059 0,050	0,079 0,066	0,098 0,082	0,118 0,099	0,137 0,115	0,157 0,132	0,177 0,149	0,196 0,165	0,216 0,181
63	20	thrust traction	31,16 28,02	0,062 0,056	0,093 0,084	0,125 0,112	0,156 0,140	0,187 0,168	0,218 0,196	0,249 0,224	0,280 0,252	0,312 0,280	0,343 0,308
80	25	thrust traction	50,24 45,36	0,100 0,091	0,150 0,138	0,200 0,181	0,250 0,227	0,301 0,272	0,351 0,318	0,402 0,363	0,452 0,408	0,502 0,454	0,552 0,500
100	32	thrust traction	78,54 70,50	0,157 0,141	0,238 0,211	0,314 0,282	0,382 0,352	0,471 0,423	0,549 0,493	0,628 0,564	0,706 0,635	0,785 0,705	0,862 0,775
125	32	thrust traction	122,66 114,67	0,245 0,229	0,368 0,344	0,490 0,459	0,613 0,573	0,736 0,688	0,859 0,803	0,981 0,917	1,104 1,032	1,226 1,147	1,349 1,262
160	40	thrust traction	201,06 188,49	0,402 0,377	0,603 0,565	0,804 0,754	1,005 0,942	1,206 1,130	1,407 1,319	1,608 1,508	1,809 1,696	2,010 1,884	2,211 2,673
200	40	thrust traction	314,15 301,59	0,628 0,603	0,942 0,905	1,257 1,206	1,571 1,508	1,885 1,810	2,199 2,111	2,513 2,413	2,827 2,714	3,145 3,016	3,456 3,318

FORCE OF SPRINGS IN SINGLE-ACTING CYLINDERS (THEORETICAL)

ISO 6431 SINGLE-ACTING CYLINDERS

Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
32	63	250	35
40	88	250	51
50	102	250	64
63	102	250	64

ISO 6432 SINGLE-ACTING CYLINDERS

Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
8	3	50	1
10	5	50	1
12	7	50	3
16	20	50	5
20	22	50	12
25	28	50	17

$$P = P_1 + \frac{(P_2 - P_1)}{C_{max}} \cdot C_x$$

P_1 = Force with spring extended
P_2 = Force with spring compressed
C_x = Required stroke
C_{max} = Max stroke

SSC SINGLE-ACTING CYLINDERS

Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
12	6	25	1,5
16	7	25	3
20	12	25	4
25	14	25	5
32	33	50	6
40	45	50	15
50	70	50	20
63	81	50	25

ROUND SINGLE-ACTING CYLINDERS

Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
32	86	250	34
40	95	250	50
50	108	250	62

SINGLE-ACTING CARTRIDGE CYLINDERS

Bore mm	Force with spring compressed N	Max. stroke mm	Force with spring extended N
6	5.03	15	–
10	7.05	15	–
16	7.05	15	–

FORCES GENERATED DURING THRUST AND TRACTION (THEORETICAL)

Cylinder bore D mm	Piston rod diameter d mm	Motion	Useful area cm^2	Thrust and traction force in daN depending on the operating pressure in bar.									
				1 bar	2 bar	3 bar	4 bar	5 bar	6 bar	7 bar	8 bar	9 bar	10 bar
8	4	thrust traction	0.50 0.38	0.5 0.4	1.0 0.8	1.5 1.1	2.0 1.5	2.5 1.9	3.0 2.3	3.5 2.6	4.0 3.0	4.5 3.4	5.0 3.8
10	4	thrust traction	0.79 0.66	0.8 0.7	1.6 1.3	2.4 2.0	3.1 2.6	3.9 3.3	4.7 4.0	5.5 4.6	6.3 5.3	7.1 5.9	7.9 6.6
12	6	thrust traction	1.13 0.85	1.1 0.8	2.3 1.7	3.4 2.5	4.5 3.4	5.7 4.2	6.8 5.1	7.9 5.9	9.0 6.8	10.2 7.6	11.3 8.5
16	6	thrust traction	2.01 1.73	2.0 1.7	4.0 3.5	6.0 5.2	8.0 6.9	10.1 8.6	12.1 10.4	14.1 12.1	16.1 13.8	18.1 15.6	20.1 17.3
16	8	thrust traction	2.01 1.51	2.0 1.5	4.0 3.0	6.0 4.5	8.0 6.0	10.1 7.5	12.1 9.0	14.1 10.6	16.1 12.1	18.1 13.6	20.1 15.1
20	8	thrust traction	3.14 2.64	3.1 2.6	6.3 5.3	9.4 7.9	12.6 10.6	15.7 13.2	18.8 15.8	22.0 18.5	25.1 21.1	28.3 23.8	31.4 26.4
20	10	thrust traction	3.14 2.36	3.1 2.4	6.3 4.7	9.4 7.1	12.6 9.4	15.7 11.8	18.8 14.1	22.0 16.5	25.1 18.8	28.3 21.2	31.4 23.6
25	8	thrust traction	4.91 4.41	4.9 4.4	9.8 8.8	14.7 13.2	19.6 17.6	24.5 22.0	29.5 26.4	34.4 30.8	39.3 35.2	44.2 39.7	49.1 44.1
25	10	thrust traction	4.91 4.12	4.9 4.1	9.8 8.2	14.7 12.4	19.6 16.5	24.5 20.6	29.5 24.7	34.4 28.9	39.3 33.0	44.2 37.1	49.1 41.2
32	12	thrust traction	8.04 6.91	8.0 6.9	16.1 13.8	24.1 20.7	32.2 27.6	40.2 34.6	48.3 41.5	56.3 48.4	64.3 55.3	72.4 62.2	80.4 69.1
40	12	thrust traction	12.57 11.44	12.6 11.4	25.1 22.9	37.7 34.3	50.3 45.7	62.8 57.2	75.4 68.6	88.0 80.0	100.5 91.5	113.1 102.9	125.7 114.4
40	16	thrust traction	12.57 10.56	12.6 10.6	25.1 21.1	37.7 31.7	50.3 42.2	62.8 52.8	75.4 63.3	88.0 73.9	100.5 84.4	113.1 95.0	125.7 105.6
50	16	thrust traction	19.63 17.62	19.6 17.6	39.3 35.2	58.9 52.9	78.5 70.5	98.2 88.1	117.8 105.7	137.4 123.4	157.1 141.0	176.7 158.6	196.3 176.2
50	20	thrust traction	19.63 16.49	19.6 16.5	39.3 33.0	58.9 49.5	78.5 66.0	98.2 82.5	117.8 99.0	137.4 115.5	157.1 131.9	176.7 148.4	196.3 164.9
63	16	thrust traction	31.17 29.16	31.2 29.2	62.3 58.3	93.5 87.5	124.7 116.6	155.9 145.8	187.0 175.0	218.2 204.1	249.4 233.3	280.6 262.5	311.7 291.6
63	20	thrust traction	31.17 28.03	31.2 28.0	62.3 56.1	93.5 84.1	124.7 112.1	155.9 140.2	187.0 168.2	218.2 196.2	249.4 224.2	280.6 252.3	311.7 280.3
80	20	thrust traction	50.27 47.12	50.3 47.1	100.5 94.2	150.8 141.4	201.1 188.5	251.3 235.6	301.6 282.7	351.9 329.9	402.1 377.0	452.4 424.1	502.7 471.2
80	25	thrust traction	50.27 45.36	50.3 45.4	100.5 90.7	150.8 136.1	201.1 181.4	251.3 226.8	301.6 272.1	351.9 317.5	402.1 362.9	452.4 408.2	502.7 453.6
100	25	thrust traction	78.54 73.63	78.5 73.6	157.1 147.3	235.6 220.9	314.2 294.5	392.7 368.2	471.2 441.8	549.8 515.4	628.3 589.0	706.9 662.7	785.4 736.3
125	32	thrust traction	122.72 114.68	122.7 114.7	245.4 229.4	368.2 344.0	490.9 458.7	613.6 573.4	736.3 688.1	859.0 802.7	981.7 917.4	1104.5 1032.1	1227.2 1146.8
160	40	thrust traction	201.06 188.50	201.1 188.5	402.1 377,0	603.2 565.5	804.2 754.0	1005.3 942.5	1206.4 1131.0	1407.4 1319.5	1608.5 1508.0	1809.6 1696.5	2010.6 1885.0
200	40	thrust traction	314.16 301.59	314.2 301.6	628.3 603.2	942.5 904.8	1256.6 1206.4	1570.8 1508.0	1885.0 1809.6	2199.1 2111.1	2513.3 2412.7	2827.4 2714.3	3141.6 3015.9

NOTES

WEIGHT OF CYLINDERS

Micro-cylinder series "ISO 6432"

Ø	Single-rod		Through-rod	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
8	40	0.234	55	0.334
10	41	0.257	59	0.371
12	77	0.419	111	0.635
16	93	0.491	133	0.708
20	181	0.732	233	1.121
25	241	1.100	334	1.722

Round cylinder series RNDC

Ø	Single-rod		Through-rod	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
32	404	1.44	455	2.04
40	660	1.58	808	3.14
50	1235	3.59	1507	6.03

Short-stroke cylinder series "SSCY"

Ø	Single-rod		Through-rod		Non-ratating		Oscillating	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
12	45	1.24	52	1.47	64	1.35		
16	63	1.65	72	2.05	88	1.6		
20	91	2.14	104	2.75	126	2.37		
25	144	3.04	167	3.65	189	3.25		
32	185	4.14	200	4.72	260	4.56	272	4.14
40	275	5.05	295	5.94	373	5.49	386	5.05
50	412	7.09	437	8.9	592	7.89	620	7.09
63	587	9.32	621	10.91	854	10.57	889	9.32
80	393	14.41	1485	16.9	1740	25.87		
100	673	21.94	2841	25.9	2692	30.77		

Compact cylinder

Ø	Single-rod		Through-rod		Non-ratating		Through-rod non-rotating	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
12	96	1.59	104	1.82	105	1.90	114	2.12
16	105	1.51	124	1.90	109	1.81	129	2.20
20	171	2.35	204	2.95	181	2.78	214	3.39
25	201	2.73	233	3.32	220	3.15	252	3.76
32	246	3.17	282	4.05	306	3.96	343	4.84
40	370	4.41	408	5.29	457	5.20	495	6.08
50	552	6.42	605	7.98	709	7.64	768	9.21
63	779	7.34	656	8.90	977	8.56	1054	10.13
80	1468	12.57	1624	15.02	1851	14.33	2027	16.78
100	2988	16.11	3100	19.93	3710	17.87	3850	21.70

Cylinder series "ISO 6431"

Ø	Single-rod		Through-rod	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
32	505	2.2	570	3.09
40	731	3.15	867	4.73
50	1180	4.57	1438	7.04
63	1557	5.03	1828	7.44
80	2913	7.49	3368	10.16
100	4099	8.79	4629	12.33
125	6869	13.42	7954	18
160	12979	22.92	13800	30
200	17000	28	18000	39

Cylinder series "ISO 6431" type A

Ø	Single-rod		Through-rod	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
32	542	3.09	662	3.98
40	777	4.08	990	5.66
50	1239	5.86	1594	8.33
63	1608	5.92	2025	8.33
80	2995	9.07	3639	11.74
100	4139	9.48	4955	13.02
125	6917	14.11	8499	18.69

Twin-rod cylinder series "TWNC"

Ø	Standard		Single through-rod		Through-rods			
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm		
32	749	2.57	1028	3.79	1028	3.45		
40	1000	2.81	1348	4.03	1348	4.38		
50	1498	3.96	2103	5.72	2103	6.41		
63	1800	5.72	2887	8.85	2887	8.17		
80	3400	9.59	5205	15.52	5205	13.4		
100	4800	10.89	7557	16.8	7557	14.7		

Rodless cylinder

Ø	Standard		Series Double		with Guide		with Guide "V"	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
16	244	0.86	561	1.72	460	1.79	-	-
25	746	1.79	1607	3.58	1.421	2.99	953	1.98
32	1707	3.84	3737	7.68	3.025	5.04	2.150	3.21
40	2911	5.55	–	–	4.434	6.75	3.210	4.67
63 (Std)	7280	9.22	–	–	10.860	10.65	9.230	9.27
63 (Heavy)	–	–	–	–	13.275	14.02	-	-

Hydraulic brake series "BRK"

Speed adjustment		Adjustment + skip or stop		Adjustment + skip and stop	
Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
1290	4.2	1430	4.2	1570	4.2

Compact guided cylinder

Ø	Non-cushioned (approximate)		Cushioned (approximate)	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
16	295	4.77	414	4.77
20	486	6.38	543	6.38
25	550	10.01	735	10.01
32	942	16.51	1.354	16.51
40	1028	18.04	1.479	18.04
50	1355	23.76	1.949	23.76
63	1900	32.56	2.714	32.56
80	3910	55.77	-	-
100	5710	73.48	-	-

Guide unit

Ø	Type GDS		Type GDH and GDM	
	Weight [g] Stroke=0	Weight [g] each mm	Weight [g] Stroke=0	Weight [g] each mm
12	150	0.78	374	0.78
16	150	0.78	374	0.78
20	420	1.22	759	1.22
25	420	1.22	759	1.22
32	772	1.76	1200	1.76
40	1000	1.76	2000	3.13
50	1900	3.13	3300	4.9
63	2300	3.13	4750	4.9
80	3800	4.9	8500	7.26
100	7000	4.9	12000	7.26

Compact Stopper cylinder

Ø x Stroke	Trunnion version	Roller version
	Weight [g]	Weight [g]
20x15	210	220
32x20	420	460
50x30	1.190	1.300
80x30	-	4.500
80x40	-	4.750

NOTES

MINI-CYLINDER SERIES "ISO 6432" Ø 8-25 mm AND ACCESSORIES

Mini-cylinders to ISO 6432 with a chamfered stainless steel barrel.
The cylinder head dimensions have been reduced for some sizes so that they can be used where there are space restrictions.
Can be used with different types of sensors.

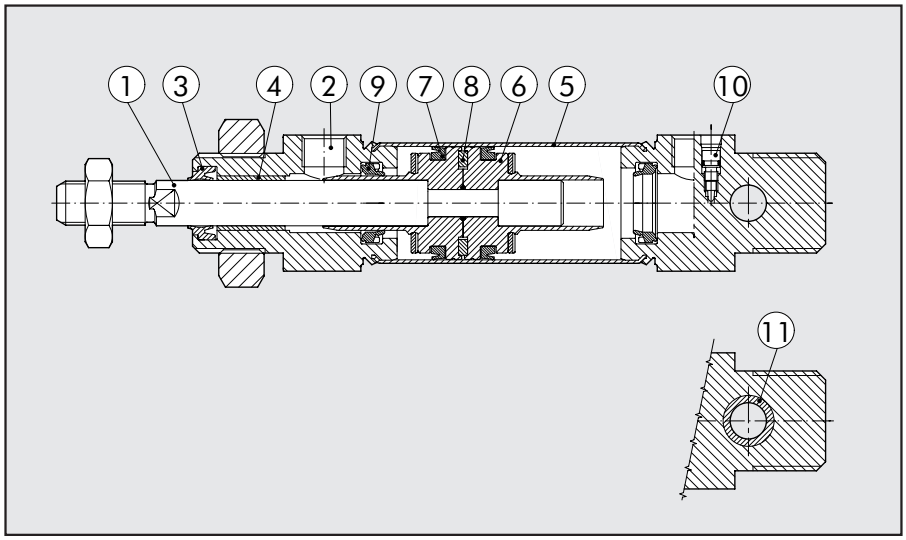
Available in various versions with a wide range of accessories:
- with or without magnet
- single and double acting – single or through rod
- with pneumatic cushioning (ø16-20-25)
- gaskets made of NBR, POLYURETHANE, and FKM/FPM (for high temperatures), and low-temperature gaskets
- special executions on request
- fixing accessories, guide units and mechanical rod locking



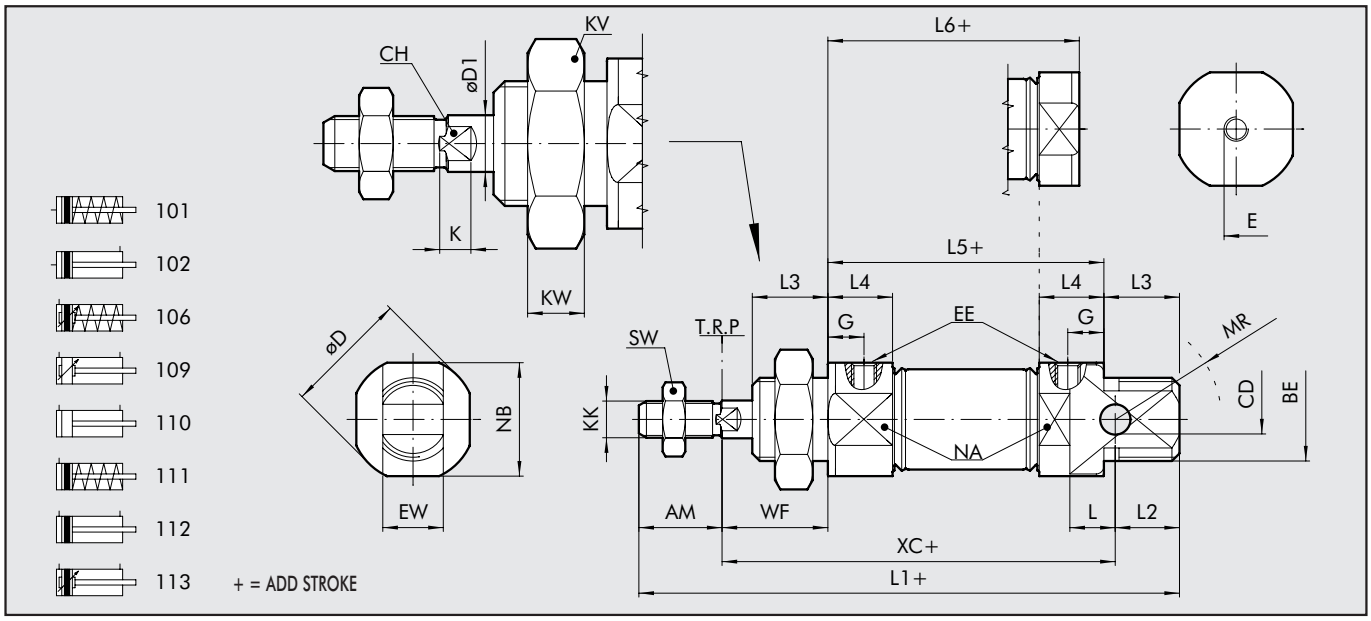
TECHNICAL DATA	Polyurethane	NBR	FKM/FPM	Low temperature
Operating pressure	max 10 bar (max 1 MPa)			
Temperature range	–10°C÷+80°C	–10°C÷+80°C	–10°C÷+150°C (non-magnetic cylinders)	–35°C to +80°C
Fluid	Unlubricated air. Lubrication, if used, must be continuous			
Bores	Ø8; Ø10; Ø12; Ø16; Ø20, Ø25;			
Design	Chamfered barrel			
Standard strokes	Single-acting:	for bores Ø8-25 strokes from 0 to 50 mm		
	Double-acting:	for bores Ø8-10 strokes from 0 to 100 mm		
		for bores Ø12-16 strokes from 0 to 200 mm		
		for bores Ø20-25 strokes from 0 to 500 mm		
	Double-acting, cushioned:	for bores Ø16 strokes from 0 to 300 mm		
		for bores Ø20-25 strokes from 0 to 500		
Versions	Double-acting, Double-acting cushioned, Single-acting retracted piston rod,			
	Through-rod, Through-rod cushioned, Version with piston rod block, no-stick slip*			
Magnet for sensors	All versions come complete with magnet. Supplied without magnet on request.			
Forces generated at 6 bar thrust/retraction	See GENERAL CATALOGUE PAGE 1.1/05			
Weights	See GENERAL CATALOGUE PAGE 1.1/06			
	*For no-stick slip versions, are no-lubricated air only			

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: anodised aluminium alloy
③ PISTON ROD GASKET: SFR (PARKER PRADIFA) self-lubricating, NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: AISI 304 steel
⑥ HALF-PISTON: acetal resin
⑦ PISTON ROD GASKET: polyurethane (PARKER PRADIFA), NBR or FKM/FPM
⑧ MAGNET: plastoneodymium
⑨ CUSHIONING GASKET: NBR or FKM/FPM
⑩ NEEDLE: OT 58 with needle out movement safety system even when fully open
⑪ BUSHING (optional): self-lubricating bronze

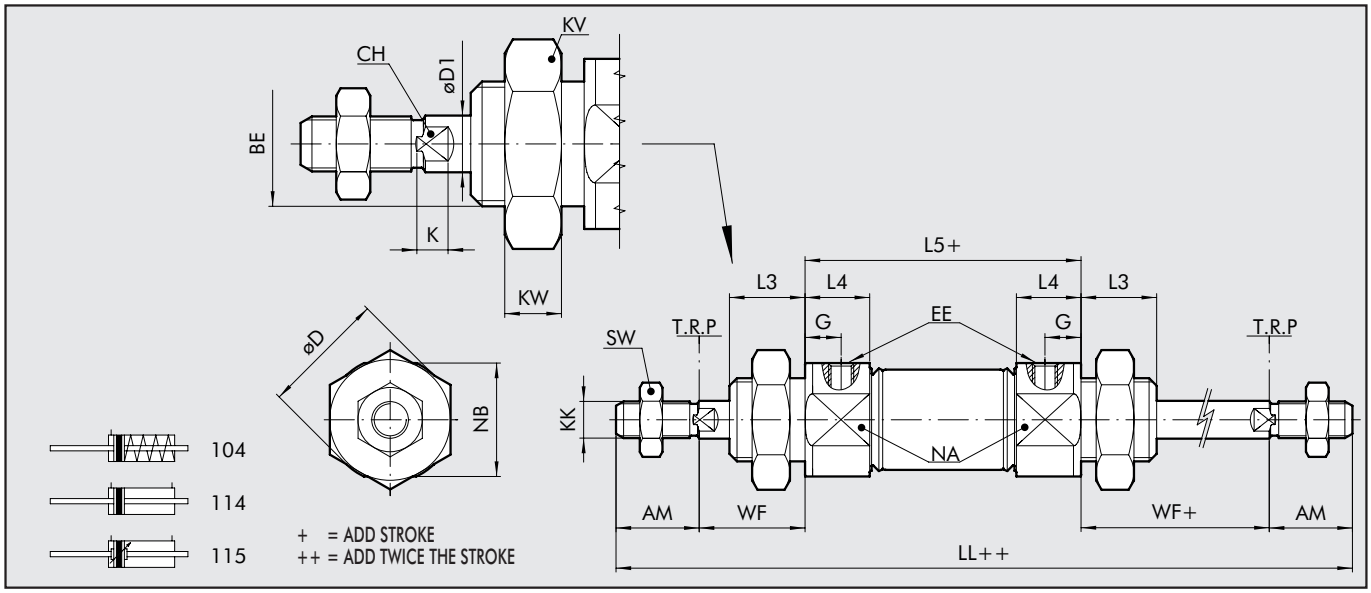


DIMENSIONS OF STANDARD VERSIONS



Ø	AM (+0.0;-2.0)	BE	øCD (H9)	øD	øD1	E	G	EE	EW (d13)	L	L1	L2	L3	L4	L5	L6	KK	XC±1)	WF (±1,2)	KW	KV	MR	NA	NB	SW	CH	K
8	12	M12x1,25	4	16.7	4	M5	6	M5	8	6.5	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
10	12	M12x1,25	4	16.7	4	M5	6	M5	8	6.5	86	10	12	10	46	46	M4	64	16	7	19	12	15	15	7	3	3
12	16	M16x1,5	6	19	6	M5	6	M5	12	9	104	13	17	10	49	47	M6	75	22	8	24	16	17	17	10	5	3,5
16	16	M16x1,5	6	19.7	6	1/8	6	M5	12	9	111	13	17	10	56	53	M6	82	22	8	24	16	20	18	10	5	3,5
20	20	M22x1,5	8	27.9	8	1/8	8	G 1/8	16	12	129	14	17	15.5	68	61	M8	95	24	10	32	18	28	24	13	7	4,6
25	22	M22x1,5	8	33	10	1/8	9	G 1/8	16	12	143	17	20	17.1	73	66.5	M10x1,25	104	28	10	32	21	30	30	17	8	5

DIMENSIONS OF STANDARD VERSIONS WITH THROUGH-ROD



Ø	AM (+0.0;-2.0)	BE	øD	øD1	G	EE	LL	L3	L4	L5	KK	WF (±1,2)	KW	KV	NA	NB	SW	CH	K
8	12	M12x1,25	16.7	4	6	M5	102	12	10	46	M4	16	7	19	15	15	7	3	3
10	12	M12x1,25	16.7	4	6	M5	102	12	10	46	M4	16	7	19	15	15	7	3	3
12	16	M16x1,5	19	6	6	M5	125	17	10	49	M6	22	8	24	17	17	10	5	3,5
16	16	M16x1,5	19.7	6	6	M5	132	17	10	56	M6	22	8	24	20	18	10	5	3,5
20	20	M22x1,5	27.9	8	8	G 1/8	156	17	15.5	68	M8	24	10	32	28	24	13	7	4,6
25	22	M22x1,5	33	10	9	G 1/8	173	20	17.1	73	M10x1,25	28	10	32	30	30	17	8	5

KEY TO CODES

CYL	1	1	2	0	1	6	0	0	2	0	C	P
		TYPE			DIAMETER		STROKE					

	101	SE axial coupling
	102	DEM axial coupling
	104	SE through-rod
■	106	SE cushioned
■	109	DEA
	110	DE
	111	SE
	112	DEM
■	113	DEMA
*▼	114	DEM through-rod
*▼■	115	DEMA through-rod
♦	116	DEM for mechanical lock
■	117	DEMA for mechanical lock

0	Standard
U	Bronze rear head bushing
V	Without head mut
S	Non-magnetic
▲ G	No stick slip

▼ 08	
▼ 10	
▼ 12	
16	
20	
25	

✚ Ø 8÷10	stroke 0÷100 mm
✚ Ø 12÷16	stroke 0÷200 mm
✚ Ø 20÷25	stroke 0÷500 mm

A	C45 chrome rod, aluminium piston rod
C	C45 chrome rod, technopolymer piston rod
Z	Stainless steel piston rod and nut aluminium piston
X	Stainless steel piston rod and nut technopolymer piston

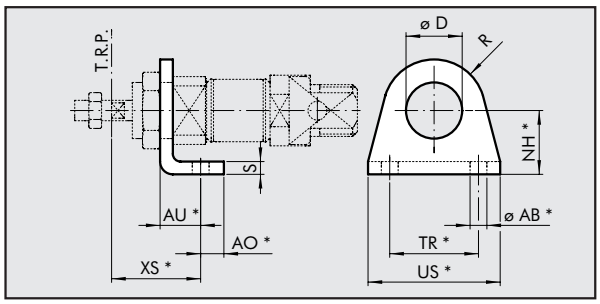
	P polyurethane
	N NBR
●	V FKM/FPM
●	B low temperature

DE: Double-acting (non-cushioned, not magnetic)
DEM: Magnetic double-acting (non-cushioned)
DEMA: Magnetic double-acting (cushioned)
DEA: Cushioned double-acting (non-magnetic)
SE: Single-acting (magnetic)

● Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
✚ Maximum recommended strokes. Higher values can create operating problems
▲ Not available for NBR (N) versions
▼ Stainless steel piston rod
■ Available from Ø16
♦ Available from Ø12
✱ For ø16÷25 aluminium piston

ACCESSORIES: FIXINGS

FOOT MODEL A

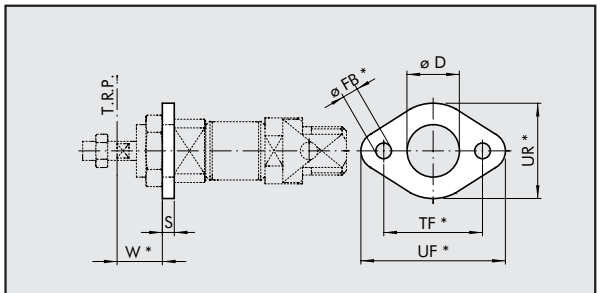


Code	Ø	D	XS (±1.4)	AU	AO	NH (±0.3)	TR (Js14)	US	AB (H13)	R	S	Weight [g]
W0950080001	8	12	24	11	5	16	25	35	4.5	10	3	22
W0950080001	10	12	24	11	5	16	25	35	4.5	10	3	22
W0950120001	12	16	32	14	6	20	32	42	5.5	13	4	42
W0950120001	16	16	32	14	6	20	32	42	5.5	13	4	42
W0950200001	20	22	36	17	8	25	40	54	6.5	20	5	90
W0950200001	25	22	40	17	8	25	40	54	6.5	20	5	90

*ISO 6432 values

Note: Individually packed

FLANGE MODEL C

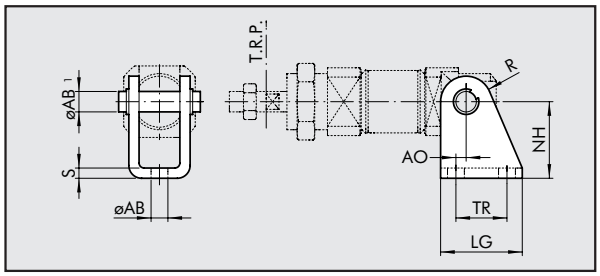


Code	Ø	D	W (±1.4)	FB (H13)	TF (Js14)	UF	UR	S	Weight [g]
W0950080002	8	12	13	4.5	30	40	22	3	10
W0950080002	10	12	13	4.5	30	40	22	3	10
W0950120002	12	16	18	5.5	40	52	30	4	26
W0950120002	16	16	18	5.5	40	52	30	4	26
W0950200002	20	22	19	6.5	50	66	40	5	52
W0950200002	25	22	23	6.5	50	66	40	5	52

*ISO 6432 values

Note: Individually packed

COUNTER-HINGE MODEL BC

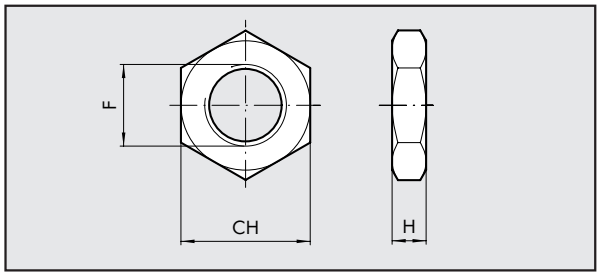


Code	Ø	AO	LG	TR (Js13)	NH (±0.2)	MO	AB1	AB (H13)	R	S	Weight [g]
W0950080005	8	2.5	22	12.5	24	18	4	4.5	6	2.5	24
W0950080005	10	2.5	22	12.5	24	18	4	4.5	6	2.5	24
W0950120005	12	2	25	15	27	25	6	5.5	7	3	40
W0950120005	16	2	25	15	27	25	6	5.5	7	3	40
W0950200005	20	4	32	20	30	30	8	6.5	10	4	78
W0950200005	25	4	32	20	30	30	8	6.5	10	4	78

*ISO 6432 values

Note: Supplied complete with 1 pin and 2 snap rings

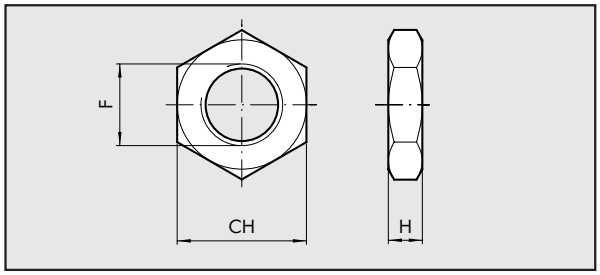
NUT FOR HEADS MODEL D



Code	Ø	F	CH	H	Weight [g]
0950080010	8	M12x1.25	19	7	12
0950080010	10	M12x1.25	19	7	12
0950120010	12	M16x1.5	24	8	20
0950120010	16	M16x1.5	24	8	20
0950200010	20	M22x1.5	32	10	44
0950200010	25	M22x1.5	32	10	44

Note: Individually packed

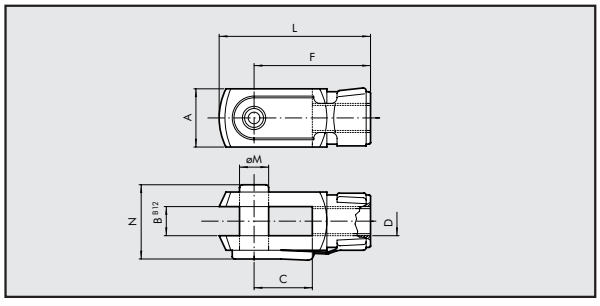
NUT FOR PISTON RODS MODEL DA



Code	Ø	F	CH	H	Weight [g]
0950080011	8	M4	7	3	0.6
0950080011	10	M4	7	3	0.6
0950120011	12	M6	10	4	1
0950120011	16	M6	10	4	1
0950200011	20	M8	13	5	3
0950322010	25	M10x1.25	17	6	7

Note: Individually packed

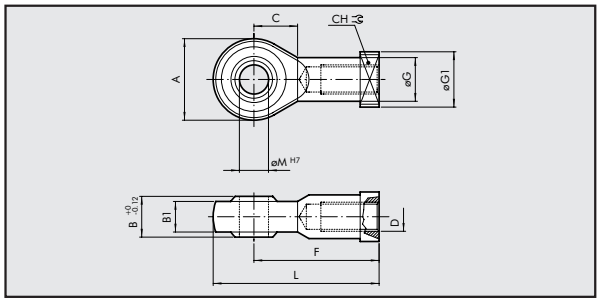
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950080020	8	4	8	4	8	21	16	M4	11	8
W0950080020	10	4	8	4	8	21	16	M4	11	8
W0950120020	12	6	12	6	12	31	24	M6	16	20
W0950120020	16	6	12	6	12	31	24	M6	16	20
W0950200020	20	8	16	8	16	42	32	M8	22	48
W0950322020	25	10	20	10	20	52	40	M10x1.25	26	92

Note: Individually packed

ROD EYE MODEL GA-M

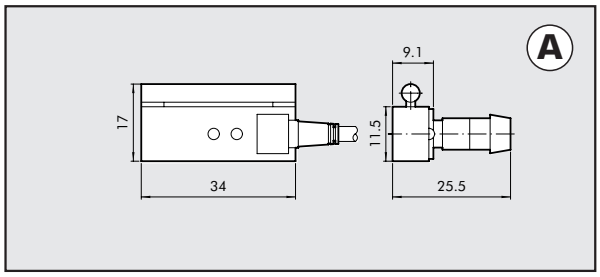


Code	Ø	ØM	C	B	B1	A	L	F	D	øG	øG1	CH	Weight [g]
W0950080025	8	5	10	8	6	18	36	27	M4	9	11	9	22
W0950080025	10	5	10	8	6	18	36	27	M4	9	11	9	22
W0950120025	12	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950120025	16	6	11	9	6.75	20	40	30	M6	10	13	11	28
W0950200025	20	8	13	12	9	24	48	36	M8	12.5	16	14	50
W0950322025	25	10	15	14	10.5	28	57	43	M10x1.25	15	19	17	78

Note: Individually packed

SENSORS MOD. DSM

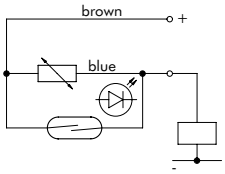
Code	Bore	Model
W0950000201	8÷25	REED SENSOR ACC. DSM2 - C525
W0950000222	8÷25	E. HALL PNP SENSOR ACC. DSM3-N225
W0950000232	8÷25	E. HALL NPN SENSOR ACC. DSM3-M225



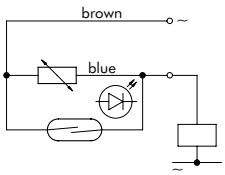
TECHNICAL DATA

Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3 to 48 (DC): 3 to 220 (AC)	6-24 V DC
Max current at 25°C	mA	500	250
Power with inductive load	VA	10	–
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life	–	10^7 impulses	10^9 impulses
Contact resistance		0.1	–
Cable length	m	2.5	2.5
Cable cross section	mm²	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

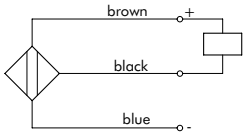
DC



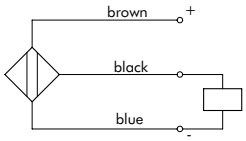
AC



Version NPN

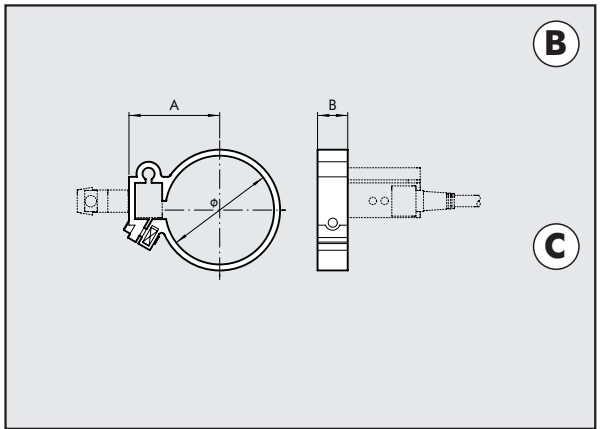


Version PNP



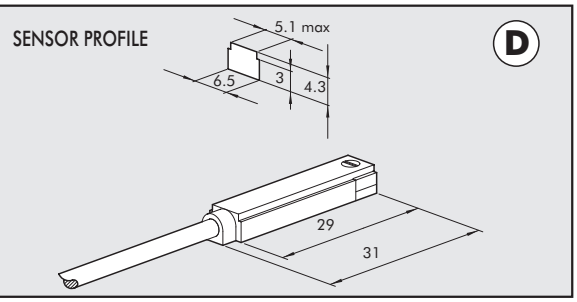
SENSOR CIRCLIP MOD. DXF

Code	Bore	Model	Ø	A	B
FOR ALUMINIUM BARREL					
W0950000108	8	FASCETTA DXF 12- 8	12	17	10
W0950000110	10	FASCETTA DXF 14-10	14	18	10
W0950000112	12	FASCETTA DXF 16-12	16	19	10
W0950000116	16	FASCETTA DXF 20-16	20	21	10
W0950000120	20	FASCETTA DXF 24-20	24	23	10
W0950000125	25	FASCETTA DXF 29-25	29	28	10
Note: Individually packed					
FOR STAINLESS STEEL BARREL					
W0950000508	8	FASCETTA DXF - 09	9.3	15	10
W0950000510	10	FASCETTA DXF - 11	11.3	16.5	10
W0950000512	12	FASCETTA DXF - 13	13.3	17.5	10
W0950000516	16	FASCETTA DXF - 17	17.3	18.5	10
W0950000520	20	FASCETTA DXF - 21	21.3	21	10
W0950000525	25	FASCETTA DXF - 26	26.3	23.5	10
Note: Individually packed					



ACCESSORIES: MAGNETIC SENSORS

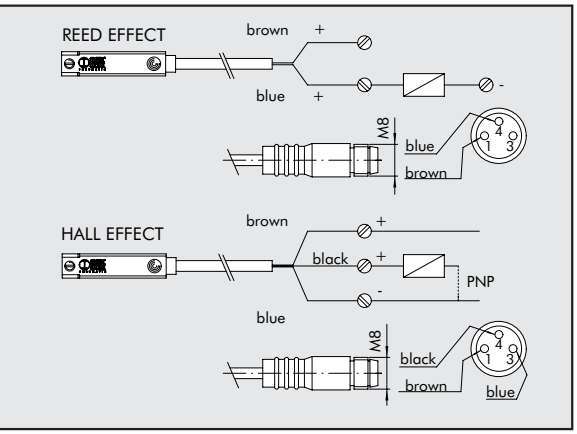
RETRACTING SENSOR



Code	Description
W0950025390	Hall sensor DSL, 3 wires, NO 2.5 m
W0950029394	Hall sensor DSL, 3 wires, NO 300 mm M8
W0950022180	REED sensor DSL, 2 wires, NO 2.5 m
W0950028184	REED sensor DSL, 2 wires, NO 300 mm M8

Note: Individually packed

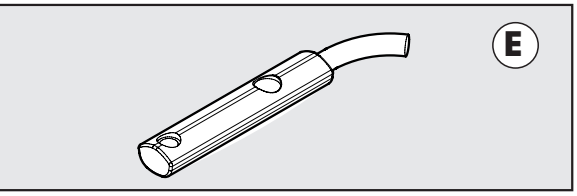
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Hall effect
Type of contact		N.O.	N.O.
Switch		–	PNP
DC voltage range	V	3÷30	6÷30
AC voltage range	V	3÷30	–
Absorption	A	0.1	0.2
DC power	W	6	4
AC power	VA	6	–
Temperature range	°C	-20÷ +85	
Activation time	s	0.5µs	0.8µs
Risk time	s	0.1µs	0.3µs
Life	imp	10 million	10^3 million
Contact resistance	Ω	0.1	–
Degree of protection	IP	65	
Voltage drop	V	3	1
Number of wires		2	3

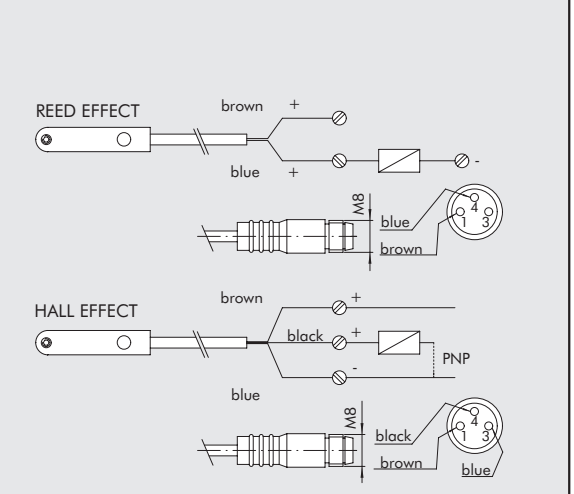
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

Note: Individually packed

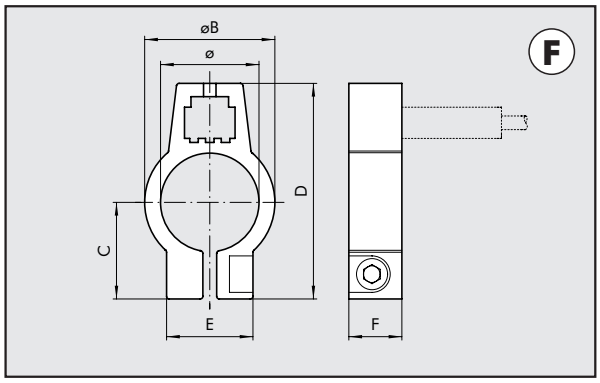
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% of Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

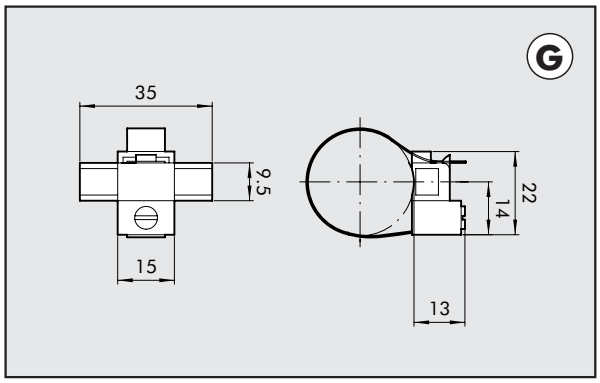
SENSOR CIRCLIP MOD. DSW



Code	Bore	Model	Ø	ØB	C	D	E	F
W0950000608	8	CIRCLIP DSW - 08	9.3	12.3	11	24	12.3	9
W0950000610	10	CIRCLIP DSW - 10	11.3	14.3	12	26	12.3	9
W0950000612	12	CIRCLIP DSW - 12	13.3	16.3	13	28	12.3	9
W0950000616	16	CIRCLIP DSW - 16	17.3	20.3	15.5	32	12.3	9
W0950000620	20	CIRCLIP DSW - 20	21.3	24.3	17.5	36	14	9
W0950000625	25	CIRCLIP DSW - 25	26.3	29.3	20	41.5	14	9

Note: Individually packed

UNIVERSAL SENSOR CIRCLIP

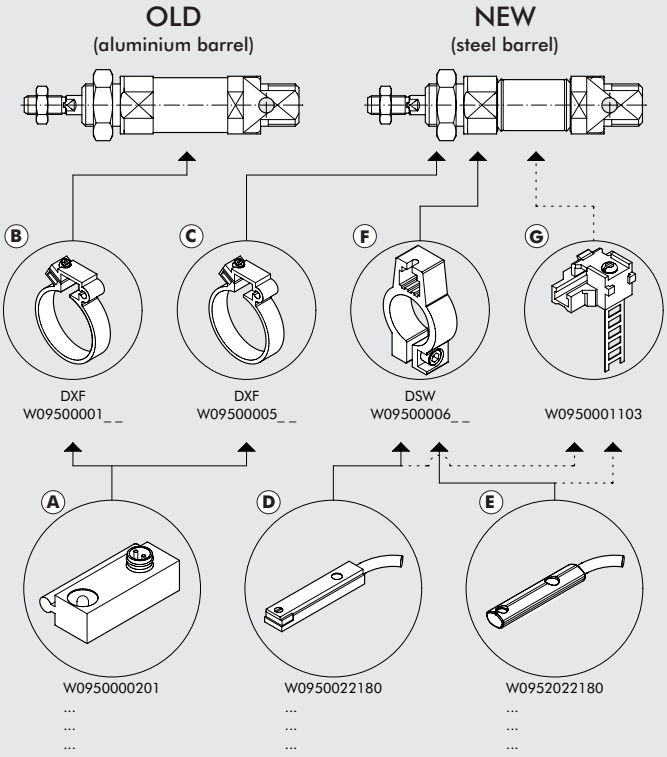


Code	Bore	Model
W0950001103	8÷25	SENSOR CIRCLIP

Note: Individually packed

MATERIAL
Circlip: stainless steel
Sensor holder: plastic

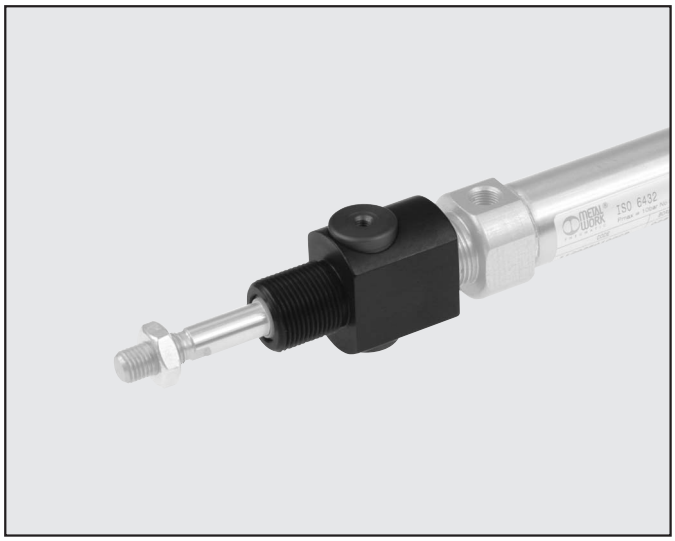
USE SENSORS



ACCESSORIES FOR MECHANICAL PISTON ROD LOCK

TECHNICAL DATA

Operating pressure	3-6 bar (0.3-0.6 Mpa)
Temperature range	Max 80°C
Fluid temperature	Max 70°C
Installation	in any position
Mechanics	double shoe with mechanical locking
Operation	NC bidirectional
Fluid	lubricated or unlubricated compressed air
Locking force	Ø 12-16: 180 N / Ø 20: 250 N / Ø 25: 400 N
Pilot port	M5
Body material	Aluminium
Shoe material	Brass
Spring material	NBR
Piston material	Synthetic, with added teflon
Gasket material	NBR



OPERATING PRINCIPLE

The mechanical piston rod lock is a normally-closed mechanism. In the absence of pneumatic piloting, the two shoes (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the shoes to come right up to each other and overcome the counter spring (B) force and the piston rod can slide (Fig. 2). It is important to remember that the mechanical piston rod lock is a static type, which means that it is necessary to stop the cylinder piston rod pneumatically before locking the part mechanically.

Fig.1

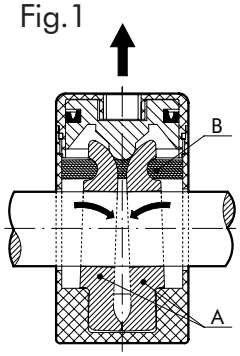
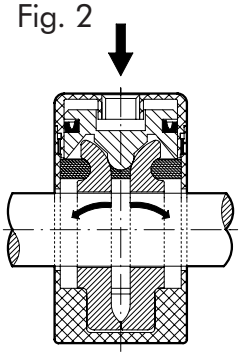
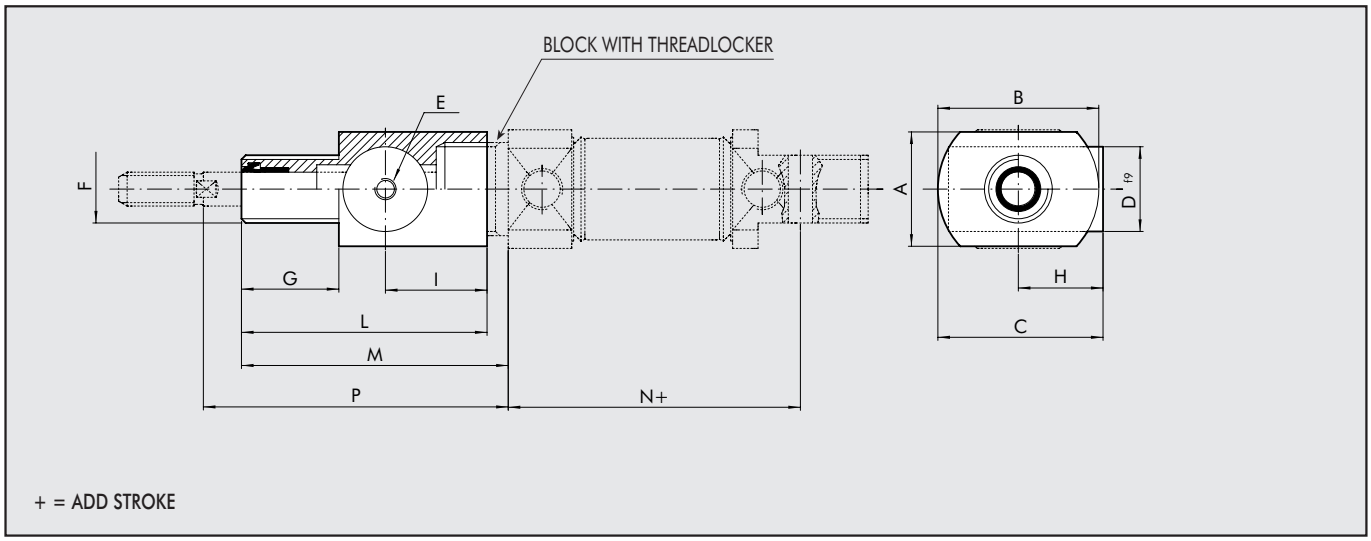


Fig. 2



DIMENSIONS

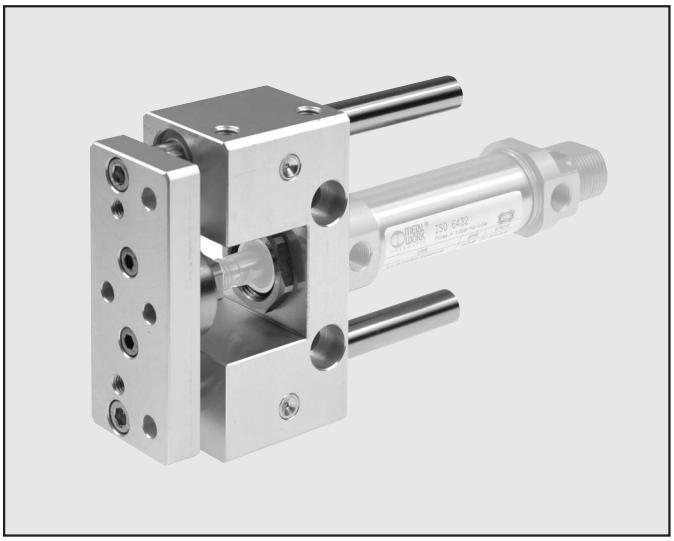


+ = ADD STROKE

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	P(±1.2)	Weight [g]
W5010001098	12	25	25	31.5	20	M5	M16x1.5	12	19	23	47	50	53	55	100
W5010001098	16	25	25	31.5	20	M5	M16x1.5	12	19	23	47	50	60	55	100
W5010001100	20	27	38	40	20	M5	M22x1.5	23	21	24	58	65	71	72	100
W5010001101	25	27	38	40	20	M5	M22x1,5	23	21	24	58	68	76	76	100

GUIDE UNIT FOR ISO 6432 CYLINDERS

Guide units series DS-DH-DM ensure optimal alignment and anti-rotation effect of the pneumatic cylinder connected to it. The guide units can be used separately or combined in order to get complete handling units: in which case the guide units can be coupled using the type A and C anchorage (foot and flange).
The guide unit can be coupled to ISO 6432 cylinders (Ø 12 - Ø 25). The following versions are available:
U PROFILE*: for limited loads and speeds (GDS)
H PROFILE*: for high loads (GDH)
H PROFILE**: for high speeds (GDM)
(For weights, see GENERAL CATALOGUE page 1.1/07)

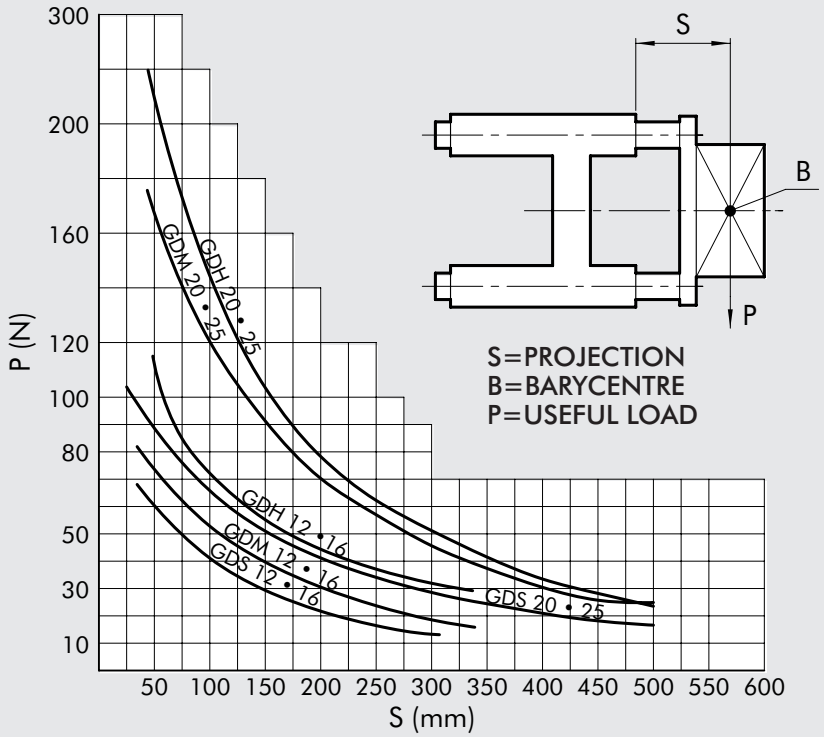


*With bronze guide bushing
**With ball guide bushing

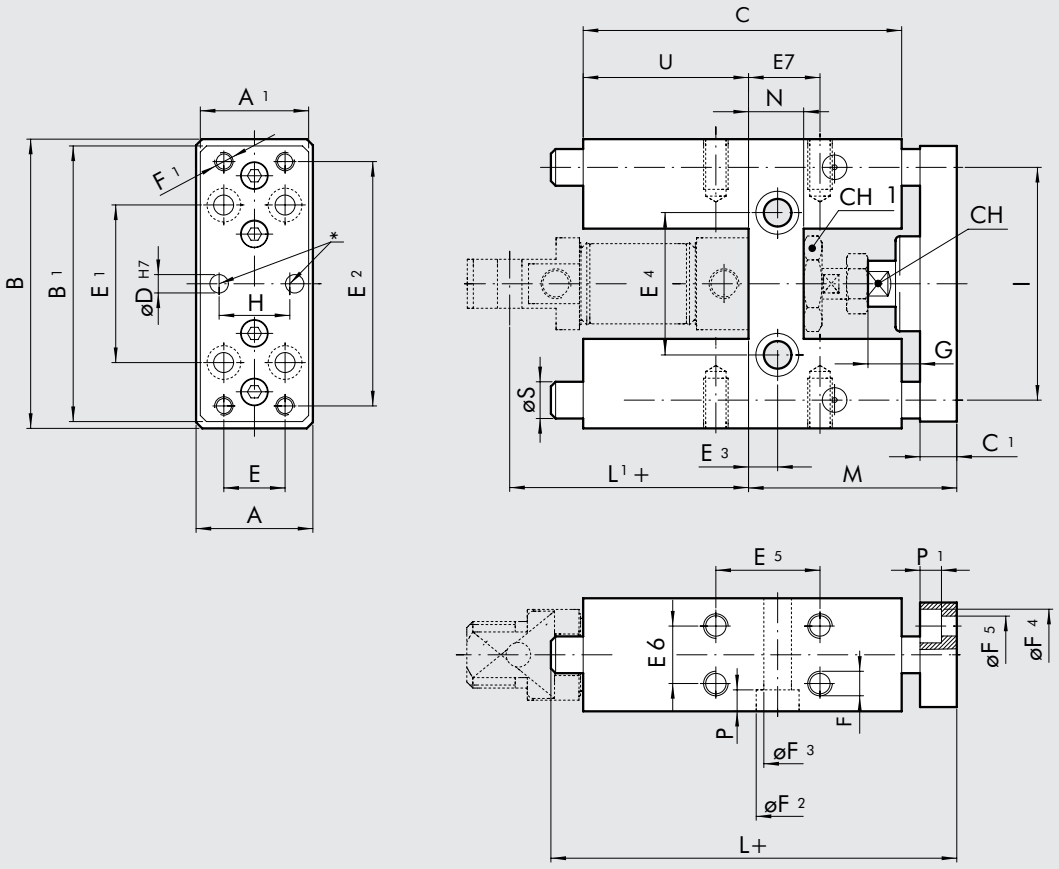
GUIDE ELEMENTS

SERIES GDS-GDH	Body:	aluminium alloy
	Guide bushing:	self-lubricating syntered bronze and wiper rings
	Piston rod:	chromed rolled steel
SERIES GDM	Body:	aluminium alloy
	Guide bushing:	linear guide ball bearings and wiper rings
	Piston rod:	tempered and chromed steel

GUIDE UNIT LOAD DIAGRAM



DIMENSIONS OF TYPE GDH-GDM



+ = ADD THE STROKE
✱ = CENTERING PINHOLES

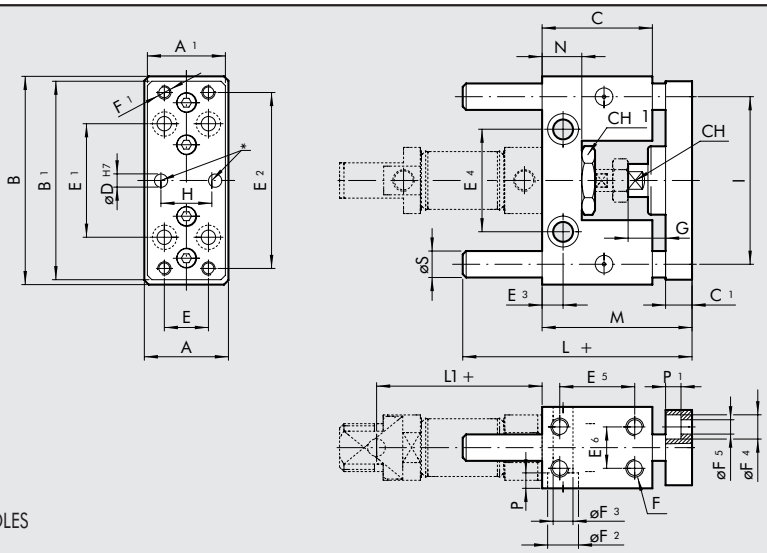
Ø	A	A_1	B	B_1	C	C_1	Ch	Ch_1	D	E	E_1	E_2	E_3	E_4	E_5	E_6	E_7	F	F_1	F_2	F_3	F_4	F_5	G	H	I	L	L_1	M	N	P	S	U
12	30	27	65	63	75	10	8	19	4	15	32	54	6,5	24	32,5	22	11	M4	M4	8,5	5,1	7,5	4,5	12	15	46	130	53	51	15	5,5	8	37
16	30	27	65	63	75	10	8	19	4	15	32	54	6,5	24	32,5	22	11	M4	M4	8,5	5,1	7,5	4,5	12	15	46	130	60	51	15	5,5	8	37
20	34	32	79	76	108	12	12	27	6	20	40	68	8,5	38	32,5	23	15	M6	M5	10,5	6,5	9	5,5	22	20	58	159	71	65	15	6,5	10	58
25	34	32	79	76	108	12	12	27	6	20	40	68	8,5	38	32,5	23	15	M6	M5	10,5	6,5	9	5,5	17	20	58	159	76	65	15	6,5	10	58

Note:
Thanks to the dimensional features, it is possible to extend the use of GDH/GDM guides to cylinders with strokes up to 25 mm above the nominal guide stroke. The table here shows the stroke/cylinder range that can be used depending on the nominal stroke of the guide.

Cylinder stroke	from mm.	to mm.	Guide stroke
	0	75	50
	75	125	100
	125	175	150
	175	225	200
	225	275	250
	275	345	320
	345	425	400
	425	525	500

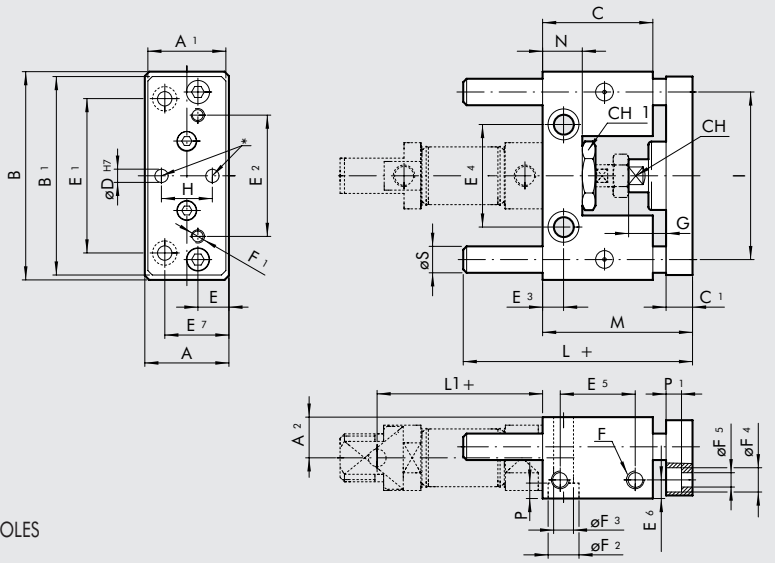
	Ordering codes GDH (bronze guide bushing)		Ordering codes GDM (ball guide bushing)	
Bore	Type	Code	Type	Code
12	UNIT MW DH 012	W0700122...	UNIT MW DM 012	W0700123...
16	UNIT MW DH 016	W0700162...	UNIT MW DM 016	W0700163...
20	UNIT MW DH 020	W0700202...	UNIT MW DM 020	W0700203...
25	UNIT MW DH 025	W0700252...	UNIT MW DM 025	W0700253...

DIMENSIONS OF TYPE GDS



+ = ADD THE STROKE
✱ = CENTERING PINHOLES

Ø	A	A_1	B	B_1	C	C_1	Ch	Ch_1	D	E	E_1	E_2	E_3	E_4	E_5	E_6	F	F_1	F_2	F_3	F_4	F_5	G	H	I	L	L_1	M	N	P	S	P1
12	30	27	65	63	38	10	8	19	4	15	32	54	6,5	24	25	22	M4	M4	8,5	5,1	7,5	4,5	15	15	46	70	53	54	13	5,5	10	4.5
16	30	27	65	63	38	10	8	19	4	15	32	54	6,5	24	25	22	M4	M4	8,5	5,1	7,5	4,5	15	15	46	70	60	54	13	5,5	10	4.5



+ = ADD THE STROKE
✱ = CENTERING PINHOLES

Ø	A	A_1	A_2	B	B_1	C	C_1	Ch	Ch_1	D	E	E_1	E_2	E_3	E_4	E_5	E_6	E_7	F	F_1	F_2	F_3	F_4	F_5	G	H	I	L	L_1	M	N	P	S	P1
20	40	38	24	100	90	48	12	13	27	6	15	70	55	8,5	46,5	32	10	30	M8	M6	14	9	11	6,5	22	20	76	77	71	65	17	9	12	6.5
25	40	38	24	100	90	48	12	13	27	6	15	70	55	8,5	46,5	32	10	30	M8	M6	14	9	11	6,5	22	20	76	77	76	71	17	9	12	6.5

Note:
Thanks to the dimensional features, it is possible to use the range of strokes - cylinders, as shown in the table here, without the guide piston rods projecting beyond the cylinder fixing value (L1 +).

Cylinder stroke	from mm.	to mm.	Guide stroke
	0	50	50
	51	100	100
	101	150	150
	151	200	200
	201	250	250

Ordering codes GDS (bronze guide bushing)

Bore	Type	Code
12	UNIT MW DS 012	W0700121...
16	UNIT MW DS 016	W0700161...
20	UNIT MW DS 020	W0700201...
25	UNIT MW DS 025	W0700251...

ROUND CYLINDER SERIES RNDC
Ø 32 TO 50 mm AND ACCESSORIES

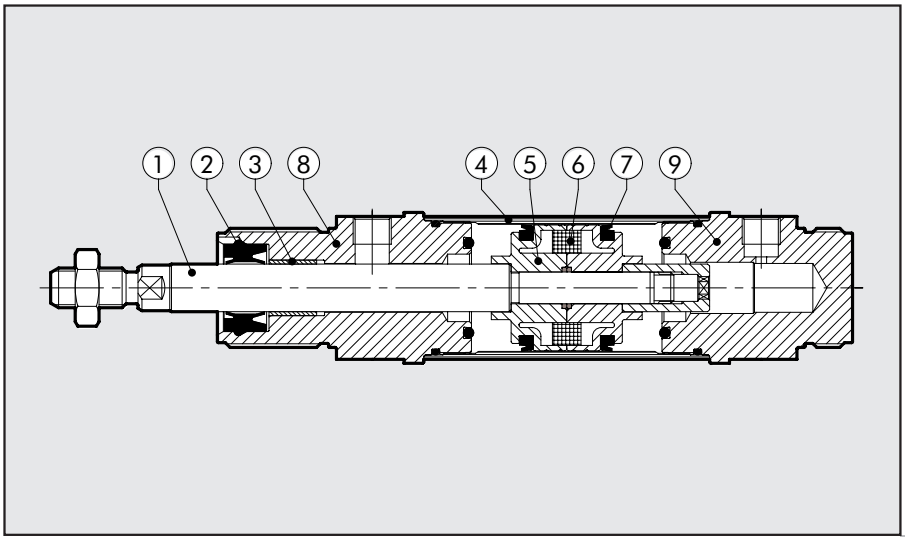
Clean profile cylinders available in different versions:
- configuration with or without magnet
- single- and double-acting - single or through-rod
- pneumatic cushioning on request
- range of gaskets available in NBR, POLYURETHANE and FKM/FPM (for high temperatures).



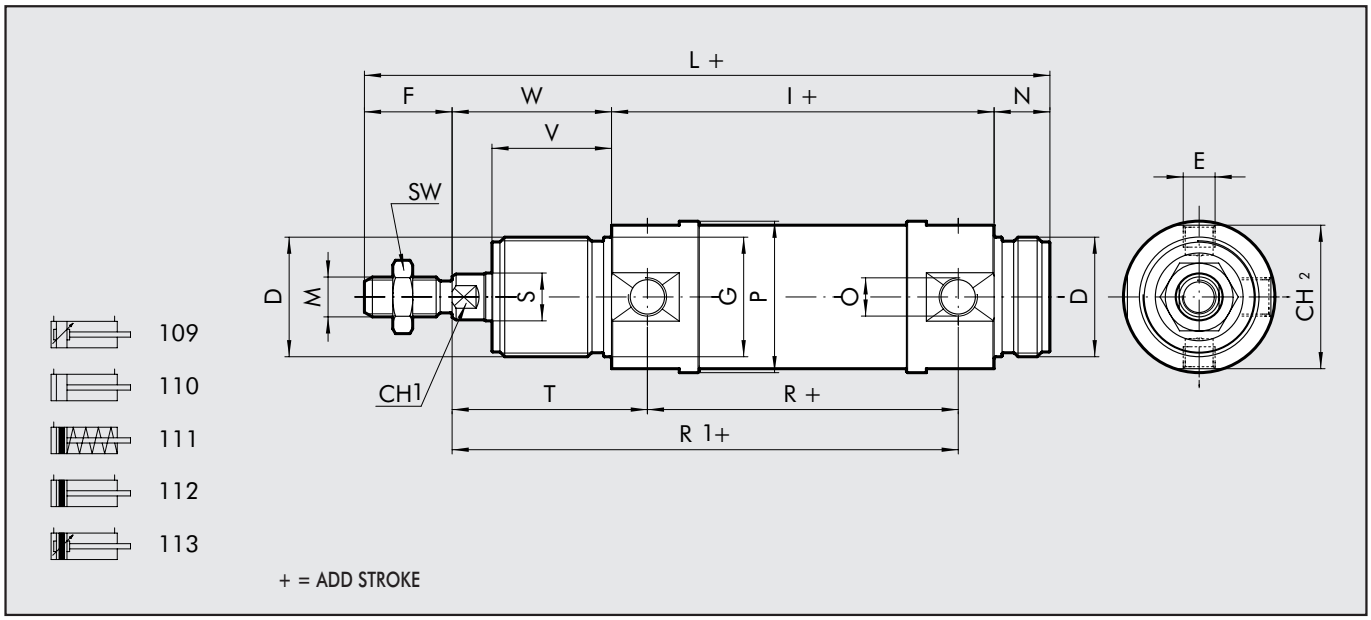
TECHNICAL DATA	Polyurethane	NBR	FKM/FPM	Low Temperature
Operating pressure	max 10 bar (max 1 MPa - 145 psi)			
Temperature range	–20°C to +80°C (non-magnetic cylinders)	–20°C to +80°C (non-magnetic cylinders)	–10°C to +150°C (non-magnetic cylinders)	–35°C to +80°C
	–20°C to +70°C (magnetic cylinders)	–20°C to +70°C (magnetic cylinders)		
Fluid	Unlubricated air. Lubrication, if used, must be continuous			
Bores	Ø 32; Ø 40; Ø 50			
Design	Screwed heads			
Versions	Double-acting, Double-acting through-rod, Double-acting cushioned, Double-acting through-rod cushioned,			
	Single-acting, Single-acting through-rod, no-stick slip*			
Magnet for sensors	All versions come complete with magnet. Supplied without magnet on request			
Standard strokes	Single-acting: for bores Ø32-50 strokes from 0 to 250 mm			
	Double-acting: for bores Ø32-50 strokes from 25 to 500 mm			
Inrush pressure	Ø32 to Ø40: 0.4 bar - Ø50: 0.3 bar			
Forces generated at 6 bar thrust/retraction	See GENERAL TECHNICAL DATA PAGE 1.1/06			
Weights	See GENERAL TECHNICAL DATA PAGE 1.1/05			
	*For no-stick slip versions, use no-lubricated air only			

COMPONENTS

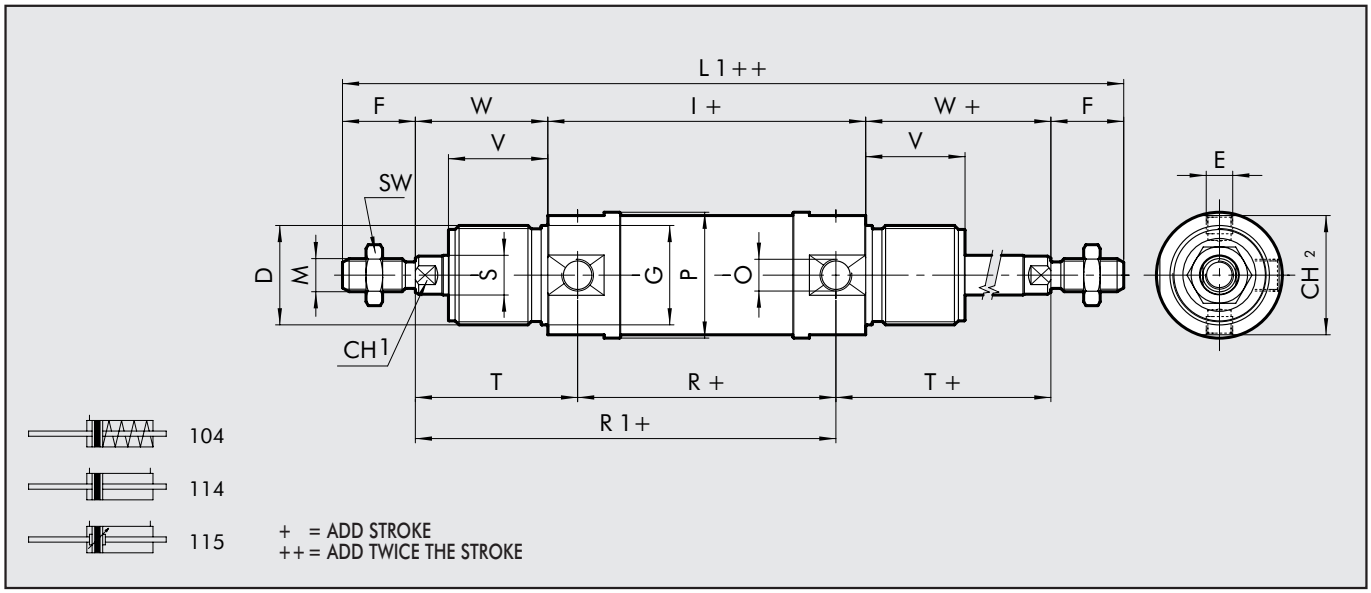
① PISTON ROD: C45 steel or stainless steel, thick chromed
② PISTON ROD GASKET: polyurethane (PARKER PRADIFA), NBR or FKM/FPM
③ GUIDE BUSHING: steel strip with bronze and PTFE insert
④ BARREL: drawn anodised aluminium alloy
⑤ HALF-PISTON: self-lubricating techno-polymer with integrated cushioning olives
⑥ MAGNET: in plastoferrite
⑦ PISTON GASKET: polyurethane (PARKER PRADIFA), NBR or FKM/FPM
⑧ ⑨ HEAD: anodised aluminium alloy



DIMENSIONS OF STANDARD VERSIONS



DIMENSIONS OF THROUGH-ROD VERSIONS



DIMENSIONS OF STANDARD DOUBLE-ACTING AND THROUGH-ROD

Ø	D	E	F	Ø G	CH1	I	L	M	N	O	Ø P	R	Ø S	SW	T	CH2	V	W	L1
32	M30x1.5	M8x1	22	30	10	96	172	M10x1.25	14	G1/8	38	78	12	17	49	36	30	40	220
40	M38x1.5	M10x1	24	38	13	113	198	M12x1.25	16	G1/4	46	89	16	19	57	43	35	45	251
50	M45x1.5	M12x1.5	32	45	17	120	220	M16x1.5	18	G1/4	57	96	20	24	62	54	38	50	284

DIMENSIONS OF STANDARD SINGLE-ACTING AND THROUGH-ROD

			I			L			R1			L1		
Lower limit	Stroke	Upper limit	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50	Ø 32	Ø 40	Ø 50
0	< C ≤	50	96	113	120	172	198	220	127	146	158	220	251	284
50	< C ≤	100	125	145.5	155.5	201	230.5	255.5	156	178.5	193.5	249	283.5	319.5
100	< C ≤	150	154	178	191	230	263	291	185	211	229	278	316	355
150	< C ≤	200	183	210.5	226.5	259	295.5	326.5	214	243.5	264.5	307	348.5	390.5
200	< C ≤	250	212	243	262	288	328	362	243	276	300	336	381	426

For all the other values, see previous table, except for T and R which are both replaced by R1.

KEY TO CODES

CYL	1	1	2	0	3	2	0	0	2	5	C	P
	TYPE				BORE		STROKE					
	■104	SE axial coupling		0	Standard		32	✚ Ø 32÷50			A	C45 chrome rod, aluminium piston rod
	109	DEA		▲ G	No stick slip		40	stroke 0÷500 mm			C	C45 chrome rod, technopolymer piston rod
	110	DE		S	Non-magnetic		50				Z	Stainless steel piston rod and nut aluminium piston
	■111	SE									X	Stainless steel piston rod and nut technopolymer piston
	112	DEM										
	113	DEMA										
	114	DEM through-rod										
	115	DEMA through-rod										

	P	polyurethane	
	N	NBR	
●	V	FKM/FPM	
●	B	low temperature	

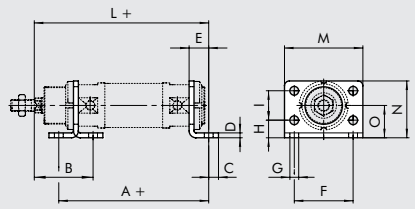
DE: Double-acting (non-cushioned, not magnetic)
DEM: Magnetic double-acting (non-cushioned)
DEMA: Magnetic double-acting (cushioned)
DEA: Cushioned double-acting (non-magnetic)
SE: Single-acting (magnetic)

● Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
✚ Maximum recommended strokes. Higher values can create operating problems
▲ Not available for NBR (N) versions
■ Only available for versions with aluminium piston (A or Z)

NOTES

ACCESSORIES: FIXINGS

FOOT MODEL AC

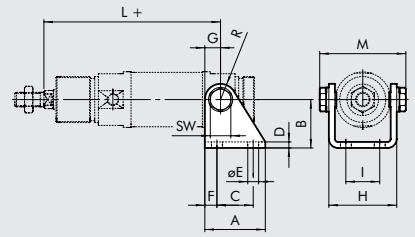


+ = ADD STROKE

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O	Weight [g]
W0950320002	32	124	50	7	4	14	52	7	14	28	150	66	49	28	104
W0950400002	40	153	60	10	5	20	60	9	18	30	178	80	58	33	190
W0950500002	50	160	64	10	6	20	70	9	20	40	190	90	70	40	296

Note: Individually packed

COUNTER-HINGE MODEL BC

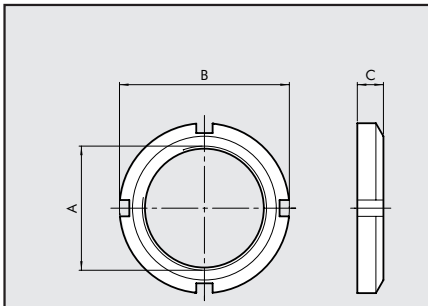


+ = ADD STROKE

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	R	SW	Weight [g]
W0950320005	32	40	35	24	4	7	8	12	46.1	20	127	60	12	13	152
W0950400005	40	50	40	30	5	9	10	13	56.1	28	146	72.5	13	17	262
W0950500005	50	54	45	34	6	9	10	14	69.1	36	158	89	14	19	401

Note: Supplied with 2 screws

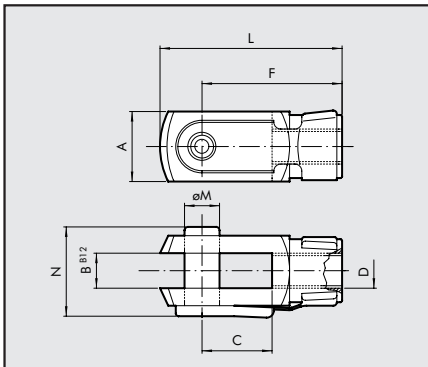
HEAD LOCK RING MODEL G



Code	Ø	A	B	C	Weight [g]
W0950320010	32	M30x1.5	45	7	46
W0950400010	40	M38x1.5	50	8	56
W0950500010	50	M45x1.5	58	9	126

Note: Individually packed

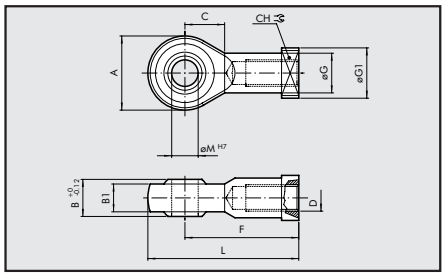
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1,25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1,25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1,5	40	340

Note: Individually packed

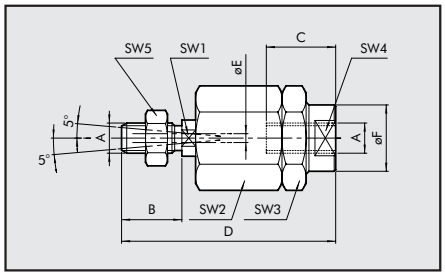
SPHERICAL JOINT MODEL GA-M



Code	Ø	Ø M	C	B1	B	A	L	F	D	Ø G	CH	Weight [g]
W0950322025	32	10	15	10,5	14	28	57	43	M10x1,25	15	17	78
W0950402025	40	12	17	12	16	32	66	50	M12x1,25	17,5	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1,5	22	22	226

Note: Individually packed

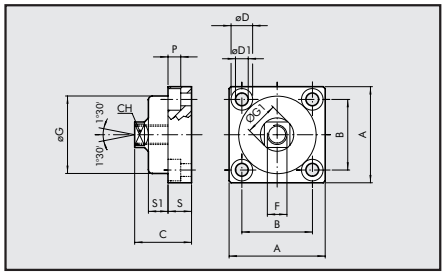
ARTICULATED JOINT MODEL GA-K



Code	Ø	A	B	C	D	Ø E	Ø F	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950322030	32	M10x1,25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	40	M12x1,25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	50	M16x1,5	32	32	103	4	32	20	41	41	30	24	620

Note: Individually packed

FLEXIBLE COLLAR - MODEL GA

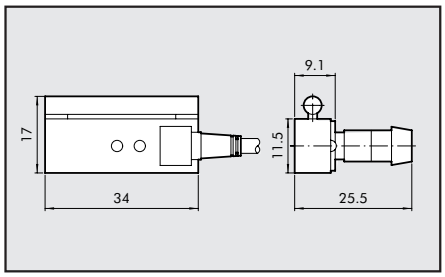


Code	Ø	A	B	C	CH	ØD	ØD1	F	ØG	ØG1	P	S	S1	Weight [g]
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	40	59	42	36	15	14	8.5	M12x.125	44	19	8.5	15	13.5	286
W0950506021	50	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628

Note: Individually packed.

ACCESSORIES: MAGNETIC SENSORS

SENSOR

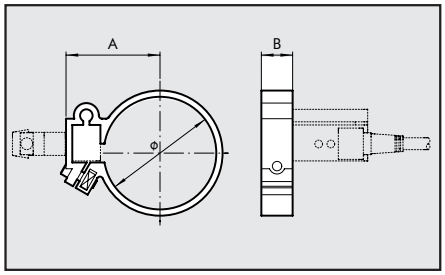


ORDERING CODES

Codes	Description
MAGNETIC PROXIMITY SENSORS	
W0950000201	REED SENSOR ACC. DSM2 - C525
W0950000222	E. HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E. HALL NPN SENSOR ACC. DSM3-M225

N.B.: For technical data on sensors, see page 1.1/12

SENSOR CIRCLIP



Code	Model	Bore	Ø	A	B
W0950000132	CIRCLIP DXF 36- 32	32	36	29.5	10
W0950000140	CIRCLIP DXF 45- 40	40	45	34.5	10
W0950000150	CIRCLIP DXF 52- 50	50	55	38.5	10

CARTRIDGE MICROCYLINDER SERIES CRTC, Ø 6-16 mm

Single-acting micro-cylinders with threaded body for fixing in small space or directly inside the machine body, owing to the external O-ring which ensures perfect seal.



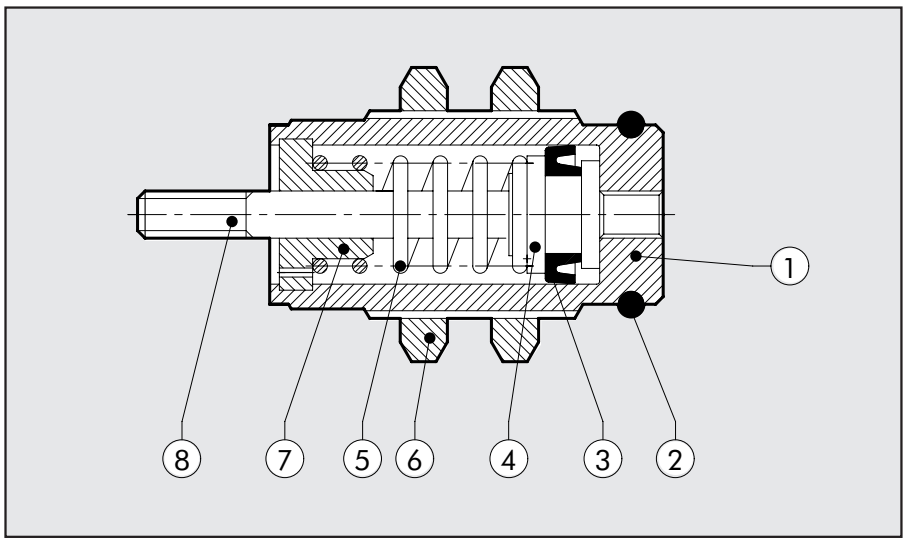
TECHNICAL DATA

Gaskets		NBR
Operating pressure		2 to 8 bar (0.2 to 0.8 Mpa)
Temperature range	°C	–10 to +80
Fluid		Lubricated or unlubricated air. Lubrication, if used, must be continuous
Bores	mm	6 ; 10 ; 16
Strokes	mm	5 ; 10 ; 15
Port		M5
Versions		Single-acting
Design		Mechanically edged
Configuration		With external O-ring for direct fixing to the machine
Weight	[g]	

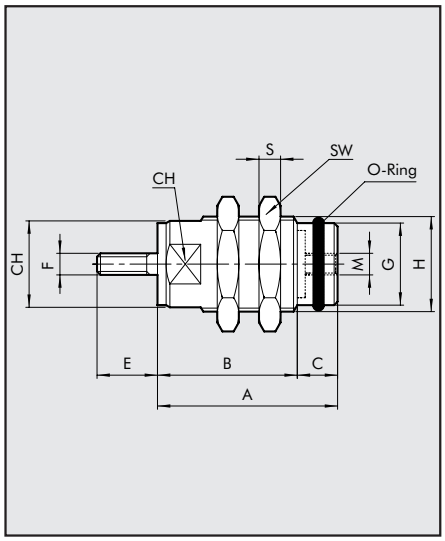
Ø	STROKE		
	5	10	15
6	16	18	19
10	35	38	41
16	80	88	94

COMPONENTS

① Nickel-plated brass body
② NBR rubber gasket
③ NBR rubber piston rod gasket
④ AISI 303 steel piston/piston rod (for Ø 6 - Ø 10)
④ Brass piston (for Ø 16)
⑤ Steel spring
⑥ Nickel-plated steel nut
⑦ Nickel-plated brass bushing
⑧ AISI 303 steel piston rod (for Ø 16)

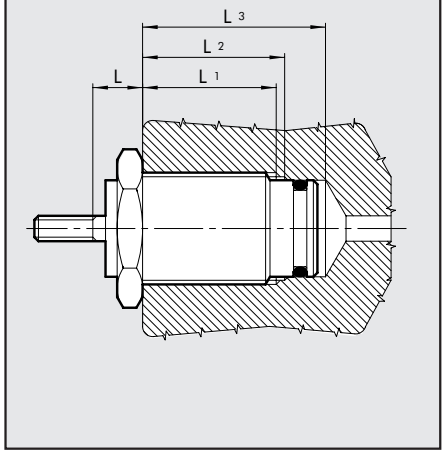


CARTRIDGE CYLINDER DIMENSIONS, Ø 6, 10, 16



Ø	A Stroke 5	A Stroke 10	A Stroke 15	B Stroke 5	B Stroke 10	B Stroke 15	C	CH	E	F	G	H	M	S	SW
6	19.5	26.5	33.5	14.5	21.5	28.5	5	9	9	M3x0.5	8.5	M10x1	M5	3	14
10	23.5	30	37	16.5	23	30	7	14	11.5	M4x0.7	13	M15x1.5	M5	4	19
16	26.5	33.5	38.5	20.5	25.5	30.5	8	20	14	M5x0.8	19	M22x1.5	M5	5	27

ASSEMBLY SEAT DIMENSIONS



Ø	L Stroke 5	L Stroke 10	L Stroke 15	L1 Stroke 5	L1 Stroke 10	L1 Stroke 15	L2 Stroke 5	L2 Stroke 10	L2 Stroke 15	L3 Stroke 5	L3 Stroke 10	L3 Stroke 15
6	6	6	6	10	18	25	12	20	27	16	24	31
10	6	6	6	12	18	25	14	20	27	20	26	34
16	8	8	8	16	21	26	18	23	28	26	31	36

KEY TO CODES

CYL	C R T C	0 1 0	0 0 1 0	S 0 0 0	0 0	0 0
	TYPE	DIAMETER	STROKE	TYPE	FURTHER DESCRIPTION	SPECIAL DESIGN
	CARTRIDGE MICROCYLINDER	006 010 016	0005 0010 0015	Single-acting retracted piston rod		

FURTHER DESCRIPTIONS
SPECIAL DESIGN = NOT ENVISAGED

ORDERING CODES

Codes	Description
W1000060005	CYL. CRTC-006-0005-S000-00
W1000060010	CYL. CRTC-006-0010-S000-00
W1000060015	CYL. CRTC-006-0015-S000-00
W1000100005	CYL. CRTC-010-0005-S000-00
W1000100010	CYL. CRTC-010-0010-S000-00
W1000100015	CYL. CRTC-010-0015-S000-00
W1000160005	CYL. CRTC-016-0005-S000-00
W1000160010	CYL. CRTC-016-0010-S000-00
W1000160015	CYL. CRTC-016-0015-S000-00

SHORT-STROKE CYLINDER SERIES SSCY, Ø 12-100 mm AND ACCESSORIES

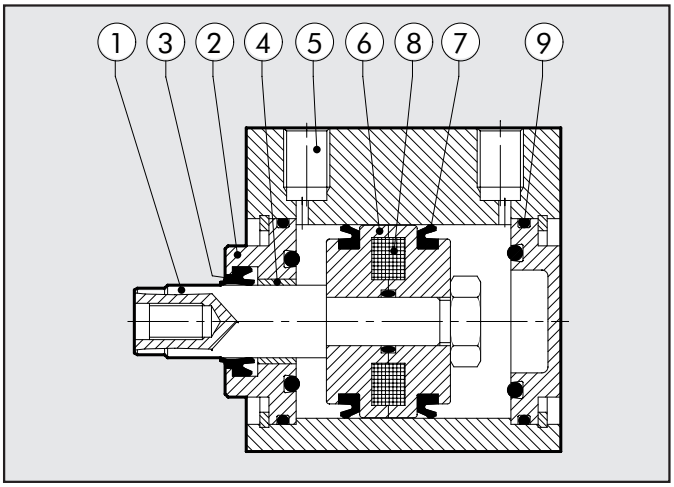
Compact cylinders suitable for installation in limited spaces:
- configuration with or without magnet
- single or double-acting - single or through-rod
- anti-rotation version and with built-in fixings
- possible choice of NBR, POLYURETHANE or FKM/FPM gaskets
- special design on request.



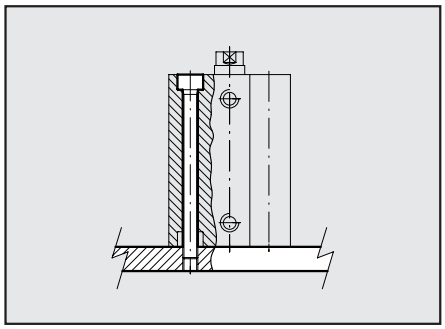
TECHNICAL DATA	Polyurethane	NBR	FKM/FPM	Low Temperature
Operating pressure	max 10 bar (max 1 MPa - 145 psi)			
Temperature range	–10°C to +80°C	–10°C to +80°C	–10°C to +150°C (non-magnetic cylinders)	–35°C to +80°C
Fluid	Unlubricated air. Lubrication, if used, must be continuous			
Bores	Ø 12 ; Ø 16 ; Ø 20 ; Ø 25 ; Ø 32 ; Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100			
Design	With profile			
Standard strokes	Double acting:	Ø 12 to Ø 25, stroke 5 to 50 mm		
		Ø 32 to Ø 40, stroke 5 to 70 mm		
		Ø 50 to Ø 63, stroke 5 to 110 mm		
		Ø 80 to Ø 100, stroke 5 to 150 mm		
	Single-acting:	Ø 12 to Ø 25, stroke 5 to 25 mm		
		Ø 32 to Ø 63, stroke 5 to 50 mm		
	Anti-rotation:	Ø 12 to Ø 63, stroke 5 to 120 mm		
		Ø 80 to Ø 100, stroke 5 to 150 mm		
	Perforated through-rod:	Ø 20 to Ø 40, stroke 5 to 100 mm		
		Ø 50 to Ø 63, stroke 5 to 130 mm		
		Ø 80 to Ø 100, stroke 5 to 165 mm		
Versions	Double-acting, Double-acting through-rod, Single-acting retracted piston rod, Single acting extended piston rod, Single-acting through-rod, Perforated through-rod, Anti-rotation, Oscillating male, Oscillating female, no-stick slip*			
Magnet for sensors	All versions come complete with magnet. Supplied without magnet on request			
Inrush pressure	Ø 12 to Ø 32: 0.6 bar - Ø 40 to Ø 100: 0.4 bar			
Forces generated at 6 bar thrust/retraction	See GENERAL TECHNICAL DATA PAGE 1.1/04			
Weight	See GENERAL TECHNICAL DATA PAGE 1.1/06			
	*For no-stick slip versions, use unlubricated air only			

COMPONENTS

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: ∅ 12 to 25 painted OT58 brass
∅ 32 to 100 painted aluminium
③ PISTON ROD GASKET:
∅ 12 to 63 SFR (PARKER PRADIFA) NBR or FKM/FPM
∅ 80 to 100 polyurethane (PARKER PRADIFA), NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodised aluminium alloy
⑥ HALF-PISTON:
∅ 12 to 63 acetal resin
∅ 80 to 100 in aluminium with PTFE guide pad
⑦ PISTON GASKET:
∅ 12 to 63 polyurethane (PARKER PRADIFA), NBR or FKM/FPM
∅ 80 to 100 SFR (PARKER PRADIFA) NBR or FKM/FPM
⑧ MAGNET: ∅ 12 to 25 in neodymium - ∅ 32 to 100 in plasto-ferrite
⑨ Static O-rings: NBR or FKM/FPM

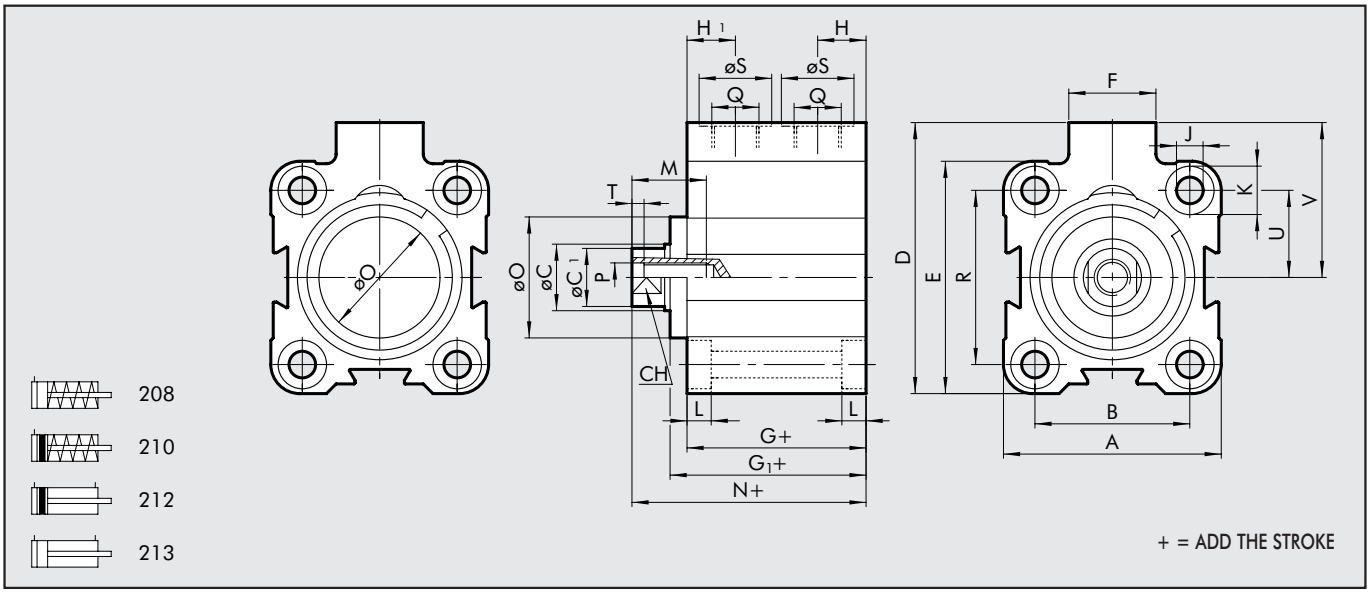


FIXING METHOD FOR SSC CYLINDERS



Fix directly from above using long through-screws or tie rods. Non-magnetic stainless steel must be used (e.g. AISI 304).

DIMENSIONS STANDARD VERSIONS



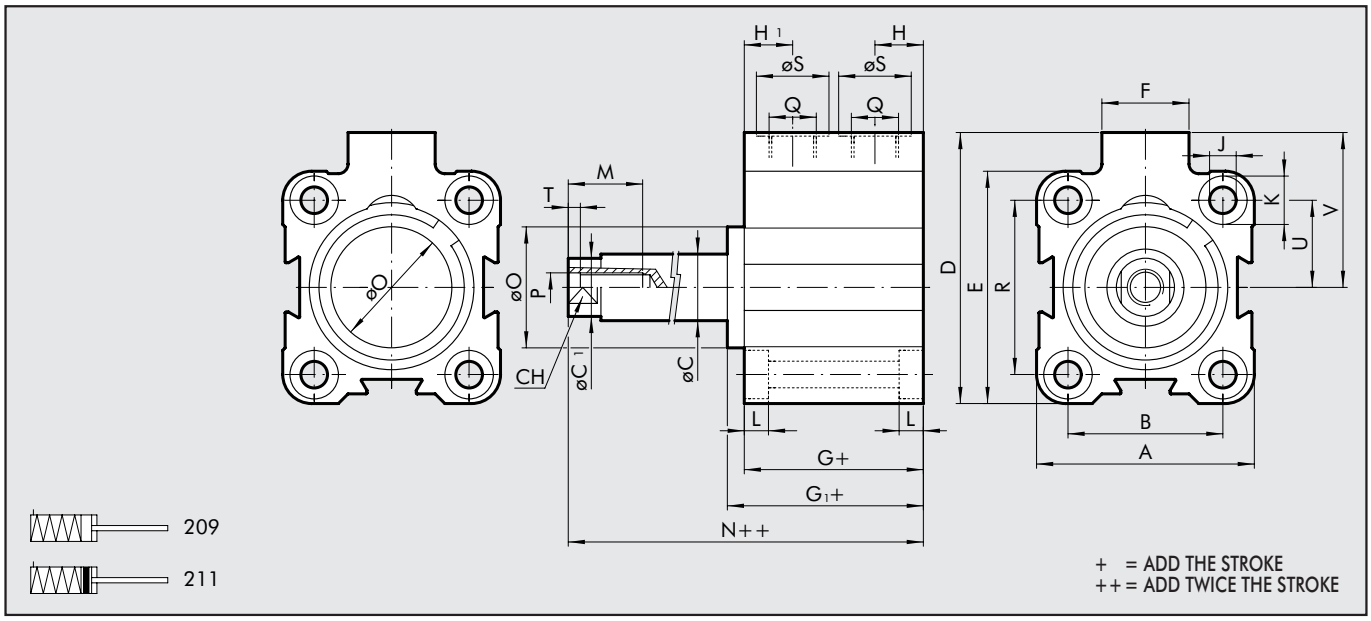
DIMENSIONS OF DOUBLE ACTING

Ø	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	23.5	13	6	5.5	28	26	11	32.5		6.5	10.5	3.7	6	3.7	7	38		M3	M5		8	5	2	9.5	16.5
16	28	20	8	7.5	33	28	11	33		6.7	10.5	3.7	6	3.7	10	37.5		M5	M5	20	8	7	2	10	19
20	32	22	10	9	37	32	11	32		6.5	10.5	4.6	7.5	4.6	10	36.5		M5	M5	22	8	8	2	11	21
25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
40	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
50	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
63	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
80	100	82	20	19	110	100	26	57	67.2	14	14	9	15	9	18	75.2	44	M10	G1/4	82	19	17	4	41	60
100	124	103	25	24	134	124	26	64	74.7	15	15	11	18	11	20	84.3	56	M12	G1/4	103	19	22	5	51.5	72

DIMENSIONS OF SINGLE-ACTING, RETRACTED PISTON ROD

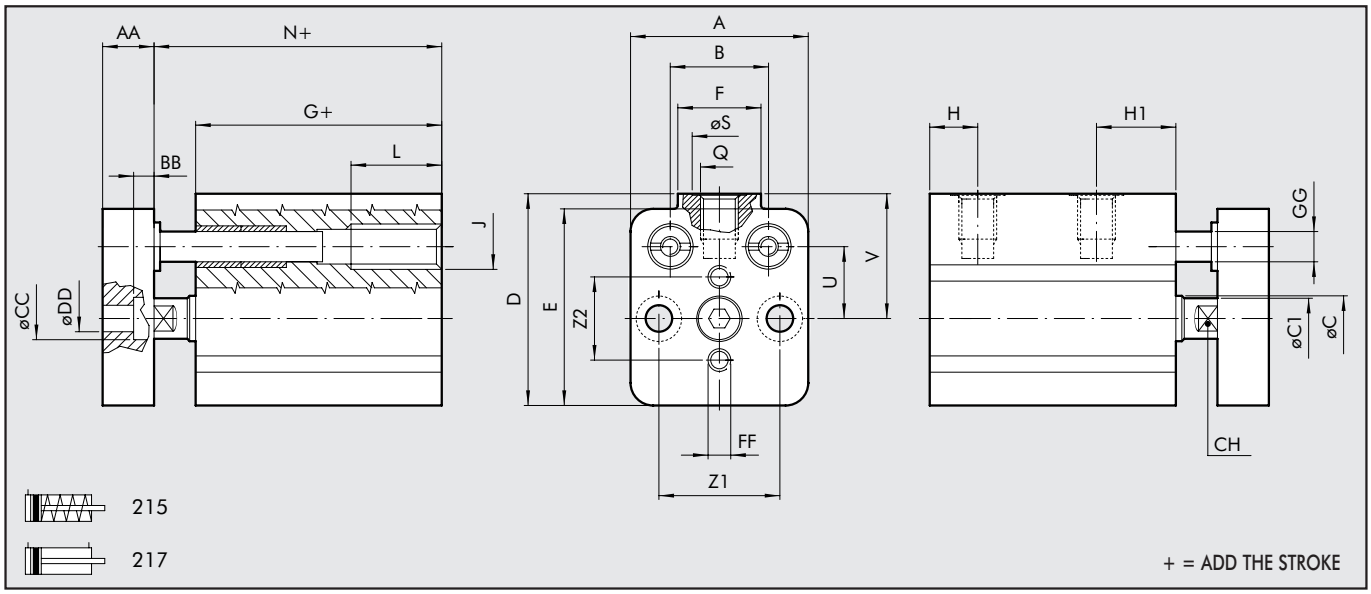
Ø	stroke	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	5÷25	23.5	13	6	5.5	28	26	11	32.5		6.5	10.5	3.7	6	3.7	7	38		M3	M5		8	5	2	9.5	16.5
16	5÷25	28	20	8	7.5	33	28	11	33		6.7	10.5	3.7	6	3.7	10	37.5		M5	M5	20	8	7	2	10	19
20	5÷25	32	22	10	9	37	32	11	32		6.5	10.5	4.6	7.5	4.6	10	36.5		M5	M5	22	8	8	2	11	21
25	5÷25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	5÷25	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
	>25÷50								45	48.8							56.3									
40	5÷25	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
	>25÷50								47.5	52.7							61.2									
50	5÷25	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
	>25÷50								47.5	54.2							61.2									
63	5÷25	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
	>25÷50								50	56.7							65.7									

DIMENSIONS OF SINGLE-ACTING EXTENDED PISTON ROD



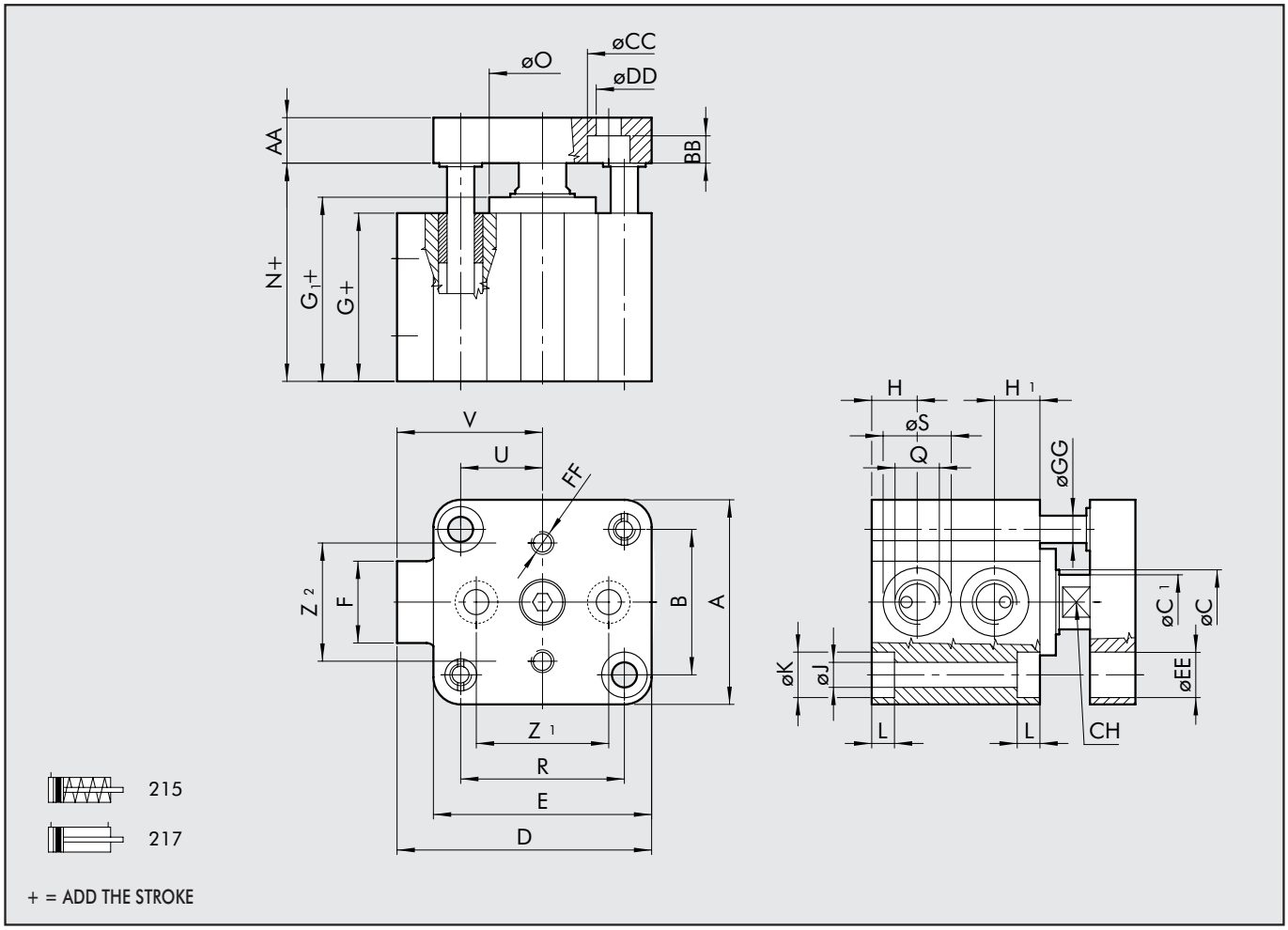
Ø	stroke	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	M	N	øO	P	Q	R	øS	CH	T	U	V
12	5÷25	23.5	13	6	5.5	28	26	11	32.5		6.5	10.5	3.7	6	3.7	7	38		M3	M5		8	5	2	9.5	16.5
16	5÷25	28	20	8	7.5	33	28	11	33		6.7	10.5	3.7	6	3.7	10	37.5		M5	M5	20	8	7	2	10	19
20	5÷25	32	22	10	9	37	32	11	32		6.5	10.5	4.6	7.5	4.6	10	36.5		M5	M5	22	8	8	2	11	21
25	5÷25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	10	42.5	20	M5	G1/8	28	15	8	2	14	28
32	5÷25	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	15	48.3	25	M6	G1/8	36	15	10	2.5	18	32
	>25÷50								45	48.8							56.3									
40	5÷25	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	15	53.2	30	M6	G1/8	40	15	10	2.5	20	35.5
	>25÷50								47.5	52.7							61.2									
50	5÷25	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	18	53.2	35	M8	G1/8	50	15	13	3.5	25	40
	>25÷50								47.5	54.2							61.2									
63	5÷25	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	18	57.7	35	M8	G1/8	62	15	13	3.5	31	48
	>25÷50								50	56.7							65.7									

DIMENSIONS OF Ø 12 ANTI-ROTATION



Ø	A	B	øC	ØC1	D	E	F	G	H	H1	J	L	N	Z1	Z2	Q	øS	U	V	AA	BB	øCC	øDD	FF	øGG
12	23.5	13	6	5.5	28	26	11	32.5	6.5	10.5	M6	12	38	16	11	M5	8	9.5	16.5	8	3.5	6	3.5	M3	4

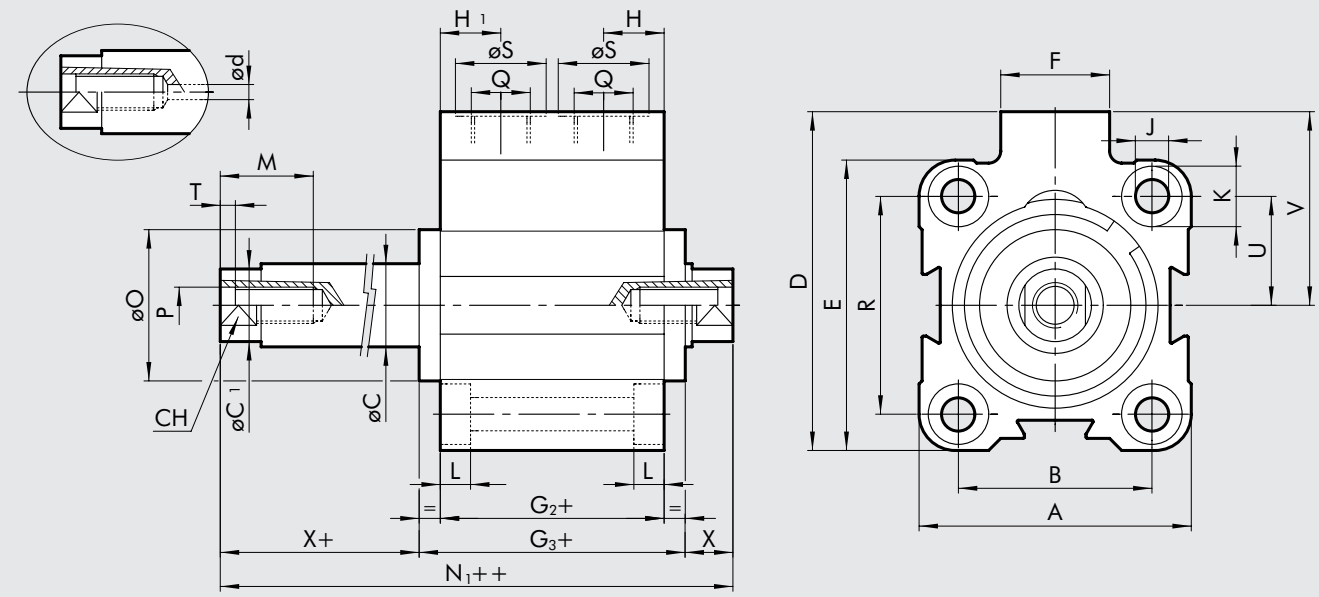
DIMENSIONS OF Ø 16 TO Ø 100 ANTI-ROTATION

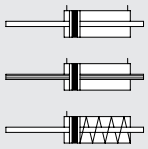


Ø	A	B	øC	øC1	D	E	F	G	G1	H	H1	J	K	L	N	Z1	Z2	Q	R	øS	CH	U
16	28	20	8	7.5	33	28	11	33		6.7	10.5	3.7	6	3.7	37.5	20	15	M5	20	8	7	10
20	32	22	10	9	37	32	11	32		6.5	10.5	4.6	7.5	4.6	36.5	22	18	M5	22	8	8	11
25	37	26	10	9	47.5	39	18	33	36.5	8.5	8.5	4.6	7.5	4.6	42.5	22	22	G1/8	28	15	8	14
32	45	32	12	11	56	48	18	37	40.8	10	10	5.5	10	5.7	48.3	26	26	G1/8	36	15	10	18
40	54.5	40	12	11	62.7	54.5	18	39.5	44.7	10	10	5.5	10	5.7	53.2	34	34	G1/8	40	15	10	20
50	66	50	16	15	73	66	18	39.5	46.2	11	11	6.6	11	6.8	53.2	43	43	G1/8	50	15	13	25
63	80	62	16	15	88	80	23	42	48.7	12	12	9	15	9	57.7	55	55	G1/8	62	15	13	31
80	100	82	20	19	110	100	26	57	67.2	14	14	9	15	9	75.2	70	70	G1/4	82	19	17	41
100	124	103	25	24	134	124	26	64	74.7	15	15	11	18	11	84.3	94	94	G1/4	103	19	22	51.5

Ø	V	AA	BB	øCC	øDD	øEE	FF	øGG	øO
16	19	8	3.5	6	3.5	6	M3	4	
20	21	8	5	7.5	4.5	7.5	M4	6	
25	28	8	5	7.5	4.5	8	M4	6	20
32	32	10	6	10	5.5	10	M5	8	25
40	35.5	10	6	10	5.5	10	M5	8	30
50	40	12	7	11	6.5	11	M6	10	35
63	48	12	9	14	9	15	M6	10	35
80	60	14	9	14	9	15	M8	12	44
100	72	17	9	14	9	18	M8	12	56

DIMENSIONS OF THROUGH-ROD





\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

DIMENSION OF DOUBLE ACTING THROUGH-ROD AND PERFORATED THROUGH-ROD

Ø	A	B	øC	øC1	D	ød**	E	F	G2	G3	H	H1	J	K	L	M	N1	øO	P	Q	R	øS	CH	T	U	V	X*
12	23.5	13	6	5.5	28		26	11	36.7		10.5	10.5	3.7	6	3.7	7	47.7		M3	M5		8	5	2	9.5	16.5	5.5
16	28	20	8	7.5	33		28	11	36.8		10.5	10.5	3.7	6	3.7	10	45.8		M5	M5	20	8	7	2	10	19	4.5
20	32	22	10	9	37	1.5	32	11	36		10.5	10.5	4.6	7.5	4.6	10	45.0		M5	M5	22	8	8	2	11	21	4.5
25	37	26	10	9	47.5	1.5	39	18	35.7	42.7	8.5	8.5	4.6	7.5	4.6	10	54.7	20	M5	G1/8	28	15	8	2	14	28	6
32	45	32	12	11	56	2.5	48	18	37	44.5	10	10	5.5	10	5.7	15	59.5	25	M6	G1/8	36	15	10	2.5	18	32	7.5
40	54.5	40	12	11	62.7	2.5	54.5	18	39.5	49.9	10	10	5.5	10	5.7	15	66.9	30	M6	G1/8	40	15	10	2.5	20	35.5	8.5
50	66	50	16	15	73	2.5	66	18	39.5	52.9	11	11	6.6	11	6.8	18	66.9	35	M8	G1/8	50	15	13	3.5	25	40	7
63	80	62	16	15	88	4	80	23	42	55.4	12	12	9	15	9	18	73.4	35	M8	G1/8	62	15	13	3.5	31	48	9
80	100	82	20	19	110	5	100	26	57	77.4	14	14	9	15	9	18	93.4	44	M10	G1/4	82	19	17	4	41	60	8
100	124	103	25	24	134	6	124	26	64	85.4	15	15	11	18	11	20	104.6	56	M12	G1/4	103	19	22	5	51.5	72	9.6

*for Ø12, Ø16, Ø20: $(N_1++) = (G_2+) + (X) + (X+)$
**column for perforated through-rod only

DIMENSION OF SINGLE-ACTING THROUGH-ROD

Ø	stroke	A	B	øC	øC1	D	E	F	G2	G3	H	H1	J	K	L	M	N1	øO	P	Q	R	øS	CH	T	U	V	X*
12	5÷25	23.5	13	6	5.5	28	26	11	36.7		10.5	10.5	3.7	6	3.7	7	47.7		M3	M5		8	5	2	9.5	16.5	5.5
16	5÷25	28	20	8	7.5	33	28	11	36.8		10.5	10.5	3.7	6	3.7	10	45.8		M5	M5	20	8	7	2	10	19	4.5
20	5÷25	32	22	10	9	37	32	11	36		10.5	10.5	4.6	7.5	4.6	10	45.0		M5	M5	22	8	8	2	11	21	4.5
25	5÷25	37	26	10	9	47.5	39	18	35.7	42.7	8.5	8.5	4.6	7.5	4.6	10	57.7	20	M5	G1/8	28	15	8	2	14	28	6
32	5÷25	45	32	12	11	56	48	18	37	44.5	10	10	5.5	10	5.7	15	59.5	25	M6	G1/8	36	15	10	2.5	18	32	7.5
	>25÷50								45	52.5							67.5										7.5
40	5÷25	54.5	40	12	11	62.7	54.5	18	39.5	49.9	10	10	5.5	10	5.7	15	66.9	30	M6	G1/8	40	15	10	2.5	20	35.5	8.5
	>25÷50								47.5	57.9							74.9										8.5
50	5÷25	66	50	16	15	73	66	18	39.5	52.9	11	11	6.6	11	6.8	18	66.9	35	M8	G1/8	50	15	13	3.5	25	40	7
	>25÷50								47.5	60.9							74.9										7
63	5÷25	80	62	16	15	88	80	23	42	55.4	12	12	9	15	9	18	73.4	35	M8	G1/8	62	15	13	3.5	31	48	9
	>25÷50								50	63.4							81.4										9

*for Ø12, Ø16, Ø20: $(N_1++) = (G_2+) + (X) + (X+)$

KEY TO CODES

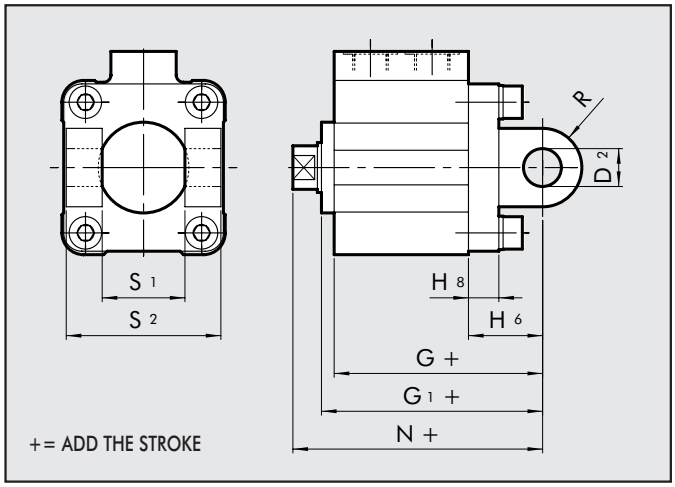
CYL	2	1	2		0		4	0	0	0	1	0	C	P
		TYPE					BORE		STROKE					

■	208	Single-acting retracted rod, non-magnetic	0	Magnetic		12	✚	Ø 12÷25 stroke 5 ÷50 mm	A C45 chrome rod, aluminium piston rod Ø 12÷63 mm
■	209	Single-acting extended rod, non-magnetic	S	Non-magnetic		16	✚	Ø 32÷40 stroke 5 ÷70 mm	C C45 chrome rod, technopolymer piston rod (standard Ø 80÷100 mm)
■	210	Single-acting, retracted rod	▲ G	No stick slip		20	✚	Ø 50÷63 stroke 5÷110 mm	Z Stainless steel piston rod and nut aluminium piston Ø 12÷63 mm
■	211	Single acting, extended rod				25	✚	Ø 80÷100 stroke 5÷150 mm	X Stainless steel piston rod and nut technopolymer piston (standard Ø 80÷100 mm)
	212	Double acting, magnetic				32			
	213	Double acting, non-magnetic				40			
	214	Double acting, through-rod				50			
■	215	Single-acting, retracted, anti-rotation				63			
	217	Double acting, anti-rotation				80			
▼	218	Double acting, perforated through-rod			◆	100			
	221	Oscillating male hinge (up to Ø 63 only)							
	222	Oscillating female hinge (up to Ø 63 only)							
■	223	Single-acting, through-rod							

P	polyurethane	
N	NBR	
● V	FKM/FPM	
● B	low temperature	

◆ In the code of cylinder with letter in fourth position Ø 100 becomes A1
■ Available up to Ø63
▼ Available from Ø20
● Only available for non-magnetic versions (S) and with aluminium piston (A or Z)
✚ Maximum recommended strokes. Higher values can create operating problem
▲ Not available for NBR (N) versions

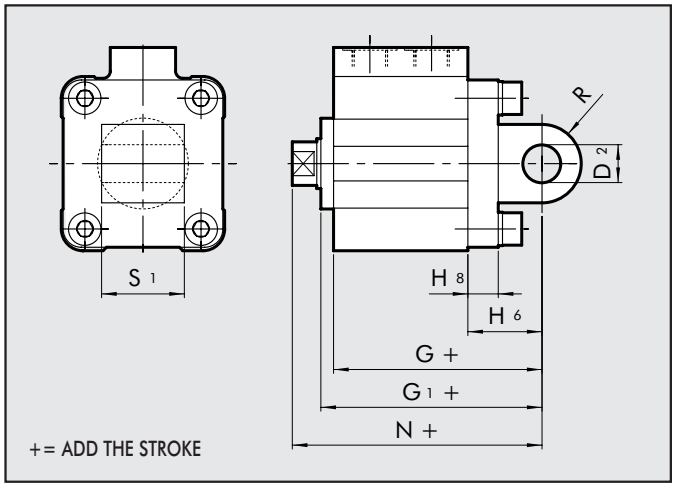
DIMENSIONS: SAME AS 222 VERSION (FEMALE HINGE MOD. B)



Ø	stroke	D_2	G	G_1	H_6	H_8	N	R	S_1	S_2
32	5÷70	10	59	62.8	22	10	70.3	11	26	45
40	5÷70	12	64.5	69.7	25	10	78.2	13	28	52
50	5÷110	12	66.5	73.2	27	12	80.2	13	32	60
63	5÷110	16	74	80.7	32	12	89.7	17	40	70

Note: For other dimensions, refer to the standard version.

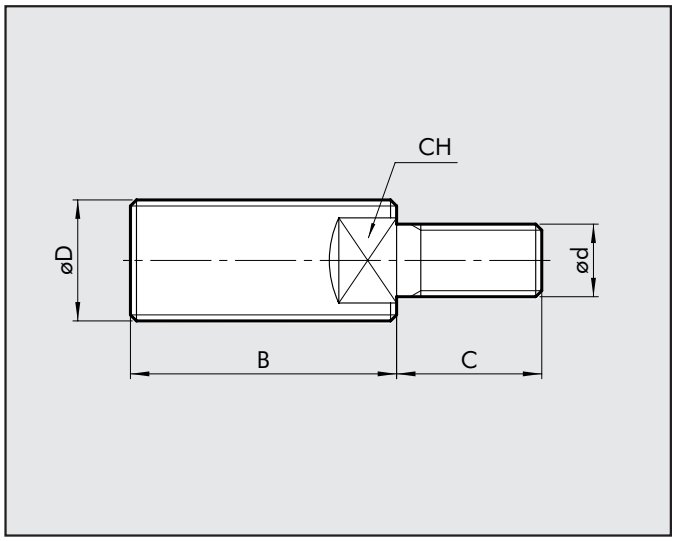
DIMENSIONS: SAME AS 221 VERSION (MALE HINGE MOD. BA)



Ø	stroke	D_2	G	G_1	H_6	H_8	N	R	S_1
32	5÷70	10	59	62.8	22	10	70.3	11	26
40	5÷70	12	64.5	69.7	25	10	78.2	13	28
50	5÷110	12	66.5	73.2	27	12	80.2	13	32
63	5÷110	16	74	80.7	32	12	89.7	17	40

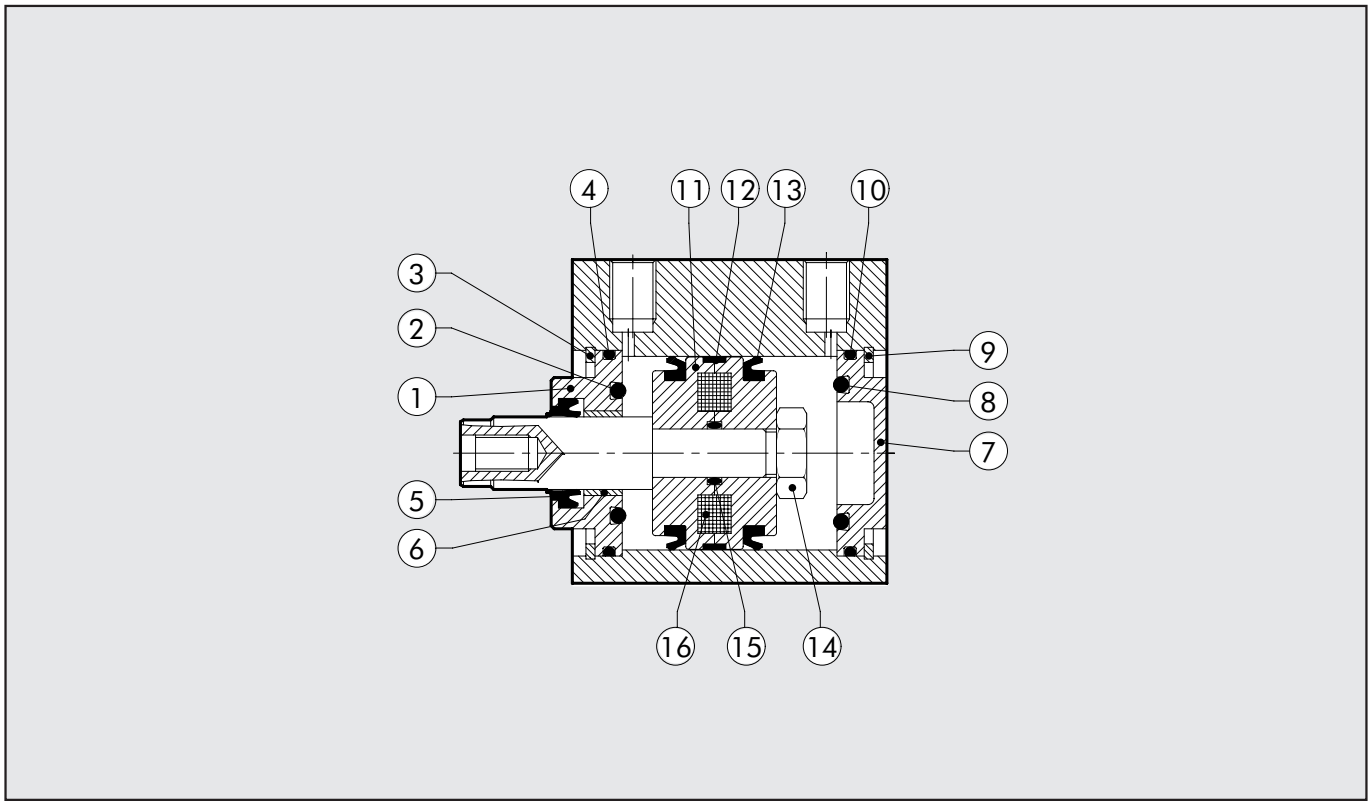
Note: For other dimensions, refer to the standard version.

DIMENSIONS OF MALE NIPPLE FOR PISTON ROD



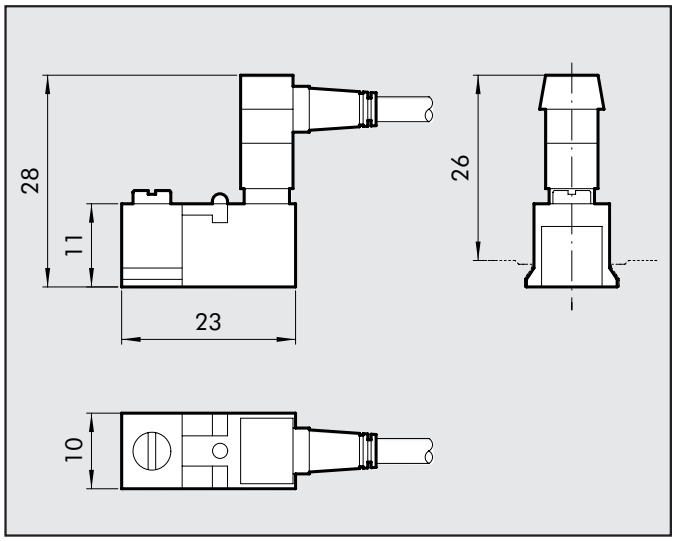
Code	Ø	Ø D	Ø d	B	C	CH	Weight [g]
219001200	12	M6	M3	16	6	4	3
219001600	16	M8	M5	20	9	6	8
219001600	20	M8	M5	20	9	6	8
219002500	25	M10x1.25	M5	22	9	7	12
219003200	32	M10x1.25	M6	22	12	7	14
219004000	40	M12x1.25	M6	24	12	10	14
219005000	50	M16x1.5	M8	32	15	13	20
219005000	63	M16x1.5	M8	32	15	13	20
219008000	80	M20x1.5	M10	40	15	17	96
219010000	100	M20x1.5	M12	40	18	17	102

SPARES FOR SSCY



Type	Parts	Bores	Code
Complete polyurethane front head kit	1-2-3-4-5-6	Ø 12÷100	009 . . . 0010
Complete NBR front head kit	1-2-3-4-5-6	Ø 12÷100	009 . . . 0011
Complete NBR rear head kit	7-8-9-10	Ø 12÷100	009 . . . 0015
Complete polyurethane piston kit	11-12-13-14-15	Ø 12÷100	009 . . . 0021
Complete NBR piston kit	11-12-13-14-15	Ø 12÷100	009 . . . 0023
Complete set of polyurethane gaskets	2-4-5-8-10-13-15	Ø 12÷100	009 . . . 0005
Complete set of NBR gaskets	2-4-5-8-10-13-15	Ø 12÷100	009 . . . 0006
Complete polyurethane front+rear head kit + piston	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15	Ø 12÷100	009 . . . 0031
Complete NBR front+rear head kit + piston	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15	Ø 12÷100	009 . . . 0033
Magnet	16	Ø 12÷100	009 . . . 0001

ACCESSORIES: MAGNETIC SENSORS

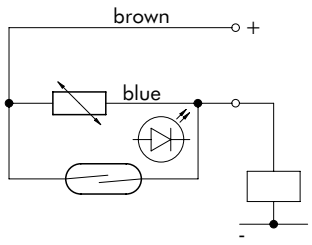


Code	Version	Bore	Model
W0950000252	Reed connector + bracket - CB	12-100	REED SENSOR DCB 2C-425
W0950000253	Hall PNP connector + bracket - CB	12-100	SENSOR AND HALL PNP DCB3-N225

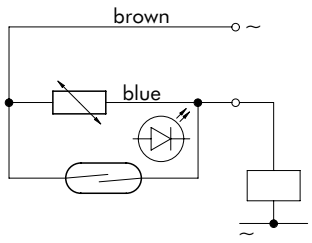
PROXIMITY SENSORS – TECHNICAL DATA

Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3 to 48 (DC): 3 to 110 (AC)	6-24 V DC
Max current at 25°C	mA	300	250
Power with inductive load	VA	8	–
Power with resistive load	Watt	15	6
Switch-on time	m sec	0.5	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	60	8
Operating life	–	10^7 impulses	10^9 impulses
Contact resistance		0.1	–
Cable length	m	2.5	2.5
Cable cross section	mm^2	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

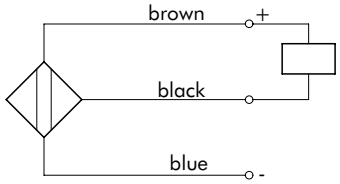
DC



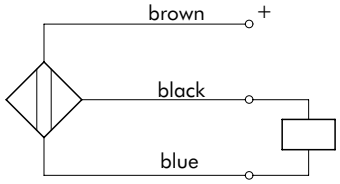
AC



Version NPN



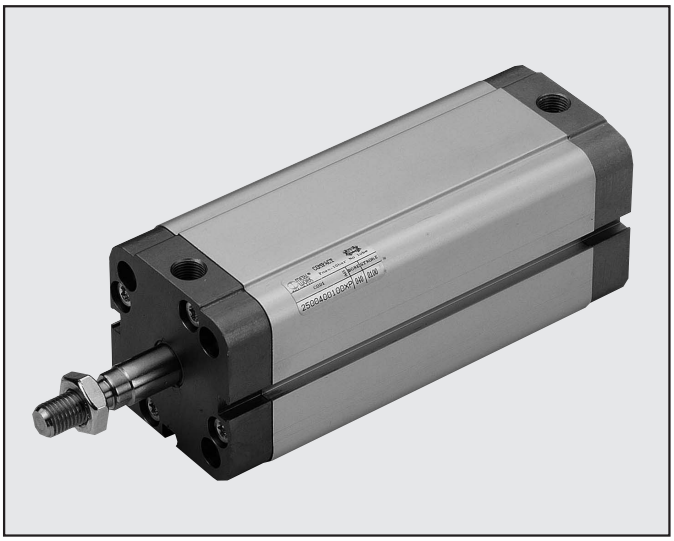
Version PNP



COMPACT CYLINDERS SERIES "CMPC" Ø 12÷100

Compact cylinder series CMPC available in numerous versions to meet a full range of requirements:
- With or without magnet
- Single-acting extended rod, retracted or through-rod
- Dual-acting non-rotating and dual-acting through-rod versions
- Tandem with two, three or four stages
- Multi-position with two and three stages
- Fixing centre distances to ISO 6431 – VDMA 24562 from Ø 32 to Ø 100 and from Ø 20 to Ø 100 complying with French standard NFE 49-004-1 and 2 (UNITOP). Ø 12 and Ø 16 have centre distances compatible with trade cylinders.

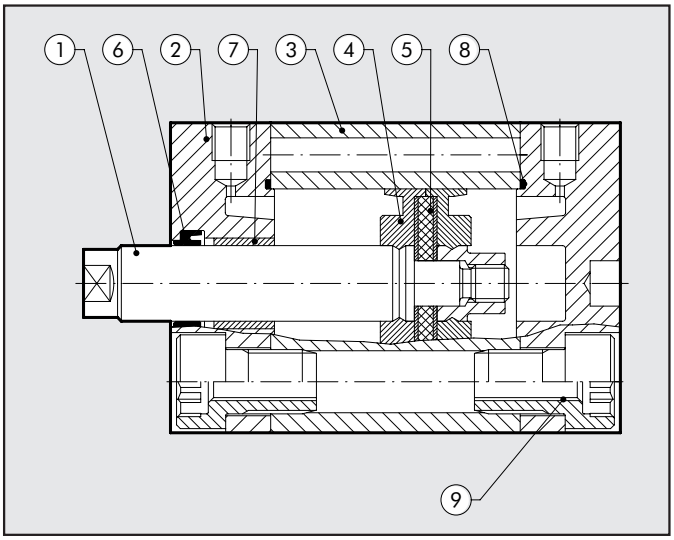
The special profile and outer heads locked onto the jacket by screws ensure optimal guiding of the cylinder and multiple fixing options with a wide range of mountings.
To determine the position in the relevant cylinder slots, it is possible to mount retracting magnetic limit switches.



TECHNICAL DATA		POLYURETHANE
Operating pressure		max 10 bar (max 1 MPa-145 psi)
Temperature range		–10°C to +80°C
Fluid		Unlubricated air. Lubrication, if used, must be continuous.
Bores	mm	Ø12, Ø16; interchangeable with similar products
	mm	Ø 30, Ø 40, Ø 50, Ø 63, Ø 80 and Ø 100 with ISO 6431 VDMA24562 fixing centre distances.
	mm	Ø 20, Ø 25, Ø 32, Ø 40, Ø 50, Ø 63, Ø 80 and Ø 100 with NFE 49-004-1 and 2 fixing centre distances.
Design		With profile, heads with screws
Versions		Double-acting, Single-acting extended or retracted rod, Through-rod, Through-rod perforated, Single-acting through-rod,
		Through-rod non-rotating, no-stick slip*
		All versions are available with male or female piston rod.
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.
Inrush pressure		As required
Notes		For correct operation, it is advisable to use 50µm filtered air
Inrush pressure		Ø 12 to Ø 32: 0.6 bar - Ø 40 to Ø 100: 0.4 bar
Forces generated at 6 bar thrust/retraction		See GENERAL TECHNICAL DATA PAGE 1.1/05
Weights		See GENERAL TECHNICAL DATA PAGE 1.1/06
		*For no-stick slip versions, use no-lubricated air only

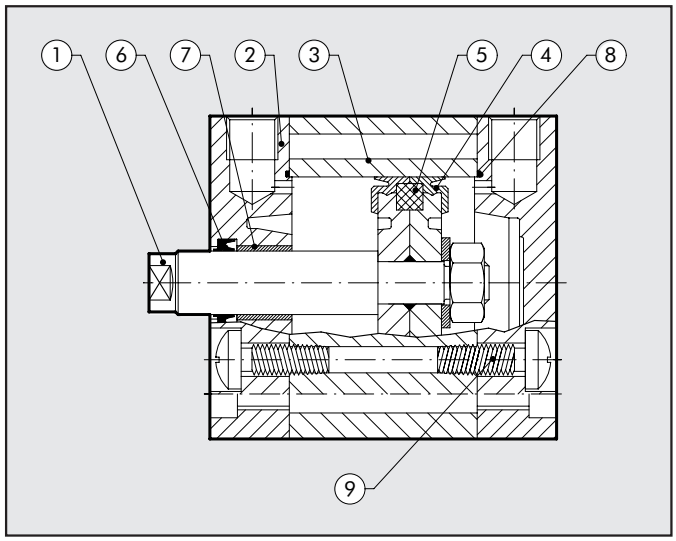
COMPONENTS Ø 12÷25

① PISTON ROD: stainless steel, thick chromed
② HEAD: extruded anodised aluminium alloy
③ BARREL: drawn anodised and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: neodymium
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert.
⑧ STATIC O-RINGS: NBR
⑨ SECURING SCREWS: zinc-plated steel

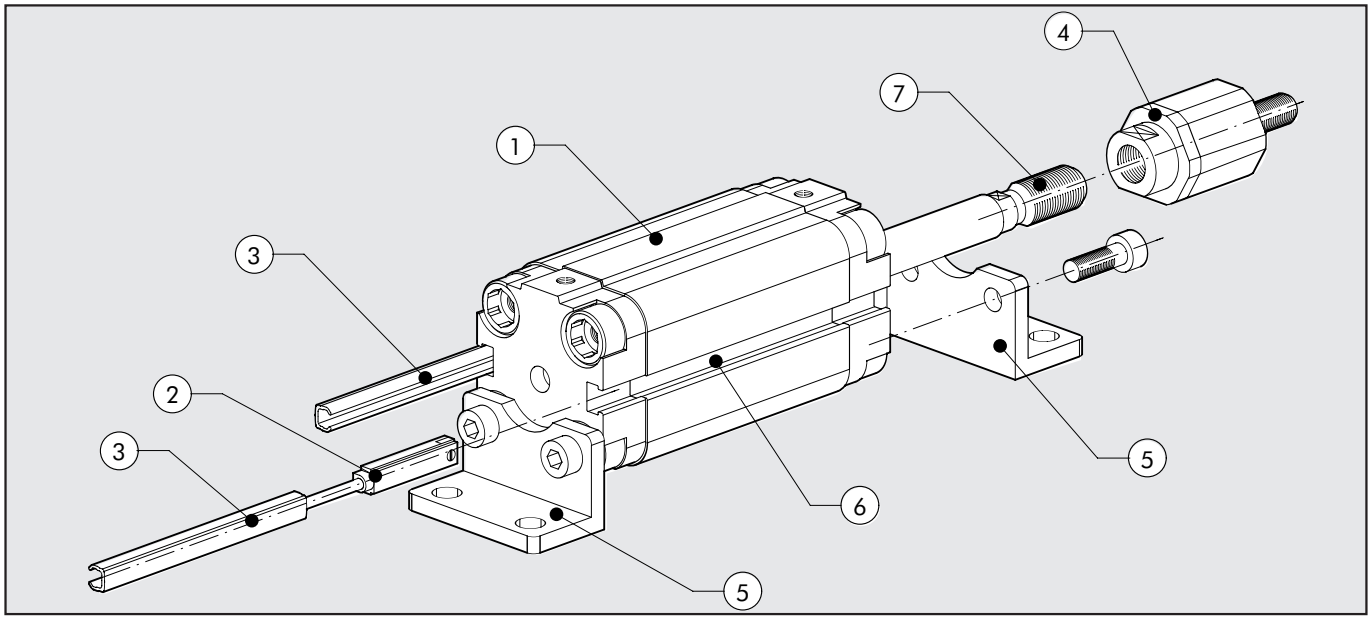


COMPONENTS Ø 32÷100

① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: extruded anodised aluminium alloy
③ JACKET: drawn anodised and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: Ø 12÷32 neodymium - Ø 40÷100 plastoferrite
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert.
⑧ STATIC O-rings: NBR
⑨ SECURING SCREWS: zinc-plated steel



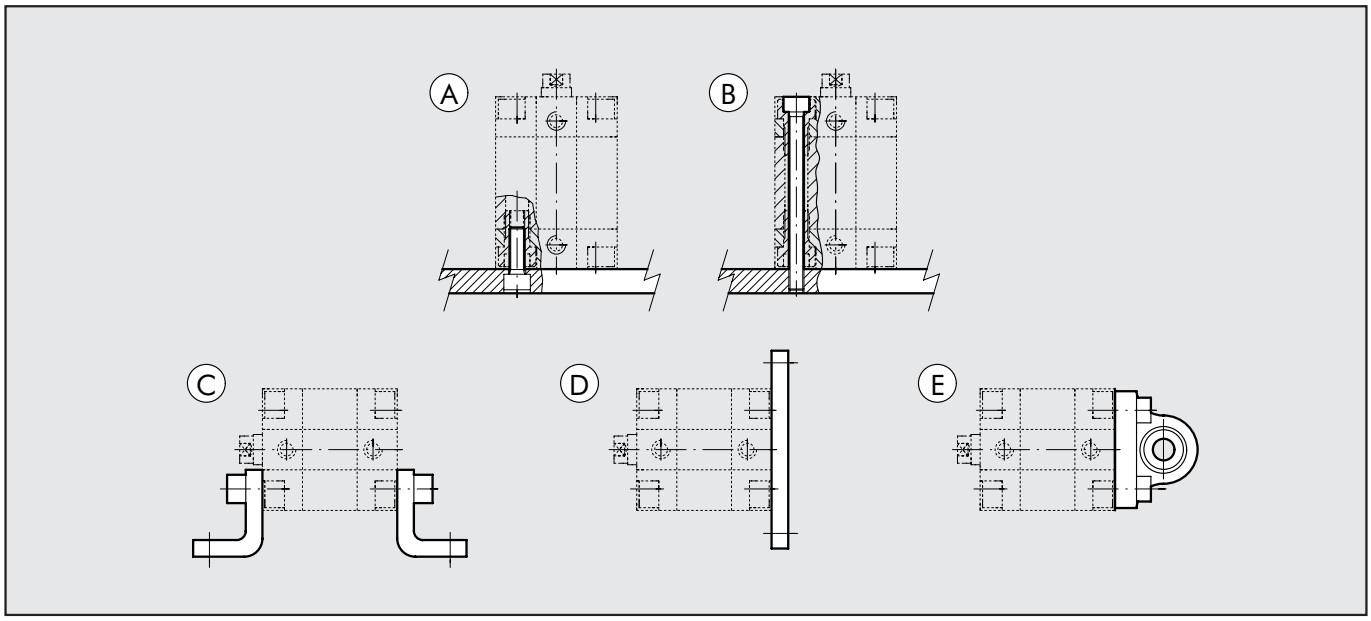
TECHNICAL DATA



① Compact cylinder available with two separate fixing centre distances
- Ø 32÷100 to ISO 6431 VDMA24562
- Ø 20÷100 to NFE 49-004-1 and 2

② Pre-wired retracting sensor with or without connector
③ Plastic strip to keep out dirt and/or protect the sensor wire cod. W0950000160
④ Ball-and-socket joint code W095… 2030
⑤ Example of cylinder mounting with feet code W095… 6001
All mountings come complete with cylinder assembly screws
⑥ Sensor slot
⑦ Piston rod with male or female thread as required

COMPACT CYLINDER FIXING OPTIONS



Fixing to structural work with a through screw, using the thread in the heads (Fig. A)
Direct fixing from above using long through screws or tie rods (Fig. B). Non-magnetic stainless steel must be used (e.g. AISI 304)
Fixing with feet; the ordering code covers the supply of one foot and two screws for fixing to the cylinder (Fig. C).
Fixing with a flange mounted on the front or rear head; the ordering code covers the supply of a flange and four screws for fixing to the cylinder (Fig. D).
Fixing with articulated hinge to compensate for slight system misalignment and turn freely (Fig. E).
The ordering code covers the supply of a hinge and four screws for fixing to the cylinder.

FORCE OF SPRINGS IN SINGLE-ACTING CYLINDERS (THEORETICAL)

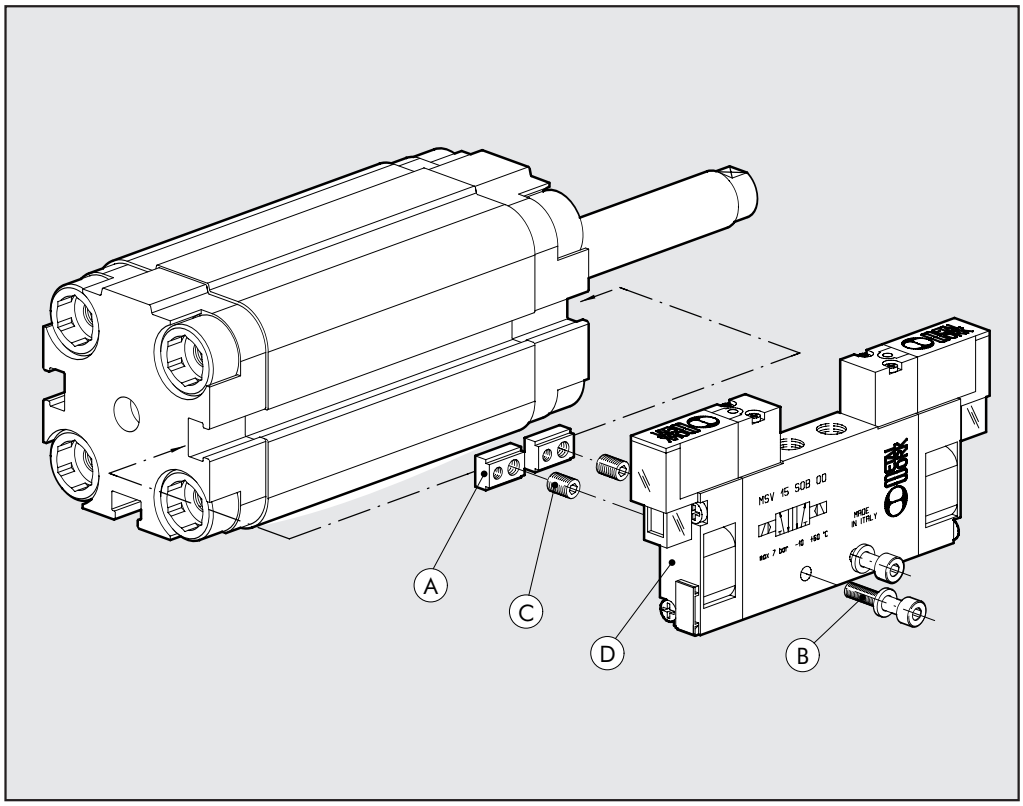
Bore	Ø 12	Ø 16	Ø 20	Ø 25	Ø 32	Ø 40	Ø 50	Ø 63	Ø 80	Ø 100
Min. load (N)	4.40	4.90	8.40	13.90	19.00	24.80	36.30	50.20	77.60	131.80
Max. load (N)	9.80	14.20	20.90	33.20	35.90	53.70	62.20	82.30	118.90	183.30

STROKES FOR COMPACT CYLINDERS

Standard stroke for single-acting cylinders	Standard stroke for other types	Max. recommended strokes for other types	Max. recommended strokes for non-rotating cylinders
Ø 12 → 10 mm	Ø 12; Ø 16 → from 5 to 40 mm	Ø 12÷Ø 25 → 200 mm	Ø 12÷Ø 63 → 120 mm
Ø 16; Ø 100 → 25 mm	Ø 20; Ø 25 → from 5 to 50 mm	Ø 32; Ø 40 → 300 mm	Ø 80; Ø 100 → 150 mm
	Ø 32÷Ø 100 → from 5 to 80 mm	Ø 50; Ø 63 → 400 mm	
		Ø 80; Ø 100 → 500 mm	

Max recommended strokes for through-rod perforated
Ø 20÷Ø 40 → from 5 to 80 mm
Ø 50; Ø 63 → from 5 to 100 mm
Ø 80; Ø 100 → from 5 to 160 mm

VALVE ASSEMBLY ON CYLINDER

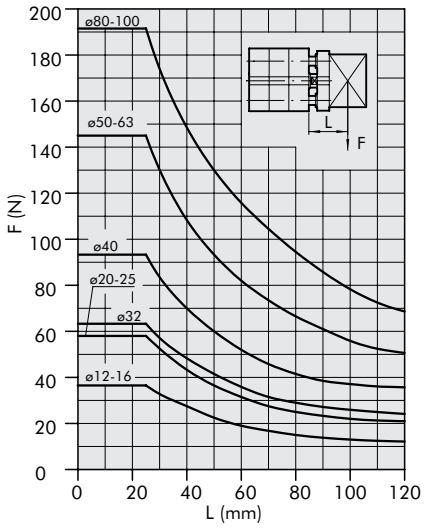


With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets. This can be done using the special plates (A) which come with both M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.
The plates are supplied complete with 2 stud pins, one M3 and one M4 (C).
After the valve centre distance and the position of the valve have been determined, the plates can be secured to the cylinder. A "position memory" will be created to facilitate subsequent maintenance on the valve.

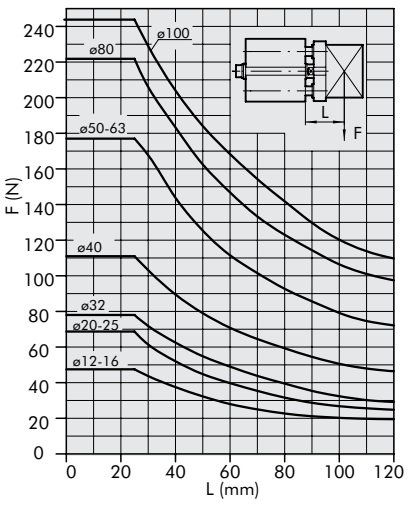
Type of valve to mount (D)	Fixing plate (A) cod. 0950003000	Position memory: grub screw (C) to be used	Screw (B) for connection to the cylinder (one per plate)	Washer (B) (one per screw)
MACH 11	n. 2	M4	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)
SERIE 70 1/8	n. 2	M3	M4x25 UNI 5931 (DIN 912)	—
SERIE 70 1/4	n. 2	M3	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)

MAXIMUM LOADS FOR NON-ROTATING VERSION

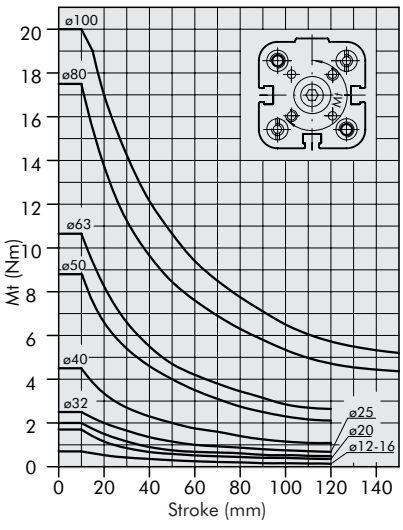
TRANSVERSAL FORCE FOR NON-ROTATING



TRANSVERSAL FORCE FOR NON-ROTATING THROUGH-ROD

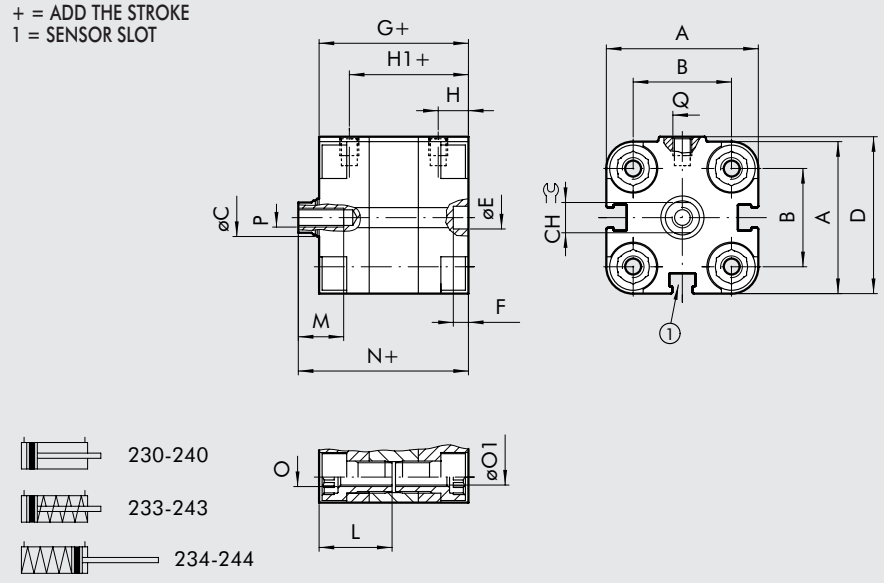


TORQUE DEPENDING ON STROKE

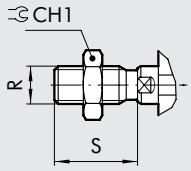


DIMENSIONS OF DOUBLE-ACTING Ø 12÷25 AND SINGLE-ACTING Ø 12÷25

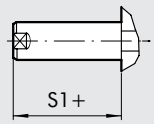
+ = ADD THE STROKE
1 = SENSOR SLOT



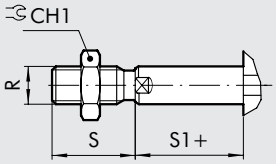
SE-DE MALE PISTON ROD



SE EXTENDED PISTON ROD



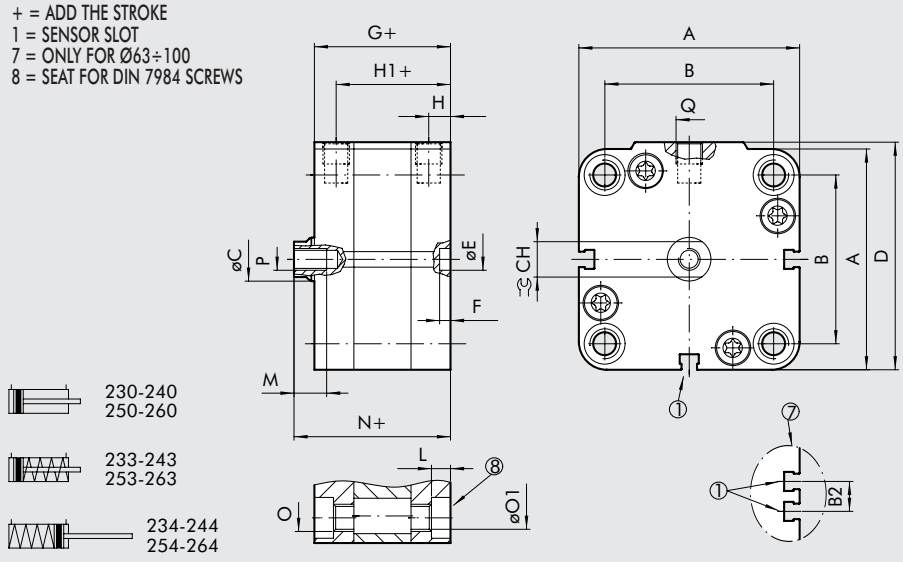
SE MALE EXTENDED PISTON ROD



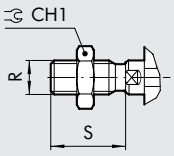
	A	B	ØC	CH	CH1	D	ØE H9	F	G	H	H1	L	M	N	O	ØO1	P	Q	R	S	S1	NORMA
Ø 12	29	18	6	5	10	30	6	4	38	8	30	18.5	8	42.5	M4	3.2	M3	M5	M6	16	4.5	
Ø 16	29	18	8	7	13	30	6	4	38	8	30	18.5	10	42.5	M4	3.2	M4	M5	M8	20	4.5	
Ø 20	36.5	22	10	8	17	37.5	6	4	38	8	30	18.5	12	42.5	M5	4.2	M5	M5	M10x1.25	22	4.5	UNITOP
Ø 25	40.5	26	10	8	17	41.5	6	4	39.5	8	31.5	19	12	45	M5	4.2	M5	M5	M10x1.25	22	5.5	UNITOP

DIMENSIONS OF DOUBLE-ACTING Ø 32÷100 AND SINGLE-ACTING Ø 32÷100

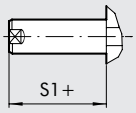
+ = ADD THE STROKE
1 = SENSOR SLOT
7 = ONLY FOR Ø63÷100
8 = SEAT FOR DIN 7984 SCREWS



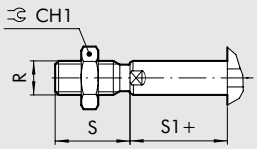
SE-DE MALE PISTON ROD



SE EXTENDED PISTON ROD

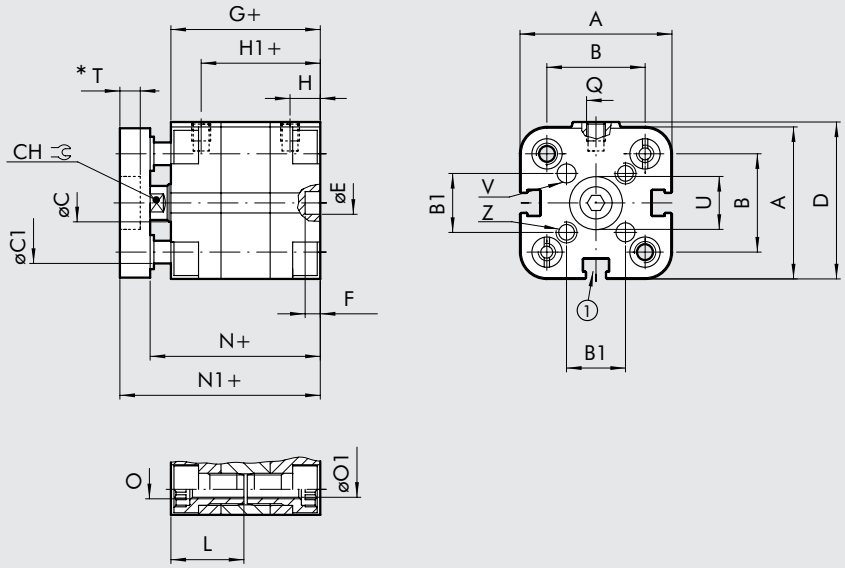


SE MALE EXTENDED PISTON ROD



	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	ØE H9	F	G	H	H1	L	M	N	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S	S1
Ø 32	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	–	12	10	17	48.5	6	4	44.5	7.5	37	4	14	50.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	6
Ø 40	56	38	42	–	12	10	17	57.5	6	4	45.5	7.5	38	4.5	14	52	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	6.5
Ø 50	67	46.5	50	–	16	13	19	69	6	4	45.5	7.5	38	4.5	16	53	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24	7.5
Ø 63	80	56.5	62	13	16	13	19	82	8	4	50	7.5	42.5	5.5	16	57.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24	7.5
Ø 80	102	72	82	17	20	17	24	105	8	4	56	8.5	47.5	5.5	20	64	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32	8
Ø 100	123	89	103	21	25	22	30	126	8	4	66.5	10.5	56	5.5	24	76.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40	10

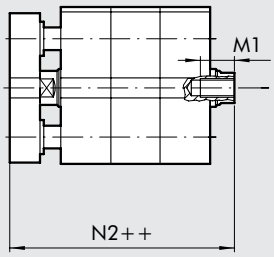
DIMENSIONS OF NON-ROTATING Ø 12÷25



247

+ = ADD THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT

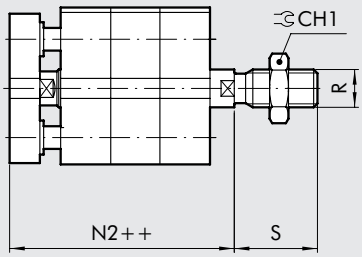
NON-ROTATING FEMALE THROUGH-ROD



24A

++ = ADD TWICE THE STROKE

NON-ROTATING MALE THROUGH-ROD



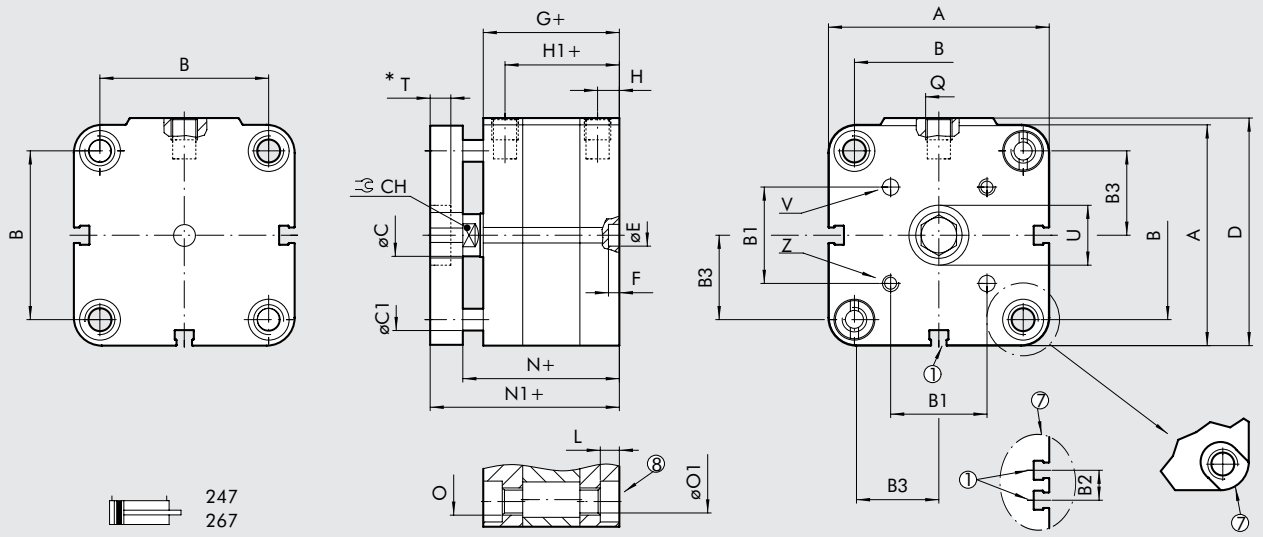
23A

++ = ADD TWICE THE STROKE

	A	B	B1	ØC	ØC1	CH	CH1	D	ØE H9	F	G	H	H1	L	M1 x strokes <5	M1 x strokes ⩾5	N	N1	N2
Ø 12	29	18	9.9	6	5	5	10	30	6	4	38	8	30	18.5	5	8	42.5	48.5	53
Ø 16	29	18	9.9	8	5	7	13	30	6	4	38	8	30	18.5	5	10	42.5	48.5	53
Ø 20	36.5	22	12	10	6	8	17	37.5	6	4	38	8	30	18.5	7	12	42.5	50.5	55
Ø 25	40.5	26	15.6	10	6	8	17	41.5	6	4	39.5	8	31.5	19	7	12	45	53	58.5

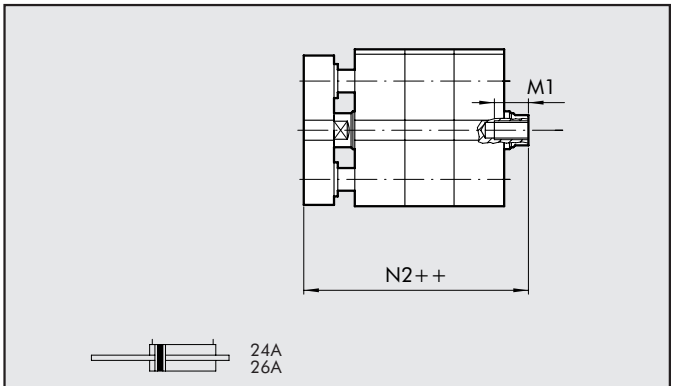
	O	ØO1	P	Q	R	S	T	ØU H9	ØV H8	Z	STANDARD
Ø 12	M4	3.2	M3	M5	M6	16	2	6	3	M3	
Ø 16	M4	3.2	M4	M5	M8	20	2	8	3	M3	
Ø 20	M5	4.2	M5	M5	M10x1.25	22	3.5	10	4	M4	UNITOP
Ø 25	M5	4.2	M5	M5	M10x1.25	22	4	14	5	M5	UNITOP

DIMENSIONS OF NON-ROTATING Ø 32÷100



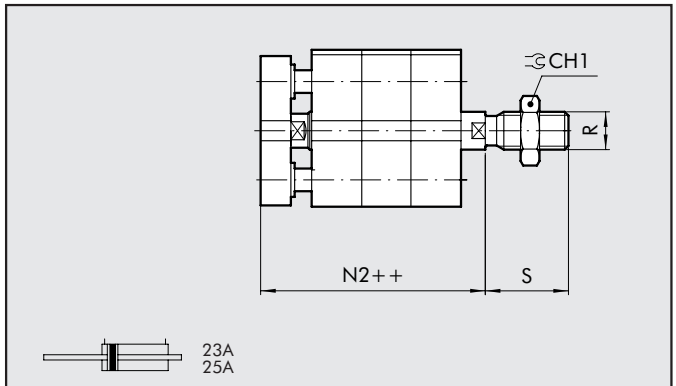
\+ = ADD THE STROKE
* = SECTION WITH TOLERANCE
1 = SENSOR SLOT
7 = ONLY FOR Ø 63 TO Ø 100
8 = SLOT FOR DIN 7984 SCREWS

NON-ROTATING FEMALE THROUGH-ROD



++ = ADD TWICE THE STROKE

NON-ROTATING MALE THROUGH-ROD

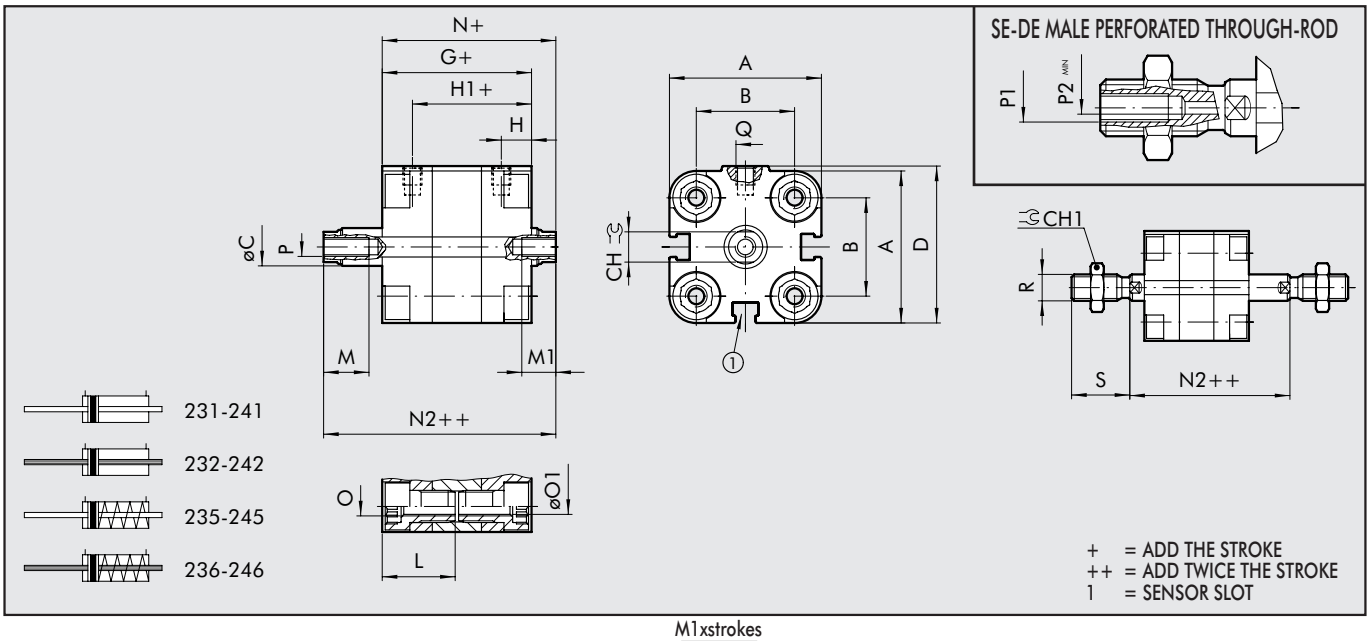


++ = ADD TWICE THE STROKE

		B																M1 x strokes	
	A	ISO	UNITOP	B1	B2	B3	ØC	ØC1	CH	CH1	D	ØE H9	F	G	H	H1	L	⩾5	<5
Ø 32	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	19.8	–	16.1	12	8	10	17	48.5	6	4	44.5	7.5	37	4	14	9
Ø 40	56	38	42	23.3	–	20	12	8	10	17	57.5	6	4	45.5	7.5	38	4.5	14	9
Ø 50	67	46.5	50	29.7	–	24	16	10	13	19	69	6	4	45.5	7.5	38	4.5	16	11
Ø 63	80	56.5	62	35.4	13	30	16	10	13	19	82	8	4	50	7.5	42.5	5.5	16	11
Ø 80	102	72	82	46	17	38.5	20	12	17	24	105	8	4	56	8.5	47.5	5.5	20	15
Ø100	123	89	103	56.6	21	48	25	12	22	30	126	8	4	66.5	10.5	56	5.5	24	19

				O		ØO1									
	N	N1	N2	ISO	UNITOP	ISO	UNITOP	P	Q	R	S	T	ØU H9	ØV H8	Z
Ø 32	50.5	60.5	66.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	17	5	M5
Ø 40	52	62	68.5	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22	4.5	17	5	M5
Ø 50	53	65	72.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24	6	22	6	M6
Ø 63	57.5	69.5	77	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24	6	22	6	M6
Ø 80	64	78	86	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32	8	28	8	M8
Ø100	76.5	90.5	100.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40	9	30	10	M10

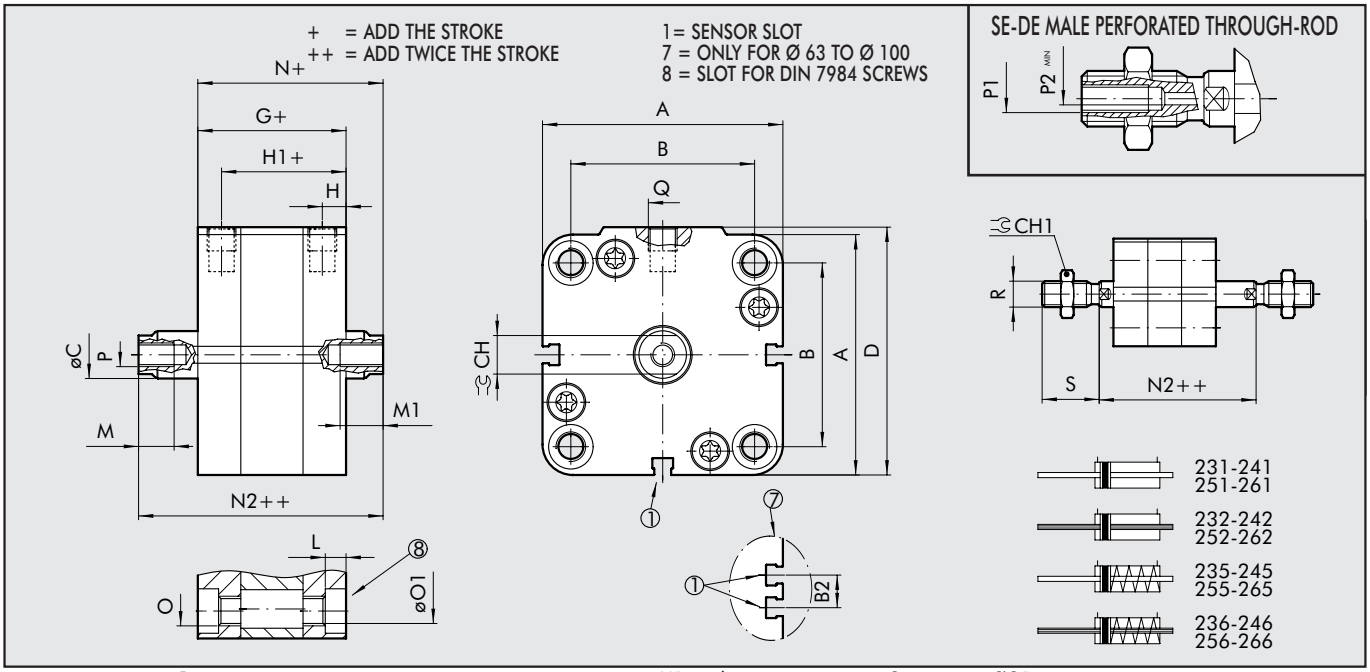
DIMENSIONS OF THROUGH-ROD Ø 12÷25



	A	B	ØC	CH	CH1	D	G	H	H1	L	M	M1xstrokes <5	M1xstrokes ⩾5	N	N2	O	ØO1	P	P1	P2	Q	R	S
Ø 12	29	18	6	5	10	30	38	8	30	18.5	8	5	8	42.5	47	M4	3.2	M3	–	–	M5	M6	16
Ø 16	29	18	8	7	13	30	38	8	30	18.5	10	5	10	42.5	47	M4	3.2	M4	–	–	M5	M8	20
Ø 20*	36.5	22	10	8	17	37.5	38	8	30	18.5	12	7	12	42.5	47	M5	4.2	M5	–	1.5	M5	M10x1.25	22
Ø 25*	40.5	26	10	8	17	41.5	39.5	8	31.5	19	12	7	12	45	50.5	M5	4.2	M5	–	1.5	M5	M10x1.25	22

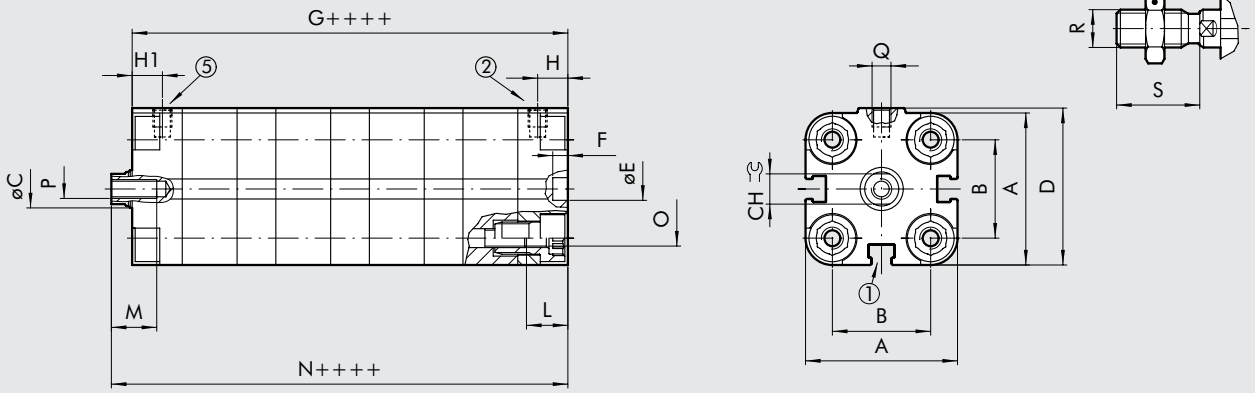
*Built to UNITOP

DIMENSIONS OF THROUGH-ROD Ø 32÷100



	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	G	H	H1	L	M	M1xstrokes ⩾5	M1xstrokes <5	N	N2	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	P1	P2	Q	R	S
Ø 32	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	–	12	10	17	48.5	44.5	7.5	37	4	14	14	9	50.5	56.5	M6	M6	5.2	5.2	M6	–	2.5	G1/8	M10x1.25	22
Ø 40	56	38	42	–	12	10	17	57.5	45.5	7.5	38	4.5	14	14	9	52	58.5	M6	M6	5.2	5.2	M6	–	2.5	G1/8	M10x1.25	22
Ø 50	67	46.5	50	–	16	13	19	69	45.5	7.5	38	4.5	16	16	11	53	60.5	M8	M8	6.2	6.2	M8	–	4	G1/8	M12x1.25	24
Ø 63	80	56.5	62	13	16	13	19	82	50	7.5	42	5.5	16	16	11	57.5	65	M8	M10	6.2	8.5	M8	–	4	G1/8	M12x1.25	24
Ø 80	102	72	82	17	20	17	24	105	56	8.5	47.5	5.5	20	20	15	64	72	M10	M10	8.5	8.5	M10	1/8	5	G1/8	M16x1.5	32
Ø 100	123	89	103	21	25	22	30	126	66.5	10.5	56	5.5	24	24	19	76.5	86.5	M10	M10	8.5	8.5	M12	1/4	6	G1/4	M20x1.5	40

DIMENSIONS OF TANDEM Ø 20÷25 - 4-STAGES



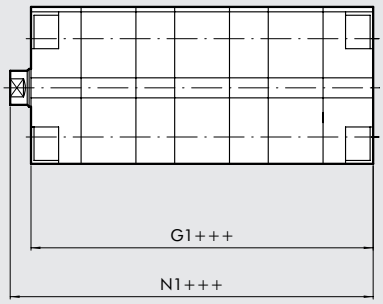


230-240

1 = SENSOR SLOT
2 = CYLINDERS OUT
5 = CYLINDERS IN

++++ = ADD FOUR TIMES THE STROKE

TANDEM 3 STAGES

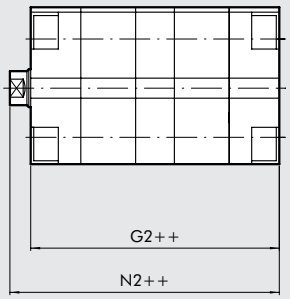




230-240

+++ = ADD THREE TIMES THE STROKE

TANDEM 2 STAGES





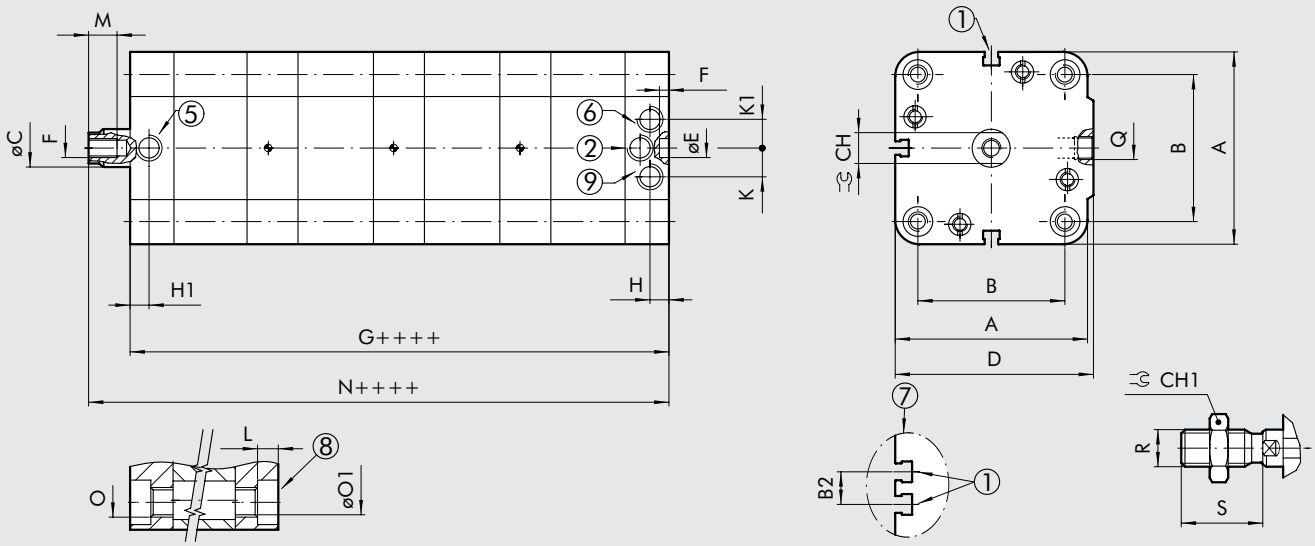
230-240

++ = ADD TWICE THE STROKE

	A	B	ØC	CH	CH1	D	ØE H9	F	G	G1	G2	H	H1	L	M	N	N1
Ø 20	36.5	22	10	8	17	37.5	6	4	114.5	89	63.5	8	8	10	12	119	93.5
Ø 25	40.5	26	10	8	17	41.5	6	4	118	92	66	8	8	10	12	123.5	97.5

N2	O	P	Q	R	S	Standard
68	M5	M5	M5	M10x1.25	22	UNITOP
71.5	M5	M5	M5	M10x1.25	22	UNITOP

DIMENSIONS OF TANDEM Ø 32÷100 - 4-STAGES

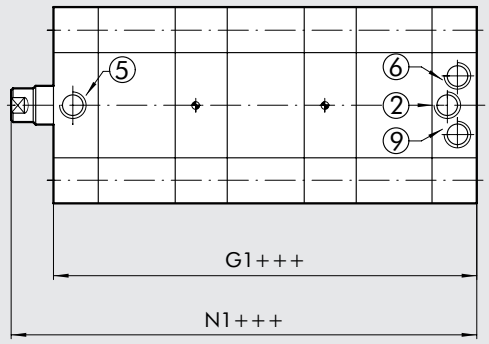


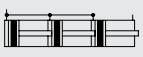


++++ = ADD FOUR TIMES THE STROKE

2 = CYLINDERS OUT FOR Ø 32÷63
5 = CYLINDERS IN FOR Ø 32÷63
6 = CYLINDERS IN FOR Ø 80; 100
9 = CYLINDERS OUT FOR Ø 80; 100
1 = SENSOR SLOT
7 = ONLY FOR Ø 63÷100
8 = SLOT FOR DIN 7984 SCREWS

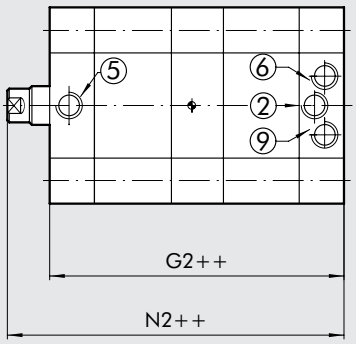
TANDEM 3-STAGES

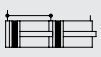




+++ = ADD THREE TIMES THE STROKE

TANDEM 2-STAGES



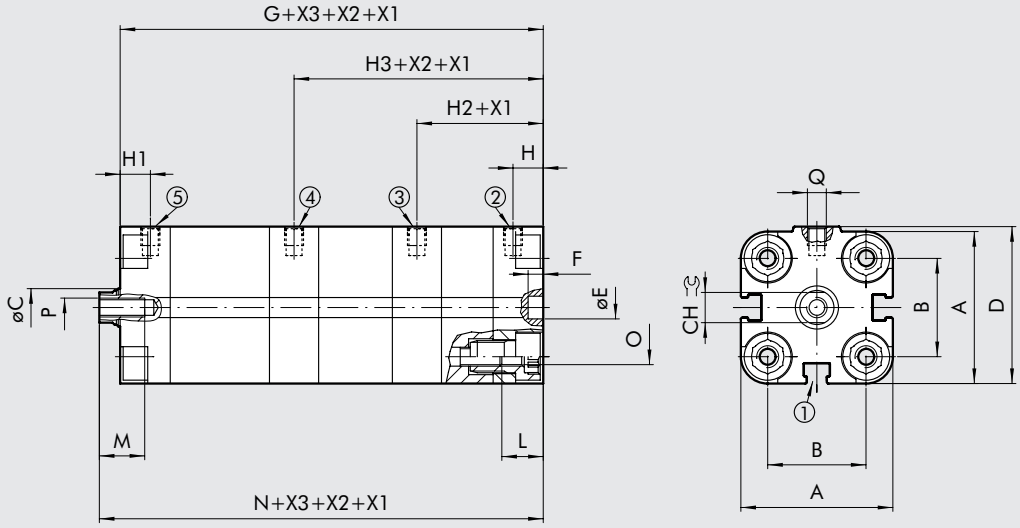


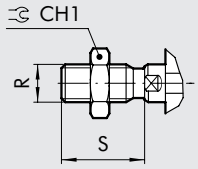
++ = ADD TWICE THE STROKE

	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	ØE H9	F	G	G1	G2	H	H1	K	K1
Ø 32	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	–	12	10	17	48.5	6	4	154	117.5	81	7.5	7.5	–	–
Ø 40	56	38	42	–	12	10	17	57.5	6	4	162.5	123.5	84.5	7.5	7.5	–	–
Ø 50	67	46.5	50	–	16	13	19	69	6	4	163.5	124	85	7.5	7.5	–	–
Ø 63	80	56.5	62	13	16	13	19	82	8	4	182	138	94	7.5	7.5	–	–
Ø 80	102	72	82	17	20	17	24	105	8	4	204.5	155	105.5	8.5	–	10.5	10.5
Ø100	123	89	103	21	25	22	30	126	8	4	243	184	125.5	10.5	–	14.5	14.5

	L	M	N	N1	N2	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S
Ø 32	4	14	160	123.5	87	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
Ø 40	4.5	14	169	130	91	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
Ø 50	4.5	16	171	131.5	92.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
Ø 63	5.5	16	189.5	145.5	101.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
Ø 80	5.5	20	212.5	163	113.5	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32
Ø100	5.5	24	253	194	135.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40

DIMENSIONS OF MULTI-POSITION Ø 12÷25 - 3-STAGES





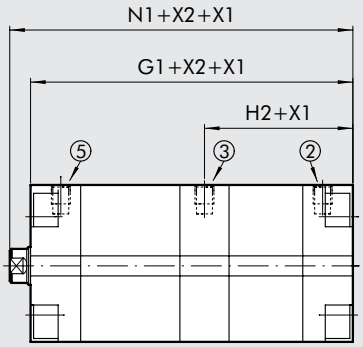


230-240

1 = SENSOR SLOT
2 = CYLINDER 1 OUT
3 = CYLINDER 2 OUT
4 = CYLINDER 3 OUT
5 = CULINDERS 1-2-3 IN

X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE
X3 = CYLINDER 3 STROKE

MULTI-POSITION 2-STAGES



2 = CYLINDER 1 OUT
3 = CYLINDER 2 OUT
5 = CULINDERS 1-2 IN

X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE

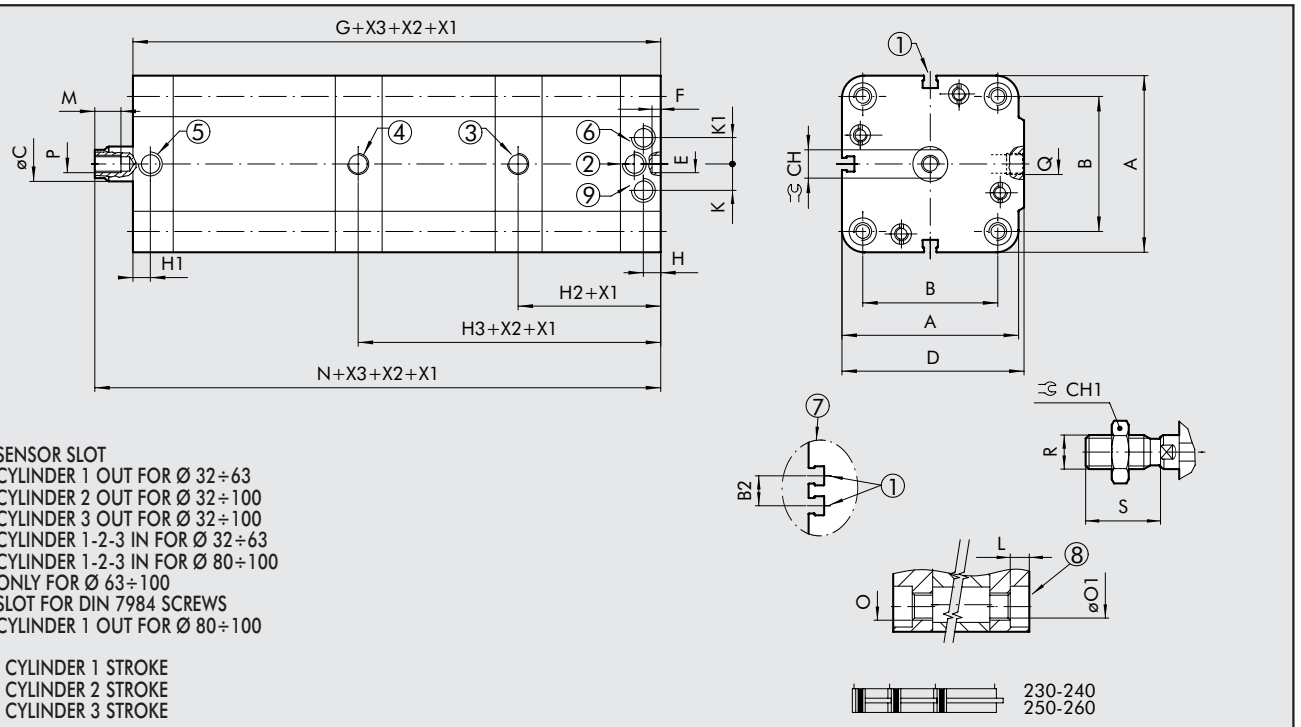


230-240

	A	B	ØC	CH	CH1	D	ØE H9	F	G	G1	H	H1	H2	H3	L	M	N	N1	O	P	Q	R	S
Ø 12	29	18	6	5	10	30	6	4	89	63.5	8	8	33.5	59	10	8	93.5	68	M4	M3	M5	M6	16
Ø 16	29	18	8	7	13	30	6	4	89	63.5	8	8	33.5	59	10	10	93.5	68	M4	M4	M5	M8	20
Ø 20*	36.5	22	10	8	17	37.5	6	4	89	63.5	8	8	33.5	59	10	12	93.5	68	M5	M5	M5	M10x1.25	22
Ø 25*	40.5	26	10	8	17	41.5	6	4	92	66	8	8	34	60	10	12	97.5	71.5	M5	M5	M5	M10x1.25	22

*Standard UNITOP

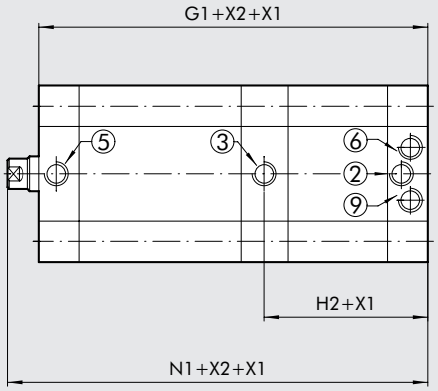
DIMENSIONS OF MULTI-POSITION Ø 32÷100 - 3-STAGES



1 = SENSOR SLOT
2 = CYLINDER 1 OUT FOR Ø 32÷63
3 = CYLINDER 2 OUT FOR Ø 32÷100
4 = CYLINDER 3 OUT FOR Ø 32÷100
5 = CYLINDER 1-2-3 IN FOR Ø 32÷63
6 = CYLINDER 1-2-3 IN FOR Ø 80÷100
7 = ONLY FOR Ø 63÷100
8 = SLOT FOR DIN 7984 SCREWS
9 = CYLINDER 1 OUT FOR Ø 80÷100

X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE
X3 = CYLINDER 3 STROKE

MULTI-POSITION 2-STAGES



2 = CYLINDER 1 OUT FOR Ø 32÷63
3 = CYLINDER 2 OUT FOR Ø 32÷100
5 = CYLINDER 1-2 IN FOR Ø 32÷63
6 = CYLINDER 1-2 IN FOR Ø 80÷100
9 = CYLINDER 1 OUT FOR Ø 80÷100

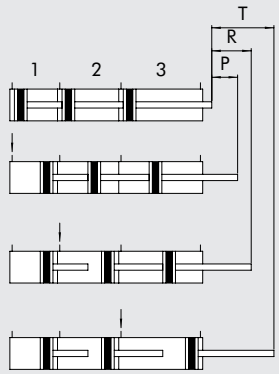
X1 = CYLINDER 1 STROKE
X2 = CYLINDER 2 STROKE

	A	B ISO	B UNITOP	B2	ØC	CH	CH1	D	ØE H9	F	G	G1	H	H1	H2	H3
Ø 32	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	–	12	10	17	48.5	6	4	117.5	81	7.5	7.5	44	80.5
Ø 40	56	38	42	–	12	10	17	57.5	6	4	123.5	84.5	7.5	7.5	46.5	85.5
Ø 50	67	46.5	50	–	16	13	19	69	6	4	124	85	7.5	7.5	47	86
Ø 63	80	56.5	62	13	16	13	19	82	8	4	138	94	7.5	7.5	51.5	95.5
Ø 80	102	72	82	17	20	17	24	105	8	4	155	105.5	8.5	–	58	107.5
Ø100	123	89	103	21	25	22	30	126	8	4	184	125.5	10.5	–	69.3	128

	K	K1	L	M	N	N1	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	P	Q	R	S
Ø 32	–	–	4	14	123.5	87	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
Ø 40	–	–	4.5	14	130	91	M6	M6	5.2	5.2	M6	G1/8	M10x1.25	22
Ø 50	–	–	4.5	16	131.5	92.5	M8	M8	6.2	6.2	M8	G1/8	M12x1.25	24
Ø 63	–	–	5.5	16	145.5	101.5	M8	M10	6.2	8.5	M8	G1/8	M12x1.25	24
Ø 80	10.5	10.5	5.5	20	163	113.5	M10	M10	8.5	8.5	M10	G1/8	M16x1.5	32
Ø100	14.5	14.5	5.5	24	194	135.5	M10	M10	8.5	8.5	M12	G1/4	M20x1.5	40

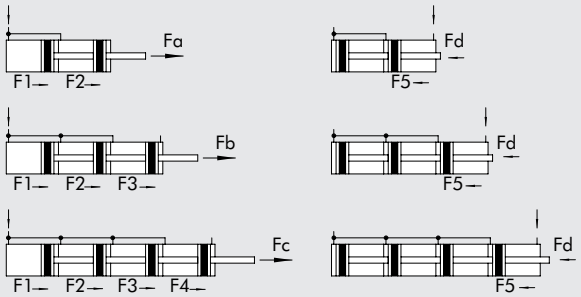
FUNCTIONAL DIAGRAMS

MULTI-POSITION



1 = STAGE 1
2 = STAGE 2
3 = STAGE 3

TANDEM



LEGENDA

P = Stage 1 stroke
R = Stage 2 stroke
T = Stage 3 stroke

Fa = F1+F2 [N]
Fb = F1+F2+F3 [N]
Fc = F1+F2+F3+F4 [N]
Fd = F5 [N]

KEY TO CODE

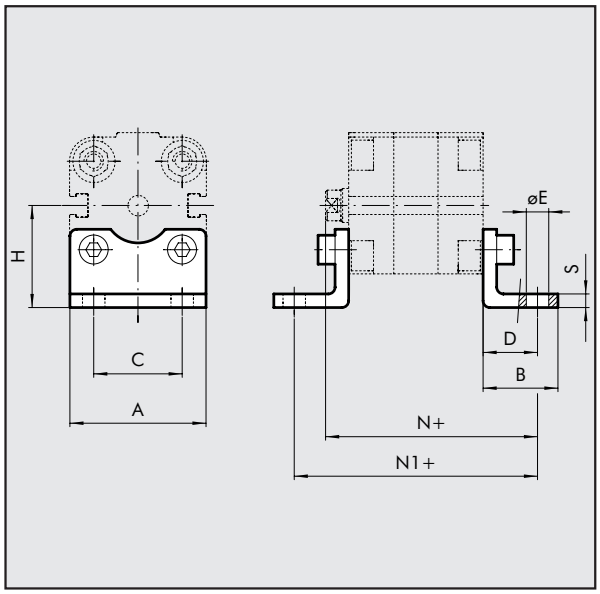
CYL	2 3	1	0	2 5	0	0 5 0	X	P
	TYPE			BORE		STROKE	CONFIGURATION	
	23 Compact cylinder centre distances to UNITOP male piston rod 24 Compact cylinder centre distances to UNITOP female piston rod 25 ■ Compact cylinder centre distances to ISO male piston rod 26 ■ Compact cylinder centre distances to ISO female piston rod	0 Double-acting 1 Double-acting through-rod 2 ✚ Double-acting through-rod perforated 3 ● Single-acting retracting piston rod 4 ● Single-acting extended piston rod 5 ● Single-acting through-rod 6 ● ✚ Single-acting through piston rod perforated 7 ▼ Double-acting non-rotating A Double-acting through-rod non-rotating	0 Magnetic S Non-magnetic ▲G No stick slip	12 16 20 25 32 40 50 63 80 ♦100	0 Standard ✚A 2-stage tandem ✚B 3-stage tandem ✚C 4-stage tandem P Stage 1 R Stage 2 T Stage 3		✱C C45 piston rod Chromium-plated X Stainless steel piston rod	P Polyurethane gaskets

♦ In the code of cylinder with letter in fourth position Ø 100 becomes A1
■ Codes only for cylinders Ø 32÷100
● Can also be used as double-acting with spring return
▼ For versions 24 and 26 only (female piston rod)
✚ Available from Ø 20
▲ Standard for ø12÷25
✱ Available from Ø 32

Examples of codes – the ordering codes for a Multi-position cylinder is a combination of several codes, each describing a stage.
Multi-position cylinder:
Stage 1: CIL 240 0 25 P ... XP
Stage 2: CIL 240 0 25 R ... XP
Stage 3: CIL 240 0 25 T ... XP

ACCESSORIES

FOOT - MODEL A



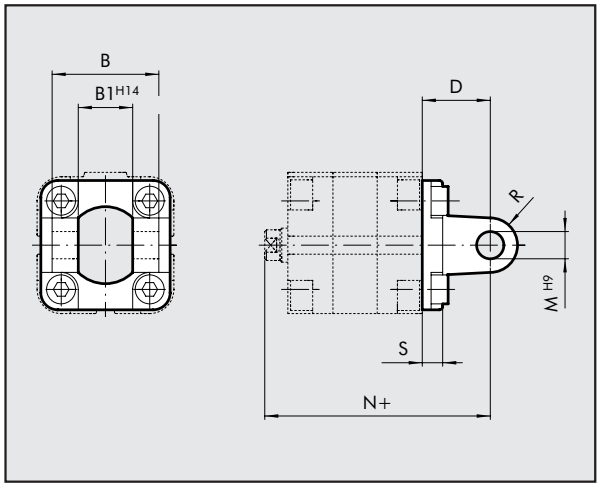
	UNITOP Codes	Ø	A	B	C	D	ØE	H	N	N1	S	Weight [g]
▲	W0950126001	12	30	17.5	18	13	5.5	22	55.5	64	3	26
▲	W0950126001	16	30	17.5	18	13	5.5	22	55.5	64	3	26
	W0950206001	20	36	22	22	16	6.6	27	58.5	70	4	46
	W0950256001	25	40	22	26	16	6.6	30	58.5	70	4	52
	W0950322001	32	45	35	32	24	7	31.9	74.5	92.5	4	76
	W0950406001	40	60	28	42	20	9	42.5	72	85.5	5	88
	W0950506001	50	68	32	50	24	9	47	77	93.5	6	176
	W0950636001	63	84	39	62	27	11	59.5	84.5	104	6	276
	W0950806001	80	102	42	82	30	11	65.5	94	116	8	392
	W0951006001	100	123	45	103	33	13.5	78	109.5	132.5	8	558

ISO Codes	Ø	A	B	C	D	ØE	H	N	N1	S	Weight [g]
W0950322001	32	45	35	32	24	7	31.9	74.5	92.5	4	76
W0950402001	40	52	43	36	28	9	36	80	101.5	4	100
W0950502001	50	65	47	45	32	9	45	85	109.5	4	162
W0950632001	63	75	47	50	32	9	50	89.5	114	6	266
W0950802001	80	95	61	63	41	12	63	105	138	6	456
W0951002001	100	115	65	75	41	14	71	117.5	148.5	6	572

▲ Non UNITOP norm fixing distance

Note: Individually packed with 2 screws.

FEMALE HINGE-MODEL B

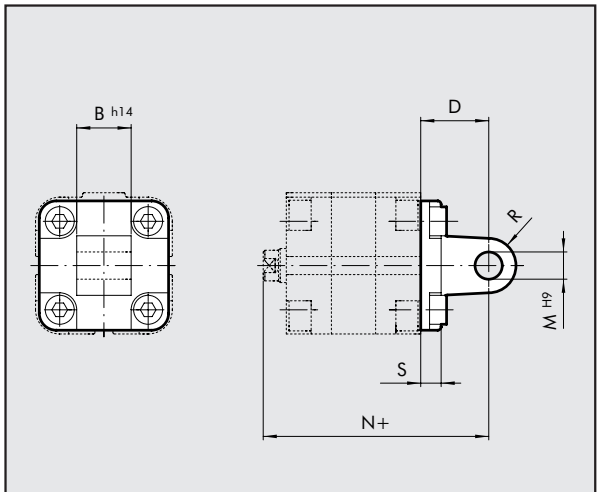


UNITOP Codes	Ø	B	B1	D	M	N	R	S	Weight [g]
W0950322003	32	45	26	22	10	72.5	11	10	116
W0950406003	40	52	28	25	12	77	12.5	9	184
W0950506003	50	60	32	27	12	80	12.5	11	266
W0950636003	63	70	40	32	16	89.5	15	11	470
W0950806003	80	90	50	36	16	100	15	13	670
W0951006003	100	110	60	41	20	117.5	20	15	1110

ISO Codes	Ø	B	B1	D	M	N	R	S	Weight [g]
W0950322003	32	45	26	22	10	72.5	11	10	74
W0950402003	40	52	28	25	12	77	13	10	116
W0950502003	50	60	32	27	12	80	13	12	176
W0950632003	63	70	40	32	16	89.5	17	12	468
W0950802003	80	90	50	36	16	100	17	16	536
W0951002003	100	110	60	41	20	117.5	21	16	925

Note: Supplied with 4 screws, 4 washers, 2 snap-rings and 1 pin.

MALE HINGE-MODEL BA



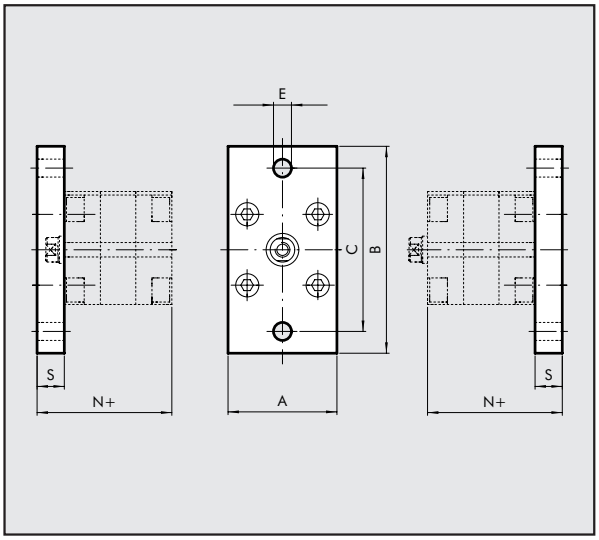
	UNITOP Codes	Ø	B	D	M	N	R	S	Weight [g]
▲	W0950126004	12	12	16	6	58.5	6	6	24
▲	W0950126004	16	12	16	6	58.5	6	6	24
	W0950206004	20	16	20	8	62.5	8	6	44
	W0950256004	25	16	20	8	62.5	8	6	48

ISO Codes	Ø	B	D	M	N	R	S	Weight [g]
W0950322004	32	26	22	10	72.5	11	10	94
W0950402004	40	28	25	12	77	13	10	124
W0950502004	50	32	27	12	80	13	12	220
W0950632004	63	40	32	16	89.5	17	12	316
W0950802004	80	50	36	16	100	17	16	578
W0951002004	100	60	41	20	117.5	21	16	850

▲ Non UNITOP norm fixing distance

Note: Supplied with 4 screws, 4 washers

FLANGE Ø 12÷25 - MODEL C (FRONT AND REAR)

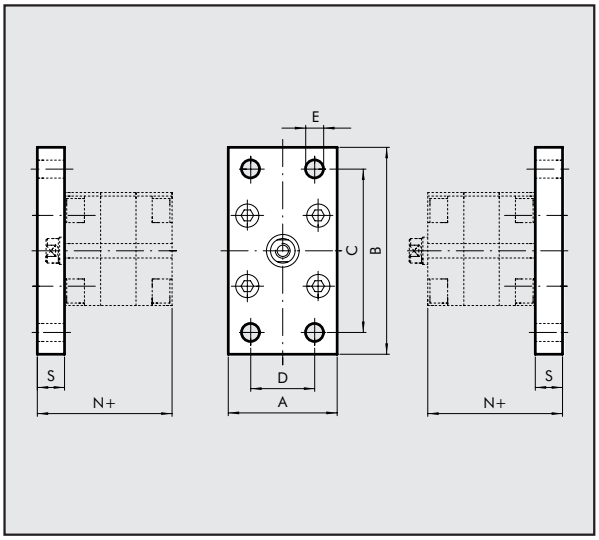


	Codes	Ø	A	B	C	E	N	S	Weight [g]
▲	W0950126002	12	29	55	43	5.5	48	10	112
▲	W0950126002	16	29	55	43	5.5	48	10	112
	W0950206002	20	36	70	55	6.6	48	10	184
	W0950256002	25	40	76	60	6.6	49.5	10	226

▲ Non UNITOP norm fixing distance

Note: Supplied with 4 screws.

FLANGE Ø 32÷100 - MODEL C (FRONT AND REAR)

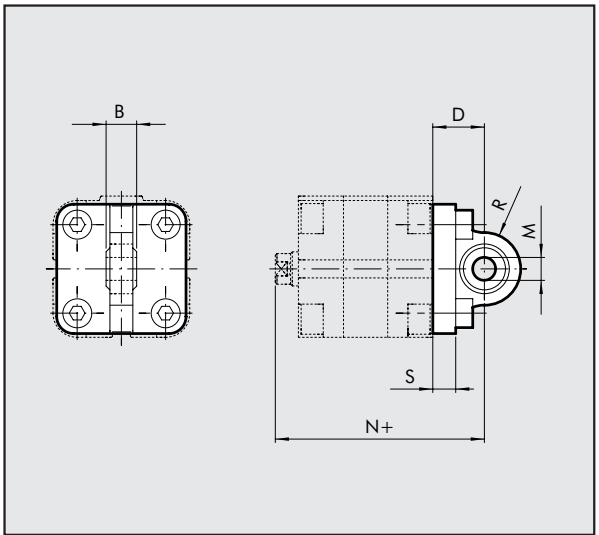


UNITOP Codes	Ø	A	B	C	D	E	N	S	Weight [g]
W0950322002	32	50	80	64	32	7	54.5	10	246
W0950406002	40	60	102	82	36	9	55.5	10	454
W0950506002	50	68	110	90	45	9	57.5	12	655
W0950636002	63	87	130	110	50	9	65	15	1255
W0950806002	80	107	160	135	63	12	71	15	1900
W0951006002	100	128	190	163	75	14	81.5	15	2700

ISO Codes	Ø	A	B	C	D	E	N	S	Weight [g]
W0950322002	32	50	80	64	32	7	54.5	10	246
W0950402002	40	55	90	72	36	9	55.5	10	290
W0950502002	50	65	110	90	45	9	57.5	12	522
W0950632002	63	75	120	100	50	9	62	12	670
W0950802002	80	95	153	126	63	12	72	16	1420
W0951002002	100	115	178	150	75	14	82.5	16	2040

Note: Supplied with 4 screws.

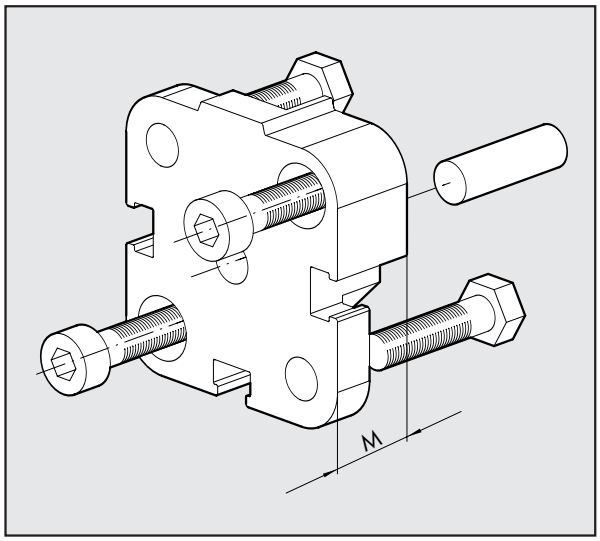
ARTICULATED MALE HINGE - MODEL BAS



ISO Codes	Ø	B	D	M	N	R	S	Weight [g]
W0950322006	32	14	22	10	72.5	16	10	106
W0950402006	40	16	25	12	77	19	10	142
W0950502006	50	16	27	12	80	19	12	236
W0950632006	63	21	32	16	89.5	24	12	336
W0950802006	80	21	36	16	100	24	16	572
W0951002006	100	25	41	20	117.5	30	16	840

Note: Supplied with 4 screws, 4 washers.

FLANGE FOR OPPOSITE CYLINDERS

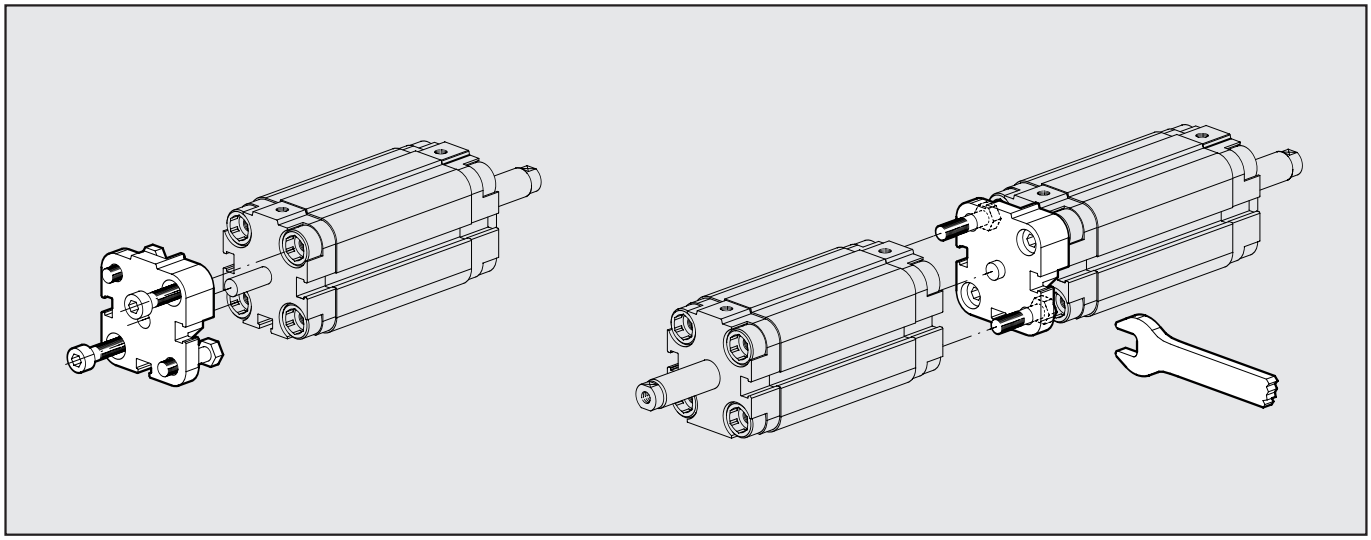


	UNITOP Codes	ISO Codes	Ø	M	Weight [g] UNITOP	ISO
▲	0950123060	–	12	12.5	29	–
▲	0950123060	–	16	12.5	29	–
	0950203060	–	20	12.5	45	–
	0950253060	–	25	13	57	–
	0950323060	0950323060	32	14.5	88	88
	0950403060	0950403061	40	14.5	106	106
	0950503060	0950503061	50	14.5	172	158
	0950633060	0950633061	63	14.5	274	258
	0950803060	0950803061	80	16.5	470	452
	0951003060	0951003061	100	19.5	826	801

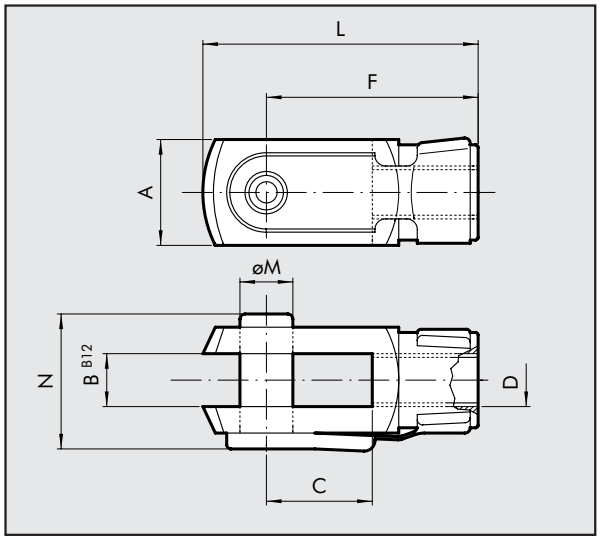
▲ Non UNITOP norm fixing distance

Note: Supplied complete with 1 pin, 4 screws.

ASSEMBLING OPPOSING CYLINDERS



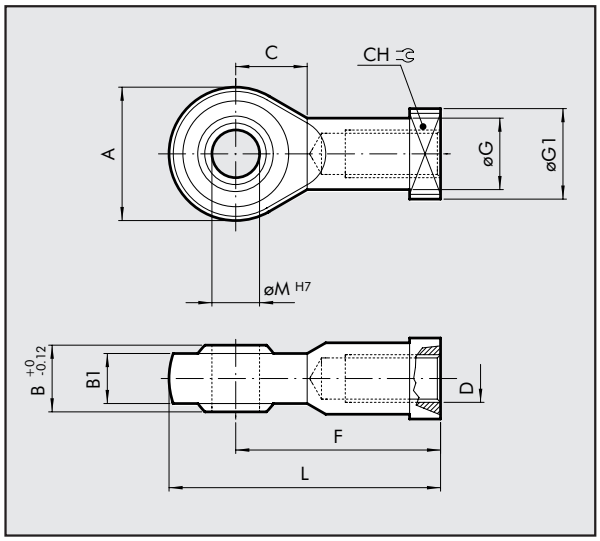
FORK - MODEL GK-M



UNITOP-ISO Codes	Ø	A	B	C	D	F	L	ØM	N	Weight [g]
W0950120020	12	12	6	12	M6	24	31	6	16	20
W0950200020	16	16	8	16	M8	32	42	8	22	48
W0950322020	20	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	25	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	32	20	10	20	M10x1.25	40	52	10	26	92
W0950322020	40	20	10	20	M10x1.25	40	52	10	26	92
W0950402020	50	24	12	24	M12x1.25	48	62	12	32	148
W0950402020	63	24	12	24	M12x1.25	48	62	12	32	148
W0950502020	80	32	16	32	M16x1.5	64	83	16	40	340
W0950802020	100	40	20	40	M20x1.5	80	105	20	48	690

Note: Individually packed.

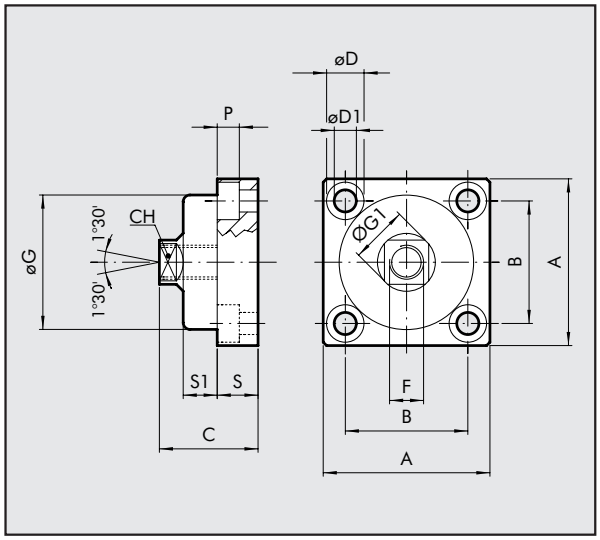
ROD EYE - MODEL GA-M



UNITOP-ISO codes	Ø	A	B	B1	C	CH	D	F	ØG	ØG1	L	ØM	Weight [g]
W0950120025	12	20	9	6.75	11	11	M6	30	10	13	40	6	28
W0950200025	16	24	12	9	13	14	M8	36	12.5	16	48	8	50
W0950322025	20	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	25	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	32	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950322025	40	28	14	10.5	15	17	M10x1.25	43	15	19	57	10	78
W0950402025	50	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950402025	63	32	16	12	17	19	M12x1.25	50	17.5	22	66	12	116
W0950502025	80	42	21	15	23	22	M16x1.5	64	22	27	85	16	226
W0950802025	100	50	25	18	27	30	M20x1.5	77	27.5	34	102	20	404

Note: Individually packed.

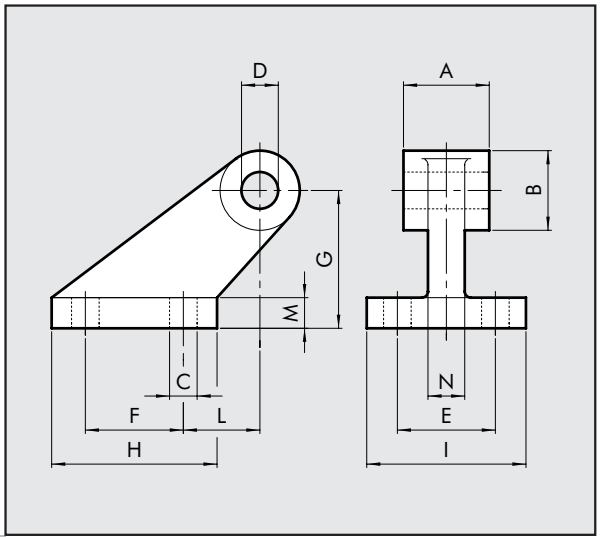
COMPENSATION JOINT - MODEL GA



UNITOP-ISO Codes	Ø	A	B	C	CH	ØD	ØD1	F	ØG	ØG1	P	S	S1	Weight [g]
W0950326021	20	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	25	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	32	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950326021	40	49	36	30	13	11	6.5	M10x1.25	39.5	17	6.5	12	10	172
W0950406021	50	59	42	36	15	14	8.5	M12x.125	44	19	8.5	15	13.5	286
W0950406021	63	59	42	36	15	14	8.5	M12x1.25	44	19	8.5	15	13.5	286
W0950506021	80	79	58	44	22	17	10.5	M16x1.5	59	26	10.5	20	15	628
W0950806021	100	89	65	51	27	19	12.5	M20x1.5	69	31	12.5	20	20	1200

Note: Individually packed.

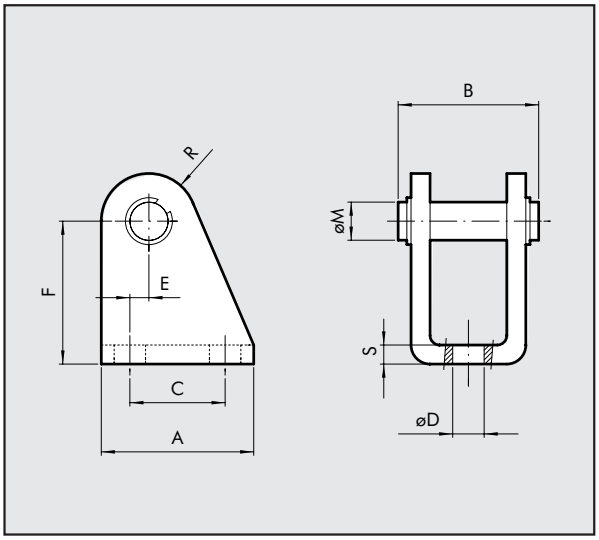
COUNTER-HINGE CETOP Ø 32÷100



UNITOP-ISO Codes	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985

Note: Supplied complete with 4 screws, 4 washers.

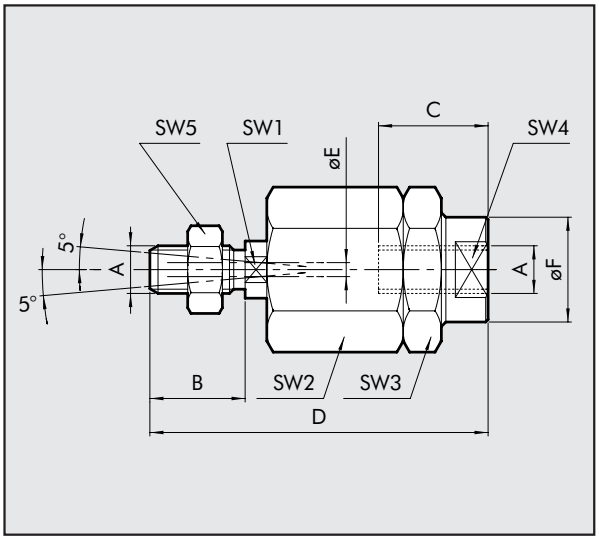
COUNTER-HINGE Ø 16÷25 - MODEL BC



UNITOP Codes	Ø	A	B	C	ØD	E	F	ØM	R	S	Weight [g]
W0950120005	12	25	25	15	5.5	2	27	6	7	3	40
W0950120005	16	25	25	15	5.5	2	27	6	7	3	40
W0950200005	20	32	30	20	6.5	4	30	8	10	4	78
W0950200005	25	32	30	20	6.5	4	30	8	10	4	78

Note: Supplied complete with 1 pin and and 2 snap rings

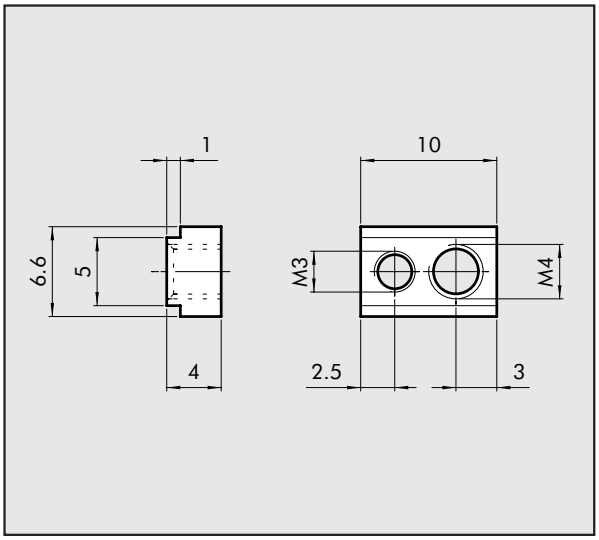
SELF ALIGNING ROD COUPLER - MODEL GA-K



UNITOP-ISO Codes	Ø	A	B	C	D	ØE	ØF	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950120030	12	M6	10	10	35	2	8.5	5	13	13	7	10	24
W0950200030	16	M8	20	20	57	4	12.5	7	17	17	11	13	56
W0950322030	20	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	25	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	32	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950322030	40	M10x1.25	20	20	71	4	22	12	30	30	19	17	216
W0950402030	50	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950402030	63	M12x1.25	24	20	75	4	22	12	30	30	19	19	220
W0950502030	80	M16x1.5	32	32	103	4	32	20	41	41	30	24	620
W0950802030	100	M20x1.5	40	40	119	4	32	20	41	41	30	30	680

Note: Individually packed.

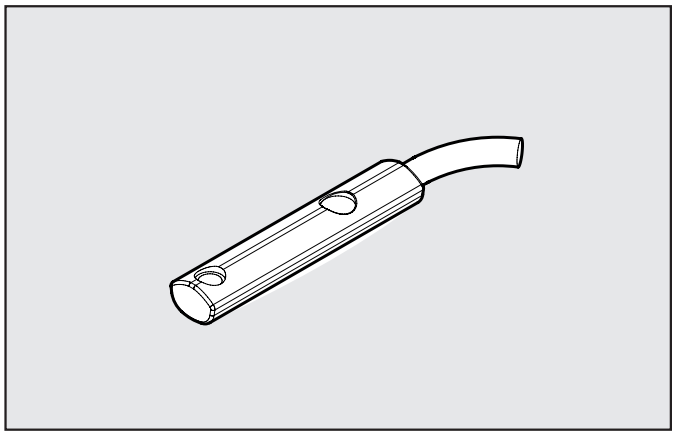
SLOTTED FIXINGPLATE



Code	Description	Weight [g]
0950003000	FIXING BLOCK	2

Note: Supplied complete with 1 M3 grub screw and 1 M4 grub screw.

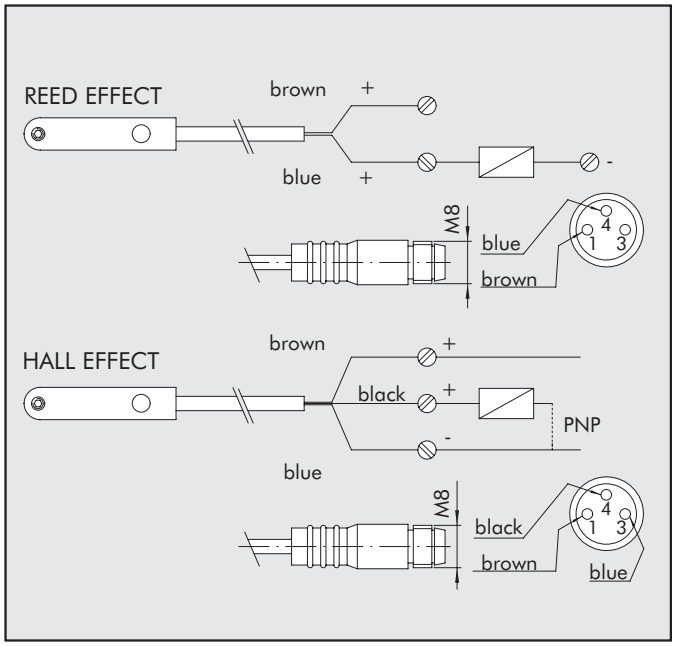
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

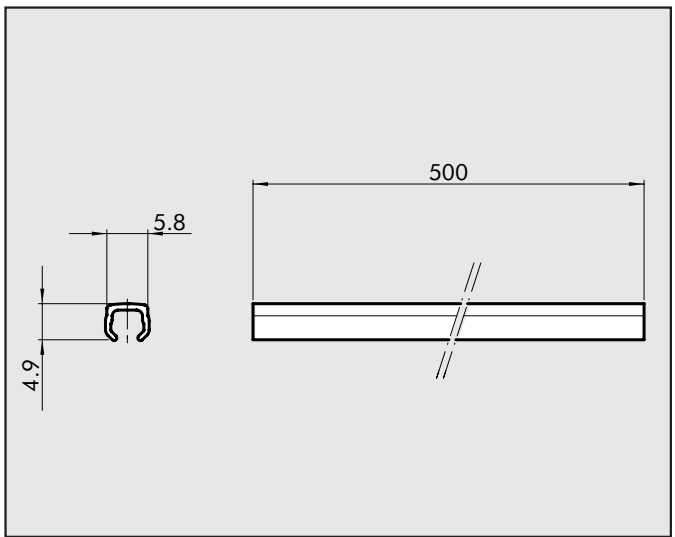
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

BAR FOR GROOVING

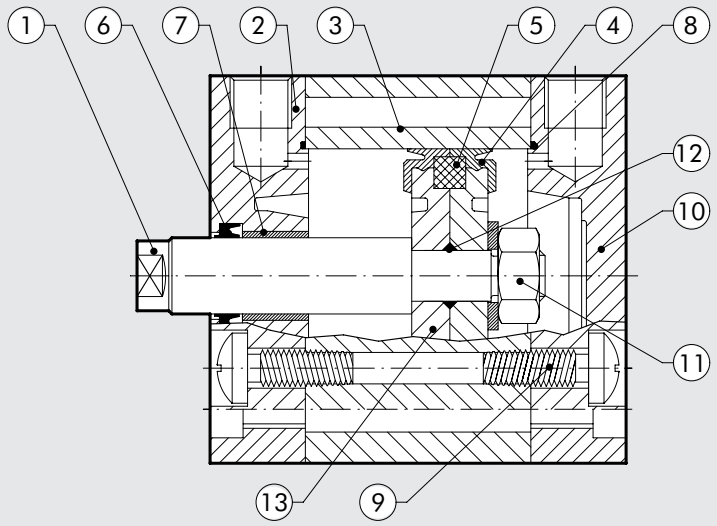


Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: The code corresponds to 1 piece.

SPARE PARTS

COMPACT CYLINDERS, SERIES CMPC

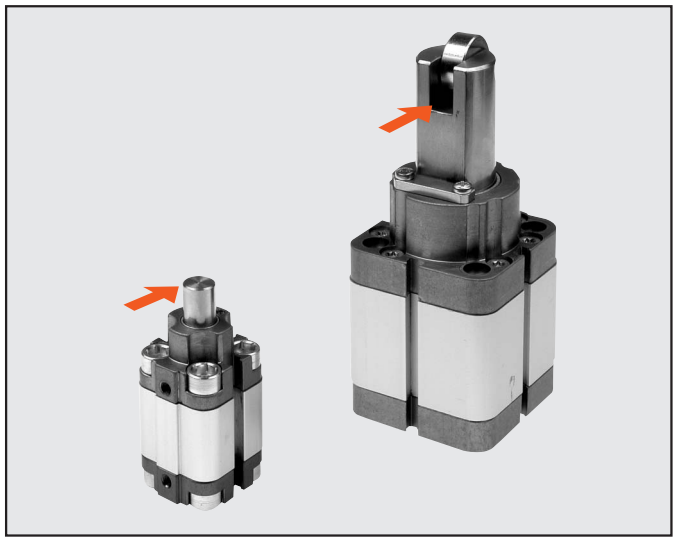


Type	Parts	Bores	Codes
Complete set of gaskets	④ ⑥ ⑧	Ø 12÷100	009 . . . 7001
Front cylinder head kit for UNITOP	② ⑦ ⑥ ⑧	Ø 12÷100	009 . . . 7101
Front cylinder head kit for ISO Ø 32	② ⑦ ⑥ ⑧	Ø 32	0090327101
Front cylinder head kit for ISO	② ⑦ ⑥ ⑧	Ø 40÷100	009 . . . 8101
Rear cylinder head kit for UNITOP	⑧ ⑩	Ø 12÷100	009 . . . 7201
Rear cylinder head kit for ISO Ø 32	⑧ ⑩	Ø 32	0090327201
Rear cylinder head kit for ISO	⑧ ⑩	Ø 40÷100	009 . . . 8201
Front + rear cylinder head kit for UNITOP	② ⑦ ⑥ ⑧ ⑩	Ø 12÷100	009 . . . 7301
Front + rear cylinder head kit for ISO Ø 32	② ⑦ ⑥ ⑧ ⑩	Ø 32	0090327301
Front + rear cylinder head kit for ISO	② ⑦ ⑥ ⑧ ⑩	Ø 40÷100	009 . . . 8301
Piston kit	④ ⑤ ⑪ ⑫ ⑬	Ø 12÷100	009 . . . 7401
Magnet	⑤	Ø 12÷100	009 . . . 7501
Front + rear cylinder head + piston kit for UNITOP	② ④ ⑤ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫ ⑬	Ø 12÷100	009 . . . 7901
Front + rear cylinder head + piston kit for ISO Ø 32	② ④ ⑤ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫ ⑬	Ø 32	0090327901
Front + rear cylinder head + piston kit for ISO	② ④ ⑤ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫ ⑬	Ø 40÷100	009 . . . 8901

COMPACT STOPPER CYLINDER Ø 20, Ø 32, Ø50, Ø 80

Compact stopper cylinders designed for stopping moving parts or chucks.

- With or without magnet execution
- Single-acting, oversize extended piston rod
- Can be also used as double-acting whith spring return
- Fixing centre distances to ISO 6431 – VDMA 24562 for Ø 32, Ø50, Ø80 and French standard NFE 49-004-1 and 2 (UNITOP).
  In the relevant cylinder slots, it is possible to mount retracting magnetic sensor.



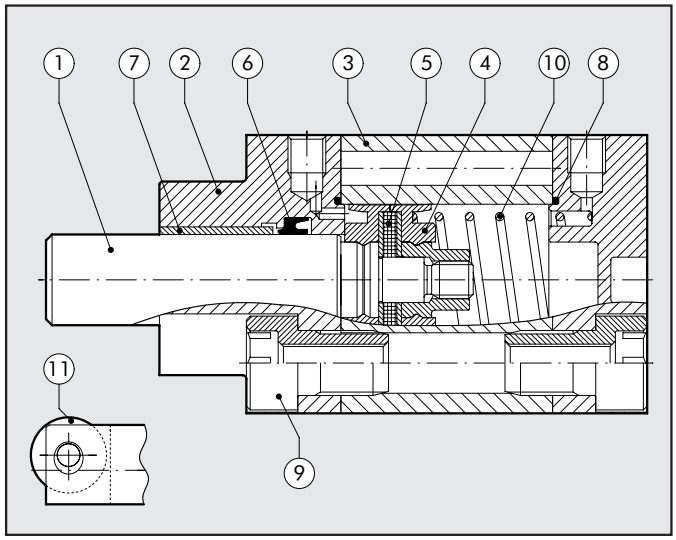
Chuck impact direction

TECHNICAL DATA

Operating pressure		max 10 bar (max 1 MPa-145 psi)
Temperature range		–10°C÷+80°C
Fluid		Unlubricated air. Lubrication, if used, must be continuous.
Stroke bore	mm	Ø 20 x15; Ø 32 x 20; Ø50 x 30; Ø 80 x 30; Ø 80 x 40 awith NFE 49-004-1 and 2 fixing centre distances (UNITOP)
	mm	Ø 32 x 20; Ø 50 x 30; Ø 80 x 30; Ø 80 x 40 with ISO 6431 VDMA24562 fixing centre distances.
Design		With profile, heads with screws
Versions		Single-acting extended rod, Can be also used as double-acting whith spring return
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.
Notes		For correct operation, it is advisable to use 50µm filtered air
Inrush pressure		Ø 20: 1,2 bar; Ø 32 e Ø 50: 1 bar; Ø 80: 0,5 bar
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/07

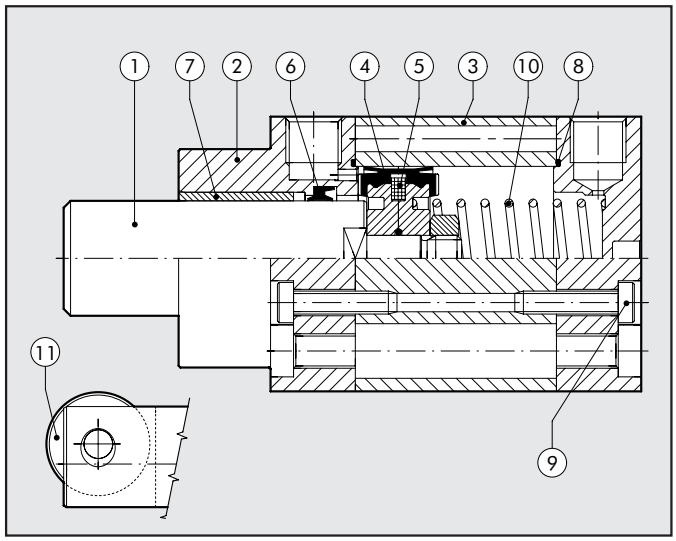
COMPONENTS Ø 20

① PISTON ROD: Stainless steel, thick chromed
② HEAD: extruded anodised aluminium alloy
③ BARREL: drawn anodised and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: neodymium-plastic
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑧ STATIC O-RINGS: NBR
⑨ SECURING SCREWS: zinc-plated steel
⑩ RETURN SPRING: spring stainless steel
⑪ WHEEL: zinc-plated steel

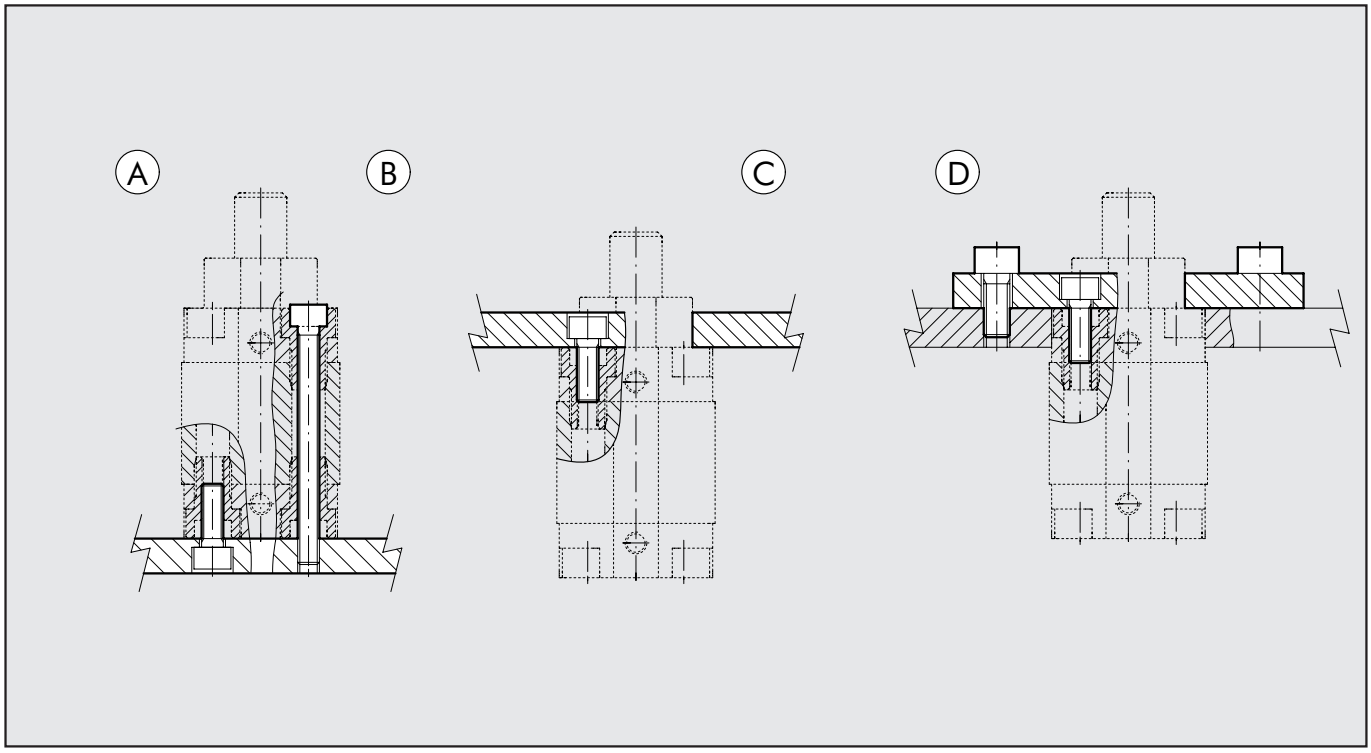


COMPONENTS Ø 32, Ø 50 e Ø 80

① PISTON ROD: Stainless steel, thick chromed
② HEAD: extruded anodised aluminium alloy
③ JACKET: drawn anodised and calibrated aluminium alloy
④ PISTON GASKET: polyurethane
⑤ MAGNET: Ø32 neodymium-plastic - Ø 50÷80 plastoferrite
⑥ PISTON ROD GASKET: polyurethane
⑦ GUIDE BUSHING: steel strip with bronze and PTFE insert.
⑧ STATIC O-rings: NBR
⑨ SECURING SCREWS: zinc-plated steel
⑩ RETURN SPRING: spring stainless steel
⑪ WHEEL: zinc-plated steel



COMPACT STOPPER CYLINDER FIXING OPTIONS

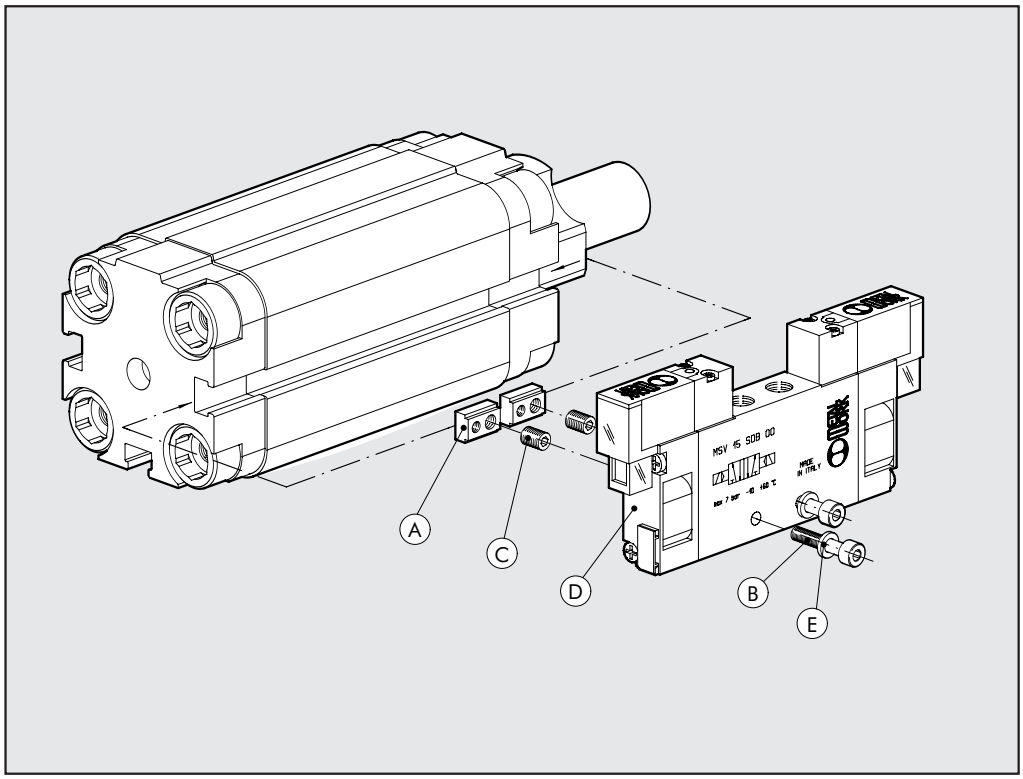


- Fixing with screws, using the thread in the rear heads (Fig. A).
- Direct fixing from above using long through screws or tie rods (Fig. B). Non-magnetic stainless steel must be used (e.g. AISI 304)
- Fixing with screws, using the thread in the front heads (Fig. C).
- Fixing using flange fixed onto the cylinder (Fig. D)

FORCE OF SPRINGS IN COMPACT STOPPER CYLINDERS (THEORETICAL)

Stroke bore	Ø 20 x 15	Ø 32 x 20	Ø 50 x 30	Ø 80 x 30	Ø 80 x 40
Min. load (N)	13,7	22,4	50,2	97,9	71,0
Max. load (N)	21,2	36,0	115,9	178,5	178,5

VALVE ASSEMBLY ON CYLINDER

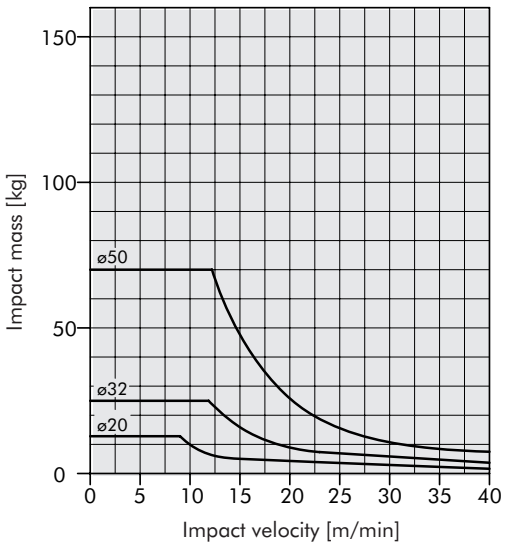


With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets. This can be done using the special plates (A) which come with both M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.
The plates are supplied complete with 2 stud pins, one M3 and one M4 (C).
After the valve centre distance and the position of the valve have been determined, the plates can be secured to the cylinder. A "position memory" will be created to facilitate subsequent maintenance on the valve.

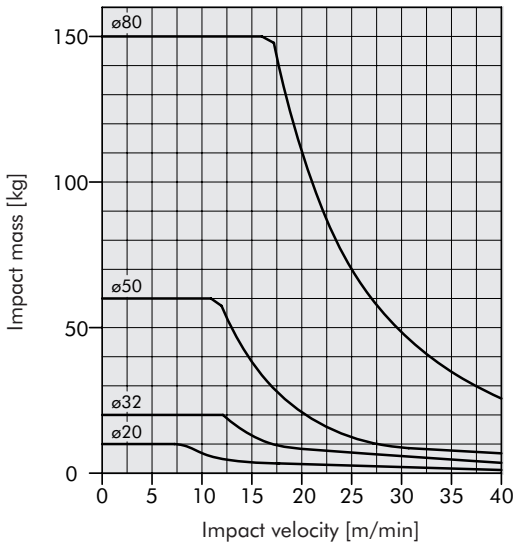
Type of valve to mount (D)	Fixing plate (A) cod. 0950003000	Position memory: grub screw (C) to be used	Screw (B) for connection to the cylinder (one per plate)	Washer (B) (one per screw)
MACH 11	n. 2	M4	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)
SERIE 70 1/8	n. 2	M3	M4x25 UNI 5931 (DIN 912)	—
SERIE 70 1/4	n. 2	M3	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)

LOAD GRAPH

TRUNNION VERSION

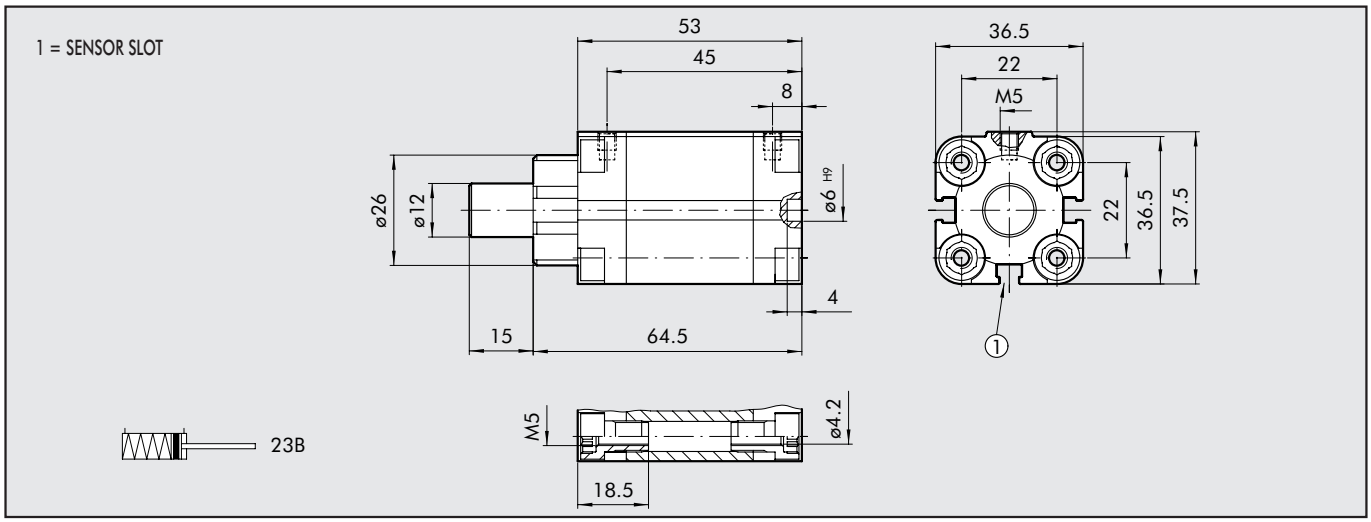


ROLLER VERSION



With stopper cylinders it is important to keep to the values shown in the graph to prevent early breakage of the mechanical parts. The values shown are only valid with about 1 mm plastic deformation (stopper on chuck).

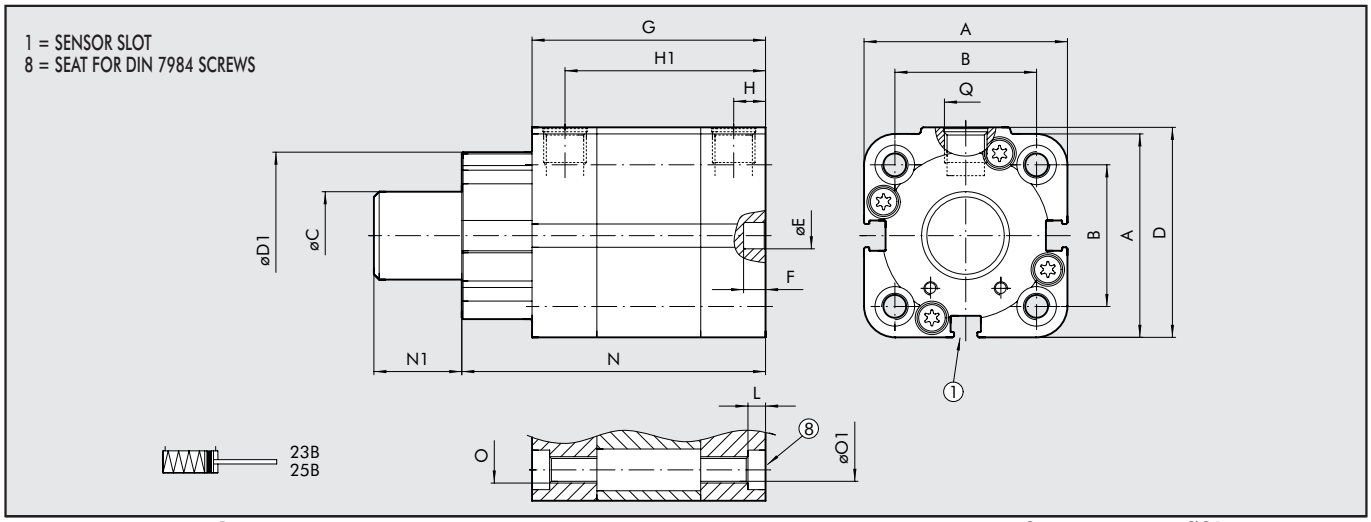
Ø20 STROKE 15 mm TRUNNION VERSION



ORDERING CODES

Code	Description
23B0200015XP	Compact stopper cylinder, trunnion ø20, stroke 15
23BS200015XP	Compact stopper cylinder, trunnion ø20, stroke 15 (non-magnetic version)

Ø 32 STROKE 20 mm; Ø 50 STROKE 30 mm TRUNNION VERSION

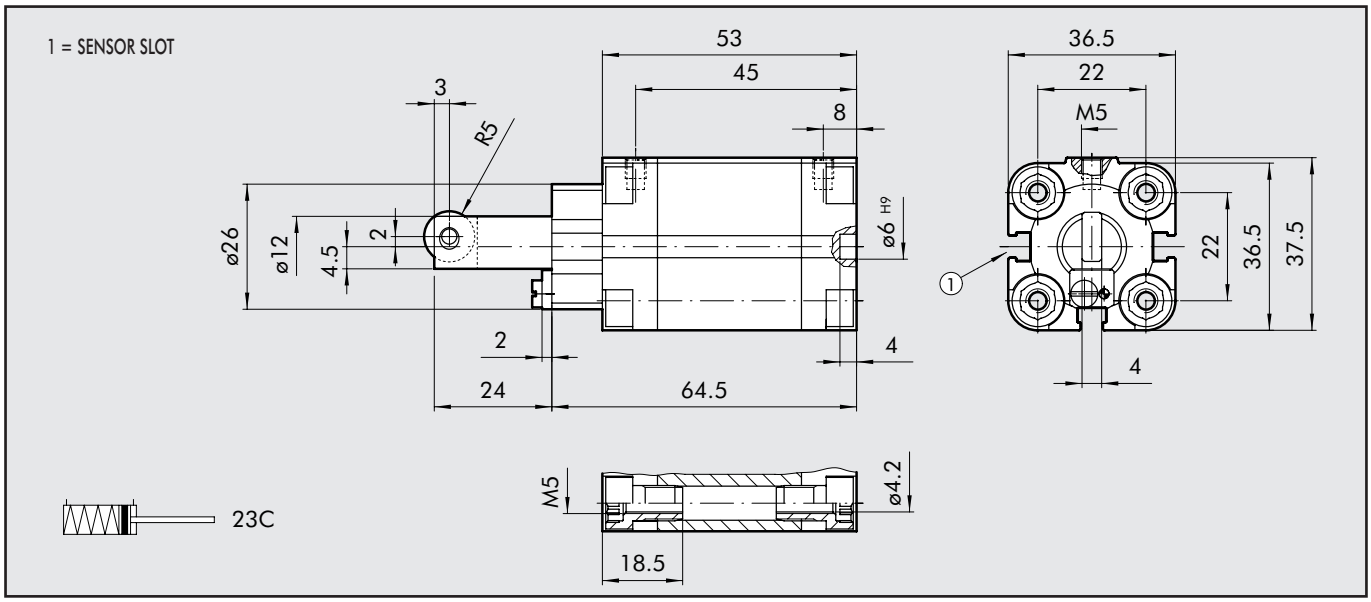


	A	B ISO	B UNITOP	ØC	D	D1	ØE H9	F	G	H	H1	L	N	N1	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP	Q
Ø 32x20	47	$32.5^{+0.1}_{-0.4}$	$32^{+0.4}_{-0.1}$	20	48.5	38	6	4	64.5	7.5	57	4	80.5	20	M6	M6	5.2	5.2	G1/8
Ø 50x30	67	46.5	50	32	69	53	6	4	75.5	7.5	68	4.5	99.5	30	M8	M8	6.2	6.2	G1/8

ORDERING CODES

Code	Description
23B0320020XP	Compact stopper cylinder, trunnion Ø32, stroke 20 UNITOP
25B0320020XP	Compact stopper cylinder, trunnion Ø32, stroke 20 ISO 6431
23BS320020XP	Compact stopper cylinder, trunnion Ø32, stroke 20 UNITOP (non-magnetic version)
25BS320020XP	Compact stopper cylinder, trunnion Ø32, stroke 20 ISO 6431 (non-magnetic version)
23B0500030XP	Compact stopper cylinder, trunnion Ø50, stroke 30 UNITOP
25B0500030XP	Compact stopper cylinder, trunnion Ø50, stroke 30 ISO 6431
23BS500030XP	Compact stopper cylinder, trunnion Ø50, stroke 30 UNITOP (non-magnetic version)
25BS500030XP	Compact stopper cylinder, trunnion Ø50, stroke 30 ISO 6431 (non-magnetic version)

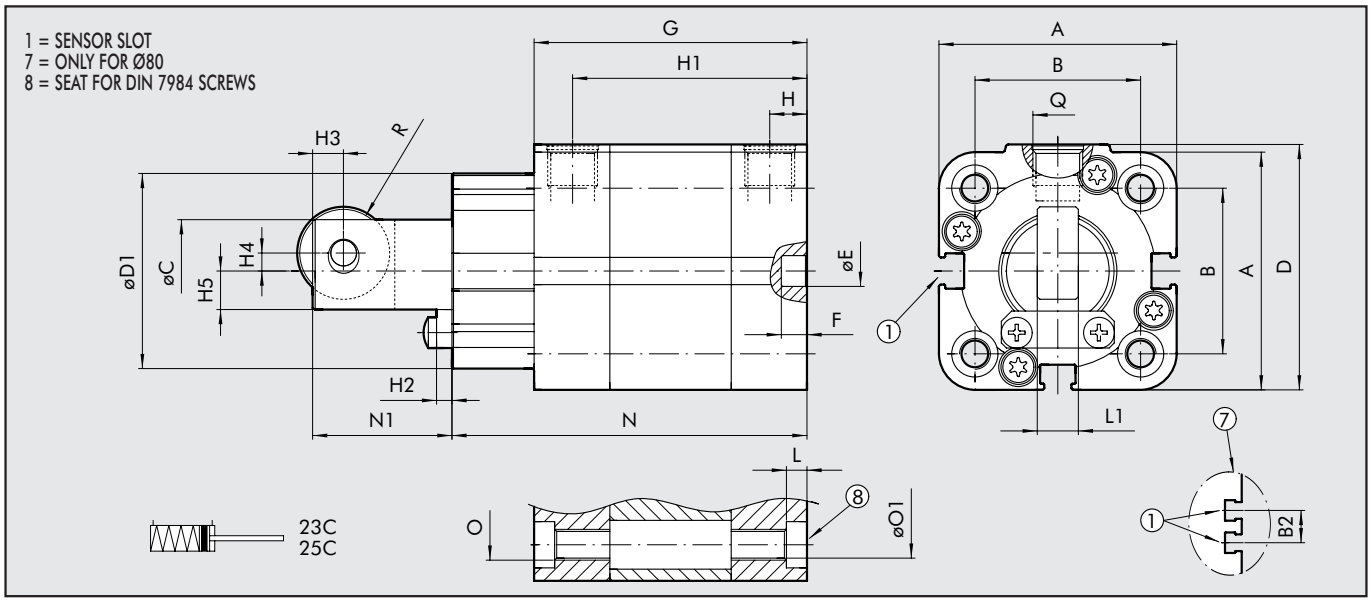
Ø20 STROKE 15 mm ROLLER VERSION



ORDERING CODES

Code	Description
23C0200015XP	Compact stopper cylinder, roller Ø20, stroke 15
23CS200015XP	Compact stopper cylinder, roller Ø20, stroke 15 (non-magnetic version)

Ø 32 STROKE 20 mm; Ø 50 STROKE 30 mm; Ø80 STROKE 30 AND 40 mm ROLLER VERSION



	A	B ISO	B UNITOP	B2	ØC	D	D1	ØE H9	G	F	H	H1	H2	H3	H4	H5	O ISO	O UNITOP	ØO1 ISO	ØO1 UNITOP
Ø 32x20	47	32.5 $^{+0.1}_{-0.4}$	32 $^{+0.4}_{-0.1}$	-	20	48.5	38	6	64.5	4	7.5	57	3	6	3.5	7.5	M6	M6	5.2	5.2
Ø 50x30	67	46.5	50	-	32	69	53	6	75.5	4	7.5	68	4	6	7	12	M8	M8	6.2	6.2
Ø 80x30	102	72	82	17	50	105	76	8	126	4	8.5	117.5	8	10	11	18	M10	M10	8.5	8.5
Ø 80x40	102	72	82	17	50	105	76	8	136	4	8.5	127.5	8	10	11	18	M10	M10	8.5	8.5

	L	L1	N	N1	Q	R
Ø 32x20	4	8	80.5	38	G1/8	9
Ø 50x30	4.5	10	99.5	50.5	G1/8	12.5
Ø 80x30	5.5	18	141	63	G1/8	18
Ø 80x40	5.5	18	151	73	G1/8	18

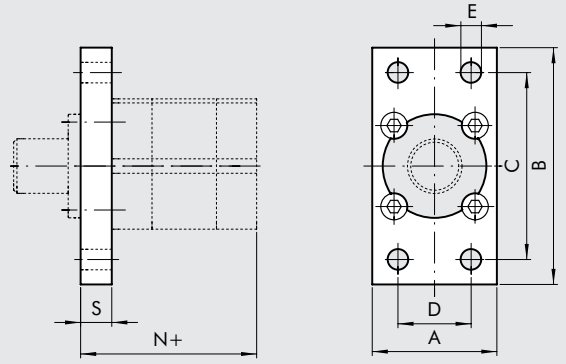
ORDERING CODES

Code	Description
23C0320020XP	Compact stopper cylinder, roller Ø32, stroke 20 UNITOP
25C0320020XP	Compact stopper cylinder, roller Ø32, stroke 20 ISO 6431
23CS320020XP	Compact stopper cylinder, roller Ø32, stroke 20 UNITOP (non-magnetic version)
25CS320020XP	Compact stopper cylinder, roller Ø32, stroke 20 ISO 6431 (non-magnetic version)
23C0500030XP	Compact stopper cylinder, roller Ø50, stroke 30 UNITOP
25C0500030XP	Compact stopper cylinder, roller Ø50, stroke 30 ISO 6431
23CS500030XP	Compact stopper cylinder, roller Ø50, stroke 30 UNITOP (non-magnetic version)
25CS500030XP	Compact stopper cylinder, roller Ø50, stroke 30 ISO 6431 (non-magnetic version)
23C0800030XP	Compact stopper cylinder, roller Ø80, stroke 30 UNITOP
25C0800030XP	Compact stopper cylinder, roller Ø80, stroke 30 ISO 6431
23CS800030XP	Compact stopper cylinder, roller Ø80, stroke 30 UNITOP (non-magnetic version)
25CS800030XP	Compact stopper cylinder, roller Ø80, stroke 30 ISO 6431 (non-magnetic version)
23C0800040XP	Compact stopper cylinder, roller Ø80, stroke 40 UNITOP
25C0800040XP	Compact stopper cylinder, roller Ø80, stroke 40 ISO 6431
23CS800040XP	Compact stopper cylinder, roller Ø80, stroke 40 UNITOP (non-magnetic version)
25CS800040XP	Compact stopper cylinder, roller Ø80, stroke 40 ISO 6431 (non-magnetic version)

NOTES

ACCESSORIES

FLANGE Ø 32, Ø 50, Ø 80



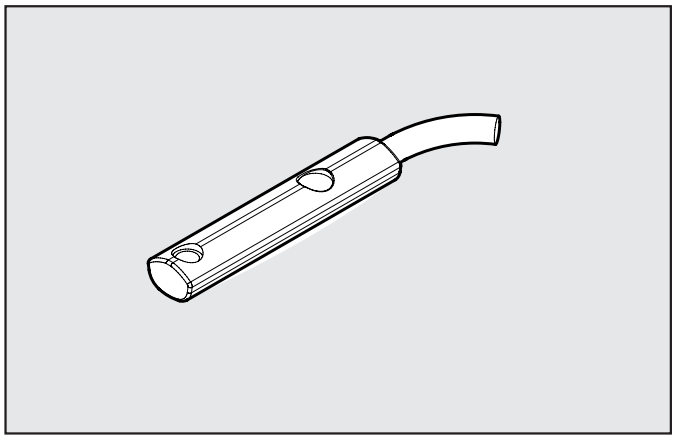
+ = ADD THE STROKE

UNITOP codes	Ø	A	B	C	D	E	N	S	Weight [g]
W0950326302	32	50	80	64	32	7	54.5	10	210
W0950506302	50	68	110	90	45	9	57.5	12	502
W0950806302	80	107	160	135	63	12	111	15	1575

ISO codes	Ø	A	B	C	D	E	N	S	Weight [g]
W0950326302	32	50	80	64	32	7	54.5	10	210
W0950506312	50	65	110	90	45	9	57.5	12	447
W0950806312	80	95	153	126	63	12	112	16	1190

Note: Supplied with 4 screws.

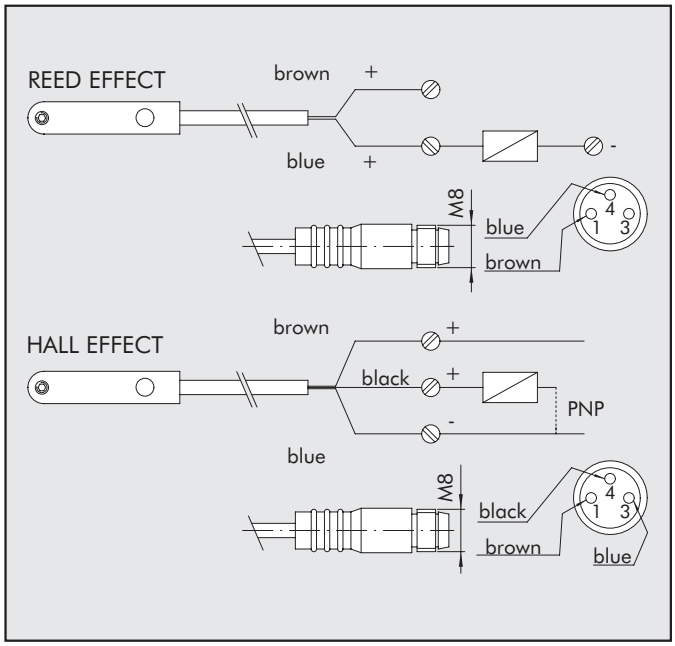
SLIM SENSOR



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

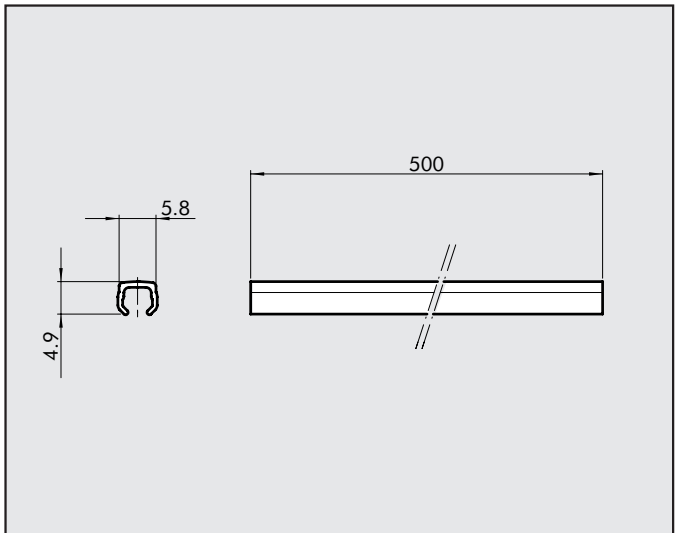
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

STRIP

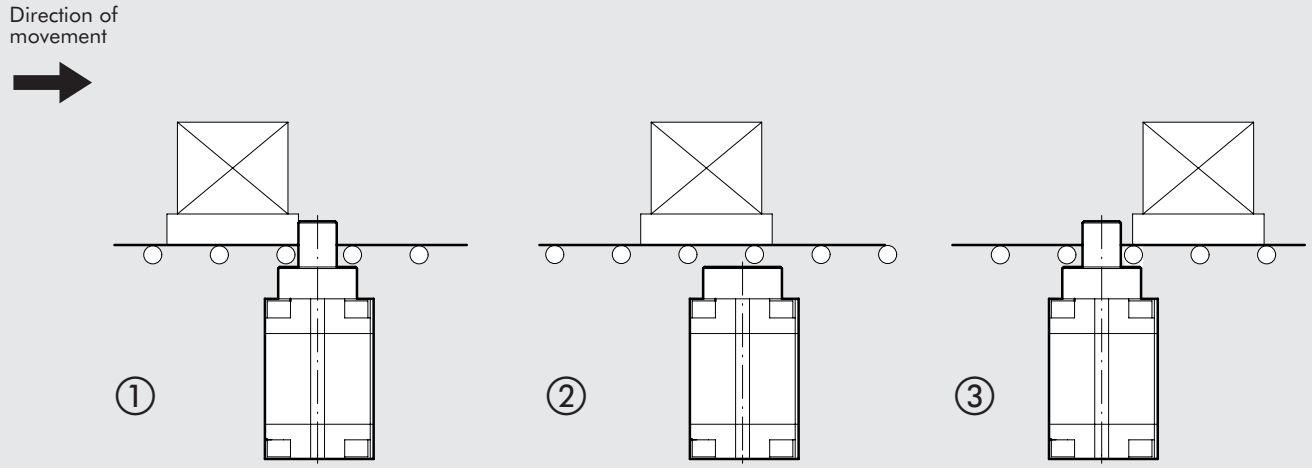


Code	Description
W0950000160	SLOT STRIP 500 mm

Note: The code corresponds to 1 piece.

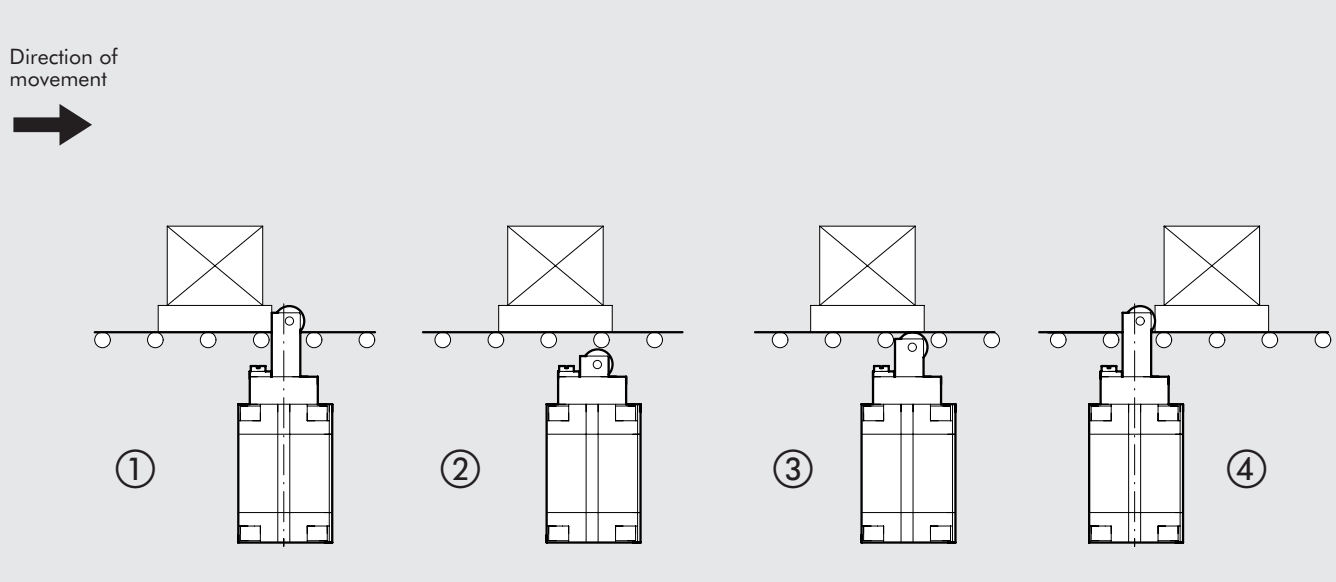
OPERATING DIAGRAMS

TRUNNION VERSION



1 - Deceleration of the chuck as it comes into contact with the piston rod, with plastic deformation of about 1 mm.
2 - The cylinder is pressurized to release the chuck.
3 - The pressure in the front chamber is maintained until the chuck has passed the stopper cylinder. The piston rod extends due to the effect of the spring and any pressure in the opposite chamber. The system is now ready to stop the next chuck.

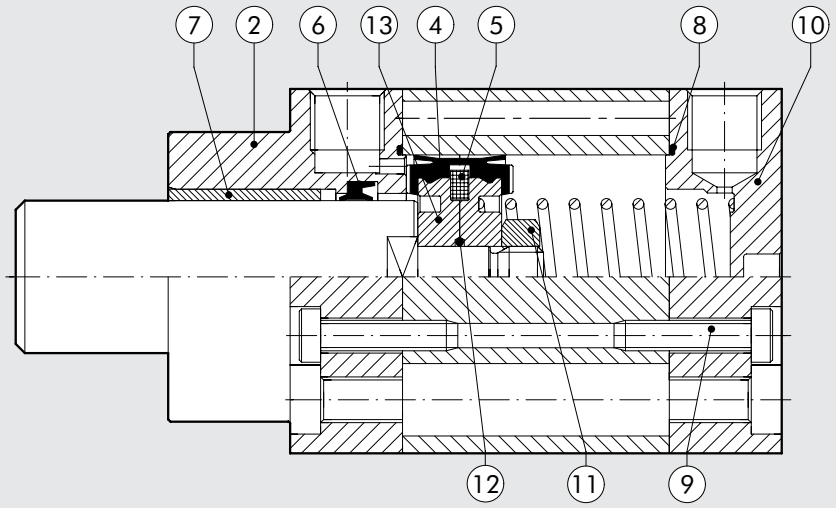
ROLLER VERSION



1 - Deceleration of the chuck as it comes into contact with the piston rod, with plastic deformation of about 1 mm.
2 - The cylinder is pressurized to release the chuck.
3 - When the pressure in the front chamber drops, the piston rod extends due to the effect of the spring or any pressure until the wheel reaches the chuck and moves it on.
4 - After the chuck has passed, the cylinder extends the piston rod fully. The system is now ready to stop the next chuck.

SPARE PARTS

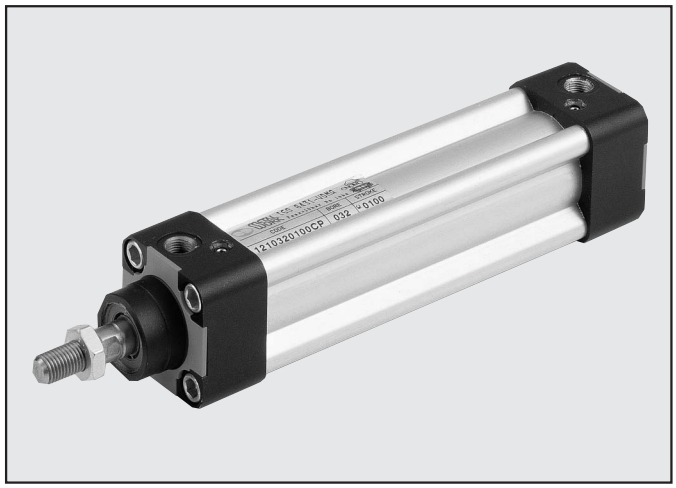
COMPACT STOPPER CYLINDERS



Type	Parts	Bores	Codes
Complete set of gaskets	④⑥⑧	Ø 20, Ø 32, Ø 50, Ø 80	009 . . . 7060
Front cylinder head kit for UNITOP	②⑦⑥⑧⑨	Ø 20, Ø 32, Ø 50, Ø 80	009 . . . 7160
Front cylinder head kit for ISO Ø 32	②⑦⑥⑧⑨	Ø 32	0090327160
Front cylinder head kit for ISO	②⑦⑥⑧⑨	Ø 50, Ø 80	009 . . . 8160
Rear cylinder head kit for UNITOP Ø20 - Ø32	⑧⑨⑩	Ø 20, Ø32	009 . . . 7201
Rear cylinder head kit for UNITOP	⑧⑨⑩	Ø 50, Ø 80	009 . . . 7260
Rear cylinder head kit for ISO Ø 32	⑧⑨⑩	Ø 32	0090327201
Rear cylinder head kit for ISO	⑧⑨⑩	Ø 50, Ø 80	009 . . . 8260
Front + rear cylinder head kit for UNITOP	②⑦⑥⑧⑨⑩	Ø 20, Ø 32, Ø 50, Ø 80	009 . . . 7360
Front + rear cylinder head kit for ISO Ø 32	②⑦⑥⑧⑨⑩	Ø 32	0090327360
Front + rear cylinder head kit for ISO	②⑦⑥⑧⑨⑩	Ø 50, Ø 80	009 . . . 8360
Piston kit Ø20	④⑤⑪	Ø 20	0090207401
Piston kit	④⑤⑪⑫⑬	Ø 32, Ø 50, Ø 80	009 . . . 7460
Magnet	⑤	Ø 20, Ø 32, Ø 50, Ø 80	009 . . . 7501
Front + rear cylinder head + piston kit for UNITOP	②④⑤⑥⑦⑧ ⑨⑩⑪⑫⑬	Ø 20, Ø 32, Ø 50, Ø 80	009 . . . 7960
Front + rear cylinder head + piston kit for ISO Ø 32	②④⑤⑥⑦⑧ ⑨⑩⑪⑫⑬	Ø 32	0090327960
Front + rear cylinder head + piston kit for ISO	②④⑤⑥⑦⑧ ⑨⑩⑪⑫⑬	Ø 50, Ø 80	009. . . 8960

CYLINDER SERIES
ISO 6431 VDMA, Ø 32-125 mm

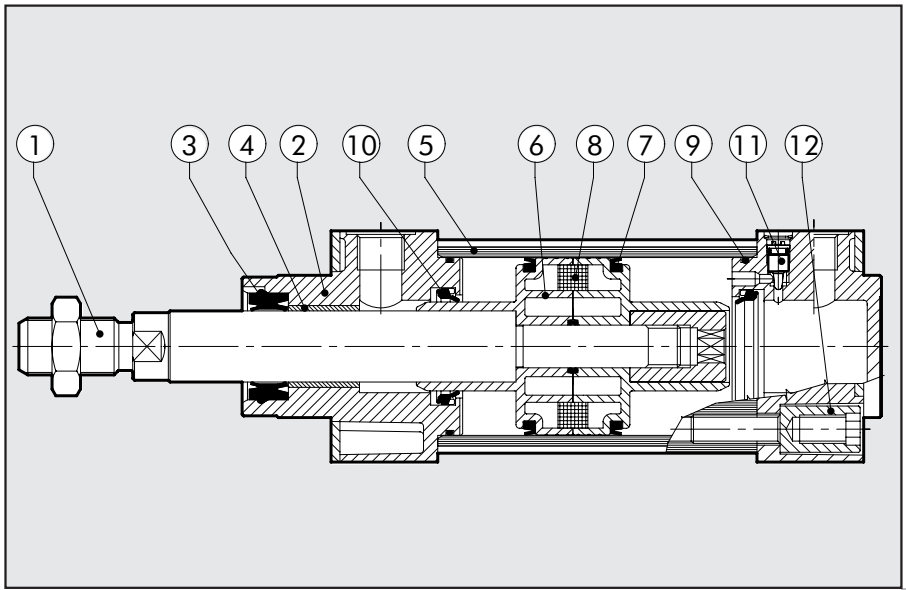
Cylinders made to ISO 6431 VDMA available in various versions and with a wide range of accessories:
- Configuration with or without magnet
- Single- or double-acting – single- or through-rod
- Wide choice of NBR, POLYURETHANE and FKM/FPM gaskets (for high temperatures)
- Fixing accessories, guide units and mechanical piston rod lock.



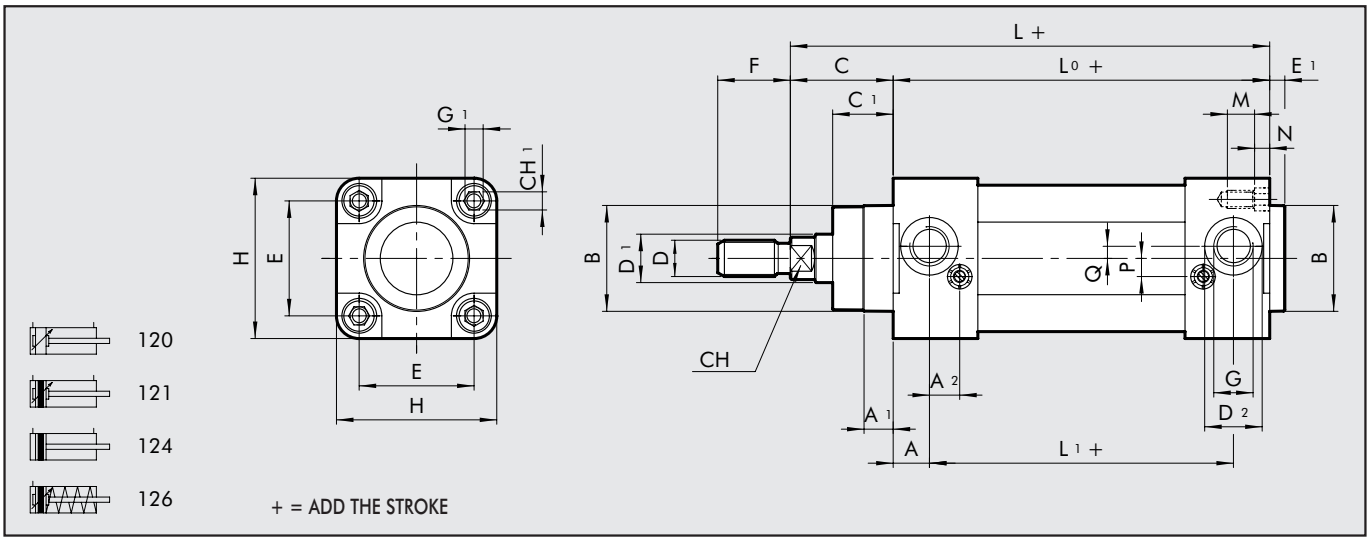
TECHNICAL DATA	Polyurethane	NBR	FKM/FPM	Low Temperature
Operating pressure	max 10 bar (max 1 MPa - 145 psi)			
Temperature range Ø 32 ÷ 63	–20°C to +80°C (non-magnetic cyl.)	–10°C to +80°C (non-magnetic cyl.)	–10°C to +150° (non-magnetic cyl.)	–35°C to + 80°C
	–20°C to +70°C (magnetic cyl.)	–10°C to +70°C (magnetic cyl.)		
Ø 80 ÷ 125	–10°C to +80°C (non-magnetic cyl.)	–10°C to +80°C (non-magnetic cyl.)	–10°C to +150° (non-magnetic cyl.)	–35°C to + 80°C
	–10°C to +70°C (magnetic cyl.)	–10°C to +70°C (magnetic cyl.)		
Fluid	Unlubricated air. Lubrication, if used, must be continuous			
Bore	Ø 32 ; Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100 ; Ø 125			
Design	Heads with Tap Tite screws			
Standard stroke	Single-acting: for bores Ø 32-63, strokes 0-250 mm			
	Double-acting: for bores Ø 32-80, strokes 25-2800 mm			
	for bores Ø 100-125, strokes 25-2600 mm			
Versions	Double-acting cushioned, Single-acting retracted piston rod cushioned, Through-rod cushioned, Long cushioning, High-temperature, Piston rod lock, Sound-proofed, Oil seal, Through-rod oil seal, Low friction, Non-stick-slip*.			
Sensor magnet	All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure	Ø 32; 40: 0.4 bar			
	Ø 50;63 strokes < 1500 mm: 0.3 bar; strokes ⩾ 1500 mm: 0.4 bar			
	Ø 80;100;125 strokes < 1500 mm: 0.2 bar; strokes ⩾ 1500 mm: 0.4 bar			
Forces generated at 6 bar thrust/retraction	See GENERAL TECHNICAL DATA PAGE 1.1/05			
Weights	See GENERAL TECHNICAL DATA PAGE 1.1/06			
	For no-stick slip versions use no-lubricated air only			

COMPONENTS

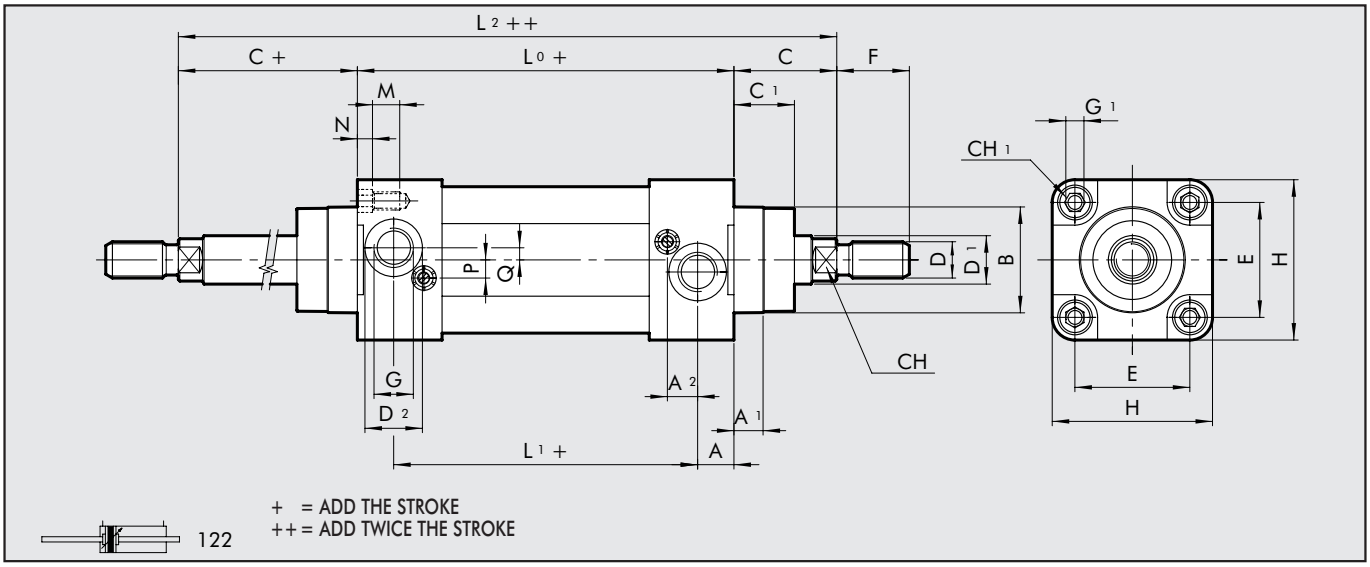
① PISTON ROD: C45 steel or stainless steel, thick chromed
② HEAD: die cast aluminium, fully machined
③ PISTON ROD GASKET: polyurethane (PARKER PRADIFA), NBR or FKM/FPM
④ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ BARREL: drawn anodised calibrated aluminium
⑥ HALF-PISTON: self-lubricating technopolymer with built-in cushioning olives (aluminium with PTFE pad for diameters 80-100-125)
⑦ PISTON GASKET: Ø 32÷63 polyurethane (PARKER PRADIFA), NBR or FKM/FPM
Ø 80÷125 SFR (PARKER PRADIFA), NBR or FKM/FPM
⑧ MAGNET: plastoferrite
⑨ Static O-rings: NBR or FKM/FPM
⑩ CUSHIONING GASKET: polyurethane (PARKER PRADIFA), NBR or FKM/FPM
⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
⑫ SCREWS: Tap Tite for assembly



DIMENSIONS OF STANDARD VERSIONS



DIMENSIONS OF THROUGH-ROD VERSION

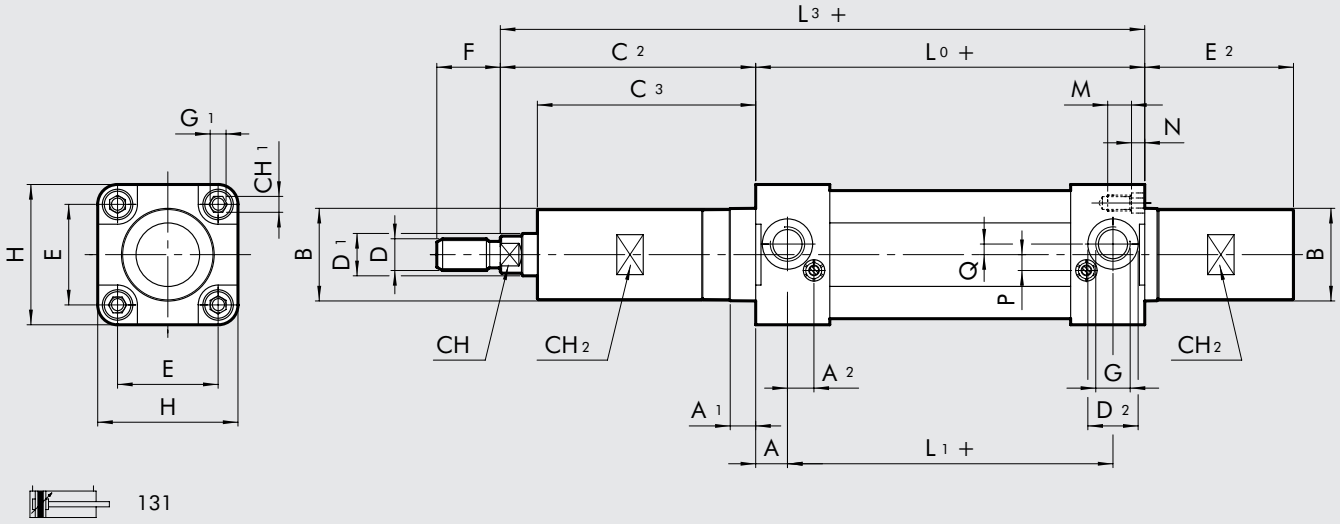


Ø.	A	A_1	A_2	B	C	C_1	CH	CH_1	D	D_1	D_2	E	E_1	F	G	G_1	H	L	L_0	L_1	L_2	M	N	P	Q
32	10	7	10	30	26	16	10	6	M10x1.25	12	15	32.5	5	22	G1/8	M6	47	120	94	74	146	9	4.5	6	4
40	12	9	10	35	30	20	13	6	M12x1.25	16	19	38	5	24	G1/4	M6	53	135	105	81	165	9	4.5	6	4
50	14	14	10	40	37	25	17	8	M16x1.5	20	19	46.5	5	32	G1/4	M8	65	143	106	78	180	12	5.5	6	6
63	16	14	10	45	37	25	17	8	M16x1.5	20	23	56.5	5	32	G3/8	M8	75	158	121	89	195	12	5.5	6	6
80	18	12	12	45	46	33	22	10	M20x1.5	25	23	72	8	40	G3/8	M10	95	174	128	92	220	16	5.5	10	7
100	20	14	12	55	51	38	22	10	M20x1.5	25	27	89	8	40	G1/2	M10	115	189	138	98	240	16	5.5	10	7
125	25	21	10	60	65	45	27	12	M27x2	32	27	110	8	54	G1/2	M12	140	225	160	110	290	19	6.5	12	8

VERSION 126 (SINGLE-ACTING)

	Upper limit	Stroke	Lower limit	Lo - Ø 32	Lo - Ø 40	L0 - Ø 50	Lo - Ø 63	L - Ø 32	L - Ø 40	L - Ø 50	L - Ø 63
ISO	0	< C ≤	25	94	105	106	121	120	135	143	158
ISO	25	< C ≤	50	94	105	106	121	120	135	143	158
NON ISO	50	< C ≤	75	115	129.5	130.5	145.5	141	159.5	167.5	182.5
NON ISO	75	< C ≤	100	136	154	155	170	162	184	192	207
NON ISO	100	< C ≤	125	157	178.5	179.5	194.5	183	208.5	216.5	231.5
NON ISO	125	< C ≤	150	178	203	204	219	204	233	241	256
NON ISO	150	< C ≤	175	199	227.5	228.5	243.5	225	257.5	265.5	280.5
NON ISO	175	< C ≤	200	220	252	253	268	246	282	290	305
NON ISO	200	< C ≤	225	241	276.5	277.5	292.5	267	306.5	314.5	329.5
NON ISO	225	< C ≤	250	262	301	302	317	288	331	339	354

DIMENSIONS OF 100 mm CUSHIONING



Ø	A	A_1	A_2	B	C_2	C_3	CH	CH_1	CH_2	D	D_1	D_2	E	E_2	F	G	G_1	H	L_3	L_0	L_1	M	N	P	Q
32	10	7	10	30	106	96	10	6	27	M10x1.25	12	15	32.5	80	22	G1/8	M6	47	200	94	74	9	4.5	6	4
40	12	9	10	35	107	97	13	6	30	M12x1.25	16	19	38	77.5	24	G1/4	M6	53	212	105	81	9	4.5	6	4
50	14	14	10	40	113.5	101.5	17	8	35	M16x1.5	20	19	46.5	77.5	32	G1/4	M8	65	219.5	106	78	12	5.5	6	6
63	16	14	10	40	113.5	101.5	17	8	35	M16x1.5	20	23	56.5	77.5	32	G3/8	M8	75	234.5	121	89	12	5.5	6	6

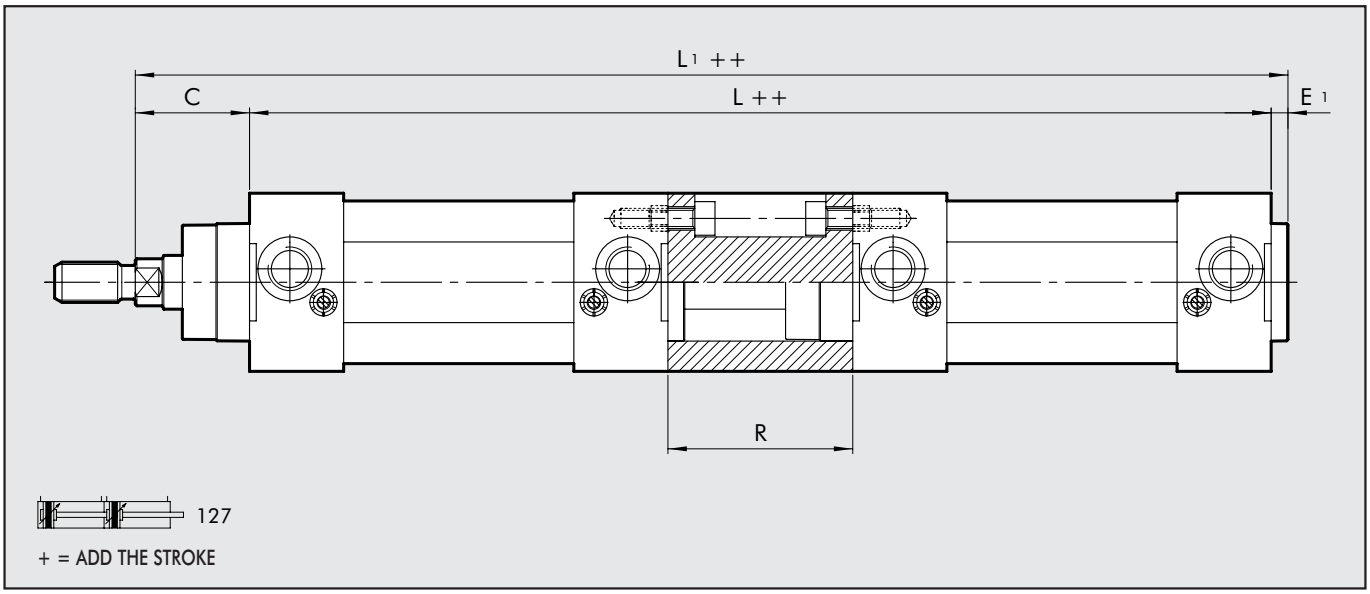
DIMENSIONS OF 150 mm CUSHIONING

Ø	C_2	C_3	E_2	L_3
32	156	146	130	250
40	157	147	122.5	262
50	162.5	150.5	120.5	268.5
63	162.5	150.5	120.5	283.5

DIMENSIONS OF 200 mm CUSHIONING

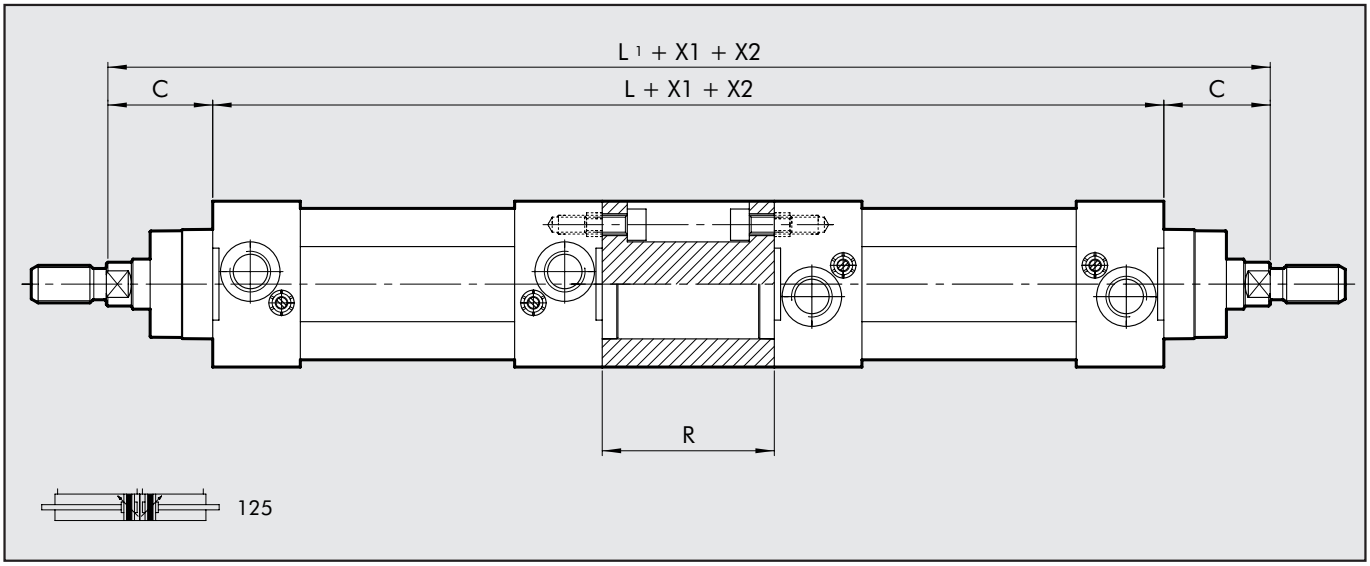
Ø	C_2	C_3	E_2	L_3
32	206	196	180	300
40	207	197	177.5	312
50	213.5	201.5	177.5	319.5
63	213.5	201.5	177.5	334.5

DIMENSIONS OF TANDEM CYLINDER



Ø	C	E_1	R	L	L_1	
32	26	5	55	243	274	
40	30	5	55	265	300	
50	37	5	68	280	322	
63	37	5	68	310	352	
80	46	8	92	348	402	
100	51	8	92	368	427	
125	65	8	120	440	513	Refer to standard cylinders for other values.

DIMENSIONS OF OPPOSED CYLINDER



Ø	C	R	L	L_1	
32	26	55	243	295	
40	30	55	265	325	
50	37	68	280	354	
63	37	68	310	384	
80	46	92	348	440	
100	51	92	368	470	
125	65	120	440	570	Refer to standard cylinders for other values.

LOW-FRICTION CYLINDER – CODE 123

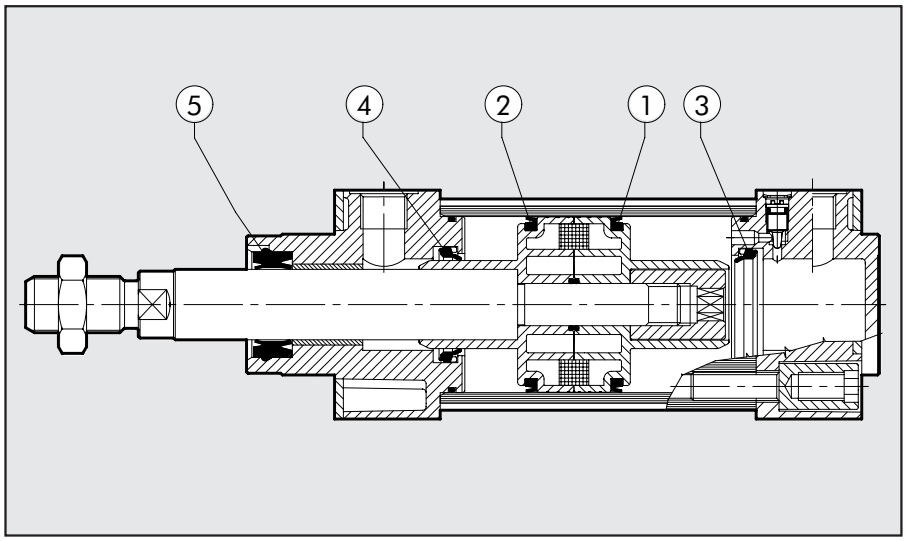
① Rear chamber piston gasket made of polyurethane (Ø 32-63); SFR (Ø 80-125);

② Front chamber piston gasket made of polyurethane (Ø 32-63); SFR (Ø 80-125);

③ Rear chamber cushioning gasket made of polyurethane;

④ Front chamber cushioning gasket made of polyurethane;

⑤ Piston rod gasket made of polyurethane.



The low-friction cylinder is typically used as a dandy or tensioning cylinder since it is a single-acting cylinder without a return spring.

The configurations are shown below:
1) The best type is A as it involves less friction.
2) Type B should be used when the cylinder is working under normal conditions outside the pneumatic cushioning area. Cushioning is only for emergency use. It acts as a shock absorber in the case of malfunction.
3) Type C differs from type A due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
4) Type D differs from type B due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
5) Type E should be used when the pressurized chamber is the front one.
6) For type F, see point 2.

NB. THE CYLINDER IS ALWAYS SINGLE-ACTING WITHOUT A RETURN SPRING.

	Type	Gaskets
Rear chamber pressure	A	1
Rear chamber pressure and cushioning in case of impact	B	1+3
Rear chamber pressure and piston rod gasket	C	1+5
Rear chamber pressure, cushioning in case of impact and piston rod gasket	D	1+3+5
Front chamber pressure	E	2+5
Front chamber pressure and cushioning in case of impact	F	2+5+4

METAL WORK PNEUMATIC

KEY TO CODES - ISO 6431 STD CYLINDER

CYL	1	2	1	0	3	2	0	0	5	0	C	P
	TYPE				BORE		STROKE					

120	Double-acting, cuschioned, non-magnetic	0	Diameter	32	Ø32÷Ø80 stroke 0÷2800 mm Ø100÷Ø125 stroke 0÷2600 mm	A	C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over
121	Double-acting, cushioned	S	Non-magnetic	40		C	C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to Ø 63 mm with < 1000 mm strokes
122	Through-rod	▲ G	No stick slip	50		Z	Stainless steel piston rod and nut aluminium piston
124	Double-acting, non-cuschioned			63		X	Stainless steel piston rod and nut technopolymer piston
125	Opposed			80			
✚ 126	Single-acting			■ 100			
127	Tandem			■ 125			
134	Rod lock version						
136	Version with piston rod lock						
♦ 137	Piston rod lock + guide unit						

N	NBR gaskets
P	polyurethane gaskets
V	FKM/FPM gaskets
● B	low temperature

■ In the code of cylinder with letter in fourth position Ø 100 becomes A1; Ø 125 becomes A2
● Only available for versions with aluminium piston (A or Z)
✚ Available until Ø63 and only the versions with piston in aluminum (A or Z)
▲ Not available for NBR (N) versions
♦ Available up to Ø 100

KEY TO CODES - ISO 6431 LOW-FRICTION CYLINDER

CYL	1	2	3	A	3	2	0	0	5	0	C	P
				TYPE	DIAMETER		STROKE					

A	Low friction, type A	32	Ø32÷Ø80 stroke 0÷2800 mm Ø100÷Ø125 stroke 0÷2600 mm	A	C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over
B	Low friction, type B	40		C	C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to Ø 63 mm with < 1000 mm strokes
C	Low friction, type C	50		Z	Stainless steel piston rod and nut aluminium piston
D	Low friction, type D	63		X	Stainless steel piston rod and nut technopolymer piston
E	Low friction, type E	80			
F	Low friction, type F	A1=Ø100			
		A2=Ø125			

N	NBR gaskets
P	Polyurethane gaskets
V	FKM/FPM gaskets

KEY TO CODES - ISO 6431 LONG-CUSHIONING CYLINDER

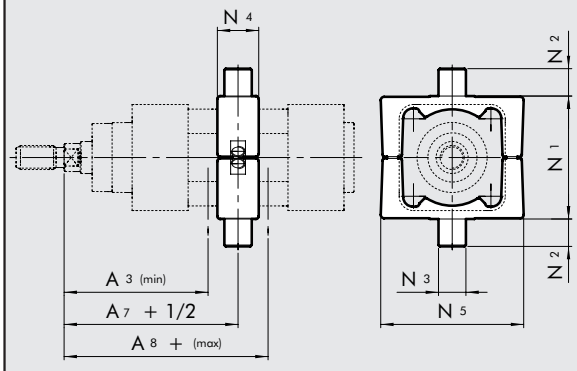
CYL	1	3	1	A	3	2	0	0	5	0	C	P
				TYPE	DIAMETER		STROKE					

A	200 mm front/rear cushioning cone – 200mm ext.	32	0000÷2600 mm	A	C45 chromed rod, aluminium piston rod for all sizes
B	150 mm front/rear cushioning cone – 150mm ext.	40		Z	Stainless steel piston rod and nut aluminium piston
C	100 mm front/rear cushioning cone – 100mm ext.	50			
D	150 mm front/rear cushioning cone – 200mm ext.	63			
E	100 mm front/rear cushioning cone – 200mm ext.				
F	50 mm front/rear cushioning cone – 100mm ext.				
G	100 mm front/rear cushioning cone – 150mm ext.				
H	200 mm front cushioning cone – 200 mm ext.				
I	150 mm front cushioning cone – 150 mm ext.				
L	100 mm front cushioning cone – 100 mm ext.				
M	150 mm front cushioning cone – 200 mm ext.				
N	100 mm front cushioning cone – 150 mm ext.				
O	50 mm front cushioning cone – 100 mm ext.				
Q	200 mm rear cushioning cone – 200 mm ext.				
R	150 mm rear cushioning cone – 150 mm ext.				
S	100 mm rear cushioning cone – 100 mm ext.				
T	150 mm rear cushioning cone – 200 mm ext.				
U	100 mm rear cushioning cone – 200 mm ext.				
V	50 mm rear cushioning cone – 100 mm ext.				

N	NBR gaskets
P	polyurethane gaskets
V	FKM/FPM gaskets

ACCESSORIES: FIXINGS

INTERMEDIATE HINGE - MODEL EN

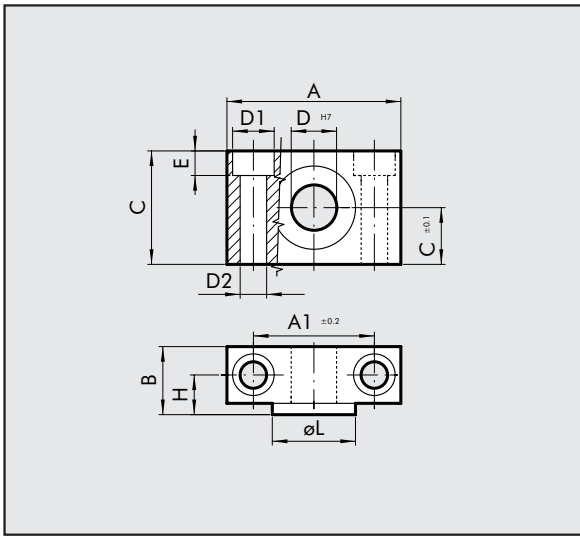


\+ = ADD THE STROKE
\+ 1/2 = ADD HALF THE STROKE

Code	Ø	$A_{3\,(min)}$	A_7	$A_{8\,(max)}$	N_1	N_2	$N_{3\,e\,9}$	N_4	N_5	Weight [g]
0950322007	32	63	73	83	50	12	12	22	65	282
0950402007	40	72	82.5	93	63	16	16	28	75	582
0950502007	50	83	90	97	75	16	16	32	95	880
0950632007	63	86.5	97.5	108.5	90	20	20	35	105	1230
0950802007	80	104	110	116	110	20	20	40	130	2030
0951002007	100	113.5	120	126.5	132	25	25	45	145	2600
0951252007	125	135	145	155	160	25	25	50	175	3900

Note: Supplied complete with 4 grub screws, 2 pins

COUNTER-HINGE FOR MODEL EN - MODEL EL

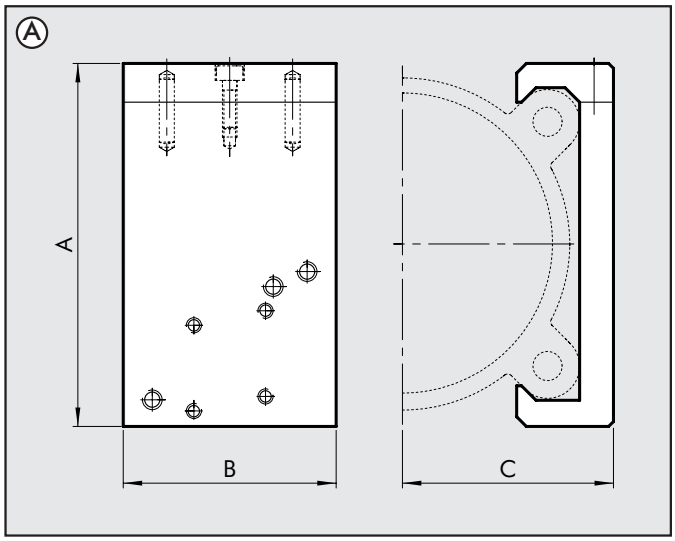


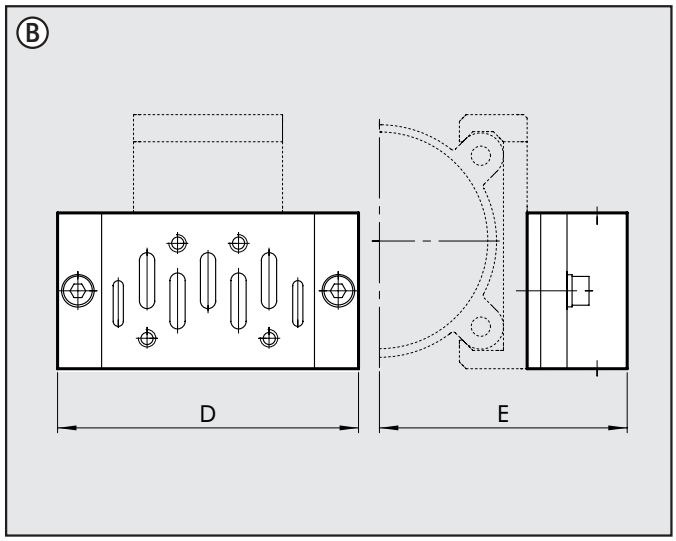
Code	Ø	A	A_1	B	C	C_1	D_1	D_2	D	E	H	ØL	Weight [g]]
W0950322009	32	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	40	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950402009	50	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	63	65	42	23	40	20	18	11	20	10.5	13	35	414
W0950632009	80	65	42	23	40	20	18	11	20	10.5	13	35	414
W0951002009	100	75	50	28.5	50	25	20	13	25	12.5	16	40	715
W0951002009	125	75	50	28.5	50	25	20	13	25	12.5	16	40	715

NOTE: Supplied with 4 securing screws

NOTES

FIXING BRACKET SERIES KCV





VALVE FIXING BRACKET - CYLINDER (Fig. A)

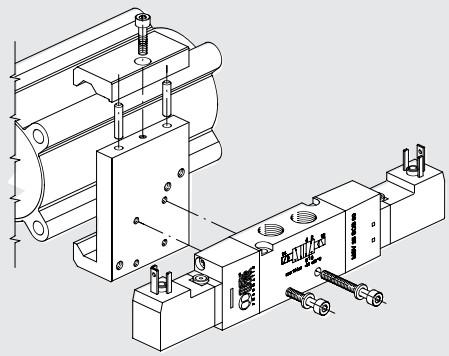
					ISO 1		ISO 2			
Code	Ø	A	B	C	D	E	D	E	Applicable valves	Weight [g]
0950322090	Ø 32	54	40	29.5	110	64.5	124	70.5	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	80
0950402090	Ø 40	59.5	40	32.2	110	67.2	124	73.2	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	86
0950502090	Ø 50	71.5	40	37	110	72	124	78	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	93
0950632090	Ø 63	81.5	40	42	110	77	124	83	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	101
0950802090	Ø 80	99	60	53.5	110	88.5	124	94.5	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	222
0951002090	Ø 100	119.5	60	63.5	110	98.5	124	104.5	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	258
0951252090	Ø 125	148	60	76.5	110	111.5	124	117.9	Series 70 1/8-1/4-1/2 ISO 1 - ISO 2	298

KIT FOR FIXING VALVES TO BRACKETS

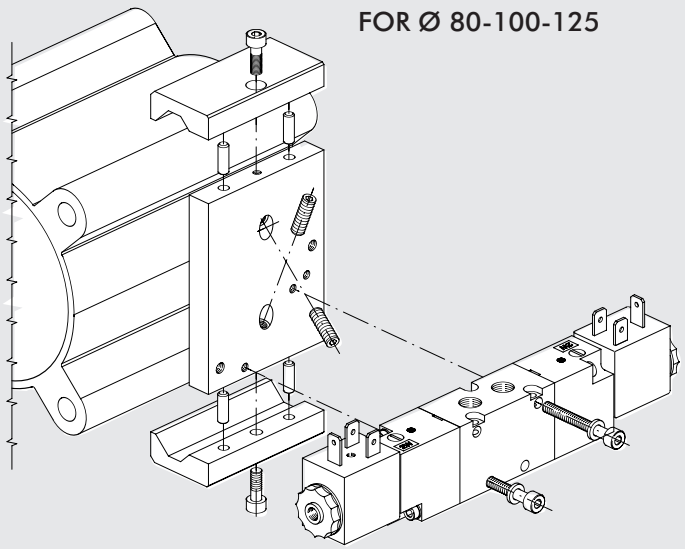
Code	Valve kit	Composition		Weight [g]
0950002003	MACH 16	2 HEX. SCREWS M3x25 with WASHER		4
0950002004	Series 70 1/8-1/4	2 HEX. SCREWS M4x50 with WASHER		8
0950002006	Series 70 1/2	2 HEX. SCREWS M5x50 with WASHER		20
0950002001	ISO 1	ADAPTOR + ISO1 BASE SIDE + SCREWS + WASHERS	(Fig. B)	230
0950002002	ISO 2	ADAPTOR + ISO 2 BASE SIDE + SCREWS + WASHERS	(Fig. B)	350

VALVE ASSEMBLY ON CYLINDER

FOR Ø 32-40-50-63



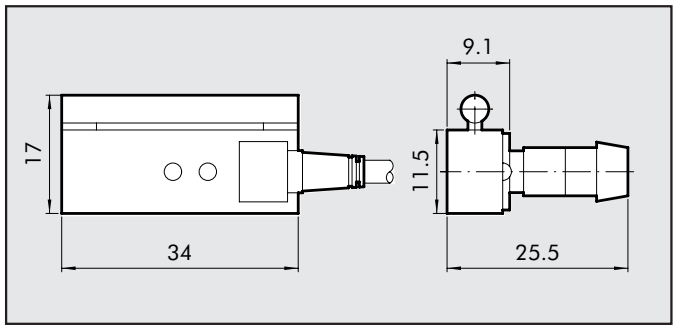
FOR Ø 80-100-125



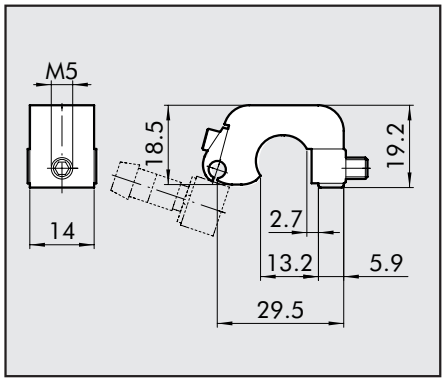
ACCESSORIES: MAGNETIC SENSORS

ORDERING CODES

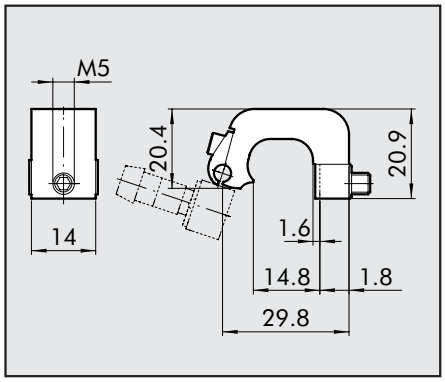
Code	Description
SENSORS	
W0950000201	REED SENSOR ACC. DSM2-C525
W0950000222	E.HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E. HALL NPN SENSOR ACC. DSM3-M225
SENSOR BRACKETS	
W0950000711	BRACKET ACC. D.32 DST 80
W0950000712	BRACKET ACC. D.50 DST 81
W0950000713	BRACKET ACC. D.80-100-125 DST 82



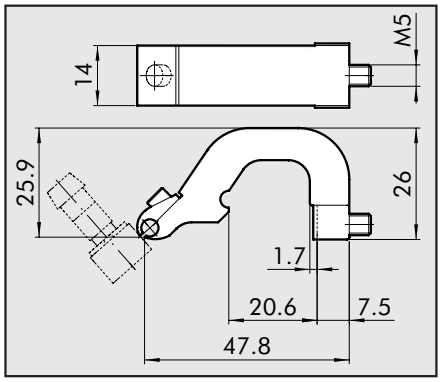
SENSOR SUPPORT BRACKET Ø 32-40



SENSOR SUPPORT BRACKET Ø 50-63



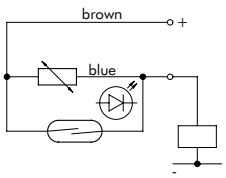
SENSOR SUPPORT BRACKET Ø 80-100-125



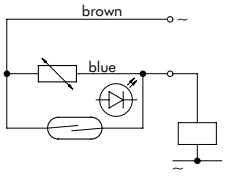
TECHNICAL DATA

Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3÷48V (DC) 3÷220 (AC)	6-24 V DC
Max current at 25°C	mA	500	250
Power with inductive load	VA	10	–
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life	–	10^7 impulses	10^9 impulses
Contact resistance		0.1	–
Cable length	m	2.5	2.5
Cable cross section	mm^2	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

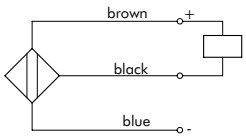
DC



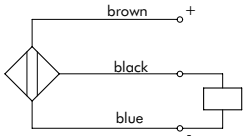
AC



Version NPN

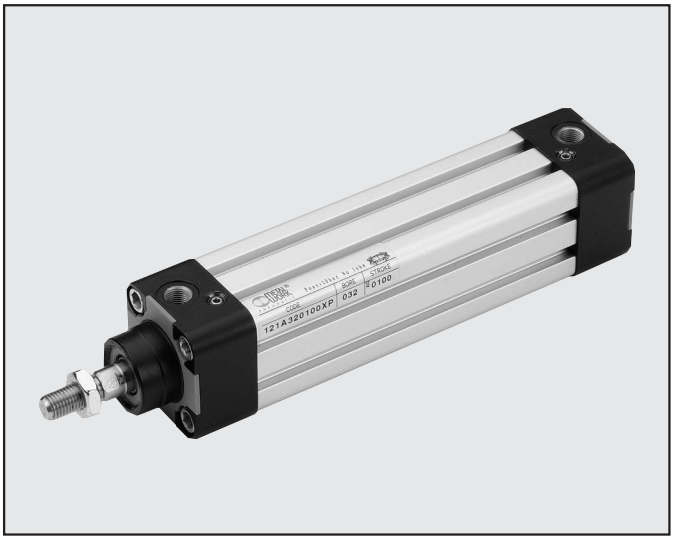


Version PNP



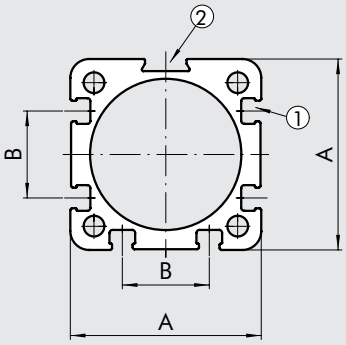
CYLINDERS SERIES ISO 6431 VDMA Ø 32-125 mm TYPE "A" RETRACTABLE SENSOR

Cylinders made to ISO 6431 VDMA available in various versions and with a wide range of accessories:
- Configuration with or without magnet
- Single- or double-acting – single- or through-rod
- Wide choice of NBR, POLYURETHANE and FKM/FPM gaskets (for high temperatures)
- Fixing accessories, guide units and mechanical piston rod lock.

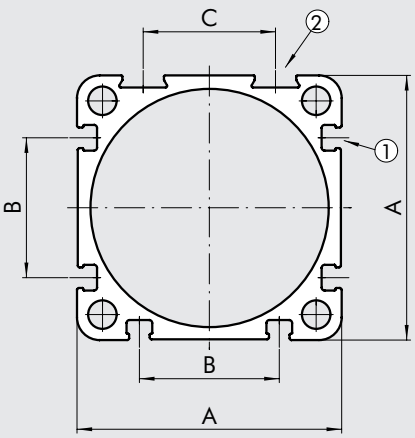


TECHNICAL DATA	Polyurethane	NBR	FKM/FPM	Low Temperature
Operating pressure	max 10 bar (max 1 MPa - 145 psi)			
Temperature range Ø 32 ÷ 63	–20°C to +80°C (non-magnetic cyl.) –20°C to +70°C (magnetic cyl.)	–10°C to +80°C (non-magnetic cyl.) –10°C to +70°C (magnetic cyl.)	–10°C to +150° (non-magnetic cyl.)	–35°C÷+80°C
Ø 80 ÷ 125	–10°C to +80°C (non-magnetic cyl.) –10°C to +70°C (magnetic cyl.)	–10°C to +80°C (non-magnetic cyl.) –10°C to +70°C (magnetic cyl.)	–10°C to +150° (non-magnetic cyl.)	–35°C÷+80°C
Fluid	Unlubricated air. Lubrication, if used, must be continuous			
Bore	Ø 32 ; Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100 ; Ø 125			
Design	Heads with Tap Tite screws			
Standard stroke	Single-acting: for bores Ø 32-63, strokes 0-250 mm Double-acting: for bores Ø 32-80, strokes 25-2800 mm for bores Ø 100-125, strokes 25-2600 mm			
Versions	Double-acting cushioned, Single-acting retracted piston rod cushioned, Through-rod cushioned, Long cushioning, High-temperature, Piston rod lock, Sound-proofed, Oil seal, Through-rod oil seal, Low friction, Non-stick-slip*.			
Sensor magnet	All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure	Ø 32; 40: 0.4 bar Ø 50;63 strokes < 1500 mm: 0.3 bar; strokes ⩾ 1500 mm: 0.4 bar Ø 80;100;125 strokes < 1500 mm: 0.2 bar; strokes ⩾ 1500 mm: 0.4 bar			
Forces generated at 6 bar thrust/retraction	See GENERAL TECHNICAL DATA PAGE 1.1/05			
Weights	See GENERAL TECHNICAL DATA PAGE 1.1/06			
	*For no-stick versions, use no-lubricated air only			

JACKET CROSS SECTION



FOR Ø 32÷50

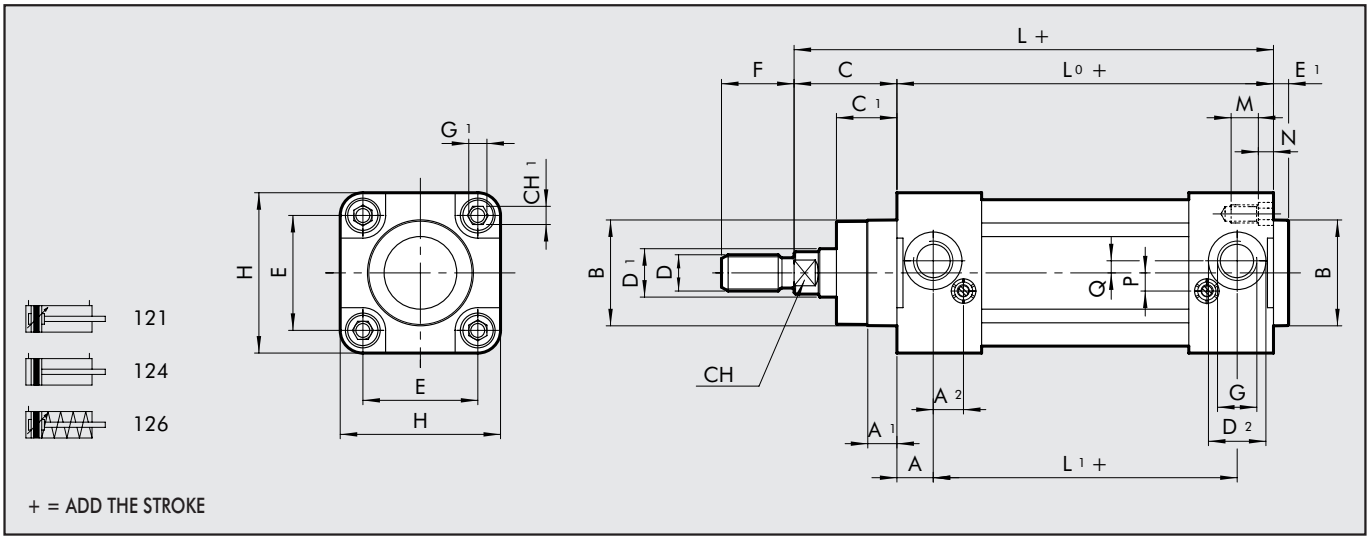


FOR Ø 63÷125

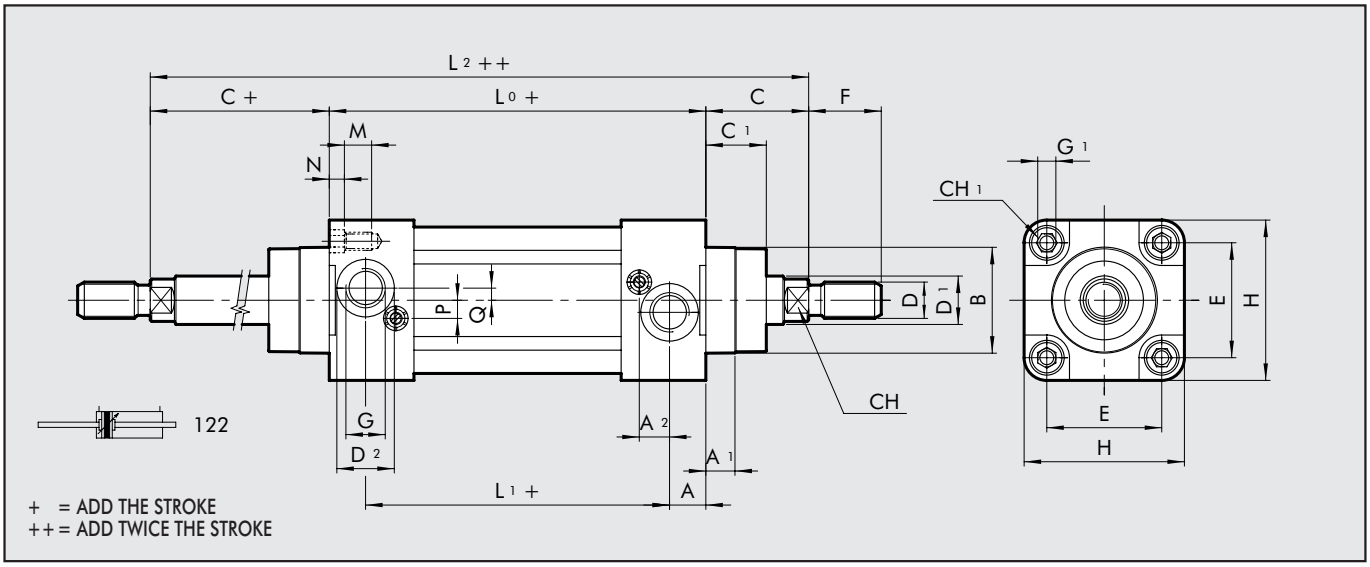
Ø	A	B	C
32	44.5	17	–
40	50.5	23	–
50	60.3	26	–
63	70	37	35
80	87	45	45
100	106	50	46
125	132	56	50

① SLOTS FOR RETRACTABLE SENSOR
② SLOTS FOR SENSOR TYPE CB

DIMENSIONS OF STANDARD VERSIONS



DIMENSIONS OF THROUGH-ROD VERSION

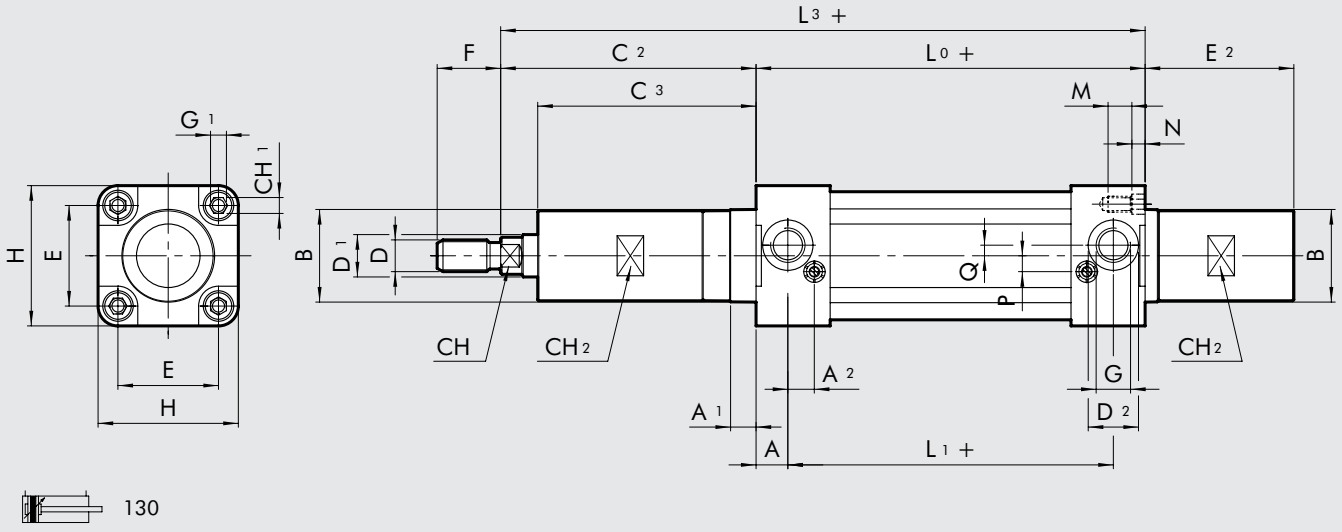


Ø.	A	A_1	A_2	B	C	C_1	CH	CH_1	D	D_1	D_2	E	E_1	F	G	G_1	H	L	L_0	L_1	L_2	M	N	P	Q
32	10	7	10	30	26	16	10	6	M10x1.25	12	15	32.5	5	22	G1/8	M6	47	120	94	74	146	9	4.5	6	4
40	12	9	10	35	30	20	13	6	M12x1.25	16	19	38	5	24	G1/4	M6	53	135	105	81	165	9	4.5	6	4
50	14	14	10	40	37	25	17	8	M16x1.5	20	19	46.5	5	32	G1/4	M8	65	143	106	78	180	12	5.5	6	6
63	16	14	10	45	37	25	17	8	M16x1.5	20	23	56.5	5	32	G3/8	M8	75	158	121	89	195	12	5.5	6	6
80	18	12	12	45	46	33	22	10	M20x1.5	25	23	72	8	40	G3/8	M10	95	174	128	92	220	16	5.5	10	7
100	20	14	12	55	51	38	22	10	M20x1.5	25	27	89	8	40	G1/2	M10	115	189	138	98	240	16	5.5	10	7
125	25	21	10	60	65	45	27	12	M27x2	32	27	110	8	54	G1/2	M12	140	225	160	110	290	19	6.5	12	8

VERSION 126 (SINGLE-ACTING)

	Upper limit	Stroke	Lower limit	Lo - Ø 32	Lo - Ø 40	L0 - Ø 50	Lo - Ø 63	L - Ø 32	L - Ø 40	L - Ø 50	L - Ø 63
ISO	0	< C ≤	25	94	105	106	121	120	135	143	158
ISO	25	< C ≤	50	94	105	106	121	120	135	143	158
NON ISO	50	< C ≤	75	115	129.5	130.5	145.5	141	159.5	167.5	182.5
NON ISO	75	< C ≤	100	136	154	155	170	162	184	192	207
NON ISO	100	< C ≤	125	157	178.5	179.5	194.5	183	208.5	216.5	231.5
NON ISO	125	< C ≤	150	178	203	204	219	204	233	241	256
NON ISO	150	< C ≤	175	199	227.5	228.5	243.5	225	257.5	265.5	280.5
NON ISO	175	< C ≤	200	220	252	253	268	246	282	290	305
NON ISO	200	< C ≤	225	241	276.5	277.5	292.5	267	306.5	314.5	329.5
NON ISO	225	< C ≤	250	262	301	302	317	288	331	339	354

DIMENSIONS OF 100 mm CUSHIONING



+ = ADD THE STROKE

Ø	A	A_1	A_2	B	C_2	C_3	CH	CH_1	CH_2	D	D_1	D_2	E	E_2	F	G	G_1	H	L_3	L_0	L_1	M	N	P	Q
32	10	7	10	30	106	96	10	6	27	M10x1.25	12	15	32.5	80	22	G1/8	M6	47	200	94	74	9	4.5	6	4
40	12	9	10	35	107	97	13	6	30	M12x1.25	16	19	38	77.5	24	G1/4	M6	53	212	105	81	9	4.5	6	4
50	14	14	10	40	113.5	101.5	17	8	35	M16x1.5	20	19	46.5	77.5	32	G1/4	M8	65	219.5	106	78	12	5.5	6	6
63	16	14	10	40	113.5	101.5	17	8	35	M16x1.5	20	23	56.5	77.5	32	G3/8	M8	75	234.5	121	89	12	5.5	6	6

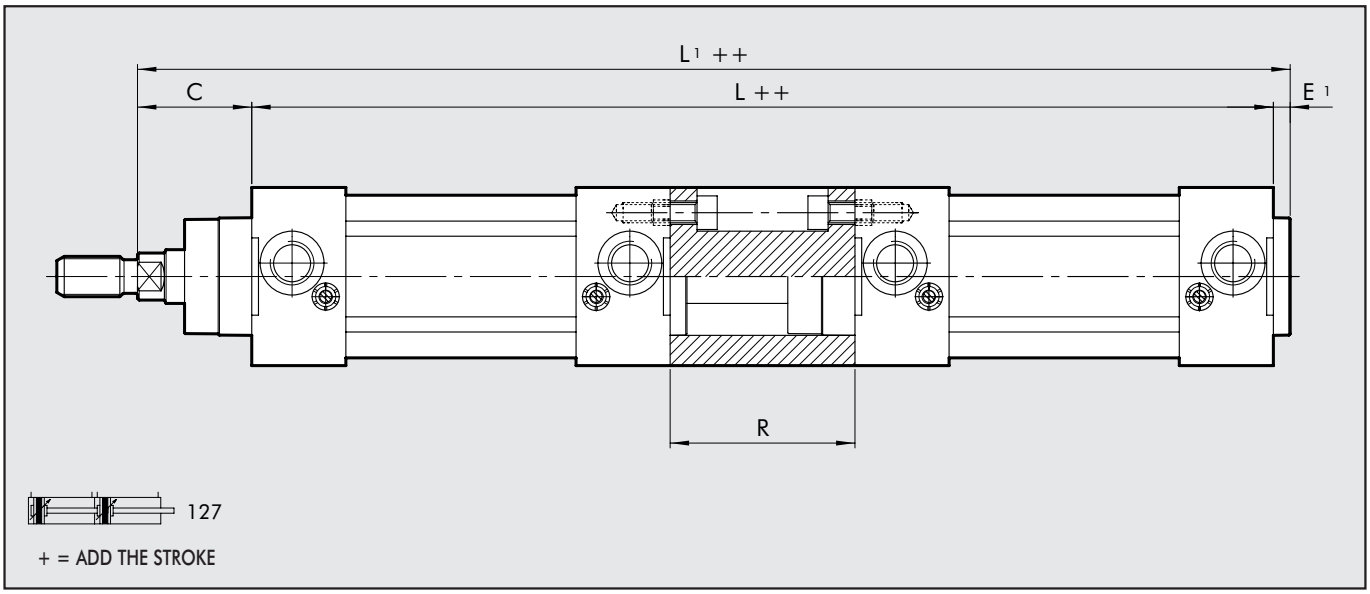
DIMENSIONS OF 150 mm CUSHIONING

Ø	C_2	C_3	E_2	L_3
32	156	146	130	250
40	157	147	122.5	262
50	162.5	150.5	120.5	268.5
63	162.5	150.5	120.5	283.5

DIMENSIONS OF 200 mm CUSHIONING

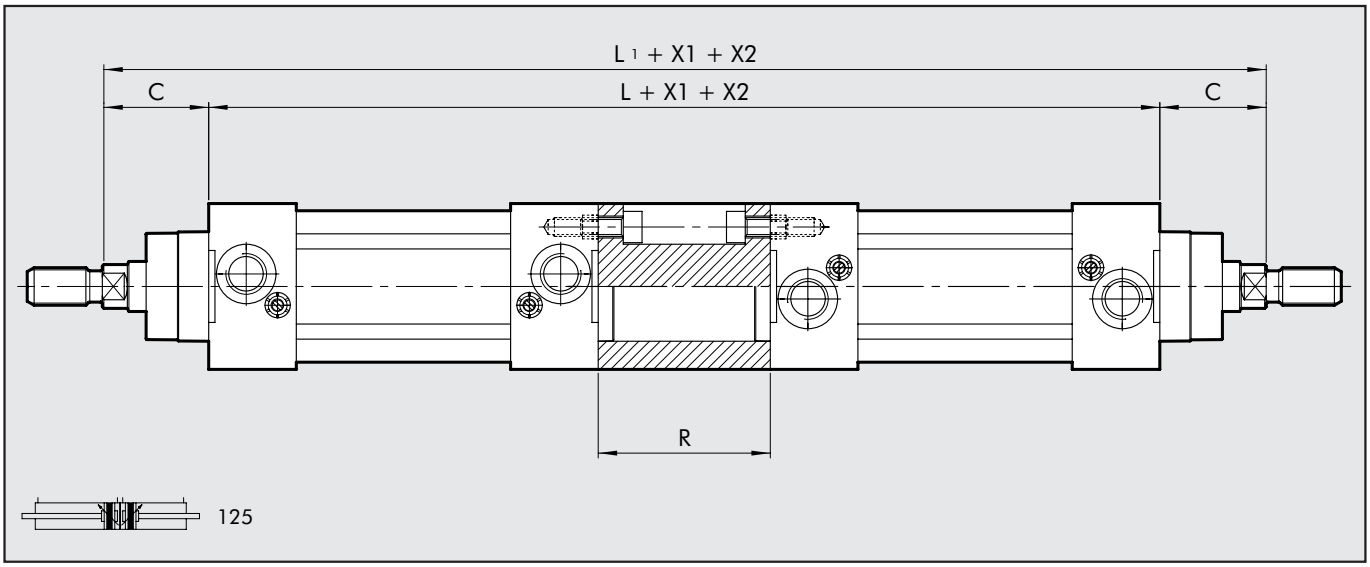
Ø	C_2	C_3	E_2	L_3
32	206	196	180	300
40	207	197	177.5	312
50	213.5	201.5	177.5	319.5
63	213.5	201.5	177.5	334.5

DIMENSIONS OF TANDEM CYLINDER



Ø	C	E_1	R	L	L_1	
32	26	5	55	243	274	
40	30	5	55	265	300	
50	37	5	68	280	322	
63	37	5	68	310	352	
80	46	8	92	348	402	
100	51	8	92	368	427	
125	65	8	120	440	513	Refer to standard cylinders for other values.

DIMENSIONS OF OPPOSED CYLINDER



Ø	C	R	L	L_1	
32	26	55	243	295	
40	30	55	265	325	
50	37	68	280	354	
63	37	68	310	384	
80	46	92	348	440	
100	51	92	368	470	
125	65	120	440	570	Refer to standard cylinders for other values.

KEY TO CODES FOR CYLINDER ISO 6431 TYPE "A", RETRACTABLE SENSOR

CYL	1	2	1	0	3	2	0	0	5	0	C	P
	TYPE				DIAMETER		STROKE					

TYPE			DIAMETER	STROKE		
121	Double-acting, cushioned	A Standard ▲B No stick slip C Non-magnetic	32 40 50 63 80 A1=100 A2=125	Ø32÷Ø80 stroke 0÷2800 mm Ø100÷Ø125 stroke 0÷2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to Ø 63mm with < 1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	N NBR gaskets P polyurethane gaskets V FKM/FPM gaskets ● B low temperature
122	Through-rod									
124	Double-acting, non-cuschioned									
125	Opposed									
✚ 126	Single-acting									
127	Tandem									
134	Rod lock version									
136	Version with piston rod lock									
♦137	Piston rod lock + guide unit									

● Only available for versions with aluminium piston (A or Z)
✚ Available until Ø63 and only the versions with piston in aluminum (A or Z)
▲ Not available for NBR (N) versions
♦ Available up to Ø 100

KEY TO CODES FOR CYLINDER ISO 6431 LOW-FRICTION TYPE "A", RETRACTABLE SENSOR

CYL	1	2	9	A	3	2	0	0	5	0	C	P
				TYPE	DIAMETER		STROKE					

TYPE	DIAMETER	STROKE		
A Low friction, type A B Low friction, type B C Low friction, type C D Low friction, type D E Low friction, type E F Low friction, type F	32 40 50 63 80 A1=Ø100 A2=Ø125	Ø32÷Ø80 stroke 0÷2800 mm Ø100÷Ø125 stroke 0÷2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with Ø 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of Ø 32 to Ø 63 mm with < 1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets

KEY TO CODES FOR CYLINDER ISO 6431 LONG-CUSHIONING TYPE "A", RETRACTABLE SENSOR

CYL	1	3	0	A	3	2	0	0	5	0	C	P
				TYPE	DIAMETER		STROKE					

TYPE	DIAMETER	STROKE		
A 200 mm front/rear cushioning cone – 200mm ext. B 150 mm front/rear cushioning cone – 150mm ext. C 100 mm front/rear cushioning cone – 100mm ext. D 150 mm front/rear cushioning cone – 200mm ext. E 100 mm front/rear cushioning cone – 200mm ext. F 50 mm front/rear cushioning cone – 100mm ext. G 100 mm front/rear cushioning cone – 150mm ext. H 200 mm front cushioning cone – 200 mm ext. I 150 mm front cushioning cone – 150 mm ext. L 100 mm front cushioning cone – 100 mm ext. M 150 mm front cushioning cone – 200 mm ext. N 100 mm front cushioning cone – 150 mm ext. O 50 mm front cushioning cone – 100 mm ext. Q 200 mm rear cushioning cone – 200 mm ext. R 150 mm rear cushioning cone – 150 mm ext. S 100 mm rear cushioning cone – 100 mm ext. T 150 mm rear cushioning cone – 200 mm ext. U 100 mm rear cushioning cone – 200 mm ext. V 50 mm rear cushioning cone – 100 mm ext.	32 40 50 63	0÷2600 mm	A C45 chromed rod, aluminium piston rod for all sizes Z Stainless steel piston rod and nut aluminium piston	N NBR gaskets P polyurethane gaskets V FKM/FPM gaskets

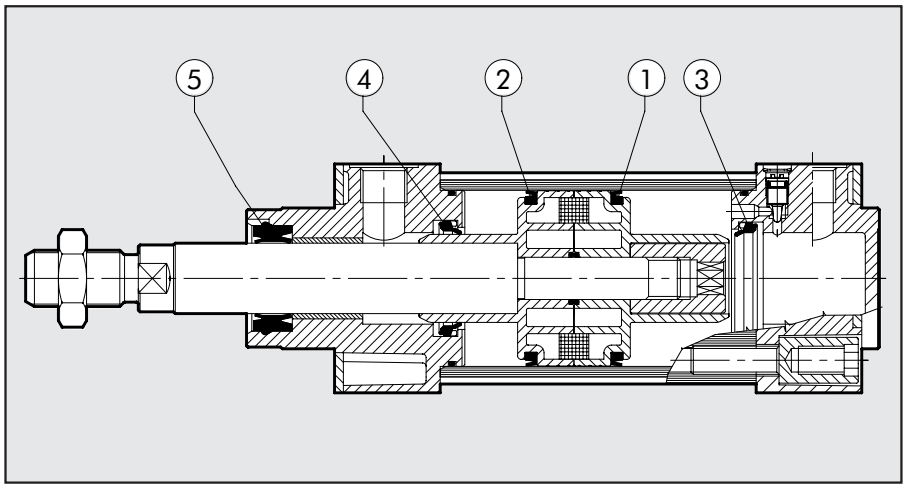
LOW-FRICTION CYLINDER – CODE 129

① Rear chamber piston gasket made of polyurethane (Ø 32-63); SFR (Ø 80-125);
② Front chamber piston gasket made of polyurethane (Ø 32-63); SFR (Ø 80-125);
③ Rear chamber cushioning gasket made of polyurethane;
④ Front chamber cushioning gasket made of polyurethane;
⑤ Piston rod gasket made of polyurethane.

The low-friction cylinder is typically used as a dandy or tensioning cylinder since it is a single-acting cylinder without a return spring.

The configurations are shown below:
1) The best type is A as it involves less friction.
2) Type B should be used when the cylinder is working under normal conditions outside the pneumatic cushioning area. Cushioning is only for emergency use. It acts as a shock absorber in the case of malfunction.
3) Type C differs from type A due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
4) Type D differs from type B due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
5) Type E should be used when the pressurized chamber is the front one.
6) For type F, see point 2.

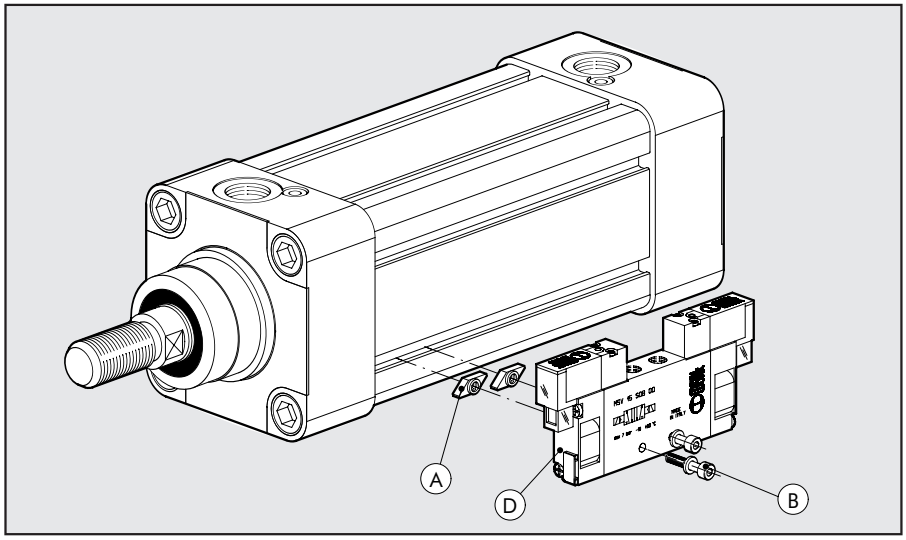
NB. THE CYLINDER IS ALWAYS SINGLE-ACTING WITHOUT A RETURN SPRING.



	Type	Gaskets
Rear chamber pressure	A	1
Rear chamber pressure and cushioning in case of impact	B	1+3
Rear chamber pressure and piston rod gasket	C	1+5
Rear chamber pressure, cushioning in case of impact and piston rod gasket	D	1+3+5
Front chamber pressure	E	2+5
Front chamber pressure and cushioning in case of impact	F	2+5+4

VALVE ASSEMBLY ON CYLINDER

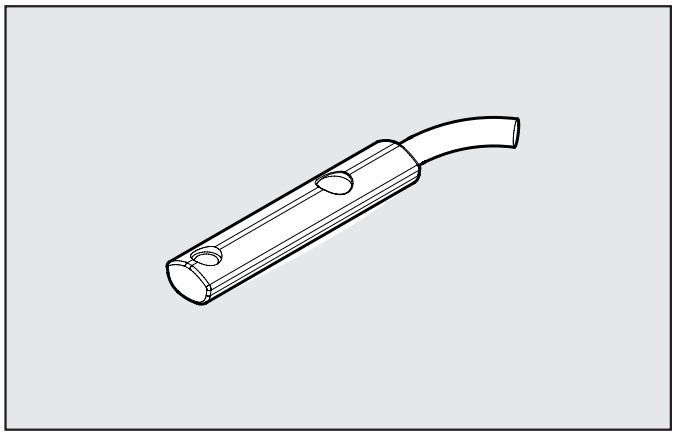
With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets.
This can be done using the special plates (A), which come with both the M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.
For ISO 1 and ISO 2 valves, the kit on which the valve is to be mounted (codes shown in the tables) will be fitted to the cylinder using the special plates (A) and the screws (B) listed in the table.



Type of valve to mount (D)	M3 fixing plate (A) code 0950003002	M4 fixing plate (A) code 0950003001	Screw (B) for connection to cylinder (one per plate)	Washer (B) (one per screw)	Valve assembly kit
MACH 11	n° 2	–	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)	–
SERIE 70 1/8	–	n° 2	M4x25 UNI 5931 (DIN 912)	–	–
SERIE 70 1/4	–	n° 2	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	–
SERIE 70 1/2	–	n° 2	M4x45 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	–
ISO 1	–	n° 2	M4x8 UNI 7688 (DIN 965A)	–	0950002001
ISO 2	–	n° 2	M4x8 UNI 7688 (DIN 965A)	–	0950002002

ACCESSORIES: MAGNETIC SENSORS

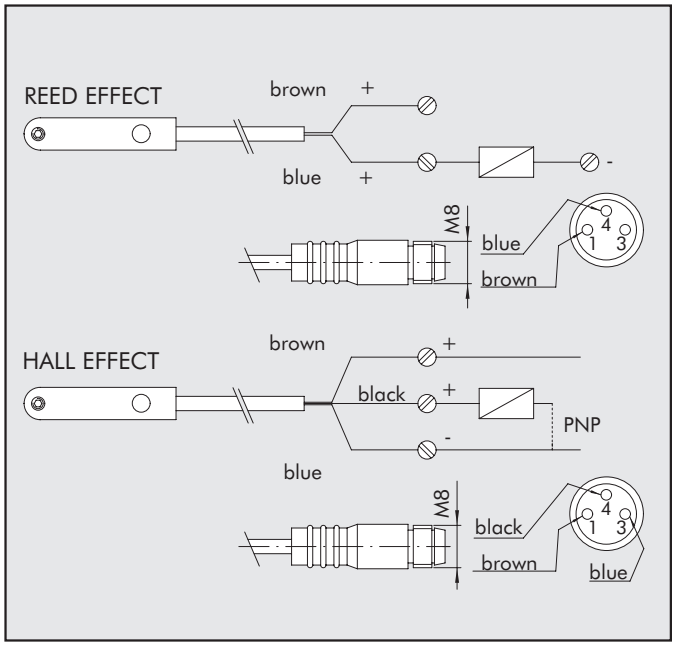
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

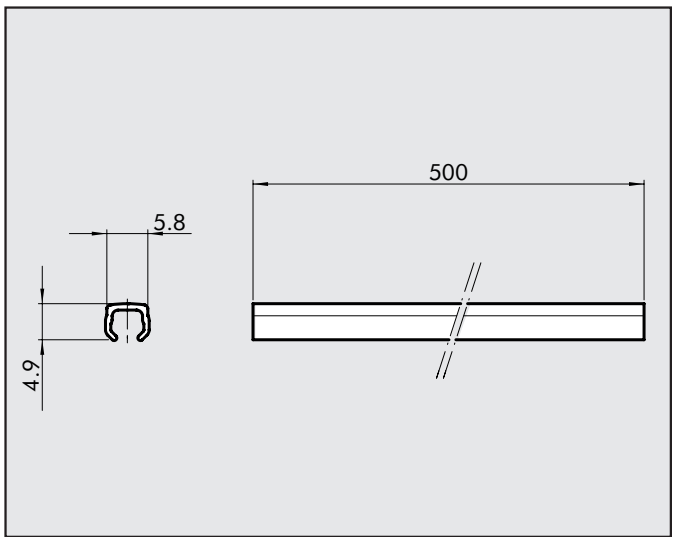
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

BAR FOR GROOVING

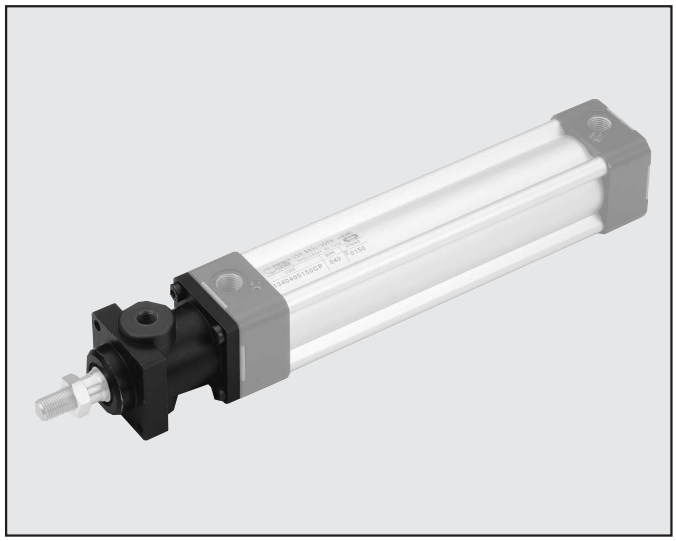


Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: The code corresponds to 1 piece.

ACCESSORIES ISO 6431 STD AND TYPE "A" RETRACTABLE SENSOR: MECHANICAL ROD BLOCK

Pilot pressure	Pp	4-8 bar (0.4-0.8 Mpa)						
Ambient temperature	Te	Max 80°C (176°F)						
Fluid temperature	tg	Max 70°C (154°F)						
Operation		NC - bidirectional						
Mechanics		Double shoe with mechanical lock						
Locking force		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
	F	650	1100	1600	2500	4000	6300	8700
Body material	(N)	Aluminium						
Shoe material		Brass						
Spring material		NBR						
Piston material		Synthetic material with added teflon						
Gasket material		NBR						
Pilot port		1/8''						



OPERATING PRINCIPLE

The mechanical piston rod lock is a normally-closed mechanism. In the absence of pneumatic piloting, the two shoes (A) lock the cylinder rod in both directions (Fig. 1). With pneumatic piloting, the piston rod guide forces the shoes to come right up to each other and overcome the counter spring (B) force and the piston rod can slide (Fig. 2). It is important to remember that the mechanical piston rod lock is a static type, which means that it is necessary to stop the cylinder piston rod pneumatically before locking the part mechanically.

Fig. 1

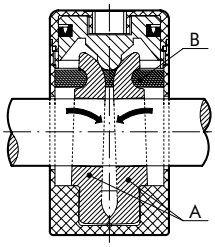
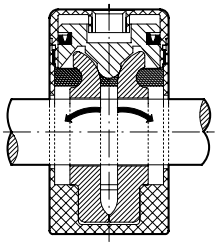
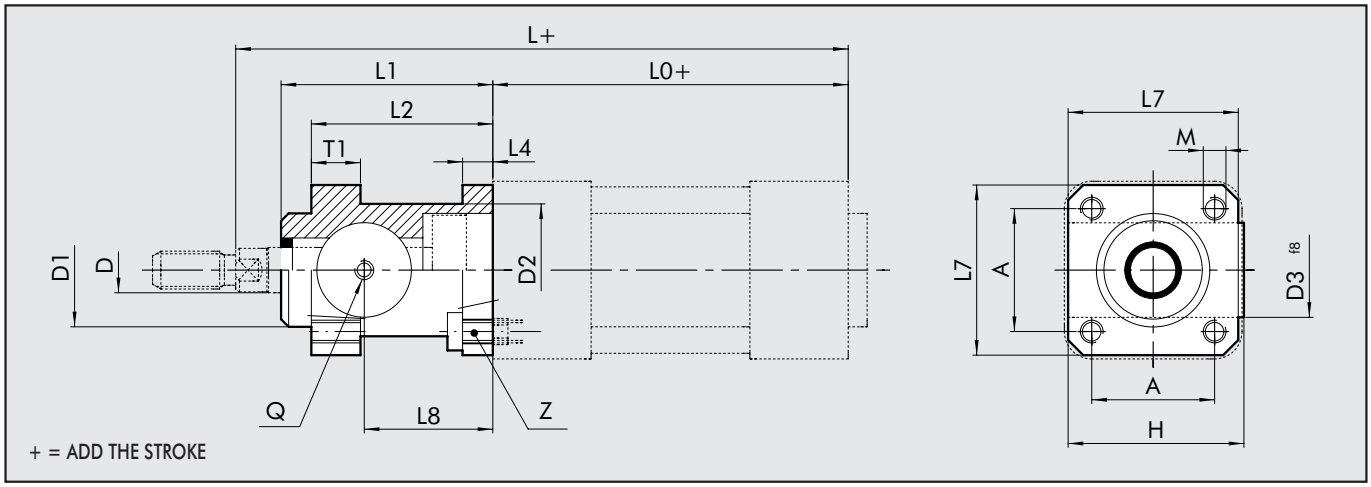


Fig. 2



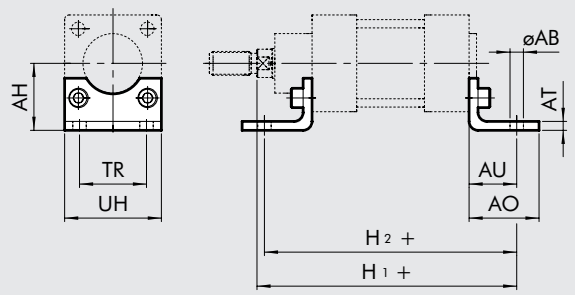
DIMENSIONS



Code	Ø	L_1	L_2	L_4	L_7	L_8	D	D_1	D_2	D_3	H	A	T_1	M	Z	Q	L_0	L	Weight [g]
W5010001102	32	58	48	8	45	34	12	30	35	25	46.5	32.5	13	M6	M6x20	M5	94	162	150
W5010001103	40	65	55	8	50	38	16	35	40	28	53	38	13	M6	M6x20	G1/8	105	180	200
W5010001104	50	82	70	15	60	48	20	40	50	35	64	46.5	16	M8	M8x30	G1/8	106	200	500
W5010001109	63	82	70	15	70	49.5	20	45	60	38	75	56.5	16	M8	M8x30	G1/8	121	215	700
W5010001106	80	110	90	18	90	61	25	45	80	48	95	72	20	M10	M10x35	G1/8	128	251	1700
W5010001107	100	115	100	18	105	68	25	55	100	58	110.5	89	20	M10	M10x35	G1/8	138	266	2700
W5010001108	125	167	122	22	140	86.5	32	60	130	65	150	110	30	M12	M12x40	G1/8	160	347	5600

ACCESSORIES ISO 6431 STD AND TYPE "A" RETRACTABLE SENSOR: FIXINGS

FOOT - MODEL A

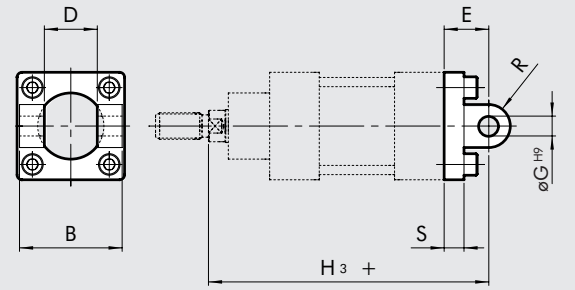


+= ADD THE STROKE

Code	Ø	Ø AB	AH	AO	AT	AU	TR	UH	H_1	H_2	Weight [g]
W0950322001	32	7	32	35	4	24	32	45	144	142	76
W0950402001	40	9	36	43	4	28	36	52	163	161	100
W0950502001	50	9	45	47	4	32	45	65	175	170	162
W0950632001	63	9	50	47	6	32	50	75	190	185	266
W0950802001	80	12	63	61	6	41	63	95	215	210	456
W0951002001	100	14	71	66	6	41	75	115	230	220	572
W0951252001	125	16	90	60	7	45	90	140	270	250	1130

Note: Individually packed with 2 screws.

FEMALE HINGE - MODEL B

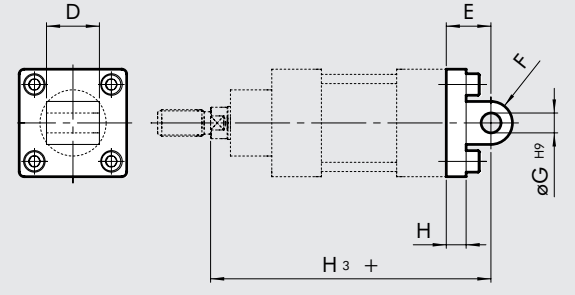


+= ADD THE STROKE

Code	Ø	B	D	E	Ø G	H_3	R	S	Weight [g]
W0950322003	32	45	26	22	10	142	11	10	116
W0950402003	40	52	28	25	12	160	13	10	160
W0950502003	50	60	32	27	12	170	13	12	252
W0950632003	63	70	40	32	16	190	17	12	394
W0950802003	80	90	50	36	16	210	17	16	670
W0951002003	100	110	60	41	20	230	21	16	1085
W0951252003	125	130	70	50	25	275	26	20	2000

Note: Supplied with 4 screws, 4 washers, 2 snap-rings, 1 pin.

MALE HINGE - MODEL BA

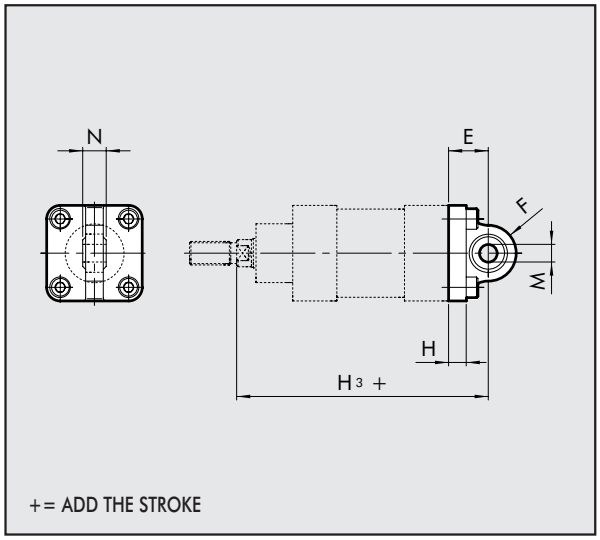


+= ADD THE STROKE

Code	Ø	D	E	F	Ø G	H	H_3	Weight [g]
W0950322004	32	26	22	11	10	10	142	94
W0950402004	40	28	25	13	12	10	160	124
W0950502004	50	32	27	13	12	12	170	220
W0950632004	63	40	32	17	16	12	190	316
W0950802004	80	50	36	17	16	16	210	578
W0951002004	100	60	41	21	20	16	230	850
W0951252004	125	70	50	26	25	20	275	1590

Note: Supplied with 4 screws, 4 washers

ARTICULATED MALE HINGE - MODEL BAS

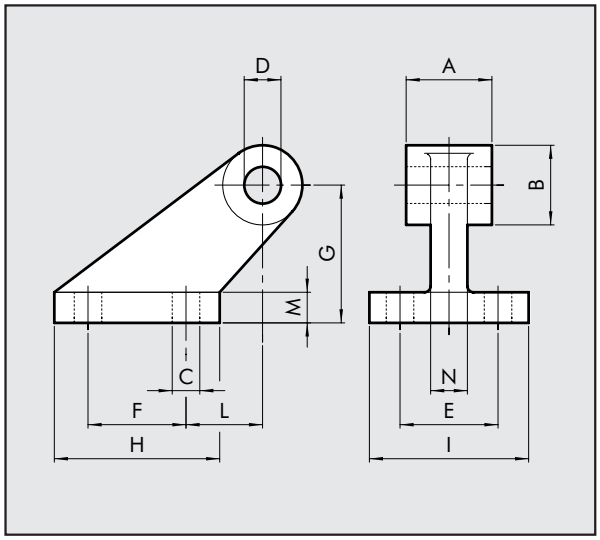


+= ADD THE STROKE

Code	Ø cil.	E	F	H	H_3	M	N	Weight [g]
W0950322006	32	22	16	10	142	10	14	106
W0950402006	40	25	19	10	160	12	16	142
W0950502006	50	27	19	12	170	12	16	236
W0950632006	63	32	24	12	190	16	21	336
W0950802006	80	36	24	16	210	16	21	572
W0951002006	100	41	30	16	230	20	25	840
W0951252006	125	50	36	20	275	25	31	1520

Note: Supplied with 4 screws, 4 washers

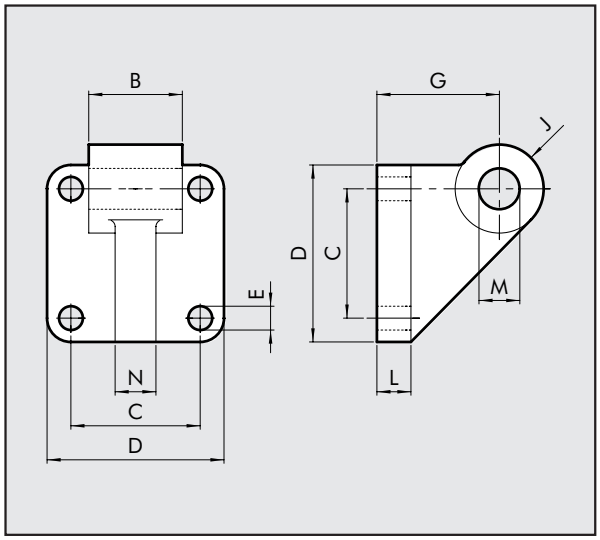
CETOP HINGE FOR MODEL B - MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985
W0951252008	125	70	44	14	25	50	70	90	103	80	40	16	22	1000

Note: Supplied with 4 screws, 4 washers

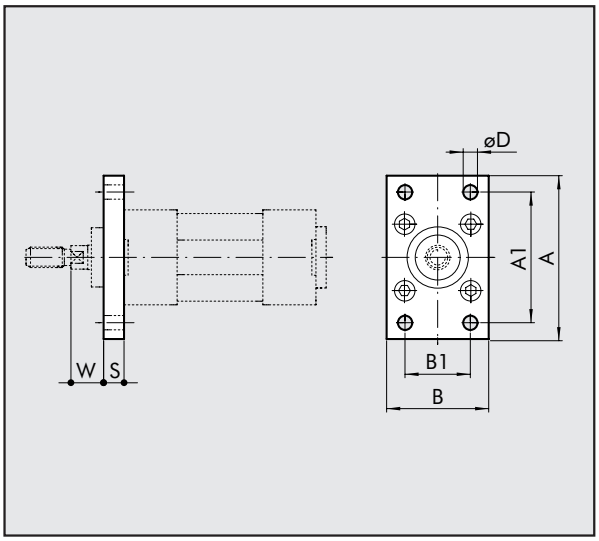
ISO HINGE FOR MODEL B - MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	12	16	15	350
W0950802108	80	49.5	72	95	11	63	17	16	16	15	655
W0951002108	100	59.5	89	115	11	73	21	16	20	22	980

Note: Supplied with 4 screws, 4 washers

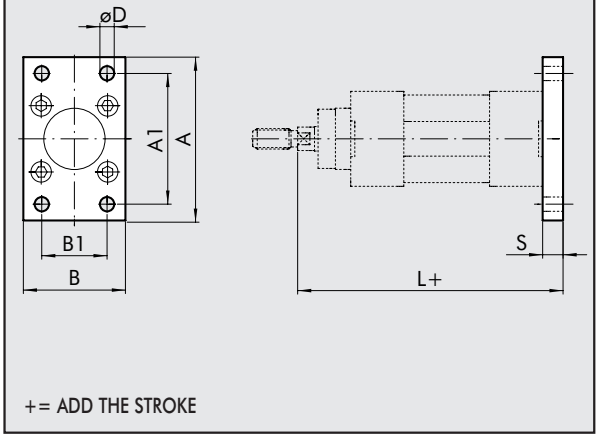
FRONT FLANGE - MODEL C



Code	Ø	A_1	A	B	S	B_1	$ØD_4$	W	Weight [g]
W0950322002	32	64	80	50	10	32	7	16	246
W0950402002	40	72	90	55	10	36	9	20	290
W0950502002	50	90	110	65	12	45	9	25	522
W0950632002	63	100	120	75	12	50	9	25	670
W0950802002	80	126	153	95	16	63	12	30	1420
W0951002002	100	150	178	115	16	75	14	35	2040
W0951252002	125	180	220	140	20	90	16	45	4300

Note: Supplied with 4 screws.

REAR FLANGE - MODEL C

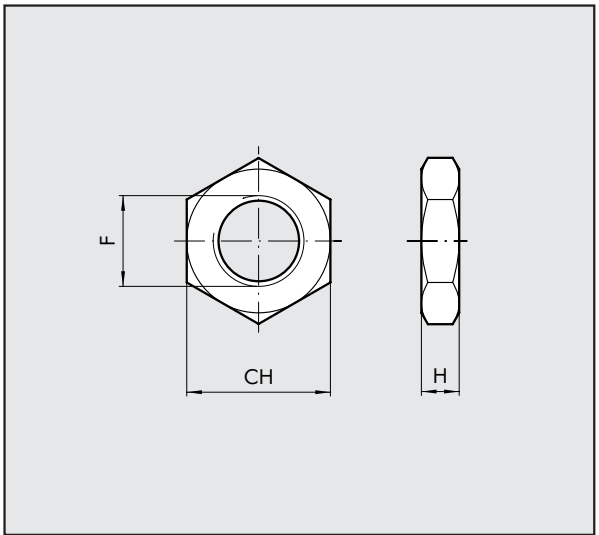


+= ADD THE STROKE

Code	Ø	A_1	A	B	S	B_1	$ØD_4$	L_{+corsa}	Weight [g]
W0950322002	32	64	80	50	10	32	7	130	246
W0950402002	40	72	90	55	10	36	9	145	290
W0950502002	50	90	110	65	12	45	9	155	522
W0950632002	63	100	120	75	12	50	9	170	670
W0950802002	80	126	153	95	16	63	12	190	1420
W0951002002	100	150	178	115	16	75	14	205	2040
W0951252002	125	180	220	140	20	90	16	245	4300

Note: Supplied with 4 screws.

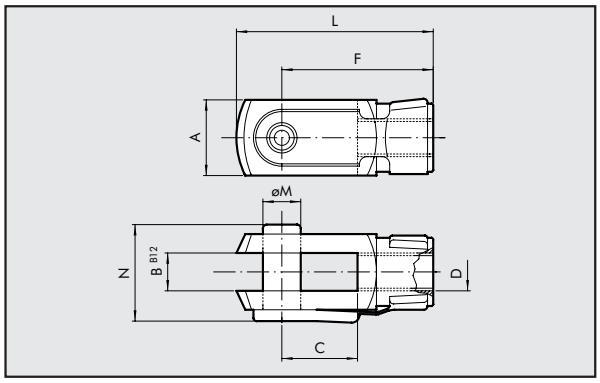
ROD NUT - MODEL S



Code	Ø	F	H	CH	Weight [g]
0950322010	32	M10x1.25	6	17	6
0950402010	40	M12x1.25	7	19	12
0950502010	50/63	M16x1.5	8	24	20
0950802010	80/100	M20x1.5	9	30	32
0951252010	125	M27x2	12	41	74

Note: Individually packed.

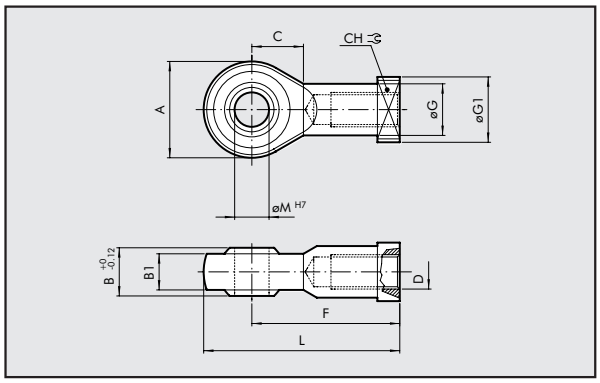
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340
W0950802020	80	20	40	20	40	105	80	M20x1.5	40	690
W0950802020	100	20	40	20	40	105	80	M20x1.5	48	690
W0951252020	125	30	54	30	55	148	110	M27x2	65	1835

Note: Individually packed.

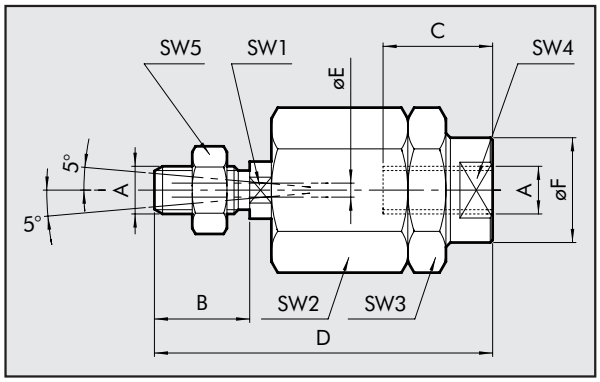
ROD EYE - MODEL GA-M



Code	Ø	Ø M	C	B1	B	A	L	F	D	Ø G	CH	Ø G1	Weight [g]
W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	19	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950802025	80	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404
W0950802025	100	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404
W0951252025	125	30	36	25	37	70	145	110	M27x2	40	41	50	1190

Note: Individually packed

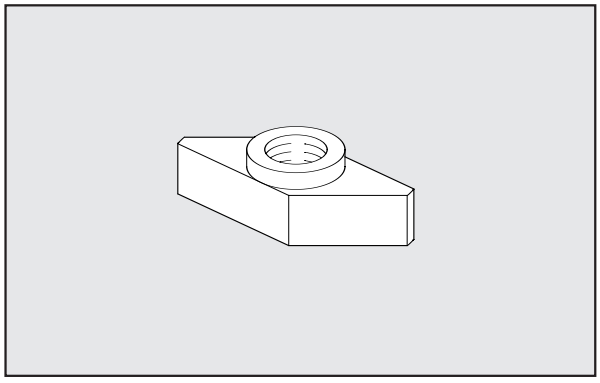
SELF ALIGNING ROD COUPLER - MODEL GA-K



Code	Ø	A	B	C	D	ØF	ØE	SW_1	SW_2	SW_3	SW_4	SW_5	Weight [g]
W0950322030	32	M10x1.25	20	20	71	22	4	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	22	4	12	30	30	19	19	220
W0950502030	50	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950802030	80	M20x1.5	40	40	119	32	4	20	41	41	30	30	680
W0950802030	100	M20x1.5	40	40	119	32	4	20	41	41	30	30	680

Note: Individually packed

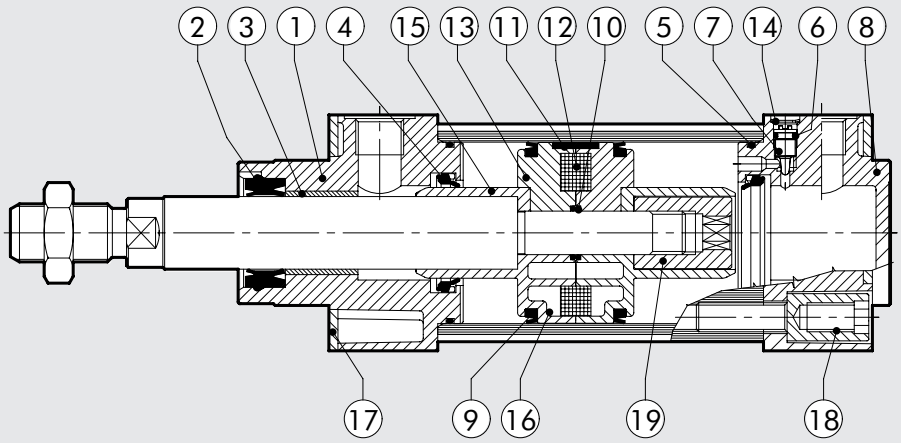
SLOTTED FIXING PLATE



Code	Description	Weight [g]
0950003001	ACC M4 T-SLOTTED FIXING PLATE	1
0950003002	ACC M3 T-SLOTTED FIXING PLATE	1

Note: Individually packed

CYLINDERS ISO 6431 STD AND TYPE "A"
RETRACTABLE SENSOR: SPARES



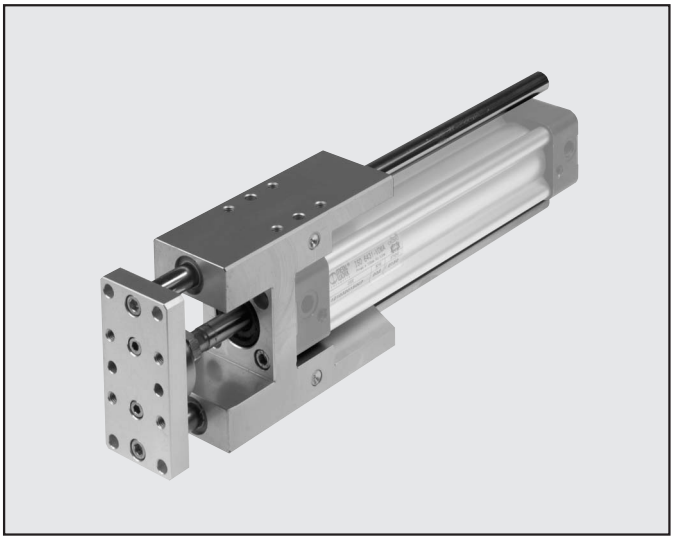
Type	Parts	Bore	Code
Complete set of polyurethane gaskets	2-4-5-6-9-10	Ø 32-125	009 . . . 0101
Complete set of NBR gaskets	2-4-5-6-9-10	Ø 32-125	009 . . . 0502
Complete polyurethane front head kit	1-2-3-4-5-6-7-14-17-18	Ø 32-125	009 . . . 0110
Complete NBR front head kit	1-2-3-4-5-6-7-14-17-18	Ø 32-125	009 . . . 0304
Complete polyurethane rear head kit	4-5-6-7-8-14-17-18	Ø 32-125	009 . . . 0111
Complete NBR rear head kit	4-5-6-7-8-14-17-18	Ø 32-125	009 . . . 0305
Complete polyurethane piston kit	9-10-16-19	Ø 32-63	009 . . . 0604
Complete polyurethane piston kit	9-10-11-13-15-18	Ø 80-125	009 . . . 0604
Complete NBR piston kit	9-10-16-19	Ø 32-63	009 . . . 0602
Complete NBR piston kit	9-10-11-13-15-18	Ø 80-125	009 . . . 0602
Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18	Ø 32-63	009 . . . 0704
Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-11-13-14-15-17-18	Ø 80-125	009 . . . 0704
Complete NBR head A+P+pistion kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18	Ø 32-63	009 . . . 0702
Complete NBR head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-11-13-14-15-17-18	Ø 80-125	009 . . . 0702
Magnet	12	Ø 32-125	009 . . . 0800

ACCESSORIES: GUIDE UNITS FOR CYLINDERS ISO 6431 STD AND TYPE "A" RETRACTABLE SENSOR

Guide units series DS-DH-DM ensure optimal alignment and anti-rotation effect of the pneumatic cylinder connected to it. The guide units can be used separately or combined in order to get complete handling units, in which case the guide units can be coupled using the type A and C anchorage (pin and flange).
The guide units can be coupled to ISO 6431 cylinders (Ø 32 - Ø 100). The following versions are available:
U PROFILE*: for limited loads and speeds (GDS)
H PROFILE*: for high loads (GDH)
H PROFILE**: for high speeds (GDM)

STANDARD STROKES:
Ø 32-100: 50-100-150-200-250-320-400-500

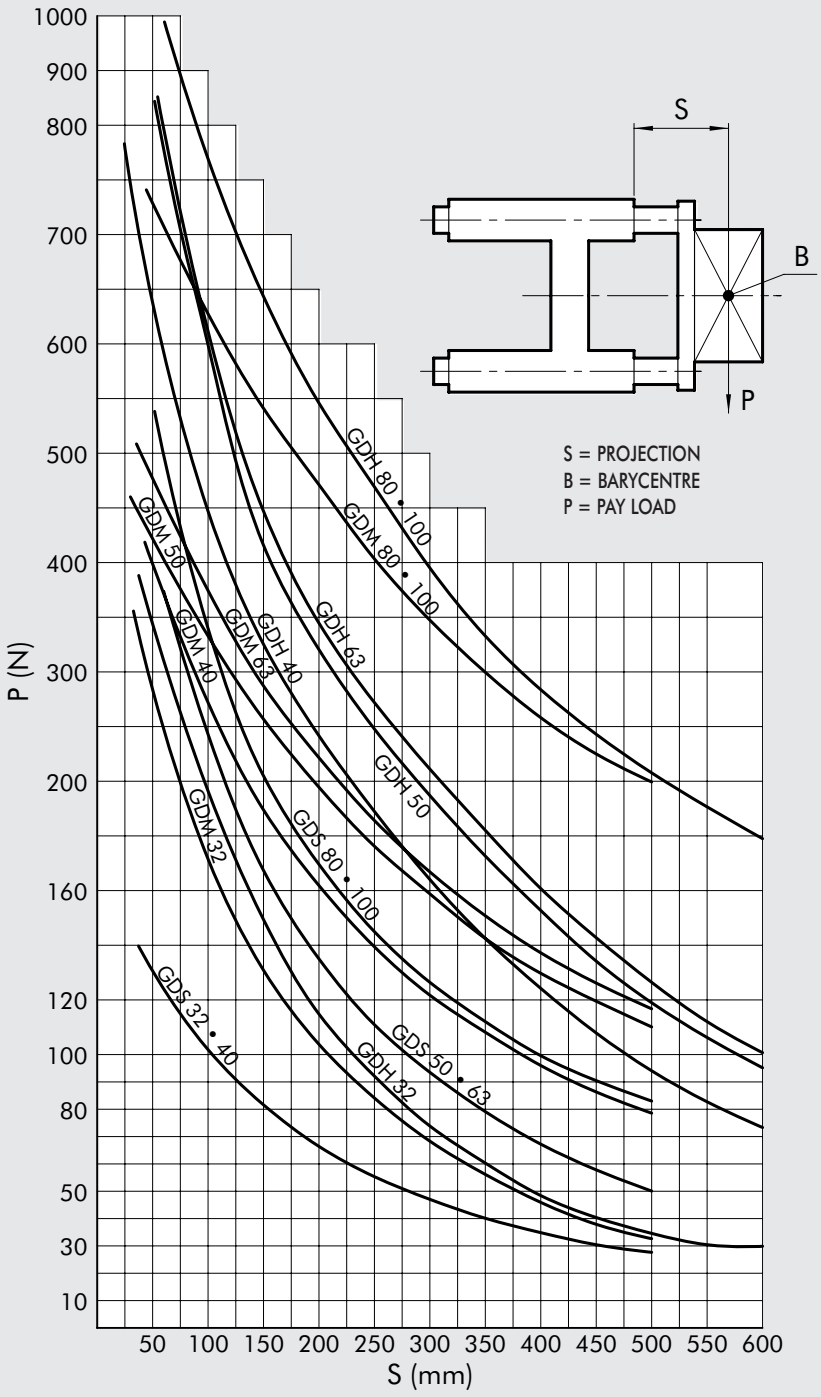
*Bronze guide bushings
**Ball guide bushings
(For weights, refer to the data sheet on page 1.1/07)



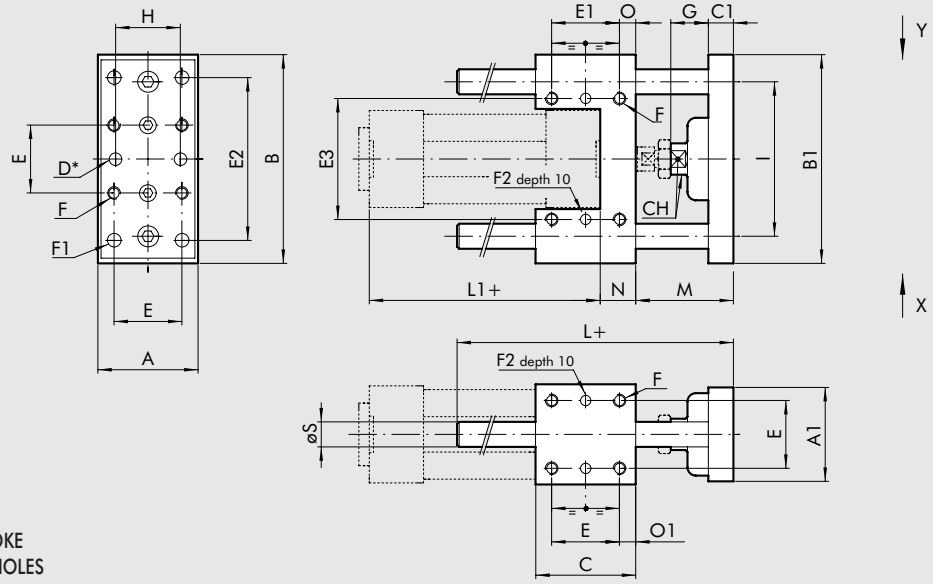
GUIDE UNIT ELEMENTS

SERIES GDS-GDH	Body:	aluminium alloy
	Guide bushing:	self-lubricating sintered bronze and wiper ring s
	Piston rod:	chromed rolled steel
SERIES GDM	Body:	aluminium alloy
	Guide bushing:	ball linear bearings and scraper ring
	Piston rod:	tempered stainless steel

GRAPH OF GUIDE UNIT LOADS



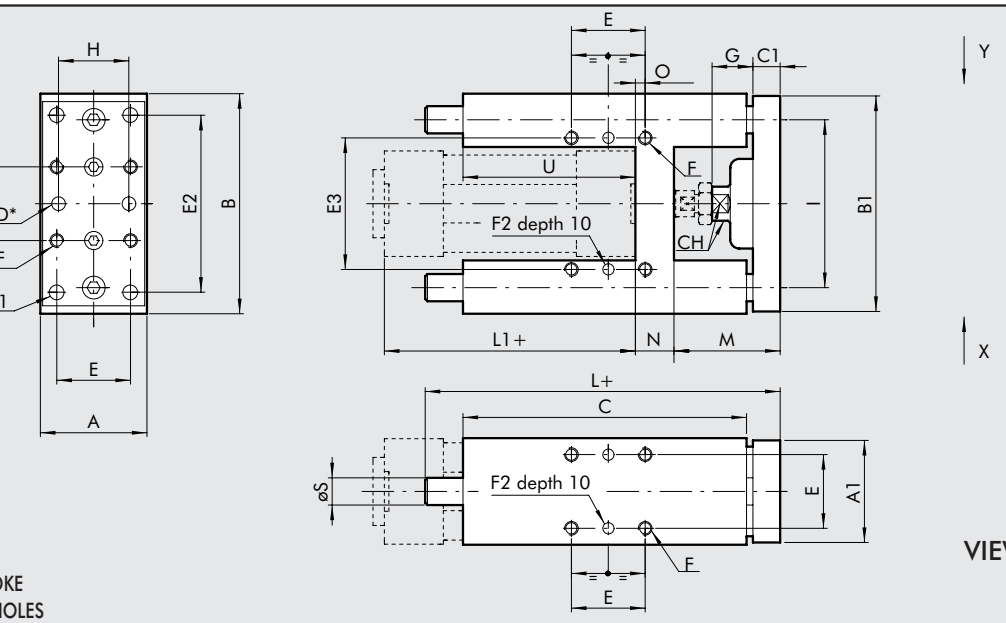
DIMENSIONS TYPE GDS



+ = ADD THE STROKE
✱ CENTERING PINHOLES

Ø	A	A_1	B	B_1	C	C_1	D^{H7}	E	E_1	E_2	E_3	F	F_1	$F_2{}^{H7}$	G	H	I	L	L_1	M	N	O	O_1	Ø S	Ch
32	48	45	100	90	48	12	6	32.5	32.5	78	58	M6	6.5	6	20	31	74	108	94	46	17	7.8	7.8	12	15
40	56	53	106	105	58	15	6	38	38	84	64	M6	6.5	6	21	36	80	120	105	52	21	10	10	12	15
50	66	63	125	120	59	15	6	46.5	46.5	100	80	M8	8.5	6	24	45	96	130	106	65	25	6.3	6.3	16	22
63	76	73	132	127	76	15	6	56.5	56.5	105	95	M8	8.5	6	24	45	104	145	121	65	25	9.8	9.8	16	22
80	98	95	165	160	90	16	6	50	50	130	130	M10	11	6	31	56	130	170	128	71	34	20	9	20	27
100	118	115	185	180	110	16	6	70	70	150	150	M10	11	6	31	56	152	190	138	71	39	20	10.5	20	27

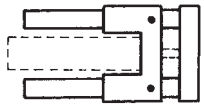
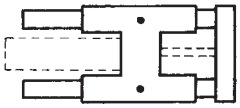
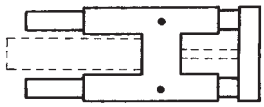
DIMENSIONS TYPE GDH-GDM



+ = ADD THE STROKE
✱ CENTERING PINHOLES

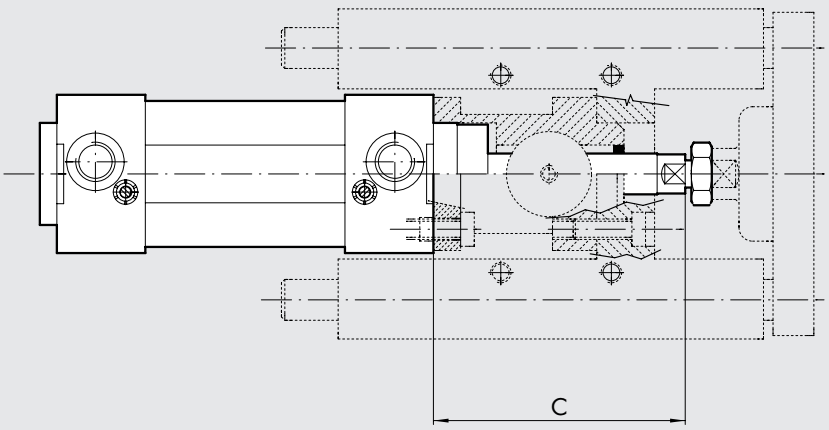
Ø	A	A_1	B	B_1	C	C_1	Ch	D^{H7}	E	E_2	O	E_3	F	F_1	$F_2{}^{H7}$	G	H	I	L	L_1	M	N	S	U
32	49	45	97	90	125	12	13	6	32.5	78	4.3	61	M6	6.5	6	18	31	74	177	94	47	17	12	76
40	58	54	115	110	139	15	15	6	38	84	11	69	M6	6.5	6	21	36	87	192	105	53	21	16	81
50	69	63	137	130	148	15	22	6	46.5	100	18.5	85	M8	8.5	6	24	45	104	205	106	63	26	20	78
63	85	79	152	145	182	15	22	6	56.5	105	15.3	100	M8	8.5	6	24	45	119	237	121	62	26	20	111
80	105	99	189	180	215	20	27	6	72	130	21	130	M10	11	6	31	56	148	280	128	76	34	25	128
100	129	120	213	200	220	20	27	6	89	150	24.5	150	M10	11	6	31	56	173	280	138	76	39	25	128

FLANGIA ANTERIORE - MOD. C

Version	Bore	Type	Code
Sliding on bronze bushings (GDS) 	32	UNIT MW DS 032...	W 0700321...
	40	UNIT MW DS 040...	W 0700401...
	50	UNIT MW DS 050...	W 0700501...
	63	UNIT MW DS 063...	W 0700631...
	80	UNIT MW DS 080...	W 0700801...
	100	UNIT MW DS 100...	W 0701001...
Sliding on bronze bushings (GDH) 	32	UNIT MW DH 032...	W 0700322...
	40	UNIT MW DH 040...	W 0700402...
	50	UNIT MW DH 050...	W 0700502...
	63	UNIT MW DH 063...	W 0700632...
	80	UNIT MW DH 080...	W 0700802...
	100	UNIT MW DH 100...	W 0701002...
Sliding on ball bearing (GDM) 	32	UNIT MW DM 032...	W 0700323...
	40	UNIT MW DM 040...	W 0700403...
	50	UNIT MW DM 050...	W 0700503...
	63	UNIT MW DM 063...	W 0700633...
	80	UNIT MW DM 080...	W 0700803...
	100	UNIT MW DM 100...	W 0701003...

NOTE: To complete the type and code,
add the 3-digit stroke (e.g. 50=050)

DIMENSIONI VERSIONE BLOCCASTELO + UNITÀ DI GUIDA COD. 137

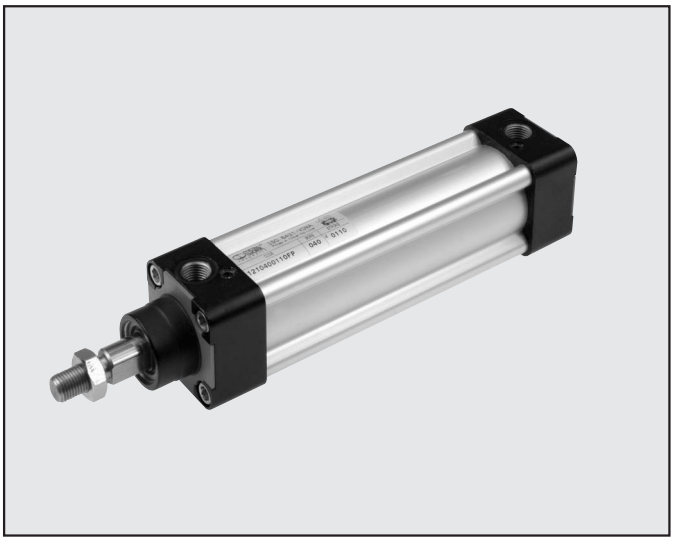


Ø	C
32	74
40	85
50	107
63	107
80	136
100	143
126	187

CYLINDER SERIES ISO 6431 VDMA, Ø 32-63 mm TWO-FLAT

This version of cylinder is used to keep the parts fixed to the piston rod at an angle and to apply torques within the specified limits.
The piston rod of the Two Flat has two opposing longitudinal surfaces; it is made of stainless steel.
The front cylinder head includes a sintered bronze bush that matches the profile of the piston rod and prevents it from rotating on its own axis. A special polyurethane gasket ensures pneumatic seal and prevents the accumulation of dirt. This technical solution is more reliable and gives a better pneumatic seal than with square or hexagonal piston rods.
The cylinders are made to ISO 6431, ISO15552 and VDMA standards. They are available in several versions and with a wide range of accessories:

- with or without magnet
- double acting, single piston rod
- double acting, through rod; one piston rod is Two Flat, the other cylindrical
- fixing accessories.

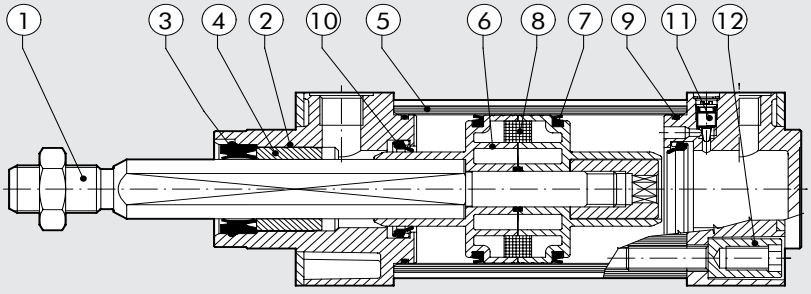


TECHNICAL DATA		POLYURETHANE			
Operating pressure		max 10 bar (max 1 MPa - 145 psi)			
Temperature range		–20 ÷+80 (non-magnetic cyl.)			
	°C	–20 ÷+70 (magnetic cyl.))			
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore		Ø 32 ; Ø 40 ; Ø 50 ; Ø 63			
Design		Heads with Tap Tite screws			
Maximun stroke	mm	Ø 32= 300	Ø 40= 400	Ø 50= 500	Ø63= 500
Versions		Double-acting cushioned, Through-rod cushioned, no-stick slip*			
Sensor magnet		All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure		Ø 32= 0.4	Ø 40= 0.4	Ø 50= 0.3	Ø63= 0.3
Max torque on piston rod	Nm	Ø 32= 0.2	Ø 40= 0.4	Ø 50= 1	Ø63= 1
Maximum rotation on the rod	**degrees**	Ø 32= 0.70°	Ø 40= 0.75°	Ø 50= 0.65°	Ø63= 0.65°
Forces generated at 6 bar thrust/retraction		See GENERAL TECHNICAL DATA PAGE 1.1/05			
Weights		See GENERAL TECHNICAL DATA PAGE 1.1/06			

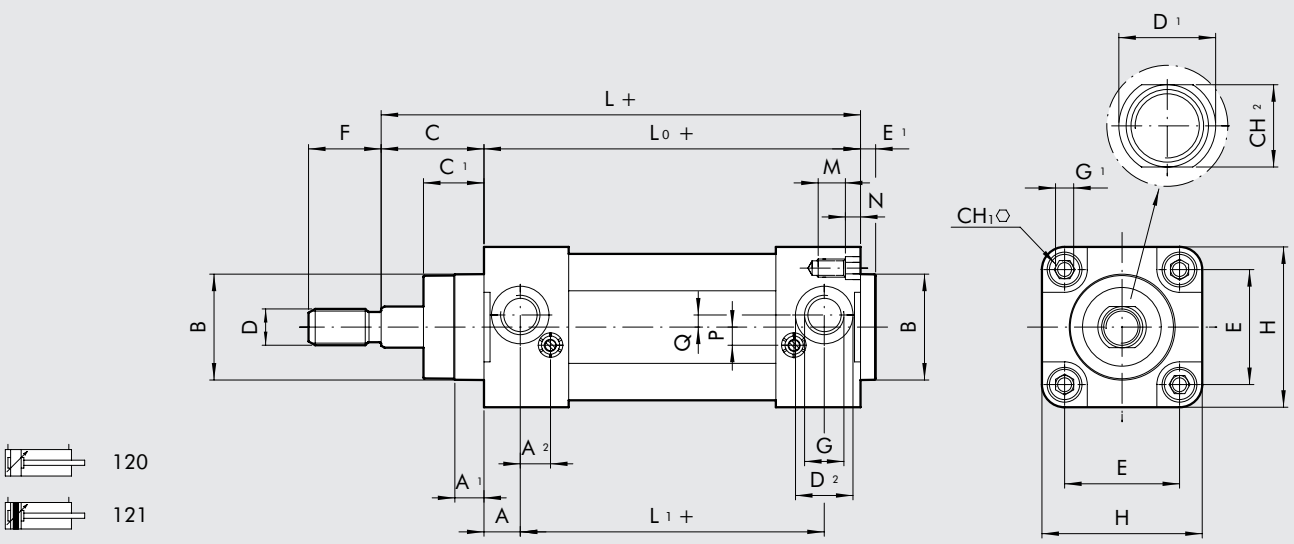
*For no-stick slip versions, use no-lubricated air only

COMPONENTS

① PISTON ROD: stainless steel.
② HEAD: die cast aluminium, fully machined
③ PISTON ROD GASKET: polyurethane (PARKER PRADIFA)
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: drawn anodised calibrated aluminium
⑥ HALF-PISTON: self-lubricating technopolymer with built-in cushioning olives
⑦ PISTON GASKET: Ø 32÷63 polyurethane (PARKER PRADIFA)
⑧ MAGNET: plastoferrite
⑨ Static O-rings: NBR
⑩ CUSHIONING GASKET: polyurethane (PARKER PRADIFA)
⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
⑫ SCREWS: Tap Tite for assembly

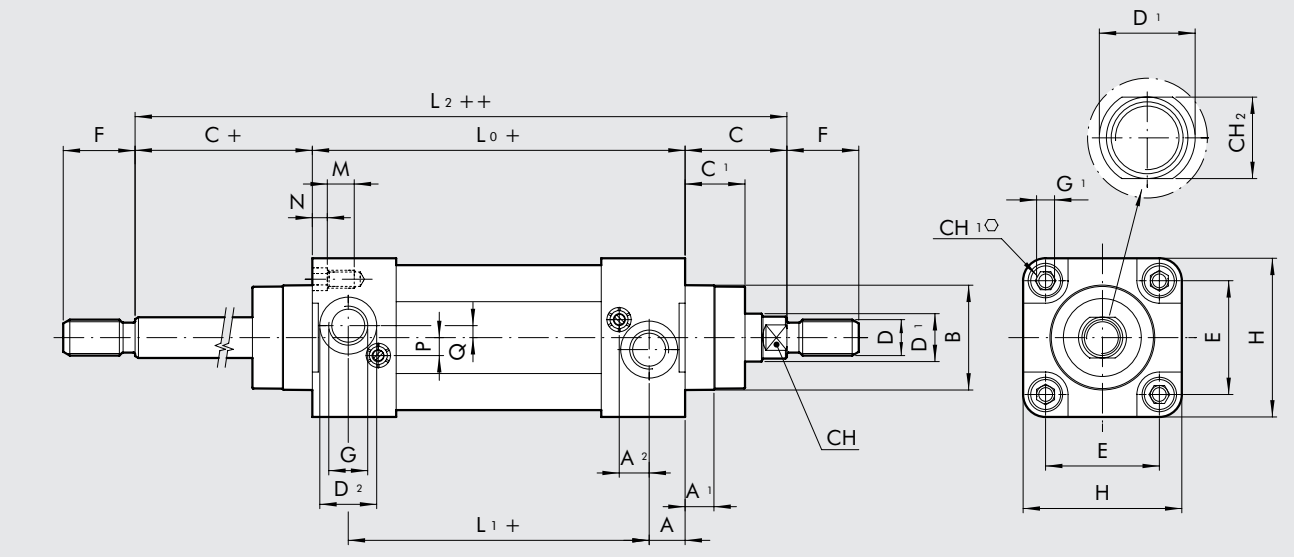


DIMENSIONS OF STANDARD VERSIONS



+ = ADD THE STROKE

DIMENSIONS OF THROUGH-ROD VERSION



+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

Ø.	A	A_1	A_2	B	C	C_1	CH	CH_1	CH_2	D	D_1	D_2	E	E_1	F	G	G_1	H	L	L_0	L_1	L_2	M	N	P	Q
32	10	7	10	30	26	16	10	6	10	M10x1.25	12	15	32.5	5	22	G1/8	M6	47	120	94	74	146	9	4.5	6	4
40	12	9	10	35	30	20	13	6	13	M12x1.25	16	19	38	5	24	G1/4	M6	53	135	105	81	165	9	4.5	6	4
50	14	14	10	40	37	25	17	8	17	M16x1.5	20	19	46.5	5	32	G1/4	M8	65	143	106	78	180	12	5.5	6	6
63	16	14	10	45	37	25	17	8	17	M16x1.5	20	23	56.5	5	32	G3/8	M8	75	158	121	89	195	12	5.5	6	6

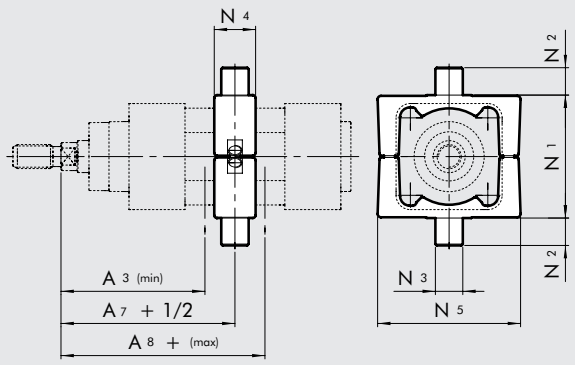
KEY TO CODES

CYL	1	2	1	0	3	2	0	0	5	0	F	P
	TYPE				BORE		STROKE					

120	Double-acting, cuschioned, non-magnetic	0	Diameter	32	Ø32 stroke 0÷300 mm	F	"Two Flat" piston rod AISI 303 stainless steel nut	P	polyurethane gaskets
121	Double-acting, cushioned	S	Non-magnetic	40	Ø40 stroke 0÷400 mm				
122	Through-rod	G	No stick slip	50	Ø50÷Ø63 stroke 0÷500 mm				
				63					

ACCESSORIES: FIXINGS

INTERMEDIATE HINGE - MODEL EN

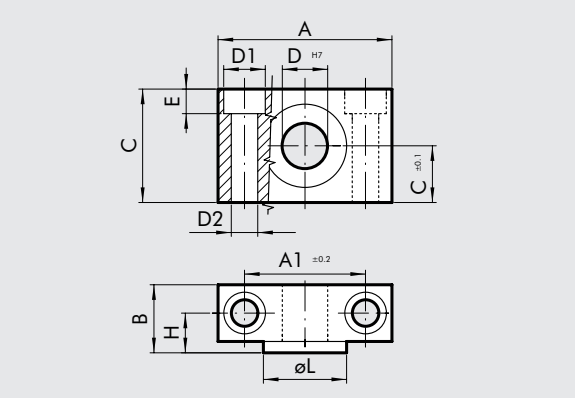


\+ = ADD THE STROKE
\+ 1/2 = ADD HALF THE STROKE

Code	Ø	$A_{3\,(min)}$	A_7	$A_{8\,(max)}$	N_1	N_2	$N_{3\,e\,9}$	N_4	N_5	Weight [g]
0950322007	32	63	73	83	50	12	12	22	65	282
0950402007	40	72	82.5	93	63	16	16	28	75	582
0950502007	50	83	90	97	75	16	16	32	95	880
0950632007	63	86.5	97.5	108.5	90	20	20	35	105	1230

Note: Supplied complete with 4 grub screws, 2 pins

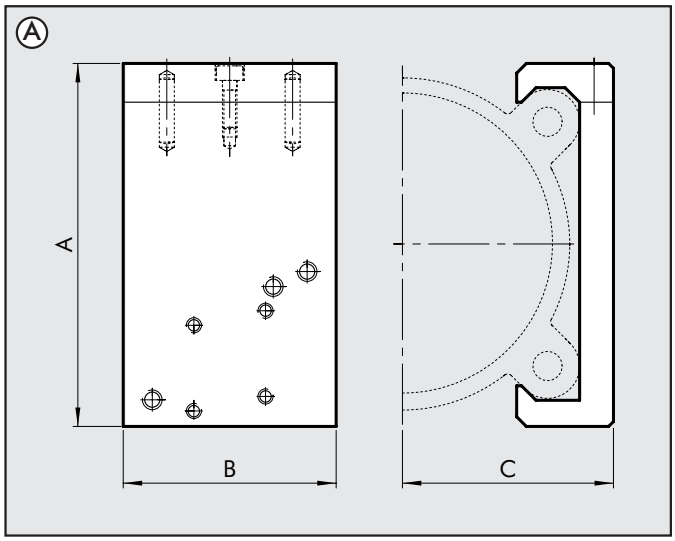
COUNTER-HINGE FOR MODEL EN - MODEL EL

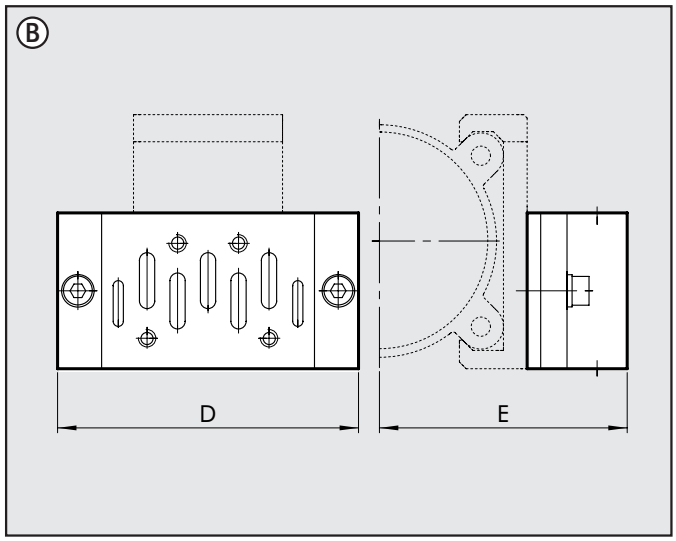


Cod.	Ø	A	A_1	B	C	C_1	D_1	D_2	D	E	H	ØL	Weight [g]
W0950322009	32	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	40	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950402009	50	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	63	65	42	23	40	20	18	11	20	10.5	13	35	414

NOTE: Supplied with 4 securing screws

CYLINDER BRACKET - VALVE SERIES KCV





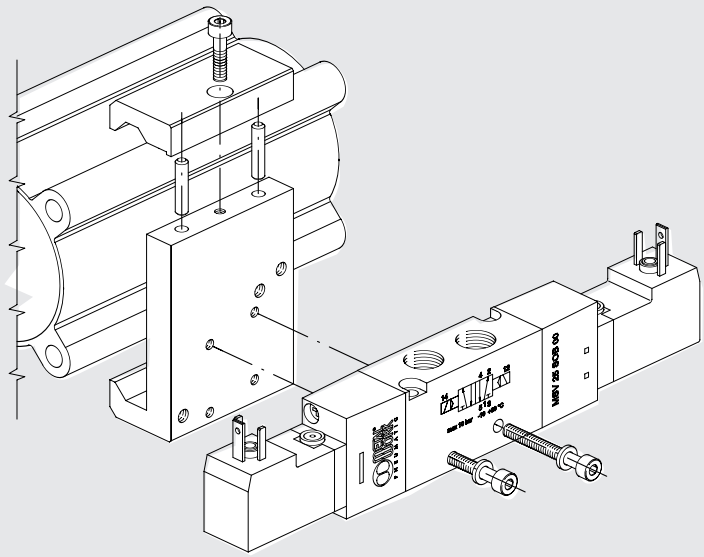
VALVE FIXING BRACKET - CYLINDER (Fig. A)

					ISO 1		ISO 2			
Code	Ø	A	B	C	D	E	D	E	Applicable valves	Weight [g]
0950322090	Ø 32	54	40	29.5	110	64.5	124	70.5	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	80
0950402090	Ø 40	59.5	40	32.2	110	67.2	124	73.2	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	86
0950502090	Ø 50	71.5	40	37	110	72	124	78	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	93
0950632090	Ø 63	81.5	40	42	110	77	124	83	MACH 16 Series 70 1/8-1/4 ISO 1 - ISO 2	101

KIT FOR FIXING VALVES TO BRACKETS

Code	Valve kit	Composition		Weight [g]
0950002003	MACH 16	2 HEX. SCREWS M3x25 with WASHER		4
0950002004	Series 70 1/8-1/4	2 HEX. SCREWS M4x50 with WASHER		8
0950002006	Series 70 1/2	2 HEX. SCREWS M5x50 with WASHER		20
0950002001	ISO 1	ADAPTOR + ISO1 BASE SIDE + SCREWS + WASHERS	(Fig. B)	230
0950002002	ISO 2	ADAPTOR + ISO 2 BASE SIDE + SCREWS + WASHERS	(Fig. B)	350

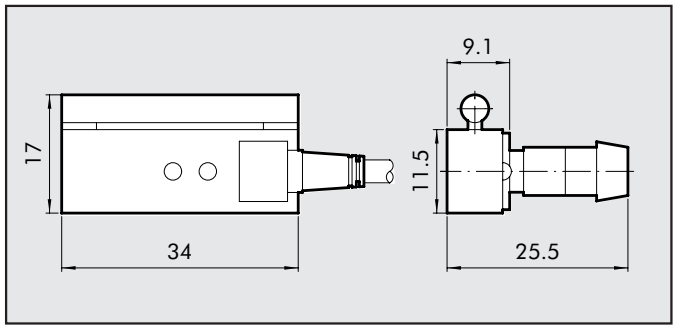
VALVE ASSEMBLY ON CYLINDER



ACCESSORIES: MAGNETIC SENSORS

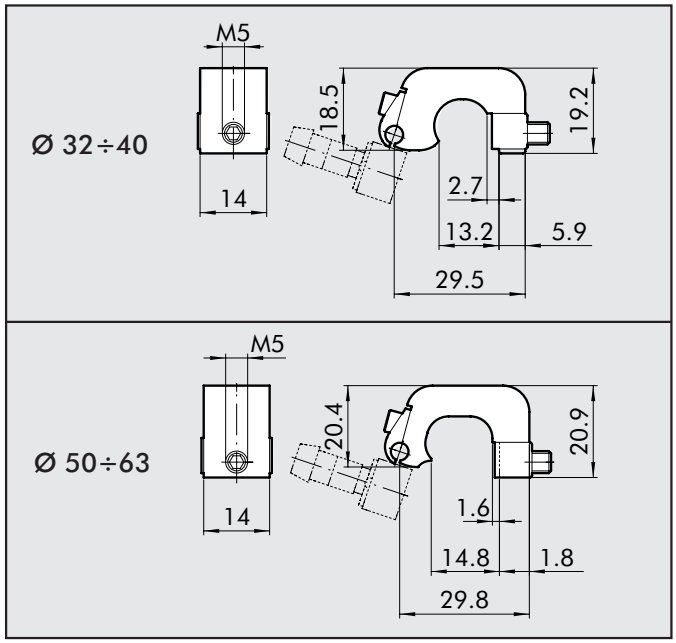
SENSOR

Code	Description
W0950000201	SENSOR REED DSM2-C525
W0950000222	SENSOR HALL PNP DSM3-N225
W0950000232	SENSOR HALL NPN DSM3-M225



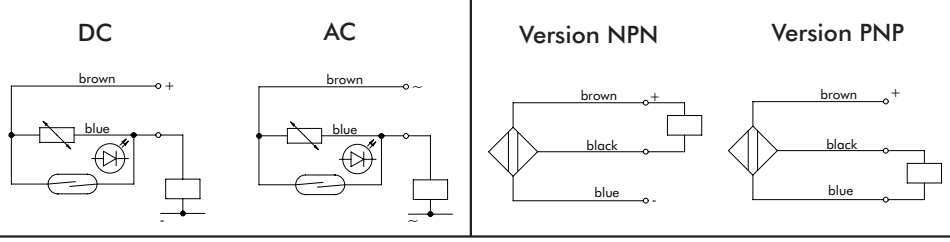
SENSOR BRACKETS

Code	Description
W0950000711	BRACKET ACC. D.32 DST 80
W0950000712	BRACKET ACC. D.50 DST 81



TECHNICAL DATA

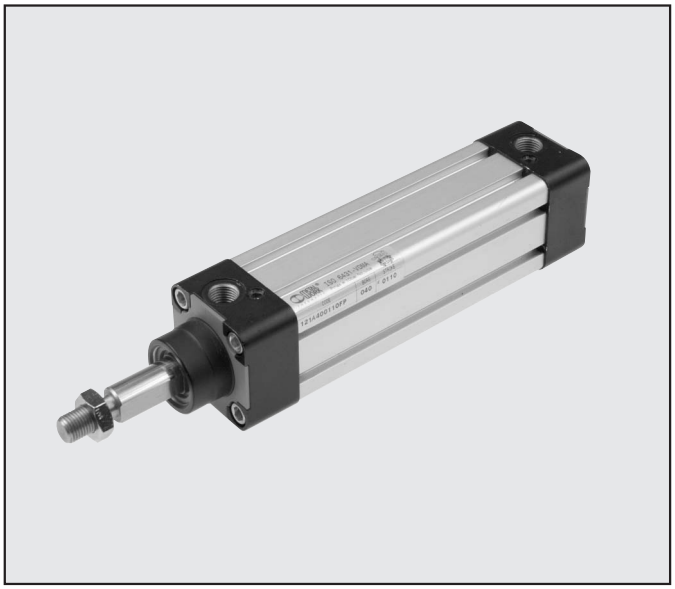
Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3÷48V (DC) 3÷220 (AC)	6-24 V DC
Max current at 25°C	mA	500	250
Power with inductive load	VA	10	–
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life	–	10^7 impulses	10^9 impulses
Contact resistance		0.1	–
Cable length	m	2.5	2.5
Cable cross section	mm^2	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit0			



CYLINDERS SERIES "ISO 6431 VDMA" Ø 32-125 mm TYPE "A" RETRACTABLE SENSOR TWO FLAT

This version of cylinder is used to keep the parts fixed to the piston rod at an angle and to apply torques within the specified limits.
Type A cylinders have a jacket with grooves for housing retractable sensors.
The piston rod of the Two Flat has two opposing longitudinal surfaces; it is made of stainless steel.
The front cylinder head includes a sintered bronze bush that matches the profile of the piston rod and prevents it from rotating on its own axis. A special polyurethane gasket ensures pneumatic seal and prevents the accumulation of dirt. This technical solution is more reliable and gives a better pneumatic seal than with square or hexagonal piston rods.
The cylinders are made to ISO 6431, ISO15552 and VDMA standards. They are available in several versions and with a wide range of accessories:

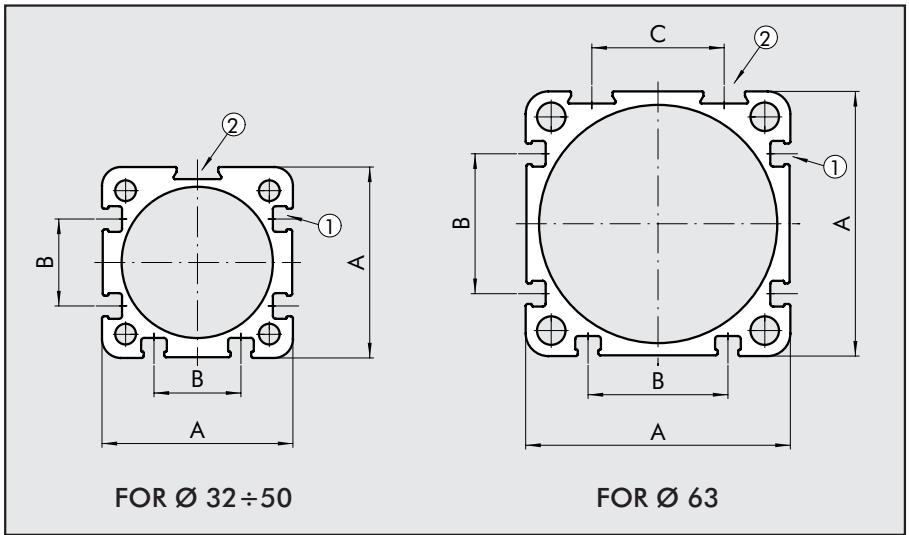
- with or without magnet
- double acting, single piston rod
- double acting, through rod; one piston rod is Two Flat, the other cylindrical
- fixing accessories.



TECHNICAL DATA		POLYURETHANE			
Operating pressure		max 10 bar (max 1 MPa - 145 psi)			
Temperature range		–20 ÷+80 (non-magnetic cyl.)			
	°C	–20 ÷+70 (magnetic cyl.))			
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore		Ø 32 ; Ø 40 ; Ø 50 ; Ø 63			
Design		Heads with Tap Tite screws			
Maximun stroke	mm	Ø 32= 300	Ø 40= 400	Ø 50= 500	Ø63= 500
Versions		Double-acting cushioned, Through-rod cushioned, no-stick slip*			
Sensor magnet		All versions come complete with magnet. Supplied without magnet on request.			
Inrush pressure		Ø 32= 0.4	Ø 40= 0.4	Ø 50= 0.3	Ø63= 0.3
Max torque on piston rod	Nm	Ø 32= 0.2	Ø 40= 0.4	Ø 50= 1	Ø63= 1
Maximum rotation on the rod	**degrees**	Ø 32= 0.70°	Ø 40= 0.75°	Ø 50= 0.65°	Ø63= 0.65°
Forces generated at 6 bar thrust/retraction		See GENERAL TECHNICAL DATA PAGE 1.1/05			
Weights		See GENERAL TECHNICAL DATA PAGE 1.1/06			

*For no-stick slip versions, use no-lubricated air only

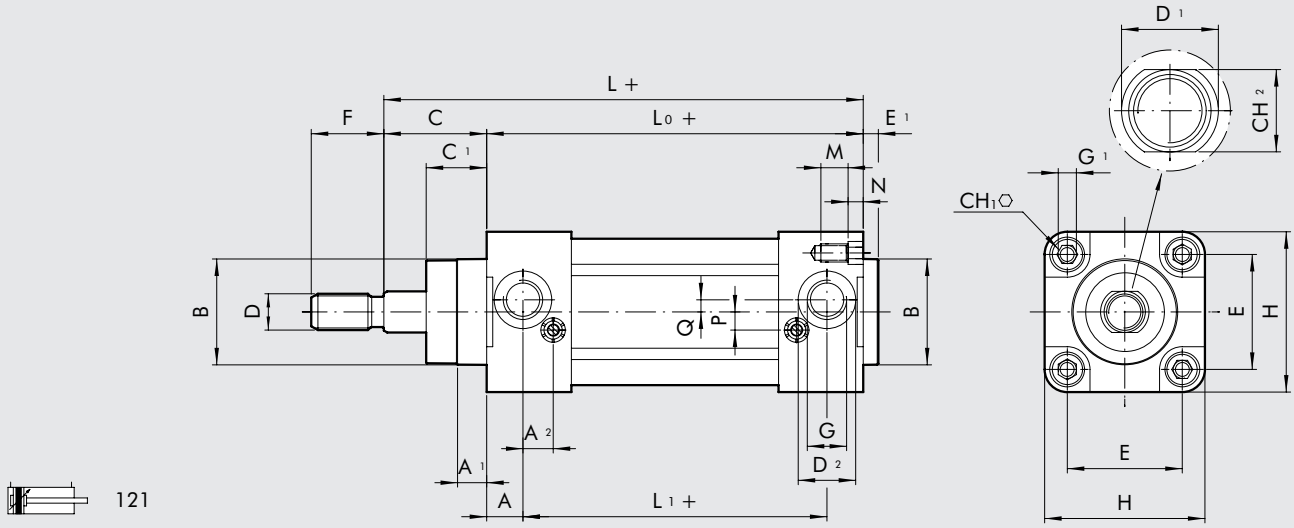
JACKET CROSS SECTION



Ø	A	B	C
32	44.5	17	–
40	50.5	23	–
50	60.3	26	–
63	70	37	35

① SLOTS FOR RETRACTABLE SENSOR
② SLOTS FOR SENSOR TYPE CB

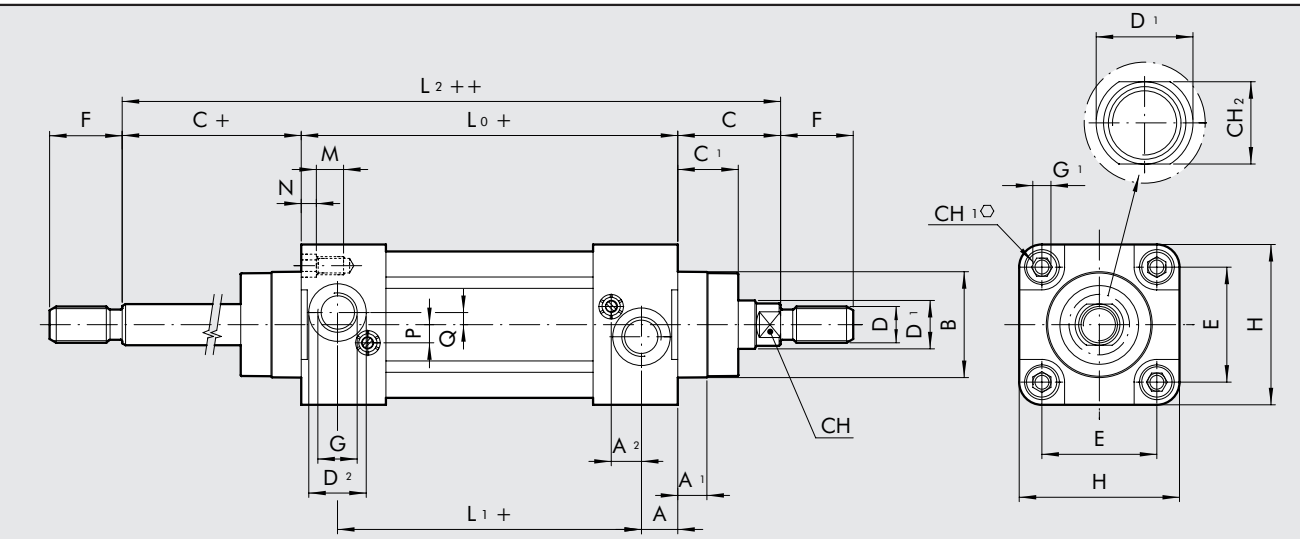
DIMENSIONS OF STANDARD VERSIONS



121

+ = ADD THE STROKE

DIMENSIONS OF THROUGH-ROD VERSION



122

+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

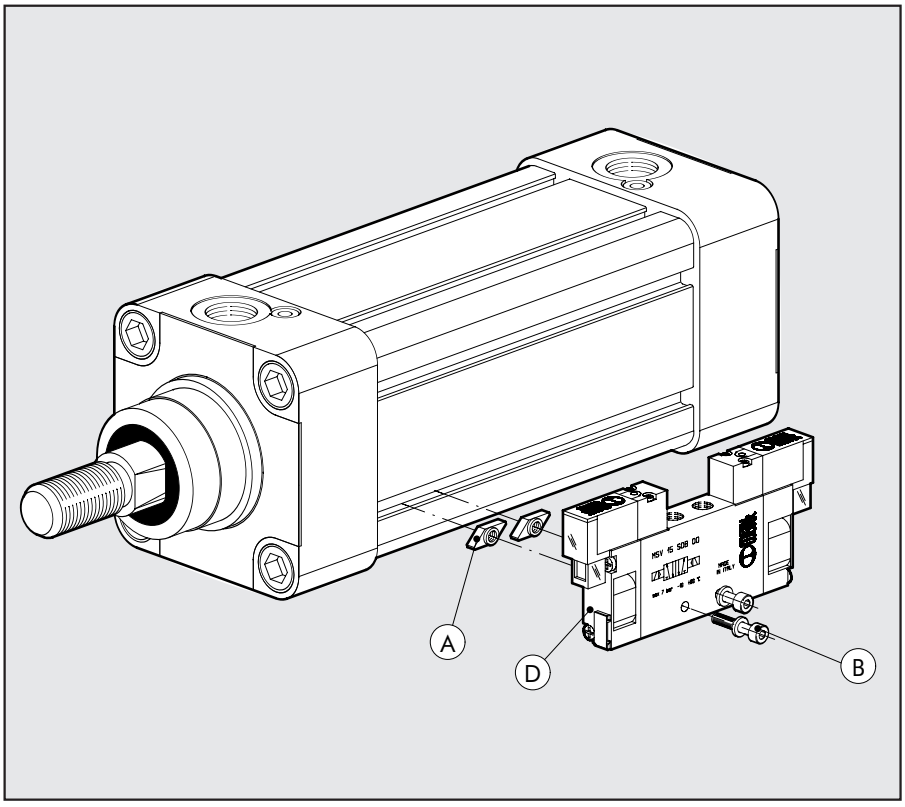
Ø	A	A_1	A_2	B	C	C_1	CH	CH_1	CH_2	D	D_1	D_2	E	E_1	F	G	G_1	H	L	L_0	L_1	L_2	M	N	P	Q
32	10	7	10	30	26	16	10	6	10	M10x1.25	12	15	32.5	5	22	G1/8	M6	47	120	94	74	146	9	4.5	6	4
40	12	9	10	35	30	20	13	6	13	M12x1.25	16	19	38	5	24	G1/4	M6	53	135	105	81	165	9	4.5	6	4
50	14	14	10	40	37	25	17	8	17	M16x1.5	20	19	46.5	5	32	G1/4	M8	65	143	106	78	180	12	5.5	6	6
63	16	14	10	45	37	25	17	8	17	M16x1.5	20	23	56.5	5	32	G3/8	M8	75	158	121	89	195	12	5.5	6	6

KEY TO CODES

CYL	1 2 1	A	3 2	0 0 5 0	F	P
	TYPE		DIAMETER	STROKE		
	121 Double-acting, cushioned 122 Through-rod	A Standard B No stick slip C Non-magnetic	32 40 50 63	Ø32 stroke 0÷300 mm Ø40 stroke 0÷400 mm Ø50÷Ø63 stroke 0÷500 mm	F "Two Flat" piston rod AISI 303 stainless steel nut	P polyurethane gaskets

VALVE ASSEMBLY ON CYLINDER

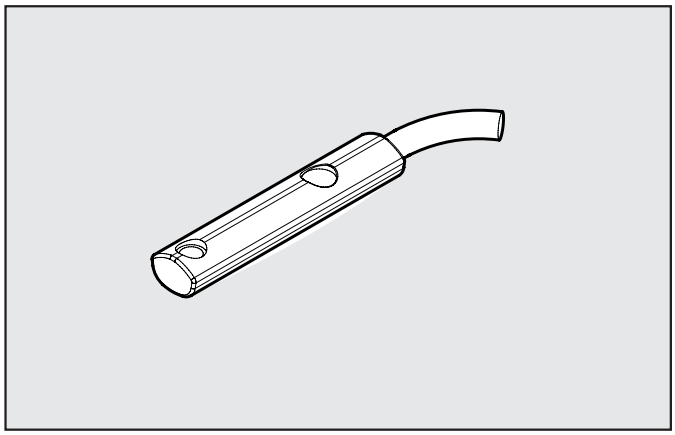
With this type of cylinder, the valves (D) can be mounted directly using the retracting sensor slot, without requiring the use of intermediate brackets.
This can be done using the special plates (A), which come with both the M3 and M4 threads, and screws (B) of the size, type and quantity shown in the table below.
For ISO 1 and ISO 2 valves, the kit on which the valve is to be mounted (codes shown in the tables) will be fitted to the cylinder using the special plates (A) and the screws (B) listed in the table.



Type of valve to mount (D)	M3 fixing plate (A) code 0950003002	M4 fixing plate (A) code 0950003001	Screw (B) for connection to cylinder (one per plate)	Washer (B) (one per screw)	Valve assembly kit
MACH 11	n° 2	–	M3x16 UNI 5931 (DIN 912)	A3.2 UNI 1751 (DIN 127A)	–
SERIE 70 1/8	–	n° 2	M4x25 UNI 5931 (DIN 912)	–	–
SERIE 70 1/4	–	n° 2	M4x30 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	–
SERIE 70 1/2	–	n° 2	M4x45 UNI 5931 (DIN 912)	A4.3 UNI 1751 (DIN 127A)	–
ISO 1	–	n° 2	M4x8 UNI 7688 (DIN 965A)	–	0950002001
ISO 2	–	n° 2	M4x8 UNI 7688 (DIN 965A)	–	0950002002

ACCESSORIES: MAGNETIC SENSORS

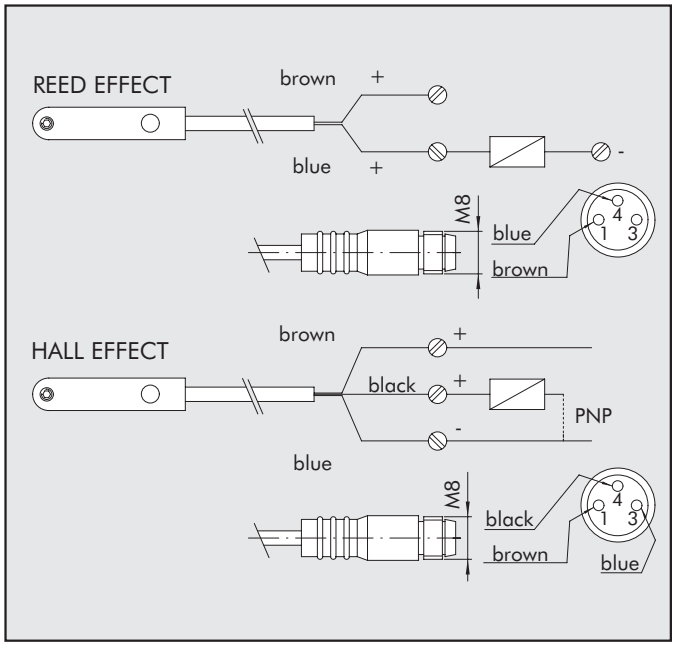
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

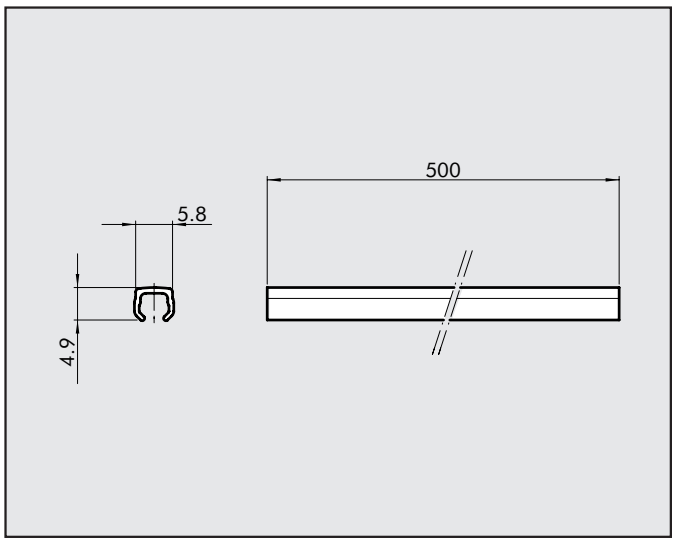
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

STRIP

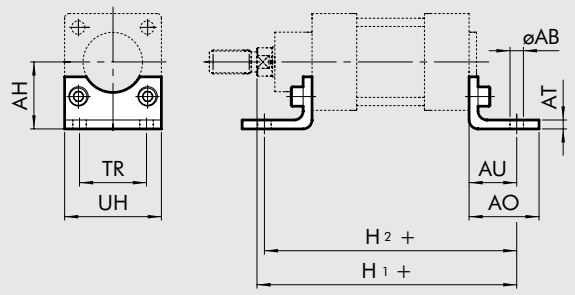


Code	Description
W0950000160	SLOT STRIP 500 mm

Note: The code corresponds to 1 piece.

ACCESSORIES ISO 6431 STD AND TYPE "A" RETRACTABLE SENSOR TWO-FLAT: FIXINGS

LEGS - MODEL A

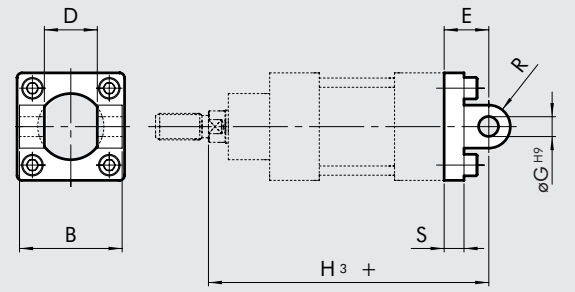


+= ADD THE STROKE

Code	Ø	Ø AB	AH	AO	AT	AU	TR	UH	H_1	H_2	Weight [g]
W0950322001	32	7	32	35	4	24	32	45	144	142	76
W0950402001	40	9	36	43	4	28	36	52	163	161	100
W0950502001	50	9	45	47	4	32	45	65	175	170	162
W0950632001	63	9	50	47	6	32	50	75	190	185	266

Note: Individually packed with 2 screws.

FEMALE HINGE - MODEL B

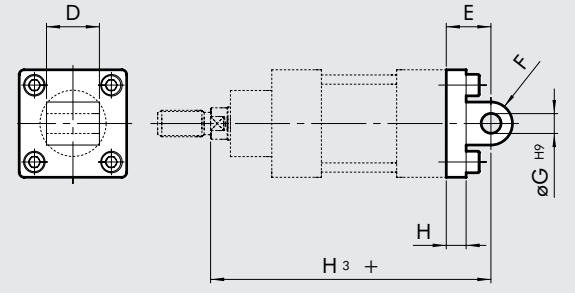


+= ADD THE STROKE

Code	Ø	B	D	E	Ø G	H_3	R	S	Weight [g]
W0950322003	32	45	26	22	10	142	11	10	116
W0950402003	40	52	28	25	12	160	13	10	160
W0950502003	50	60	32	27	12	170	13	12	252
W0950632003	63	70	40	32	16	190	17	12	394

Note: Supplied with 4 screws, 4 washers, 2 snap-rings, 1 pin.

MALE HINGE - MODEL BA

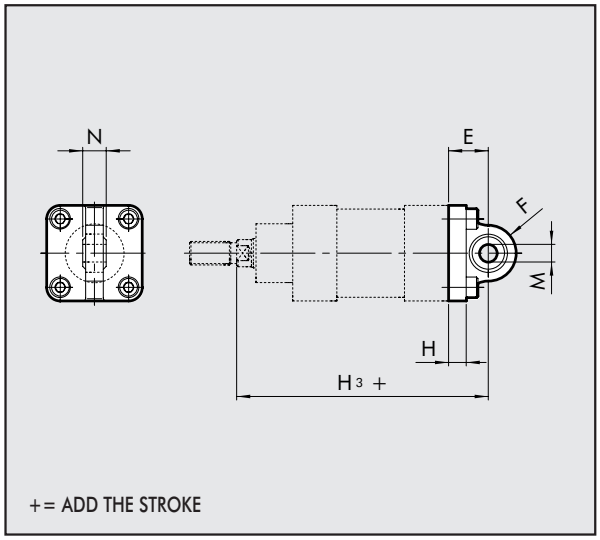


+= ADD THE STROKE

Code	Ø	D	E	F	Ø G	H	H_3	Weight [g]
W0950322004	32	26	22	11	10	10	142	94
W0950402004	40	28	25	13	12	10	160	124
W0950502004	50	32	27	13	12	12	170	220
W0950632004	63	40	32	17	16	12	190	316

Note: Supplied with 4 screws, 4 washers

ARTICULATED MALE HINGE - MODEL BAS

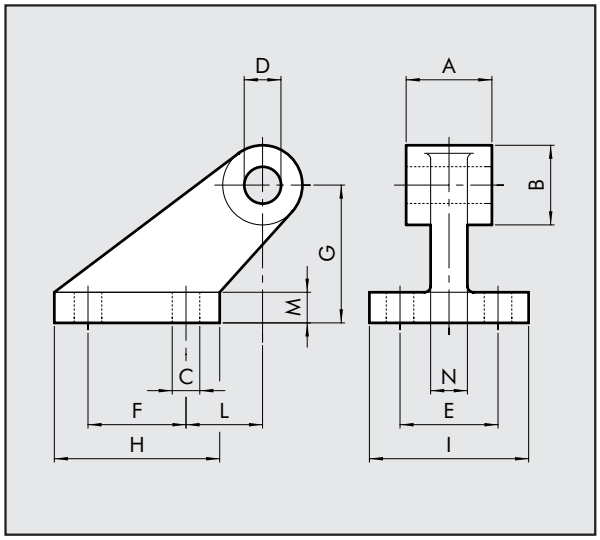


+= ADD THE STROKE

Code	Ø cil.	E	F	H	H_3	M	N	Weight [g]
W0950322006	32	22	16	10	142	10	14	106
W0950402006	40	25	19	10	160	12	16	142
W0950502006	50	27	19	12	170	12	16	236
W0950632006	63	32	24	12	190	16	21	336

Note: Supplied with 4 screws, 4 washers

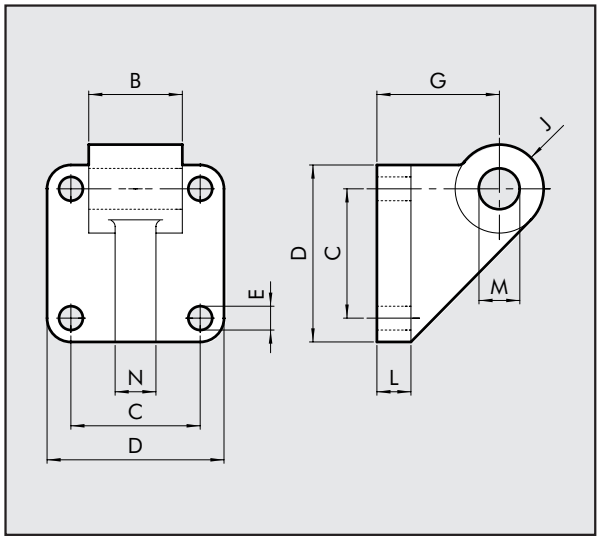
CETOP COUNTER-HINGE FOR MODEL B MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440

Note: Supplied with 4 screws, 4 washers

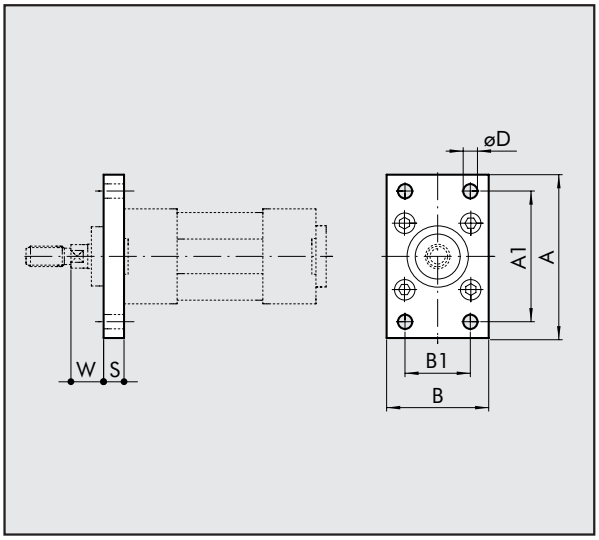
ISO COUNTER-HINGE FOR MODEL B MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	16	12	15	350

Note: Supplied with 4 screws, 4 washers

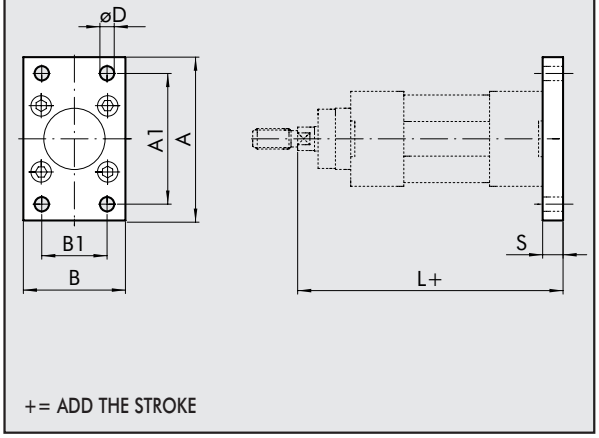
FRONT FLANGE - MODEL C



Code	Ø	A_1	A	B	S	B_1	$ØD_4$	W	Weight [g]
W0950322002	32	64	80	50	10	32	7	16	246
W0950402002	40	72	90	55	10	36	9	20	290
W0950502002	50	90	110	65	12	45	9	25	522
W0950632002	63	100	120	75	12	50	9	25	670

Note: Supplied with 4 screws.

REAR FLANGE - MODEL C

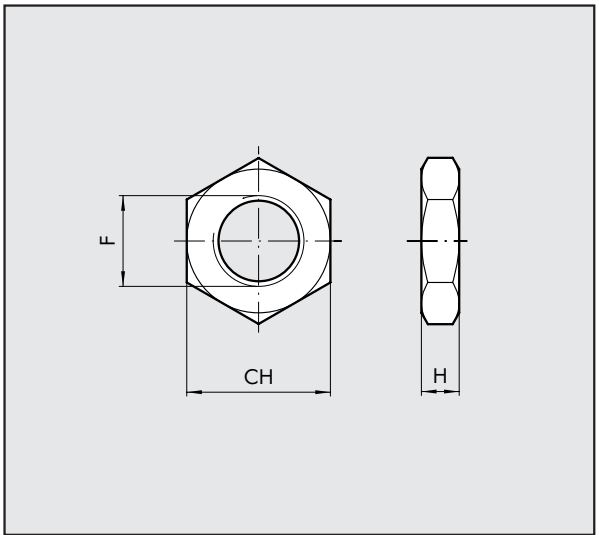


+= ADD THE STROKE

Code	Ø	A_1	A	B	S	B_1	$ØD_4$	L_{+corsa}	Weight [g]
W0950322002	32	64	80	50	10	32	7	130	246
W0950402002	40	72	90	55	10	36	9	145	290
W0950502002	50	90	110	65	12	45	9	155	522
W0950632002	63	100	120	75	12	50	9	170	670

Note: Supplied with 4 screws.

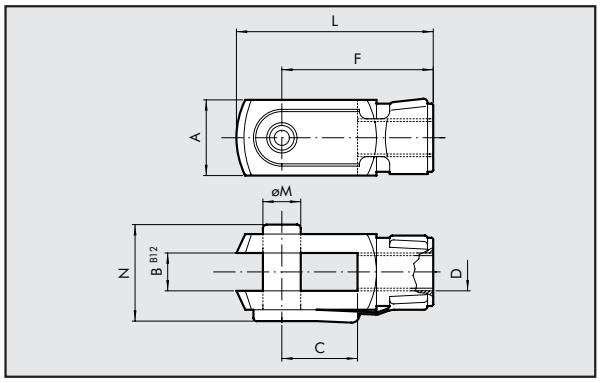
NUT FOR PISTON RODS - MODEL S



Code	Ø	F	H	CH	Weight [g]
0950320200	32	M10x1.25	6	17	6
0950400200	40	M12x1.25	7	19	12
0950500200	50/63	M16x1.5	8	24	20

Note: Individually packed.

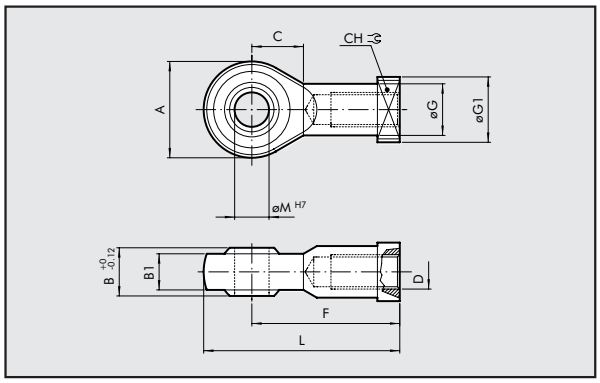
FORK MODEL GK-M



Code	Ø	Ø M	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950402020	40	12	24	12	24	62	48	M12x1.25	32	148
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340

Note: Individually packed.

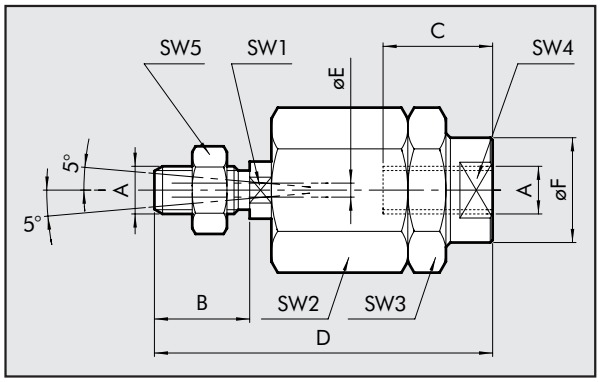
ARTICULATED JOINT - MODEL GA-M



Code	Ø	Ø M	C	B1	B	A	L	F	D	Ø G	CH	Ø G1	Weight [g]
W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	19	78
W0950402025	40	12	17	12	16	32	66	50	M12x1.25	17.5	19	19	116
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226

Note: Individually packed

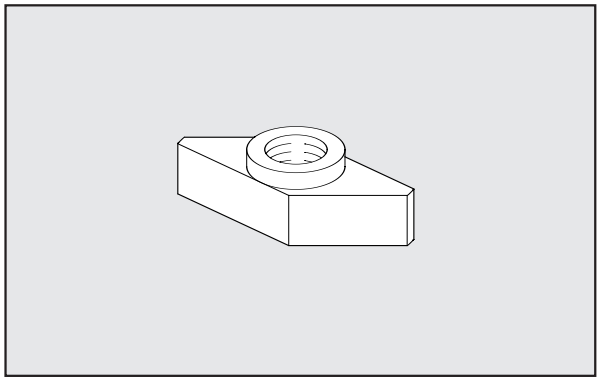
ARTICULATED JOINT - MODEL GA-K



Code	Ø	A	B	C	D	ØF	ØE	SW_1	SW_2	SW_3	SW_4	SW_5	Weight [g]
W0950322030	32	M10x1.25	20	20	71	22	4	12	30	30	19	17	216
W0950402030	40	M12x1.25	24	20	75	22	4	12	30	30	19	19	220
W0950502030	50	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620

Note: Individually packed

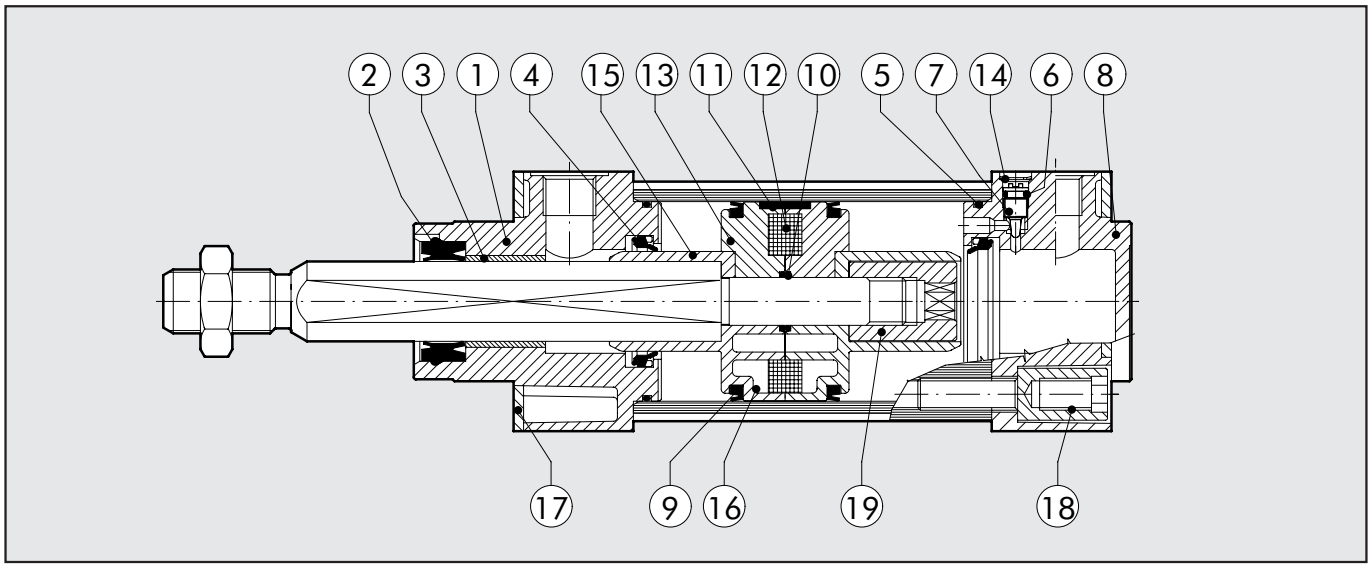
KIT FOR CYLINDER ASSEMBLY WITH SENSOR SLOTS



Code	Description	Weight [g]
0950003001	ACC. M4 T-SLOTTED FIXING PLATE	1
0950003002	ACC. M3 T-SLOTTED FIXING PLATE	1

Note: Individually packed

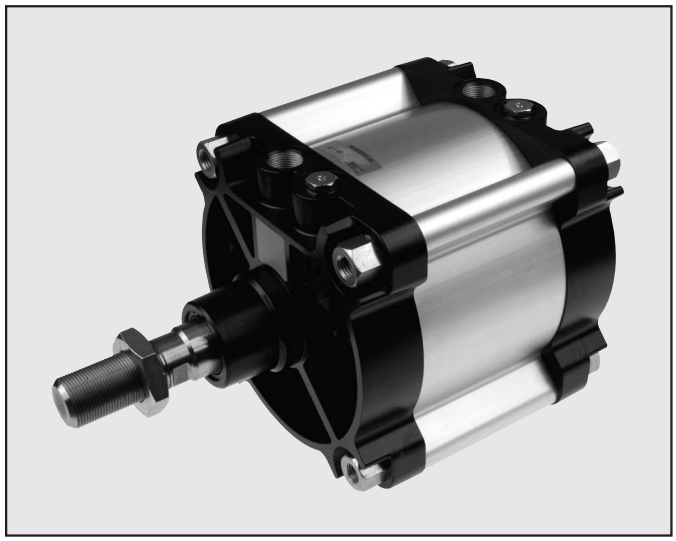
CYLINDERS ISO 6431 STD AND TYPE "A" RETRACTABLE SENSOR TWO-FLAT: SPARES



Type	Parts	Bore	Code
Complete set of polyurethane gaskets	2-4-5-6-9-10	Ø 32÷63	009 . . . 0101F
Complete polyurethane front head kit	1-2-3-4-5-6-7-14-17-18	Ø 32÷63	009 . . . 0110F
Complete polyurethane rear head kit	4-5-6-7-8-14-17-18	Ø 32÷63	009 . . . 0111
Complete polyurethane piston kit	9-10-16-19	Ø 32÷63	009 . . . 0604
Complete polyurethane head A+P+piston kit	1-2-3-4-5-6-7-8-9-10-14-16-17-18	Ø 32÷63	009 . . . 0704F
Magnet	12	Ø 32÷63	009 . . . 0800

CYLINDER SERIES ISO 6431
VDMA, Ø 160-200 mm

Cylinders made to ISO 6431 available in various versions and with a wide range of accessories:
- Configuration with or without magnet
- Double-acting – single- or through-rod
- NBR gaskets
- Special configurations on request



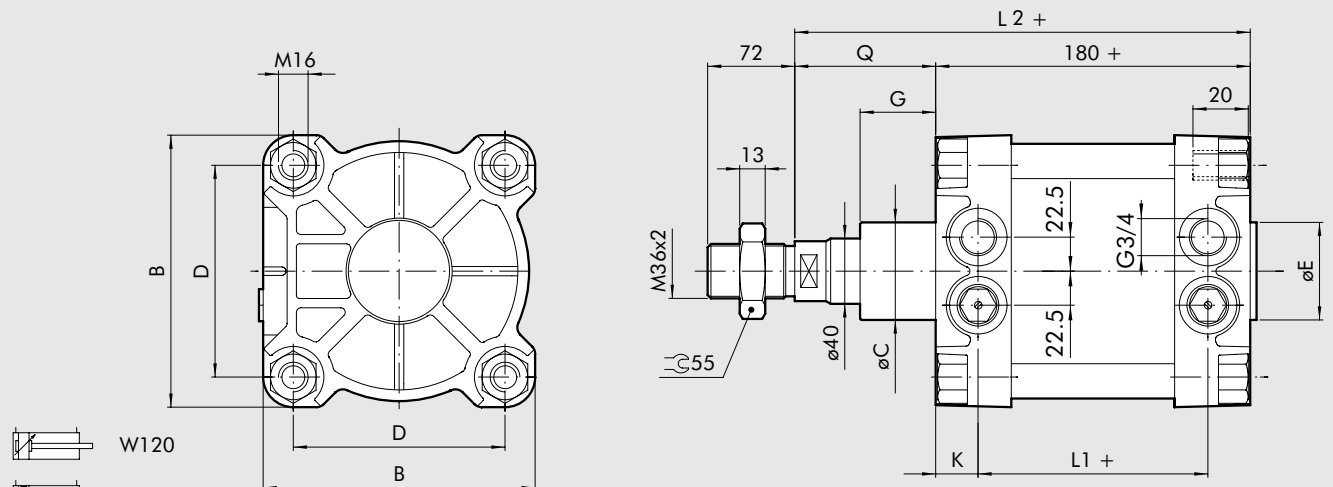
TECHNICAL DATA

Operating pressure	P	max 10 b ar (1 MPa)
Temperature range	Te	–10°C to +70°C
Fluid temperature	Tf	–10°C to +70°C
Design		Profile with internal tie rods
Materials		Heads: die cast aluminium
		Piston rod: thick chromed steel
		Jacket: aluminium
		Piston: aluminium with PTFE guide belt
		Gaskets: NBR
Forces generated at 6 bar (tensile stress)		See GENERAL TECHNICAL DATA PAGE 1.1/05
Standard strokes	mm	25-50-75-80-100-125-150-200-250-300-350-400-500-600-700-800-900-1000
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/06

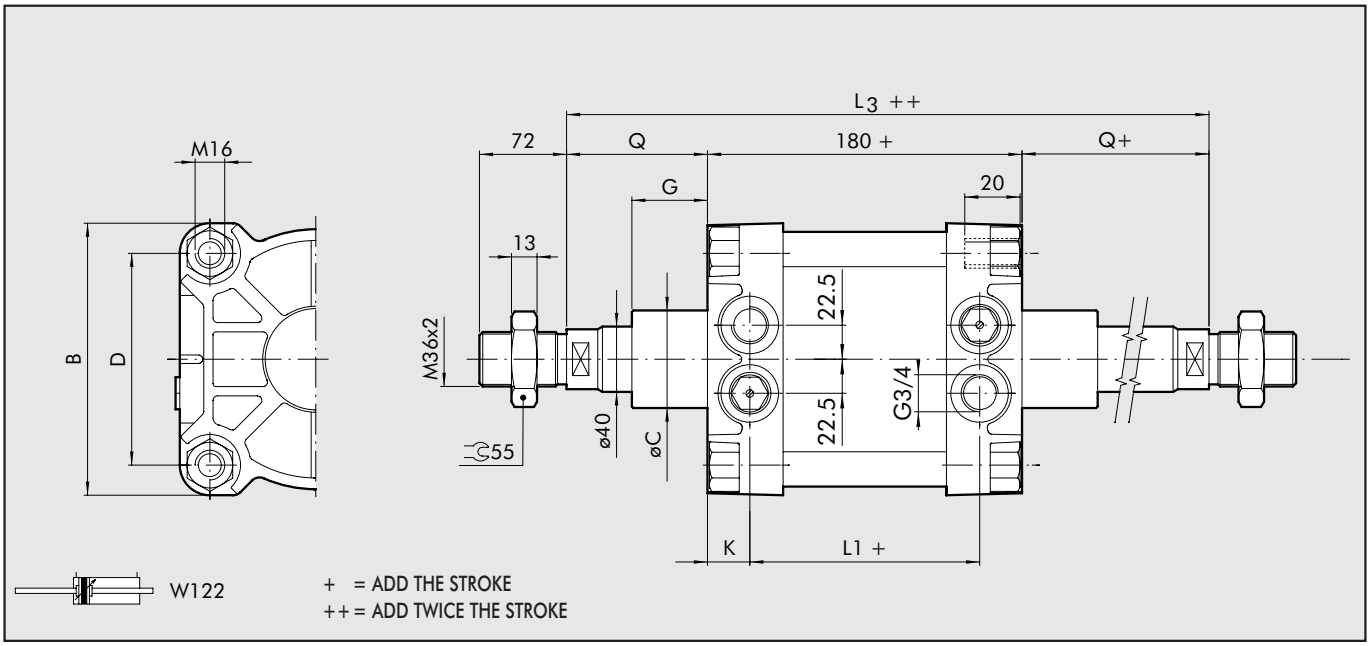
KEY TO CODES

CYL	W 1 2 1	1 6 0	0 0 5 0
	TYPE	DIAMETER-EXECUTION	STROKE
	W120 Double-acting, cushioned, non magnetic W121 Double-acting cylinder, cuschioned W122 Double-acting cylinder, cuschioned, through-rod W124 Double-acting cylinder, non-cuschioned	160 200 AA3 160+intermediate hinge AA4 200+intermediate hinge XA3 160 stainless steel piston rod XA4 200 stainless steel piston rod	0025÷2800 mm

DIMENSIONS OF STANDARD VERSION

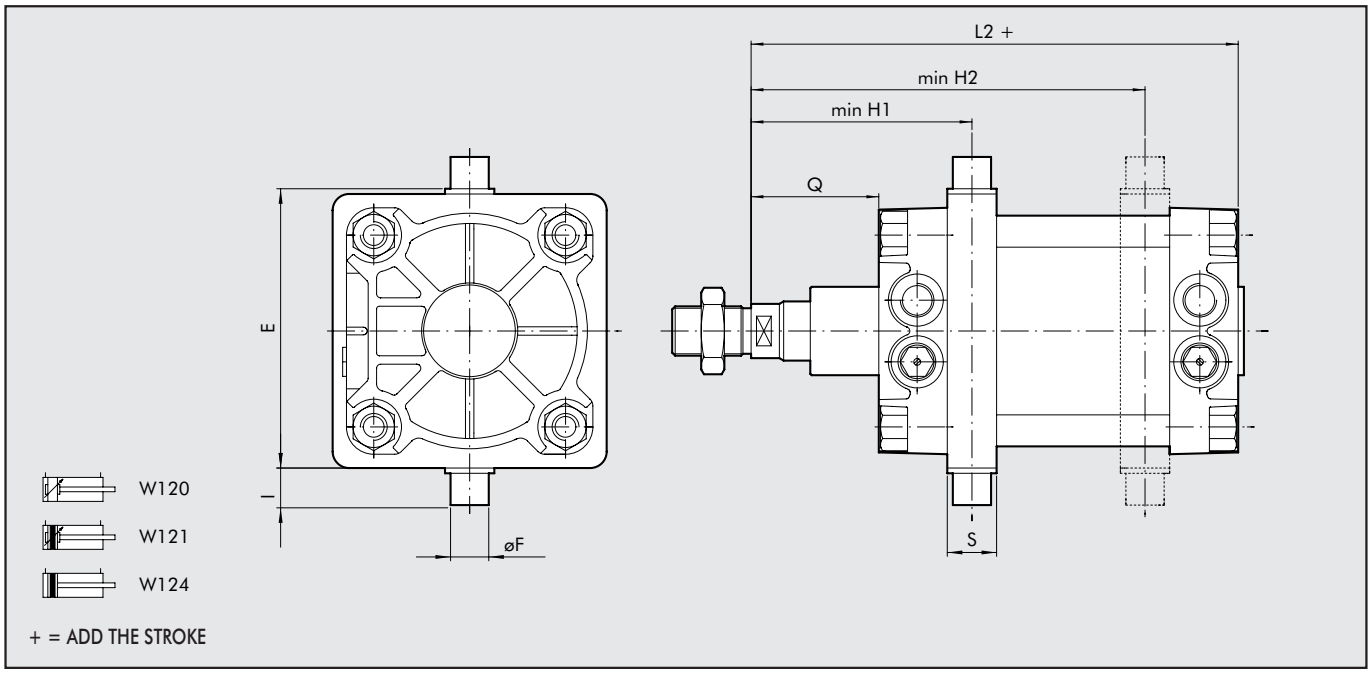


DIMENSIONS OF THROUGH-ROD VERSION



Ø	B	Ø C	Ø E	D	G	L_1	L_2	L_3	Q	K
160	180	65	65	140	50	124	259	338	79	28
200	220	75	75	175	60	122	275	370	95	29

DIMENSIONS OF VERSION WITH INTERMEDIATE HINGE

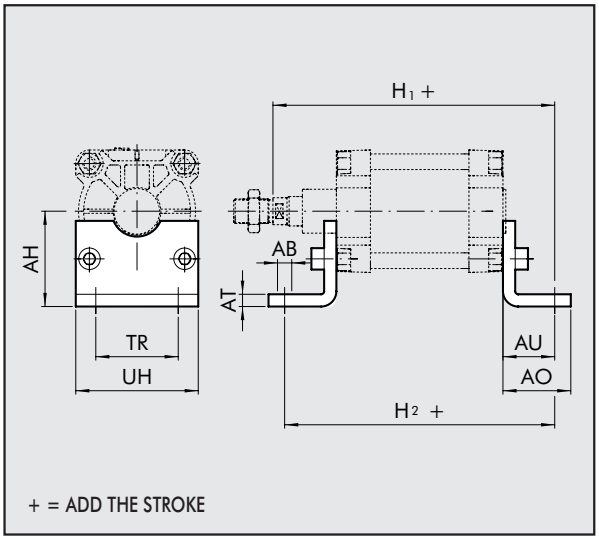


Ø	E	Ø F	H1	H2	I	L2	Q	S
160	200	32	145	195	32	259	79	40
200	250	32	161	211	32	275	95	40

For the missing values, refer to standard cylinders.
In your order, please specify the desired value for H1

ACCESSORIES: FIXINGS

FOOT - MODEL A

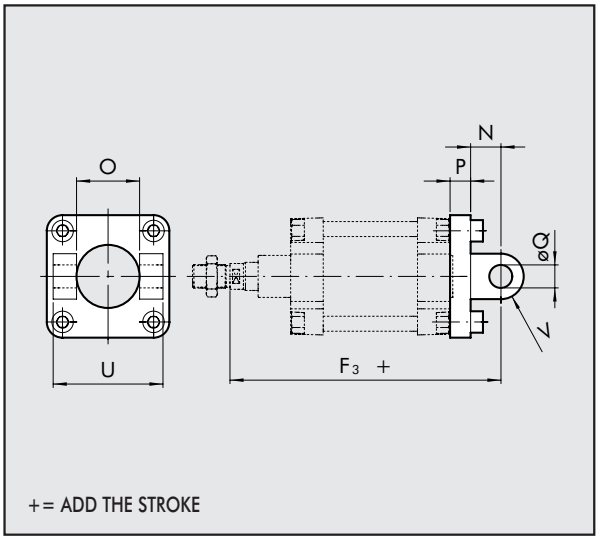


+ = ADD THE STROKE

Code	Ø	AB	AH	AO	AT	AU	H_1	H_2	TR	UH	Weight [g]
W0951602001	160	18	115	80	10	60	319	300	115	180	2400
W0952002001	200	22	135	120	10	70	345	320	135	220	4000

Note: Individually packed with 2 screws.

FEMALE HINGE - MODEL B

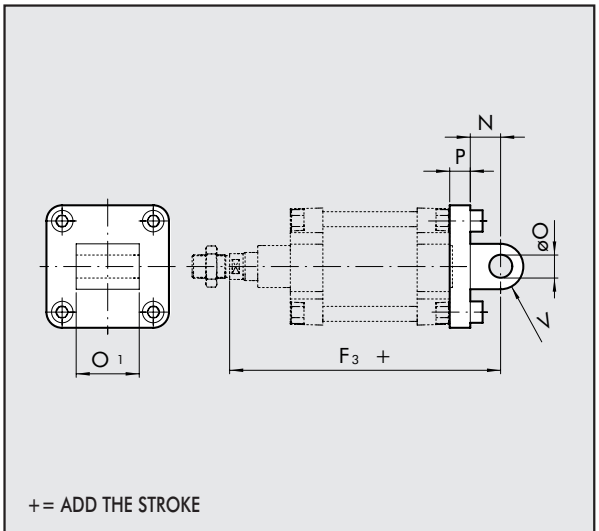


+= ADD THE STROKE

Code	Ø	U	O	Ø Q	P	N	F_3	V	Weight [g]
W0951602003	160	170	90	30	20	35	314	30	3500
W0952002003	200	170	90	30	20	40	335	30	6000

Note: Supplied complete with 4 screws, 4 washers, 2 snap rings.

MALE HINGE - MODEL BA

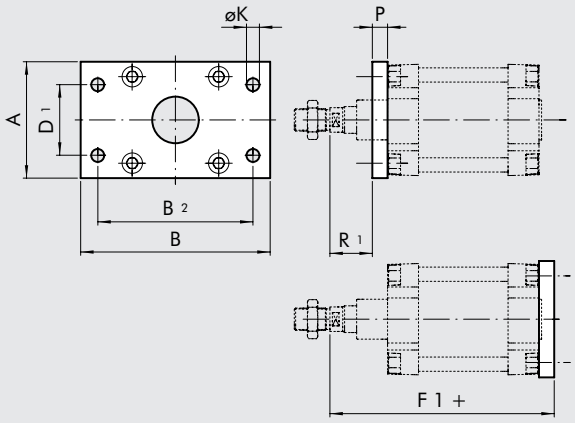


+= ADD THE STROKE

Code	Ø	O_1	Ø O	P	N	F_3	V	Weight [g]
W0951602004	160	90	30	20	35	314	30	2600
W0952002004	200	90	30	20	40	335	30	4500

Note: Supplied complete with 4 screws, 4 washers.

FLANGE - MODEL C (FRONT AND REAR)

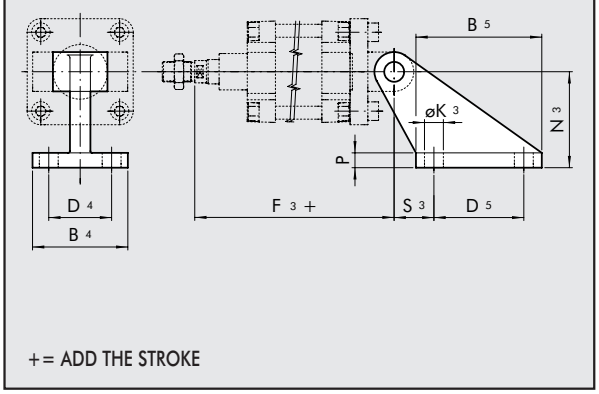


+= ADD THE STROKE

Code	Ø	A	B	B_2	D_1	Ø K	R_1	P	F_1	Weight [g]
W0951602002	160	180	270	230	115	18	59	20	279	6900
W0952002002	200	225	312	270	135	22	70	25	300	12800

Note: Individually packed with 4 screws.

CETOP COUNTER-HINGE - MODEL GL

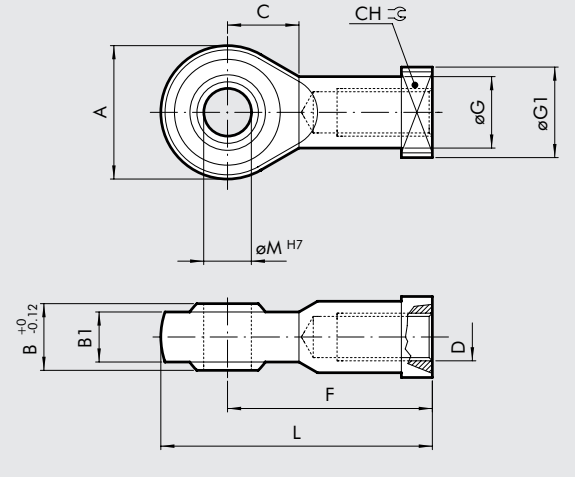


+= ADD THE STROKE

Code	Ø	B_4	B_5	D_4	D_5	N_2	N_3	S_3	$ØK_3$	P	F_3	Weight [g]
W0951602008	160	110	154	63	110	55	140	50	18	20	314	2300
W0951602008	200	110	154	63	110	60	140	50	18	20	335	2300

Note: Supplied complete with 4 screws, 4 washers.

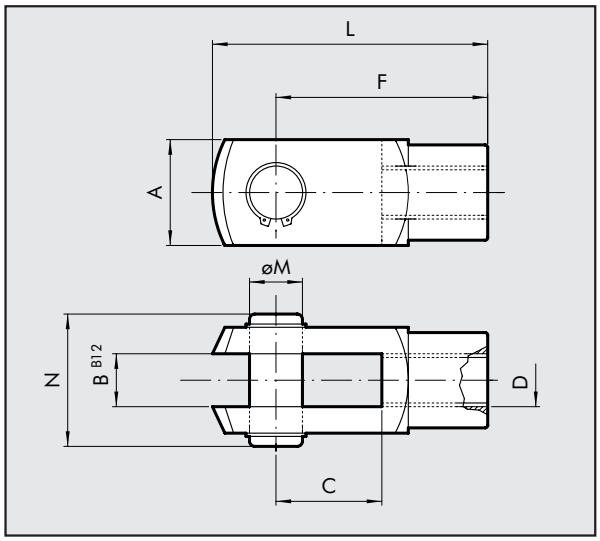
ROD EYE - MODEL GA-M



Code	Ø	Ø M	C	B_1	B	A	L	F	D	Ø G	CH	Ø G_1	Weight [g]
W0952002025	160	35	41	28	43	80	165	125	M36x2	46	50	58	1645
W0952002025	200	35	41	28	43	80	165	125	M36x2	46	50	58	1645

Note: Individually packed

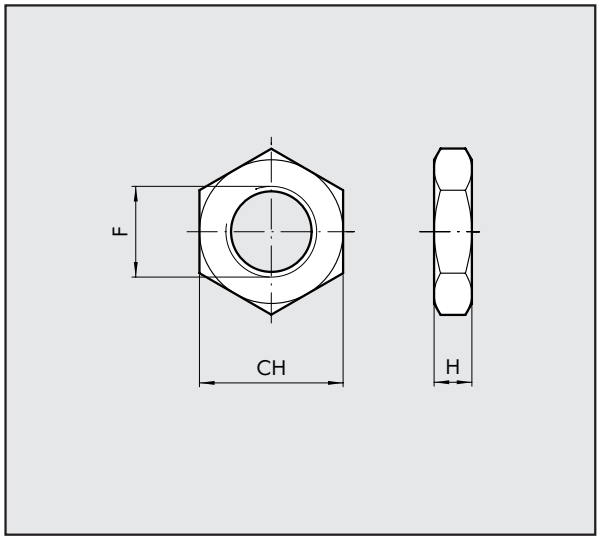
FORK - MODEL GK-M



Code	Ø	ØM	C	B	A	L	F	D	N	Weight [g]
W0951602020	160	35	72	35	70	188	144	M36x2	84	3850
W0951602020	200	35	72	35	70	188	144	M36x2	84	3850

Note: Individually packe

ROD NUT - MODEL S



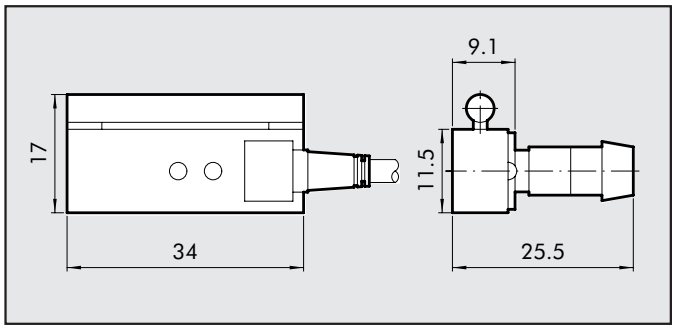
Code	Ø	F	H	CH	Weight [g]
W0951602010	160	M36x2	13	55	170
W0951602010	200	M36x2	13	55	170

Note: Individually packe

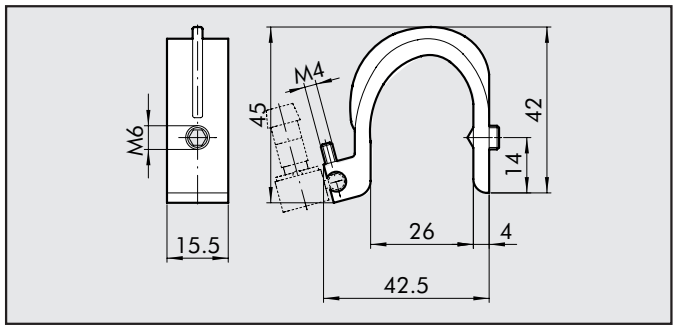
NOTES

ACCESSORIES: MAGNETIC SENSORS

MAGNETIC SENSOR



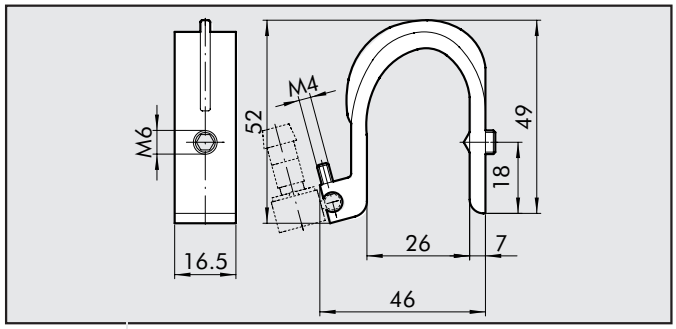
SENSOR SUPPORT BRACKET Ø 160



ORDERING CODES

Code	Description
MAGNETIC PROXIMITY SENSORS	
W0950000201	REED SENSOR ACC. DSM2-C525
W0950000222	E.HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E.HALL NPN SENSOR ACC. DSM3-M225
SENSOR BRACKET	
W0950000715	BRACKET ACC. ST160
W0950000716	BRACKET ACC. ST200

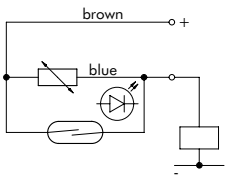
SENSOR SUPPORT BRACKET Ø 200



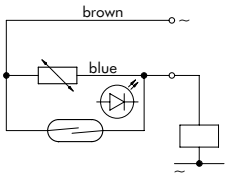
TECHNICAL DATA

Type		REED+VARISTOR+LED 2 wires	HALL VERSION PNP/NPN 3 wires
Contact		REED+VARISTOR+LED NO	HALL EFFECT NO PNP/NPN
Max AC/DC voltage	V	3÷48 (DC); 3÷220 (AC)	6-24 V DC
Max current at 25°C	mA	1000	250
Power with inductive load	VA	10	–
Power with resistive load	Watt	50	6
Switch-on time	m sec	1.2	0.8
Switch-off time	m sec	0.1	3
Switch-on point	Gauss	110	15
Switch-off point	Gauss	95	8
Operating life	–	10^7 impulses	10^9 impulses
Contact resistance		0.1	–
Cable length	m	2.5	2.5
Cable cross section	mm^2	0.35	0.35
Cable material		Soft PVC	Soft PVC
Circuit			

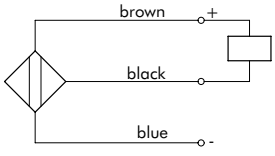
DC



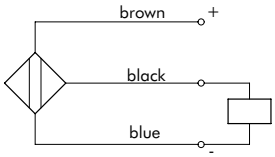
AC



Version NPN

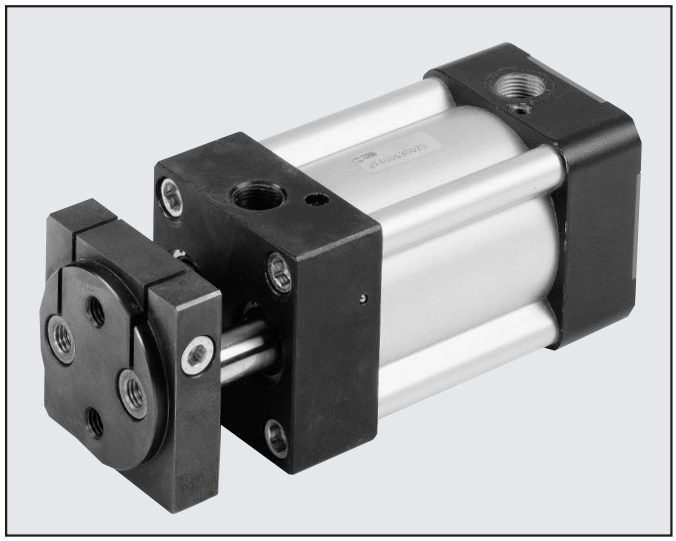


Version PNP



TWIN RODS CYLINDER SERIES TWNC, Ø 32-100 mm

Anti-rotation cylinders with axial dimensions to ISO 6431.
- Standard configuration with magnet
- Double-acting – passing twinner rods and single passing rod
- Polyurethane gasket

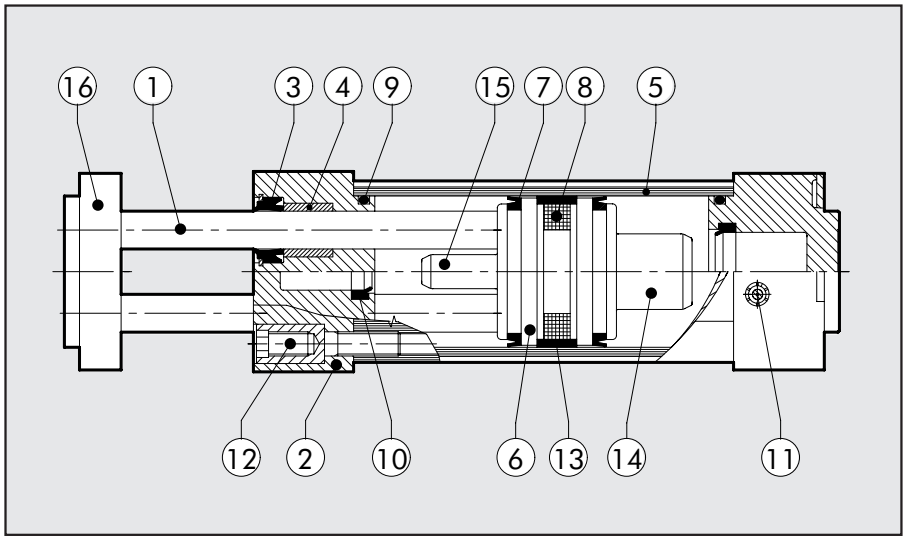


TECHNICAL DATA

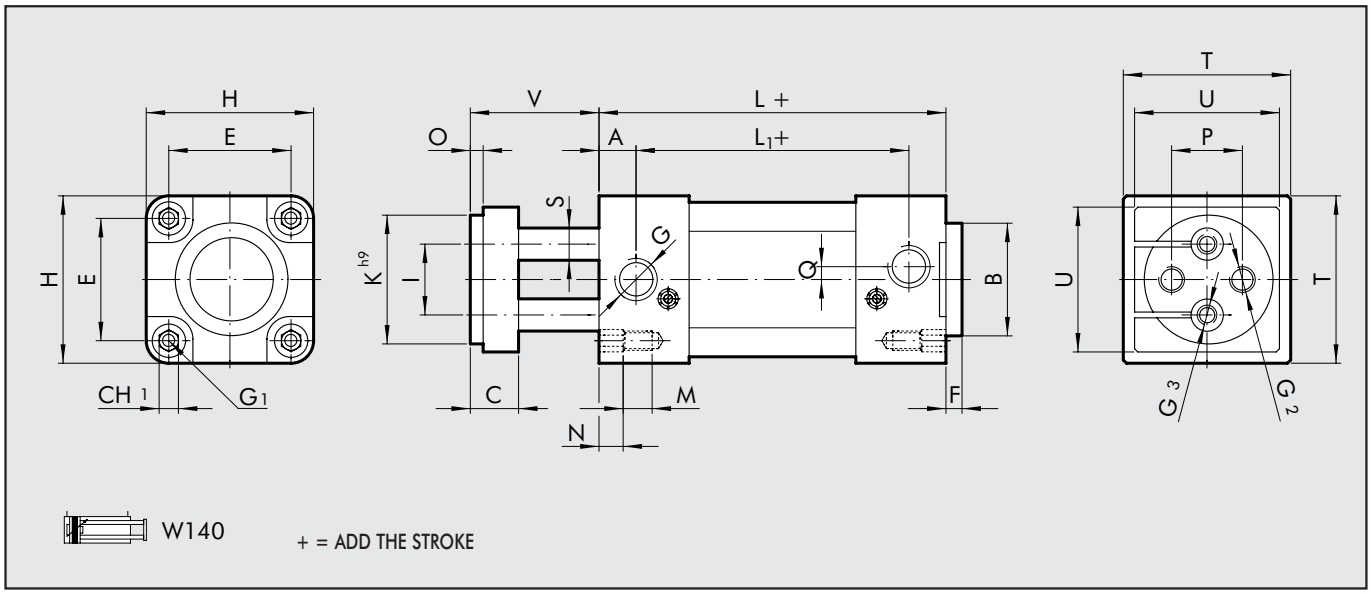
Gaskets		NBR - POLYURETHANE	
Operating pressure		Max. 10 bar (max. 1 Mpa - 145 psi)	
Temperature range	°C	–10°C to +80°C	
Fluid		Filtered, unlubricated air. Lubrication, if used, must be continuous.	
Bores	mm	Ø 32; Ø 40; Ø 50; Ø 63; Ø 80, Ø 100;	
Strokes	mm	25 to 500 mm	
Design		Extruded profile	
Esecution		Magnetic standard cushioned	
Forces generated at 6 bar thrust/retraction	N	Ø 32: 434N / 350N	Ø 40: 678N / 597N
		Ø 50: 1060N / 940N	Ø 63: 1683N / 1471N
		Ø 80: 2714N / 2295N	Ø 100: 4241N / 3812N
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/06	

COMPONENTS

① PISTON ROD: thick chromed steel
② HEAD: aluminium alloy
③ PISTON ROD GASKET: NBR rubber
④ GUIDE BUSHING: sintered bronze
⑤ BARREL: drawn anodised aluminium alloy
⑥ PISTON: aluminium alloy
⑦ PISTON GASKET: polyurethane (PARKER PRADIFA) or NBR.
⑧ MAGNET: plastoferrite
⑨ Static O-rings: NBR rubber
⑩ CUSHIONING GASKET: NBR rubber
⑪ NEEDLE: OT 58 brass
⑫ SCREWS: Tap Tite for fixing and assembly
⑬ SHOE: PTFE
⑭ REAR CUSHIONING CONE: aluminium
⑮ FRONT CUSHIONING CONE: OT58 brass
⑯ FLANGE: burnished steel

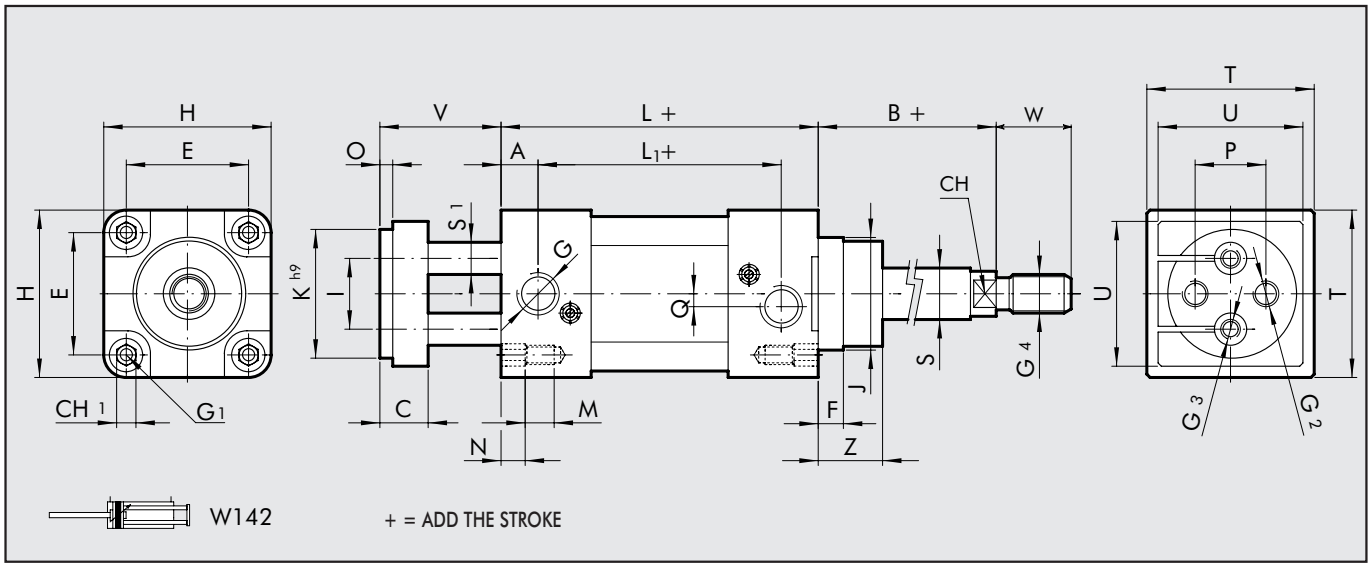


TWIN RODS CYLINDER



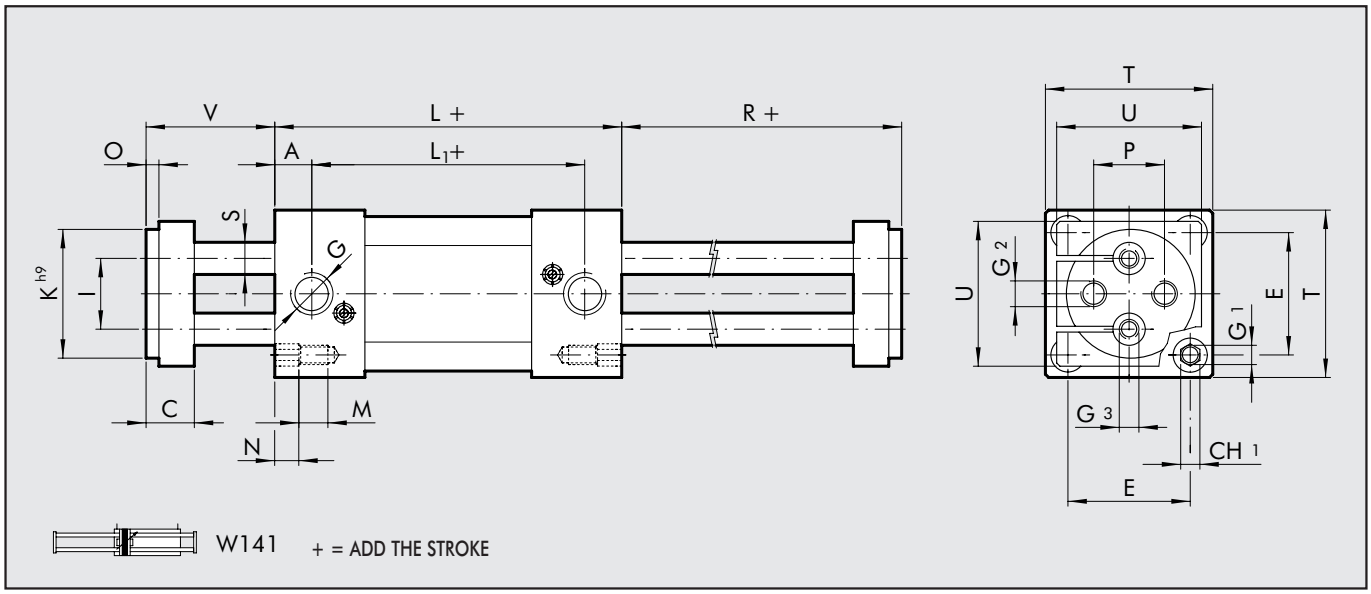
Ø	A	B	C	E	F	G	G_1	G_2	G_3	H	K	I	L	L_1	M	N	O	P	Q	S	T	U	V	CH1
32	13	30	15	32.5	5	G1/8	M6	M6	–	47	32	18	100	77	9	5.5	4	19	4	10	47	45	40	6
40	11.5	35	15	38	5	G1/4	M6	M8	–	53	40	22	100	76.5	9	5.5	4	22	4	10	52	50	40	6
50	14	40	18	46.5	5	G1/4	M8	M8	M8	65	50	30	106	78	12	5.5	5	30	6	12	65	55	43	8
63	14	45	22	56.5	5	G3/8	M8	M10	M10	75	63	38	116	86	12	5.5	5	38	6	16	75	70	47	8
80	15	45	25	72	8	G3/8	M10	M12	M12	95	80	48	131	98	16	5.5	5	50	7	22	95	90	50	10
100	15	55	25	89	8	G1/2	M10	M12	M12	115	100	60	138	103	16	5.5	5	70	7	22	115	110	50	10

SINGLE THROUGH-ROD CYLINDER



Ø	A	B	C	E	F	G	G_1	G_2	G_3	G_4	H	J	K	I	L	L_1	M	N	O	P	Q	S	S_1	T	U	V	W	Z	CH	CH1
32	13	26	15	32.5	7	G1/8	M6	M6	–	M10x1.25	47	30	32	18	100	77	9	5.5	4	19	4	12	10	47	45	40	22	16	10	6
40	11.5	30	15	38	9	G1/4	M6	M8	–	M12x1.25	53	35	40	22	100	76.5	9	5.5	4	22	4	16	10	52	50	40	24	20	13	6
50	14	37	18	46.5	14	G1/4	M8	M8	M8	M16x1.5	65	40	50	30	106	78	12	5.5	5	30	6	20	12	65	55	43	32	25	17	8
63	14	37	22	56.5	14	G3/8	M8	M10	M10	M16x1.5	75	45	63	38	116	86	12	5.5	5	38	6	20	16	75	70	47	32	25	17	8
80	15	46	25	72	12	G3/8	M10	M12	M12	M20x1.5	95	45	80	48	131	98	16	5.5	5	50	7	25	22	95	90	50	40	33	22	10
100	15	51	25	89	17	G1/2	M10	M12	M12	M20x1.5	115	55	100	60	138	103	16	5.5	5	70	7	25	22	115	110	50	40	38	22	10

W141 THROUGH-RODS CYLINDER



Ø	A	C	E	G	G_1	G_2	G_3	K	I	L	L_1	M	N	O	P	R	S	T	U	V	CH1
32	13	15	32.5	G1/8	M6	M6	–	32	18	111	85	9	5.5	4	19	40	10	47	45	40	6
40	11.5	15	38	G1/4	M6	M8	–	40	22	104	81	9	5.5	4	22	40	10	52	50	40	6
50	14	18	46.5	G1/4	M8	M8	M8	50	30	113	85	12	5.5	5	30	43	12	65	55	43	8
63	14	22	56.5	G3/8	M8	M10	M10	63	38	125	97	12	5.5	5	38	47	16	75	70	47	8
80	15	25	72	G3/8	M10	M12	M12	80	48	135	105	16	5.5	5	50	50	22	95	90	50	10
100	15	25	89	G1/2	M10	M12	M12	100	60	142	112	16	5.5	5	70	50	22	115	110	50	10

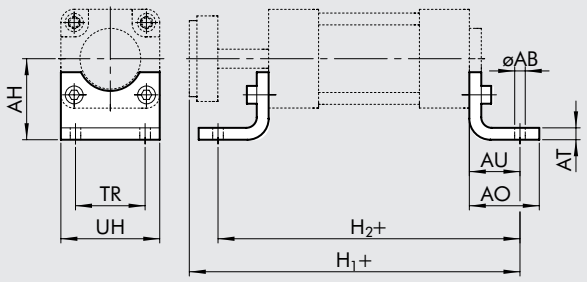
KEY TO CODES

CYL	W 1 4 0	0 3 2	0 0 2 5
	TYPE	BORES	STROKE
	W140 double-acting cylinder, magnetc, cuschioned W141 double-acting cylinder, magnetic, cuschioned, through-rod W142 double-acting cylinder, magnetic, cuschioned, single through-rod	032 040 050 063 080 100	✚ 0025÷0500 mm

✚ Maximum recommended strokes. Higher values can create operating problems

ACCESSORIES: FIXINGS

FOOT - MODEL A/S



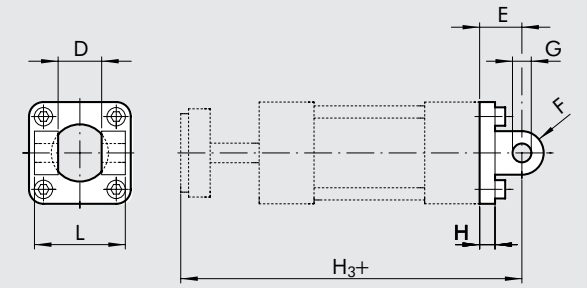
+ = ADD THE STROKE

Code	Ø	AB	AH	AO	AT	AU	TR	UH	H_1	H_2	Weight [g]
W0950323001	32	7	32	35	4	24	32	45	164	148	76
W0950403001	40	9	36	43	4	28	36	52	168	156	98
W0950503001	50	9	45	47	4	32	45	65	181	170	156
W0950633001	63	9	50	47	6	32	50	75	195	180	246
W0950803001	80	12	63	61	6	41	63	95	222	213	406
W0951003001	100	14	71	66	6	41	75	115	229	220	540

Note: Individually packed with 2 screws.

For fixing the leg to the supporting surface, it is advisable to use a DIN 7984 sunk-headed screw.

FEMALE HINGE - MODEL B

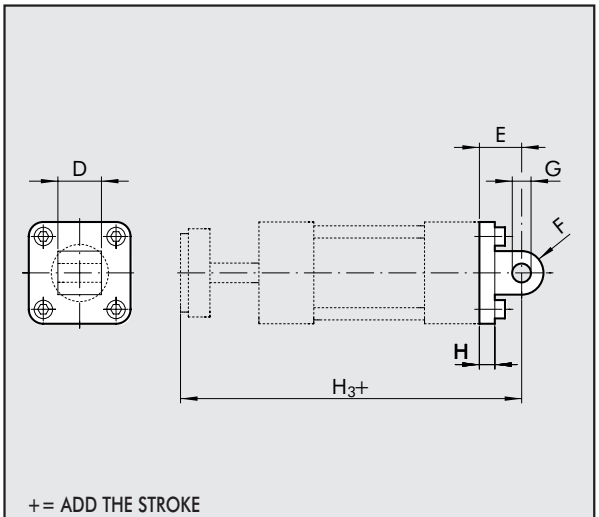


+= ADD THE STROKE

Code	Ø	D	E	F	G	H	H_3	L	Weight [g]
W0950322003	32	26	22	11	10	10	162	45	116
W0950402003	40	28	25	13	12	10	165	52	160
W0950502003	50	32	27	13	12	12	176	60	252
W0950632003	63	40	32	17	16	12	195	70	394
W0950802003	80	50	36	17	16	16	217	90	670
W0951002003	100	60	41	21	20	16	229	110	1085

Note: Supplied with 4 screws, 4 washers, 2 snap-rings and 1 pin.

MALE HINGE - MODEL BA

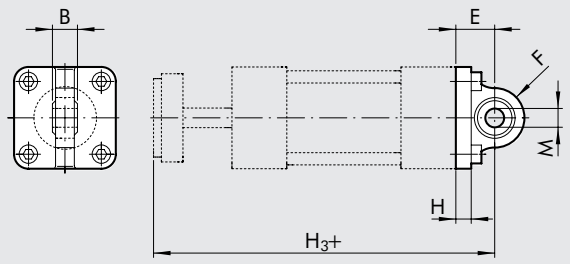


+= ADD THE STROKE

Code	Ø	D	E	F	G	H	H_3	Weight [g]
W0950322004	32	26	22	11	10	10	162	94
W0950402004	40	28	25	13	12	10	165	124
W0950502004	50	32	27	13	12	12	176	220
W0950632004	63	40	32	17	16	12	195	316
W0950802004	80	50	36	17	16	16	217	578
W0951002004	100	60	41	21	20	16	229	850

Note: Supplied with 4 screws, 4 washers.

ARTICULATED MALE HINGE - MODEL BAS

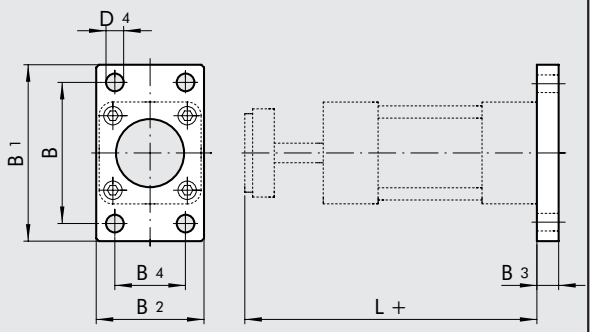


+ = ADD THE STROKE

Code	Ø	E	F	H	H_3	M	N	Weight [g]
W0950322006	32	22	16	10	162	10	14	106
W0950402006	40	25	19	10	165	12	16	142
W0950502006	50	27	19	12	176	12	16	236
W0950632006	63	32	24	12	195	16	21	336
W0950802006	80	36	24	16	217	16	21	572
W0951002006	100	41	30	16	229	20	25	840

Note: Supplied with 4 screws, 4 washers.

REAR FLANGE - MODEL C

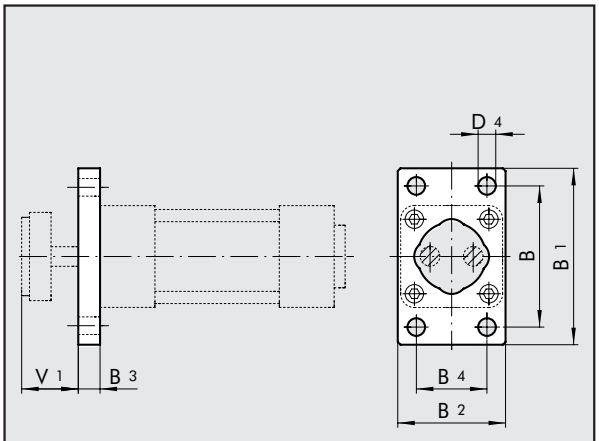


+= ADD THE STROKE

Code	Ø	B	B_1	B_2	B_3	B_4	D_4	L	Weight [g]
W0950322002	32	64	80	50	10	32	7	140	246
W0950402002	40	72	90	55	10	36	9	140	290
W0950502002	50	90	110	65	12	45	9	149	522
W0950632002	63	100	120	75	12	50	9	163	670
W0950802002	80	126	153	95	16	63	12	181	1420
W0951002002	100	150	178	115	16	75	14	188	2040

Note: Supplied with 4 screws.

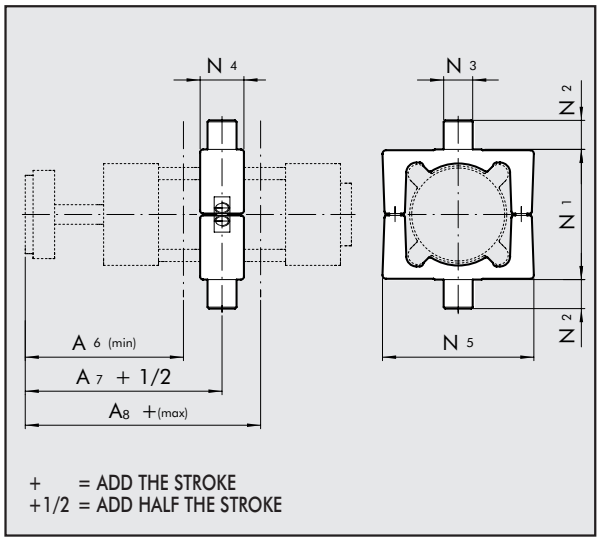
FRONT FLANGE - MODEL C



Code	Ø	B	B_1	B_2	B_3	B_4	D_4	V_1	Weight [g]
W0950323002	32	64	80	50	10	32	7	30	228
W0950403002	40	72	90	55	10	36	9	30	288
W0950503002	50	90	110	65	12	45	9	31	486
W0950633002	63	100	120	75	12	50	9	35	569
W0950803002	80	126	153	95	16	63	12	34	1145
W0951003002	100	150	178	115	16	75	14	34	1760

Note: Supplied with 4 screws.

INTERMEDIATE HINGE - MODEL EN

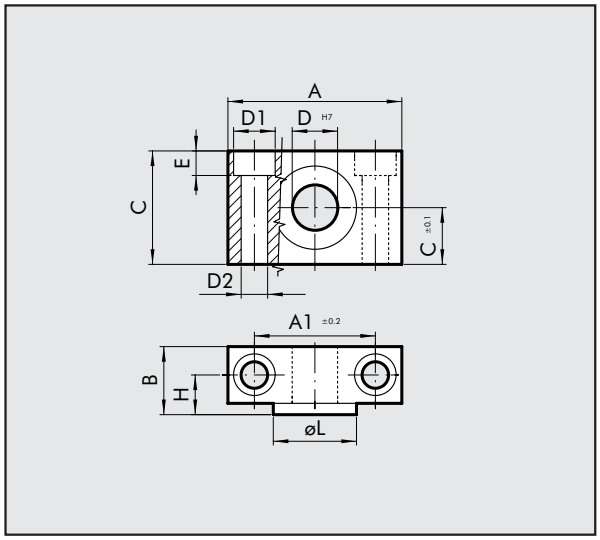


\+ = ADD THE STROKE
+1/2 = ADD HALF THE STROKE

Code	Ø	N_1	N_2	N_3	N_4	N_5	A_6	A_7	A_8	Weight [g]
0950322007	32	50	12	12	22	65	79	91	103	282
0950402007	40	63	16	16	28	75	82	90	98	582
0950502007	50	75	16	16	32	95	91.5	97.5	103.5	880
0950632007	63	90	20	20	35	105	95.5	104.5	113.5	1230
0950802007	80	110	20	20	40	130	108	115.5	123	2030
0951002007	100	132	25	25	45	145	110.5	119	127.5	2600

Note: Supplied with 4 screws, 2 pin.

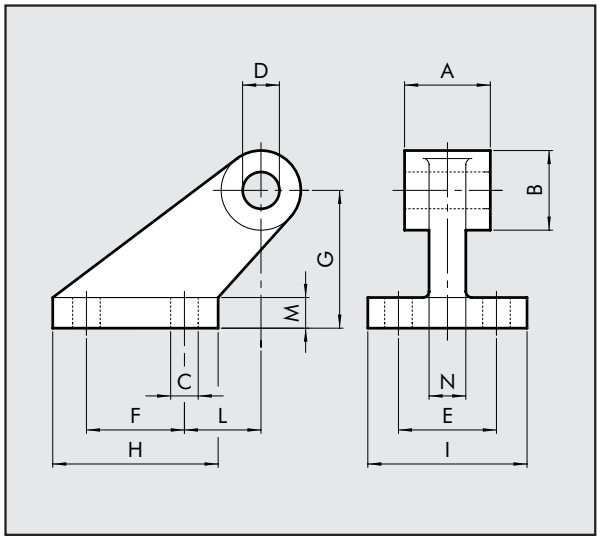
COUNTER-HINGE FOR MODEL EN - MODEL EL



Code	Ø	A	A_1	B	C	C_1	D_1	D_2	D	E	H	ØL	Weight [g]
W0950322009	32	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	40	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950402009	50	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	63	65	42	23	40	20	18	11	20	10.5	13	35	414
W0950632009	80	65	42	23	40	20	18	11	20	10.5	13	35	414
W0951002009	100	75	50	28.5	50	25	20	13	25	12.5	16	40	715

Note: Supplied with 4 screws.

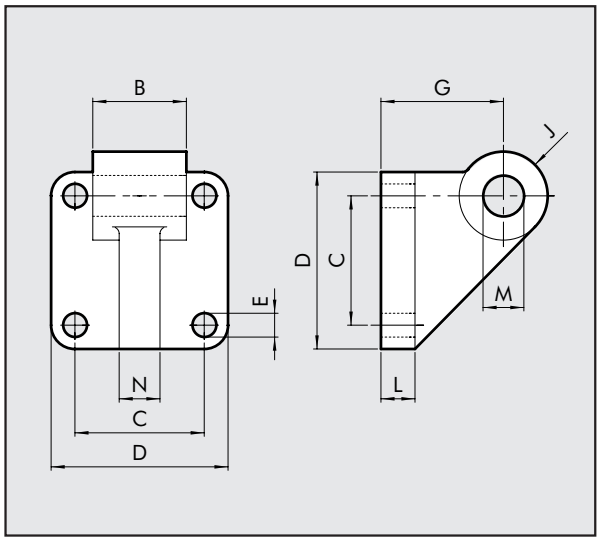
COUNTER-HINGE CETOP FOR MODEL B MODEL GL



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96
W0950402008	40	28	26	9	12	32	32	45	54	52	25	10	12	216
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440
W0950802008	80	50	33	11	16	40	50	63	75	63	32	12	15	464
W0951002008	100	60	44	14	20	50	70	90	103	80	40	16	22	985

Note: Supplied with 4 screws, 4 washers.

COUNTER-HINGE ISO FOR MODEL B-MODEL GS



Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]
W0950322108	32	25.5	32.5	45	7	32	11	10	10	10	106
W0950402108	40	27.5	38	52	7	36	13	10	12	12	138
W0950502108	50	31.5	46.5	65	9	45	13	12	12	12	252
W0950632108	63	39.5	56.5	75	9	50	17	16	16	15	350
W0950802108	80	49.5	72	95	11	63	17	16	16	15	655
W0951002108	100	59.5	89	115	11	73	21	20	20	22	980

Note: Supplied with 4 screws, 4 washers.

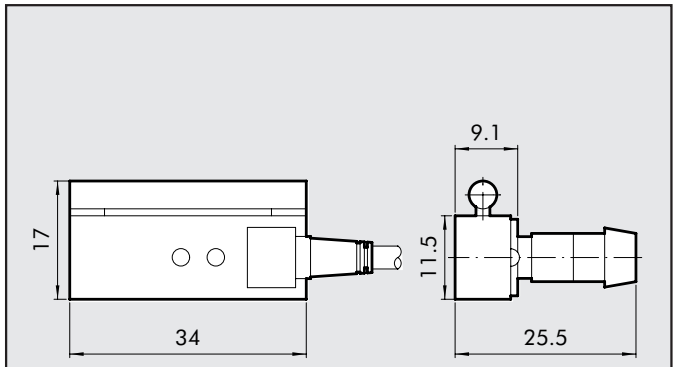
ACCESSORIES: MAGNETIC SENSORS

ORDERING CODES

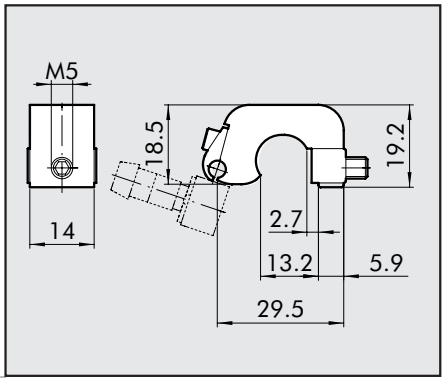
Code	Description
MAGNETIC PROXIMITY SENSORS	
W0950000201	REED SENSOR ACC. DSM2-C525
W0950000222	E.HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E.HALL NPN SENSOR ACC. DSM3-M225
SENSOR BRACKET	
W0950000711	BRACKET ACC. D.32-40 DST 80
W0950000712	BRACKET ACC. D.50-63 DST 81
W0950000713	BRACKET ACC. D.80-125 DST 82

NB: For technical features of sensors see page 1.1/93

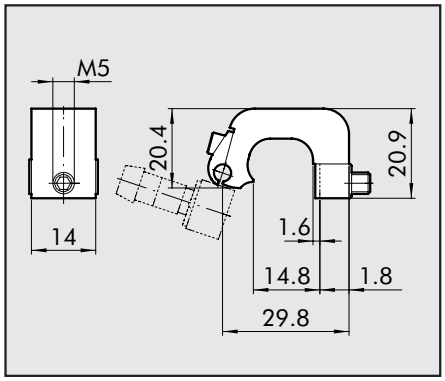
SENSOR



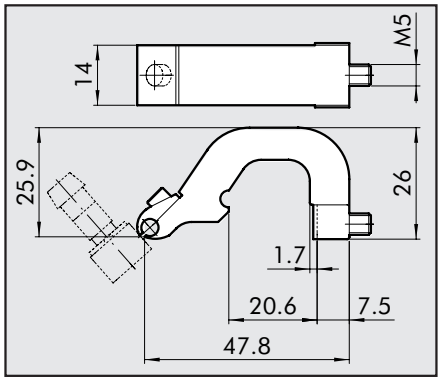
SENSOR BRACKET Ø 32-40



SENSOR BRACKET Ø 50-63



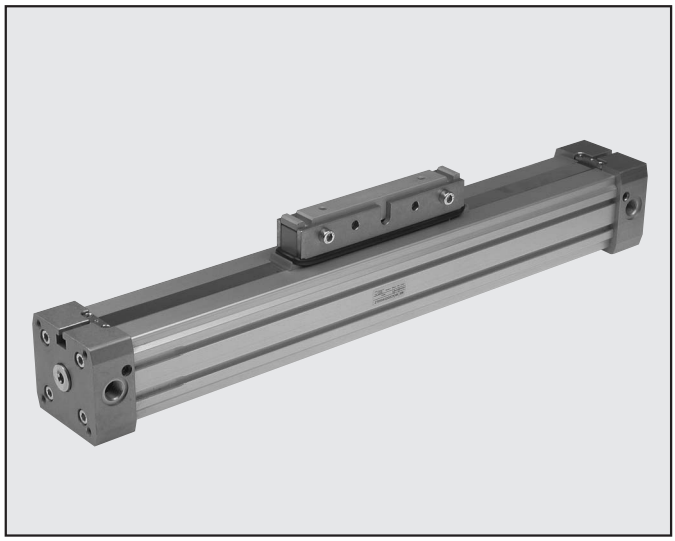
SENSOR BRACKET Ø 80-100



RODLESS CYLINDER
Ø 16, 25, 32, 40, 63

Rodless cylinders come in five different bores - Ø 16, 25, 32, 40 and 63 mm – and the design incorporates numerous innovations.
- Calibrated extruded anodized aluminium alloy jacket.
- Sensor slots and accessory slots in the jacket itself.
- Longitudinal seal by means of specially-shaped indeformable stainless steel strips.
- Strokes 100 to 5700 mm with 1mm intervals.
- Adjustable integrated pneumatic cushioning
- Adjustable limit switches and decelerations can be applied at any time.
- For this type of cylinder (size 32 and upwards), the valves can be fitted directly using the retracting sensors without requiring any intermediate brackets.

Refer to the table on page 1.1/96.

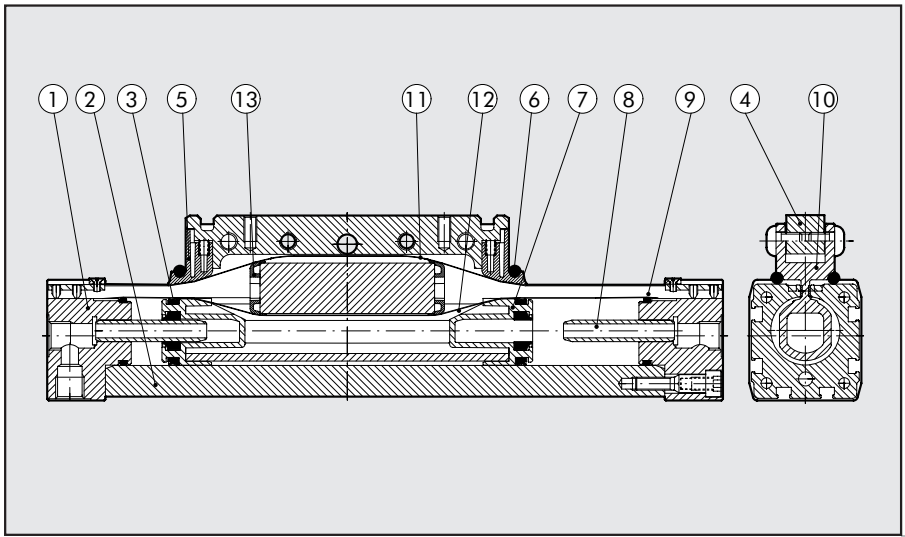


TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar	1 ÷ 8	
	MPa	0.1 ÷ 0.8	
	psi	14.5 ÷ 116	
Temperature range	°C	–15 ÷ 80	
	°F	- 5 ÷ 176	
Fluid		50µm unlubricated filtered air Lubrication, if used, must be continuous.	
Bores	mm	Ø 16, 25, 32, 40 and 63	
Type of construction		Double-acting rodless cylinder with direct transmission system	
Strokes		for Ø 16 :100 to 5000 mm with 1mm interval	
		for Ø 25, 32 and 40 :100 to 5700 mm with 1mm interval	
		for Ø 63 :100 to 5500 mm with 1mm interval	
Recommended speeds		V<1 m/s (NBR)	V>1 m/s (FKM/FPM)
Max. speed with decelerators		< 1 m/s (NBR)	2 m/s (FKM/FPM)
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/07	

For versions no-stick slip, use no-lubricated air only

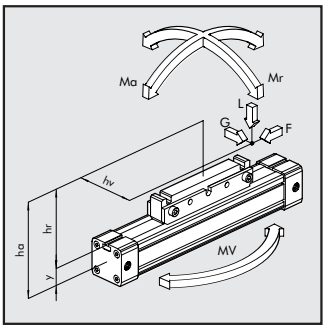
COMPONENTS

① CYLINDER HEAD: aluminium alloy
② BARREL: profiled anodized aluminium alloy
③ PISTON GASKET: NBR or FKM/FPM
④ CENTRAL ELEMENT: aluminium alloy
⑤ SCRAPER: Hostaform®
⑥ O-RING: FKM/FPM
⑦ PISTON: Hostaform®
⑧ CUSHIONING CONE: aluminium alloy
⑨ STATIC O-RINGS: NBR or FKM/FPM
⑩ SLIDE: aluminium alloy
⑪ OUTER STRIP: stainless steel
⑫ INNER STRIP: stainless steel
⑬ BAND SUPPORT: Hostaform®



DIMENSIONNG - FORCE AND TORQUE

Bore Ø	Centre Distance Y	Actual Force F at 6 bar [N]	Cushioning stroke [mm]	Max. load L [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
16	9	110	15	120	4	0.3	0.5
25	14	250	21	300	15	1	3
32	18	420	26	450	30	2	4
40	22	640	32	750	60	4	8
63	44	1550	40	1650	200	8	24



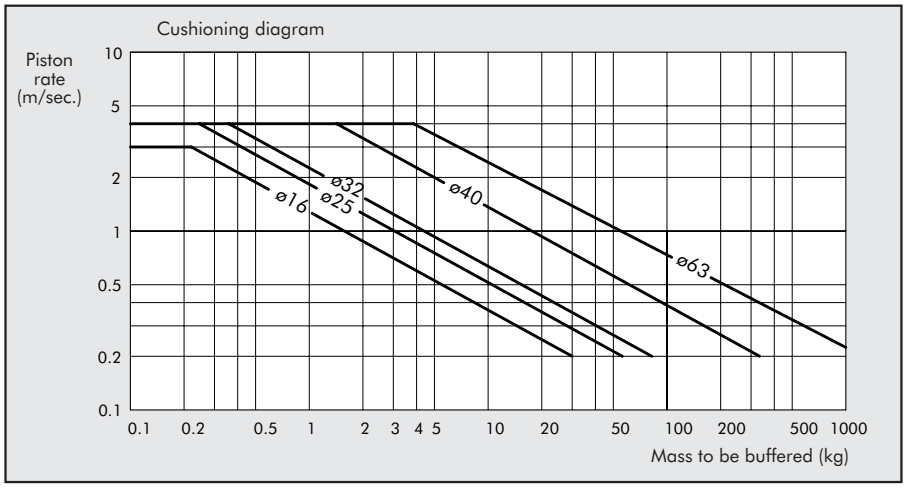
NB: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations.

$Ma = F \times ha \qquad Mr = L \times hv + G \times hr \qquad Mv = F \times hv$

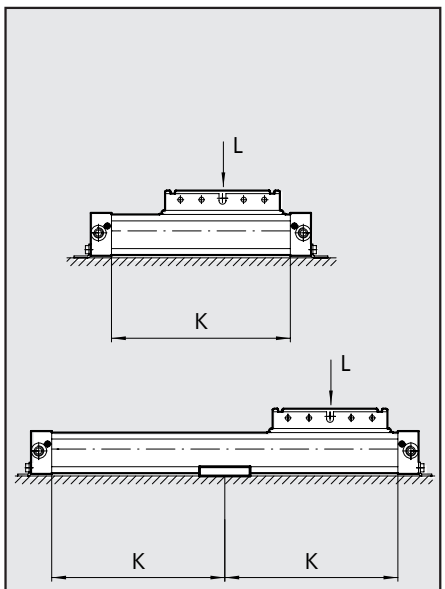
$$\frac{Mv}{Mv_{max}} \leq 1; \qquad \frac{L}{L_{max}} \leq 1; \qquad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4\,\frac{L}{L_{max}} \leq 1$$

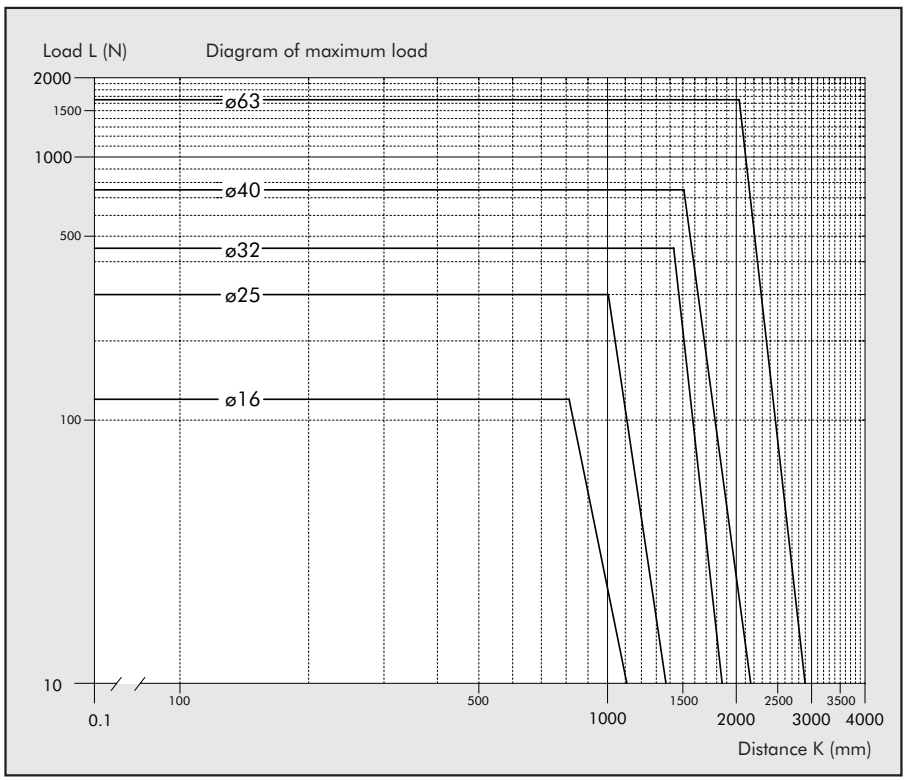
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

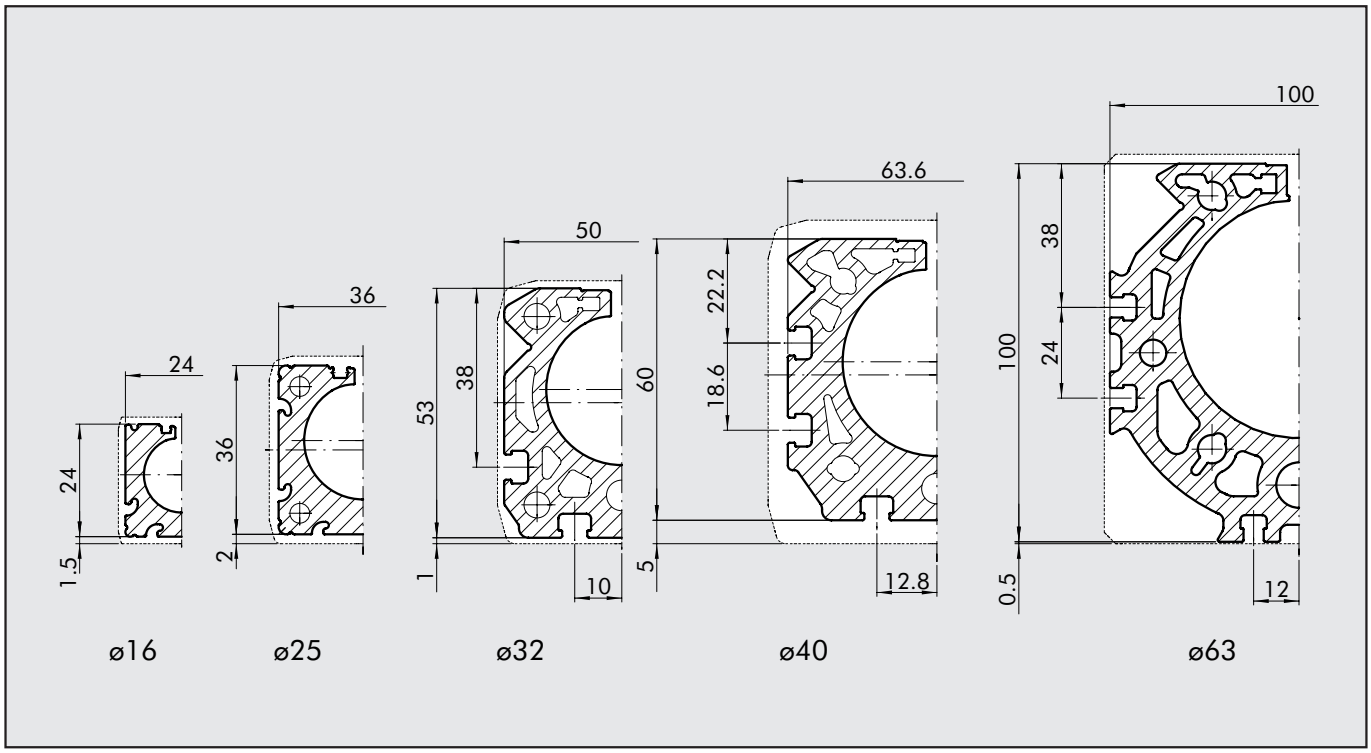


MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS

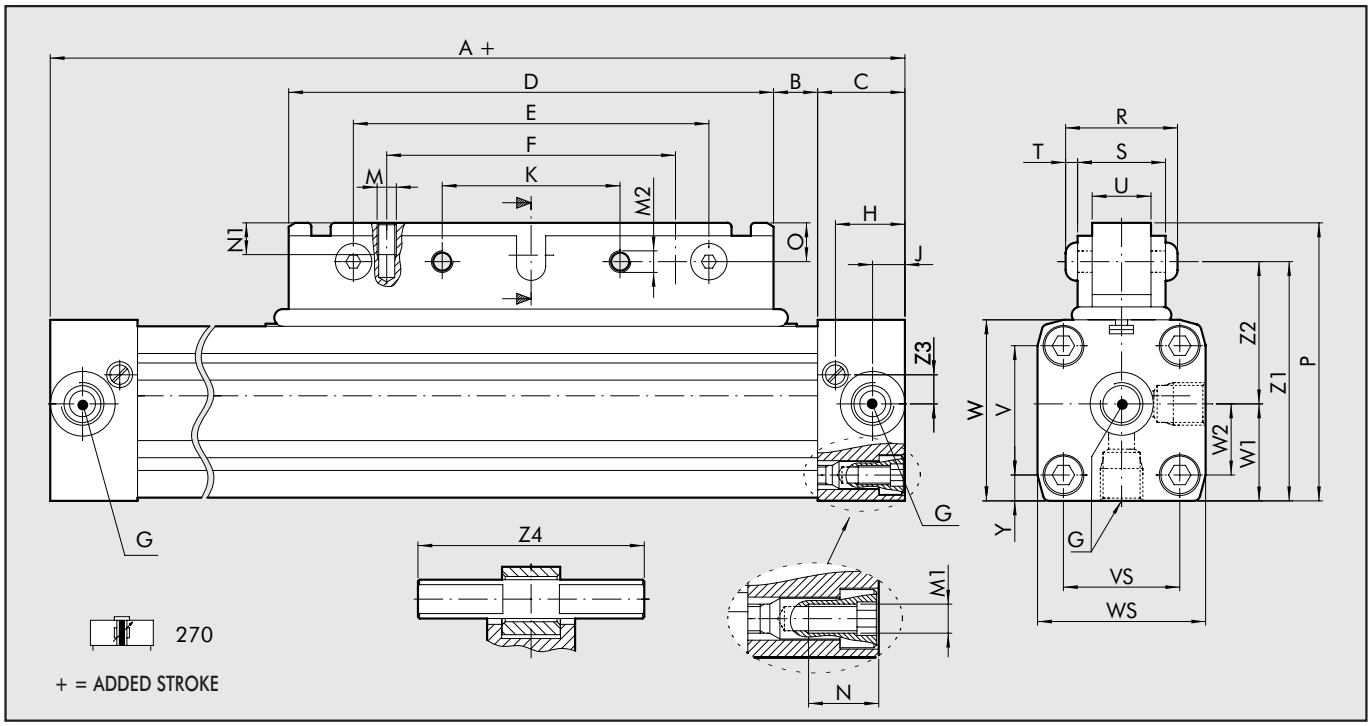




BARREL CROSS SECTION

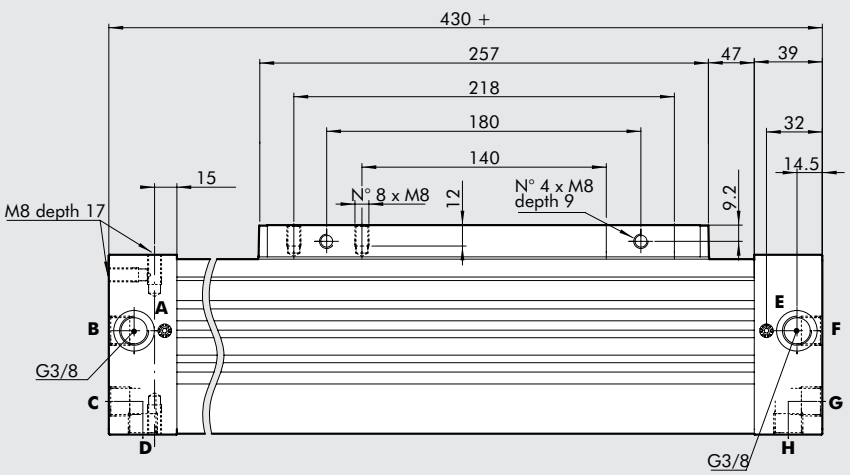


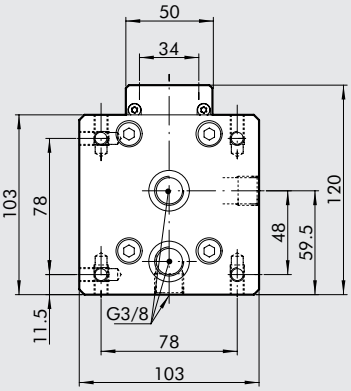
DIMENSIONS OF RODLESS CYLINDER Ø 16÷40

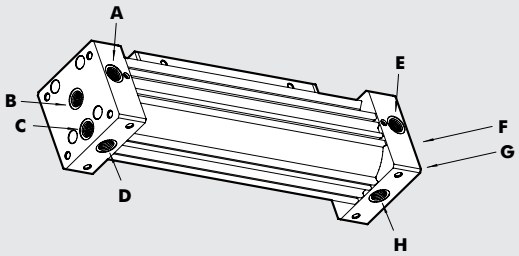


Ø	A	B	C	D	E	F	G	H	J	K	M	M1	M2	N	N1	O	P	R	S	T	U	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3	Z4
16	130	12	15	76	64	48	M5	12	6.4	32	M4	M3	M5	7	8	6	43.5	23.5	18	2.75	10	18	18	27	27	13.5	9	4.5	37.5	24	4.5	28
25	200	17	23	120	100	80	1/8	18.5	8.5	50	M5	M5	M6	12	11	13	66	29.6	23	3.3	15	27	27	40	40	20	13.5	6.5	53	33	6.5	42
32	250	23	27	150	110	90	1/4	22	10.5	55	M6	M6	M8	14	12	12	86	36	27	4.4	18	40	36	56	52	30	22	8	74	44	8	70
40	300	45	30	150	110	90	1/4	24	15	55	M6	M6	M8	17.5	12	12	97	36.8	28	4.4	18	54	54	69	72	36	27	9	85	49	11.8	70

DIMENSIONS OF RODLESS CYLINDER Ø 63







Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs.

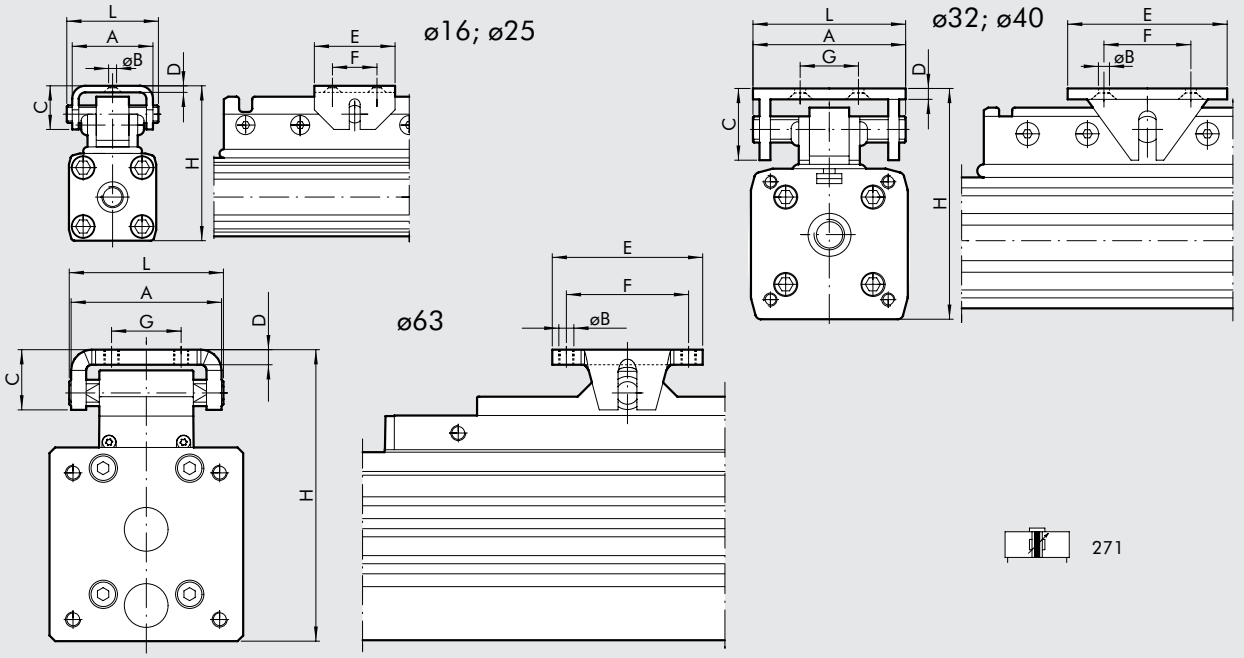
If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

all feeds from the left
A, B feed the left chambers
C, D feed the right chambers

all feeds from the right
E, F feed the right chambers
G, H feed the left chambers

+ = ADDED STROKE

RODLESS CYLINDER WITH SWING CARRIAGE

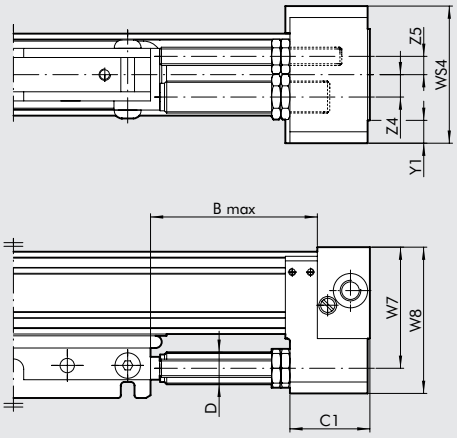


NOTE: For other dimensions see code 270

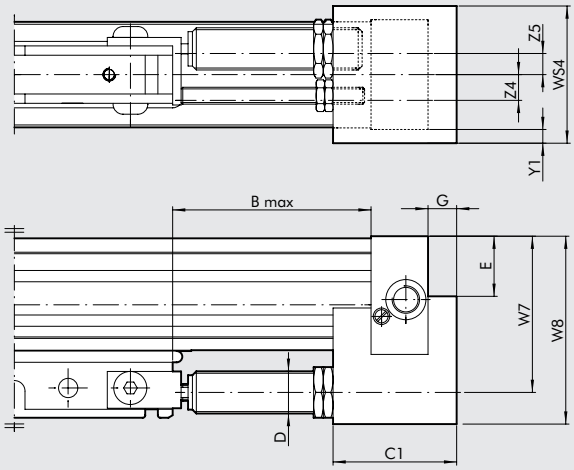
Ø	A	ØB	C	D	E	F	G	H	L
16	25	4.5	13	2	20	10	–	47-50	28
25	37	5.5	20	3	30	16	–	72-75	42
32	70	6.5	38	5	90	75	55	91-100	70
40	70	6.5	38	5	90	75	55	111-120	70
63	80	M8	32	8	80	65	37	155-162	82

DIMENSIONS OF RODLESS CYLINDER + ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS

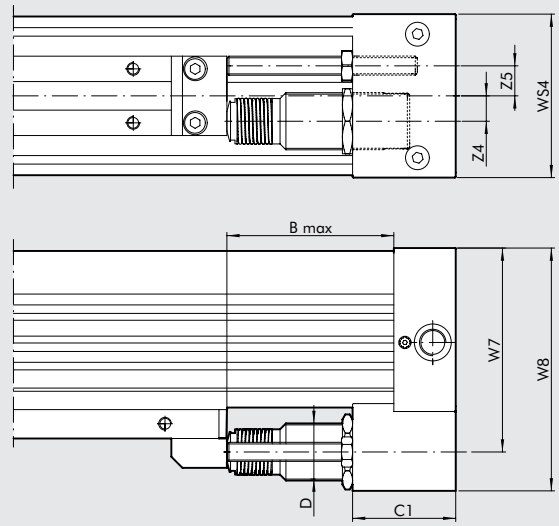
ø16



ø25÷ø40



ø63



273

Ø	B Max	C1	D	E	G	W7	W8	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force for stroke [J]	Max. cushioned force for hour [J]	Max. impact force [N]	Max. thrust force [N]
16	42	22	M12x1	–	–	38	46	42	7.5	7	7.5	10	4.5	14125	1000	220
25	72	44	M14x1.5	17	9	53	67	50	5	8	9.8	16	18	34000	2800	530
32	90	56	M20x1.5	29	11	74	89	60	4	10	12.2	22	40	53700	3750	890
40	105	74	M25x1.5	32.8	14	89	108	75	1.5	12.5	12.7	25	65	70000	5500	1550
63	105	65	M36x1.5	–	–	128.5	153	103	–	16	19	25	125	91000	11120	2220

For graphs to help choose shock absorbers see page 1.1/124

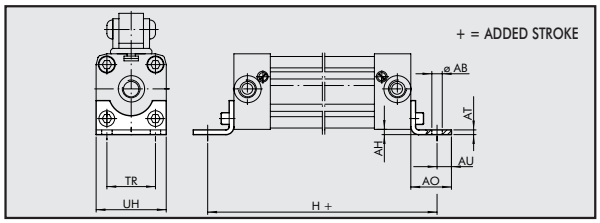
KEY TO CODES

CYL	2	7	0	0	2 5	0 0 5 0	C	N
	TYPE				BORE	STROKE	CONFIGURATION	
	27	Rodless cylinder	0 Standard 1 With swing drive ✚2 Twin cushioned series "Double" 3 Double-acting cushioned Magnetic + adjustable limit switches and shock absorbers	0 magnetic S non-magnetic ■G No stick slip	16 25 32 40 63	Ø 16: from 100 to 5000mm Ø 25÷40: from 100 to 5700 mm Ø63 from 100 to 5500 mm	C	N NBR ●V FKM/FPM

■ For speed ≤ 0.2 m/s ● For speed ≥ 1m/s ✚ Available up to Ø 32

ACCESSORIES

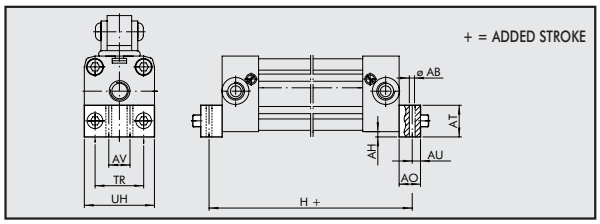
FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	25	5.5	2	22	2.5	6	27	40	232	32

Note: Individually packed with 2 screws.

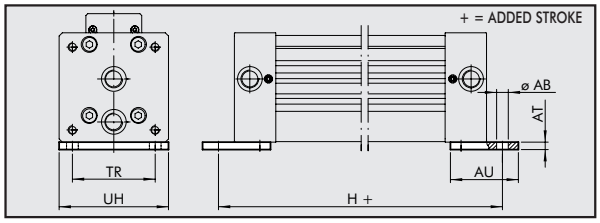
FOOT Ø 32; 40



Code	Ø	ØAB	AH	AO	AT	AU	AV	TR	UH	H	Weight [g]
W0950327001	32	6.6	4	25	20	8	20	36	51	284	88
W0950407001	40	9	2	25	20	11.5	30	54	71	327	112

Note: Individually packed with 2 screws.

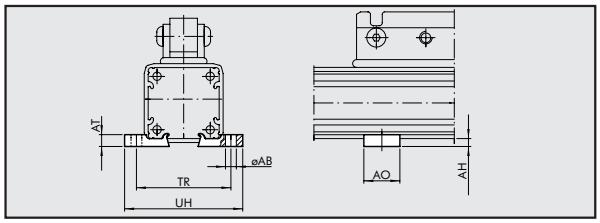
FOOT Ø 63



Code	Ø	ØAB	AT	AU	TR	UH	H	Weight [g]
W0950637001	63	11	7	64	78	103	460	360

Note: Individually packed with 2 screws.

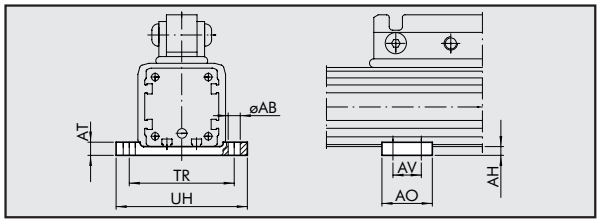
INTERMEDIATE FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950167031	16	5.5	3	20	5	41	53	4
W0950257031	25	5.5	4	20	6	48	60	6

Note: Individually packed.

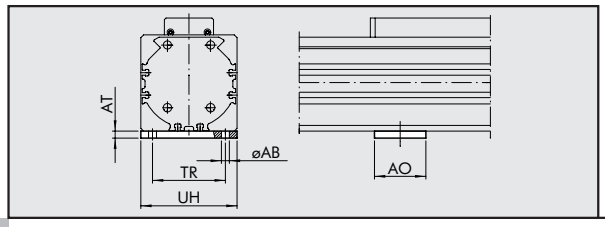
INTERMEDIATE FOOT Ø 32; 40



Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950327032	32	6.5	5	55	8	40	61.5	73	72
W0950407032	40	6.5	7	60	8	45	70÷75	85	104

Note: plate supplied complete with 4 screws, 4 fixing plates

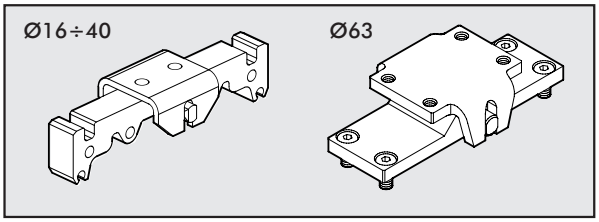
INTERMEDIATE FOOT Ø 63



Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950637032	63	8.5	7.5	55	7.5	78	103	330

Note: plate supplied complete with 4 screws, 4 fixing plates

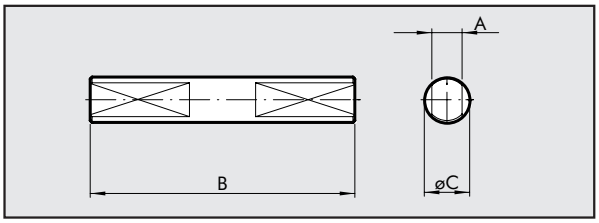
KIT TO TRANSFORM INTO SWING VERSION



Code	Ø	Weight [g]
W0950167035	16	34
W0950257035	25	118
W0950327035	32	450
W0950327035	40	450
W0950637035	63	810

Note: ø16÷40: Supplied complete with 1 adaptor, 1 support, 1 pin, 1 bushing
ø63: Supplied complete with 1 plate, 1 support, 1 pin, 2 bushings, 4 screws

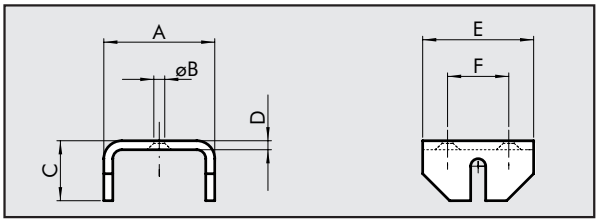
DRIVE PIN



Code	Ø	A	B	ØC	Weight [g]
W0950167034	16	2.9	28	5	6
W0950257034	25	5	42	8	16
W0950327034	32	8	70	12	52
W0950327034	40	8	70	12	52
W0950637034	63	10	82	14	100

Note: Individually packed.

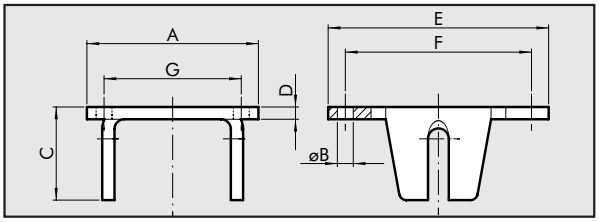
SWING SUPPORT Ø 16; 25



Code	Ø	A	ØB	C	D	E	F	Weight [g]
W0950167033	16	25	4.5	13	2	20	10	14
W0950257033	25	37	5.5	20	3	30	16	40

Note: Individually packed.

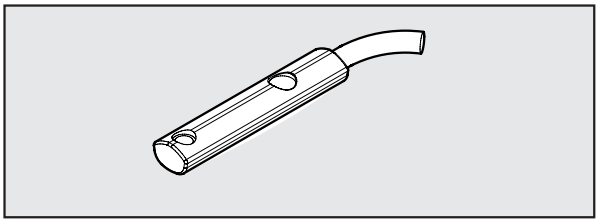
SWING SUPPORT Ø 32; 40; 63



Code	Ø	A	ØB	C	D	E	F	G	Weight [g]
W0950327033	32	70	6.5	38	5	90	75	55	274
W0950327033	40	70	6.5	38	5	90	75	55	274
W0950637033	63	80	M8	32	8	80	65	37	400

Note: Individually packed.

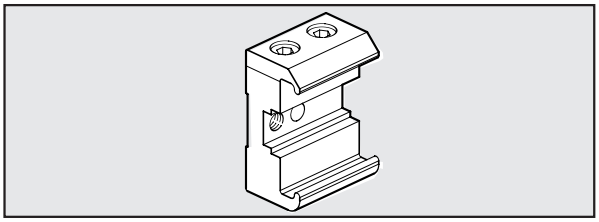
SLIM SENSOR



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

For technical data, refer to page 1.1/97

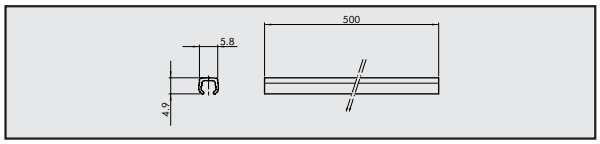
SENSOR SUPPORT Ø 16; 25



Code	Description
0950164001	SENSOR SUPPORT STD

Note: Supplied with 1 stud pin, 2 screws

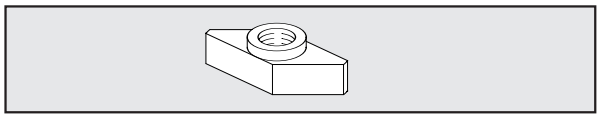
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: the code corresponds to 1 piece

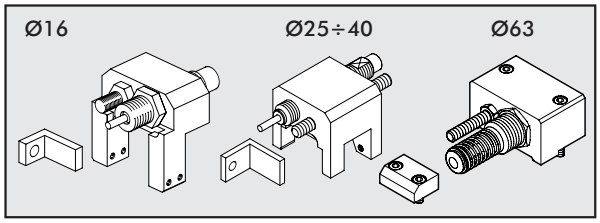
SLOTTED FIXING PLATE



Code	Description	Weight [g]
0950003001	ACC. M3 T-SLOTTED FIXING PLATE	1
0950003002	ACC. M4 T-SLOTTED FIXING PLATE	1

Note: Individually packed

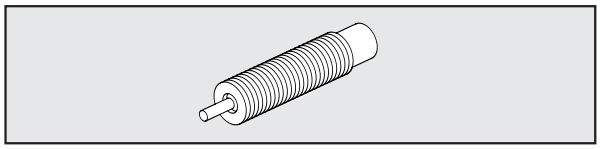
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



Code	Description	Weight [g]
0950164002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 16	125
0950254002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 25	260
0950324002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 32	460
0950404002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 40	730
0950634002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 63	1620

Note: Supplied complete with 1 shock absorber support, 1 standard shock absorber , 1 shock absorber nut, 1 limit switch grub screw, 1 grub screw nut (2 for ø63) , 1 bracket, 1 bracket screw, 4 locking grub screws (for Ø 16 and Ø 25), 4 locking plates and 4 screws (for Ø 32 and Ø 40).

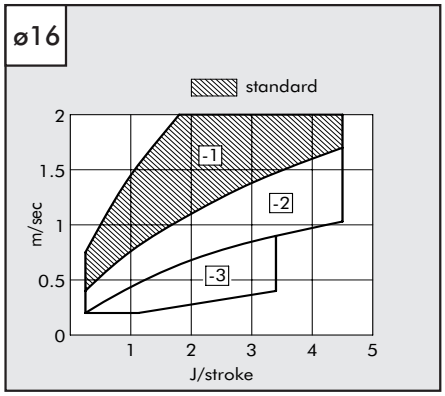
SHOCK ABSORBERS



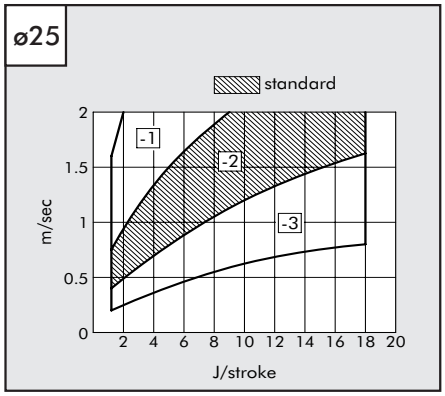
Code	Bore	Description
0950004003	ø16	Shock absorbers PR015 MF1 + nut M12x1.5
0950004004	ø25	Shock absorbers PR025 MC2 + nut M14x1.5
0950004005	ø32	Shock absorbers PR050 MC2 + nut M20x1.5
0950004006	ø40	Shock absorbers PR0100 MF2 + nut M25x1.5
0950004007	ø63	Shock absorbers PR0125 MF3 + nut M36x1.5

GRAPHS TO HELP CHOOSE THE RIGHT SHOCK ABSORBERS

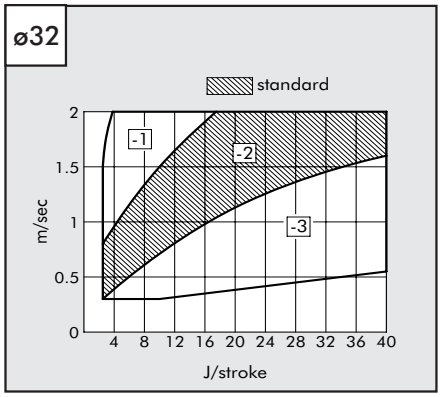
ø16



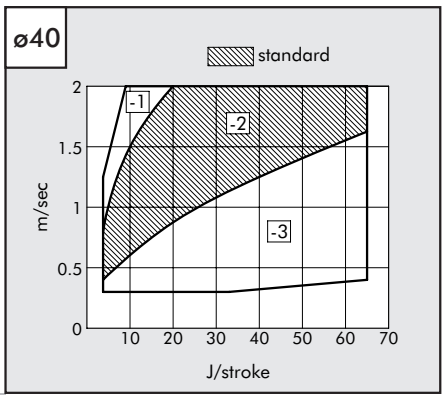
ø25



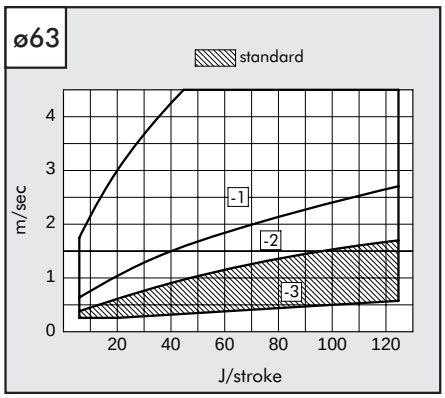
ø32



ø40



ø63

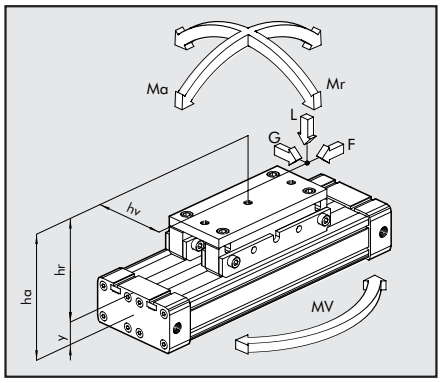


The dotted areas indicate that the SHOCK ABSORBERS is supplied standard. Other options can be selected depending on the speed [m/sec] and the maximum work force [J/stroke] to dissipate at each stroke
Refer to the diagrams above to select the correct option.

RODLESS CYLINDER
DOUBLE SERIES Ø 16, 25, 32

DIMENSIONS – FORCES AND MOMENTS

Bore Ø	Actual force F at 6 bar [N]	Cushioning stroke [mm]	Max load L [N]	Ma max. [Nm]	Mr max. [Nm]	Mv max [Nm]
2x16	200	15	240	8	2.4	1
2x25	480	21	600	30	8	6
2x32	820	26	900	60	16.5	10

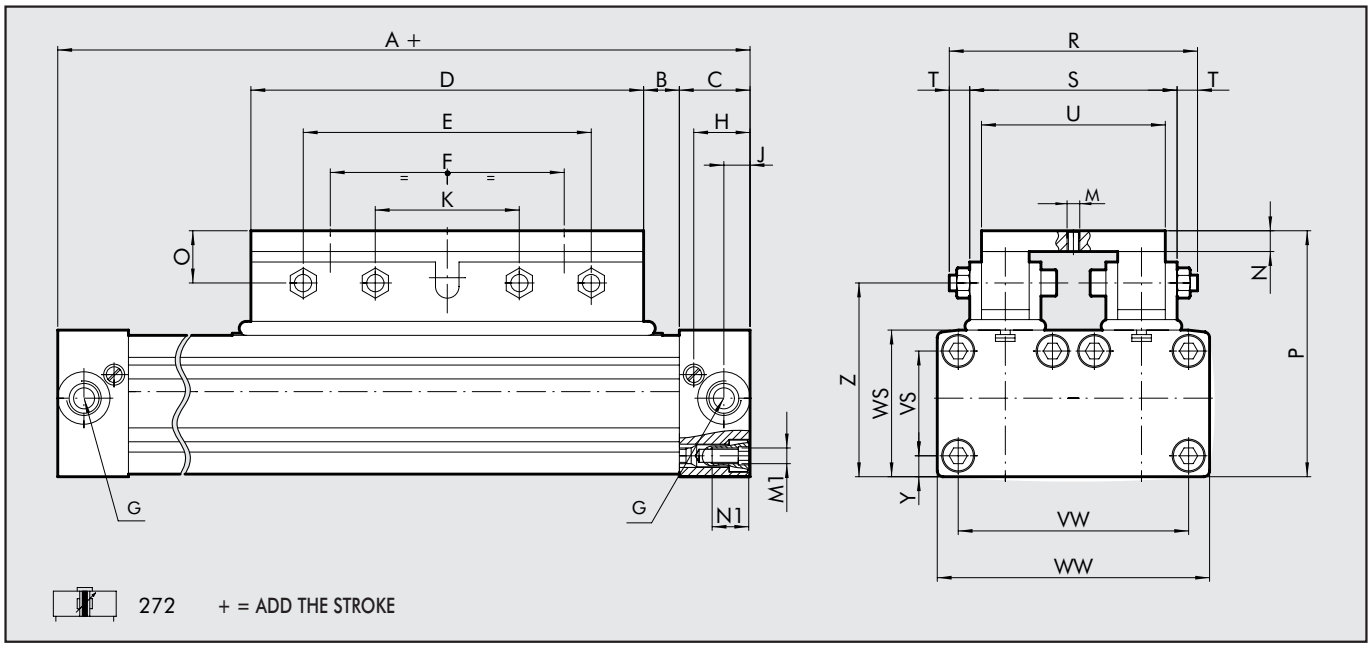


Ma = F x ha Mr = L x hv + G x hr MV = F x hv

$$\frac{Mv}{Mv_{max}} \leq 1; \quad \frac{L}{L_{max}} \leq 1; \quad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \frac{L}{L_{max}} \leq 1$$

(For the weights see GENERAL TECHNICAL DATA PAGE 1.1/07)

DIMENSIONS OF RODLESS CYLINDER, DOUBLE SERIES

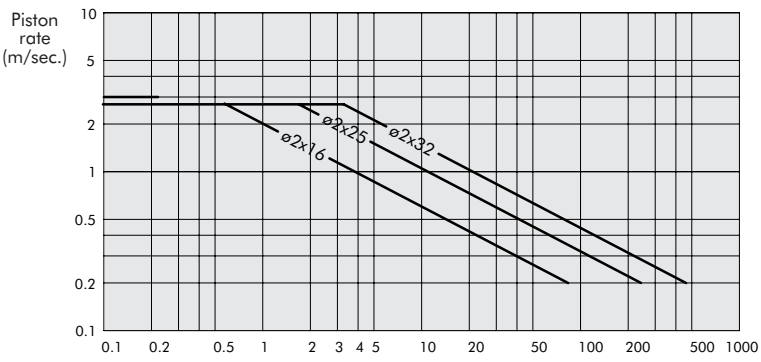


Ø	A	B	C	D	E	F	G	H	J	K	M	N	M1	N1	O	P	R	S	T	U	VW	VS	WW	WS	Y	Z
2x16	130	12	15	76	64	48	M5	12	6.4	32	M5	10	M3	7	16	53.5	52	42	5	34	42	18	51	27	4.5	37.5
2x25	200	17	23	120	100	80	1/8	18.5	8.5	50	M6	15	M5	12	20	74	74	59	7.5	50	63	27	72	41	7	53.5
2x32	250	23	27	150	110	90	1/4	22.5	10.5	55	M6	12	M6	14	20	95	92	78	7.5	70	86	40	100	56	8	74

DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

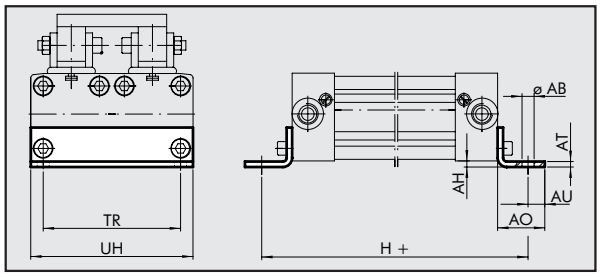
For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

Cushioning diagram



DOUBLE ACCESSORIES

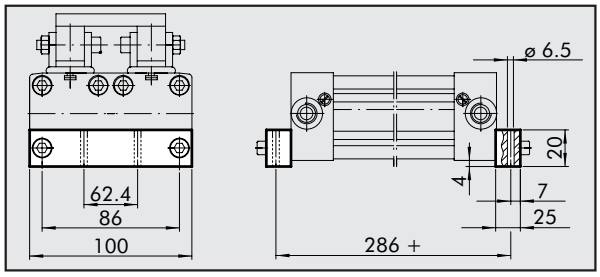
FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950168001	2x16	3.6	1.5	14	1.6	4	42	51	150	18
W0950258001	2x25	5.5	2	22	2.5	6	63	72	232	54

Note: Individually packed complete with 2 screws

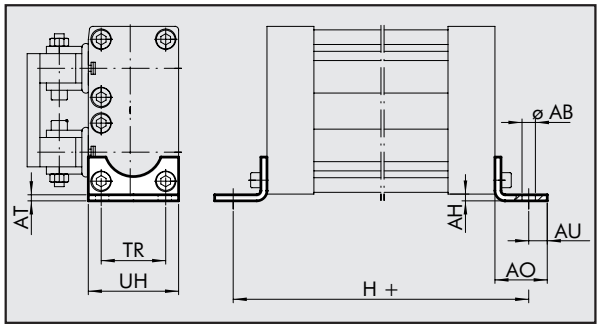
FOOT Ø 32



Code	Description	Weight [g]
W0950328036	PIEDINO DOUBLE Ø 32	156

Note: Individually packed complete with 2 screws

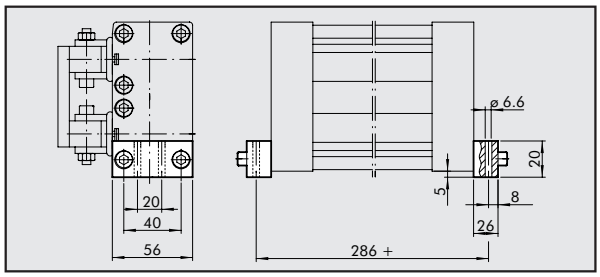
VERTICAL FOOT Ø 16; 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950167001	2x16	3.6	1.5	14	1.6	4	18	26	150	10
W0950257001	2x25	5.5	4	22	2.5	6	27	40	232	32

Note: Individually packed complete with 2 screws

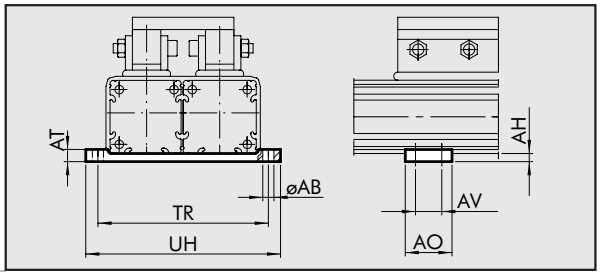
VERTICAL FOOT Ø 32



Code	Description	Weight [g]
W0950328035	VERTICAL FOOT Ø 32	92

Note: Individually packed complete with 2 screws

INTERMEDIATE FOOT Ø 16÷32

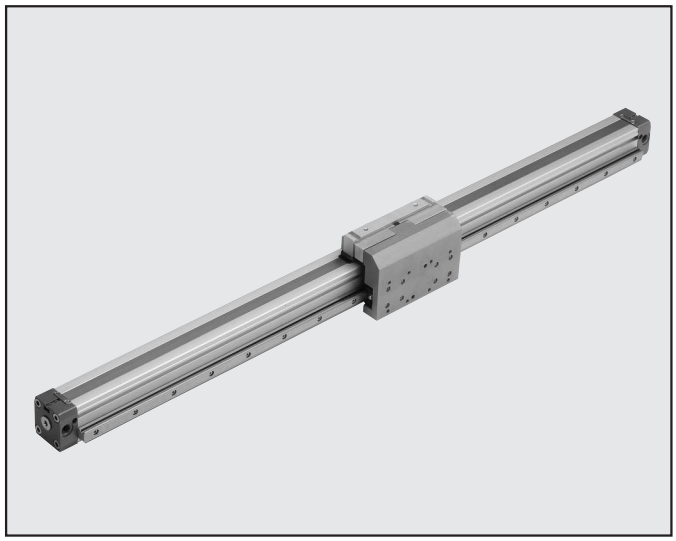


Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950168037	2x16	3.5	3	12	6	6	60.5	64	16
W0950258037	2x25	5.5	4	20	6	10.5	84.5	96	34
W0950328037	2x32	6.5	5	55	8	40	111.5	123	96

Note: Supplied complete with 8 screws, 8 fixing plates (plates for Ø 32 only)

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE Ø 16, 25, 32, 40, 63

The range of rodless cylinders with ball circulation guides is available with five different bores Ø 16, 25, 32,40 and 63.
The bore 63 can be supplied in two versions: the "standard" one for intermediate loads and the "heavy" one for considerably weighty loads.
Besides the general features specified for standard rodless cylinders, the other main features are:
• Very high load capacity, acting in all directions without discharging onto the cylinder slide.
• Hardened steel guide connected firmly to the cylinder jacket.
• Ball circulation shoes constructed using special technology that make them very silent when the guide slides, with very long maintenance intervals. For example, they only need lubricating every 2000 km or once a year.
• Extra sturdy slide support with various holes for fixing the loads. Holes for centring pins are also provided.
• 100 to 2650 stroke at intervals of 1 mm.
• Integrated pneumatic adjustable cushioning.
• Adjustable limit switches and decelerations can be applied at any time.
For this type of cylinder (size 32 and upwards), the valves can be fitted directly using the retracting sensors without requiring any intermediate brackets.
Refer to the table on page 1.1/96.

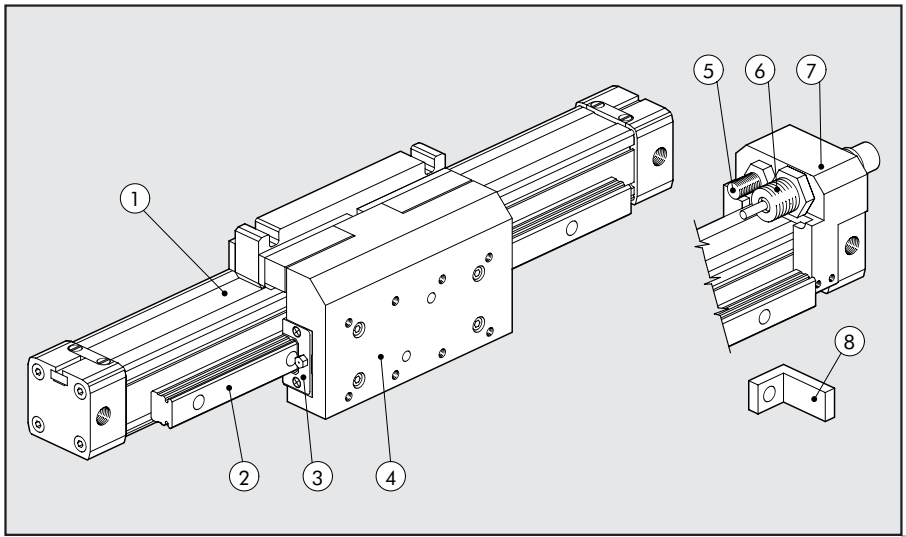


TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar	0.5÷8	
	MPa	0.05÷0.8	
	psi	7÷116	
Temperature range	°C	–15÷80	
	°F	- 5÷176	
Fluid		50µm unlubricated filtered air lubrication, if used, must be continuous	
Bores		Ø 16, 25, 32, 40 and 63	
Type of construction		Doubl-acting rodless cylinder with direct transmission system	
Strokes		Ø 16: 100 to 1350 with 1 mm interval	
		Ø 25: 100 to 2300 with 1 mm interval	
		Ø 32: 100 to 2300 with 1 mm interval	
		Ø 40: 100 to 2250 with 1 mm interval	
		Ø 63 standard: 100 to 2100 with 1 mm interval	
		Ø 63 heavy: 100 to 2650 with 1 mm interval	
Threaded ports		M5, G1/8", G1/4", G3/8"	
Assembly		as required	
Recommended speed		<1 m/s (NBR)	⩾1 m/s (FKM/FPM)
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/07	
Max. speed with decelerators		<1 m/s (NBR)	2 m/s (FKM/FPMs)
		For no-stick slip versions, use no-lubricated air only	

COMPONENTS

For version 275
① CYLINDER: see construction details on page 1.1/93
② GUIDE: hardened steel
③ SHOE: steel with hardened ball circulation
④ SLIDE SUPPORT: anodised aluminium

For version 276
Besides the details specified above:
⑤ END-OF-STROKE STUD PIN: zinc-plated steel, complete with 2 zinc-plated nuts for fixing.
⑥ DECELERATOR: burnished steel, complete with 2 zinc-plated or burnished nuts for fixing
⑦ DECELERATOR SUPPORT: anodised aluminium
⑧ BRACKET: hardened-and-tempered and zinc-plated steel



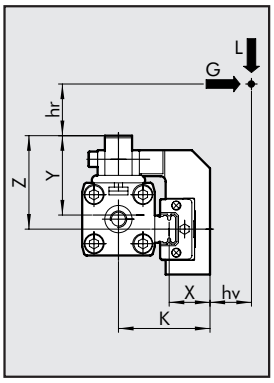
DIMENSIONES - FORCES AND MOMENTS

Ø	Version	Actual force F at 6 bar [N]	Cushioning stroke [mm]	K [mm]	X [mm]	Y [mm]	Z [mm]	Max load L [N]	Max load G [N]	Ma max. [Nm]	Mr max. [Nm]	Mv max [Nm]
16	–	110	15	35	16	29	33	500	500	16	15	16
25	–	250	21	50.5	21	44	51.5	1500	1500	100	50	100
32	–	420	26	59	22.5	53.5	70	3000	3000	200	100	200
40	–	640	32	68	24.7	58	73	4000	4000	200	140	200
63	standard	1550	40	84	23.1	79	100	6000	6000	400	140	400
63	heavy	1550	40	91	29.2	79	88	10000	10000	600	400	600

N.B.: when the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations

Ma = F x (hr + Y) Mr = G x (hr + z) + Lx (hv + X) Mv = F x (K + hv)

$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + \frac{Mv}{Mv_{max}} + \frac{L}{L_{max}} + \frac{G}{G_{max}} \leq 1$$



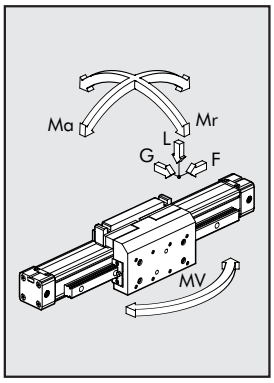
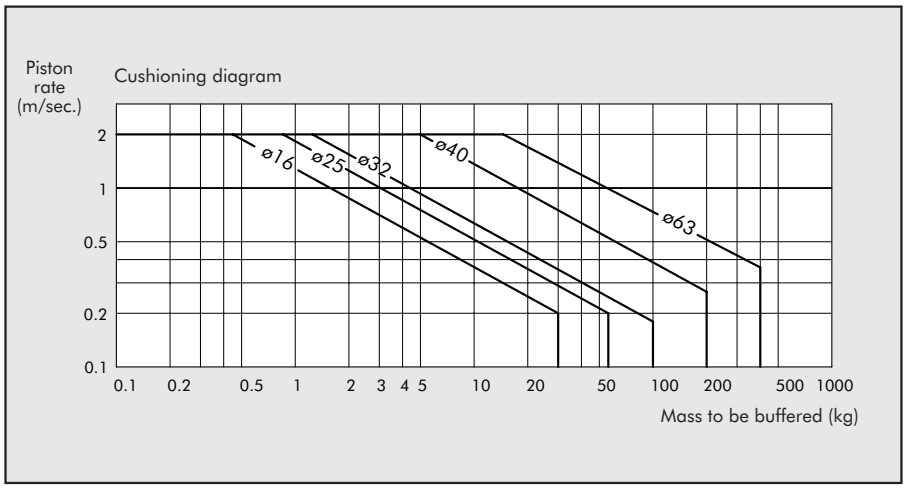
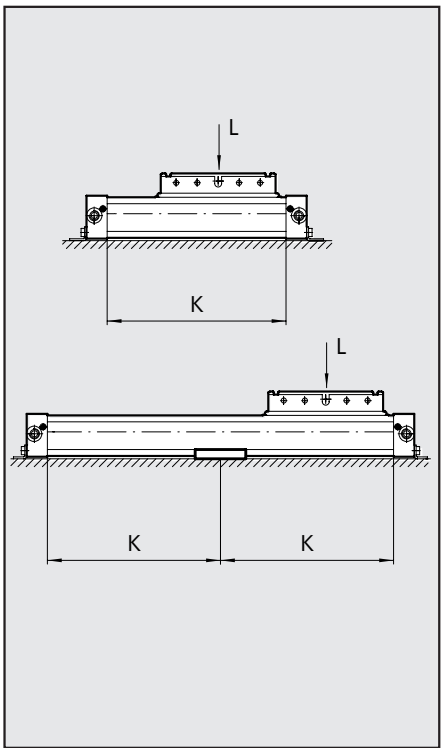


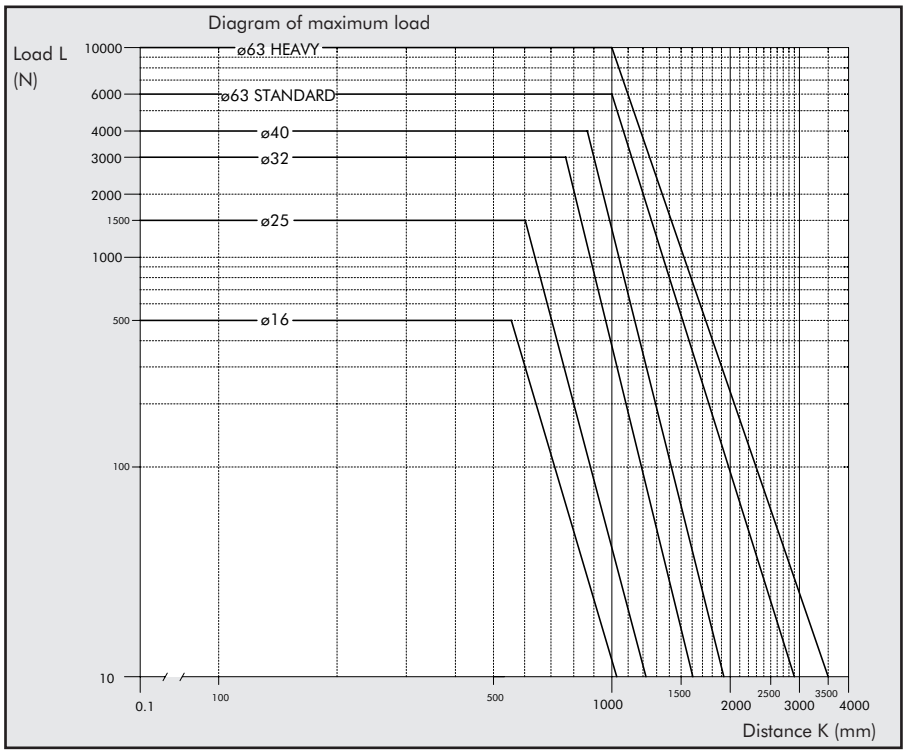
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

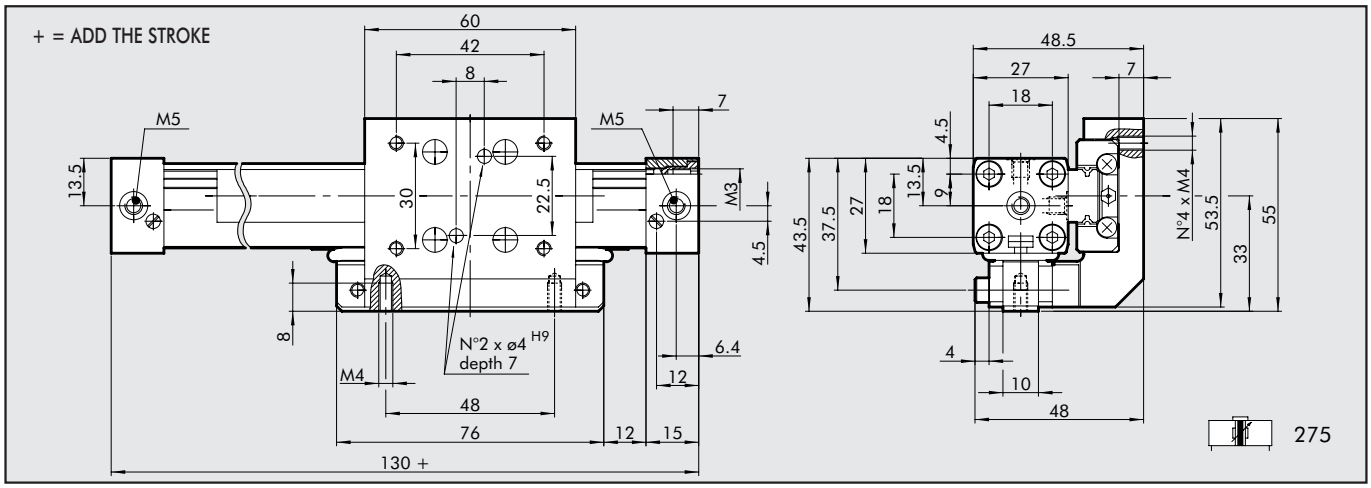


MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS

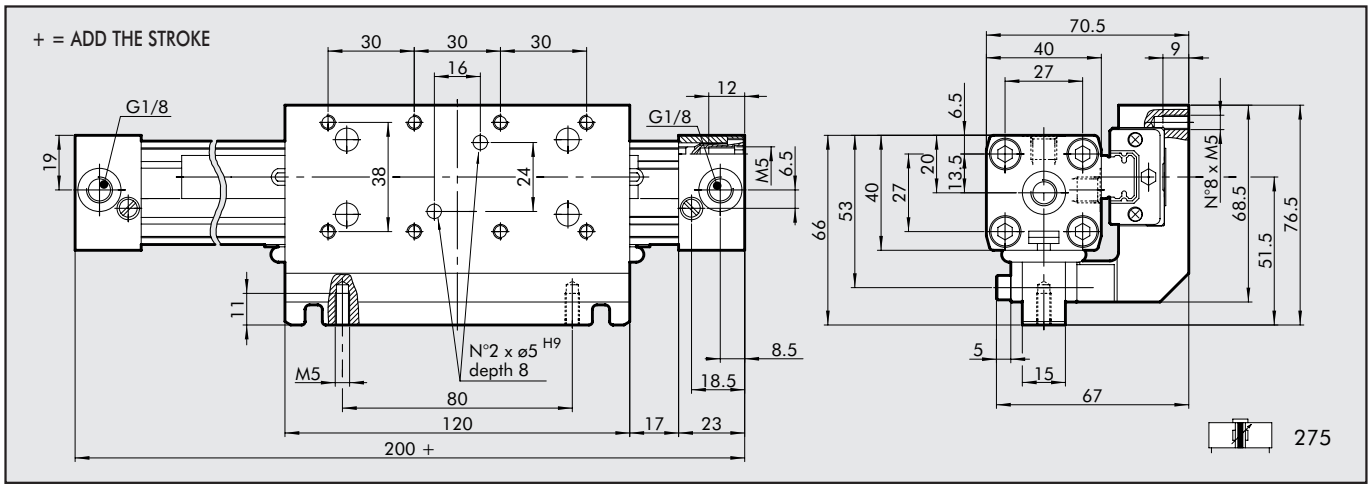




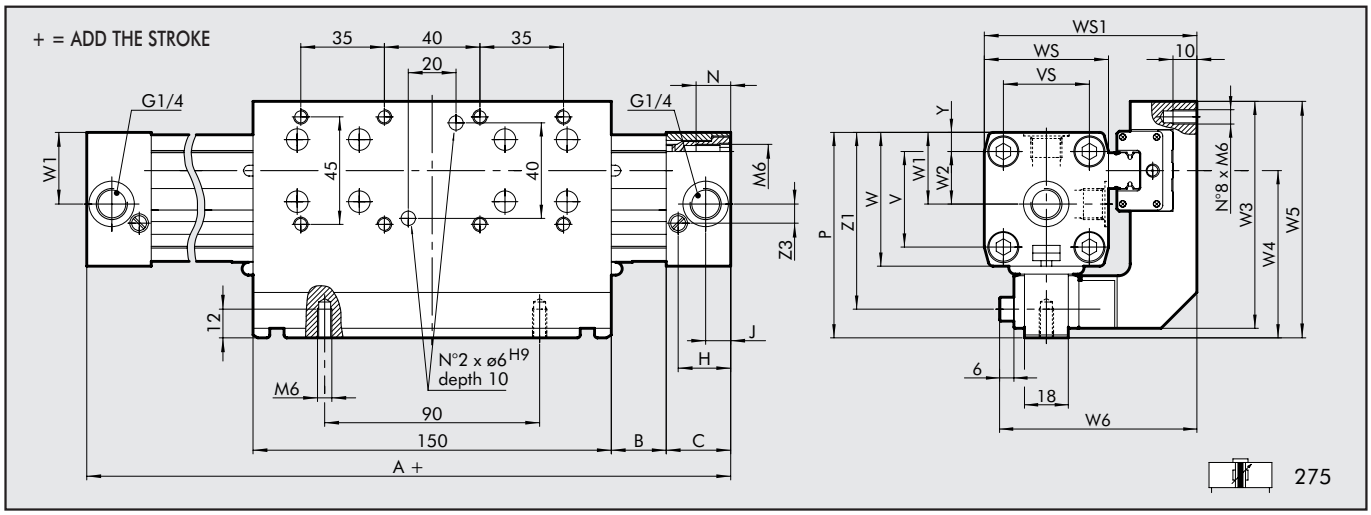
RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE Ø 16



RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE Ø 25



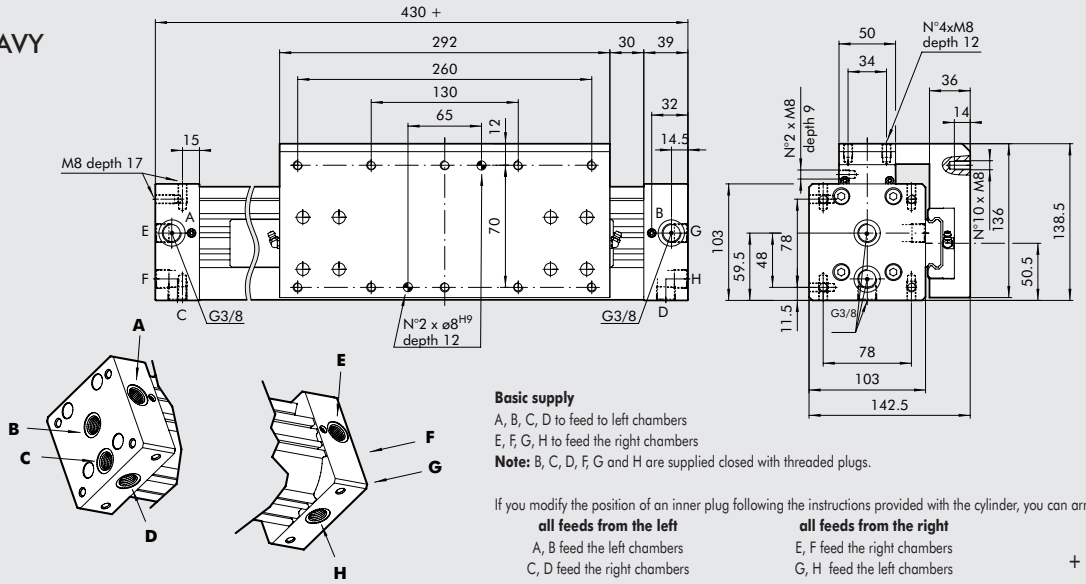
RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE Ø 32; Ø 40



Ø	A	B	C	H	J	N	P	V	VS	W	WS	WS1	W1	W2	W3	W4	W5	W6	Y	Z1	Z3
32	250	23	27	22	10.5	14	86	40	36	56	52	85	30	22	95	70	99	78.5	8	74	8
40	300	45	30	24	15	17.5	97	54	54	69	72	104	36	27	98	73	102	88	9	85	11.8

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE Ø 63

HEAVY



Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs.

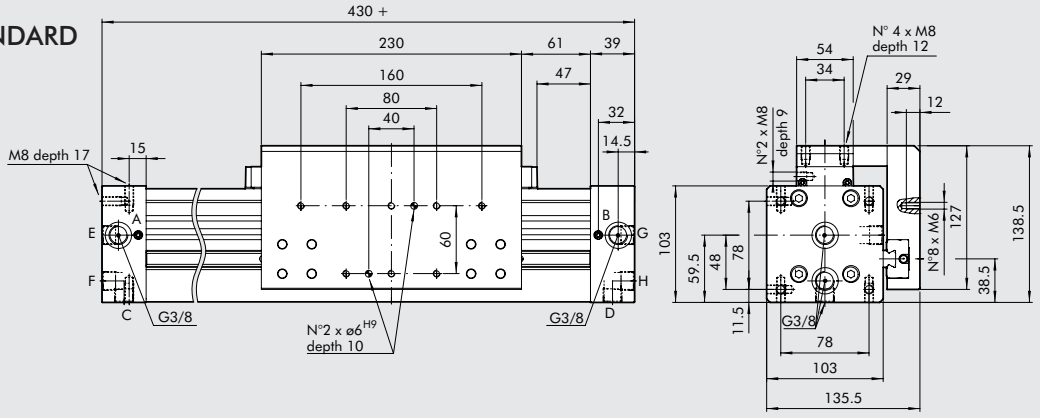
If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

all feeds from the left	**all feeds from the right**
A, B feed the left chambers	E, F feed the right chambers
C, D feed the right chambers	G, H feed the left chambers

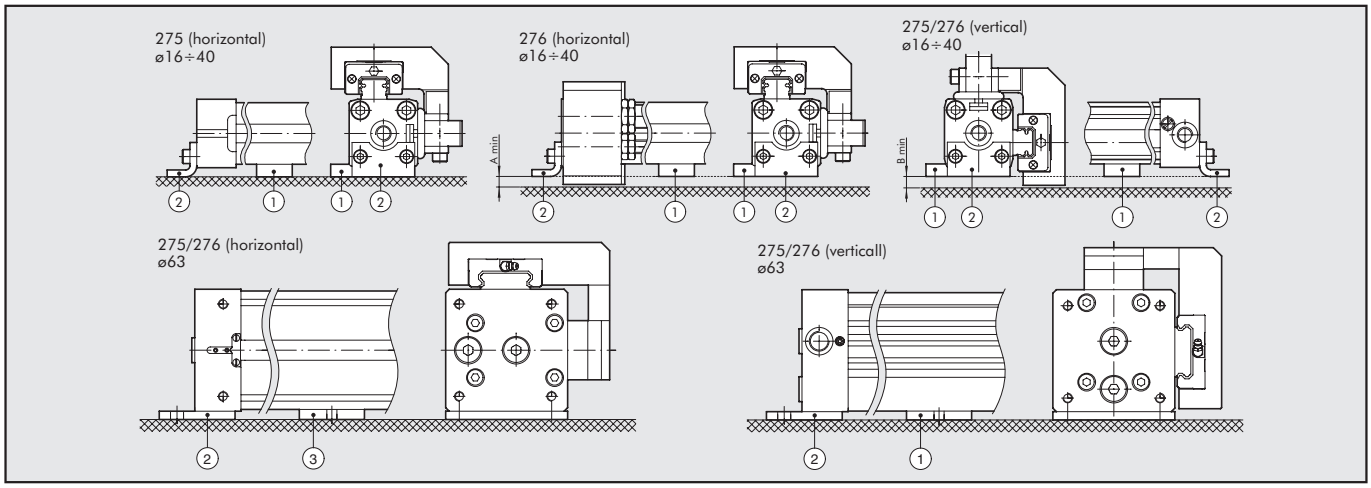
+ = ADD THE STROKE

275

STANDARD



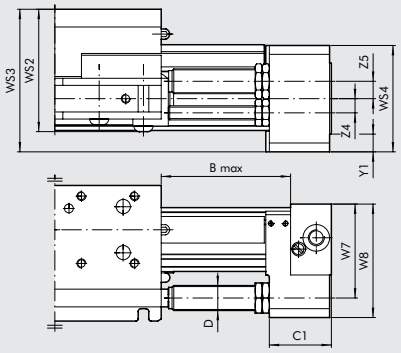
ASSEMBLY DIAGRAMS



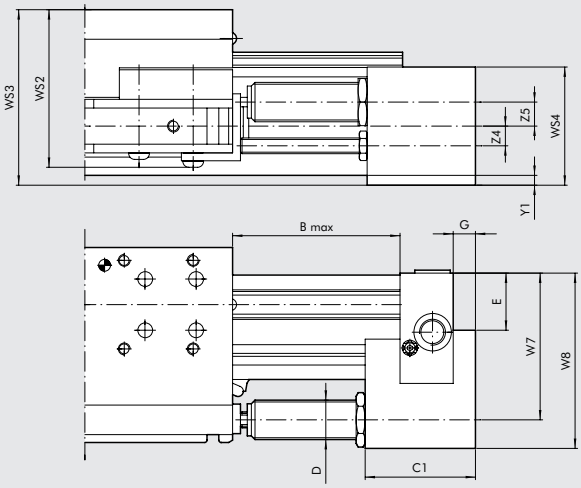
Ø	A	Horizontal layout		B	Vertical layout	
	min	Interm. support code (1)	Leg code (2)	min	Interm. support code (1)	Leg code (2))
16	8	W0950164004	W0950167001	12	W0950164004	W0950167001
25	10	W0950254004	W0950257001	10	W0950254004	W0950257001
32	4	W0950324004	W0950328035	11	W0950324004	W0950327001
40	3	W0950404004	W0950407001	5	W0950404004	W0950407001
63	–	W0950637032	W0950637001	–	W0950637036	W0950637001

RODLESS CYLINDER WITH BALL RECIRCULATING GUIDE + SHOCK ABSORBERS Ø 16÷63

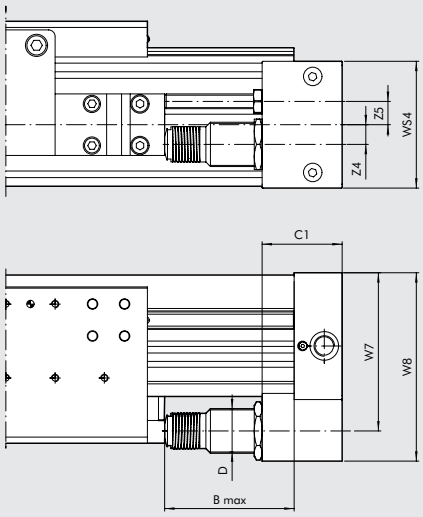
ø16



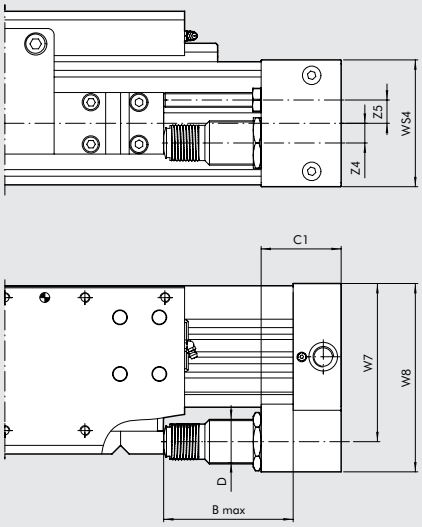
ø25; ø32; ø40



ø63 STD



ø63 HEAVY



276

Ø	Version	B max	C1	D	E	G	W7	W8	WS2	WS3	WS4	Y1	Z4	Z5	Stroke	Max. cushioned force Per stroke [J]	Max. cushioned force Per hour [J]	Max. impact force [N]	Max. thrust force [N]
16	–	50	22	M12x1	–	–	38	46	52	56	42	7.5	7	7.5	10	4.5	14125	1000	220
25	–	72	44	M14x1	17	9	53	67	71	80.5	50	5	8	9.8	16	18	34000	2800	530
32	–	90	56	M20x1.5	29	11	74	89	82.5	91	60	4	10	12.2	22	40	53700	3750	890
40	–	105	74	M25x1.5	32.8	14	89	108	92	108	75	1.5	12.5	12.7	25	65	70000	5500	1550
63	standard	105	65	M36x1.5	–	–	128.5	153	–	–	103	–	16	19	25	125	91000	11120	2220
63	heavy	105	65	M36x1.5	–	–	128.5	153	–	–	103	–	16	19	25	125	91000	11120	2220

For graphs to help choose shock absorbers see page 1.1/124

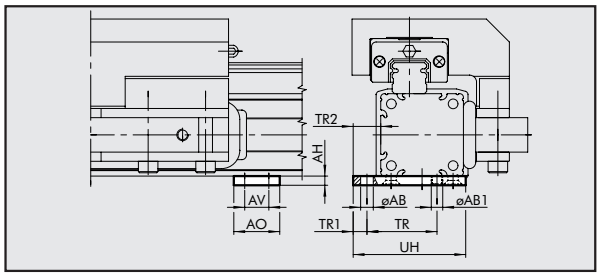
KEY TO CODES

CIL	2 7	5	0	2 5	0 0 5 0	C	N
	TYPE		BORE		STROKE	CONFIGURATION	
	27 Rodless cylinder	5 Double-acting cushioned magnetic with ball circulation guides 6 Double-acting cushioned magnetic with ball circulation guides + adjustable limit switch and shock absorbers	0 STD Magnetic S STD Non magn. ■ G STD No stick slip A HEAVY Magnetic ■ B HEAVY No stick slip C HEAVY Non magn.	16 25 32 40 63	Ø 16: from 100 to 1350 mm Ø 25-32: from 100 to 2300 mm Ø 40: from 100 to 2250 mm Ø 63 std: from 100 to 2100 mm Ø 63 heavy: from 100 to 2650 mm		N NBR ● V FKM/FPM

■ For speed ⩽ 0.2 m/s
● For speed ⩾ 1 m/s

ACCESSORIES

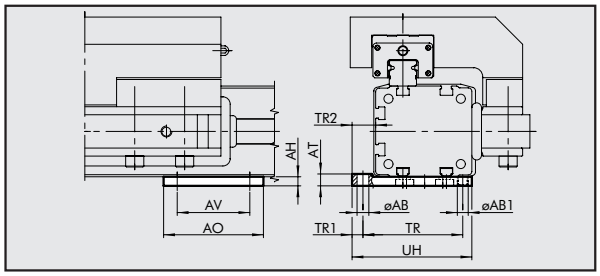
INTERMEDIATE SUPPORT Ø 16÷25



Code	Ø	ØAB	ØAB1	AH	AO	AV	TR	TR1	TR2	UH]
W0950164004	16	3.5	M3	3	12	6	20	4	8	32.5
W0950254004	25	5.5	M5	4	20	10.5	30.5	6	12	49

Note: Supplied complete with 4 screws.

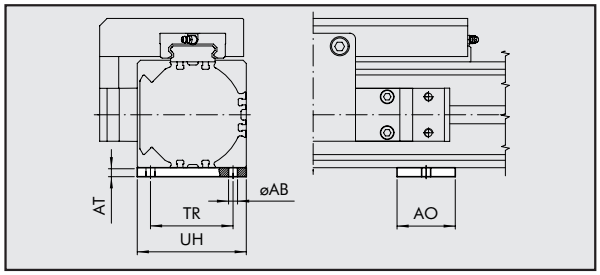
INTERMEDIATE SUPPORT Ø 32÷40



Code	Ø	ØAB	ØAB1	AH	AO	AT	AV	TR	TR1	TR2	UH
W0950324004	32	6.5	M6	5	55	5	40	55	6	13	66
W0950404004	40	6.5	M6	6.6	60	8	45	63	7.5	15	77

Note: Supplied complete with 4 screws, 4 plates.

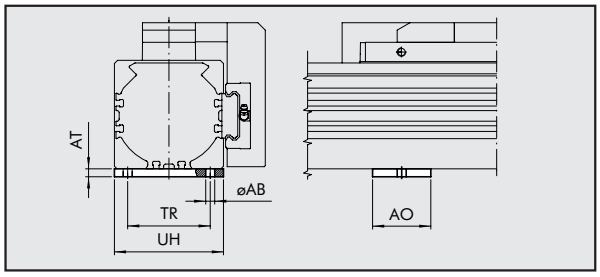
INTERMEDIATE SUPPORT KIT Ø 63 FOR HORIZONTAL POSITION



Code	Ø	ØAB	AH	AO	AT	TR	UH
W0950637036	63	8.5	7.5	55	8.5	78	103

Note: Supplied complete with 4 screws, 4 plates.

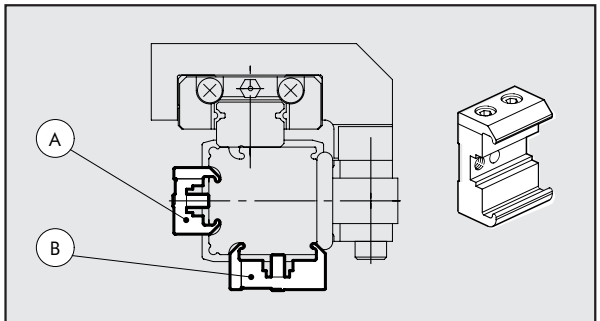
INTERMEDIATE SUPPORT KIT Ø 63 FOR VERTICAL POSITION



Code	Ø	ØAB	AH	AO	AT	TR	UH
W0950637032	63	8.5	7.5	55	7.5	78	103

Note: Supplied complete with 4 screws, 4 plates.

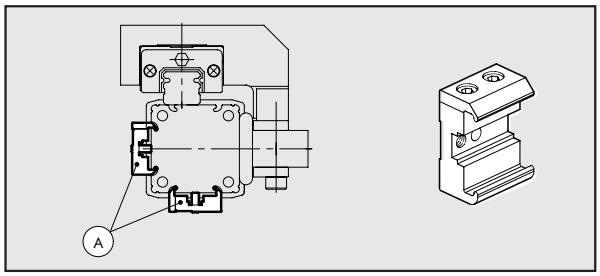
SENSOR SUPPORT Ø 16



Code sensor support	Description sensor support	Type sensor support	Mounting on the carriage opposite side	Mounting on the guide opposite side
0950164003	sensor support corto	A	•	
0950164001	sensor support std	B		•

Note: Supplied complete with 2 screws, 1 pin.

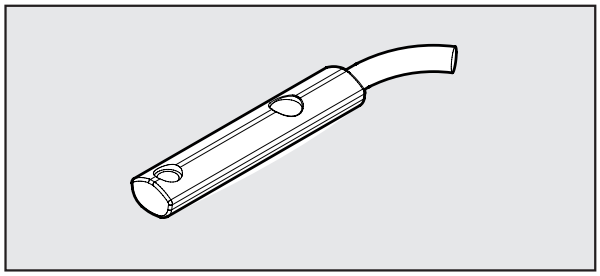
SENSOR SUPPORT Ø 25



Code sensor support	Description sensor support	Type sensor support	Mounting on the carriage opposite side	Mounting on the guide opposite side
0950164001	sensor support std	A	•	•

Note: Supplied complete with 2 screws, 1 pin.

SLIM SENSOR

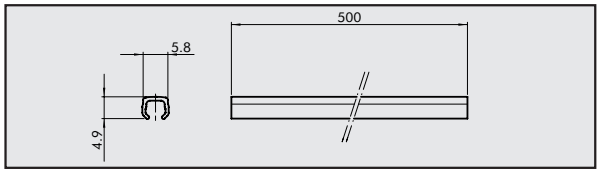


Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

For technical features, refer to page 1.1/97

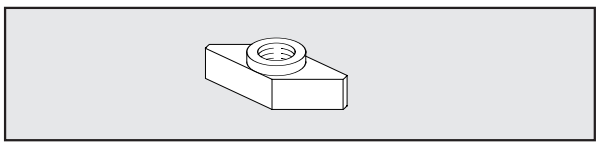
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: the code corresponds to 1 piece

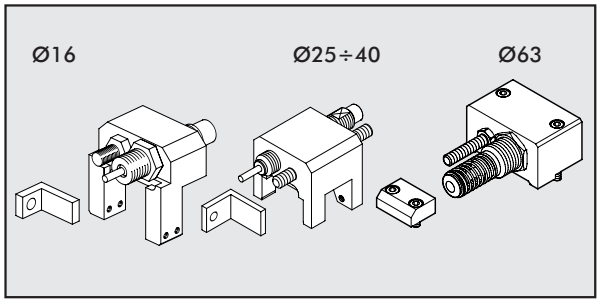
KIT FOR CYLINDER ASSEMBLY WITH SENSOR SLOTS



Code	Description	Weight [g]
0950003001	ACC. M3 T-SLOTTED FIXING PLATE	1
0950003002	ACC. M4 T-SLOTTED FIXING PLATE	1

Note: Individually packed

ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT

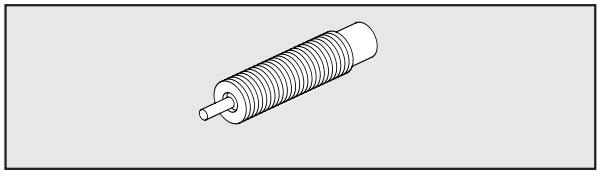


Code	Description	Weight [g]
0950164002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 16	125
0950254002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 25	260
0950324002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 32	460
0950404002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 40	730
0950634002	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 63	1620

Note: Supplied complete with 1 shock absorber support, 1 standard shock absorber, 1 shock absorber nut, 1 limit switch grub screw, 1 grub screw nut (2 for ø63) , 1 bracket, 1 bracket screw, 4 locking grub screws (for Ø 16 and Ø 25), 4 locking plates and 4 screws (for Ø 32 and Ø 40).

For graphs to help choose shock absorbers, see page 1.1/124

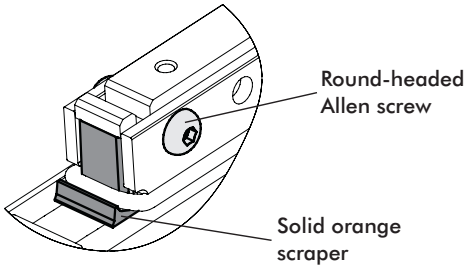
SHOCK ABSORBERS

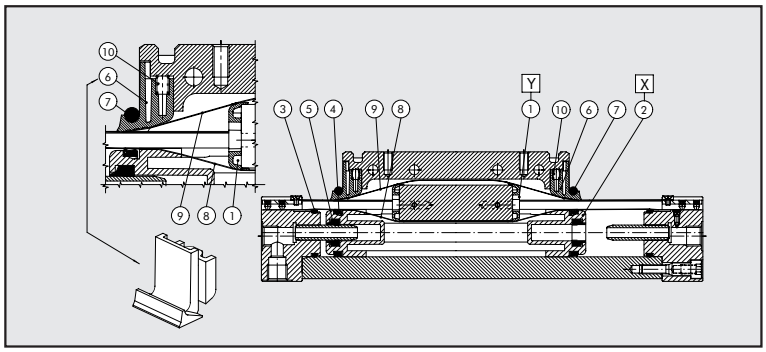


Code	Bore	Description
0950004003	ø16	Shock absorbers PR015 MF1 + nut M12x1.5
0950004004	ø25	Shock absorbers PR025 MC2 + nut M14x1.5
0950004005	ø32	Shock absorbers PR050 MC2 + nut M20x1.5
0950004006	ø40	Shock absorbers PR0100 MF2 + nut M25x1.5
0950004007	ø63	Shock absorbers PR0125 MF3 + nut M36x1.5

SPARE PARTS

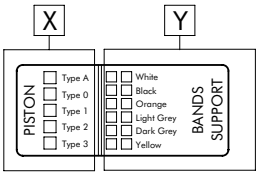
"LAST RELEASE" CYLINDER





① Bands support Kit
② Piston kit
③ ④ ⑤ ⑥ ⑦ ⑩ NBR gaskets Kit (FKM/FPM for ⑦)
③ ④ ⑤ ⑥ ⑦ ⑩ FKM/FPM gaskets Kit
⑧ ⑨ Bands Kit (inner/outer)

Spare parts label
on one cylinder side



BANDS SUPPORT KIT POS 1 (Y)

Ø	Code White	Code Black	Code Orange	Code Light grey	Code Dark grey	Code Yellow
16	0090165080	0090165081	0090165082	0090165083	0090165084	0090165085
25	0090255080	0090255081	0090255082	0090255083	0090255084	0090255085
32	0090325080	0090325081	0090325082	0090325083	0090325084	0090325085
40	0090405080	0090405081	0090405082	0090405083	0090405084	0090405085
63	*0090635080	*0090635081	*0090635082	*0090635083	*0090635084	*0090635085

* For ø63, the kit includes a strip support and a shim in the colour ordered.
Therefore, two kits must be ordered for each cylinder.

BANDS KIT (inner and outer) pos 8-9

Ø	Code	
16	0090166...	
25	0090256...	
32	0090326...	
40	0090406...	
63	0090636...	...= STROKE

NBR GASKET KIT posn. 3,4,5,6,7,10

Ø	Code
16	0090165022
25	0090255022
32	0090325022
40	0090405022
63	0090635022

FKM/FPM GASKET KIT posn. 3-4-5-6-7-10

Ø	Code
16	0090165023
25	0090255023
32	0090325023
40	0090405023
63	0090635023

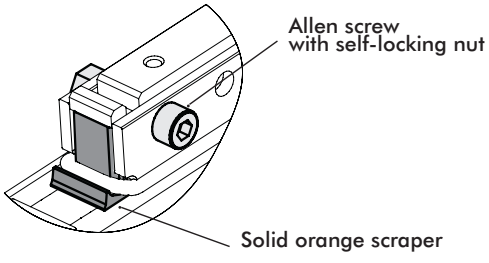
PISTON KIT POS 2 (X)

Ø	Code Type 0 (0 rings)	Code Type 1 (1 rings)	Code Type 2 (2 rings)	Code Type 3 (3 rings)	Code Type A (4 rings)
16	0090165015	0090165016	0090165017	0090165018	–
25	0090255015	0090255016	0090255017	0090255018	–
32	0090325015	0090325016	0090325017	0090325018	0090325019
40	0090405015	0090405016	0090405017	0090405018	–
63	0090635015	0090635016	0090635017	0090635018	–

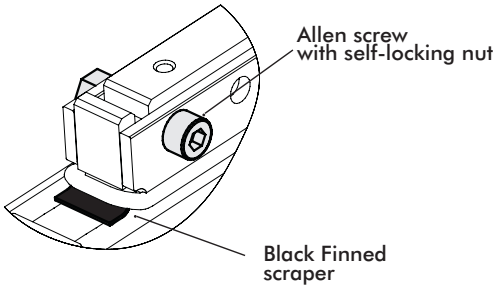
NOTES

IF THE ENDS OF THE CARRIAGE APPEAR AS BELOW INDICATED, PLEASE CONTACT OUR COMMERCIAL DEPARTMENT FOR THE SPARE PARTS

"INTERMEDIATE RELEASE"

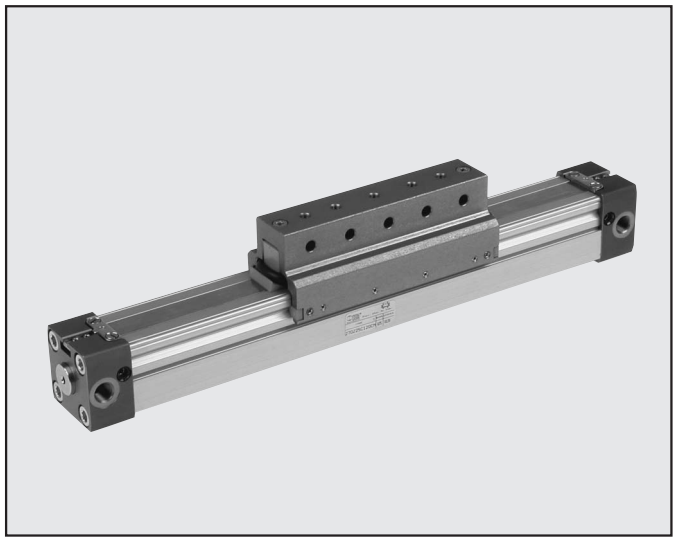


"OLD RELEASE"



RODLESS CYLINDER WITH GUIDE "V" Ø 25, 32, 40, 63

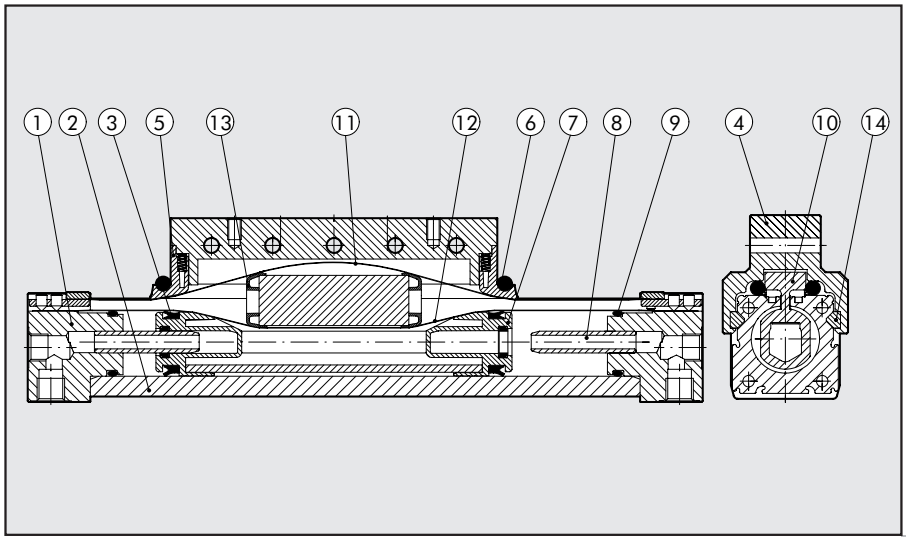
Two opposed V-shaped guide units are obtained directly in the anodized aluminium cylinder liner, on which a cover with two acetalic resin wear-resistant pads slides.
The cover has a tip-up-type carriage-piston rod coupling. In this way the carriage only transfers loads axially and does not support loads and moments in other directions.
The play of the pads can be adjusted by means of side threaded grub screws. Therefore, it is possible to recover the wear of pads, which can be replaced without the need for dismantling the cylinder.
This family of rodless cylinders has the same features as the basic versions: such as an integrated adjustable pneumatic cushioning, sensor slots and accessory holding slots.
A version is available with adjustable limit switches and hydraulic decelerators. They can be purchased separately and applied at any time to the basic cylinders as well.



TECHNICAL DATA		NBR	FKM/FPM
Operating pressure	bar	1.5 ÷ 8	
	MPa	0.15 ÷ 0.8	
	psi	21.8 ÷ 116	
Temperature range	°C	–15 ÷ 80	
	°F	- 5 ÷ 176	
Fluid		50µm unlubricated filtered air Lubrication, if used, must be continuous.	
Bores	mm	Ø 25, 32, 40 and 63	
Type of construction		Double-acting rodless cylinder with direct transmission system	
Strokes		for Ø 25, 32 and 40 :100 to 5700 mm with 1mm interval	
		for Ø 63 :100 to 5500 mm with 1mm interval	
Recommended speeds		V<1 m/s (NBR)	V>1 m/s (FKM/FPM)
Max. speed with decelerators		< 1 m/s (NBR)	2 m/s (FKM/FPM)
Weight		See GENERAL TECHNICAL DATA PAGE 1.1/07	
		For no-stick slip versions, use no-lubricated air only	

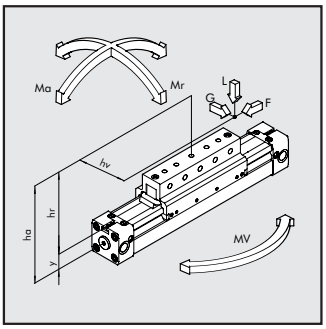
COMPONENTS

① CYLINDER HEAD: aluminium alloy
② BARREL: profiled anodized aluminium alloy
③ PISTON GASKET: NBR or FKM/FPM
④ CENTRAL ELEMENT: aluminium alloy
⑤ SCRAPER: Hostaform®
⑥ O-RING: FKM/FPM
⑦ PISTON: Hostaform®
⑧ CUSHIONING CONE: aluminium alloy
⑨ STATIC O-RINGS: NBR or FKM/FPM
⑩ SLIDE: aluminium alloy
⑪ OUTER STRIP: stainless steel
⑫ INNER STRIP: stainless steel
⑬ BAND SUPPORT: Hostaform®
⑭ "V" GUIDE PLATE: Hostaform®



DIMENSIONNG - FORCE AND TORQUE

Bore Ø	Centre Distance Y	Actual Force F at 6 bar [N]	Cushioning stroke [mm]	Max. load L [N]	Ma max [Nm]	Mr max [Nm]	Mv max [Nm]
25	14	200	21	350	22	5	22
32	18	300	26	400	40	10	40
40	22	490	32	700	70	26	70
63	44	1300	40	1800	250	80	250



N.B.:The loads can be applied for speeds below 0.2 m/s. For higher speeds, it is advisable not to exceed 1 m/s.

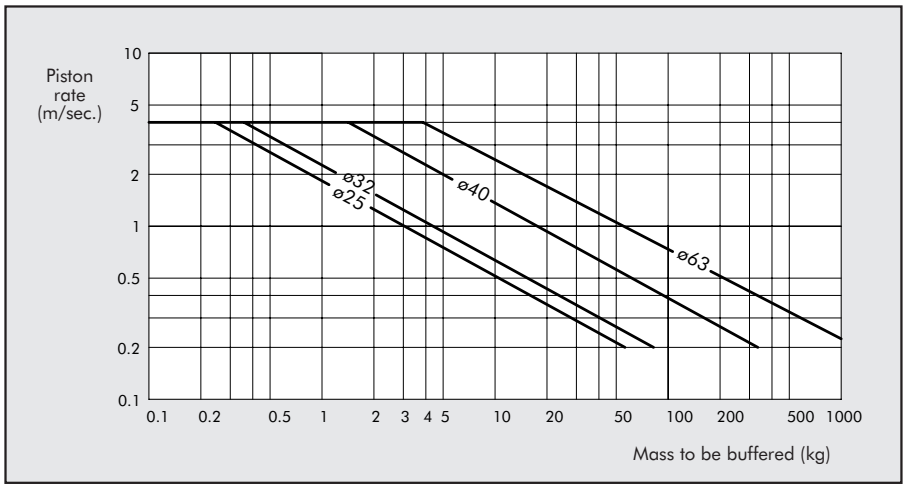
NB: When the cylinder is subjected simultaneously to torque and force, it is advisable to keep to the following equations.

$Ma = F \times ha \qquad Mr = L \times hv + G \times hr \qquad Mv = F \times hv$

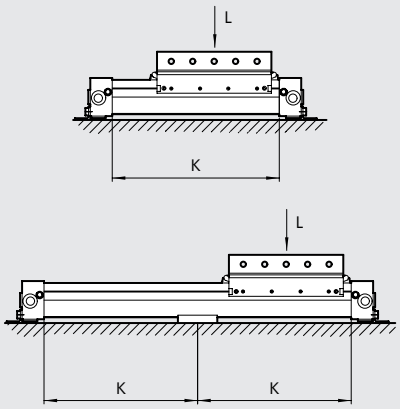
$$\frac{Mv}{Mv_{max}} \leq 1; \qquad \frac{L}{L_{max}} \leq 1; \qquad \frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4\,\frac{L}{L_{max}} \leq 1$$

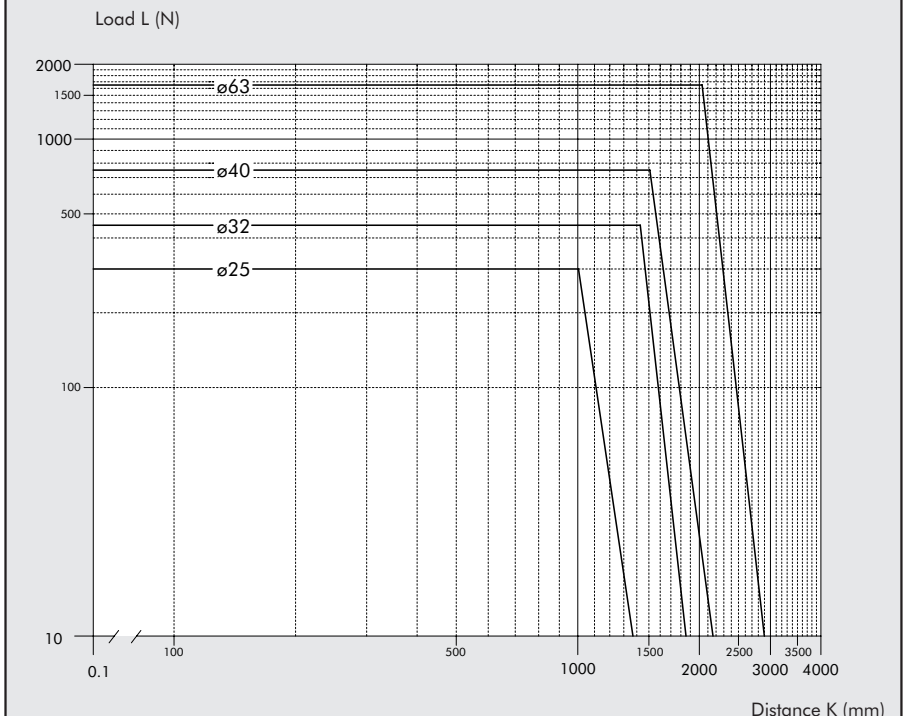
DIAGRAM OF SPEED AND MAXIMUM CUSHIONABLE LOAD

For the cylinder to reach the end-of-stroke position without intense or repeated impact which would damage it, it is necessary to annul the kinetic energy of the moving mass and the work generated. The maximum cushionable load depends on the traversing speed and the absorption of the air buffer supplied standard with the various cylinders. The diagram shows the speeds and cushionable mass for the various diameters at a pressure of 6 bar.

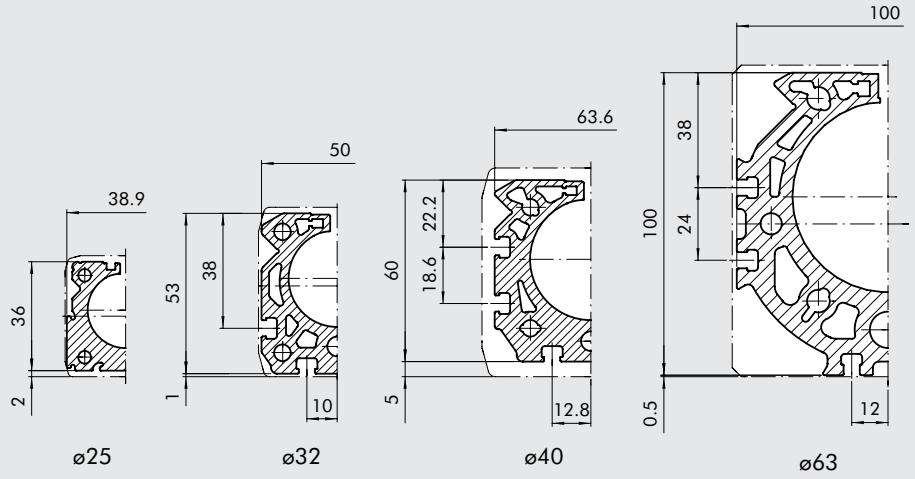


MAXIMUM LOAD ACCORDING TO THE DISTANCE BETWEEN SUPPORTS

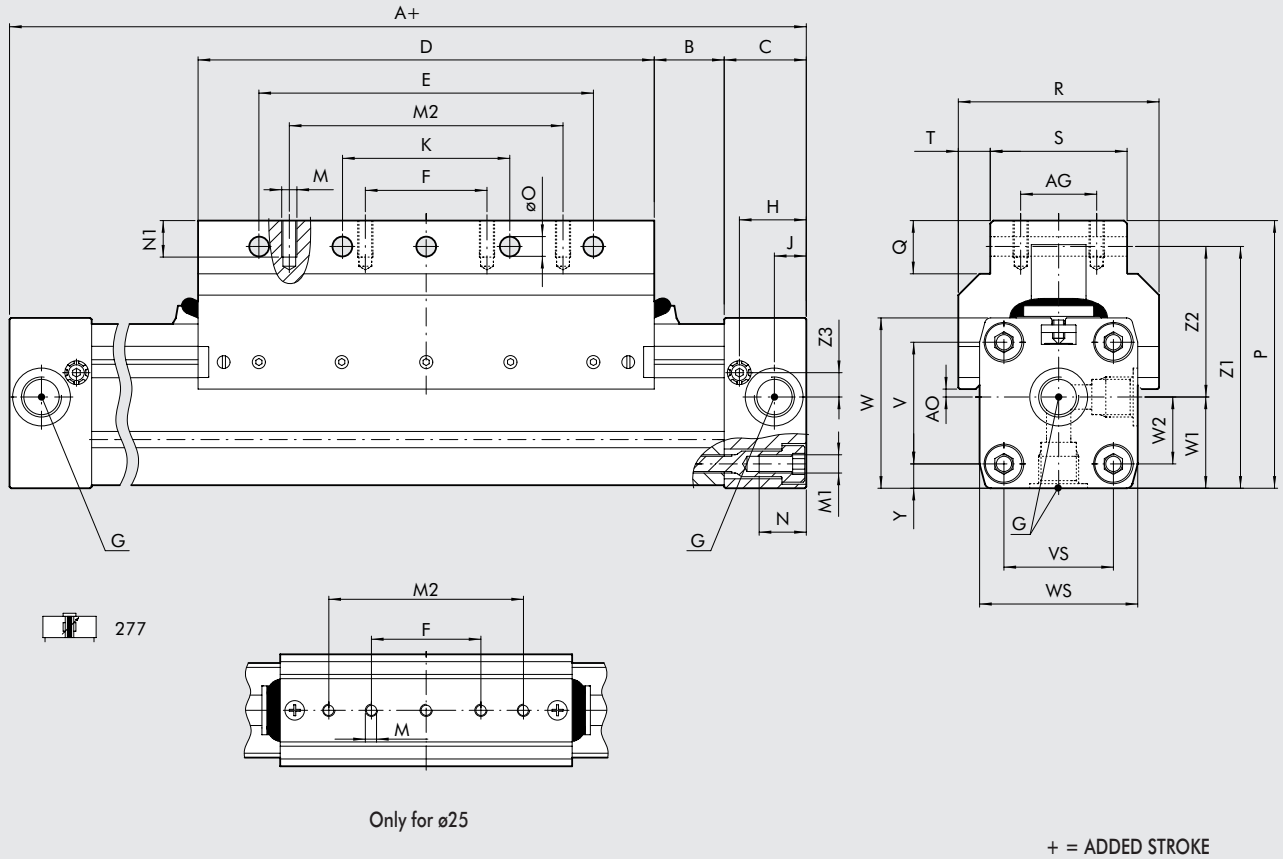




BARREL CROSS SECTION

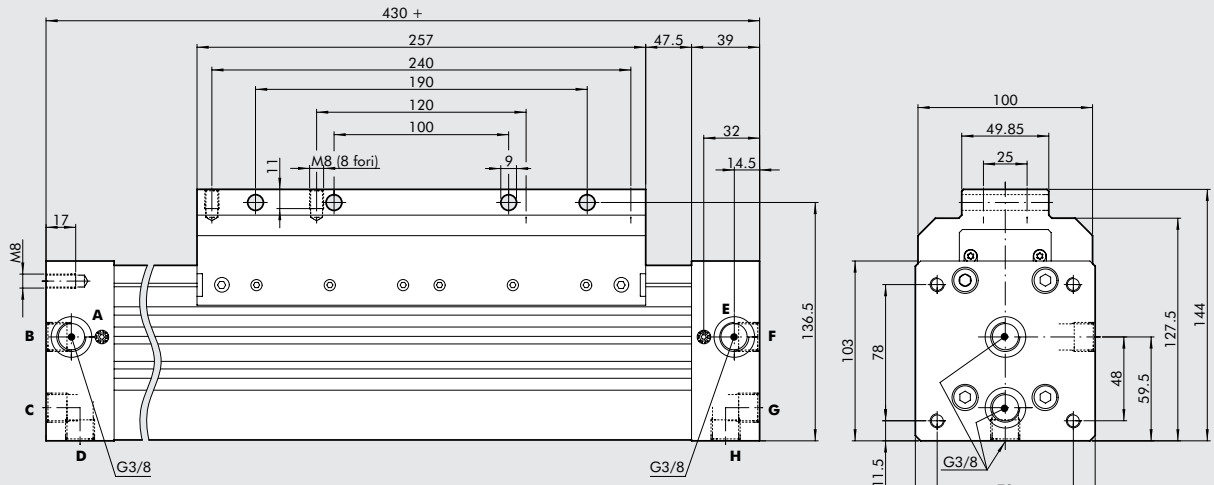


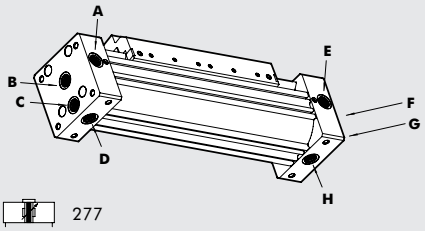
DIMENSIONS OF RODLESS CYLINDER WITH GUIDE "V" Ø 25÷40



Ø	A	AG	AO	B	C	D	E	F	G	H	J	K	M	M1	M2	N	N1	øO	P	R	S	T	V	VS	W	WS	W1	W2	Y	Z1	Z2	Z3
25	200	-	2	17	23	120	90	45	1/8	18.5	8.5	45	M5	M5	80	12	8	5.5	67.5	46	26	10	27	27	40	40	20	13.5	6.5	57.5	37.5	6.5
32	250	25	2.6	23	27	150	110	90	1/4	22	10.5	55	M5	M6	90	15	12	6.4	88	66	45	10.5	40	36	56	52	30	22	8	79.5	49.5	8
40	300	25	9.4	45	30	150	110	90	1/4	24	15	55	M6	M6	90	17.5	12	6.4	98.5	80	45	17.5	54	54	69	72	36	27	9	89.9	53.9	11.8

DIMENSIONS OF RODLESS CYLINDER WITH GUIDE "V" Ø63





277

Basic supply
A, B, C, D to feed to left chambers
E, F, G, H to feed the right chambers
Note: B, C, D, F, G and H are supplied closed with threaded plugs.

If you modify the position of an inner plug following the instructions provided with the cylinder, you can arrange:

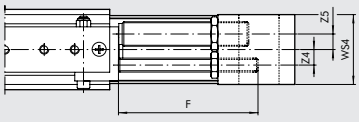
all feeds from the left
A, B feed the left chambers
C, D feed the right chambers

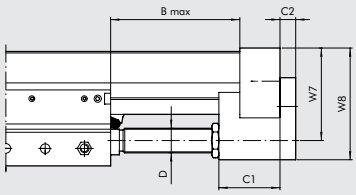
all feeds from the right
E, F feed the right chambers
G, H feed the left chambers

+ = ADDED STROKE

DIMENSIONS OF RODLESS CYLINDER WITH GUIDE "V" + ADJUSTABLE LIMIT SWITCH AND DECELERATORS

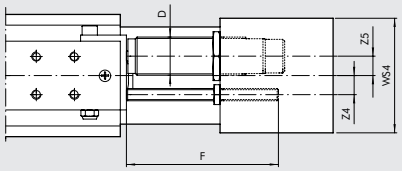
Ø25

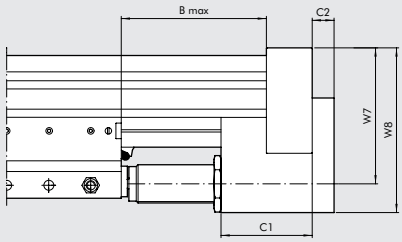




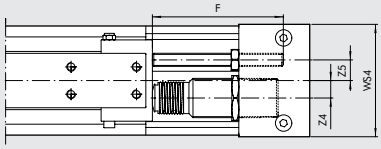
278

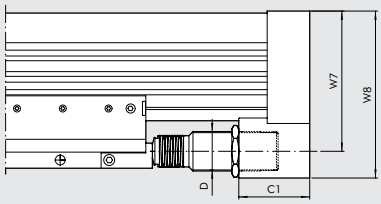
Ø32; Ø40





Ø63





Ø	B Max	C1	C2	D	F	W7	W8	WS4	Z4	Z5	Stroke	Max. cushioned force for stroke [J]	Max. cushioned force for hour [J]	Max. impact force [N]	Max. thrust force [N]
25	84	35	9	M14x1.5	80	53	67	50	8	9.8	16	26	34000	2800	530
32	110	45	11	M20x1.5	100	74	60	64	10	12.2	22	54	53700	3750	890
40	120	60	14	M25x1.5	100	89	75	80	12.5	12.7	25	90	70000	5500	1550
63	122	65	-	M36x1.5	120	128.5	153	103	16	19	25	160	91000	11120	2220

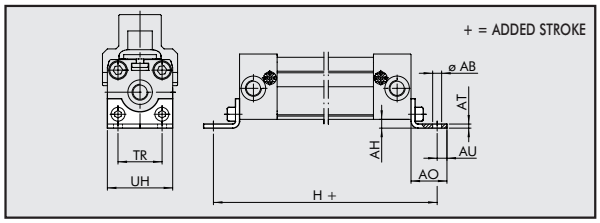
KEY TO CODES

CYL	2	7	7	0	2 5	0 0 5 0	C	N
	TYPE				BORE	STROKE	CONFIGURATION	
	27 Rodless cylinder	7 Double-acting cushioned Magnetic with guide "V" 8 Double-acting cushioned Magnetic with guide "V" + adjustable limit switches and decelerator	0 magnetic S non-magnetic G* No stick slip	25 32 40 63	Ø 25÷40: from 100 to 5700 mm Ø63 from 100 to 5500 mm	C	N NBR V** FKM/FPM	

*For speed ≤ 0.2 m/s **For speed ≥ 1m/s

ACCESSORIES

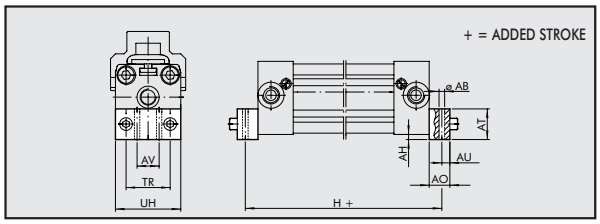
FOOT Ø 25



Code	Ø	ØAB	AH	AO	AT	AU	TR	UH	H	Weight [g]
W0950257001	25	5.5	2	22	2.5	6	27	40	232	32

Note: Individually packed with 2 screws.

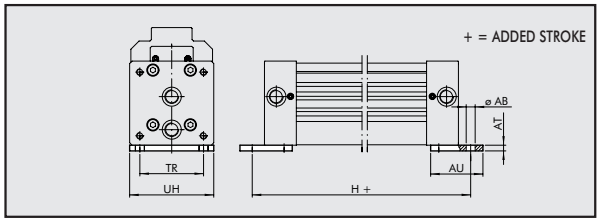
FOOT Ø 32; 40



Code	Ø	ØAB	AH	AO	AT	AU	AV	TR	UH	H	Weight [g]
W0950327001	32	6.6	4	25	20	8	20	36	51	284	88
W0950407001	40	9	2	25	20	11.5	30	54	71	327	112

Note: Individually packed with 2 screws.

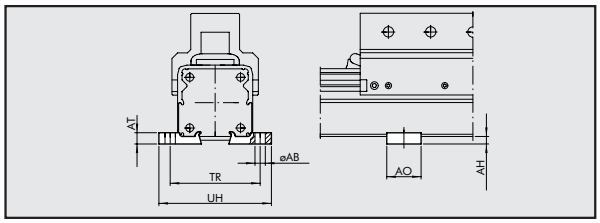
FOOT Ø 63



Code	Ø	ØAB	AT	AU	TR	UH	H	Weight [g]
W0950637001	63	11	7	64	78	103	460	360

Note: Individually packed with 2 screws.

INTERMEDIATE SUPPORT Ø 25

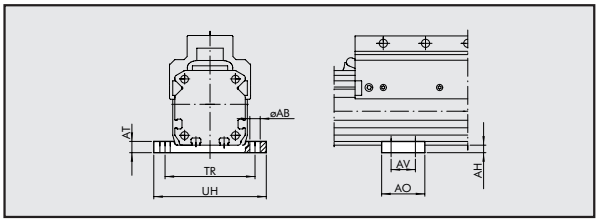


Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950257031	25	5.5	4	20	6	48	60	6

Note: Individually packed.

METAL WORK PNEUMATIC

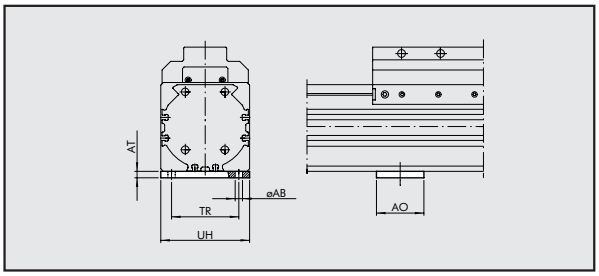
INTERMEDIATE SUPPORT Ø 32; 40



Code	Ø	ØAB	AH	AO	AT	AV	TR	UH	Weight [g]
W0950327032	32	6.5	5	55	8	40	61.5	73	72
W0950407032	40	6.5	7	60	8	45	70÷75	85	104

Note: plate supplied complete with 4 screws, 4 fixing plates

INTERMEDIATE SUPPORT Ø 63

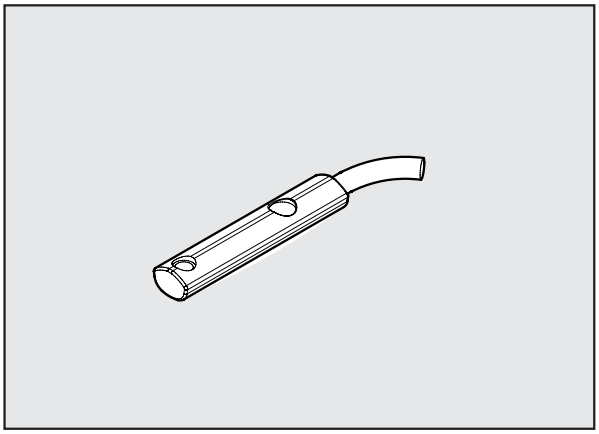


Code	Ø	ØAB	AH	AO	AT	TR	UH	Weight [g]
W0950637032	63	8.5	7.5	55	7.5	78	103	330

Note: plate supplied complete with 4 screws, 4 fixing plates

Note: plate supplied complete with 4 screws, 4 fixing plates

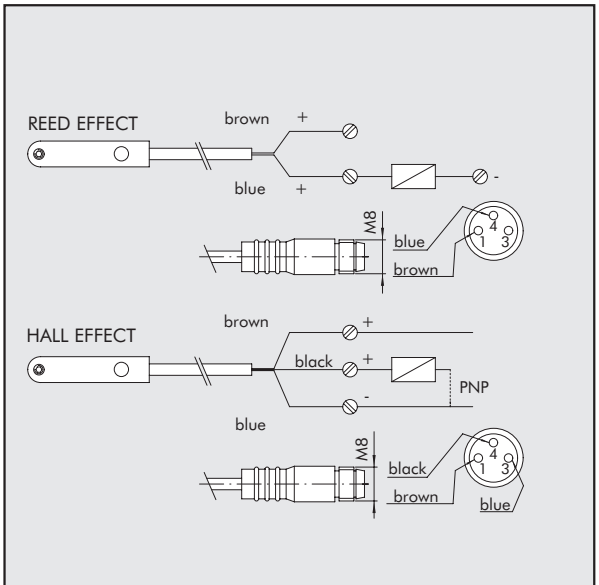
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
FOR Ø25	
W0952022500	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952128184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952025500	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029395	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
FOR Ø32÷63	
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

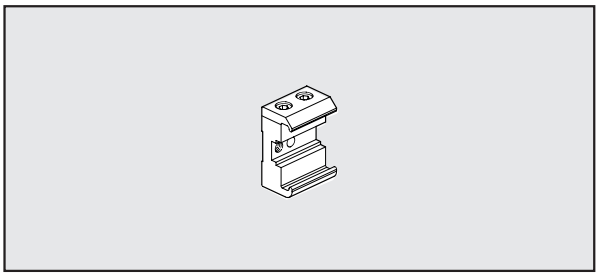
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

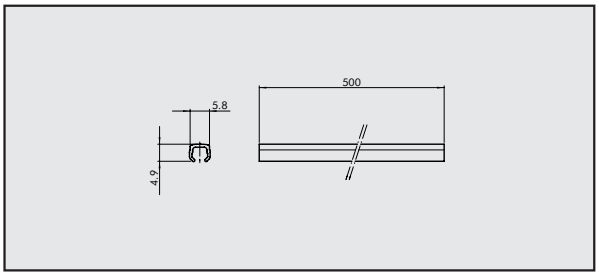
SENSOR SUPPORT Ø 25



Code	Description
0950164001	SENSOR SUPPORT STD

Note: Supplied with 1 stud pin, 2 screws

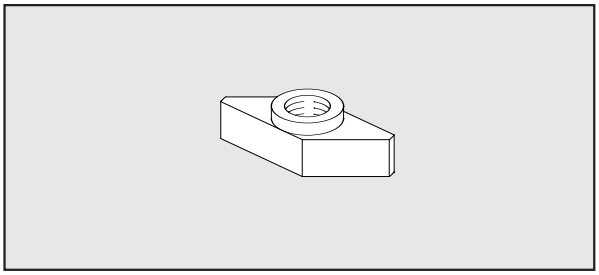
SLOT STRIP



Code	Description
W0950000160	SLOT STRIP 500 mm

Note: the code corresponds to 1 piece

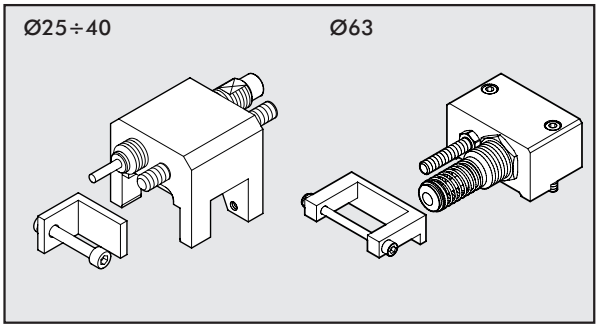
KIT FOR CYLINDER ASSEMBLY WITH SENSOR SLOTS



Code	Description	Weight [g]
0950003001	ACC. M3 T-SLOTTED FIXING PLATE	1
0950003002	ACC. M4 T-SLOTTED FIXING PLATE	1

Note: Individually packed

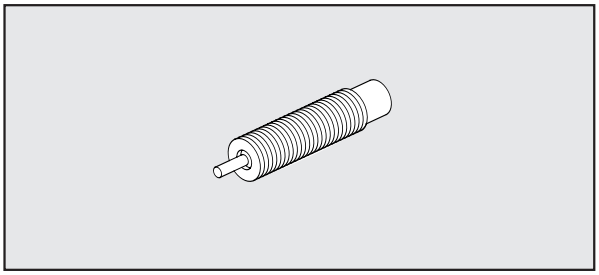
ADJUSTABLE LIMIT SWITCH AND SHOCK ABSORBERS KIT



Code	Description	Weight [g]
0950254004	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 25	260
0950324004	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 32	460
0950404004	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 40	730
0950634004	ACC. RODLESS CYLINDER LIMIT SWITCH AND SHOCK ABSORBERS Ø 63	1620

Note: Supplied complete with 1 shock absorber support, 1 standard shock absorber , 1 shock absorber nut, 1 limit switch grub screw, 1 grub screw nut (2 for ø63) , 1 bracket, 1 bracket screw, 4 locking grub screws (for Ø 25), 4 locking plates and 4 screws (for Ø 32 and Ø 40).
For graphs to help shock absorbers, see page 1.1/124

SHOCK ABSORBERS



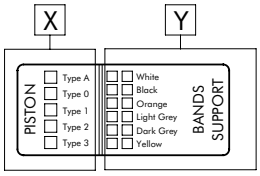
Code	Bore	Description
0950004004	ø25	Shock absorbers PR025 MC2 + nut M14x1.5
0950004005	ø32	Shock absorbers PR050 MC2 + nut M20x1.5
0950004006	ø40	Shock absorbers PR0100 MF2 + nut M25x1.5
0950004007	ø63	Shock absorbers PR0125 MF3 + nut M36x1.5

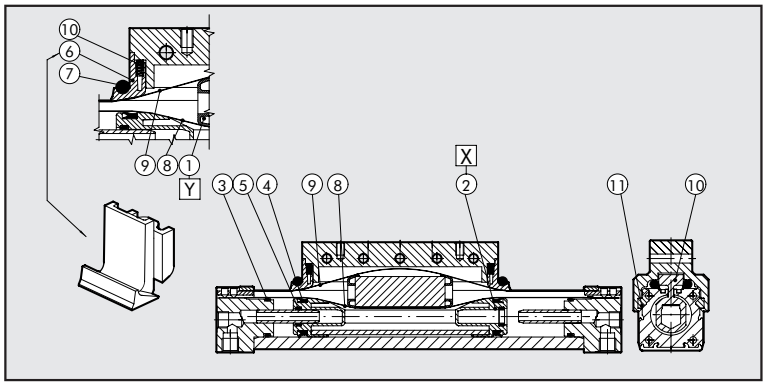
SPARE PARTS

"NEW GENERATION" CYLINDER

① Bands support Kit
② Piston kit
③ ④ ⑤ ⑥ ⑦ ⑩ NBR gaskets Kit (FKM/FPM for ⑦)
③ ④ ⑤ ⑥ ⑦ ⑩ FKM/FPM gaskets Kit
⑧ ⑨ Bands Kit (inner/outer)
⑪ "V" guide plate Kit

Spare parts label
on one cylinder side





BANDS SUPPORT KIT POS 1 (Y)

Ø	Code White	Code Black	Code Orange	Code Light grey	Code Dark grey	Code Yellow
25	0090255080	0090255081	0090255082	0090255083	0090255084	0090255085
32	0090325080	0090325081	0090325082	0090325083	0090325084	0090325085
40	0090405080	0090405081	0090405082	0090405083	0090405084	0090405085
63	*0090635080	*0090635081	*0090635082	*0090635083	*0090635084	*0090635085

* For ø63, the kit includes a strip support and a shim in the colour ordered.
Therefore, two kits must be ordered for each cylinder.

PISTON KIT POS 2 (X)

Ø	Code Type 0 (0 rings)	Code Type 1 (1 rings)	Code Type 2 (2 rings)	Code Type 3 (3 rings)	Code Type A (4 rings)
25	0090255015	0090255016	0090255017	0090255018	–
32	0090325015	0090325016	0090325017	0090325018	0090325019
40	0090405015	0090405016	0090405017	0090405018	–
63	0090635015	0090635016	0090635017	0090635018	–

BANDS KIT (inner and outer) pos 8-9

Ø	Code	
25	0090256...	
32	0090326...	
40	0090406...	
63	0090636...	...= STROKE

NBR GASKET KIT pos. 3-4-5-6-7-10

Ø	Code
25	0090255022
32	0090325022
40	0090405022
63	0090635022

FKM/FPM GASKET KIT pos. 3-4-5-6-7-10

Ø	Code
25	0090255023
32	0090325023
40	0090405023
63	0090635023

"V" GUIDE PLATE KIT posn. 11

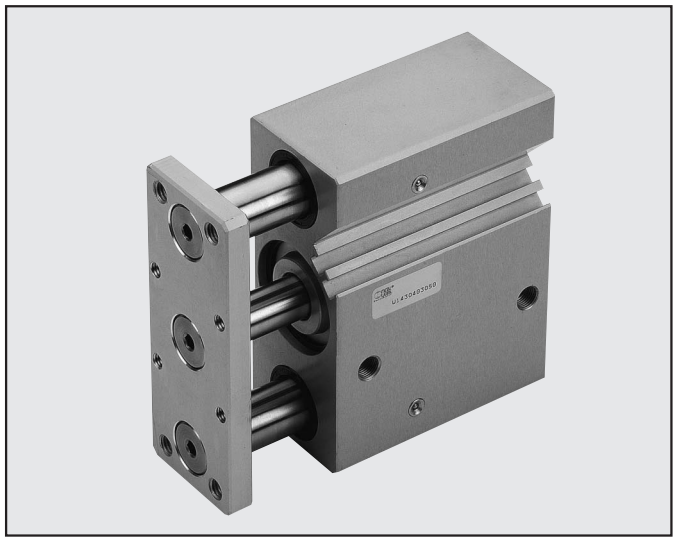
Ø	Code
25	0090255060
32	0090325060
40	0090325060
63	0090635060

NOTES

GUIDED COMPACT CYLINDERS
Ø 16÷100

GUIDED COMPACT CYLINDERS

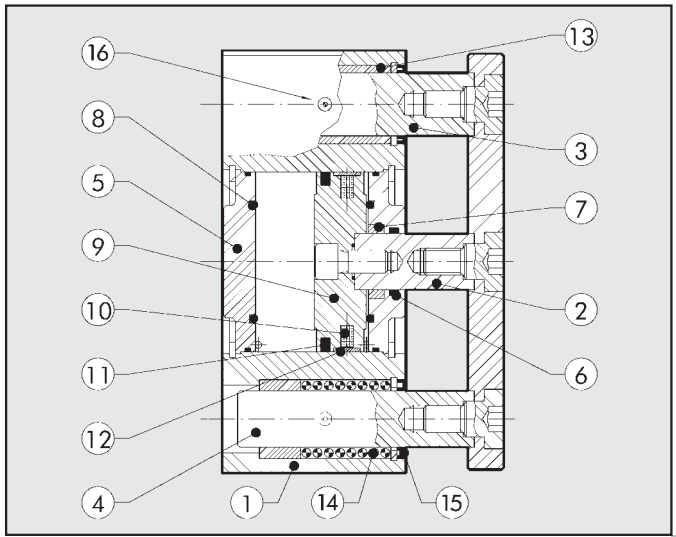
The guided compact cylinder series CMPG is a robust and practical solution with a built-in guide unit. The rod guiding bushes are mounted directly in the anodized aluminium alloy lining.
Two guiding solutions are available: sintered bronze bushes coupled with ground carbon chromed steel rods, or ball recirculation bushes coupled with tempered, chromed and ground steel rods.
There are grooves on one side of the body to house the retractable sensors.
In the non-cushioned version, the stop is silenced by NBR front gaskets, and the cushioned version has adjustable pins to graduate braking.
Threaded holes and calibrated holes are provided for fixing the dowel pins.



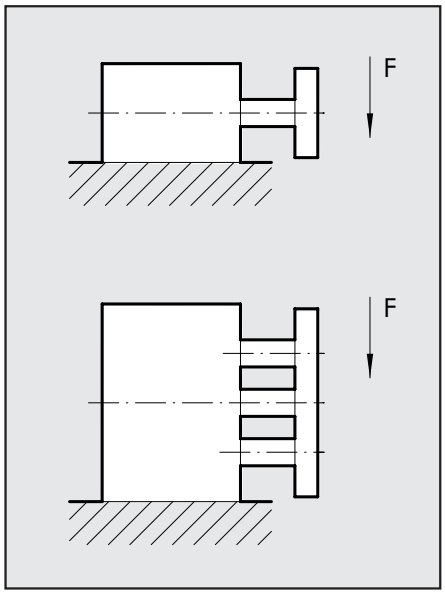
TECHNICAL DATA		CUSHIONED	NO-CUSHIONED
Operating pressure	bar	1÷10	
	MPa	0.1÷1	
	psi	14.5÷145	
Temperature range	°C	0÷80°C	
	°F	32÷176°F	
With dry air	°C	–20°	
	°F	–4°	
Strokes		Ø16: 20-30-40-50	Ø16: 10-20-30-40-50
		Ø20; Ø25: 20-30-40-50-75-100-150	Ø20; Ø25: 20-30-40-50-75-100-150
		Ø32÷63: 25-50-75-100,175,200	Ø32÷Ø100: 25-50-75-100,150,175
		Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.	
Version		With bronze bushings	
		With ball bearings	
Bores	mm	Ø 16; 20; 25; 32; 40; 50; 63; 80; 100.	
Weights		See GENERAL TECHNICAL DATA PAGE 1.1/07	

COMPONENTS

① JACKET: anodized aluminium alloy
② PISTON ROD: grinded chrome steel
③ GUIDE ROD: grinded chrome steel
④ GUIDE ROD: hardened and tempered chrome steel
⑤ REAR BASE: anodized aluminium alloy
⑥ FRONT BASE: anodized aluminium alloy
⑦ GUIDE BUSHING: self-lubricating bronze
⑧ BUFFER GASKET: NBR
⑨ PISTON: aluminium alloy
⑩ MAGNET: plastoferrite
⑪ PISTON GASKET: (PARKER PRADIFA) NBR
⑫ GUIDE RING: PTFE
⑬ SLIDE BUSHING: sintered bronze
⑭ BALL BEARINGS
⑮ DUST SCRAPER RING: NBR or FKM/FPM
⑯ GREASE NIPPLES: zinc-plated or stainless steel



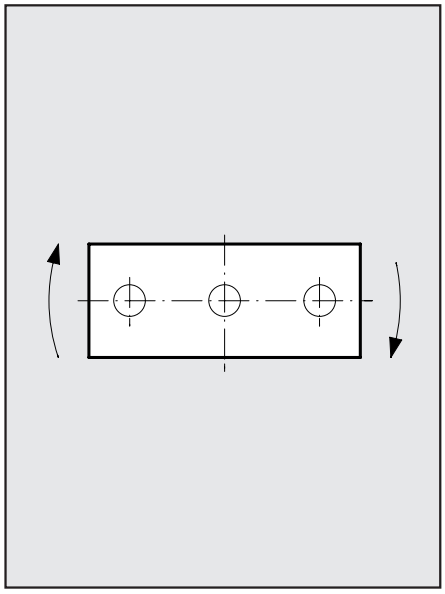
MAXIMUM SIDE LOAD



Ø mm	Guide unit	Stroke (mm) 10	20	25	30	40	50	75	100	150	200
16	Bushes	35	29	–	26	23	20	–	–	–	–
	Balls	29	31	–	45	38	34	–	–	–	–
20	Bushes	–	52	–	48	79	35	58	49	–	–
	Balls	–	56	–	61	54	70	54	50	–	–
25	Bushes	–	71	–	62	78	48	78	66	–	–
	Balls	–	72	–	–	–	73	60	52	–	–
32	Bushes	–	–	197	–	–	168	138	109	78	65
	Balls	–	–	89	–	–	60	276	217	138	110
40	Bushes	–	–	197	–	–	168	138	109	78	65
	Balls	–	–	89	–	–	60	276	217	138	110
50	Bushes	–	–	295	–	–	256	216	177	125	103
	Balls	–	–	138	–	–	89	393	314	184	148
63	Bushes	–	–	295	–	–	256	216	177	125	103
	Balls	–	–	138	–	–	89	393	314	184	148
80	Bushes	–	–	354	–	–	305	256	207	153	128
	Balls	–	–	236	–	–	158	864	687	413	335
100	Bushes	–	–	540	–	–	471	413	344	254	213
	Balls	–	–	471	–	–	314	1374	1074	629	511

NB: Forces are expressed in N

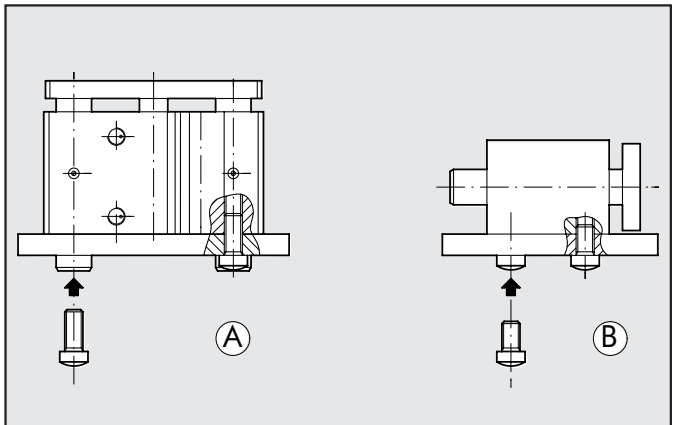
MAXIMUM TORQUE ON PLATE



Ø mm	Guide unit	Stroke (mm) 10	20	25	30	40	50	75	100	150	200
16	Bushes	0.51	0.45	–	0.36	0.32	0.28	–	–	–	–
	Balls	0.74	0.6	–	0.5	0.72	0.65	–	–	–	–
20	Bushes	–	0.92	–	0.79	0.72	0.64	1.05	0.9	–	–
	Balls	–	1.28	–	1.08	1.78	1.59	1.24	1	–	–
25	Bushes	–	1.55	–	1.32	1.18	1.04	1.7	1.44	–	–
	Balls	–	1.98	–	1.7	2.16	2.2	1.66	1.4	–	–
32	Bushes	–	–	3.94	–	–	2.95	2.46	1.97	1.55	1.24
	Balls	–	–	1.97	–	–	1	2.96	2.44	2.40	2.18
40	Bushes	–	–	4.4	–	–	3.45	2.96	2.46	1.70	1.40
	Balls	–	–	2.46	–	–	1.45	6.38	5.4	3.00	2.40
50	Bushes	–	–	7.36	–	–	5.9	4.9	4.4	3.00	2.50
	Balls	–	–	3.45	–	–	2.44	10.8	8.35	4.50	3.60
63	Bushes	–	–	7.85	–	–	6.38	5.4	4.9	3.40	2.80
	Balls	–	–	3.94	–	–	2.46	11.77	9.3	5.00	4.00
80	Bushes	–	–	11.78	–	–	9.8	7.84	6.88	5.30	4.40
	Balls	–	–	9.34	–	–	5.88	31.38	24.5	10.40	11.70
100	Bushes	–	–	22.55	–	–	19.62	16.68	14.7	10.65	8.90
	Balls	–	–	21.56	–	–	13.73	63.72	49.1	26.60	21.60

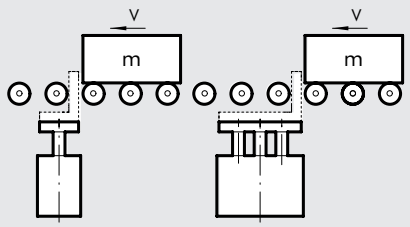
NB: Forces are expressed in Nm

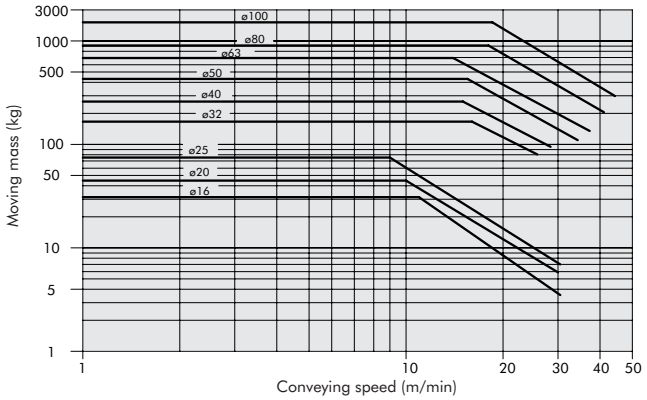
ASSEMBLY OPTIONS



If the compact guided cylinder is mounted as shown in figure A, there need to be two through holes in the frame for the guide columns.

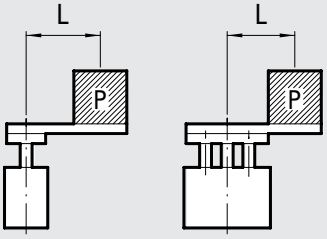
STOPPER FUNCTIONS

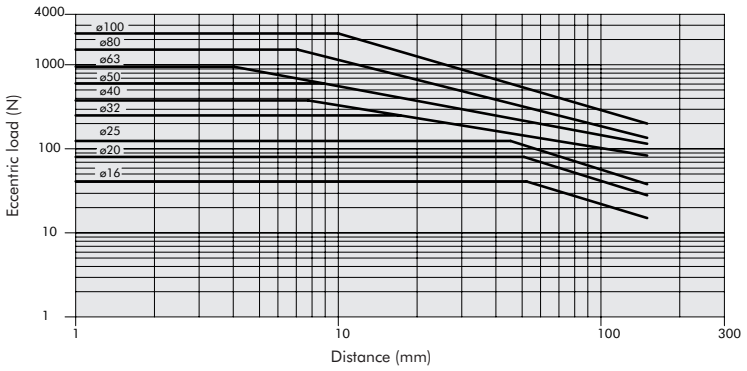




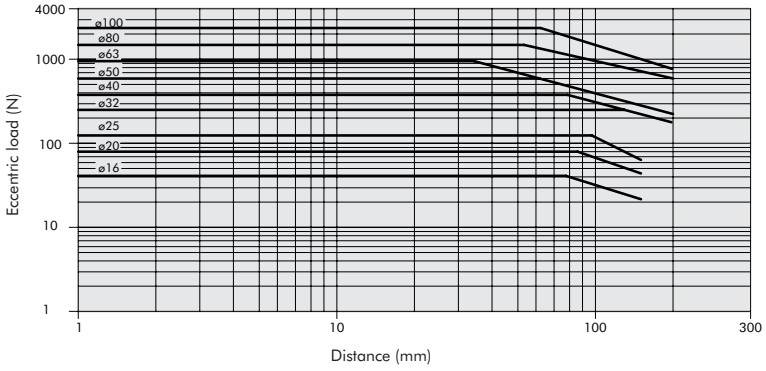
The graph refers to a 50mm-stroke cylinder.

LIFTING FUNCTIONS

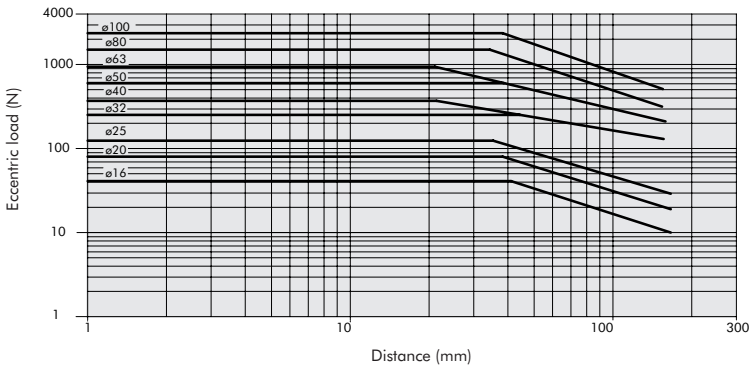




The graph refers from 25 to 50 mm-stroke cylinders with ball re-circulation guide unit.

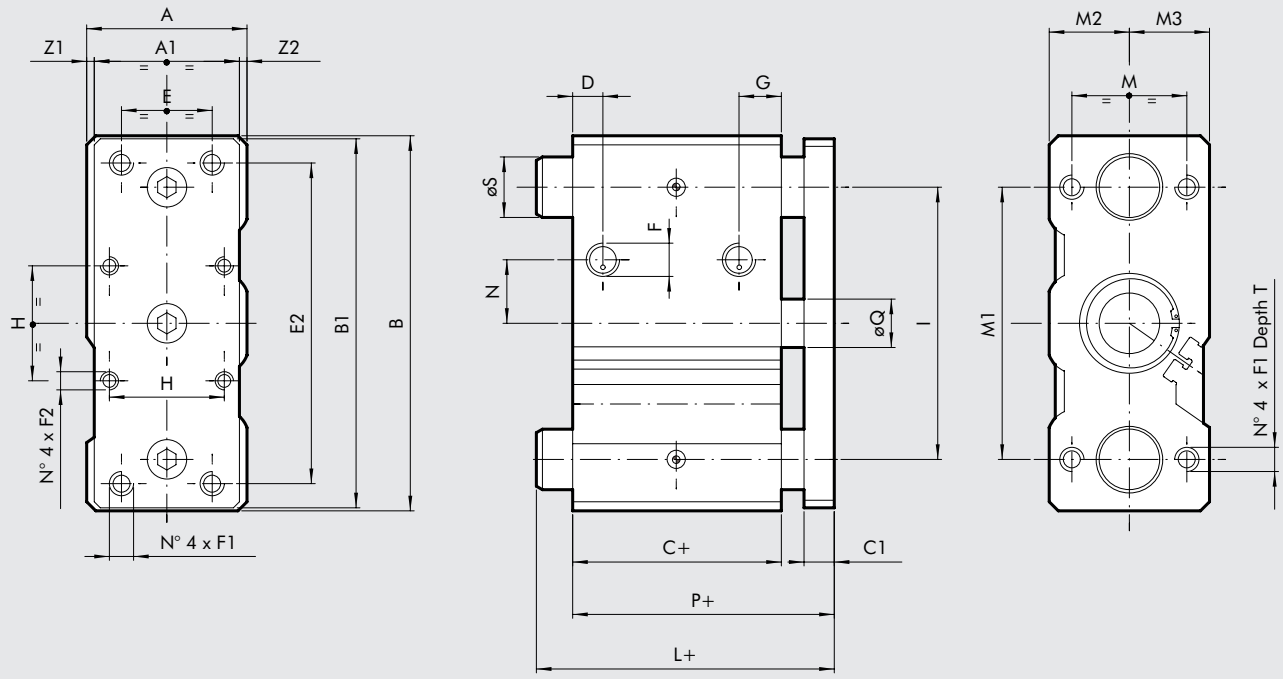


The graph refers from 75 to 100 mm-stroke cylinders with ball re-circulation guide unit.



The graph refers to 50mm-stroke cylinders with bushing guide unit.

DIMENSIONS OF NO-CUSHIONED COMPACT GUIDED CYLINDERS



Ø	Ø S Bronze-Bushings	Ø S Ball Bearings
16	10	10
20	12	10
25	16	16
32	20	20
40	20	20
50	25	20
63	25	20
80	28	25
100	35	30

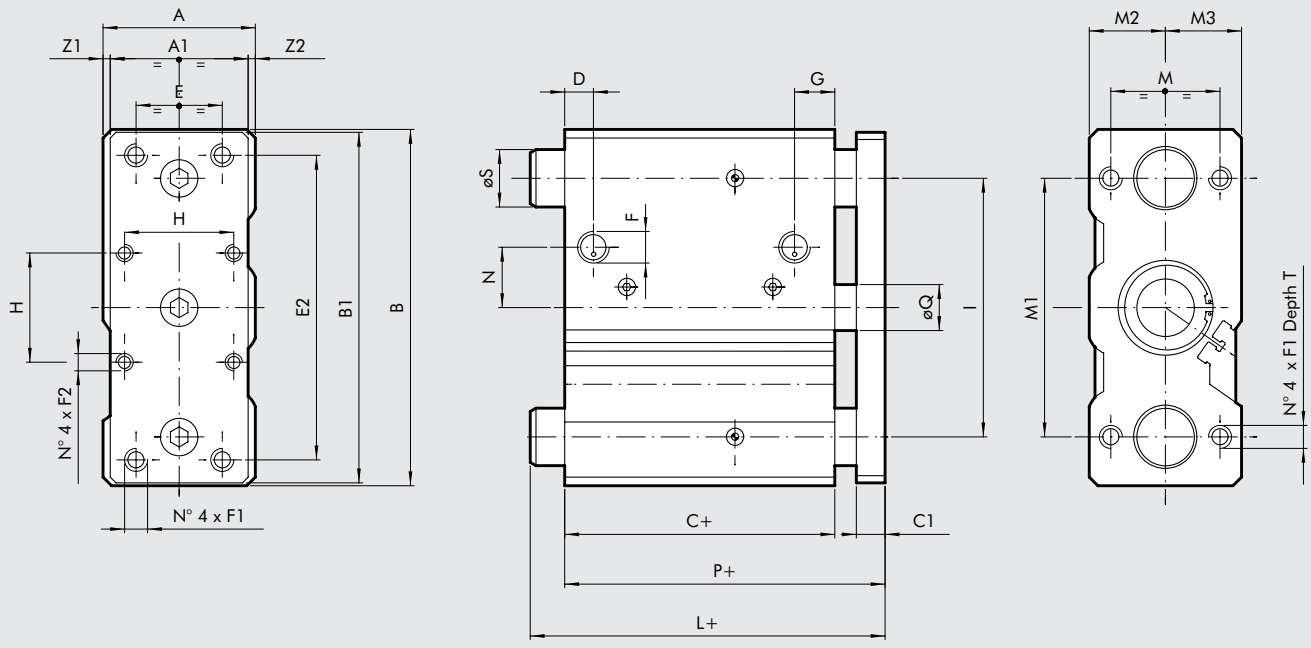


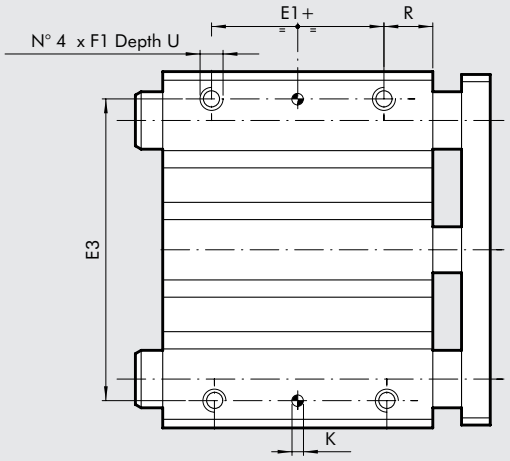
+ = ADD THE STROKE

Ø	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	F2	G	H	K^{H7}	I	L	M	M1	M2	M3	N	P	ØQ	R	T	U	Z1	Z2
16	33	25	64	62	33	10	8	16	7	52	54	M5	M5	–	11	–	4	40	*	22	42	15	18	6	45	8	13	13	8	5.5	2.5
20	36	29	74	72	37	10	8.5	18	10	60	64	1/8	M5	–	10.5	–	4	46	*	26	52	17	19	7	49	10	13	13	8	4.5	2.5
25	42	38	88	86	37.5	10	9	26	10	70	76	1/8	M6	–	11.5	–	4	56	*	32	62	21	21	8	49.5	12	14	15	9	2	2
32	51	48	114	112	37.5	10	9	30	5	96	100	1/8	M8	M6	12.5	32.5	6	80	73.5	38	80	25.5	25.5	15	49.5	16	16	20	11	1.5	1.5
40	51	48	124	122	44	10	10	30	10	106	110	1/8	M8	M6	14	38	6	90	73.5	38	90	25.5	25.5	21	56	16	17	20	11	1.5	1.5
50	59	56	140	138	44	12	11	40	10	120	124	1/4	M10	M8	14	46.5	6	100	83	44	100	29.5	29.5	27	58	20	17	25	12.5	1.5	1.5
63	72	69	150	148	49	12	13.5	50	10	130	132	1/4	M10	M8	16.5	56.5	6	110	83	44	110	36	36	33	63	20	19	25	15	1.5	1.5
80	92	88	188	185	56.5	16	15.5	60	15	160	166	3/8	M12	M10	19	72	8	140	93	56	140	46	46	37	74.5	25	21	30	18	2	2
100	112	108	224	221	66	16	19	80	15	190	200	3/8	M14	M10	23	89	8	170	105	62	170	56	56	40	84	30	25	35	21	2	2

* =	L stroke	
Ø	0÷50	75÷100
16	45	–
20	49	76
25	49.5	79.5

DIMENSIONS OF CUSHIONED COMPACT GUIDED CYLINDERS





Ø S

Ø	Bronze-Bushings	Ball Bearings
16	10	10
20	12	10
25	16	16
32	20	20
40	20	20
50	25	20
63	25	20



W143___4
W143___5

+ = ADD THE STROKE

Ø	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	F2	G	H	KH7	I	L	M	M1	M2	M3	N	P	ØQ	R	T	U	Z1	Z2
16	33	25	64	62	58	10	8	16	32	52	54	M5	M5	–	11	–	4	40	*	22	42	15	18	6	73	8	13	13	8	5.5	2.5
20	36	29	74	72	62	10	8.5	18	35	60	64	1/8	M5	–	10.5	–	4	46	*	26	52	17	19	7	78	10	13	13	8	4.5	2.5
25	42	38	88	86	62.5	10	9	26	35	70	76	1/8	M6	–	11.5	–	4	56	*	32	62	21	21	8	78.5	12	14	15	9	2	2
32	51	48	114	112	62.5	10	9	30	30	96	100	1/8	M8	M6	12.5	32.5	6	80	98.5	38	80	25.5	25.5	15	74.5	16	16	20	11	1.5	1.5
40	51	48	124	122	69	10	10	30	35	106	110	1/8	M8	M6	14	38	6	90	98.5	38	90	25.5	25.5	21	81	16	17	20	11	1.5	1.5
50	59	56	140	138	69	12	11	40	35	120	124	1/4	M10	M8	14	46.5	6	100	108	44	100	29.5	29.5	27	83	20	17	25	12.5	1.5	1.5
63	72	69	150	148	74	12	13.5	50	35	130	132	1/4	M10	M8	16.5	56.5	6	110	108	44	110	36	36	33	88	20	19	25	15	1.5	1.5

* =	L stroke	
Ø	0÷50	75÷100
16	70	–
20	74	101.5
25	74.5	104.5

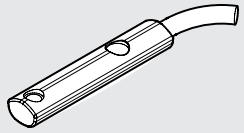
KEY TO CODES

W 1 4 3	0 3 0	2	0 2 5
TYPE	DIAMETER	VERSION	STROKE
	16 20 25 32 40 50 63 *80 *A1=100	2 bronze bushings 3 ball bearings 4 cushioned with brass bushings 5 cushioned with ball bearings	CUSHIONED VERSION Ø 16: 20, 30, 40, 50 Ø 20÷25: 20, 30, 40, 50, 75, 100, 150 Ø 32÷63: 25, 50, 75, 100, 150, 175 NOT CUSHIONED VERSION Ø 16: 10, 20, 30, 40, 50 Ø 20÷25: 20, 30, 40, 50, 75, 100, 150 Ø 32÷100: 25, 50, 75, 100, 150, 200 Other strokes on request but with the same cylinder dimensions as the standard stroke immediately above.

* Only for not cushioned version.

ACCESSORIES

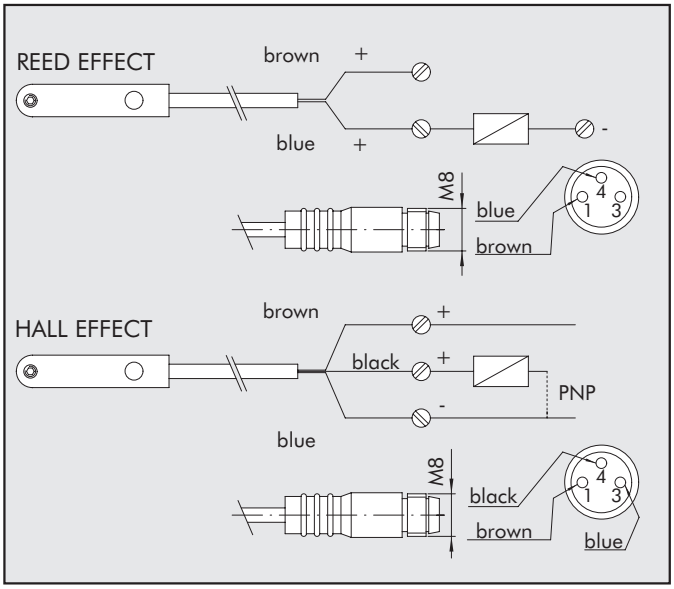
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

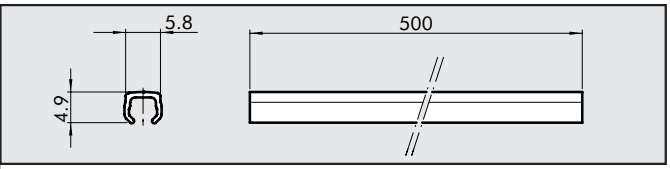
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: the code corresponds to 1 piece

STAINLESS STEEL MINI-CYLINDER SERIES "ISO 6432" Ø 16÷25 mm

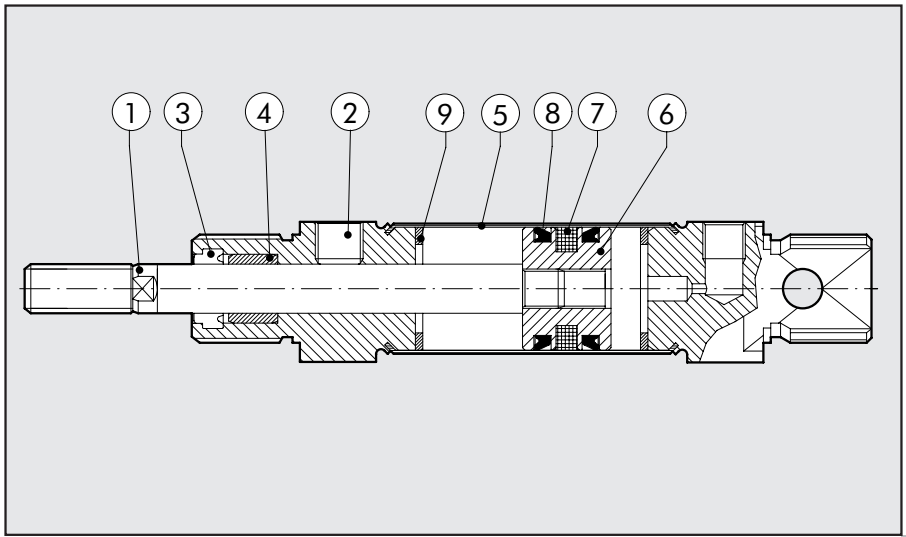
ISO 6432 stainless steel micro-cylinders are available in various versions with a wide range of accessories
- with or without magnet execution
- double-acting - single or through-rod
- gaskets: Polyurethane or FKM/FPM (for high temperatures)
- fixing accessories



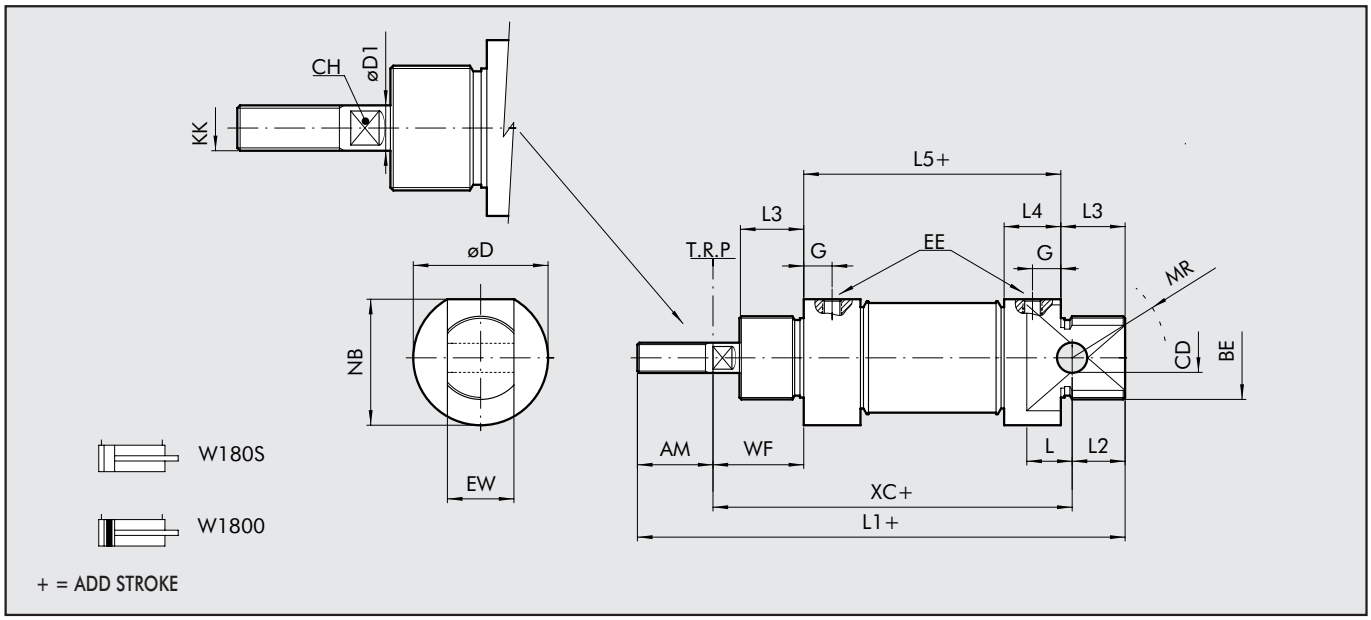
TECHNICAL DATA		POLYURETHANE	FKM/FPM
Operating pressure		max 10 bar (max 1 MPa)	
Temperature range	°C	–10÷+80	–10÷+150 (non-magnetic cylinders)
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	Ø 16 ; Ø 20 ; Ø 25	
Design		Chamfered heads	
Standard strokes	mm	max 500	
Versions		Double-acting, Double-acting through-rod	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	

COMPONENTS

① PISTON ROD: AISI 316 steel
② HEAD:AISI 304 steel
③ PISTON ROD GASKET: polyurethane or FKM/FPM
④ GUIDE BUSHING: sintered bronze
⑤ JACKET: AISI 304 steel
⑥ PISTON: brass
⑦ PISTON GASKET: polyurethane or FKM/FPM
⑧ MAGNET: plastoferrite
⑨ Static O-rings: NBR or FKM/FPM

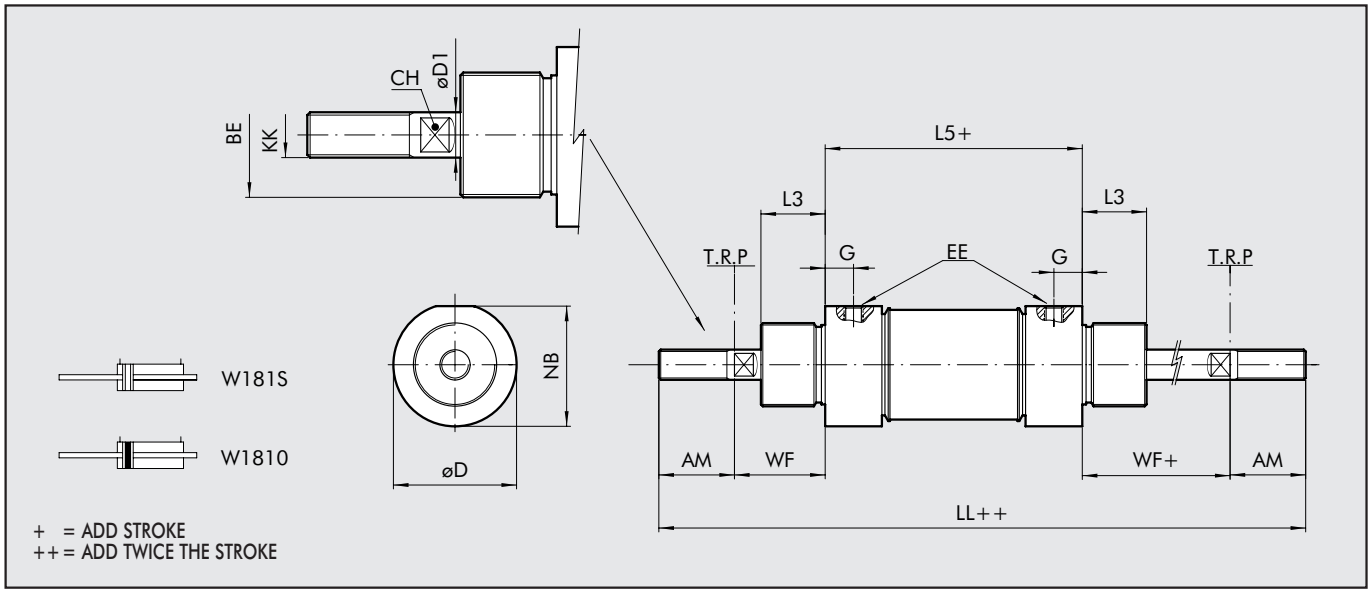


DIMENSIONS OF DOUBLE-ACTING



Ø	AM	BE	øCD (H9)	C H	øD	øD1	EE	EW (d13)	G	KK	L	L1	L2	L3	L5	MR	NB	WF	XC
16	16	M16x1,5	6	5	19	6	M5	12	5	M6	9	109	11	18	55	16	18	22	82
20	20	M22x1,5	8	7	27	8	G 1/8	16	8	M8	12	131	16	20	67	18	25,5	24	95
25	22	M22x1,5	8	9	30	10	G 1/8	16	8	M10x1,25	12	140	14	22	68	21	28,5	28	104

DIMENSIONS DOUBLE-ACTING THROUGH-ROD



Ø	AM	BE	CH	øD	øD1	EE	G	KK	LL	L3	L5	NB	WF (±1,2)
16	16	M16x1,5	5	19	6	M5	5	M6	129,5	18	55	18	22
20	20	M22x1,5	7	27	8	G 1/8	8	M8	156	20	67	25,5	24
25	22	M22x1,5	9	30	10	G 1/8	8	M10x1,25	169	22	68	28,5	28

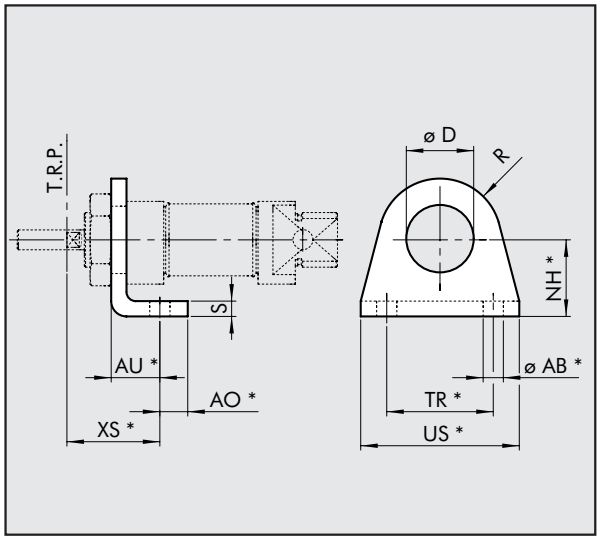
KEY TO CODES

W 1 8	0	0	1 6	0 0 2 0
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	0 DEM 1 DEM through-rod	0 Standard (magnetic) S Not magnetic V FKM/FPM gasket I Longer piston rod	16 20 25	Ø 16÷25 stroke 0÷500 mm

DEM: Magnetic double-acting (non-cushioned)

ACCESSORIES: FIXINGS

STAINLESS STEEL LEG MODEL A

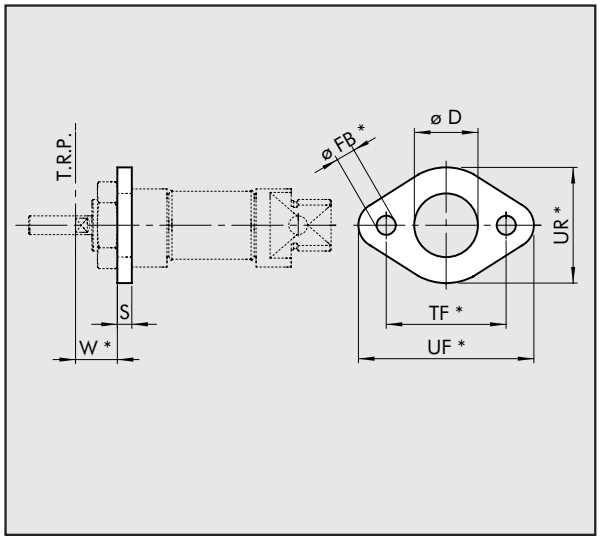


Code	Ø	ØAB	AU	AO	D	NH	XS (±1.4)	R	S	TR	US	Weight [g]
W095X120001	16	5,5	14	6	16,1	20	22	13	4	32	42	42
W095X200001	20	6,6	17	8	22,1	25	36	20	5	40	54	90
W095X200001	25	6,6	17	8	22,1	25	40	20	5	40	54	90

*ISO 6432 values

Note: Individually packed

STAINLESS STEEL FLANGE MODEL C



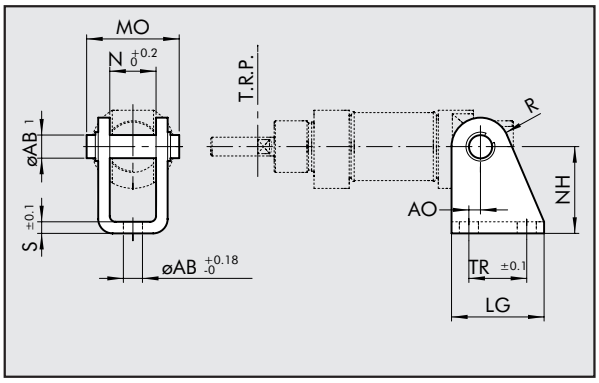
Code	Ø	D	FB	W (±1.4)	S	TF	UF	UR	Weight [g]
W095X120002	16	16	5.5	18	4	40	52	30	26
W095X200002	20	22	6.6	19	5	50	66	40	52
W095X200002	25	22	6.6	23	5	50	66	40	52

*ISO 6432 values

Note: Individually packed

STAINLESS STEEL COUNTER-HINGE MODEL BC

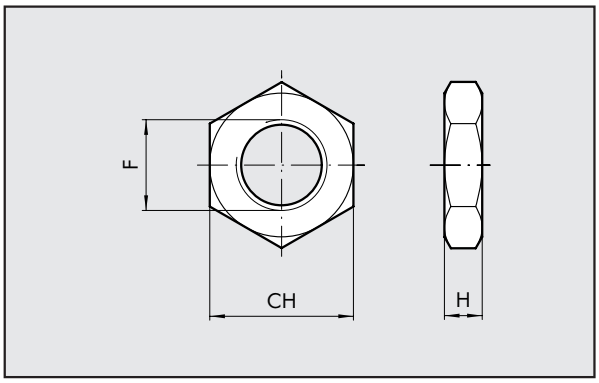
Code	Ø	AB1	AB	AO	LG	MO	N	NH	R	S	TR	Weight [g]
W095X120005	16	6	5.5	2	25	24	12.1	27	7	3	15	40
W095X200005	20	8	6.6	4	32	31	16.1	30	10	4	20	78
W095X200005	25	8	6.6	4	32	31	16.1	30	10	4	20	78



Note: Supplied complete with 1 pin and 2 snap rings

STAINLESS STEEL NUT FOR HEADS

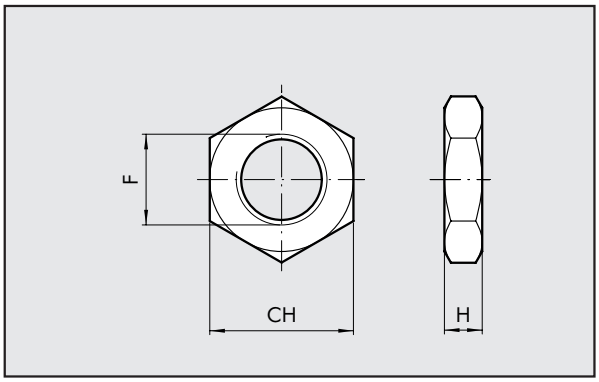
Code	Ø	CH	F	H
W095X120010	16	22	M16x1.5	5
W095X200010	20	27	M22x1.5	8
W095X200010	25	27	M22x1.5	8



Note: Individually packed

STAINLESS STEEL NUT FOR PISTON RODS

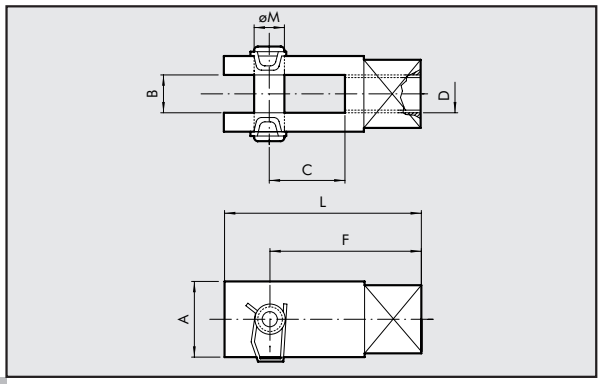
Code	Ø	CH	F	H	Weight [g]
W095X120011	16	10	M6	4	1
W095X200011	20	13	M8	5	3
W095X322011	25	17	M10x1.25	6	7



Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M

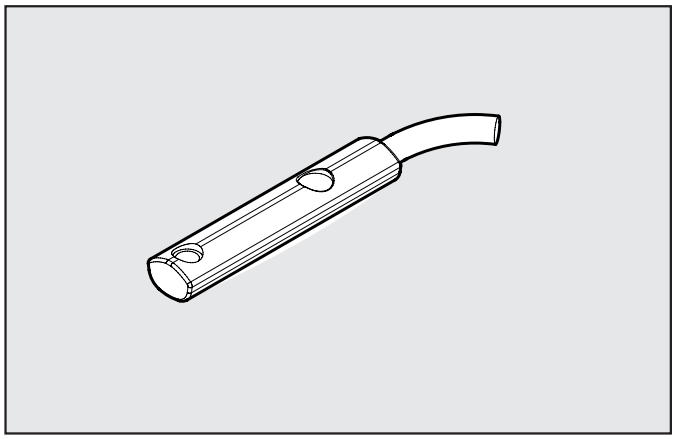
Code	Ø	A	B	C	D	F	L	Ø M
W095X120020	16	12	6	12	M6	24	31	6
W095X200020	20	16	8	16	M8	32	42	8
W095X322020	25	20	10	20	M10x1.25	40	52	10



Note: Individually packed

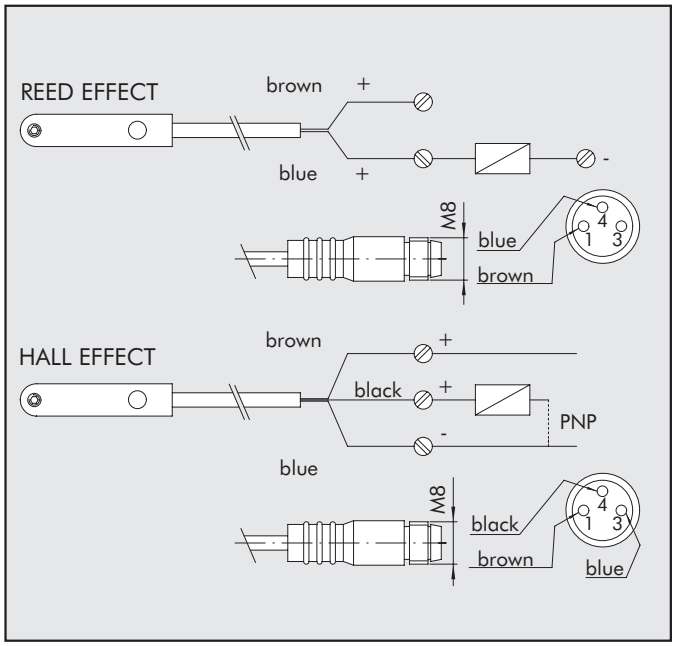
ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

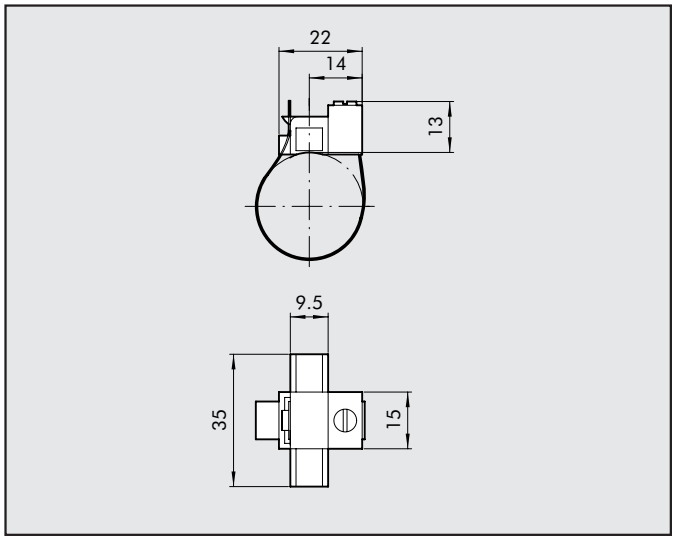
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

SENSOR CIRCLIP



Codice	Alesaggio	Modello
W0950001103	8÷63	SENSOR CIRCLIP

Note: Individually packed

MATERIAL
Circlip: stainless steel
Sensor holder: plastic

STAINLESS STEEL ROUND CYLINDER SERIES "RNDC" Ø 32 TO 63 mm

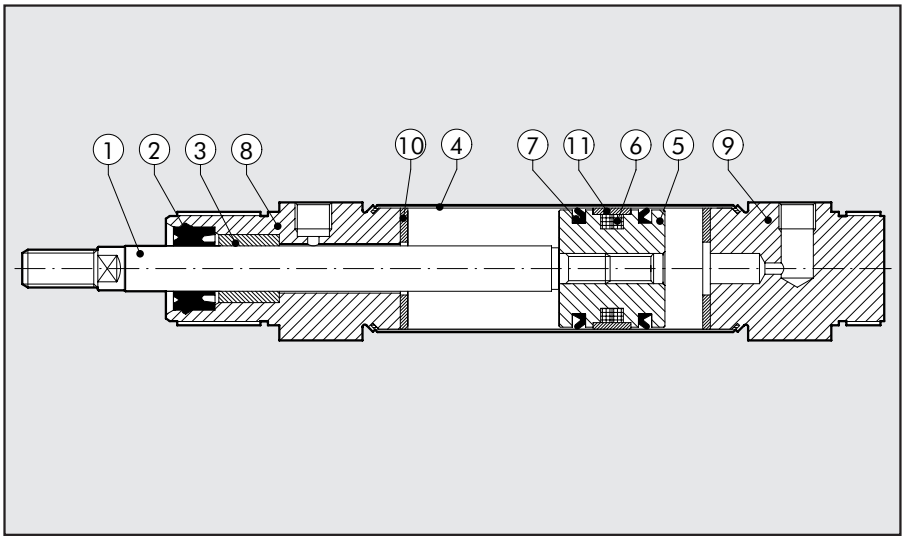
Stainless steel clean profile cylinders available in different versions:
- with or without magnet execution
- double-acting - single or through-rod
- pneumatic cushioning on request
- gaskets:Polyurethane or FKM/FPM (for high temperatures).



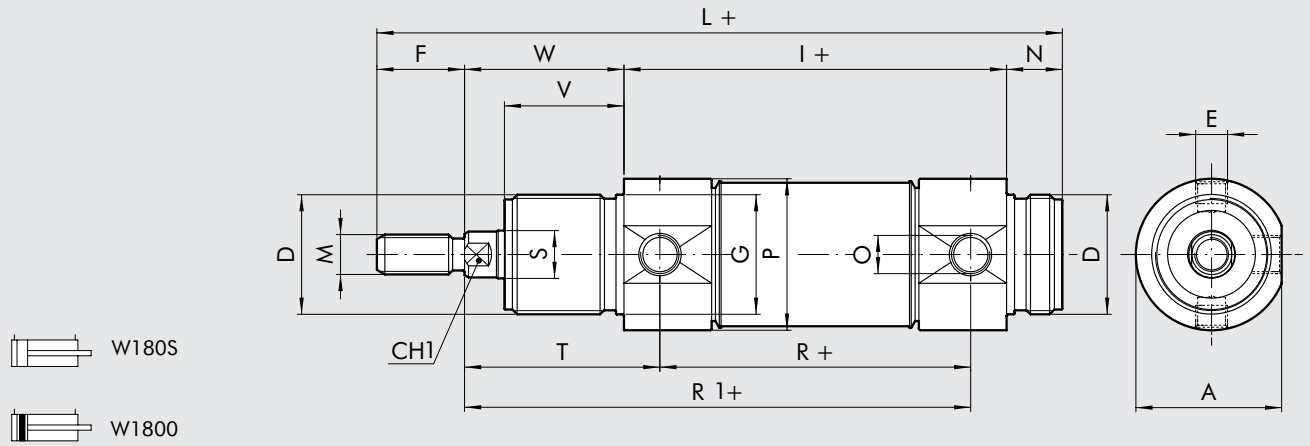
TECHNICAL DATA		POLYURETHANE	FKM/FPM
Operating pressure		max 10 bar (max 1 MPa)	
Temperature range	°C	–10÷+80	–10÷+150 (non-magnetic cylinders)
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	Ø 32 ; Ø 40 ; Ø 50 ; Ø63	
Design		Chamfered heads	
Standard strokes	mm	max 500	
Versions		Double-acting, Double-acting through-rod	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	

COMPONENTS

① PISTON ROD: AISI 316 steel
② PISTON ROD GASKET: polyurethane or FKM/FPM
③ GUIDE BUSHING: sintered bronze
④ JACKET: AISI 304 steel
⑤ PISTON: aluminium
⑥ MAGNET: plastoferrite
⑦ PISTON GASKET: polyurethane or FKM/FPM
⑧ ⑨ HEAD:AISI 304 steel
⑩ BUFFER: polyurethane
⑪ GUIDE RING: PTFE

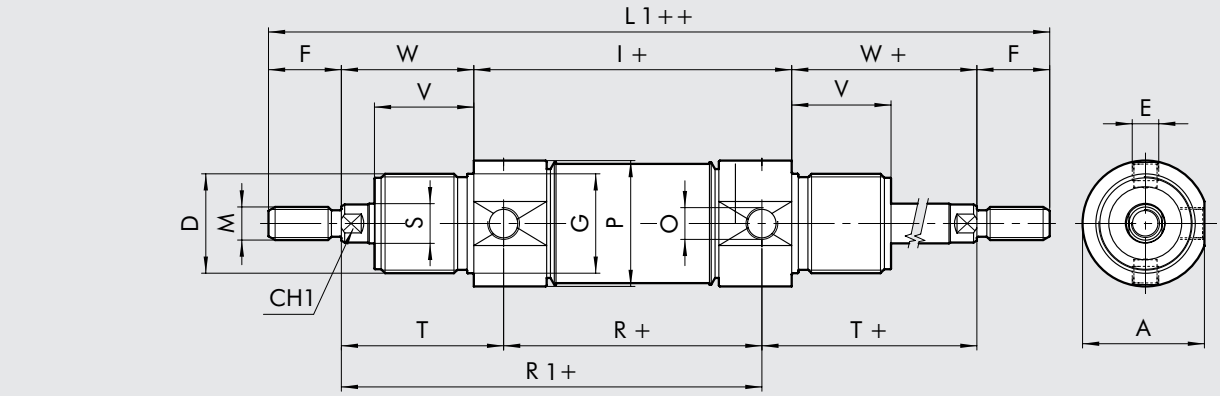


DIMENSIONS OF DOUBLE-ACTING



+ = ADD STROKE

DIMENSIONS DOUBLE-ACTING THROUGH-ROD



+ = ADD STROKE
++ = ADD TWICE THE STROKE

Ø	A	CH1	D	E	F	Ø G	I	L	L1	M	N	O	Ø P	R	Ø S	T	V	W
32	36.5	10	M30x1.5	M8x1	20	30	96	168	212	M10x1.5	14	G1/8	38	78	12	47	30	38
40	44	13	M38x1.5	M10x1	24	38	113	198	251	M12x1.75	16	G1/4	46	89	16	57	35	45
50	55	17	M45x1.5	M12x1.5	32	45	120	220	284	M16x2	18	G1/4	57	96	20	62	38	50
63	67.5	17	M45x1.5	M14x1.5	32	45	124	224	288	M16x2	18	G3/8	70	98	20	63	38	50

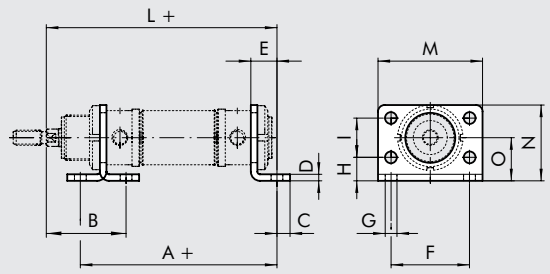
KEY TO CODES

W 1 8	0	0	3 2	0 0 5 0
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	0 DEM 1 DEM through-rod	0 Standard (magnetic) S Not magnetic V FKM/FPM gasket I Longer piston rod	32 40 50 63	Ø 32÷63 stroke 0÷500 mm

DEM: Magnetic double-acting (non-cushioned)

ACCESSORIES: FIXINGS

STAINLESS STEEL LEG MODEL AC

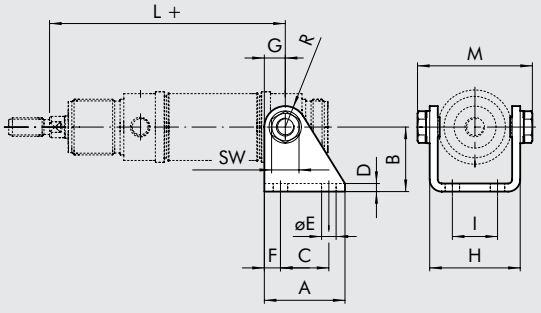


+ = ADD STROKE

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	O
W095X320002	32	124	48	7	4	14	52	7	14	28	148	66	49	28
W095X400002	40	153	60	10	5	20	60	9	18	30	178	80	58	33
W095X500002	50	160	64	10	6	20	70	9	20	40	190	90	70	40
W095X630002	63	164	64	10	6	20	76	9	20	50	194	96	80	45

Note: Individually packed

STAINLESS STEEL COUNTER-HINGE MODEL BC

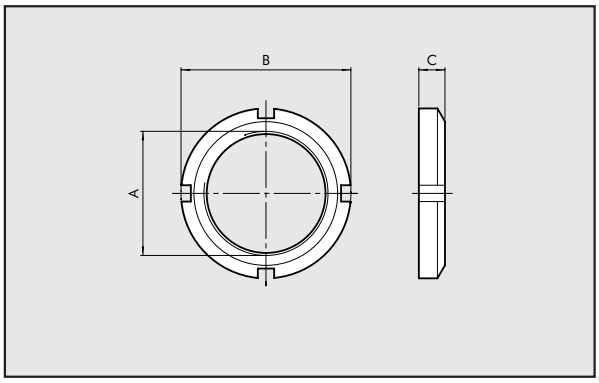


+ = ADD STROKE

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	R
W095X320005	32	40	35	24	4	7	8	12	46.1	20	125	58.1	12
W095X400005	40	50	40	30	5	9	10	13	56.1	28	146	70.1	13
W095X500005	50	54	45	34	6	9	10	14	69.1	36	158	86.1	14
W095X630005	63	65	50	35	6	9	15	16	82.1	42	161	99.1	16

Nota: Supplied complete with 2 screws

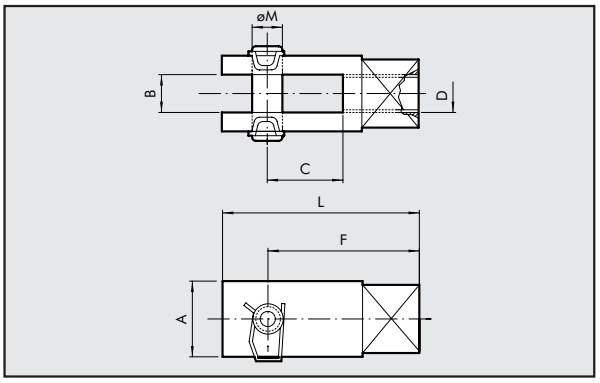
STAINLESS STEEL HEAD RING NUT MODEL G



Code	Ø	A	B	C
W095X320010	32	M30x1.5	45	7
W095X400010	40	M38x1.5	52	8
W095X500010	50	M45x1.5	58	9
W095X500010	63	M45x1.5	58	9

Note: Individually packed

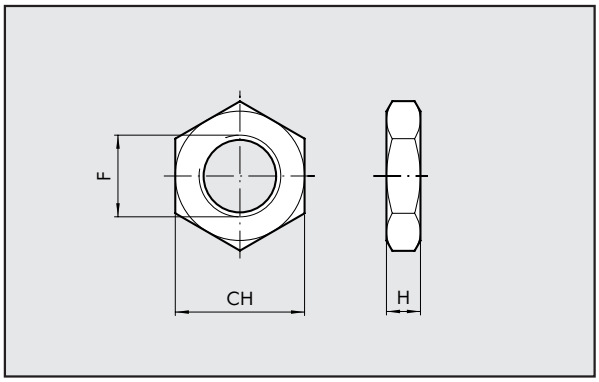
STAINLESS STEEL FORK-MODEL GK-M



Code	Ø	A	B	C	D	F	L	Ø M
W095X320020	32	20	10	20	M10x1.5	40	52	10
W095X400020	40	24	12	24	M12x1.75	48	62	12
W095X500020	50	32	16	32	M16x2	64	83	16
W095X500020	63	32	16	32	M16x2	64	83	16

Note: Individually packed

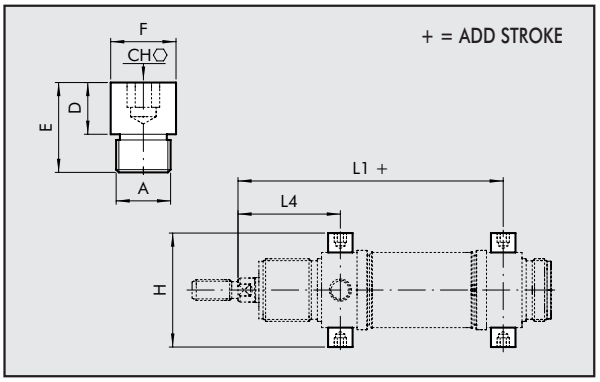
STAINLESS STEEL NUT FOR PISTON RODS



Code	Ø	F	CH	H	Weight [g]
W095X320011	32	M10x1.5	17	6	6
W095X400011	40	M12x1.75	19	7	12
W095X500011	50	M16x2	24	8	20
W095X500011	63	M16x2	24	8	20

Note: Individually packed

STAINLESS STEEL OSCILLATING PIN

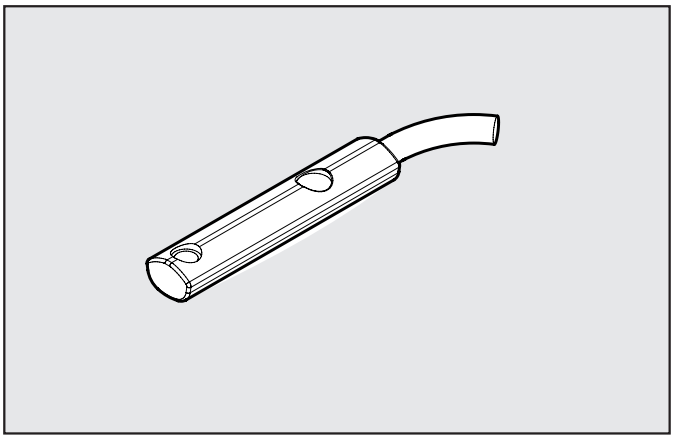


Code	Ø	A	CH	D	E	øF	H	L1	L4
W095X320007	32	M8X1	5	8	14	10	51	125	47
W095X400007	40	M10X1	6	9.5	16.5	12	61	146	57
W095X500007	50	M12X1.5	6	11	20	14	75	158	62
W095X630007	63	M14X1.5	8	13	26	16	92	161	63

Note: 2- piece pack

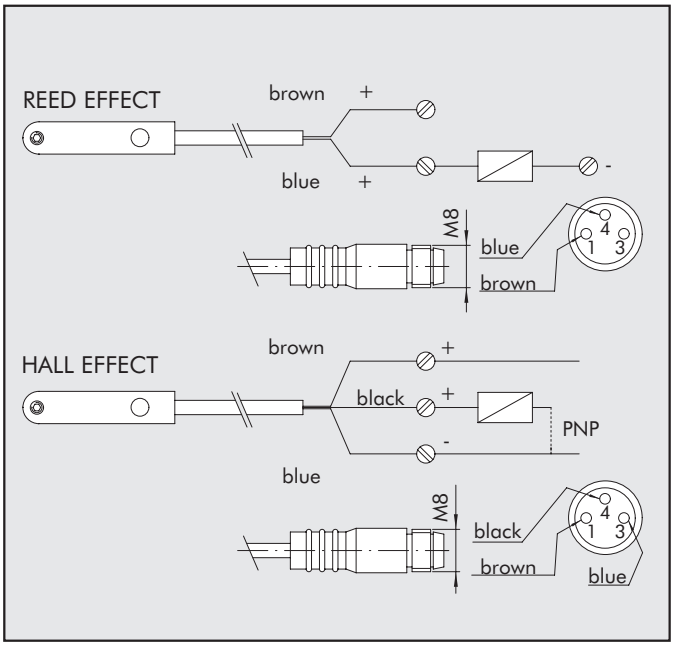
ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

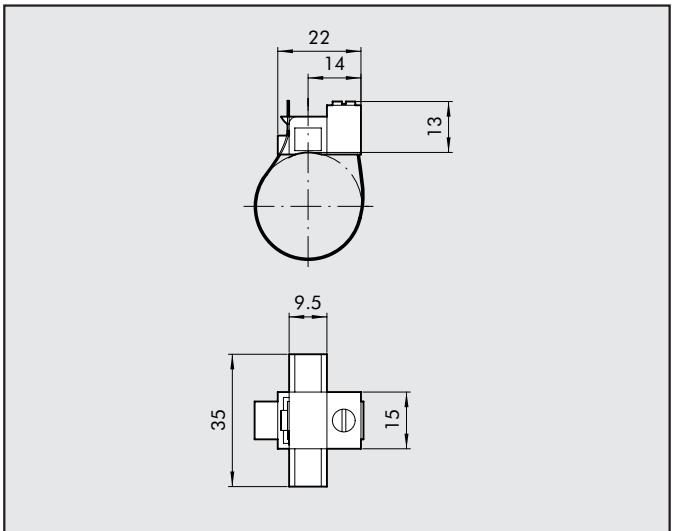
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

SENSOR CIRCLIP



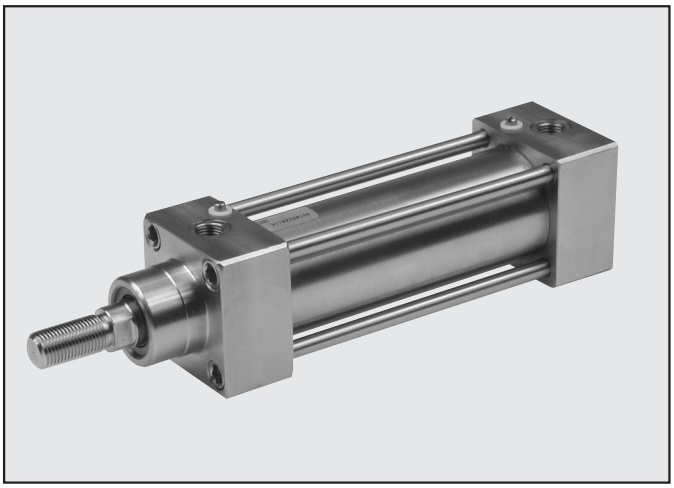
Codice	Alesaggio	Modello
W0950001103	8÷63	SENSOR CIRCLIP

Note: Individually packed

MATERIAL
Circlip: stainless steel
Sensor holder: plastic

STAINLESS STEEL CYLINDER SERIES ISO 6431 VDMA, Ø 32-100 mm

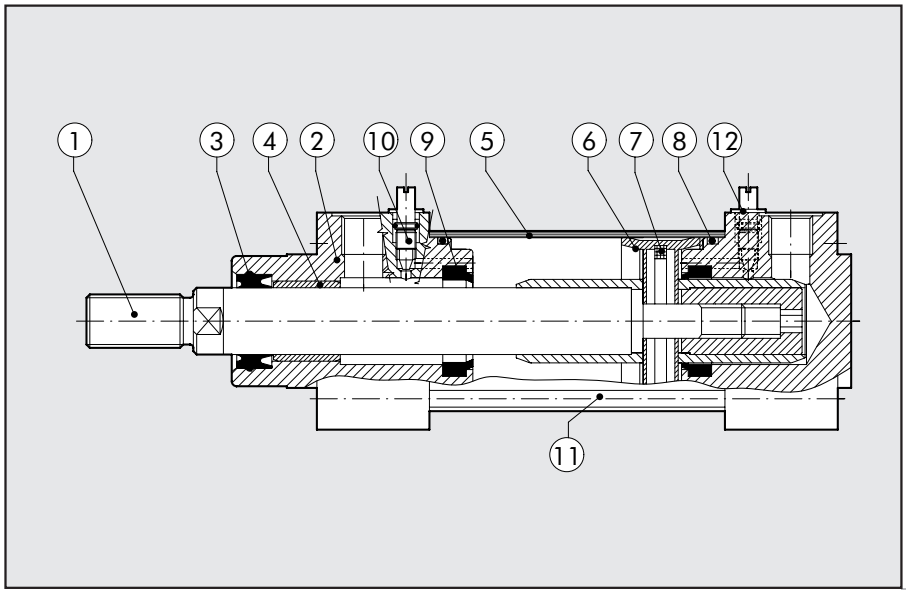
Stainless steel cylinders made to ISO 6431 VDMA available in various versions and with a wide range of accessories:
- with or without magnet execution
- Double-acting – single- or through-rod
- Gaskets: Polyurethane or FKM/FPM (for high temperatures)
- Fixing accessories, guide units and mechanical piston rod lock.



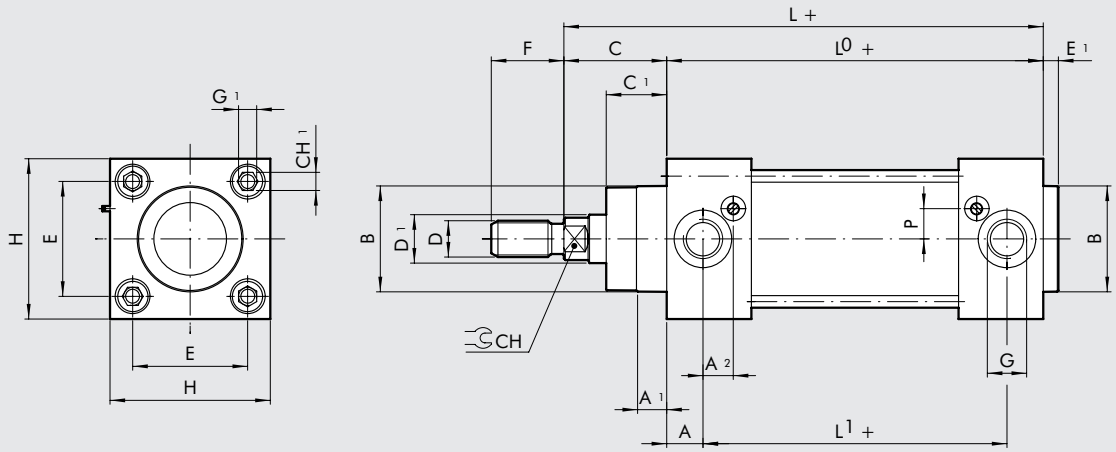
TECHNICAL DATA		POLYURETHANE	FKM/FPM
Operating pressure		max 10 bar (max 1 MPa - 145 psi)	
Temperature range	°C	–20÷+80	–10÷+150
Fluid		Unlubricated air. Lubrication, if used, must be continuous	
Bores	mm	Ø 32 ;Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100	
Design		heads with tie rods	
Standard strokes	mm	max 1000	
Versions		Double-acting cushioned, Double-acting through-rod cushioned	
Magnet for sensors		All versions come complete with magnet. Supplied without magnet on request.	

COMPONENTS

① PISTON ROD: AISI 316 steel
② HEAD:AISI 304 steel
③ PISTON ROD GASKET: polyurethane or FKM/FPM
④ GUIDE BUSHING: sintered bronze
⑤ JACKET: AISI 304 steel
⑥ ENBLOC GASKET: NBR or FKM/FPM
⑦ MAGNET: plastoferrite
⑧ Static O-rings: NBR or FKM/FPM
⑨ CUSHIONING GASKET: polyurethane or FKM/FPM
⑩ CUSHIONING NEEDLE: AISI 304 steel
⑪ TIE ROD: AISI 316 steel
⑫ NEEDLE-RETAINING RING: technopolymer



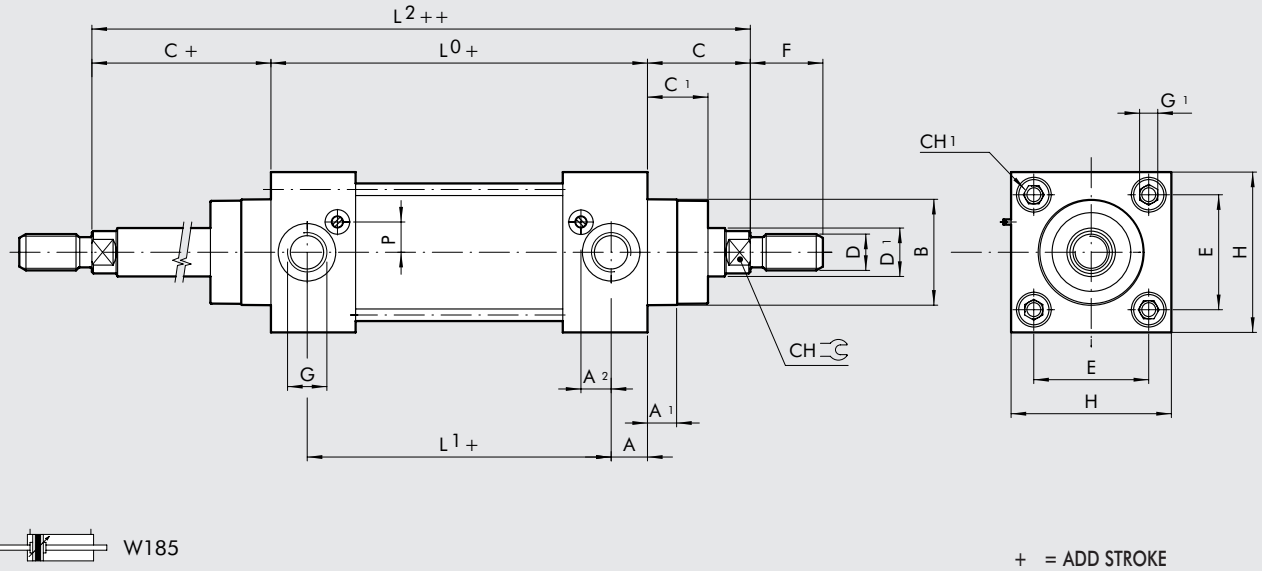
DIMENSIONS OF DOUBLE-ACTING



W184

+ = ADD STROKE

DIMENSIONS DOUBLE-ACTING THROUGH-ROD



W185

+ = ADD STROKE
++ = ADD TWICE THE STROKE

Ø.	A	A_1	A_2	B	C	C_1	CH	CH_1	D	D_1	E	E_1	F	G	G_1	H	L	L_0	L_1	L_2	P
32	14	9	11.3	30	26	18	10	6	M10x1.25	12	32.5	4	22	G1/8	M6	50	121	95	67	147	6
40	14	9	13	35	30	22	13	6	M12x1.25	16	38	4	24	G1/4	M6	55	135	105	77	165	8
50	14	9	12.7	40	37	25.5	16	8	M16x1.5	20	46.5	4	32	G1/4	M8	65	143	106	78	180	11.8
63	16	9	15.8	45	37	25	16	8	M16x1.5	20	56.5	4	32	G3/8	M8	75	158	121	89	195	11.7
80	16	9	16.3	45	46	35	21	10	M20x1.5	25	72	4	40	G3/8	M10	95	174	128	96	220	15.5
100	18	9	15.5	55	51	38	21	10	M20x1.5	25	89	4	40	G1/2	M10	110	189	138	102	240	15.5

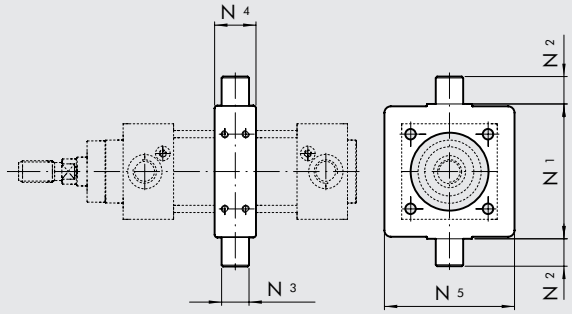
KEY TO CODES

W 1 8	4	0	3 2	0 0 5 0
	TYPE	VERSION	DIAMETER	STROKE
Stainless steel cylinder	4 DEMA 5 DEMA through-rod	0 Standard (magnetic) V FKM/FPM gasket I Longer piston rod	32 40 50 63 80 A1=100	Ø 32÷100 stroke 0÷1000 mm

DEMA: Magnetic double-acting (cushioned)

ACCESSORIES: FIXINGS

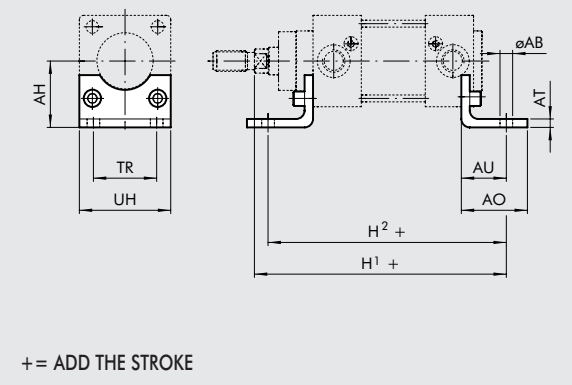
STAINLESS STEEL INTERMEDIATE HINGE - MODEL EN



Code	Ø	N_1	N_2	N_3	N_4	N_5
W095X322007	32	50	12	12	22	65
W095X402007	40	63	16	16	28	75
W095X502007	50	75	16	16	32	95
W095X632007	63	90	20	20	35	105
W095X802007	80	110	20	20	40	130
W095XA12007	100	132	25	25	45	145

Note: Supplied complete with 8 grub screws

STAINLESS STEEL SHORT FOOT MOUNTING

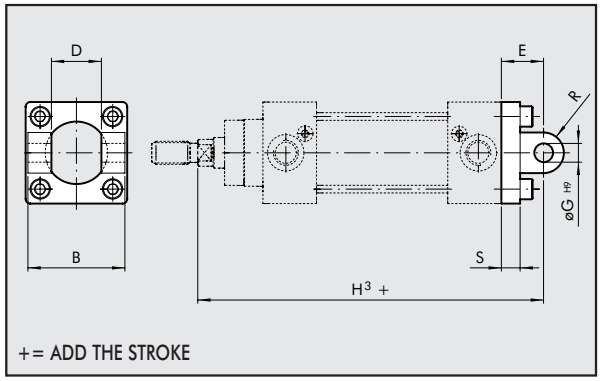


+= ADD THE STROKE

Code	Ø	Ø AB	AH	AO	AT	AU	TR	UH	H_1	H_2
W095X322001	32	7	32	35	4	24	32	45	145	143
W095X402001	40	9	36	36	4	28	36	52	163	161
W095X502001	50	9	45	47	5	32	45	65	175	170
W095X632001	63	9	50	45	5	32	50	75	190	185
W095X802001	80	12	63	55	6	41	63	95	215	210
W095XA12001	100	14	71	57	6	41	75	115	230	220

Note: Individually packed with 2 screws.

STAINLESS STEEL FEMALE HINGE - MODEL B

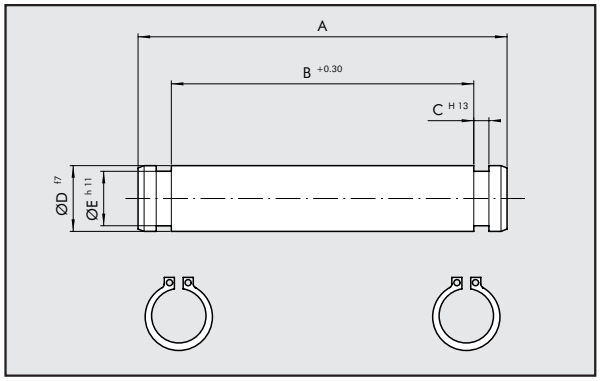


+= ADD THE STROKE

Code	Ø	B	D	E	Ø G	H_3	R	S
W095X322003	32	45	26	22	10	142	10	9
W095X402003	40	52	28	25	12	160	12	9
W095X502003	50	65	32	27	12	170	12	11
W095X632003	63	75	40	32	16	190	16	11
W095X802003	80	95	50	36	16	210	16	14
W095XA12003	100	115	60	41	20	230	20	14

Note: Supplied with 4 screws, 4 washers.
WITHOUT PIN.

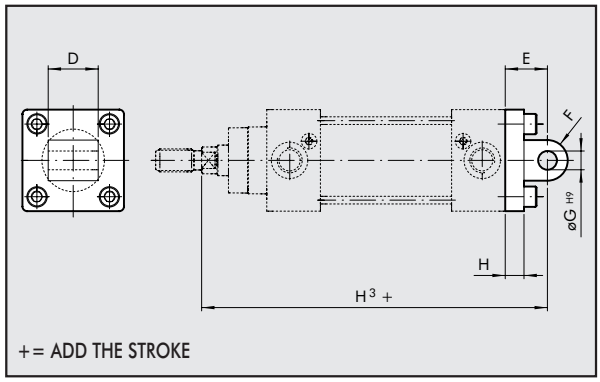
FEMALE HINGE INOX PIN



Code	Ø	A	B	C	D	E
W095X322050	32	53	46	1.1	10	9.6
W095X402050	40	60	53	1.1	12	11.5
W095X502050	50	68	61	1.1	12	11.5
W095X632050	63	78	71	1.1	16	15.2
W095X802050	80	98	91	1.1	16	15.2
W095XA12050	100	118	111	1.3	20	19

Note: Supplied with 2 snap-rings

STAINLESS STEEL MALE HINGE - MODEL BA

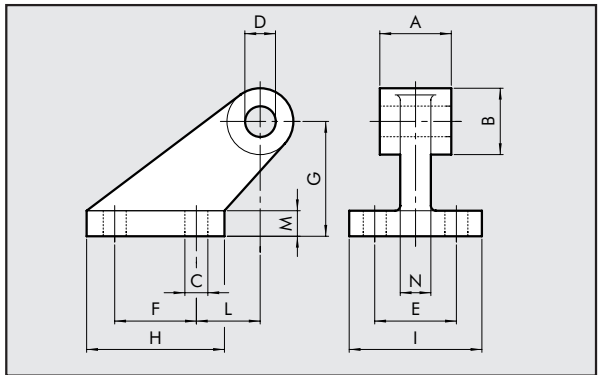


+= ADD THE STROKE

Code	Ø	D	E	F	Ø G	H	H_3
W095X322004	32	26	22	10	10	9	143
W095X402004	40	28	25	12	12	9	160
W095X502004	50	32	27	12	12	11	170
W095X632004	63	40	32	16	16	11	190
W095X802004	80	50	36	16	16	14	210
W095XA12004	100	60	41	20	20	14	230

Note: Supplied with 4 screws, 4 washers.

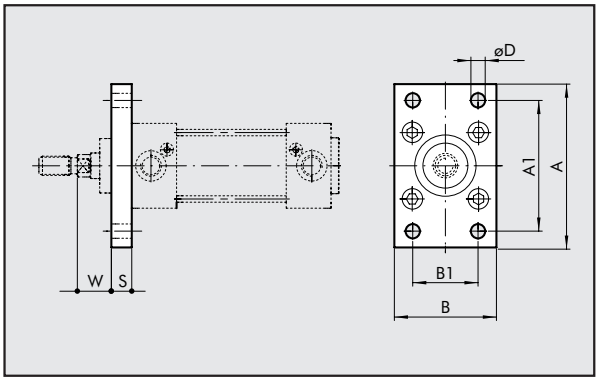
STAINLESS STEEL ISO COUNTER-HINGE FOR MODEL B - MODEL GS



Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N
W095X322008	32	26	20	6.6	10	38	18	32	31	51	3	8	10
W095X402008	40	28	22	6.6	12	41	22	36	35	54	2	10	15
W095X502008	50	32	26	9	12	50	30	45	45	65	3	12	16
W095X632008	63	40	30	9	16	52	35	50	50	67	2	14	16
W095X802008	80	50	30	11	16	66	40	63	60	86	7	14	20
W095XA12008	100	60	38	11	20	76	50	71	70	96	5	17	20

Note: Individually packed

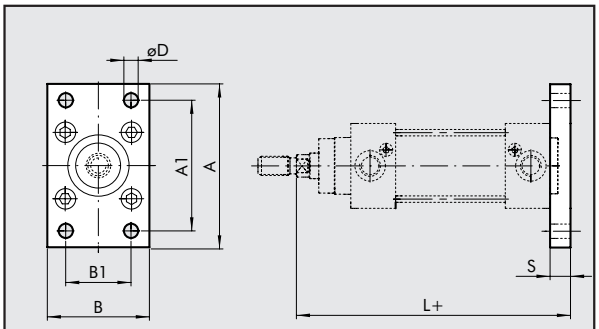
STAINLESS STEE FRONT FLANGE - MODEL C



Code	Ø	A	A_1	B	B_1	S	ØD	W
W095X322002	32	80	64	45	32	10	7	16
W095X402002	40	90	72	52	36	10	9	20
W095X502002	50	110	90	65	45	12	9	25
W095X632002	63	120	100	75	50	12	9	25
W095X802002	80	150	126	95	63	16	12	30
W095XA12002	100	170	150	115	75	16	14	35

Note: Supplied with 4 screws.

STAINLESS STEE REAR FLANGE - MODEL C

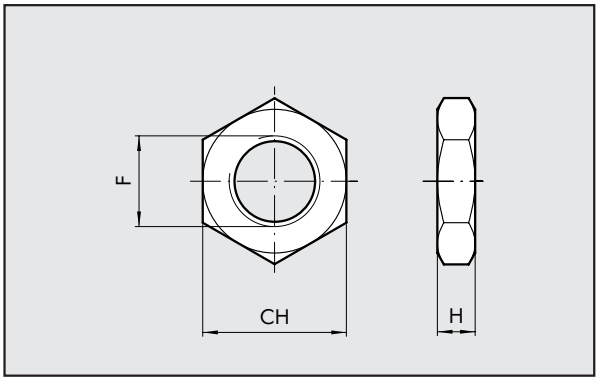


+= ADD THE STROKE

Code	Ø	A	A_1	B	B_1	S	ØD	L
W095X322002	32	80	64	45	32	10	7	105
W095X402002	40	90	72	52	36	10	9	115
W095X502002	50	110	90	65	45	12	9	118
W095X632002	63	120	100	75	50	12	9	133
W095X802002	80	150	126	95	63	16	12	144
W095XA12002	100	170	150	115	75	16	14	154

Note: Supplied with 4 screws.

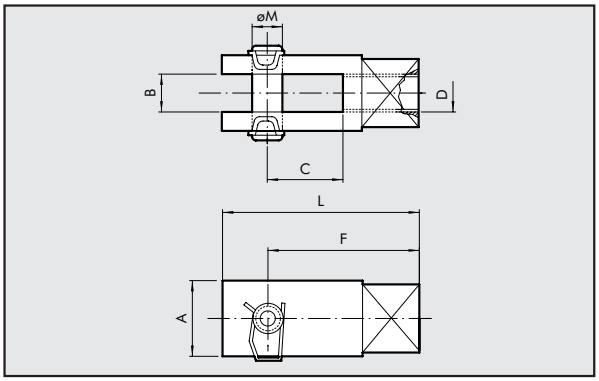
STAINLESS STEEL NUT FOR PISTON RODS



Code	Ø	F	H	CH	Weight [g]
W095X322011	32	M10x1.25	6	17	6
W095X402011	40	M12x1.25	7	19	12
W095X502011	50	M16x1.5	8	24	20
W095X502011	63	M16x1.5	8	24	20
W095X802011	80	M20x1.5	9	30	32
W095X802011	100	M20x1.5	9	30	32

Note: Individually packed

STAINLESS STEEL FORK-MODEL GK-M

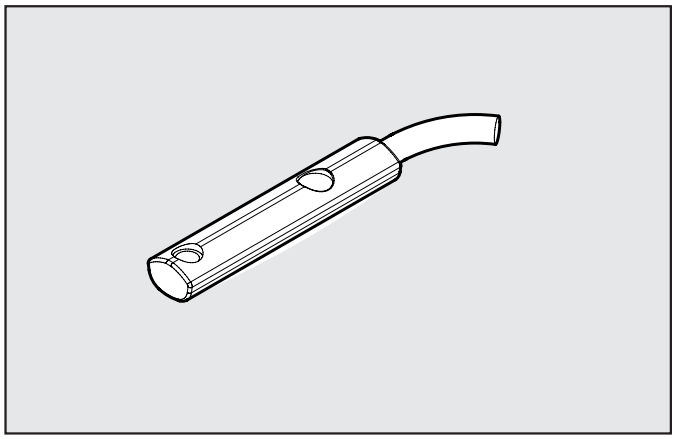


Code	Ø	A	B	C	D	F	L	Ø M
W095X322020	32	20	10	20	M10x1.25	40	52	10
W095X402020	40	24	12	24	M12x1.25	48	62	12
W095X502020	50	32	16	32	M16x1.5	64	83	16
W095X502020	63	32	16	32	M16x1.5	64	83	16
W095X802020	80	40	20	40	M20x1.5	80	105	20
W095X802020	100	40	20	40	M20x1.5	80	105	20

Note: Individually packed

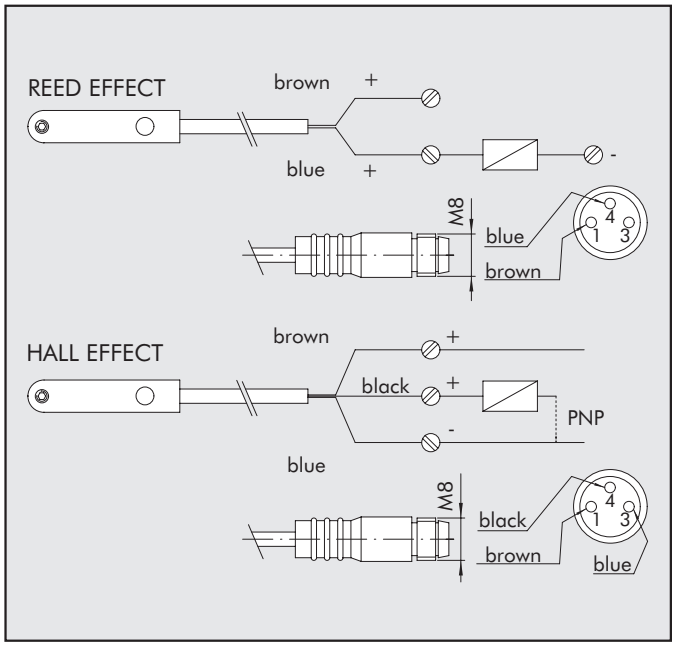
ACCESSORIES: MAGNETIC SENSORS

SLIM SENSOR



Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

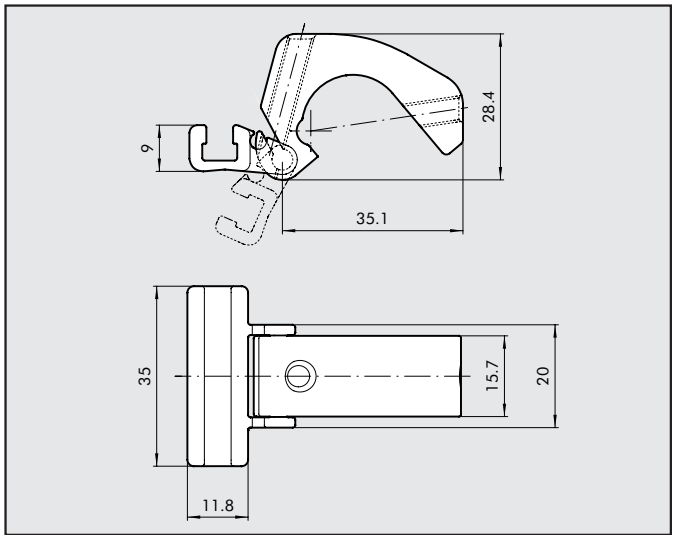
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

SENSOR BRACKET



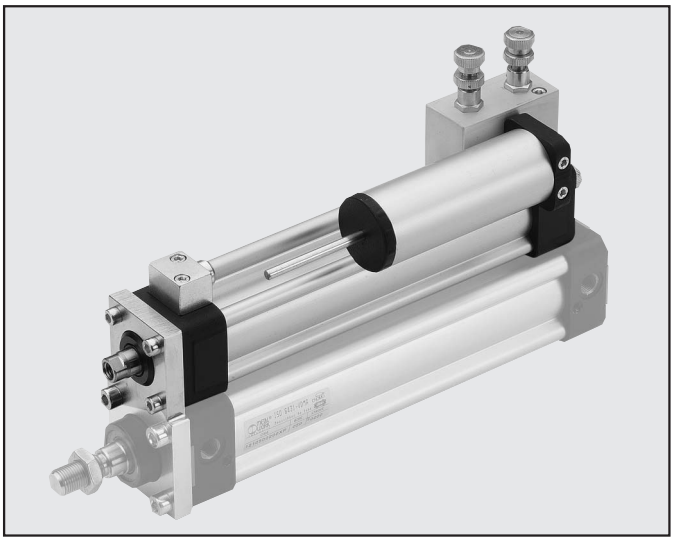
Codice	Modello	Alesaggio
W0950001100	SENSOR BRACKET	32÷100

Note: Individually packed

MATERIAL
Bracket: zinc-plated aluminium
Sensor holder: zinc-plated aluminium
Fixing screw: zinc-plated aluminium

HYDRAULIC BRAKE SERIES BRK FOR ISO 6431 CYLINDER Ø 40-80 mm

The hydraulic brake is the closed loop type without its own power source. It is normally linked to an ISO 6431 pneumatic cylinder. It consists of a cylinder full of oil, one or more flow regulation valves and a top-up tank to compensate for any oil leakage.
The following versions are available:
• With piston rod adjustment in either direction or both;
• With SKIP valve (slow-fast) or stop valve or both.
The compensation tank needs to be topped up from time to time. This should be done when the oil reaches the minimum level marked on the rod. With the piston rod right out, the stick must project not less than 20 mm from the tank cap. COMLUBE-DEXRON ATF oil should be used. During the first few cycles, any excess oil is ejected through a hole in the tank.

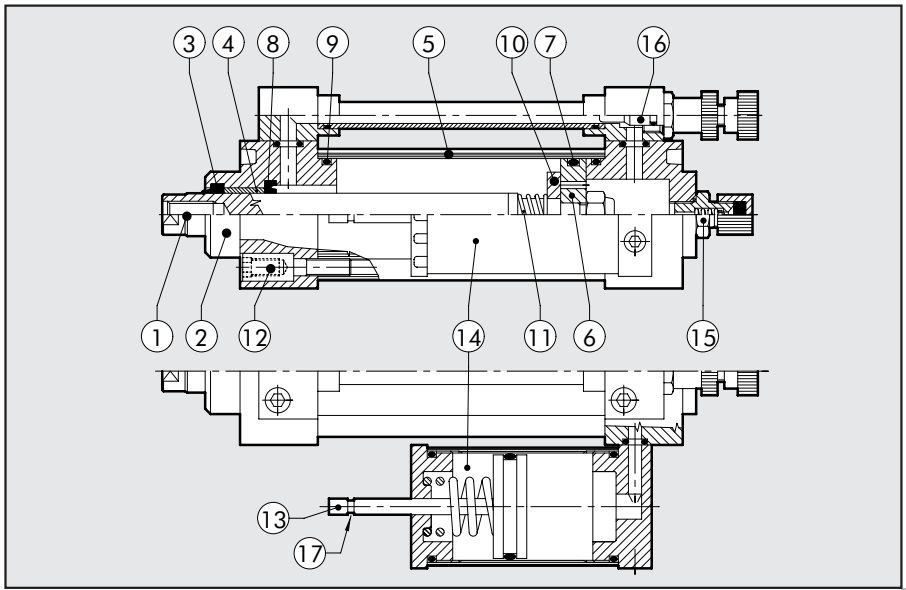


TECHNICAL DATA

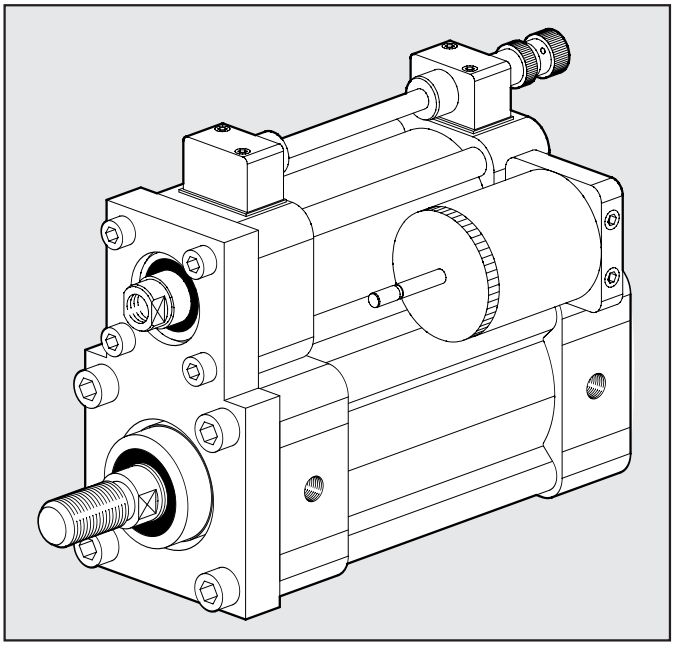
Gaskets		NBR
Temperature range	T	–10°C to +70°C
Fluid		Filtered lubricated or unlubricated air.
		Lubrication, if used, must be continuous.
Adjustable load	F	6000N standard version
		5000N with valves
Speed	V	10 mm/min. to 6000 mm/min.
Standard strokes	mm	50, 100, 150, 200, 250, 300, 350, 400, 450, 500
		On request other special strockes, up to 1000
Configurations		Piston rod thrust adjustment; Piston rod retract adjustment
		Adjustment on both strokes; Thrust adjustment + skip valve
		Retract adjustment + skip valve; Double adjustment + double skip valve
		Thrust adjustment + stop valve; Retract adjustment + stop valve
		Twin adjustment + double stop valve; Thrust adjustment + skip/stop valve
		Retract adjustment + skip/stop valve
Fixing to cylinder		with flange kit
Connectable cylinders	mm	ISO 6431 cylinders with bores Ø 40 to Ø 80
Weights		See GENERAL TECHNICAL DATA PAGE 1.1/07

COMPONENTS

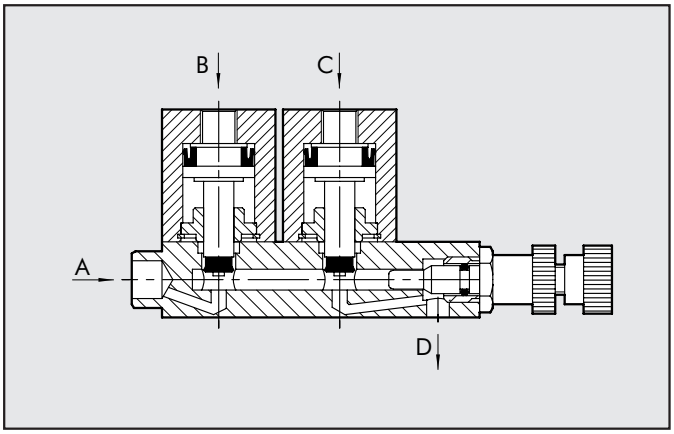
① PISTON ROD: thick chromed steel
② HEADS: die cast aluminium alloy
③ PISTON ROD GASKET: NBR rubber
④ PISTON ROD GUIDE BUSHING: steel strip with bronze and PTFE insert
⑤ JACKET: drawn anodised aluminium alloy
⑥ PISTON: aluminium alloy
⑦ PISTON GASKET: NBR rubber
⑧ OIL SEAL GASKET: polyurethane
⑨ Static O-rings: NBR rubber
⑩ SEALING DISK: plastic
⑪ SPRINGS: zinc-plated steel
⑫ SECURING/ASSEMBLY SCREW: Tap Tite screw
⑬ OIL LEVEL STICK: zinc-plated steel
⑭ OIL RECOVERY TANK
⑮ VALVE for OIL FILLING
⑯ FLOW REGULATION NEEDLE
⑰ MINIMUM LEVEL



HYDRAULIC BRAKE + ISO 6431 CYLINDER Ø 40-80



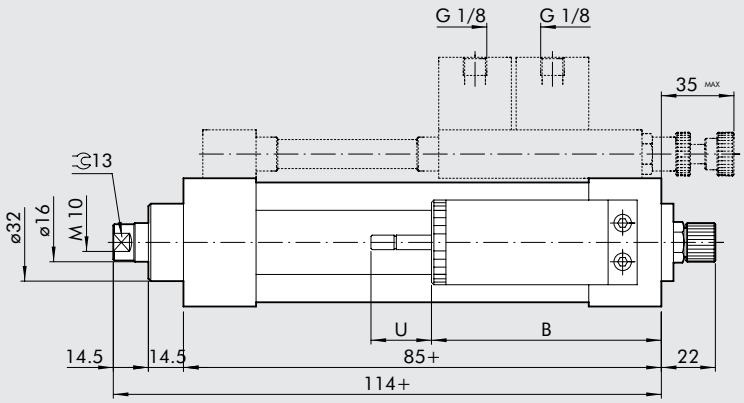
SKIP-STOP VALVE



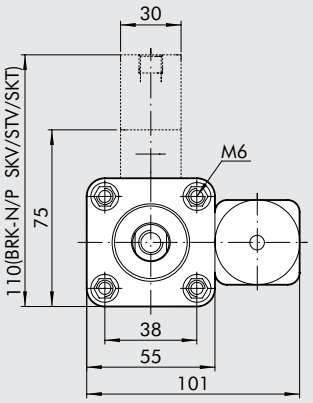
Both the skip valve and the stop valve are normally open and the fluid flows freely from A to D.
With supply from port C, the skip valve is controlled and the fluid is forced to pass through a choke generated by the regulation pin.
With supply from port B, the stop valve is controlled and the flow of fluid is interrupted.

DIMENSIONS OF HYDRAULIC BRAKE

TYPE: BRK-P STD/SKV/STV/SKT

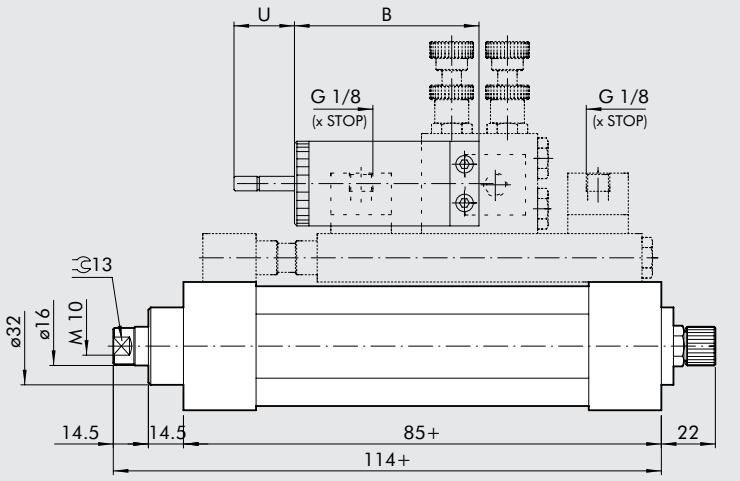


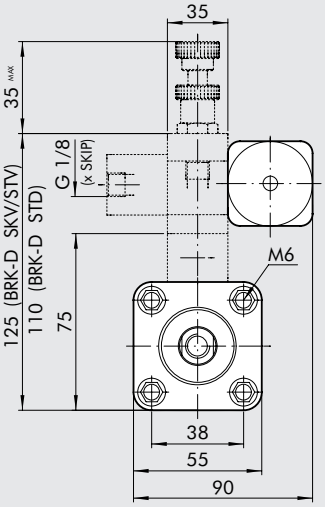
BRK-N STD/SKV/STV/SKT



Stroke	B	U
1÷50	90	28
51÷100	110	37
101÷150	110	44
151÷200	135	52
201÷250	135	60
251÷300	155	68
301÷350	155	77
351÷400	185	85
401÷450	185	92
451÷500	205	100

TYPE: BRK-D STD/STV/SKT

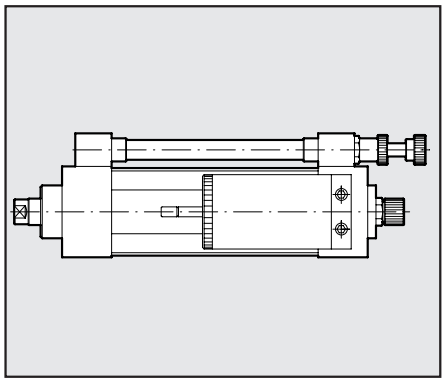


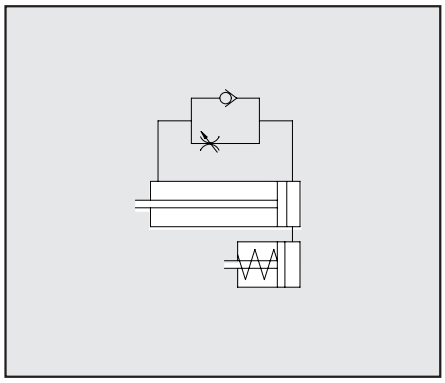


+ = ADD THE STROKE

HYDRAULIC BRAKE BRK-P STD.

Code

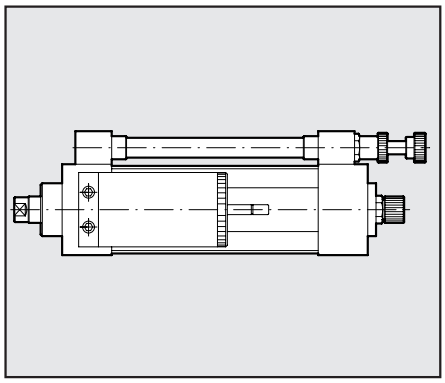


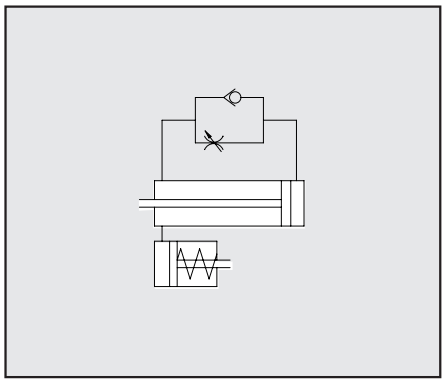


PISTON ROD THUST ADJUSTMENT
W170001 . . . . ENTER THE STROKE

PISTON ROD THRUST ADJUSTMENT

Code

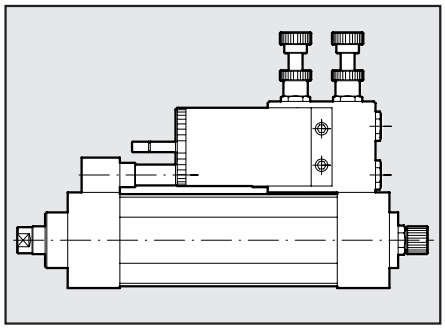


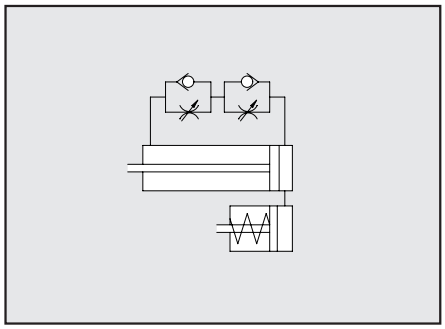


PISTON ROD RETRACT ADJUSTMENT
W170011 . . . . ENTER THE STROKE

HYDRAULIC BRAKE BRK-D STD

Code

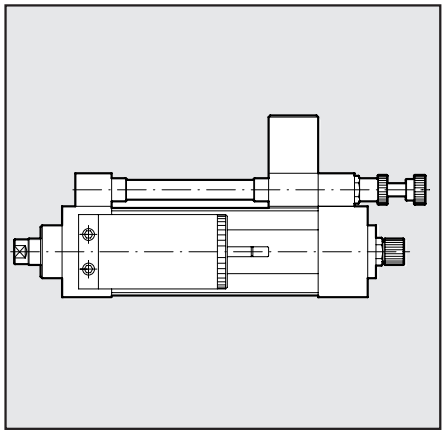


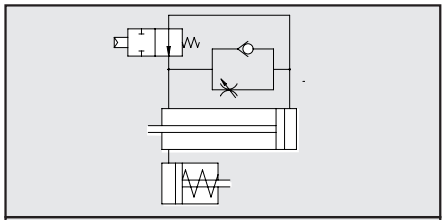


PISTON ROD RETRACT ADJUSTMENT
W170021 . . . . ENTER THE STROKE

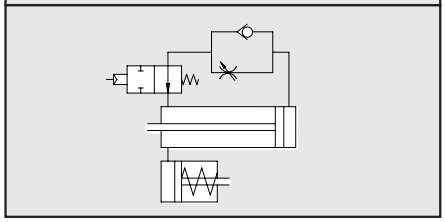
HYDRULIAC BRAKE BRK-N SKV/BRK-N STV

Code





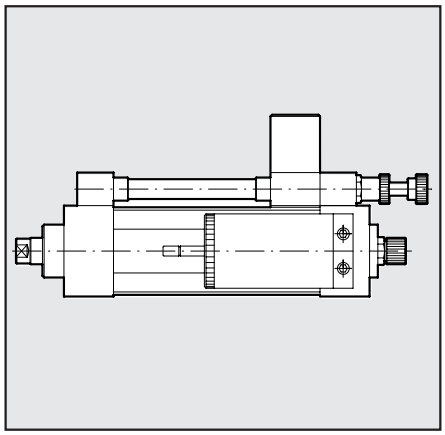
RETRACT ADJUSTMENT + SKIP VALVE
W170111 . . . . ENTER THE STROKE

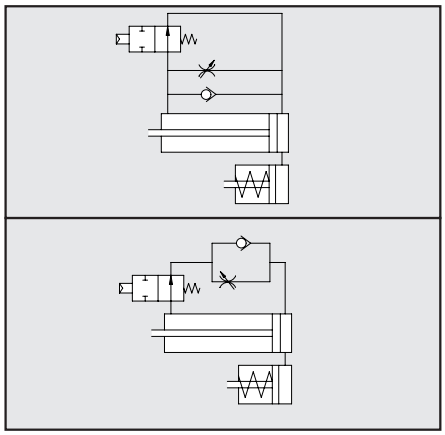


RETRACT ADJUSTMENT + STOP VALVE
W170211 . . . . ENTER THE STROKE

HYDRAULIC BRAKE BRK-P SKV/BRK-P STV

Code



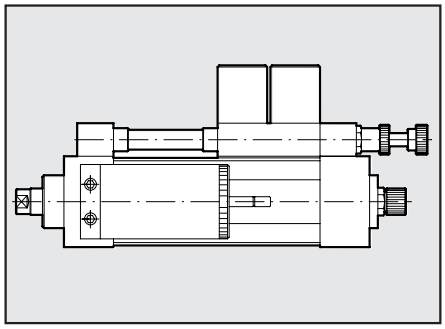


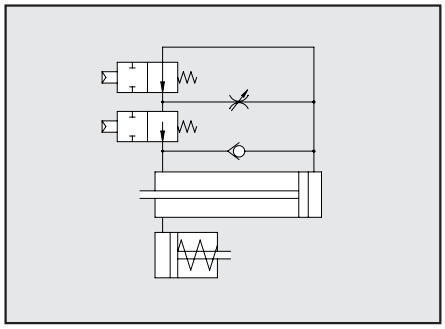
THRUST ADJUSTMENT + SKIP VALVE
W170101 . . . . ENTER THE STROKE

THRUST ADJUSTMENT+STOP VALVE
W170201 . . . . ENTER THE STROKE

HYDRAULIC BRAKE BRK-N SKT

Code

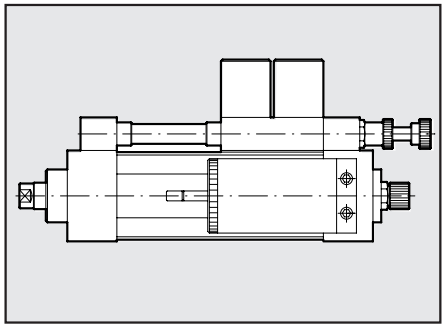


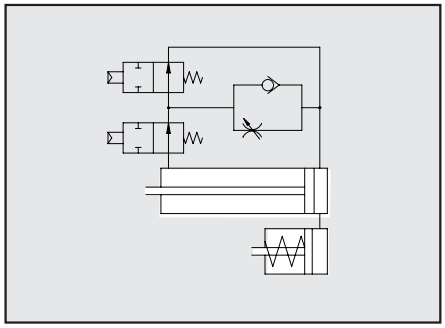


RETRACT ADJUSTMENT + SKIP/STOP VALVES
W170311 . . . . ENTER THE STROKE

HYDRAULIC BRAKE BRK-P SKT

Code

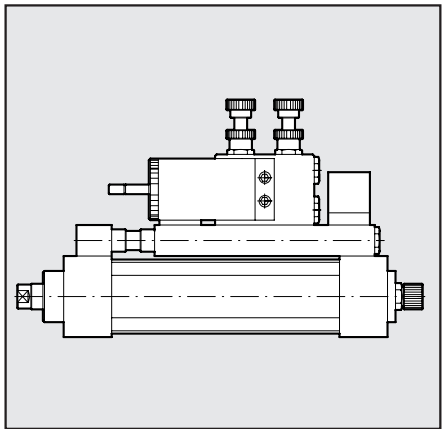


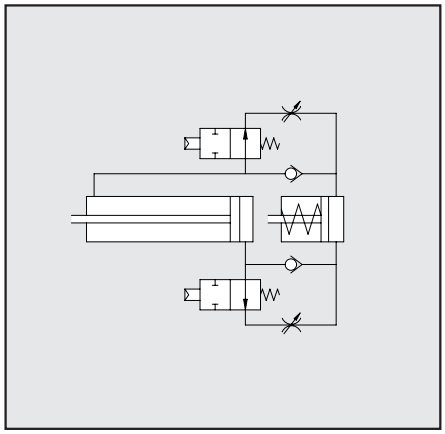


THRUST ADJUSTMENT + SKIP/STOP VALVE
W170301 . . . . ENTER THE STROKE

HYDRAULIC BRAKE BRK-D STV

Code



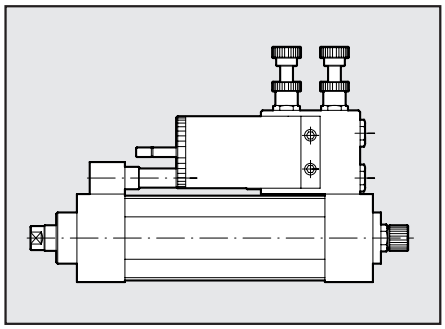


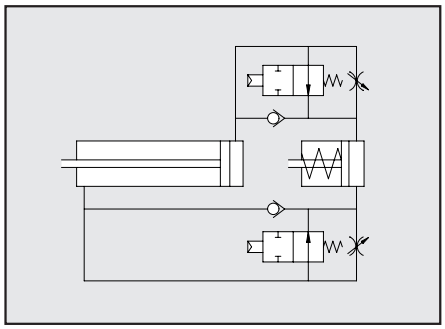
PISTON ROD THRUST RETRACT ADJUSTMENT
+ DOUBLE STOP VALVE
W170221 . . . . ENTER THE STROKE

NOTE: minimum stroke 150 mm

HYDRAULIC BRAKE BRK-D SKV

Code





PISTON ROD THRUST RETRACT ADJUSTMENT
+ DOUBLE SKIP VALVE
W170121 . . . . ENTER THE STROKE

KEY TO CODES

W	1	7	0		0	0	1		0	2	0	0

W170	Hydraulic brake	001	Piston rod thrust adjustment
		011	Piston rod retract adjustment
		021	Piston rod retract/thrust adjustment
		101	Thrust adjustment + SKIP VALVE
		111	Retract adjustment + SKIP VALVE
		121	Double adjustment + DOUBLE SKIP VALVE
		201	Thrust adjustment + STOP VALVE
		211 ✚	Retract adjustment + STOP VALVE
		221	Double adjustment + DOUBLE STOP VALVE
		301	Thrust adjustment + SKIP/STOP VALVE
		311	Retract adjustment + SKIP/STOP VALVE

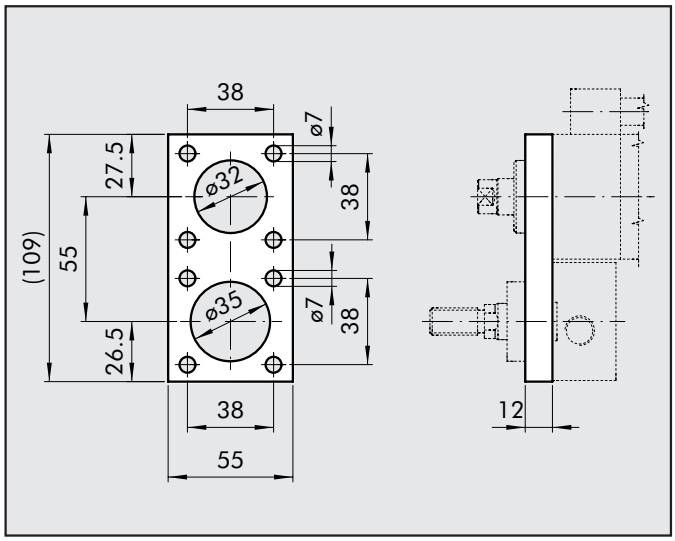
Enter the desired stroke in 4 digits. Example: for a 50mm-stroke cylinder enter 0050.

✚ Minimum stroke 150 mm

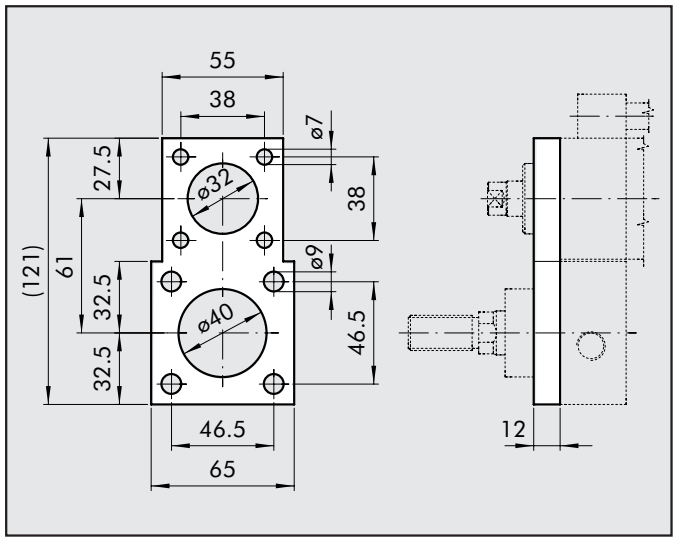
NOTES

ACCESSORIES: FLANGE

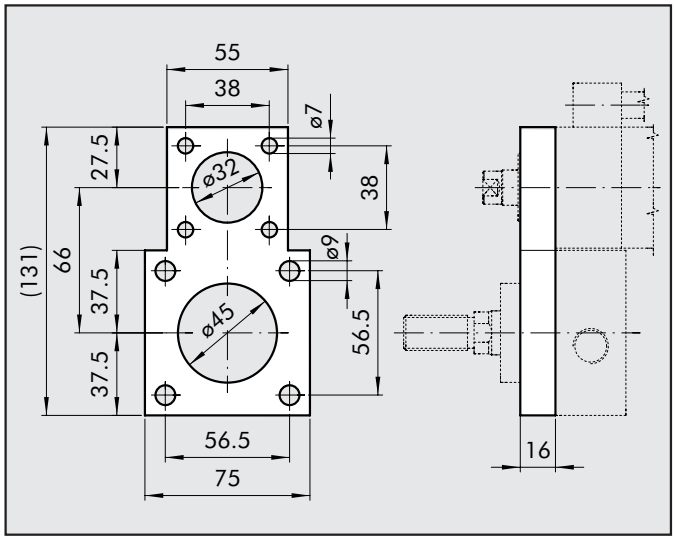
FLANGE Ø 40



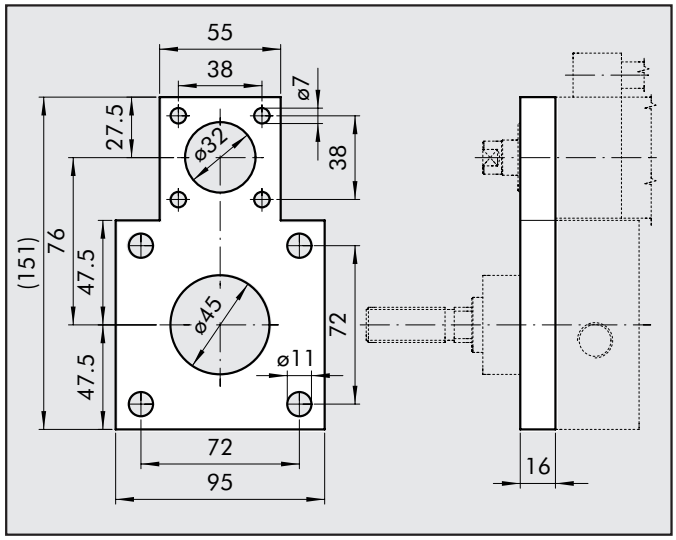
FLANGE Ø 50



FLANGE Ø 63



FLANGE Ø 80



ORDERING CODES

Code	Description	Weight [g]
BRAKE CYLINDER CONNECTING FLANGE		
W0950402012	FLANGE ACC. MODEL CF-040	418
W0950502012	FLANGE ACC. MODEL CF-050	540
W0950632012	FLANGE ACC. MODEL CF-063	792
W0950802012	FLANGE ACC. MODEL CF-080	1216

Note: Supplied complete with 4+4 screws.

SET OF SCREWS FOR FLANGE		
W0950402111	KIT BRK-P/C-040	58
W0950502111	KIT BRK-P/C-050	93
W0950632111	KIT BRK-P/C-063	97
W0950802111	KIT BRK-P/C-080	151

Note: the code corresponds to 4+4 screws.

NOTES

SENSOR TESTER

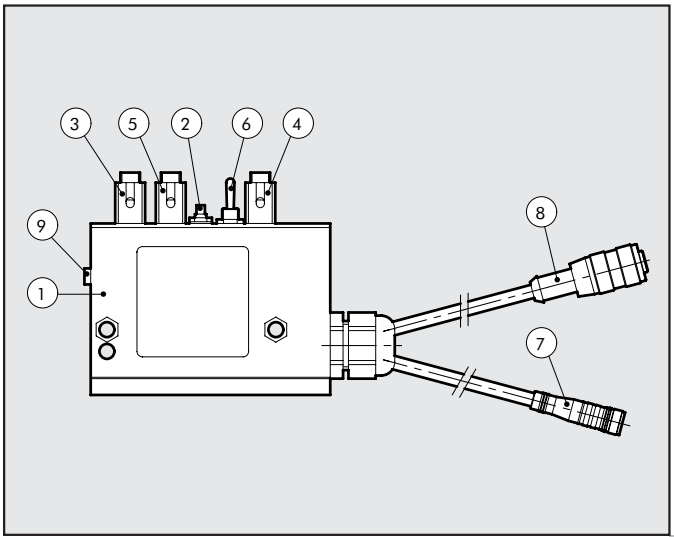
This sensor tester features the following:
• a green light and acoustic signal indicating correct operation
• sensors can be checked without having to be disassembled.
• M8 and M12 connections, and terminal board for direct connection to the wires
• PNP or NPN switching button
• 9V battery power supply
• automatic switch-off



TECHNICAL DATA	
Container material	PA 6.6 blue
Degree of protection	IP00
Connections	M8 and M12 plug-socket type with 40 cm cable
Additional connections	3 terminals for wire connection
Power supply	9V DC (battery type 6LR61)
Internal voltage	15V DC
Green light	tester switched on
Yellow light	sensor in operation
Red light	battery flat

COMPONENTS

① CONTAINER (PA 6.6 blue)
② START BUTTON
③ WIRE CONNECTION + (brown)
④ WIRE CONNECTION – (blue)
⑤ OUTPUT CONNECTION (black)
⑥ PNP/NPN SELECTOR
⑦ M8x1 CONNECTOR
⑧ M12x1 CONNECTOR
⑨ LED COVER



Code	Description	Dimension [mm]	Weight [g]
W0950060000	SENSOR TESTER	63x88x24	192

TABLE OF CONTENTS
GRIPPERS

CHAPTER 1.2

	INTRODUCTION	PAGE 1.2/02
	GRIPPERS WITH TWO PARALLEL JAWS, SERIES P1	PAGE 1.2/12
	GRIPPERS WITH TWO PARALLEL JAWS, SERIES P2	PAGE 1.2/14
	PRECISION GRIPPERS WITH TWO PARALLEL JAWS, SERIES P3	PAGE 1.2/17
	GRIPPERS WITH TWO PARALLEL JAWS, LONG STROKE, SERIES P4	PAGE 1.2/21
	GRIPPERS WITH TWO HINGED JAWS, SERIES P7	PAGE 1.2/26
	TECHNOPOLYMER HINGED GRIPPERS, SERIES P8	PAGE 1.2/29
	GRIPPERS 160° WITH 2 HINGED JAWS SERIES P9	PAGE 1.2/32
	TOGGLE GRIPPERS, SERIES P10	PAGE 1.2/34
	GRIPPERS WITH THREE PARALLEL JAWS, SERIES P11	PAGE 1.2/38

PNEUMATIC GRIPPERS

GENERAL

① Pneumatic gripper
② Jaws
③ Clamping finger
④ Sensor slot
⑤ F = clamping force of one jaw only
If a gripper has three jaws, with F = 25N, so the total clamping force is 25 x 3 = 75N.
⑥ Load
⑦ L = distance between the barycentre of the load and the reference surface
⑧ C = stroke of a single jaw

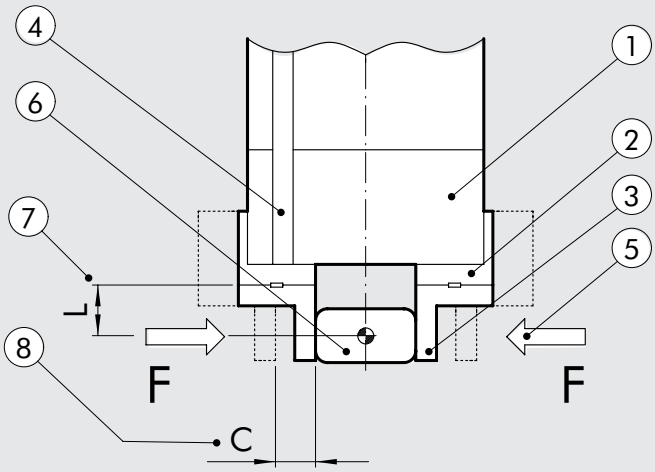
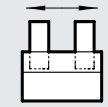


FIG. 1.1

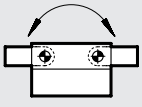
GENERAL



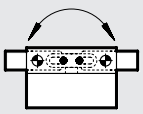
Parallel gripper: the jaws move in a straight line. There may be two, three or even four jaws.



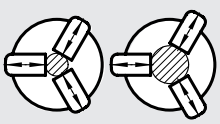
Hinged gripper: the jaws are hinged and move along the arc of a circle. It is generally cheaper than a parallel gripper but there are some limitations (see drawing 1.6):
- If the part has varying dimensions, the contact area changes.
- If the part is cylindrical with varying dimensions, the position of the axis of the clamped part varies.



Gripper with retracting jaws: the jaws have an opening angle of about 90°. The clamping fingers can retract fully from the work top, and so, in certain cases, it is possible to avoid one linear retraction motion (see drawing 1.5).



Toggle gripper: a hinged gripper with a toggle-action mechanism to achieve high clamping forces. Clamping is irreversible even when there is no pressure, so the part cannot be released accidentally. The opening angle is 90° so it acts as retracting gripper. The clamping force is high within a limited angle only.



Number of jaws: two-jaw grippers are used for prism-shaped parts or cylindrical ones with a single diameter. Three-jaw grippers can be used for cylindrical parts with different diameters.

CLAMPING FINGERS

FIG. 1.2

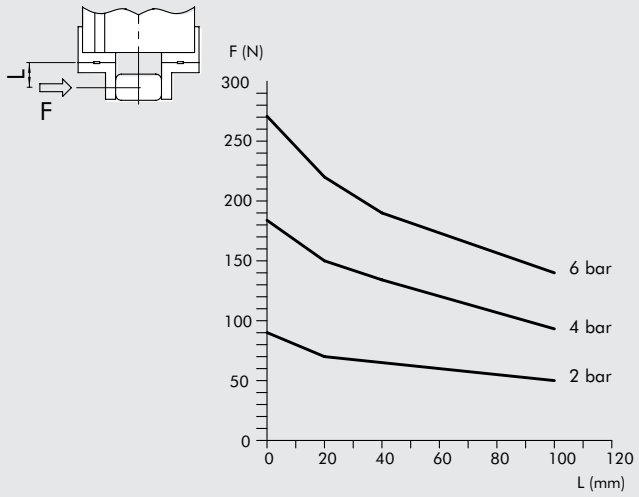
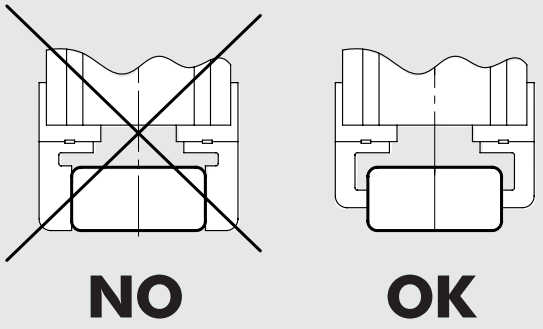


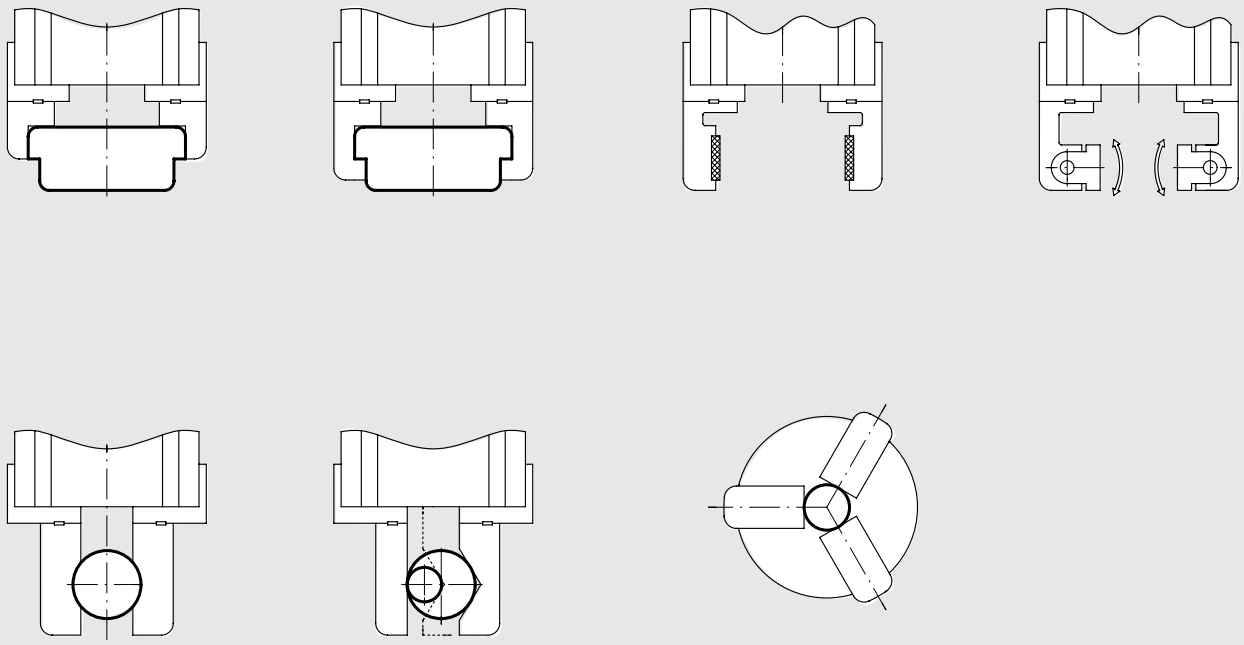
FIG. 1.3



The clamping fingers must be as light and short as possible to keep inertia to a minimum.
The longer the clamping fingers, the less force is available (see fig. 1.2).
Wider fingers are only heavier, they do not increase friction (see fig. 1.3).

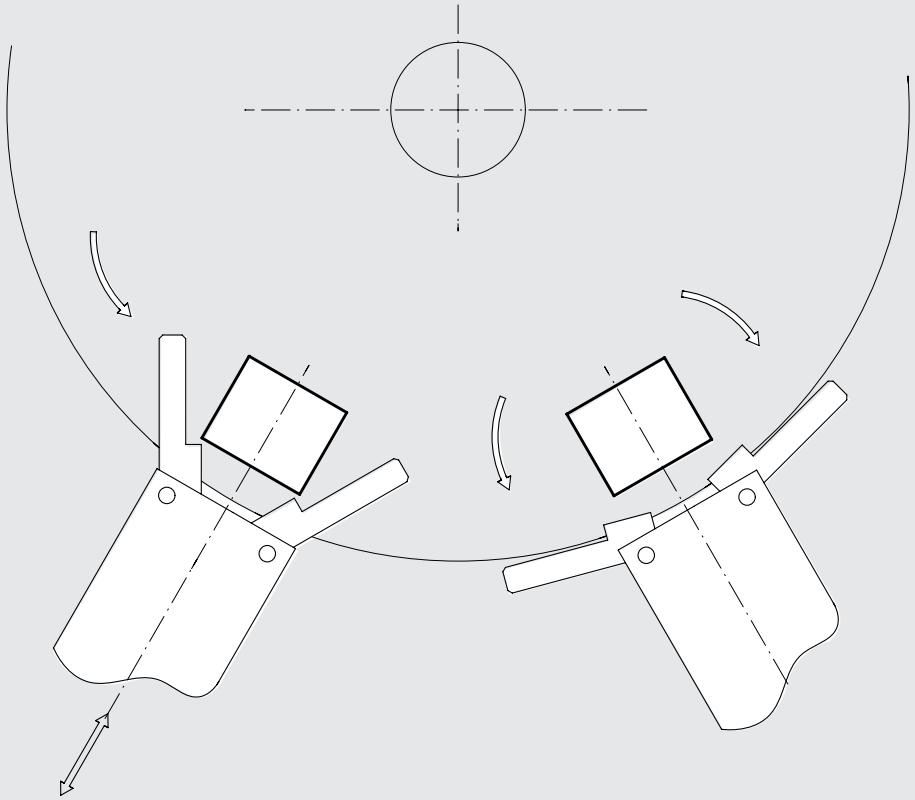
FEATURES

FIG. 1.4



EXAMPLE OF RETRACTING HINGED GRIPPERS

FIG. 1.5



EXAMPLE OF USE LIMITATIONS OF HINGED GRIPPERS

FIG. 1.6

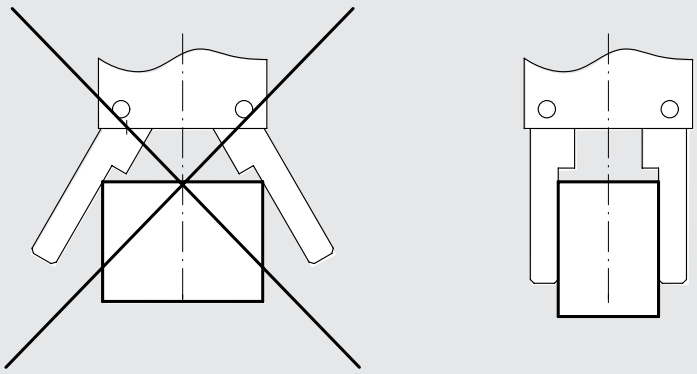
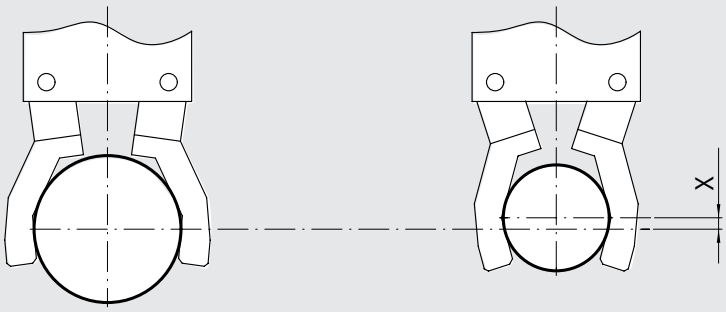


FIG. 1.7

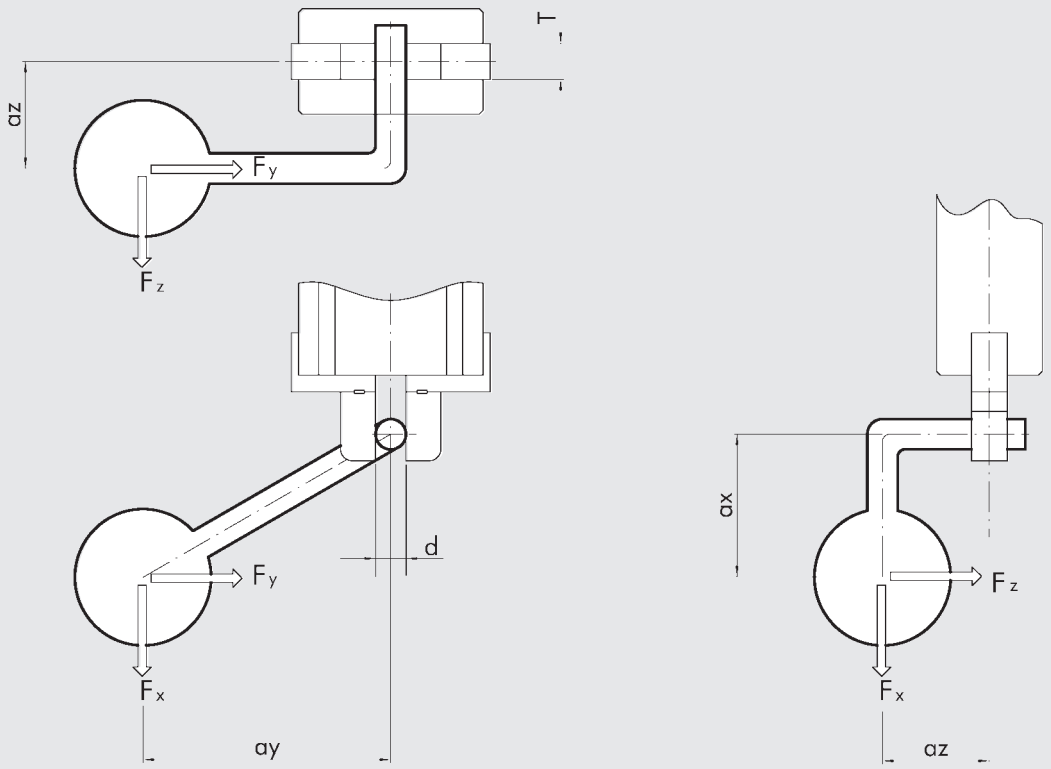


CALCULATIONS

First of all, determine the necessary clamping force.
Then decide which type of gripper can ensure this force with required pressure and clamping distance.
To help designers calculate the clamping force, we propose two levels of calculation.

DRAWING TO CALCULATE GRIPPER CLAMPING FORCE

FIG. 1.8



APPROXIMATION METHOD

Clamping force of each jaw [N] ≥ 200 x weight of part [kg] / number of jaws.

	Data	Unit of measurement	Formula	Example	
M	Mass of part	kg		1.2	
n	Number of jaws	–		3	
F	Clamping force of each jaw	N	≥ 200 x M / n	≥ 200 x 1.2 / 3 = 80	

PRECISION COMPUTING METHOD

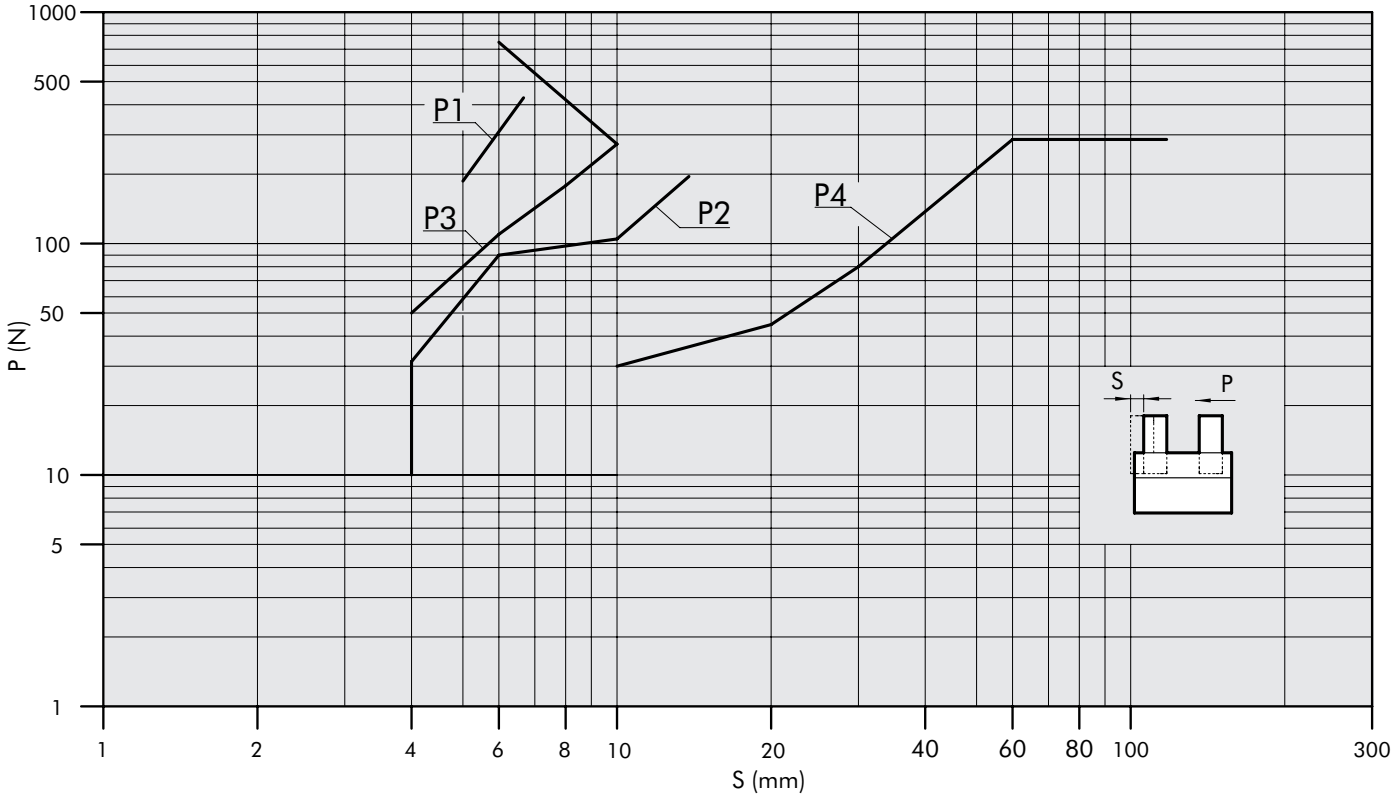
	Data	Unit of measur.	Formula	Example
M	Mass of part	Kg		1,2
a	Acceleration	m/s^2		5 in direction X
Ω	Angle speed	rad/s		0
T	Width of clamping finger	mm		8
d	Clamping diameter of part	mm		16
ax	Distance along X of the barycentre from clamping centre	mm		0
ay	Distance along Y of the barycentre from clamping centre	mm		0
az	Distance along Z of the barycentre from clamping centre	mm		25
μ	Finger/part friction coefficient			0,2
	Some examples:			
	Smooth steel on smooth metal		μ = 0,1	
	Rough steel on smooth metal		μ = 0,2-0,3	
	Soft material, e.g. Vulkolan		μ = 0,4	
	Coupled shape (vedi fig. 1.4)		μ = 1	
	Forces applied to barycentre of part.			
	When determining the forces, assess for each direction:			
	Force x weight	N	M x 9,81	
	Force of inertia x linear acceleration	N	Mx a	
	Force of inertia x angular velocity	N	$M \times \Omega^2 \times r$	
Fx	Force along gripper axis	N		Fx = peso 1.2 x 9.81 = 11.8 N
Fy	Force perpendicular to jaw	N		Fy = F.of inertia = 1.2 x 5 = 6 N
Fz	Force tangent to jaw	N		Fz = O
	Force equivalent to clamping centre:			
Ft eq	Equivalent tangential force	N	$\sqrt{\left[Fx \cdot \left(\frac{az+\frac{T}{2}}{T}+\frac{ay+\frac{d}{2}}{d}\right)+Fz\cdot\frac{ax}{T}+Fy\cdot\frac{ax}{d}\right]^2+Fz^2}$	$\sqrt{\left[11.8\cdot\frac{25+\frac{8}{2}}{8}+O\right]^2}=42.8\ N$
Fy eq	Equivalent perpendicular force	N	$Fy\cdot\frac{az+\frac{T}{2}}{T}+Fz\cdot\frac{ay}{T}$	$=6\cdot\frac{\left(25+\frac{8}{2}\right)}{8}=75\ N$
Fs teo	Theoretical clamping force	N	Greater of (Fteq/2μ) and (Fyeq)	Greater of (42.8/2.02) and 75 = 107
F	**Clamping force**	N	FsTeo · 1.5 (safety coefficient)	= 107 · 1.5 = 160 N

COMPARATIVE CHARTS FOR GRIPPERS

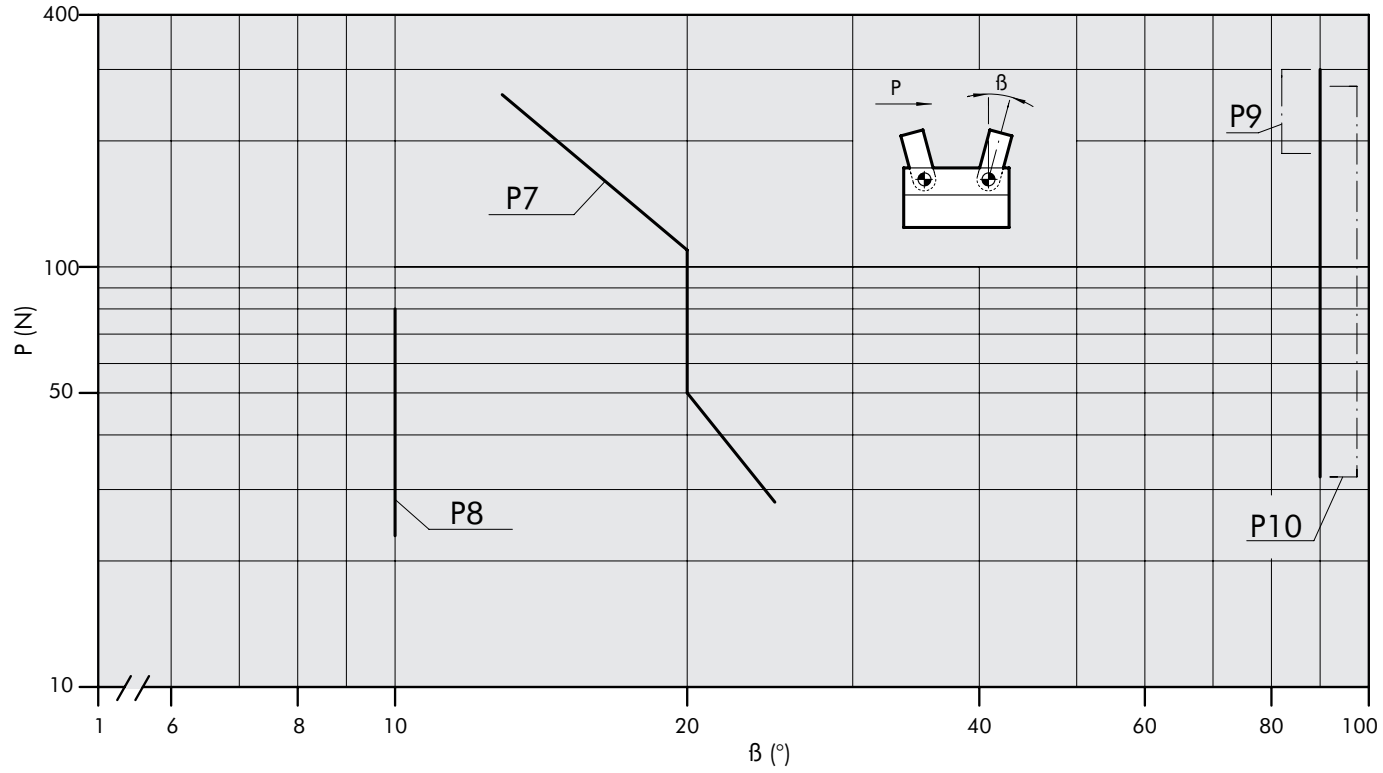
The lines plotted on the graphs below show the following for each series of gripper:
- Clamping force (at 6 bar)
- Stroke (linear or angular)

This allows you to determine the most appropriate series to meet your requirements. For instance, if you want a gripper with two parallel jaws, a clamping force greater than 100 N and stroke greater than 12 mm, you can find it in series P2 or P4.

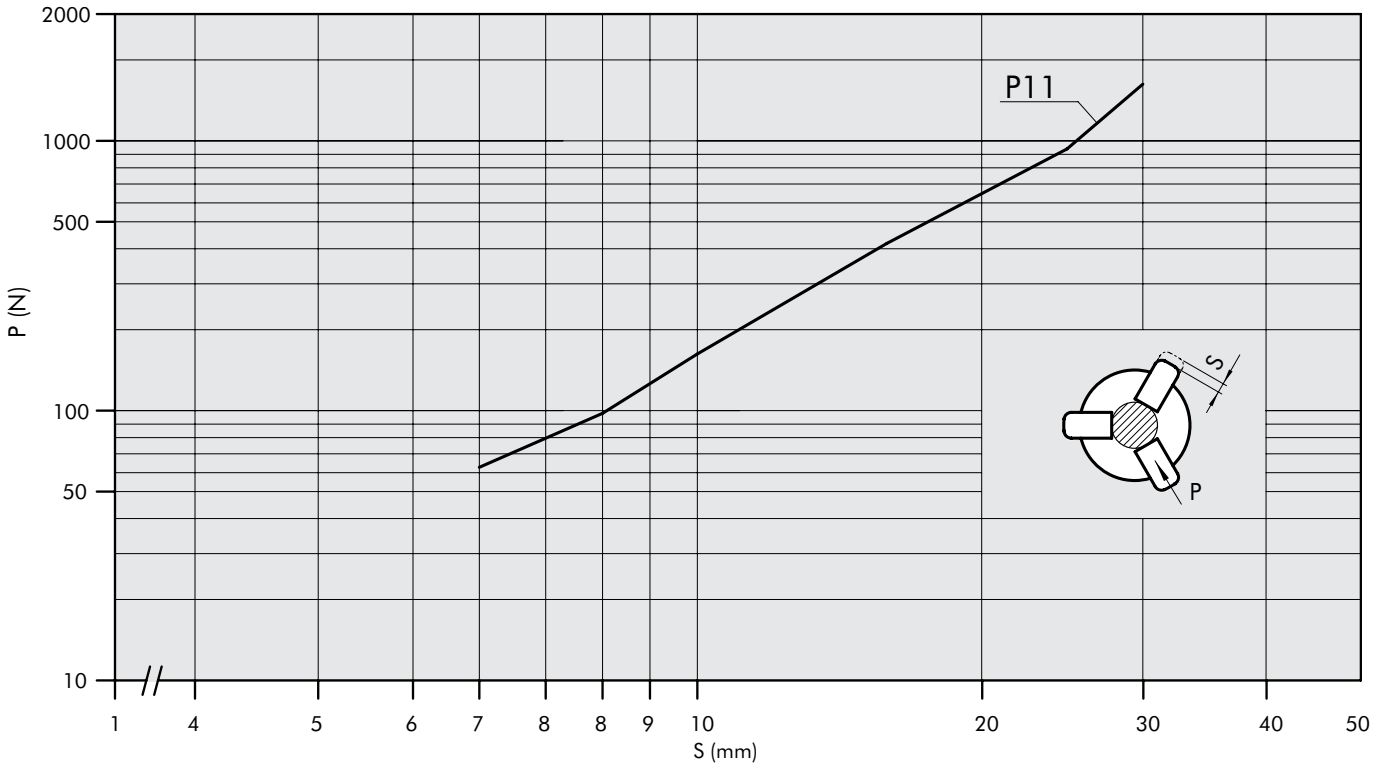
COMPARATIVE CHART - GRIPPERS WITH TWO PARALLEL JAWS



COMPARATIVE CHART - GRIPPERS WITH TWO HINGED JAWS



COMPARATIVE CHART - GRIPPERS WITH THREE JAWS

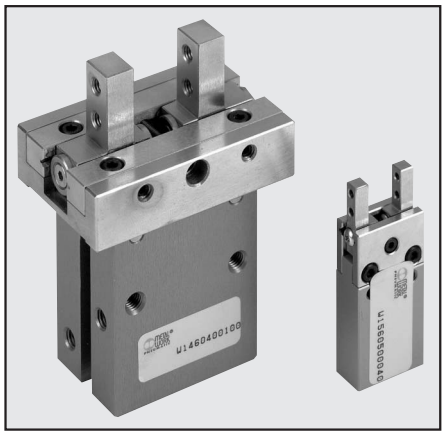


NOTES

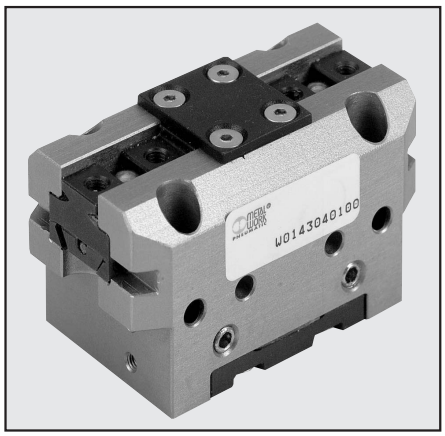
GRIPPERS WITH TWO PARALLEL JAWS



• Serie P1
This is a gripper with an excellent quality-to-price ratio.
Double action with internal or external clamping. All size come with magnets and sensor slot. The materials used and the heat and chemical treatments applied means that the parts subject to stress are extra-resistant.



• Serie P2
This is a gripper with rollers recirculation jaw guides.
Starting from very small sizes – minimum thickness 10 mm.
Larger sizes have a system for taking up jaw guide play.
Double action with internal or external clamping.
Comes with magnet and sensor slot.



• Serie P3
High-precision sturdy gripper guaranteed for 1,500,000 cycles with max load without maintenance.
Top quality materials, accurately worked: body made of highly-resistant hardened aluminium alloy body. Moving parts made of hardened and tempered steel.
Double action with internal or external clamping.
Special versions available on request:
• With induction sensors
• 5-position monitoring using a positionable sensor.
• With spring lock device for when there is no pressure.
• Double clamping force and half stroke.



• Serie P4
Gripper with a long stroke.
The shape of the jaws makes them particularly suitable for clamping parts of large size with respect to the weight.
Double action with internal or external clamping.
Magnets for position sensors.

GRIPPERS WITH TWO HINGED JAWS



• Serie P7
This is a double-acting gripper with an excellent quality-to-price ratio. Designed for application of a retracting magnetic sensor. The body is in a single piece.
Simplified jaw replacement method.
Provided with magnets and sensor slots.



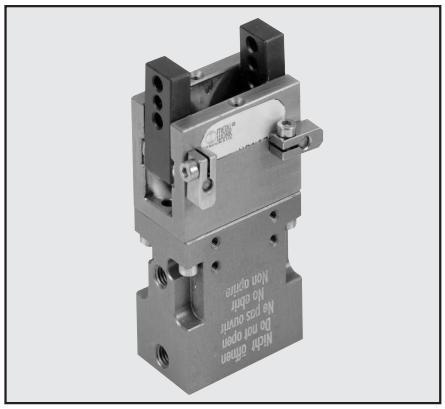
• Serie P8
Single-acting normally open grippers. Virtually all the component parts are made of technopolymer to make the device lighter. The smallest version is really tiny – it weighs a mere 36 g.

GRIPPERS WITH TWO RETRACTING JAWS

The following two series of wide-opening grippers can be used for specific applications.



• Serie P9
Toggle-type pivoted grippers for external clamping, up to 180° opening angle and high clamping forces.
The workpiece is not released, even when the power is cut off. Provided with magnets and sensor slots.



• Serie P10
Grippers with 20°-180° adjustable opening designing for gripping the part from the outside. With high clamping forces. There is also a version with springs for extra safety during pressure drops. Each of the two fingers can be adjusted by about 1°. Top quality materials and accurate working. Highly resistant hardened aluminium alloy body. Moving parts made of tempered steel. 2,000,000 cycles without maintenance. Induction sensors can be mounted.

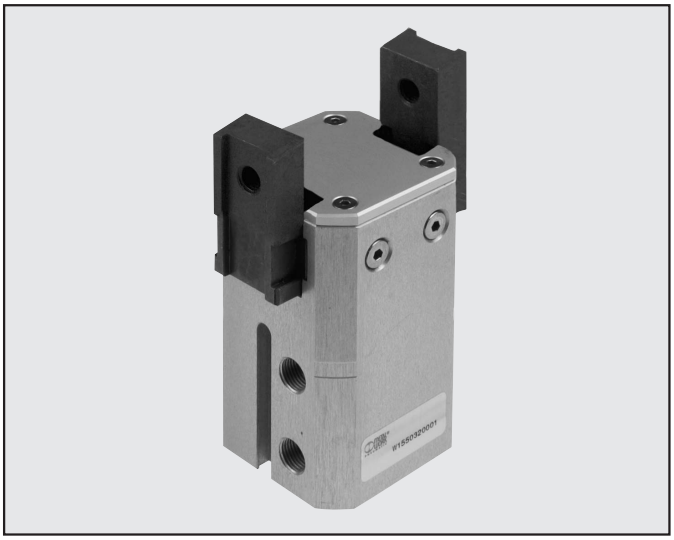
GRIPPERS WITH THREE JAWS



• Serie P11
Grippers with a good quality-to-price ratio. Double action with internal or external clamping. Magnets for position sensors, slim type.
Four-jaw self-centring version available on request.

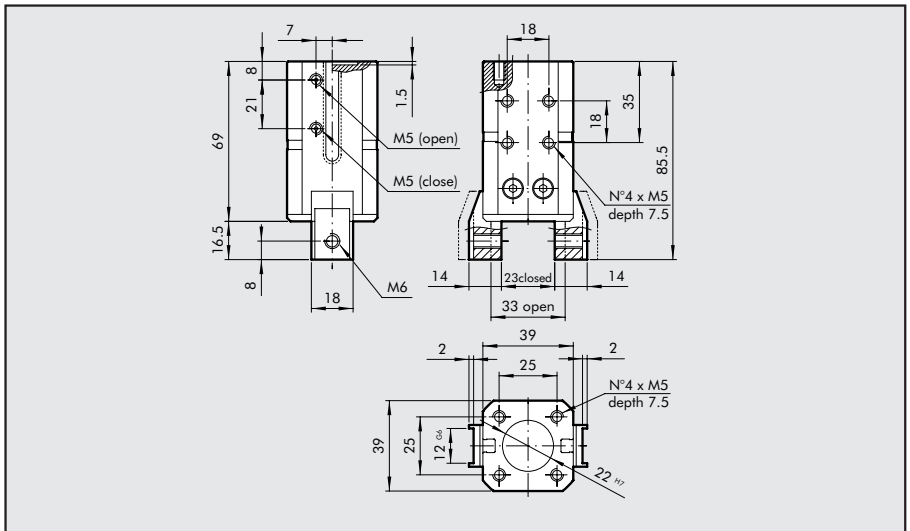
GRIPPER WITH 2 PARALLEL JAWS SERIES P1

- Dual-acting parallel gripper for internal and external clamping.
- Anodized aluminium alloy body and tempered steel jaws.
- Bottom or side fixing.
- All sizes come with magnets and sensor slots.



TECHNICAL DATA		P1-20	P1-32
Gaskets		NBR	
Operating pressure		2-8 bar (0.2 - 0.8 Mpa)	
Temperature range	°C	5÷70	
Fluid		Filter lubricated or lubricated air. Lubrication, if used, must be continuous.	
Bores	mm	20 - 32	
On request		Magnetic Version	
Clamping force (at 6 bar) 20 mm from the top surface	N	180	420
Single jaw stroke	mm	5	6.5
Weight	Kg	0.50	0.70

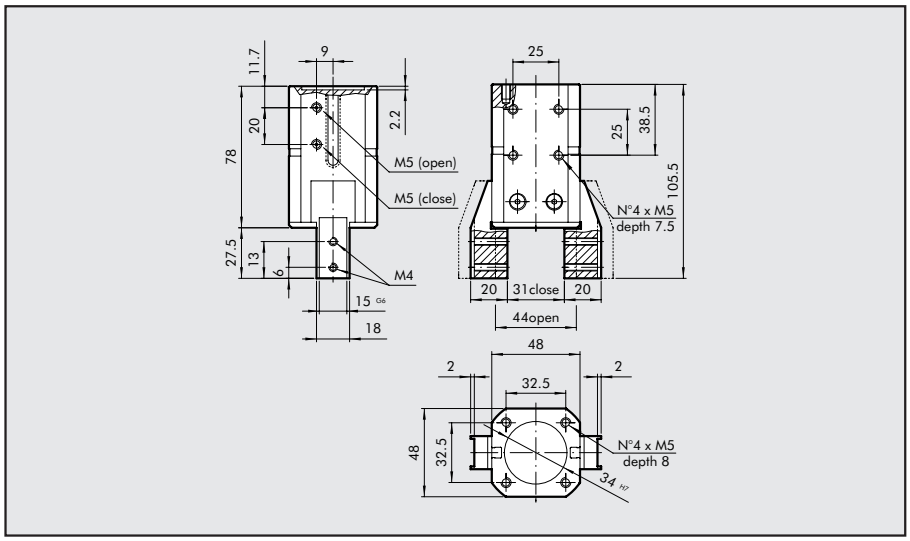
DIMENSIONS OF GRIPPERS P1-20



ORDERING CODES

Code	Description
W1550200001	GRIPPER WITH 2 PARALLEL JAWS P1-20

DIMENSIONS OF GRIPPERS P1-32

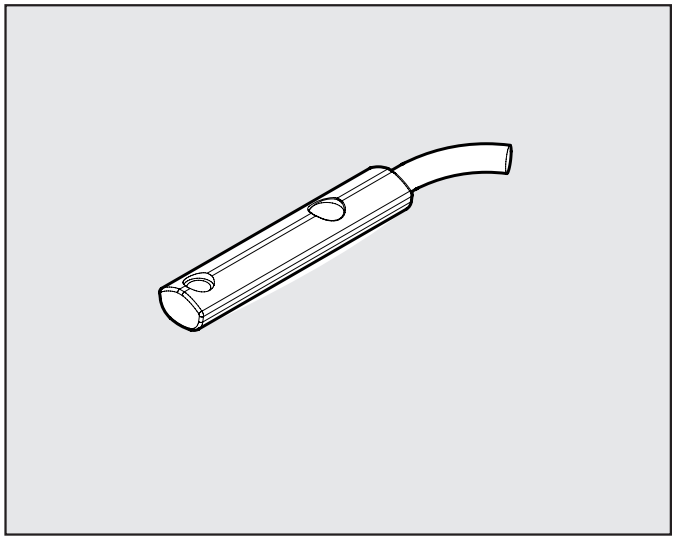


ORDERING CODES

Code	Description
W1550320001	GRIPPER WITH 2 PARALLEL JAWS P1-32

ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



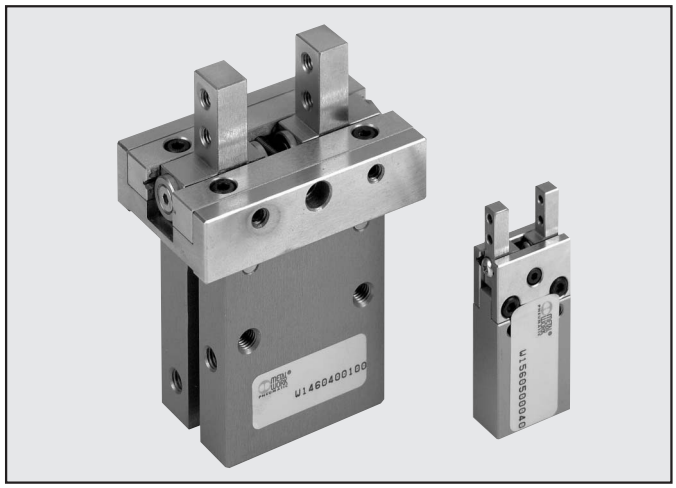
Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

See page 1.1/97 for wiring diagram.

NOTES

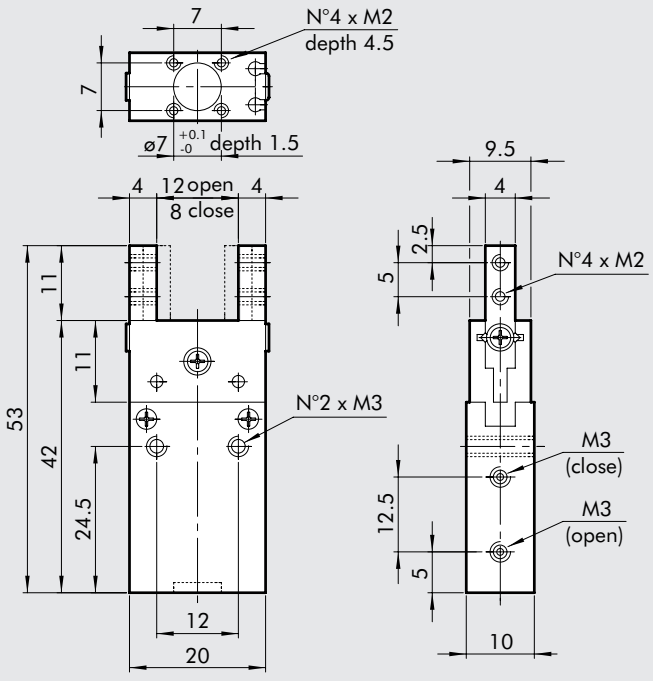
GRIPPERS WITH 2 PARALLEL ROLLER-RECIRCULATION JAWS SERIES P2

These are grippers with 2 parallel jaws with a roller-recirculation guiding system. Double-acting system with clamping in both directions. All the grippers come with magnet and sensor slots.



TECHNICAL FEATURES		P2 - 6	P2 - 10	P2 - 16	P2 - 20	P2- 25
Min./max. operating pressure	bar	1.5 - 7				
Temperature range	°C	5 - 60				
Maximum operating frequency	cycles/s	2				
Fluid		20 µm dried or lubricated filtered air. Lubrication, if used, must be continous				
Size		6	10	16	20	25
Bore	mm	6	12	16	20	25
Single jaw stroke	mm	2	2	3	5	7
Closing force at 6 bar	N	5.3	28	83	97	180
Opening force at 6 bar	N	7.4	35	95	115	210
Weight	Kg	0.027	0.048	0.12	0.24	0.45

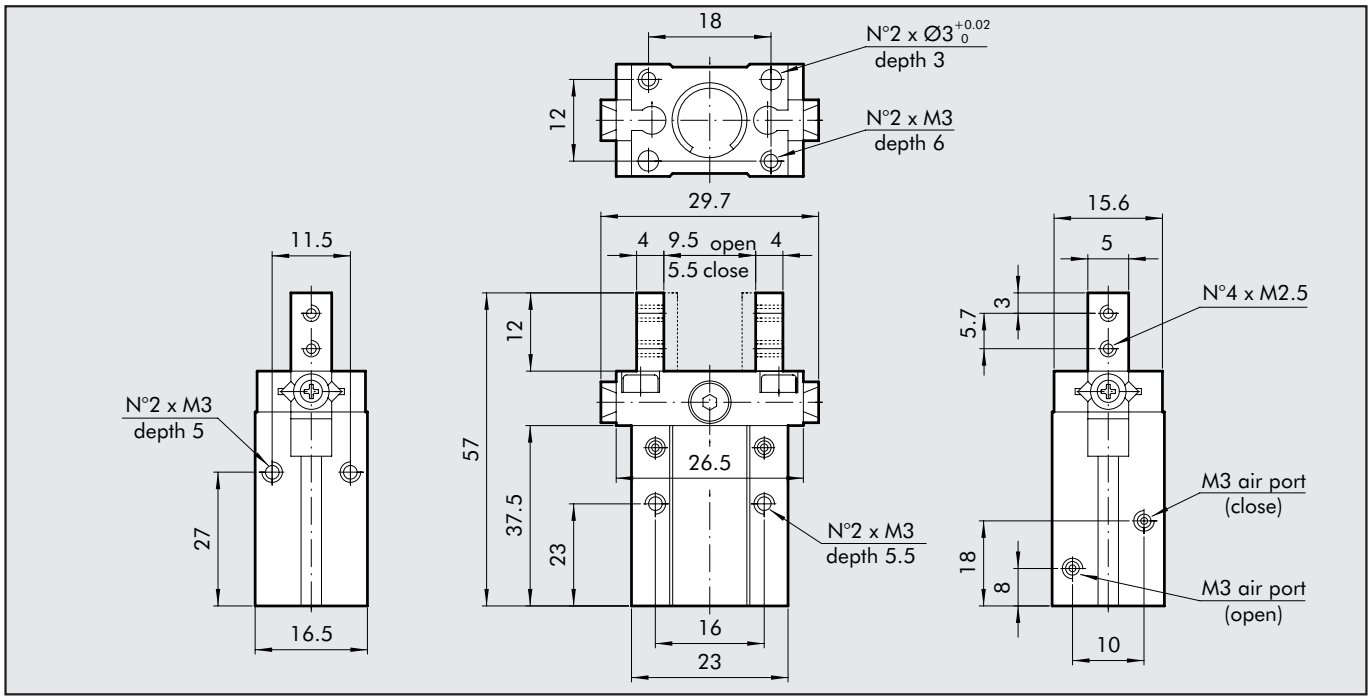
DIMENSIONS OF GRIPPER P2-6



ORDERING CODES

Code	Description
W1570060200	GRIPPER WITH 2 PARALLEL JAWS P2-6 (For sensor see W0950044180 page 1.2/24)

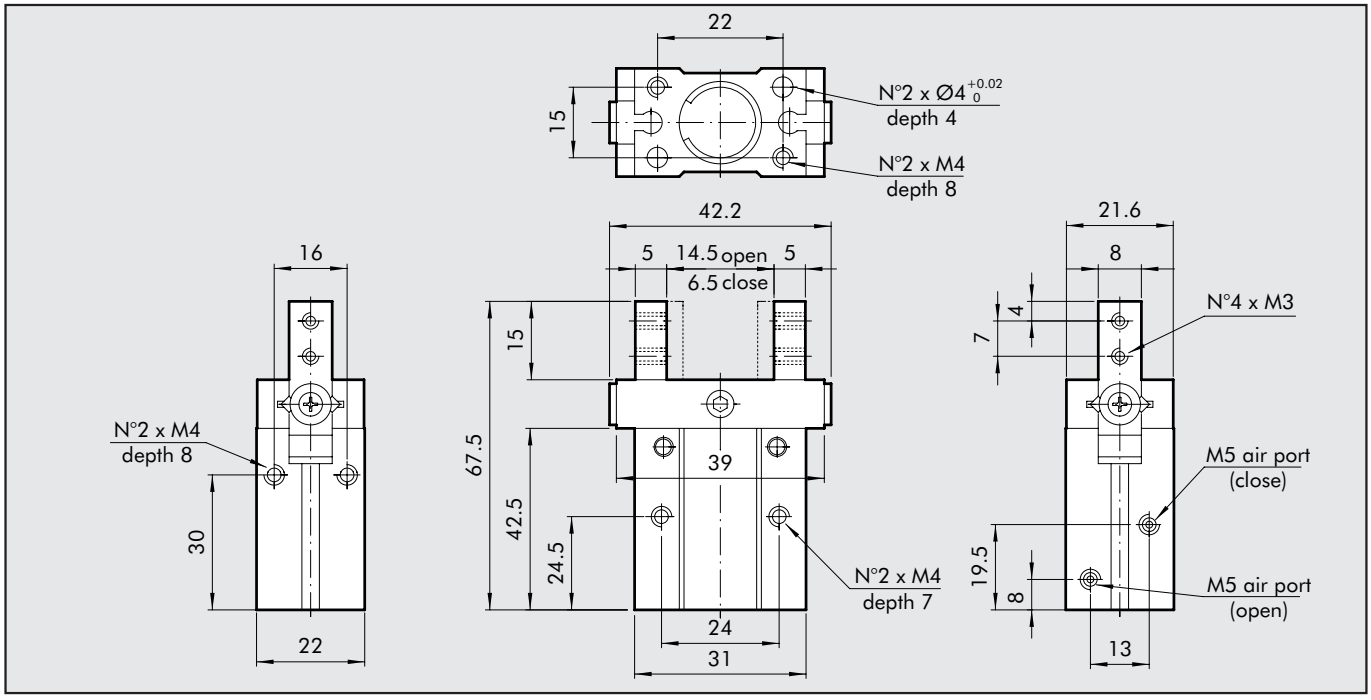
DIMENSIONS OF GRIPPER P2-10



ORDERING CODES

Code	Description
W1570100200	GRIPPER WITH 2 PARALLEL JAWS P2-10 (For sensor see W0950044180 page 1.2/24)

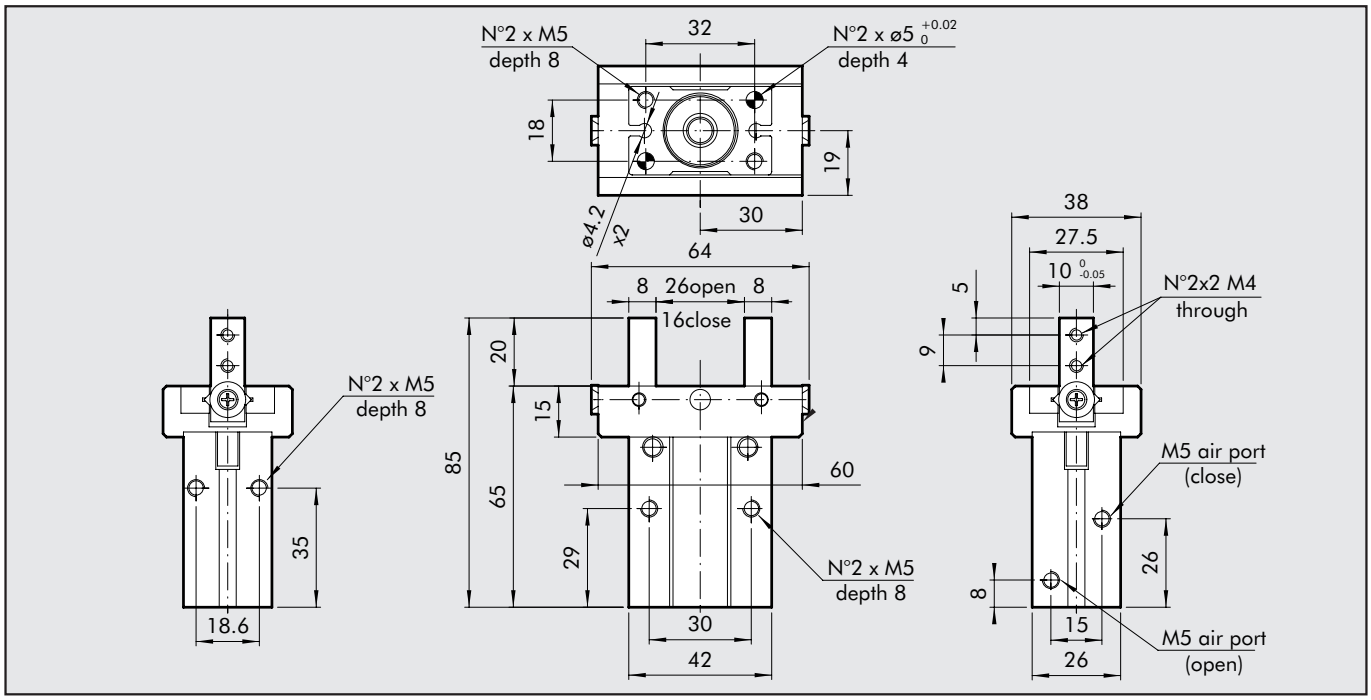
DIMENSIONS OF GRIPPER P2-16



ORDERING CODES

Code	Description
W1570160200	GRIPPER WITH 2 PARALLEL JAWS P2-16 (For sensor see W0950044180 and following, page 1.2/24)

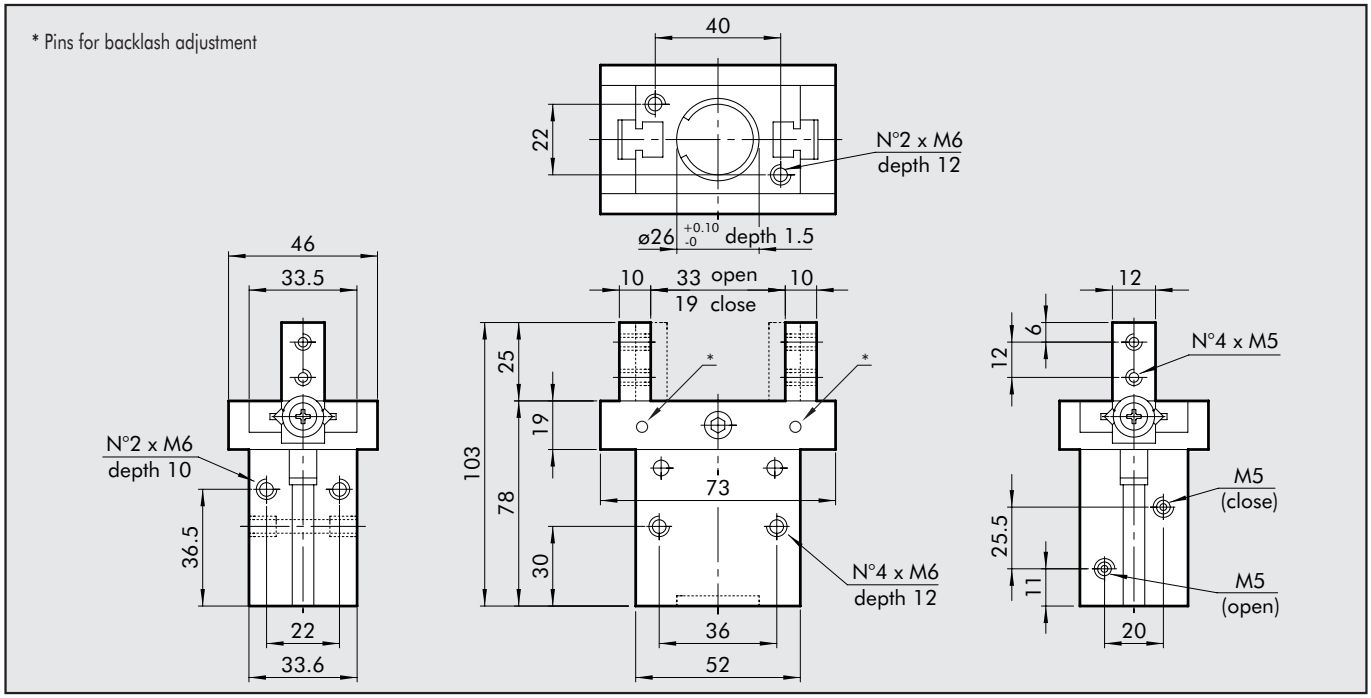
DIMENSIONS OF GRIPPER P2-20



ORDERING CODES

Code	Description
W1570200200	GRIPPER WITH 2 PARALLEL JAWS P2-20 (For sensor see W0950044180 and following, page 1.2/24)

DIMENSIONS OF GRIPPER P2-25

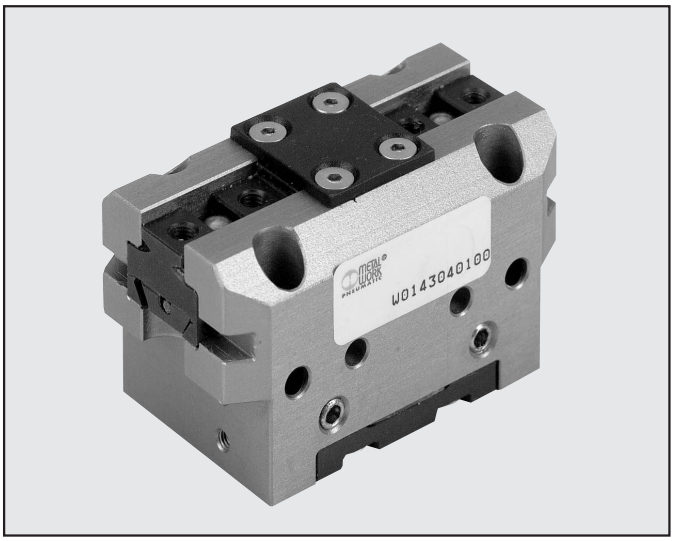


ORDERING CODES

Code	Description
W1570250200	GRIPPER WITH 2 PARALLEL JAWS P2-25 (For sensor see W0950025390 and following, page 1.2/28)

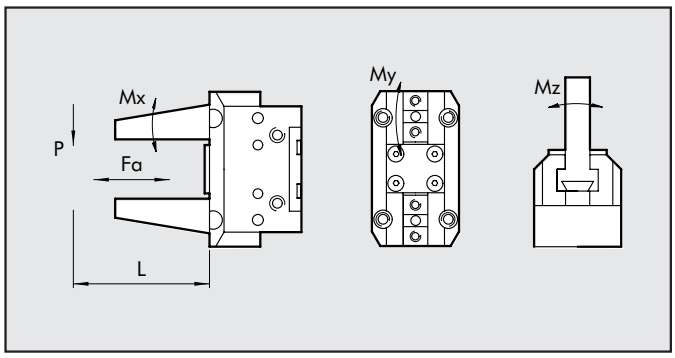
GRIPPER WITH 2 PARALLEL JAWS SERIES P3

These are grippers with 2 parallel double-acting jaws with internal and external clamping. The grippers are guaranteed for a minimum operation of 1.5 million cycles. Body made of hardened aluminium alloy, jaws made of ground, hardened and tempered steel.
Air can be supplied from below or from the side. Various types of fixing are available. The supply includes sensor haolders (if necessary), fixing screws for all directions and O-rings for direct pneumatic connection.
(the inductive sensors are not supplied by Metal Work)

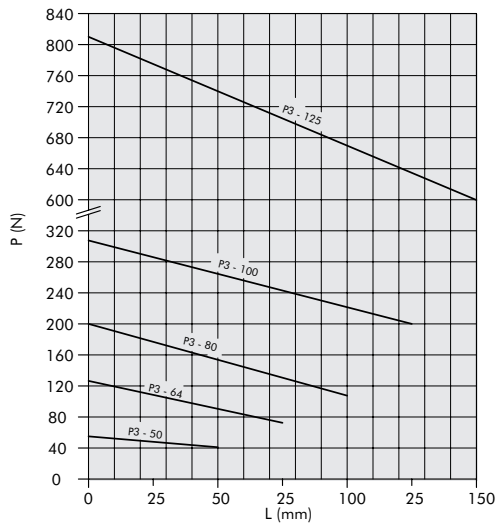


TECHNICAL FEATURES		P3 - 50	P3 - 64	P3 - 80	P3 - 100	P3 - 125
Pressure range	bar	2 to 8				
Temperature range	°C	5°C to 85°C				
Fluid		20µm dried or lubricated filtered air. Lubrication, if used, must be continous				
Life		over 1.5 million cycles				
Jaw force	mm	4	6	8	10	6
Clamping force per jaw at 6 bar	N	50 (L=20mm)	110 (L=20mm)	180 (L=25mm)	225 (L=32mm)	750 (L=32mm)
Applicable weight (recommended)	Kg	0.5	1.2	1.8	2.8	8.5
Air consumption per cycle	cm^3	5	10	20	40	70
Opening time	sec	0.02	0.02	0.03	0.05	0.08
Closing time	sec	0.02	0.02	0.03	0.05	0.08
Weight of grippers	Kg	0.125	0.27	0.43	0.75	1.3
Moment of inertia	Kg cm^2	0.5	1.2	2	10	21
Repeatability	mm	0.01	0.01	0.01	0.01	0.02
Maximum length of clamping fingers	mm	50	64	80	100	125

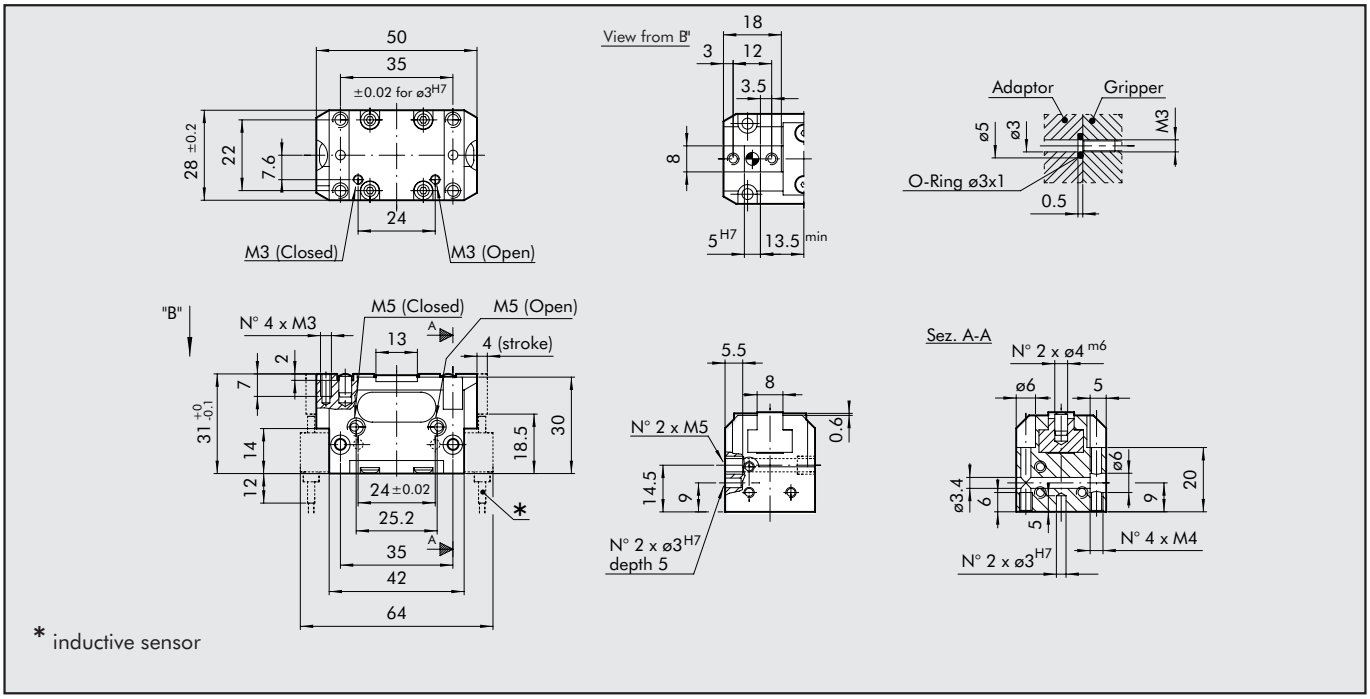
CLAMPING FORCE ACCORDING TO FINGER LENGTH



GRIPPER	FΔ (N)	Mx (Nm)	My (Nm)	Mz (Nm)	L (mm)	P (N)
P3 - 50	250	10	10	12	20	50
P3 - 64	450	30	25	15	20	110
P3 - 80	600	90	35	30	25	180
P3 - 100	800	95	45	45	32	225
P3 - 125	900	100	70	60	32	750



DIMENSIONS OF GRIPPERS P3-50

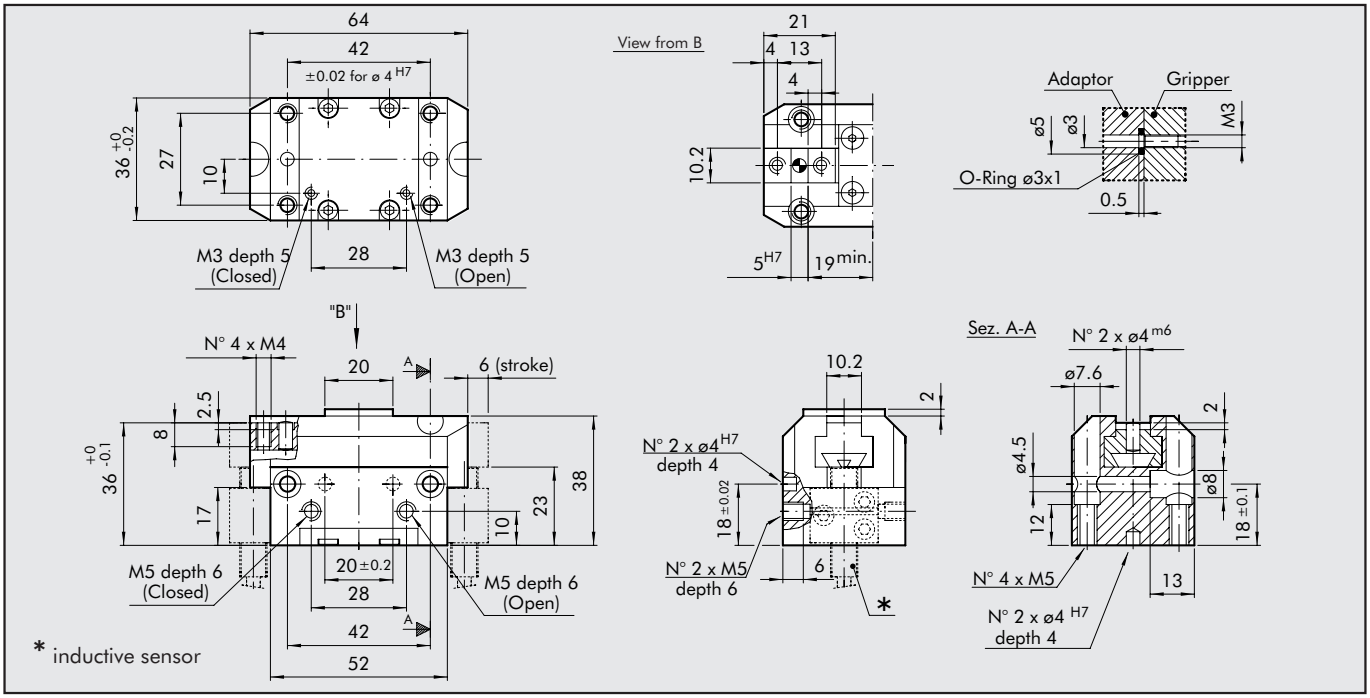


* inductive sensor

ORDERING CODES

Code	Description
W1560500200	GRIPPER WITH 2 PARALLEL JAWS P3-50

DIMENSIONS OF GRIPPERS P3-64

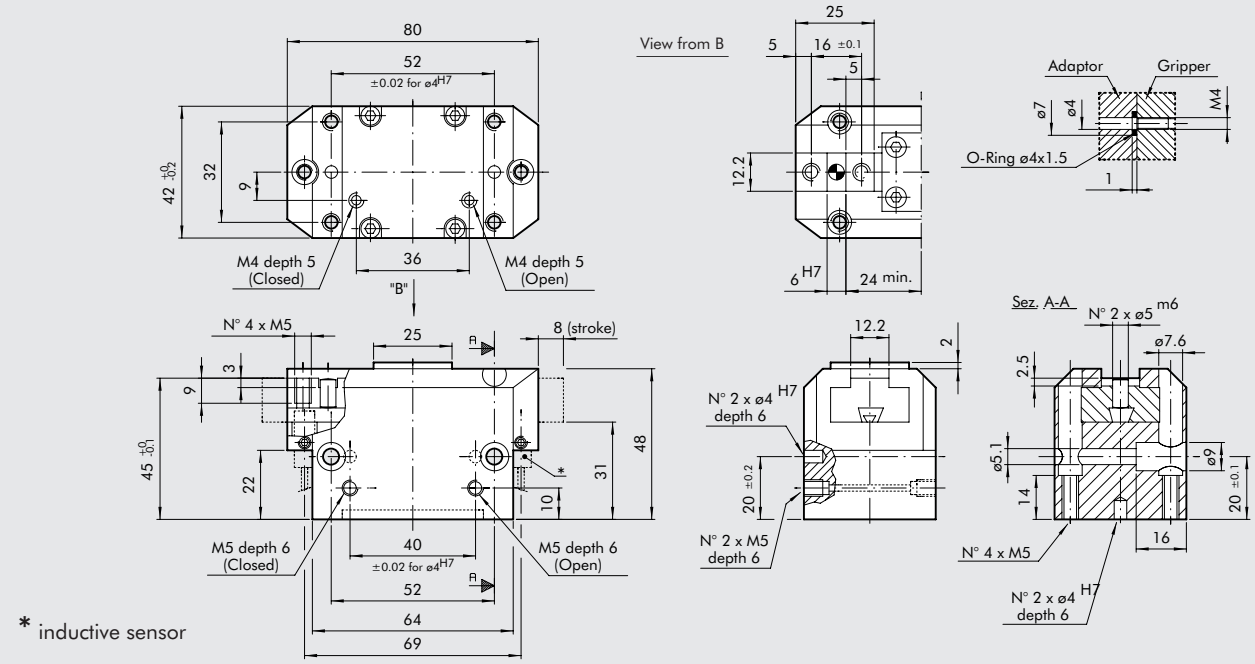


* inductive sensor

ORDERING CODES

Code	Description
W1560640200	GRIPPER WITH 2 PARALLEL JAWS P3-64

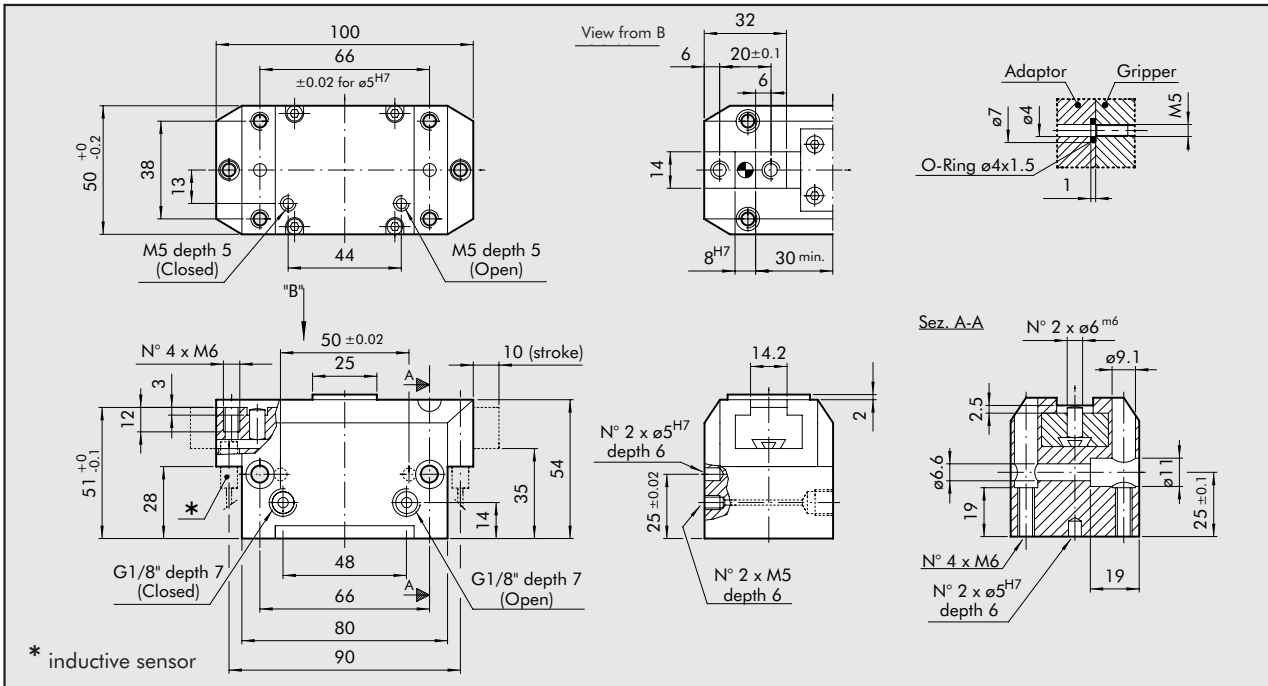
DIMENSIONS OF GRIPPERS P3-80



ORDERING CODES

Code	Description
W1560800200	GRIPPER WITH 2 PARALLEL JAWS P3-80

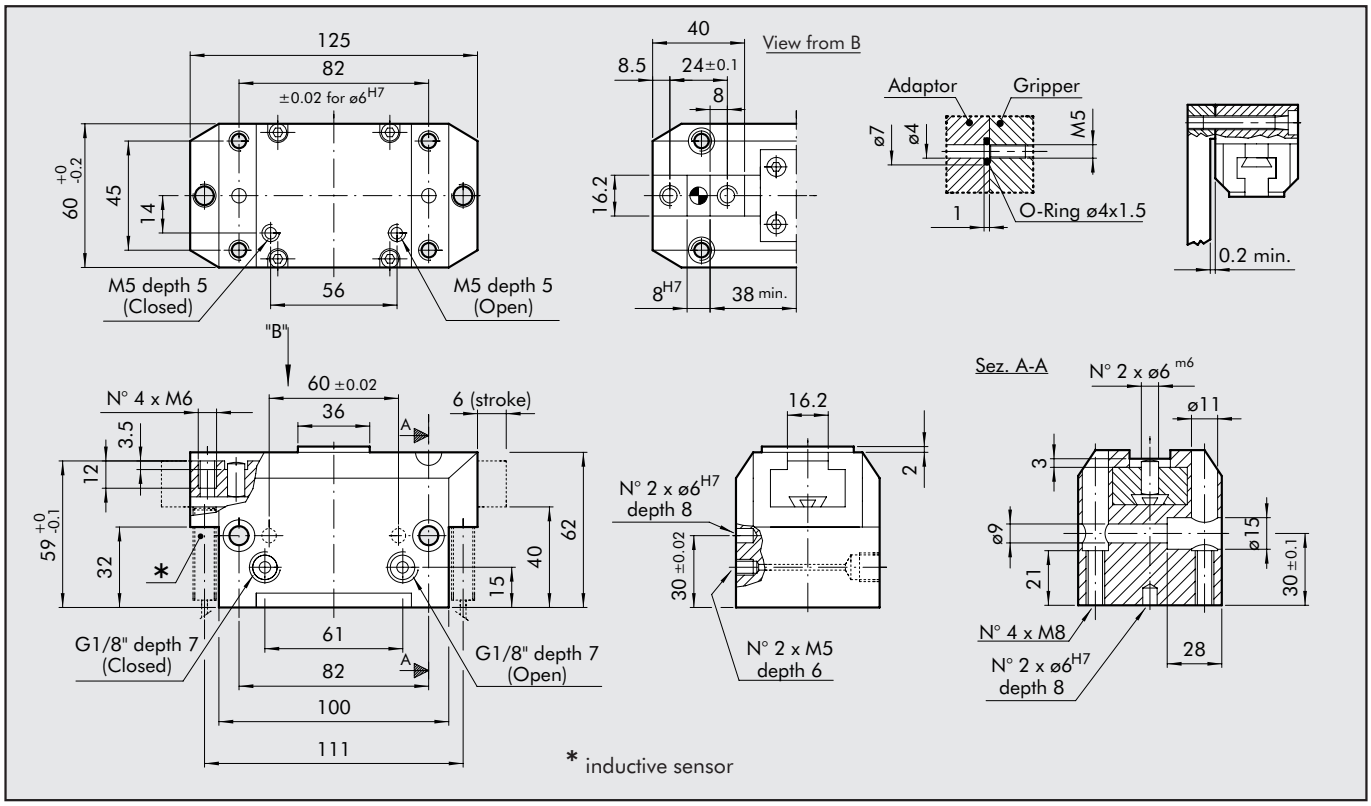
DIMENSIONS OF GRIPPERS P3-100



ORDERING CODES

Code	Description
W1561000200	GRIPPER WITH 2 PARALLEL JAWS P3-100

DIMENSIONS OF GRIPPERS P3-125

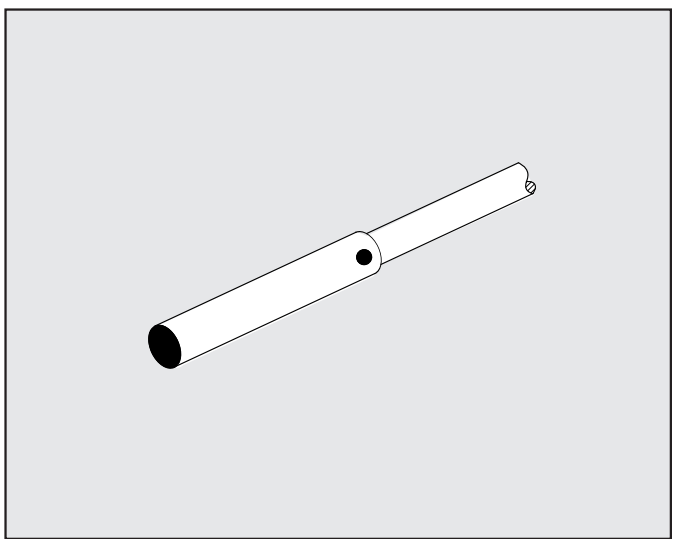


ORDERING CODES

Code	Description
W1561250200	GRIPPER WITH 2 PARALLEL JAWS P3-125

ACCESSORIES

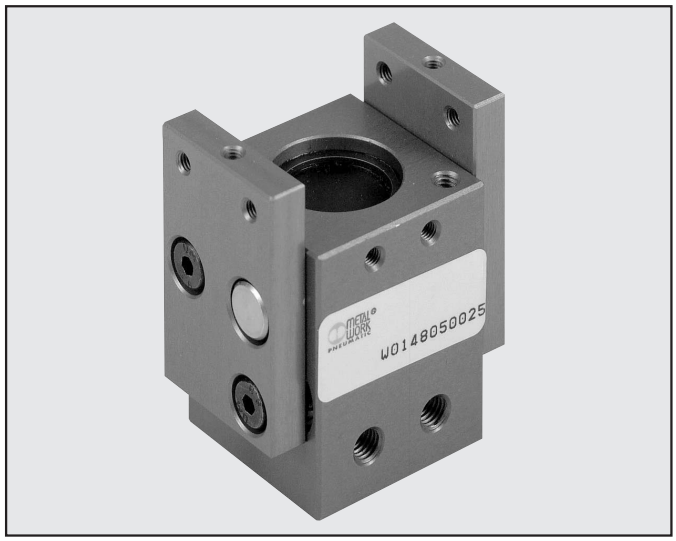
INDUCTION SENSOR FOR P3-50



Code	Description
W0950037391	INDUCTION SENSOR Ø 4 mm PNP-NO-2 m

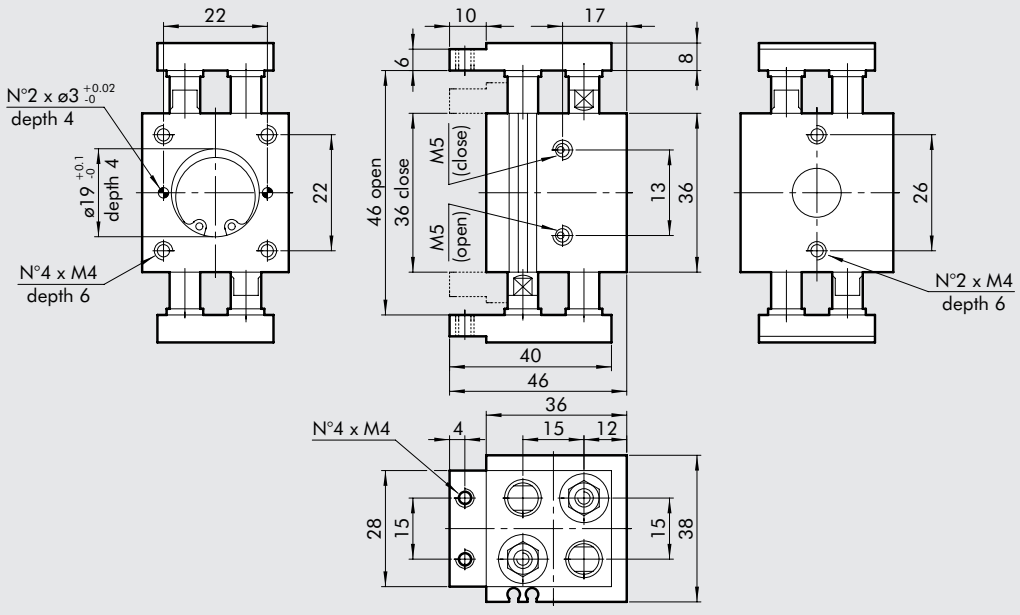
GRIPPERS WITH 2 PARALLEL LONG-STROKE JAWS – SERIES P4

These are grippers with 2 parallel long-stroke jaws. The mechanical design makes them suitable for clamping bulky parts. All grippers, except for the smallest ones, can mount a retracting magnetic proximity sensor.



TECHNICAL FEATURES		P4 - 10	P4 - 12	P4 - 16	P4 - 25	P4 - 30
Min./max. operating pressure	bar	3 - 7				
Temperature range	°C	5 - 60				
Maximum operating frequency	cycles/s	1				
Fluid		Lubricated or unlubricated filtered air; if used, it must be continuous				
Bore	mm	2x10	2x12	2x16	2x30	2x30
Single jaw stroke	mm	5	10	15	30	60
Closing force at 6 bar	N	28	41	75	260	260
Opening force at 6 bar	N	28	41	75	260	260
Weight	kg	0.18	0.3	0.5	2.95	3.7

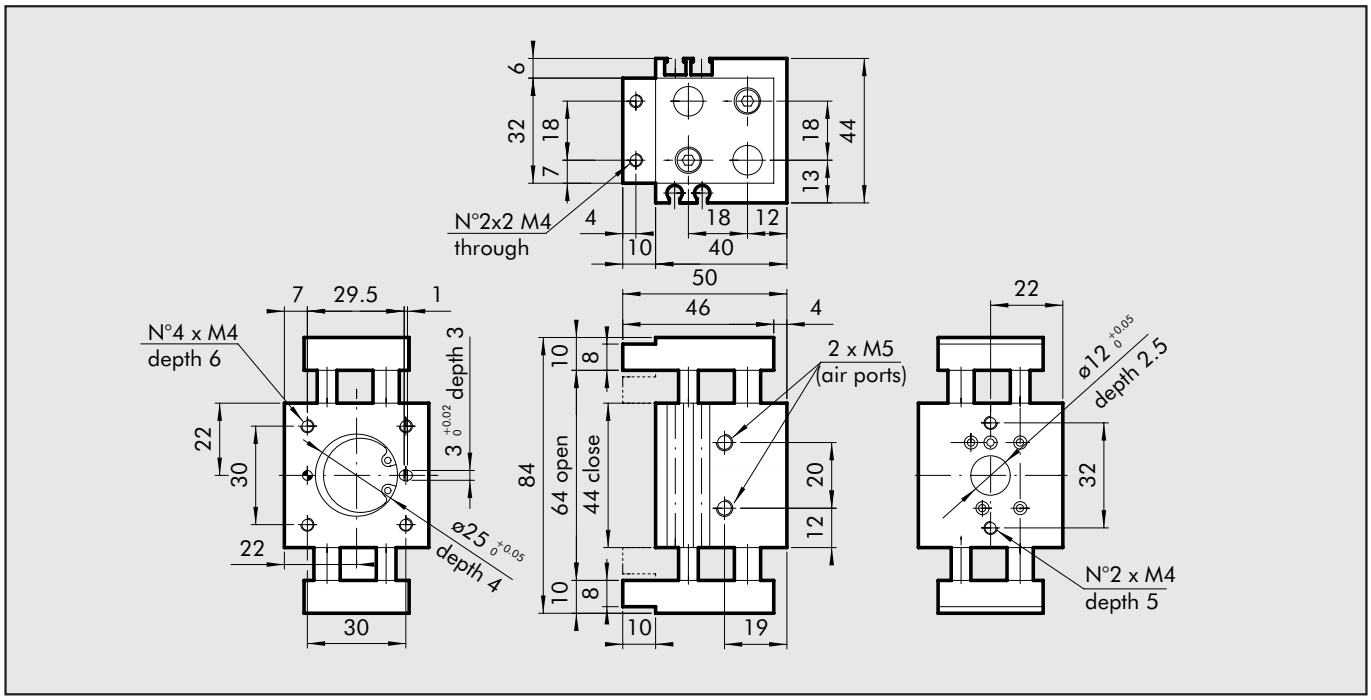
DIMENSIONS OF GRIPPER P4-10



ORDERING CODES

Code	Description
W1580100200	GRIPPER WITH 2 LONG-STROKE JAWS P4-10

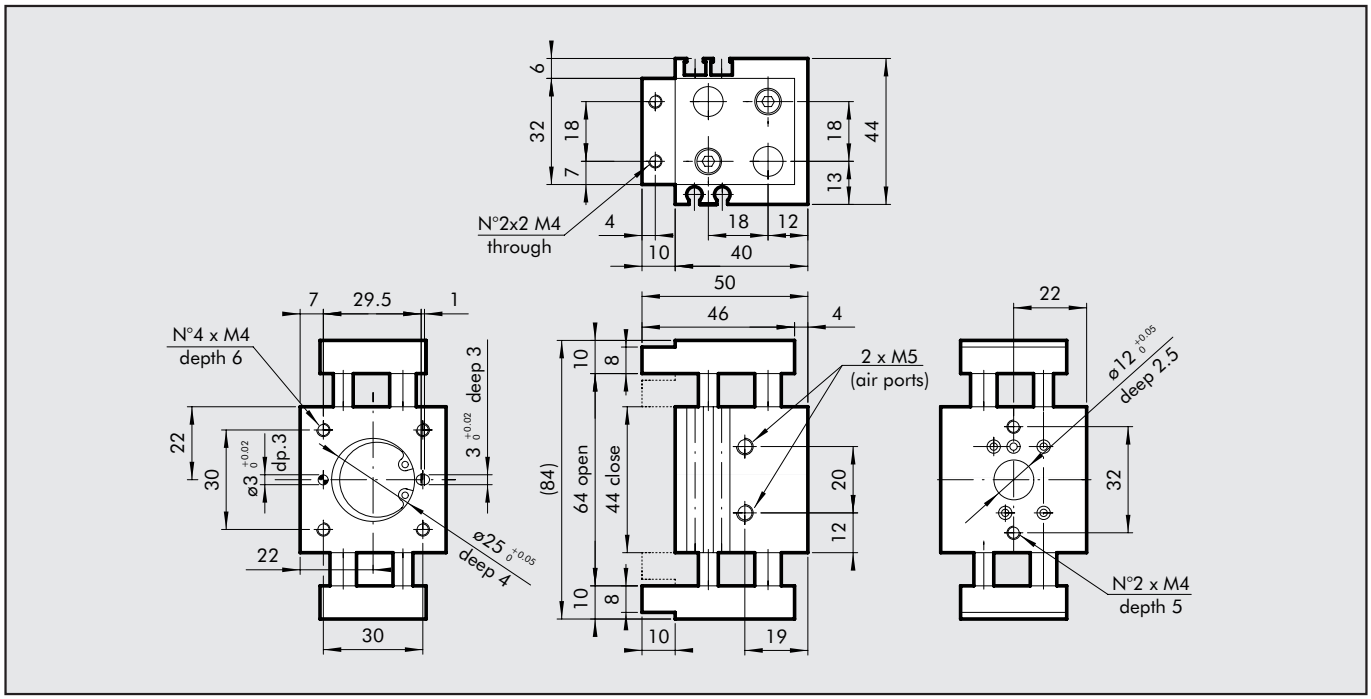
DIMENSIONS OF GRIPPER P4-12



ORDERING CODES

Code	Description
W1580120200	GRIPPER WITH 2 LONG-STROKE JAWS P4-12

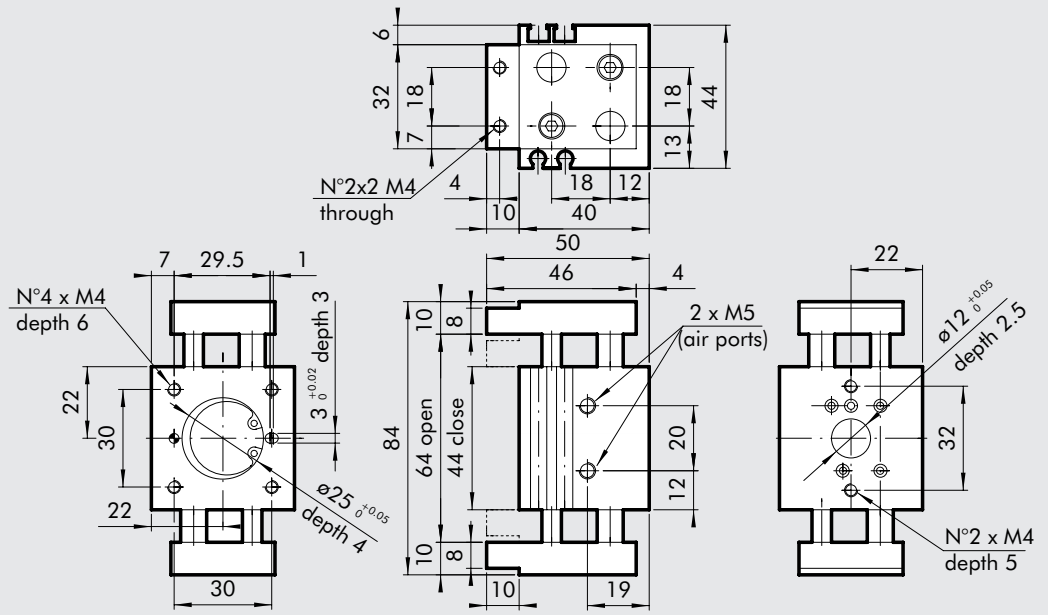
DIMENSIONS OF GRIPPER P4-16



ORDERING CODES

Code	Description
W1580160200	GRIPPER WITH 2 LONG-STROKE JAWS P4-16

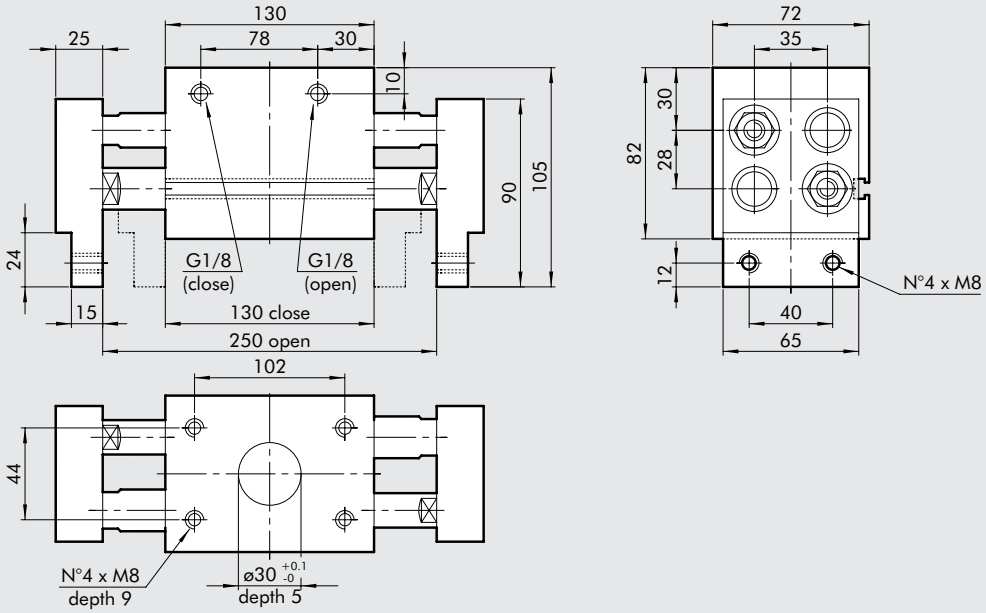
DIMENSIONS OF GRIPPER P4-25



ORDERING CODES

Code	Description
W1580250200	GRIPPER WITH 2 LONG-STROKE JAWS P4-25

DIMENSIONS OF GRIPPER P4-30

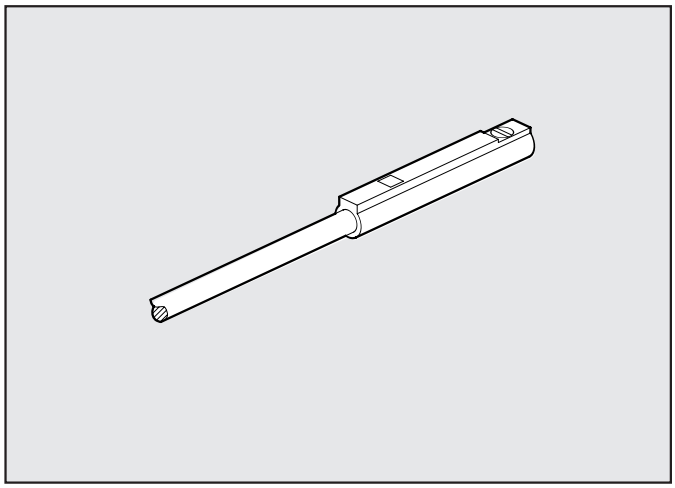


ORDERING CODES

Code	Description
W1580300200	GRIPPER WITH 2 LONG-STROKE JAWS P4-30

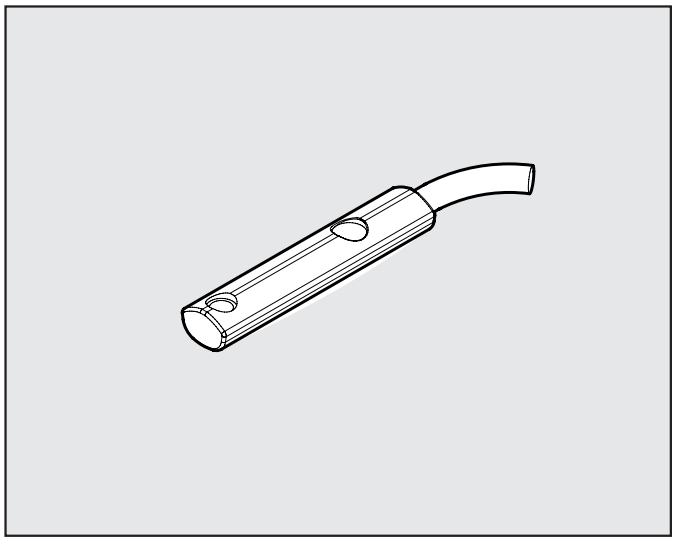
ACCESSORIES

SENSOR FOR P4-10



Code	Description
W0950044180	Magnetic REED sensor Ø 4 2 wires 24VDC 1 m

SLIM SENSOR FOR P4-12÷30



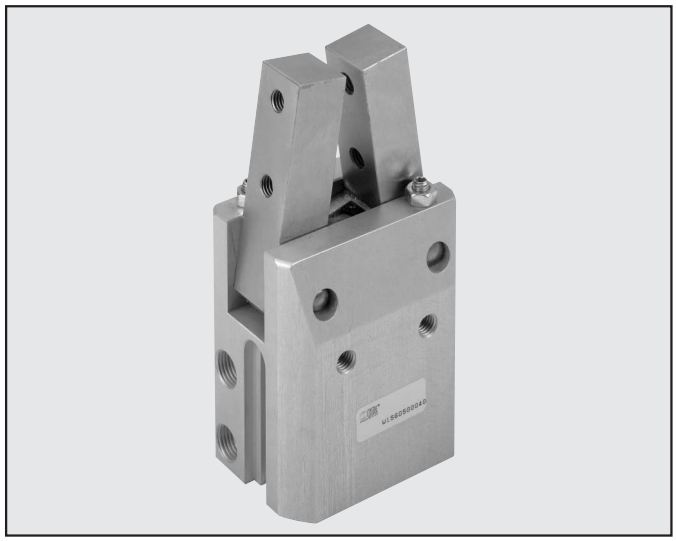
Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

N.B.: for technical features of sensor, see pag. 1.2/28

NOTES

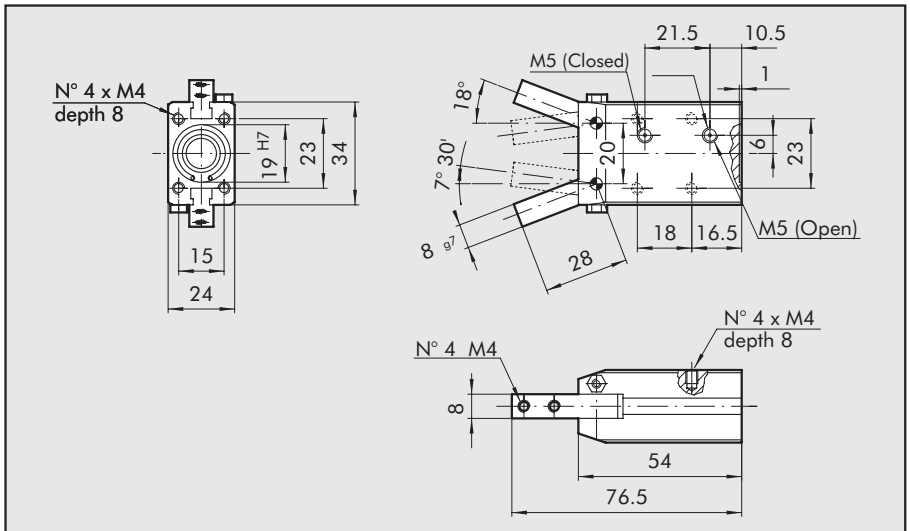
GRIPPERS WITH 2 HINGED JAWS – SERIES P7

Hinged grippers with 30° opening angle.
Bores 16, 20, 32 and 50 mm.
All grippers are magnetic with slots in the body with retracting sensors.



TECHNICAL FEATURES		P7 - 16	P7 - 20	P7 - 32	P7 - 50
Clamping force at 6 bar		30N (L*=15 mm)	55N (L*=15 mm)	105N (L*=25 mm)	225N (L*=30mm)
Weight	kg	0.12	0.19	0.5	1.6
Operating pressure	bar	1.5÷10	2÷10	2÷10	1÷10
Fluid		Lubricated or unlubricated filtered air; if used, it must be continuous.			
Temperature range		+5°C to 70°C	+5°C to 70°C	+5°C to 70°C	+5°C to 70°C
Materials		Anodized aluminium body: NBR/polyurethane seal			
		*L = length of clamping finger			

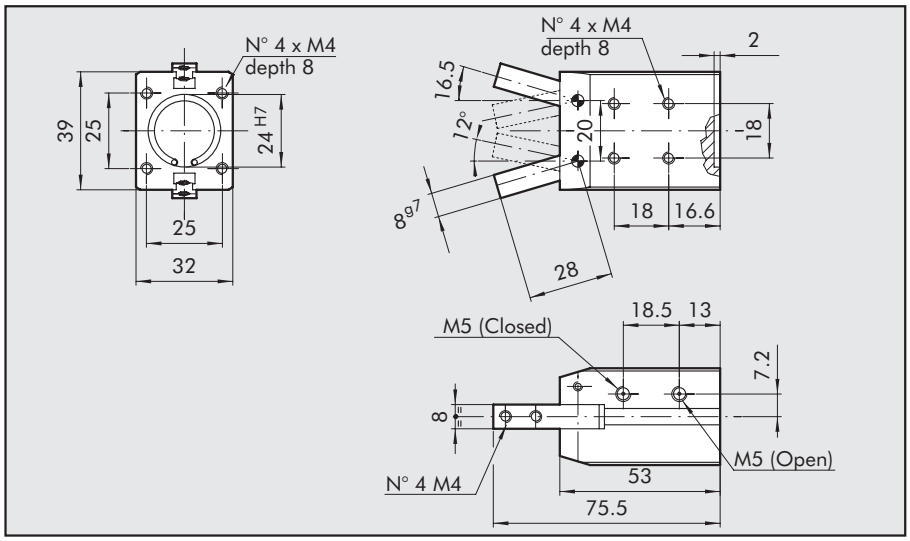
DIMENSIONS OF GRIPPERS P7-16



ORDERING CODES

Code	Description
W1590160200	GRIPPER WITH 2 HINGED JAWS P7-16

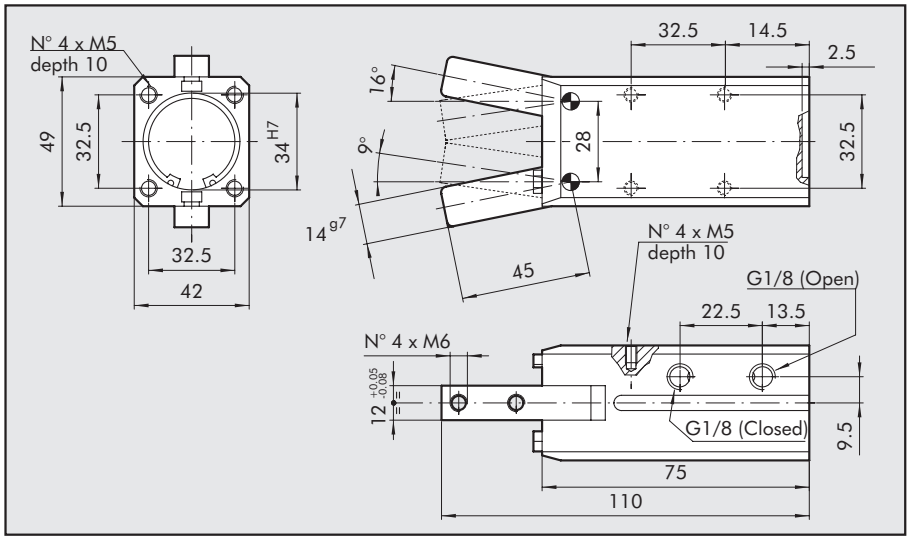
DIMENSIONS OF GRIPPERS P7-20



ORDERING CODES

Code	Description
W1590200200	GRIPPER WITH 2 HINGED JAWS P7-20

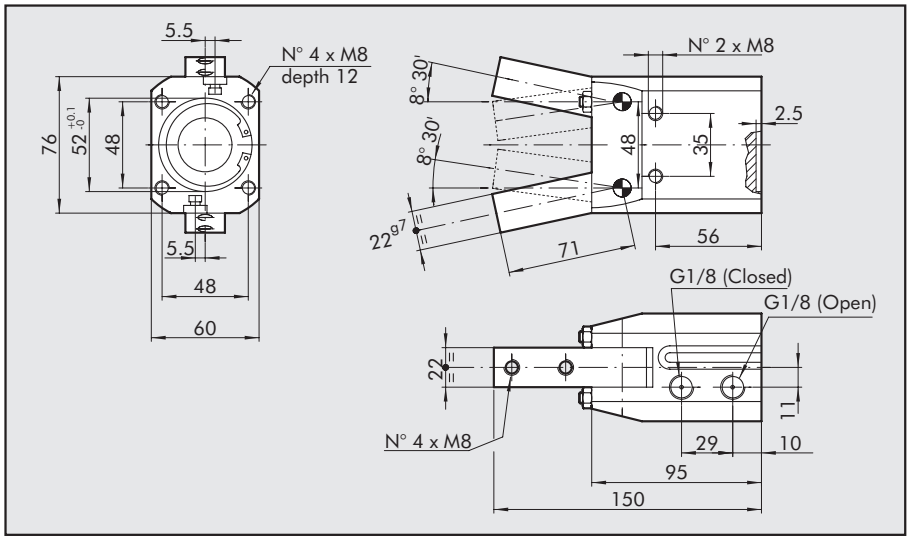
DIMENSIONS OF GRIPPERS P7-32



ORDERING CODES

Code	Description
W1590320200	GRIPPER WITH 2 HINGED JAWS P7-32

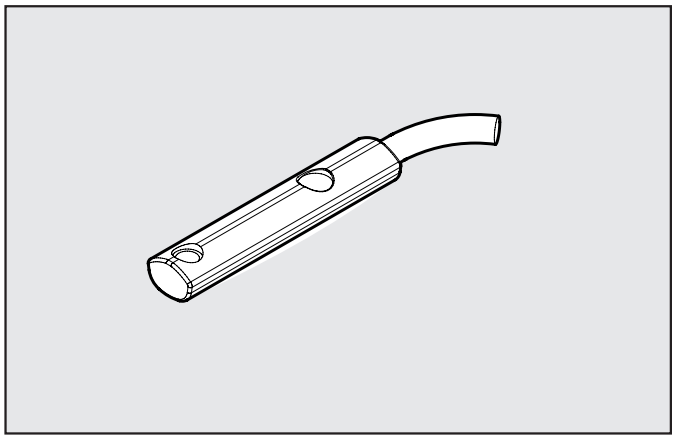
DIMENSIONS OF GRIPPERS P7-50



ORDERING CODES

Code	Description
W1590500200	GRIPPER WITH 2 HINGED JAWS P7-50

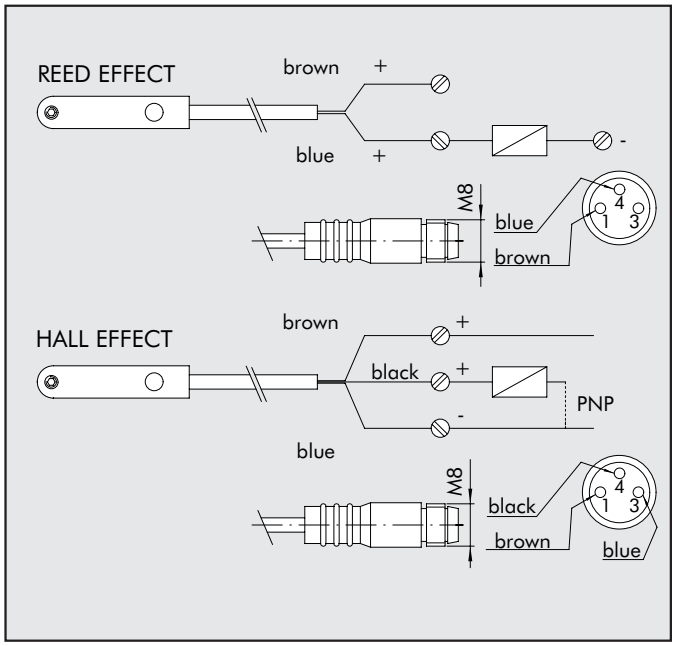
SLIM SENSOR



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

NOTE

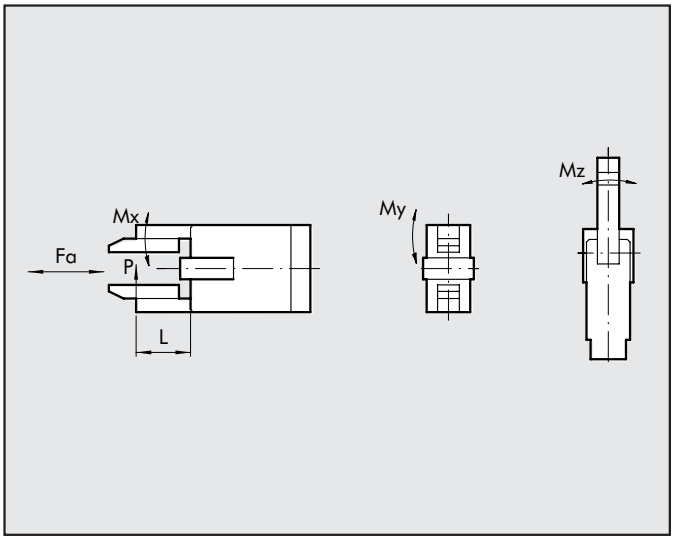
TECHNOPOLYMER HINGED GRIPPERS SERIES P8

Single-acting hinged grippers, normally open, made entirely of technopolymer. Three sizes with clamping force 25-80 N at 6 bar.
This solution makes the entire system lighter.
This gripper is corrosion-resistant and antimagnetic. It comes complete with spring-loaded bracket for pre-loading the piece (force 1.5-6 N) and sensor holders.



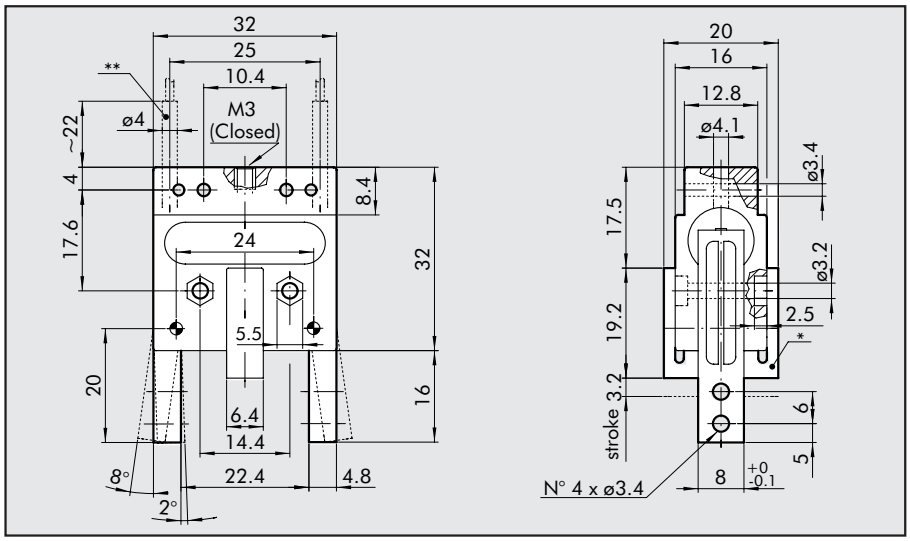
TECHNICAL FEATURES		P8 - 32	P8 - 40	P8 - 50
Pressure range	bar		4 to 7	
Temperature range	°C		5°C to 60°C	
Fluid			20µm dried or lubricated filtered air	
Life			over 2 million cycles	
Jaw opening angle		8°	8°	8°
Clamping force per jaw at 6 bar	N	22.5	48	80
Applicable weight (recommended)	kg	0.2	0.4	0.8
Air consumption per cycle	cm^3	0.5	1	1.8
Opening time	sec	0.04	0.05	0.05
Closing time	sec	0.06	0.08	0.08
Weight of grippers	g	36	45	60
Moment of inertia	kg cm^2	0.04	0.12	0.15
Repeatability	mm	0.1	0.1	0.1

TABLE OF MOMENTS



Gripper	FA (N)	Mx (Ncm)	My (Ncm)	Mz (Ncm)	P (N)
P8 - 32	3	9	10	10	22.5
P8 - 40	5	23	20	20	47.5
P8 - 50	8	49	30	40	80

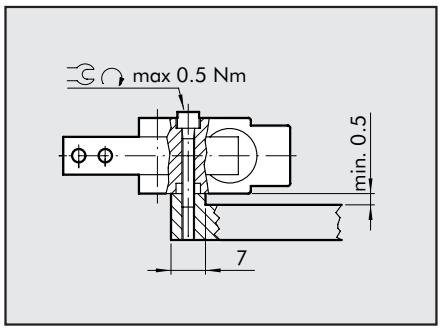
DIMENSIONS OF GRIPPERS P8-32



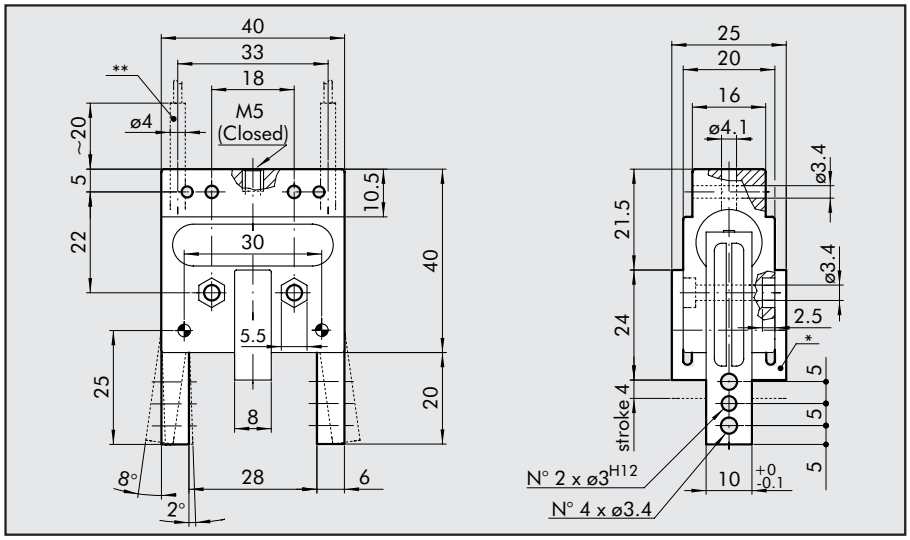
ORDERING CODES

Code	Description
W0710010002	TECNOPOLIMER HINGED GRIPPERS P8-32

* Removable part clamping system
** Induction sensor



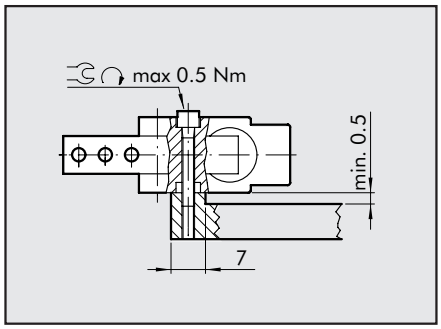
DIMENSIONS OF GRIPPERS P8-40



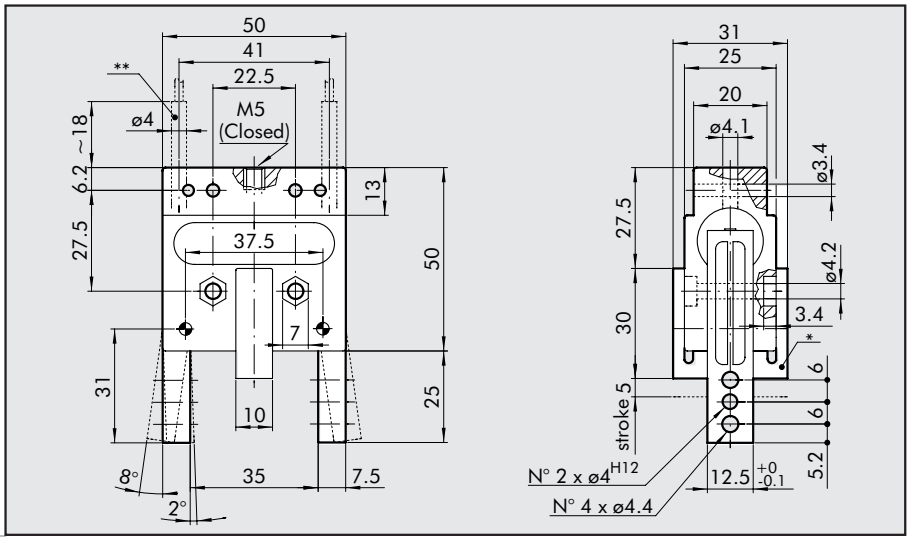
ORDERING CODES

Code	Description
W0710010003	TECNOPOLIMER HINGED GRIPPERS P8-40

* Removable part clamping system
** Induction sensor



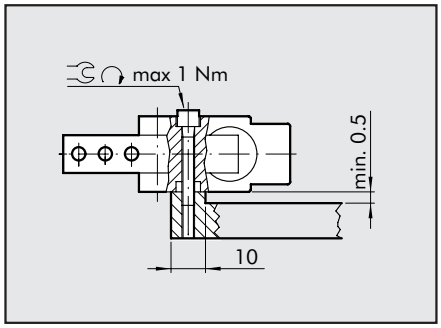
DIMENSIONS OF GRIPPERS P8-50



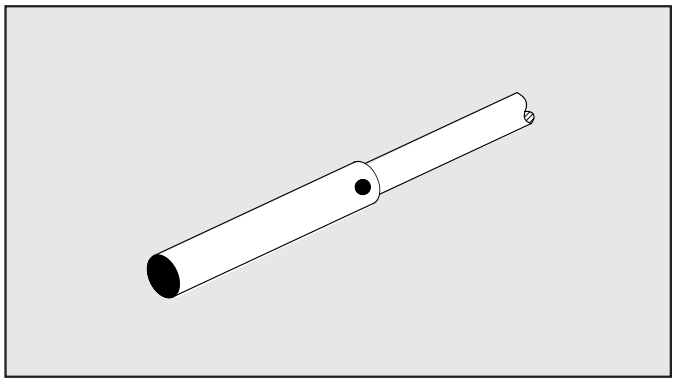
ORDERING CODES

Code	Descrizione
W0710010004	TECNOPOLIMER HINGED GRIPPERS P8-50

* Removable part clamping system
** Induction sensor



INDUCTION SENSOR



ORDERING CODES

Code	Description
W0950037391	INDUCTION SENSOR Ø 4 mm PNP-NO-2 m

NOTES

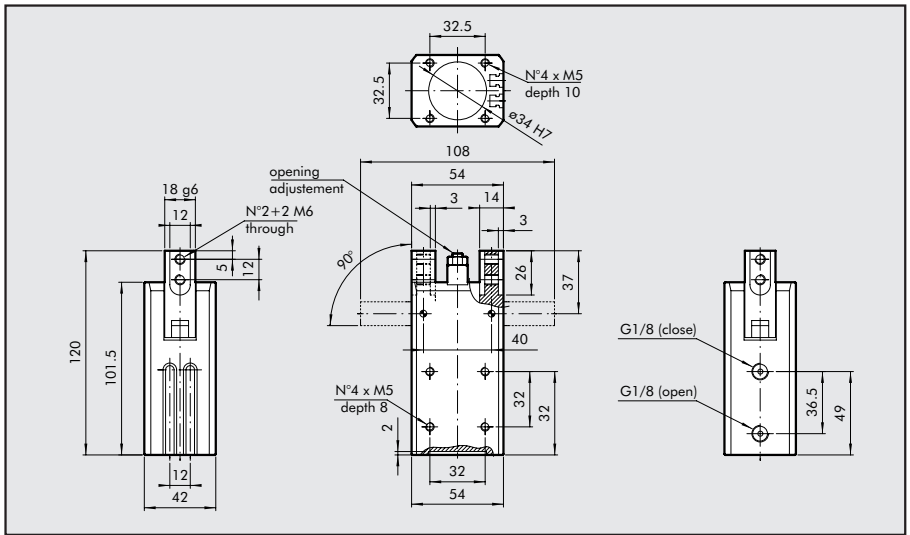
GRIPPER 180° WITH 2 HINGED JAWS SERIES P9

- Toggle-type pivoted grippers, with adjustable opening angle.
- High clamping forces.
- Body made of hard anodized aluminium, jaws and moving parts made of tempered steel.
- Bottom or side fixing.
- All sizes come with magnets and sensor slots.



TECHNICAL DATA		P9-32	P9-40
Gaskets		NBR, POLYURETHANE	
Operating pressure		2-8 bar (0.2 - 0.8 Mpa)	
Temperature range	°C	5÷70	
Fluid		Filter lubricated or lubricated air. Lubrication, if used, must be continuous.	
Bores	mm	32 - 40	
Jaw opening angle		Adjustable 180°	
Clamping force (at 6 bar), 20 mm from the jaw pivot	N	180	300
Weight	Kg	0.85	1.5

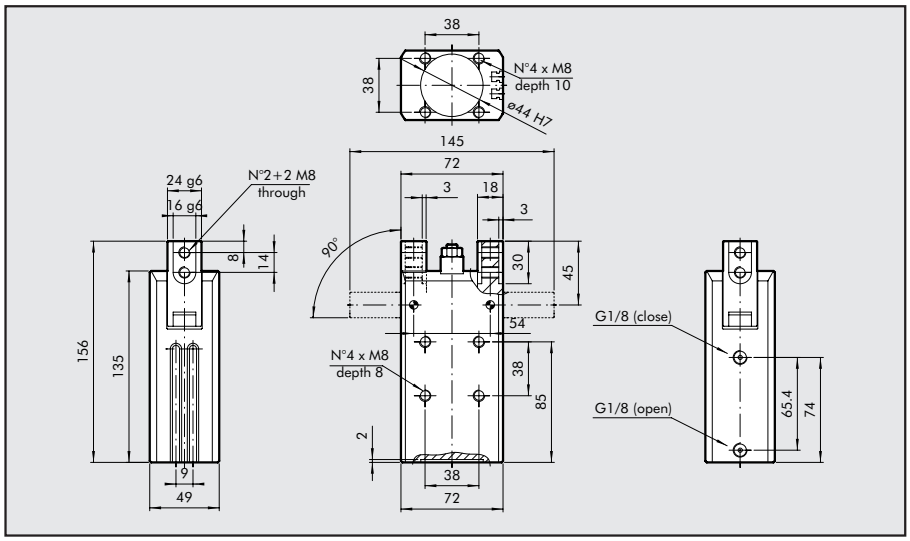
DIMENSIONS OF GRIPPERS P9-32



ORDERING CODES

Code	Description
W1530320180	HINGED GRIPPER P9-32

DIMENSIONS OF GRIPPERS P9-40

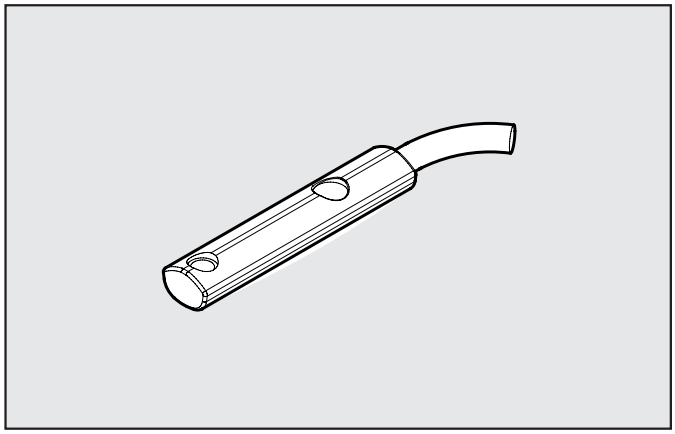


ORDERING CODES

Code	Description
W1530400180	HINGED GRIPPER P9-40

ACCESSORIES: MAGNETIC SENSORS

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



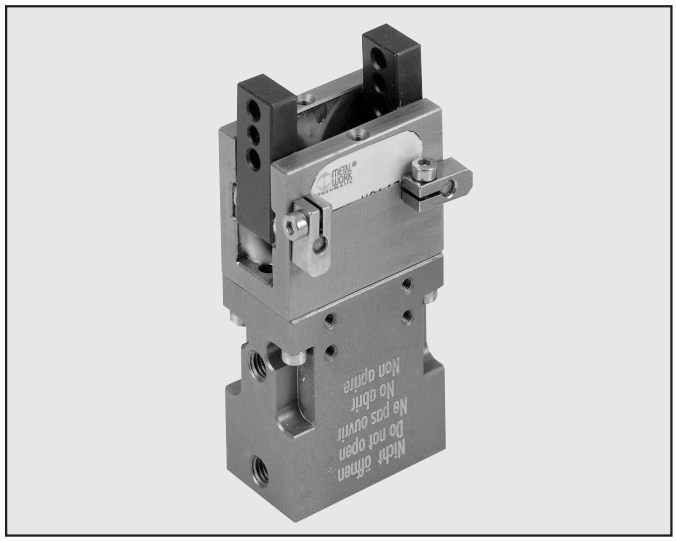
Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

See page 1.1/97 for wiring diagram.

NOTES

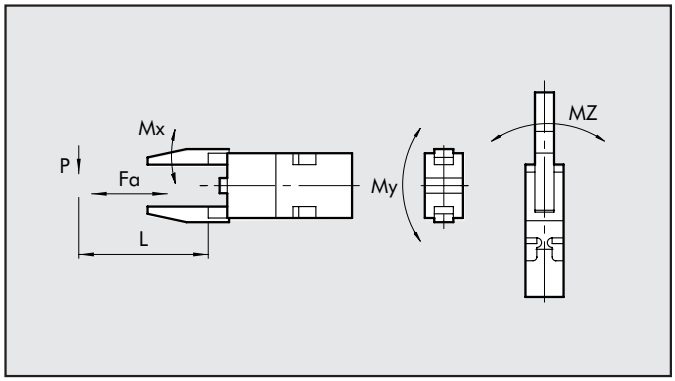
TOGGLE GRIPPERS SERIES P10

Toggle-type hinged grippers for gripping from outside with 20°-180° adjustable opening angle. One-degree adjustment for each jaw. The toggle system allows high clamping forces.
The body of the gripper is made of hardened aluminium, the moving parts of hardened and tempered steel. The body is designed to mount induction sensors.
The supply includes sensor holders, centring pins and O-rings for direct connection.



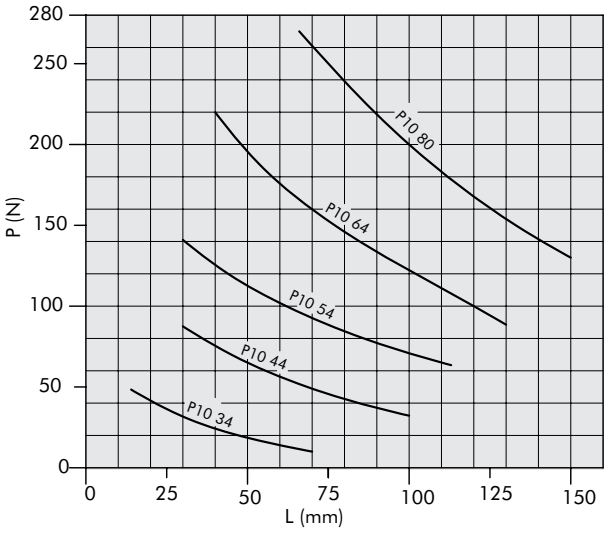
TECHNICAL FEATURES		P10 - 34	P10 - 44	P10 - 54	P10 - 80
Pressure range	bar	4.5 to 6.5			
Temperature range	°C	5°C to 60°C			
Fluid		20µm dried or lubricated filtered air; if used, it must be continuos			
Life without maintenance		over 2 million cycles			
Jaw opening angle		20° -180° adjustable			
Clamping force per jaw at 6 bar	N	32 (L=11 mm)	90 (L=15 mm)	145 (L=17 mm)	275 (L=45 mm)
Clamping force of spring alone	N	14	40	55	115
Applicable weight (recommended)	Kg	0.3	0.9	1.4	2.7
Air consumption per cycle	cm^3	4.5	16	36	110
Opening time	sec	0.4	0.5	0.7	0.8
Closing time	sec	0.3	0.4	0.6	0.7
Closing time with spring only	N	0.35	0.45	0.6	0.7
Weight of grippers	Kg	0.14	0.34	0.56	1.6
Moment of inertia	Kg cm^2	0.2	0.8	2	12
Repeatability	mm	0.1	0.1	0.1	0.1
Maximum finger length	mm	75	100	115	150

TABLE OF FORCES AND MOMENTS

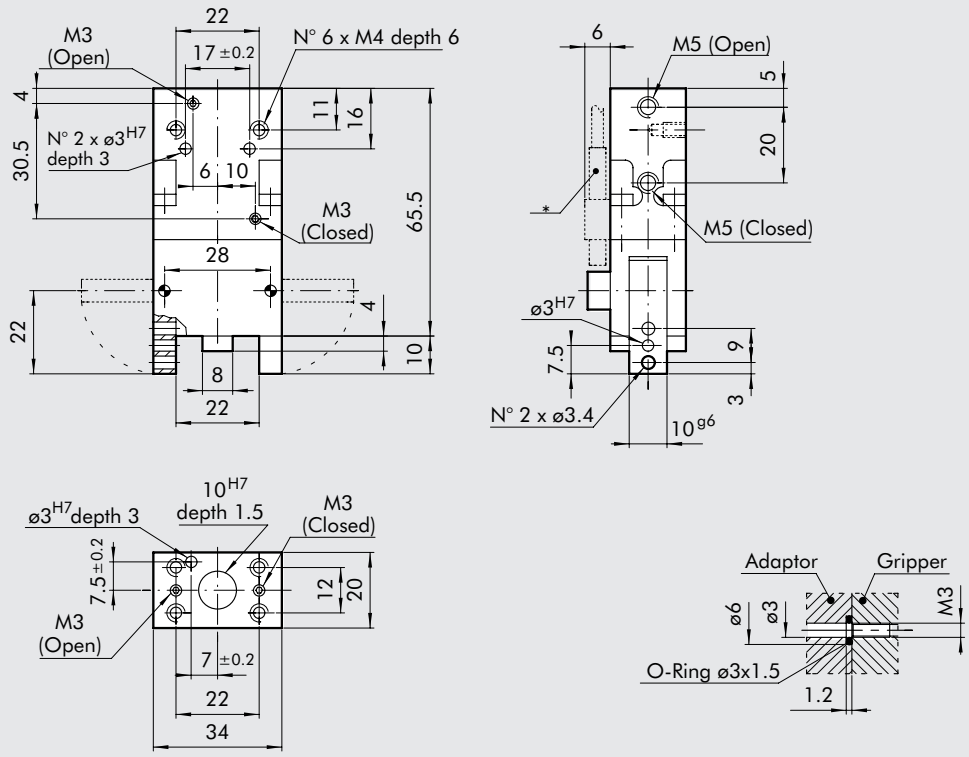


Gripper	FA (N)	Mx (Nm)	My (Nm)	Mz (Nm)	L (mm)	PN
P10 - 34	50	0.7	0.3	3.9	11	32
P10 - 44	100	2.7	0.5	6.2	15	90
P10 - 54	180	4.9	1	10	17	145
P10 - 80	400	24.8	1.6	17.5	45	225

CLAMPING FORCE ACCORDING TO FINGER LENGTH



DIMENSIONS OF GRIPPERS P10-34

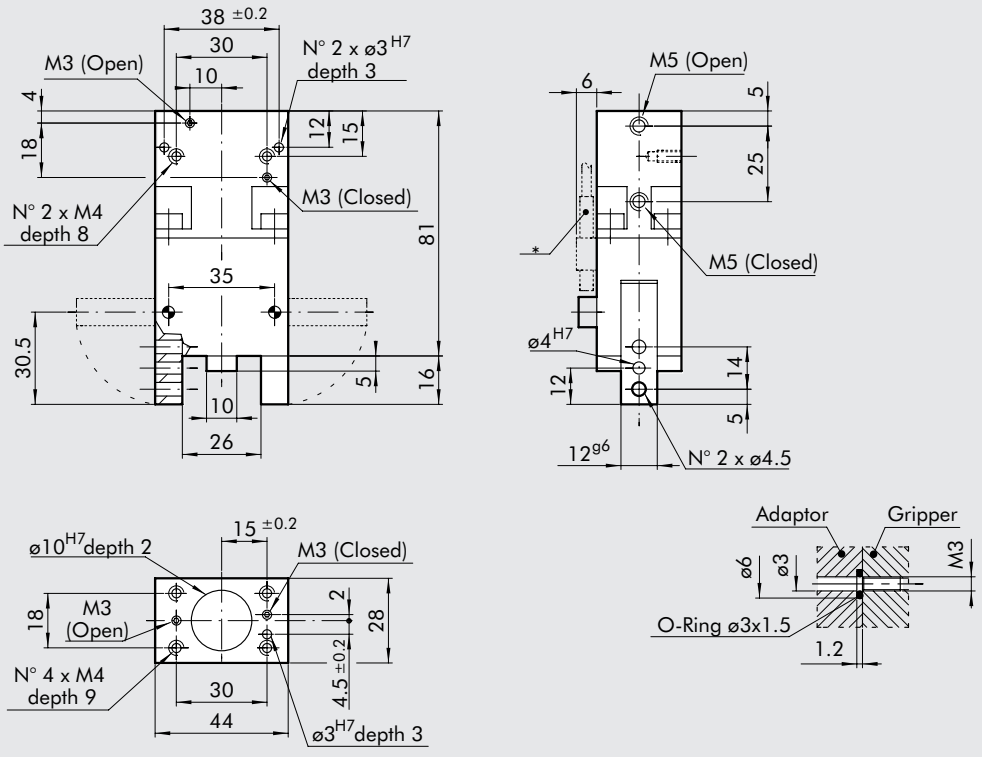


*INDUCTION SENSOR

ORDERING CODES

Code	Description
W1590340201	TOGGLE GRIPPERS P10-34

DIMENSIONS OF GRIPPERS P10-44

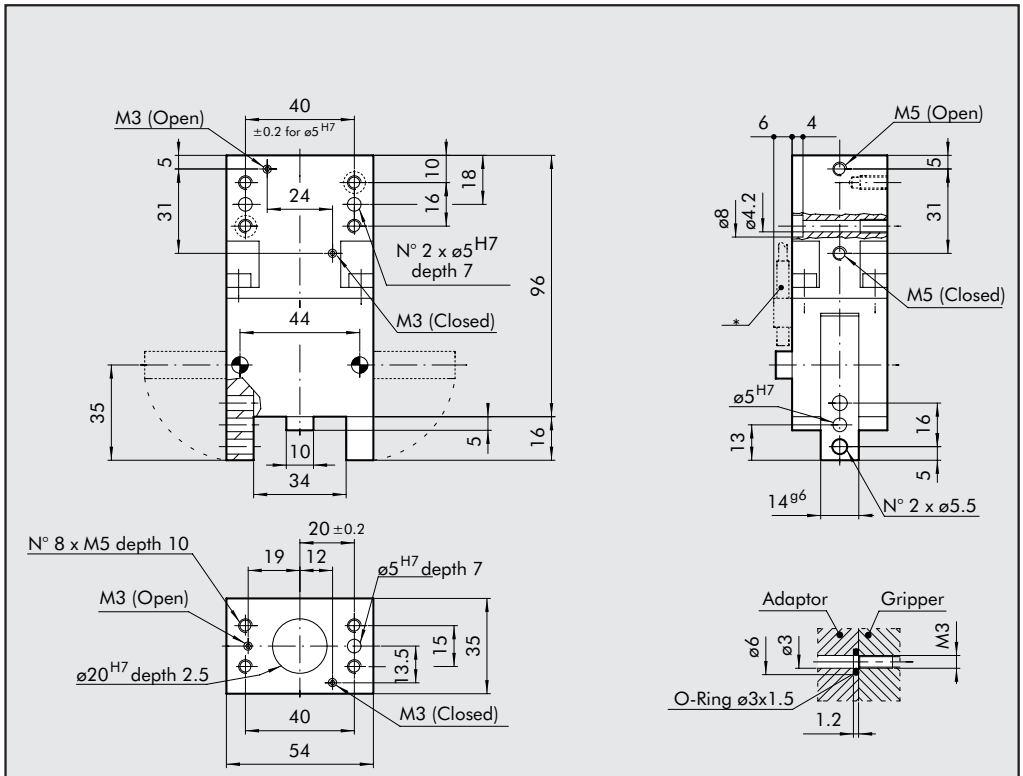


*INDUCTION SENSOR

ORDERING CODES

Code	Description
W1590440201	TOGGLE GRIPPERS P10-44

DIMENSIONS OF GRIPPERS P10-54

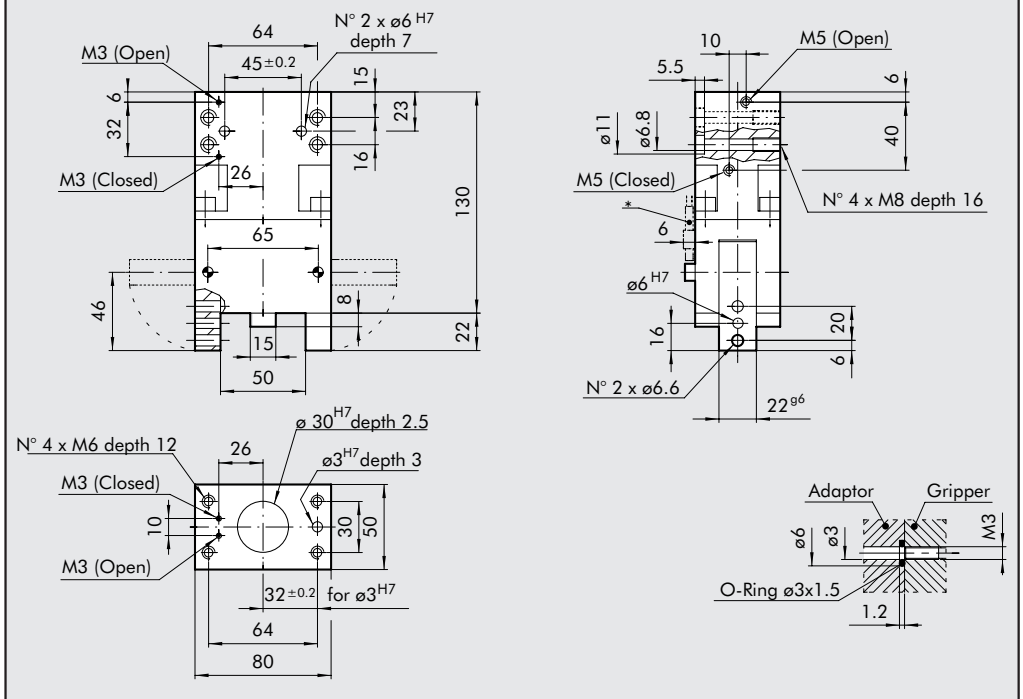


*INDUCTION SENSOR

ORDERING CODES

Code	Description
W1590540201	TOGGLE GRIPPERS P10-54

DIMENSIONS OF GRIPPERS P10-80

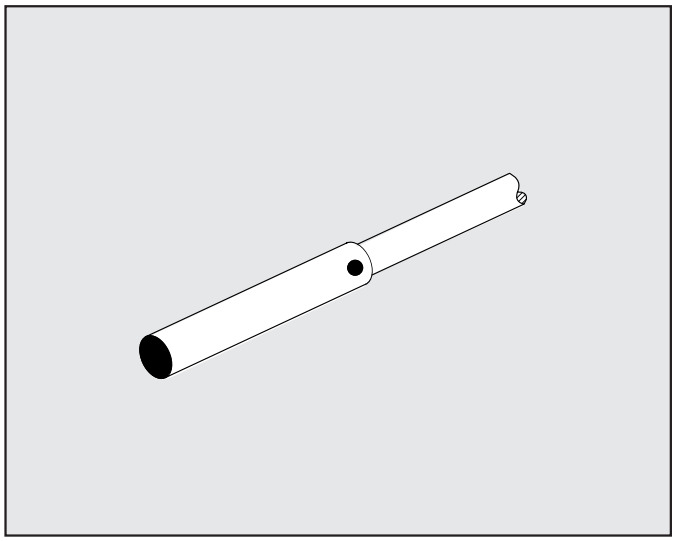


*INDUCTION SENSOR

ORDERING CODES

Code	Description
W1590800201	TOGGLE GRIPPERS P10-80

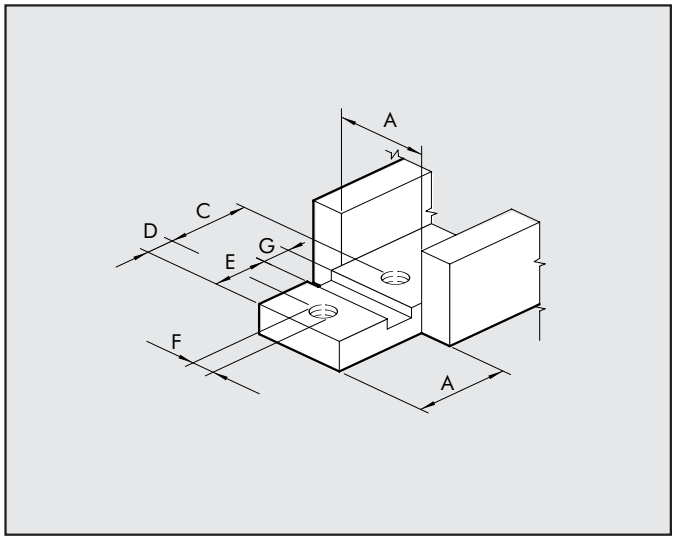
INDUCTION SENSOR



ORDERING CODES

Code	Description
W0950037391	INDUCTION SENSOR Ø 4 mm PNP-NO-2 m

DIMENSIONS OF CLAMPING FINGER SLOT

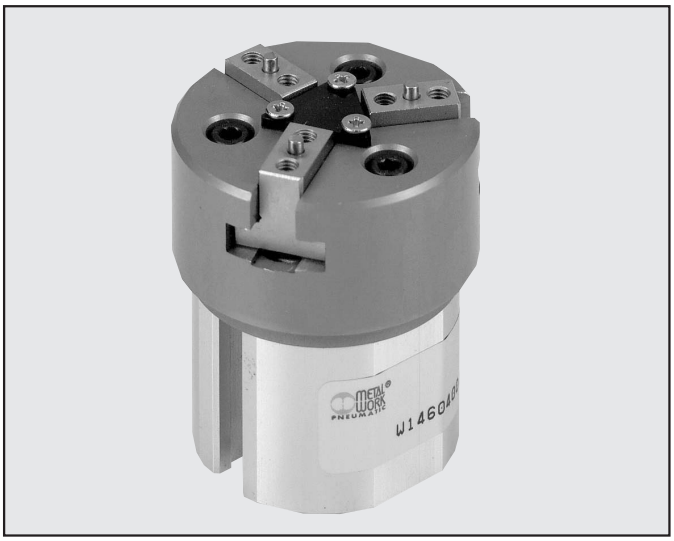


Gripper	A	B^{H7}	C	D	E	F	G^{H7}
P10 - 34	10	10	9	3	6	M3	3
P10 - 44	14	12	14	4	9	M4	4
P10 - 54	17	14	16	5	10.5	M5	5
P10 - 80	20	22	20	6	13	M6	6

NOTES

GRIPPERS WITH 3 PARALLEL JAWS – SERIES P11

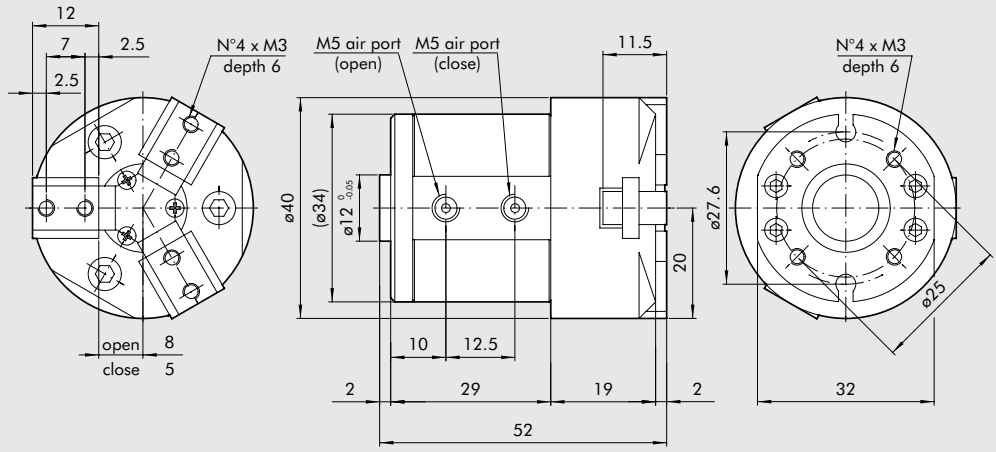
Double-acting grippers with three self-centring jaws, internal and external clamping. The body contains slots for mounting retracting magnetic sensors.



TECHNICAL FEATURES		P11 - 16	P11 - 20	P11 - 25	P11 - 40	P11 - 60	P11 - 80
Min./max. operating pressure	bar	1.5÷7					
Temperature range	°C	5÷60					
Fluid		20µm dried and lubricated filtered air. Lubrication, if used, must be continuous.					
Bore	mm	16	20	25	40	60	80
Single jaw stroke	mm	3	4	5	8	12.5	15
Closing force at 6 bar	N	58	90	150	390	880	1500
Opening force at 6 bar	N	65	108	170	450	1000	1700
Weight	kg	0.12	0.21	0.3	1.2	2.7	4.5
Maximum operating frequency	cycles/s	1.5	1.5	1.5	1.2	1.2	1.2

NOTES

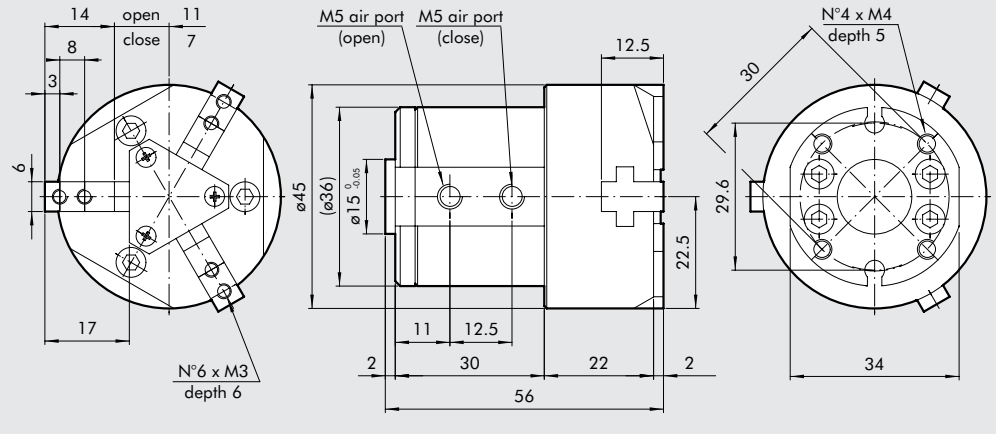
DIMENSIONS OF GRIPPER P11-16



ORDERING CODES

Code	Description
W1570160300	GRIPPERS WITH 3 PARALLEL JAWS P11-16

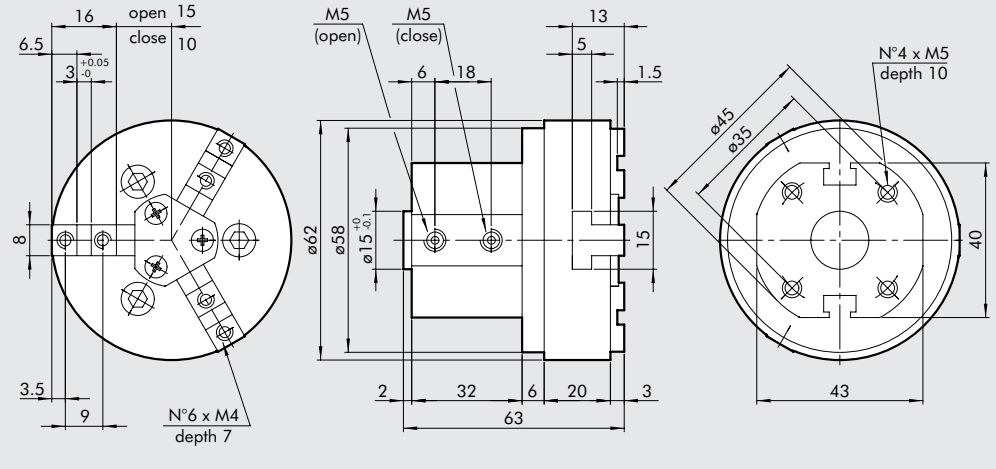
DIMENSIONS OF GRIPPER P11-20



ORDERING CODES

Code	Description
W1570200300	GRIPPERS WITH 3 PARALLEL JAWS P11-20

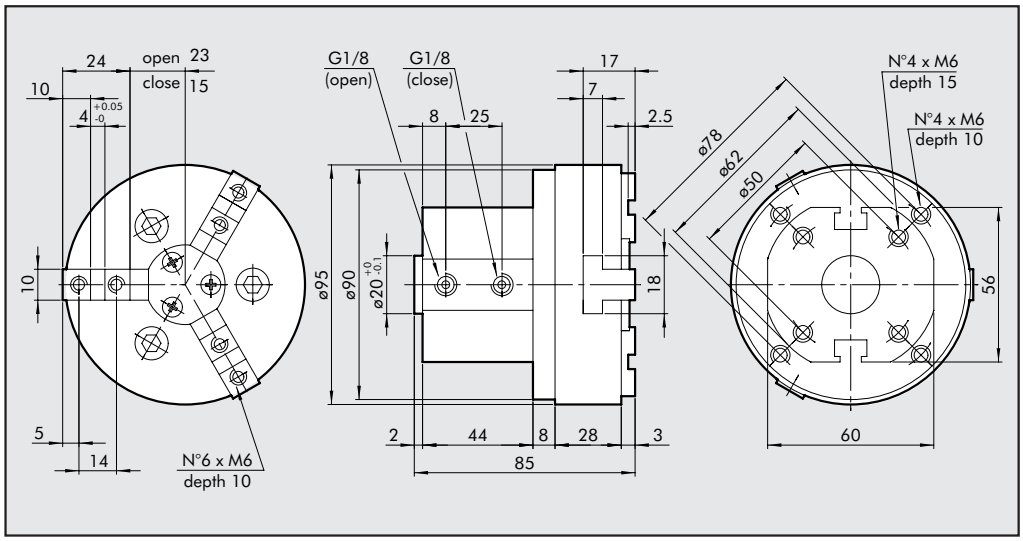
DIMENSIONS OF GRIPPER P11-25



ORDERING CODES

Code	Description
W1570250300	GRIPPERS WITH 3 PARALLEL JAWS P11-25

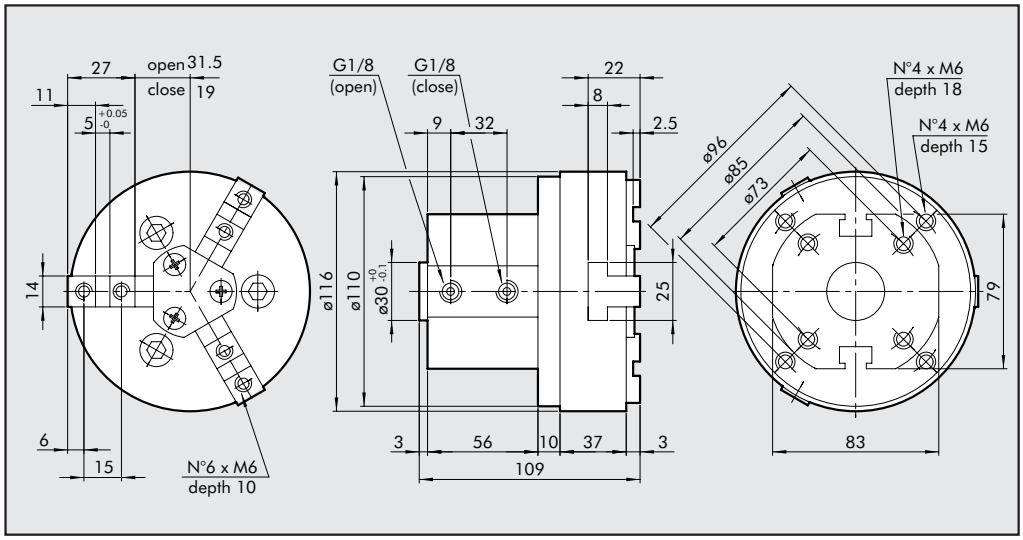
DIMENSIONS OF GRIPPER P11-40



ORDERING CODES

Code	Description
W1570400300	GRIPPERS WITH
	3 PARALLEL
	JAWS P11-40

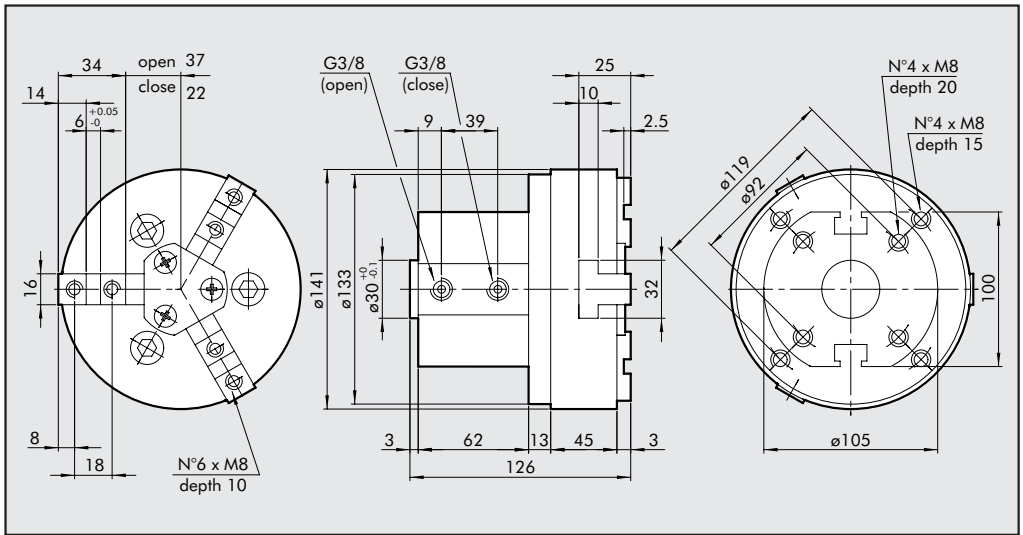
DIMENSIONS OF GRIPPER P11-60



ORDERING CODES

Code	Description
W1570600300	GRIPPERS WITH
	3 PARALLEL
	JAWS P11-60

DIMENSIONS OF GRIPPER P11-80

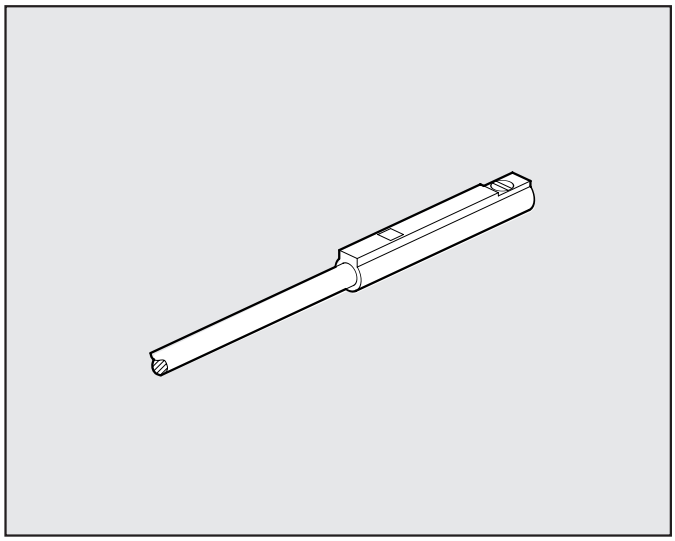


ORDERING CODES

Code	Description
W1570800300	GRIPPERS WITH
	3 PARALLEL
	JAWS P11-80

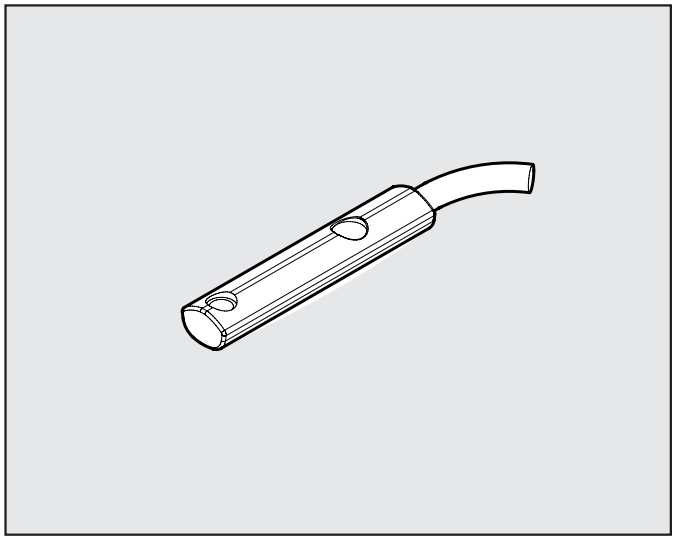
ACCESSORIES

SENSOR FOR P11-16÷20



Code	Description
W0950044180	Magnetic REED sensor Ø 4 2 wires 24VDC 1 m

SLIM SENSOR FOR P11-25÷80



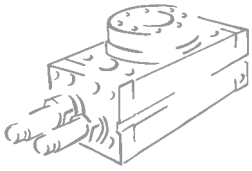
Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

N.B.: for technical features of sensor, see pag. 1.2/28

NOTES

TABLE OF CONTENTS
ROTARY ACTUATORS

CHAPTER 1.3



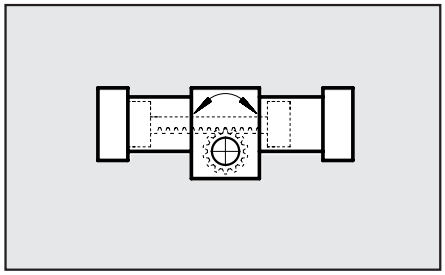
	INTRODUCTION	PAGE 1.3/02
	ROTARY ACTUATORS SERIES R1	PAGE 1.3/06
	ROTARY ACTUATORS SERIES R2	PAGE 1.3/09
	ROTARY ACTUATORS SERIES R3	PAGE 1.3/13
	ROTARY ACTUATORS SERIES R3 WITH EXTERNAL SHOCK ABSORBERS	PAGE 1.3/18

ROTARY ACTUATORS

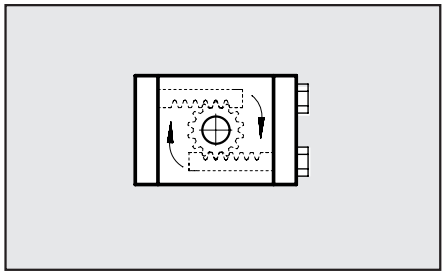
TYPES

Rotary actuators come in the following types in terms of position:
- two positions, fixed or adjustable
- three positions, fixed or adjustable

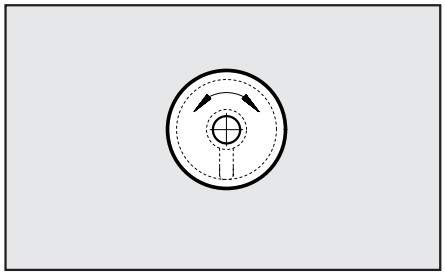
Rotation is alternating in all the types shown in this catalogue. There also exist rotary actuators that always rotate in the same direction, with 4, 6, or more positions.



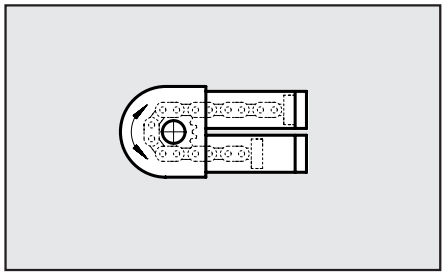
Rotary actuator with single rack
A pinion is keyed onto the rotating part and is rotated by means of a rack. The rack is driven by two pneumatic pistons, one on either side.
As there is no play take-up system, it is not suitable for applications requiring accurate positioning. But there is a version with outer adjustable mechanical stops that stop the rotating part and also take up play.



Rotary actuator with double rack
The pinion keyed onto the rotating element is turned by two opposing racks, each driven by a pneumatic piston. The system has automatic play take-up, which means it is suitable for applications requiring accurate positioning. The parallelepiped shape of the design makes them ideal for use on mechanical arms.



Blade-type rotary actuator
The rotating element is connected to one or two blades inside a cylindrical chamber. The air pressure on one of the sides of the blade rotates the element. These are compact, cylindrical actuators designed for manipulation where particularly accuracy and high loads are not required.

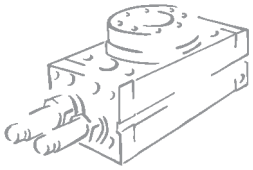


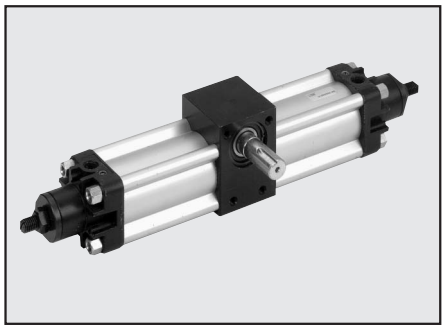
Chain-type rotary actuator
A chain that is stretched at either end by a pneumatic piston winds round and rotates a pinion. This type of actuator is not included in our catalogue.

NOTES

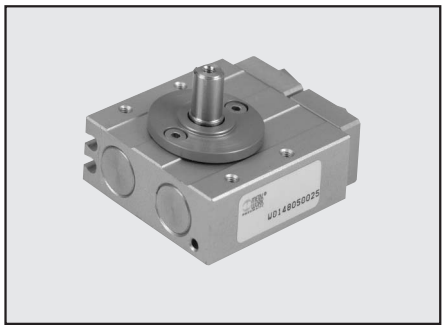
The use of hydraulic decelerators means it is possible to increase absorbed power. Some models in the catalogue have built-in decelerators. For those without, the user can mount decelerators outside the actuator.

With horizontal axis rotation, if the masses are distributed asymmetrically it may be difficult to keep a constant rotation speed using flow regulators only. In this case it is advisable to use a decelerator.

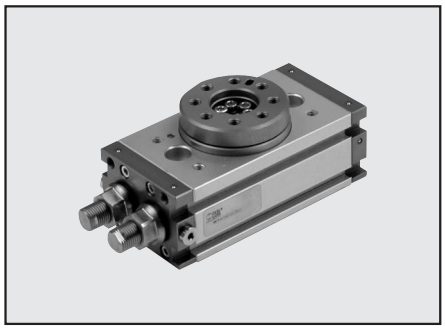




Series R1
These are rotary actuators with a single rack driven by cylinders inside extruded jackets similar to ISO 6431 cylinders. The range includes thrust cylinders with 32 - 100 mm bore.
There is a fixed stroke version and one with a mechanically adjustable stroke.
Strokes available: 90°, 180°, 270° and 360°.
Magnets for standard sensors.
The rotating part ends in a shaft or a hole with a spanner slot. This type feature a plain yet sturdy construction and is relatively inexpensive.



Series R2
These are actuators with a double rack and play take-up, and have a shaft with a spanner slot.
Strokes 90° and 180°. Stroke adjustment using screws. Pneumatic end-of-stroke cushioning.
Magnets for position sensors.
Compact and inexpensive. The smallest size measures a mere 46 x 65 x 28 mm.



Series R3
These are actuators with a double rack, play take-up and flange.
Strokes available regulation from 0° to 180°.
Versions with a mechanical stop or hydraulic end-of-stroke cushioning.
Magnets for position sensors.
There is a hole in the flange for air pipes or wires.

BLADE ROTARY ACTUATORS

This catalogue does not include blade-type rotary actuators, but we can supply models with one or two blades on specific request.
There are numerous options:
- Fixed stroke version: angle of rotation 90°, 180° or 270°.
- Adjustable stroke version
- Induction sensors

Mounting accessories: flange or one or two brackets.

CALCULATIONS

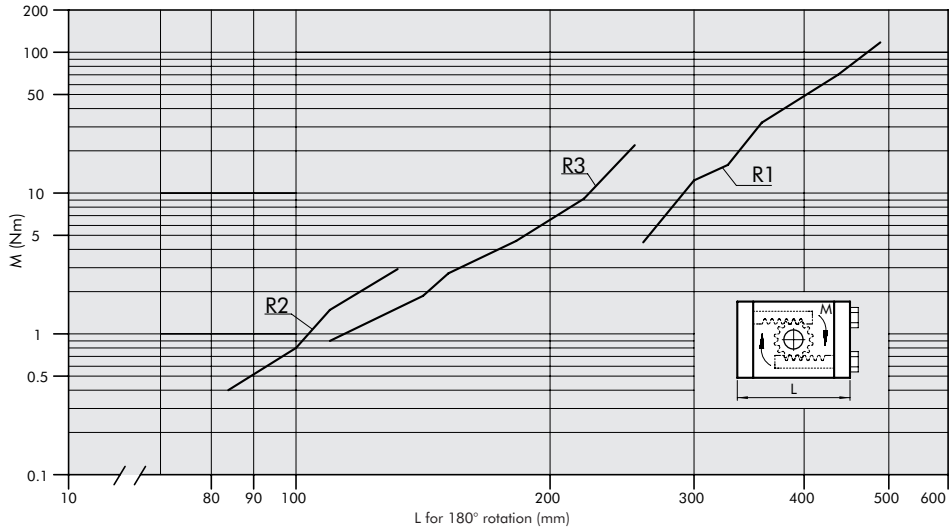
The following needs to be calculated:
• Absorbed kinetic energy
• Axial forces on the shaft or rotating flange
• Radial force on the shaft or rotating flange
• Overturning moment

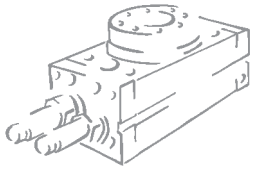
Then compare each of the 4 sizes with the admissible ones shown in the catalogue for each rotary actuator. Remember that the application of optional hydraulic decelerator, where envisaged, doubles the kinetic energy that can be absorbed by the actuator.

ROTARY ACTUATOR COMPARATIVE CHART

The lines plotted on the graph below show the following for each series of actuators:
• Possible torque (at 6 bar)
• Length (for actuator with 180° rotation)

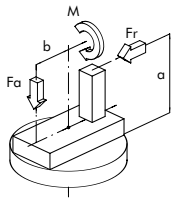
This allow you to determine the most appropriate series to meet your requirements. For instance, if you want a rotary actuator with torque greater than 100 N and length less than 300 mm, you can find it in series P3.



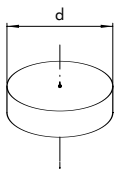
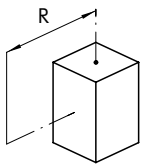
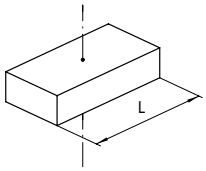


SIZING

HOW TO CALCULATE KINETIC ENERGY

	Denomination	Unit of measurement	Formula	Example
				
$\propto$	Angle of rotation	rad	$= \text{degrees} \cdot \frac{\pi}{180}$	$= 90° = \frac{\pi}{2}$ rad.
t	Rotation time	s		2
Jta	Moment of inertia of rotating masses N.B.: sommare quello delle singole masse	Kg m²	$= \sum Ji$	$= 0.078 + 0.02 + 0.133 = 0.232$
E	Energia cinetica	Nm	$= 1/2\ Jw^2 = 2J \cdot \left(\frac{\alpha^2}{t}\right)$	$= 2 \cdot 0.232 \cdot \frac{(\frac{\pi}{2})^2}{2} = 0.57$
Fr	Radial force (Remember to take into account centrifugal forces)	N	$(Fc = M \cdot w^2 \cdot R)$	50
Fa	Axial force	N		10
M	Overturning moment	Nm	$= M + Fr \cdot a + Fa \cdot b$	$= 50 \times 0.1 + 10 \times 0 = 5$ Nm

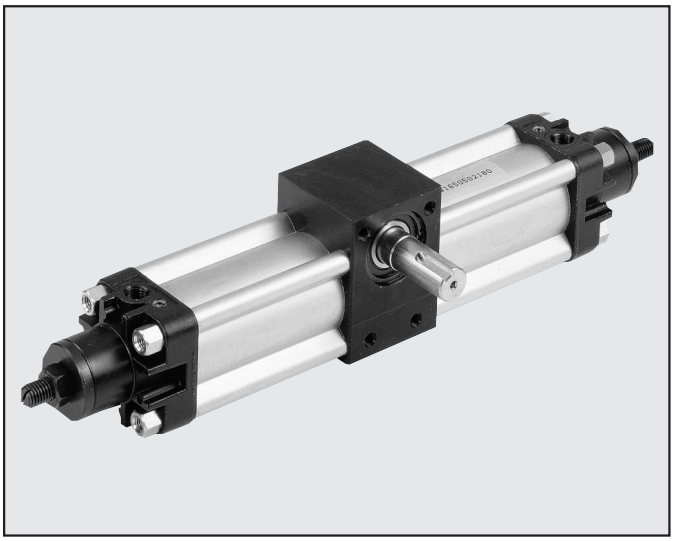
MOMENTS OF INERTIA FOR THE MOST COMMON SHAPES

	Denomination	Unit of measurement	Formula	Example
			Disco 	
M	Disk mass	Kg		7
d	Disk diameter	m		0.3
J	Moment of inertia of the disk	Kg m²	$= \frac{Md^2}{8}$	$= \frac{7 \cdot 0.3^2}{8} = 0.0787$
			Mass distant from rotation axis 	
M	Mass	Kg		0.5
R	Distance between barycenter and rotation axis	m		0.2
J	Moment of inertia of the mass	Kg m²	$= MR^2$	$= 0.5 \times 0.2^2 = 0.02$
			Parallelepiped with barycenter on rotation axis 	
M	Mass	Kg		10
L	Side of the parallelepiped	m		0.4
J	Moment of inertia of the mass	Kg m²	$= M \frac{L^2}{12}$	$= \frac{10 \cdot 0.4^2}{12} = 0.13$

ROTARY ACTUATORS
SERIES R1, Ø 32-100 mm

Rack-type rotary cylinders in various configurations:
- Configuration with standard magnet
- Version with male pinion or female hole
- Mechanical stroke adjustment
- Special configurations on request

The central body has ISO bore holes for wall fixing using ISO pin and/or flange fittings.



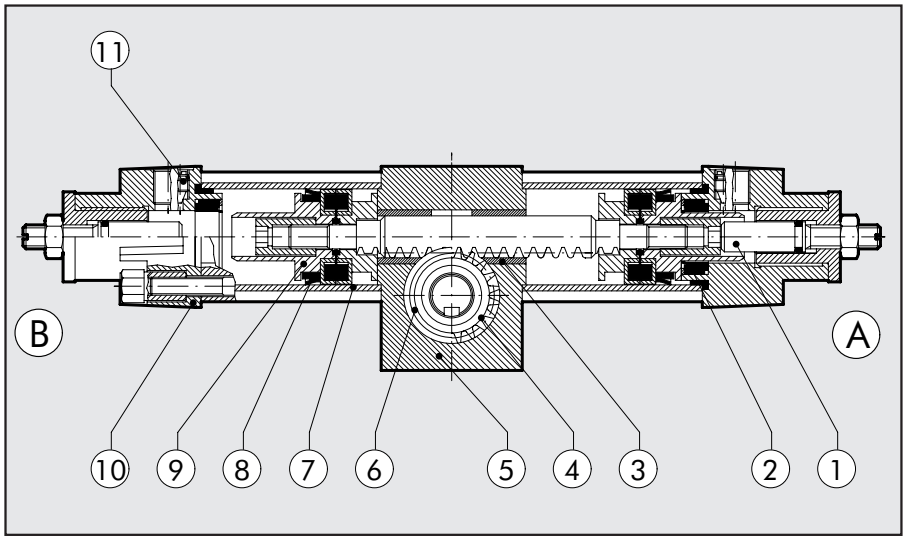
We always suggest to use flow microregulators. During the setup of the actuator, star with CLOSE flow microregulators, and open gradually till the achievment of the required speed.

TECHNICAL DATA		32	40	50	63	80	100
Gaskets		NBR					
Operating pressure	P	10 bar (1 MPa - 145 psi)					
Temperature range	°C	–10 to +70					
Fluid		Filtered lubricated or unlubricated air. Lubrication, if used, must be continuous.					
Bores	mm	Ø 32 ; Ø 40 ; Ø 50 ; Ø 63 ; Ø 80 ; Ø 100					
Rotation angle		90°; 180°; 270°; 360°					
Type of construction		Extruded profile					
Configuration		Magnetic standard cushioned					
Axial load	N	2500	2800	4500	5600	8500	12200
Max. moment (6 bar - 0.6 Mpa)	MF (Nm)	4.5	12.5	16	32	70	120

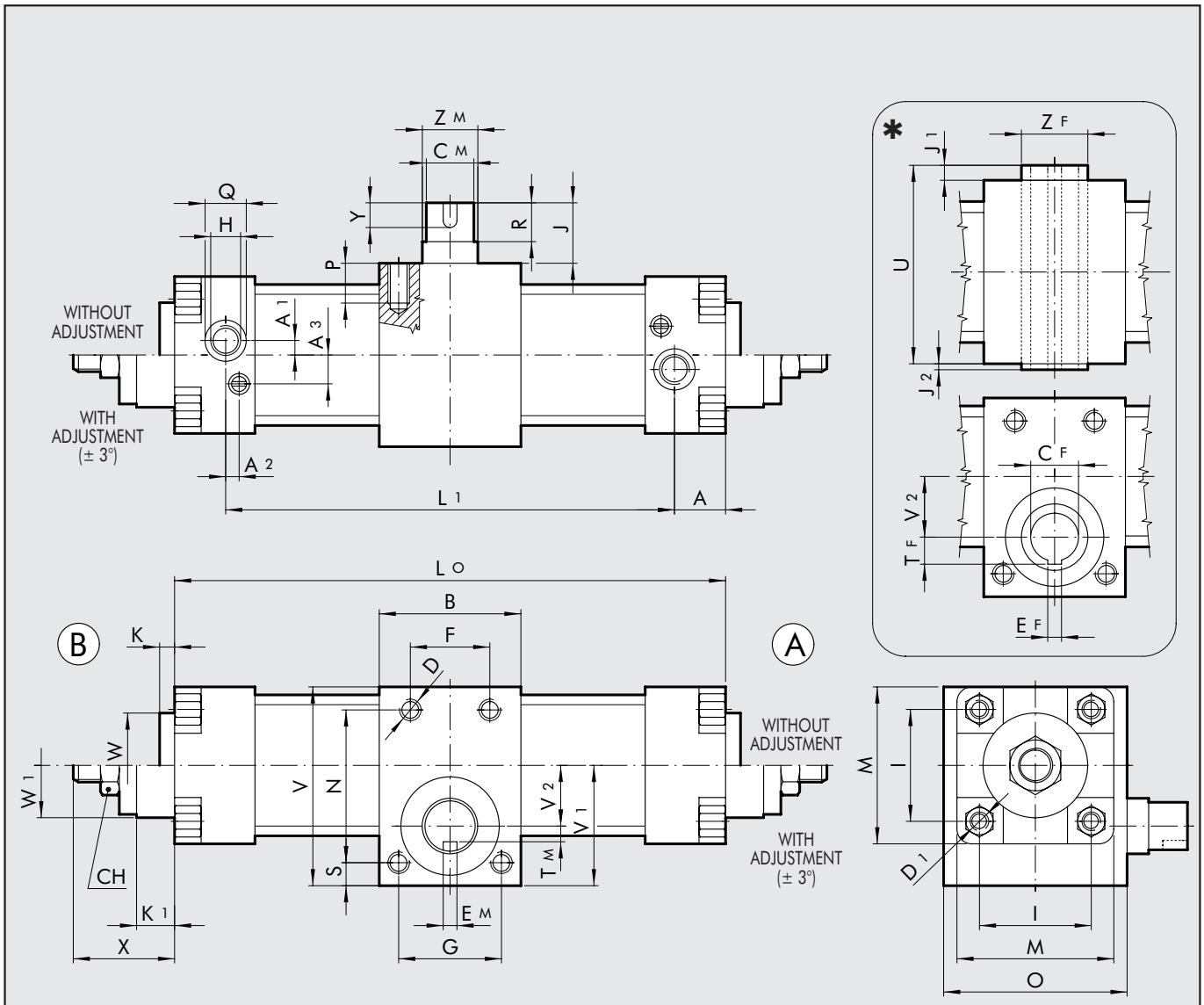
NB: The product is supplied with negative end-of-stroke piston (in the proximity of head A). The first cycle involves movement of the piston (towards head B) with consequent anti-clockwise rotation of the pinion.

COMPONENTS

① ADJUSTING SCREW: steel
② HEAD GASKET: NBR
③ RACK BUSHING: self-lubricating sintered bronze
④ PINION: C40 chromed steel
⑤ CENTRAL BODY: anodised aluminium
⑥ BALL BEARING
⑦ JACKET: aluminium
⑧ PISTON GASKET: NBR
⑨ PISTON: aluminium
⑩ HEAD: die cast aluminium
⑪ NEEDLE: OT 58 brass



DIMENSIONS OF ROTARY CYLINDER Ø 32-100



Note: with the key slot in the position specified, the piston is in contact with head A.

✱ DETAIL OF FEMALE PINION

Ø	A	A_1	A_2	A_3	B	CMh8	CF	D	D_1	EM	EF	F	G	H	I	J	J_1	J_2	K	K_1	L	L_2
32	15	4	4	7.5	47	14	10	M6	M6	5	3	30	30	1/8	32.5	34.5	5	-	3	16	176	146
40	17.5	6	4.5	10	54	16	12	M6	M6	5	4	30	30	1/4	38	39.5	5	2	3	20	194	159
50	19	5.5	3	10.5	62	19	14	M8	M8	6	5	32	45	1/4	46.5	46.5	7.5	-	3	25	209	171
63	22	7.5	5	13	72	24	16	M10	M8	8	5	38	52	3/8	56.5	52.5	4.5	-	3	25	232	188
80	21	6.5	4	15	92	28	25	M12	M10	8	8	48	70	3/8	72	58.5	9.5	-	3	32	273	231
100	21	9	7	15	107	38	30	M14	M10	10	8	60	80	1/2	89	67	7.5	-	3	35	299	257

M	N	O	P	Q	R	S	TM	TF	U	V	V_1	V_2	W	W_1	X	Y	ZM	ZF	CH	Δ
46	50	47	10	15	30	9	4	6.5	51.2	68	44.5	19	30	30	36	20	15	15	13	0.233
52	60	54	11	20	35	7	5	7.3	60	74	46	23	35	35	50	25	17	17	17	0.266
65	65	64	12	20	40	10	6	9.3	71	85	51	25	40	40	54	25	20	20	17	0.311
75	73	73.5	15	24	45	11	8	10.3	78	95	56	27.5	45	45	55	30	25	25	19	0.344
95	100	93.5	20	24	50	12.5	10	16	102	125	76	39	45	45	68	35	35	35	19	0.466
115	120	109	25	30	60	15	14.5	18.5	117	150	90	45	55	55	75	45	45	45	22	0.555

$L_0 = L + 2 \cdot SL$ $L_1 = L_2 + 2 \cdot SL$

$SL = \alpha° \cdot \Delta$

Δ = Linear displacement (mm) for each degree of rotation

KEY TO CODES

W	1	6	5	0	5	0	1	0	9	0
								ANGLE OF ROTATION*		
W165		cyl. with male piston		032			1	cyl. without adjustment of rotation angle		090
W166		cyl. with female pinion		040						180
				050			2	with adjustment of rotation angle		270
				063						360
				080						
				100						

N.B. For magnetic proximity sensors, see ISO 6431 Cylinder Accessories
* expressed in sexagesimal degrees.

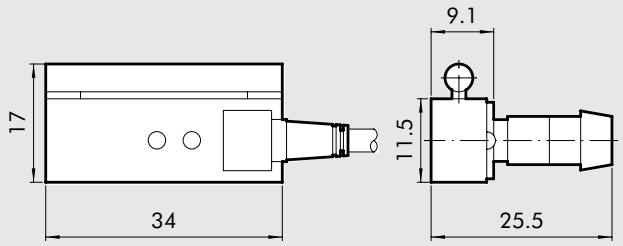
ACCESSORIES: MAGNETIC SENSORS

ORDERING CODES

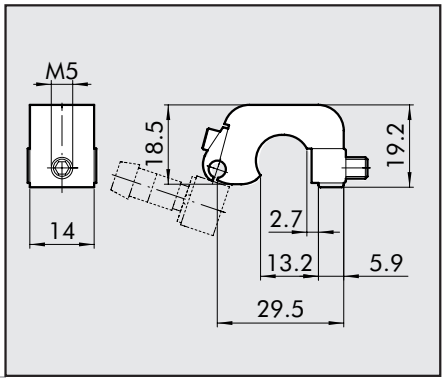
Code	Description
MAGNETIC PROXIMITY SENSORS	
W0950000201	REED SENSOR ACC. DSM2-C525
W0950000222	E.HALL PNP SENSOR ACC. DSM3-N225
W0950000232	E.HALL NPN SENSOR ACC. DSM3-M225
SENSOR BRACKET	
W0950000711	BRACKET ACC. D.32-40 DST 80
W0950000712	BRACKET ACC. D.50-63 DST 81
W0950000713	BRACKET ACC. D.80-125 DST 82

NB: For technical features of sensors, see page 1.1/71

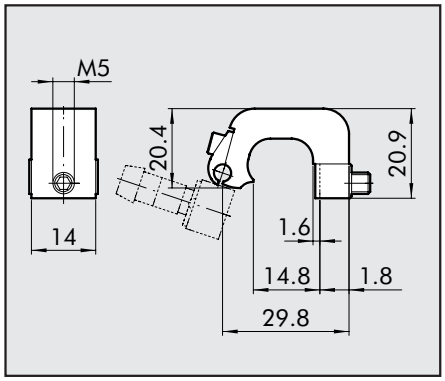
SENSOR



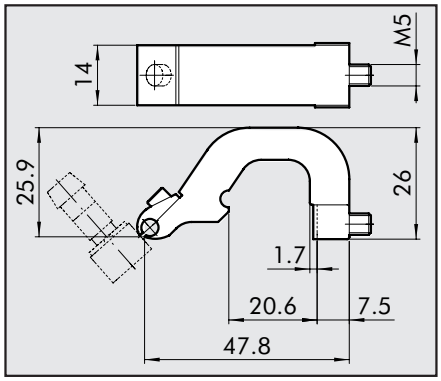
BRACKET Ø 32-40

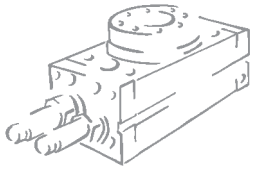


BRACKET Ø 50-63



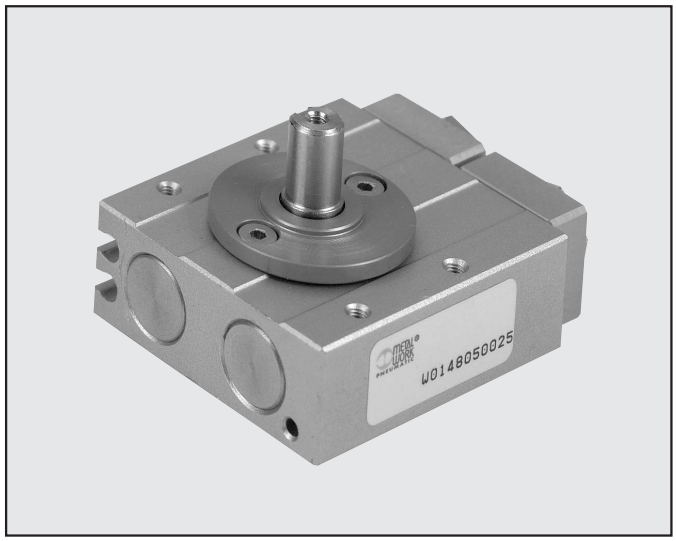
BRACKET Ø 80-100





ROTARY ACTUATOR SERIES R2

Actuator with double rack and play take-up. Four sizes – 12, 16, 20 and 25. Two angles of rotation – 90° and 180°. Stroke adjustment system for all sizes. Pneumatic cushioning for all sizes except the smallest.
There are slots in the body to house a magnetic proximity sensor.
Air supply, stroke adjustment and cushioning adjustment are all on the same side.

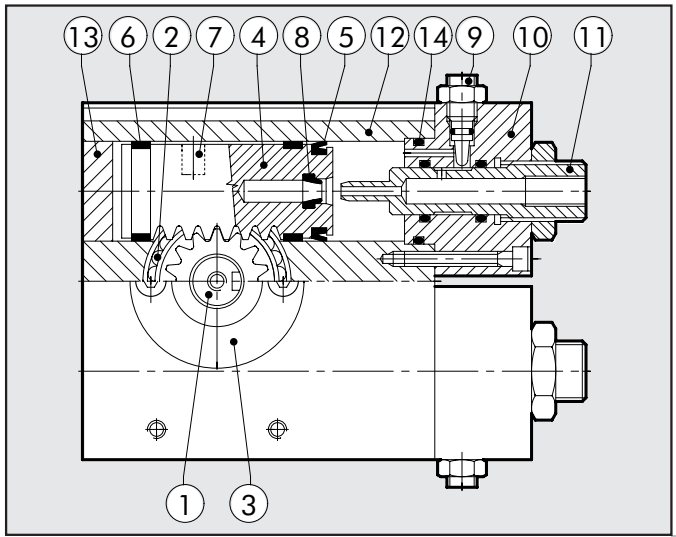


We always suggest to use flow microregulators. During the setup of the actuator, star with CLOSE flow microregulators, and open gradually till the achievment of the required speed.

TECHNICAL FEATURES		R2 - 12	R2 - 16	R2 - 20	R2 - 25
Pressure range	bar	1.5 to 7			
Temperature range	°C	5 to 60			
Angle adjustment	degrees	35° (about +10° -25°)			
Fluid		10µm dried or lubricated filtered air. Lubrication, if used, must be continuous			
Versions		90°/180° rotation			
Ports		Both at the front			
Sizes		12	16	20	25
Theoretical torque (P=pressure in bar)	Nm	0.065 x P	0.14 x P	0.25 x P	0.48 x P
Max. axial load	N	8	14	40	80
Max. radial load	N	8	14	40	80
Weight with 90° rotation	Kg	0.18	0.26	0.63	0.8
Weight with 180° rotation	Kg	0.21	0.31	0.72	1
Rotation time without load					
• 90° angle	s	0.2	0.2	0.2	0.2
• 180° angle	s	0.3	0.3	0.3	0.3

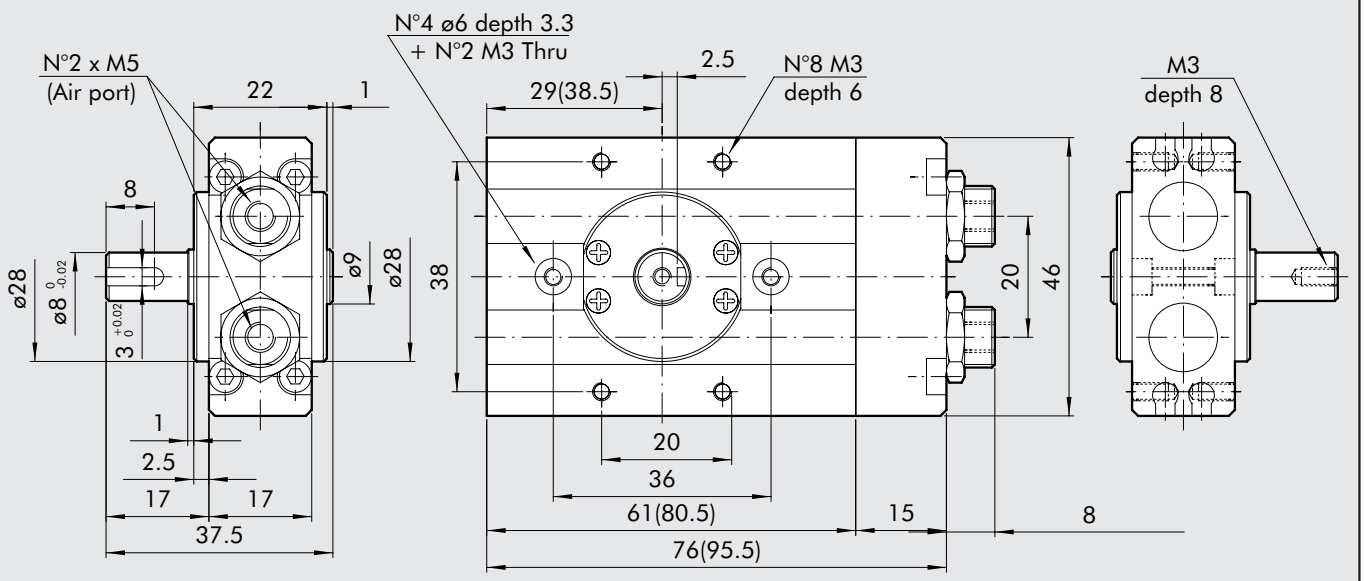
COMPONENTS

① ROTARY SHAFT / PINION: hardened and tempered steel
② BALL BEARING
③ FLANGE: anodised aluminium
④ PISTON / RACK: hardened and tempered steel
⑤ PISTON GASKET: NBR
⑥ GUIDE SHOE: PTFE
⑦ MAGNET: neodymium
⑧ CUSHIONING GASKET: NBR
⑨ CUSHIONING PIN: zinc-plated steel
⑩ HEAD: anodised aluminium
⑪ PNEUMATIC CONNECTION / STROKE ADJUSTMENT: steel
⑫ JACKET: anodised aluminium
⑬ BASE: anodised aluminium
⑭ SEAL: NBR



ACCESSORIES

ROTARY ACTUATOR R2 12 90°/180°

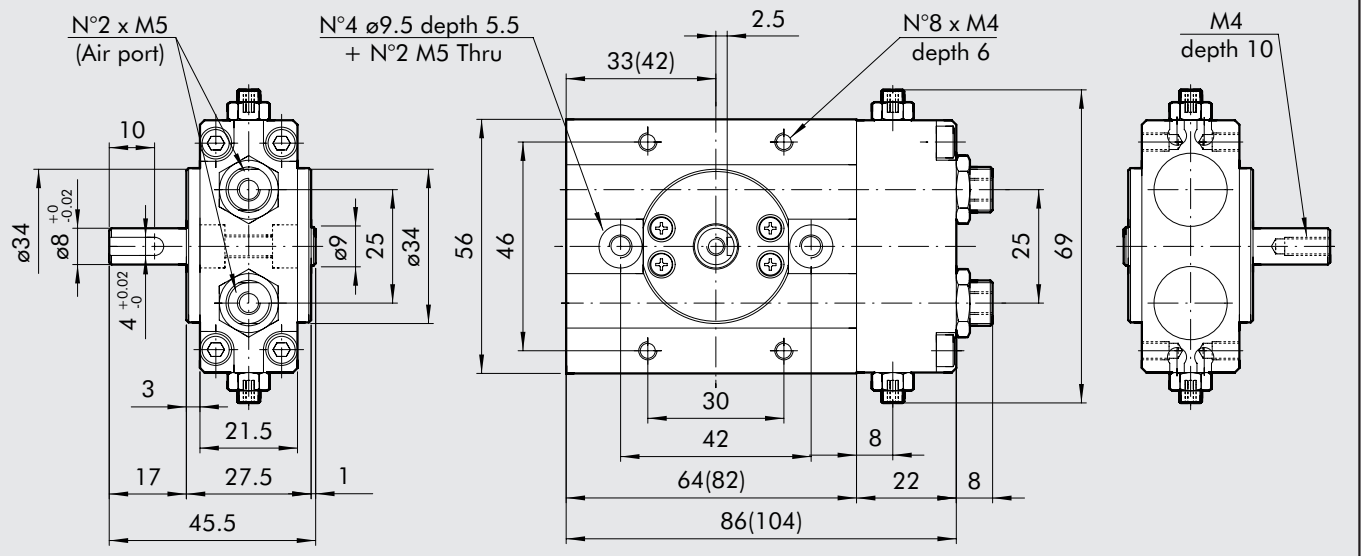


Dimensions for 180° rotation are given in brackets

ORDERING CODES

Code	Description
W1620122090	ROTARY ACTUATOR R2-12-90°
W1620122180	ROTARY ACTUATOR R2-12-180°

ROTARY ACTUATOR R2 16 90°/180°

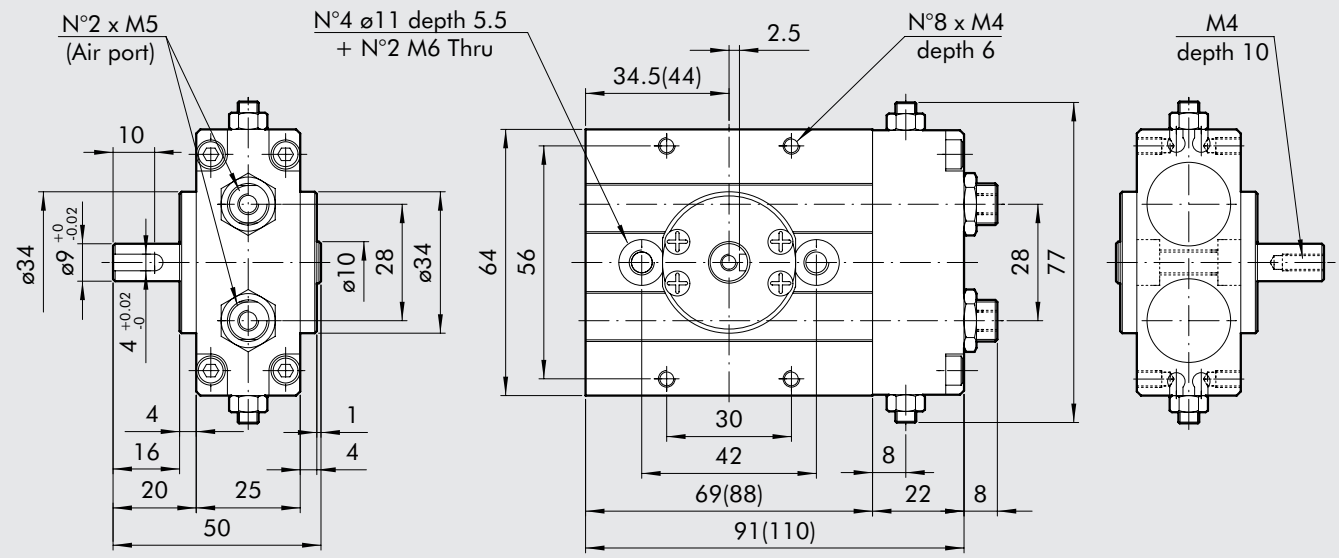


Dimensions for 180° rotation are given in brackets

ORDERING CODES

Code	Description
W1620162090	ROTARY ACTUATOR R2-16-90°
W1620162180	ROTARY ACTUATOR R2-16-180°

ROTARY ACTUATOR R2 20 90°/180°

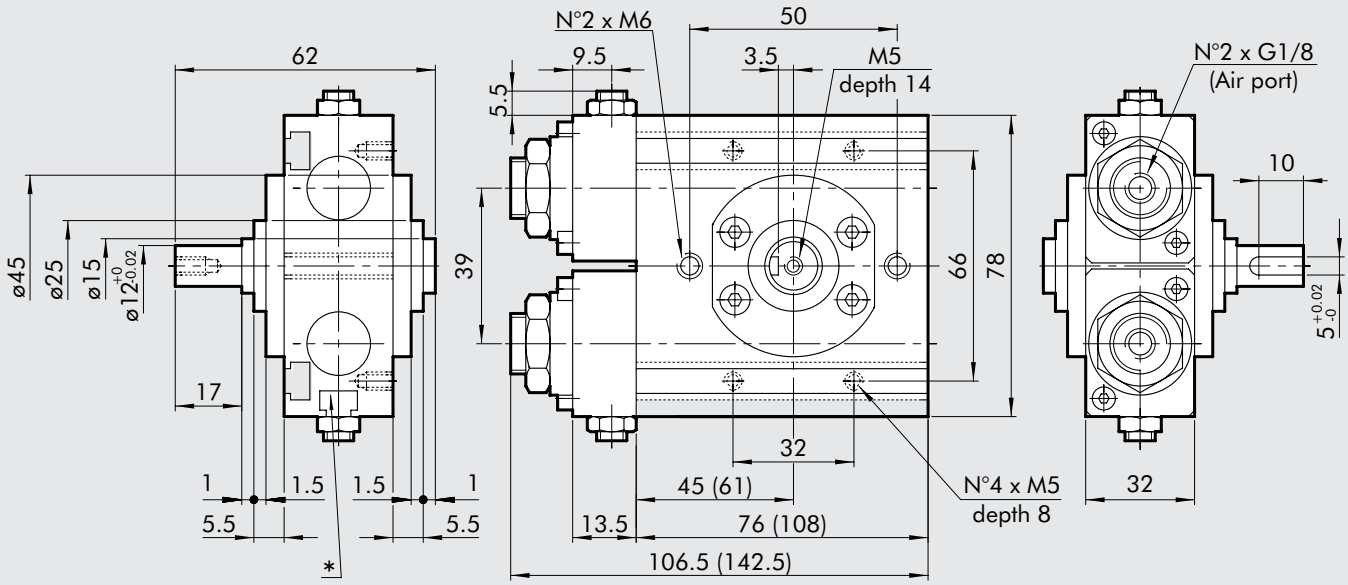


* Groore for sensors
Dimensions for 180° rotation are given in brackets

ORDERING CODES

Code	Description
W1620202090	ROTARY ACTUATOR R2-20-90°
W1620202180	ROTARY ACTUATOR R2-20-180°

ROTARY ACTUATOR R2 25 90°/180°



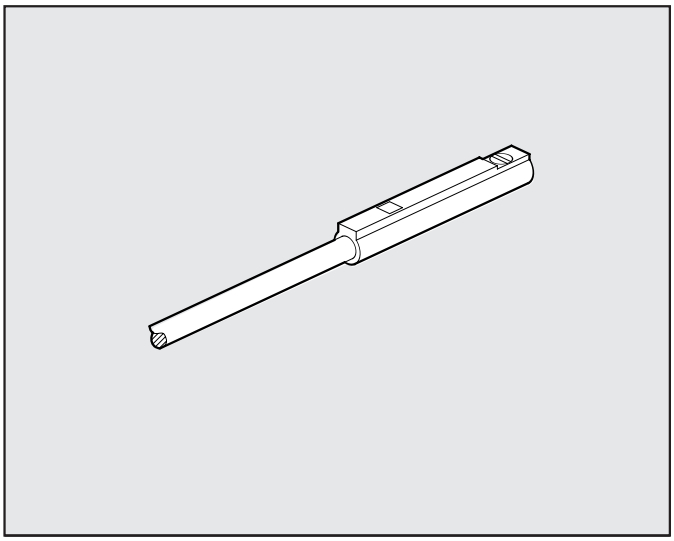
* Groore for sensors
Dimensions for 180° rotation are given in brackets

ORDERING CODES

Code	Description
W1620252090	ROTARY ACTUATOR R2-25-90°
W1620252180	ROTARY ACTUATOR R2-25-180°

ACCESSORIES

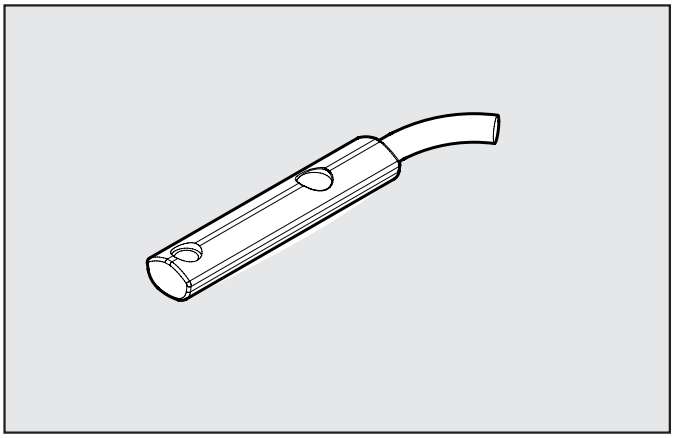
MAGNETIC SENSOR Ø 4, FOR R2-12÷20



ORDERING CODES

Code	Description
W0950044180	Magnetic sensor REED Ø 4, 2 wires, reed 20VDC 1 m

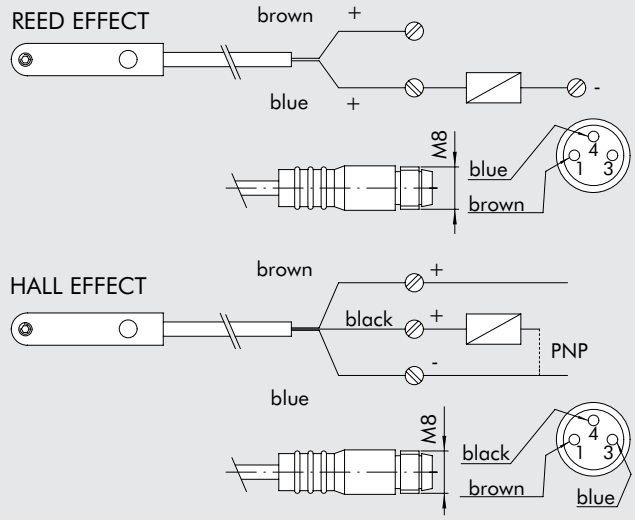
SLIM SENSOR FOR R2-25



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

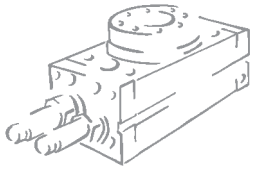
This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

WIRING DIAGRAM



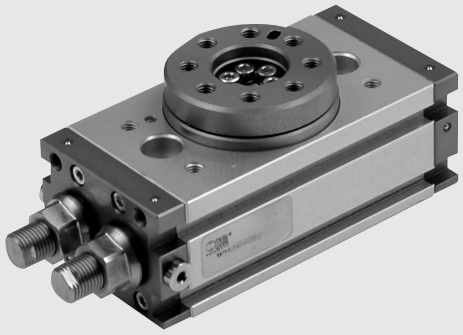
TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2



ROTARY ACTUATORS SERIES R3

Actuator with double rack and play take-up.
Angle of rotation adjustable from 0 to 180°.
The R3 rotary actuator can come with a mechanical stop or hydraulic end-of-stroke cushioning.
There is a version with flange and one with shaft (for ø16-20-25-30).
There are slots in the body for retracting magnetic proximity sensors, two on each side. There is hole in the flange for air pipes or wires.



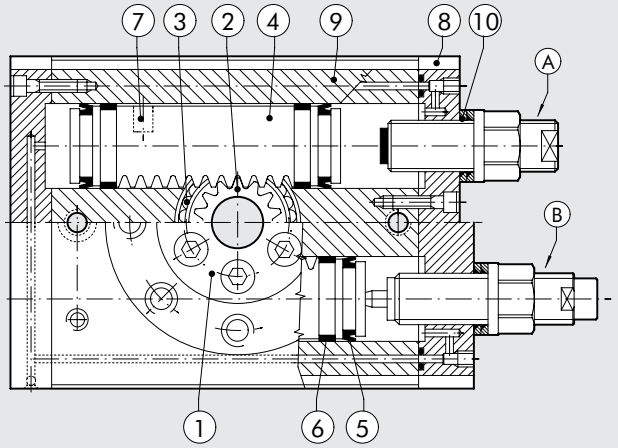
We always suggest to use flow microregulators. During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievment of the required speed.

TECHNICAL FEATURES		R3 - 16	R3 - 20	R3 - 22	R3 - 25	R3 - 30	R3 - 40
Pressure range	bar	3 to 7					
Temperature range	°C	5 to 60					
Angle adjustment	degrees	0-180					
Fluid		20µm dried or lubricated filtered air. Lubrication, if used, must be continuous					
Versions		With mechanical stop / hydraulic decelerator					
Sizes		16	20	22	25	30	40
Bores	mm	2 x 16	2 x 20	2 x 22	2 x 25	2 x 30	2 x 40
Theoretical torque	Nm	0.9	1.8	2.7	4.6	9.3	22
Max. axial load	N	74	135	195	300	340	360
Max. radial load	N	78	137	360	450	490	560
Weight	Kg	0.53	0.99	1.29	2.08	3.9	6.7
Rotation time without load	s	0.2	0.2	0.2	0.2	0.3	0.3

COMPONENTS

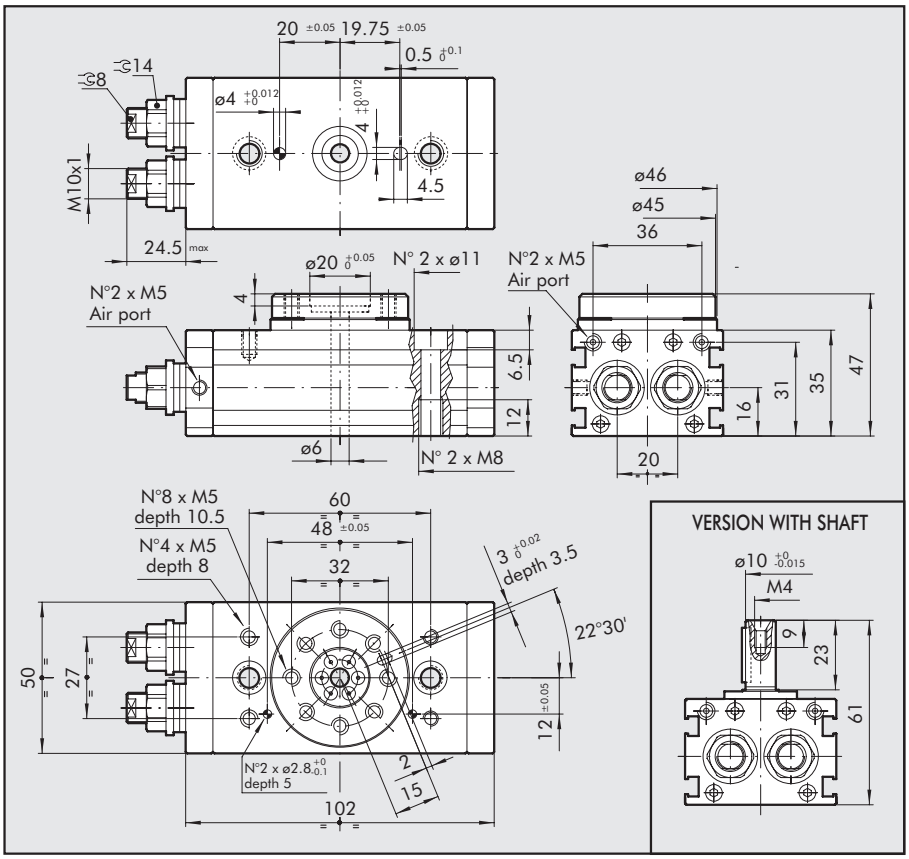
① ROTARY FLANGE: anodised aluminium
② PINION: hardened and tempered steel
③ BALL BEARING
④ PISTON / RACK: hardened and tempered steel
⑤ CUSHIONING GASKET: NBR
⑥ GUIDE SHOE: PTFE
⑦ MAGNET: neodymium
⑧ HEAD: anodised aluminium
⑨ JACKET: anodised aluminium
⑩ SEAL: NBR

VERSIONS:
Ⓐ Stroke adjustment
Ⓑ Stroke adjustment with inside hydraulic shock absorbers (available from ø25)



DIMENSIONS

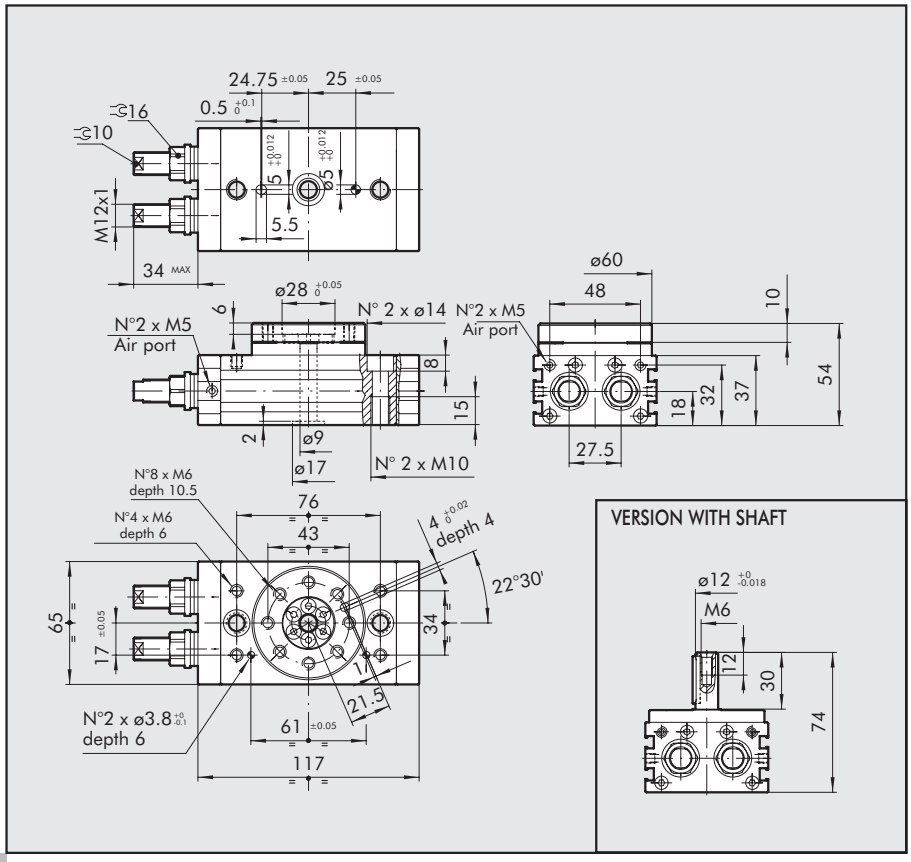
ROTARY ACTUATOR R3-16



ORDERING CODES

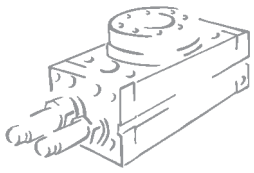
Code	Description
W1630162180	ROTARY ACTUATOR WITH FLANGE R3-16
W1630165180	ROTARY ACTUATOR WITH SHAFT R3-16

ROTARY ACTUATOR R3-20

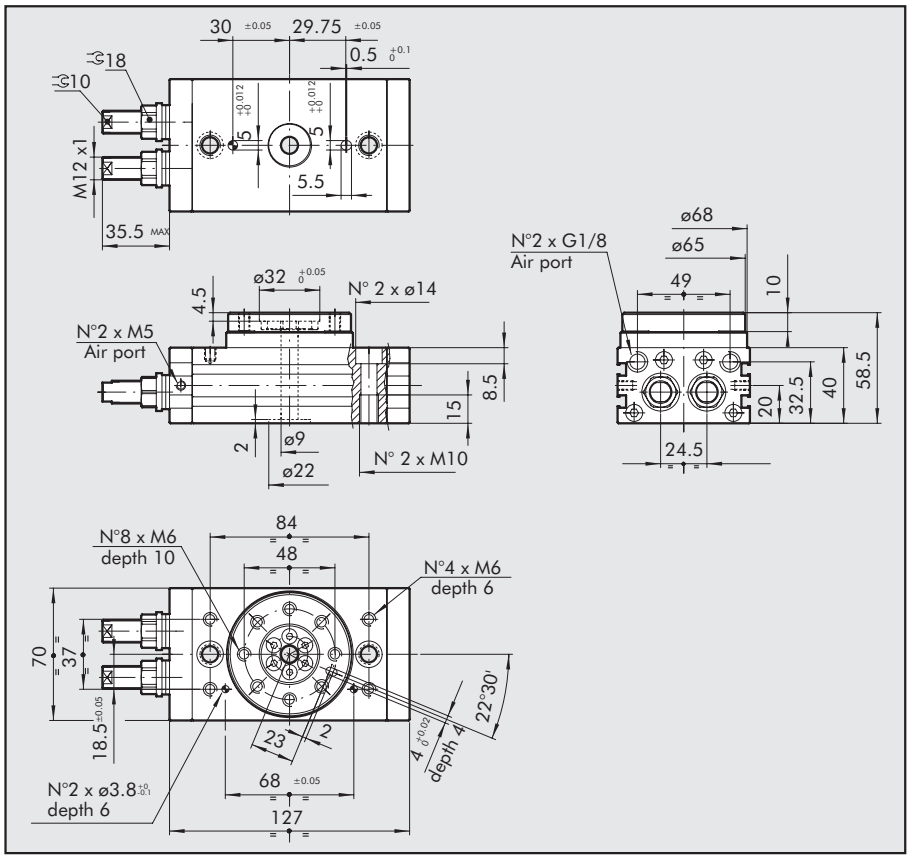


ORDERING CODES

Code	Description
W1630202180	ROTARY ACTUATOR WITH FLANGE R3-20
W1630205180	ROTARY ACTUATOR WITH SHAFT R3-20



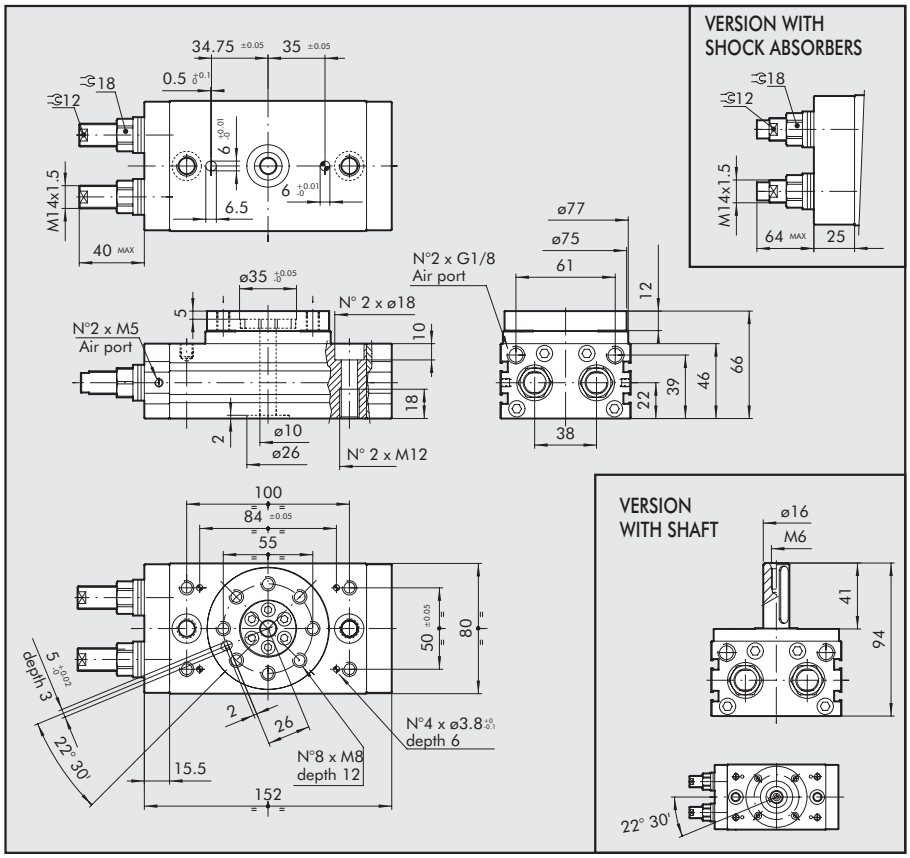
ROTARY ACTUATOR R3-22



ORDERING CODES

Code	Description
W1630222180	ROTARY ACTUATOR
	WITH FLANGE R3-22

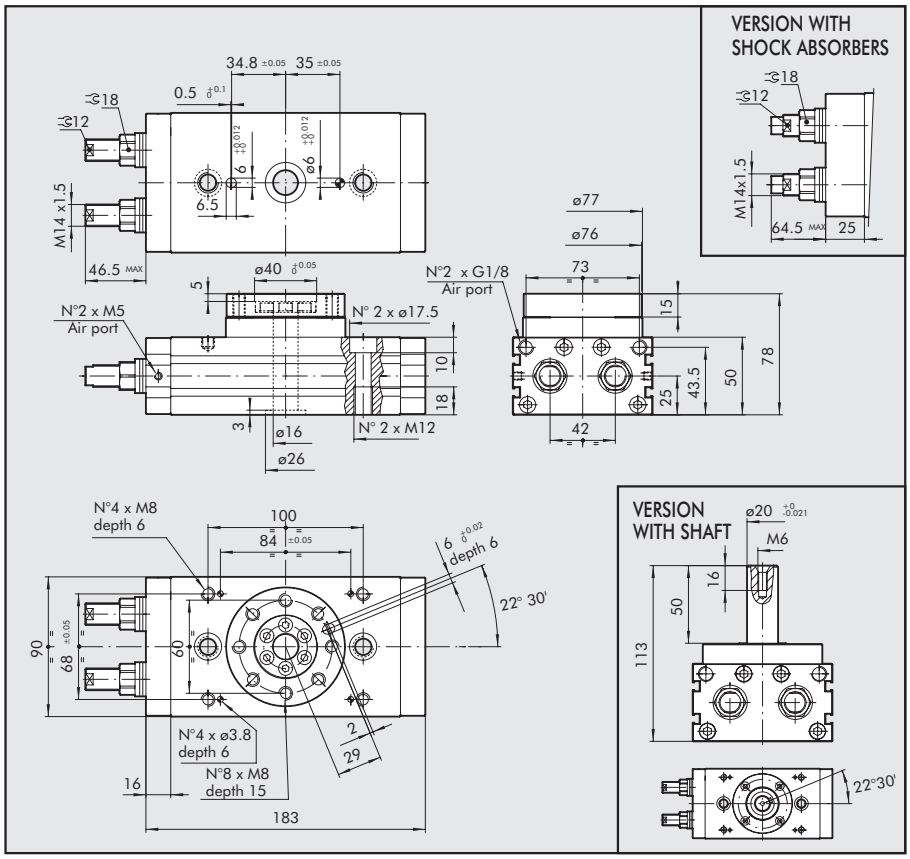
ROTARY ACTUATOR R3-25



ORDERING CODES

Code	Description
W1630252180	ROTARY ACTUATOR
	WITH FLANGE R3-25
W1630253180	ROTARY ACTUATOR
	WITH FLANGE + SHOCK ABS. R3-25
W1630255180	ROTARY ACTUATOR
	WITH SHAFT R3-25
W1630256180	ROTARY ACTUATOR
	WITH SHAFT + SHOCK ABS. R3-25

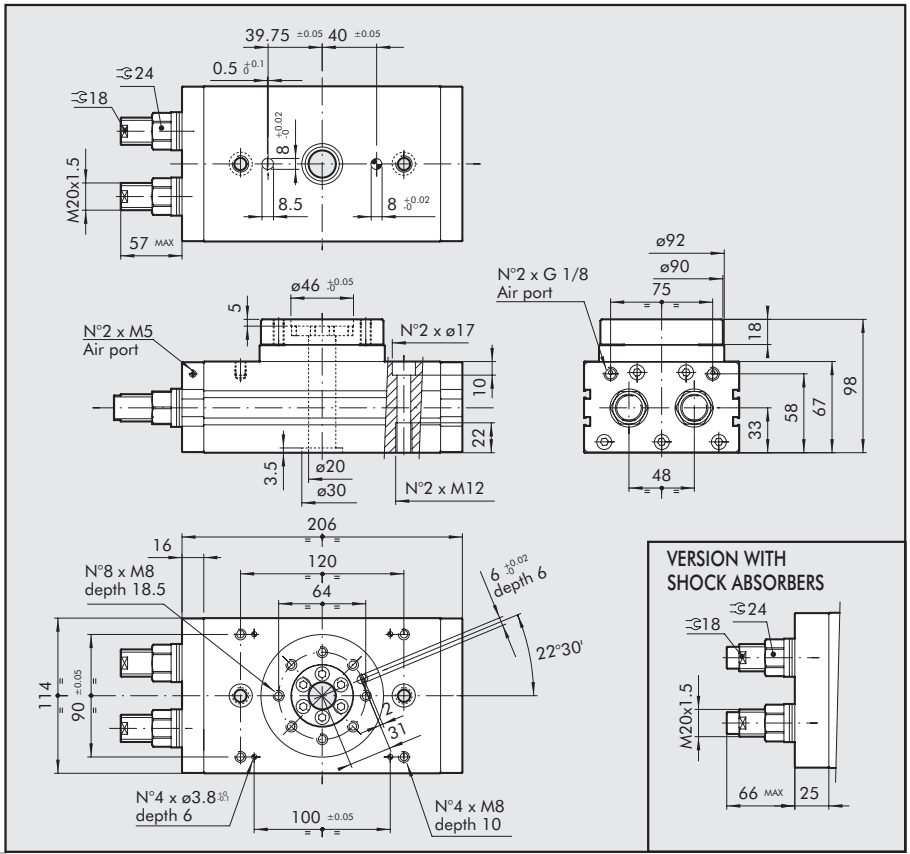
ROTARY ACTUATOR SERIES R3-30



ORDERING CODES

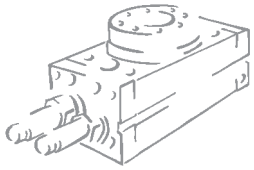
Code	Description
W1630302180	ROTARY ACTUATOR
	WITH FLANGE R3-30
W1630303180	ROTARY ACTUATOR
	WITH FLANGE + SHOCK ABS. R3-30
W1630305180	ROTARY ACTUATOR
	WITH SHAFT R3-30
W1630306180	ROTARY ACTUATOR
	WITH SHAFT + SHOCK ABS. R3-30

ROTARY ACTUATOR SERIES R3-40



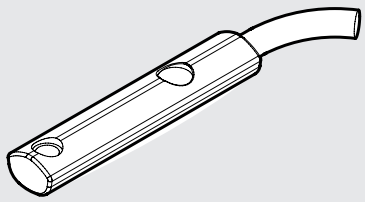
ORDERING CODES

Code	Description
W1630402180	ROTARY ACTUATOR
	WITH FLANGE R3-40
W1630403180	ROTARY ACTUATOR
	WITH FLANGE + SHOCK ABS. R3-40



ACCESSORIES

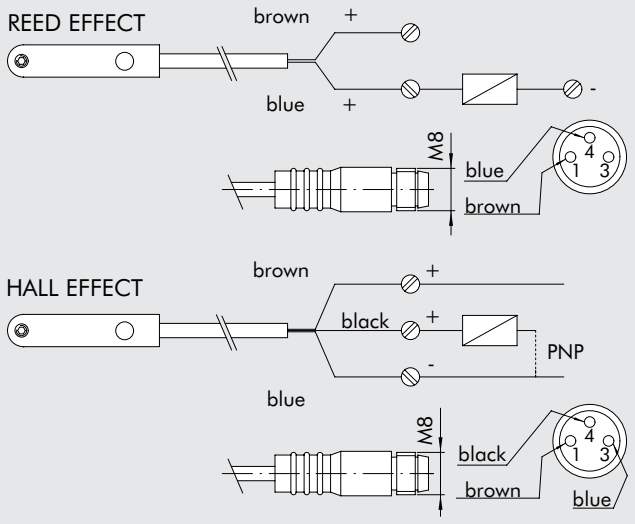
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

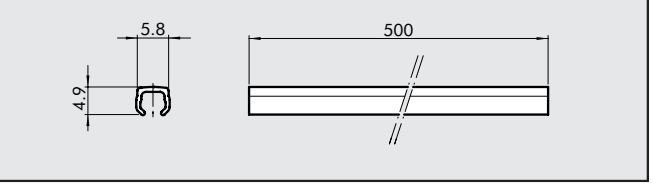
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

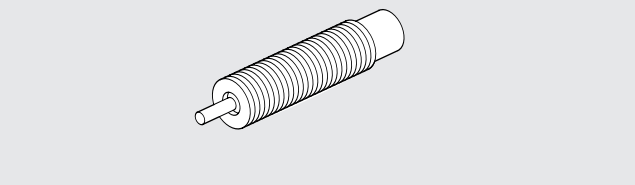
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

SPARES

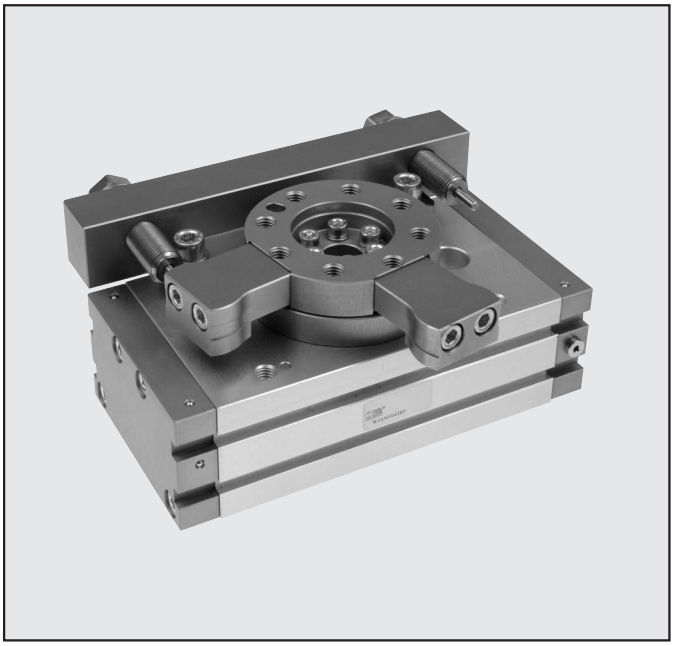
SHOCK ABSORBERS



Code	Bore	Description
0950004008	ø25-30	Shock absorbers SA 0410PD3 SB + nut M14x1.5
0950004005	ø40	Shock absorbers PR050 MC2 + nut M20x1.5

ROTARY ACTUATOR SERIE R3 WITH EXTERNAL SHOCK ABSORBERS

Dual-rack actuator with automatic adjustment for wear. Hydraulic shock absorbers are arranged externally and operate at a distance from the axis of rotation which is considerably higher than for internal ones. This means that the absorbable kinetic energy is 4 to 8 times higher. It is reduced in length as there are no adjusting screws. A 90° and a 180° versions are available.
Grooves are provided in the body to fix retractable magnetic proximity sensors, two on each side.
A hole has been drilled in the flange for the passage of air pipes or power cables.

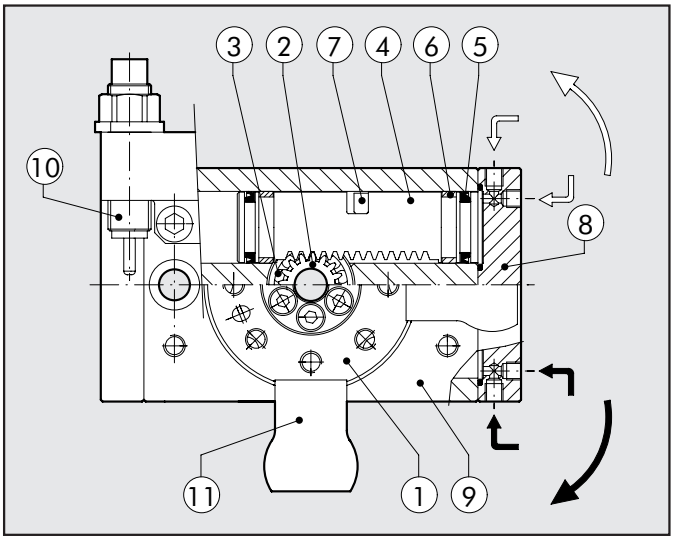


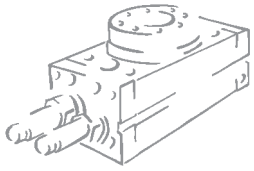
We always suggest to use flow microregulators. During the setup of the actuator, start with CLOSE flow microregulators, and open gradually till the achievment of the required speed.

TECHNICAL FEATURES		R3 - 16	R3 - 20	R3 - 22	R3 - 25	R3 - 30	R3 - 40
Pressure range	bar	da 3 a 7					
Temperature range	°C	da 5° a 60°					
Angle adjustment	degrees	90° o 180° ±3°					
Fluid		20µm dried or lubricated filtered air. Lubrication, if used, must be continuous					
Sizes		16	20	22	25	30	40
Bore	mm	2 x 16	2 x 20	2 x 22	2 x 25	2 x 30	2 x 40
Theoretical torque at a 6 bar	Nm	0.9	1.8	2.7	4.6	9.3	22
Max. axial load	N	74	135	195	300	340	360
Max. radial load	N	78	137	360	450	490	560
Max overturning moment	Nm	2,4	4	5,3	9,7	12	18
Admissible kinetic energy	J	0,16	0,55	0,85	1,40	1,85	3,35
Rotation time without load	s	0.2	0.2	0.2	0.2	0.3	0.3

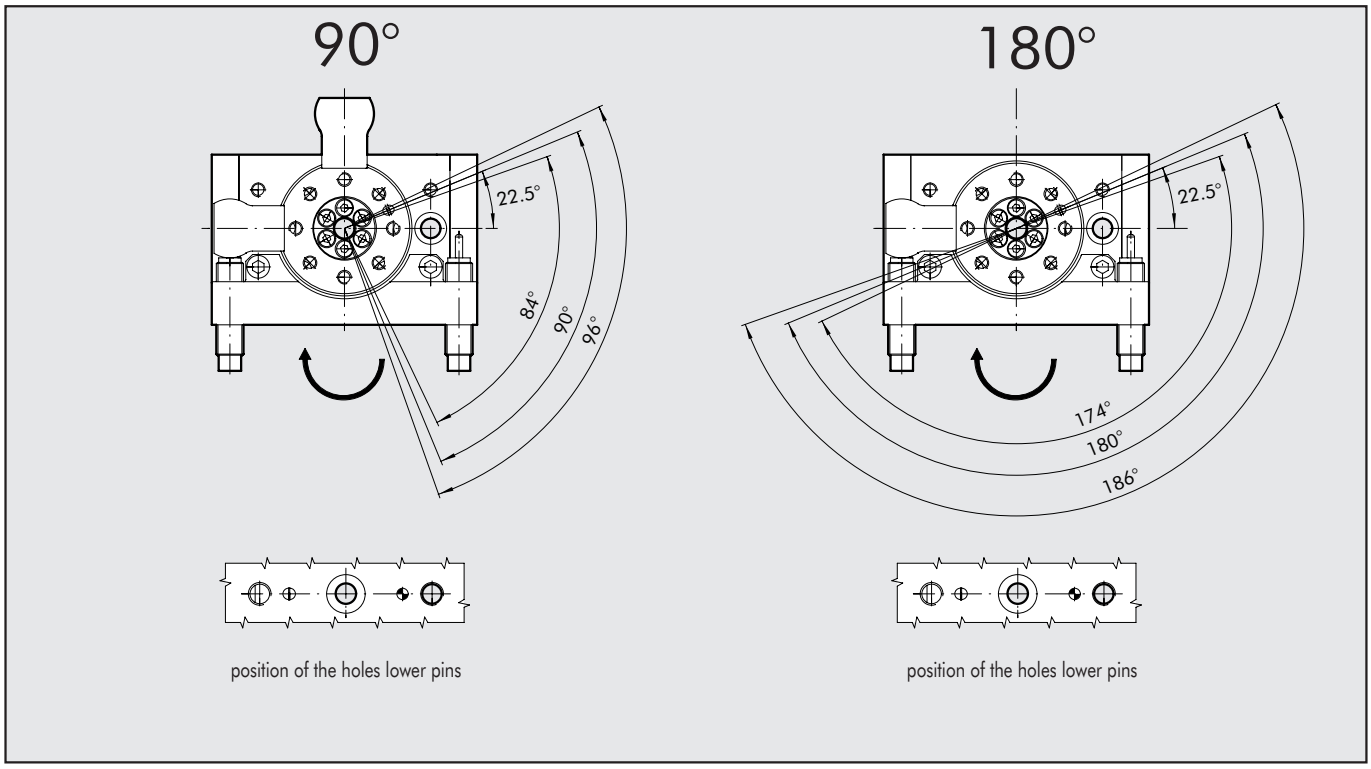
COMPONENTS

① ROTARY FLANGE: anodised aluminium
② PINION: hardened and tempered steel
③ BALL BEARING
④ PISTON / RACK: hardened and tempered steel
⑤ CUSHIONING GASKET: NBR
⑥ GUIDE SHOE: PTFE
⑦ MAGNET: neodymium
⑧ HEAD: anodised aluminium
⑨ JACKET: anodised aluminium
⑩ STROKE REGULATOR WITH HYDRAULIC SHOCK ABSORBERS
⑪ Block for 90° version



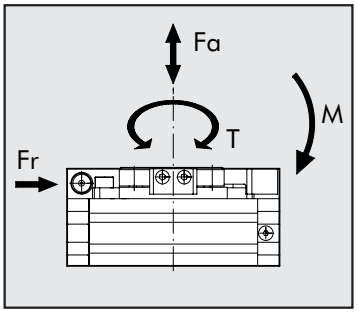


ROTATION ANGLE



DIMENSIONES - FORCES AND MOMENTS

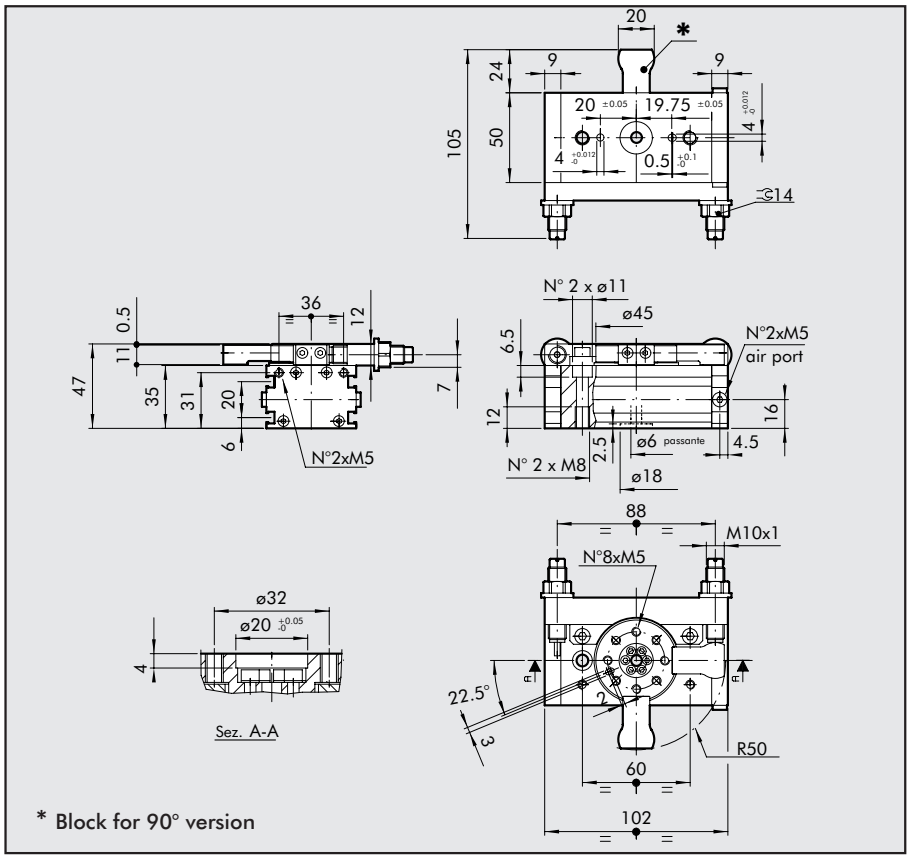
Ø	T Theoretical torque at 6 bar [Nm]	FA Max. axial load [N]	FR Max. radial load [N]	M Averturing momnet [Nm]
16	0.9	74	78	2.4
20	1.8	135	137	4
22	2.7	195	360	5.3
25	4.6	300	450	9.7
30	9.3	340	490	12
40	22	360	560	18



ADMISSIBLE KINETIC ENERGY Joule [J]

Ø	with flange, 90° rotation°: W1630_4090 with flange, 180° rotation°: W1630_4180
16	0,16
20	0,55
22	0,85
25	1,40
30	1,85
40	3,35

ROTARY ACTUATOR SERIES R3-16 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

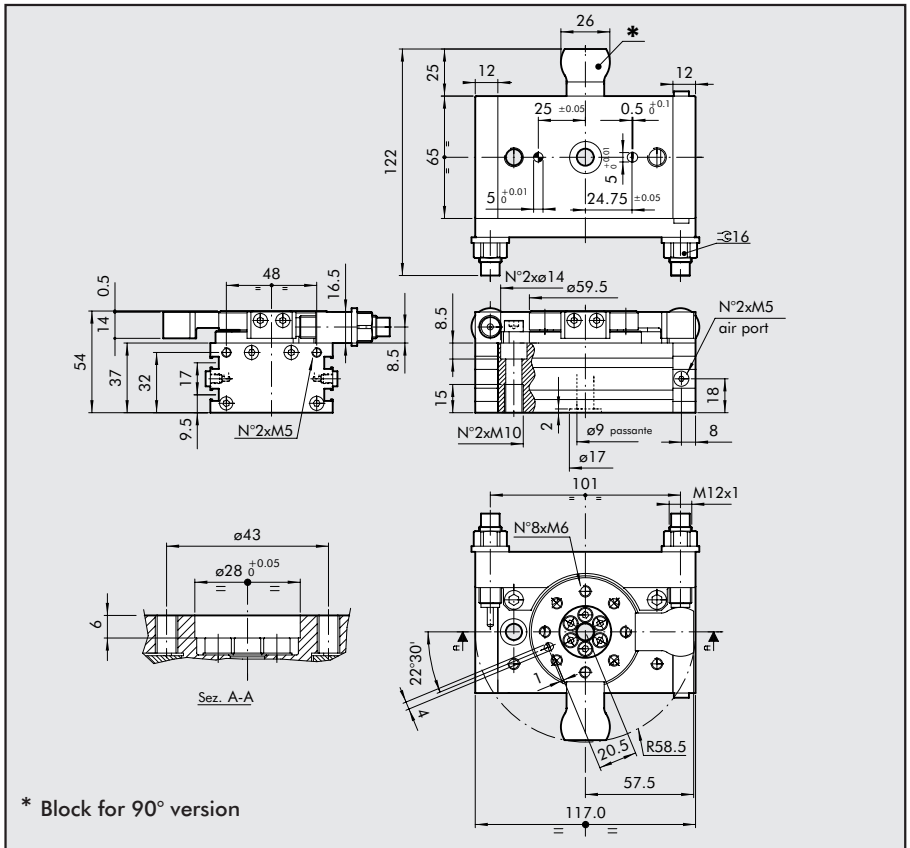


* Block for 90° version

ORDERING CODES

Code	Description
W1630164090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-16-90
W1630164180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-16-180

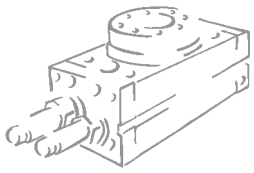
ROTARY ACTUATOR SERIES R3-20 WITH EXTERNAL SHOCK ABSORBERS, 90/180°



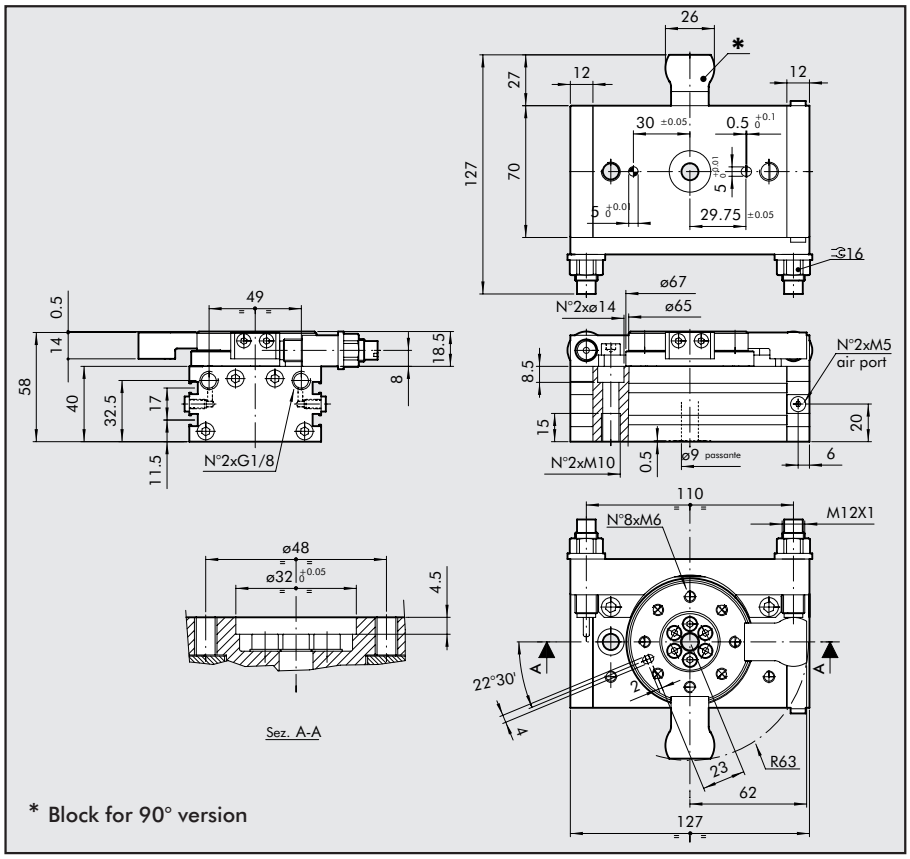
* Block for 90° version

ORDERING CODES

Code	Description
W1630204090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-20-90
W1630204180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-20-180



ROTARY ACTUATOR SERIES R3-22 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

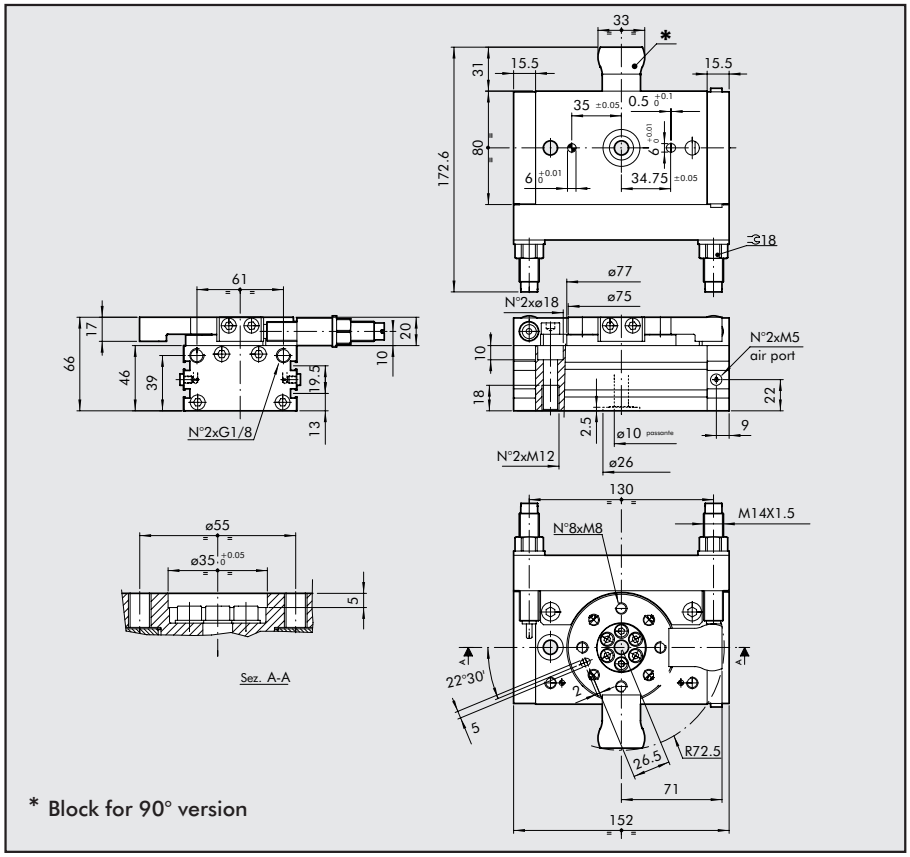


* Block for 90° version

ORDERING CODES

Code	Description
W1630224090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-22-90
W1630224180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-22-180

ROTARY ACTUATOR SERIES R3-25 WITH EXTERNAL SHOCK ABSORBERS, 90/180°

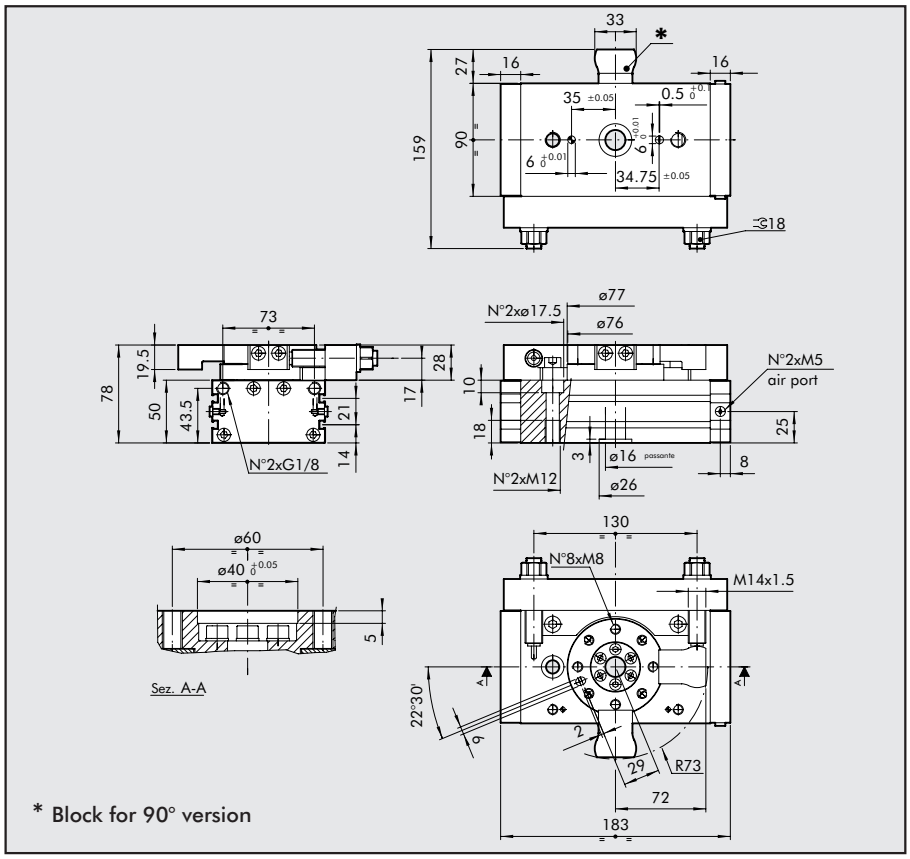


* Block for 90° version

ORDERING CODES

Code	Description
W1630254090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-25-90
W1630254180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-25-180

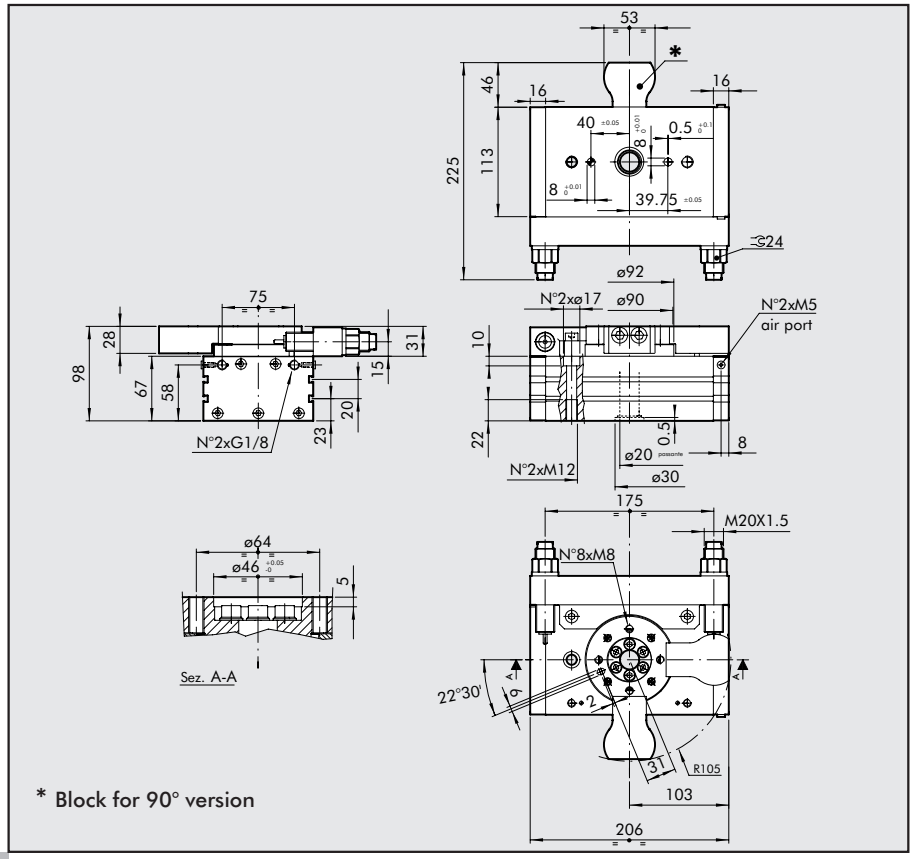
ROTARY ACTUATOR SERIES R3-30 WITH EXTERNAL SHOCK ABSORBERS, 90/180°



ORDERING CODES

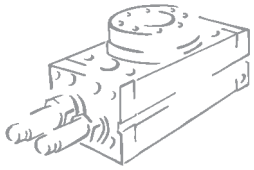
Code	Description
W1630304090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-30-90
W1630304180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-30-180

ROTARY ACTUATOR SERIES R3-40 WITH EXTERNAL SHOCK ABSORBERS, 90/180°



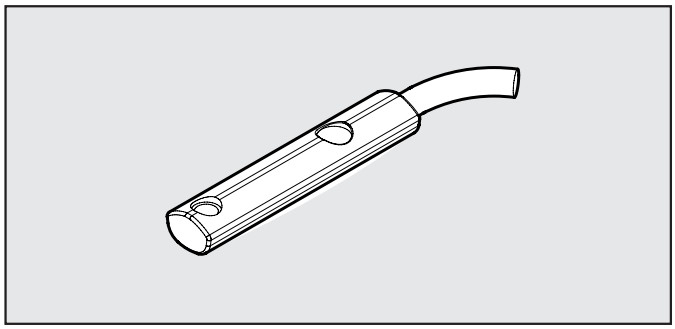
ORDERING CODES

Code	Description
W1630404090	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-40-90
W1630404180	ROTARY ACTUATOR WITH FLANGE + SHOCK ABSORBERS R3-40-180



ACCESSORIES

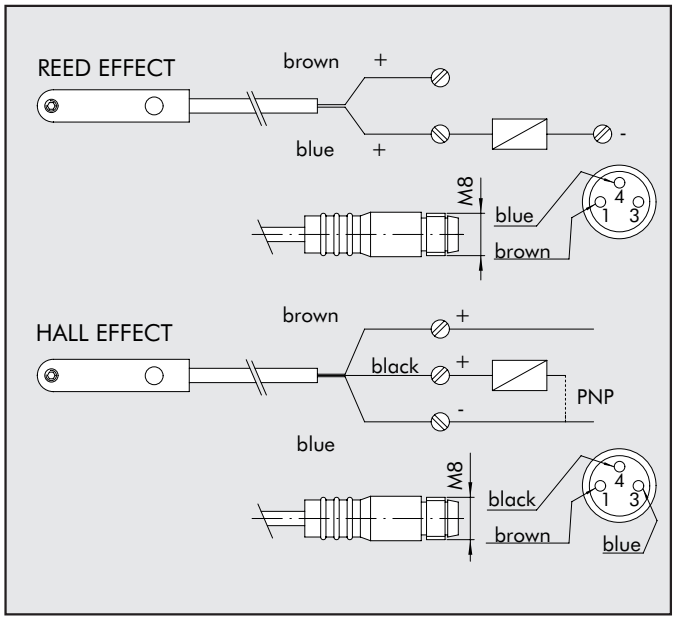
RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

This type of sensor can be inserted in the slot of the sensor from above. This means the cylinder heads do not require a through opening.

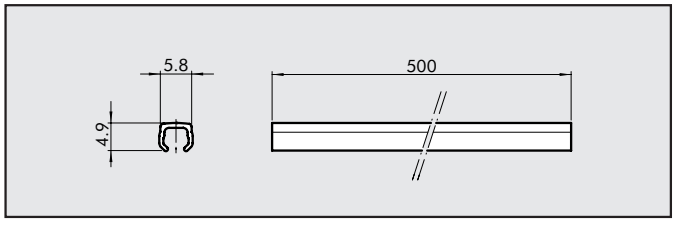
WIRING DIAGRAM



TECHNICAL DATA

		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2

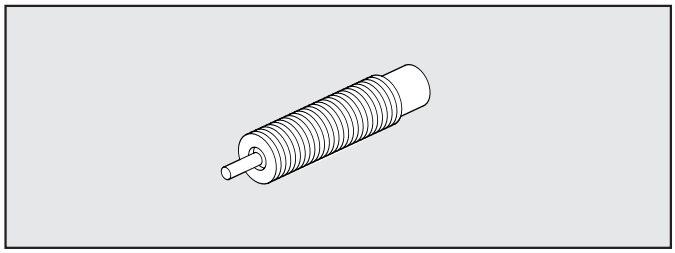
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

SPARES

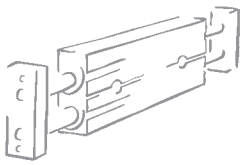
SHOCK ABSORBERS

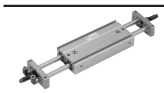


Code	Bore	Description
0950004009	ø16	Shock absorbers PMX 10 MF3 + nut M10x1
0950004010	ø22	Shock absorbers PM 15 MF3 + nut M12x1
0950004011	ø25-ø30	Shock absorbers SPM 25 MC-C + nut M14x1.5
0950004005	ø40	Shock absorbers PR50 MC2 + nut M20x1.5

TABLE OF CONTENTS
GUIDE UNITS AND SLIDES

CHAPTER 1.4

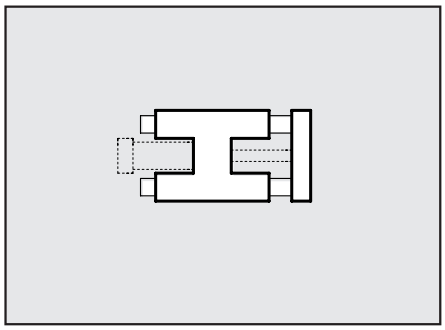


	INTRODUCTION	PAGE 1.4/02
	HEAVY-DUTY UNITS-S7	PAGE 1.4/08
	COMPACT PRECISION SLIDES - SERIE S8	PAGE 1.4/13
	TWIN CYLINDERS S10	PAGE 1.4/24
	TWIN CYLNDERS SLIDE WITH FIXED BODY SERIES S11	PAGE 1.4/28
	TWIN CYLNDERS SLIDE WITH FIXED PLATES SERIES S12	PAGE 1.4/34

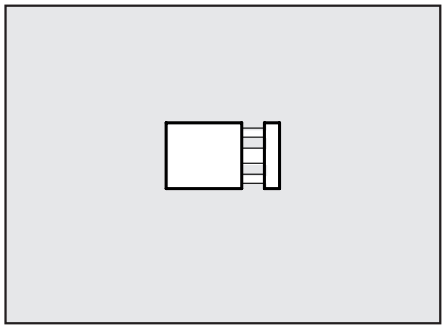
GUIDE UNITS AND SLIDES

TYPES

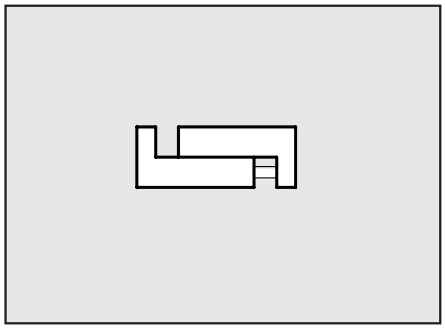
The range of guide units and slides is very extensive.
Guides are grouped into families.



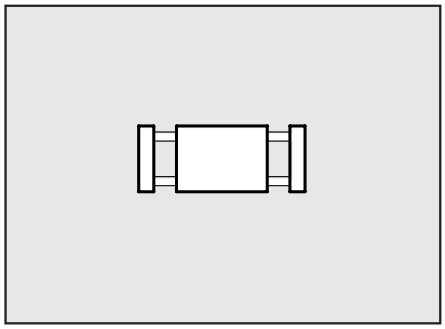
Guide units to couple with standard cylinders
These are separate units to which an ISO 6432 or ISO 6431 cylinder is attached.



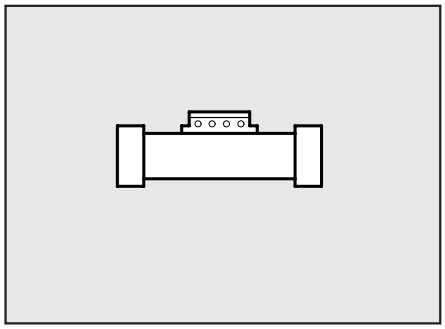
Pneumatic single piston cylinders with supports at the end of the piston rod.
The common factor in all the various configurations is that, as well the calibrated hole for the piston in the cylinder body or front head, there are other slots housing bushes or guide bearings for additional piston rods.



Guides with pneumatic actuator
The main part of this actuators is the guiding section which determines the shape, applications, loads, maximum strokes and cost. The pneumatic part is housed in one of the bodies of the unit or it comes as a complete cylinder housed inside the guide.

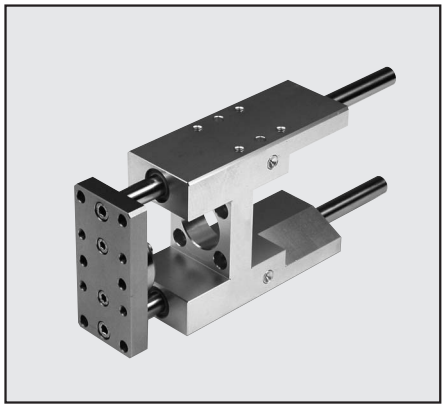


Twin pneumatic cylinder
The jacket has two calibrated holes for housing two pistons and rods side by side. There are versions with a single piston rod, through piston rod and different power supplies depending on whether you wish to fix the jacket or the flanges to the ends of the piston rod.



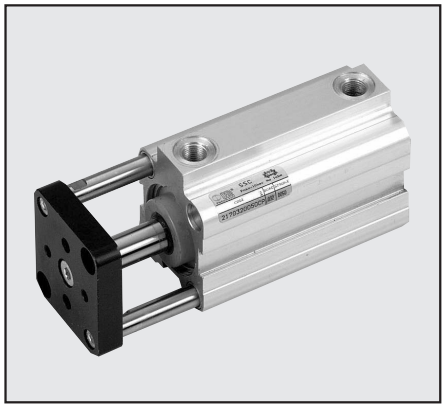
Rodless cylinders
In these cylinders the piston rod is integral with a carriage on the outside of the jacket, so there is no piston rod. We offer versions in which the jacket is open, with a C-shaped section, and piston and carriage linked mechanically. There are other versions – that we do not make - in which the jacket is closed and there is no contact with the piston which is moved by magnetic force.

GUIDE UNITS TO COUPLE WITH STANDARD CYLINDERS

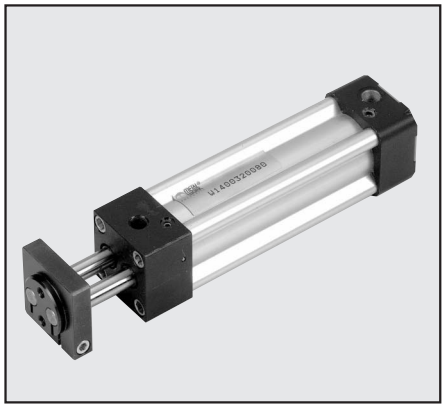


• Series S1
GDS, GDH and GDM for ISO 6432 minicylinders and ISO 6431 cylinders.
The GDS series, which has a C-shaped body, is for lesser loads. Series GDH and GDM have an H-shaped body. GDH guide units guide piston rod with ball re-circulation bushes and are more suitable for high speed.
There guides for minicylinders with bores 12-25 mm (see catalogue page 1.1/16) and guides for cylinders with bore 32-100 mm (see catalogue page 1.1/85).

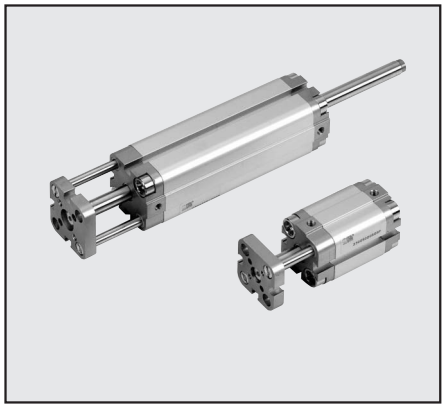
CYLINDERS WITH PISTON ROD SUPPORT SYSTEM



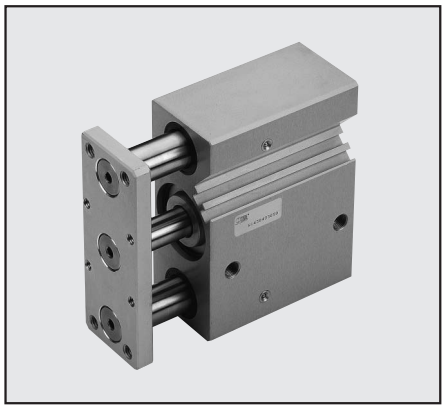
• Series S2
Short-stroke anti-rotation cylinders.
Bores available Ø 12 –100.
See catalogue pages 1.1/28 - 1.1/29



• Series S3
Twin-rod cylinders
These are cylinders with axial movement and ISO 6431 ports.
Bores available Ø 32 –100.
See catalogue page 1.1/110.

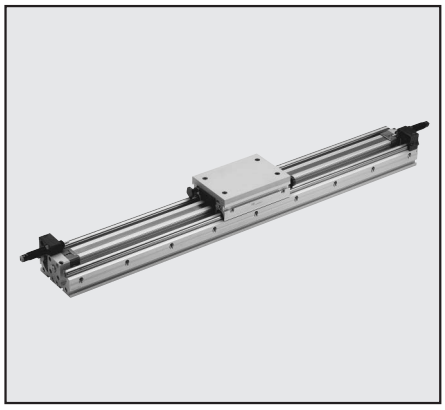


• Series S4
Compact anti-rotation cylinders
These are similar in design to the short-stroke anti-rotation cylinders. They are slightly sturdier since the guide rod diameter is greater in some sizes and the top plate is fixed on better.
There are bores Ø 12 –100 with dimensions to UNITOP NFE 49-004 1 and, and bores Ø 32-100 with fixing dimensions as for ISO 6431 cylinders.
See catalogue pages 1.1/39 - 1.1/40.

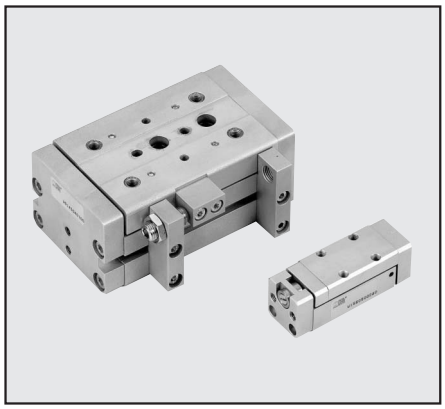


• Series S6
Compact guided cylinders
These cylinders have a high load capacity exceeding that of short-stroke anti-rotation cylinders and compact anti-rotation cylinders.
All come complete with magnets for magnetic sensors.
Bores available Ø 16-100.
See catalogue page 1.1/143.

GUIDES WITH PNEUMATIC ACTUATOR

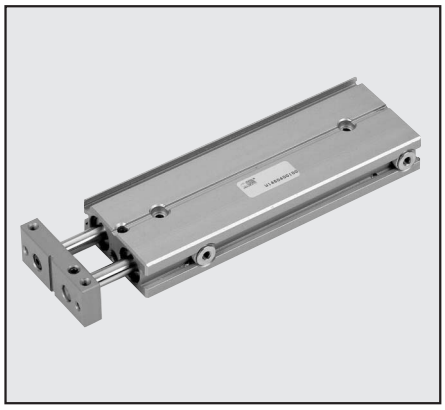


• Series S7
Heavy-duty guides
These are used with long strokes. The slide is guided by ball re-circulation shoes that run on hardened and tempered steel rods fixed all along an aluminium frame, which houses the pneumatic cylinder.
The size available can take a Ø 32 ISO 6431 cylinder or a Ø 25 rodless cylinder.
At the end of the stroke there are counter-blocks with a finely adjustable mechanical stop, hydraulic shock absorber and proximity sensor.
Optionals:
• Safety buffer
• Intermediate sensors
• Pneumatically-operated intermediate stops
• Interface plates
The guides can also house cog belt or ball screw systems, not described in this catalogue.

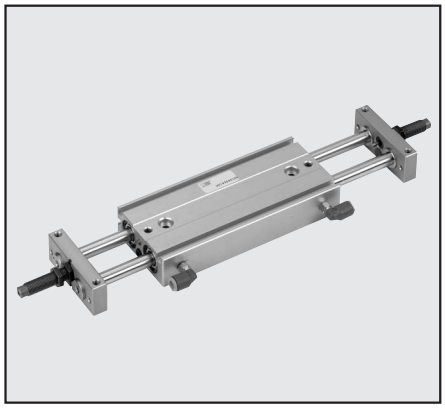


• Series S8
Compact precision slide
The slide is guides by ball re-circulation shoes that run on steel guides fixed directly onto the cylinder body. The slide runs along the side of the cylinder, which makes the assembly particularly compact and sturdy.
A sensor magnet is provided.
Slides with cylinder bores Ø 8-40.
Optionals:
• Adjustable mechanical stop
• Pneumatic cushioning
• Hydraulic shock absorber

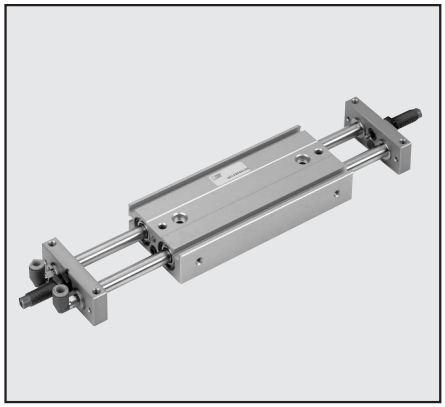
TWIN PNEUMATIC CYLINDER



• Series S10
Twin cylinder
The main feature of this cylinder is that it is extra flat.
There are sensor slots and air ports in one side.
Bores Ø 12-30.
There are two models, with bronze bushes or with ball re-circulation bearings for high speeds.



• Series S11
Twin cylinder guide unit
The main feature of this guide unit is that it is extra flat.
It is similar to the twin cylinder, but has through rods and two flanges at the ends. Bores Ø 12-30.
Two hydraulic shock absorbers can be mounted optionally.
There are two models, with bronze bushes or with ball re-circulation bearings for high speeds.

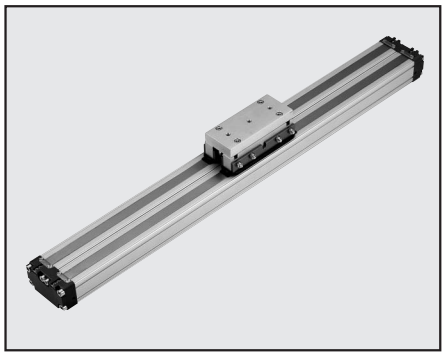


• Series S12
Twin cylinder slide
This is similar to the twin cylinder guide unit but here it is the central body that moves while the two end flanges are fixed. The air ports are at the ends of the piston rods.
Two hydraulic shock absorbers can be mounted optionally.
Bores Ø 12-30.
There are two models, with bronze bushes or with ball re-circulation bearings for high speeds.

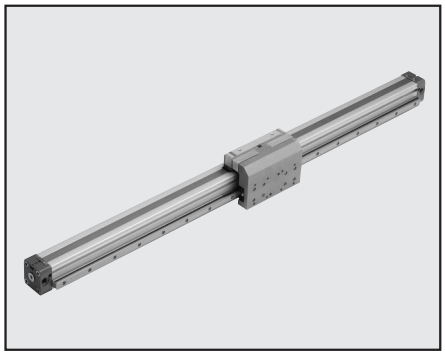
RODLESS CYLINDER



• Series S13
Standard rodless cylinder
This is the most compact guide unit available. In all the above models the axial length is equal to a basic value plus double the stroke, but here it is equal to the basic value plus the stroke, so slightly less than half the length of the other models. The other two dimensions are also the basic values, comparable only with solutions adopting piston rod supporting system. There are, however, limitations regarding radial loads and applicable moments.
Bores Ø 16-25-32-40-63.
See catalogue page 1.1/117.



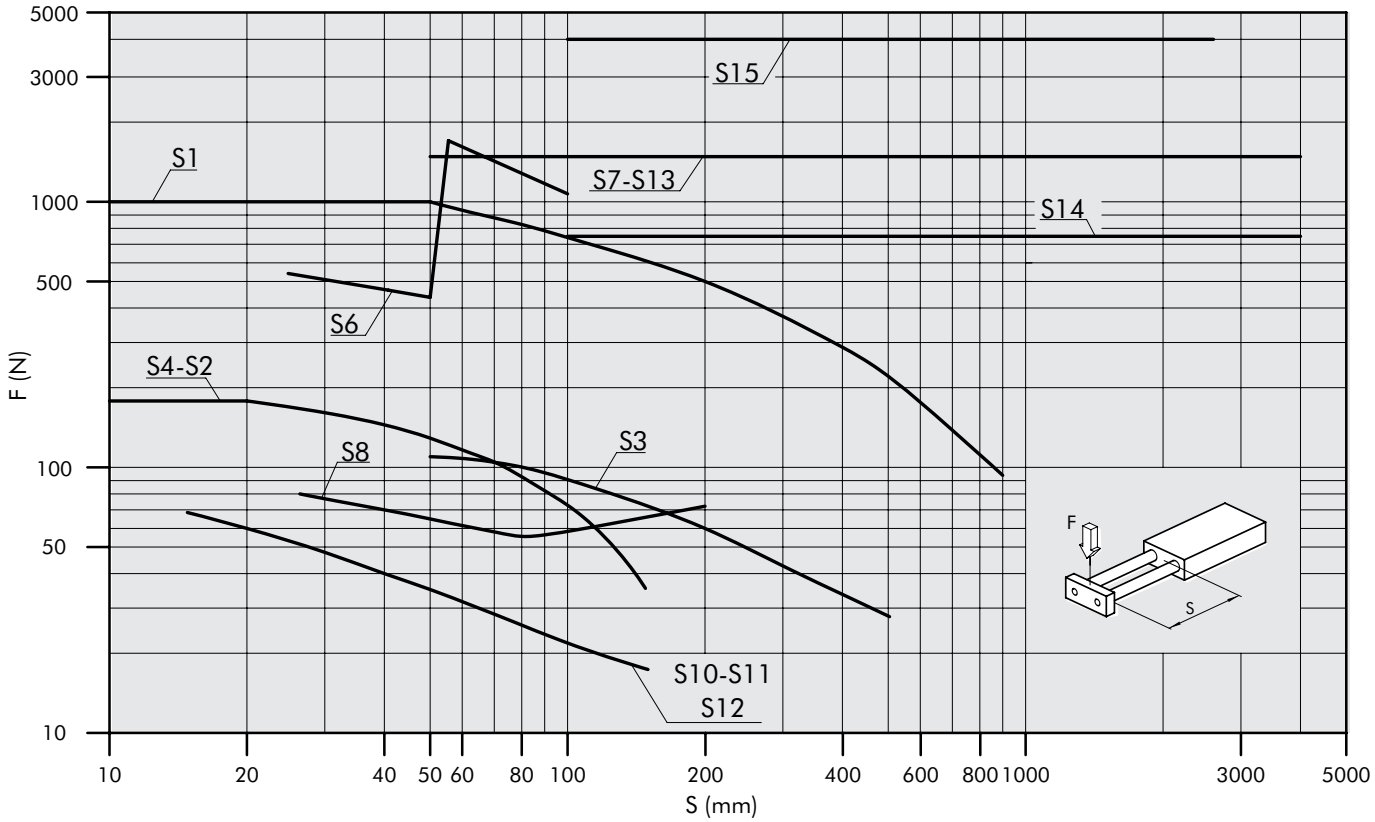
• Series S14
Rodless twin cylinders
These have twice the axial force of the standard cylinder. The radial load capacity and torque resistance are also much greater.
Bores Ø 16-32.
See catalogue page 1.1/125.



• Series S15
Rodless cylinder with ball recirculating guide
For improved load capacity with respect to standard rodless cylinders, this version has a steel guide on one side of the jacket and the re-circulation shoes fixed onto the carriage.
See catalogue page 1.1/127.

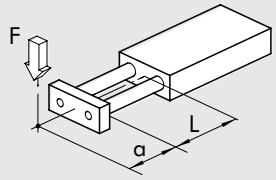
COMPARATIVE CHART – GUIDE UNITS AND SLIDES

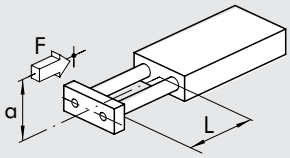
The lines plotted on the graph below show the following for each series of guide or slide:
• Maximum radial load F
• Stroke S
This allows you to determine the most appropriate series to meet your requirements. For instance, if you want a slide able to withstand radial loads greater than 100 N and with a stroke greater than 100 mm, you can find it in series S7, S13, S14 and S15.

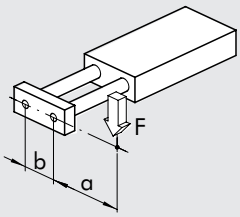


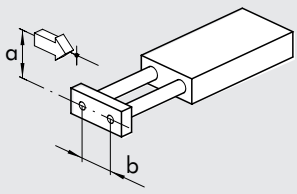
Admitted loads for each guide unit are shown in the catalogue.
If the load is not aligned with the moving plate, it is possible to determine the equivalent load or stroke with a good approximation.

LOAD CONDITIONS

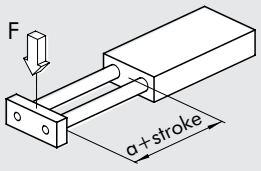




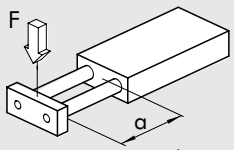




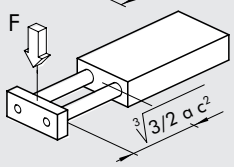
LOAD OR STROKE EQUIVALENCE

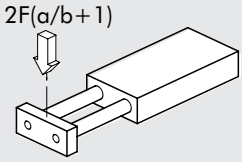


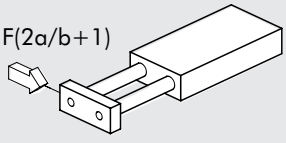
TO CHECK
THE ADMISSIBLE
LOAD



TO CHECK
THE ARROW



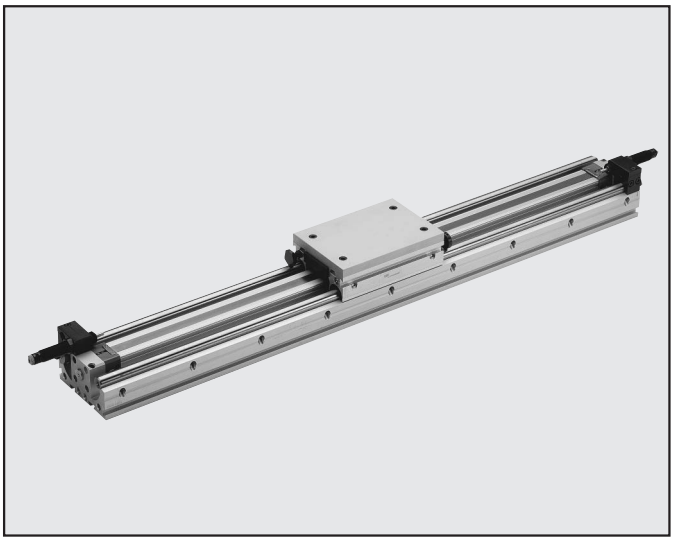




HEAVY-DUTY UNITS, SERIES S7

Series S7 heavy-duty guide units are used as a support of ISO 6431 cylinders or rodless cylinders in the case of very long strokes. The guide unit is comprised of an aluminium frame and a hardened and tempered steel guide with a ball re-circulation system.
Hydraulic decelerators and adjustable mechanical stops are mounted at the end of the stroke, toghether with an older for induction sensors (sensors excluded)
Optionals:

- Protection bellows
- Induction sensor
- Intermediate sensor
- Interface plates



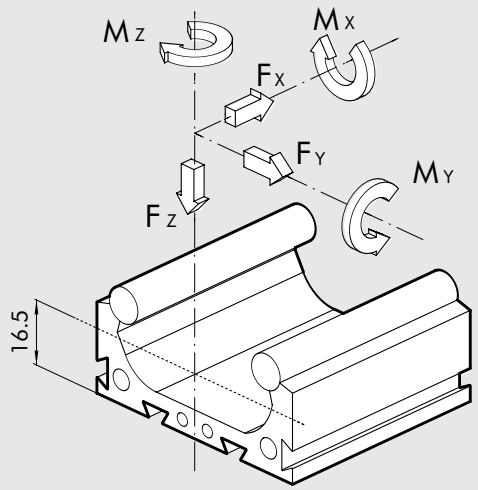
TECHNICAL FEATURES

Temperature range	°C	-15 to +80
Pressure range:		
- with Ø 32 ISO 6431 cylinder	bar	2÷10
- with Ø 25 rodless cylinder	bar	2÷8
Fluid		Lubricated or unlubricated filtered air. Lubrication, if used, must be continuous.
Strokes	mm	With Ø 32 ISO 6431 cylinder: 25 to 200, with rodless cylinder: 100 to 200 (on request up to 4000)
Versions		With Ø 32 ISO 6431 cylinder, with Ø 25 rodless cylinder, with protection bellows
Max. speed	m/s	3

KEY TO CODES

W 1 4 9	3	0 0	1 2 0 0
FAMILY	SIZE	VERSION	STROKE
W149 Heavy-duty guide unit	3 rodless cylinder Ø 25 4 ISO 6431 cylinder Ø 32	00 Standard 01 with polyurethane protection bellows	Standard strokes: 25*; 50*; 100; 125; 160; 200; 250; 320; 400; 500; 600; 700; 800; 900; 1000; 1100; 1200; 1300; 1400; 1500; 1600; 1700; 1800; 1900; 2000 *only with ISO 6431 cylinder (W1494...)

MOMENTS



Moment of inertia Jy	mm^4	226.000
Moment of inertia Jz	mm^4	2.800.000
Weight of version with ISO cylinder Ø 32	Kg	3 + 0.016 stroke/mm
Weight of version with rodless cylinder	Kg	5.1 + 0.010 stroke/mm
Deceleration energy	Joule	2÷10
Admitted loads		
Fy	N	± 1400
Fz	N	+ 2100; - 1000
Fx with ISO 6431 cylinder Ø 32	N	72 x pressure (bar)
Fx with rodless cylinder Ø 25	N	45 x pressure (bar)
Mx	Nm	55
My	Nm	100
Mz	Nm	100

CALCULATION:

With several simultaneous loads (compare each load with those admitted), it is possible to define the equivalent load.

$$Fequiv = \sqrt{\left[Fy + \frac{2\,Mz}{0.12}\right]^2 + \left[Fy + 2\,\frac{My}{0.12} + 2\,\frac{Mx}{0.08}\right]^2}$$

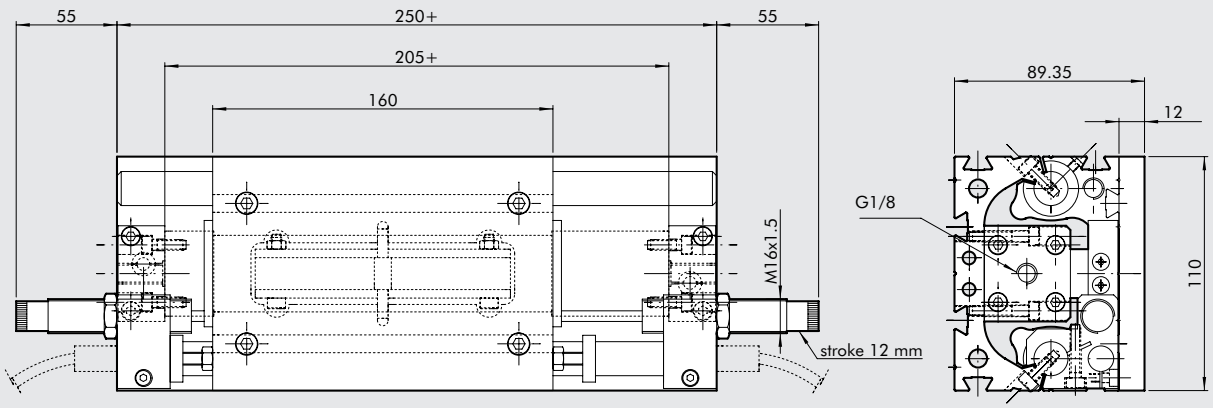
The equivalent load must be compared with the max. Fy load.

The loads in the table are admitted as
- static loads
- dynamic loads for 500 km duration.

As regards duration with other loads, use the following formula:

$$LIFE\ [Km] = 500 \cdot \left(\frac{F\ admitted}{F\ actual}\right)^3$$

DIMENSIONS OF VERSION S7 WITH RODLESS CYLINDER, Ø 25



+ = ADD THE STROKE

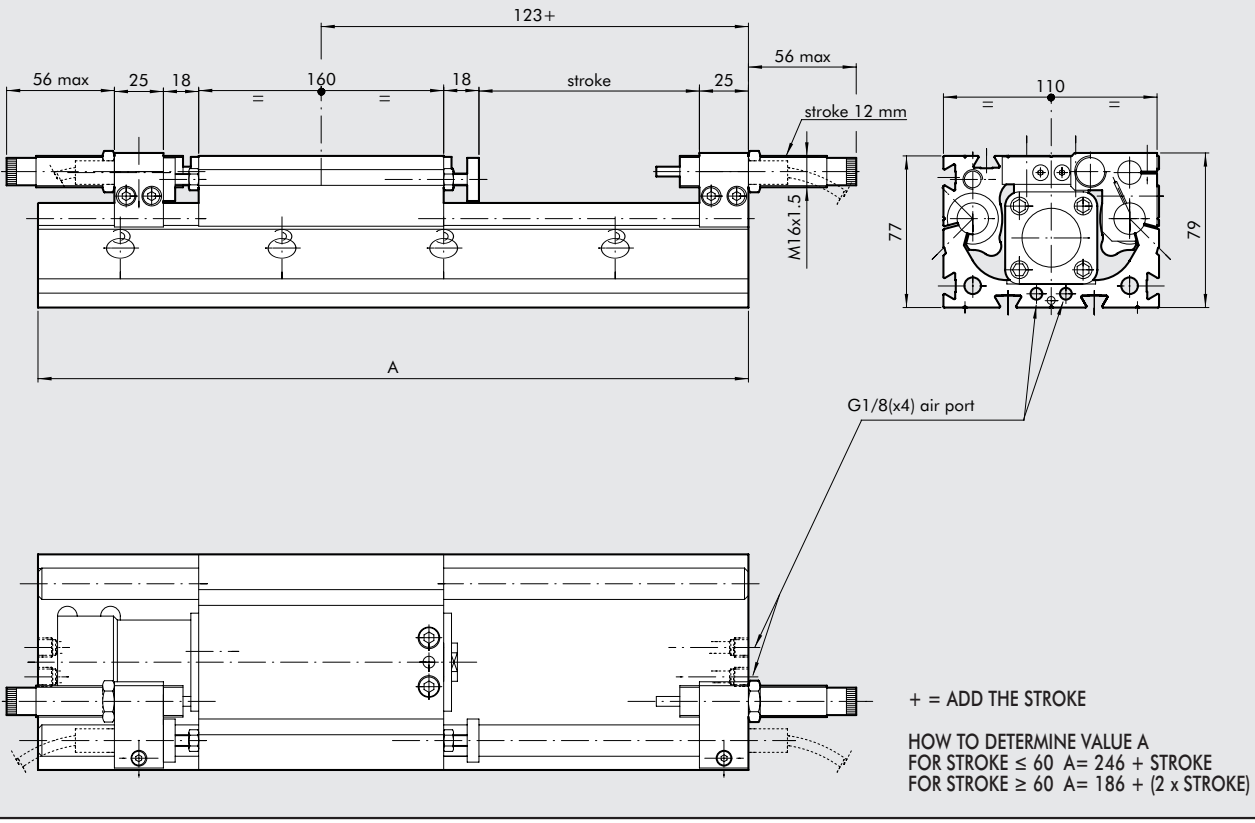
ORDERING CODES

Code

W149300....

N.B. Any additional work for fixing to a 12-mm plate must be done by the customer.

DIMENSIONS OF VERSION S7 WITH ISO 6431 CYLINDER, Ø 32



+ = ADD THE STROKE

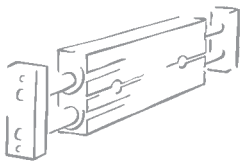
HOW TO DETERMINE VALUE A
FOR STROKE ≤ 60 A= 246 + STROKE
FOR STROKE ≥ 60 A= 186 + (2 x STROKE)

ORDERING CODES

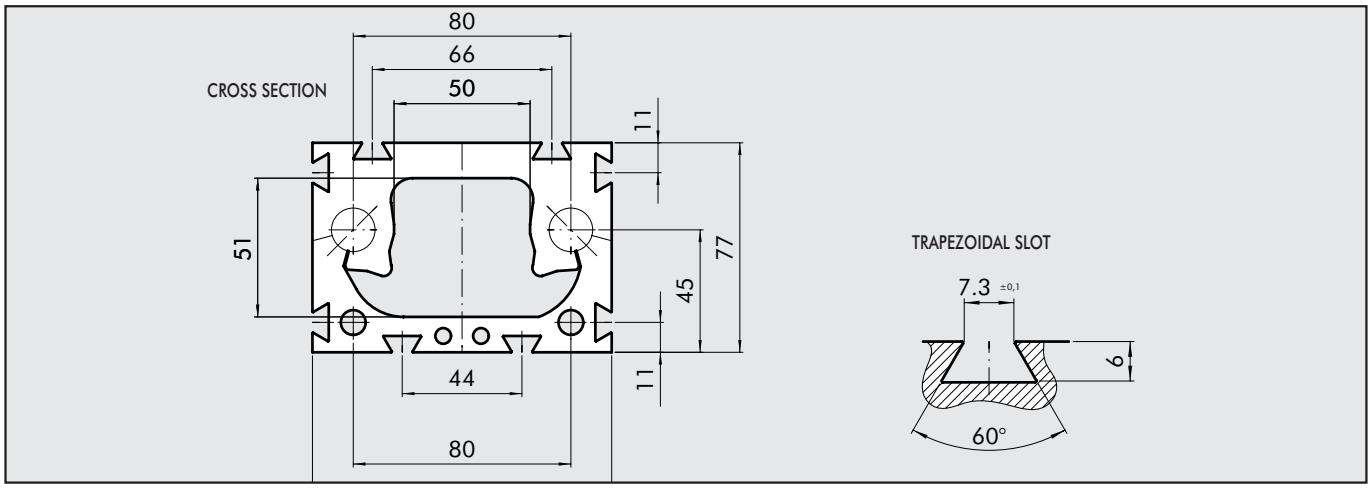
Code

W149400....

N.B. Any additional work for fixing to a 12-mm plate must be done by the customer.

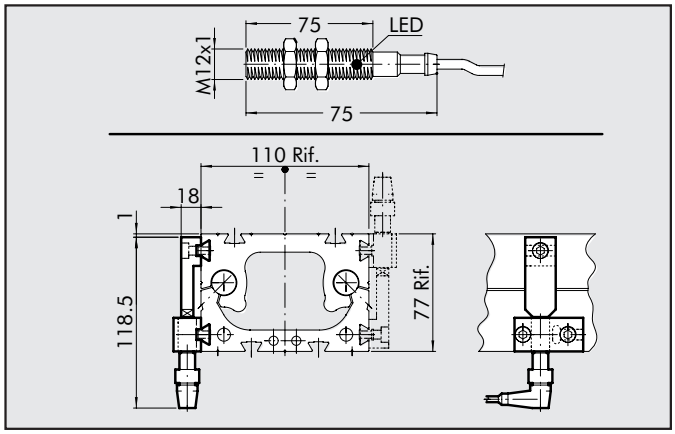


CROSS SECTIONS AND ANCHOR POINTS



ACCESSORIES

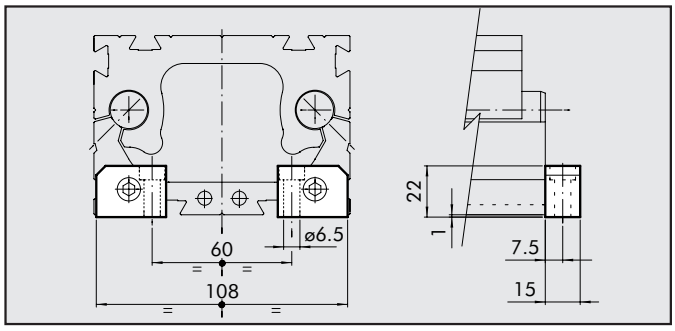
INDUCTION SENSORS



ORDERING CODES

Code	Description
W0950037395	INDUCTION SENSOR M12-PNP-NO-2 m
W0950009001	INTERMEDIATE SENSOR KIT FOR S7

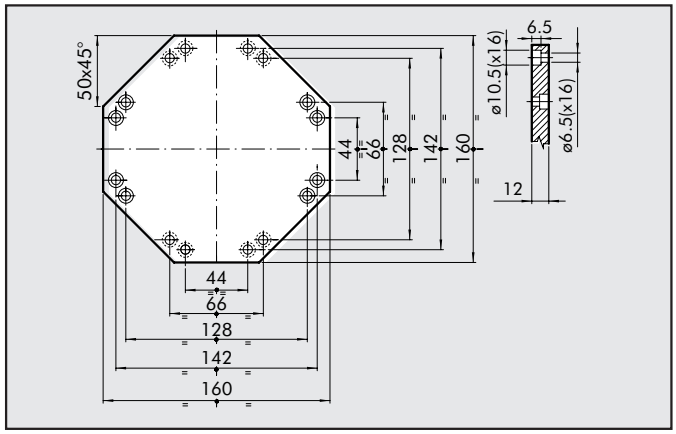
FOOT



ORDERING CODES

Code	Description
W0950009003	FEET KIT FOR S7

INTERFACE PLATE



ORDERING CODES

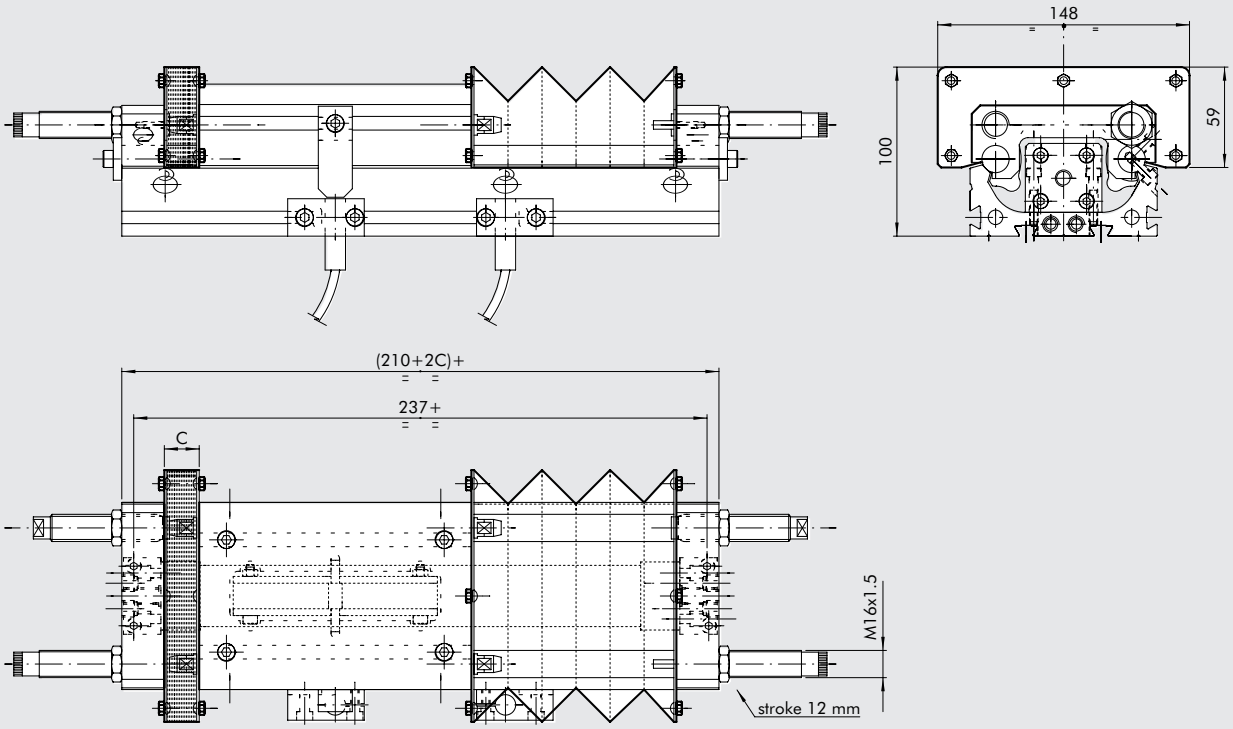
Code	Description
W0950009002	CROSS PLATE FOR S7

With the cross plate it is possible to connect two S7 heavy guides in the following ways:

- bottom side of one guide (centre distance 44) with the carriage of the another (centre distance 66)
- bottom side of one guide (centre distance 44) with the bottom side of the other (centre distance 44)
- carriage of one guide (centre distance 66) with the carriage of theother (centre distance 66).

Note: packed complete with 2 pieces and 2 screws

DIMENSIONS OF VERSION S7 WITH PROTECTION BELLOWS



+ = ADD THE STROKE

ORDERING CODES

Code	Description
W149301....	VERSION S7 WITH RODLESS CYLINDER AND POLYURETHANE PROTECTION BELLOWS

HOW TO CALCULATE VALUE C

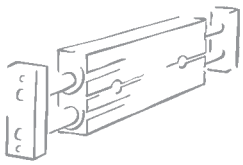
- For polyurethane 0.0825 x stroke + 8

If C < 20.5, then C=20.5

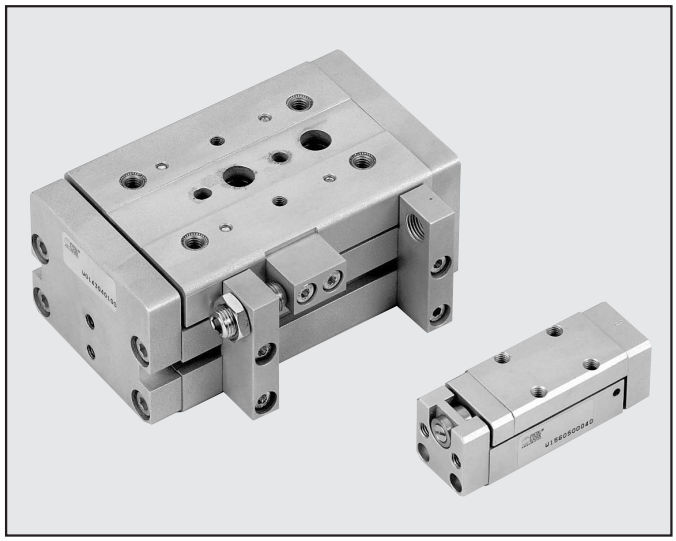
N.B. Any additional work for fixing to a 12-mm plate on the slide must be done by the customer.

NOTES

COMPACT PRECISION SLIDES SERIES S8



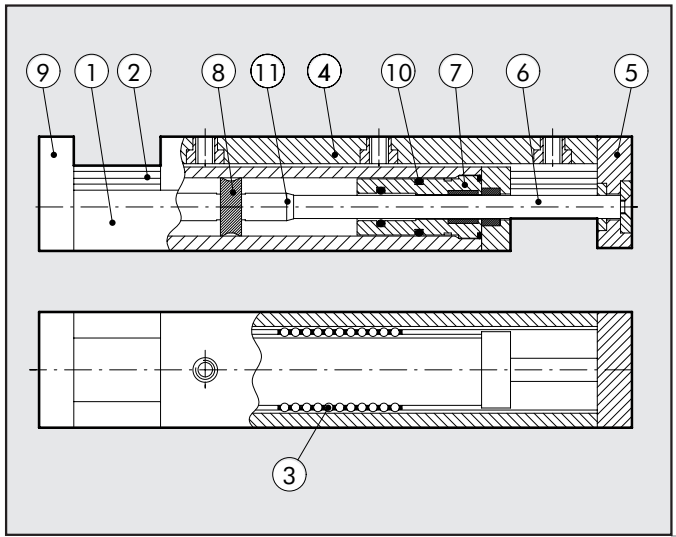
There are two sliding systems available:
• Type SB-B with in-line ball bearings
• Type S8-C with ball re-circulation bearings
The guides fixed onto the slide body are made of hardened and tempered steel. There are slots in the body of slide S8-C for mounting a retracting sensor. There are also a kits for mounting adjustable mechanical stops or hydraulic shock absorbers.
All S8 slides come on request with permanent pneumatic cushioning.
Slide made with Toss-System.



TECHNICAL DATA		S8-B	S8-C
Pressure range	bar	2-6	
Temperature range	°C	-10 to +60	
Fluid		20µ unlubricated filtered air. Lubrication, if used, must be continuous	
Bores	mm	8 10 16 20 25 32 40	10 16 20 25 32 40
Strokes	mm	Ø 8; 10; 25; 50; 80; 100	10 to 40: 25; 50; 80; 100; 125; 160; 200
	mm	10 to 40: 10; 25; 80; 100; 125; 160; 200	
Type of guide		In-line ball bearings	Ball re-circulation
		(bars of hardened, tempered and ground steel)	(bars of hardened, tempered and ground steel)
Air ports		Both on front plate	
Versions		Double-acting	Double-acting
		With permanent pneumatic cushioning	With permanent pneumatic cushioning
			With 5 mm adjustable mechanical stops
			With hydraulic shock absorbers
			With pneumatic cushioning and mechanical stops
End-of-stroke sensors		Magnetic, only on request	Magnetic, retracting type

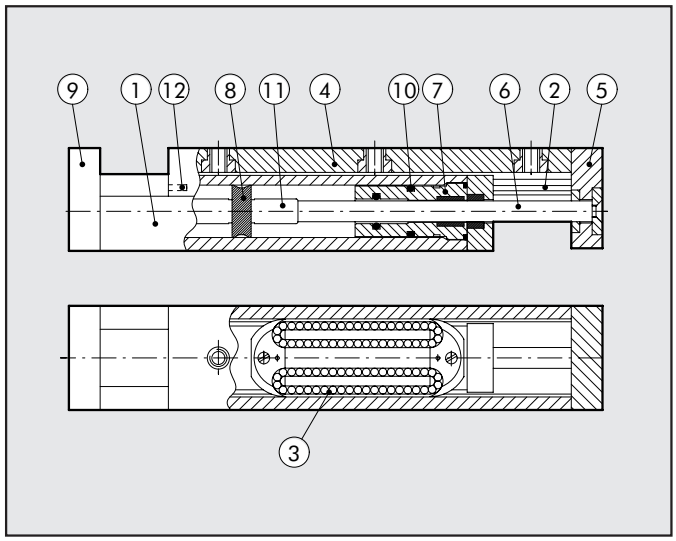
COMPONENTS FOR SERIES S8-B

① SLIDE BODY: aluminium
② GUIDES: high Cr alloy steel
③ IN-LINE BALL CAGE: steel
④ MOVING PART: aluminium
⑤ FRONT PLATE: aluminium
⑥ PISTON ROD: thick chromium plated steel
⑦ BASE: Hostaform®
⑧ PISTON: NBR
⑨ AIR PORT PLATE: aluminium
⑩ STATIC O-RINGS: NBR
⑪ CUSHIONING CONE: OT 58



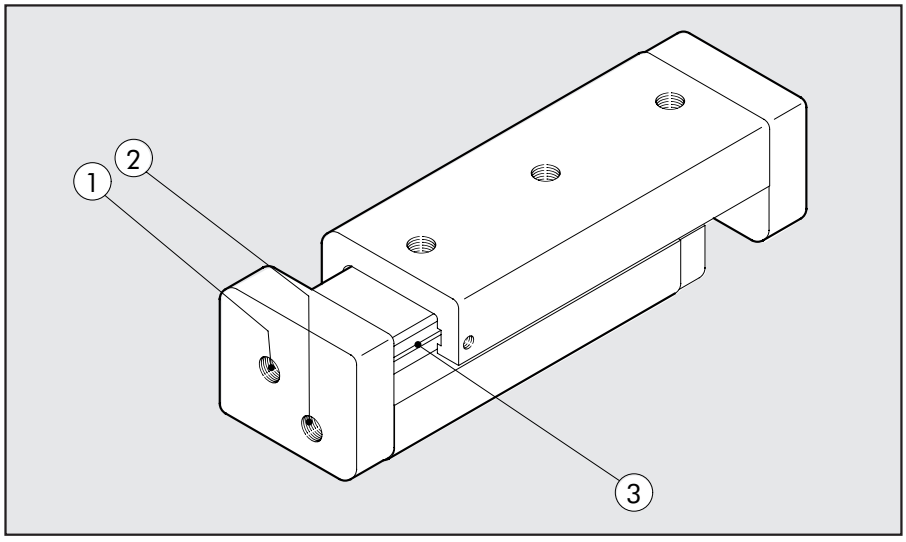
COMPONENTS FOR SERIES S8-C

① SLIDE BODY: aluminium
② GUIDES: high Cr alloy steel
③ BALL RE-CIRCULATION TRACKS: steel
④ MOVING PART: aluminium
⑤ FRONT PLATE: aluminium
⑥ PISTON ROD: thick chromium plated steel
⑦ BASE: Hostaform®
⑧ PISTON: NBR
⑨ AIR PORT PLATE: aluminium
⑩ STATIC O-RINGS: NBR
⑪ CUSHIONING CONE: OT 58
⑫ MAGNET: Plastoferrite



COMPACT PRECISION SLIDE SERIES S8-B

① Pneumatic port for slide opening
② Pneumatic port for slide closing
③ Ball system guide

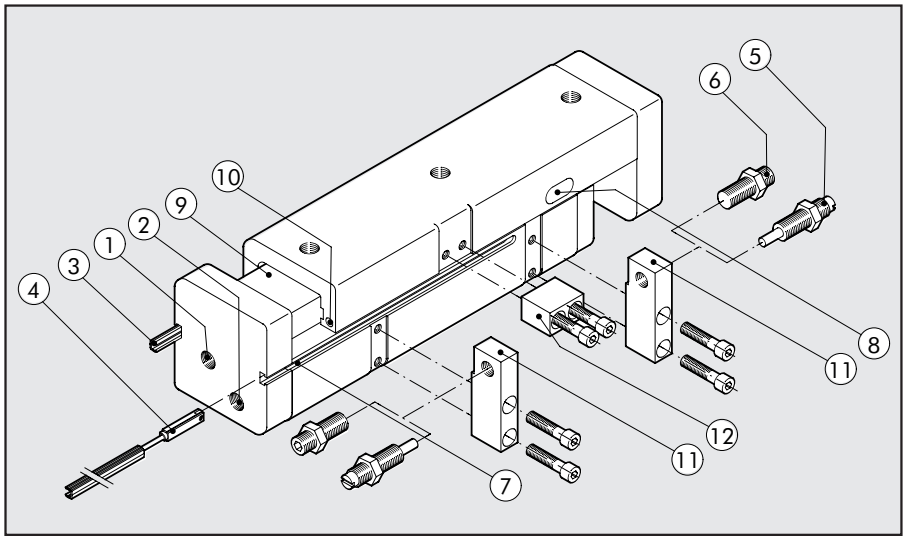


COMPACT PRECISION SLIDE SERIES S8-C

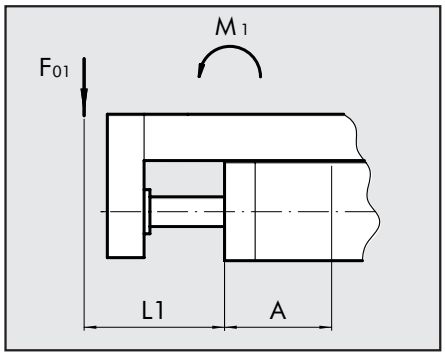
① Pneumatic port for slide opening
② Pneumatic port for slide closing
③ Slot cover strip
④ Retracting sensor

Code
W0950000160
W0950028184
W0950025390
W0950029394

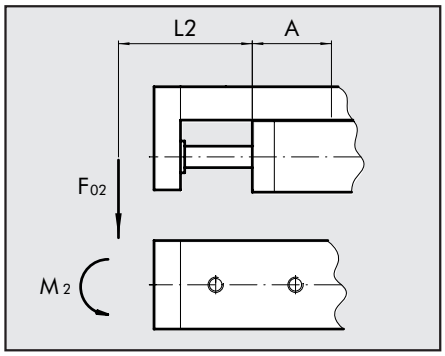
⑤ Hydraulic decelerator
⑥ Mechanical stop
⑦ Sensor slot
⑧ Lubrication point for ball re-circulation system
⑨ Ball system guide
⑩ Magnet
⑪ Hydraulic decelerator/mechanical stop support
⑫ Counter block for hydraulic decelera-tor/mechanical stop



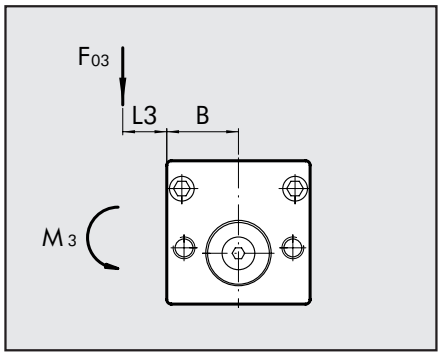
CALCULATIONS FOR COMPACT PRECISION SLIDES SERIES S8-B



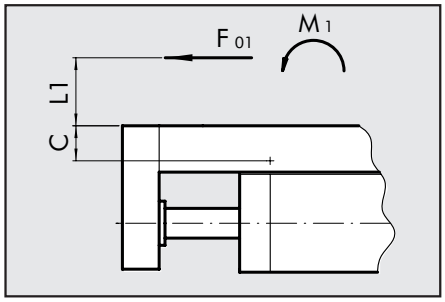
F_{01} $(L_1 + A) \leq M\ 1$



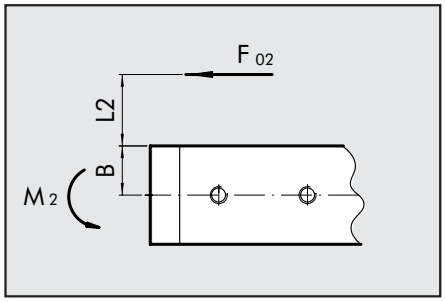
F_{02} $(L_2 + A) \leq M\ 2$



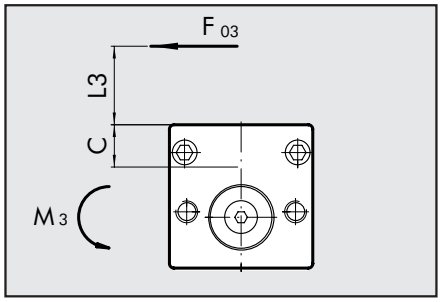
F_{03} $(L_3 + B) \leq M\ 3$



F_{01} $(L_1 + C) \leq M\ 1$



F_{02} $(L_2 + B) \leq M\ 2$

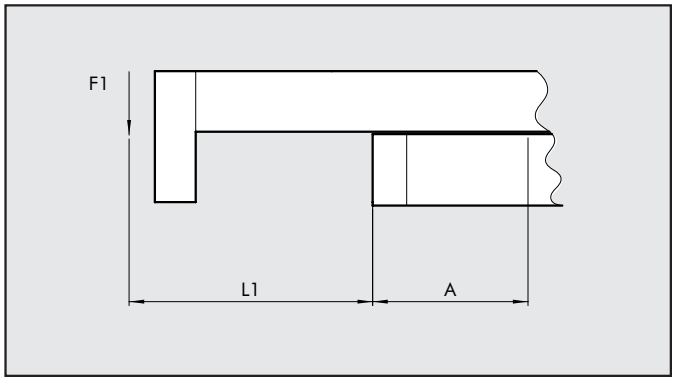


F_{03} $(L_3 + C) \leq M\ 3$

SERIES S8-B

	STROKE 10 mm					STROKE 25 mm					STROKE 50 mm					STROKE 80 mm				
	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C
Ø	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm
8-B	1.28	0.58	34.5	12.25	11.4	1.55	0.58	42	12.25	11.4	2.08	0.81	60.8	12.25	11.4	2.63	0.98	80	12.25	11.4
10-B	1.37	1.04	40.6	17.25	10.4	1.42	1.04	48.1	17.25	10.4	2.12	1.45	66.9	17.25	10.4	2.6	1.76	86.1	17.25	10.4
16-B	1.52	1.15	40.6	19.75	11.5	1.58	1.15	48.1	19.75	11.5	2.35	1.61	66.9	19.75	11.5	2.88	1.96	86.1	19.75	11.5
20-B	1.67	1.27	40.6	19.75	13.6	1.74	1.27	48.1	19.75	13.6	2.58	1.77	66.9	19.75	13.6	3.17	2.16	86.1	19.75	13.6
25-B	3.32	2.65	49.2	27.25	16	3.83	2.65	56.7	27.25	16	4.86	4.16	77	27.25	16	6.7	5.68	102.4	27.25	16
32-B	4.6	3.87	49.7	32.25	17.7	4.78	4.56	57.2	32.25	17.7	6.36	5.88	75.8	32.25	17.7	9.31	8.48	103.2	32.25	17.7
40-B	5.06	4.42	49.7	34.75	20.8	5.26	5.17	57.2	34.75	20.8	7	6.67	75.8	34.75	20.8	10.24	9.59	103.2	34.75	20.8
	STROKE 100 mm					STROKE 125 mm					STROKE 160 mm					STROKE 200 mm				
	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C
Ø	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm
8-B	3.37	1.22	96.3	12.25	11.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
10-B	3.23	2.18	98.4	17.25	10.4	3.93	2.18	121.2	17.25	10.4	5.22	2.18	151.3	17.25	10.4	6.13	2.18	178.1	17.25	10.4
16-B	3.59	2.42	98.4	19.75	11.5	4.37	2.42	121.2	19.75	11.5	5.8	2.42	151.3	19.75	11.5	6.81	2.42	178.1	19.75	11.5
20-B	3.95	2.67	98.4	19.75	13.6	4.8	2.67	121.2	19.75	13.6	6.38	2.67	151.3	19.75	13.6	7.5	2.67	178.1	19.75	13.6
25-B	8.07	6.82	120.2	27.25	16	13	6.82	140.5	27.25	16	11.38	6.82	168.4	27.25	16	13.71	6.82	201.4	27.25	16
32-B	10.84	9.75	119.4	32.25	17.7	13.07	9.75	141.2	32.25	17.7	14.78	9.75	164.9	32.25	17.7	18.48	9.75	200.4	32.25	17.7
40-B	11.92	11.04	119.4	34.75	20.8	14.38	11.04	141.2	34.75	20.8	16.26	11.04	164.9	34.75	20.8	20.32	11.04	200.4	34.75	20.8

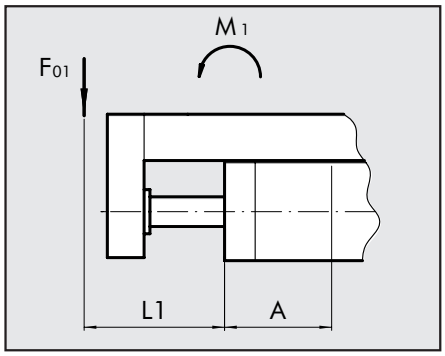
EXAMPLE OF CALCULATION



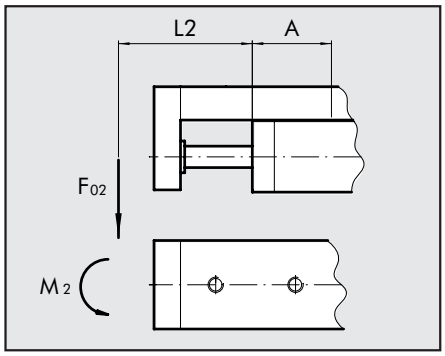
Values: Ø25 corsa 80 mm Tipo S8-B
DISTANCE L_1 = 40 mm = 0.04 m
LONG MOMENT M_1 = 6.7 Nm
CORRECTION FACTOR A = 102.4 mm = 0.1024 m

CALCULATION: $F_1 \leq \frac{M_1}{L_1+A} = \frac{6.7\ Nm}{0.04 + 0.1024} = 47\ N$

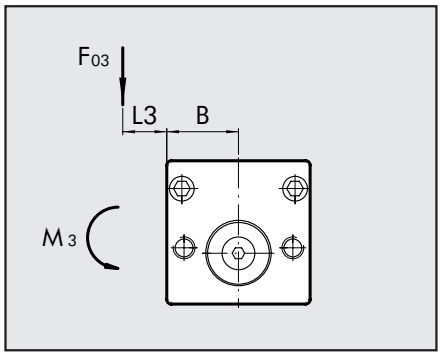
CALCULATIONS FOR COMPACT PRECISION SLIDES SERIES S8-C



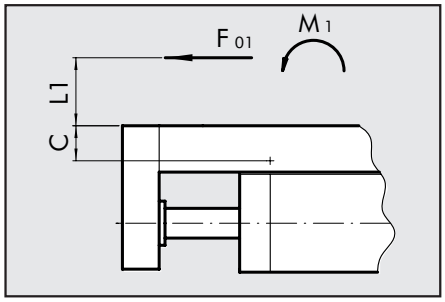
F_{01} $(L_1 + A) \leq M\ 1$



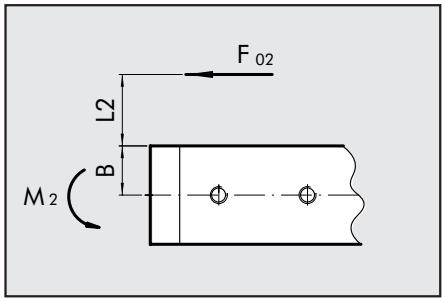
F_{02} $(L_2 + A) \leq M\ 2$



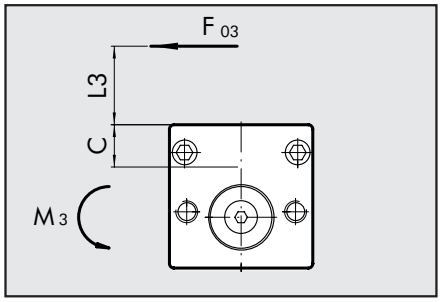
F_{03} $(L_3 + B) \leq M\ 3$



F_{01} $(L_1 + C) \leq M\ 1$



F_{02} $(L_2 + B) \leq M\ 2$



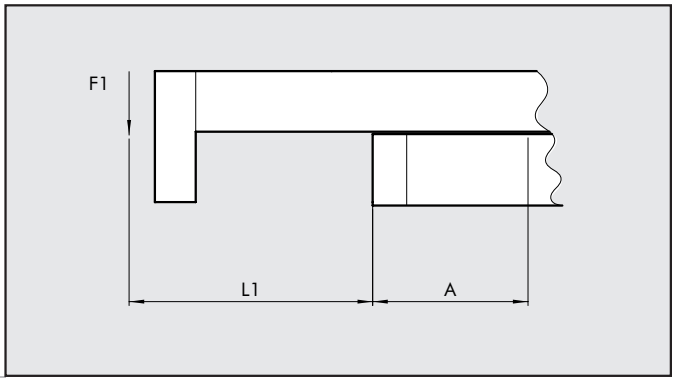
F_{03} $(L_3 + C) \leq M\ 3$

SERIES S8-C

	STROKE 25 mm					STROKE 50 mm					STROKE 80 mm					STROKE 100 mm				
	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C
Ø	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm
10-B	2.6	1.03	58.5	17.25	12	2.9	1.35	66.5	17.25	12	2.7	1.23	64	17.25	12	3.7	1.85	76.5	17.25	12
16-B	2.9	1.15	59.5	19.75	12	3.2	1.5	66.5	19.75	12	3	1.37	64	19.75	12	4.1	2.06	76.5	19.75	12
20-B	3.2	1.27	59.5	19.75	15	3.5	1.65	66.5	19.75	15	3.3	1.51	64	19.75	15	4.5	2.26	76.5	19.75	15
25-B	4.4	2.65	68	27.25	18	6.5	4.24	84.5	27.25	18	6.8	4.77	87	27.25	18	8.2	6.1	97	27.25	18
32-B	7.8	4.56	84.5	32.25	21.8	7.8	4.56	84.5	32.25	21.8	8.3	5	87	32.25	21.8	10.3	6.83	97	32.25	21.8
40-B	8.6	5	89.5	34.75	21.8	8.6	5	89.5	34.75	21.8	9.2	5.5	92	34.75	21.8	11.3	7.5	102	34.75	21.8

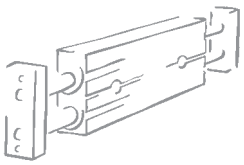
	STROKE 125 mm					STROKE 160 mm					STROKE 200 mm				
	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C	M1/M2	M3	A	B	C
Ø	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm	Nm	Nm	mm	mm	mm
10-B	5	2.07	87.5	17.25	12	5.7	2.07	97.5	17.25	12	7.1	2.07	117.5	17.25	12
16-B	5.5	2.3	87	19.75	12	6.3	2.3	97	19.75	12	7.9	2.3	117	19.75	12
20-B	6	2.53	87	19.75	15	6.9	2.53	97	19.75	15	8.7	2.53	117	19.75	15
25-B	10	5.3	101.5	27.25	18	12.3	5.3	119	27.25	18	15.5	5.3	144	27.25	18
32-B	13.2	9.57	112	32.25	21.8	15.8	8.65	116	32.25	21.8	20.2	8.65	166	32.25	21.8
40-B	14.5	10.5	117	34.75	21.8	17.4	9.5	120	34.75	21.8	22.2	9.5	260	34.75	21.8

EXAMPLE OF CALCULATION

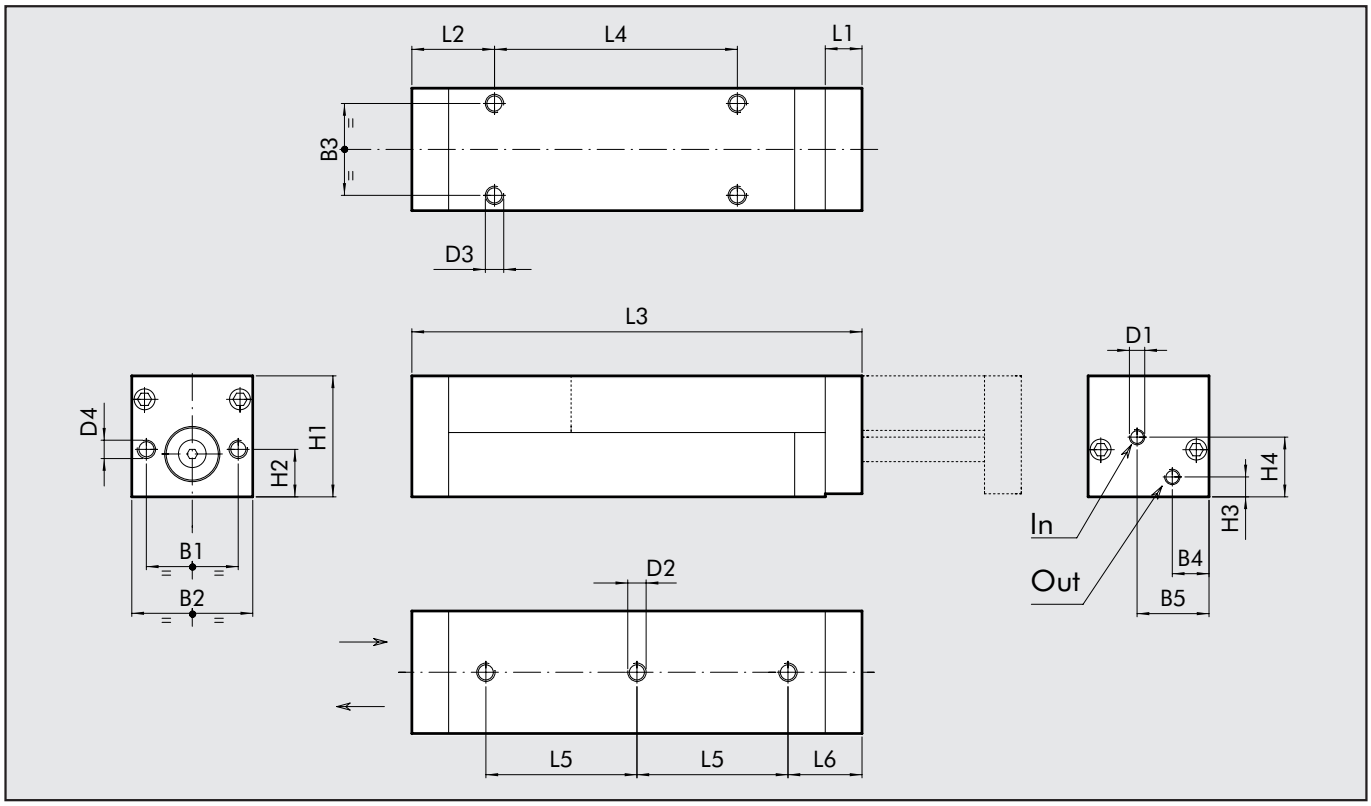


Values: Ø32 corsa 50 mm
DISTANCE L_1 = 20 mm = 0.02 m
LONG MOMENT M_1 = 7.8 Nm
CORRECTION FACTOR A = 84.5 mm = 0.0845 m

CALCULATION: $F_1 \leq \frac{M_1}{L_1+A} = \frac{7.8\ Nm}{0.02 + 0.0845} = 74.6\ N$



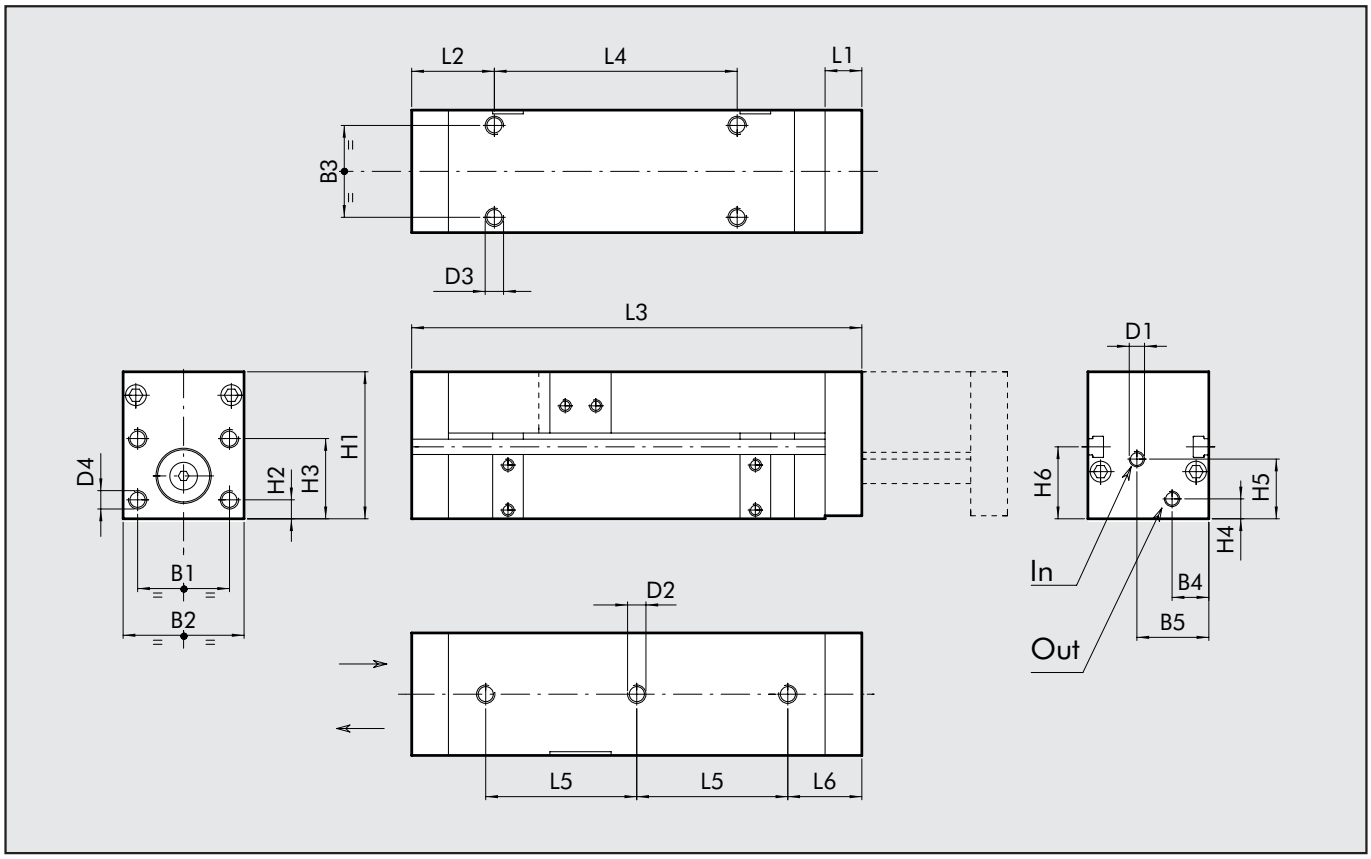
DIMENSIONS OF COMPACT PRECISION SLIDES SERIES S8-B



Bore Ø (mm)	Piston rod bore Ø (mm)	B1 (mm)	B2 (mm)	B3 (mm)	B4 (mm)	B5 (mm)	D1	D2 Thread/ Depth (mm)	D3 Thread/ Depth (mm)	D4 Thread/ Depth (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	L1 (mm)	L2 (mm)
8	4	16	25	18	12.5	12.5	M5	M4/6.0	M4/8.0	M4/9.5	25	11.7	4.5	18.3	10	22
10	5	26	35	25	12.0	21	M5	M6/5.5	M5/10	M6/11.5	26	10.5	5.0	14.0	12	27
16	8	30	40	30	13.0	25.5	M5	M6/5.5	M6/12	M6/11.5	32	12.0	7.5	15.5	12	27
20	8	30	40	30	12.5	24.5	M5	M6/8.0	M6/14	M6/11.5	39.5	15.5	8.0	20.0	12	22
25	10	35	55	39	17.5	34.75	G 1/8"	M8/7.5	M8/18	M8/10.5	45	19.0	12.0	23.0	15	35
32	12	45	65	49	20.0	40.5	G 1/8"	M8/7.5	M8/20	M8/10.5	50	20.0	10.8	28.3	15	35
40	15	50	70	54	23.0	44.5	G 1/4"	M8/10.5	M8/20	M8/10.5	65	27.0	15.0	36.5	20	40

Bore (mm)		(mm) Stroke 10	25	50	80	100	125	160	200
8	L 3	74	89	129	169	192	–	–	–
	L 4	21	36	76	116	2 x 69.5	–	–	–
	L 5	29	44	2 x 42	2 x 62	3 x 49	–	–	–
	L 6	22	22	22	22	22	–	–	–
Weight [g]		100	150	200	260	300	–	–	–
10/16	L 3	80	95	135	175	200	245	305	360
	L 4	15	30	70	2 x 55	2 x 67.5	2 x 90	2 x 120	2 x 147.5
	L 5	31	2 x 23	2 x 43	3 x 42	3 x 50	3 x 65	3 x 85	4 x 78
	L 6	24	24	24	24	24.5	24.5	24.5	23.5
Weight [g]		190/290	240/380	340/530	440/630	540/730	590/880	780/1080	890/1280
20	L 3	80	95	135	175	200	245	305	360
	L 4	25	30	70	2 x 55	2 x 67.5	2 x 90	2 x 120	2 x 147.5
	L 5	31	2 x 23	2 x 43	3 x 42	3 x 50	3 x 65	3 x 85	4 x 78
	L 6	24	24	24	24	24.5	24.5	24.5	23.5
Weight [g]		390	440	580	730	830	1030	1280	1530
25/32	L 3	101	121	156	211	246	286	341	411
	L 4	20	40	75	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165
	L 5	45	65	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115
	L 6	27.5	27.5	27.5	27	27.5	27	27.5	32.5
Weight [g]		640/840	740/1000	1000/1300	1340/1740	1540/2040	1840/2400	2200/2840	2600/3440
40	L 3	116	131	166	221	256	296	351	421
	L 4	25	40	75	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165
	L 5	50	65	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115
	L 6	32.5	32.5	32.5	32	32.5	32	32.5	37.5
Weight [g]		1340	1540	1900	2500	2900	3300	3940	4640

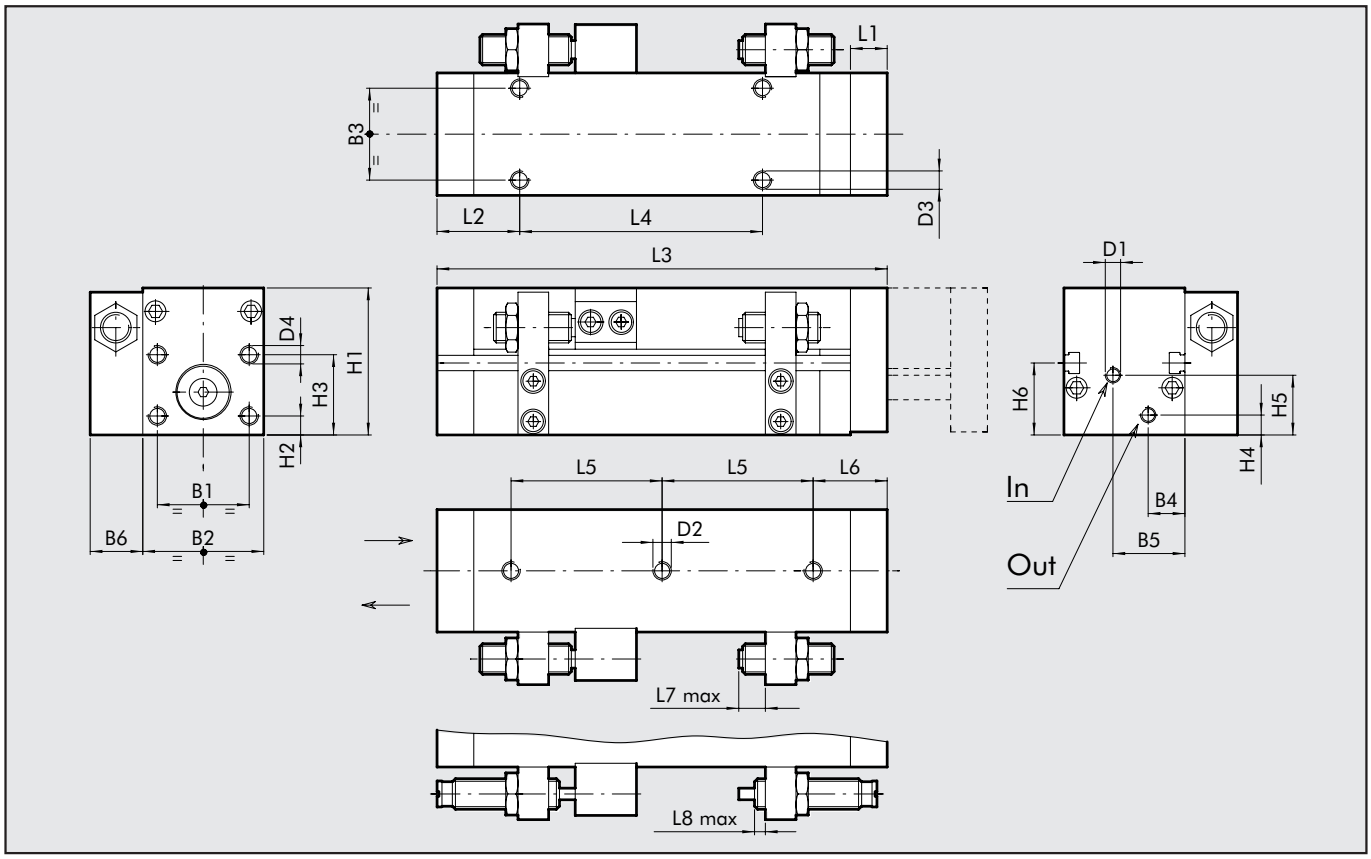
DIMENSIONS OF COMPACT PRECISION SLIDES SERIES S8-C



Bore Ø (mm)	Piston rod bore Ø (mm)	B1 (mm)	B2 (mm)	B3 (mm)	B4 (mm)	B5 (mm)	D1	D2 Thread/ Depth (mm)	D3 Thread/ Depth (mm)	D4 Thread/ Depth (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	L1 (mm)	L2 (mm)
10	5	24	35	25	12.0	21.0	M5	M6/5.5	M5/6	M6/11.5	35	5.7	20.7	7.0	14.0	12	27
16	8	28	40	30	13.0	25.5	M5	M6/5.5	M6/10	M6/11.5	40	6.2	21.2	7.5	15.5	12	27
20	8	28	40	30	12.5	24.5	M5	M6/8.0	M6/14	M6/11.5	48	6.2	26.2	8.0	20.0	12	27
25	10	35	55	39	17.5	34.75	G 1/8"	M8/7.5	M8/15	M8/10.5	60	10.2	35.2	11.0	24.0	15	35
32	12	45	65	49	20.0	40.5	G 1/8"	M8/7.5	M8/20	M8/10.5	70	10.2	40.2	10.8	28.3	15	35
40	15	50	70	54	23.0	44.5	G 1/4"	M8/10.5	M8/20	M8/10.5	80	10.2	45.2	15.0	36.5	20	40

Bore (mm)		(mm) Stroke						
		25	50	80	100	125	160	200
10/16	L 3	135	175	200	245	305	360	440
/20	L 4	70	2 x 55	2 x 67.5	2 x 90	2 x 120	2 x 147.5	3 x 125
	L 5	2 x 43	3 x 42	3 x 50	3 x 65	3 x 85	4 x 78	4 x 98
	L 6	24	24	24.5	24.5	24.5	23.5	23.5
Weight [g]		450/640/780	520/720/860	605/815/960	720/935/1200	870/1100/1460	1080/1335/1740	1320/1595/2160
25/32	L 3	156/ 211	211	246	286	341	411	501
	L 4	75/130	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165	3 x 140
	L 5	2 x 50/2 x 78	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115	4 x 110
	L 6	27.5/27	27	27.5	27	27.5	32.5	30.0
Weight [g]		1400/2100	1700/2420	2060/2800	2440/3260	2920/3900	3585/4760	4345/5640
40	L 3	166	221	256	296	351	421	511
	L 4	75	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165	3 x 140
	L 5	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115	4 x 110
	L 6	32.5	32	32.5	32	32.5	37.5	35
Weight [g]		2940	3240	3240	3940	4575	5460	6540

DIMENSIONS OF COMPACT PRECISION SLIDES SERIES S8-C, COMPLETE



Bore Ø (mm)	Piston rod bore Ø (mm)	B1 (mm)	B2 (mm)	B3 (mm)	B4 (mm)	B5 (mm)	B6 (mm)	D1	D2 Thread/ Depth (mm)	D3 Thread/ Depth (mm)	D4 Thread/ Depth (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	L1 (mm)	L2 (mm)	L7 (mm)	L8 (mm)
10	5	24	35	25	12.0	21.0	17.5	M5	M6/5.5	M5/6	M6/11.5	35	5.7	20.7	7.0	14.0	12	27	5	6.4
16	8	28	40	30	13.0	25.5	17.5	M5	M6/5.5	M6/10	M6/11.5	40	6.2	21.2	7.5	15.5	12	27	5	10
20	8	28	40	30	12.5	24.5	17	M5	M6/8.0	M6/14	M6/11.5	48	6.2	26.2	8.0	20.0	12	27	5	16
25	10	35	55	39	17.5	34.75	22	G 1/8"	M8/7.5	M8/15	M8/10.5	60	10.2	35.2	11.0	24.0	15	35	5	16
32	12	45	65	49	20.0	40.5	22	G 1/8"	M8/7.5	M8/20	M8/10.5	70	10.2	40.2	10.8	28.3	15	35	5	16
40	15	50	70	54	23.0	44.5	32	G 1/4"	M8/10.5	M8/20	M8/10.5	80	10.2	45.2	15.0	36.5	20	40	5	19

Bore (mm)		(mm) Stroke 25	50	80	100	125	160	200
10/16	L 3	135	175	200	245	305	360	440
20	L 4	70	2 x 55	2 x 67.5	2 x 90	2 x 120	2 x 147.5	3 x 125
	L 5	2 x 43	3 x 42	3 x 50	3 x 65	3 x 85	4 x 78	4 x 98
	L 6	24	24	24.5	24.5	24.5	23.5	23.5
Weight [g]		500/690/830	570/770/910	655/865/1010	770/9835/1250	920/1150/1510	1080/1335/1740	1320/1595/2160
25/32	L 3	156/211	211	246	286	341	411	501
	L 4	75/130	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165	3 x 140
	L 5	2 x 50/2 x 78	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115	4 x 110
	L 6	27.5/27	27	27.5	27	27.5	32.5	30.0
Weight [g]		1500/2200	1800/2520	2160/2900	2540/3360	3020/4000	3685/4860	4445/5740
40	L 3	166	221	256	296	351	421	511
	L 4	75	130	2 x 82.5	2 x 102.5	2 x 130	2 x 165	3 x 140
	L 5	2 x 50	2 x 78	2 x 95	3 x 77	3 x 95	3 x 115	4 x 110
	L 6	32.5	32	32.5	32	32.5	37.5	35
Weight [g]		3140	3440	3740	4140	4775	5660	6740

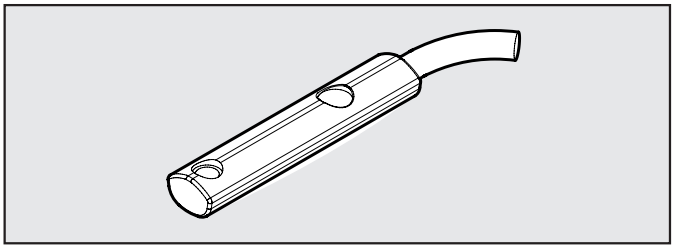
KEY TO CODES FOR S8-B PRECISION SLIDE

W 1 4 8 B	0 8	O	0 5 0
TYPE	DIAMETER	VARIANT	STROKE
Precision slide series S8 type B	08 10 16 20 25 32 40	0 non-magnetic 6* non-magnetic, cushioned fixed, pneumatic * starting from Ø20 and stroke 80	10 mm 25 mm 50 mm 80 mm 100 mm 125 mm (excluded Ø 8) 160 mm (excluded Ø 8) 200 mm (excluded Ø 8)

KEY TO CODES FOR S8-C PRECISION SLIDE

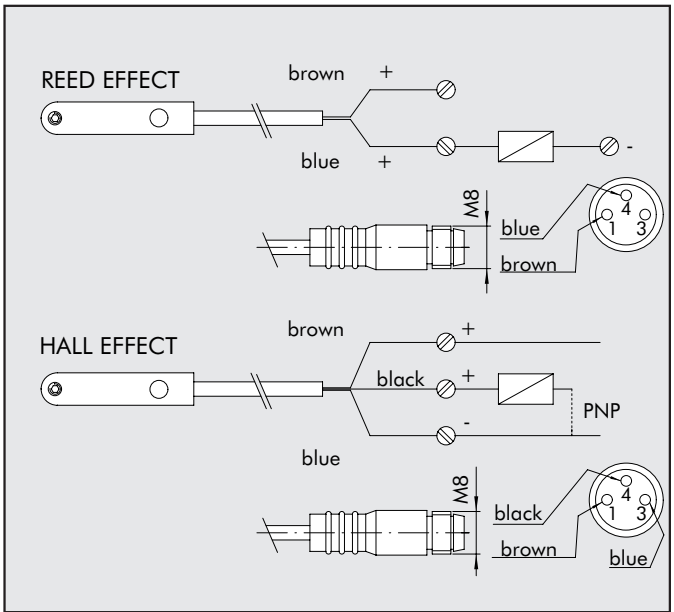
W 1 4 8 C	1 0	O	0 5 0
TYPE	DIAMETER	VARIANT	STROKE
Precision slide series S8 type C	10 16 20 25 32 40	0 non-magnetic 6* non-magnetic with fixed pneum. cushioning 7 magnetic with mechanical stop 4 magnetic with hydraulic shock absorber 8* magnetic with mech. stop and fixed pneum. cushioning * starting from Ø20 and stroke 50	25 mm 50 mm 80 mm 100 mm 125 mm 160 mm 200 mm

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE



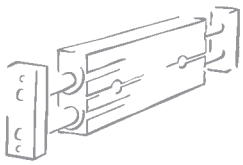
Code	Description
W0952025390	HALL N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL N.O. SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED N.O. SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED N.O. SENSOR, VERTICAL INSERTION 300 mm M8

WIRING DIAGRAM



TECHNICAL DATA

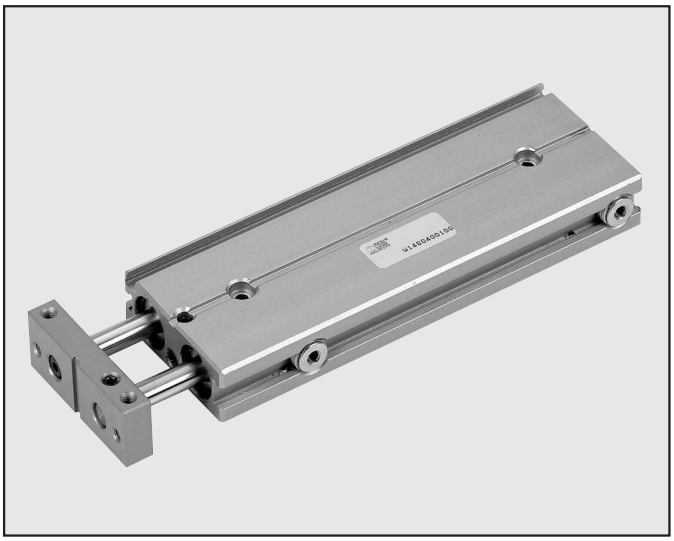
		Reed	Effetto Hall
Type of contact		N.O.	N.O.
Switch		-	PNP
Supply voltage (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Power	W	3 (peak valve=6)	3
Voltage variation		-	≤ 10% di Ub
Voltage drop	V	-	≤ 2
Input current	mA	-	≤ 10
Output current	mA	≤ 100	≤ 100
Switching frequency	Hz	≤ 400	≤ 5
Short-circuit protection		-	Yes
Over-voltage suppression		-	Yes
Polarity inversion protection		-	Yes
EMC		EN 60 947-5-2	EN 60 947-5-2
LED display		Yellow	Yellow
Magnetic sensitivity		2,8 mT ±25%	2,8 mT ±25%
Repeatability		≤ 0,1 mT	≤ 0,1 mT
Degree of protection (EN 60529)		IP 67	IP 67
Vibration and shock resistance		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperature range	°C	-25 ÷+75	-25 ÷ +75
Sensor capsule material		PA66 + PA6I/6T	PA66 + PA6I/6T
2.5m connecting cable		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Connecting cable with M8x1		Polyurethane; 2 x 0,14 mm^2	Polyurethane; 3 x 0,14 mm^2



TWIN CYLINDER SERIES S10

There are two sliding systems available:
- on bushes
- on ball recirculating bearings

The frame is made up of two paired cylinders with a common anodized aluminium body containing slots for retracting sensors.
There are 5 bores available:
2 x Ø12, 2 x Ø16, 2 x Ø20, 2 x Ø25 and 2 x Ø30

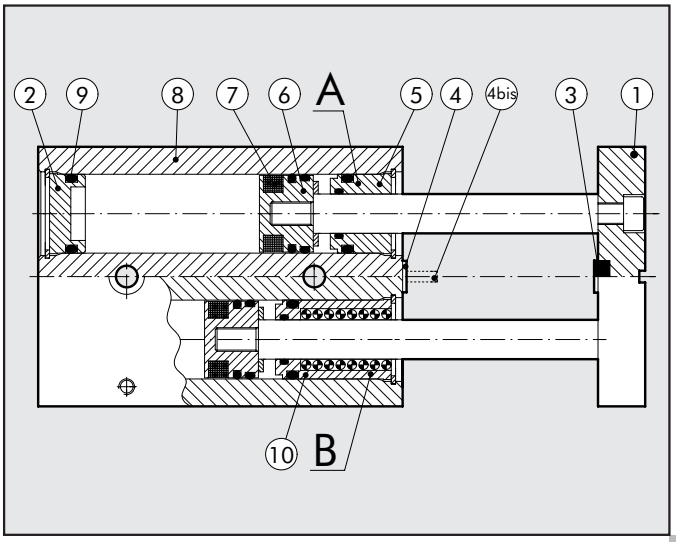


TECHNICAL FEATURES		S10-12	S10-16	S10-20	S10-25	S10-30
Pressure range	bar	3 to 7				
Temperature range	°C	5 to +60				
Fluid		20µm dried or lubricated filtered air. Lubrication, if used, must be continuous.				
Piston speed	mm/s	30 to 100 mm/s				
Versions		System with sliding bushes / System with ball bushes available with stop screw or hydraulic decelerator				
Sizes		12	16	20	25	30
Bores	mm	2 x 12	2 x 16	2 x 20	2 x 25	2 x 30
Piston rod diameter	mm	6	8	10	12	16
Strokes	mm	15	15	25	25	25
	mm	25	25	50	50	50
	mm	50	50	75	75	75
	mm	–	75	100	125	125
Weight (C=stroke)						
Sliding version	Kg	0.12 + (0.002 x C)	0.24 + (0.0025 x C)	0.51 + (0.005 x C)	0.76 + (0.006 x C)	1.3 + (0.009 x C)
Ball bearing version	Kg	0.21 + (0.002 x C)	0.48 + (0.0025 x C)	0.77 + (0.005 x C)	0.18 + (0.006 x C)	1.92 + (0.009 x C)
Theoretical thrust		Multiply the value shown by the pressure in bar				
Thrust force (ΔP = pressure in bar)	da N	2.26 x ΔP	4 x ΔP	6.28 x ΔP	9.8 x ΔP	14.1 x ΔP
Pull force	da N	1.69 x ΔP	3 x ΔP	4.11 x ΔP	7.5 x ΔP	10.1 x ΔP
Max. loads		(The values shown refer to the min. and max. strokes)				
Sliding version	N	3 to 1.5	6 to 3	10 to 3.5	12 to 5.6	20 to 7
Ball bearing version	N	6 to 4	11 to 6	20 to 7	26 to 8	36 to 11

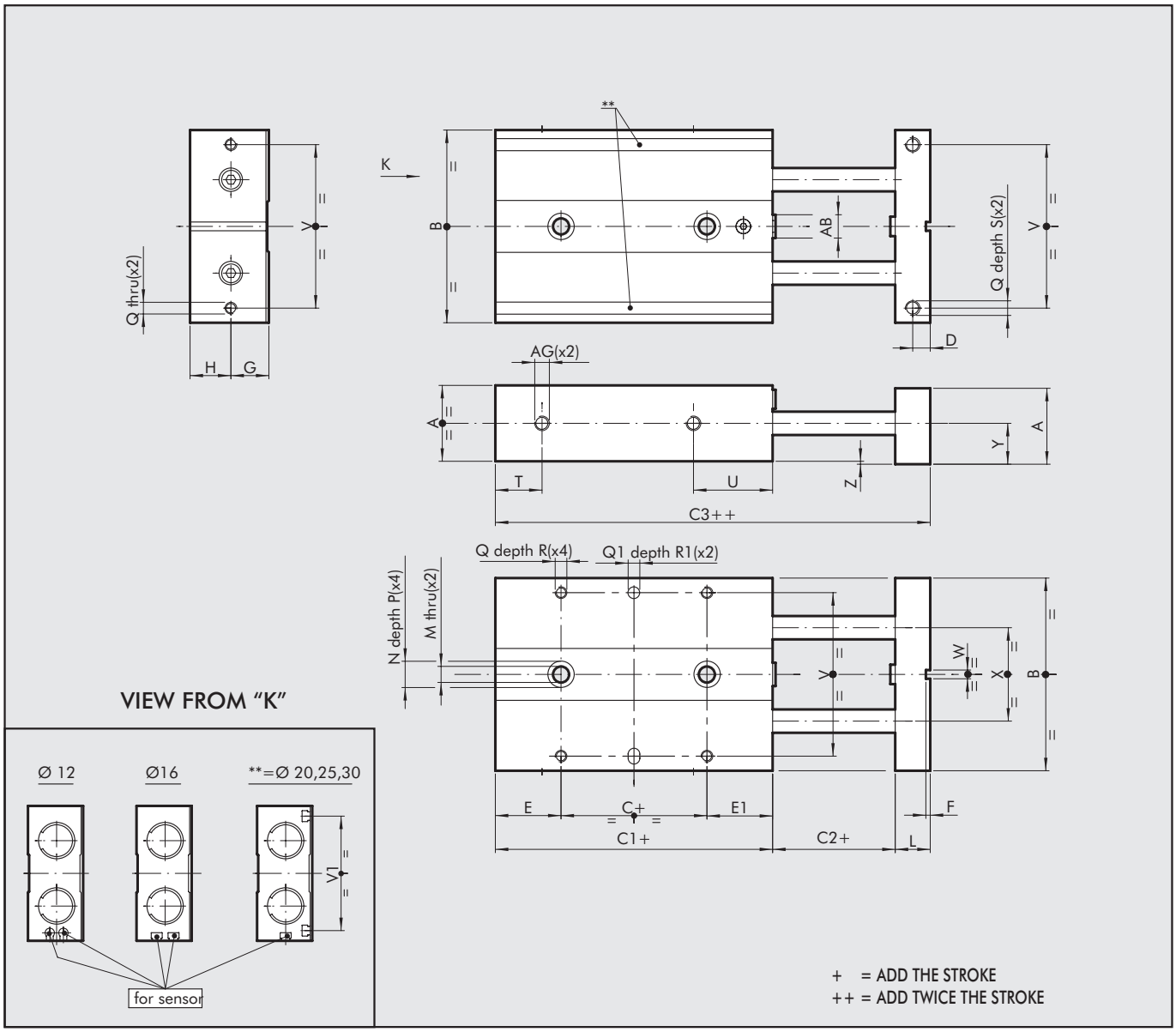
COMPONENTS

① FLANGE: anodized aluminium
② REAR BASE: anodized aluminium
③ BUFFER: rubber
④ ADJUSTABLE STRIKER PLATE. Zinc-plated steel
④ bis. HYDRAULIC DECELERATOR
⑤ FRONT BASE: brass
⑥ PISTON: brass
⑦ MAGNET: Plastoferrite
⑧ CYLINDER BODY: anodized aluminium
⑨ STATIC O-RING: NBR
⑩ BALL RE-CIRCULATION BUSH

VERSIONS:
Ⓐ With sliding bushes
Ⓑ With ball bushes



DIMENSIONS OF TWIN CYLINDER SERIES S10

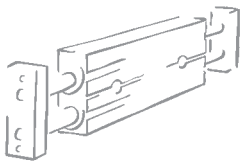


Code	Ø	A	B	C	C1	C2	C3	D	E	E1	F	G	H	L	M	N	P	Q	$Q1^{H7}$	R	R1	S	T
W1440122...*	12	18	46	10	50	2	60	4	20	20	1.5	9	10	8	4.3	8	4	M3	4	5	3	8	9
W1440162...*	16	22	56	16	62	2	74	5	26	20	1.5	11	12	10	4.3	8	4	M4	4	6	3	8	10
W1440202...*	20	26	66	10	68	2	82	6	29	29	1.5	13	14	12	5.5	9	5	M4	4	7	3	10	11
W1440252...*	25	32	78	10	74	2	90	7	32.5	31.5	2.5	16	17	14	6.5	10.5	6	M5	4	7	3	12	11
W1440302...*	30	36	98	10	87	2	105	8	37.5	39.5	2.5	18	19	16	8.5	14	8	M6	6	8	5	12	13

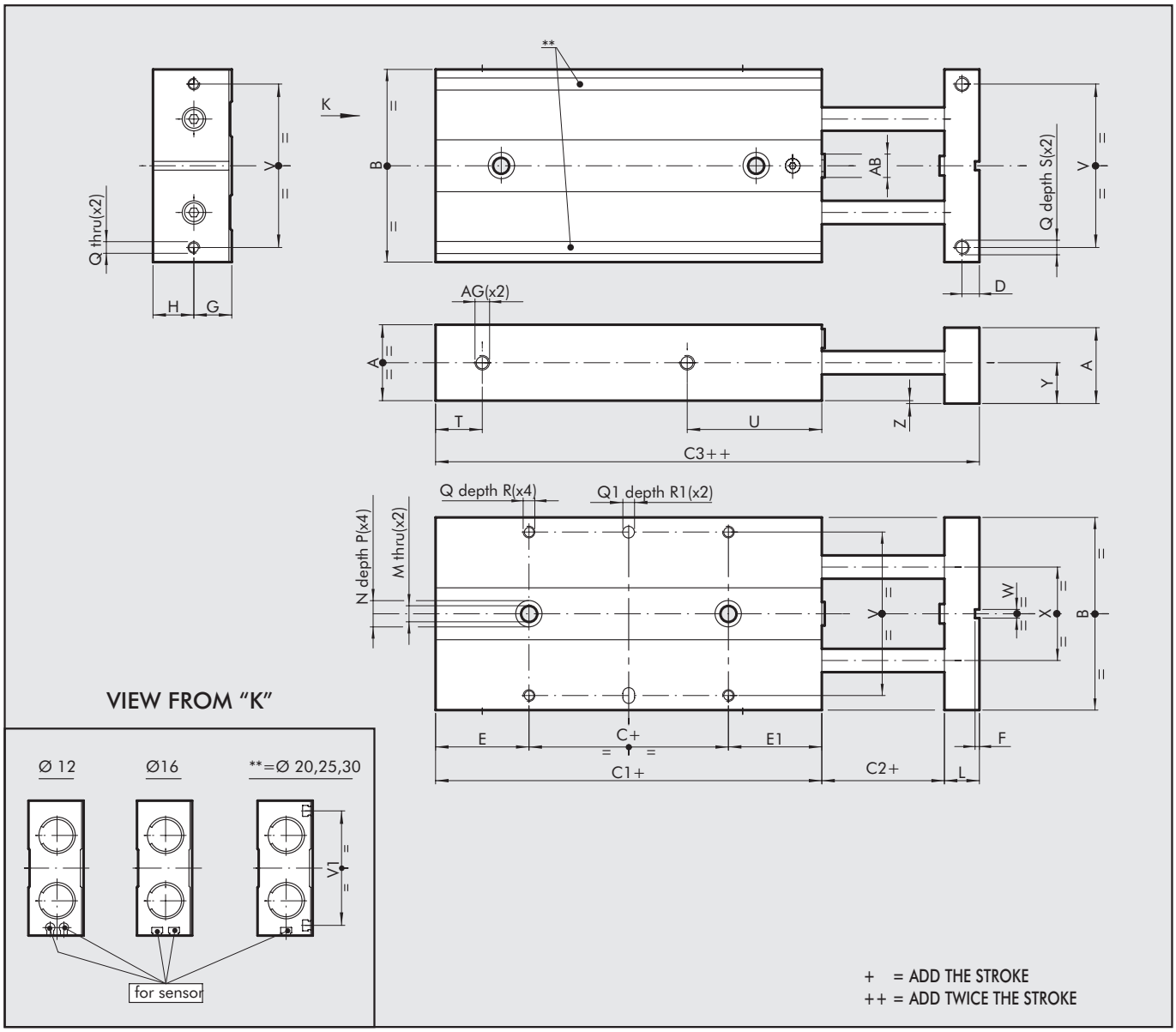
*Enter stroke in mm.

Ø	U	V	V1	W	X	Y	Z	AB	AG
12	28	38	–	3	20	10	1	M5	M5
16	33	46	–	3	26	12	1	M6	M5
20	40	56	54	3	30	14	1	M8	M5
25	42	66	64	5	39	17	1	M10	M5
30	51	86	82	5	52	19	1	M12	G 1/8"

Strokes for bore 12 mm	15; 25; 50;
Strokes for bore 16 mm	15; 25; 50; 75;
Strokes for bore 20 mm	25; 50; 75; 100;
Strokes for bore 25 mm	25; 50; 75; 125;
Strokes for bore 30 mm	25; 50; 75; 125;



DIMENSIONS OF TWIN CYLINDER SERIES S10, ON BALL BEARINGS



VIEW FROM "K"

\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

Code	Ø	A	B	C	C1	C2	C3	D	E	E1	F	G	H	L	M	N	P	Q	$Q1^{H7}$	R	R1	S	T
W1440123...*	12	18	46	10	69	2	79	4	29.5	29.5	1.5	9	10	8	4.3	8	4	M3	4	5	3	8	9
W1440163...*	16	22	56	10	90	2	98	5	42	38	1.5	11	12	10	4.3	8	4	M4	4	6	3	8	10
W1440203...*	20	26	66	10	100	2	111	6	46.5	43.5	1.5	13	14	12	5.5	9	5	M4	4	7	3	10	11
W1440253...*	25	32	78	10	108	2	120	7	51.5	46.5	2.5	16	17	14	6.5	10.5	6	M5	4	7	3	12	11
W1440303...*	30	36	98	10	124	2	142	8	56	58	2.5	18	19	16	8.5	14	8	M6	6	8	5	12	13

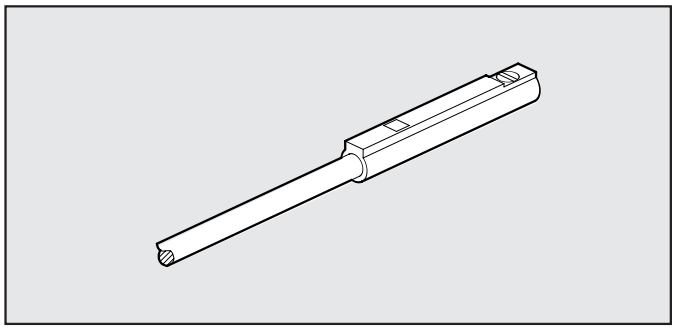
*Enter stroke in mm.

Ø	U	V	V1	W	X	Y	Z	AB	AG
12	47	38	–	3	20	10	1	M5	M5
16	57	46	–	3	26	12	1	M6	M5
20	69	56	54	3	30	14	1	M8	M5
25	72	66	64	5	39	17	1	M10	M5
30	88	86	82	5	52	19	1	M12	G 1/8"

Strokes for bore 12 mm	15; 25; 50;
Strokes for bore 16 mm	15; 25; 50; 75;
Strokes for bore 20 mm	25; 50; 75; 100;
Strokes for bore 25 mm	25; 50; 75; 125;
Strokes for bore 30 mm	25; 50; 75; 125;

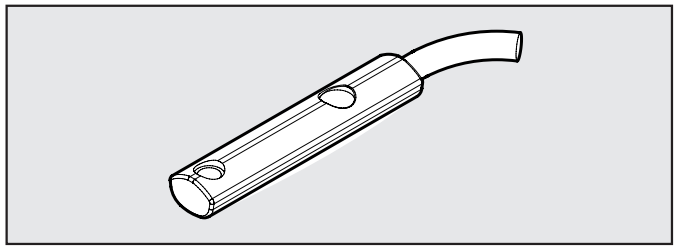
ACCESSORIES

MAGNETIC SENSOR Ø 4, FOR SLIDE S10 Ø12



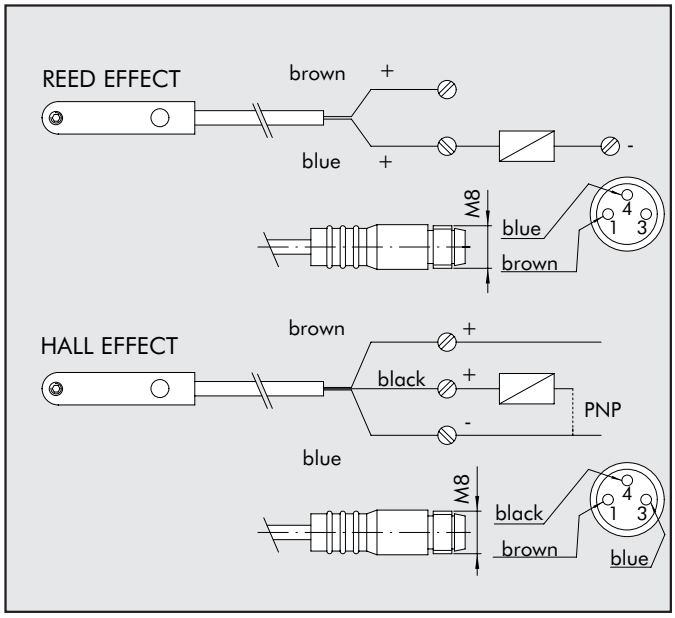
Codice	Descrizione
W0950044180	SENSORE MAGNETICO REED 2 FILI 24VDC 1 m

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S10 Ø16÷30



Codice	Descrizione
W0952025390	SENSORE HALL INS. VERT. NO 2.5 m
W0952029394	SENSORE HALL INS. VERT. NO 300 mm M8
W0952022180	SENSORE REED INS. VERT. NO 2.5 m
W0952028184	SENSORE REED INS. VERT. NO 300 mm M8

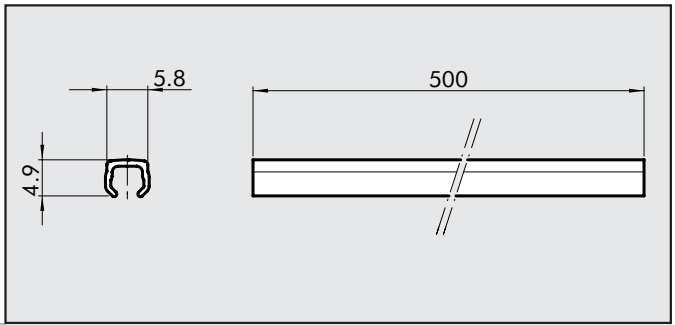
WIRING DIAGRAM



TECHNICAL FEATURES

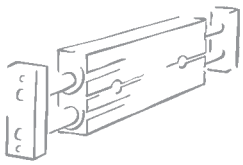
		Reed	Effetto Hall
Tipo contatto		N.O.	N.O.
Interruttore		-	PNP
Tensione di alimentazione (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Potenza	W	3 (6 di picco)	3
Variazione di tensione		-	≤ 10% di Ub
Caduta di tensione	V	-	≤ 2
Consumo	mA	-	≤ 10
Corrente di uscita	mA	≤ 100	≤ 100
Frequenza di commutazione	Hz	≤ 400	≤ 5
Protezione da corto circuito		-	Sì
Soppressione sovratensione		-	Sì
Protezione all'inversione polarità		-	Sì
EMC		EN 60 947-5-2	EN 60 947-5-2
Visualizzazione comunicazione Led		Giallo	Giallo
Sensibilità magnetica		2,8 mT ±25%	2,8 mT ±25%
Ripetibilità		≤ 0,1 mT	≤ 0,1 mT
Grado di protezione (EN 60529)		IP 67	IP 67
Resistenza alle vibrazioni e urti		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperatura di lavoro	°C	-25 ÷+75	-25 ÷ +75
Materiale capsula sensore		PA66 + PA6I/6T	PA66 + PA6I/6T
Cavo di connessione 2,5m		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Cavo di connessione con M8x1		Poliuretano; 2 x 0,14 mm^2	Poliuretano; 3 x 0,14 mm^2

BAR FOR GROOVING



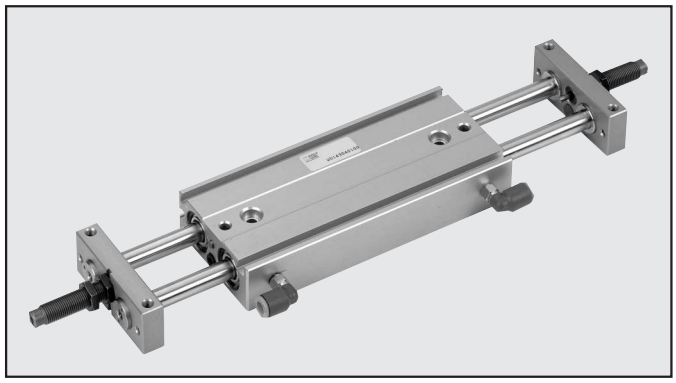
Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: the code corresponds to 1 piece



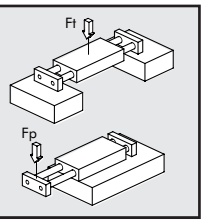
TWIN CYLINDER SLIDE WITH FIXED BODY SERIES S11

There are two sliding systems available:
• on bushes
• on ball bearings
The frame is made up of two paired through-rod cylinders with a common anodized aluminium body containing slots for retracting sensors.
There are 5 bores available:
2 x Ø12, 2 x Ø16, 2 x Ø20, 2 x Ø25 and 2 x Ø30.
The piston rods are united by means of a plate on which mechanical stops or hydraulic shock absorbers can be mounted.



TECHNICAL FEATURES

Fluid		20µ filtered air				
Pressure range		1.5 to 7 bar (0.15 to 0.7 MPa)				
Temperature range	°C	5 to +60				
Piston speed	mm/s	30 to 200				
Versions		With sliding bushes / With ball bearing bushes / With stop screw / With hydraulic shock absorbers				
Bores	mm	12	16	20	25	30
Piston rod diameter	mm	6	8	10	12	16
Strokes	mm	25	25	25	25	25
		50	60	50	50	50
		75	75	75	75	75
		–	100	100	100	100
		–	–	125	125	125
		–	–	–	150	150
Weight = X + (Y · C)	kg					
C= stroke						
Sliding version		X = 0.14	X = 0.25	X = 0.5	X = 0.7	X = 1.24
		Y = 0.002	Y = 0.0035	Y = 0.045	Y 0.007	Y = 0.01
Ball bearing version		X = 0.25	X = 0.37	X = 0.78	X = 1.04	X = 1.98
		Y = 0.002	Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
Theoretical thrust (P = relative pressure in bar)		16.9xP	30xP	47xP	75xP	101xP
Max. loads						
Loads with sliding version	N	Ft: 7÷3	Ft: 20÷4	Ft: 35÷4.5	Ft: 50÷5.4	Ft: 80÷12
		Fp: 4÷1.5	Fp: 4÷1.5	Fp: 12÷3	Fp: 15÷3.5	Fp: 20÷4.5
Loads with ball bearing version	N	Ft: 13÷5	Ft: 35÷6.5	Ft: 58÷7	Ft: 80÷8	Ft: 130÷18
		Fp: 6÷3	Fp: 11÷3	Fp: 18÷5	Fp: 23÷6	Fp: 50÷8

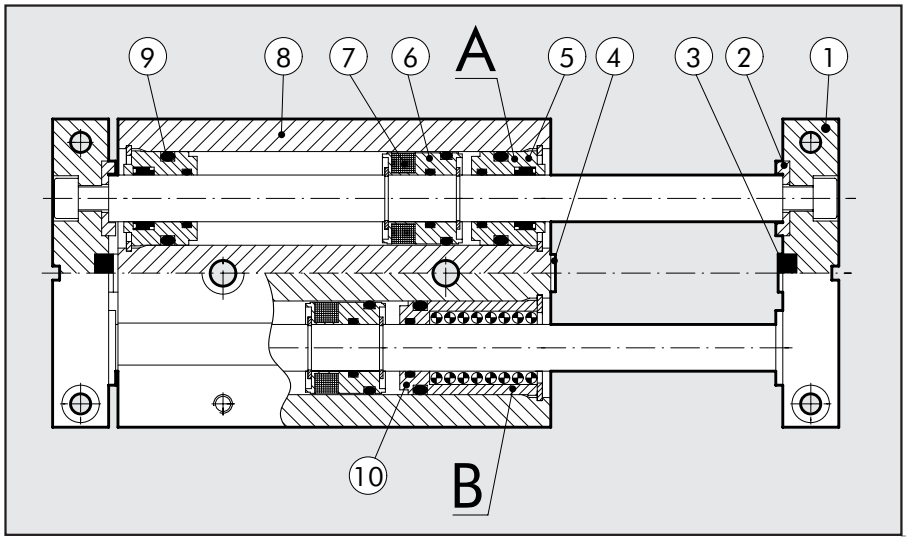


COMPONENTS

① FLANGE: anodized aluminium
② WASHER: steel
③ BUFFER: rubber
④ ADJUSTABEL STRIKER PLATE: Zinc-plated steel
⑤ BASE: brass
⑥ PISTON: brass
⑦ MAGNET: plastoferrite
⑧ CYLINDER BODY: anodized aluminium
⑨ STATIC O-RINGS: NBR
⑩ BUSH: ball bearing

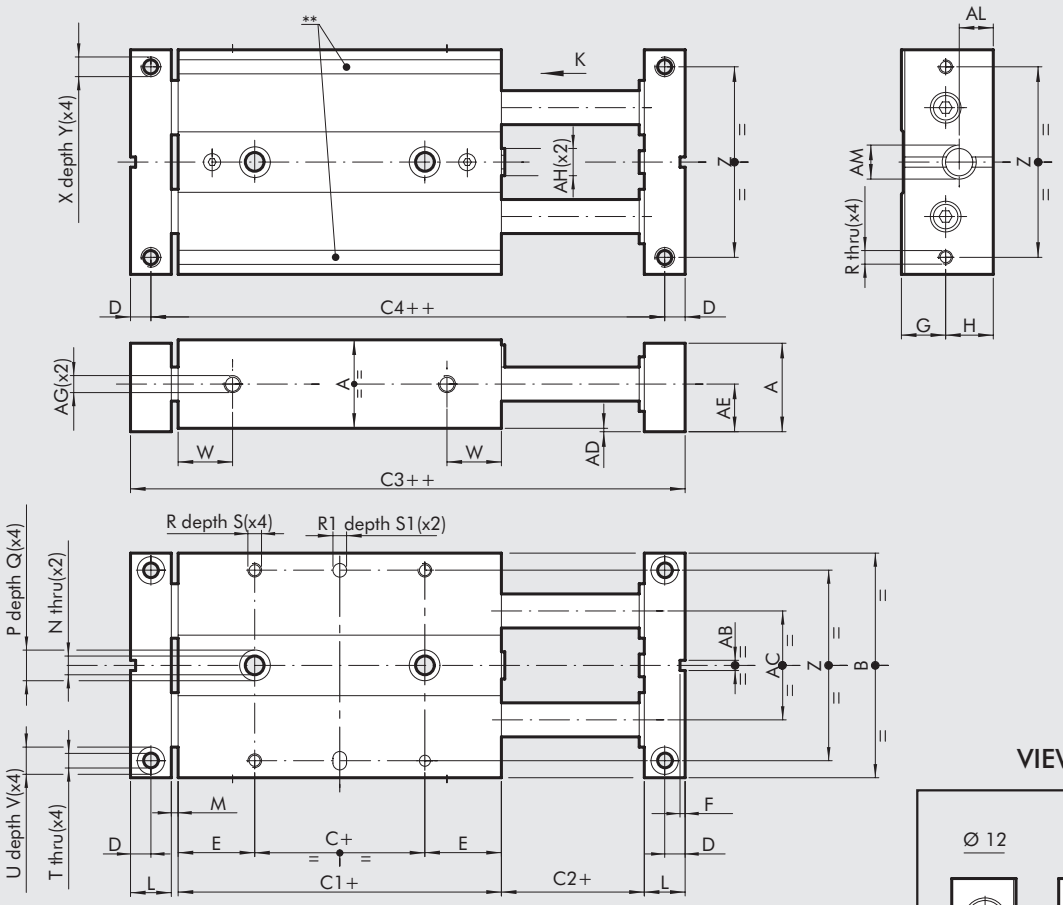
A = Version with sliding bushes

B = Version with ball bearing bushes

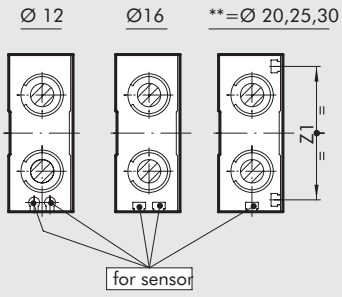


METAL WORK PNEUMATIC

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS SERIES S11 - Ø 12-30



VIEW FROM "K"



\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

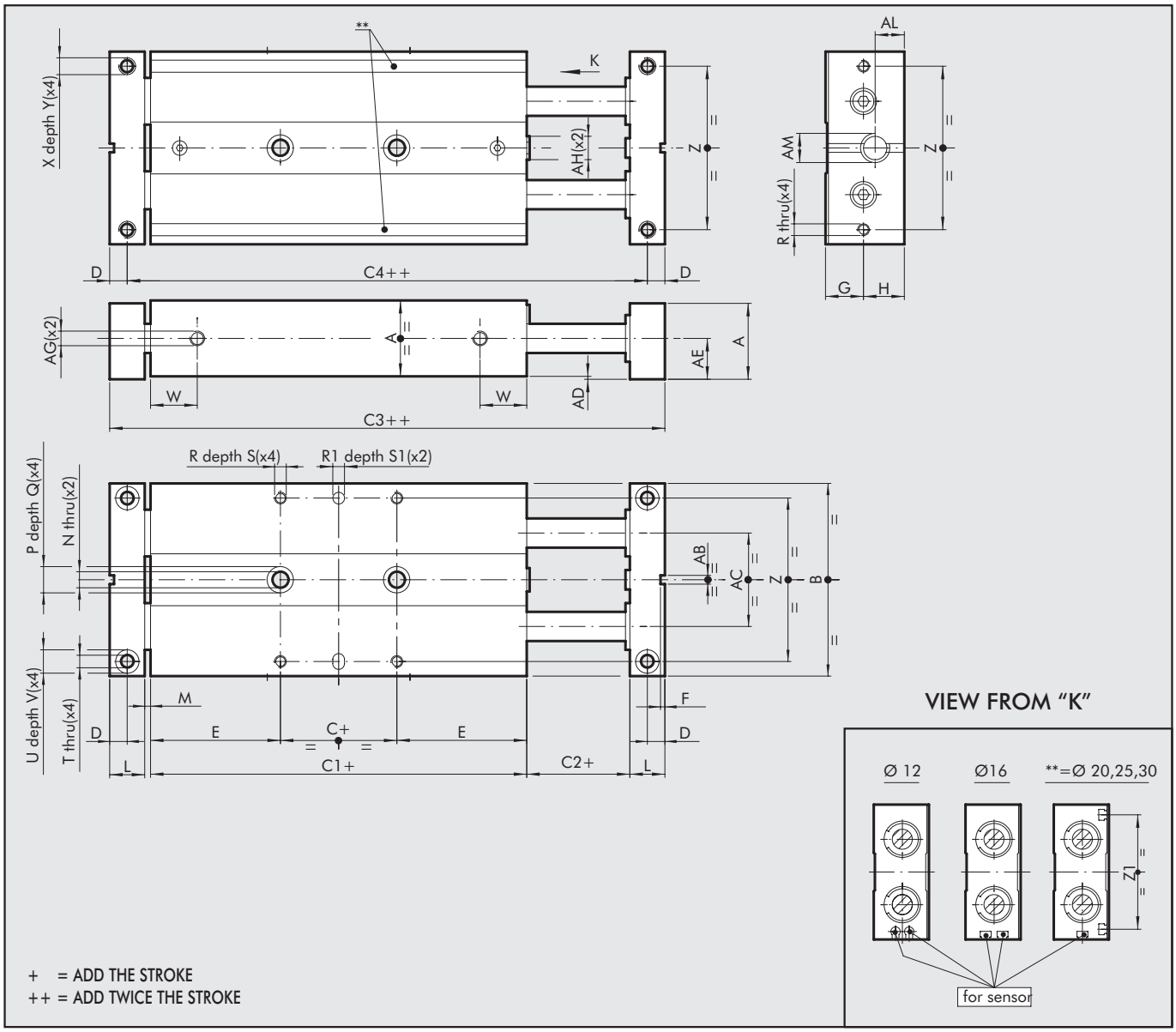
Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 H7	S	S1	T
W1450122...*	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450162...*	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450202...*	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450252...*	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450302...*	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	14	M4	6	38	–	3	20	1	10	4	M5	M5	M8 x 1	7
16	8	4	15	M5	8	46	–	3	26	1	12	5	M5	M6	M10 x 1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	M8	M10 x 1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	M10	M12 x 1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS SERIES S11 - Ø 12-30



Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	$R1^{H7}$	S	S1	T
W1450123...*	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450163...*	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450203...*	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450253...*	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450303...*	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

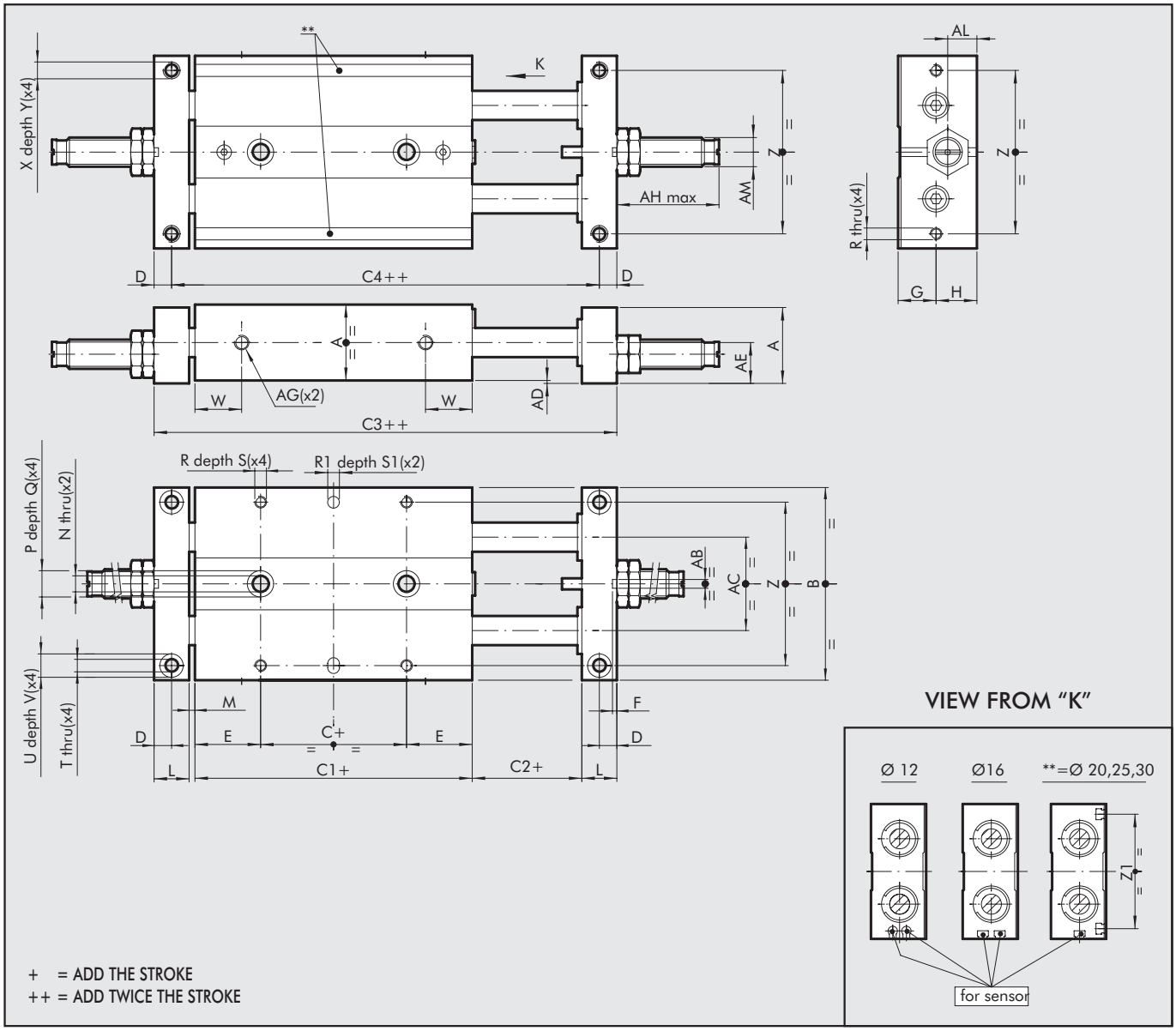
*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	–	3	20	1	10	4	M5	M5	M8 x 1	7
16	8	4	33	M5	8	46	–	3	26	1	12	5	M5	M6	M10 x 1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	M8	M10 x 1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	M10	M12 x 1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

METAL WORK PNEUMATIC

DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS WITH SHOCK ABSORBERS SERIES S11 - Ø 12-30



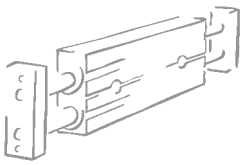
\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1^{H7}	S	S1	T
W1450124...*	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450164...*	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450204...*	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450254...*	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450304...*	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

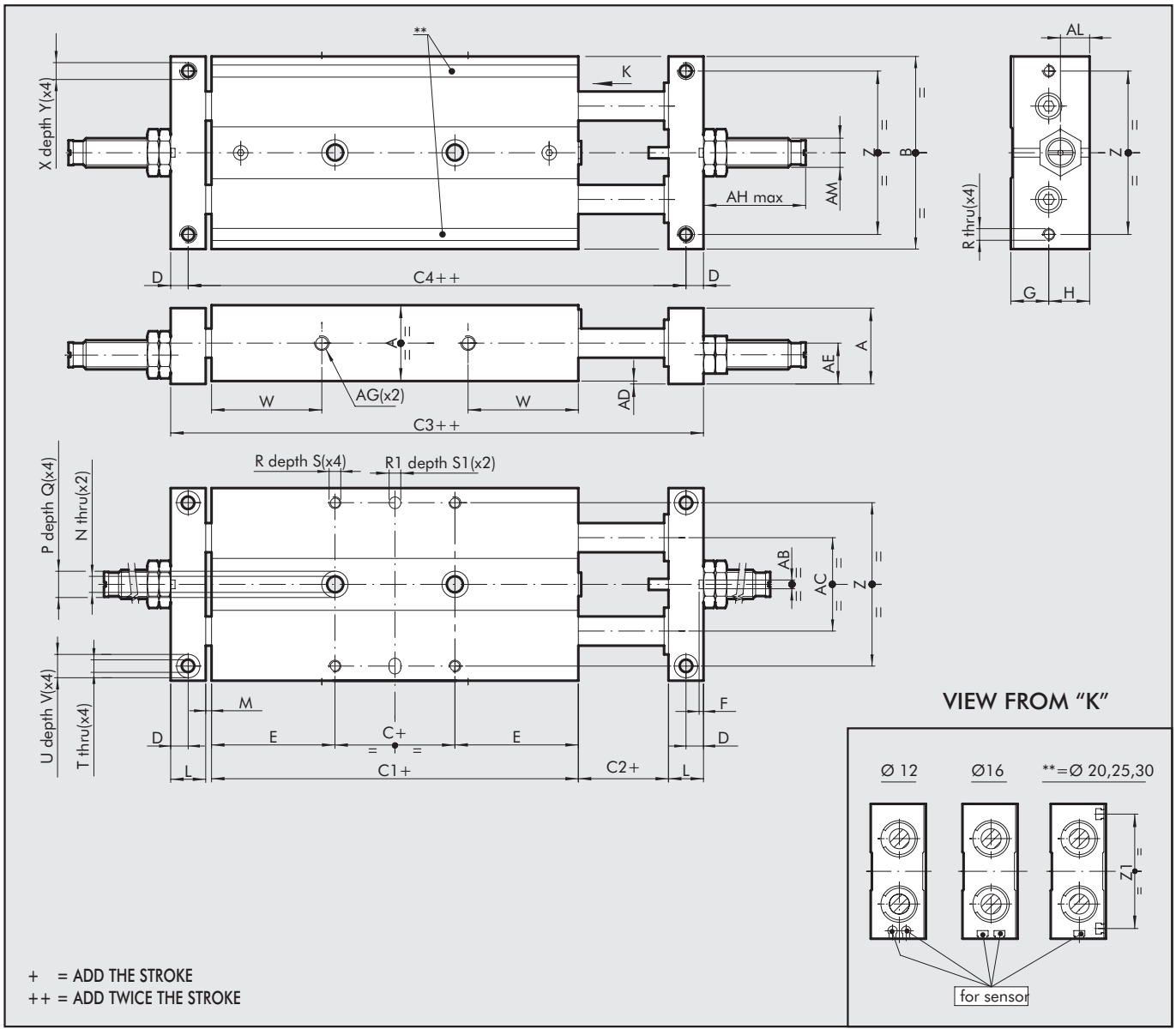
*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	14	M4	6	38	–	3	20	1	10	4	M5	30	M8 x 1	7
16	8	4	15	M5	8	46	–	3	26	1	12	5	M5	35	M10 x 1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	35	M10 x 1	9
25	9	5	19	M6	12	66	69	5	39	1	17	6	M5	36	M12 x 1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150



DIMENSIONS OF TWIN-CYLINDER GUIDE UNITS, BALL BEARING VERSION WITH SHOCK ABSORBERS SERIES S11 - Ø 12-30 mm



\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	$R1^{H7}$	S	S1	T
W1450125...*	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1450165...*	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1450205...*	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1450255...*	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1450305...*	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

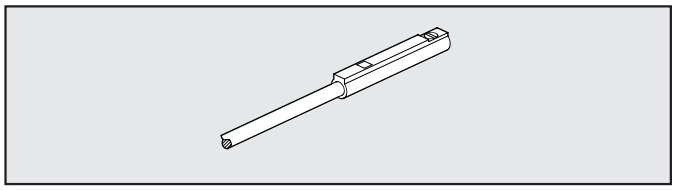
*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	–	3	20	1	10	4	M5	30	M8 x 1	7
16	8	4	33	M5	8	46	–	3	26	1	12	5	M5	35	M10 x 1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	35	M10 x 1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	36	M12 x 1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

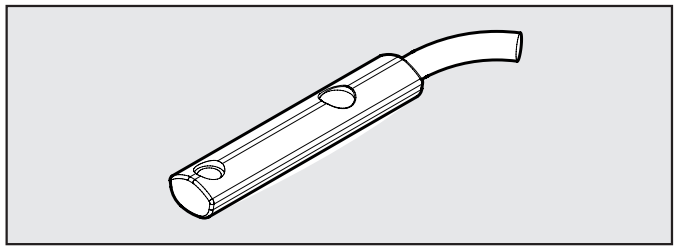
ACCESSORIES

MAGNETIC SENSOR Ø 4, FOR SLIDE S11 Ø12



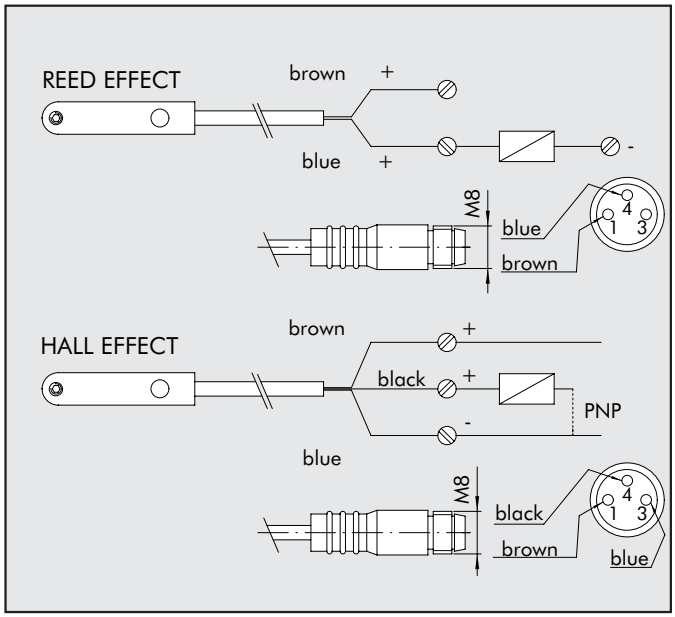
Code	Description
W0950044180	MAGNETIC SENSOR REED 2 WIRES 24VDC 1 m

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S11 Ø16÷30



Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

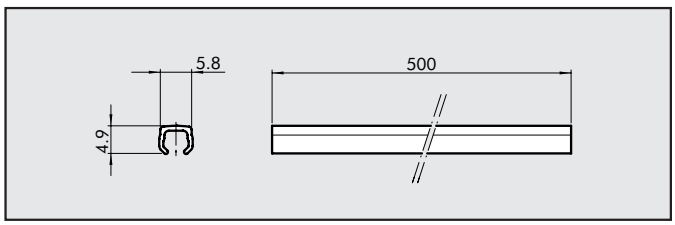
WIRING DIAGRAM



TECHNICAL FEATURES

		Reed	Effetto Hall
Tipo contatto		N.O.	N.O.
Interruttore		-	PNP
Tensione di alimentazione (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Potenza	W	3 (6 di picco)	3
Variazione di tensione		-	≤ 10% di Ub
Caduta di tensione	V	-	≤ 2
Consumo	mA	-	≤ 10
Corrente di uscita	mA	≤ 100	≤ 100
Frequenza di commutazione	Hz	≤ 400	≤ 5
Protezione da corto circuito		-	Si
Soppressione sovratensione		-	Si
Protezione all'inversione polarità		-	Si
EMC		EN 60 947-5-2	EN 60 947-5-2
Visualizzazione comunicazione Led		Giallo	Giallo
Sensibilità magnetica		2,8 mT ±25%	2,8 mT ±25%
Ripetibilità		≤ 0,1 mT	≤ 0,1 mT
Grado di protezione (EN 60529)		IP 67	IP 67
Resistenza alle vibrazioni e urti		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperatura di lavoro	°C	-25 ÷+75	-25 ÷ +75
Materiale capsula sensore		PA66 + PA6I/6T	PA66 + PA6I/6T
Cavo di connessione 2,5m		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Cavo di connessione con M8x1		Poliuretano; 2 x 0,14 mm^2	Poliuretano; 3 x 0,14 mm^2

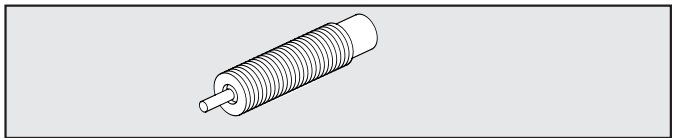
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

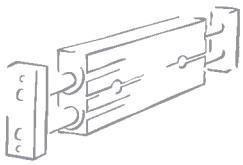
Note: the code corresponds to 1 piece

SHOCK ABSORBERS



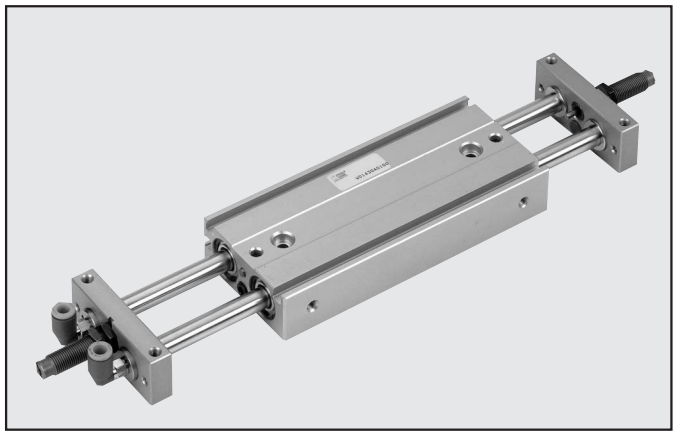
Code	Ø	Description
0950004001	ø12	Shock absorbers PM8 MC2 + nut M8x1
0950004002	ø16-20	Shock absorbers PM10 MF2 + nut M10x1
0950004003	ø25	Shock absorbers PR015 MF1 + nut M12x1
0950004004	ø30	Shock absorbers PR025 MC2 + nut M14x1.5

TWIN CYLINDER SLIDE WITH FIXED PLATES SERIES S12



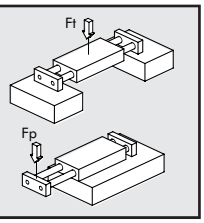
Two sliding systems are available:
- on bushes
- on ball bearings

The structure is made up of two paired through-rod cylinders with a common anodized aluminium body with grooves for mounting the retractable sensor.
Five bores available: 2xØ12; 2xØ16; 2xØ20; 2xØ25; 2xØ30.
The rods are joined together by means of a plate on which the mechanical limit switches or hydraulic shock absorbers can be mounted.
The compressed air ports are at the end of the piston rods.



TECHNICAL FEATURES

Fluid		20µm filtered air				
Pressure range		1.5 to 7 bar (0.15 to 0.7 MPa)				
Temperature range	°C	5 to +60				
Piston speed	mm/s	30 to 200 mm/s				
Versions		With sliding bushes / With ball bearing bushes / With stop screw / With hydraulic shock absorbers				
Bores	mm	12	16	20	25	30
Piston rod diameter	mm	6	8	10	12	16
Strokes	mm	25	25	25	25	25
		50	60	50	50	50
		75	75	75	75	75
		–	100	100	100	100
		–	–	125	125	125
		–	–	–	150	150
Weight = X + (Y · C)	kg					
C= stroke						
Sliding version		X = 0.14	X = 0.25	X = 0.5	X = 0.7	X = 1.24
		Y = 0.002	Y = 0.0035	Y = 0.045	Y 0.007	Y = 0.01
Ball bearing version		X = 0.25	X = 0.37	X = 0.78	X = 1.04	X = 1.98
		Y = 0.002	Y = 0.0035	Y = 0.045	Y = 0.007	Y = 0.01
Theoretical thrust	N	16.9xP	30xP	47xP	75xP	101xP
P = relative pressure in bar						
Loads with sliding version	N	Ft: 7÷3	Ft: 20÷4	Ft: 35÷4.5	Ft: 50÷5.4	Ft: 80÷12
		Fp: 4÷1.5	Fp: 4÷1.5	Fp: 12÷3	Fp: 15÷3.5	Fp: 20÷4.5
Loads with ball bearing version	N	Ft: 13÷5	Ft: 35÷6.5	Ft: 58÷7	Ft: 80÷8	Ft: 130÷18
		Fp: 6÷3	Fp: 11÷3	Fp: 18÷5	Fp: 23÷6	Fp: 50÷8

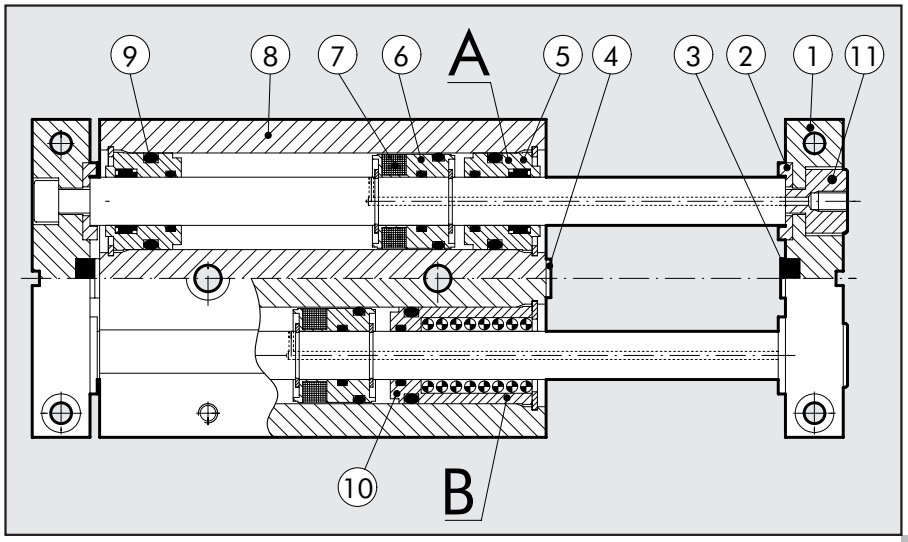


COMPONENTS

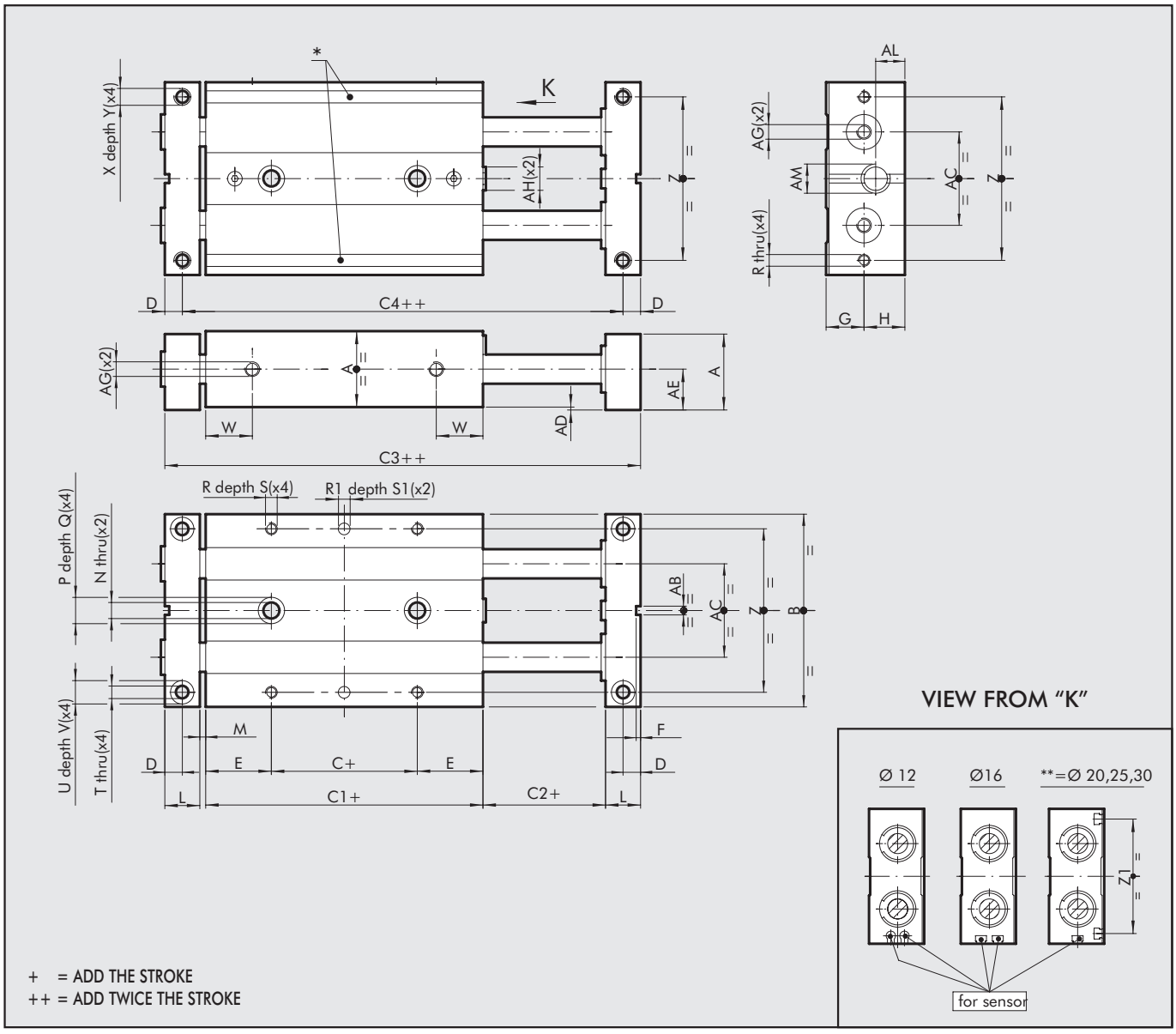
① FLANGE: anodized aluminium
② WASHER: steel
③ BUFFER: rubber
④ ADJUSTABLE STRIKER PLATE: Zinc-plated steel
⑤ BASE: brass
⑥ PISTON: brass
⑦ MAGNET: Plastoferrite
⑧ CYLINDER BODY: anodized aluminium
⑨ STATIC O-RINGS: NBR
⑩ BUSH: ball bearing
⑪ VITE: con alimentazione pneumatica

A = Version with sliding bush

B = Version with ball bearing bush



DIMENSIONS OF TWIN-CYLINDER SLIDE SERIES S12 - Ø 12-30



\+ = ADD THE STROKE
++ = ADD TWICE THE STROKE

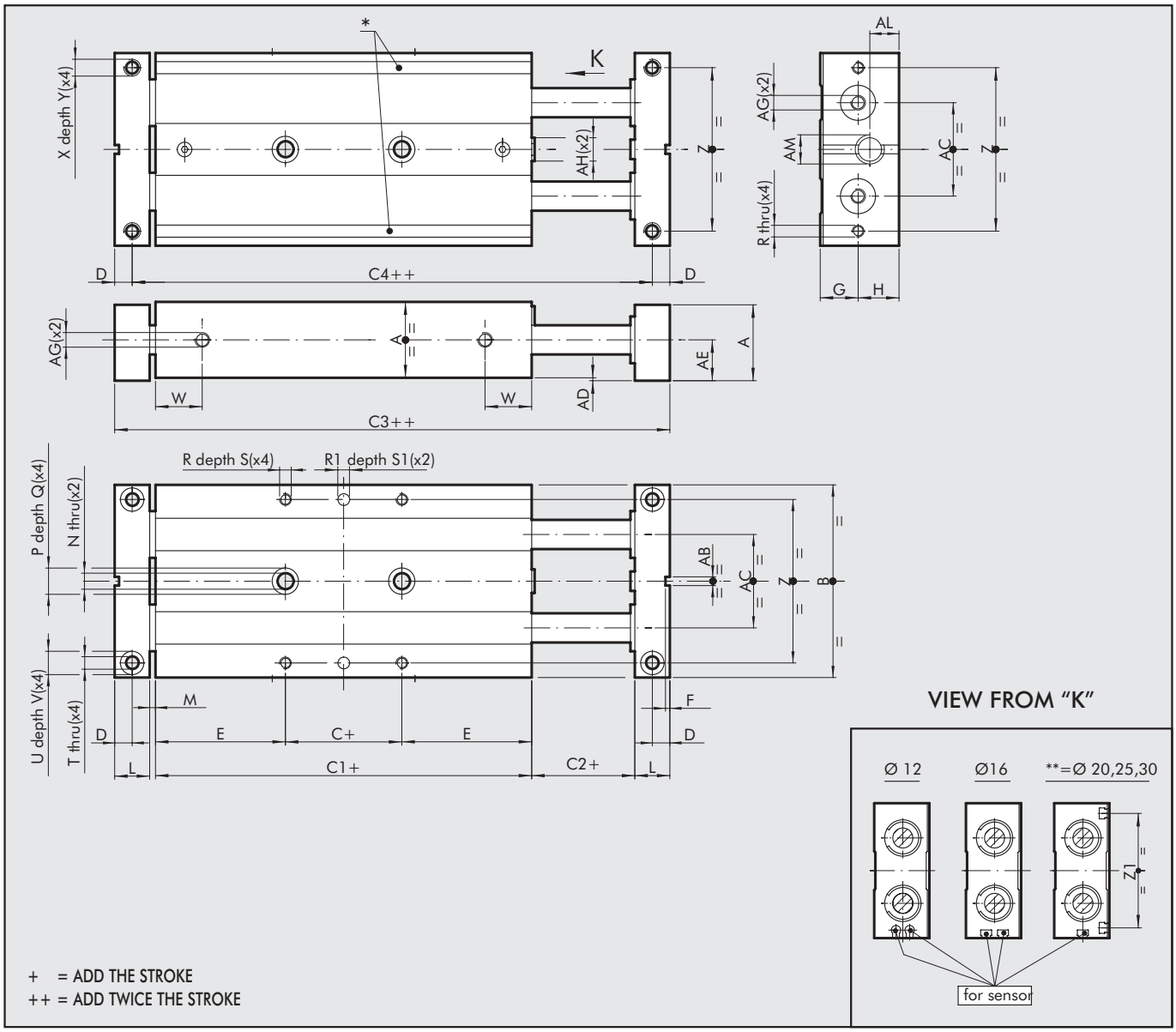
Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 H7	S	S1	T
W1460122...*	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1460162...*	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460202...*	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460252...*	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460302...*	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	14	M4	6	38	–	3	20	1	10	4	M5	M5	M8 x 1	7
16	8	4	15	M5	8	46	–	3	26	1	12	5	M5	M6	M10 x 1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	M8	M10 x 1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	M10	M12 x 1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

DIMENSIONS OF TWIN-CYLINDER SLIDE SERIES S12 - Ø 12-30



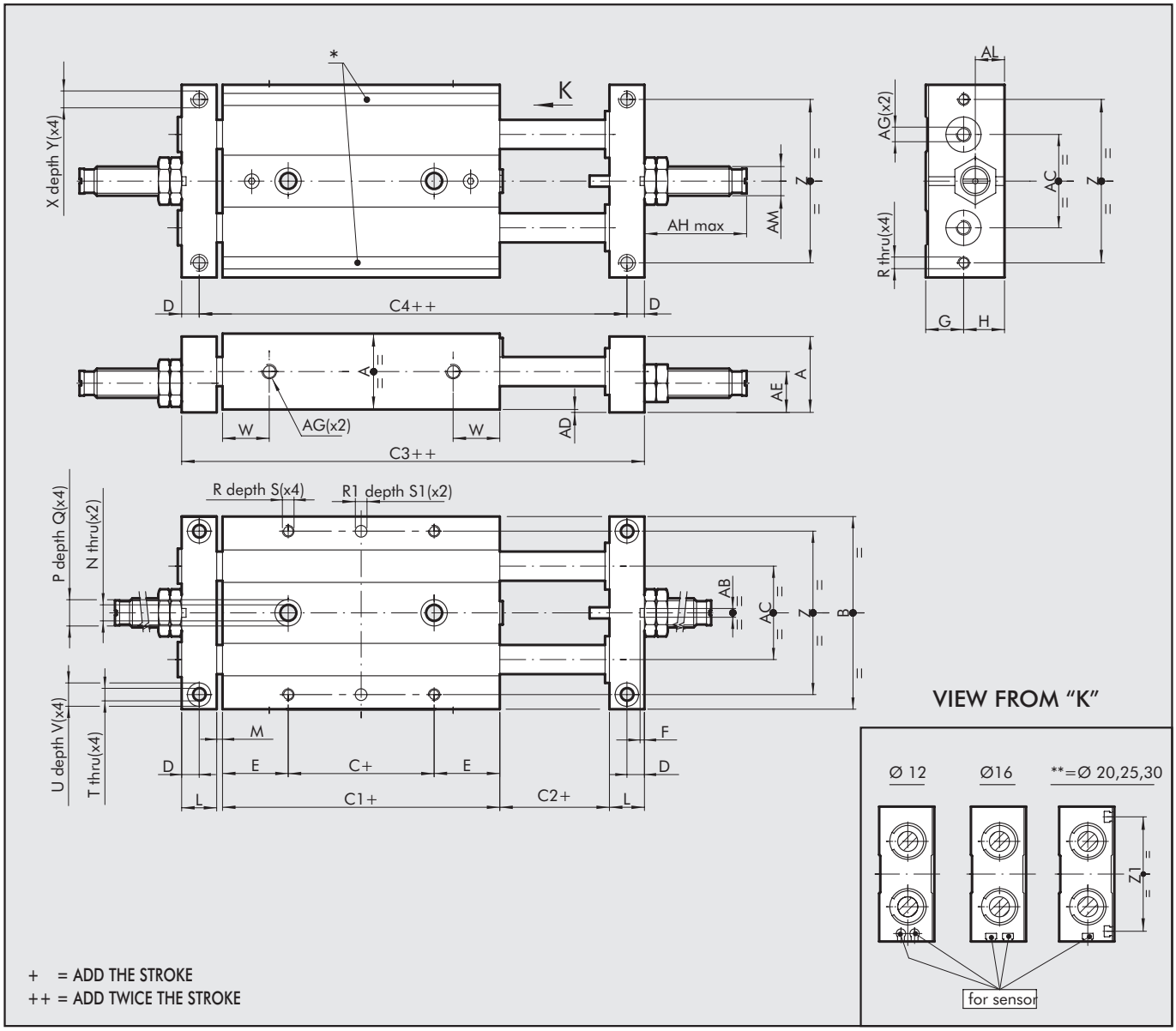
Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1^{H7}	S	S1	T
W1460123...*	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1460163...*	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460203...*	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460253...*	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460303...*	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	–	3	20	1	10	4	M5	M5	M8 x 1	7
16	8	4	33	M5	8	46	–	3	26	1	12	5	M5	M6	M10 x 1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	M8	M10 x 1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	M10	M12 x 1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	M12	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

DIMENSIONS OF TWIN-CYLINDER SLIDE WITH SHOCK ABSORBERS SERIES S12 - Ø 12-30



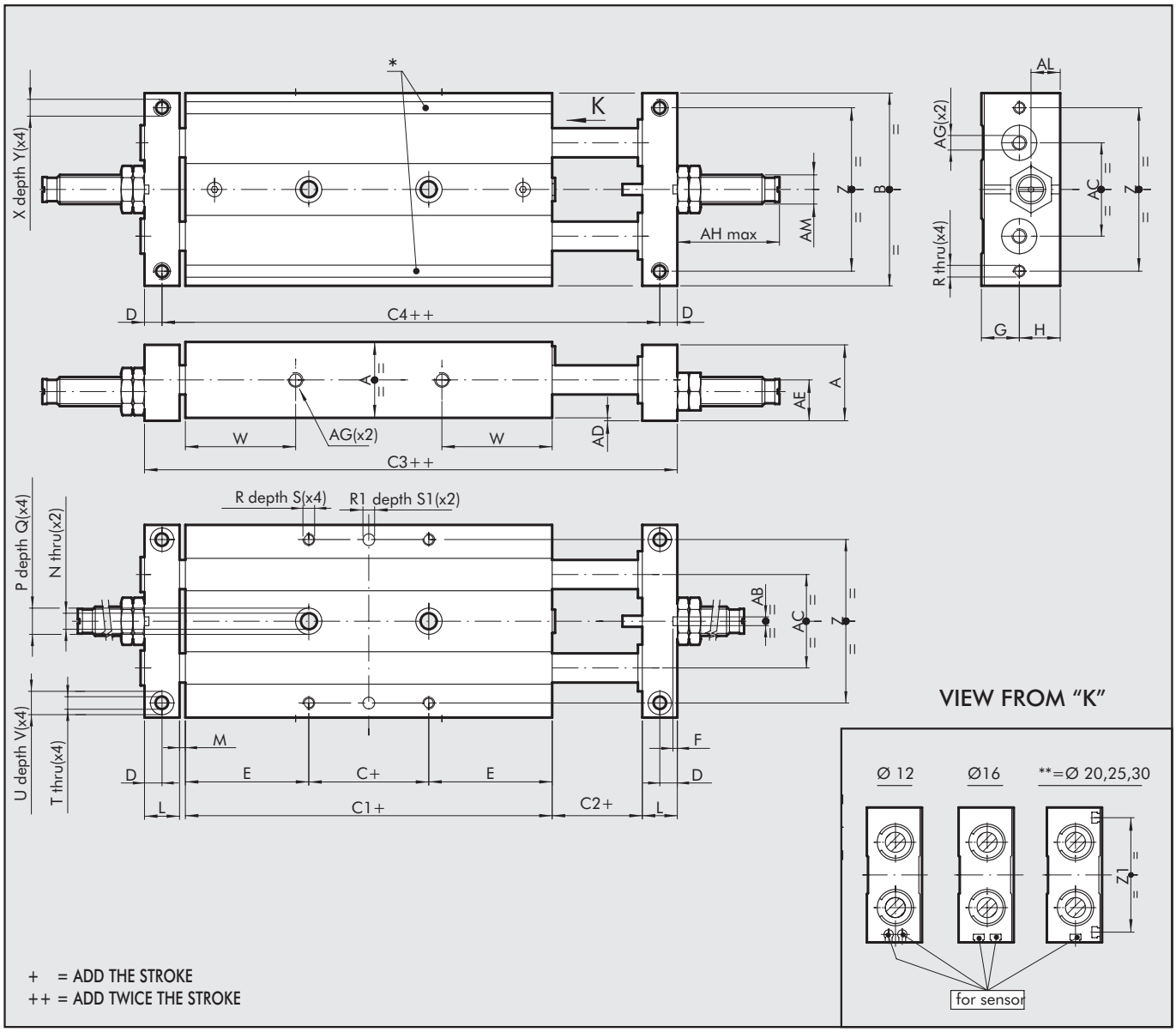
Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1 H7	S	S1	T
W1460124...*	12	18	46	5	45	2	65	57	4	20	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1460164...*	16	22	56	10	50	2	74	64	5	20	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460204...*	20	26	66	10	55	2	83	71	6	22.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460254...*	25	32	78	10	60	2	92	78	7	25	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460304...*	30	36	98	10	70	2	106	90	8	30	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	14	M4	6	38	–	3	20	1	10	4	M5	30	M8 x 1	7
16	8	4	15	M5	8	46	–	3	26	1	12	5	M5	35	M10 x 1	8.5
20	8	4	16	M5	10	56	54	3	30	1	14	5	M5	35	M10 x 1	9
25	9	5	19	M6	12	66	64	5	39	1	17	6	M5	36	M12 x 1	10
30	9	5	21	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

DIMENSIONS OF TWIN-CYLINDER SLIDE WITH SHOCK ABSORBERS SERIES S12 - Ø 12-30



Codes	Ø	A	B	C	C1	C2	C3	C4	D	E	F	G	H	L	M	N	P	Q	R	R1^{H7}	S	S1	T
W1460125...*	12	18	46	5	71	2	91	83	4	33	1.5	9	10	8	2	4.3	8	4	M3	4	5	3	3.3
W1460165...*	16	22	56	10	85	2	109	99	5	37.5	1.5	11	12	10	2	4.3	8	4	M4	4	6	3	4.3
W1460205...*	20	26	66	10	99	2	127	115	6	44.5	1.5	13	14	12	2	5.5	9	5	M4	4	7	3	4.3
W1460255...*	25	32	78	10	105	2	137	123	7	47.5	2.5	16	17	14	2	6.5	10.5	6	M5	4	7	3	5.2
W1460305...*	30	36	98	10	128	2	164	148	8	59	2.5	18	19	16	2	8.5	14	8	M6	6	8	5	5.2

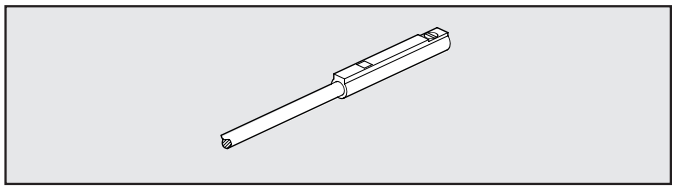
*Enter required stroke

Ø	U	V	W	X	Y	Z	Z1	AB	AC	AD	AE	AF	AG	AH	AM	AL
12	6	3	28	M4	6	38	–	3	20	1	10	4	M5	30	M8 x 1	7
16	8	4	33	M5	8	46	–	3	26	1	12	5	M5	35	M10 x 1	8.5
20	8	4	40	M5	10	56	54	3	30	1	14	5	M5	35	M10 x 1	9
25	9	5	42	M6	6	66	64	5	39	1	17	6	M5	36	M12 x 1	10
30	9	5	50	M6	12	86	82	5	52	1	19	6	G 1/8	60	M14 x 1.5	12

Strokes for bore 12 mm	25; 50; 75
Strokes for bore 16 mm	25; 50; 75; 100
Strokes for bore 20 mm	25; 50; 75; 100; 125
Strokes for bore 25 mm	25; 50; 75; 125; 150
Strokes for bore 30 mm	25; 50; 75; 125; 150

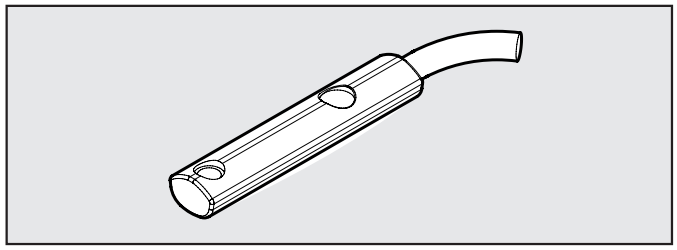
ACCESSORIES

MAGNETIC SENSOR Ø 4, FOR SLIDE S121 Ø12



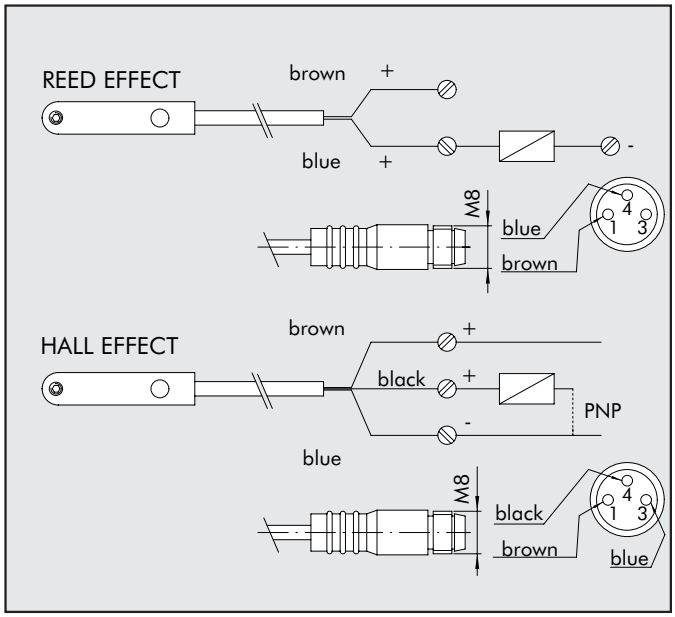
Code	Description
W0950044180	MAGNETIC SENSOR REED 2 WIRES 24VDC 1 m

RETRACTABLE SENSOR WITH INSERTION FROM ABOVE, FOR SLIDE S12 Ø16÷30



Code	Description
W0952025390	HALL SENSOR, VERTICAL INSERTION 2.5m
W0952029394	HALL SENSOR, VERTICAL INSERTION 300 mm M8
W0952022180	REED SENSOR, VERTICAL INSERTION 2.5m
W0952028184	REED SENSOR, VERTICAL INSERTION 300 mm M8

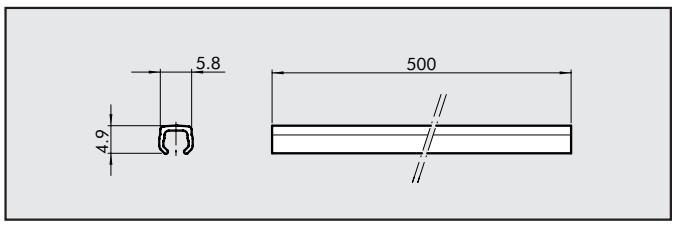
WIRING DIAGRAM



TECHNICAL FEATURES

		Reed	Effetto Hall
Tipo contatto		N.O.	N.O.
Interruttore		-	PNP
Tensione di alimentazione (Ub)	V	10 ÷ 30 AC/DC	10 ÷ 30 DC
Potenza	W	3 (6 di picco)	3
Variazione di tensione		-	≤ 10% di Ub
Caduta di tensione	V	-	≤ 2
Consumo	mA	-	≤ 10
Corrente di uscita	mA	≤ 100	≤ 100
Frequenza di commutazione	Hz	≤ 400	≤ 5
Protezione da corto circuito		-	Si
Soppressione sovratensione		-	Si
Protezione all'inversione polarità		-	Si
EMC		EN 60 947-5-2	EN 60 947-5-2
Visualizzazione comunicazione Led		Giallo	Giallo
Sensibilità magnetica		2,8 mT ±25%	2,8 mT ±25%
Ripetibilità		≤ 0,1 mT	≤ 0,1 mT
Grado di protezione (EN 60529)		IP 67	IP 67
Resistenza alle vibrazioni e urti		30 g, 11 ms, 10÷55 Hz, 1mm	30 g, 11 ms, 10÷55 Hz, 1mm
Temperatura di lavoro	°C	-25 ÷+75	-25 ÷ +75
Materiale capsula sensore		PA66 + PA6I/6T	PA66 + PA6I/6T
Cavo di connessione 2,5m		PVC; 2 x 0,12 mm^2	PVC; 3 x 0,14 mm^2
Cavo di connessione con M8x1		Poliuretano; 2 x 0,14 mm^2	Poliuretano; 3 x 0,14 mm^2

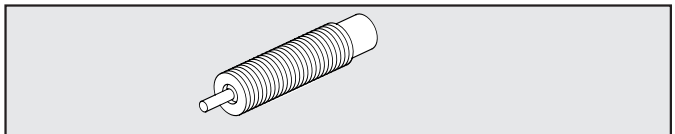
BAR FOR GROOVING



Code	Description
W0950000160	BAR FOR GROOVING L=500 mm

Note: the code corresponds to 1 piece

SHOCK ABSORBERS

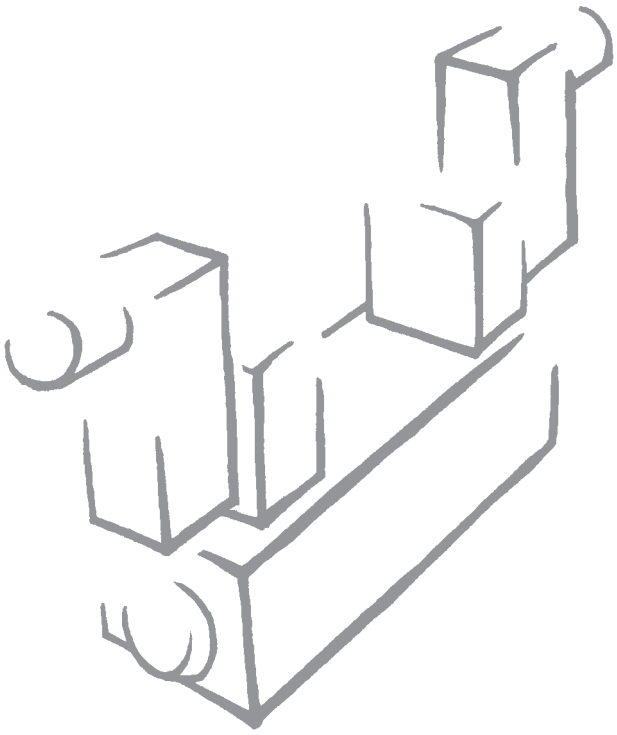


Code	Ø	Description
0950004001	ø12	Shock absorbers PM8 MC2 + nut M8x1
0950004002	ø16-20	Shock absorbers PM10 MF2 + nut M10x1
0950004003	ø25	Shock absorbers PR015 MF1 + nut M12x1
0950004004	ø30	Shock absorbers PR025 MC2 + nut M14x1.5

METAL WORK PNEUMATIC

2

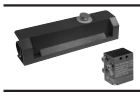
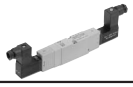
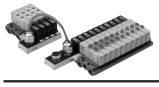
VALVES
FIELD BUS



DISTRIBUTORS

VALVE SUMMARY

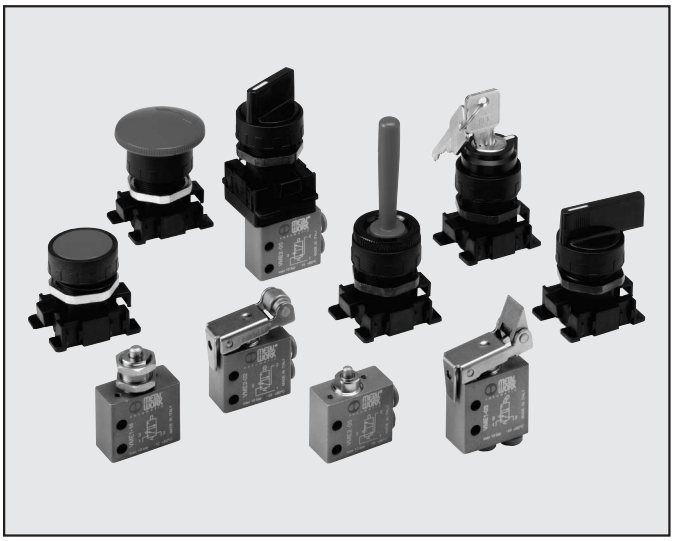
CHAPTER 2.1

	MINIVALVES, SERIES VME-1 MECHANICALLY/HAND OPERATED	PAGE 2.1/02
	VALVES, SERIES PEV , PEDAL OPERATED	PAGE 2.1/07
	TWO HAND SAFETY VALVE	PAGE 2.1/09
	VALVES, SERIES 70	PAGE 2.1/09
	VALVES, SERIES 70 ON BASE	PAGE 2.1/42
	VALVES, NEMUR	PAGE 2.1/50
	VALVES ISO 5599/1, SERIES IPV-ISV	PAGE 2.1/53
	VALVES ISO 5599/1 – M12-CONNECTOR	PAGE 2.1/61
	PRESSURE REGULATOR FOR BASES ISO 5599/1	PAGE 2.1/69
	VALVES MACH 18 VDMA 24563-02	PAGE 2.1/70
	VALVES MACH 11	PAGE 2.1/77
	VALVES MACH 16	PAGE 2.1/83
	MULTIPLE CONNECTOR	PAGE 2.1/92
	REDUCER WITH GAUGE, SERIES “RMV”	PAGE 2.1/106
	MULTIMACH MM	PAGE 2.1/107
	MULTIMACH HDM	PAGE 2.1/121
	MULTIMACH HDM+AS-INTERFACE	PAGE 2.1/129
	SOLENOID VALVES PIV.P 10 mm	PAGE 2.1/141
	SOLENOID VALVES PIV.M 15 mm	PAGE 2.1/143
	SOLENOID VALVES PIV ON BASE	PAGE 2.1/146
	SOLENOID VALVES PIV IN L INE	PAGE 2.1/152
	SOLENOID VALVE CNOMO	PAGE 2.1/156

MINIVALVES, MECHANICALLY AND HAND OPERATED SERIES VME

- Minivalves with 3/2 NO NC poppet,
- Installation in any position
- Push-in fittings for pipe Ø 4 mm and M5 on the valve body
- Low actuation force
- Rapid, accurate signal
- Mechanical actuation
- The VMA1-000 adapter allows manual actuation of 1 or 2 VME valves with manual Ø 22 panel actuators. Thus it is possible to obtain 3/2, 5/2, 5/3 open centre and 5/3 pressure centre pneumatic functions.

On request, it is possible to place a NC-NO electric switch next to a VME valve for mixed solenoid/pneumatic signals.

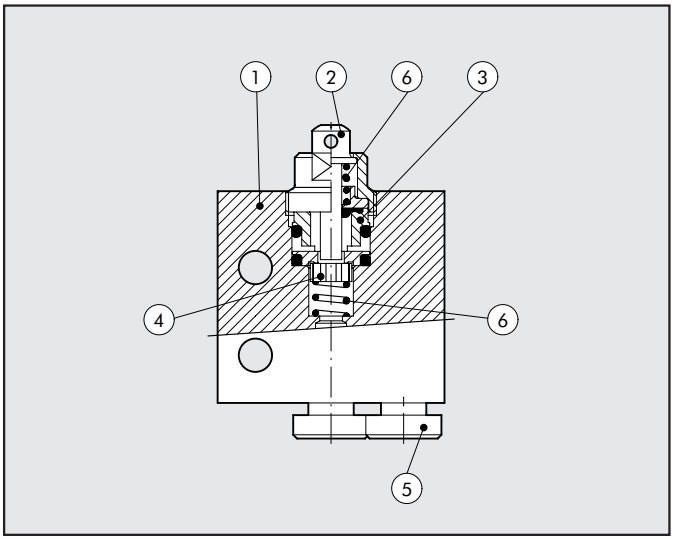


TECHNICAL DATA

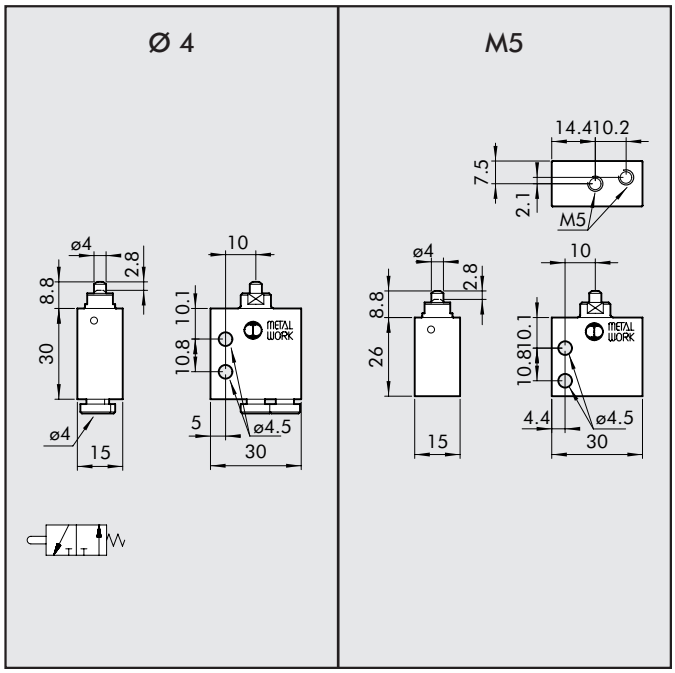
Valve fitting port	Push-in fitting for pipe diam. 4 and M5 (axial or side)
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous
Type	with poppet
Versions	Mechanical and manual
Operators:	
• mechanical	With Plunger – Plunger for wall-mounting – Roller lever – Unidirectional roller lever
• manual	Depending on the type of actuation panel selected
Operating pressure	0.5-10 bar
Operating temperature range	-10°÷+60°C
Nominal diameter	2.5 mm
Conductance C	16.5 Nl/min · bar
Critical ratio b	0.03 bar/bar
Flow rate at 6 Bar P 0.5 Bar	35 Nl/min
Flow rate at 6 Bar P 1 Bar	60 Nl/min
Actuation force – Plunger at 6 Bar	8 N
Recommended lubricant	ISO and UNI FD 22
Installation	In any position

COMPONENTS

① VALVE BODY: Aluminium
② BUTTON: chemically nickel-plated brass
③ DISTANCE PLATES: Brass
④ GASKETS: NBR nitrile rubber
⑤ PUSH-IN FITTING CARTRIDGES: stainless steel, brass and plastic
⑥ SPRINGS: stainless steel

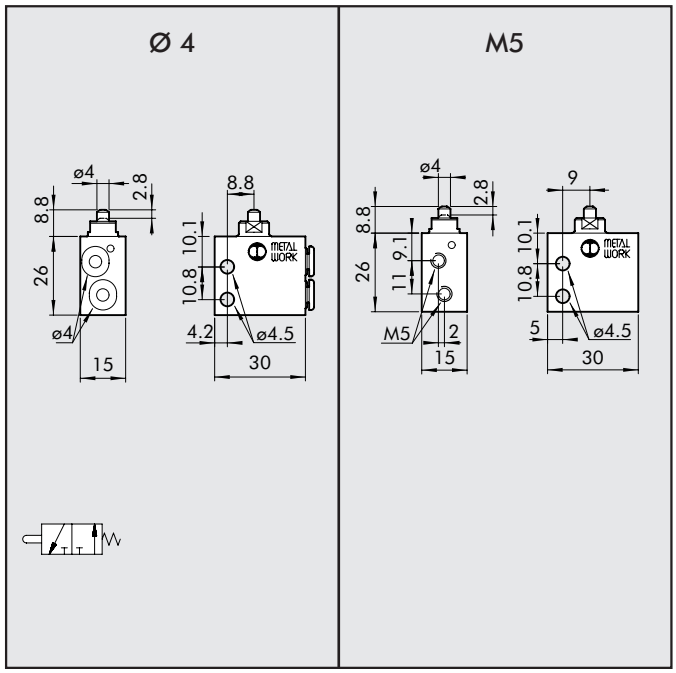


PLUNGER 3/2 NO – AXIAL FITTINGS



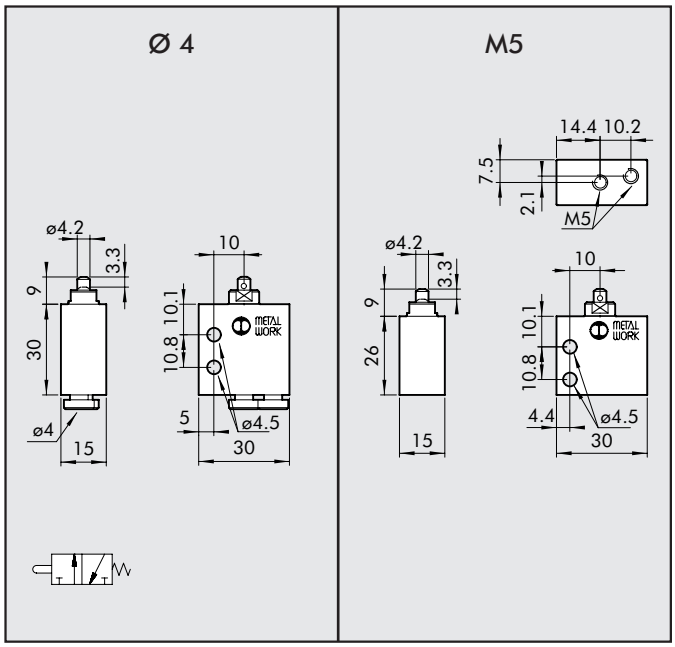
Code	Description	Weight [g]
W3501000101	VME1-10 NO Ø4	42
W3501000110	VME1-16 NO M5	36

PLUNGER 3/2 NO – SIDE FITTINGS



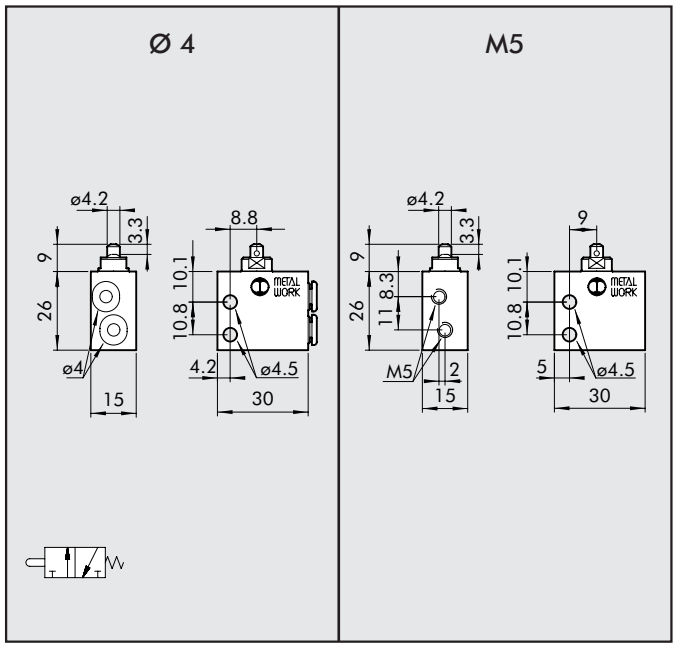
Code	Description	Weight [g]
W3501001100	VME2-00 NO Ø4	34
W3501001110	VME2-10 NO M5	34

PLUNGER 3/2 NC – AXIAL FITTINGS



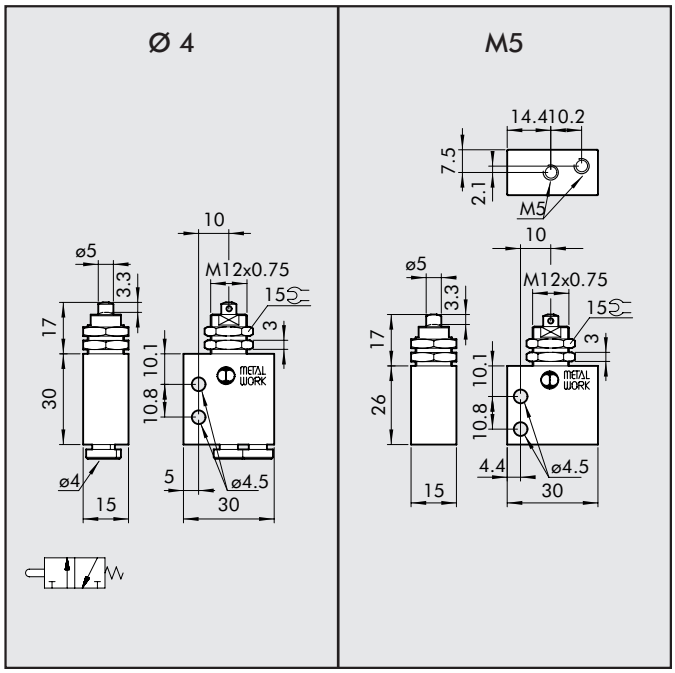
Code	Description	Weight [g]
W3501000100	VME1-01 NC Ø4	42
W3501000111	VME1-11 NC M5	36

PLUNGER 3/2 NC – SIDE FITTINGS



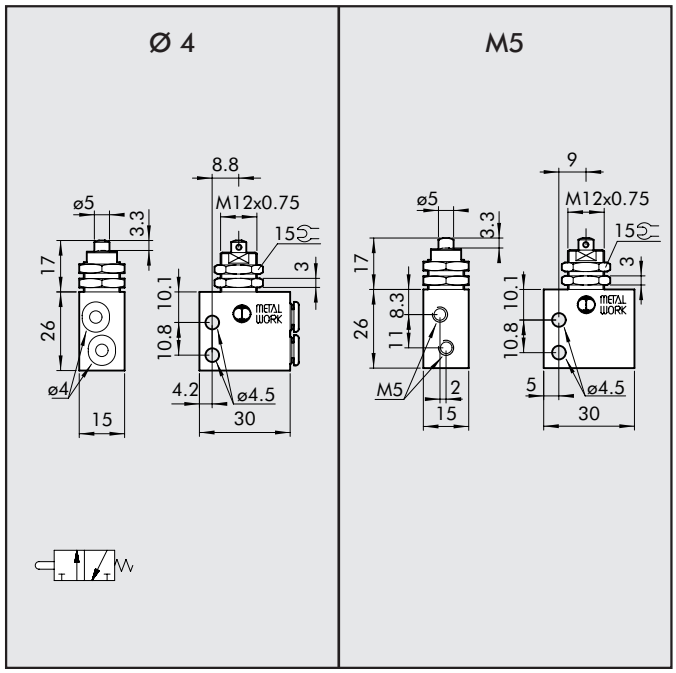
Code	Description	Weight [g]
W3501001101	VME2-01 NC Ø4	34
W3501001111	VME2-11 NC M5	34

PLUNGER FOR WALL MOUNTING, 3/2 NC AXIAL FITTINGS



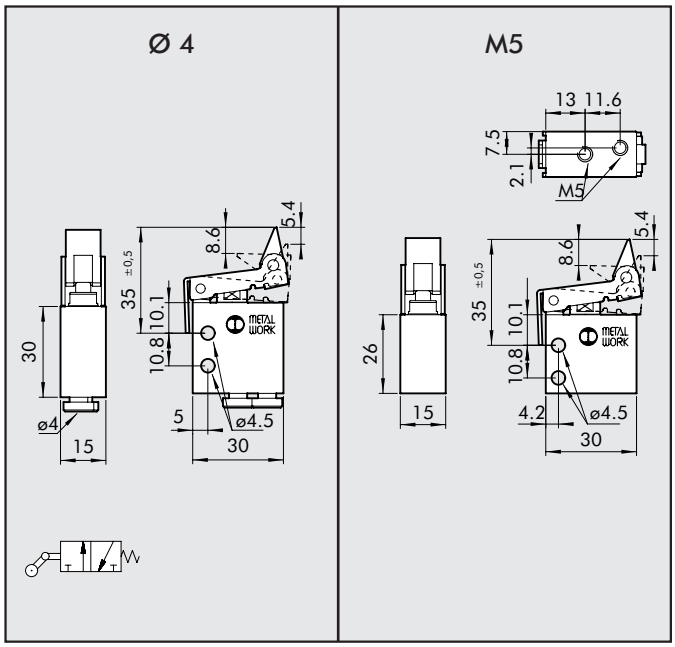
Code	Description	Weight [g]
W3501000400	VME1-04 NC Ø4	54
W3501000411	VME1-14 NC M5	48

PLUNGER FOR WALL MOUNTING, 3/2 NC SIDE FITTINGS



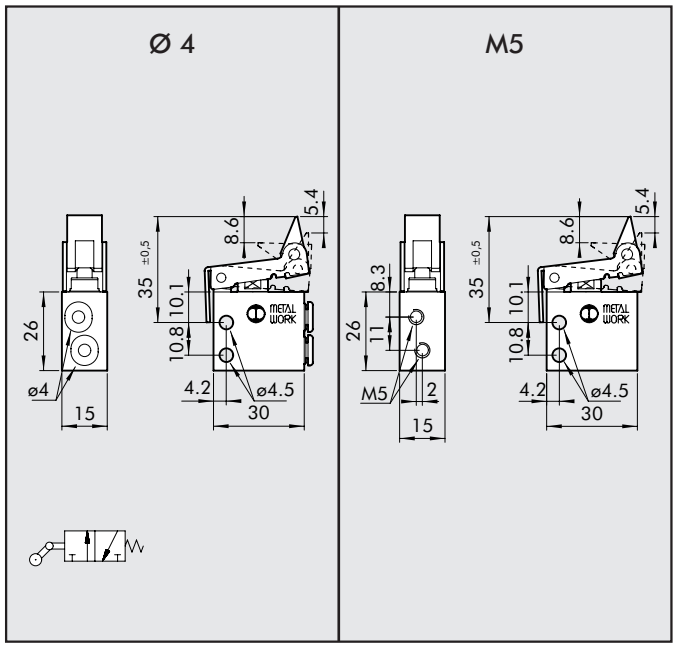
Code	Description	Weight [g]
W3501001401	VME2-04 NC Ø4	46
W3501001411	VME2-14 NC M5	46

UNIDIRECTIONAL ROLLER LEVER, 3/2 NC AXIAL FITTINGS



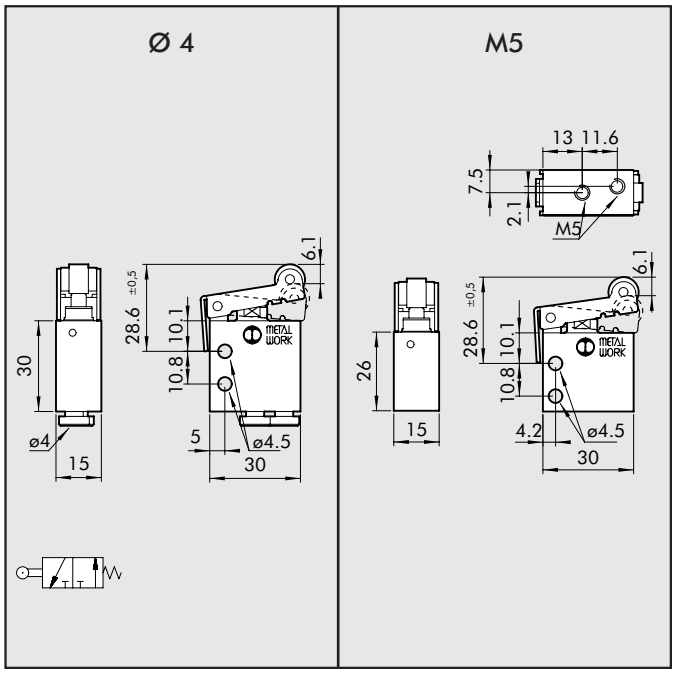
Code	Description	Peso [g]
W3501000300	VME1-03 NC Ø4	60
W3501000311	VME1-13 NC M5	54

UNIDIRECTIONAL ROLLER LEVER, 3/2 NC SIDE FITTINGS



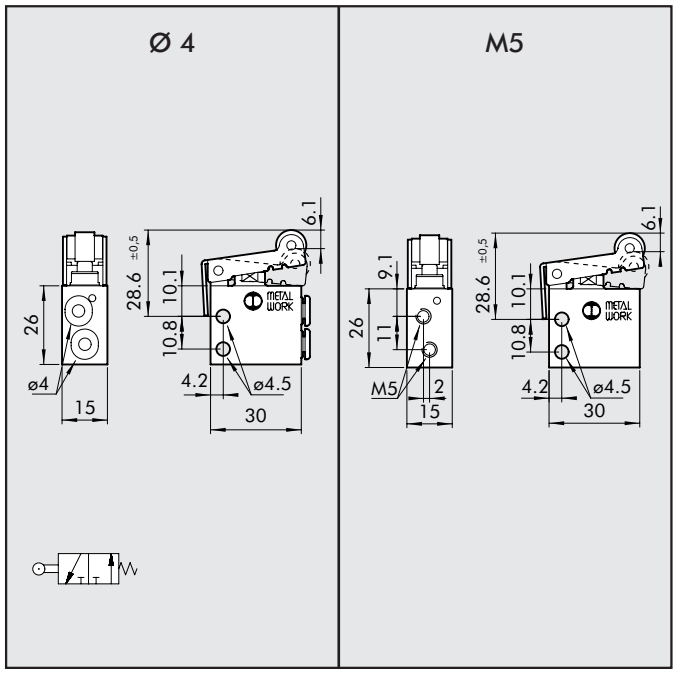
Code	Description	Peso [g]
W3501001301	VME2-03 NC Ø4	52
W3501001311	VME2-13 NC M5	52

ROLLER LEVER, 3/2 NO - AXIAL FITTINGS



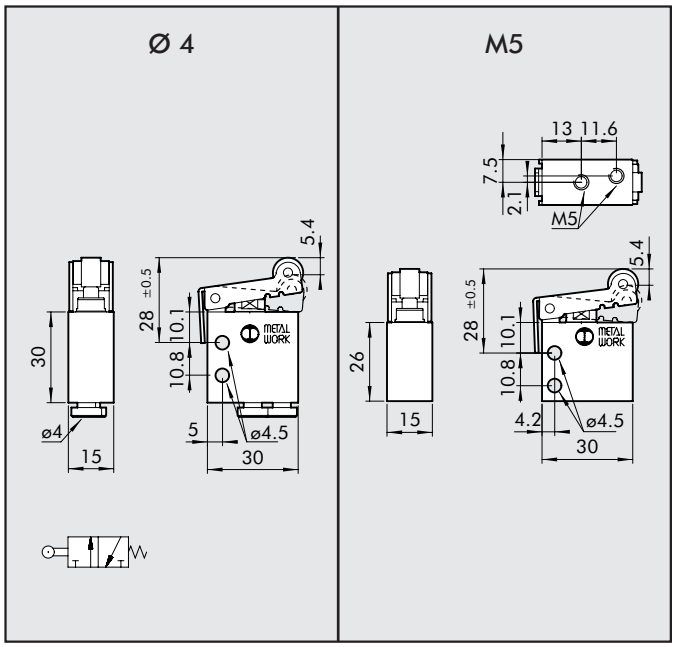
Code	Description	Weight [g]
W3501000201	VME1-05 NO ø4	58
W3501000210	VME1-15 NO M5	52

ROLLER LEVER, 3/2 NO - SIDE FITTINGS



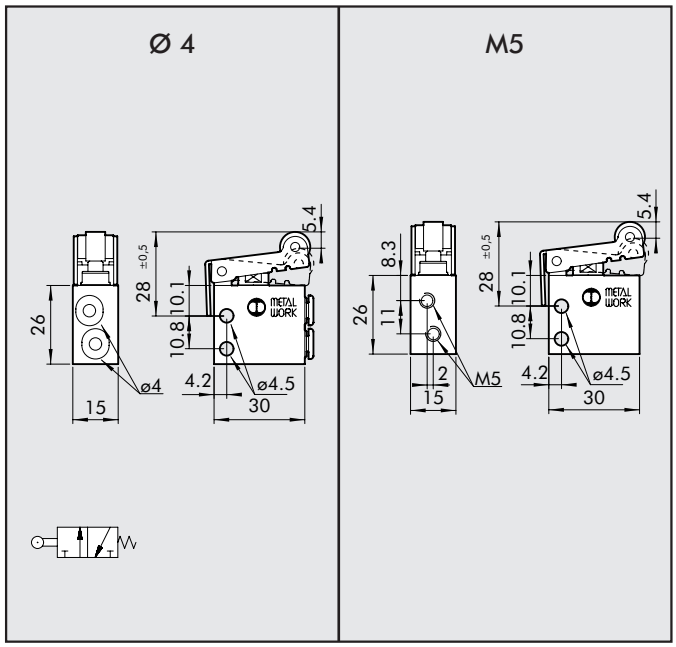
Code	Description	Weight [g]
W3501001200	VME2-05 NO ø4	50
W3501001210	VME2-15 NO M5	50

ROLLER LEVER, 3/2 NC - AXIAL FITTINGS



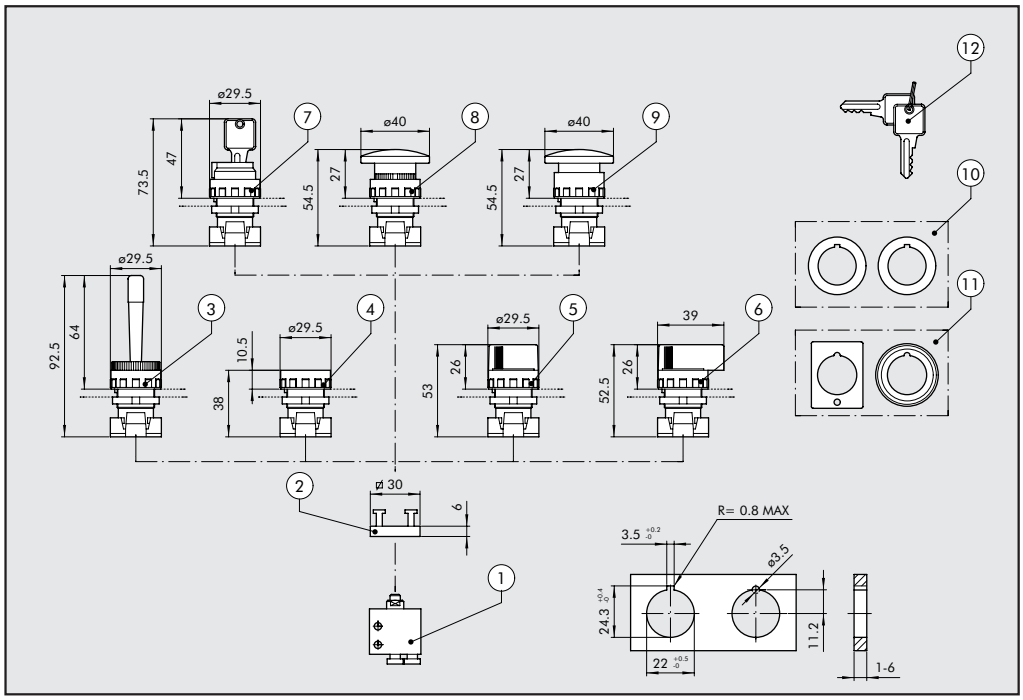
Code	Description	Weight [g]
W3501000200	VME1-02 NC ø4	56
W3501000211	VME1-12 NC M5	50

ROLLER LEVER, 3/2 NC - SIDE FITTINGS



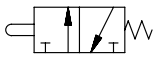
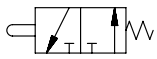
Code	Description	Weight [g]
W3501001201	VME2-02 NC ø4	52
W3501001211	VME2-12 NC M5	50

MANUAL VME VALVES – ASSEMBLY DIAGRAM



NOTES:
For 5/2 pneumatic operation, assemble a 3/2 NC plunger valve and a 3/2 NO one on the adapter.
For 5/3 pneumatic operation with open centres, assemble two 3/2 NC plunger valves on the adapter.
For 5/3 pneumatic operation with pressure centres, assemble two 3/2 NO plunger valves on the adapter.

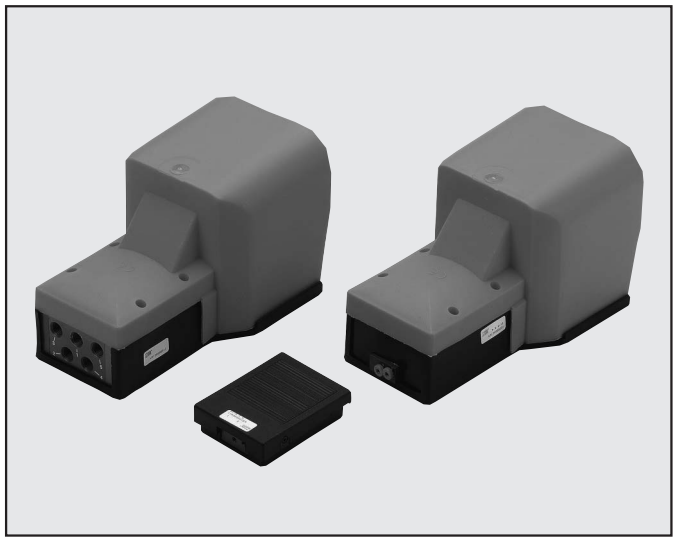
ORDERING CODES

Symbol	Reference	Description	Code	Weight [g]
	①	3/2 NC Axial fittings ø4	W3501000100	42
		3/2 NC Axial fittings M5	W3501000111	36
		3/2 NC Side fittings ø4	W3501001101	34
		3/2 NC Side fittings M5	W3501001111	34
	①	3/2 NO Axial fittings ø4	W3501000101	42
		3/2 NO Axial fittings M5	W3501000110	36
		3/2 NO Side fittings ø4	W3501001100	34
		3/2 NO Side fittings M5	W3501001110	34
	②	2 places adaptor thickness 6.8 mm	0351000050	5
	③	Red handler with horizontally pivoted lever	W0351000015	25
	④	Fat push button + 2 red/black coloured disks	W0351000011	15
		◆ *Bistable fat push button without disk*		
	⑤	Black selector short lever at 2 positions with return	W0351000030	20
		Black selector short lever at 2 positions	W0351000031	20
	⑤	Black selector short lever at 3 positions with return	W0351000032	20
		Black selector short lever at 3 positions	W0351000033	20
	⑥	Black selector long lever at 2 positions with return	W0351000034	26
		Black selector long lever at 2 positions	W0351000035	26
	⑥	Black selector long lever at 3 positions with return	W0351000036	26
		Black selector long lever at 3 positions	W0351000037	26
	⑦	2 positions key selector with extractable key in 2 positions	W0351000016	50
		2 positions key selector with extractable key in 0	W0351000018	50
	⑧	Red mushroom-head push button ø40	W0351000013	27
		Black mushroom-head push button ø40	W0351000017	27
	⑨	Red mushroom-head push button with lock ø40	W0351000014	29
	⑩	✚ Reducer from 30 to 22.5 mm	W0351000049	
	⑪	▲ Adapter for bore ø30 G2326	W0351000050	
	⑫	✚ key for ESC selectors	W0351000021	
		Green disk for push button ④	W0351000056	

◆ It can't be supplied. As working replaced by selector with bistable short lever at 2 positions ⑤
✚ Usable only with technopolymer body selectors
▲ Usable only with metal body selectors

VALVES SERIES PEV
PEDAL OPERATED

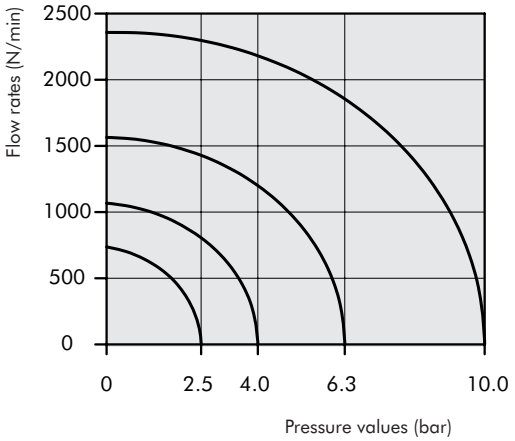
The valves series PEV with pedal are available in a wide range:
- 5/2 1/4" monostable and bistable with guarded pedal
- 3/2 M5 monostable, pedal not guarded
- 3/2 Ø 4 monostable, pedal not guarded
- 3/2 M5 in monostable and bistable configuration with guarded pedal
- 3/2 Ø 4 in monostable and bistable configuration with guarded pedal



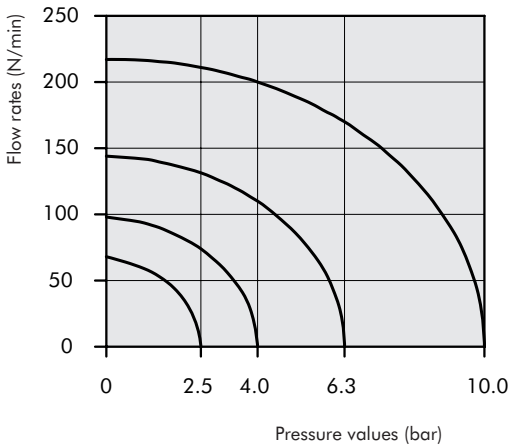
TECHNICAL DATA

Valve fitting port	Ø 4	M5	1/4''
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Type	Mono/ bistable guarded	Monostable not guarded	Mono/ bistable guarded
	Monostable not guarded	Mono/ bistable guarded	–
Operating pressure	2.5÷10 bar - 0.25÷1 MPa - 36÷145 psi		
Operating temperature range	–10°C+60°C		
Nominal diameter	2.5 mm	2.5 mm	7.5mm
Conductance C	16.5 Nl/min · bar	16.5 Nl/min · bar	264.26 Nl/min · bar
Critical ratio b	0.03 bar/bar	0.03 bar/bar	0.32 bar/bar
Flow rate at 6.3 bar P 0.5 bar	60 Nl/min	60 Nl/min	640 Nl/min
Flow rate at 6.3 bar P 1 bar	95 Nl/min	95 Nl/min	840 Nl/min

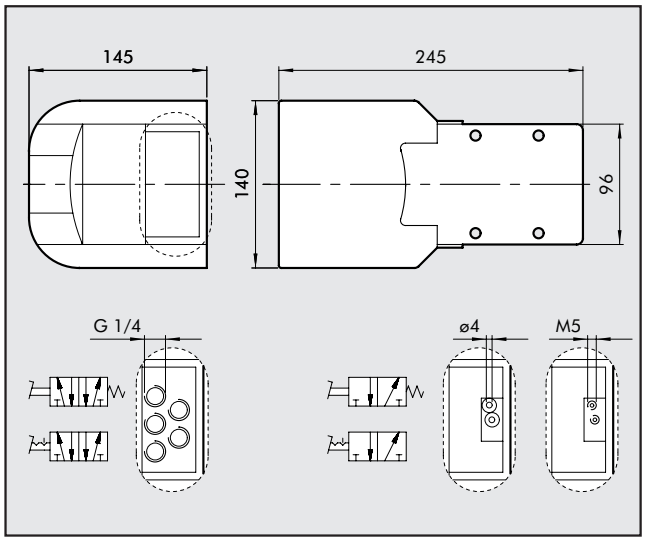
FLOW CHARTS for 1/4"

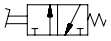


FLOW CHARTS for M5/Ø 4 mm

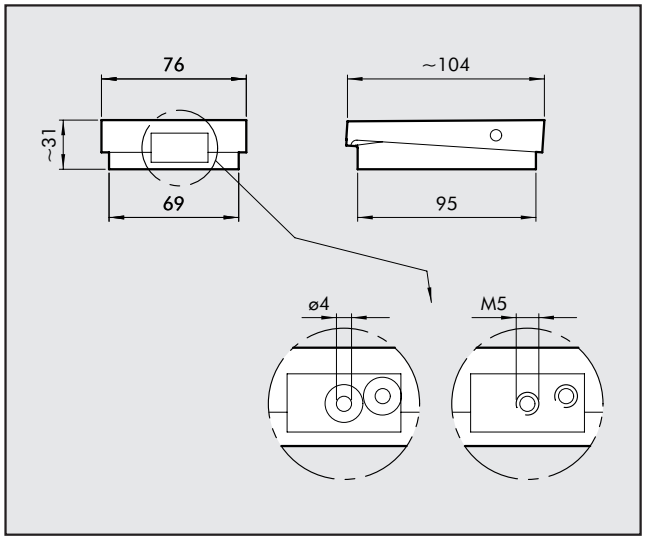


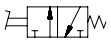
GUARDED PEDAL WITH VALVES 5/2 1/4" – 3/2 M5 – 3/2 Ø 4



Symbol	Description	Abbrev.	Code	Weight [g]
	5/2 - 1/4'' monostable, guarded	PEV 35 PES PR	W3120000001	1027
	5/2 - 1/4'' bistable guarded	PEV 35 PEB PR	W3120000011	1035
	3/2 M5 monostable, guarded	PEV 03 PES PR	W3120000301	883
	3/2 Ø 4 monostable, guarded	PEV F3 PES PR	W3120000321	887
	3/2 M5 bistable, guarded	PEV 03 PEB PR	W3120000331	890
	3/2 Ø 4 bistable, guarded	PEV F3 PEB PR	W3120000311	914

NOT-GUARDED PEDAL WITH VALVES 3/2 M5 – 3/2 Ø 4



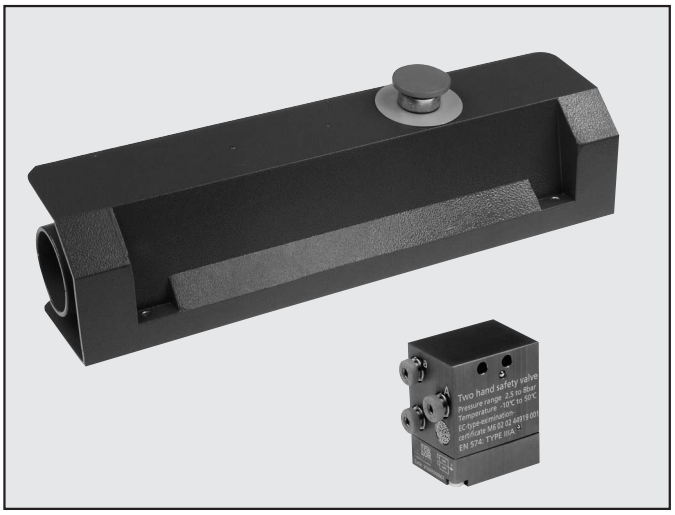
Symbol	Description	Abbrev.	Code	Weight [g]
	3/2 - M5 monostable not guarded	PEV 03 PES WP	W3120000411	188
	3/2 Ø 4 monostable not guarded	PEV F3 PES WP	W3120000401	192

KEY TO CODES

P E V	F	3	P E	C	W P
FAMILY	DIMENSIONS	FUNCTION	OPERATION 14	REPEATED OPERATION 12	FURTHER DETAILS
PEV Valve with pedal	3 1/4 0 M5 F Ø 4	3 3/2 5 5/2	PE Pedal operated	S mech. Springs C mechanical block B bistable	WP not guarded PR guarded

TWO HAND SAFETY VALVE

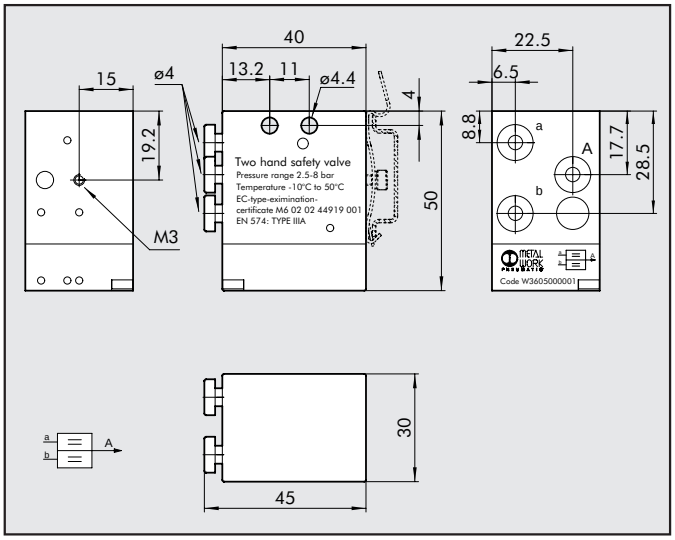
The two hand safety valve generates an output signal only if two synchronised pneumatic input signals are received. If one input signal is interrupted, the output signal is interrupted as well.
The most common application involves connecting a manual button-controlled valve to each of the inputs and using the output signal as a start-of-cycle control for a pneumatically-operated machine.
• The two hand safety valve can be secured with through screws or a DIN bar adaptor.
• The complete pushbutton panel includes the dual manual control valve, two manual pushbuttons, and an emergency stop valve, all housed in a metal box to be mounted on a wall or stand.
• The pushbutton housing is supplied on request for anyone wishing to get a personalised pneumatic connection or drill holes to secure the unit.



TECHNICAL DATA

Compressed air couplings	mm	Push-in fitting for Ø4 pipe
Fluid		Filtered, unlubricated compressed air, max 50m
Version		Single-control – Complete pushbutton panel
Standard		EN574 type IIIA, TUV approved, Certified M6020244919001
Synchronisation, max. time between two signals	sec	0.4
De-activation time, with pipe L=max 1000 mm	sec	<0.05
Actuation		pneuamtic
Reset		spring operated
Operating pressure	bar	2.5 ÷ 8
Temperature range	°C	-10 ÷ +60
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 MPa – 87 psi) DP 1 bar (0.1MPa-1.45 psi))	Nl/min	85
Mounting position		in any direction

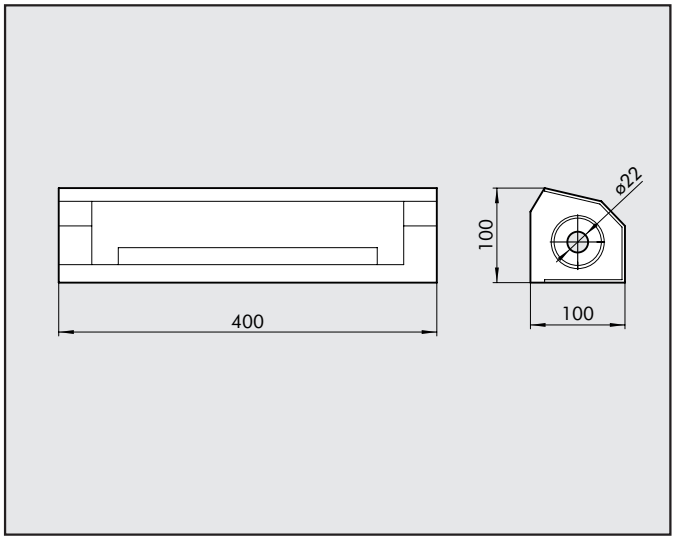
TWO HAND SAFETY VALVE



Code	Description
W3605000001	Two hand safety valve

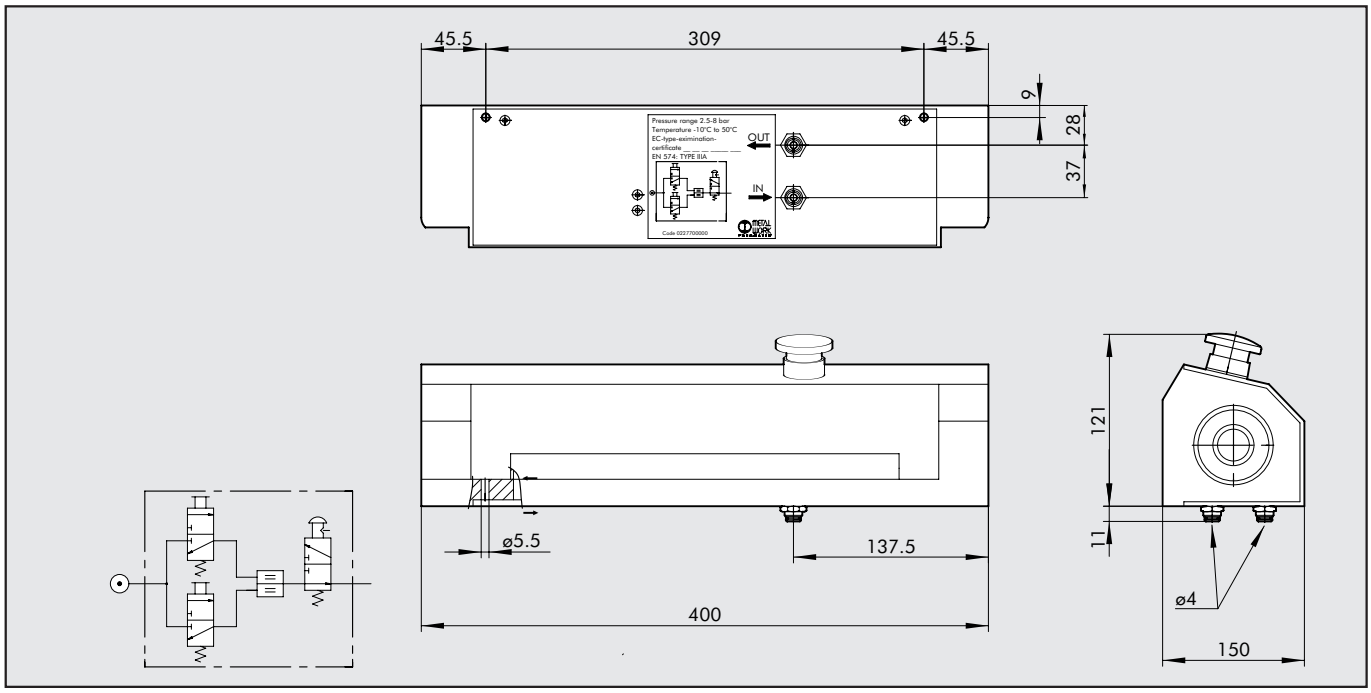
Materials
Body: anodised aluminium
Internal parts: brass and technopolymer
Gaskets: NBR
Spring: alloy steel

PUSHBUTTON HOUSING



Code	Description
W3120000212	Pushbutton housing

COMPLETE PUSHBUTTON PANEL



ORDERING CODES

Code	Description
0227700000	Complete pushbutton panel

Materials

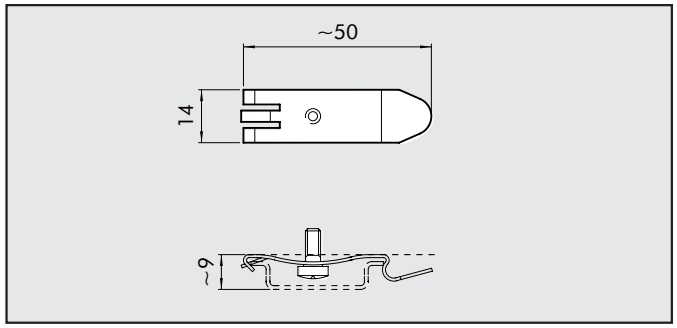
Pressure die-cast and painted aluminium alloy

MAIN COMPONENTS

Code	Description	Quantity
W3605000001	Dual manual safety valve	1
W0351000011	Monostable protected button - black disk	2
W0351000014	Emergency stop button	1
W3501000100	VME1-01 NC Ø4	2
W3501001100	VME2-01 NO Ø4	1
0351000050	Valve-button connecting base	3
2L11001	RL10 Ø4	2

ACCESSORIES

CONNECTION BRACKETS ON THE BAR



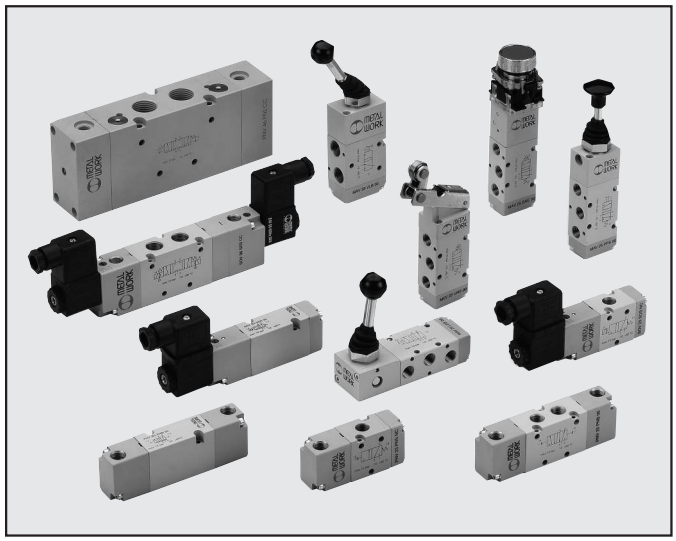
Code	Description
0227300600	CONNECTION BRACKETS ON DIN BAR

Individually packed

NOTES

VALVES SERIES 70

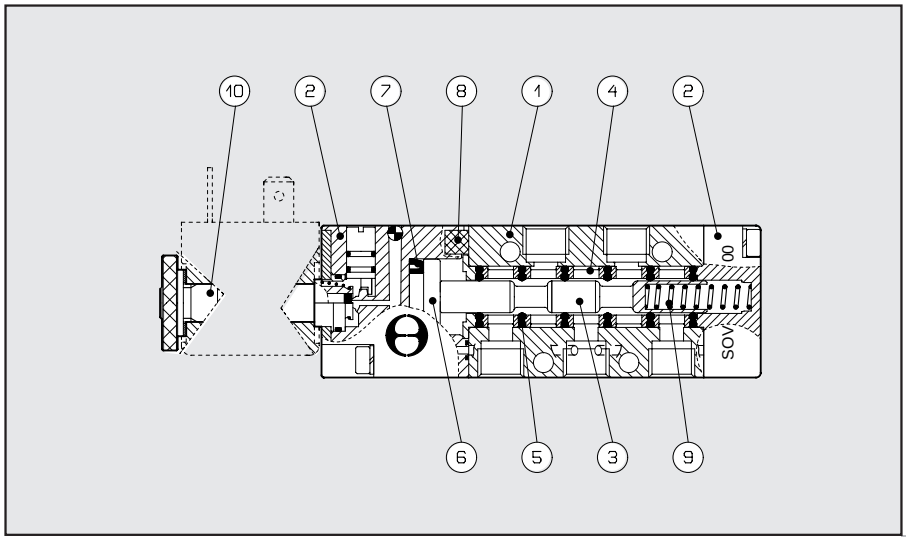
This is Metal Work's full range. Available in three sizes: 1/8", 1/4", 1/2". Three versions: 3/2 5/2 5/3, four different types of actuation (mechanical, manual, pneumatic and electric). Series 70 valves can be used for a wide range of applications as they can be mounted in line, on the wall, on the cylinder using a special bracket, or in series on a multiple or manifold base.



TECHNICAL DATA	1/8''	1/4''	1/2''
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous		
Thread on the valve ports	G 1/8	G 1/4	G 1/2
Operating pressure:			
• monostable	2.5÷10 bar		
• bistable	1÷10 bar		
• asserved	vacuum÷10 bar		
Minimum pilot pressure	2.5 bar		
Operating temperature range	–10°C÷+60°C		
Nominal diameter	5 mm	7.5 mm	15 mm
Conductance C	121.43 Nl/min · bar	264.26 Nl/min · bar	971.43 Nl/min · bar
Critical ratio b	0.32 bar/bar	0.27 bar/bar	0.43 bar/bar
Flow rate at ΔP 0.5 bar	400 Nl/min	750 Nl/min	3,200 Nl/min
Flow rate at ΔP 1 bar	550 Nl/min	1100 Nl/min	4,600 Nl/min
Installation	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)		
Recommended lubricant	ISO and UNI FD 22		
Maximum coil nut torque	1 Nm		

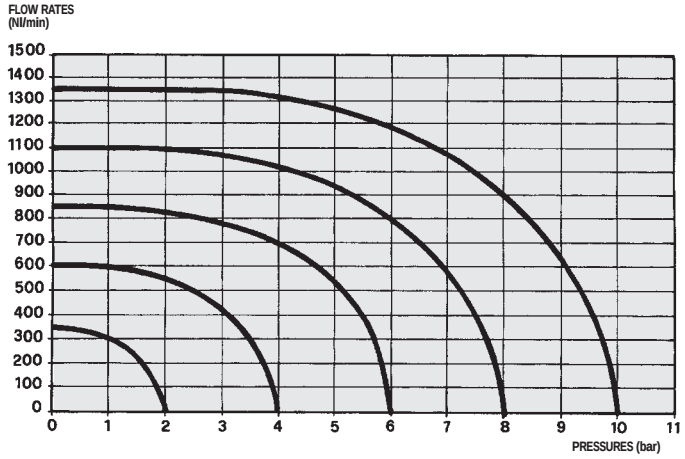
COMPONENTS

① VALVE BODY: Aluminium
② CONTROL/END CAP: HOSTAFORM®
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: Nitrile rubber NBR
⑥ PISTONS: HOSTAFORM®
⑦ PISTON GASKET: Nitrile rubber NBR
⑧ FILTER: sintered bronze
⑨ SPRINGS: special steel
⑩ OPERATOR: Brass pipe – Stainless steel core

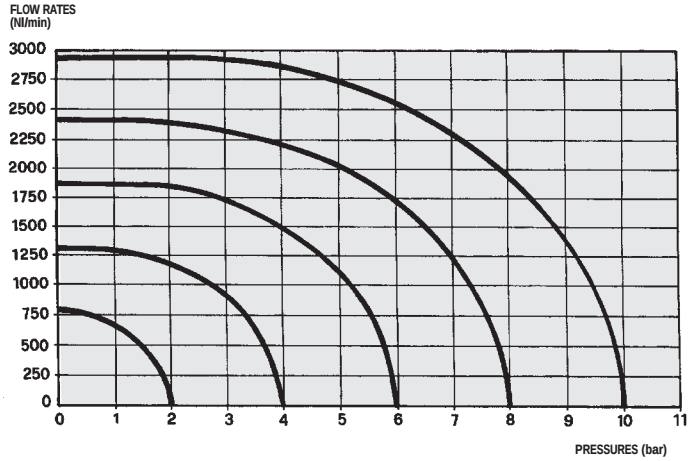


FLOW CHARTS

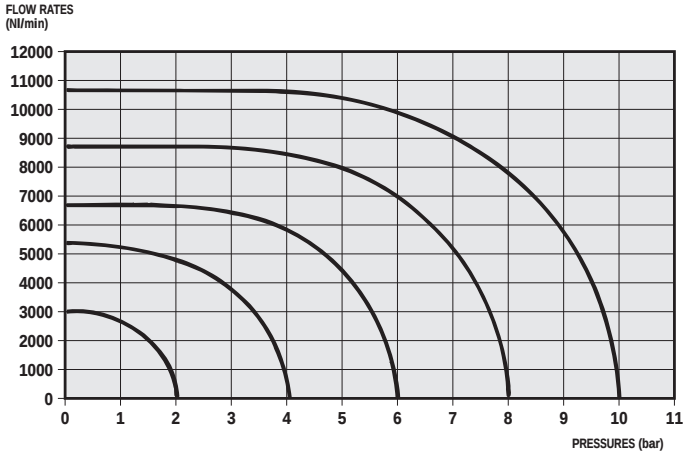
VALVES SERIES 70, 1/8"



VALVES SERIES 70, 1/4"



VALVES SERIES 70, 1/2"



VALVES SERIES 70, HAND OPERATED

TECHNICAL DATA	1/8''	1/4''	1/2''
Operating pressure range:			
• version with direct control		Vacuum-10 bar	
• Pilot-assisted version		2.5÷10 bar	
Operating temperature range		-10 to 60°C	
Nominal diameter	5 mm	7.5 mm	15 mm
Conductance C [Nl/min · bar]	121.43	264.26	971.43
Critical ratio b	0.32 bar/bar	0.27 bar/bar	0.43 bar/bar
Flow rate at 6 bar ΔP 0.5 bar	400 Nl/min	750 Nl/min	3200 Nl/min
Flow rate at 6 bar ΔP 1 bar	550 Nl/min	1100 Nl/min	4600 Nl/min

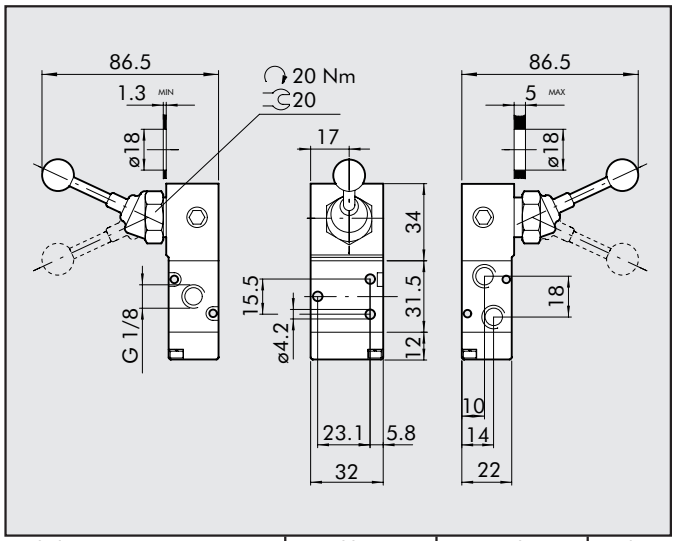


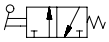
KEY TO CODES

M A V	2	3	P P	S	N C
FAMILY	DIMENSIONS	FUNCTION	OPERATION 14	REPEATED OPERATION 12	FURTHER DETAILS
MAV manual valves	2 1/8'' 3 1/4'' 4 1/2''	3 3/2 5 5/2 6 5/3 8 2x3/2	PP drawer VL axial lever LE 90° lever BRE arranged for manual panel actuators	A pneumatic/ mechanical spring* S mech. spring B bistable D differential O stable for 5/3 *on demand	NC normally closed NO normally open OO no indication CC closed centres OC open centres PC pressure centres

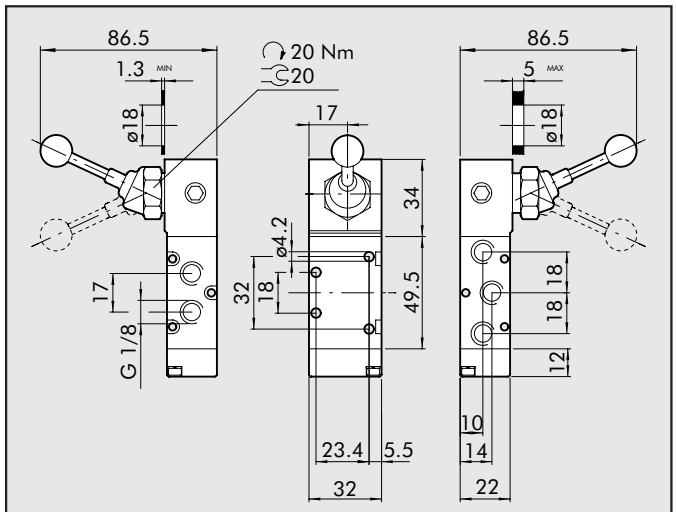
VALVES SERIES 70, HAND OPERATED, 1/8"

90° LEVER 3/2 1/8"



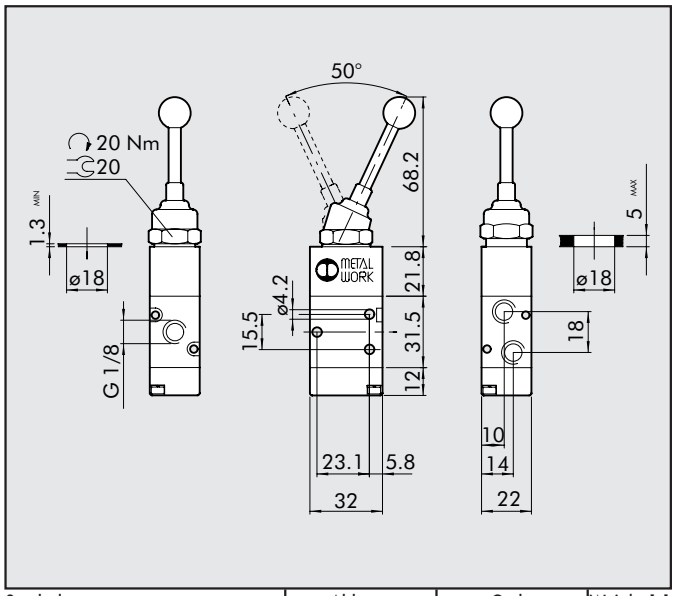
Symbol	Abbrev.	Code	Weight [g]
	MAV 23 LES NC	7010000100	168
	MAV 23 LEB OO	7010000200	171

90° LEVER 3/2 1/8"



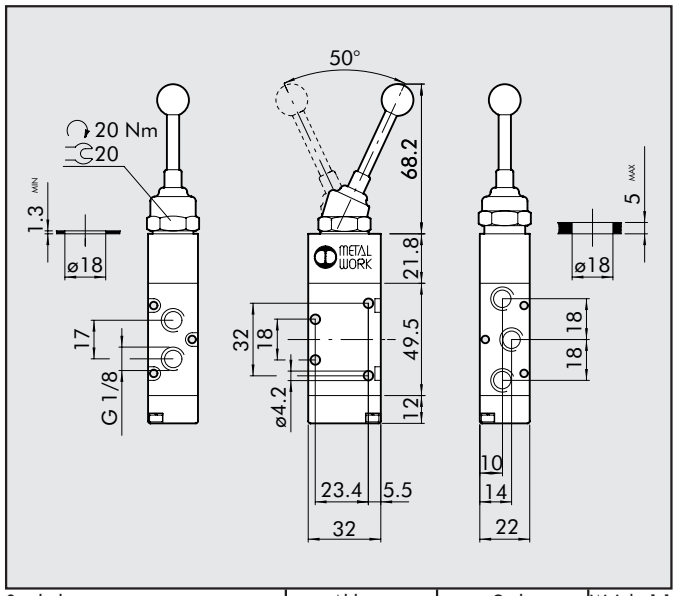
Symbol	Abbrev.	Code	Weight [g]
	MAV 25 LES OO	7010000300	194
	MAV 25 LEB OO	7010000400	197

FRONT LEVER 3/2, 1/8”



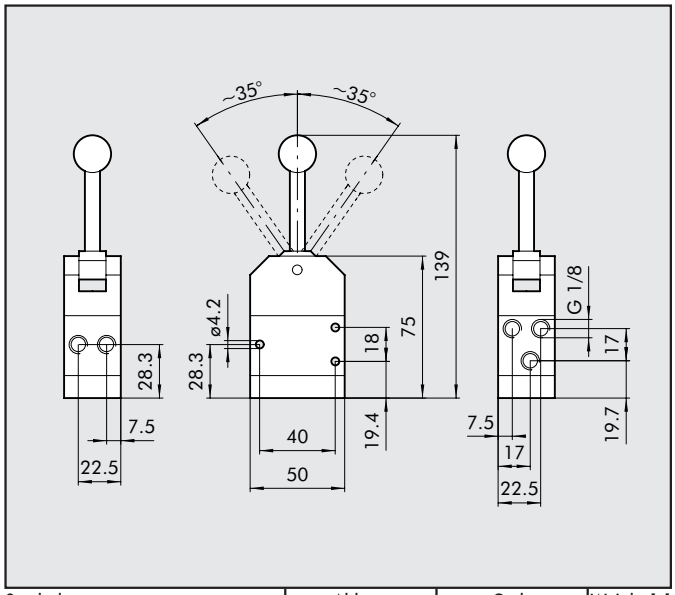
Symbol	Abbrev.	Code	Weight [g]
	MAV 23 VLB OO	7010001400	130

FRONT LEVER 5/2, 1/8”



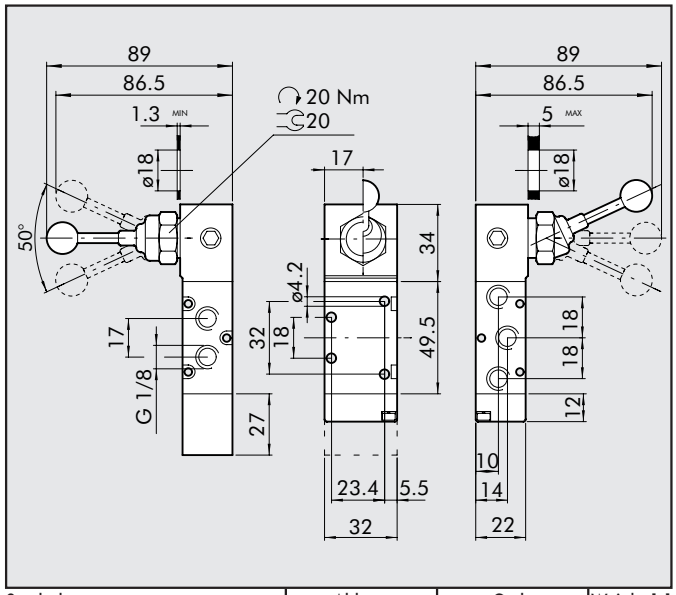
Symbol	Abbrev.	Code	Weight [g]
	MAV 25 VLB OO	7010001700	156

FRONT LEVER 5/3, 1/8”



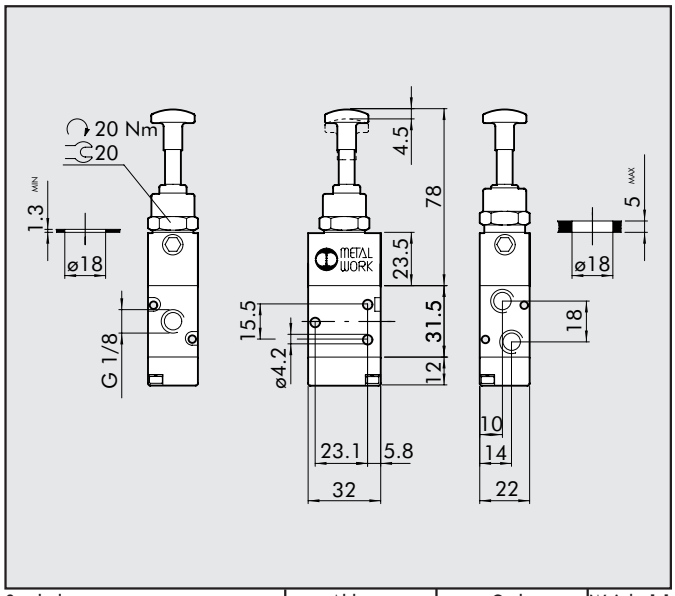
Symbol	Abbrev.	Code	Weight [g]
	MAV 28 VLO OC	7010001150	316
	MAV 28 VLS OC	7010001160	325

ANGULAR LEVER 5/3, 1/8”



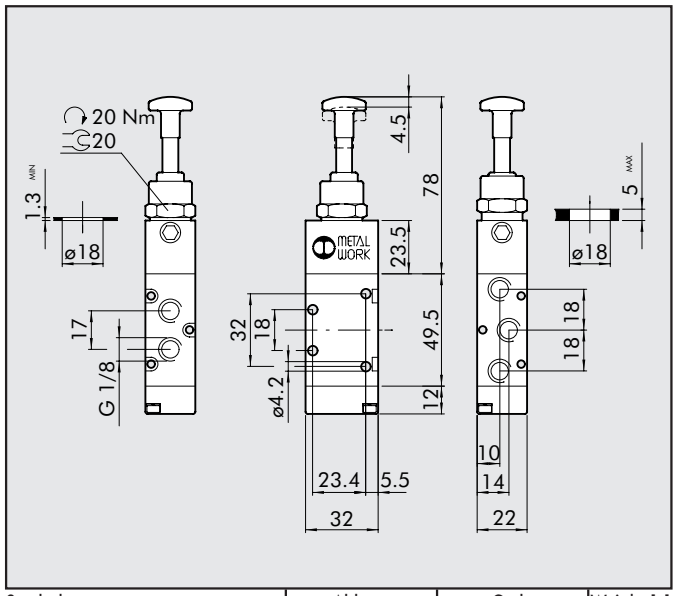
Symbol	Abbrev.	Code	Weight [g]
	MAV 26 LES CC	7010001000	242
	MAV 26 LES OC	7010000900	242
	MAV 26 LES PC	7010001100	242
	MAV 26 LEO CC	7010000500	194
	MAV 26 LEO OC	7010000600	194
	MAV 26 LEO PC	7010000700	194

DRAWER 3/2, 1/8"



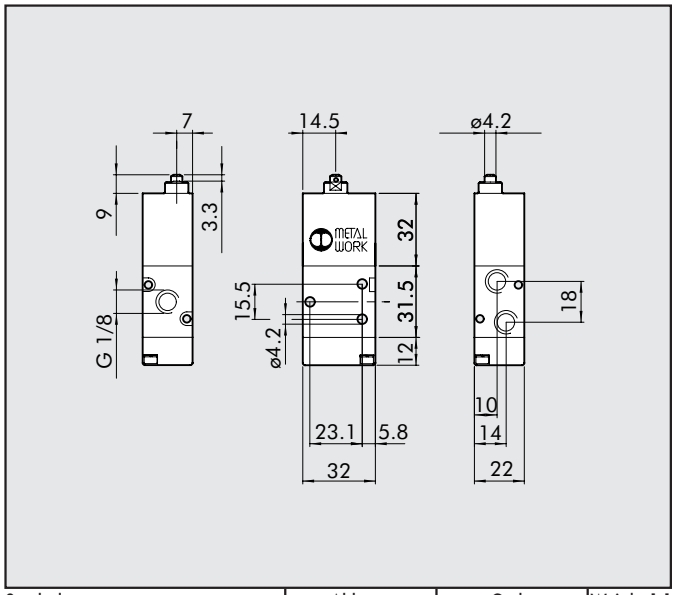
Symbol	Abbrev.	Code	Weight [g]
	MAV 23 PPB OO	7010001300	134
	MAV 23 PPS NC	7010001200	134

DRAWER 5/2



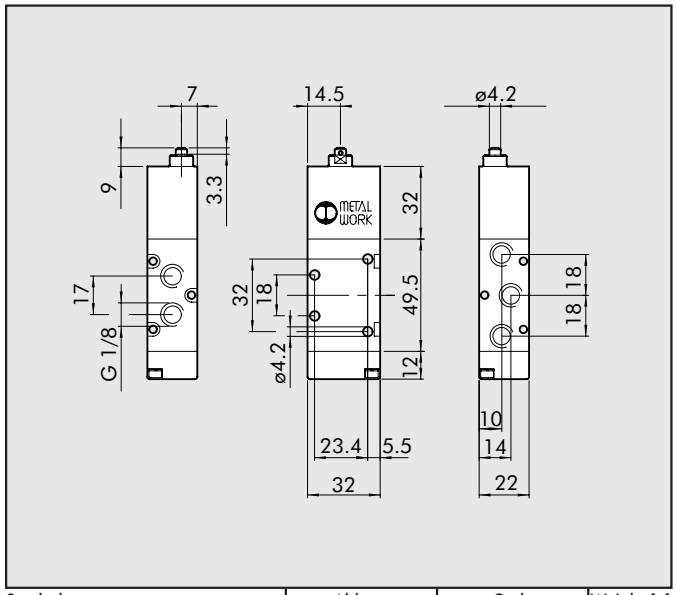
Symbol	Abbrev.	Code	Weight [g]
	MAV 25 PPB OO	7010001600	160
	MAV 25 PPS OO	7010001500	160

PILOT-ASSISTED PLUNGER 3/2 1/8" FOR PANEL ACTUATORS



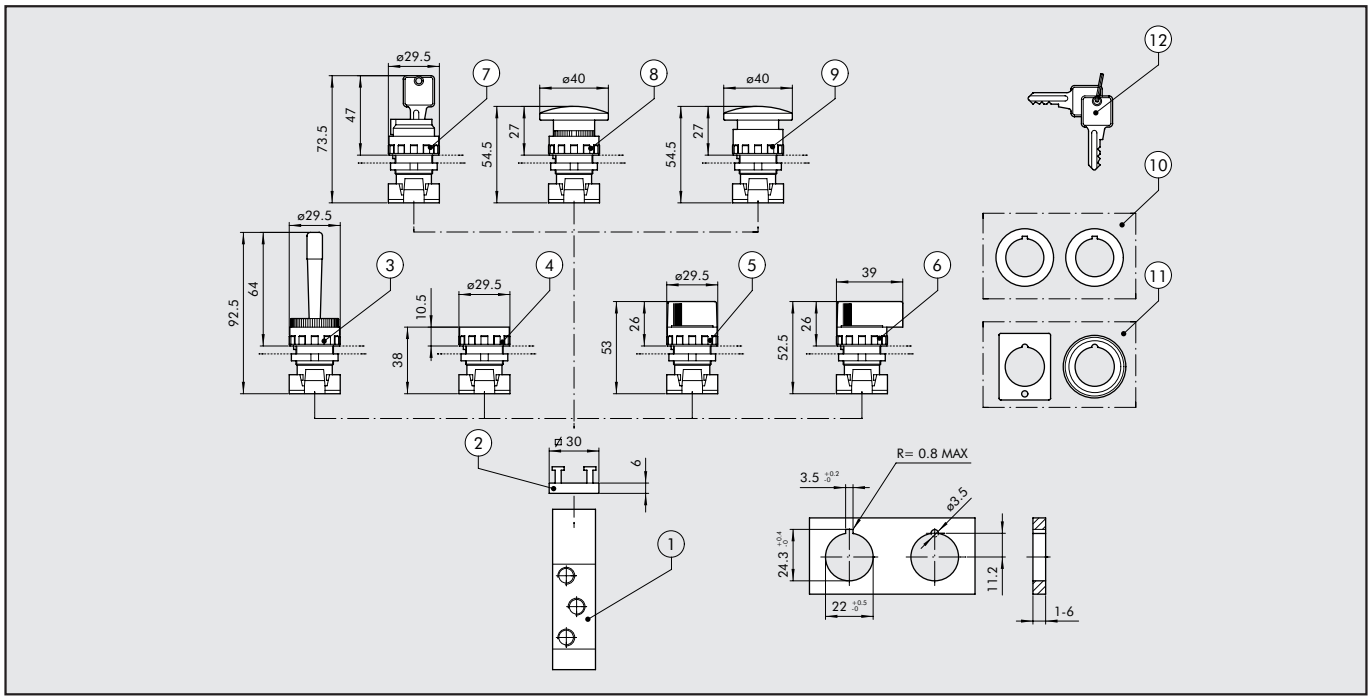
Symbol	Abbrev.	Code	Weight [g]
	MAV 23 BRE NC	7010001800	124

PILOT-ASSISTED PLUNGER 5/2 1/8" FOR PANEL ACTUATORS



Symbol	Abbrev.	Code	Weight [g]
	MAV 25 BRE OO	7010001900	150

ASSEMBLY DIAGRAM FOR PILOT-ASSISTED HAND-OPERATED VALVES SERIES 70 WITH PANEL ACTUATORS



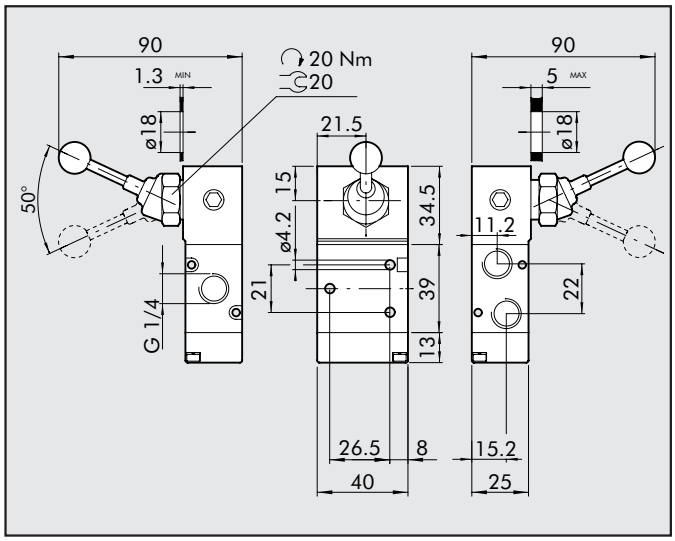
ORDERING CODES

Symbol	Reference	Description	Code	Weight [g]
	①	Pilot-assisted plunger 3/2, 1/8"	7010001800	124
	①	Pilot-assisted plunger 5/2, 1/8"	7010001900	150
	②	2 places adaptor thickness 6.8 mm	0351000050	5
	③	Red handler with horizontally pivoted lever	W0351000015	25
	④	Fat push button + 2 red/black coloured disks	W0351000011	15
		♦ *Bistable fat push button without disk*		
	⑤	Black selector short lever at 2 positions with return	W0351000030	20
		Black selector short lever at 2 positions	W0351000031	20
	⑤	Black selector short lever at 3 positions with return	W0351000032	20
		Black selector short lever at 3 positions	W0351000033	20
	⑥	Black selector long lever at 2 positions with return	W0351000034	26
		Black selector long lever at 2 positions	W0351000035	26
	⑥	Black selector long lever at 3 positions with return	W0351000036	26
		Black selector long lever at 3 positions	W0351000037	26
	⑦	2 positions key selector with extractable key in 2 positions	W0351000016	50
		2 positions key selector with extractable key in 0	W0351000018	50
	⑧	Red mushroom-head push button ø40	W0351000013	27
		Black mushroom-head push button ø40	W0351000017	27
	⑨	Red mushroom-head push button with lock ø40	W0351000014	29
	⑩	✚ Reducer from 30 to 22.5 mm	W0351000049	
	⑪	▲ Adapter for bore ø30 G2326	W0351000050	
	⑫	✚ key for ESC selectors	W0351000021	
		Green disk for push button ④	W0351000056	

♦ It can't be supplied. As working replaced by selector with bistable short lever at 2 positions ⑤
✚ Usable only with technopolymer body selectors
▲ Usable only with metal body selectors

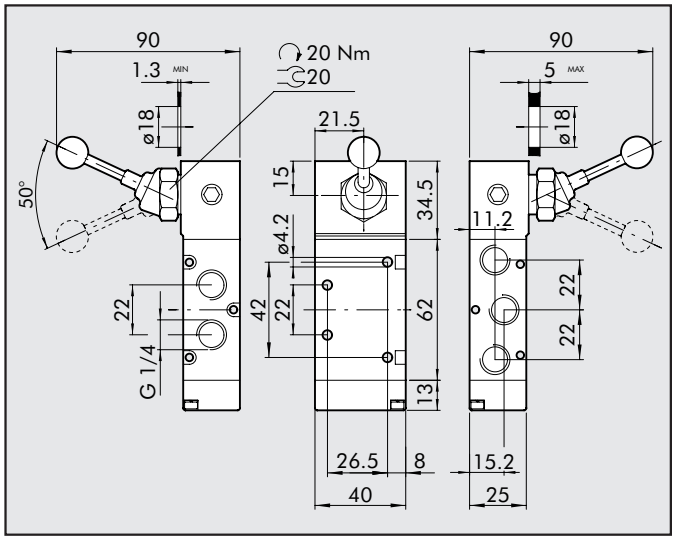
VALVES SERIES 70, HAND-OPERATED, 1/4"

90° LEVER 3/2, 1/4"



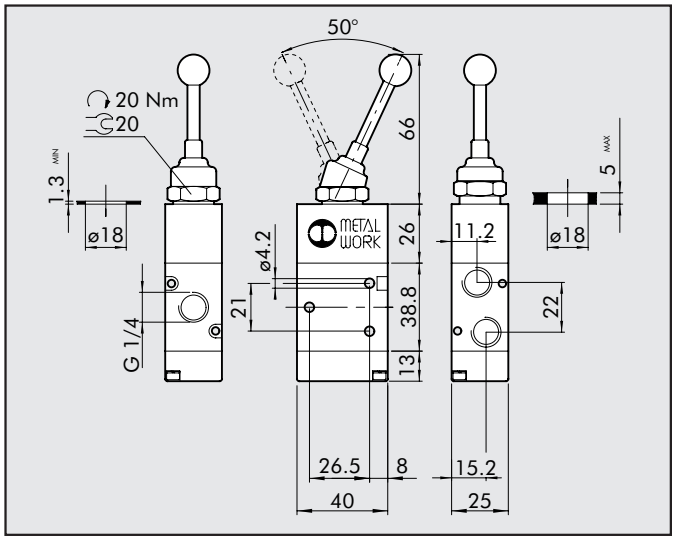
Symbol	Abbrev.	Code	Weight [g]
	MAV 33 LES NC	7020000100	244
	MAV 33 LEB OO	7020000200	244

90° LEVER 5/2, 1/4"



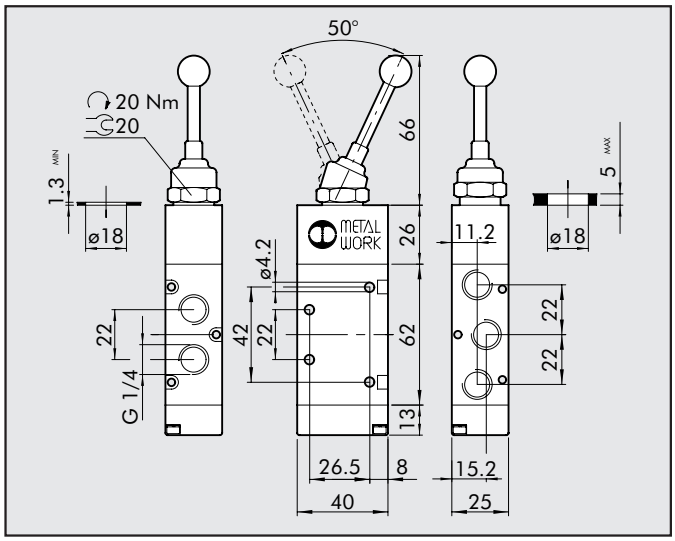
Symbol	Abbrev.	Code	Weight [g]
	MAV 35 LES OO	7020000300	290
	MAV 35 LEB OO	7020000400	290

FRONT LEVER 3/2, 1/4"



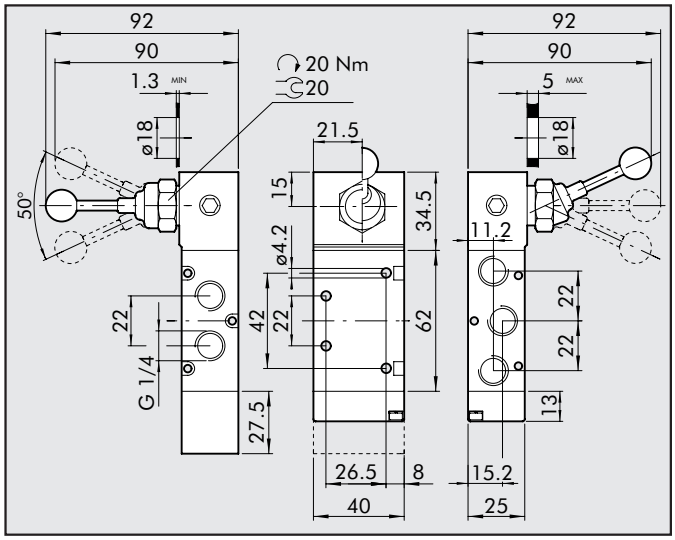
Symbol	Abbrev.	Code	Weight [g]
	MAV 33 VLB OO	7020001400	194

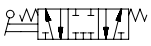
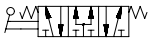
FRONT LEVER 5/2, 1/4"



Symbol	Abbrev.	Code	Weight [g]
	MAV 35 VLB OO	7020001700	244

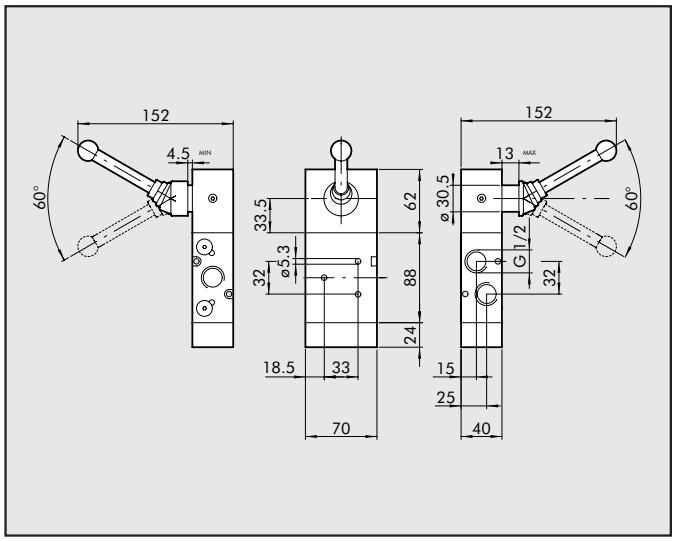
90° LEVER 5/3, 1/4"



Symbol	Abbrev.	Code	Weight [g]
	MAV 36 LES CC	7020001000	354
	MAV 36 LES OC	7020000900	354
	MAV 36 LES PC	7020001100	354
	MAV 36 LEO CC	7020000500	288
	MAV 36 LEO OC	7020000600	288
	MAV 36 LEO PC	7020000700	288

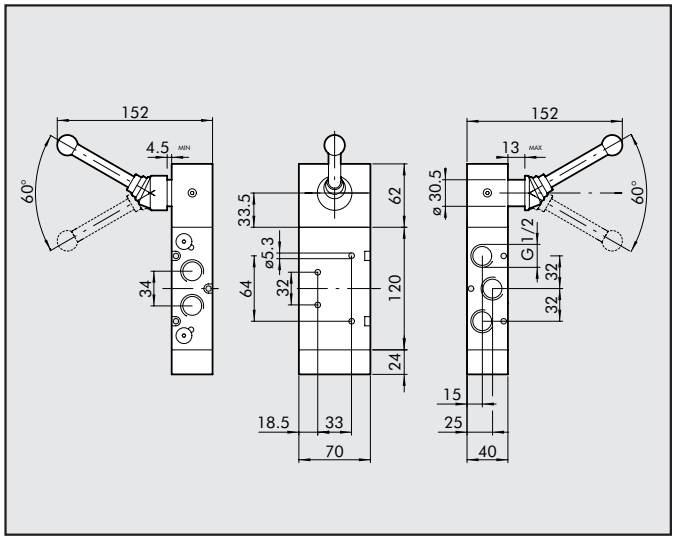
VALVES SERIES 70, HAND OPERATED, 1/2"

90° LEVER 3/2, 1/2"



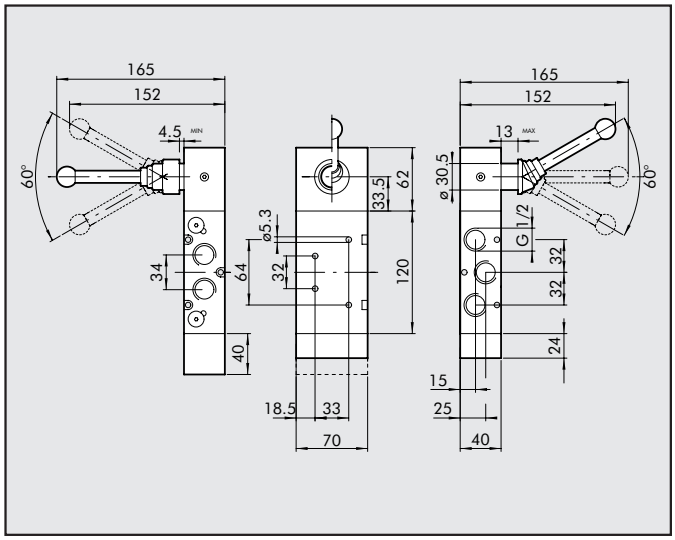
Symbol	Abbrev.	Code	Weight [g]
	MAV 43 LES NC	7030000100	1443
	MAV 43 LEB OO	7030000200	1435

90° LEVER 5/2, 1/2"



Symbol	Abbrev.	Code	Weight [g]
	MAV 45 LES OO	7030000300	1588
	MAV 45 LEB OO	7030000400	1630

90° LEVER 5/3, 1/2"

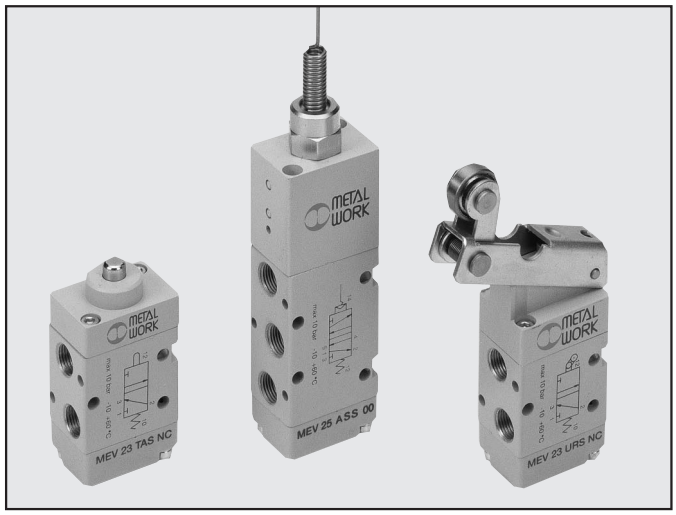


Symbol	Abbrev.	Code	Weight [g]
	MAV 46 LES CC	7030001000	1810
	MAV 46 LES OC	7030000900	1800
	MAV 46 LES PC	7030001100	1800
	MAV 46 LEO CC	7030000500	1615
	MAV 46 LEO OC	7030000600	1605
	MAV 46 LEO PC	7030000700	1605

VALVES SERIES 70, MECHANICALLY OPERATED, 1/8”

TECHNICAL DATA

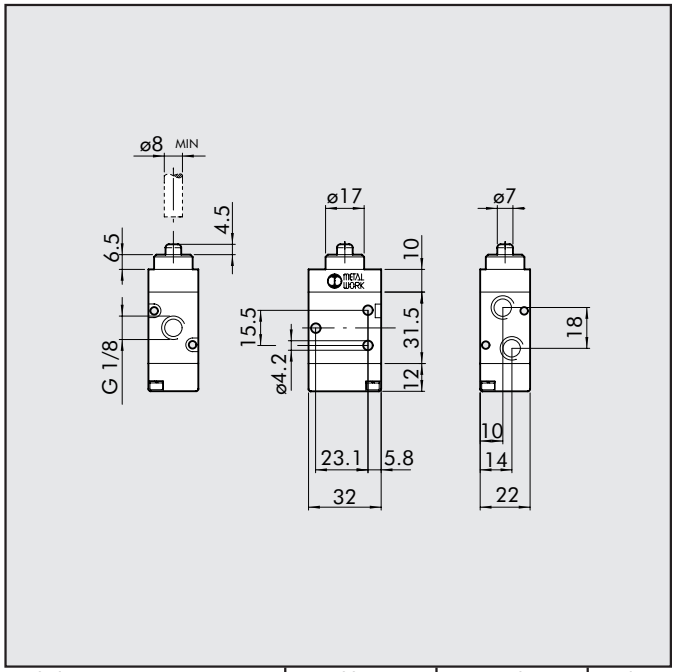
Thread at valve ports	G 1/8
Operation force at 6 Bar:	
• Version with direct control	50 N
• Pilot-assisted Version	6 N
Operating pressure:	
• Version with direct control	Vacuum to 10 bar
• Pilot-assisted version	2.5÷10 bar
Operating temperature range	-10° to 60°C
Nominal diameter	5 mm
Conductance C	121.43 Nl/min · bar
Critical ratio b	0.32 bar/bar
Flow rate at 6 bar ΔP 0.5 bar	400 Nl/min
Flow rate at 6 bar ΔP 1 bar	550 Nl/min



KEY TO CODES AND ORDERING CODES

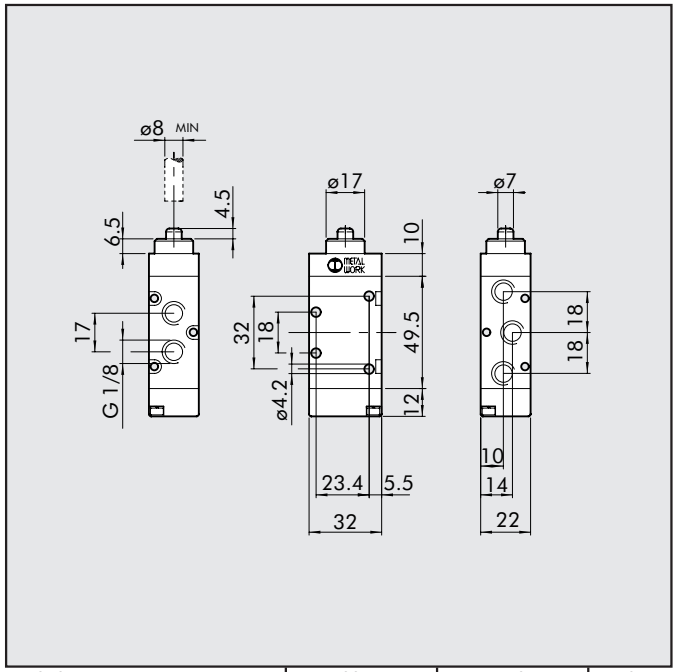
M E V	2	3	T A	S	N C
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
MEV Mechanically-operated I valves	2 1/8’’	3 3/2 5 5/2	TA Plunger BR Bidirectional roller UR unidirectional roller TS sensitive plunger RS sensitive roller AS sensitive aerial LL frontal roller lever	S Mechanical spring A pneumatic/ mechanical spring* *on demand	NC normally closed OO 5/2

PLUNGER 3/2, 1/8”



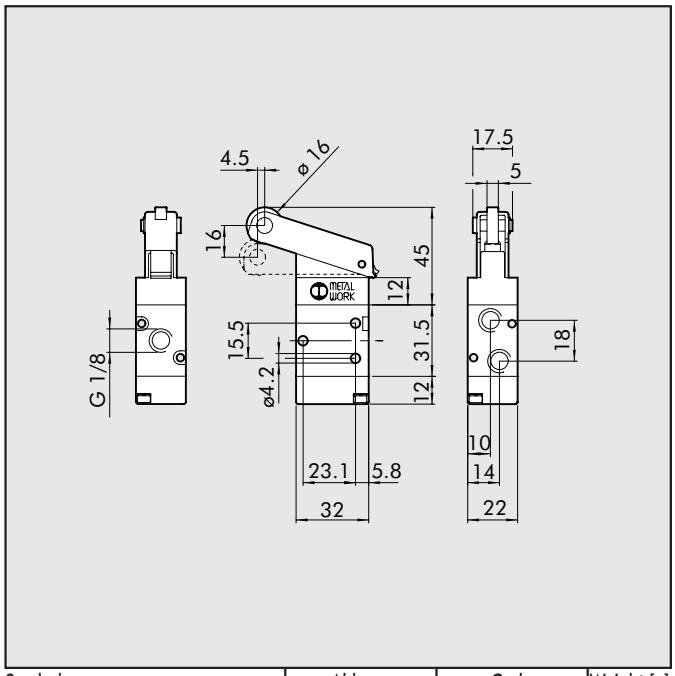
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 TAS NC	7001000100	88

PLUNGER 5/2, 1/8”



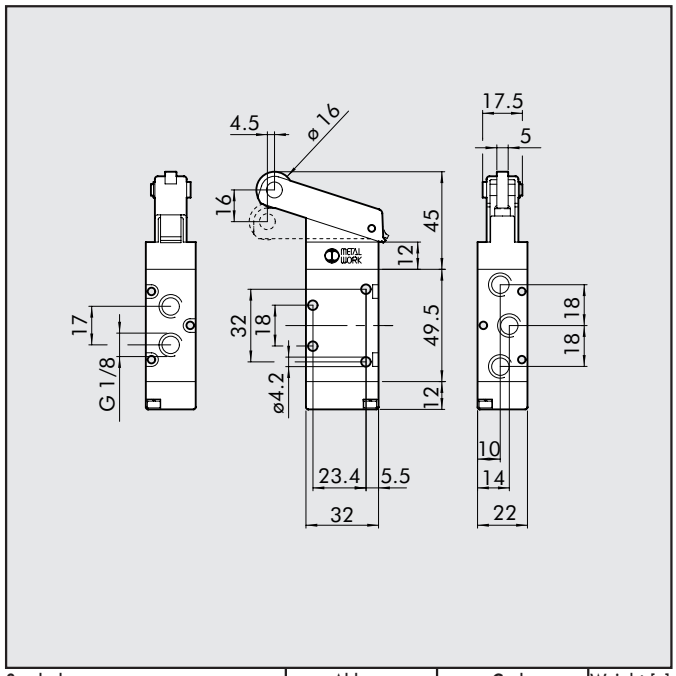
Symbol	Abbrev.	Code	Weight [g]
	MEV 25 TAS OO	7001000110	114

ROLLER LEVER 3/2, 1/8"



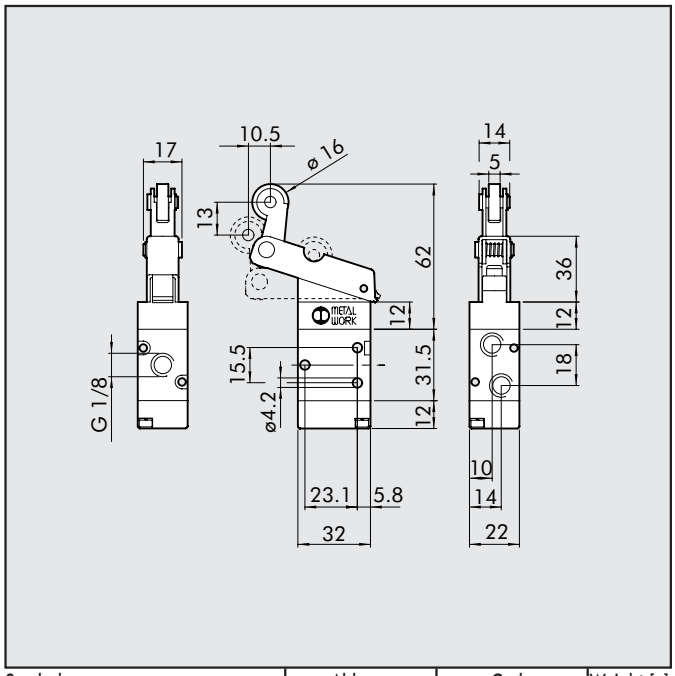
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 BRS NC	7001000500	130

ROLLER LEVER 5/2, 1/8"



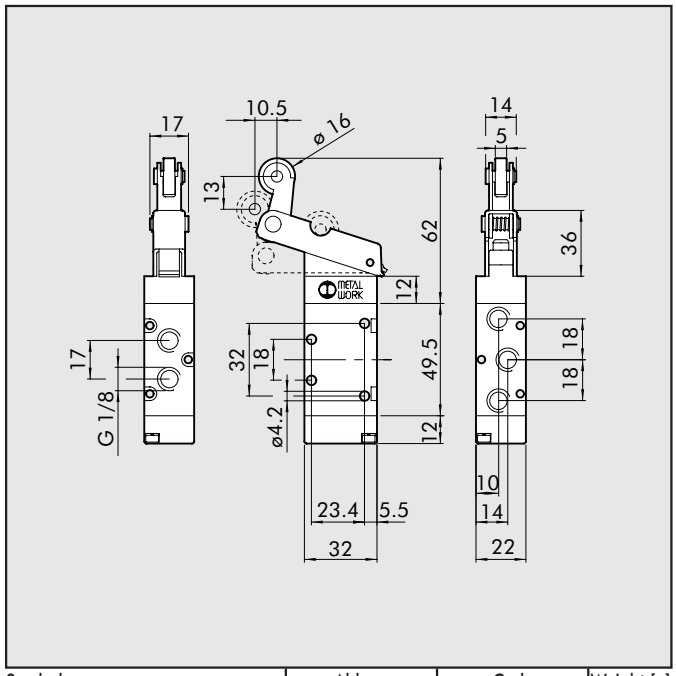
Symbol	Abbrev.	Code	Weight [g]
	MEV 25 BRS OO	7001000510	156

UNIDIRECTIONAL ROLLER 3/2, 1/8" LEVERS



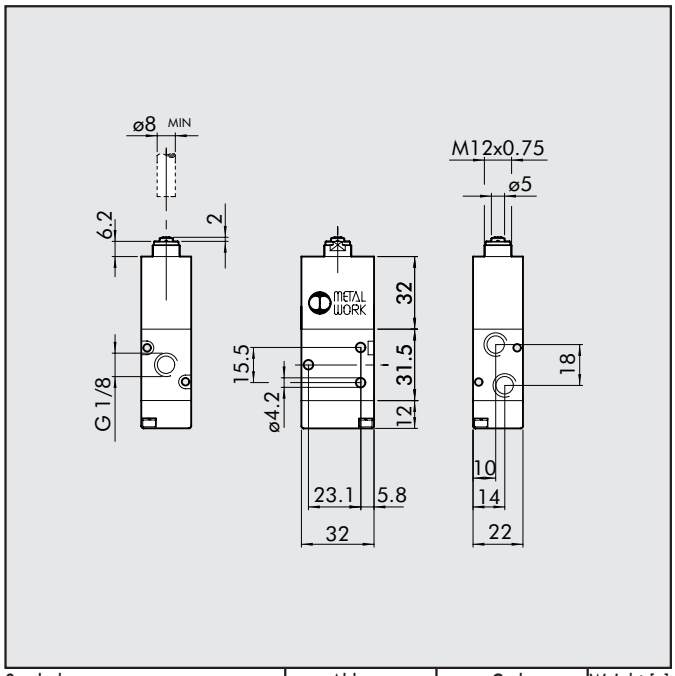
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 URS NC	7001000600	136

UNIDIRECTIONAL ROLLER 5/2, 1/8" LEVERS



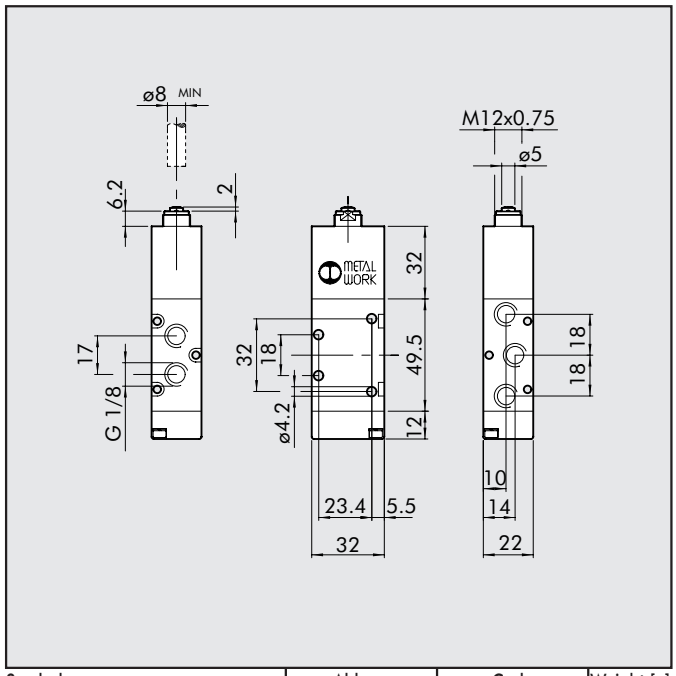
Symbol	Abbrev.	Code	Weight [g]
	MEV 25 URS OO	7001000610	162

PILOT-ASSISTED PLUNGER 3/2 NC, 1/8”



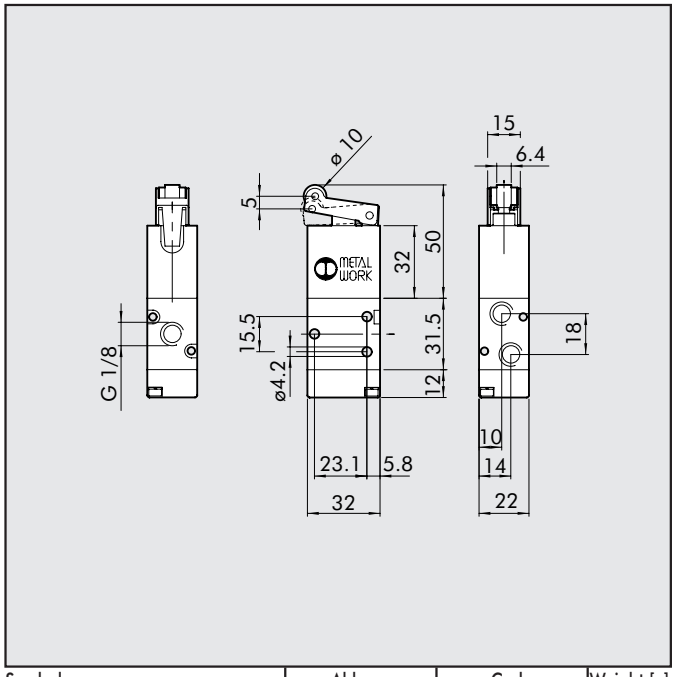
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 TSS NC	7001000200	126

PILOT-ASSISTED PLUNGER 5/2, 1/8”



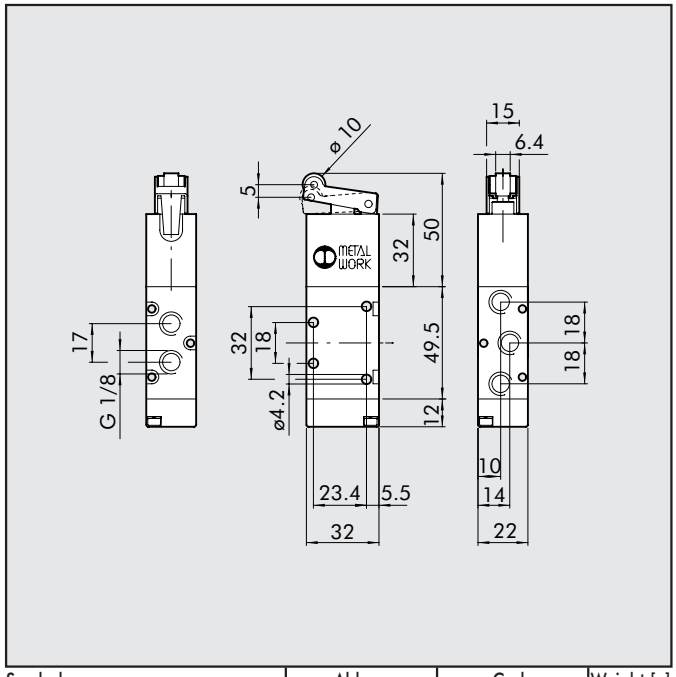
Symbol	Abbrev.	Code	Weight [g]
	MEV 25 TSS OO	7001000210	152

PILOT-ASSISTED ROLLER LEVER 3/2 NC, 1/8”



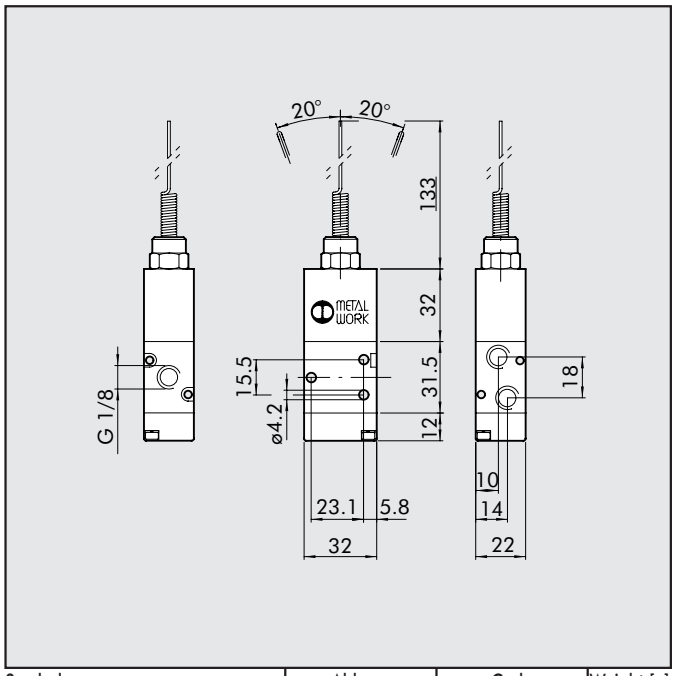
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 RSS NC	7001000400	138

PILOT-ASSISTED ROLLER LEVER 5/2, 1/8”



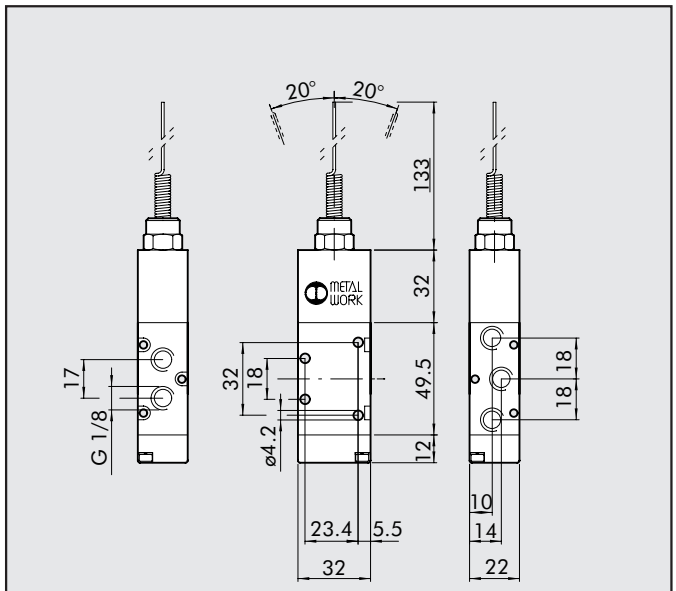
Symbol	Abbrev.	Code	Weight [g]
	MEV 25 RSS OO	7001000410	164

PILOT-ASSISTED AERIAL 3/2 NC, 1/8"



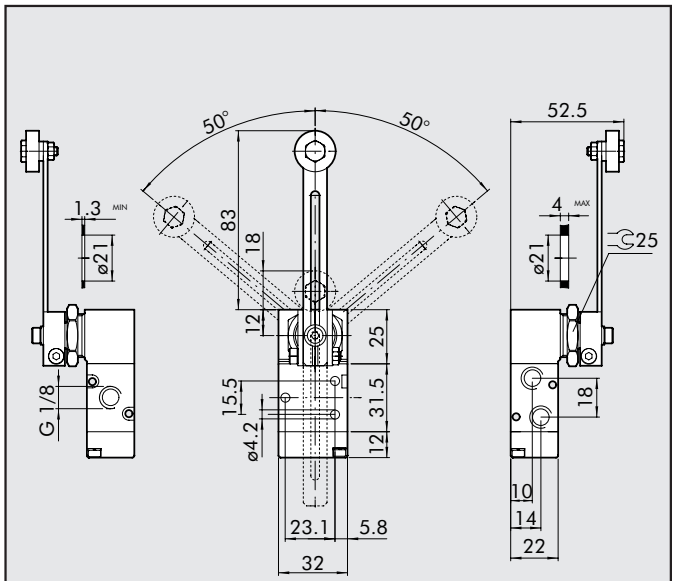
Symbol	Abbrev.	Code	Weight [g]
	MEV 23 ASS NC	7001000700	142

PILOT-ASSISTED AERIAL 5/2 NC, 1/8"



Symbol	Abbrev.	Code	Weight [g]
	MEV 25 ASS OO	7001000710	168

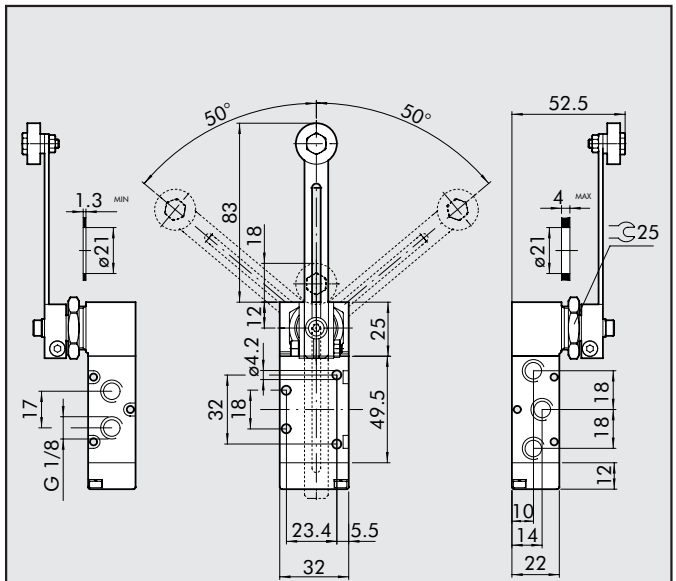
ROLLER-LEVER 3/2 1/8"



Operating torque: 0.5Nm

Symbol	Abbrev.	Code	Weight [g]
	MEV 23 LLS NC	7001000900	189

ROLLER-LEVER 5/2 1/8"

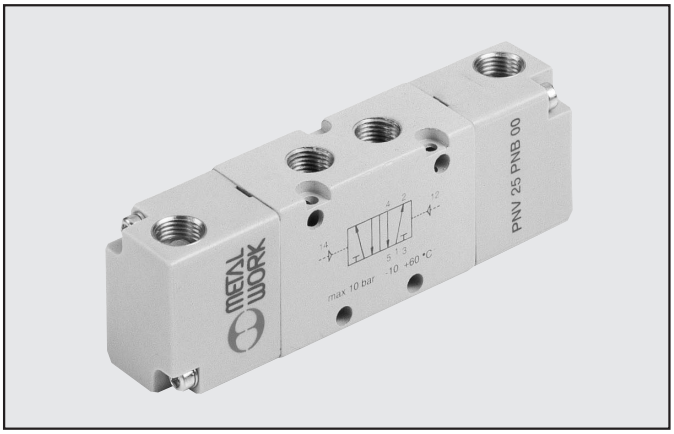


Operating torque: 0.5Nm

Symbol	Abbrev.	Code	Weight [g]
	MEV 25 LLS OO	7001000910	216

VALVES SERIES 70, PNEUMATIC

TECHNICAL DATA	1/8''	1/4''	1/2''
Operating pressure	Vacuum to 10 bar		
Minimum operating pressure			
• monostable	2.5 bar		
• bistable	1 bar		
Operating temperature range	-10° to 60°C		
Nominal diameter	5 mm	7.5 mm	15 mm
Conductance C [Nl/min · bar]	121.43	264.26	971.43
Critical ratio b	0.32 bar/bar	0.27 bar/bar	0.43 bar/bar
Flow rate at 6 bar ΔP 0.5 bar	400 Nl/min	750 Nl/min	3200 Nl/min
Flow rate at 6 bar ΔP 1 bar	550 Nl/min	1100 Nl/min	4600 Nl/min
TRA/TRR monostable at 6 bar	6ms/15ms	7ms/15ms	16ms/46ms
TRA /TRR bistable at 6 bar	7ms/7ms	7ms/7ms	16ms/16ms

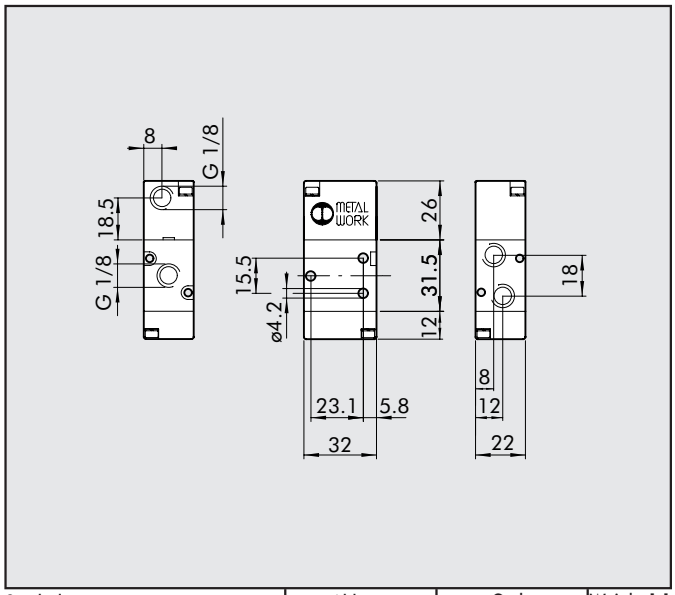


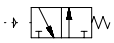
KEY TO CODES

P N V	2	3	P N	S	N C
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
PNV pneumatic valves	2 1/8'' 3 1/4'' 4 1/2''	3 3/2 5 5/2 6 5/3	PN pneumatic	S mechanical spring B bistable D differential O stable for 5/3 A pneumatic/mechanical spring* *on demand	OO 5/2 NC normally closed NO normally open CC closed centres OC open centres PC pressure centres

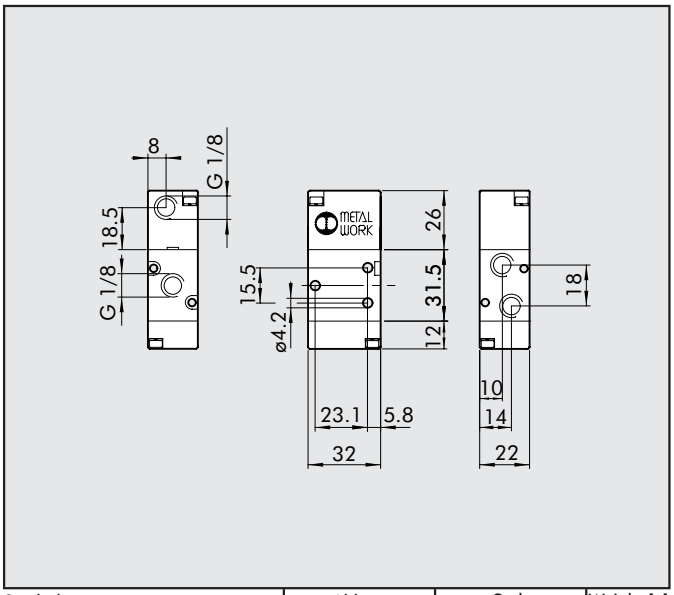
VALVES SERIES 70, PNEUMATIC, 1/8”

MONOSTABLE 3/2 NO, 1/8”



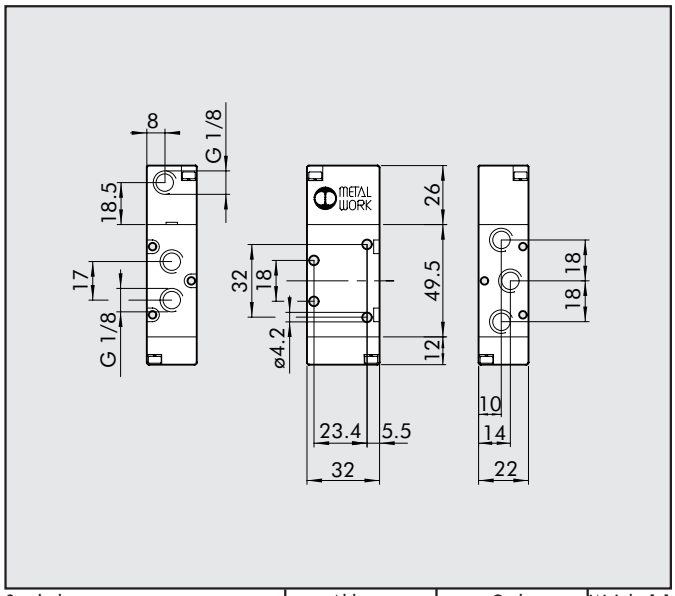
Symbol	Abbrev.	Code	Weight [g]
	PNV 23 PNS NO	7010010400	82

MONOSTABLE 3/2 NC, 1/8”



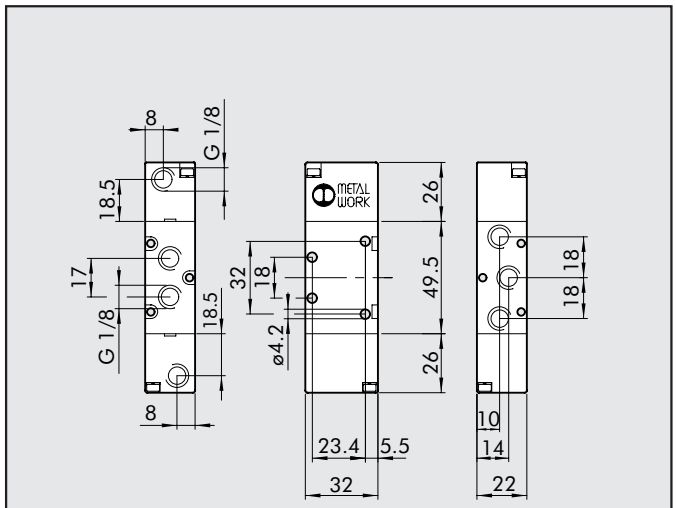
Symbol	Abbrev.	Code	Weight [g]
	PNV 23 PNS NC	7010010200	82

MONOSTABLE 5/2, 1/8"



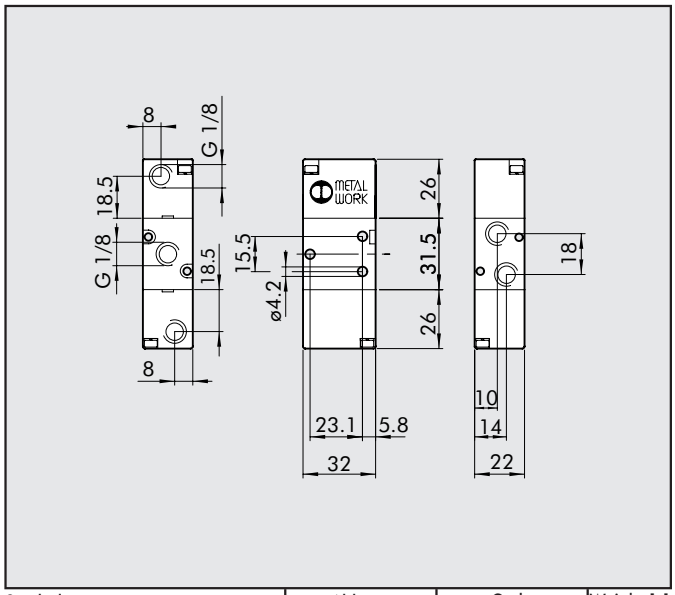
Symbol	Abbrev.	Code	Weight [g]
	PNV 25 PNS OO	7010011100	108

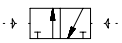
BISTABLE 5/2, 1/8"



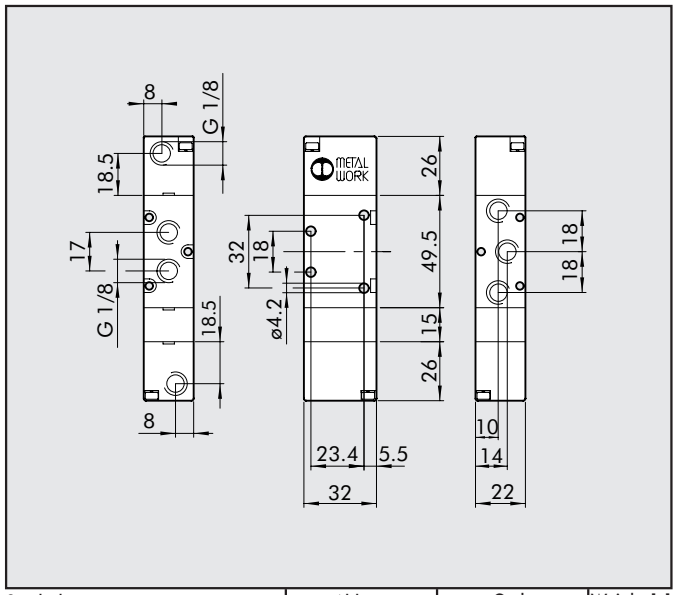
Symbol	Abbrev.	Code	Weight [g]
	PNV 25 PNB OO	7010011200	122
	PNV 25 PND OO	7010011300	128

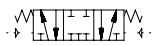
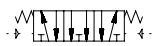
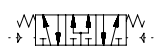
BISTABLE 3/2, 1/8"



Symbol	Abbrev.	Code	Weight [g]
	PNV 23 PNB OO	7010010100	96

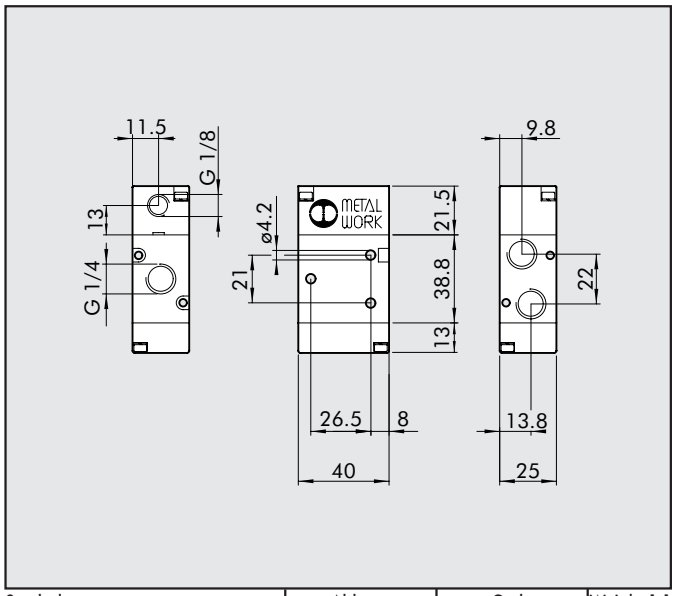
MONOSTABLE 5/3, 1/8"

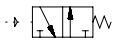


Symbol	Abbrev.	Code	Weight [g]
	PNV 26 PNS CC	7010012100	150
	PNV 26 PNS OC	7010012200	150
	PNV 26 PNS PC	7010012300	150

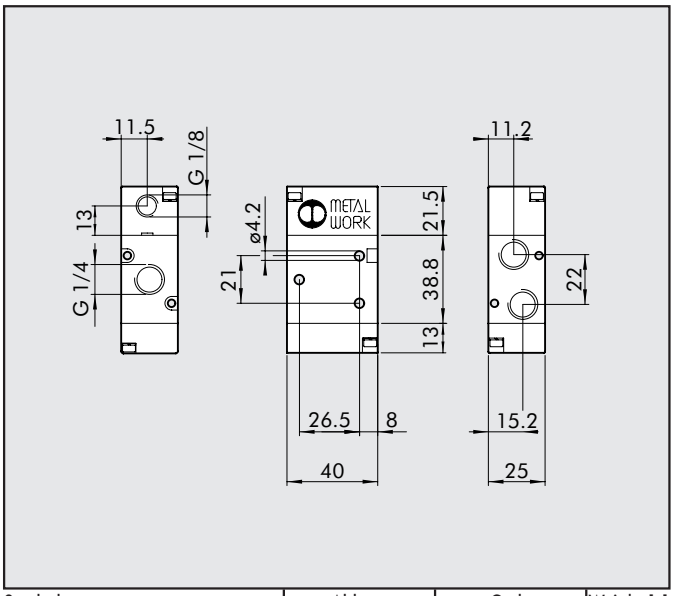
VALVES SERIES 70, PNEUMATIC, 1/4”

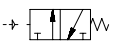
MONOSTABLE 3/2 NO, 1/4”



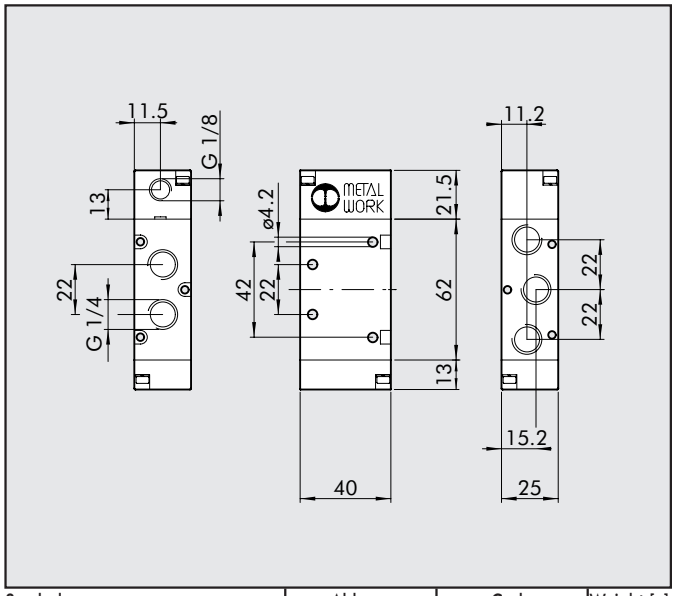
Symbol	Abbrev.	Code	Weight [g]
	PNV 33 PNS NO	7020010400	124

MONOSTABLE 3/2 NC, 1/4”



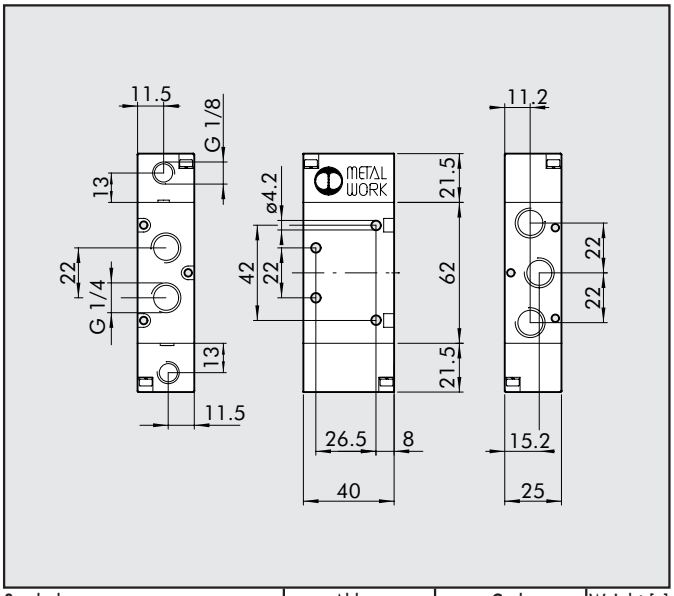
Symbol	Abbrev.	Code	Weight [g]
	PNV 33 PNS NC	7020010200	122

MONOSTABLE 5/2, 1/4”



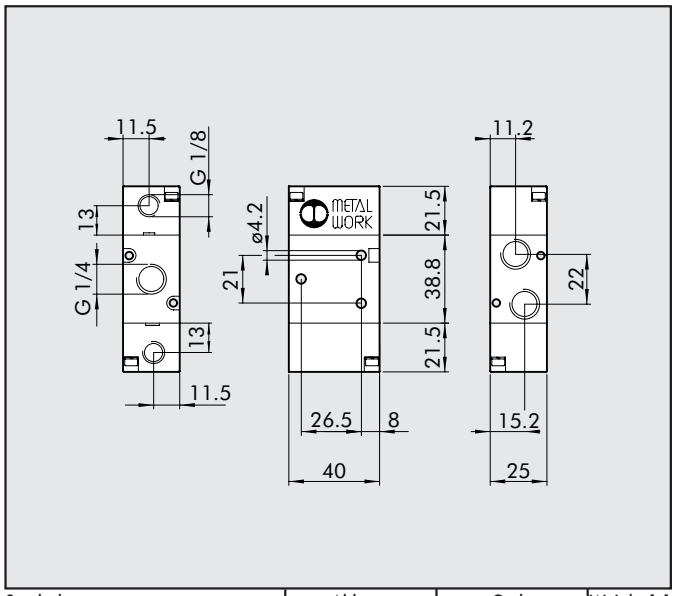
Symbol	Abbrev.	Code	Weight [g]
	PNV 35 PNS OO	7020011100	174

BISTABLE 5/2, 1/4”



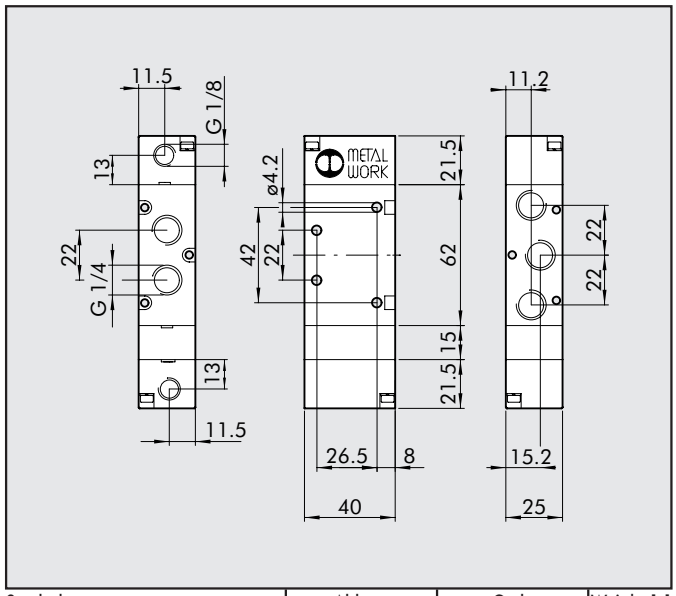
Symbol	Abbrev.	Code	Weight [g]
	PNV 35 PNB OO	7020011200	174
	PNV 35 PND OO	7020011300	198

BISTABLE 3/2, 1/4"



Symbol	Abbrev.	Code	Weight [g]
	PNV 33 PNB OO	7020010100	134

MONOSTABLE 5/3, 1/4"

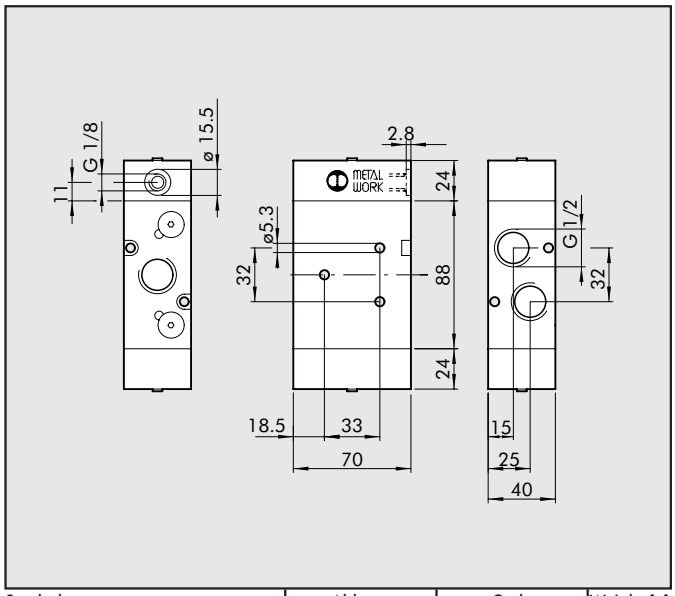


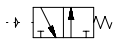
Symbol	Abbrev.	Code	Weight [g]
	PNV 36 PNS CC	7020012100	124
	PNV 36 PNS OC	7020012200	124
	PNV 36 PNS PC	7020012300	124

NOTES

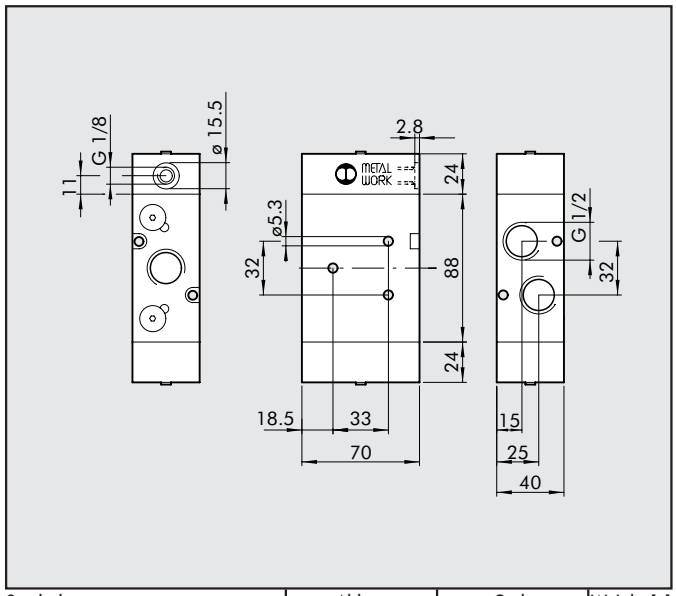
VALVES SERIES 70, PNEUMATIC, 1/2”

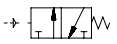
MONOSTABLE 3/2 NO, 1/2”



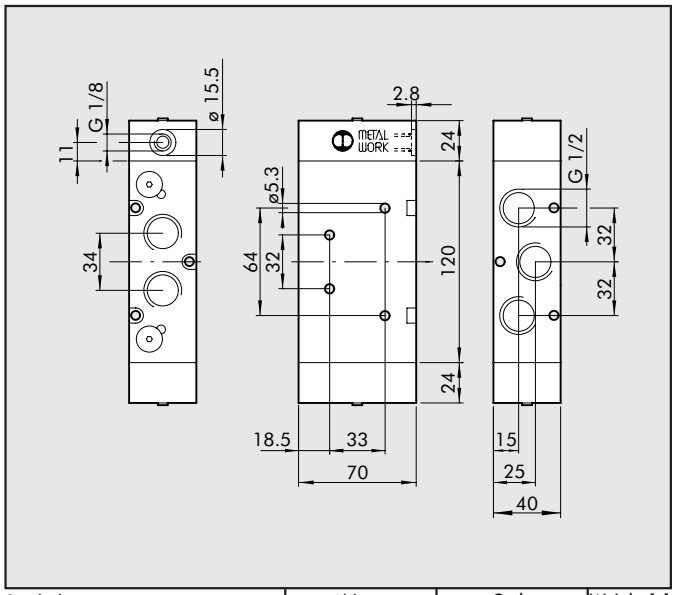
Symbol	Abbrev.	Code	Weight [g]
	PNV 43 PNS NO	7030010400	905

MONOSTABLE 3/2 NC, 1/2”



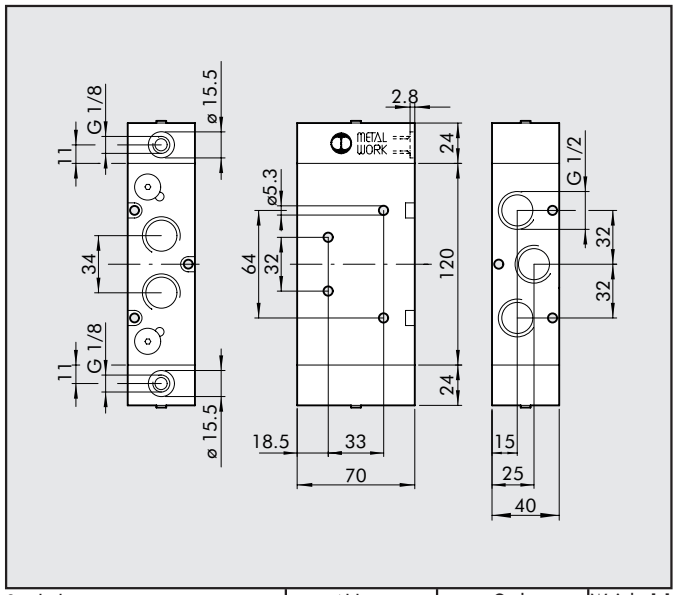
Symbol	Abbrev.	Code	Weight [g]
	PNV 43 PNS NC	7030010200	905

MONOSTABLE 5/2, 1/2”



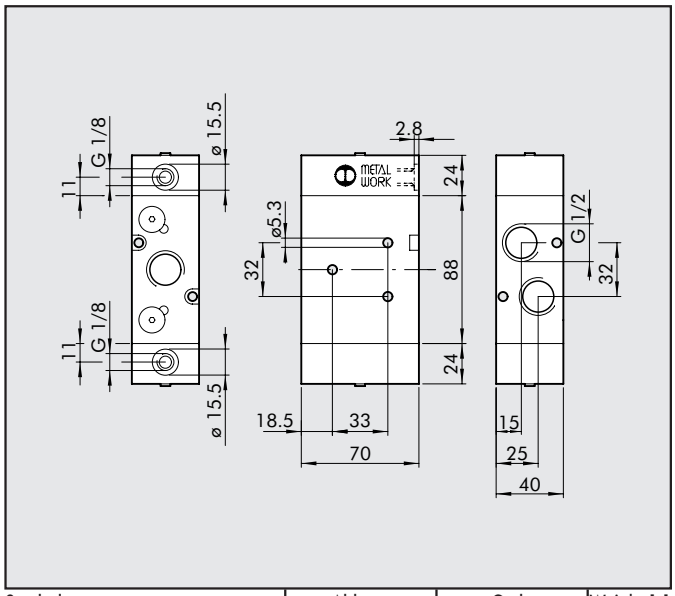
Symbol	Abbrev.	Code	Weight [g]
	PNV 45 PNS OO	7030011100	1090

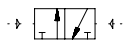
BISTABLE 5/2, 1/2”



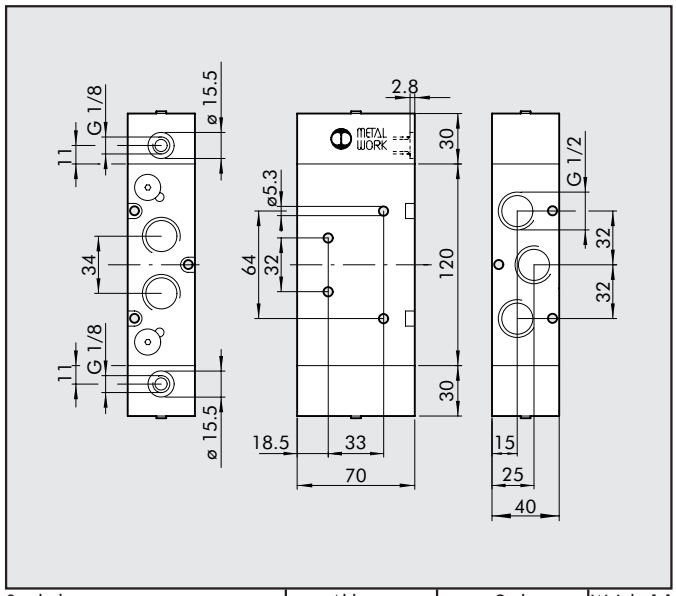
Symbol	Abbrev.	Code	Weight [g]
	PNV 45 PNB OO	7030011200	1077
	PNV 45 PND OO	7030011300	1090

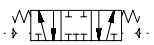
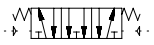
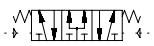
BISTABLE 3/2, 1/2"



Symbol	Abbrev.	Code	Weight [g]
	PNV 43 PNB OO	7030010100	921

MONOSTABLE 5/3, 1/2"

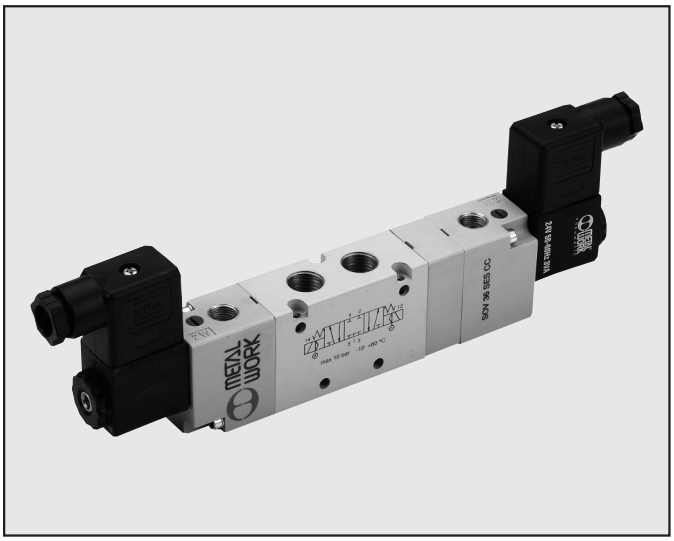


Symbol	Abbrev.	Code	Weight [g]
	PNV 46 PNS CC	7030012100	1200
	PNV 46 PNS OC	7030012200	1194
	PNV 46 PNS PC	7030012300	1196

NOTES

VALVES SERIES 70, SOLENOID/PNEUMATIC

TECHNICAL DATA		1/8"	1/4"	1/2"
Operating pressure:	• monostable	2.5 bar÷10 bar		
	• bistable	1÷10 bar		
	• asserved	Vacuum÷10		
Minimum actuation pressure		2.5 bar		
Operating temperature range		-10° to 60°C		
Nominal diameter		5 mm	7.5 mm	15 mm
Conductance C [Nl/min · bar]		121.43	264.26	971.43
Critical ratio b		0.32 bar/bar	0.27 bar/bar	0.43 bar/bar
Flow rate at 6 bar ΔP 0.5 bar		400 Nl/min	750 Nl/min	3200 Nl/min
Flow rate at 6 bar ΔP 1 bar		550 Nl/min	1100 Nl/min	4600 Nl/min
TRA/TRR monostable at 6 bar		15 ms / 35 ms	19 ms / 45 ms	36 ms / 60 ms
TRA /TRR bistable at 6 bar		20 ms / 20 ms	21 ms / 21 ms	30 ms / 30 ms
Hand operation		bistable		
Coil voltage values		24VDC÷24VAC÷110VAC÷220VAC 50/60Hz		
Power		2 W (DC) 3VA (AC)		2 W (DC) 3VA (AC)
				5W (DC) 5VA (AC)
Voltage tolerance		-10%÷+15%		
Insulation class		F 155		
Maximum coil nut torque		1 Nm		

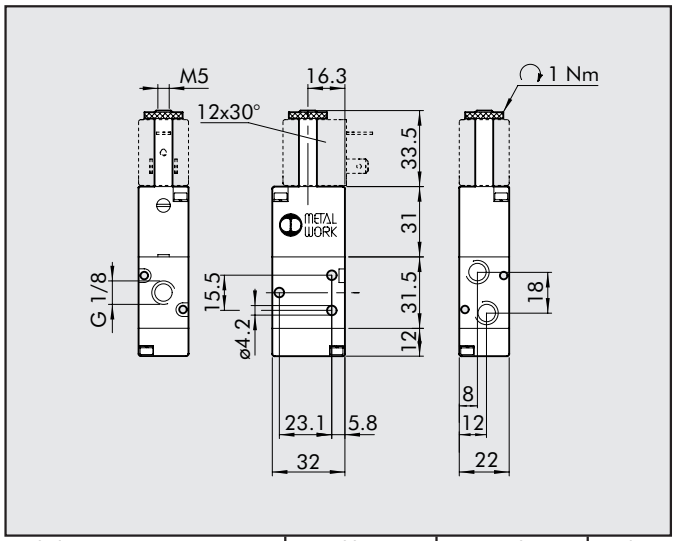


KEY TO CODES

S O V	2	3	S O	S	N C
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
SOV Solenoid / pneumatic	2 1/8"	3 3/2	SO Solenoid	S mechanical spring	NC normally closed
	3 1/4"	5 5/2	SE Solenoid assisted	B bistable	NO normally open
	4 1/2"	6 5/3		D differential	CC closed centres
				P pneumatic*	OC open centres
				A pneumatic/mechanical spring*	PC pressure centres
				*on demand	OO 5/2

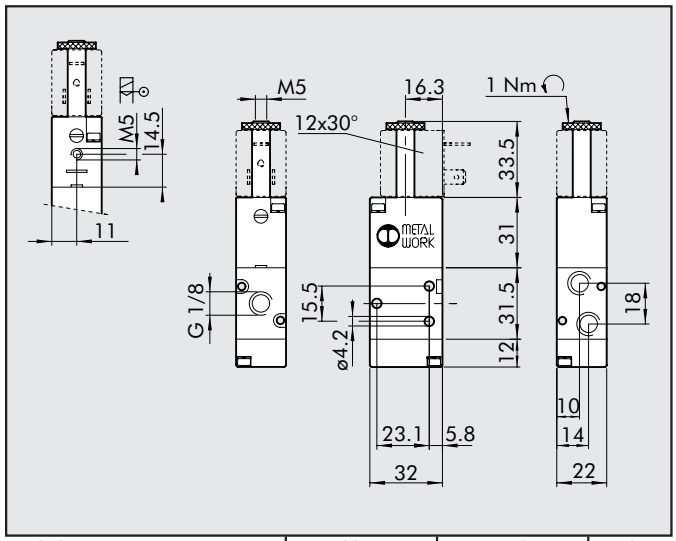
VALVES SERIES 70, SOLENOID/PNEUMATIC- PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/8"

MONOSTABLE 3/2 NO, 1/8"



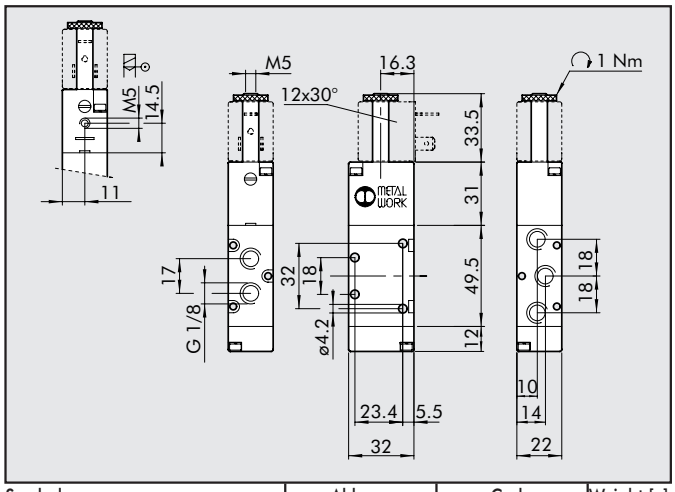
Symbol	Abbrev.	Code	Weight [g]
	SOV 23 SOS NO	7010020400	100

MONOSTABLE 3/2 NC, 1/8"



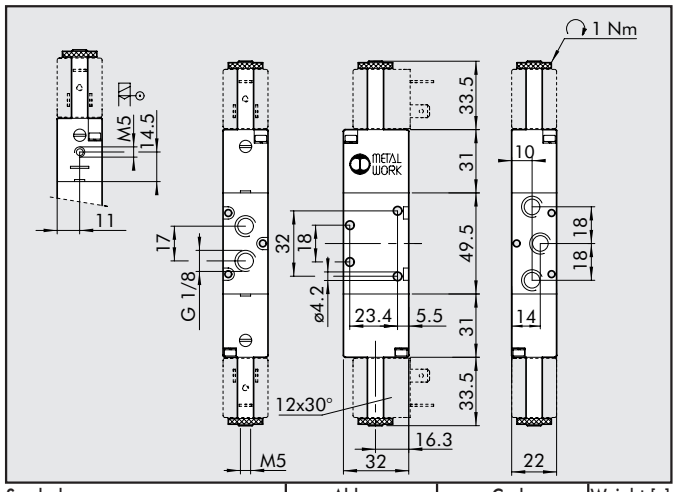
Symbol	Abbrev.	Code	Weight [g]
	SOV 23 SOS NC	7010020200	100
	SOV 23 SES NC	7010020500	100

MONOSTABLE 5/2, 1/8”



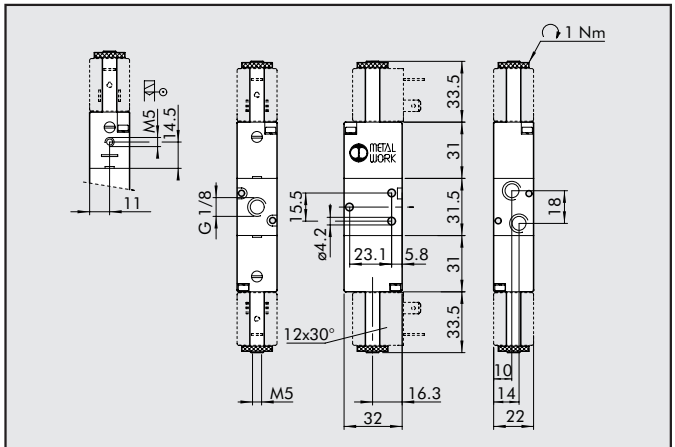
Symbol	Abbrev.	Code	Weight [g]
	SOV 25 SOS OO	7010021100	128
	SOV 25 SES OO	7010021500	129

BISTABLE 5/2, 1/8”



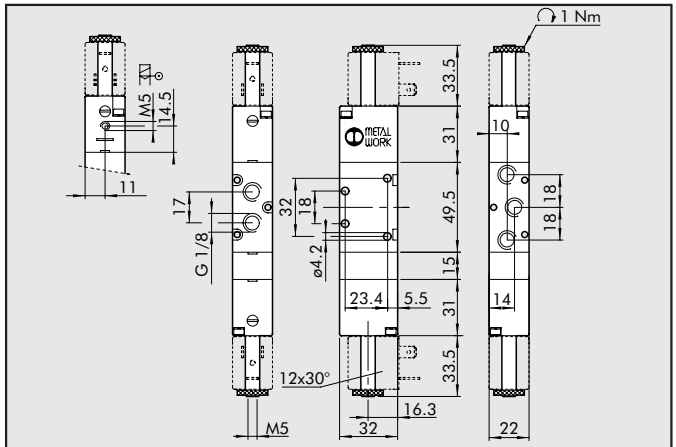
Symbol	Abbrev.	Code	Weight [g]
	SOV 25 SOB OO	7010021200	160
	SOV 25 SOD OO	7010021300	166
	SOV 25 SEB OO	7010021600	160

BISTABLE 3/2, 1/8”



Symbol	Abbrev.	Code	Weight [g]
	SOV 23 SOB OO	7010020100	135
	SOV 23 SEB OO	7010020300	136

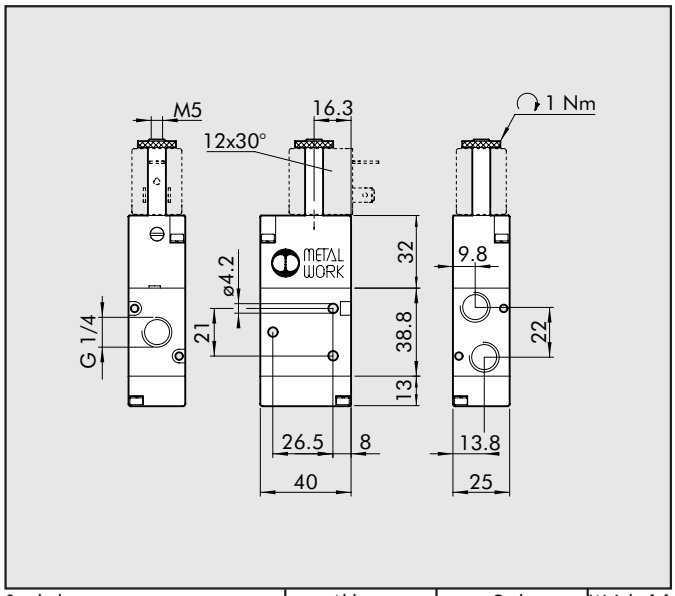
MONOSTABLE 5/3, 1/8”



Symbol	Abbrev.	Code	Weight [g]
	SOV 26 SOS CC	7010022100	190
	SOV 26 SOS OC	7010022200	190
	SOV 26 SOS PC	7010022300	190
	SOV 26 SES CC	7010022400	188
	SOV 26 SES OC	7010022500	188
	SOV 26 SES PC	7010022600	188

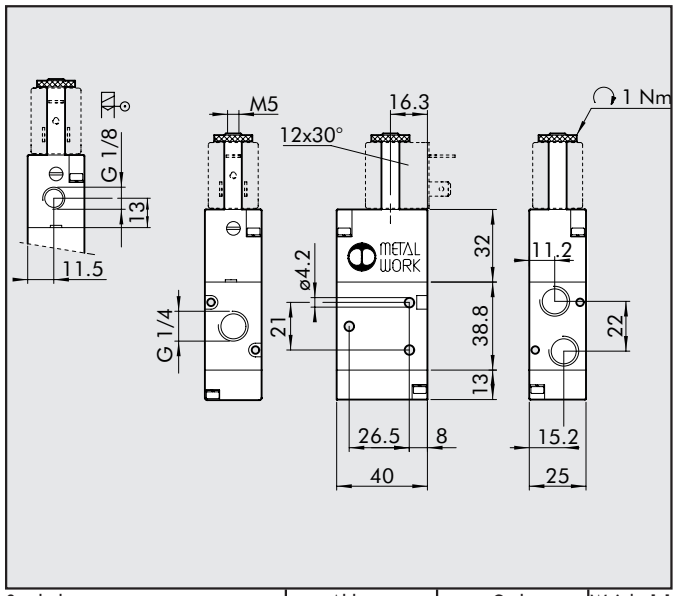
VALVES SERIES 70, SOLENOID/PNEUMATIC- PILOT-ASSISTED SOLENOID/ PNEUMATIC, 1/4”

MONOSTABLE 3/2 NO, 1/4”



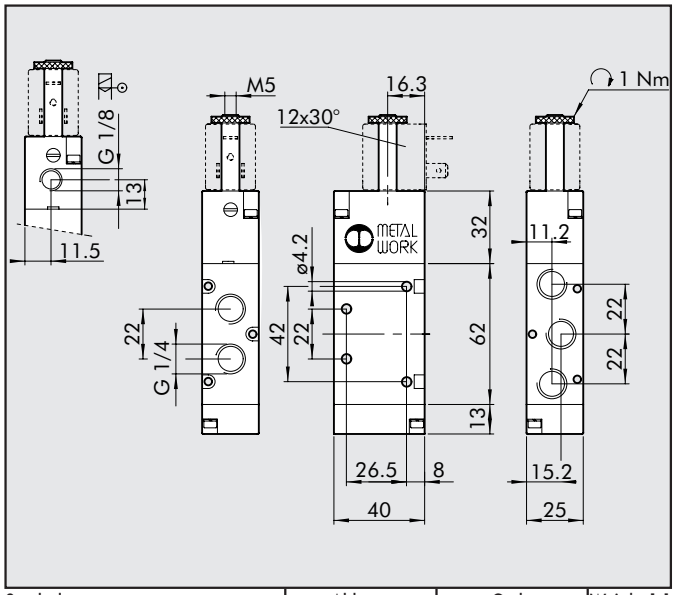
Symbol	Abbrev.	Code	Weight [g]
	SOV 33 SOS NO	7020020400	152

MONOSTABLE 3/2 NC, 1/4”



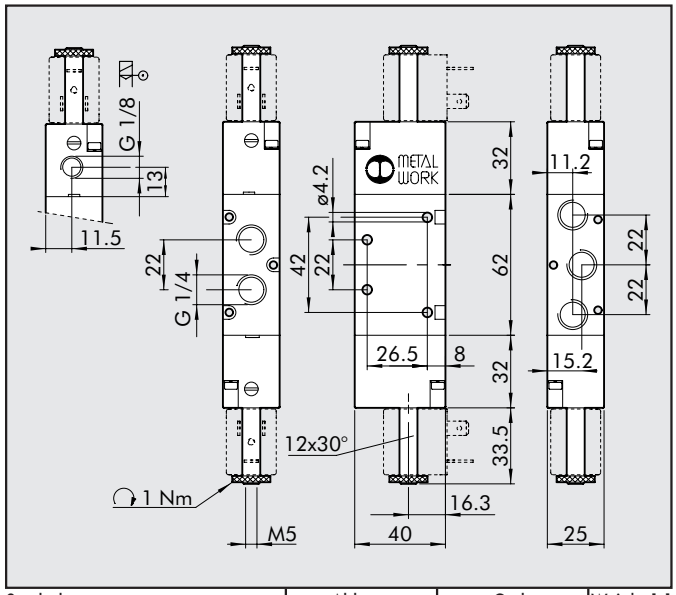
Symbol	Abbrev.	Code	Weight [g]
	SOV 33 SOS NC	7020020200	152
	SOV 33 SES NC	7020020500	152

5/2 1/4” MONOSTABLE



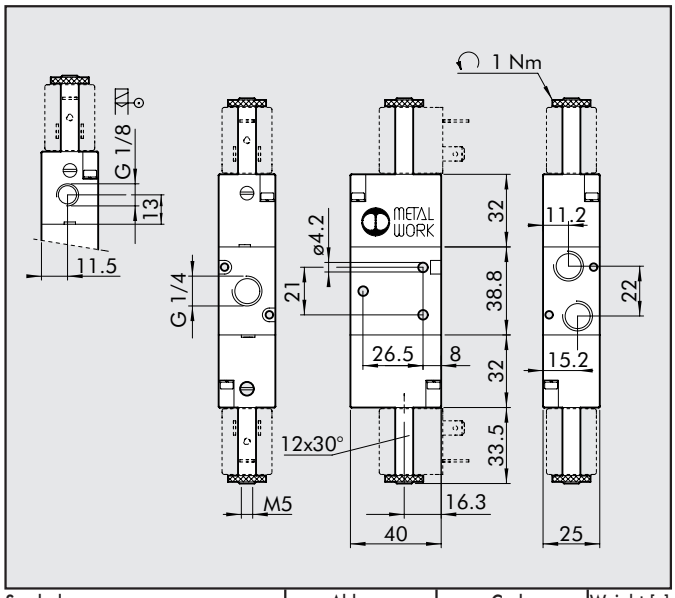
Symbol	Abbrev.	Code	Weight [g]
	SOV 35 SOS OO	7020021100	200
	SOV 35 SES OO	7020021500	200

5/2 1/4” BISTABLE



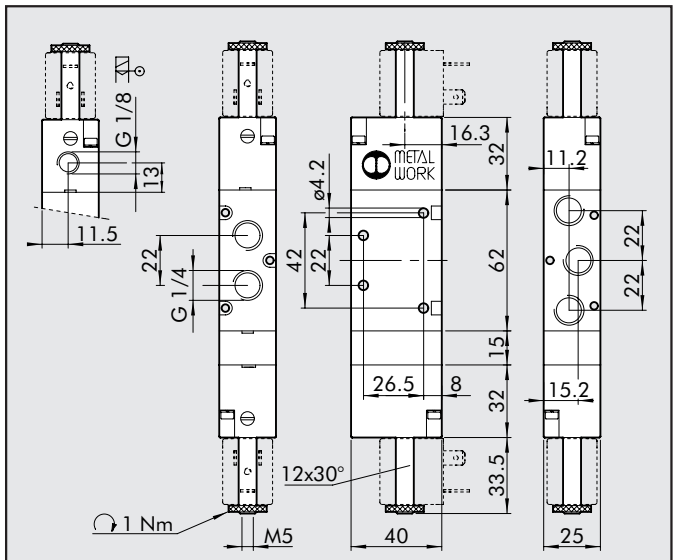
Symbol	Abbrev.	Code	Weight [g]
	SOV 35 SOB OO	7020021200	236
	SOV 35 SOD OO	7020021300	252
	SOV 35 SEB OO	7020021600	242

3/2 BISTABLE



Symbol	Abbrev.	Code	Weight [g]
	SOV 33 SOB OO	7020020100	190
	SOV 33 SEB OO	7020020300	190

5/3 MONOSTABLE

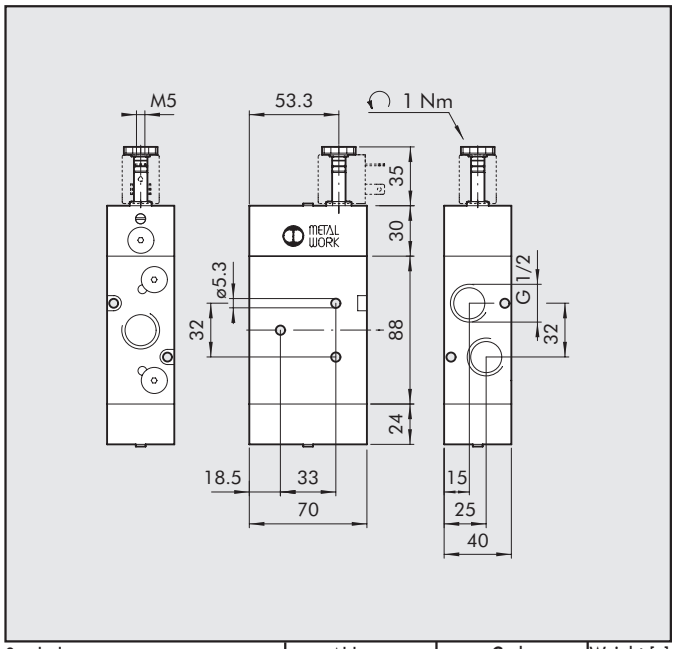


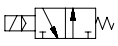
Symbol	Abbrev.	Code	Weight [g]
	SOV 36 SOS CC	7020022100	274
	SOV 36 SOS OC	7020022200	274
	SOV 36 SOS PC	7020022300	274
	SOV 36 SES CC	7020022400	277
	SOV 36 SES OC	7020022500	277
	SOV 36 SES PC	7020022600	277

NOTES

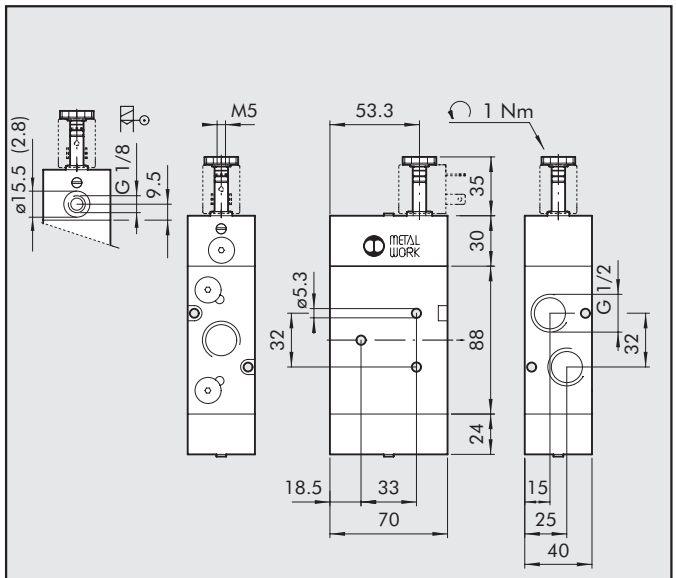
VALVES SERIES 70, SOLENOID/PNEUMATIC- PILOT-ASSISTED SOLENOID/PNEUMATIC, 1/2”

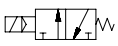
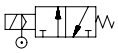
MONOSTABLE 3/2 NO, 1/2”



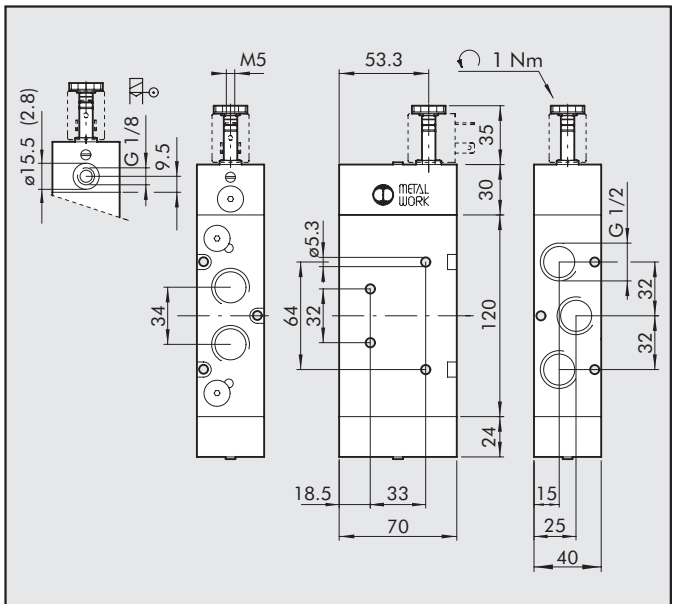
Symbol	Abbrev.	Code	Weight [g]
	SOV 43 SOS NO	7030020400	930

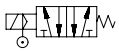
MONOSTABLE 3/2 NC, 1/2”



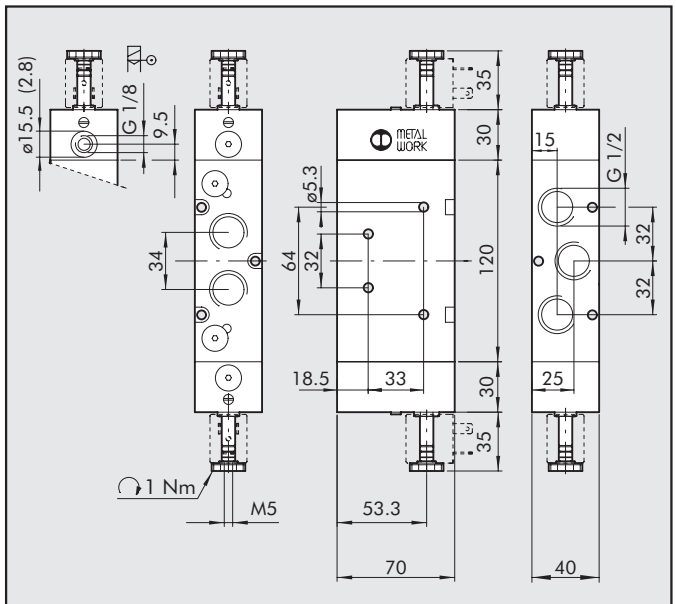
Symbol	Abbrev.	Code	Weight [g]
	SOV 43 SOS NC	7030020200	930
	SOV 43 SES NC	7030020500	923

MONOSTABLE 5/2, 1/2”



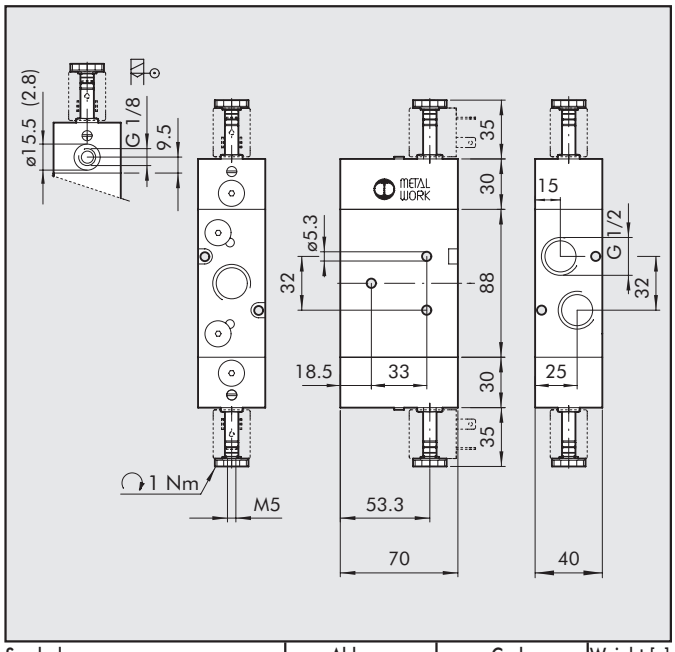
Symbol	Abbrev.	Code	Weight [g]
	SOV 45 SOS OO	7030021100	1120
	SOV 45 SES OO	7030021500	1113

BISTABLE 5/2, 1/2”



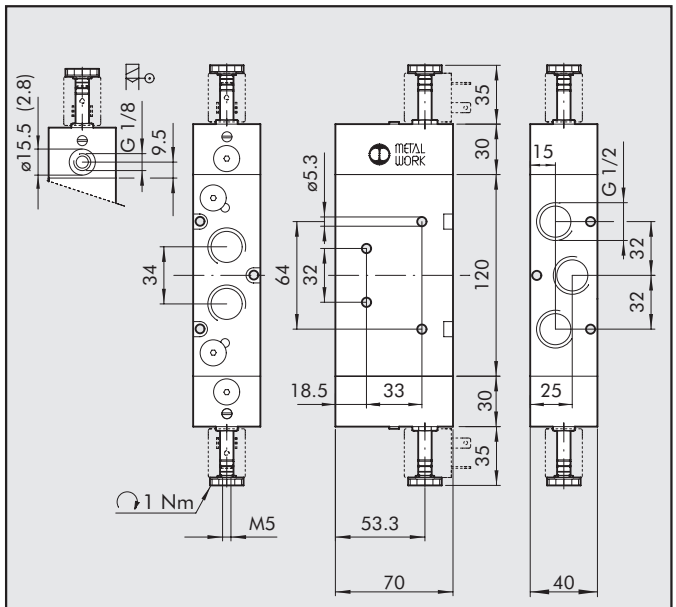
Symbol	Abbrev.	Code	Weight [g]
	SOV 45 SOB OO	7030021200	1140
	SOV 45 SOD OO	7030021300	1152
	SOV 45 SEB OO	7030021600	1127

BISTABLE 3/2, 1/2"



Symbol	Abbrev.	Code	Weight [g]
	SOV 43 SOB OO	7030020100	955
	SOV 43 SEB OO	7030020300	942

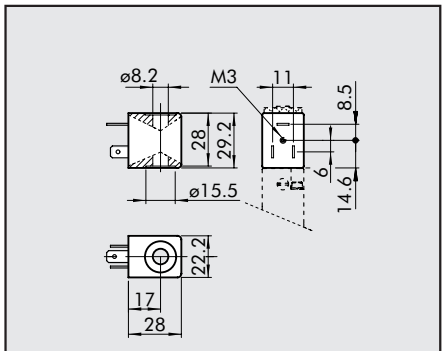
MONOSTABLE 5/3, 1/2"



Symbol	Abbrev.	Code	Weight [g]
	SOV 46 SOS CC	7030022100	1265
	SOV 46 SOS OC	7030022200	1265
	SOV 46 SOS PC	7030022300	1265
	SOV 46 SES CC	7030022400	1252
	SOV 46 SES OC	7030022500	1252
	SOV 46 SES PC	7030022600	1252

ACCESSORIES FOR SERIES 70 SOLENOID/PNEUMATIC VALVES

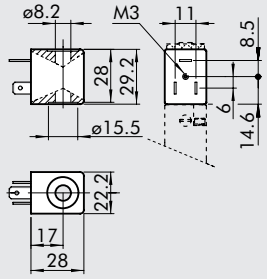
COILS FOR SERIES 70 SOV 1/8" 1/4" VALVES



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: from 70°C to 20°C – Ambient temperature

Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC	W0215000151
24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC	W0215000101
24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC	W0215000111
110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC	W0215000121
220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC	W0215000131

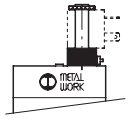
COILS FOR SERIES 70 SOV 1/2" VALVES



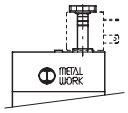
- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: from 70°C to 20°C – Ambient temperature

■ Coils usable with valves having either new pilot and old pilot
♦ Coils at low absorption usable only with valves having new pilot

OLD PILOT

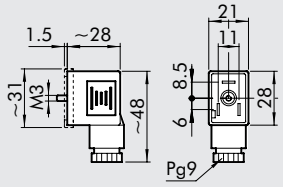


NEW PILOT



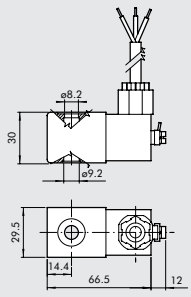
Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
12Vcc	5W	5W	Coil 22 Ø8 5W-12VDC	W0215000051 ■
24Vcc	5W	5W	Coil 22 Ø8 5W-24VDC	W0215000001 ■
24V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-24VAC	W0215000011 ■
110V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-110VAC	W0215000021 ■
220V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-220VAC	W0215000031 ■
12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC	W0215000151 ♦
24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC	W0215000101 ♦
24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC	W0215000111 ♦
110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC	W0215000121 ♦
220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC	W0215000131 ♦

COIL CONNECTORS



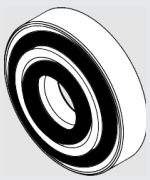
Colour	Ø Cable	Type	Code
Black	PG9	Standard	W0970510011
Transparent	PG9	LED 24V	W0970510012
Transparent	PG9	LED 110V	W0970510013
Transparent	PG9	LED 220V	W0970510014
Transparent	PG9	LED + VDR 24V	W0970510015
Transparent	PG9	LED + VDR 110V	W0970510016
Transparent	PG9	LED + VDR 220V	W0970510017

KIT FOR COIL EEEXM



Code	Description
0227606913	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 3M
0227606915	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 5M
0227608013	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 3M
0227608015	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 5M
0227608023	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 3M
0227608025	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 5M
0227608033	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 3M
0227608035	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 5M

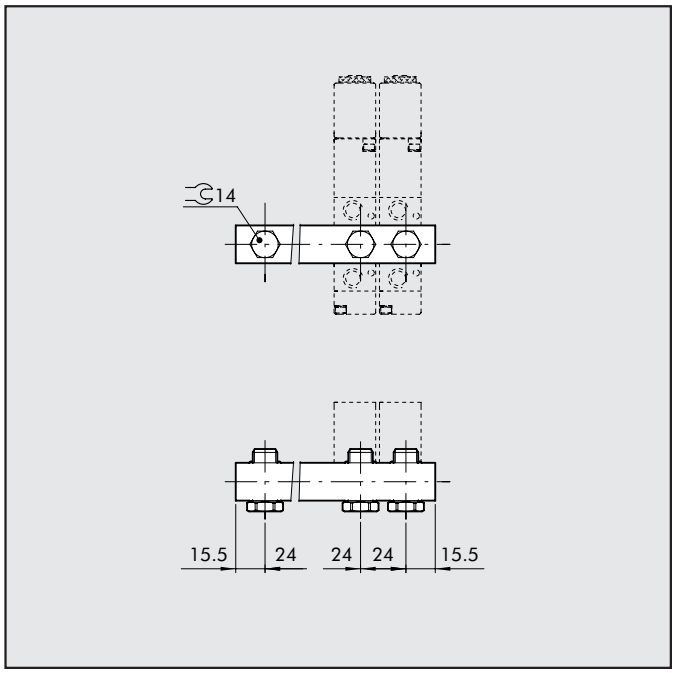
KIT FOR COILS SIDE 22 IP65



Code	Description
0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

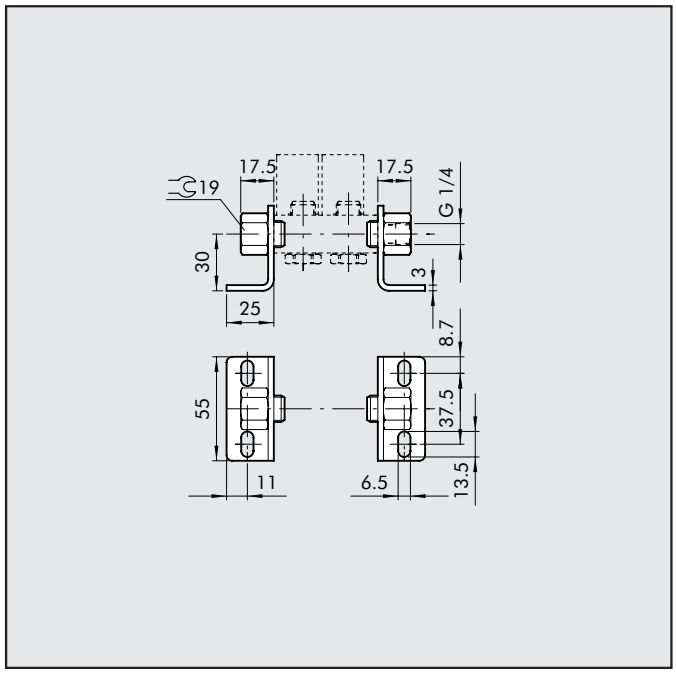
ACCESSORIES: 1/8 MANIFOLDS FOR SERIES 70 PNV-SOV VALVES

MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



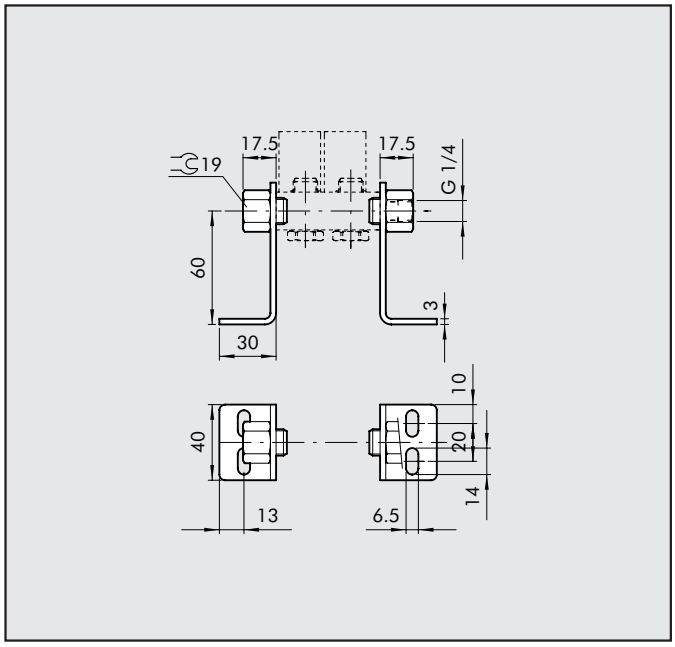
Code	Abbrev.	Weight [g]
0221000200	CSA-18-02	70
0221000300	CSA-18-03	99
0221000400	CSA-18-04	131
0221000500	CSA-18-05	162
0221000600	CSA-18-06	192
0221000700	CSA-18-07	229

BRACKET SET H30



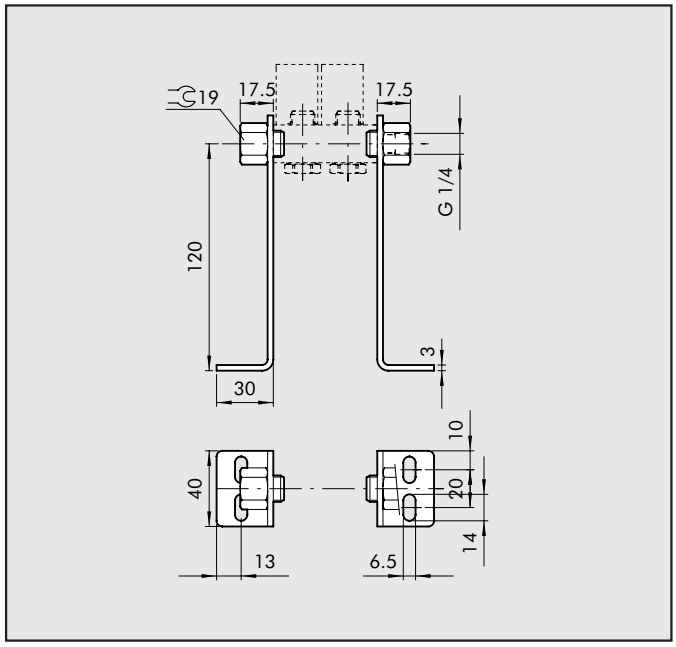
Code	Description	Weight [g]
0221000192	CSA-18-OE	181

BRACKET SET H60



Code	Abbrev.	Weight [g]
0221000191	CSA-18-OC	213

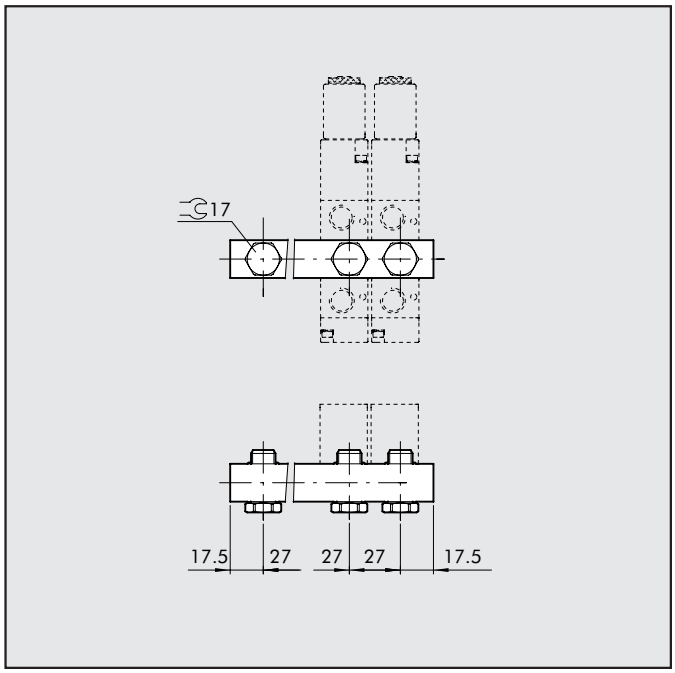
BRACKET SET H120



Code	Description	Weight [g]
0221000190	CSA-18-OO	309

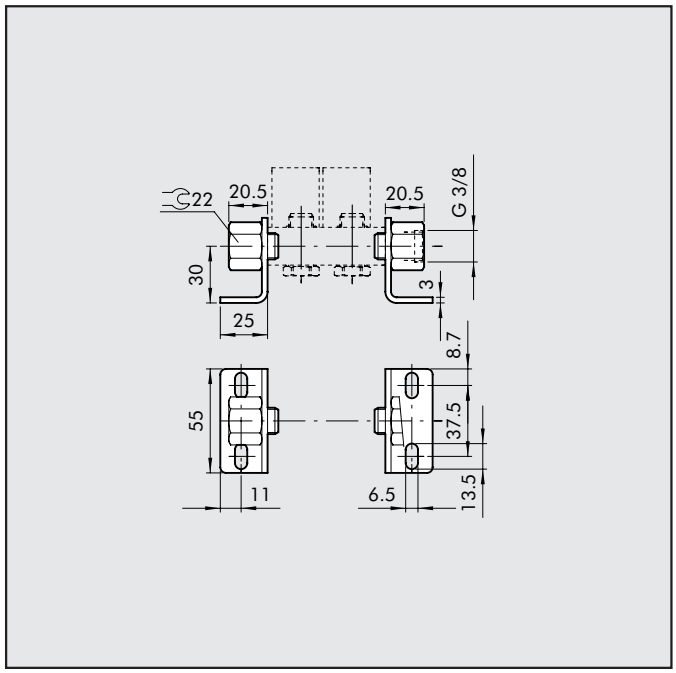
ACCESSORIES: 1/4 MANIFOLDS FOR SERIES 70 PNV-SOV VALVES

MANIFOLD WITH 2 TO 7 POSITIONS + FITTINGS



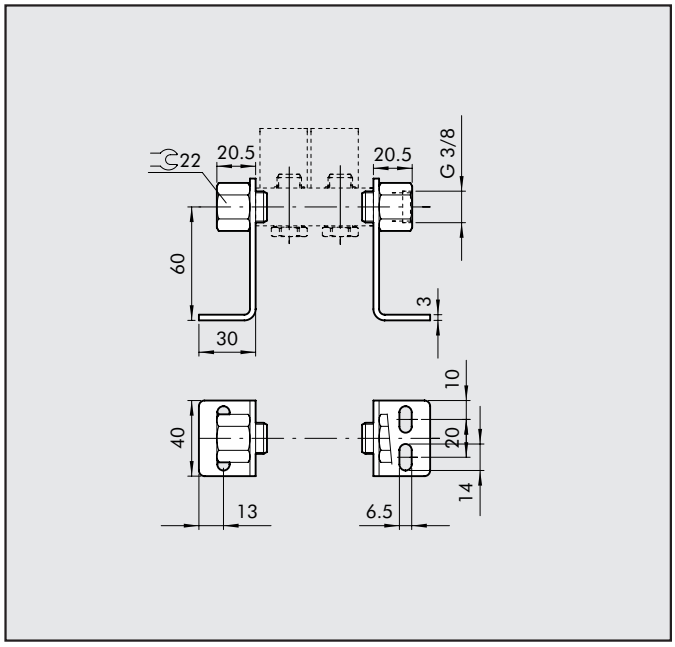
Code	Abbrev.	Weight [g]
0222000200	CSA-14-02	89
0222000300	CSA-14-03	131
0222000400	CSA-14-04	174
0222000500	CSA-14-05	213
0222000600	CSA-14-06	252
0222000700	CSA-14-07	328

BRACKET SET H30



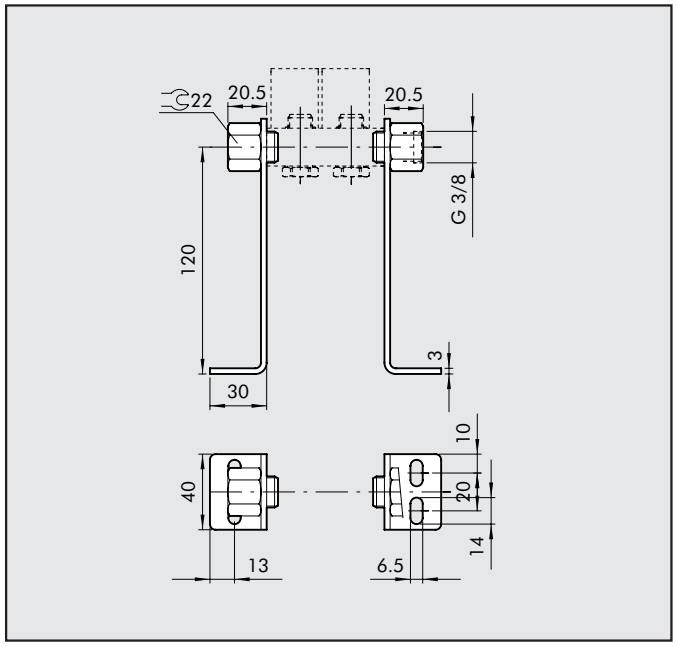
Code	Description	Weight [g]
0222000192	CSA-14-OE	209

BRACKET SET H60



Code	Abbrev.	Weight [g]
0222000191	CSA-14-OC	242

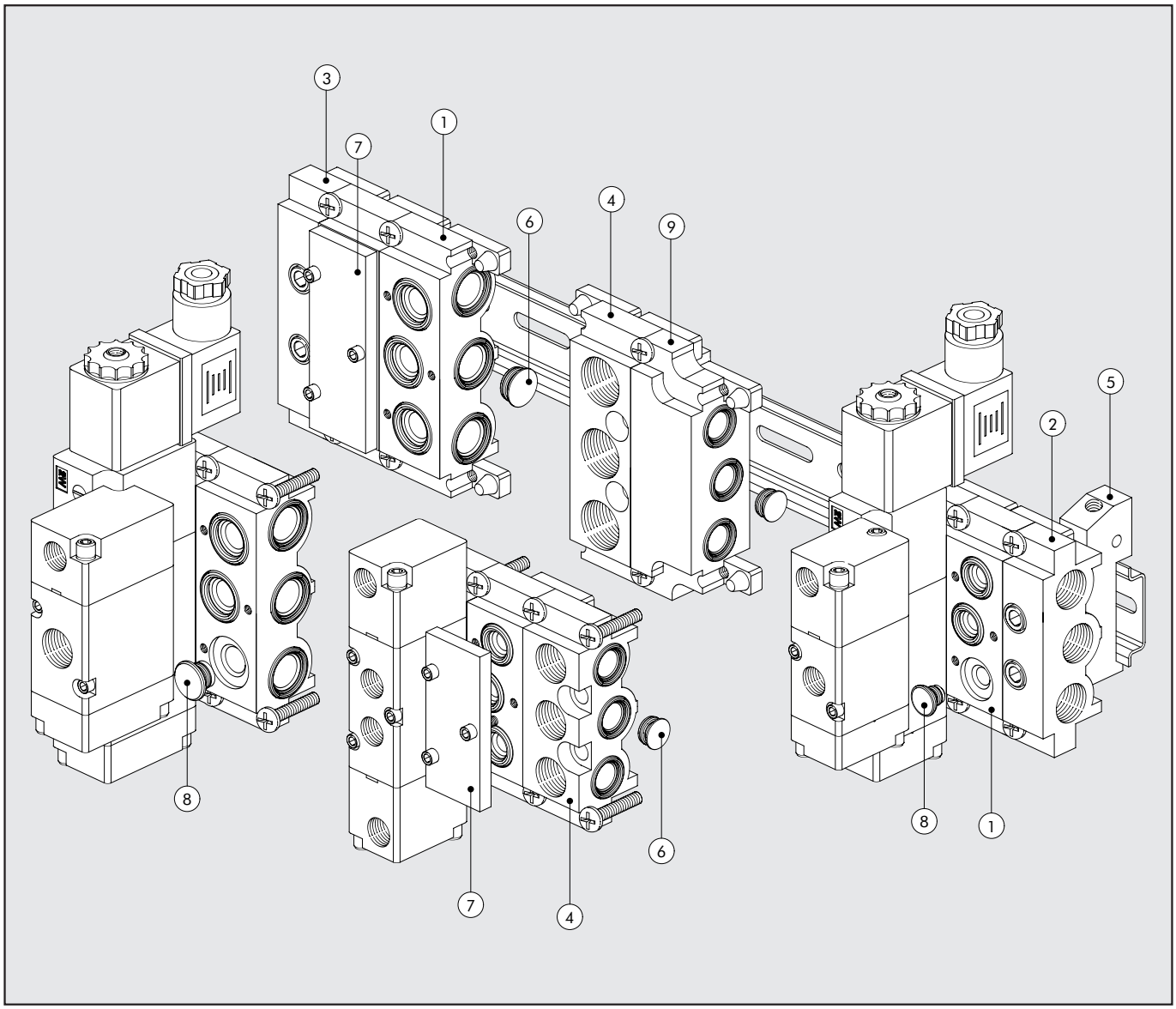
BRACKET SET H120



Code	Description	Weight [g]
0222000190	CSA-14-OO	338

ACCESSORIES: MANIFOLD BASES FOR SERIES 70 PNV-SOV VALVES

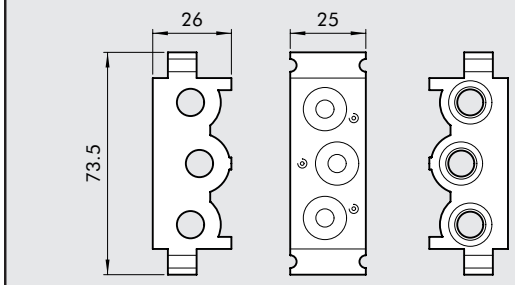
MODULAR BASES FOR SERIES 70 SOV-PNV VALVES



ORDERING CODES		1/8''		1/4''	
Reference	Description	Code	Abbrev.	Code	Abbrev.
①	Modular manifold base	0226004150	COMP. MANIFOLD 1/8"	0226005150	MANIFOLD 1/4"
②	End plate without OR	0226004201	T S/Z OR 1/8"	0226005201	T S/Z OR 1/4"
③	End plate with OR	0226004200	MAN. INPUT T. 1/8"	0226005200	MAN. INPUT T. 1/4"
④	Intermediate part for upper feed	0226004300	SUP. SUPPLY SWITCH 1/8"	0226005300	SUP. SUPPLY SWITCH 1/4"
⑤	Adapter Ω	0226004600	ADT Ω 1/8"	0226005600	ADT Ω 1/4"
⑥	Intermediate diaphragm	0226004000	COMP. DIA. 1/8"	0226005000	COMP. DIA. 1/4"
⑦	Blanking plate	0226004500	COMP. PCS 1/8"	0226005500	COMP. PCS 1/4"
⑧	3/2 cap	0226004001	COMP. PLUG 3/2 1/8"	0226005001	COMP. PLUG 3/2 1/4"
⑨	Dimensional adapter	0226006600	COMP. ADAPT. 1/8", 1/4"	–	–

MODULAR BASE 1/8”

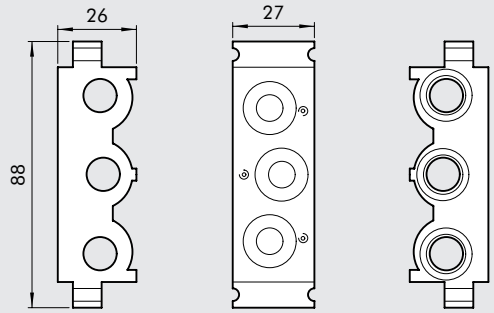
1



Code	Abbrev.	Weight [g]
0226004150	Comp. MANIFOLD 1/8”	110

MODULAR BASE 1/4"

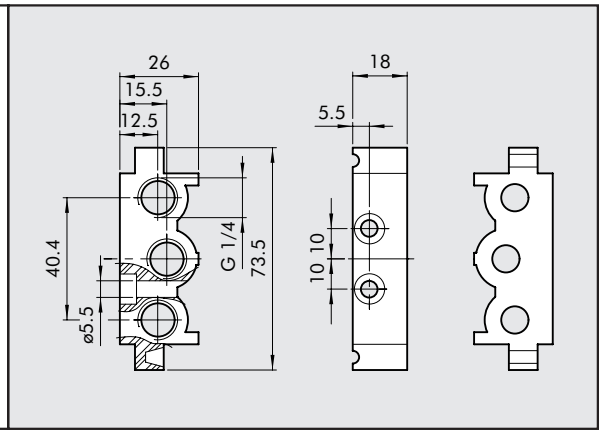
1



Code	Abbrev.	Weight [g]
0226005150	Comp. MANIFOLD 1/4”	131

END PLATE WITHOUT OR 1/8”

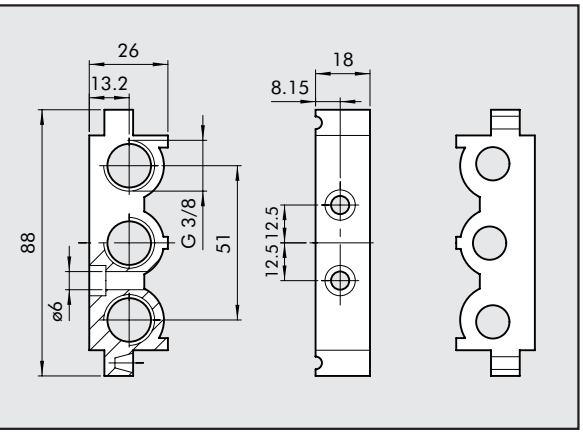
2



Code	Abbrev.	Weight [g]
0226004201	T. S/ZA OR 1/8’’	52

END PLATE WITHOUT OR 1/4"

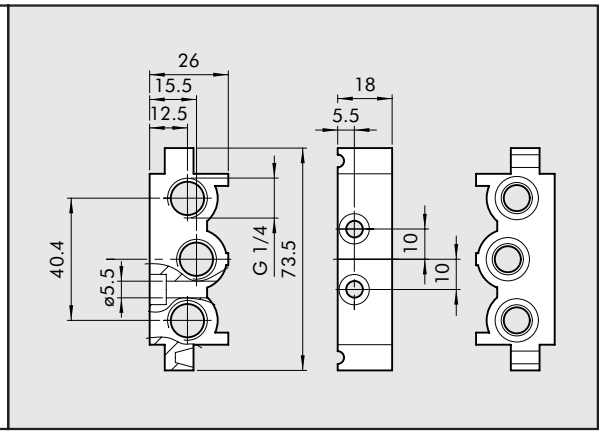
2



Code	Abbrev.	Weight [g]
0226005201	T. S/ZA OR 1/4”	57

END PLATE WITH OR 1/8”

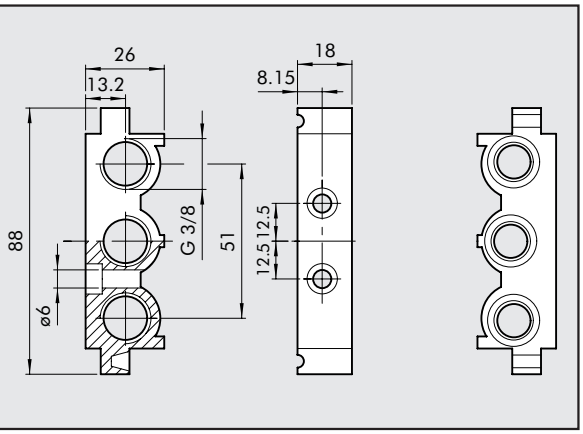
3



Code	Abbrev.	Weight [g]
0226004200	MAN. INPUT T. 1/8”	74

END PLATE WITH OR 1/4"

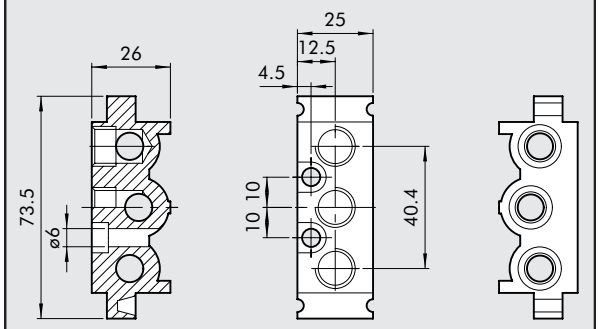
3



Code	Abbrev.	Weight [g]
0226005200	MAN. INPUT T. 1/4”	80

INTERMEDIATE PART FOR UPPER FEED 1/8”

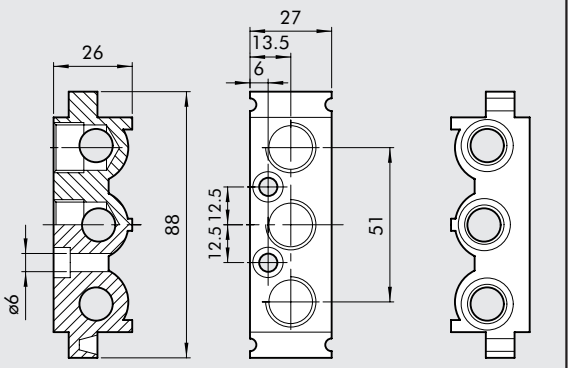
4



Code	Abbrev.	Weight [g]
0226004300	SUP. SUPPLY SW. 1/8”	93

INTERMEDIATE PART FOR UPPER FEED 1/4"

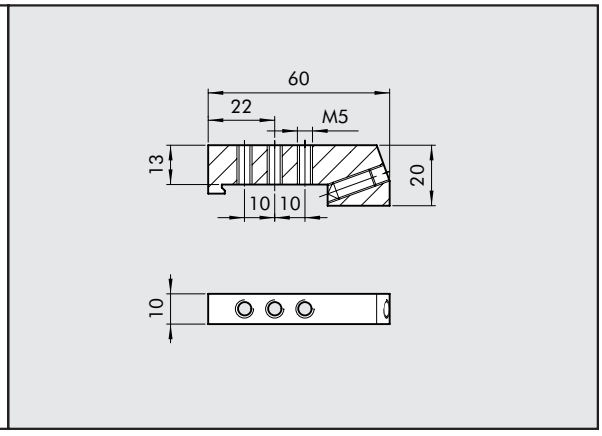
4



Code	Abbrev.	Weight [g]
0226005300	SUP. SUPPLY SW. 1/4”	109

ADAPTER FOR Ω BAR BASES 1/8”

5

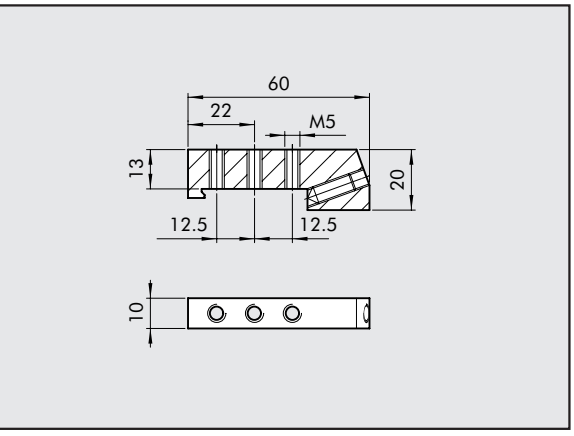


Code	Abbrev.	Weight [g]
0226004600	ADT Ω 1/8”	46

N.B. ALSO FOR MULTIPLE BASES

ADAPTER FOR Ω BAR BASES 1/4"

5

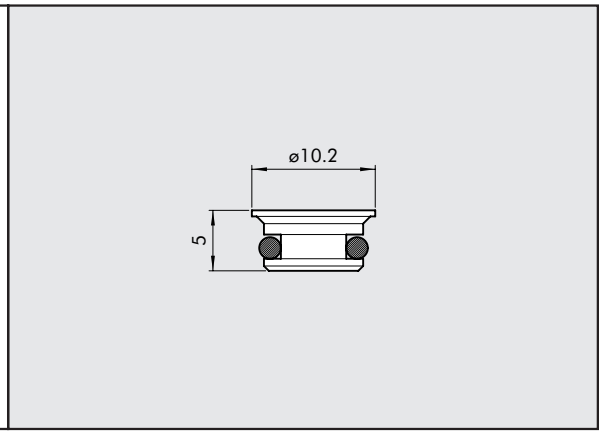


Code	Abbrev.	Weight [g]
0226005600	ADT Ω 1/4”	46

N.B. ALSO FOR MULTIPLE BASES

INTERMEDIATE DIAPHGRAM 1/8”

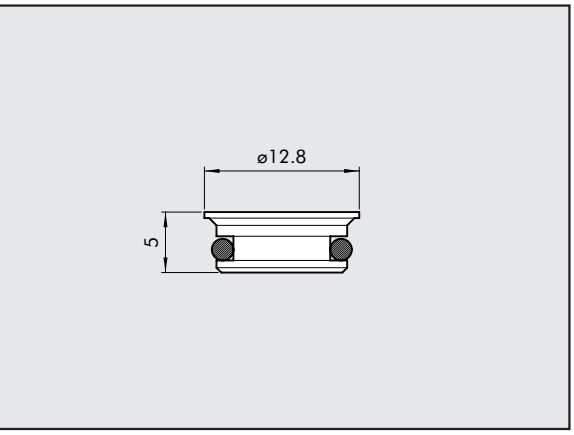
6



Code	Abbrev.	Weight [g]
0226004000	COMP. DIA. 1/8”	2

INTERMEDIATE DIAPHGRAM 1/4"

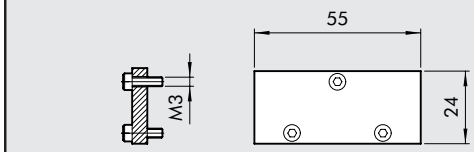
6



Code	Abbrev.	Weight [g]
0226005000	COMP. DIA. 1/4”	3

BLANKING PLATE FOR UNUSED POSITIONS 1/8”

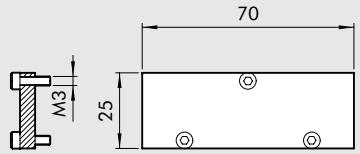
7



Code	Abbrev.	Weight [g]
0226004500	COMP. PCS 1/8”	23

BLANKING PLATE FOR UNUSED POSITIONS 1/4"

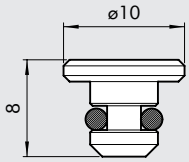
7



Code	Abbrev.	Weight [g]
0226005500	COMP. PCS 1/4”	29

PLUG FOR 3/2 1/8”

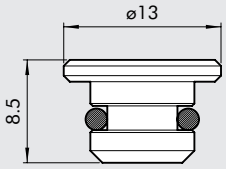
8



Code	Abbrev.	Weight [g]
0226004001	COMPLETE PLUG 3/2 1/8”	2

PLUG FOR 3/2 1/4"

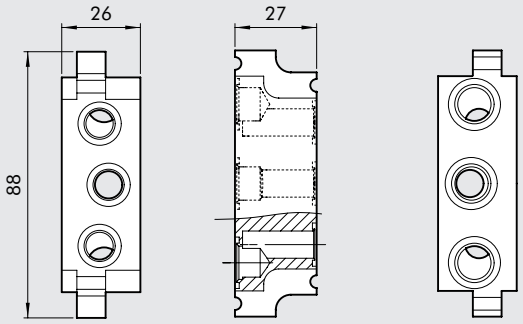
8



Code	Abbrev.	Weight [g]
0226005001	COMPLETE PLUG 3/2 1/4”	4

DIMENSIONAL ADAPTER 1/8” – 1/4"

9

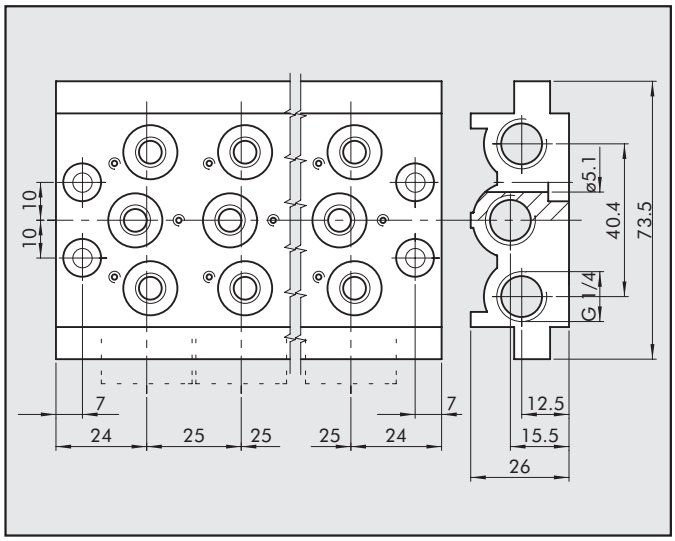


Code	Abbrev.	Weight [g]
0226006600	COMP. ADAPT. 1/8”, 1/4”	177

NOTES

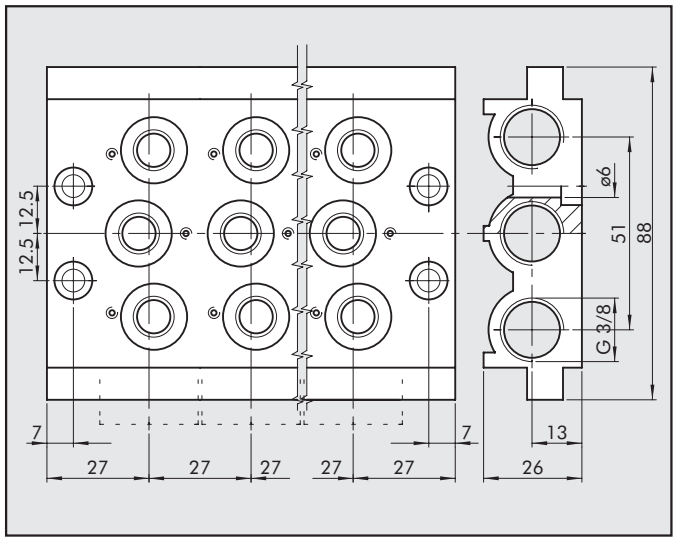
ACCESSORIES: MULTIPLE BASES FOR SERIES 70 PNV-SOV VALVES

MULTIPLE BASES 1/8"



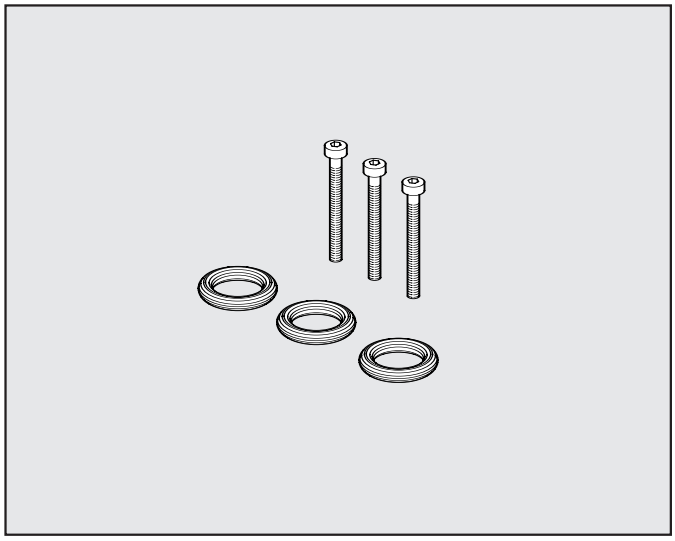
Code	Description	Abbrev.	Weight [g]
0223000201	2-POSITION BASE	CVM-18-02	236
0223000301	3-POSITION BASE	CVM-18-03	321
0223000401	4-POSITION BASE	CVM-18-04	407
0223000501	5-POSITION BASE	CVM-18-05	494
0223000601	6-POSITION BASE	CVM-18-06	587
0223000701	7-POSITION BASE	CVM-18-07	711
0223000801	8-POSITION BASE	CVM-18-08	760
0223000901	9-POSITION BASE	CVM-18-09	842
0223001001	10-POSITION BASE	CVM-18-10	923

MULTIPLE BASES 1/4"



Code	Description	Abbrev.	Weight [g]
0224000201	2-POSITION BASE	CVM-14-02	296
0224000301	3-POSITION BASE	CVM-14-03	406
0224000401	4-POSITION BASE	CVM-14-04	515
0224000501	5-POSITION BASE	CVM-14-05	624
0224000601	6-POSITION BASE	CVM-14-06	733
0224000701	7-POSITION BASE	CVM-14-07	845
0224000801	8-POSITION BASE	CVM-14-08	956
0224000901	9-POSITION BASE	CVM-14-09	1055
0224001001	10-POSITION BASE	CVM-14-10	1086

GASKET KIT

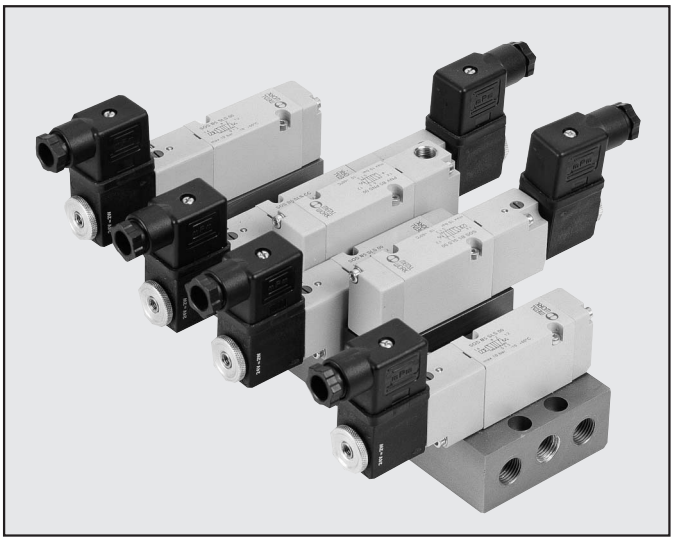


Code	Description	Weight [g]
0226004701	GASKET KIT FOR 1/8" BASE	5
0226005701	GASKET KIT FOR 1/4" BASE	5

NOTES

VALVES SERIES 70, ON BASE

The series 70 valves on base, available in the air- and solenoid-actuated versions, is an excellent clean solution for use when it is necessary to intervene on the valves without disconnecting the pipes. Here, the inlet, output and utility ports are in the base.

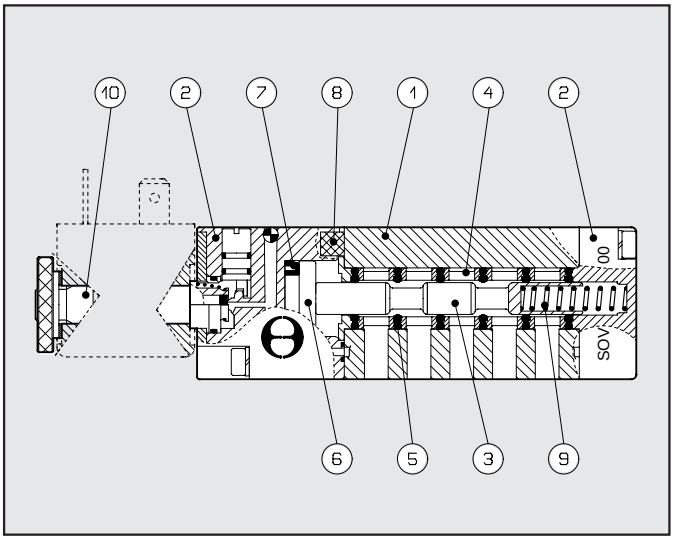


TECHNICAL DATA

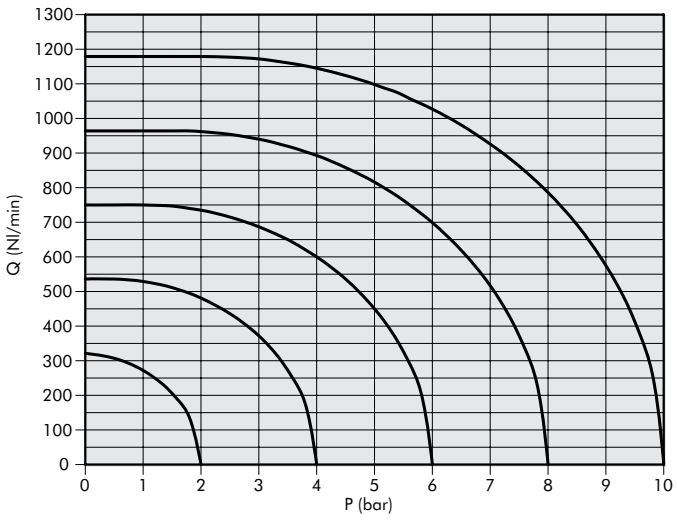
Operating pressure:	• monostable	2.5÷10 bar
	• bistable	1÷10 bar
	• pilot-assisted	vacuum÷10 bar
Minimum pilot pressure		2.5 bar
Operating temperature range		-10°÷+60°C
Nominal diameter		5 mm
Conductance C		107.69 Nl/min · bar
Critical ratio b		0.29 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar		320 Nl/min
Flow rate at 6 Bar ΔP 1 Bar		450 Nl/min
Maximum torque coil nut		1 Nm

COMPONENTS

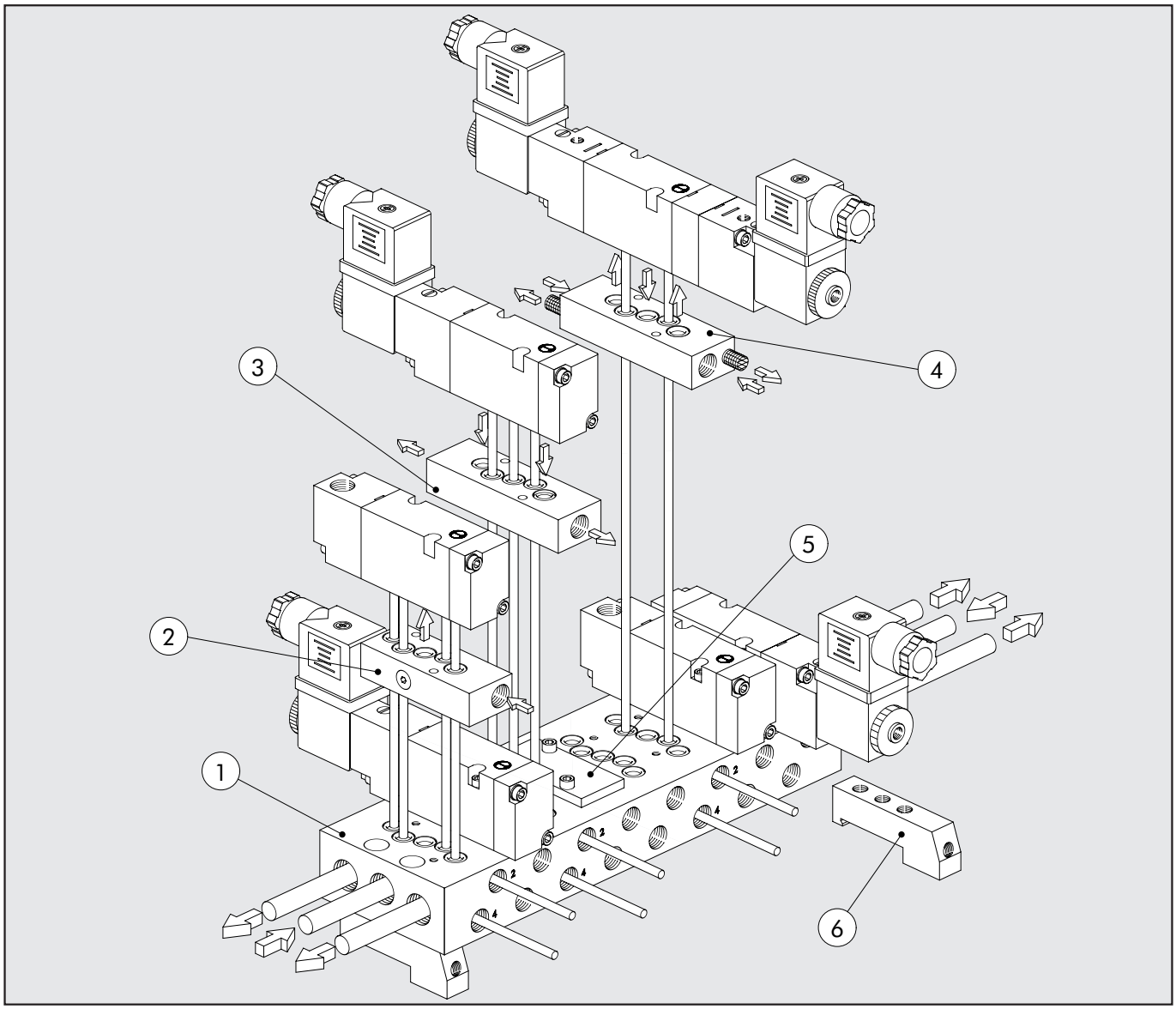
① VALVE BODY: Aluminium
② CONTROL/BASE: HOSTAFORM®
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: Nitrile rubber NBR
⑥ PISTONS: HOSTAFORM®
⑦ PISTON GASKET: Nitrile rubber NBR
⑧ FILTER: sintered Bronze
⑨ SPRINGS: special steel
⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHART



MULTI-PURPOSE BASE FOR VALVES SERIES 70 ON BASE



Abbrev.	Description	Abbrev.
①	2-position base 1/8 on base	0223100201
	4-position base 1/8 on base	0223100401
	6-position base 1/8 on base	0223100601
	8-position base 1/8 on base	0223100801
	10-position base 1/8 on base	0223101001
②	Separate feed kit	0223106301
③	Exhaust regulation kit	0223106303
④	Exhaust feed kit	0223106302
⑤	Blanking plate	0223106500
⑥	Ω bar adaptor	0226004600

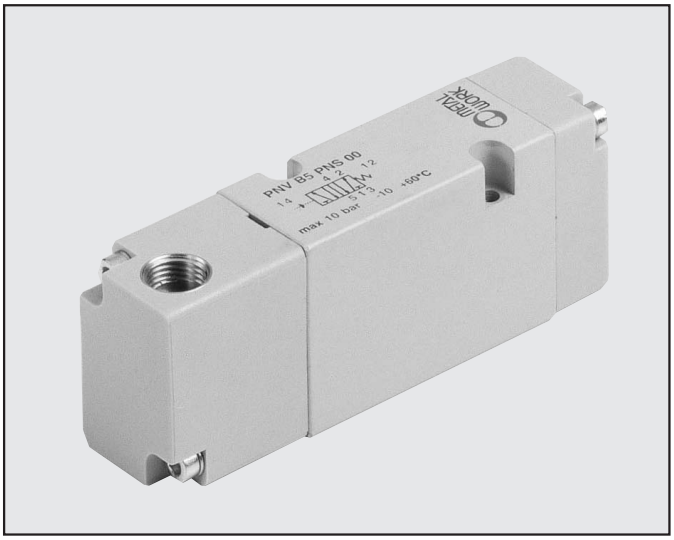
KEY TO CODES

P N V	B	5	P N	S	O O
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
PNV pneum. SOV electro-pneum.	B 1/8" on base	5 5/2 6 5/3	PN pneumatic SO Solenoid valve SE Solenoid pilot-assisted valve	S mechanical spring B bistable D differential	OO 5/2 CC closed centres OC open centres PC pressure centres

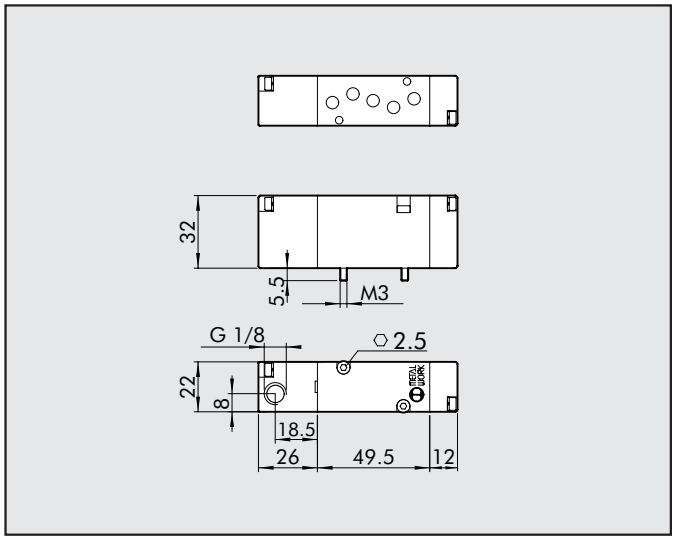
VALVES, SERIES 70, PNEUMATIC, ON BASE

TECHNICAL DATA

Operating pressure	Vacuum ÷ 10 bar
Minimum operating pressure	2.5 bar
Operating temperature range	-10°÷ +60°C
Nominal diameter	5 mm
Conductance C	107.69 Nl/min · bar
Critical ratio b	0.29 bar/bar
Flow rate at 6 bar ΔP 0.5 bar	320 Nl/min
Flow rate at 6 bar ΔP 1 bar	450 Nl/min
TRA/TRR monostable at 6 bar	6 ms / 15 ms
TRA /TRR bistable at 6 bar	7 ms / 7 ms

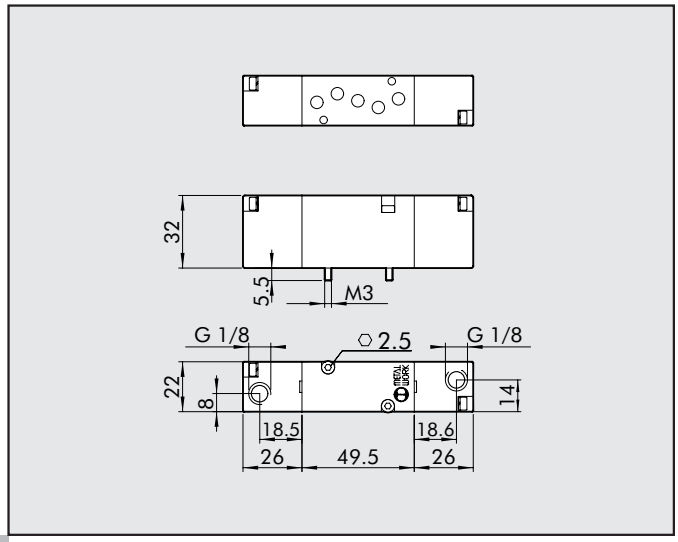


MONOSTABLE 5/2



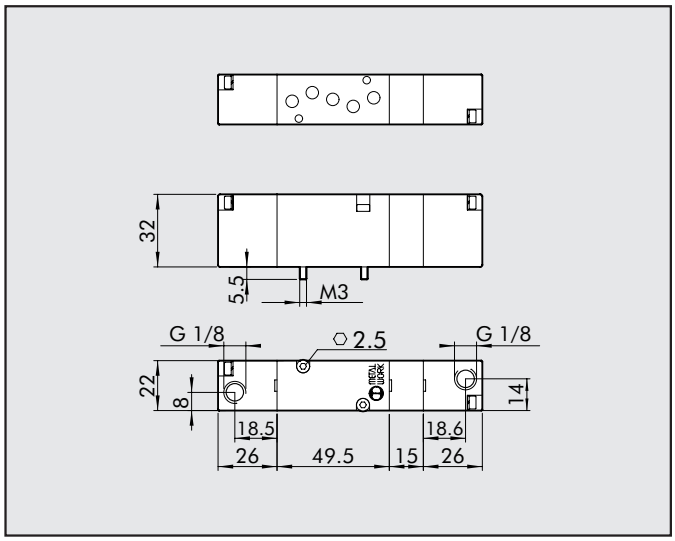
Symbol	Abbrev.	Code	Weight [g]
	PNV B5 PNS OO	7011011100	125

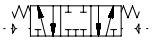
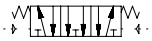
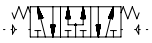
BISTABLE 5/2



Symbol	Abbrev.	Code	Weight [g]
	PNV B5 PNB OO	7011011200	136
	PNV B5 PND OO	7011011300	142

MONOSTABLE 5/3



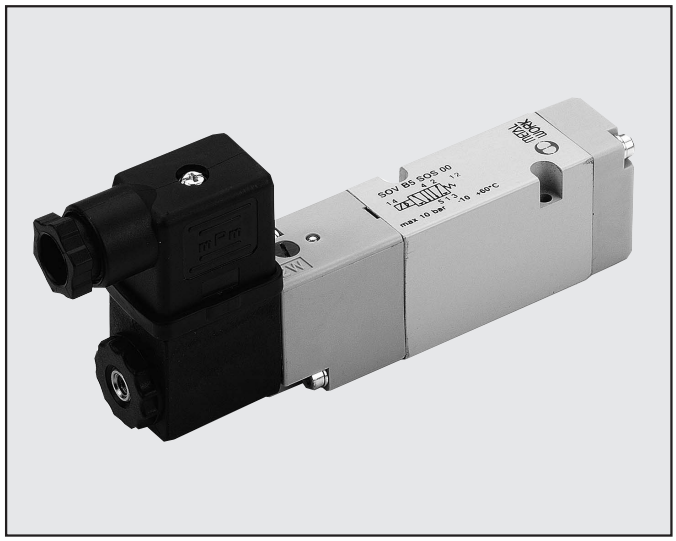
Symbol	Abbrev.	Code	Weight [g]
	PNV B6 PNS CC	7011012100	164
	PNV B6 PNS OC	7011012200	164
	PNV B6 PNS PC	7011012300	164

NOTES

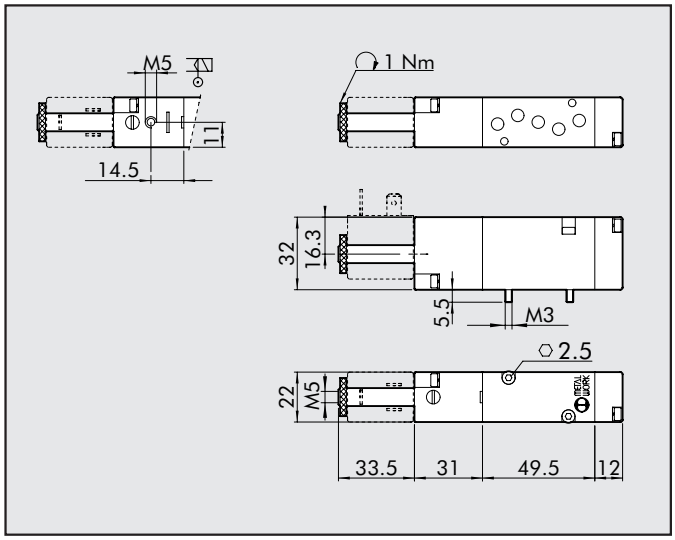
VALVES SERIES 70, SOLENOID/PNEUMATIC ON BASE

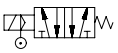
TECHNICAL DATA

Operating pressure	• monostable	2.5÷10 bar
	• bistable	1÷10 bar
	• pilot-assisted	vacuum÷10 bar
Minimum pilot pressure		2.5 bar
Operating temperature range		-10° to 60°C
Nominal diameter		5 mm
Conductance C		107.69 Nl/min · bar
Critical ratio b		0.29 bar/bar
Flow rate at 6 bar ΔP 0.5 bar		320 Nl/min
Flow rate at 6 bar ΔP 1 bar		450 Nl/min
TRA/TRR monostable at 6 bar		15 ms / 35 ms
TRA /TRR bistable at 6 bar		20 ms / 20 ms
Electrical technical data		
Coil voltages		24VDC÷24VAC÷110VAC÷220VAC 50/60Hz
Capacity		2 W (DC) 3VA (AC)
Voltage tolerance		-10% ÷ +15%
Insulation class		F 155
Maximum torque – coil nut		1 Nm

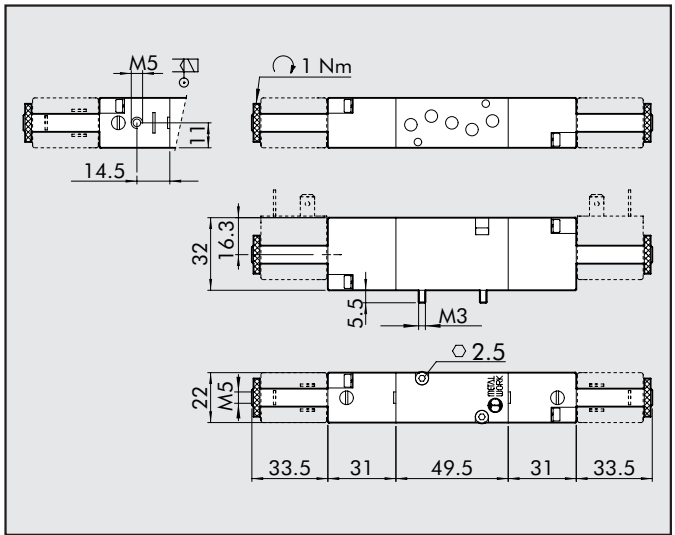


MONOSTABLE 5/2



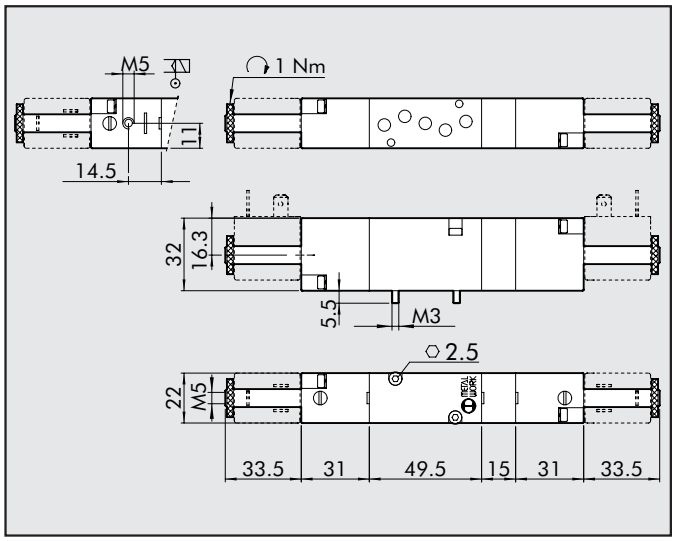
Symbol	Abbrev.	Code	Weight [g]
	SOV B5 SOS OO	7011021100	142
	SOV B5 SES OO	7011021500	143

BISTABLE 5/2



Symbol	Abbrev.	Code	Weight [g]
	SOV B5 SOB OO	7011021200	174
	SOV B5 SOD OO	7011021300	180
	SOV B5 SEB OO	7011021600	174

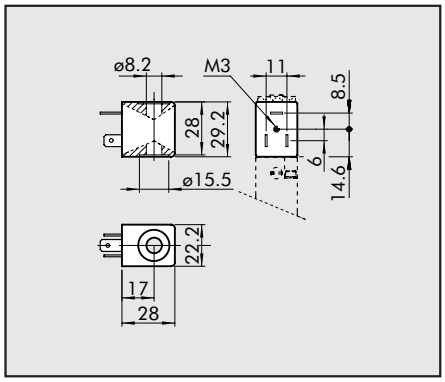
BISTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	SOV B6 SOS CC	7011022100	204
	SOV B6 SOS OC	7011022200	204
	SOV B6 SOS PC	7011022300	204
	SOV B6 SES CC	7011022400	202
	SOV B6 SES OC	7011022500	202
	SOV B6 SES PC	7011022600	202

ACCESSORIES: VALVES SERIES 70, ON BASE

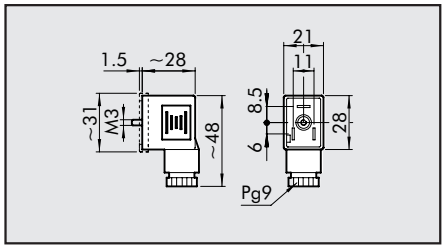
COILS FOR VALVES SERIES 70 SOV ON BASE



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to atmospheric agents
- Coil temperature 100% ED: from 70°C to 20°C – Ambient temperature

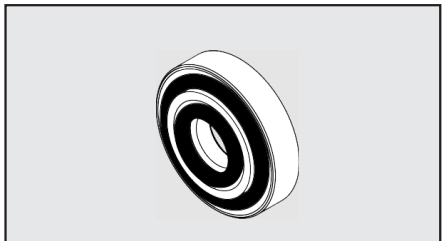
Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC	W0215000151
24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC	W0215000101
24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC	W0215000111
110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC	W0215000121
220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC	W0215000131

COIL CONNECTORS



Colour	Ø Cable	Type	Code
Black	PG9	Standard	W0970510011
Transparent	PG9	LED 24V	W0970510012
Transparent	PG9	LED 110V	W0970510013
Transparent	PG9	LED 220V	W0970510014
Transparent	PG9	LED + VDR 24V	W0970510015
Transparent	PG9	LED + VDR 110V	W0970510016
Transparent	PG9	LED + VDR 220V	W0970510017

KIT FOR COILS SIDE 22 IP65

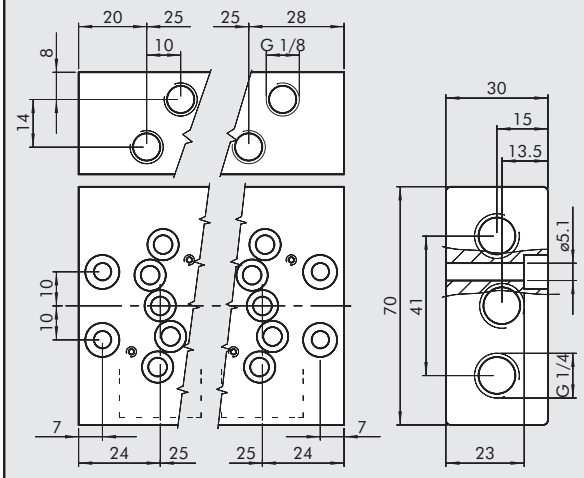


Code	Description
0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

ACCESSORIES: MULTIPLE BASES FOR VALVES SERIES 70, ON BASE

MULTIPLE BASE

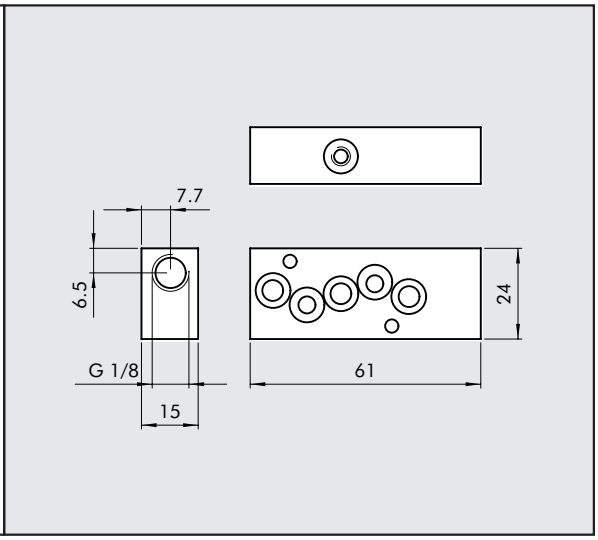
1



Code	Description	Weight [g]
0223100201	2-POSITION BASE 1/8 ON BASE	341
0223100401	4-POSITION BASE 1/8 ON BASE	591
0223100601	6-POSITION BASE 1/8 ON BASE	855
0223100801	8-POSITION BASE 1/8 ON BASE	1093
0223101001	10-POSITION BASE 1/8 ON BASE	1352

SEPARATE FEED KIT

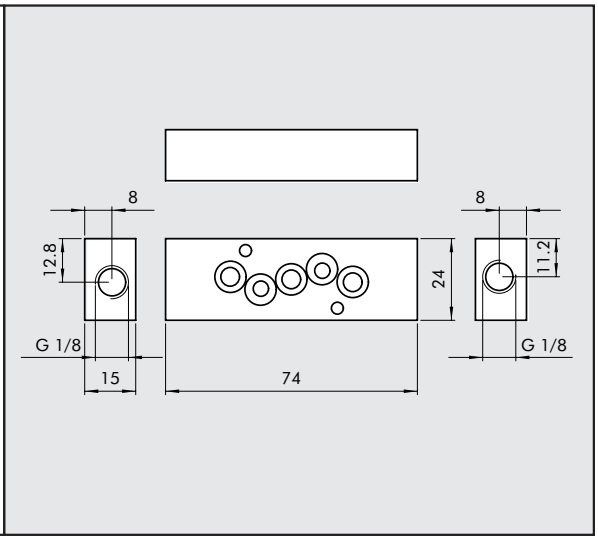
2



Code	Description	Weight [g]
0223106301	SEPARATE FEED KIT 1/8	65

EXHAUST REGULATION KIT

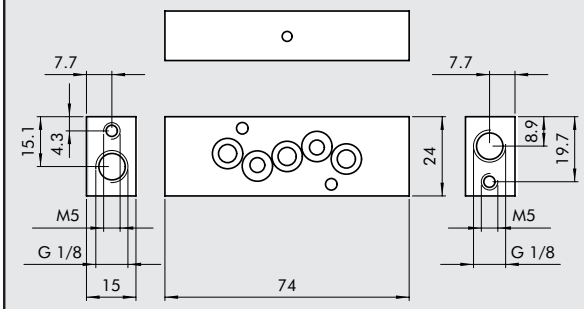
3



Code	Description	Weight [g]
0223106303	EXHAUST REGULATION KIT 1/8	75

EXHAUST FEED KIT

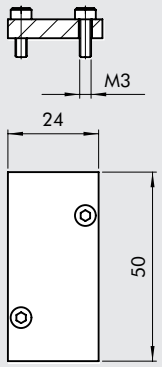
4



Code	Description	Weight [g]
0223106302	EXHAUST FEED KIT 1/8	75

BLANKING PLATE

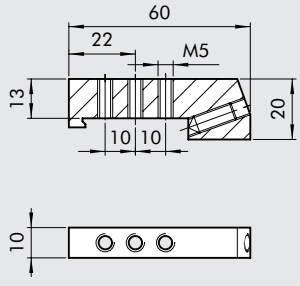
5



Code	Description	Weight [g]
0223106500	BLANKING PLATE 1/8	15

ADAPTER FOR BAR Ω

6



Code	Description	Weight [g]
0226004600	ADAPTER FOR BAR Ω 1/8"	46

NAMUR VALVES

TECHNICAL DATA

Operating pressure	
• Monostable, electric	2.5÷10 bar
• Bistable, electric	1÷10 bar
• pilot-assisted, electric	vacuum at 10 bar
Minimum pilot pressure	
• monostable, pneumatic	2.5 bar
• bistable, pneumatic	1 bar
Operating temperature range	–10° to 60°C
Nominal diameter	7.5 mm
Conductance C	264.26 Nl/min · bar
Critical ratio b	0.27 bar/bar
Flow rate at 6 bar ΔP 0.5 bar	750 Nl/min
Flow rate at 6 bar ΔP 1 bar (0.1 Mpa÷14.5 psi)	1100 Nl/min
Response time at 6 bar:	
• TRA/TRR monostable, pneum. at 6 bar	7 ms / 15 ms
• TRA /TRR bistable, pneum. at 6 bar	7 ms / 7 ms
• TRA/TRR monostable, electric, at 6 bar	19 ms/ 45 ms
• TRA /TRR bistable, electric, at 6 bar	21 ms / 21 ms

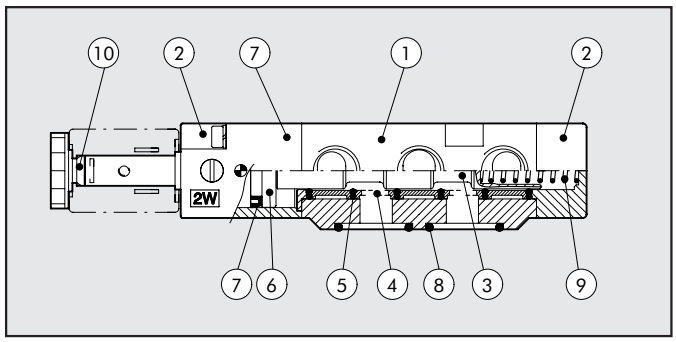


KEY TO CODES

P N V	A	5	P N	S	O O
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
PNV pneum. SOV electro-pneum.	A Namur	4 4/2 5 5/2	PN pneum. SO solenoid	S mechanical spring B bistable	OO 5/2 NC normally closed

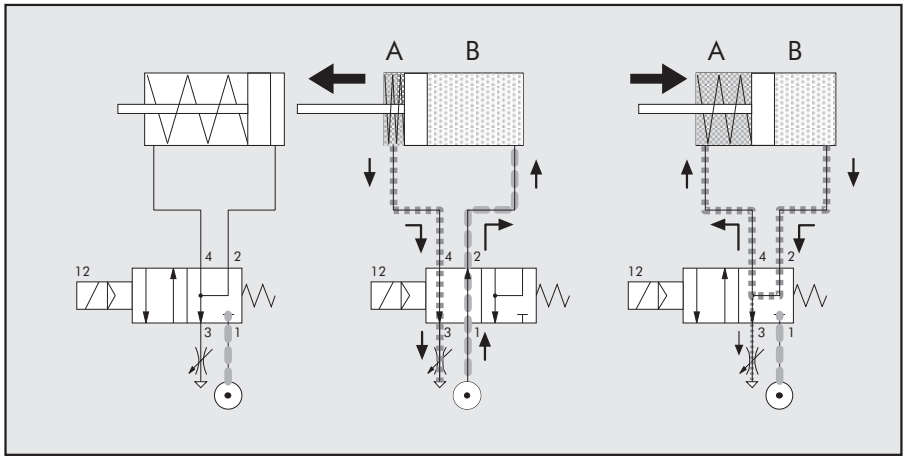
COMPONENTS

① VALVE BODY: Aluminium
② CONTROL/BASE: HOSTAFORM®
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: NBR nitrile rubber
⑥ PISTONS: HOSTAFORM®
⑦ PISTON GASKET: NBR nitrile rubber
⑧ INTERFACE GASKETS: NBR nitrile rubber
⑨ SPRINGS: special steel
⑩ OPERATOR: Brass pipe – Stainless steel core

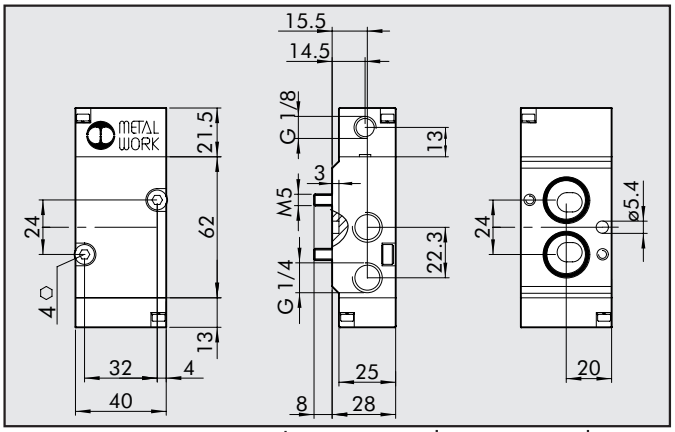


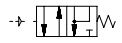
FUNCTIONING DIAGRAM 4/2 NAMUR VALVE

During the piston retraction stage, the air for chamber A is taken from the air leaving chamber B. This prevents the dirty air from getting in from the outside enviroment.

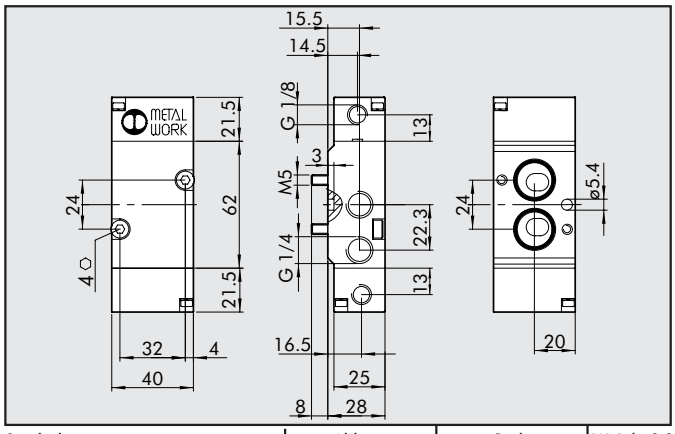


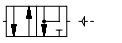
MONOSTABLE, PNEUMATIC 4/2



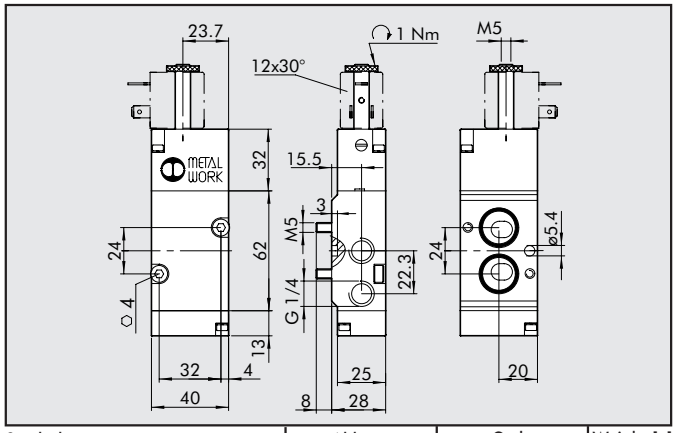
Symbol	Abbrev.	Code	Weight [g]
	PNV A4 PNS NC	7021010110	208

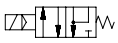
BISTABLE, PNEUMATIC 4/2



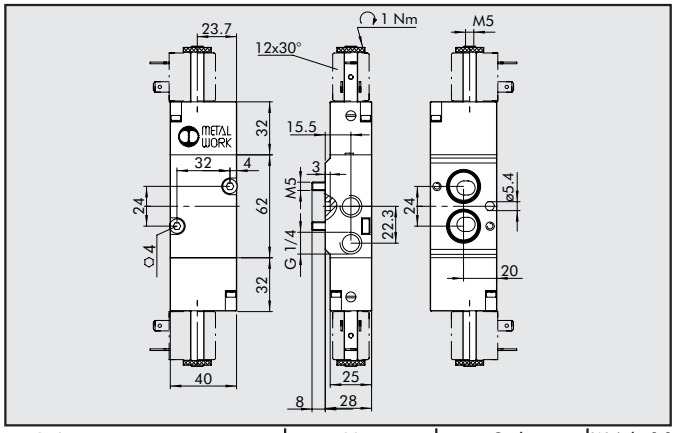
Symbol	Abbrev.	Code	Weight [g]
	PNV A4 PNB OO	7021010210	216

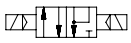
MONOSTABLE, SOLENOID/PNEUMATIC 4/2



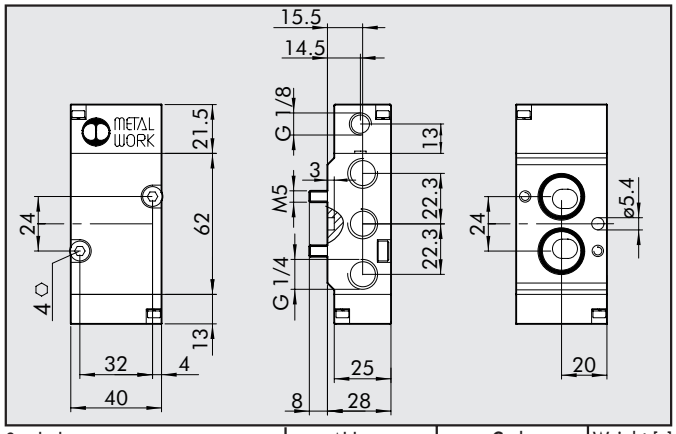
Symbol	Abbrev.	Code	Weight [g]
	SOV A4 SOS NC	7021020110	234

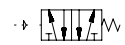
BISTABLE, SOLENOID/PNEUMATIC 4/2



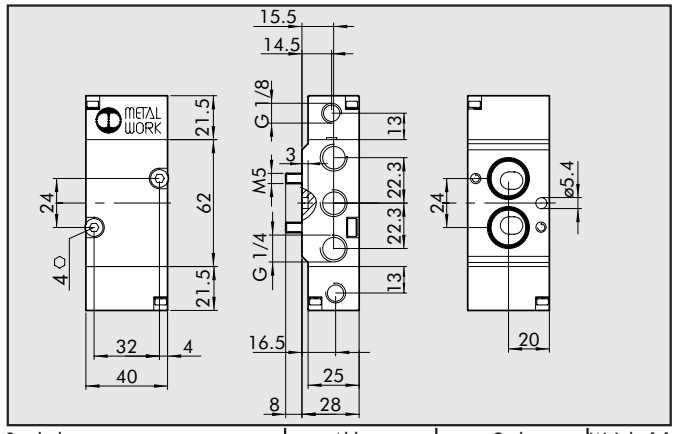
Symbol	Abbrev.	Code	Weight [g]
	SOV A4 SOB OO	7021020210	270

MONOSTABLE, PNEUMATIC 5/2



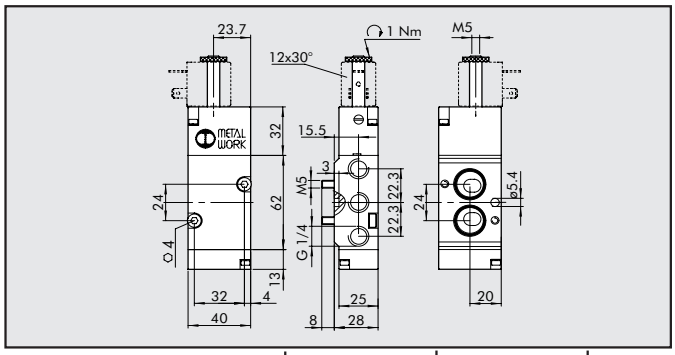
Symbol	Abbrev.	Code	Weight [g]
	PNV A5 PNS OO	7021010100	208

BISTABLE, PNEUMATIC 5/2



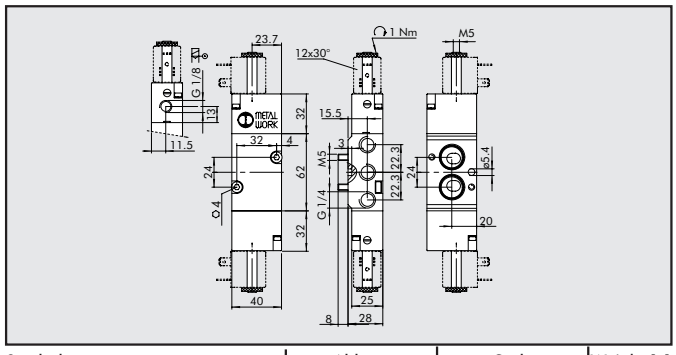
Symbol	Abbrev.	Code	Weight [g]
	PNV A5 PNB OO	7021010200	216

MONOSTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Abbrev.	Code	Weight [g]
	SOV A5 SOS OO	7021020100	234

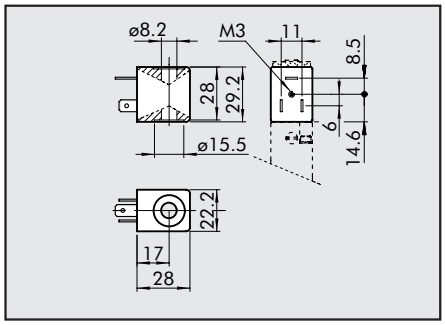
BISTABLE, SOLENOID/PNEUMATIC 5/2



Symbol	Abbrev.	Code	Weight [g]
	SOV A5 SOB OO	7021020200	270

ACCESSORIES: NAMUR VALVES

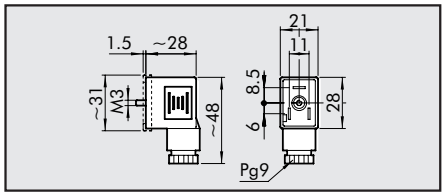
COILS



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 DIN 40050 with connector
- Avoid prolonged exposure to atmospheric agents
- Coil temperature 100% ED: from 70°C to 20°C – Ambient temperature

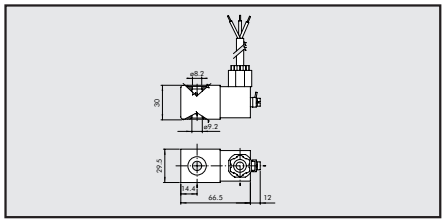
Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC	W0215000151
24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC	W0215000101
24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC	W0215000111
110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC	W0215000121
220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC	W0215000131

COIL CONNECTORS



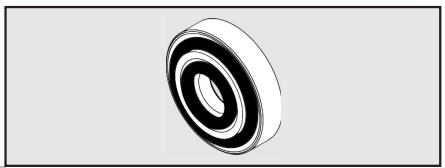
Colour	Ø Cable	Type	Code
Black	PG9	Standard	W 097051 0011
Transparent	PG9	LED 24V	W 097051 0012
Transparent	PG9	LED 110V	W 097051 0013
Transparent	PG9	LED 220V	W 097051 0014
Transparent	PG9	LED + VDR 24V	W 097051 0015
Transparent	PG9	LED + VDR 110V	W 097051 0016
Transparent	PG9	LED + VDR 220V	W 097051 0017

KIT FOR COIL EEEXM



Code	Description
0227606913	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 3M
0227606915	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 5M
0227608013	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 3M
0227608015	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 5M
0227608023	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 3M
0227608025	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 5M
0227608033	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 3M
0227608035	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 5M

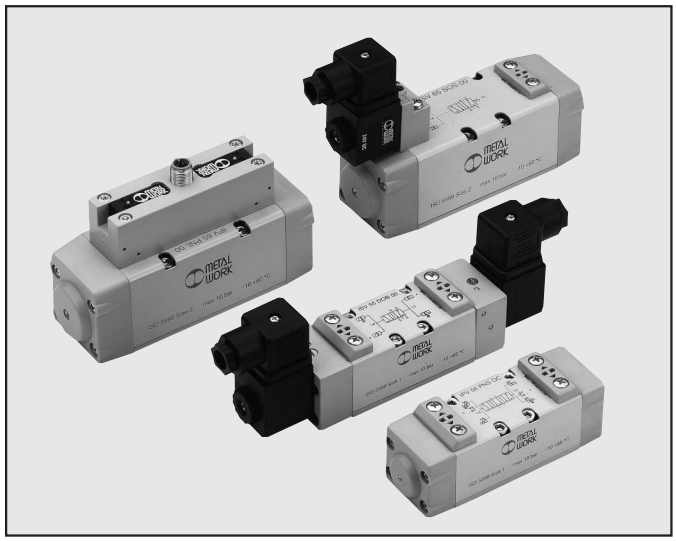
KIT FOR COILS SIDE 22 IP65



Code	Description
0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

VALVES ISO 5599/1, SERIES IPV-ISV

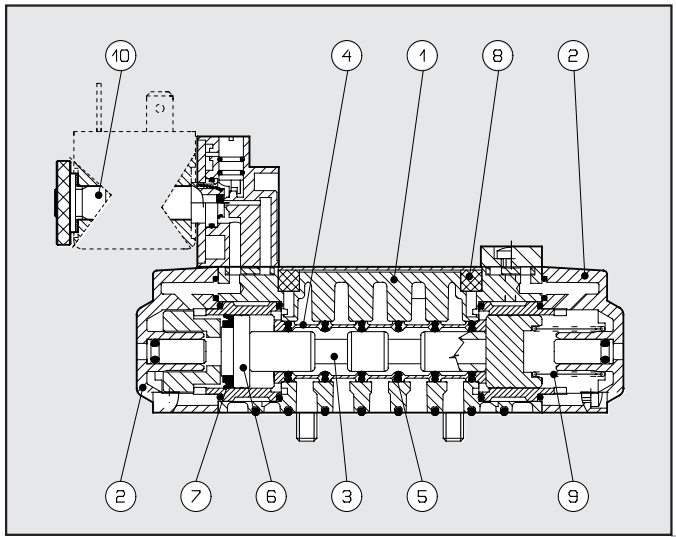
The assembly surface dimensions of ISO1 and ISO2 valves are to ISO5599-1. They are available in the 5-way versions with 2 and 3 positions and with pneumatic or solenoid actuation.



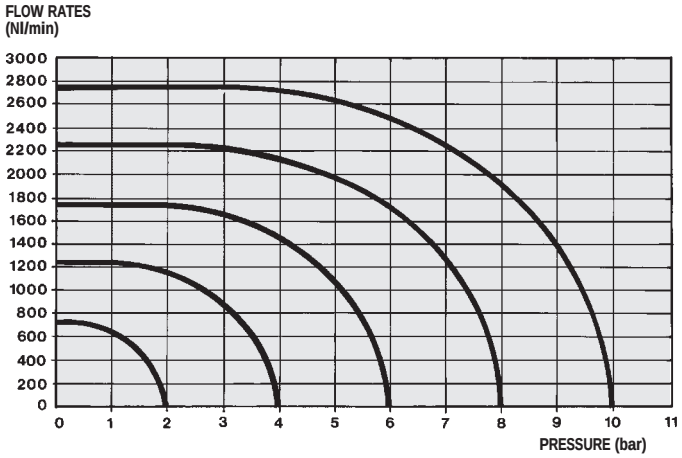
TECHNICAL DATA	ISO 1	ISO 2
Fluid	Filtered air without lubrication; lubrication, if used, must be continuous	
Operating pressure:		
• monostable	Vacuum ÷10 bar pneumatic – 2.5÷10 bar solenoid/pneumatic	
• bistable	Vacuum ÷ 10 bar pneumatic – 1÷10 bar solenoid/pneumatic	
• pilot-assisted	Vacuum ÷ 10 bar	
Minimum pilot pressure	2.5 bar	
Operating temperature range	-10°÷ +60°C	
Nominal diameter	7.5 mm	12 mm
Conductance C	250 Nl/min · bar	657.14 Nl/min · bar
Critical ratio b	0.36 bar/bar	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	700 Nl/min	1800 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	1100 Nl/min	2700 Nl/min
Installation	In any position (vertical assembly is not recommended for bistable valves subjected to vibration)	
Assembly	On single and manifold bases according to ISO 5599/1	
Recommended lubricant	ISO and UNI FD 22	
Solenoid pilot:	to CNOMO / in-line pilot / M12	
Manual:	bistable on solenoid pilot	
	monostable on valve body	
Maximum torque nut/coil	1 Nm	

COMPONENTS

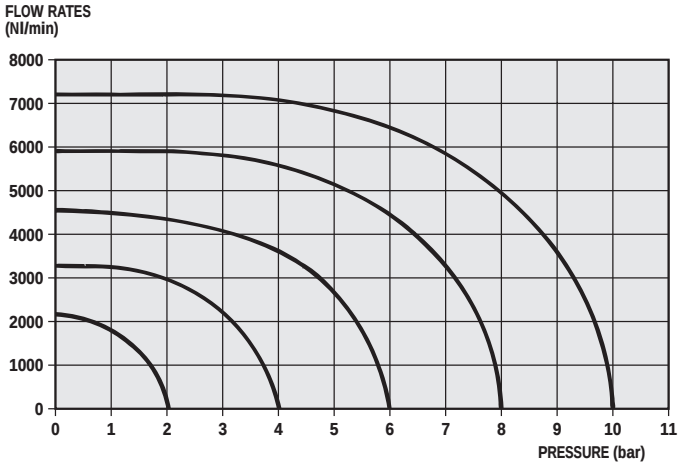
① VALVE BODY: Aluminium
② END CAP: HOSTAFORM®
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: NBR nitrile rubber
⑥ PISTONS: HOSTAFORM®
⑦ PISTON GASKETS: NBR nitrile rubber
⑧ FILTER: sintered bronze
⑨ SPRINGS: special steel
⑩ OPERATOR: Brass pipe – Stainless steel core



FLOW CHARTS ISO 1



FLOW CHARTS ISO 2



KEY TO CODES

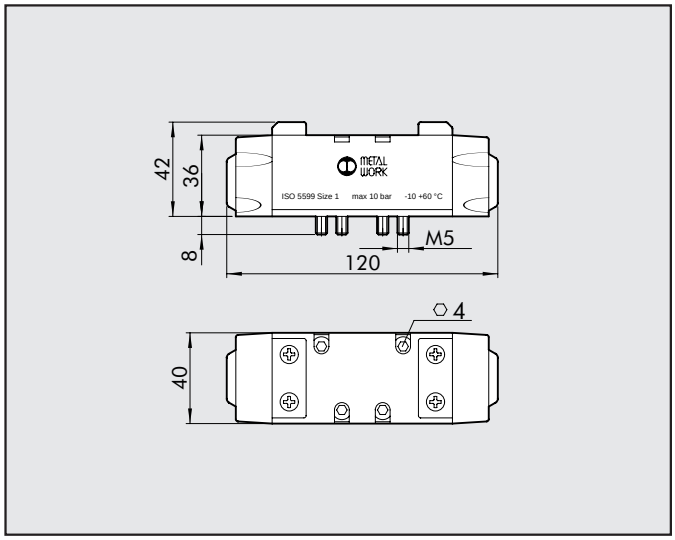
I P V	5	5	P N	S	O O
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS
IPV ISO pneumatic ISV ISO solenoid/ pneumatic	5 ISO 1 6 ISO 2	5 5/2 6 5/3	PN pneumatic SO solenoid/pneumatic SE electric pilot-assisted DO solenoid/pneumatic in line DE solenoid, assisted in line CO M12 solenoid/pneumatic CE M12 solenoid assisted	S mechanical spring B bistable D differential	OO 5/2 CC closed centres OC open centres PC pressure centres

VALVES ISO 5599/1, PNEUMATIC SERIES IPV

TECHNICAL DATA	ISO 1	ISO 2
Operating pressure	Vacuum ÷ 10 bar	
Minimum operation pressure:		
• monostable	2.5 bar	
• bistable	1 bar	
Operating temperature range	-10° to 60°C	
Nominal diameter	7.5 mm	12 mm
Conductance C	250 Nl/min · bar	657.14 Nl/min · bar
Critical ratio b	0.36 bar/bar	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	700 Nl/min	1800 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	1100 Nl/min	2700 Nl/min
Response times at 6 Bar:		
• monostable	12 ms	24 ms
• bistable	20 ms	30 ms
Repositioning response times at 6 Bar:		
• monostable	30 ms	43 ms
• bistable	20 ms	30 ms
Manual	monostable on valve body	

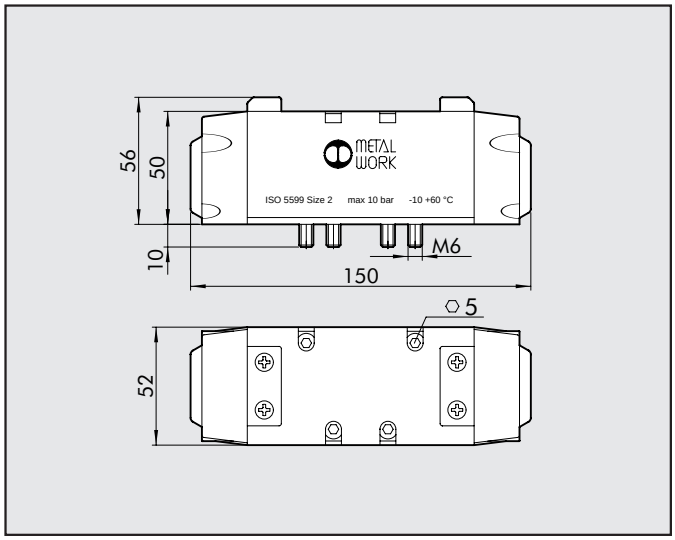


PNEUMATIC ACTUATION ISO 1



Symbol	Abbrev.	Code	Weight [g]
	IPV 55 PNS OO	7051011100	310
	IPV 55 PNB OO	7051011200	310
	IPV 55 PND OO	7051011300	310
	IPV 56 PNS CC	7051012100	310
	IPV 56 PNS OC	7051012200	310
	IPV 56 PNS PC	7051012300	310

PNEUMATIC ACTUATION ISO 2



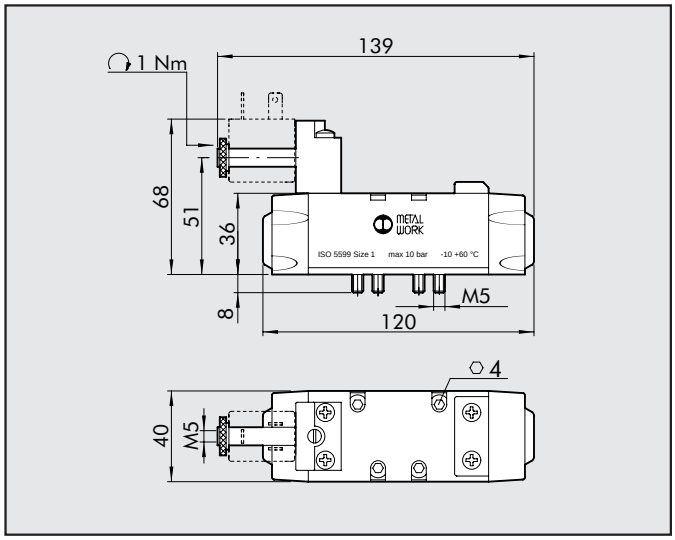
Symbol	Abbrev.	Code	Weight [g]
	IPV 65 PNS OO	7052011100	705
	IPV 65 PNB OO	7052011200	705
	IPV 65 PND OO	7052011300	705
	IPV 66 PNS CC	7052012100	705
	IPV 66 PNS OC	7052012200	705
	IPV 66 PNS PC	7052012300	705

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV

TECHNICAL DATA	ISO 1	ISO 2
Operating pressure:		
• monostable	2.5÷10 bar	
• bistable	1÷10 bar	
• pilot-assisted	Vacuum ÷ 10 bar	
Minimum pilot pressure	2.5 bar	
Operating temperature range	-10° to 60°C	
Nominal diameter	7.5 mm	12 mm
Conductance C	250 Nl/min · bar	657.14 Nl/min · bar
Critical ratio b	0.36 bar/bar	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	700 Nl/min	1800 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	1100 Nl/min	2700 Nl/min
TRA / TRR monostable at 6 Bar	24 ms / 50 ms	39 ms / 60 ms
TRA / TRR bistable at 6 Bar	80 ms / 80 ms	90 ms / 90 ms
Solenoid pilot:	Standards CNOMO	
Manual:	bistable on solenoid pilot	
	monostable on valve body	
Coils:	30mm side DIN 43650 Form A – ISO	
	22 mm side	
Maximum torque coil/nut	1 Nm	

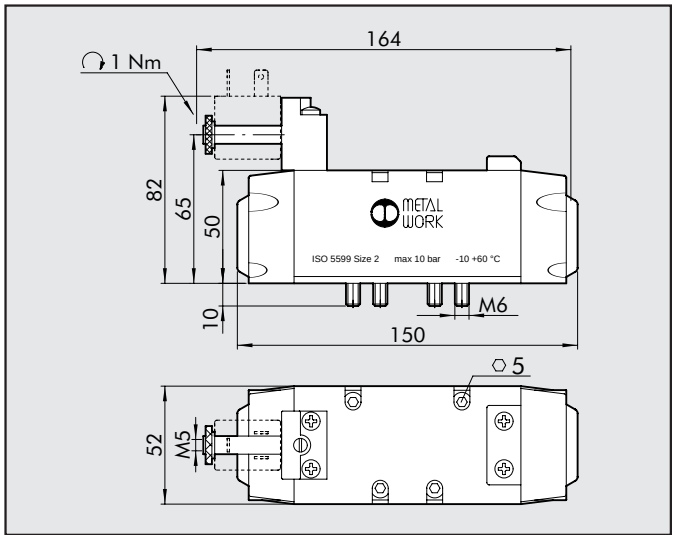


MONOSTABLE 5/2 ISO 1



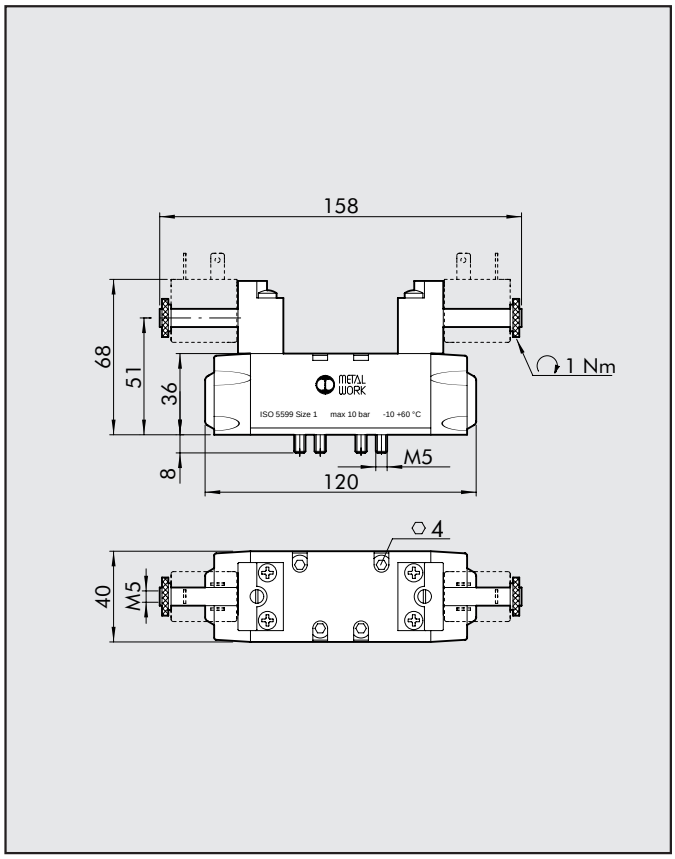
Symbol	Abbrev.	Code	Weight [g]
	ISV 55 SOS OO	7051021100	344
	ISV 55 SES OO	7051021400	344

MONOSTABLE 5/2 ISO 2



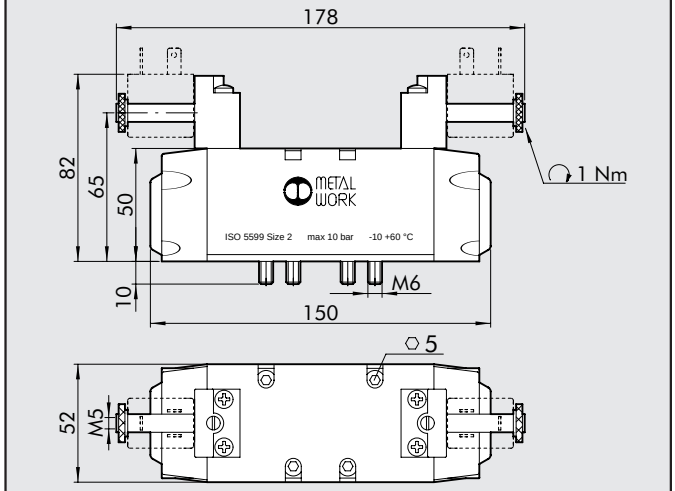
Symbol	Abbrev.	Code	Weight [g]
	ISV 65 SOS OO	7052021100	715
	ISV 65 SES OO	7052021400	715

BISTABLE 5/2 ISO 1
MONOSTABLE 5/3 ISO 1



Symbol	Abbrev.	Code	Weight [g]
	ISV 55 SOB OO	7051021200	388
	ISV 55 SOD OO	7051021300	375
	ISV 56 SOS CC	7051022100	372
	ISV 56 SOS OC	7051022200	372
	ISV 56 SOS PC	7051022300	372
	ISV 55 SEB OO	7051021500	388
	ISV 55 SED OO	7051021600	375
	ISV 56 SES CC	7051022400	372
	ISV 56 SES OC	7051022500	372
	ISV 56 SES PC	7051022600	372

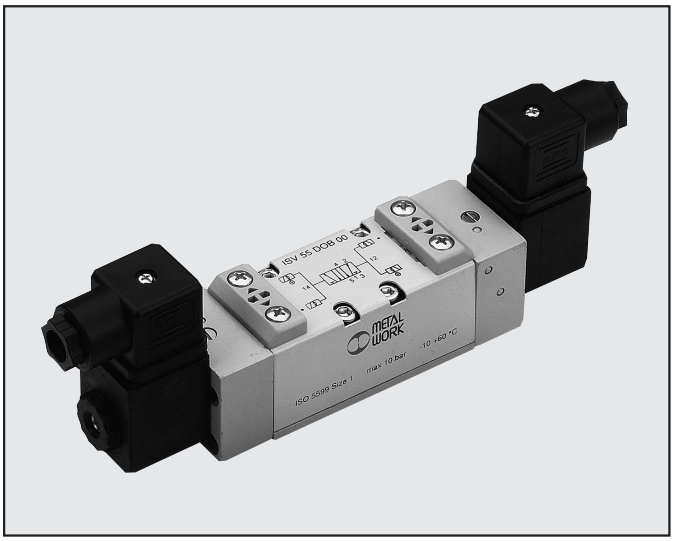
BISTABLE 5/2 ISO 2
MONOSTABLE 5/3 ISO 2



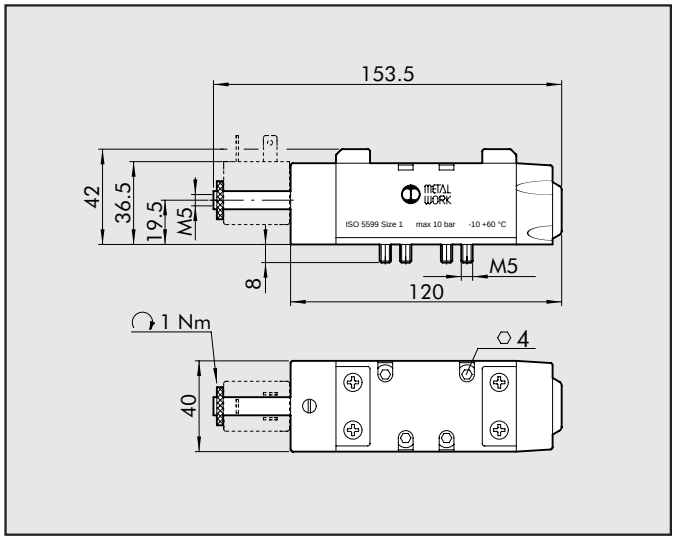
Symbol	Abbrev.	Code	Weight [g]
	ISV 65 SOB OO	7052021200	740
	ISV 65 SOD OO	7052021300	710
	ISV 66 SOS CC	7052022100	720
	ISV 66 SOS OC	7052022200	720
	ISV 66 SOS PC	7052022300	720
	ISV 65 SEB OO	7052021500	740
	ISV 65 SED OO	7052021600	710
	ISV 66 SES CC	7052022400	720
	ISV 66 SES OC	7052022500	720
	ISV 66 SES PC	7052022600	720

VALVES ISO 5599/1, PNEUMATIC, SERIES ISV WITH IN-LINE SOLENOID PILOT

TECHNICAL DATA	ISO 1
Operating pressure:	
• monostable	2.5-10 bar
• bistable	1-10 bar
• pilot-assisted	Vacuum – 10 bar
Minimum pilot pressure	2.5 bar
Operating temperature range	-10° to 60°C
Nominal diameter	7.5 mm
Conductance C	250 Nl/min · bar
Critical ratio b	0.36 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	700 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	1100 Nl/min
TRA / TRR monostable at 6 Bar	24 ms / 50 ms
TRA / TRR bistable at 6 Bar	80 ms / 80 ms
Solenoid pilot:	In line pilot
Manual:	bistable on solenoid pilot
Coils:	30mm side DIN 43650 Form A – ISO
	22 mm side
Maximum torque coil/nut	1 Nm

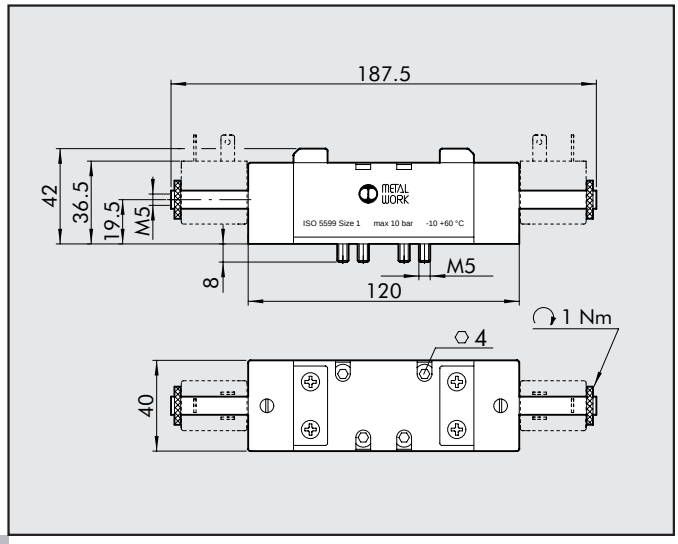


MONOSTABLE 5/2 ISO 1



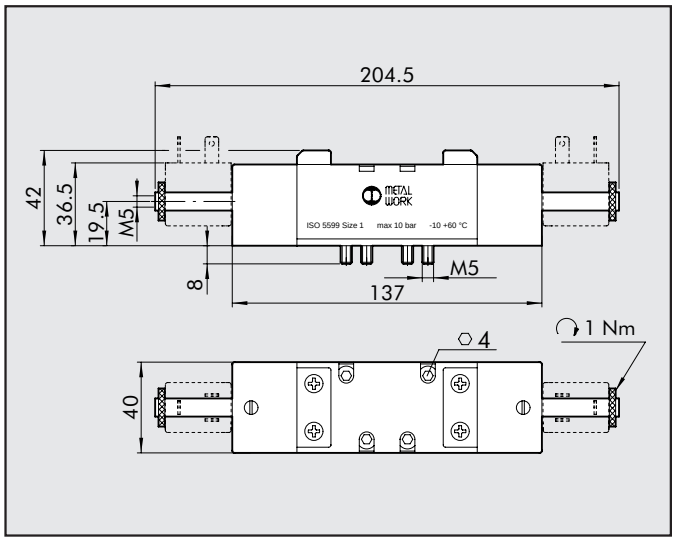
Symbol	Abbrev.	Code	Weight [g]
	ISV 55 DOS OO	7053021100	396
	ISV 55 DES OO	7053021400	396

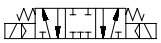
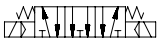
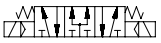
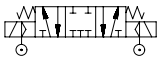
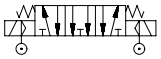
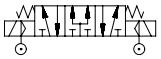
BISTABLE 5/2 ISO 1



Symbol	Abbrev.	Code	Weight [g]
	ISV 55 DOB OO	7053021200	450
	ISV 55 DEB OO	7053021500	450

MONOSTABLE 5/3 ISO 1

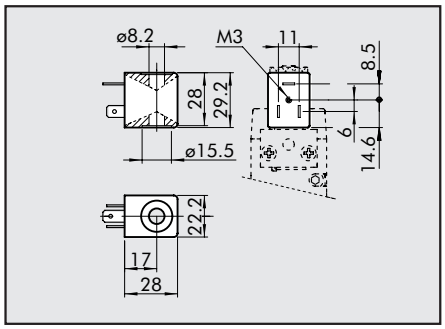


Symbol	Abbrev.	Code	Weight [g]
	ISV 56 DOS CC	7053022100	517
	ISV 56 DOS OC	7053022200	516
	ISV 56 DOS PC	7053022300	516
	ISV 56 DES CC	7053022400	517
	ISV 56 DES OC	7053022500	516
	ISV 56 DES PC	7053022600	515

NOTES

COILS AND CONNECTORS FOR ISO 5599/1 SOLENOID VALVES SERIES ISV

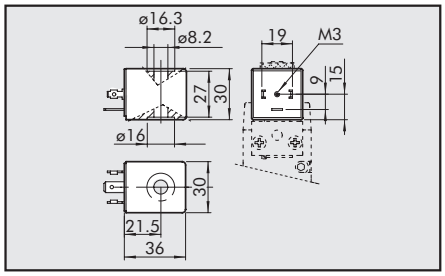
COILS SIDE 22 mm FOR ISO 5599/1 SOLENOID VALVES



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: 70°C at 20°C – Ambient temperature

Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC	W0215000151
24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC	W0215000101
24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC	W0215000111
110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC	W0215000121
220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC	W0215000131

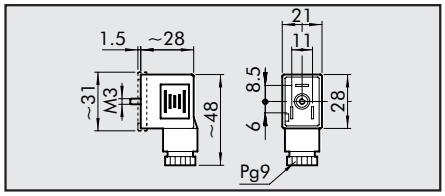
COILS SIDE 30 mm



- electric contact DIN43650 shape A – ISO 4400
- Voltage tolerance: -10% + 10%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector

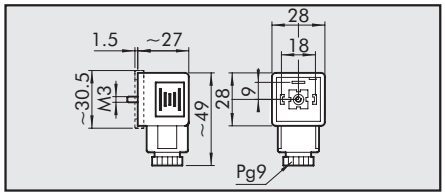
Nominal voltage	Absorption		Abbrev.	Code
	Inrush	Holding		
24Vcc	5W	4W	Coil 30 Ø8 4W-24VDC	W0210010100
24V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-24VAC	W0210011100
110V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-110VAC	W0210012100
220V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-220VAC	W0210013100

CONNECTOR FOR COILS SIDE 22 mm



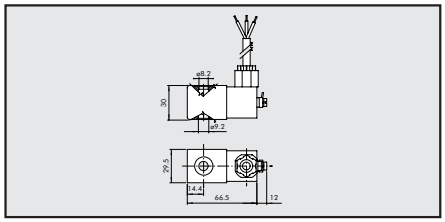
Colour	Ø Cable	Type	Code
Black	PG9	Standard	W0970510011
Transparent	PG9	LED 24V	W0970510012
Transparent	PG9	LED 110V	W0970510013
Transparent	PG9	LED 220V	W0970510014
Transparent	PG9	LED + VDR 24V	W0970510015
Transparent	PG9	LED + VDR 110V	W0970510016
Transparent	PG9	LED + VDR 220V	W0970510017

CONNECTOR FOR COILS SIDE 30 mm



Colour	Ø Cable	Type	Code
Black	PG9	Standard	W0970520033
Transparent	PG9	LED 24V	W0970520034
Transparent	PG9	LED 110V	W0970520035
Transparent	PG9	LED 220V	W0970520036
Transparent	PG9	LED + VDR 24V	W0970520037
Transparent	PG9	LED + VDR 110V	W0970520038
Transparent	PG9	LED + VDR 220V	W0970520039

KIT FOR COIL EEEXM



Code	Description
0227606913	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 3M
0227606915	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 5M
0227608013	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 3M
0227608015	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 5M
0227608023	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 3M
0227608025	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 5M
0227608033	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 3M
0227608035	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 5M

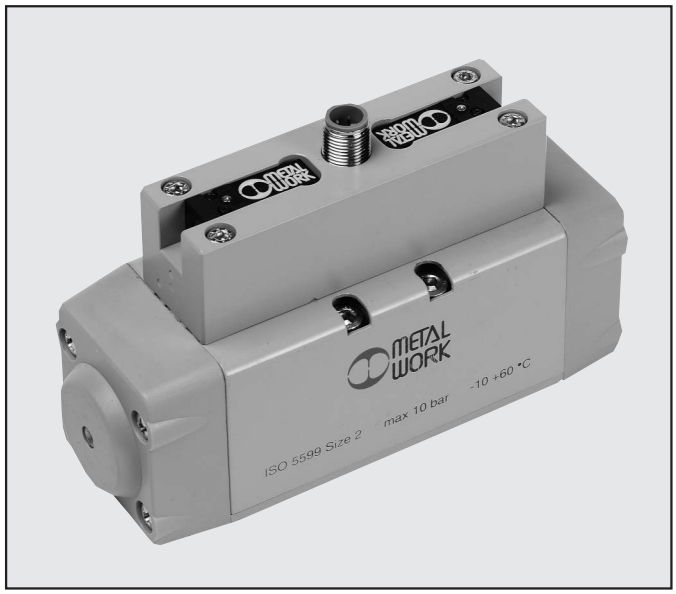
KIT FOR COILS SIDE 22 IP65



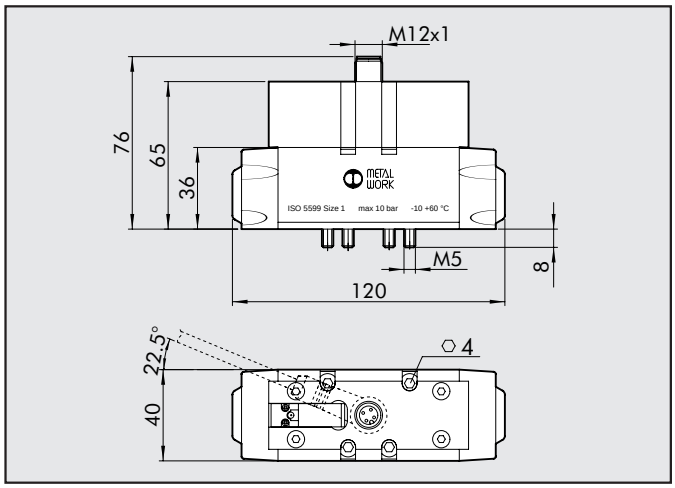
Code	Description
0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

VALVES ISO 5599/1, SOLENOID/PNEUMATIC, SERIES ISV WITH M12 CONNECTOR

TECHNICAL DATA	ISO 1	ISO 2
Operating pressure:		
• monostable	2.5÷10 bar	
• bistable	1÷10 bar	
• pilot-assisted	Vacuum – 10 bar	
Minimum pilot pressure	2.5 bar	
Operating temperature range	-10°÷ +60°C	
Nominal diameter	7.5 mm	12 mm
Conductance C	250 Nl/min · bar	657.14 Nl/min · bar
Critical ratio b	0.36 bar/bar	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	700 Nl/min	1800 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	1100 Nl/min	2700 Nl/min
TRA / TRR monostable at 6 Bar	22 ms / 60 ms	78 ms / 180 ms
Solenoid pilot:	with built-in coil	
Manual:	monostable on solenoid pilot	
	monostable on valve body	
Coil power	1,2 W	
Voltage	24 VDC ±10%	
Electrical connection	M12	
Degree of protection	IP65 EN60529	
Electrical protection	Transil	

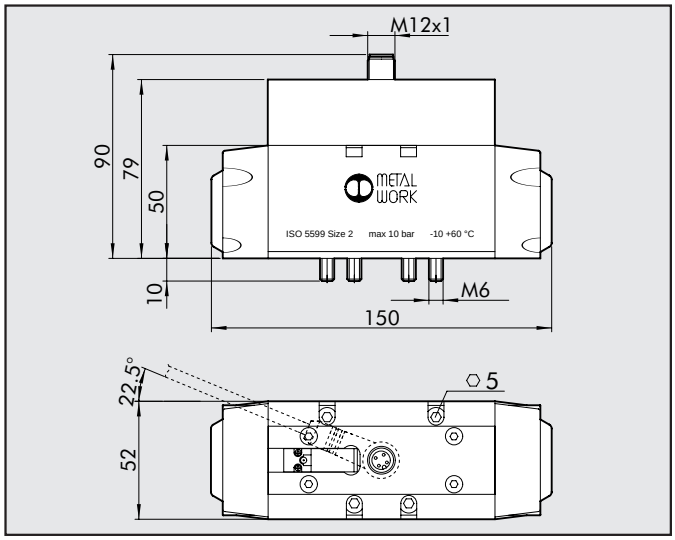


MONOSTABLE 5/2 ISO 1



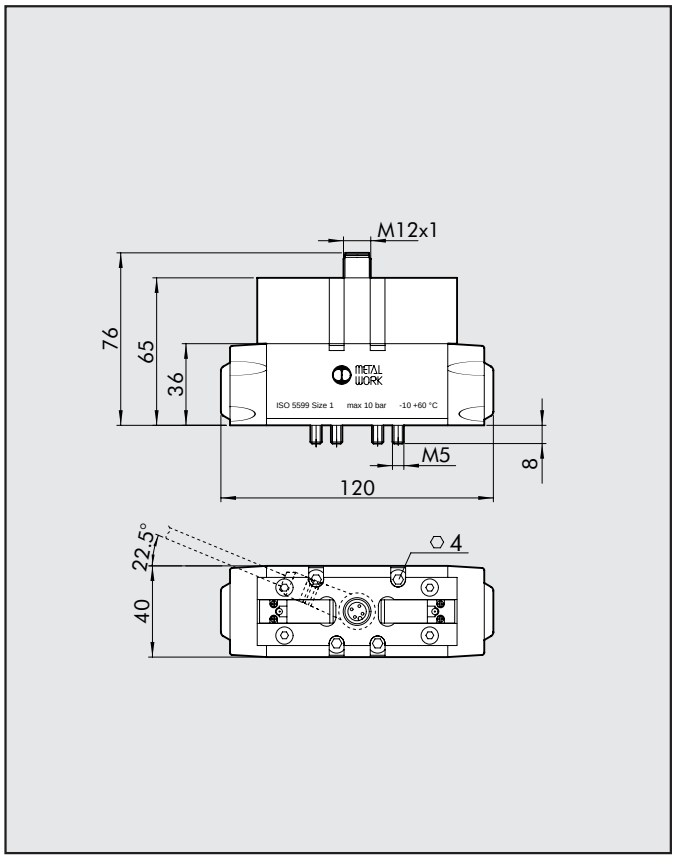
Symbol	Abbrev.	Code	Weight [g]
	ISV 55 COS OO	7054021100	508
	ISV 55 CES OO	7054021400	508

MONOSTABLE 5/2 ISO 2



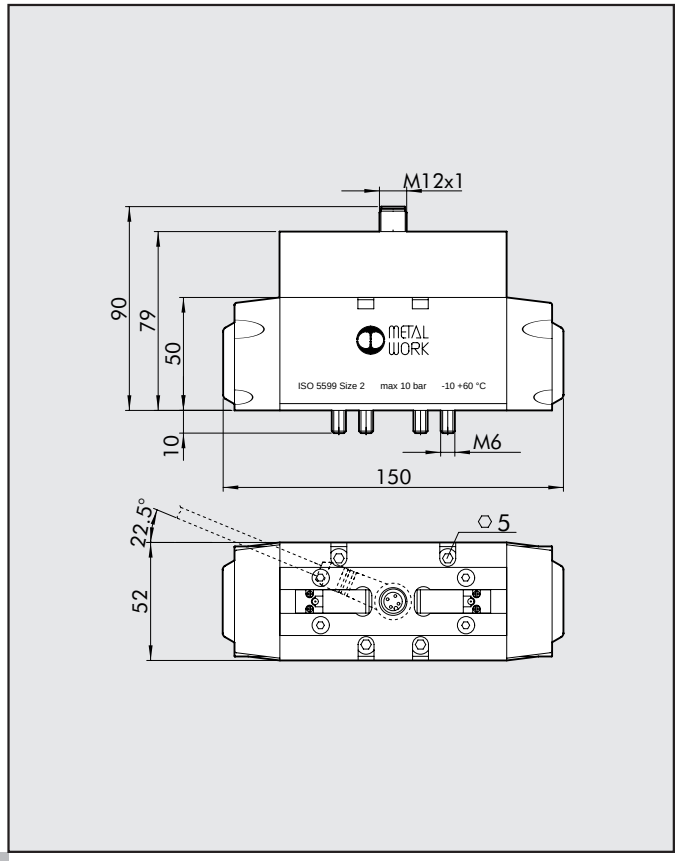
Symbol	Abbrev.	Code	Weight [g]
	ISV 65 COS OO	7055021100	901
	ISV 65 CES OO	7055021400	901

BISTABLE 5/2 ISO 1
MONOSTABLE 5/3 ISO 1



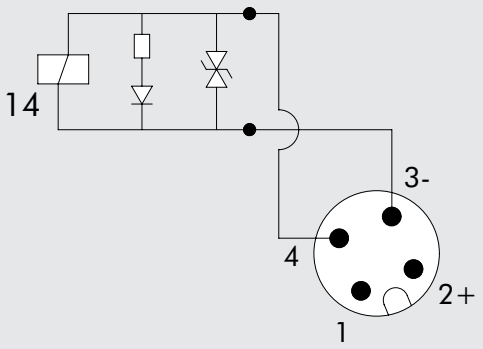
Symbol	Abbrev.	Code	Weight [g]
	ISV 55 COB OO	7054021200	512
	ISV 55 COD OO	7054021300	490
	ISV 56 COS CC	7054022100	496
	ISV 56 COS OC	7054022200	496
	ISV 56 COS PC	7054022300	496
	ISV 55 CEB OO	7054021500	512
	ISV 55 CED OO	7054021600	490
	ISV 56 CES CC	7054022400	496
	ISV 56 CES OC	7054022500	496
	ISV 56 CES PC	7054022600	496

BISTABLE 5/2 ISO 2
MONOSTABLE 5/3 ISO 2

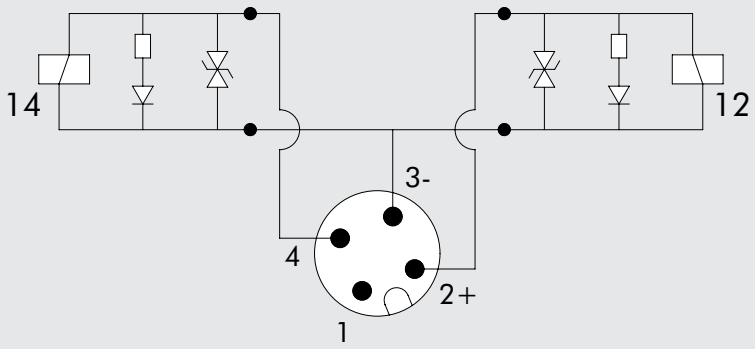


Symbol	Abbrev.	Code	Weight [g]
	ISV 65 COB OO	7055021200	860
	ISV 65 COD OO	7055021300	860
	ISV 66 COS CC	7055022100	868
	ISV 66 COS OC	7055022200	868
	ISV 66 COS PC	7055022300	868
	ISV 65 CEB OO	7055021500	860
	ISV 65 CED OO	7055021600	860
	ISV 66 CES CC	7055022400	868
	ISV 66 CES OC	7055022500	868
	ISV 66 CES PC	7055022600	868

WIRING DIAGRAM



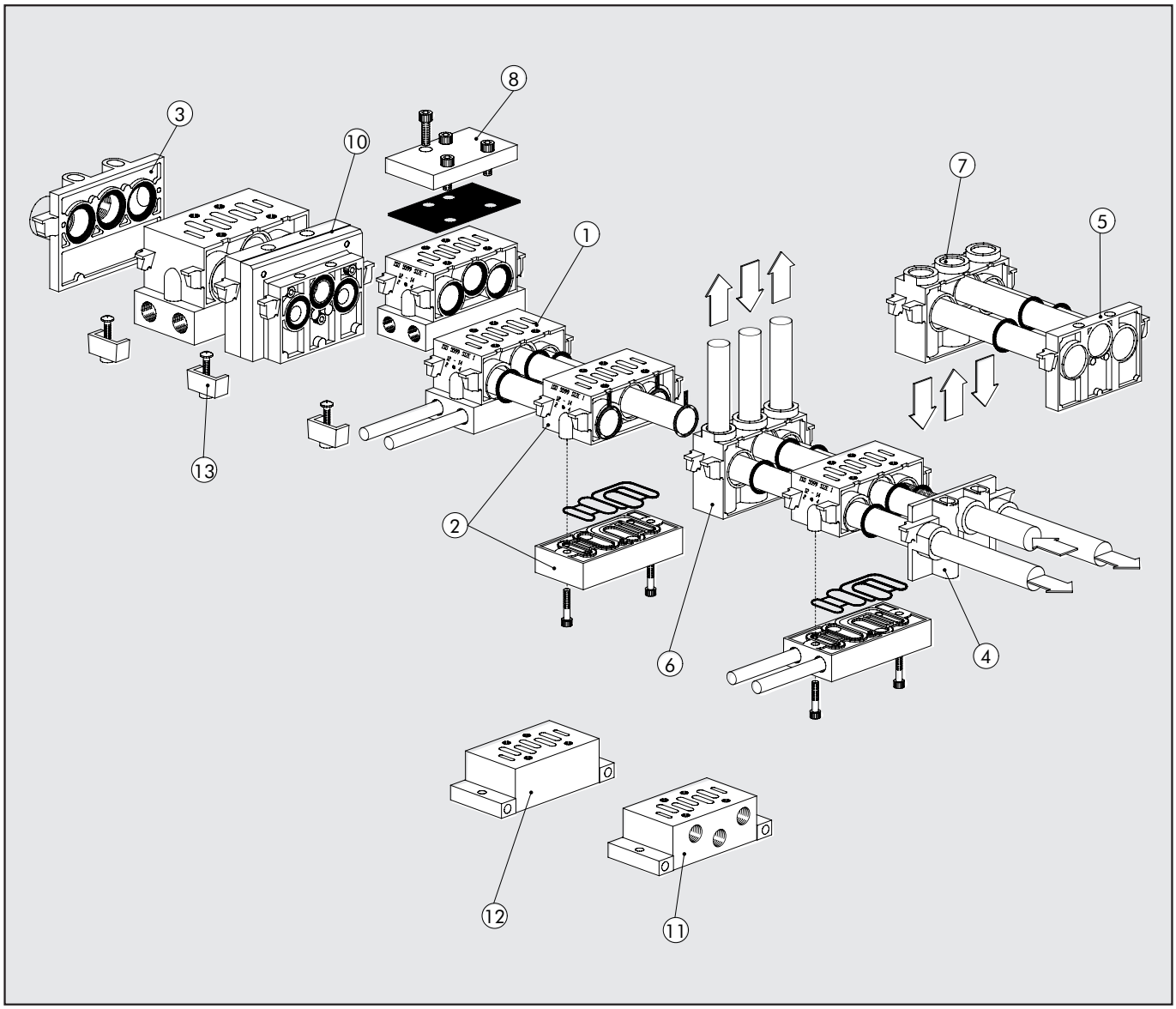
MONOSTABLE



BISTABLE

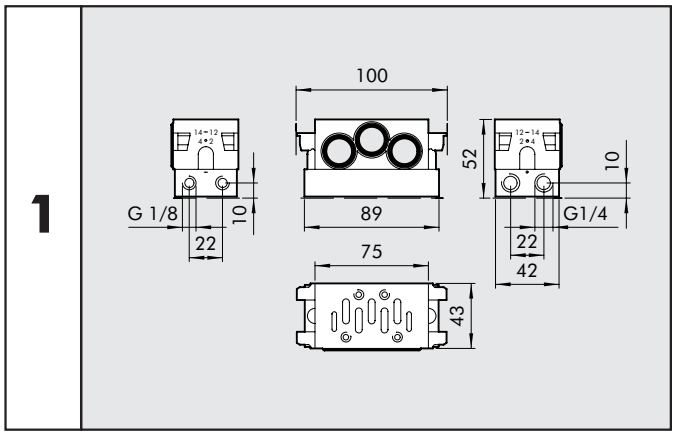
NOTES

BASES TO ISO 5599/1
FOR ISO 5599/1 VALVES SERIES IPV-ISV



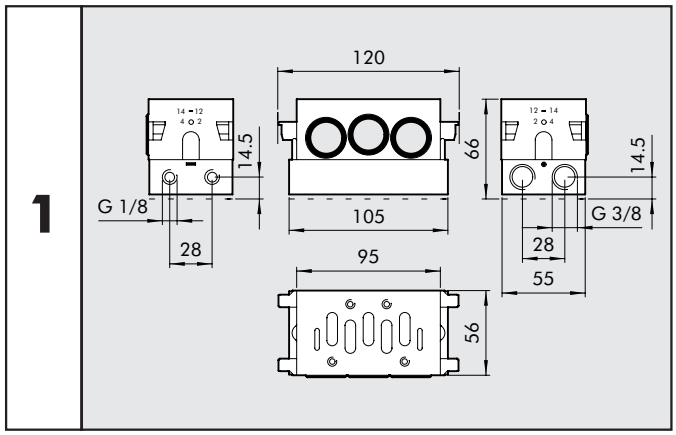
Ref.	Description	ISO 1 Code	ISO 2 Code
①	Manifold base – side ports	0228000150	0228001150
②	Manifold base with bottom ports	0228000155	0228001155
③	Input end plate	0228000200	0228001200
④	Additional input end plate	0228000201	0228001201
⑤	Blind end plate	0228000210	0228001210
⑥	Intermediate – top ports	0228000300	0228001300
⑦	Intermediate – back ports	0228000301	0228001301
⑧	Blanking plate	0228000500	0228001500
⑨	Intermediate diaphragm	0228000400	0228001400
⑩	ISO 1/ISO 2 port adapter	0228000600	–
⑪	Individual base – side ports	0228000100	0228001100
⑫	Base – bottom ports	0228000110	0228001110
⑬	Assembly kit	0228000700	0228001700

MANIFOLD BASE, SIDE PORTS, BMS-1



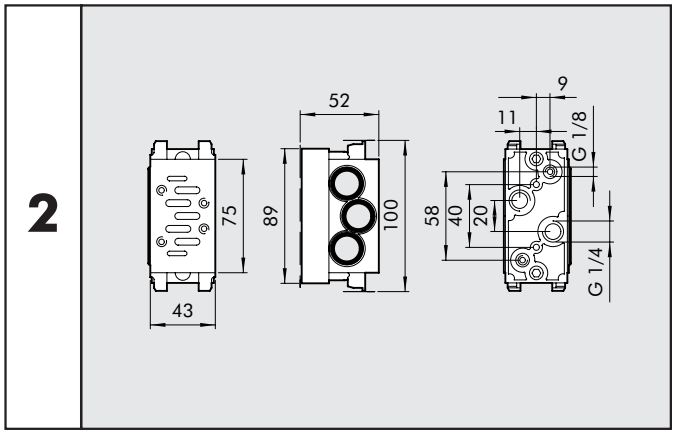
Code	Abbrev.	Weight [g]
0228000150	BMS-1	314

MANIFOLD BASE, SIDE PORTS, BMS-2



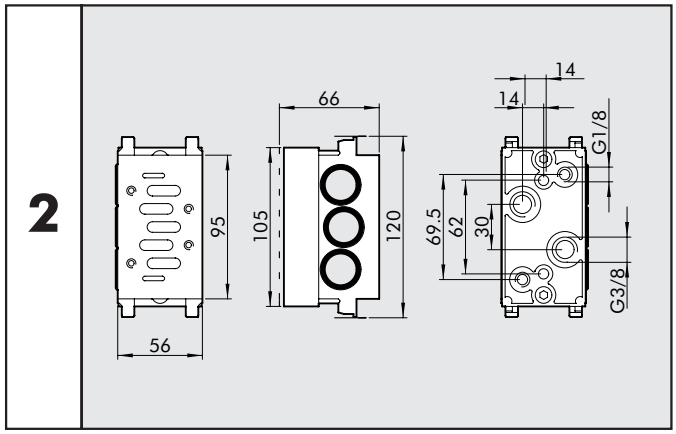
Code	Abbrev.	Weight [g]
0228001150	BMS-2	131

MANIFOLD BASE, BOTTOM PORTS, BMS-1



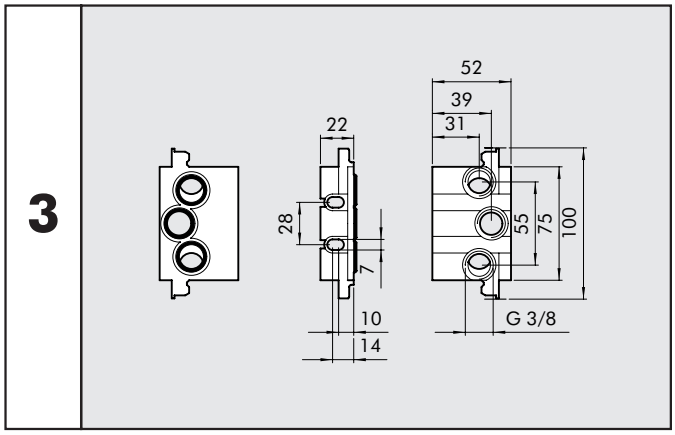
Code	Abbrev.	Weight [g]
0228000155	BMB-1	314

MANIFOLD BASE, BOTTOM PORTS, BMS-2



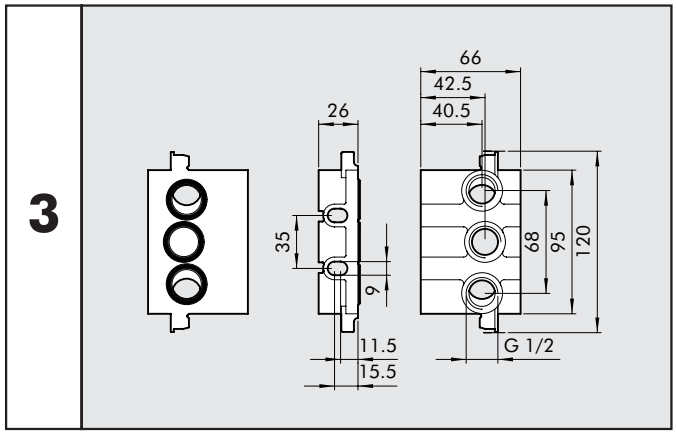
Code	Abbrev.	Weight [g]
0228001155	BMB-2	505

INPUT END PLATE TIN-1



Code	Abbrev.	Weight [g]
0228000200	TIN-1	129

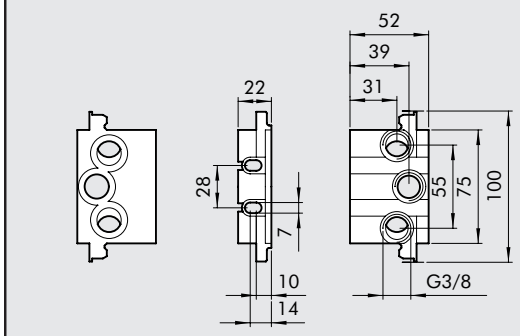
INPUT END PLATE TIN-2



Code	Abbrev.	Weight [g]
0228001200	TIN-2	206

ADDITIONAL INPUT END PLATE TIS-1

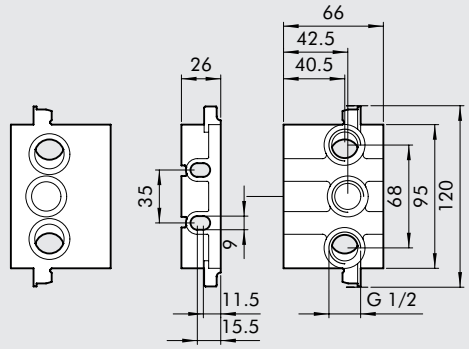
4



Code	Abbrev.	Weight [g]
0228000201	TIS-1	84

ADDITIONAL INPUT END PLATE TIS-2

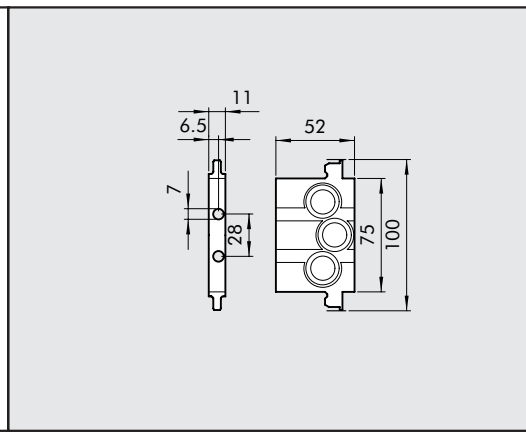
4



Code	Abbrev.	Weight [g]
0228001201	TIS-2	162

BLIND END PLATE TCI-1

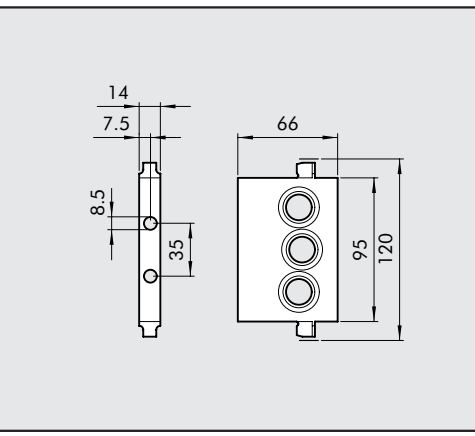
5



Code	Abbrev.	Weight [g]
0228000210	TC1-1	79

BLIND END PLATE TCI-2

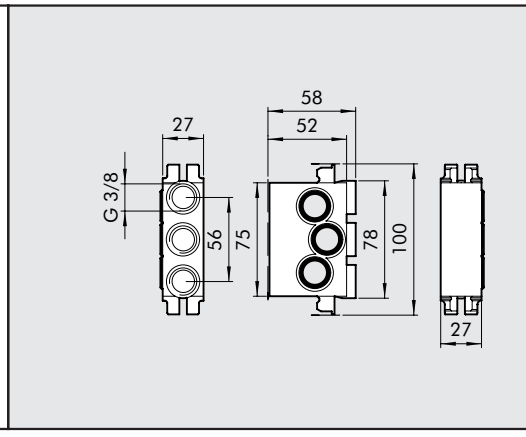
5



Code	Abbrev.	Weight [g]
0228001210	TC1-2	130

INTERMEDIATE TOP PORTS TIA-1

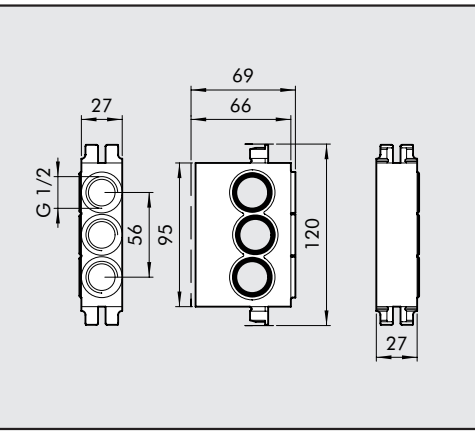
6



Code	Abbrev.	Weight [g]
0228000300	TIA-1	235

INTERMEDIATE TOP PORTS TIA-2

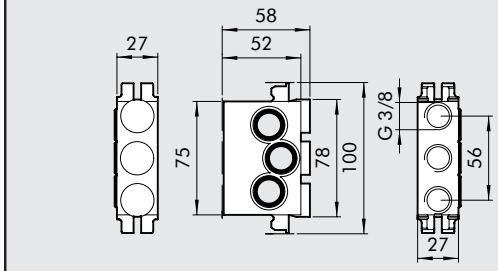
6



Code	Abbrev.	Weight [g]
0228001300	TIA-2	299

INTERMEDIATE REAR PORTS TIB-1

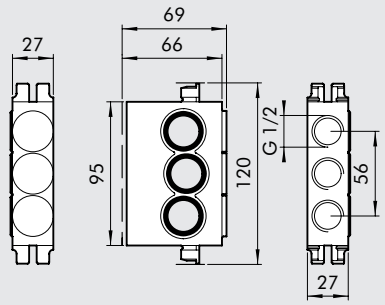
7



Code	Abbrev.	Weight [g]
0228000301	TIB-1	237

INTERMEDIATE REAR PORTS TIB-2

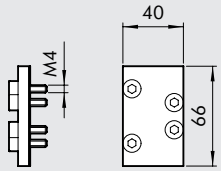
7



Code	Abbrev.	Weight [g]
0228001301	TIB-2	299

BLANKING PLATE PCS-1

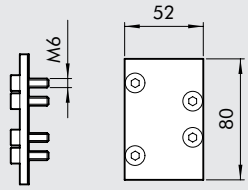
8



Code	Abbrev.	Weight [g]
0228000500	PCS-1	47

BLANKING PLATE PCS-2

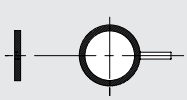
8



Code	Abbrev.	Weight [g]
0228001500	PCS-2	96

INTERMEDIATE DIAPHRAGM DIA-1 DIA-2

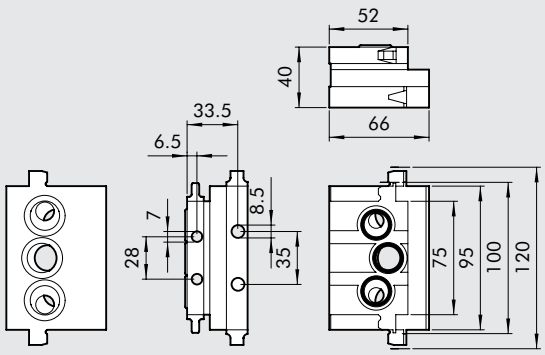
9



Code	Abbrev.	Weight [g]
0228000400	DIA-1	4
0228001400	DIA-2	7

DIMENSION ADAPTER ADT 1-2

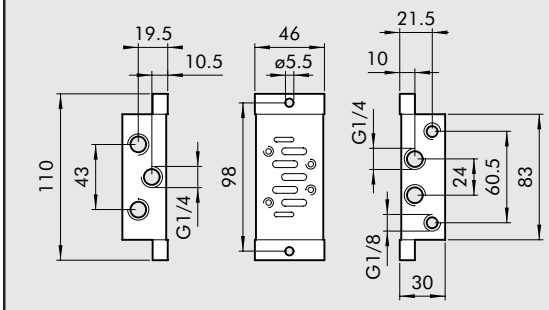
10



Code	Abbrev.	Weight [g]
0228000600	ADT 1-2	454

INDIVIDUAL BASE SIDE PORTS BSS-1

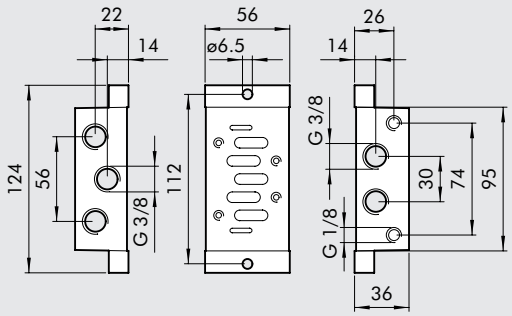
11



Code	Abbrev.	Weight [g]
0228000100	BSS-1	165

INDIVIDUAL BASE SIDE PORTS BSS-2

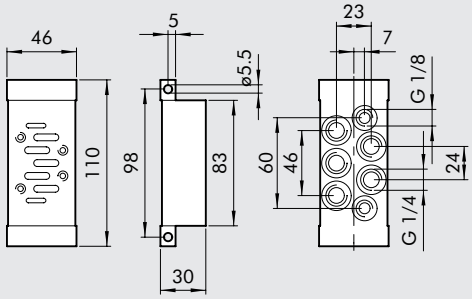
11



Code	Abbrev.	Weight [g]
0228001100	BSS-2	257

INDIVIDUAL BASE BOTTOM PORTS BSB-1

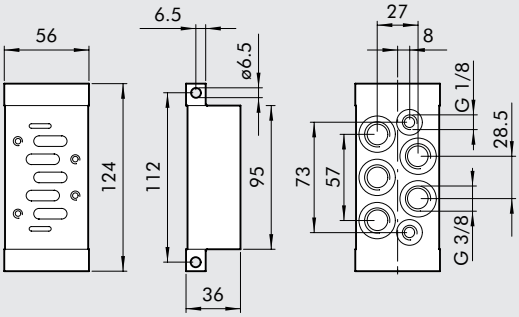
12



Code	Abbrev.	Weight [g]
0228000110	BSB-1	197

INDIVIDUAL BASE BOTTOM PORTS BSB-2

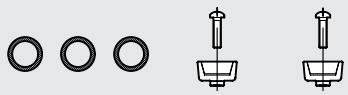
12



Code	Abbrev.	Weight [g]
0228001110	BSB-2	304

ASSEMBLY KIT ISO 1

13



Code	Abbrev.	Weight [g]
0228000700	KIT ISO 1	47

ASSEMBLY KIT ISO 2

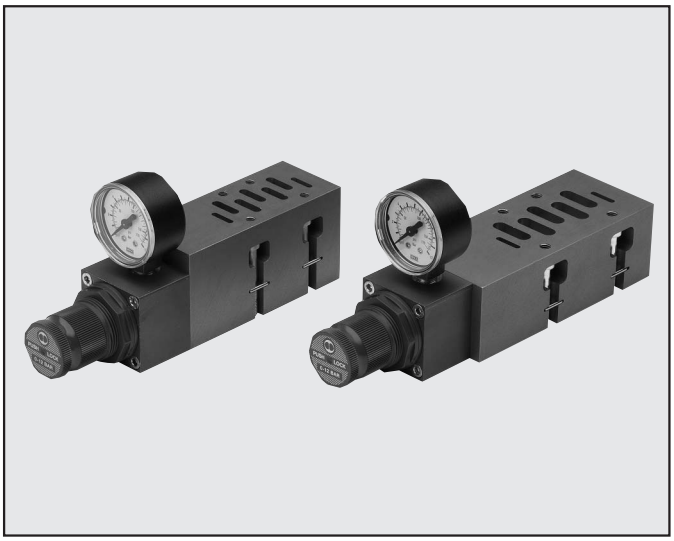
13



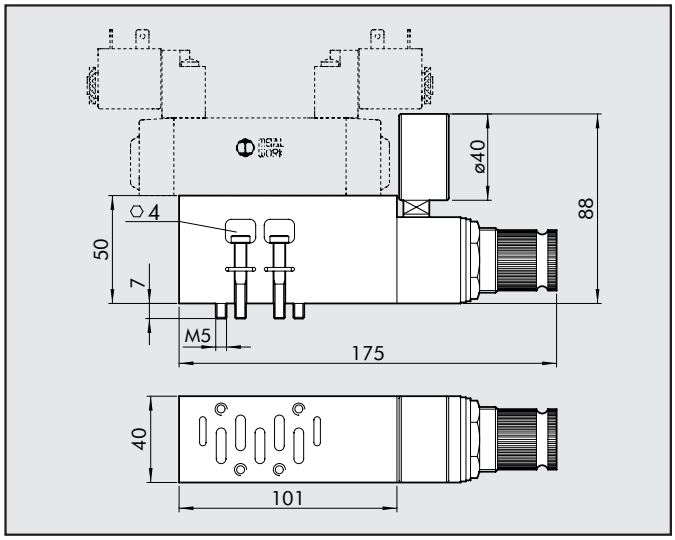
Code	Abbrev.	Weight [g]
0228001700	KIT ISO 2	47

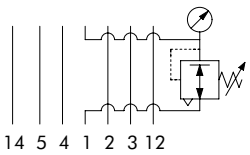
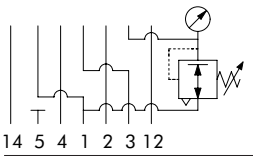
SANDWICH REGULATORS FOR ISO 5599/1 BASES

TECHNICAL DATA	ISO 1	ISO 2
Max upstream pressure	13 bar	
Pressure range	0÷12 bar	
Pressure gauge range	0÷12 bar	
Flow rate at 6 Bar ΔP 1 Bar	400 Nl/min	550 Nl/min
Operating temperature range	–10÷+60°C	
Fixing screw on ISO 5599/1 base	M5 ant-extraction	M6 anti-extraction
Installation	in any position	
Instructions for use	Downstream pressure must always be set to increasing values	



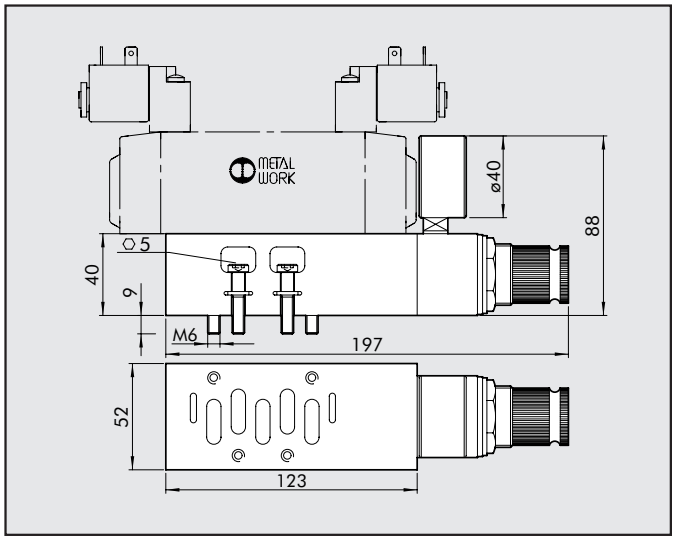
SANDWICH REGULATOR FOR ISO 1 VALVES

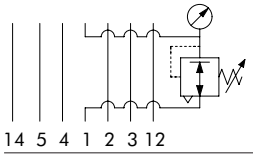
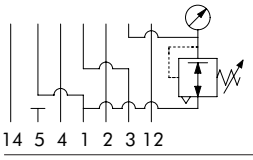


Symbol	Abbrev.	Code	Weight [g]
	0228000804	Sandwich regulator 1 0÷12 bar ISO 1	760
	0228000814*	Sandwich regulator 3 0÷12 bar ISO 1	760

*A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure

SANDWICH REGULATOR FOR ISO 2 VALVES

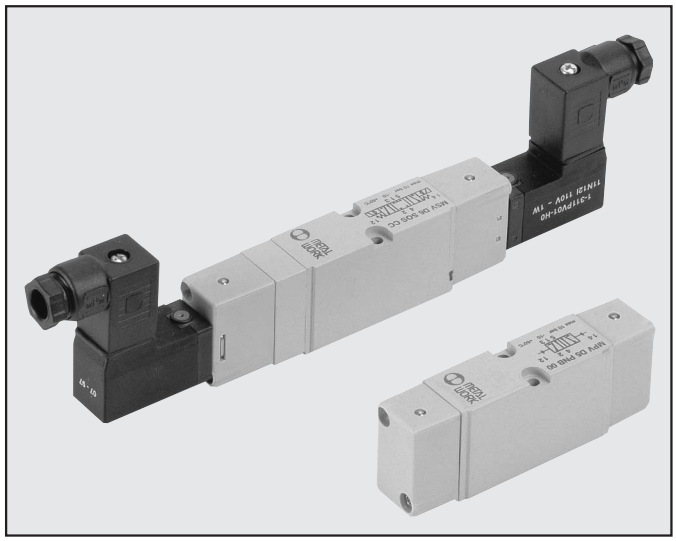


Symbol	Code	Description	Weight [g]
	0228001804	Sandwich regulator 1 0÷12 bar ISO 2	900
	0228001814*	Sandwich regulator 3 0÷12 bar ISO 2	900

*A pilot-assisted valve needs to be used since port 1 relieves pressure, it is not under pressure

VALVES TO VDMA 24563-02
SERIES MACH 18

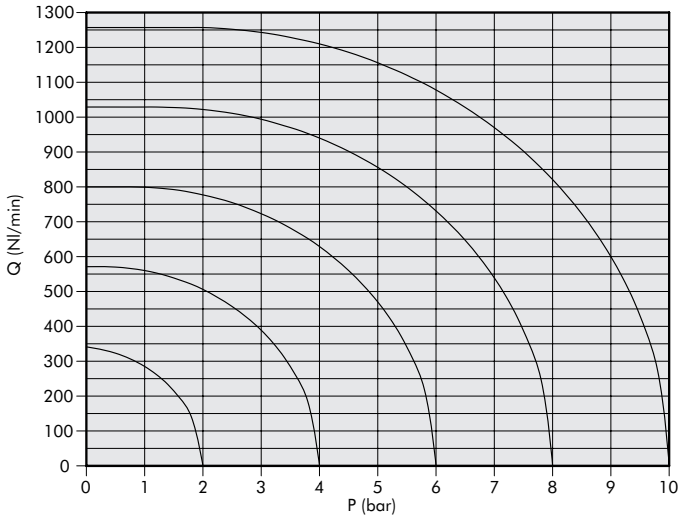
The MACH 18 valve is designed to VDMA 24563-02-18 mm. It comes in 5-way versions with 2 and 3 positions with solenoid or pneumatic actuation.



TECHNICAL DATA

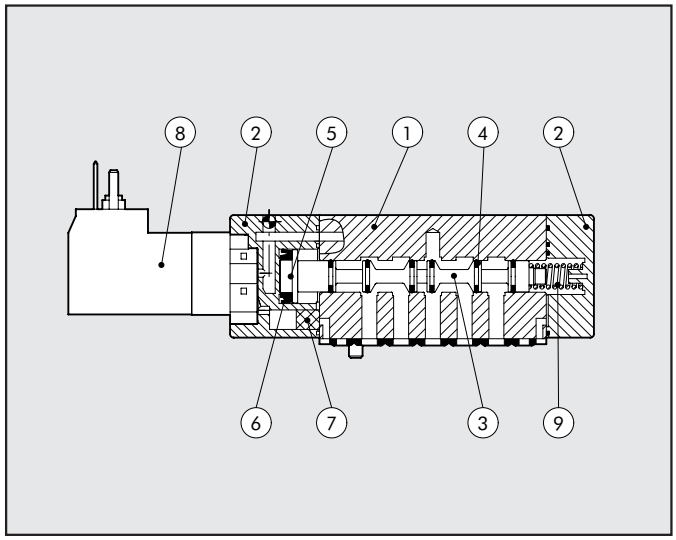
Fluid	Filtered air without lubrication;
	lubrication, if used, must be continuous
Operating pressure:	
• monostable	1.5÷10 bar
• monostable 5/3	Vacuum to 10 bar – 1.9 to 10 bar solenoid/pneumatic
• bistable	Vacuum to 10 bar – 1 to 10 bar solenoid/pneumatic
• pilot-assisted	Vacuum to 10 bar
Minimum pilot pressure	1.9-10 bar
Operating temperature range	-10° to 60°C
Conductance C	114.86 Nl/min · bar
Critical ratio b	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	340 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	470 Nl/min
Installation	in any position (vertical assembly is not recommended for bistable valves subjected to vibration)
Assembly	on manifold bases
Recommended lubricant	ISO and UNI FD 22
Solenoid pilot	integrated coil to DIN 43650 C-shape
Manual	monostable on solenoid pilot
	(with manual monostable on request)

FLOW CHART

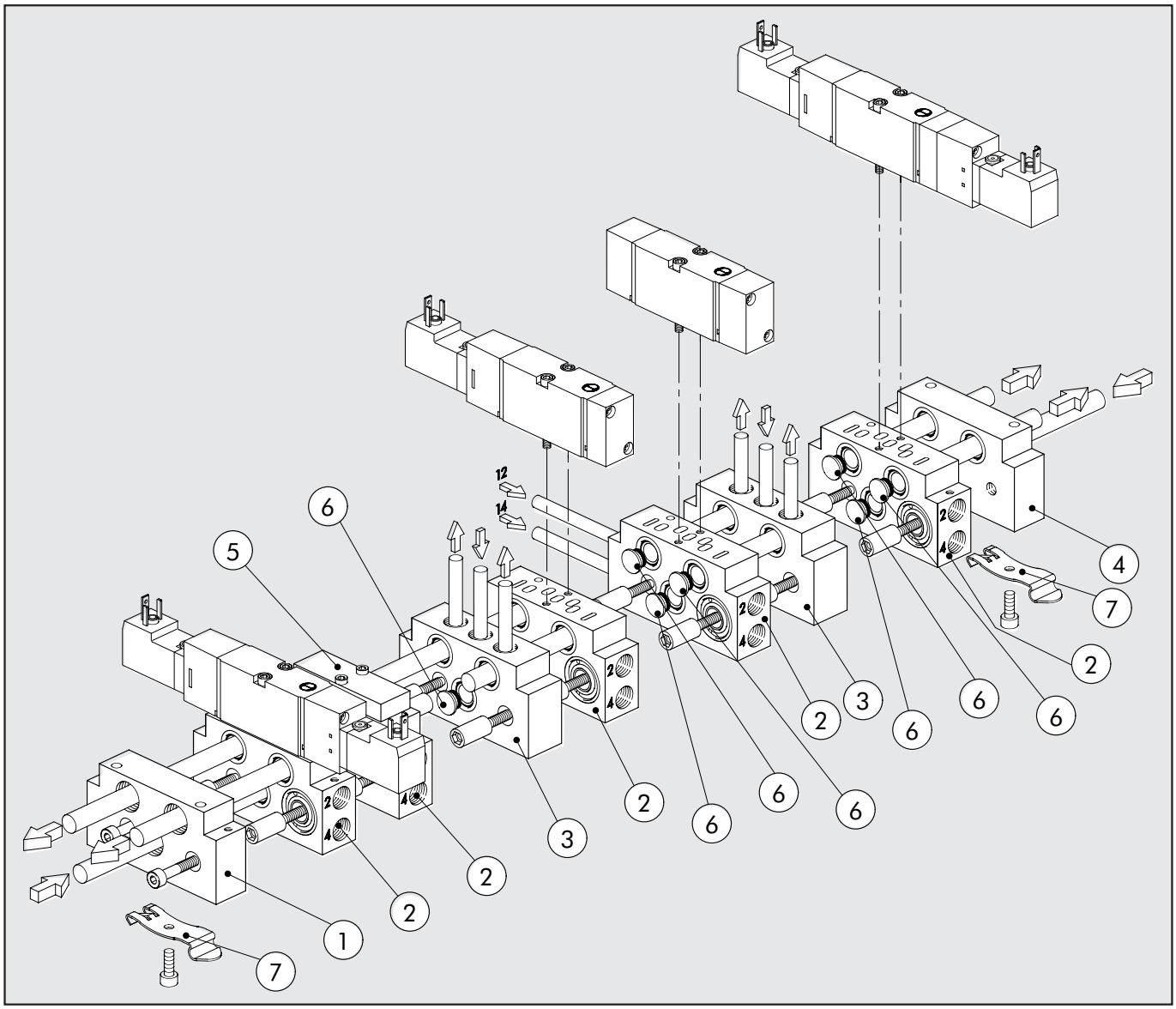


COMPONENTS

① VALVE BODY: Aluminium
② CONTROL/END CAP: HOSTAFORM®
③ SPOOL: aluminium
④ GASKETS: Polyurethane
⑤ PISTON: HOSTAFORM®
⑥ PISTON GASKET: Polyurethane
⑦ FILTER: sintered bronze
⑧ PILOT: with integrated coil
⑨ SPRING: special steel



MODULARITY



Ref.	Description	Code
①	VDMA input end plate kit	0227100201
②	Manifold side base kit size 2	0227200150
③	VDMA intermediate bases size 2	0227200300
④	VDMA output end plate kit	0227100200
⑤	VDMA blanking plate size 2	0227200500
⑥	Intermediate diaphragm	0227100000
⑦	Connection bracket on DIN bar	0227300600

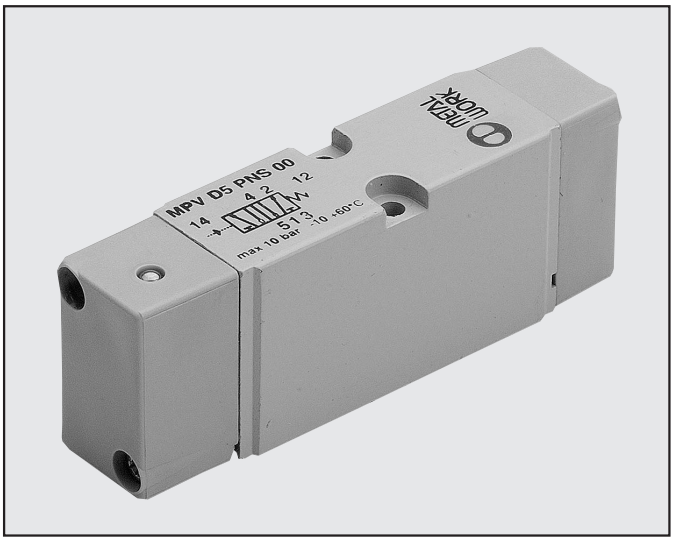
KEY TO CODES

M S V	D	5	S O	S	O O	24VDC
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS	VOLTAGE
MSV electropneumatic MPV pneumatic	D VDMA 24563-02	5 5/2 6 5/3	SO solenoid/ pneumatic SE solenoid-pilot-assisted PN pneumatic	S mechanical spring B bistable	OO 5/2 CC closed centres OC open centres PC pressure centres	24VDC 24VAC 110VAC 220VAC

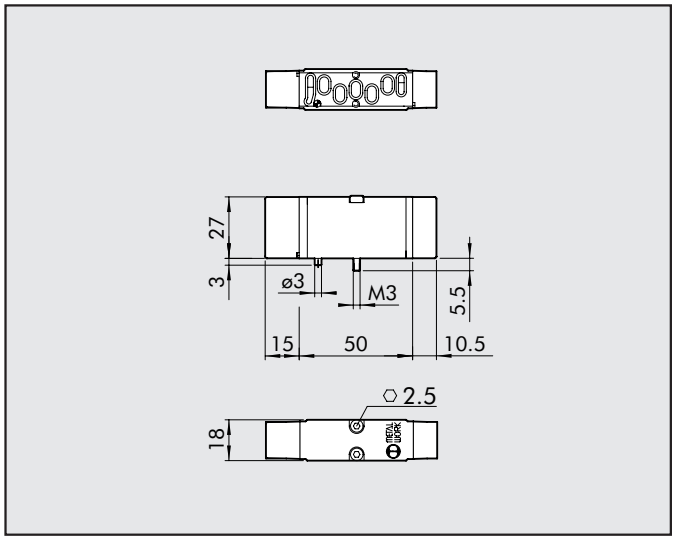
MACH 18 VDMA 24563-02
MPV PNEUMATIC

TECHNICAL DATA

Operating pressure:	Vacuum ÷ 10 bar
• monostable	1.5 bar
• monostable 5/3	1.9 bar
• bistable	1 bar
Conductance C	114.86 Nl/min · bar
Critical ratio b	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	340 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	470 Nl/min
Actuation response times at 6 Bar:	
• monostable	4 ms
• bistable	4 ms
Repositioning response times at 6 Bar:	
• monostable	8,4 ms
• bistable	4 ms
Operating pressure	-10° to 60°C

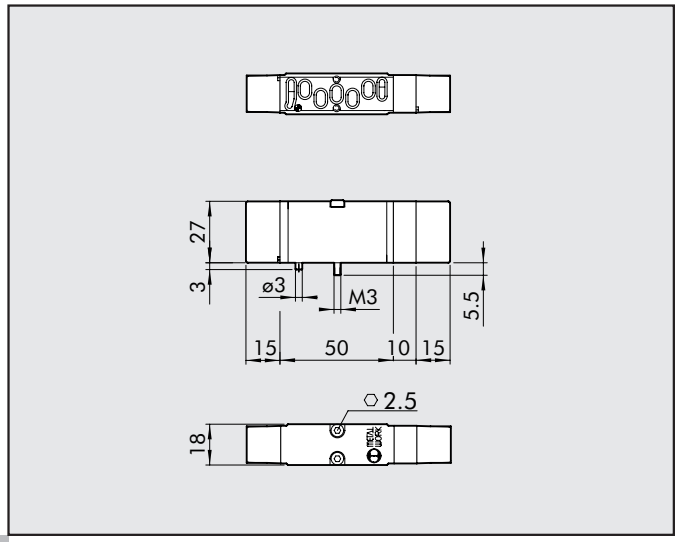


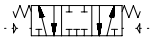
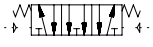
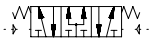
MONOSTABLE 5/2



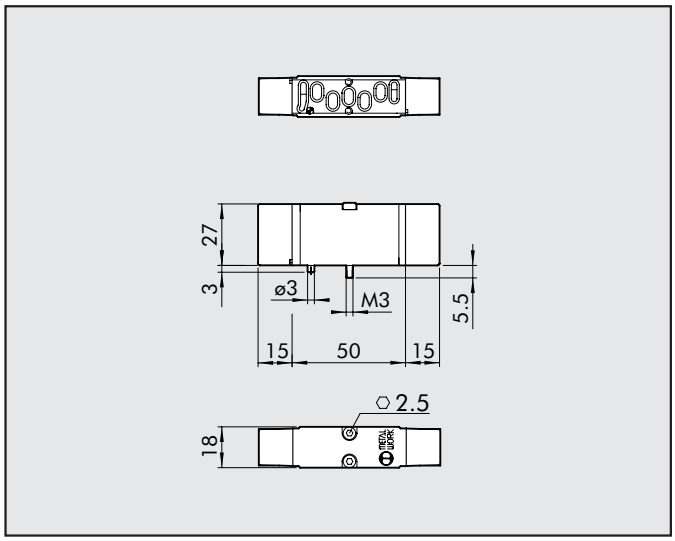
Symbol	Abbrev.	Code	Weight [g]
	MPV D5 PNS 00	7063010130	80

MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MPV D6 PNS CC	7063010210	93
	MPV D6 PNS OC	7063010310	93
	MPV D6 PNS PC	7063010410	93

BISTABLE 5/2



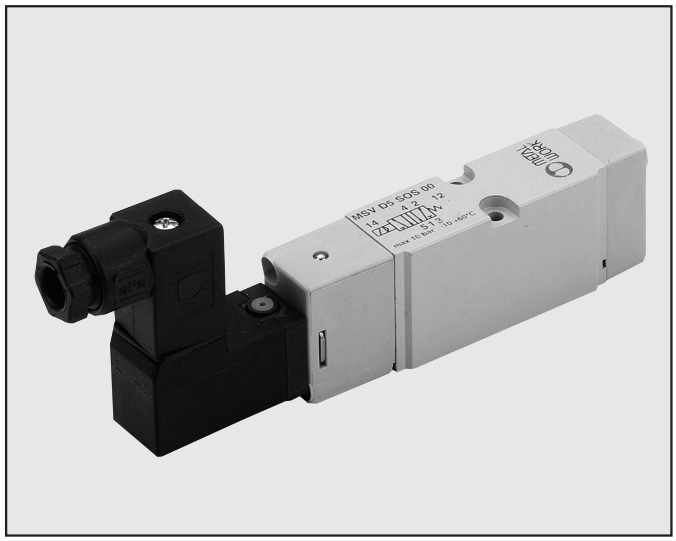
Symbol	Abbrev.	Code	Weight [g]
	MPV D5 PNB OO	7063010110	78

NOTES

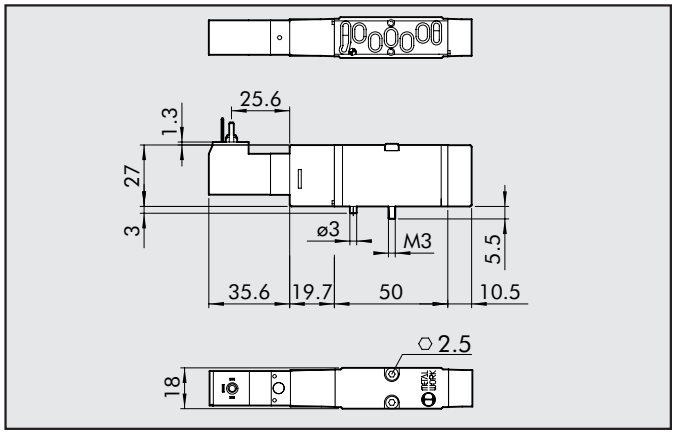
MACH 18 VDMA 24563-02
SOLENOID/PNEUMATIC MSV

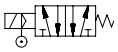
TECHNICAL DATA

Operating pressure:	
• monostable	1.9÷10 bar
• bistable	1÷10 bar
• pilot-assisted	Vacuum ÷10 bar
Minimum pilot pressure	2 bar
Operating temperature range	-10°÷ +60°C
Conductance C	114.86 Nl/min · bar
Critical ratio b	0.25 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	340 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	470 Nl/min
TRA/TRR monostable at 6 Bar	12 ms / 26 ms
TRA /TRR bistable at 6 Bar	21 ms / 21 ms
Type of manual actuation	monostable on solenoid pilot
	(with bistable manual valve on request)
Pilot with integrated coil	24 VDC - 24VAC - 110 VAC - 220 VAC
Power	1 W
Voltage tolerance	-10%÷ -15%
Insulation class	F 155
Degree of protection	IP 65 EN60529 with connector
Solenoid rating	100% ED
Electrical contacts	DIN 43650 C Shape

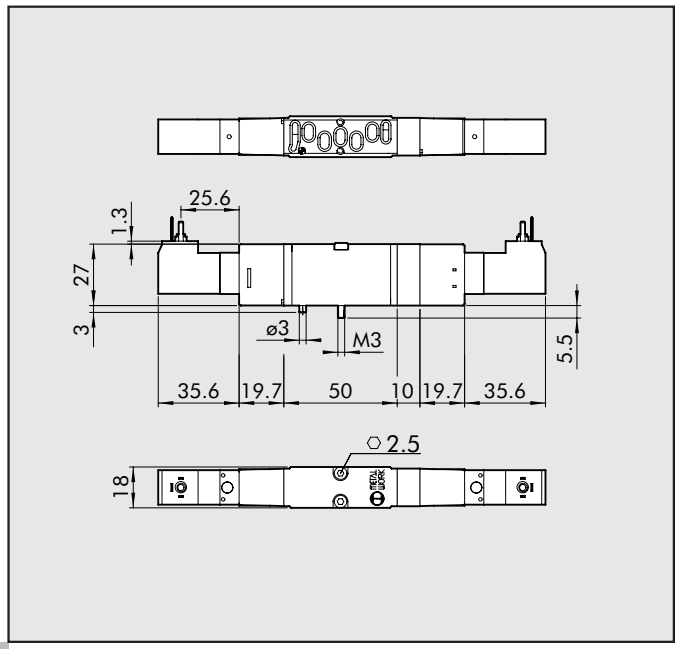


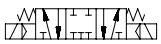
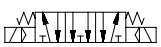
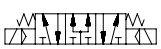
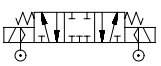
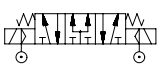
MONOSTABLE 5/2



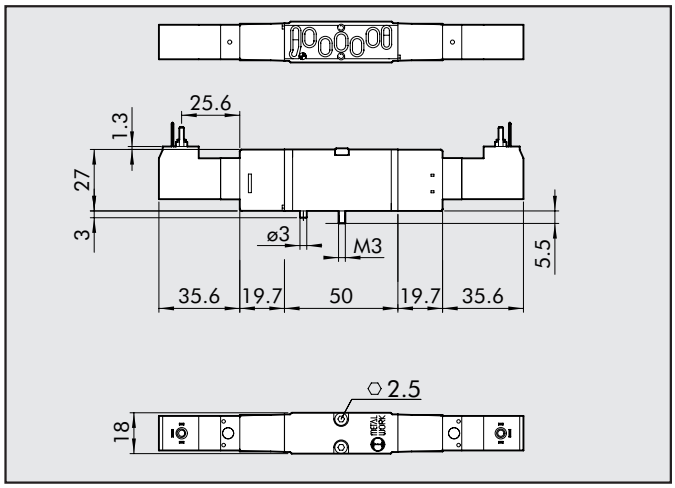
Symbol	Abbrev.	Code	Weight [g]
	MSV D5 SOS 00 24VDC	7063020132	110
	MSV D5 SOS 00 24VAC	7063020133	110
	MSV D5 SOS 00 110VAC	7063020134	110
	MSV D5 SOS 00 220VAC	7063020135	110
	MSV D5 SES 00 24VDC	7063030132	110
	MSV D5 SES 00 24VAC	7063030133	110
	MSV D5 SES 00 110VAC	7063030134	110
	MSV D5 SES 00 220VAC	7063030135	110

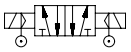
MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MSV D6 SOS CC 24VDC	7063020212	156
	MSV D6 SOS CC 24VAC	7063020213	156
	MSV D6 SOS CC 110VAC	7063020214	156
	MSV D6 SOS CC 220VAC	7063020215	156
	MSV D6 SOS OC 24VDC	7063020312	156
	MSV D6 SOS OC 24VAC	7063020313	156
	MSV D6 SOS OC 110VAC	7063020314	156
	MSV D6 SOS OC 220VAC	7063020315	156
	MSV D6 SOS PC 24VDC	7063020412	156
	MSV D6 SOS PC 24VAC	7063020413	156
	MSV D6 SOS PC 110VAC	7063020414	156
	MSV D6 SOS PC 220VAC	7063020415	156
	MSV D6 SES CC 24VDC	7063030212	156
	MSV D6 SES CC 24VAC	7063030213	156
	MSV D6 SES CC 110VAC	7063030214	156
	MSV D6 SES CC 220VAC	7063030215	156
	MSV D6 SES OC 24VDC	7063030312	156
	MSV D6 SES OC 24VAC	7063030313	156
	MSV D6 SES OC 110VAC	7063030314	156
	MSV D6 SES OC 220VAC	7063030315	156
	MSV D6 SES PC 24VDC	7063030412	156
	MSV D6 SES PC 24VAC	7063030413	156
	MSV D6 SES PC 110VAC	7063030414	156
	MSV D6 SES PC 220VAC	7063030415	156

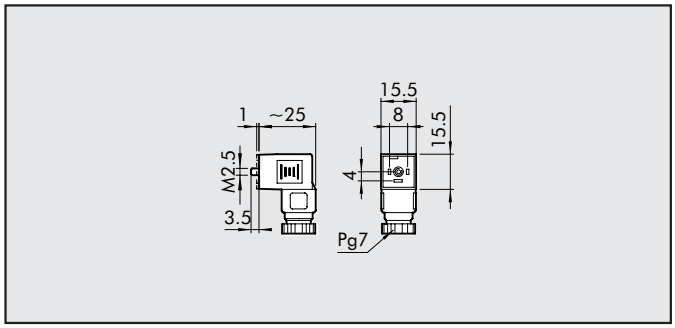
BISTABLE 5/2



Symbol	Abbrev.	Code	Weight [g]
	MSV D5 SOB 00 24VDC	7063020112	143
	MSV D5 SOB 00 24VAC	7063020113	143
	MSV D5 SOB 00 110VAC	7063020114	143
	MSV D5 SOB 00 220VAC	7063020115	143
	MSV D5 SEB 00 24VDC	7063030112	143
	MSV D5 SEB 00 24VAC	7063030113	143
	MSV D5 SEB 00 110VAC	7063030114	143
	MSV D5 SEB 00 220VAC	7063030115	143

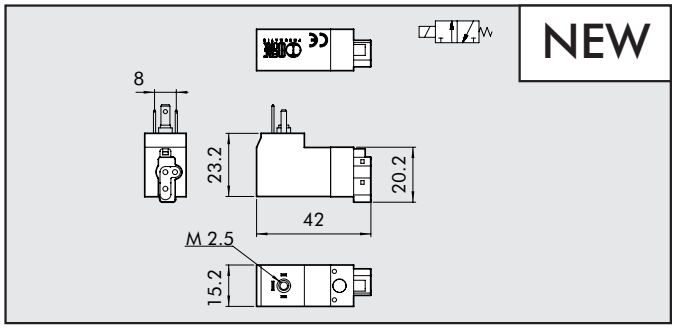
ACCESSORIES: MACH 18 VALVES, MSV SOLENOID/PNEUMATIC

CONNECTOR 15 mm DIN 43650 SHAPE C



Code	Description
W0970501021	CONNECTOR 15 mm C SHAPE DIN 43650
W0970501022	CONNECTOR 15 mm C SHAPE DIN 43650 LED 24 V
W0970501025	CONNECTOR 15 mm C SHAPE DIN 43650 LED+VDR 24V

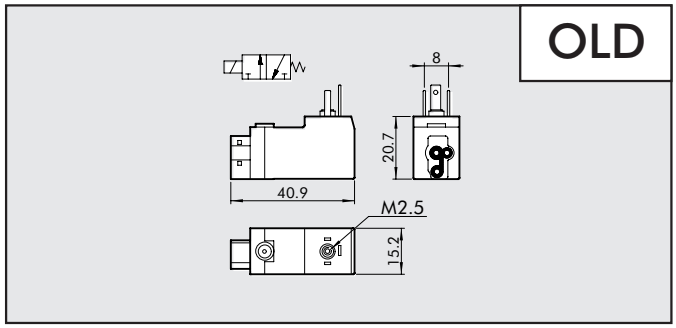
SPARE PARTS: COIL MACH 18



Code	Description
W4015301000	IN-LINE PILOT 24 VDC
W4015301010	IN-LINE PILOT 24 VAC 50/60 Hz
W4015301020	IN-LINE PILOT 110 VAC 50/60 Hz
W4015301030	IN-LINE PILOT 220 VAC 50/60 Hz

NB: if the pilot to be replaced bears the writing CE, you have to order among the NEW pilots, otherwise order among the OLD pilots

SPARE PARTS: COIL MACH 18



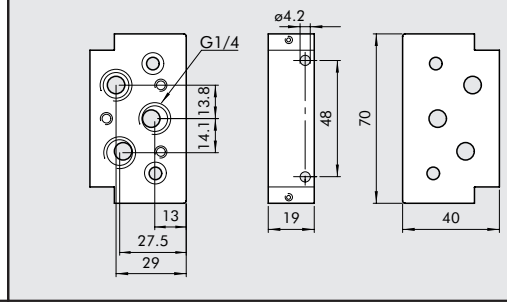
Code	Description
W4015101000	IN-LINE PILOT 24 VDC
W4015101010	IN-LINE PILOT 24 VAC 50/60 Hz
W4015101020	IN-LINE PILOT 110 VAC 50/60 Hz
W4015101030	IN-LINE PILOT 220 VAC 50/60 Hz

NOTES

BASES TO VDMA24563-02 FOR MACH 18 VALVES

INPUT END PLATE TO VDMA 24563-02

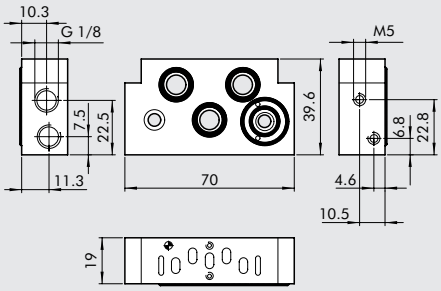
1



Code	Description	Weight [g]
0227100201	VDMA INPUT END PLATE KIT	125

INPUT END PLATE TO VDMA 24563-02

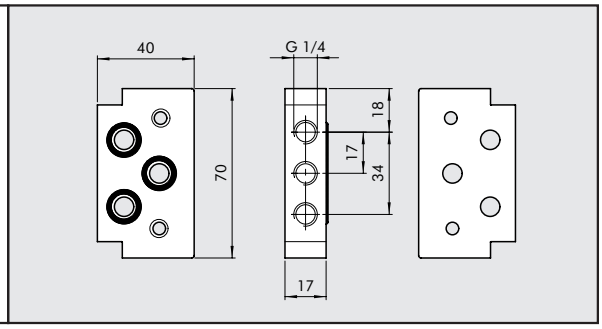
2



Code	Description	Weight [g]
0227200150	VDMA BASE KIT, MANIFOLD SIDE, DIMENSION 2	125

INTERMEDIATE UPPER PORTS 24563-02

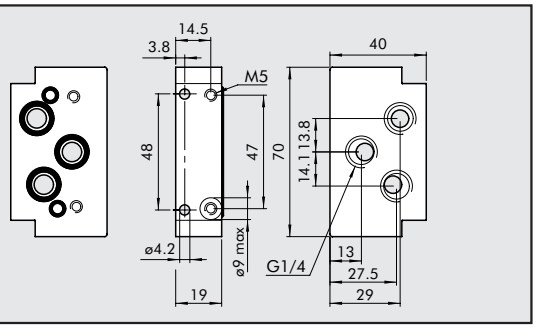
3



Code	Description	Weight [g]
0227200300	VDMA INTERMEDIATE UPPER PORTS KIT	118

OUTPUT END PLATE TO VDMA 24563-02

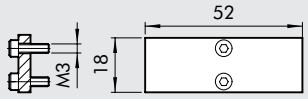
4



Code	Description	Weight [g]
0227100200	VDMA OUTPUT END-PLATE KIT	122

BLANKING PLATE – UNUSED POSITION

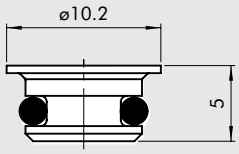
5



Code	Description	Weight [g]
0227200500	ACC. PIASTRA CHIUSURA MACH 18	24

INTERMEDIATE DIAPHRAGM

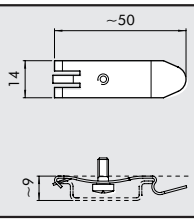
6



Code	Description	Weight [g]
0227100000	INTERMEDIATE DIAPHRAGM	2

CONNECTION BRACKETS ON THE BAR

7

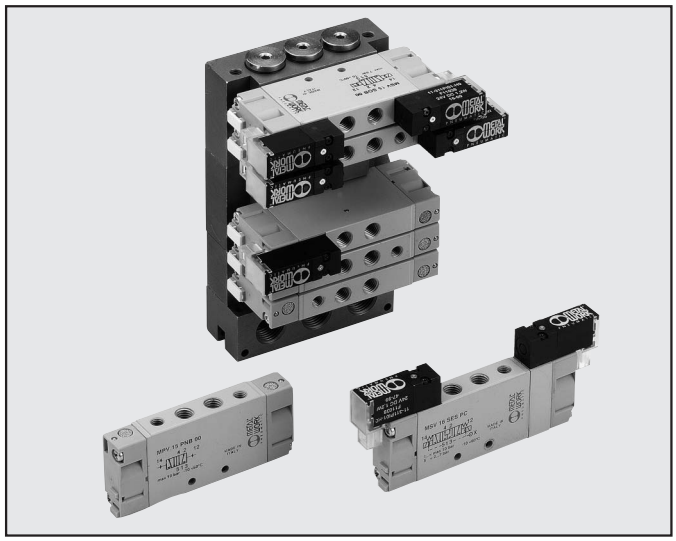


Code	Description	Weight [g]
0227300600	CONNECTION BRACKETS ON DIN BAR	7

NOTES

MACH 11 VALVES

The Mach 11 in-line valves with M7 threaded connection come in the following versions:
• 5/2 monostable and bistable
• 5/3 with closed, open or pressure centres.
Control:
• pneumatic
• solenoid/pneumatic 24 V
With an exceptional compact design only 11 mm wide, and excellent high performance, these valves can be used in numerous applications in industrial automation.

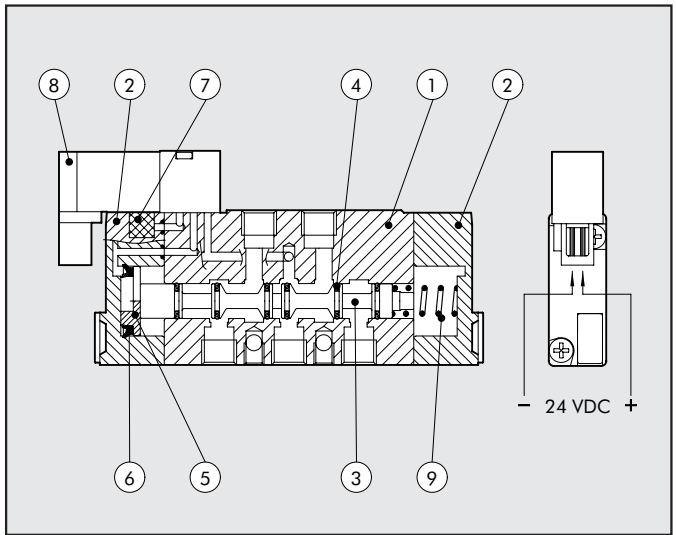


TECHNICAL DATA

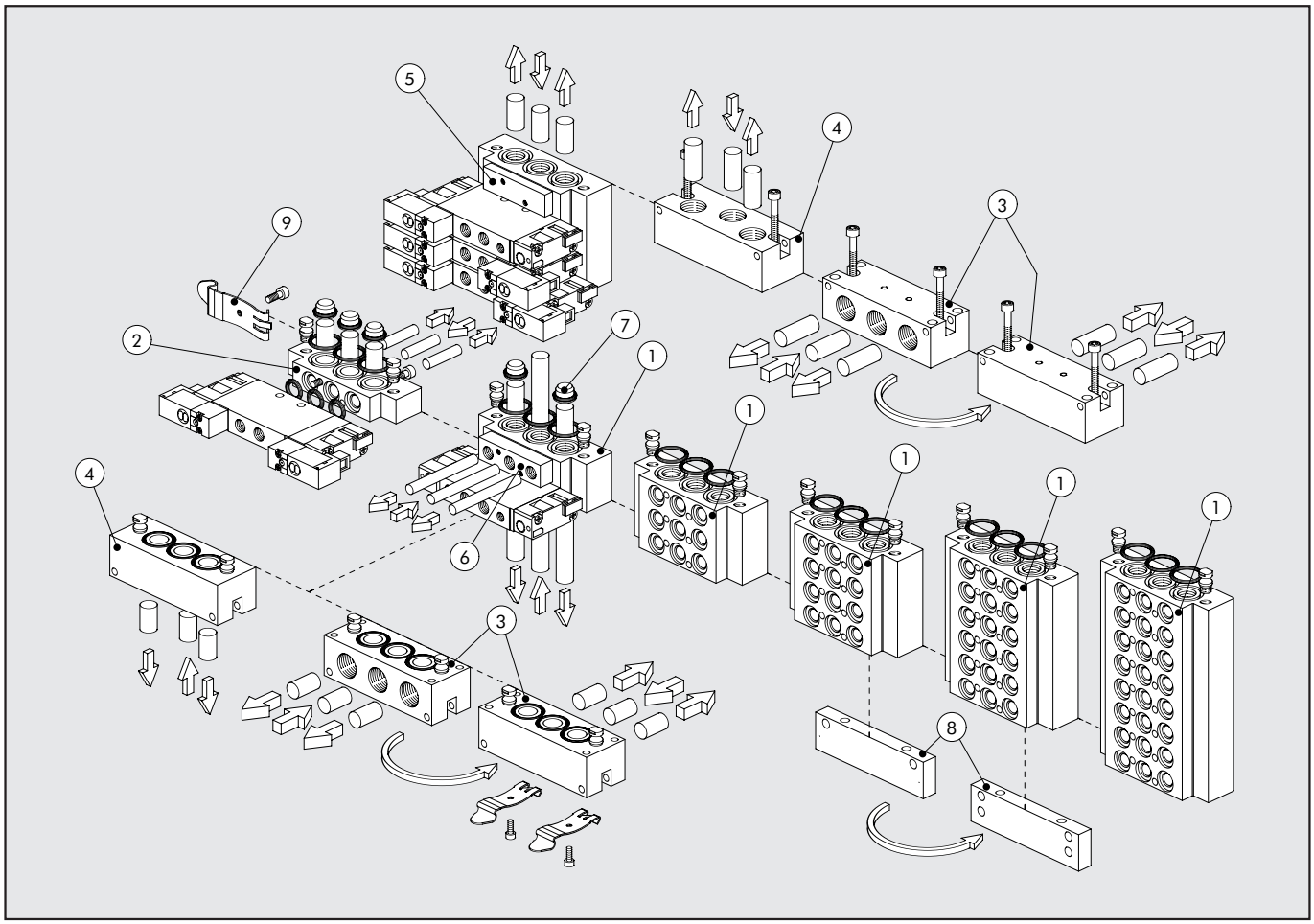
Valve port thread		M7		
Pilot thread		M5		
Maximum external diameter of gaskets	mm	M5: Ø 11 mm M5: Ø 9 mm		
Operating temperature range	°C	-10 °C ÷ +60 °C		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve wall-mounting		M3		
Flow rate at 6 bar ΔP 1 bar	Nl/min	400 Nl/min		
Pressure range	bar	Electric	Electric pilot-assisted	Pneumatic
		- monostable: 2÷7 bar	- pilot pressure: 2÷7 bar	- monostable control pressure values: 2÷10 bar
		- bistable: 1÷7 bar	- valve: vacuum ÷10 bar	- bistable control pressure values: 1÷10 bar
		- 5/3: 2/7 bar		- control pressure 5/3: 2÷10 bar
				- valve: vacuum ÷ 10 bar
Voltage range		24 VDC ±10%		
Power		1,2 W		
Insulation class		F155		
Degree of protection		IP 51*		
Solenoid rating		100% ED		
TRA/TRR monostable at 6 bar	ms	10 ms / 45 ms		4 ms / 9 ms
TRA/TRR bistable at 6 bar	ms	22 ms / 22 ms		4 ms / 4 ms
TRA/TRR 5/3 monostable at 6 bar	ms	22 ms / 22 ms		4 ms / 4 ms
		*IP 65 on request		

COMPONENTS

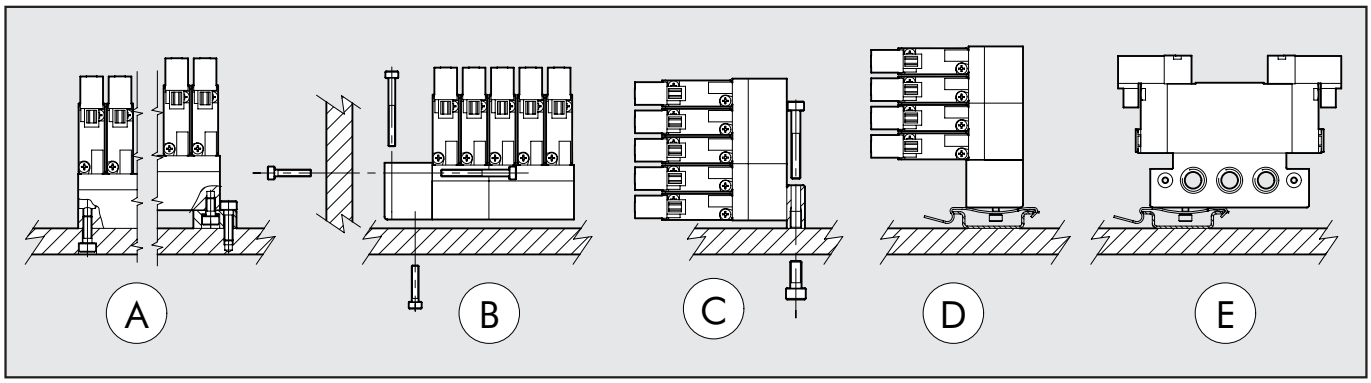
① VALVE BODY: Aluminium
② CONTROL/END CAP: HOSTAFORM®
③ SPOOL: Aluminium
④ GASKETS: Polyurethane
⑤ PISTONS: HOSTAFORM®
⑥ PISTON GASKET: Polyurethane
⑦ FILTER: sintered bronze
⑧ PILOT: with integrated coil
⑨ SPRING: special steel
⑩ REMOVABLE IDENTIFICATION PLATE



MACH 11 MODULARITY



HOW TO FIX THE BASE



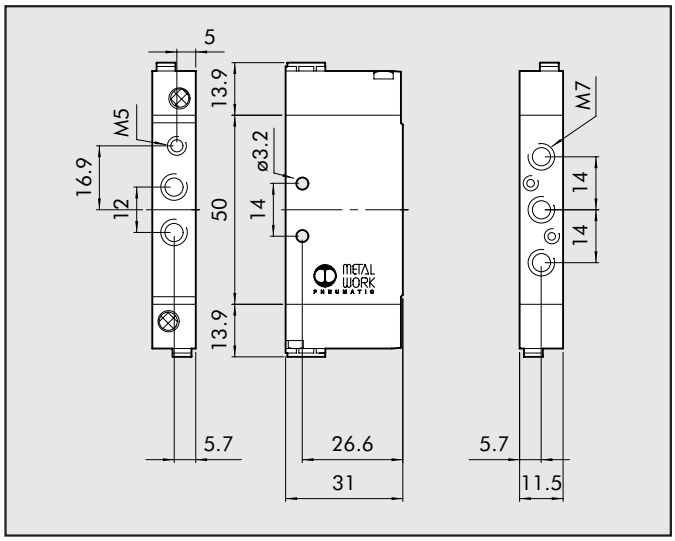
KEY TO CODES

M S V	1	5	S O	B	0 0	2 4 V D C
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING	FURTHER DETAILS	
MSV Mini-solenoid valve MPV Mini pneumatic valve	1 M7	5 5/2 6 5/3	SO Solenoid valve SE electric pilot-assisted PN pneumatic	B bistable S mechanical spring	00 5/2 standard CC closed centres OC open centres PC pressure centres	24VDC

For versions with electrical pilot IP65, please contact our Sales Assistance Department.

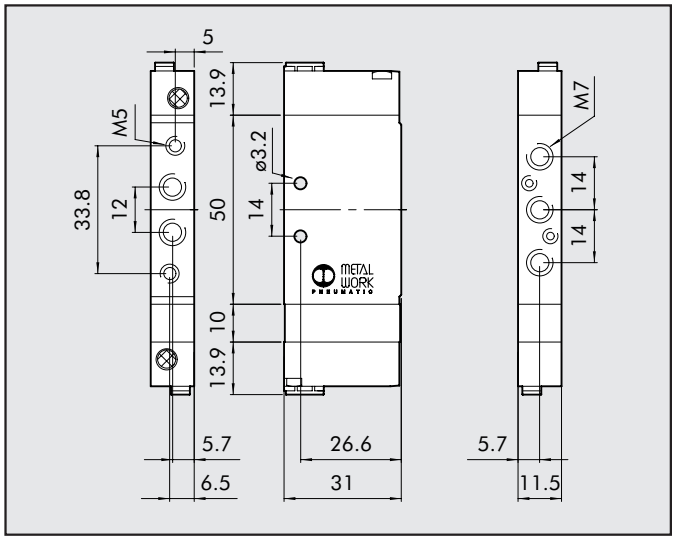
MACH 11 VALVES, PNEUMATIC

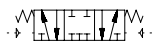
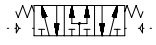
MONOSTABLE 5/2



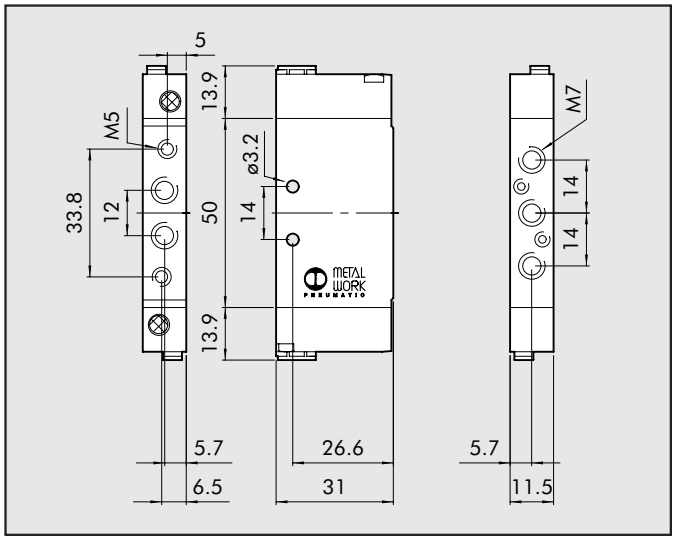
Symbol	Abbrev.	Code	Weight [g]
	MPV 15 PNS OO	7061010130	52

MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MPV 16 PNS CC	7061010210	62
	MPV 16 PNS OC	7061010310	62
	MPV 16 PNS PC	7061010410	62

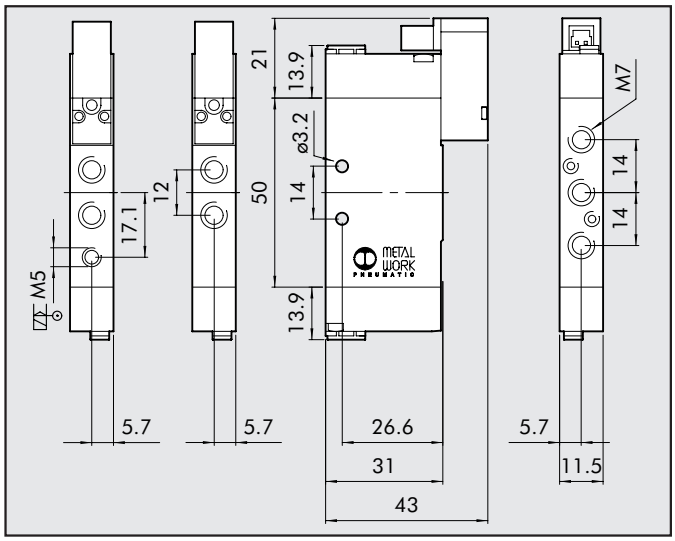
BISTABLE 5/2

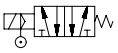


Symbol	Abbrev.	Code	Weight [g]
	MPV 15 PNB OO	7061010110	52

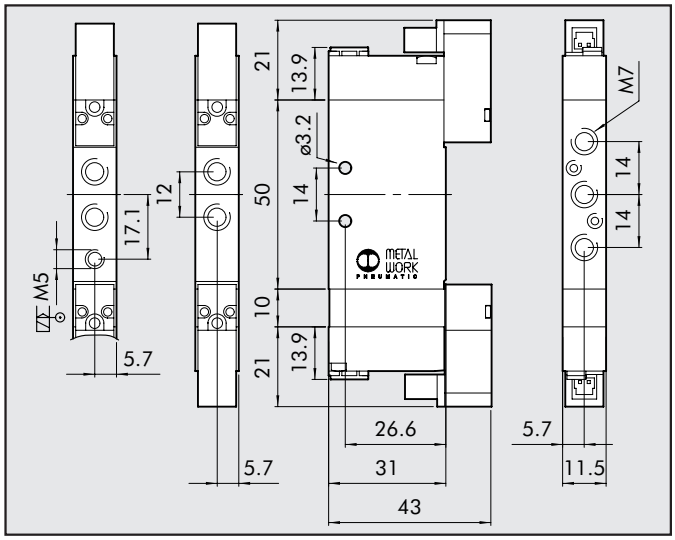
MACH 11 VALVES, SOLENOID-PNEUMATIC

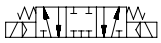
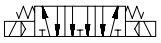
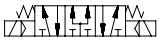
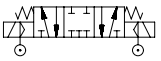
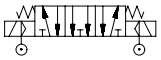
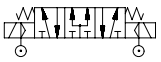
MONOSTABLE 5/2



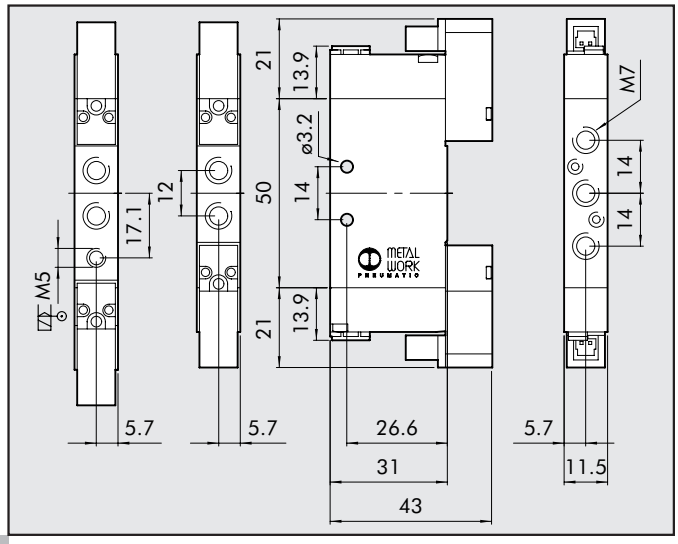
Symbol	Abbrev.	Code	Weight [g]
	MSV 15 SOS OO 24VDC	7061020132	60
	MSV 15 SES OO 24VDC	7061030132	60

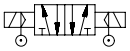
MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MSV 16 SOS CC 24VDC	7061020212	82
	MSV 16 SOS OC 24VDC	7061020312	82
	MSV 16 SOS PC 24VDC	7061020412	82
	MSV 16 SES CC 24VDC	7061030212	82
	MSV 16 SES OC 24VDC	7061030312	82
	MSV 16 SES PC 24VDC	7061030412	82

BISTABLE 5/2

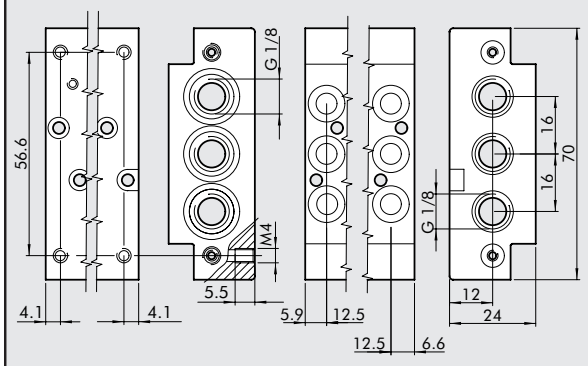


Symbol	Abbrev.	Code	Weight [g]
	MSV 15 SOB OO 24 VDC	7061020112	72
	MSV 15 SEB OO 24 VDC	7061030112	88

ACCESSORIES: MANIFOLD BASES FOR MACH 11VALVES

MULTIPLE MANIFOLD BASE

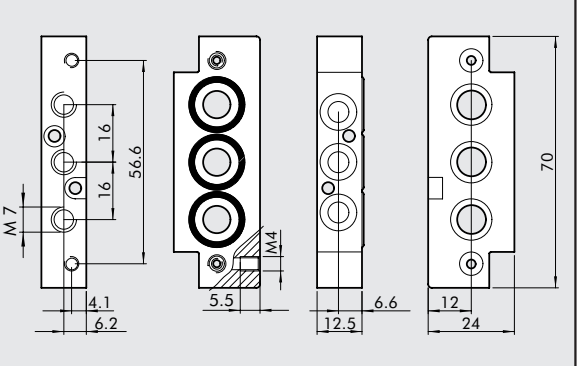
1



Code	Description	Weight [g]
0227400201	BASE, 2 POSN. FOR MACH 11	94
0227400301	BASE, 3 POSN. FOR MACH 11	140
0227400401	BASE, 4 POSN. FOR MACH 11	186
0227400601	BASE, 6 POSN. FOR MACH 11	282
0227400801	BASE, 8 POSN. FOR MACH 11	378

SEPARATE FEED MANIFOLD BASE

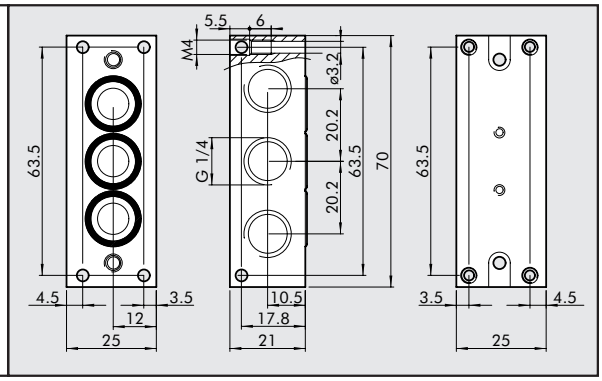
2



Code	Description	Weight [g]
0227400200	SEPARATE FEED MANIFOLD BASE FOR MACH 11	44

90° END PLATE

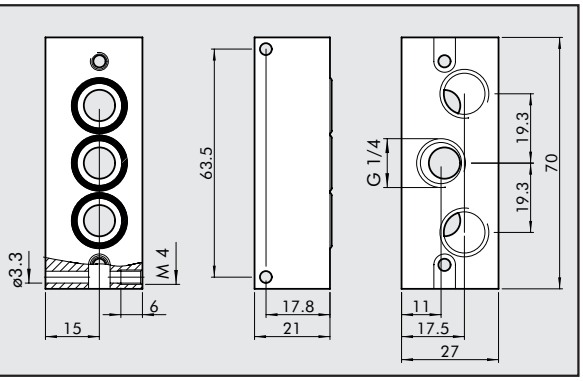
3



Code	Description	Weight [g]
0227400101	90° END PLATE 1/4 MACH 11	82

STRAIGHT END PLATE

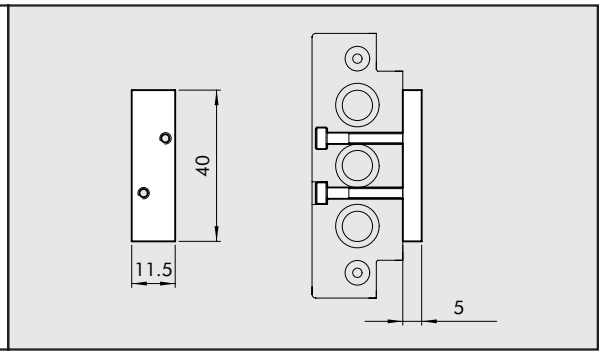
4



Code	Description	Weight [g]
0227400100	STRAIGHT END PLATE 1/4 FOR MACH 11	93

BLANKING PLATE

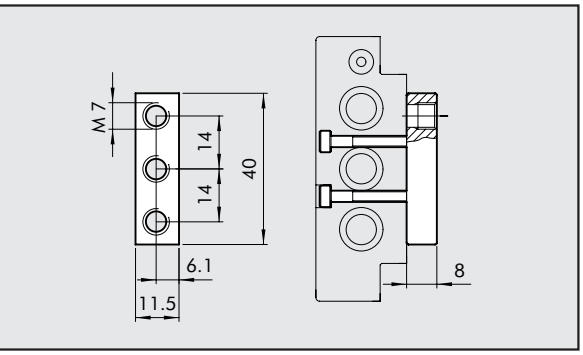
5



Code	Description	Weight [g]
0227400500	BLANKING PLATE FOR MACH 11	13

FEED BLOCK

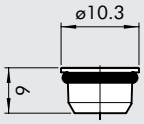
6



Code	Description	Weight [g]
0227400503	M7 FEED BLOCK FOR MACH 11	11

DIAPHRAGM

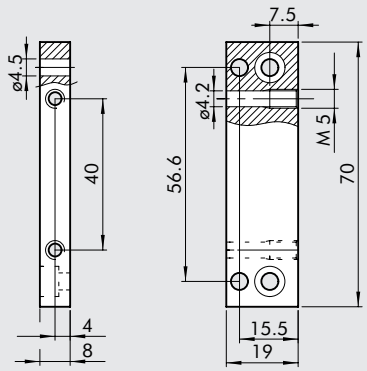
7



Code	Description	Weight [g]
0227400000	DIAPHRAGM FOR MACH 11 BASES	3

BASE FIXING PLATE

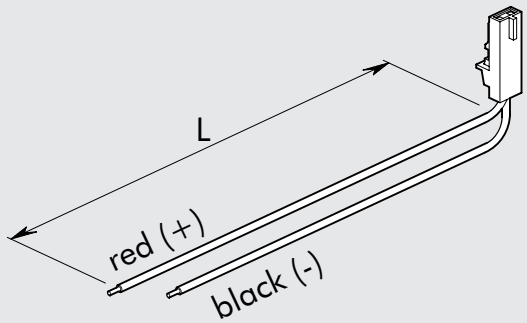
8



Code	Description	Weight [g]
0227400504	FIXING PLATE FOR MACH 11 BASES	28

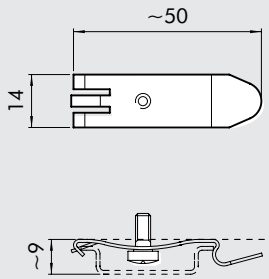
ACCESSORIES

PLUG-IN CONNECTOR



Code	Description
W0970512000	PLUG-IN CONNECTOR FOR MACH 11 L= 300

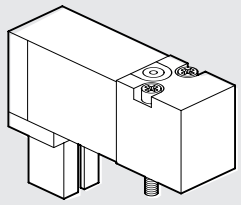
CONNECTION BRACKET ON DIN BAR



Code	Description
0227300600	CONNECTION BRACKET ON DIN BAR

SPARE PARTS

PLUG-IN PILOT FOR MACH 11

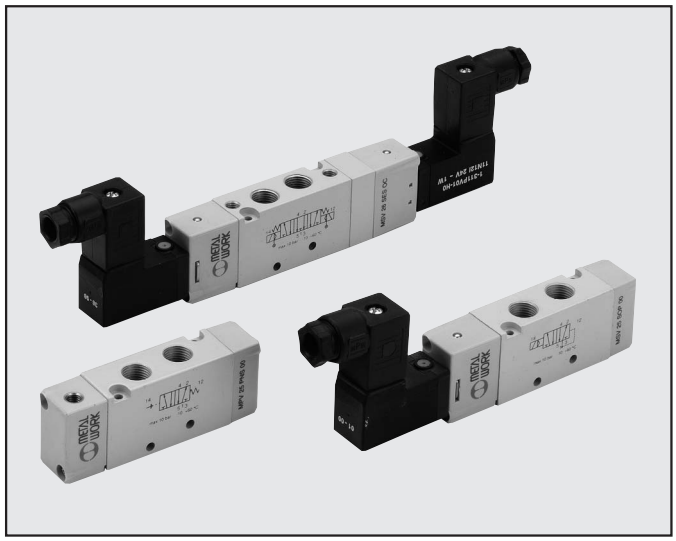


Codice	Descrizione
W4005001000	PILOTA PLUG-IN MACH 11 24VDC LED

NOTES

MACH 16 VALVES

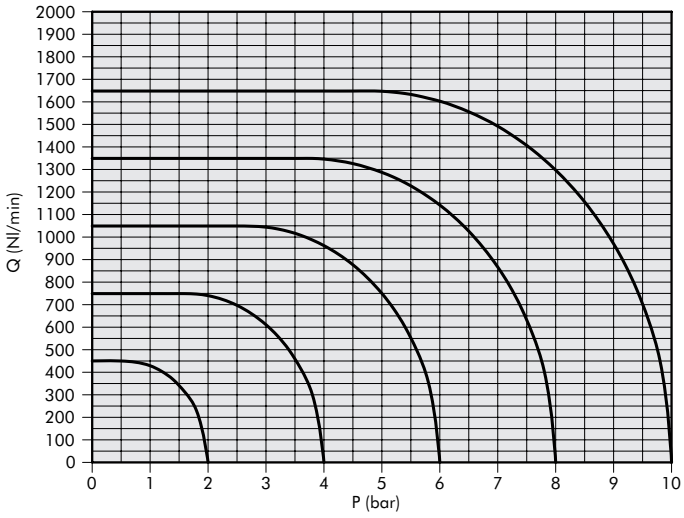
Available in size 1/8" only, versions 5/2 and 5/3 and with pneumatic and solenoid actuation. The Mach 16 valve is a typical small size valve, only 16 mm wide, with excellent performance 750 NL/min flow rate at 6 bar ΔP 1 Bar.
The valve can be used in line, on a panel or on a base (multiple or manifold)
The Mach design is the result of the miniaturisation concept with the same durability, sturdiness and reliability.



TECHNICAL DATA

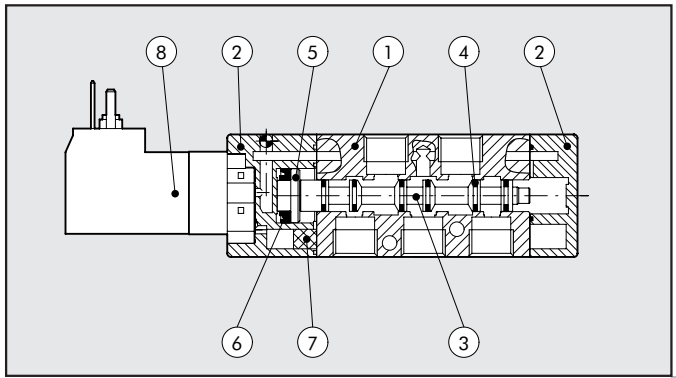
Valve port thread	1/8''
Type of control	M5 pneumatic actuation
	solenoid/pneumatic operation with integrated coil
Maximum outer diameter of gaskets	15 mm
for ports 1 – 3- 5	
Maximum outer diameter for ports 2 – 4	15 mm
Operating temperature range	–10°C to 60°C
Minimum actuation pressure pilot –	monostable with pneumatic spring: see picture on page 2.2/88
pneumatic controls	1.6 bar for monostable valves – mechanical spring
	1 bar for bistable valves – 1.9 bar for valves 5/3
Maximum operating pressure	10 bar
Fluid	Filtered lubricated or unlubricated air
	lubrication, if used, must be continuous
Recommended lubricant	ISO and UNI FD22
Solenoid pilot	Integrated coil DIN 43650 C shape
Manual	monostable on solenoid pilot (with bistable manual valve on request)
Number of ways in base	1-3-5 and pilot exhaust
Screws for wall-mounting single valve	2 screws M3
Screws for base-mounting valve	2 screws M2.5x30
Installation	in any position (vertical assembly is not recom-
	mended for bistable valves subjected to vibration)
Flow rate at 6 Bar ΔP 0.5 Bar	540 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	750 Nl/min
Conductance C	149.8 Nl/min · bar
Critical ratio b	0.525 bar/bar

FLOW CHART

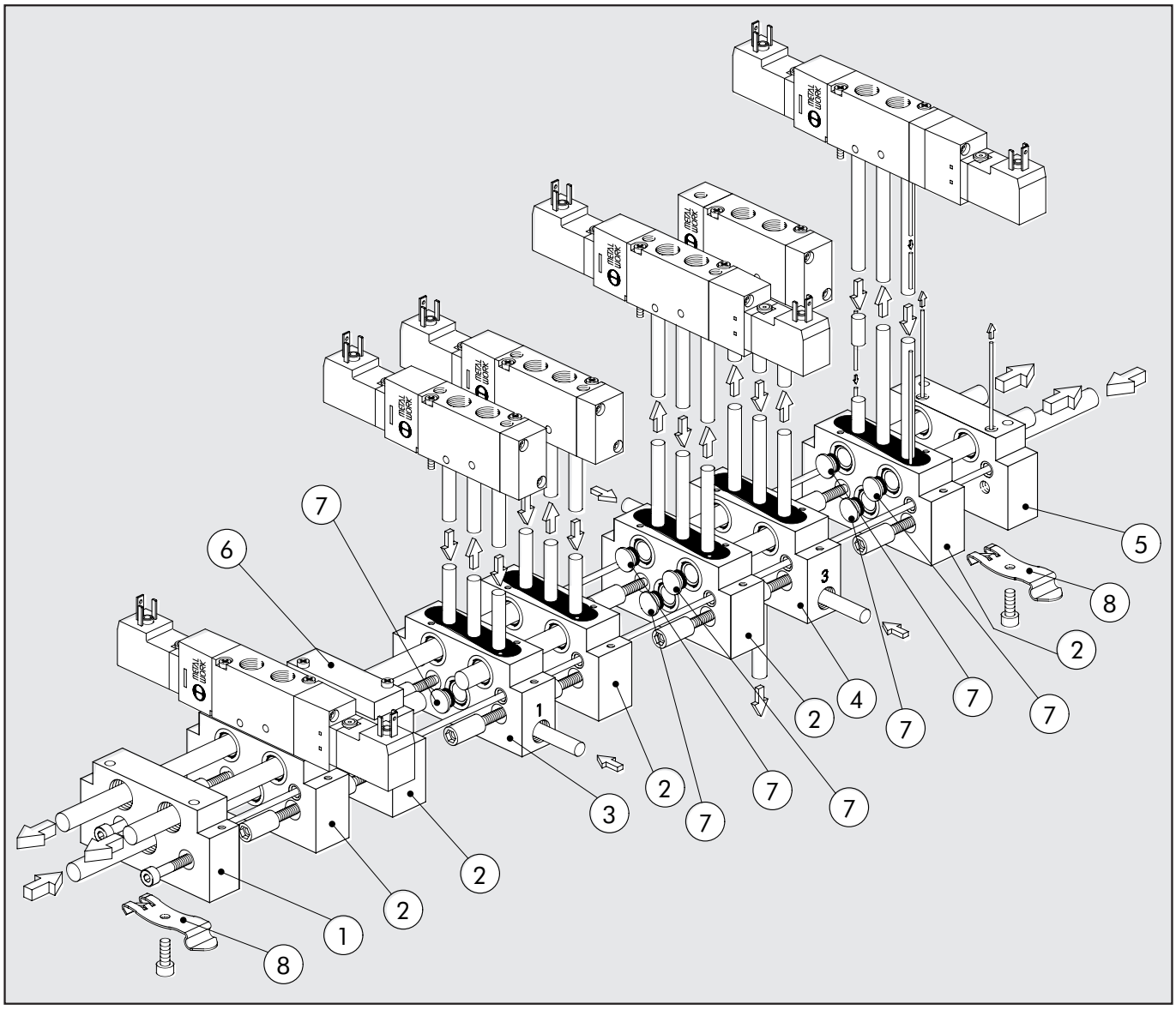


COMPONENTS

① VALVE BODY: Aluminium
② CONTROL/END CAP: HOSTAFORM®
③ SPOOL: Aluminium
④ GASKETS: Polyurethane
⑤ PISTONS: HOSTAFORM®
⑥ PISTON GASKET: Polyurethane
⑦ FILTER: sintered bronze
⑧ PILOT: with integrated coil



MANIFOLD BASES FOR MACH 16



Ref.	Description	Code
①	M16/VDMA Input end-plate kit	0227100201
②	M16 manifold base kit	0227100150
③	M16 separate feed manifold base kit	0227100301
④	M16 exhaust feed manifold base kit	0227100302
⑤	M16/VDMA output end-plate kit	0227100200
⑥	M16 blanking plate	0225004500
⑦	Intermediate diaphragm	0227100000
⑧	Connection bracket on DIN-bar	0227300600

KEY TO CODES

M S V	2	5	S O	P	O O	24VDC
FAMILY	PORT	FUNCTION	OPERATORS 14	RESETTING 12	FURTHER DETAILS	VOLTAGE
MSV solenoid/ pneumatic	2 1/8"	5 5/2	SO solenoid/ pneumatic	P pneumatic spring	OO 5/2	24VDC
MPV pneumatic		6 5/3	SE solenoid pilot	S mechanical spring	CC closed centres	24VAC
			PN pneumatic	B bistable	OC open centres	110VAC
					PC pressure centres	220VAC

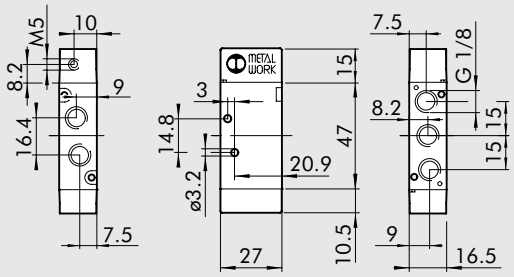
MACH 16 VALVES MPV, PNEUMATIC

TECHNICAL DATA

Operating pressure	vacuum – 10 bar
Minimum operating pressure:	
• monostable with pneumatic spring	see graph page 2.2/86
• monostable with mechanical spring	1.6 bar
• monostable 5/3	1.9 bar
• bistable	1 bar
Conductance C	149.8 Nl/min · bar
Critical ratio b	0.525 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	540 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	750 Nl/min
Repositioning response times at 6 Bar:	
• monostable	4 ms
• bistable	4 ms
Repositioning response times at 6 Bar:	
• monostable	8.4 ms
• bistable	4 ms

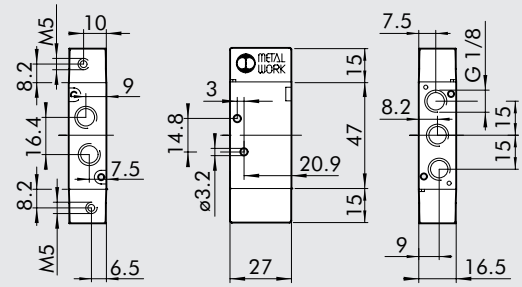


MONOSTABLE 5/2



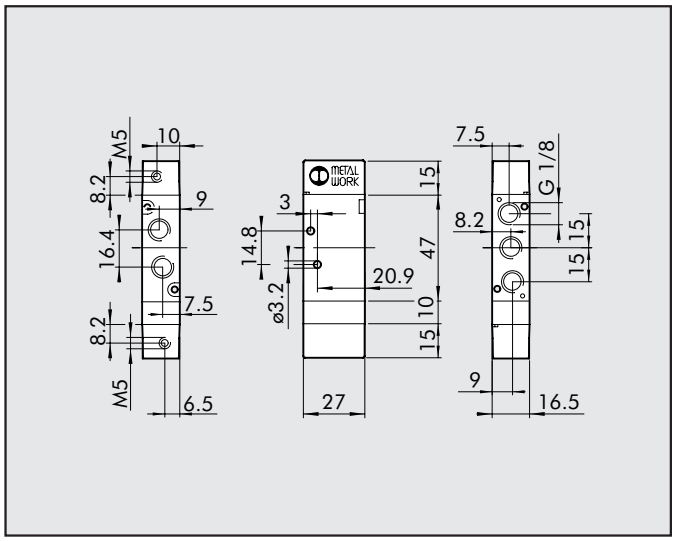
Symbol	Abbrev.	Code	Weight [g]
	MPV 25 PNP OO	7062010100	60
	MPV 25 PNS OO	7062010130	61

BISTABLE 5/2



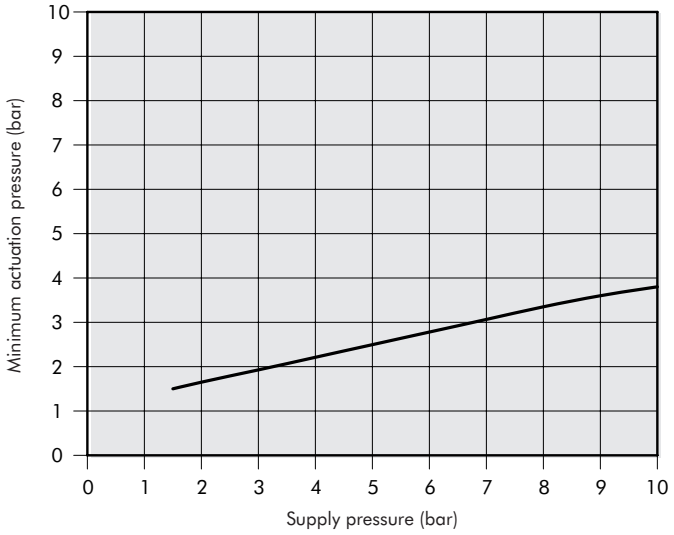
Symbol	Abbrev.	Code	Weight [g]
	MPV 25 PNB OO	7062010110	62

MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MPV 26 PNS CC	7062010210	73
	MPV 26 PNS OC	7062010310	73
	MPV 26 PNS PC	7062010410	73

OPERATING PRESSURE

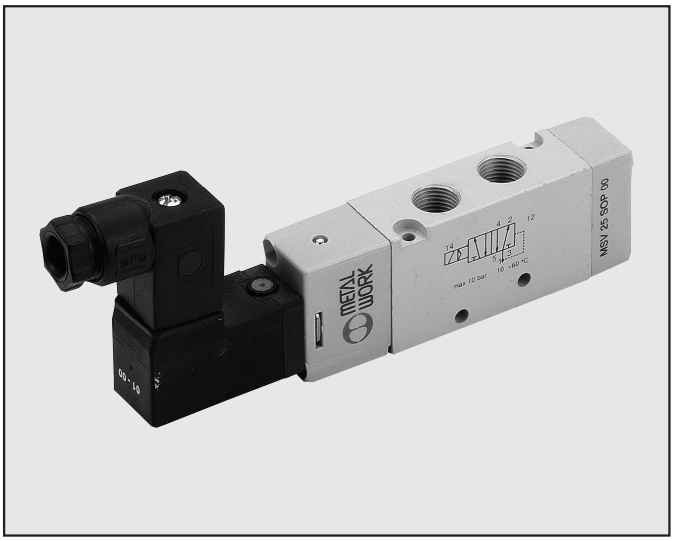


NOTES

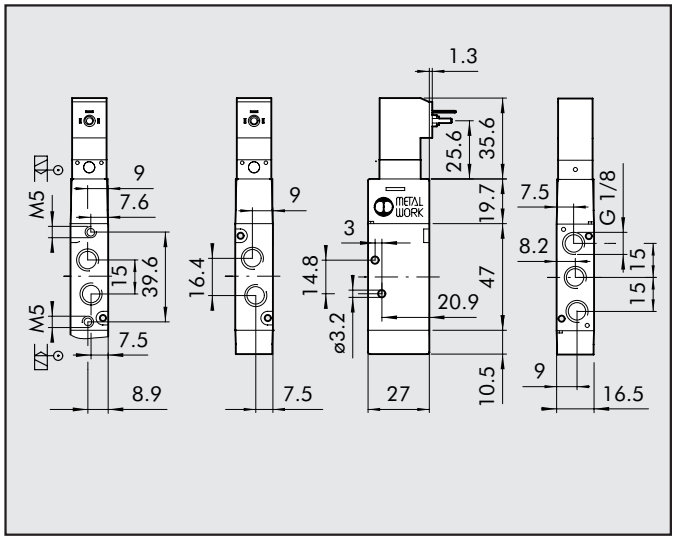
MACH 16 VALVES MPV, SOLENOID/PNEUMATIC

TECHNICAL DATA

Operating pressure:	
• monostable	1.5-10 bar
• bistable	1-10 bar
• pilot-assisted	vacuum – 10 bar
Minimum pilot pressure	2 bar
Operating temperature range	-10° to 60°C
Conductance C	149.8 Nl/min · bar
Critical ratio b	0.525 bar/bar
Flow rate at 6 Bar ΔP 0.5 Bar	540 Nl/min
Flow rate at 6 Bar ΔP 1 Bar	750 Nl/min
TRA/TRR monostable at 6 bar	12 ms / 26 ms
TRA/TRR bistable at 6bar	21 ms / 21 ms
Type of operation: Manual	monostable on the solenoid pilot
	(also with bistable manual valve on request)
Pilot with integrated coil	24 VDC - 24 VAC - 110 VAC - 220 VAC
Powers	1 W
Voltage tolerance	-10% ÷ +15%
Insulation class	F 155
Degree of protection	IP 65 EN60529 with connector
Solenoid rating	100% ED
Electrical contacts	DIN 43650 C shape

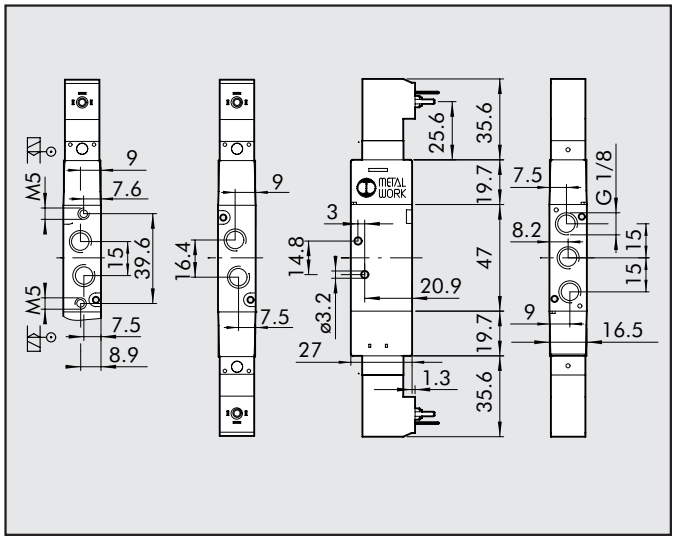


MONOSTABLE 5/2



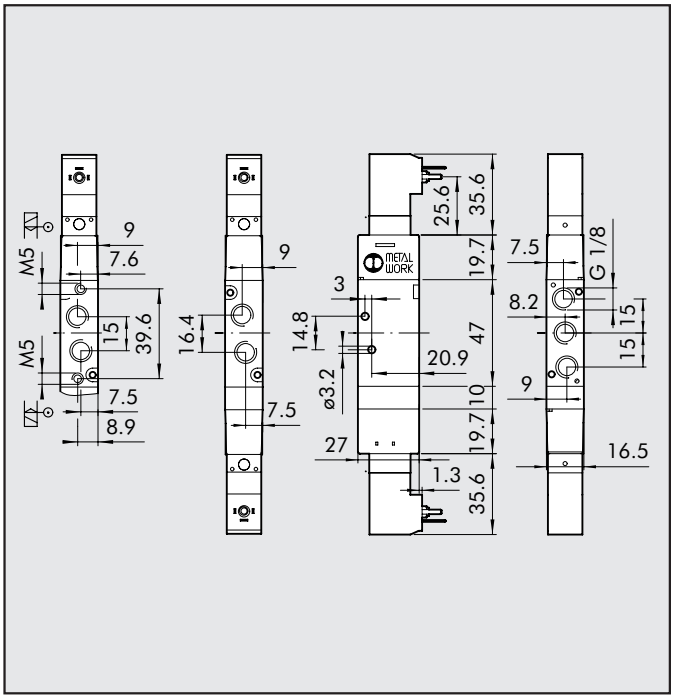
Symbol	Abbrev.	Code	Weight [g]
	MSV 25 SOP 00 24VDC	7062020102	92
	MSV 25 SOP 00 24VAC	7062020103	92
	MSV 25 SOP 00 110VAC	7062020104	92
	MSV 25 SOP 00 220VAC	7062020105	92
	MSV 25 SOS 00 24VDC	7062020132	93
	MSV 25 SOS 00 24VAC	7062020133	93
	MSV 25 SOS 00 110VAC	7062020134	93
	MSV 25 SOS 00 220VAC	7062020135	93
	MSV 25 SES 00 24VDC	7062030132	93
	MSV 25 SES 00 24VAC	7062030133	93
	MSV 25 SES 00 110VAC	7062030134	93
	MSV 25 SES 00 220VAC	7062030135	93

BISTABLE 5/2



Symbol	Abbrev.	Code	Weight [g]
	MSV 25 SOB 00 24VDC	7062020112	124
	MSV 25 SOB 00 24VAC	7062020113	124
	MSV 25 SOB 00 110VAC	7062020114	124
	MSV 25 SOB 00 220VAC	7062020115	124
	MSV 25 SEB 00 24VDC	7062030112	125
	MSV 25 SEB 00 24VAC	7062030113	125
	MSV 25 SEB 00 110VAC	7062030114	125
	MSV 25 SEB 00 220VAC	7062030115	125

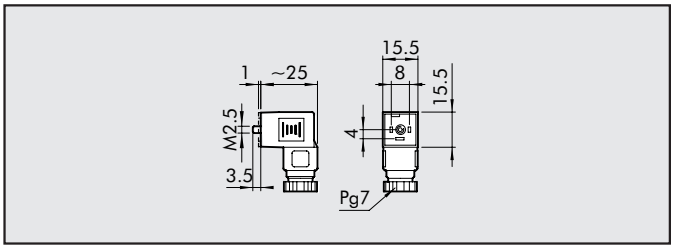
MONOSTABLE 5/3



Symbol	Abbrev.	Code	Weight [g]
	MSV 26 SOS CC 24VDC	7062020212	142
	MSV 26 SOS CC 24VAC	7062020213	142
	MSV 26 SOS CC 110VAC	7062020214	142
	MSV 26 SOS CC 220VAC	7062020215	142
	MSV 26 SOS OC 24VDC	7062020312	142
	MSV 26 SOS OC 24VAC	7062020313	142
	MSV 26 SOS OC 110VAC	7062020314	142
	MSV 26 SOS OC 220VAC	7062020315	142
	MSV 26 SOS PC 24VDC	7062020412	142
	MSV 26 SOS PC 24VAC	7062020413	142
	MSV 26 SOS PC 110VAC	7062020414	142
	MSV 26 SOS PC 220VAC	7062020415	142
	MSV 26 SES CC 24VDC	7062030212	143
	MSV 26 SES CC 24VAC	7062030213	143
	MSV 26 SES CC 110VAC	7062030214	143
	MSV 26 SES CC 220VAC	7062030215	143
	MSV 26 SES OC 24VDC	7062030312	143
	MSV 26 SES OC 24VAC	7062030313	143
	MSV 26 SES OC 110VAC	7062030314	143
	MSV 26 SES OC 220VAC	7062030315	143
	MSV 26 SES PC 24VDC	7062030412	143
	MSV 26 SES PC 24VAC	7062030413	143
	MSV 26 SES PC 110VAC	7062030414	143
	MSV 26 SES PC 220VAC	7062030415	143

ACCESSORIES: MACH 16 VALVES MSV, SOLENOID/PNEUMATIC

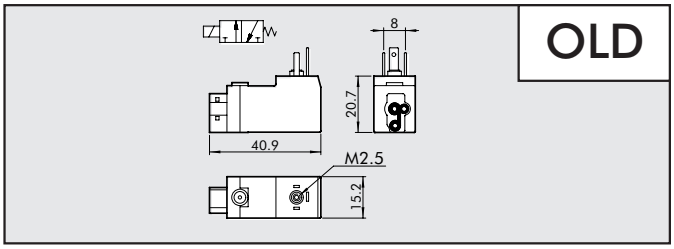
CONNECTOR 15 mm SHAPE C TO DIN 43650



Code	Description
W0970501021	CONNECTOR 15 mm SHAPE C DIN 43650
W0970501022	CONNECTOR 15 mm SHAPE C DIN 43650 LED 24V
W0970501025	CONNECTOR 15 mm SHAPE C DIN 43650 LED+VDR 24V

SPARE PARTS: COIL MACH 16

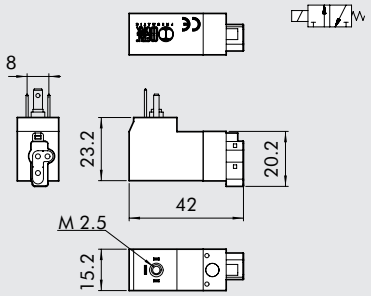
OLD



Code	Description
W4015101000	IN-LINE PILOT 24 VDC
W4015101010	IN-LINE PILOT 24 VAC 50/60 Hz
W4015101020	IN-LINE PILOT 110 VAC 50/60 Hz
W4015101030	IN-LINE PILOT 220 VAC 50/60 Hz

SPARE PARTS: COIL MACH 16

NEW



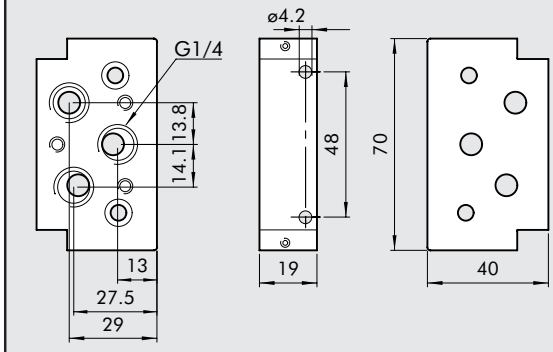
Code	Description
W4015301000	IN-LINE PILOT 24 VDC
W4015301010	IN-LINE PILOT 24 VAC 50/60 Hz
W4015301020	IN-LINE PILOT 110 VAC 50/60 Hz
W4015301030	IN-LINE PILOT 220 VAC 50/60 Hz

NB: if the pilot to be replaced bears the writing CE, you have to order among the NEW pilots, otherwise order among the OLD pilots

MANIFOLD BASES FOR MACH 16 VALVES

MACH 16 INPUT END-PLATE

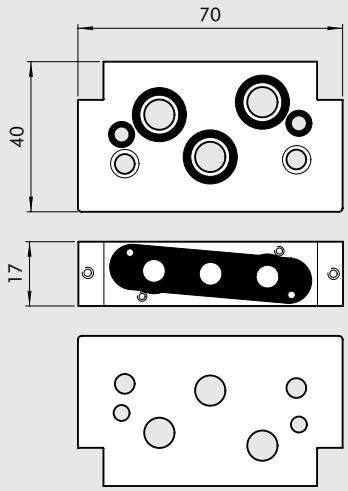
1



Code	Description	Weight [g]
0227100201	INPUT END-PLATE KIT M16/VDMA	125

MACH 16 MANIFOLD BASE

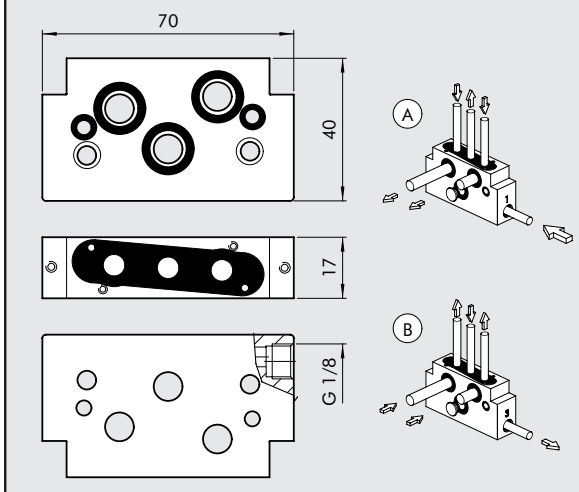
2



Code	Description	Weight [g]
0227100150	MANIFOLD BASE KIT M16	121

MACH 16 SEPARATE FEED MANIFOLD BASE

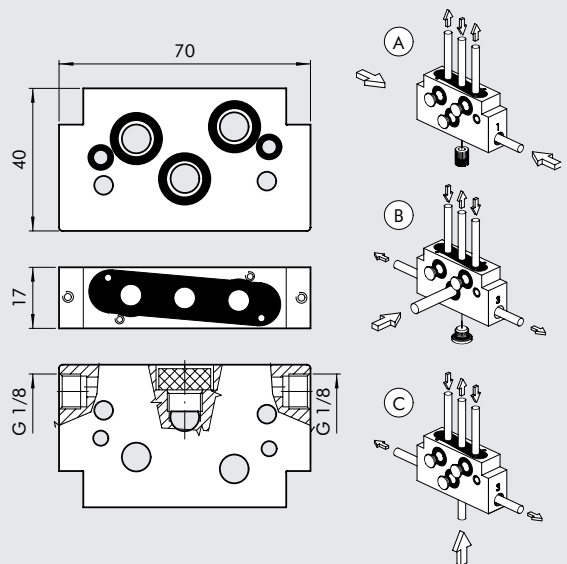
3



Code	Description	Weight [g]
0227100301	MANIFOLD BASE KIT– SEPARATE FEED M16	119

MACH 16 EXHAUST FEED MANIFOLD BASE

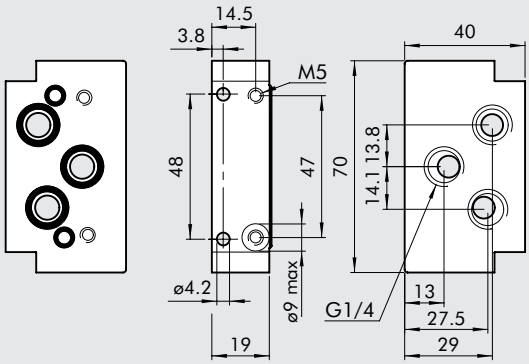
4



Code	Description	Weight [g]
0227100302	MANIFOLD BASE KIT– EXHAUST FEED	113

MACH 16 OUTPUT END-PLATE

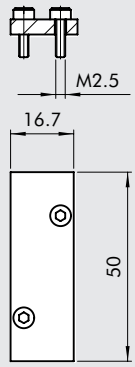
5



Code	Description	Weight [g]
0227100200	OUTPUT END-PLATE KIT M16/VDMA	122

BLANKING PLATE – UNUSED POSITION

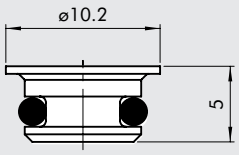
6



Code	Description	Weight [g]
0225004500	ACCESSORIES – BLANKING PLATE FOR MACH 16	18

INTERMEDIATE DIAPHRAGM

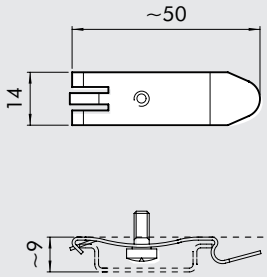
7



Code	Description	Weight [g]
0227100000	INTERMEDIATE DIAPHRAGM	1

CONNECTION BRACKET ON DIN BAR

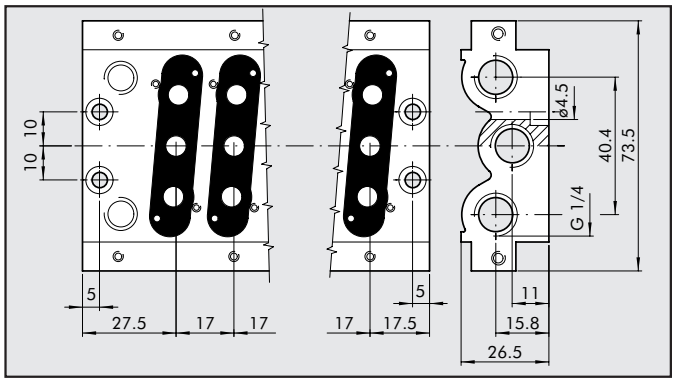
8



Code	Description	Weight [g]
0227300600	CONNECTION BRACKET ON DIN BAR	7

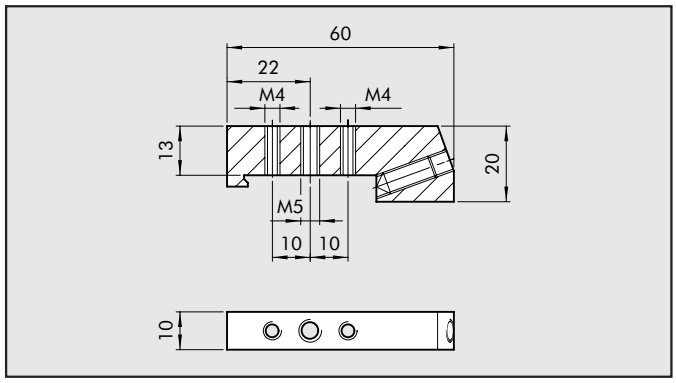
MULTIPLE BASES FOR MACH 16 VALVES

MULTIPLE BASE FOR MACH 16



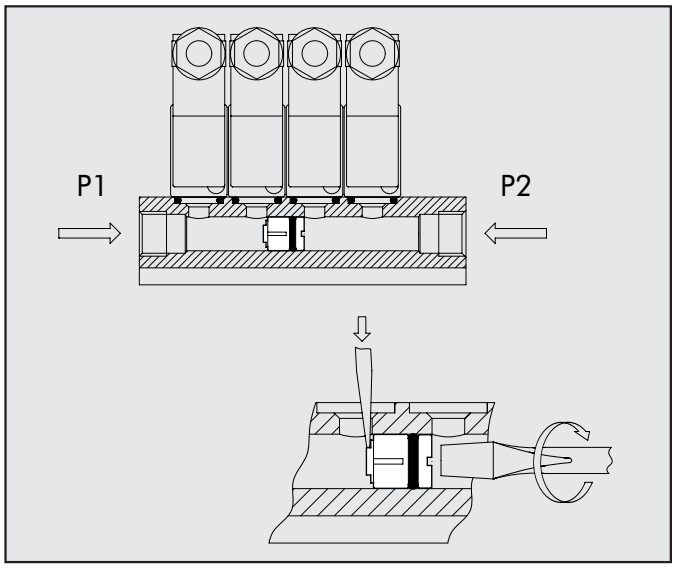
Code	Description	Posn.	Weight [g]
0225000201	ACC. BASE CVM.PN-08-02-0-000	2	180
0225000401	ACC. BASE CVM.PN-08-04-0-000	4	286
0225000601	ACC. BASE CVM.PN-08-06-0-000	6	390
0225000801	ACC. BASE CVM.PN-08-08-0-000	8	500
0225001001	ACC. BASE CVM.PN-08-10-0-000	10	613
0225001201	ACC. BASE CVM.PN-08-12-0-000	12	706

Ω BAR ADAPTER MULTIPLE BASES FOR MACH 16



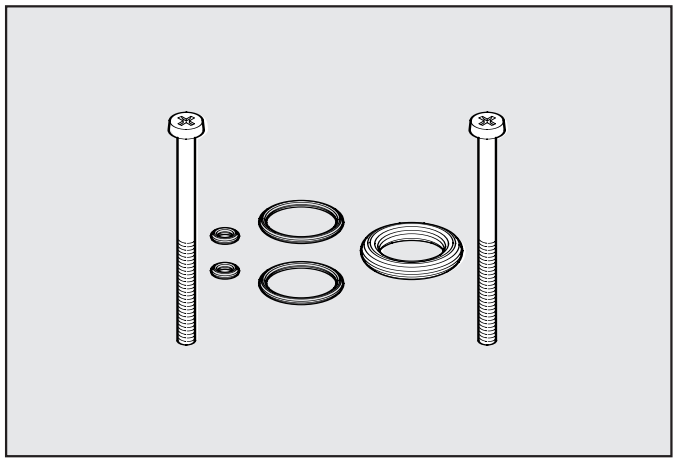
Code	Description	Weight [g]
0225004600	ACCESSORIES: OMEGA-ADAPTER MACH 16	46

INTERMEDIATE DIAPHRAGM



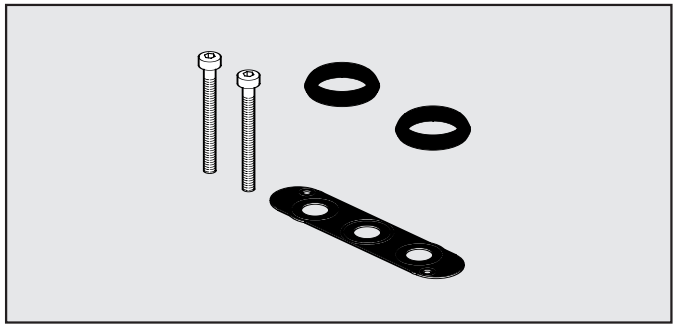
Code	Description	Weight [g]
0227100001	ACC. MULTIPLE BASE DIAPHRAGM	6

GASKET KIT



Code	Description	Weight [g]
0226007001	M16 MULTIPLE BASE GASKET KIT	5

KIT OF SPARE INTEGRATED GASKET



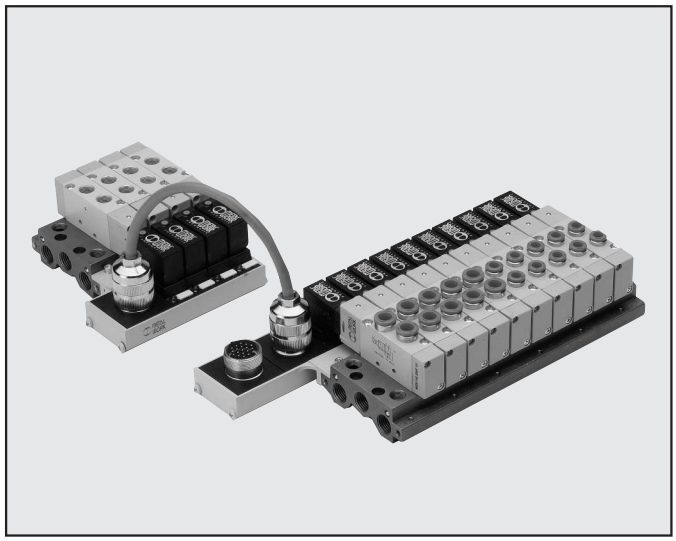
Code	Description	Weight [g]
0226007003	M16 MULTIPLE BASE GASKET KIT	5

MULTIPLE CONNECTORS

Mach 16 valves can be mounted on bases with pneumatic or electrical connection. The electric contacts of the individual valves are connected by means of a printed circuit board in a sealed conduit to a single connection point suitable for up to 16 controls. The number 16 was chosen because the number of outputs of most PLC output boards is 16 or a multiple of it.
The system has numerous alternatives and variants for a wide range of requirements:

- Base for monostable or bistable valves.
- Connection via a multiple connector or wired cable.
- Supply of individual parts or ready prepared bases or complete valve units
- The configuration can be modified at any time to convert bases for monostable valves into bases for bistable valves.
- The return cable can be used to connect two monostable valve units to a single multiple connector.

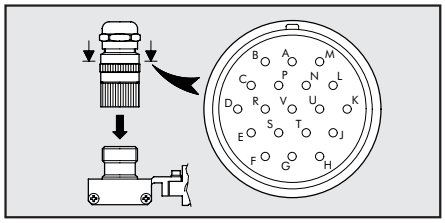
All versions are certified for electromagnetic compatibility and hence they bear the CE mark. The system is prearranged for mounting a slave for field buses, which can be added at any time.
Valve units with multiple pneumatic/electrical connection are supplied complete with valves and are tested.
System modularity means that the valve sequence can be ordered to meet your own requirements (see key to codes).



TECHNICAL DATA

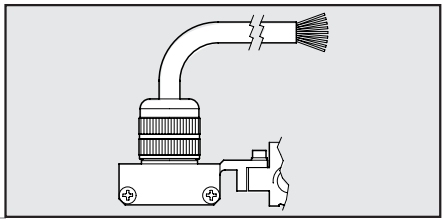
Supply voltage	24VDC 24VAC
Maximum absorption	50 m A for each position
Valve actuation indicator	yellow LED
Protection	Fuse
Operating temperature range	–10° to 60°C
Degree of protection with valves mounted	IP65
Insulation class	in compliance with IEC 664-1and VDE 0110 Group C
Electromagnetic compatibility	in compliance with EEC 366/89
Maximum number of solenoid valves which can be applied	16
Number of contacts	19, 16 of which for solenoid valves, 2 common and 1 earth
Version with connectors	
Connector insulation class	in compliance with MIL 26485
Section of cables to weld to connector	max. 0.6 mm^2
Number of contacts	19, 16 of which for solenoid valves, 2 common and 1 earth
Pre-wired version	
Cable length	5 m
Number of wires	19, 16 of which for solenoid valves, 2 common and 1 earth
Wire section	0.22 mm^2
Shielding	tin plated – covering 80-90%
Cable	outer oil-proof and flame-proof PVC sheath
Cable outside diameter	8.5 mm

WIRING DIAGRAM FOR PRE-WIRED VERSION



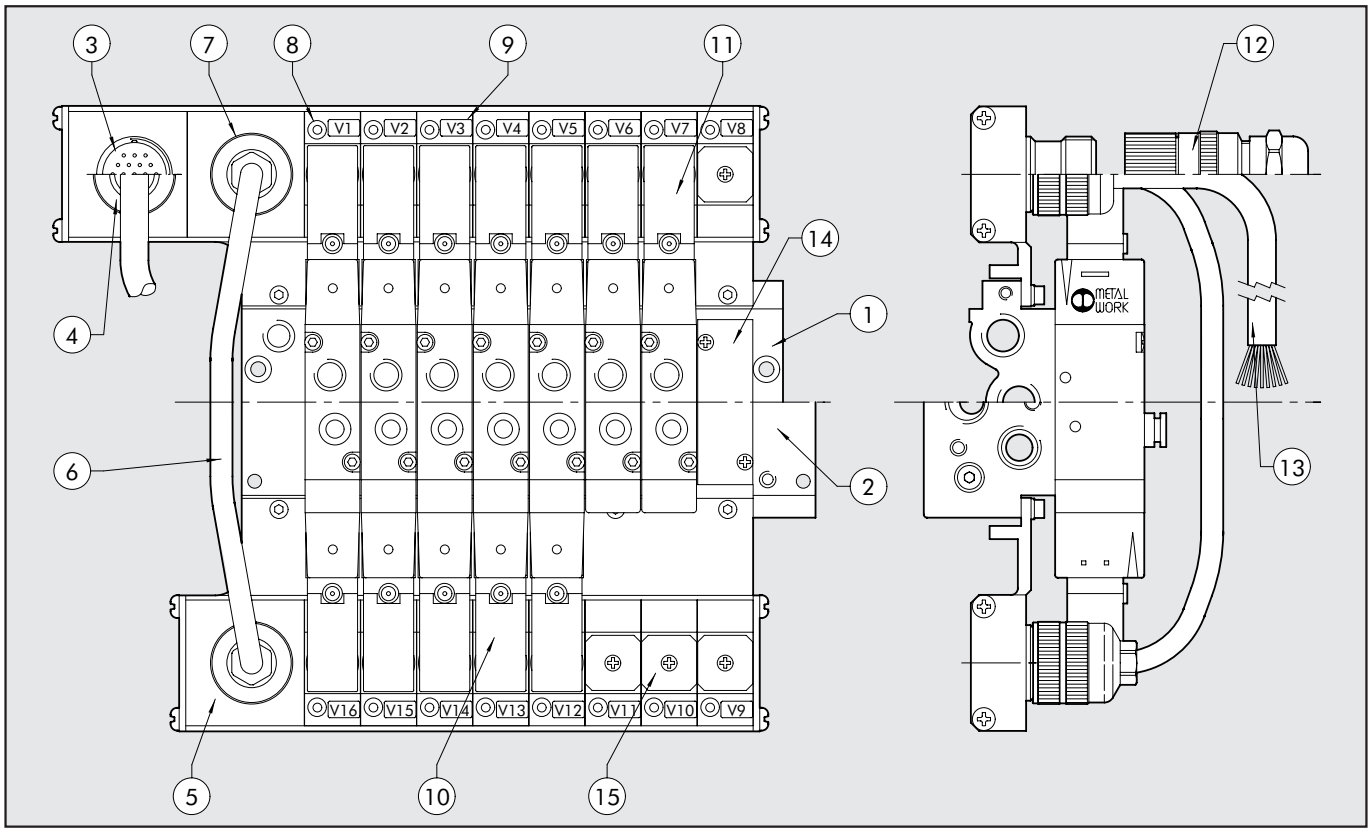
Position of electrical contact	Pin on flying connector	Position of electrical contact	Pin on flying connector	Position of electrical contact	Pin on flying connector
V1	S	V8	J	V15	B
V2	F	V9	A	V16	P
V3	U	V10	N	EARTH	K
V4	H	V11	M	-COM	E
V5	V	V12	L	-COM	R
V6	G	V13	D		
V7	T	V14	C		

WIRING DIAGRAM FOR VERSION WITH CONNECTOR



Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
V1	green /black	V8	brown/red	V15	orange
V2	yellow	V9	red/white	V16	blue/black
V3	white/black	V10	red/black	EARTH	yellow/red
V4	blue	V11	green/red	-COM	brown/black
V5	red	V12	blue/red	-COM	green
V6	yellow/black	V13	brown		
V7	white	V14	orange/black		

COMPONENTS



① Multiple base: extruded anodised aluminium
② Modular base: anodised aluminium
③ Main assembly, version with connector
④ Main assembly, pre-wired version
⑤ Secondary unit/additional secondary unit
⑥ 10-wire return cable
⑦ Socket for 10-wire return cable
⑧ LED (LED on= Solenoid valve energised)
⑨ Identification label (for writing on)
⑩ Bistable solenoid valve MACH 16
⑪ Monostable solenoid valve MACH 16
⑫ Flying 19-wire connector for version with connector: nickel-plated aluminium, silver-plated contacts
⑬ 19-wire cable for pre-wired version
⑭ Blanking plate – pneumatic position: anodised aluminium
⑮ Small blanking plate – electric connector: painted aluminium

KEY TO CODES

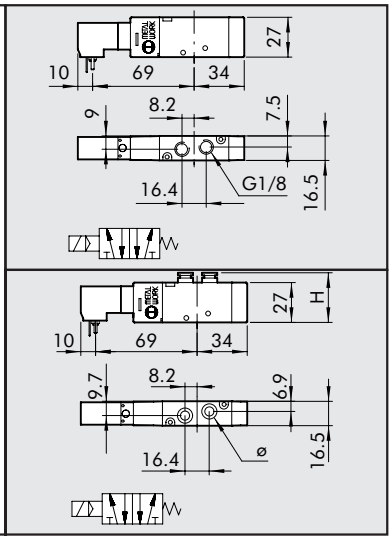
A	0 8	B	W C 5	0 8	M M 6 V L	2 4 V D C
FAMILY	NO. OF POSITIONS			SIZE		VOLTAGE
A multiple base for solenoid/pneumatic connection Mach 16	04 4 Posn. 06 6 Posn. 08 8 Posn. 10 10 Posn. 12 12 Posn.	M electrical connection only for monostable valves B electrical connection for bistable valves	MCN celectrical connector WC5 pre-wired cable ACM additional connection for monostable battery	08 G 1/8''	M MSV 25 SMS 00 M6 MSV G5 SMS 00 M8 MSV H5 SMS 00 V MSV 25 SCS 00 L MSV 25 SMP 00 L6 MSV G5 SMP 00 L8 MSV H5 SMP 00 J MSV 25 SMB 00 J6 MSV G5 SMB 00 J8 MSV H5 SMB 00 K MSV 25 SCB 00 G MSV 26 SMS CC G6 MSV G6 SMS CC G8 MSV H8 SMS CC O MSV 26 SCS CC E MSV 26 SMS OC E6 MSV G6 SMS OC E8 MSV H8 SMS OC F MSV 26 SCS OC B MSV 26 SMS PC B6 MSV G6 SMS PC B8 MSV H8 SMS PC C MSV 26 SCS PC A BLANKING PLATE D INTERMEDIATE DIAPHRAGM	24VDC 24VAC

N.B. The valve insertion order inside the descriptive key is the following, starting from the connector, from the left towards the right: the first left square corresponds to the first valve close to the connector on the base. There are 12 squares available for the description: if you order a base with less than 12 positions, complete by placing a 0 in the remaining boxes.

MACH 16 VALVES
FOR MULTIPLE CONNECTOR

MONOSTABLE 5/2, SOLENOID/PNEUMATIC - MECHANICAL SPRING

M

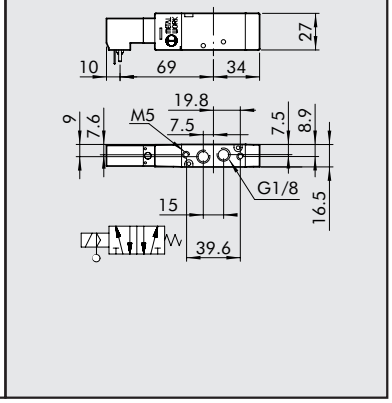


Code	Description	Weight [g]
7062040132	MSV 25 SMS 00 24VDC	92
7062040133	MSV 25 SMS 00 24VAC	92

Code	Description	Ø	H	Weight [g]
7066040132	MSV G5 SMS OO 24 VDC	6	32.7	96
7067040132	MSV H5 SMS OO 24 VDC	8	34	98
7066040133	MSV G5 SMS OO 24 VAC	6	32.7	96
7067040133	MSV H5 SMS OO 24 VAC	8	34	98

MONOSTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED – MECHANICAL SPRING

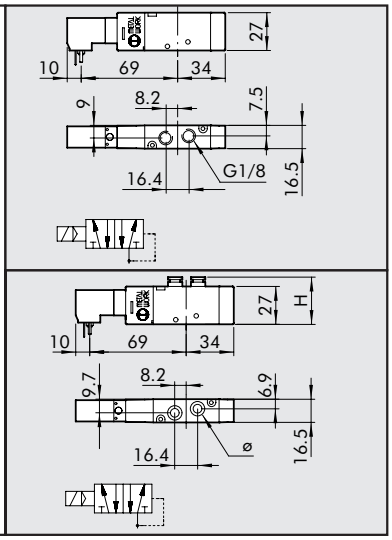
V



Code	Description	Weight [g]
7062060132	MSV 25 SCS 00 24VDC	93
7062060133	MSV 25 SCS 00 24VAC	93

MONOSTABLE 5/2, SOLENOID/PNEUMATIC - PNEUMATIC SPRING

L

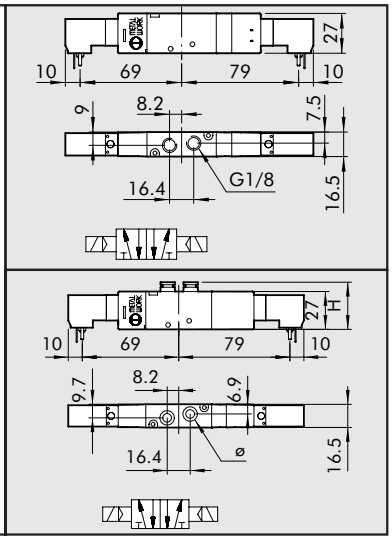


Code	Description	Weight [g]
7062040102	MSV 25 SMP 00 24VDC	93
7062040103	MSV 25 SMP 00 24VAC	93

Code	Description	Ø	H	Weight [g]
7066040102	MSV G5 SMP OO 24 VDC	6	32.7	96
7067040102	MSV H5 SMP OO 24 VDC	8	34	98
7066040103	MSV G5 SMP OO 24 VAC	6	32.7	96
7067040103	MSV H5 SMP OO 24 VAC	8	34	98

BISTABLE 5/2, SOLENOID/PNEUMATIC

J

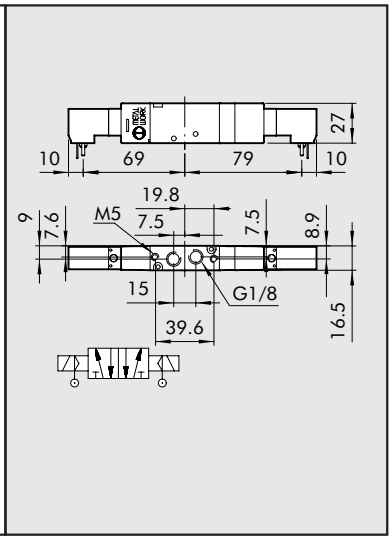


Code	Description	Weight [g]
7062040112	MSV 25 SMB 00 24VDC	139
7062040113	MSV 25 SMB 00 24VAC	139

Code	Description	Ø	H	Weight [g]
7066040112	MSV G5 SMB OO 24 VDC	6	32.7	143
7067040112	MSV H5 SMB OO 24 VDC	8	34	146
7066040113	MSV G5 SMB OO 24 VAC	6	32.7	143
7067040113	MSV H5 SMB OO 24 VAC	8	34	146

BISTABLE 5/2, SOLENOID/PNEUMATIC, PILOT-ASSISTED

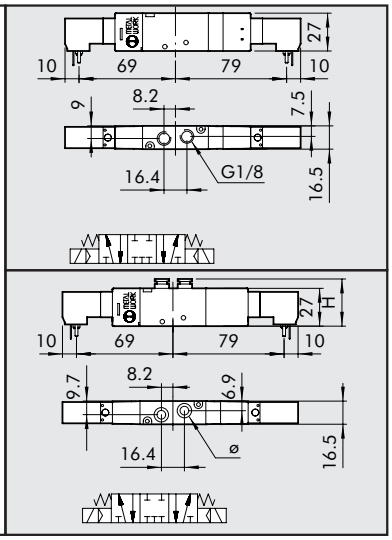
K



Code	Description	Weight [g]
7062060112	MSV 25 SCB 00 24VDC	140
7062060113	MSV 25 SCB 00 24VAC	140

MONOSTABLE 5/3, SOLENOID/PNEUMATIC – CLOSED CENTRES

G

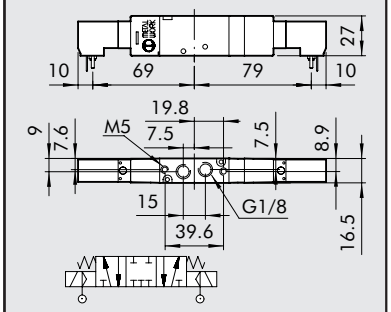


Code	Description	Weight [g]
7062040212	MSV 26 SMS CC 24VDC	142
7062040213	MSV 26 SMS CC 24VAC	142

Code	Description	Ø	H	Weight [g]
7066040212	MSV G6 SMS CC 24 VDC	6	32.7	146
7067040212	MSV H6 SMS CC 24 VDC	8	34	146
7066040213	MSV G6 SMS CC 24 VAC	6	32.7	146
7067040213	MSV H6 SMS CC 24 VAC	8	34	146

MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED – CLOSED CENTRES

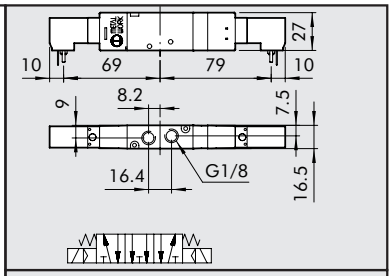
O



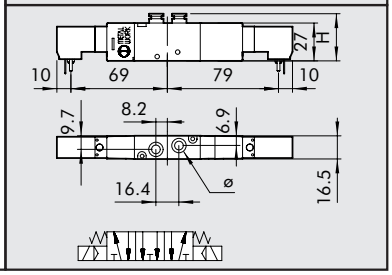
Code	Description	Weight [g]
7062060212	MSV 26 SCS CC 24VDC	143
7062060213	MSV 26 SCS CC 24VAC	143

MONOSTABLE 5/3 SOLENOID/PNEUMATIC – OPEN CENTRES

E



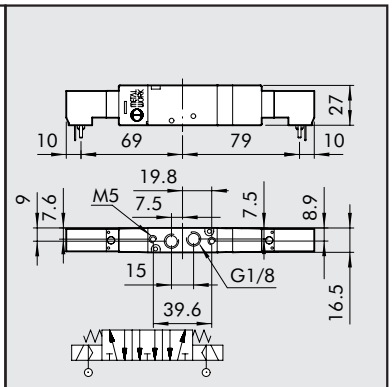
Code	Description	Weight [g]
7062040312	MSV 26 SMS OC 24VDC	142
7062040313	MSV 26 SMS OC 24VAC	142



Code	Description	Ø	H	Weight [g]
7066040312	MSV G6 SMS OC 24 VDC	6	32.7	146
7067040312	MSV H6 SMS OC 24 VDC	8	34	146
7066040313	MSV G6 SMS OC 24 VAC	6	32.7	146
7067040313	MSV H6 SMS OC 24 VAC	8	34	146

MONOSTABLE 5/3 SOLENOID/PNEUMATIC, PILOT-ASSISTED – OPEN CENTRES

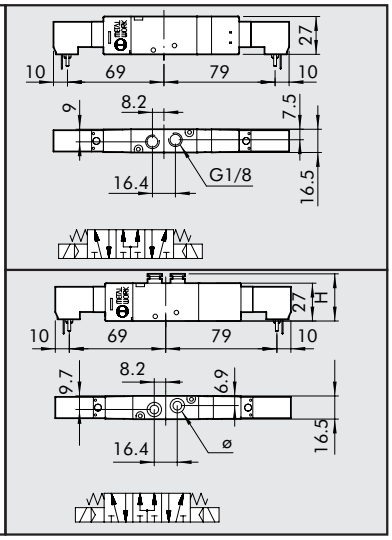
F



Code	Description	Weight [g]
7062060312	MSV 26 SCS OC 24VDC	143
7062060313	MSV 26 SCS OC 24VAC	143

MONOSTABLE 5/3, SOLENOID/PNEUMATIC – PRESSURE CENTRES

B

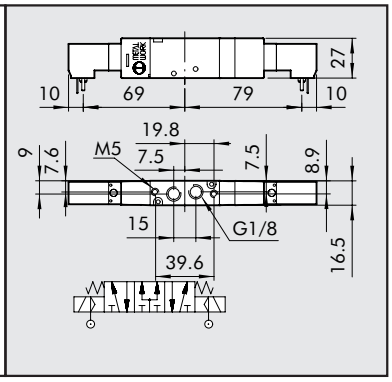


Code	Description	Weight [g]
7062040412	MSV 26 SMS PC 24VDC	142
7062040413	MSV 26 SMS PC 24VAC	142

Code	Description	Ø	H	Weight [g]
7066040412	MSV G6 SMS PC 24 VDC	6	32.7	146
7067040412	MSV H6 SMS PC 24 VDC	8	34	146
7066040413	MSV G6 SMS PC 24 VAC	6	32.7	146
7067040413	MSV H6 SMS PC 24 VAC	8	34	146

MONOSTABLE 5/3, SOLENOID/PNEUMATIC, PILOT-ASSISTED – PRESSURE CENTRES

C

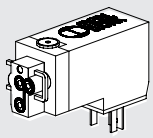


Code	Description	Weight [g]
7062060412	MSV 26 SCS PC 24VDC	143
7062060413	MSV 26 SCS PC 24VAC	143

SPARE PARTS

COIL MACH 16

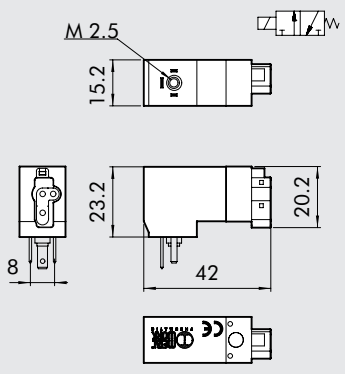
OLD



Code	Description
W4015201000	PILOT – MULTIPLE CONNECTION 24 VDC
W4015201010	PILOT – MULTIPLE CONNECTION 24 VAC

COIL MACH 16

NEW

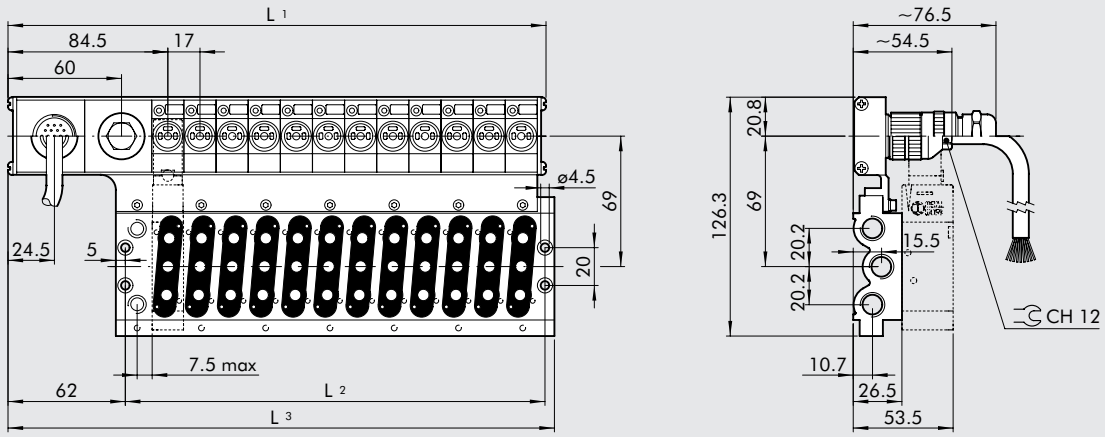


Code	Description
W4015401000	IN-LINE PILOT 24 VDC
W4015401010	IN-LINE PILOT 24 VAC 50/60 Hz

NB: if the pilot to be replaced bears the writing CE, you have to order among the NEW pilots, otherwise order among the OLD pilots

BASES WITH MULTIPLE CONNECTION

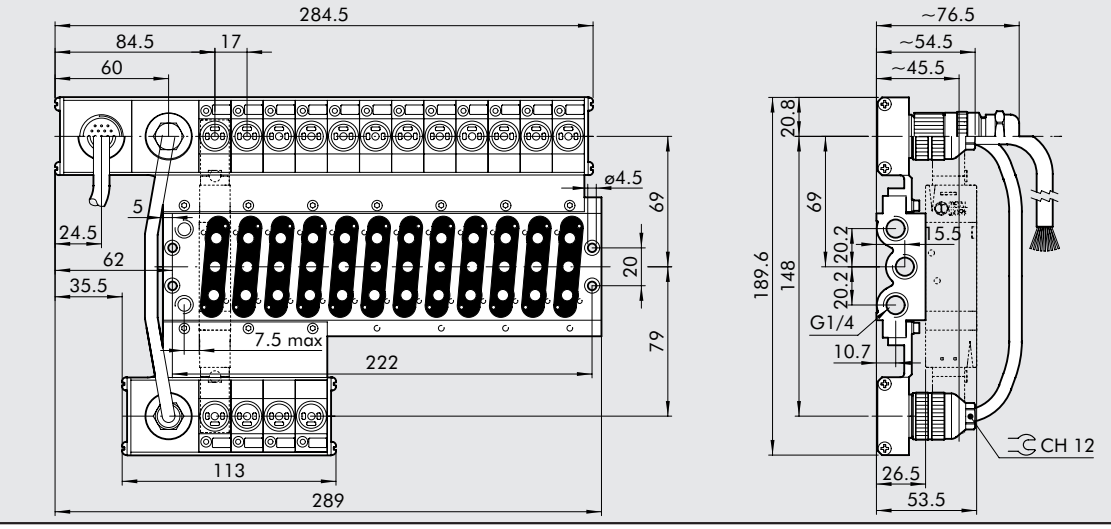
MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8, 10, 12 POSITIONS



Pos.-Nr.	L1	L2	L3	Description	Code 24 VDC	Code VAC		Weight [g]
4	148.5	86	153	CVM EP 08 04 M MCN	0225100401	0225110401		504
6	182.5	120	187	CVM EP 08 06 M MCN	0225100601	0225110601		644
8	216.5	154	221	CVM EP 08 08 M MCN	0225100801	0225110801	with connector	784
10	250.5	188	255	CVM EP 08 10 M MCN	0225101001	0225111001		924
12	284.5	222	289	CVM EP 08 12 M MCN	0225101201	0225111201		1264
4	148.5	86	153	CVM EP 08 04 M WC5	0225400401	0225410401		3642
6	182.5	120	187	CVM EP 08 06 M WC5	0225400601	0225410601		3781
8	216.5	154	221	CVM EP 08 08 M WC5	0225400801	0225410801	with pre-wired cable	3923
10	250.5	188	255	CVM EP 08 10 M WC5	0225401001	0225411001		4070
12	284.5	222	289	CVM EP 08 12 M WC5	0225401201	0225411201		4195

. . . . . : • 24VDC = direct current
• 24VAC = alternating current

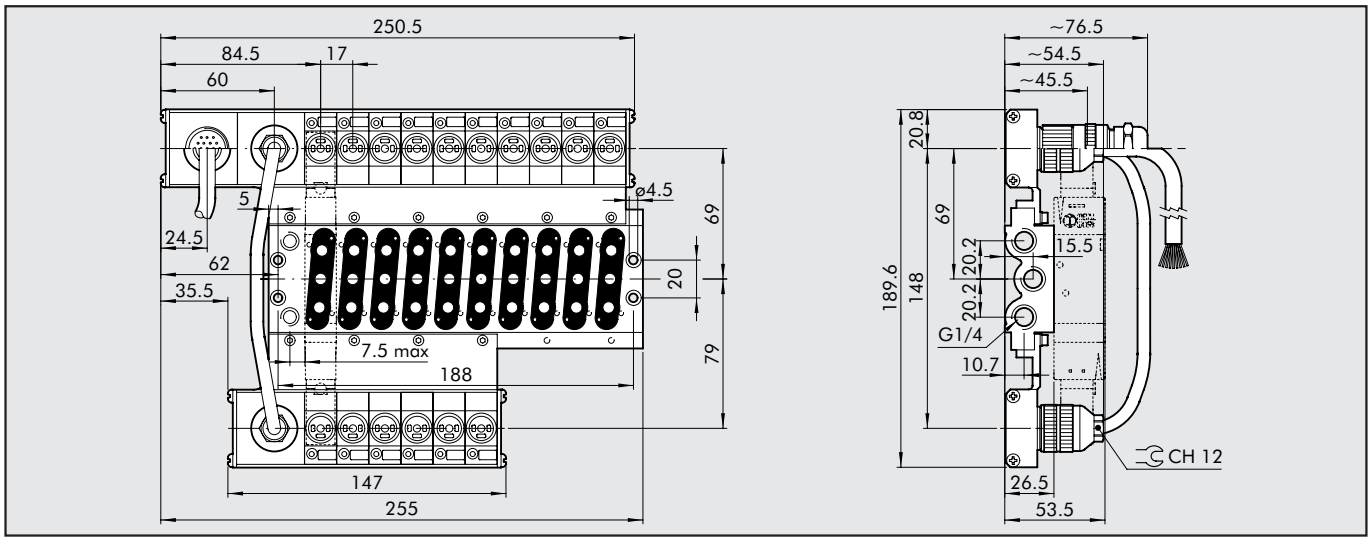
BISTABLE SOLENOID/PNEUMATIC BASE WITH 12 POSITIONS



Pos.-Nr.	Description	Code 24 VDC	Code VAC		Weight [g]
12	CVM EP 08 12 B MCN	0225201201	0225211201	with multiple connector	1315
12	CVM EP 08 12 B WC5	0225501201	0225511201	with pre-wired cable	4700

. . . . . : • 24VDC = direct current
• 24VAC = alternating current

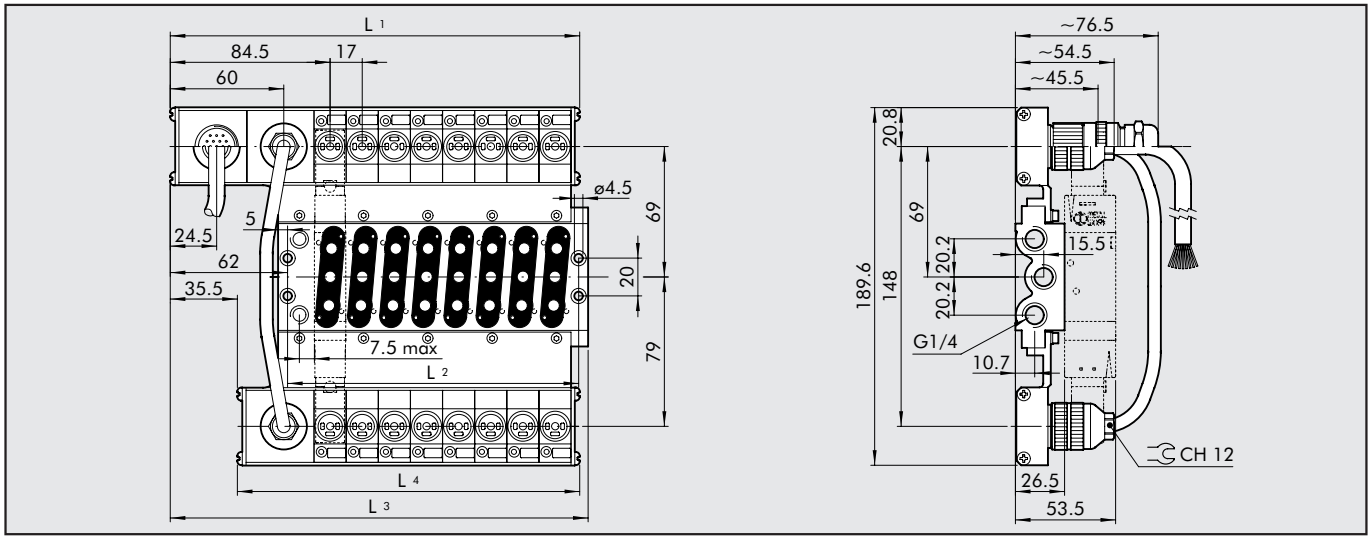
BISTABLE SOLENOID/PNEUMATIC BASE WITH 10 POSITIONS



Pos.-Nr.	Description	Code 24 VDC	Code VAC		Weight [g]
10	CVM EP 08 10 B MCN	0225201001	0225211001	with multiple connector	1245
10	CVM EP 08 10 B WC5	0225501001	0225511001	with pre-wired cable	4600

. . . . . : • 24 VDC = direct current
• 24 VAC = alternating current

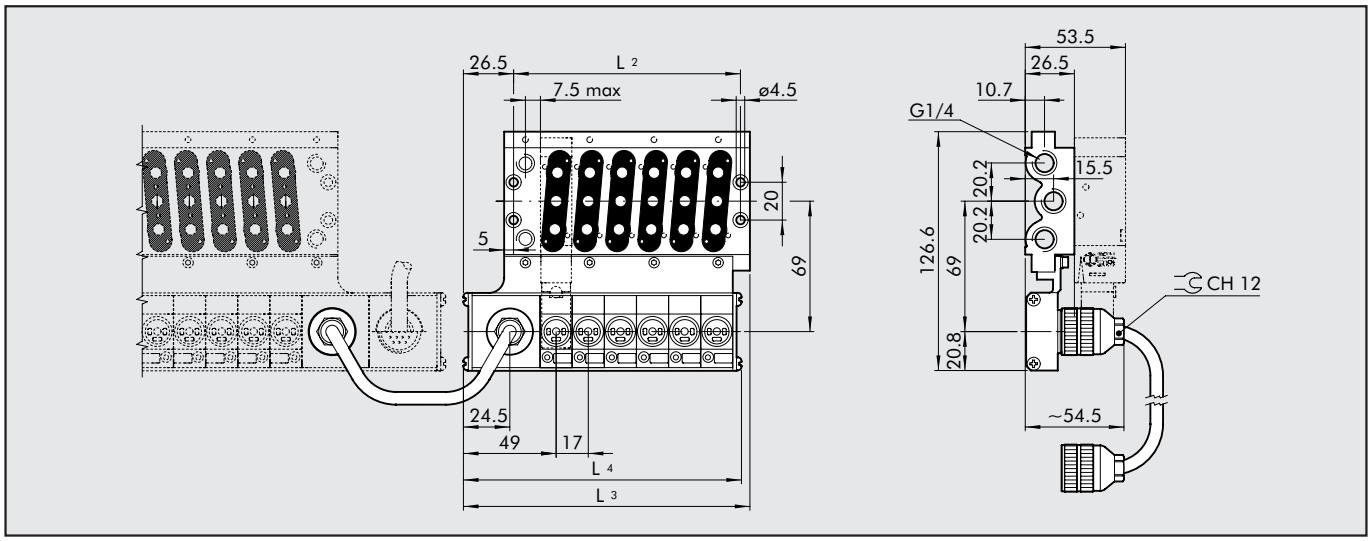
BISTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS



Pos.-Nr.	L1	L2	L3	L4	Description	Code 24 VDC	Code VAC		Weight [g]
4	148.5	86	153	113	CVM EP 08 04 B MCN	0225200401	0225210401		770
6	182.5	120	187	147	CVM EP 08 06 B MCN	0225200601	0225210601	with multiple connector	965
8	216.5	154	221	181	CVM EP 08 08 B MCN	0225200801	0225210801		1200
4	148.5	86	153	113	CVM EP 08 04 B WC5	0225500401	0225510401		3910
6	182.5	120	187	147	CVM EP 08 06 B WC5	0225500601	0225510601	with pre-wired cable	4086
8	216.5	154	221	181	CVM EP 08 08 B WC5	0225500801	0225510801		4264

. . . . . : • 24 VDC = direct current
• 24 VAC = alternating current

ADDITIONAL MONOSTABLE SOLENOID/PNEUMATIC BASE WITH 4, 6, 8 POSITIONS



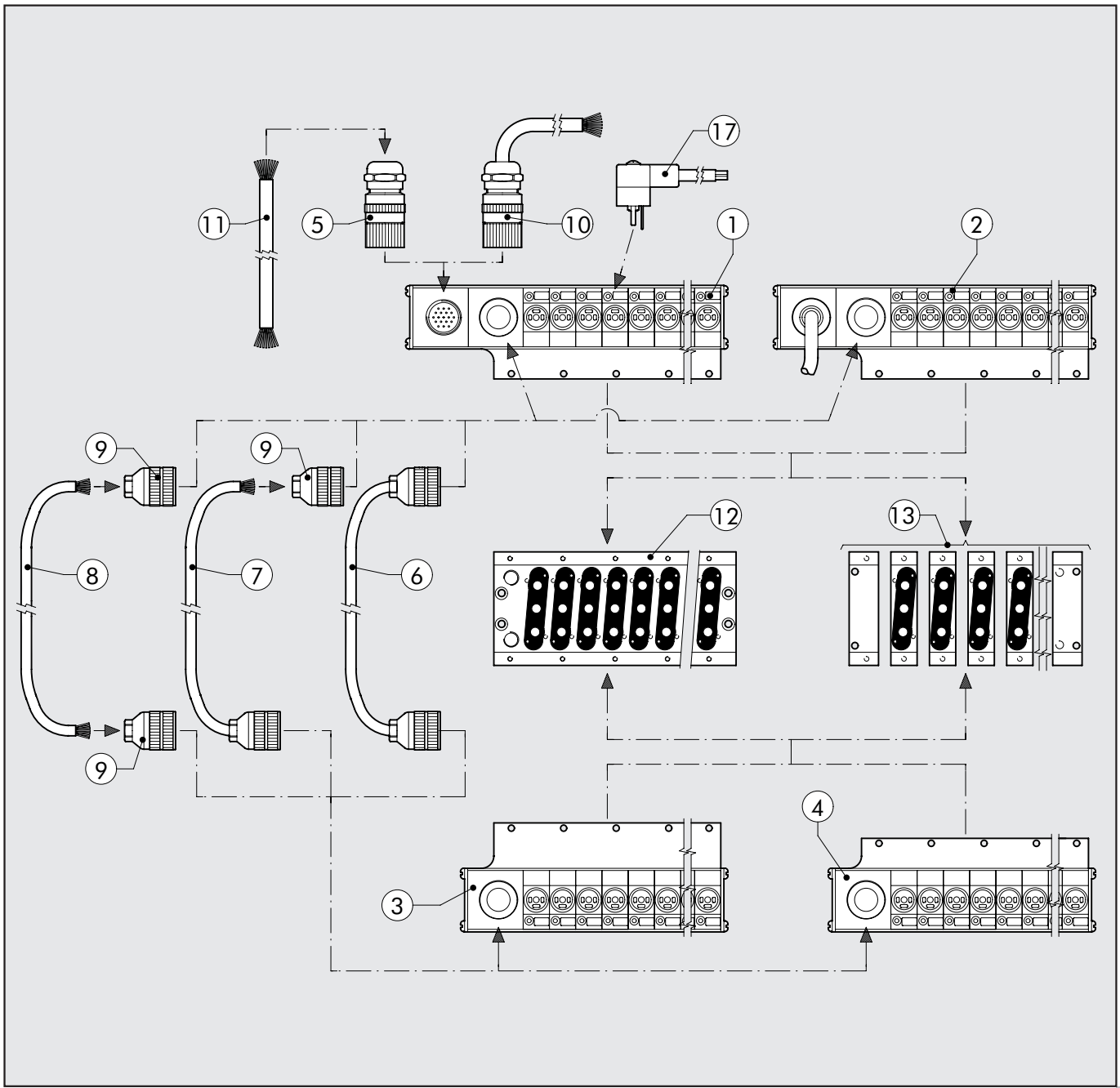
Pos.-Nr.	L2	L3	L4	Description	Code 24 VDC	Code VAC	Weight [g]
4	86	117.5	113	CVM EP 08 04 M ACM	0225300401	0225310401	500
6	120	151.5	147	CVM EP 08 06 M ACM	0225300601	0225310601	640
8	154	185.5	181	CVM EP 08 08 M ACM	0225300801	0225310801	780

. . . . . : • 24 VDC = direct current
• 24 VAC = alternating current

NOTES

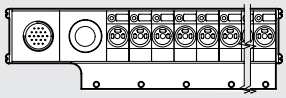
MODULAR MULTIPLE CONNECTOR KIT

It is possible to buy the various assembly kits separately, to obtain a wide range of customised applications.
The main units of the version with connector ① or the pre-wired version ② can easily be assembled with the multiple base ⑫ or the modular manifold base ⑬. The manifold base allows particular circuits on the individual valves (feed from exhaust outlets, pressure differentiation, etc.)
Likewise, on the other side it is also simple to mount the secondary unit ③. This possibility is very interesting because it allows you to convert a base for monostable valves into a base for bistable valves.
If you fit an additional secondary unit ④ on a base, you obtain an additional solenoid base that can be connected by means of return cables to a main base for monostable valves. The only thing to remember is that in all cases the total number of positions (connection to solenoid valve coil) must not exceed sixteen.
The 10 pin return cable ⑥ is used when a main unit and a secondary unit, or only one additional secondary unit, are mounted together on the multiple (or manifold) base. It has to be connected to the sockets shown in the diagram.
For different requirements, it is also possible to have return cables with a connector at one end only ⑦, or just the 10-wire cable ⑧. These types are available in different lengths. A 10-wire connector kit ⑨ is also available if you need to complete the wiring.
In the version with a connector, the 19-wire flying connector ⑤ pilots the entire assembled base. This connector must be welded onto the 19-wire cable ⑪, which is available in different lengths. The 19-wire connector complete with cable ⑩ is available in various lengths.
The male connector ⑰ allows the free electrical connection of the multiple connector to be used, in order to control the valves placed in the system or to control the bistable valves by a monostable multiple electrical connection base.



MAIN KIT – VERSION WITH CONNECTOR

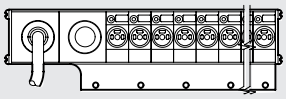
1



Code	Description	Weight [g]
0226500401	MAIN MULTIPLE CONNECTION KIT, 4 POSITIONS VDC	245
0226510401	MAIN MULTIPLE CONNECTION KIT, 4 POSITIONS VAC	245
0226500601	MAIN MULTIPLE CONNECTION KIT, 6 POSITIONS VDC	280
0226510601	MAIN MULTIPLE CONNECTION KIT, 6 POSITIONS VAC	280
0226500801	MAIN MULTIPLE CONNECTION KIT, 8 POSITIONS VDC	308
0226510801	MAIN MULTIPLE CONNECTION KIT, 8 POSITIONS VAC	308
0226501001	MAIN MULTIPLE CONNECTION KIT, 10 POSITIONS VDC	344
0226511001	MAIN MULTIPLE CONNECTION KIT, 10 POSITIONS VAC	344
0226501201	MAIN MULTIPLE CONNECTION KIT, 12 POSITIONS VDC	396
0226511201	MAIN MULTIPLE CONNECTION KIT, 12 POSITIONS VAC	396

MAIN MULTIPLE PRE-WIRED CONNECTION KIT

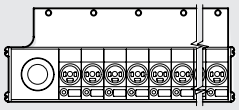
2



Code	Description	Weight [g]
0226400401	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 4 POSITIONS VDC	3350
0226410401	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 4 POSITIONS VAC	3350
0226400601	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 6 POSITIONS VDC	3400
0226410601	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 6 POSITIONS VAC	3400
0226400801	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 8 POSITIONS VDC	3423
0226410801	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 8 POSITIONS VAC	3423
0226401001	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 10 POSITIONS VDC	3460
0226411001	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 10 POSITIONS VAC	3460
0226401201	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 12 POSITIONS VDC	3490
0226411201	PRE-WIRED MULTIPLE MAIN CONNECTOR KIT, 12 POSITIONS VAC	3490

SECONDARY KIT

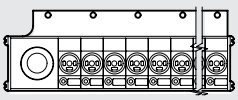
3



Code	Description	Weight [g]
0226200401	MULTIPLE SECONDARY CONNECTOR KIT, 4 POSITIONS VDC	166
0226210401	MULTIPLE SECONDARY CONNECTOR KIT, 4 POSITIONS VAC	166
0226200601	MULTIPLE SECONDARY CONNECTOR KIT, 6 POSITIONS VDC	210
0226210601	MULTIPLE SECONDARY CONNECTOR KIT, 6 POSITIONS VAC	210
0226200801	MULTIPLE SECONDARY CONNECTOR KIT, 8 POSITIONS VDC	257
0226210801	MULTIPLE SECONDARY CONNECTOR KIT, 8 POSITIONS VAC	257

ADDITIONAL SECONDARY KIT

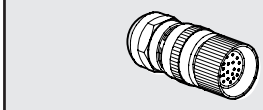
4



Code	Description	Weight [g]
0226300401	MULTIPLE SECONDARY CONNECTOR KIT, 4 POSITIONS VDC	158
0226310401	MULTIPLE SECONDARY CONNECTOR KIT, 4 POSITIONS VAC	158
0226300601	MULTIPLE SECONDARY CONNECTOR KIT, 6 POSITIONS VDC	199
0226310601	MULTIPLE SECONDARY CONNECTOR KIT, 6 POSITIONS VAC	199
0226300801	MULTIPLE SECONDARY CONNECTOR KIT, 8 POSITIONS VDC	243
0226310801	MULTIPLE SECONDARY CONNECTOR KIT, 8 POSITIONS VAC	243

19-WIRE CONNECTOR KIT

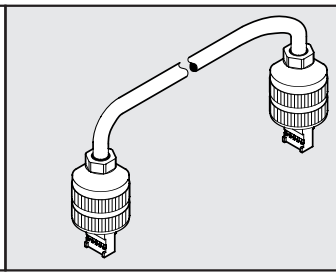
5



Code	Description
0226170001	19-WIRE CONNECTOR KIT

10-WIRE RETURN CABLE

6

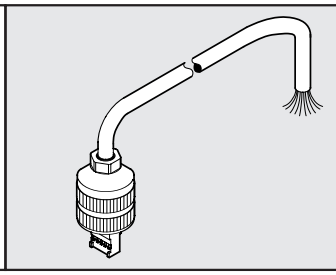


PLEASE CONTACT OUR SALES OFFICES

0226150022	22 cm
022615----	Length in cm

10-WIRE RETURN CABLE – ONE END WITH CONNECTOR

7



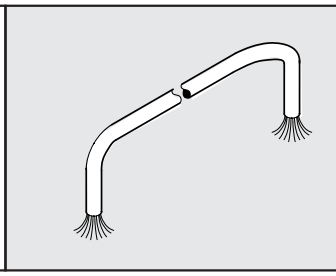
PLEASE CONTACT OUR SALES OFFICES

022613----

---- Length in cm

CABLE WITH 10 CONNECTORS

8

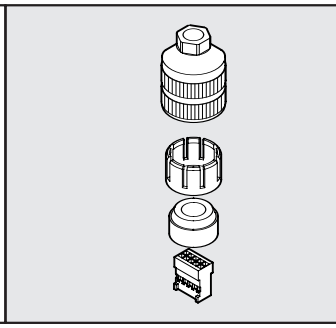


Code	Description
0226107201	10-WIRES CABLE

Please specify the desired length in metres

10-WIRE CONNECTOR KIT

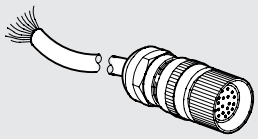
9



Code	Description
0226170002	10-WIRE CONNECTOR KIT

19-WIRE CABLE, ONE END WITH CONNECTOR

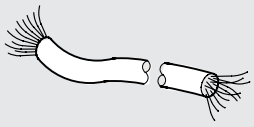
10



Code	Description
0226140250	19-WIRE CABLE, ONE END WITH CONNECTOR L = 2.5 m
0226140500	19-WIRE CABLE, ONE END WITH CONNECTOR L = 5 m
0226141000	19-WIRE CABLE, ONE END WITH CONNECTOR L = 10 m
0226141500	19-WIRE CABLE, ONE END WITH CONNECTOR L = 15 m
0226142000	19-WIRE CABLE, ONE END WITH CONNECTOR L = 20 m
0226143000	19-WIRE CABLE, ONE END WITH CONNECTOR L = 30 m

19-WIRE CABLE

11

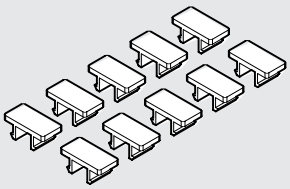


Code	Description
0226107101	19-WIRE CABLE

Indicate the desired length in metres

SET OF IDENTIFICATION PLATES

12

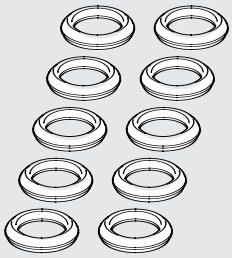


Code	Description
0226107000	SET OF IDENTIFICATION PLATES

Package: 10 pieces

ELECTRIC CONTACT GASKETS

13

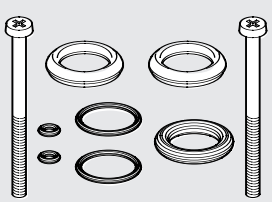


Code	Description
0226107001	SET OF ELECTRIC CONTACT GASKETS

Package: 10 pieces

SET OF MULTIPLE BASE GASKETS

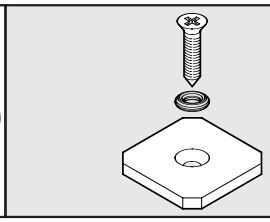
14



Code	Description
0226007001	SET OF M16 MULTIPLE BASE GASKETS

ELECTRIC CONNECTION BLANKING PLATE

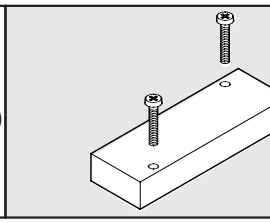
15



Code	Description
0225004502	ACCESSORIES:– MACH 16 ELECTRIC CONNECTION BLANKING PLATE

BASE BLANKING PLATE

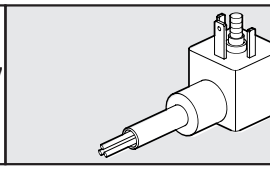
16



Code	Description
0225004500	ACCESSORIES: MACH 16 BASE BLANKING PLATE

MALE CONNECTOR

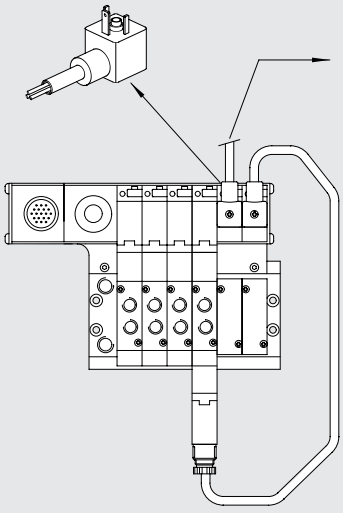
17



Code	Description
W0970504021	MALE CONNECTOR 2mm

Max power for each position = 5W
Max total power of multiple connector = 36W

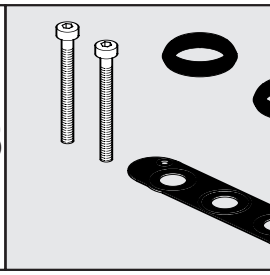
EXAMPLE OF A MALE CONNECTOR



SOV 1/8″
SOV 1/4"
SOV 1/2"
SOV on base
MACH 16
MACH 18
ISO 1 – ISO 2
PIV valves
APR: progressive starter
V3V: circuit switching valve

KIT OF MULTIPLE BASE GASKETS

18



Code	Description
0226007003	KIT OF M16 MULTIPLE BASE INTEGRATE GASKETS

REDUCER WITH GAUGE FOR VALVES, SERIES "RMV"

The RMV-series miniature pressure regulator with pressure gauge for valves is specifically conceived for mounting on the outlets of valves with a 1/8" port.
With limited cross dimension, it can be fitted to a series of small valves. The body is 16.5 mm wide and fits exactly on the valves of the Mach 16 series for multiple electrical connection.
Using the RMV, it is possible to differentiate the pressure of each single output of the valves. For example, if you mount it on port 2 and not on port 4, the pressure can be reduced on port 2 only. If you mount one for each port, the pressure on port 2 will differ from that on port 4, which in turn is less than the feed pressure (outlet 1).
There are three 1/8" threaded RMV ports that are pneumatically connected in parallel. A small pressure gauge is mounted in one port; another port is plugged by an A7-type fitting and a third can take a fitting. The user, however, can decide whether the layout of components is to be modified or not. He might, for example, decide to mount three fittings to create a three-port reduced-pressure distributor.

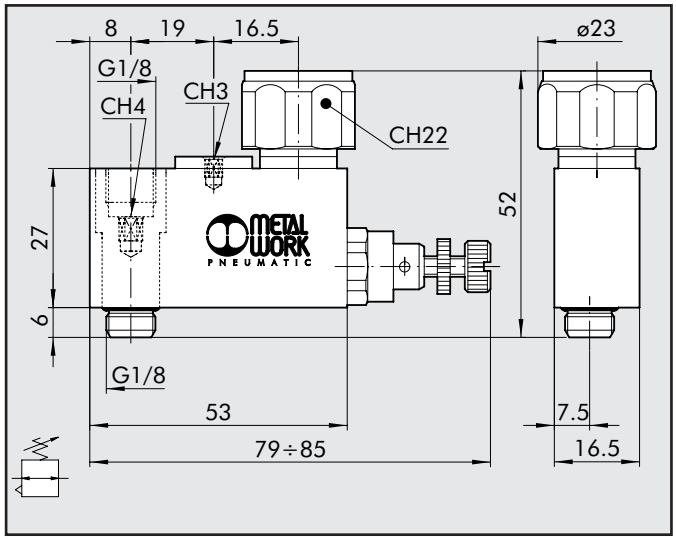


TECHNICAL DATA

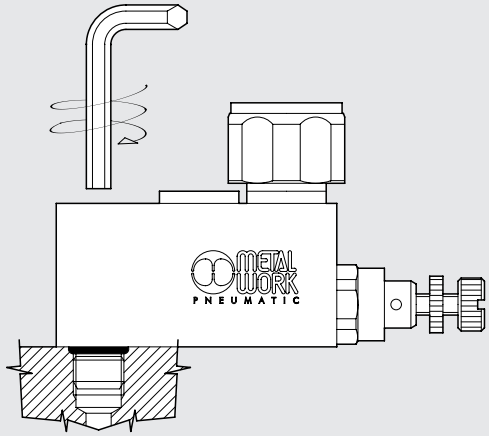
Threaded input connection		1/8" external thread
Threaded output connection		1/8" internal thread
Regulation range	bar	1÷8
	MPa	0.1÷0.8
	psi	14.5÷116
Input pressure	bar	2÷10
	MPa	0.2÷1
	psi	29÷145
Flow rate at 6.3 bar (0.63 Mpa - 91 psi) ΔP 1 bar		140 Nl/1'
Flow rate at free exhaust at 6.3 bar (0.63 Mpa - 91 psi)		360 Nl/1'
Fluid		filtered lubricated or unlubricated air
Maximum temperature at 10 Bar (1 Mpa - 145 psi)		-10°C ÷ +60°
		+14°F ÷ + 140°F
Assembly position		on valves
Use instructions		The pressure must always be regulated in increasing values

ORDERING CODE

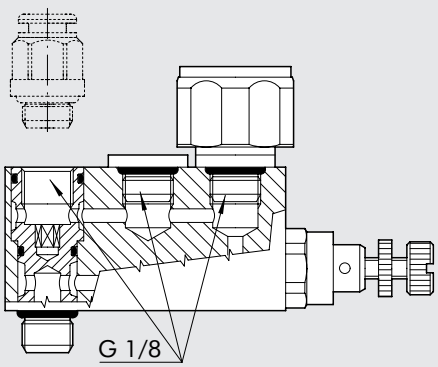
Code	Description
9061601	RMV 1/8"



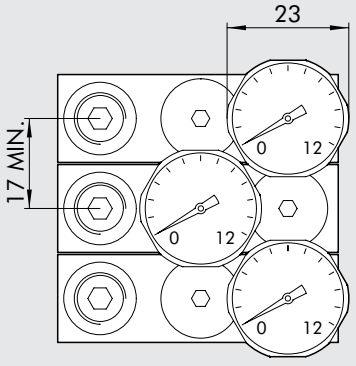
APPLICATIONS – ASSEMBLY



Fixing the reducer onto the valve



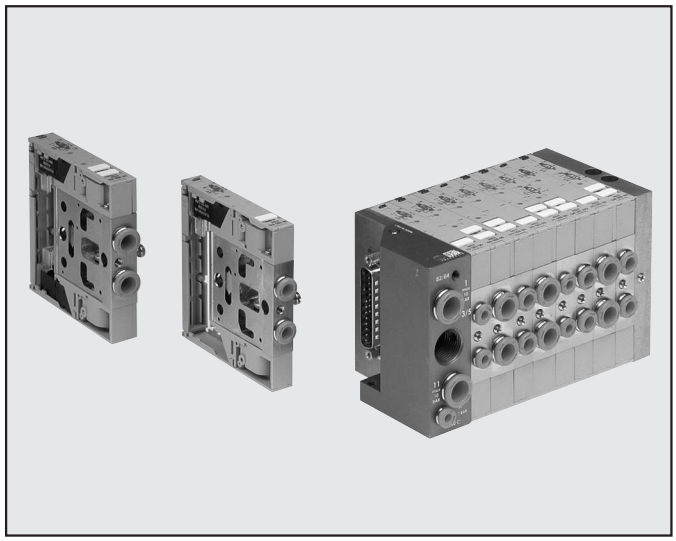
3 outputs with G1/8" thread



When mounting on valve units, with a pitch of less than 23 mm, alternate the gauge positions.

MULTIMACH

Multimach is not a mere valve, it is an electropneumatic distribution "island" - a single block ready for connection to power and air delivery pipes and a multi-pin cable.
All the pneumatic connections are situated on one side with built-in push-in fittings. The user interface is on the other side so that the fitter or serviceman has everything within an easy reach: manual controls, active valve signalling lights, compressed air system diagram, valve identification plates. The user can count on four different orientations for the electric connector.
Multimach provides full flexibility in the application of valves: 1 to 24 valves, power plates and drain for pipes of various sizes, electric 9- or 25-pin plug connector. But the real novelty, which is patented by Metal Work, is the possibility of mounting valves of different flow rates: three different valves can be mounted at a time and a valve can be replaced with another of a different flow rate. This revolutionary concept enables the user to optimise space and costs and adapt the unit to different performance requirements.
The ratio between the flow rate of the Multimach system and sizes is incomparable: the top in terms of miniaturisation and efficiency.

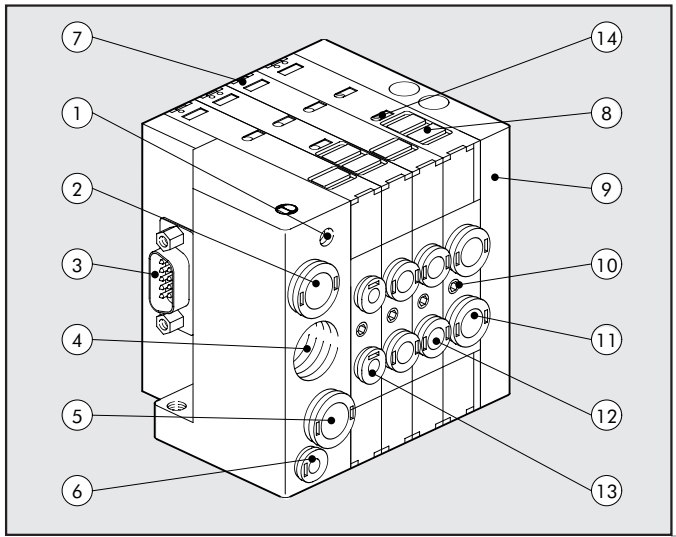


TECHNICAL DATA

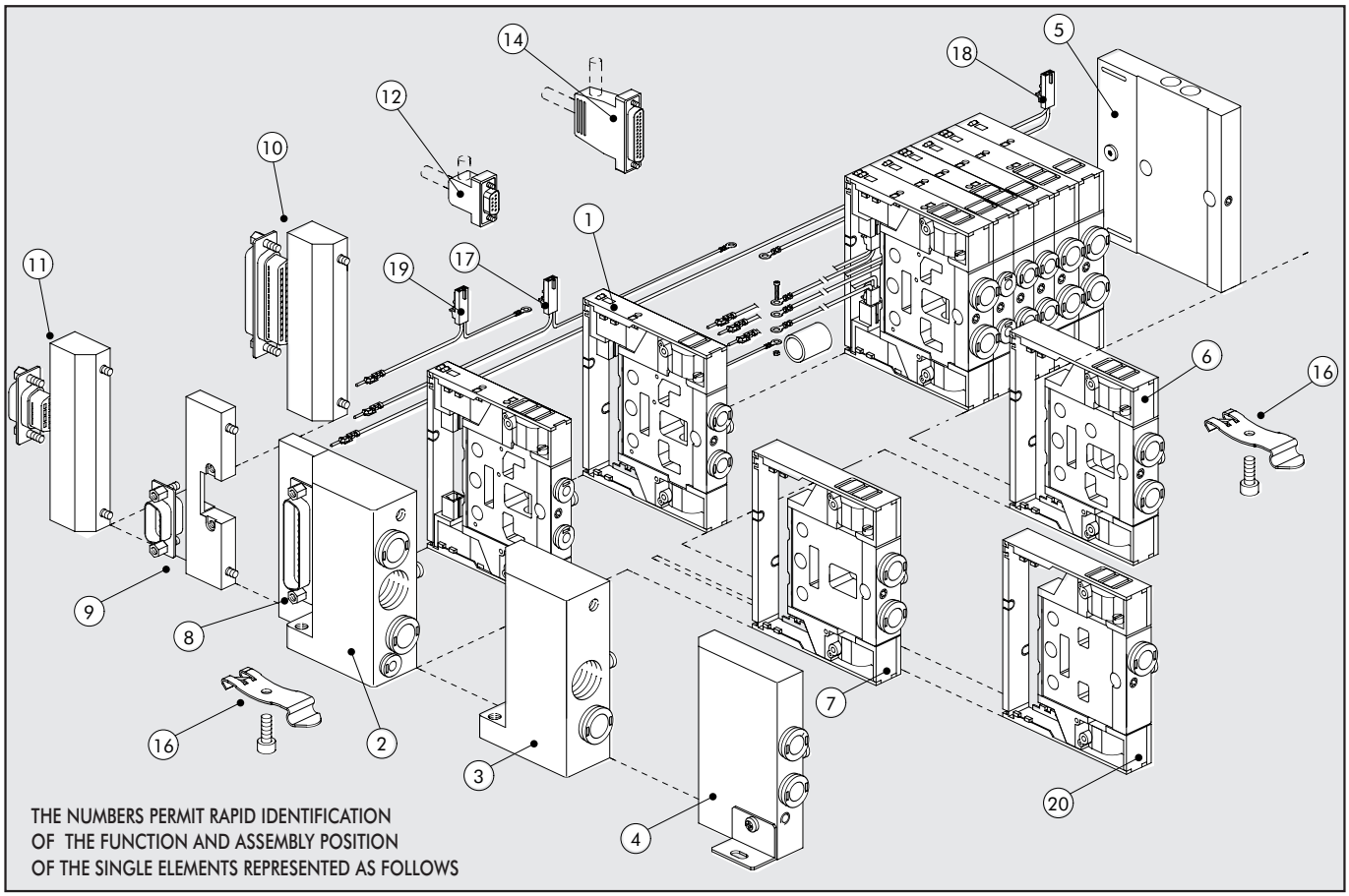
Valve port connections		quick-connection ports 2 and 4, Ø 4,6,8 mm		threaded exhaust port 3/8 or fitting Ø8
Connection on the end-plate for the supply of pilots		Automatic fitting Ø 4		
Operating temperature range	°C	-10°C to 60°C		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Screw for valve - wall-mounting		according to the end-plate used: see page 2.1/108		
Flow rate at 6 bar ΔP 1bar	Nl/min	11mm Ø 4: 200 Nl/min	11mm Ø 6: 500 Nl/min	14mm Ø 8: 800 Nl/min
Voltage range		24 VDC ±10%		
Power		1,2 W		
Insulation class		F155		
Degree of protection		IP51		
Solenoid rating		100% ED		
Pressure range		X (pilot supply)		1-11 (valve supply)
	- terminal 1-11	2÷7 bar		vacuum at 10 bar
	- terminal 1	2 ÷ 7 bar		
	- terminal 1 reduced	2 ÷ 7 bar		
TRA/TRR 2X3/2 monostable at 6 bar		8 ms / 45 ms		
TRA/TRR 5/2 monostable at 6 bar		8 ms / 33 ms		
TRA/TRR 5/2 bistable at 6 bar		20 ms / 20 ms		
TRA/TRR 5/3 cc monostable at 6 bar		20 ms / 20 ms		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.		

COMPONENTS

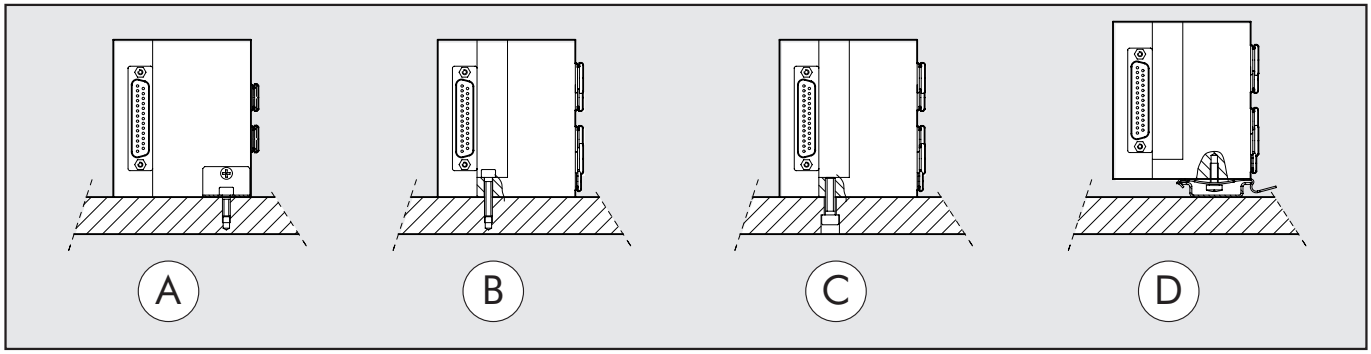
① Exhaust – Solenoid pilot
② Valve supply – port 1
③ Electrical multiple connection with 9 or 25 pins
④ Threaded connection of exhausts 3/5
⑤ Valve supply
⑥ Electrical control supply
⑦ LED (LED on, solenoid valve energised)
⑧ Removable identification labels
⑨ Blind end-plate
⑩ Screw for valve wall-mounting
⑪ Utility port for pipe Ø 8 mm
⑫ Utility port for pipe Ø 6 mm
⑬ Utility port for pipe Ø 4 mm
⑭ Manual control



THE MULTIMACH WORLD: FLEXIBILITY



FIXING THE BASE:



A: Fixing with reduced end-plate 1, CODE 0227300300, supplied complete with bracket.
B: Fixing with end-plate 1-11 CODE 0227300200 or with end-plate CODE 0227300201
C: Fixing with end-plate 1-11 CODE 0227300200 or with end-plate 1 CODE 0227300201 using the M4-thread found on the M5 end-plate.
D: Fixing on the DIN bar with end-plate 1-11 CODE 0227300 using the reduced end-plate 1 CODE 0227300300 or end-plate CODE 0227300201 using the push-in bracket CODE 0227300600. If you have to remove the base from the bar, this is rapid and can be performed without using any tools.

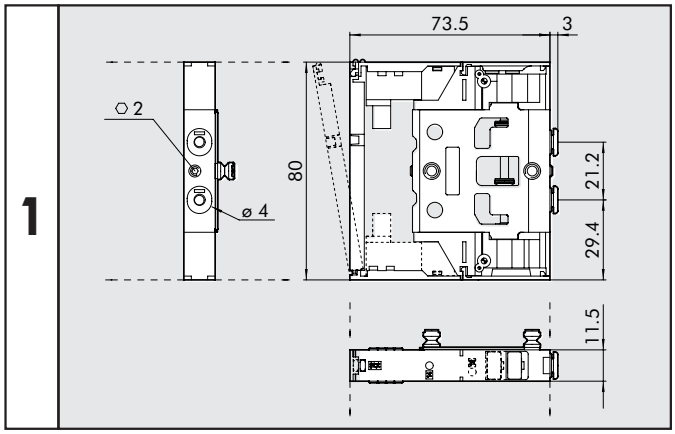
VALVE CODES

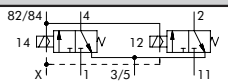
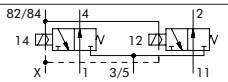
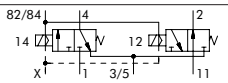
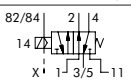
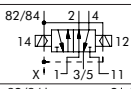
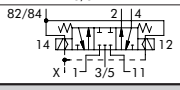
N S V	F	5	S E	B	0 0	2 4 V D C
FAMILY	PORT	FUNCTION	OPERATORS	RESETTING	FURTHER DETAILS	VOLTAGE
NSV mini-solenoid valve	F 11 mm cartridges Ø 4 G 11 mm cartridges Ø 6 H 14 mm cartridges Ø 8	5 5/2 6 5/3 8 3/2x2	SE Solenoid valve	B bistable S mechanical spring	00 5/2 3/2 NC+ 3/2 NO CC5/3 closed centres NC normally closed NO normally open	24VDC

KEY TO CODES – MULTIMACH-UNIT

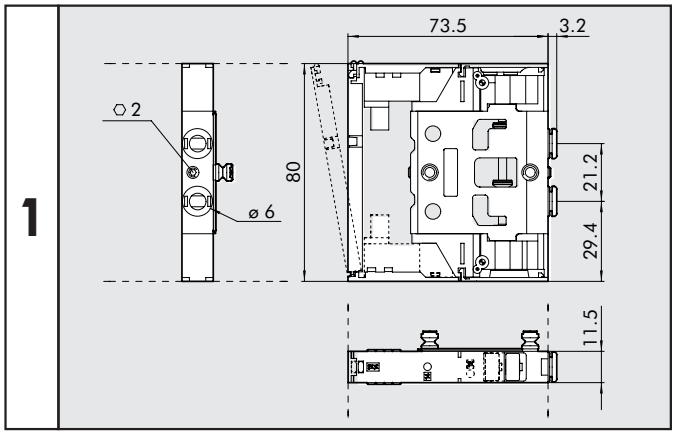
M 5 1	2	8	I6-W8-W6-O4-L8-5		1 2 - 1 4
VALVE	INPUT END-PLATE	ELECTRICAL BASE	TYPE OF VALVE		FURTHER DETAILS
Multimach IP51	2 End-plate1-11 3 End-plate 1 4 Reduced end-plate 1	8 Axial 25-wire connector base 9 Axial 9-wire connector base 10 25-wire rear connector base 11 9-wire rear connector base	I no. 2 3/2NC W no. 2 3/2NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable	5 blind end-plate 6 Passing-intermed. 7 Blind intermediate 20 exhaust section. 4 cartridge 4 6 cartridge 6 8 cartridge 8	12 9-wire connector 14 25-wire connector 16 Brackets for DIN bar

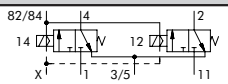
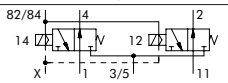
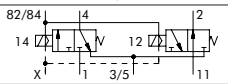
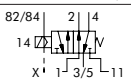
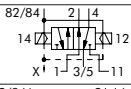
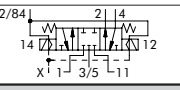
VALVE DIMENSIONS Ø 4



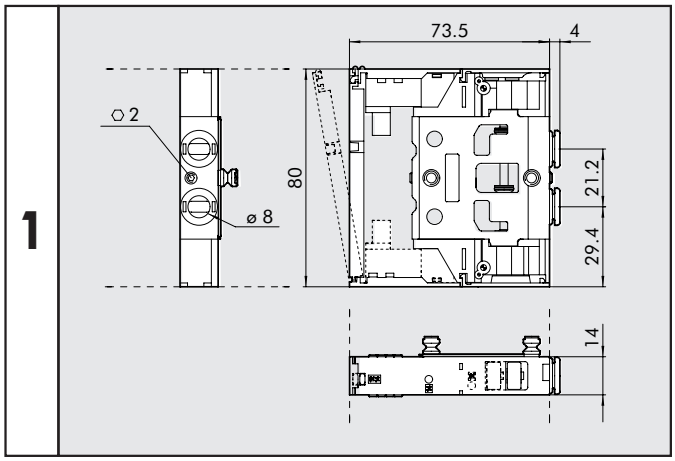
	Symbol	Abbrev.	Code	Weight [g]
I4		NSV F8 SES NC	7068030532	118
W4		NSV F8 SES NO	7068030632	118
L4		NSV F8 SES 00	7068030732	118
V4		NSV F5 SES 00	7068030132	100
K4		NSV F5 SEB 00	7068030112	114
O4		NSV F6 SES CC	7068030212	115

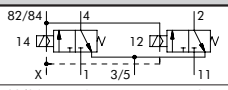
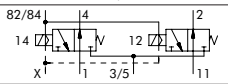
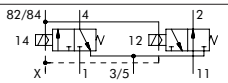
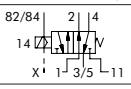
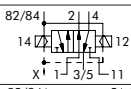
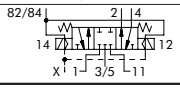
VALVE DIMENSIONS Ø 6



	Symbol	Abbrev.	Code	Weight [g]
I6		NSV G8 SES NC	7069030532	110
W6		NSV G8 SES NO	7069030632	110
L6		NSV G8 SES 00	7069030732	110
V6		NSV G5 SES 00	7069030132	90
K6		NSV G5 SEB 00	7069030112	107
O6		NSV G6 SES CC	7069030212	108

VALVE DIMENSIONS Ø 8

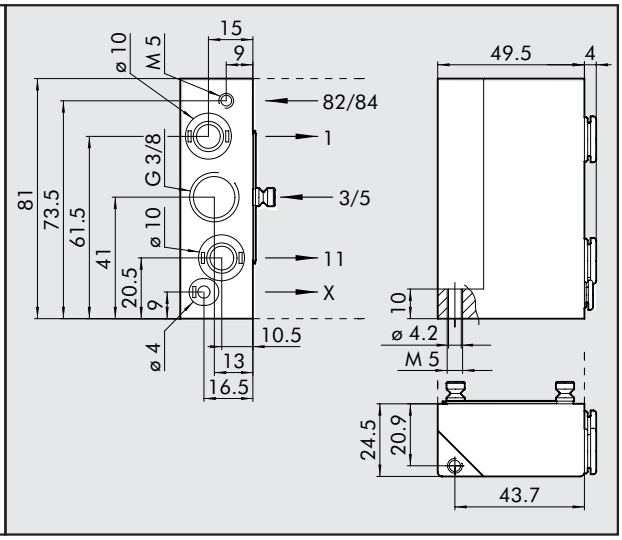


	Symbol	Abbrev.	Code	Weight [g]
I8		NSV H8 SES NC	7070030532	124
W8		NSV H8 SES NO	7070030632	124
L8		NSV H8 SES 00	7070030732	124
V8		NSV H5 SES 00	7070030132	105
K8		NSV H5 SEB 00	7070030112	120
O8		NSV H6 SES CC	7070030212	121

ACCESSORIES

END-PLATE 1-11

2

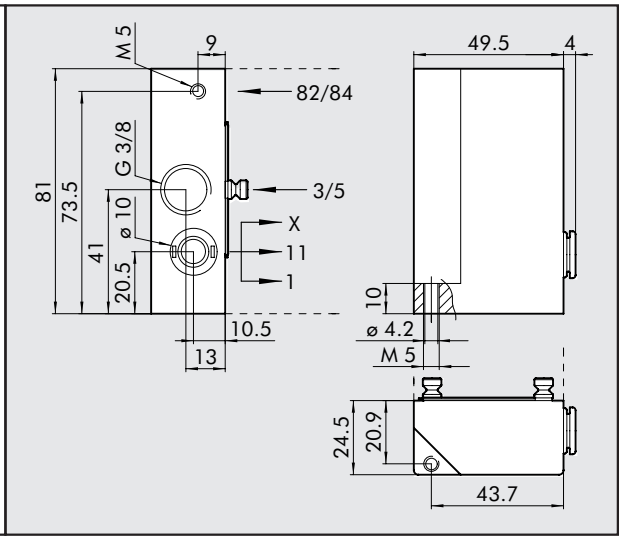


Code	Description	Weight [g]
0227300200	END-PLATE KIT 1-11	223

This end-plate allows for supplies to be differentiated
- port 2
- port 4
- pilot supply

END-PLATE 1

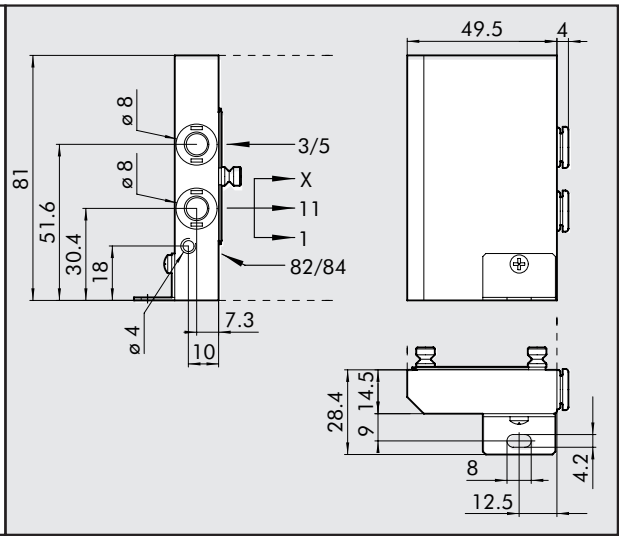
3



Code	Description	Weight [g]
0227300201	END-PLATE KIT 1	224

REDUCED END-PLATE 1

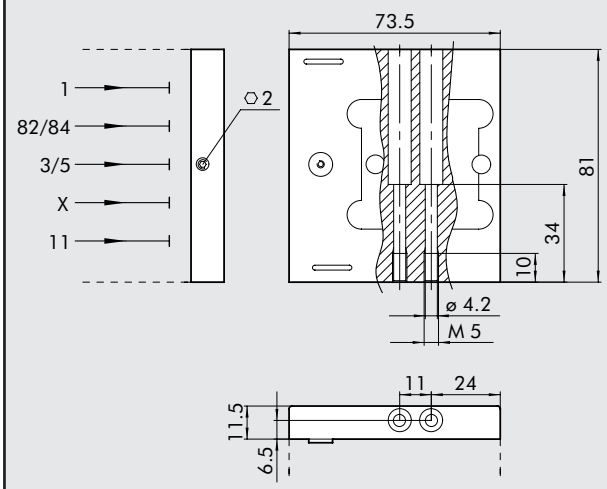
4



Code	Description	Weight [g]
0227300300	REDUCED END-PLATE KIT 1	148

BLIND END-PLATE

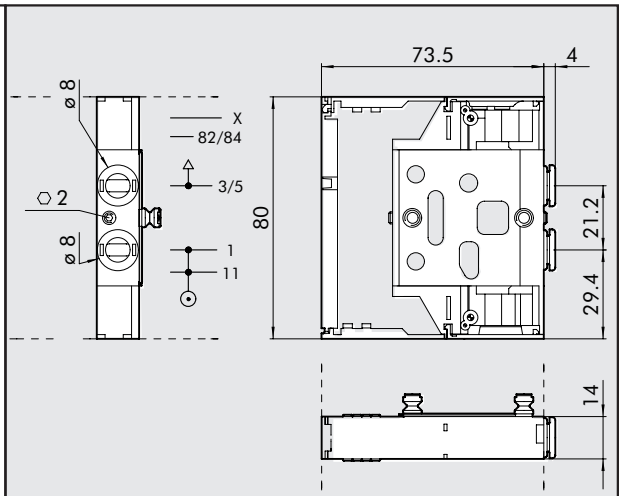
5



Code	Description	Weight [g]
0227300500	BLIND END-PLATE	168

INTERMEDIATE THROUGH

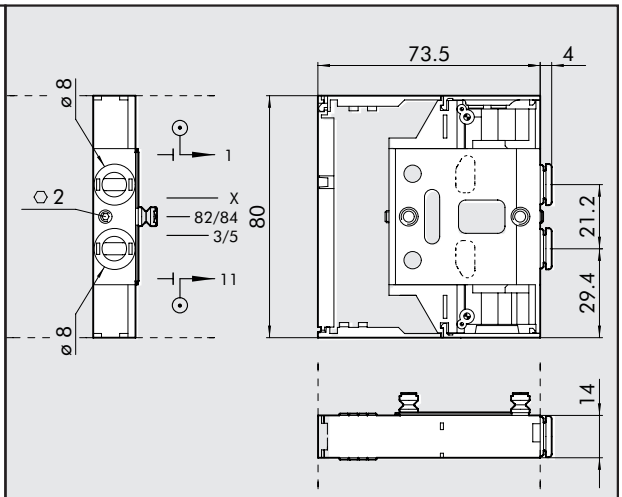
6



Code	Description	Weight [g]
0227300301	INTERMEDIATE THROUGH	92

INTERMEDIATE BLIND

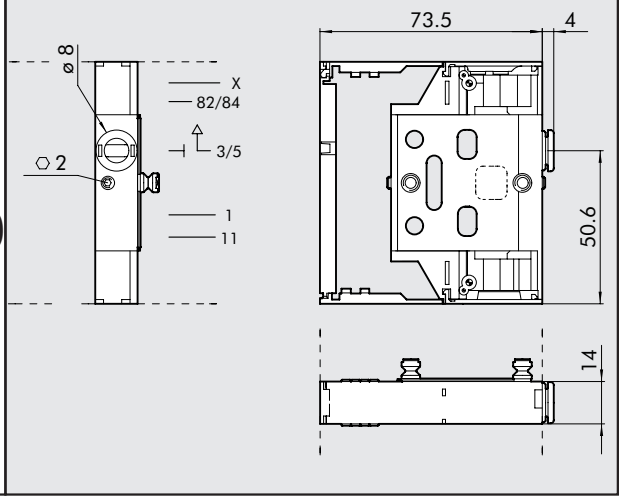
7



Code	Description	Weight [g]
0227300302	INTERMEDIATE BLIND	89

INTERMEDIATE EXHAUST SWITCH

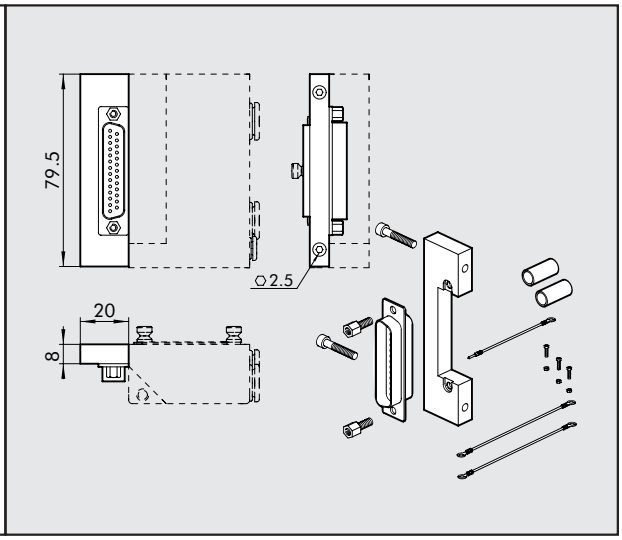
20



Code	Description	Weight [g]
0227300303	INTERMEDIATE EXHAUST SWITCH	95

AXIAL CONNECTOR BASE, 25 WIRES

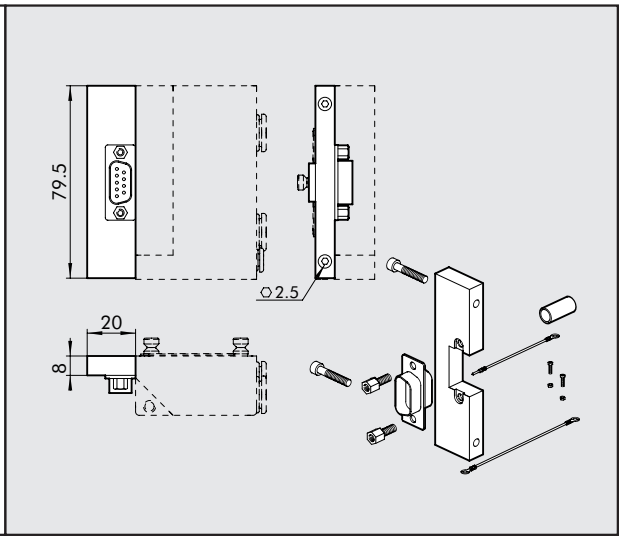
8



Code	Description	Weight [g]
0226180001	AXIAL CONNECTOR BASE KIT, 25 WIRES	54

AXIAL CONNECTOR BASE, 9 WIRES

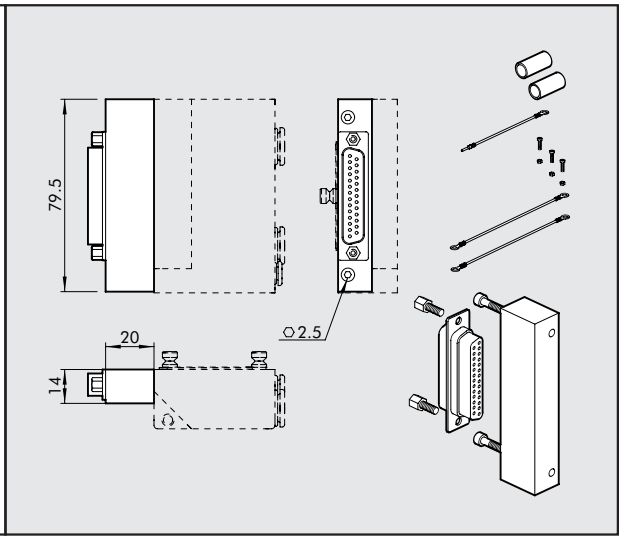
9



Code	Description	Weight [g]
0226180002	AXIAL CONNECTOR BASE KIT, 9 WIRES	51

REAR CONNECTOR BASE, 25 WIRES

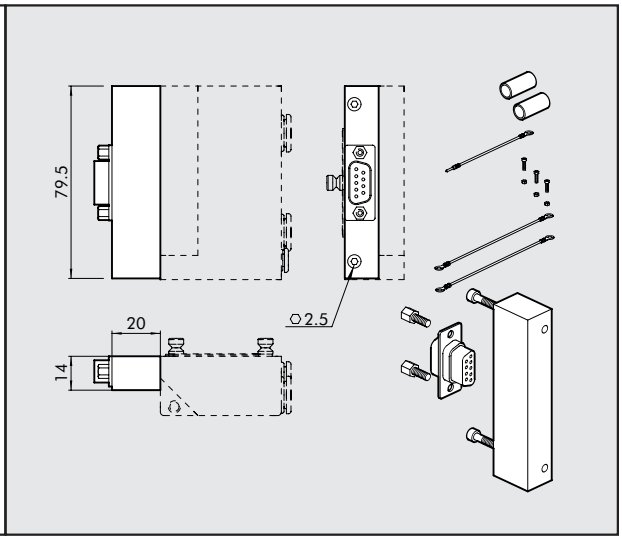
10



Code	Description	Weight [g]
0226180003	REAR CONNECTOR BASE KIT, 25 WIRES	73

REAR CONNECTOR BASE, 9 WIRES

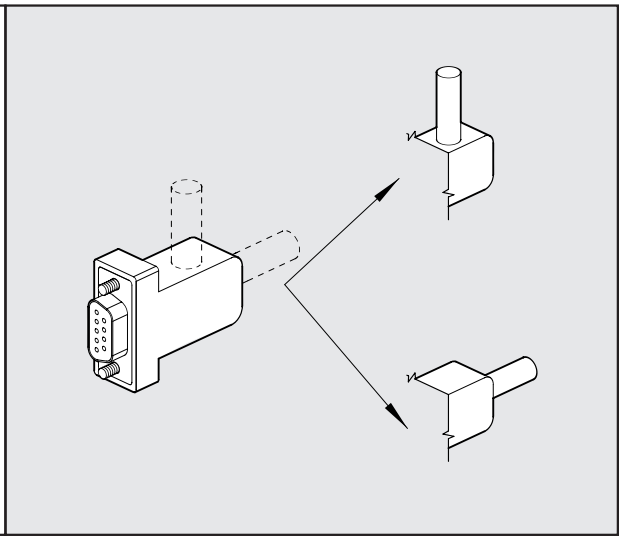
11



Code	Description	Weight [g]
0226180004	REAR CONNECTOR BASE KIT, 9 WIRES	77

STRAIGHT AND 90° CONNECTOR KIT, 9 WIRES

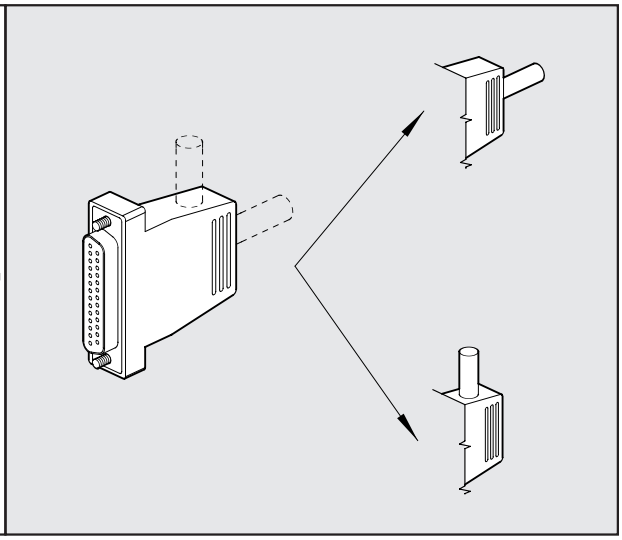
12



Code	Description	Weight [g]
0226180102	STRAIGHT AND 90° CONNECTOR KIT, 9 WIRES	31

STRAIGHT AND 90° CONNECTOR KIT, 25 WIRES

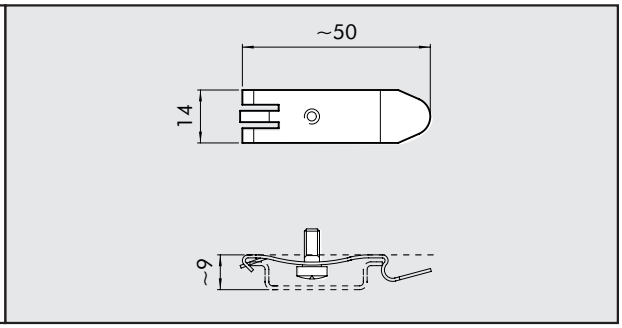
14



Code	Description	Weight [g]
0226180101	STRAIGHT AND 90° CONNECTOR KIT, 25 WIRES	48

CONNECTION BRACKETS ON DIN BAR

16

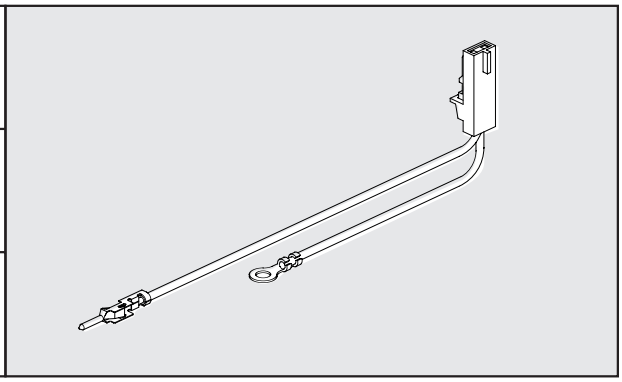


Code	Description	Weight [g]
0227300600	CONNECTION BRACKETS ON DIN BAR	8

Individually packed

CONNECTOR KIT + WIRE

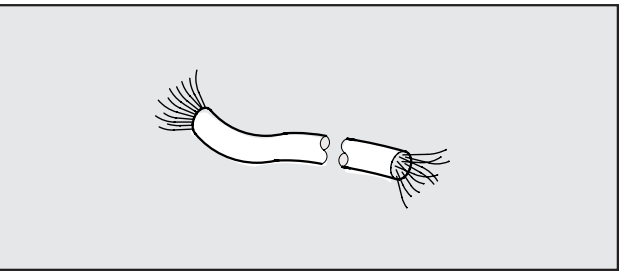
19
17
18



Code	Description	Weight [g]
0226180399	CONNECTOR KIT + WIRE 1-6*	3
0226180400	CONNECTOR KIT + WIRE 7-12**	4
0226180401	CONNECTOR KIT + WIRE13-30***	5

* For valve connection from 1st to 6th position counting from the connector
** For valve connection from 7th to 12th position, counting from the connector
*** For valve connection from 13th to 30th position, counting from the connector

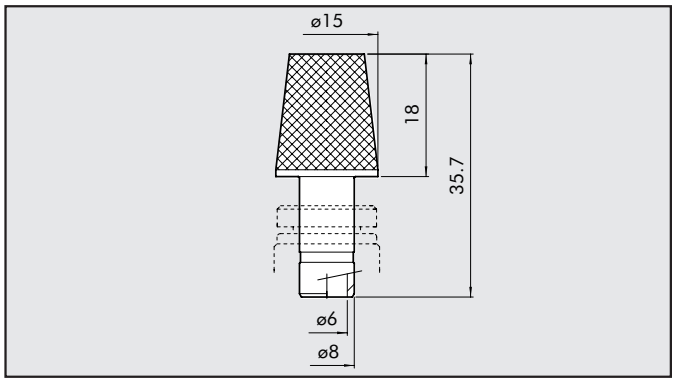
CABLES



Code	Description	Weight [g]
0226107201	10-WIRE CABLE	86
0226107101	19-WIRE CABLE	122
0226107102	25-WIRE CABLE	130

Specify the number of metres desired

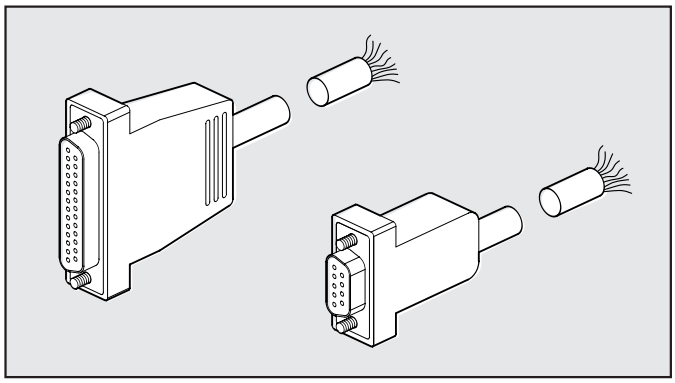
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	SILENCER FOR FITTING, Ø 8	15

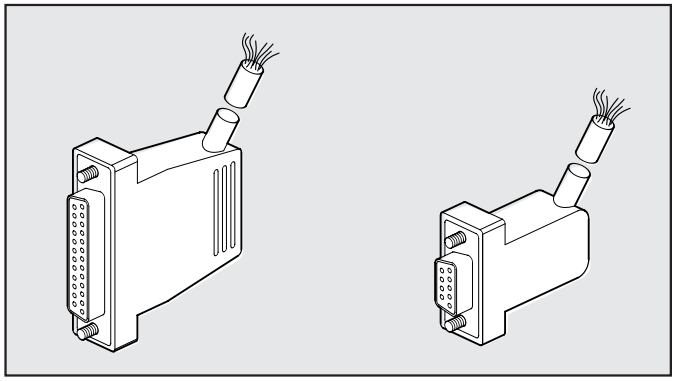
At the 3/5-exhaust port of the reduced end-plate 1
page 2.1/112 ref. 4 and of the intermediate through of the exhaust switch
page 2.1/114 reference 20

STRAIGHT PRE-WIRED CONNECTOR KIT



Code	Description	Weight [g]
0226900100	CONNECTOR + 9-WIRE AXIAL CABLE L.=1 M	90
0226900250	CONNECTOR + 9-WIRE AXIAL CABLE L.=2.5 M	220
0226900500	CONNECTOR + 9-WIRE AXIAL CABLE L.=5 M	434
0226920100	CONNECTOR + 25-WIRE AXIAL CABLE L.=1 M	132
0226920250	CONNECTOR + 25-WIRE AXIAL CABLE L.=2.5 M	320
0226920500	CONNECTOR + 25-WIRE AXIAL CABLE L.=5 M	636

PRE-WIRED 90° CONNECTOR



Code	Description	Weight [g]
0226910100	CONNECTOR + 9-WIRE 90° CABLE L.=1 M	90
0226910250	CONNECTOR + 9-WIRE 90°CABLE L.=2.5 M	220
0226910500	CONNECTOR + 9-WIRE 90°CABLE L.=5 M	434
0226930100	CONNECTOR + 25-WIRE 90° CABLE L.=1 M	132
0226930250	CONNECTOR + 25-WIRE 90° CABLE L.=2.5 M	320
0226930500	CONNECTOR + 25-WIRE 90° CABLE L.=5 M	636

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTORS

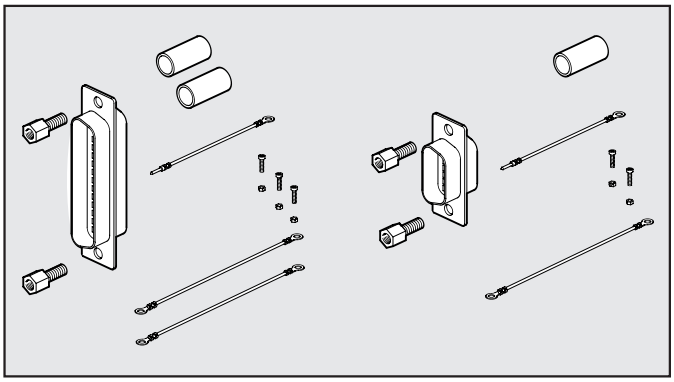
25 PIN

Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black
2	red/brown	11	red/orange	20	white
3	white/black	12	light blue	21	blue/white
4	red/blue	13	yellow/white	22	brown
5	black/orange	14	yellow	23	green/white
6	yellow/red	15	red/green	24	red
7	black/brown	16	orange	25	green/black
8	white/red	17	orange/white		
9	red/black	18	green		

9 PIN

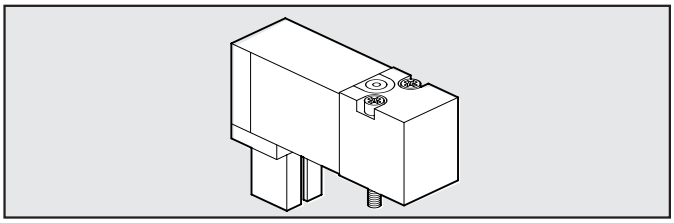
Position of electrical contact	Colour of the corresponding wire
1	green/black
2	white
3	blue/black
4	blue
5	yellow/black
6	yellow
7	red/black
8	green
9	white/black

MALE CONNECTOR KIT + CONTACTS + COMMON TERMINAL



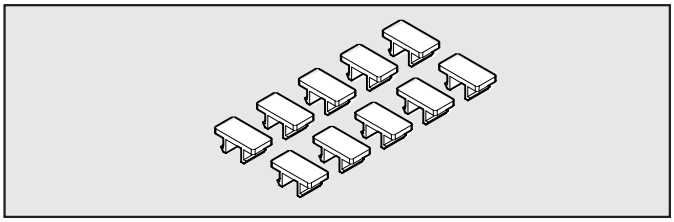
Code	Description
0226180201	MALE CONNECTOR KIT - 25 PINS
0226180202	MALE CONNECTOR KIT - 9 PINS

ELECTRIC PILOT



Code	Description
W4005001000	PLUG-IN PILOT 24 VDC LED

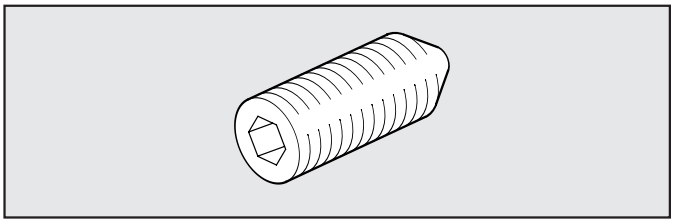
IDENTIFICATION PLATE KIT



Code	Description
0226107000	IDENTIFICATION PLATE KIT

Comes in 10-pc. packs

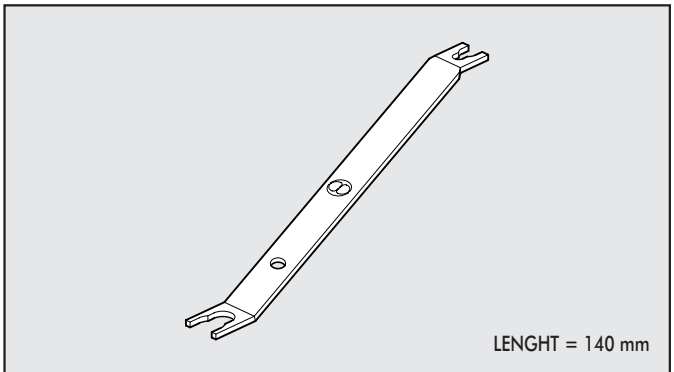
GRUB SCREW



Code	Description
0227300800	GRUB SCREW FOR MULTIMACH

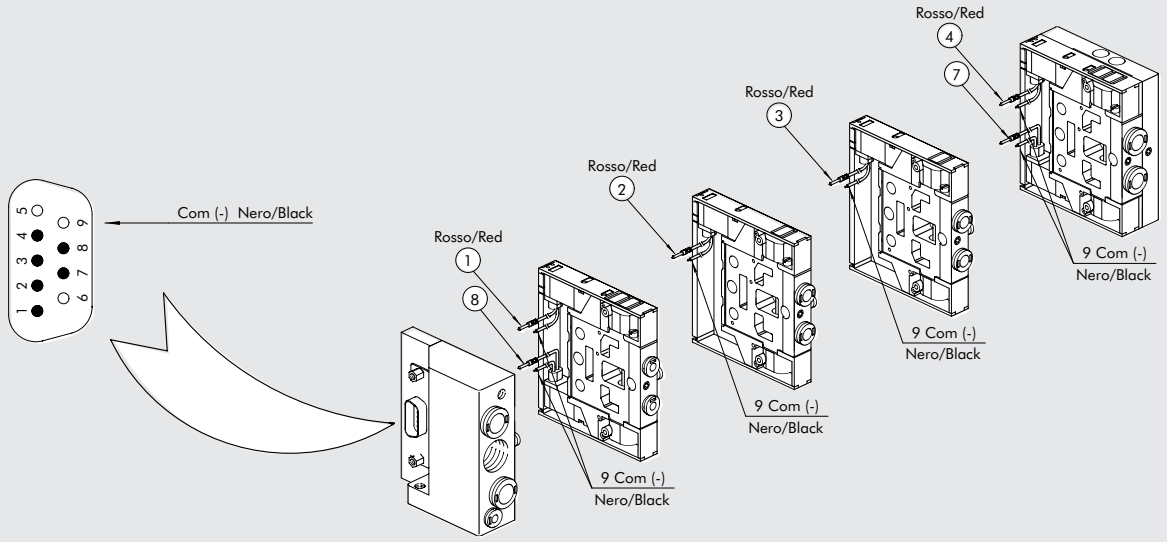
Comes in 10-pc. pack

R17 - PIPE RELEASE SPANNER



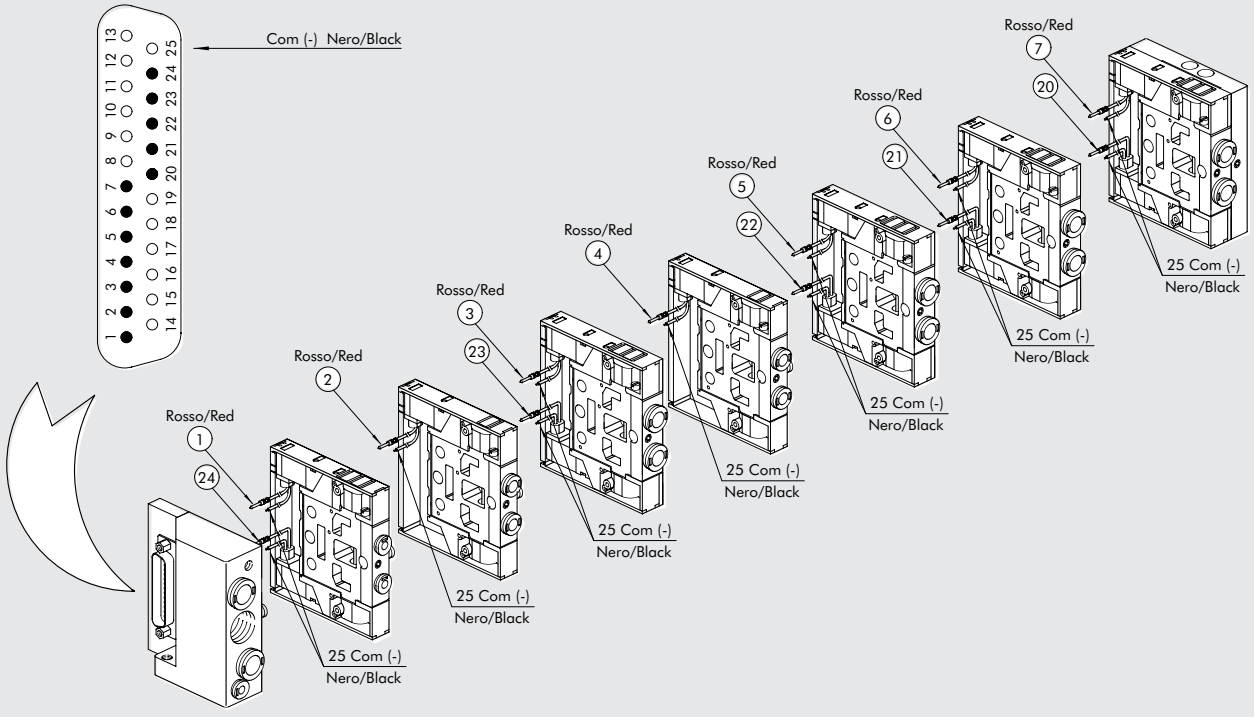
Code	Description	Ø Tube	Notes
2L17001	RL17	from Ø 3 to Ø 10	For R fitting and Fox fitting

WIRING DIAGRAM OF THE 9-PIN CONNECTOR



NOTE: AVAILABLE WITH POSITIVE COMMON WIRE ON REQUEST

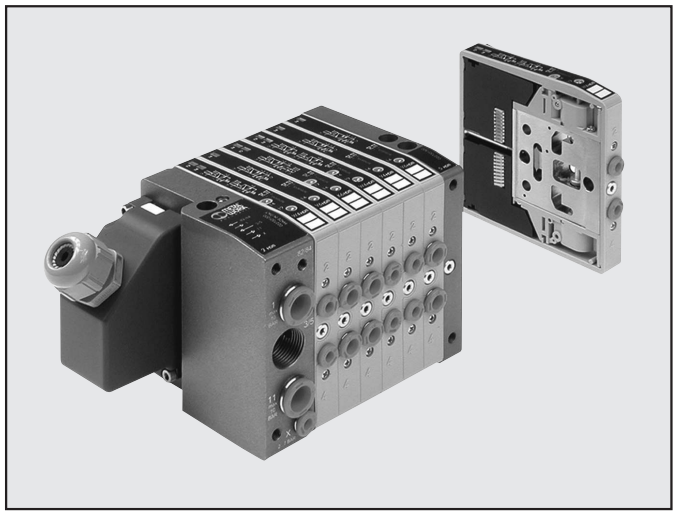
WIRING DIAGRAM OF THE 25-PIN CONNECTOR



NOTE: AVAILABLE WITH POSITIVE COMMON WIRE ON REQUEST.

HDM
HEAVY DUTY MULTIMACH

HDMs are the ideal solution for those requiring the unbeatable performance, flexibility and modularity of Multimach valves combined with sturdy mechanics and a high degree of protection against external agents. Each valve is enclosed in a reinforced technopolymer protective shell that acts as a shock-absorber and prevents the infiltration of dirt. The class of protection is IP65. The smooth, rounded design makes HDMs ideal for applications requiring frequent washing without the deposit of residues. All the pneumatic connections are on one side, with built-in push-in fittings. The user interface is on another side so that the fitter and the service engineer have everything at hand.
Flexibility is total: there are 1-16 valves, input and output terminals for pipes of different sizes and intermediate modules for separate inputs and outputs. One very important new feature is that valves of different capacities can be mounted as required. Three different valve sizes can be combined at will. This means a valve can be replaced at any time by another one offering a different performance. It only takes a few seconds to replace or add a valve. To do this, merely loosen the two grub screws fixing the valve to the adjacent ones. Since the electrical signal is relayed from one valve to the next by means of gold-plated contacts connected to an electronic board, the electrical connections are entirely automatic.
The ratio of the HDM's flow rate to its dimensions is unrivalled – miniaturisation and efficiency have reached a peak.

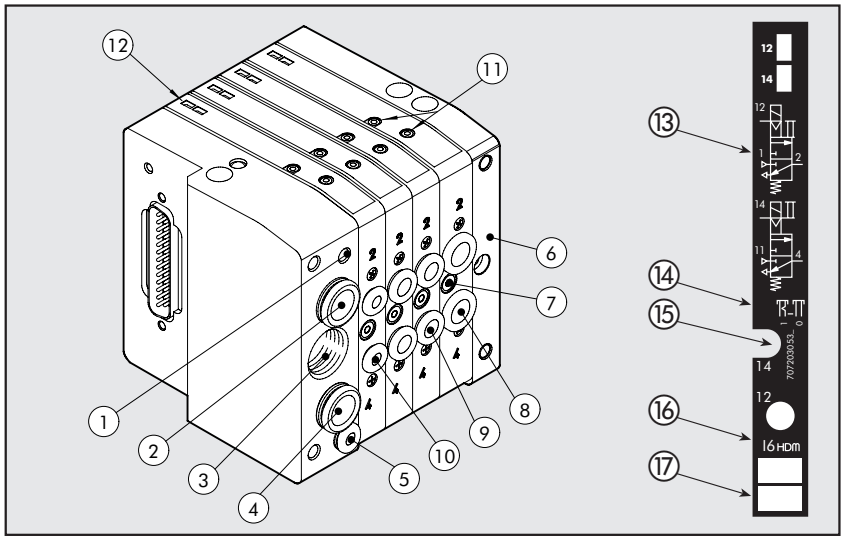


TECHNICAL DATA

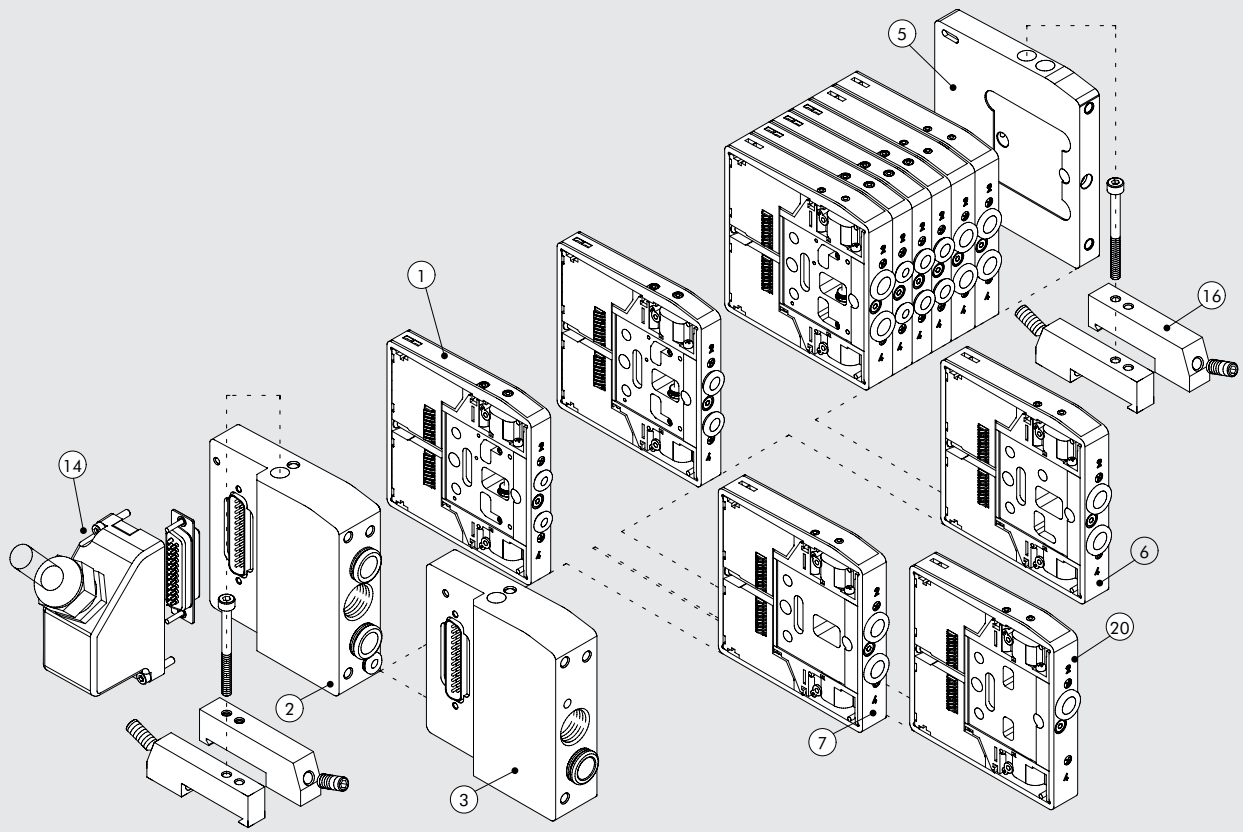
Valve port connections		quick-connection ports 2 and 4, Ø 4,6,8 mm		threaded exhaust port 3/8 or fitting Ø8 mm
Connection on the end-plate for the supply of pilots		Automatic fitting Ø 4 mm		
Maximum number of pilots		16		
Maximum number of valves		16 (same as the max. no. of pilots)		
Operating temperature range	°C	-10 ÷ +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	Nl/min	11mm Ø 4 = 200	11mm Ø 6 = 500	14mm Ø 8 = 800
Pressure range		X (pilot supply)		1-11 (valve supply)
- terminal 1-11		2 ÷ 7 bar		vacuum at 10 bar
- terminal 1		2 ÷ 7 bar		
Voltage range		24 VDC ±10%		
Power	W	0,6		
Control		PNP o NPN		
Insulation class		F155		
Degree of protection		IP65 with common outlets		
Solenoid rating		100% ED		
TRA/TRR 2X3/2 monostable at 6 bar	ms	8 / 45		
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33		
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20		
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.		

COMPONENTS

① Exhaust – Solenoid pilot 82/84
② Valve supply – port 1
③ Threaded connection of exhausts 3/5
④ Valve supply – port 11
⑤ Electrical control supply X
⑥ Blind end-plate
⑦ Screw for valve wall-mounting
⑧ Utility port for pipe Ø 8 mm
⑨ Utility port for pipe Ø 6 mm
⑩ Utility port for pipe Ø 4 mm
⑪ Manual control
⑫ LED (LED on, solenoid valve energised)
⑬ Pneumatic symbol
⑭ Identification of the monostable or bistable manual control
⑮ Valve ordering code
⑯ Valve identification code
⑰ Blank space for valve number

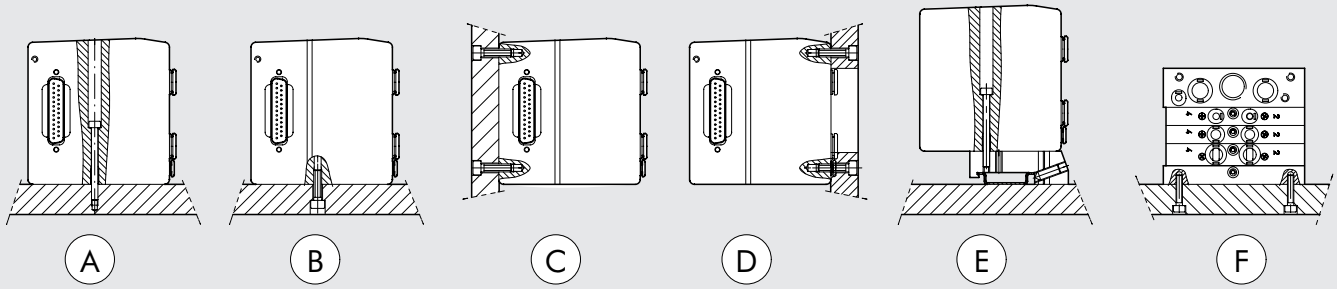


THE MULTIMACH WORLD: FLEXIBILITY



THE NUMBERS PERMIT RAPID IDENTIFICATION
OF THE FUNCTION AND ASSEMBLY POSITION
OF THE SINGLE ELEMENTS REPRESENTED AS FOLLOWS

FIXING THE BASE



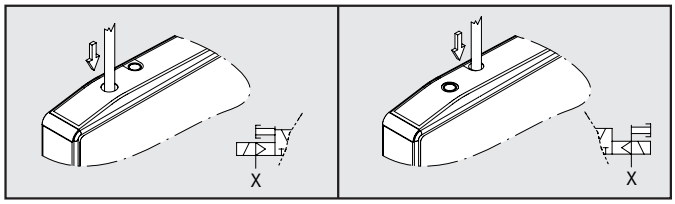
A: Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
B-C: Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
D: Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals. An opening for the pipes is made in the plate.
E: Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate , using the push-in bracket code 0227301600.
F: Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.
Note: The sole fixing admitted is the one showed.

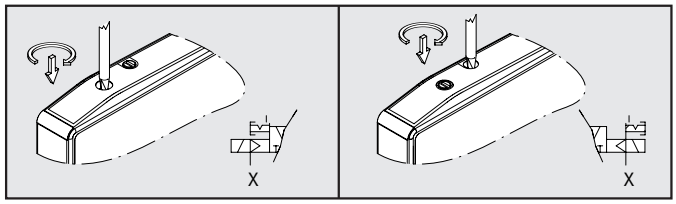
KEY TO CODES – MULTIMACH-UNIT HDM

H D M	2	8	M	I6-W8-W6-O4-L8-5	1 4 - 1 6
VALVE	INPUT END-PLATE	ELECTRICAL BASE	MANUAL TYPE	TYPE OF VALVE	FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate1-11 3 End-plate1	8 D-Sub 25-wire	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 blind end-plate 6 Passing-intermed. 7 Blind intermediate 20 exhaust section. 4 cartridge 4 6 cartridge 6 8 cartridge 8	14 IP65 25-wire shell 16 n° 2 brackets for DIN bar

*uses a single PIN (like the V) and occupies 2 signals

MANUAL CONTROLS





MONOSTABLE OVERRIDE PORT 2
with direct actuation on the spool

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
  - With valves type I, W, L, V and F, the manual control returns to the home position, and the valve repositions.
  - With type K valves, the manual control remains in position and the valve remains switched.
  - With type O valves, the manual control does not return completely to the home position but the valve does reposition.

N.B.: The pilot power supply X need not be present.

MONOSTABLE OVERRIDE PORT 4
servo-assisted

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
  - The manual control returns to the home position.
  - Valves type I, W, L, V and F reposition.
  - The type K valve remains switched

With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

BISTABLE OVERRIDE PORT 2
with direct actuation on the spool

- Press the manual control right in then turn it fully clockwise and Leave it in position.
- Rotate the manual control fully anticlockwise, and then release it.
  - With valves type I, W, L, V and F, the manual control returns to the home position, and the valve repositions.
  - With type K valves, the manual control remains in position and the valve remains switched.
  - With type O valves, the manual control does not return completely to the home position but the valve does reposition.

N.B.: The pilot power supply X need not be present.

BISTABLE OVERRIDE PORT 4
servo-assisted

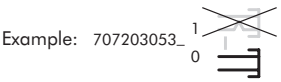
- Press the manual control right in then turn it fully clockwise and Leave it in position.
- Rotate the manual control fully anticlockwise, and then release it:
  - The manual control returns to the home position.
  - Valves type I, W, L and O reposition.
  - The type K valve remains switched

With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

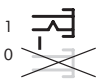
- The reference code for the monostable control ends in 0 (2 for type F).

Example: 707203053_ 1 0

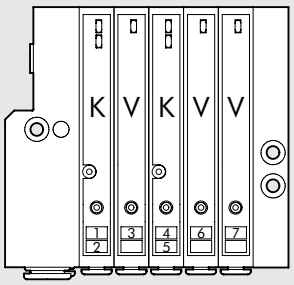


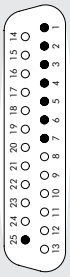
- The reference code for the monostable control ends in 1 (3 for type F).

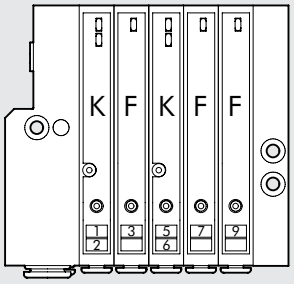
Example: 707203053_ 1 0

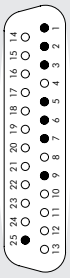


WIRING DIAGRAM



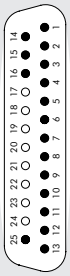


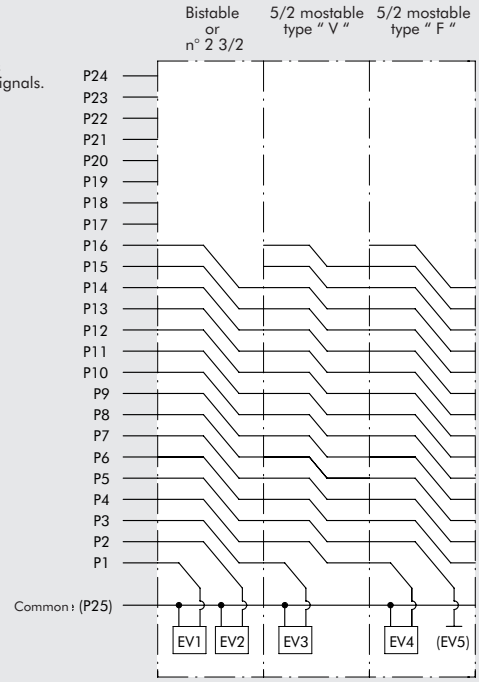




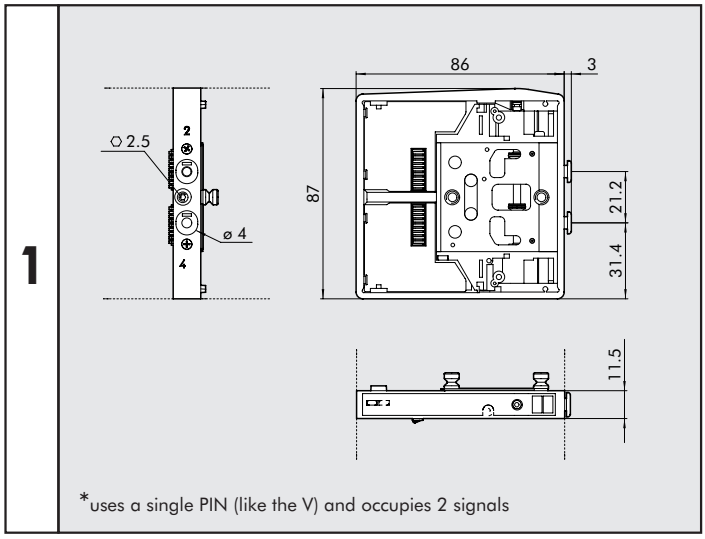
NOTE: The type F monostable valve uses one PIN only (like the V) but occupies 2 signals.

PNP - Com (-)
NPN - Com (+)





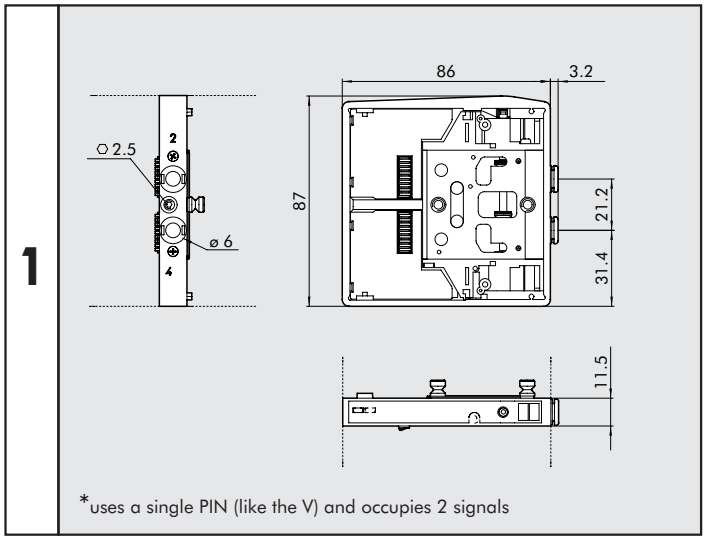
VALVE DIMENSIONS HDM Ø 4



*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I4 HDM		monostable	7071030530	130
		bistable	7071030531	
W4 HDM		monostable	7071030630	130
		bistable	7071030631	
L4 HDM		monostable	7071030730	130
		bistable	7071030731	
V4 HDM		monostable	7071030130	115
		bistable	7071030131	
***F4** HDM		monostable	7071030132	115
		bistable	7071030133	
K4 HDM		monostable	7071030110	130
		bistable	7071030111	
O4 HDM		monostable	7071030210	130
		bistable	7071030211	

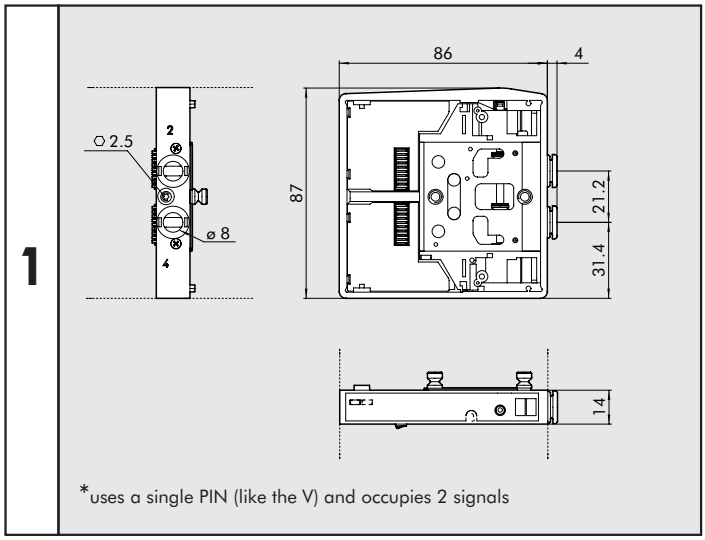
VALVE DIMENSIONS HDM Ø 6



*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I6 HDM		monostable	7072030530	130
		bistable	7072030531	
W6 HDM		monostable	7072030630	130
		bistable	7072030631	
L6 HDM		monostable	7072030730	130
		bistable	7072030731	
V6 HDM		monostable	7072030130	115
		bistable	7072030131	
***F6** HDM		monostable	7072030132	115
		bistable	7072030133	
K6 HDM		monostable	7072030110	130
		bistable	7072030111	
O6 HDM		monostable	7072030210	130
		bistable	7072030211	

VALVE DIMENSIONS HDM Ø 8



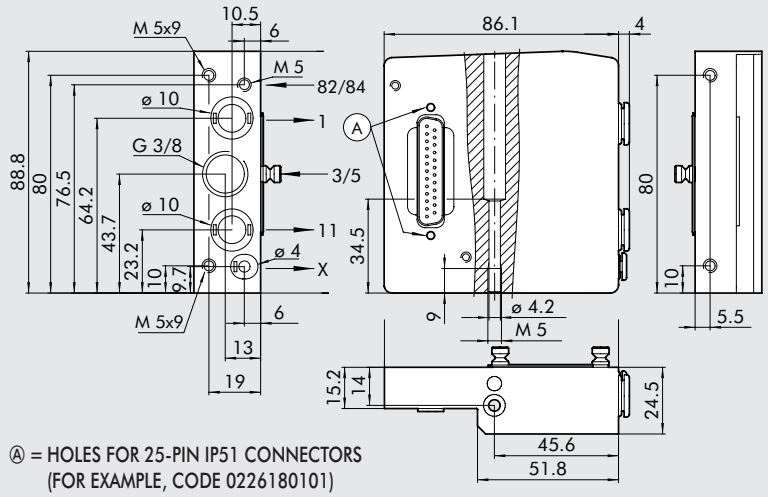
*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I8 HDM		monostable	7073030530	140
		bistable	7073030531	
W8 HDM		monostable	7073030630	140
		bistable	7073030631	
L8 HDM		monostable	7073030730	140
		bistable	7073030731	
V8 HDM		monostable	7073030130	130
		bistable	7073030131	
***F8** HDM		monostable	7073030132	130
		bistable	7073030133	
K8 HDM		monostable	7073030110	140
		bistable	7073030111	
O8 HDM		monostable	7073030210	140
		bistable	7073030211	

ACCESSORIES

END-PLATE 1-11-25D

2

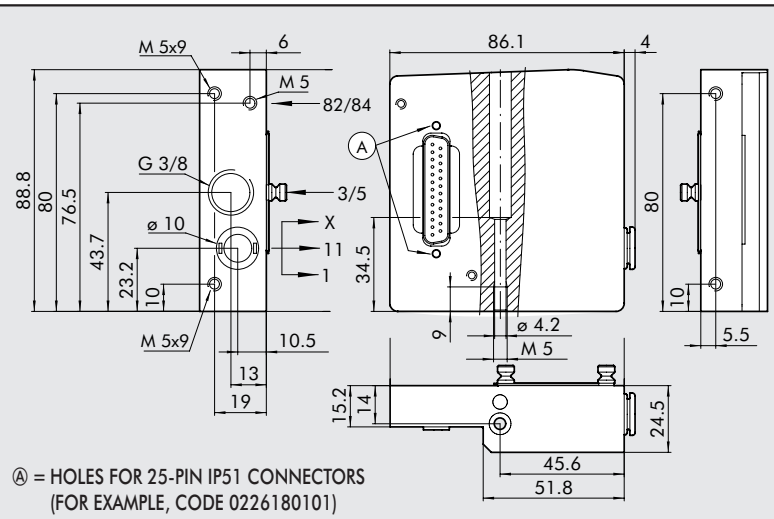


Code	Description	Weight [g]
0227301200	END-PLATE HDM KIT 1-11-25D	370

This end-plate allows for supplies to be differentiated
- port 2
- port 4
- pilot supply

END-PLATE 1-25D

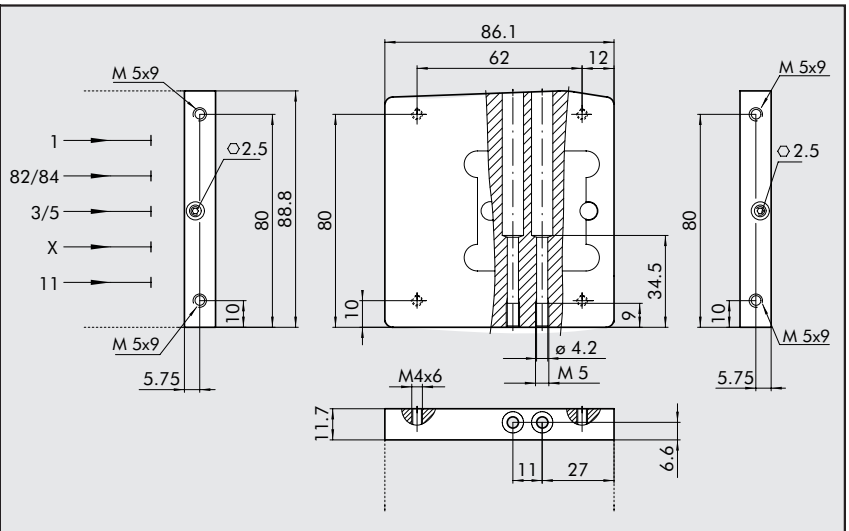
3



Code	Description	Weight [g]
0227301201	END-PLATE HDM KIT 1-25D	370

BLIND END-PLATE

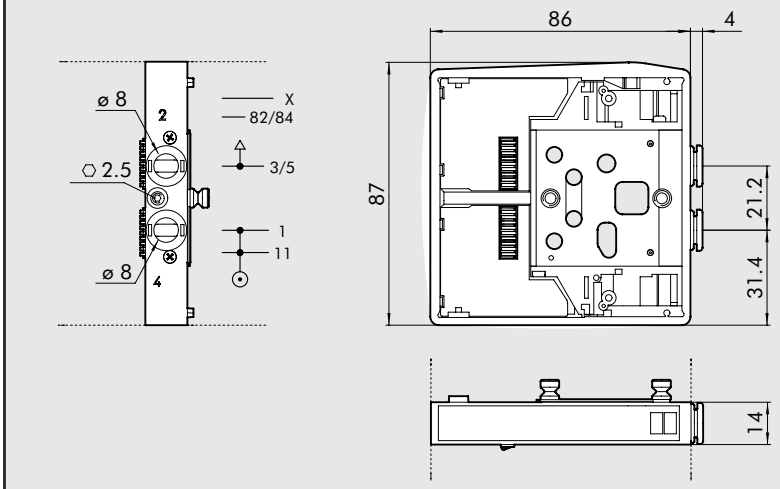
5



Code	Description	Weight [g]
0227301500	BLIND END-PLATE HDM	230

INTERMEDIATE THROUGH

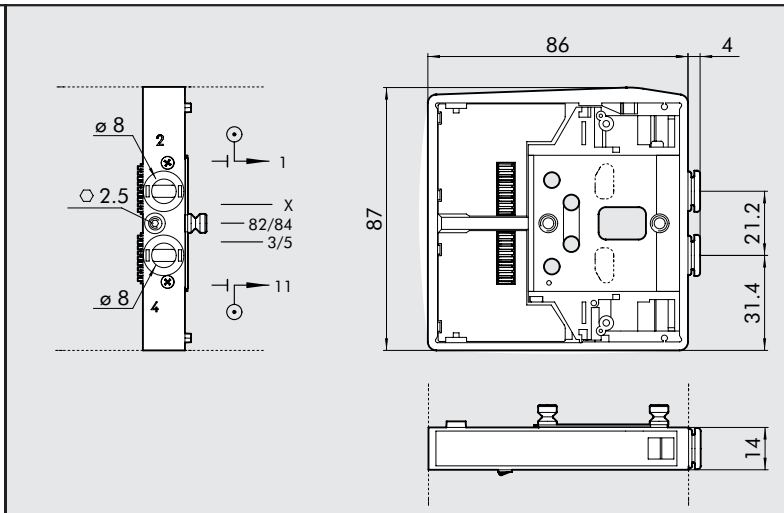
6



Code	Description	Weight [g]
0227301301	INTERMEDIATE THROUGH HDM	120

INTERMEDIATE BLIND

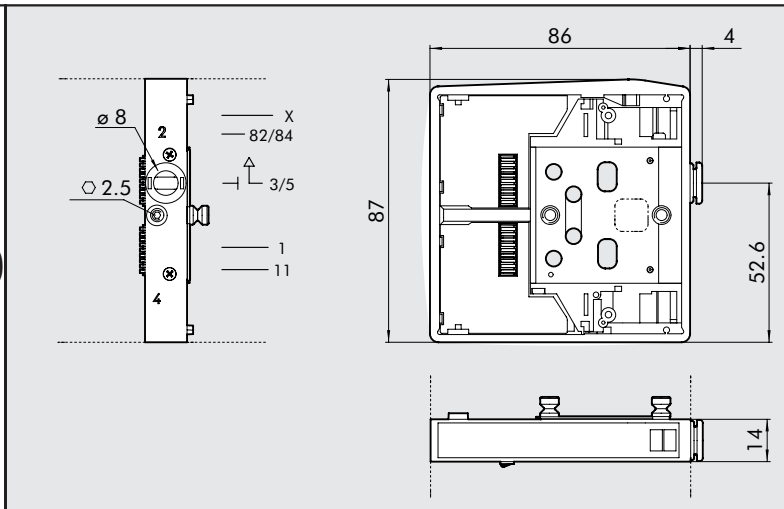
7



Code	Description	Weight [g]
0227301302	INTERMEDIATE BLIND HDM	117

INTERMEDIATE EXHAUST SWITCH

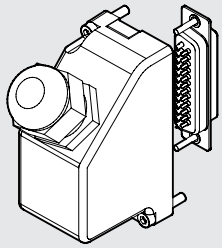
20



Code	Description	Weight [g]
0227301303	INTERMEDIATE EXHAUST SWITCH HDM	125

45° CONNECTOR KIT, 25 WIRES IP65

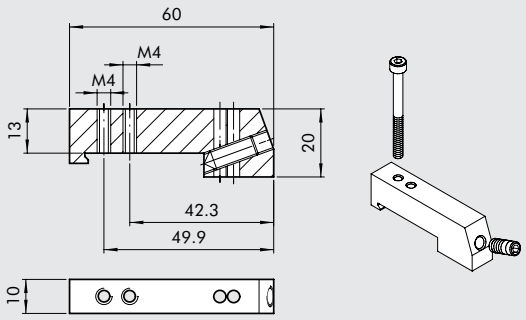
14



Code	Description	Weight [g]
0226180107	45° CONNECTOR KIT, 25 WIRES IP 65	65

CONNECTION BRACKETS ON DIN BAR

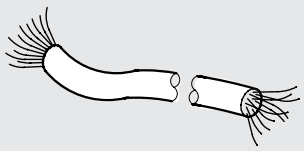
16



Code	Description	Weight [g]
0227301600	CONNECTION BRACKETS ON DIN BAR HDM/CM	30

Supplied complete with one M4x45 screws and one M6 grub screw
Individually packed

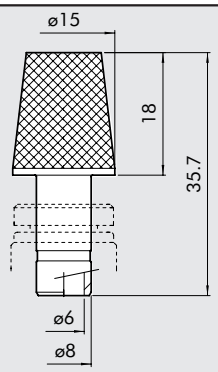
CABLES



Code	Description	Weight [g]
0226107201	10-WIRE CABLE	86
0226107101	19-WIRE CABLE	122
0226107102	25-WIRE CABLE	130

Specify the number of metres desired

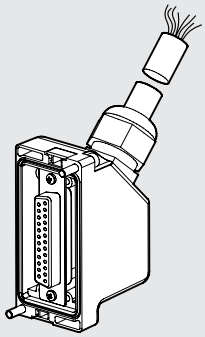
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	SILENCER FOR FITTING, Ø 8	15

At the 3/5-exhaust port of the intermediate through reference 6
and of the exhaust switch reference 20

PRE-WIRED 45° CONNECTOR KIT, 25 WIRES IP65



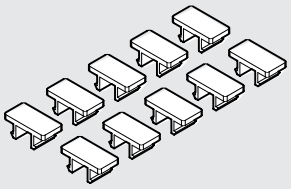
Code	Description	Weight [g]
0226960100	ACCESSORIES: CONNECTOR IP 65+ 25-WIRE 45° CABLE L.=1 M	190
0226960250	ACCESSORIES: CONNECTOR IP 65+ 25-WIRE 45° CABLE L.=2.5 M	390
0226960500	ACCESSORIES: CONNECTOR IP 65+ 25-WIRE 45° CABLE L.=5 M	740

WIRING DIAGRAM FOR PRE-WIRED PLUG CONNECTOR

25 PIN

Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire	Position of electrical contact	Colour of the corresponding wire
1	blue/black	10	brown/white	19	yellow/black
2	red/brown	11	red/orange	20	white
3	white/black	12	light blue	21	blue/white
4	red/blue	13	yellow/white	22	brown
5	black/orange	14	yellow	23	green/white
6	yellow/red	15	red/green	24	red
7	black/brown	16	orange	25	green/black
8	white/red	17	orange/white		
9	red/black	18	green		

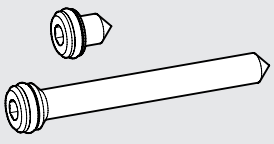
IDENTIFICATION PLATE KIT



Code	Description
0226107000	IDENTIFICATION PLATE KIT

Comes in 10-pc. packs

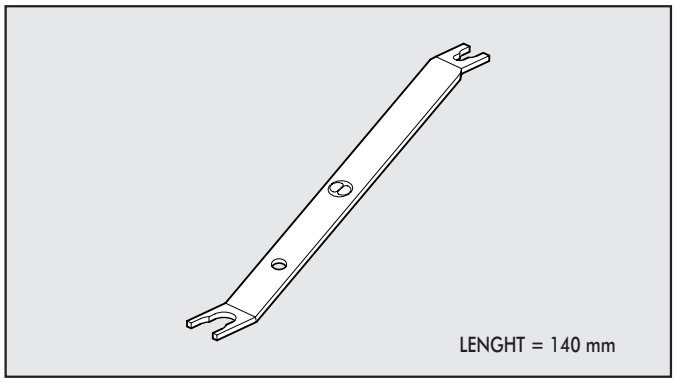
GRUB SCREW KIT



Code	Description
0227301800	GRUB SCREW FOR MULTIMACH HDM/CM

Comes in 1+1 -pc. packs

R17 - PIPE RELEASE SPANNER

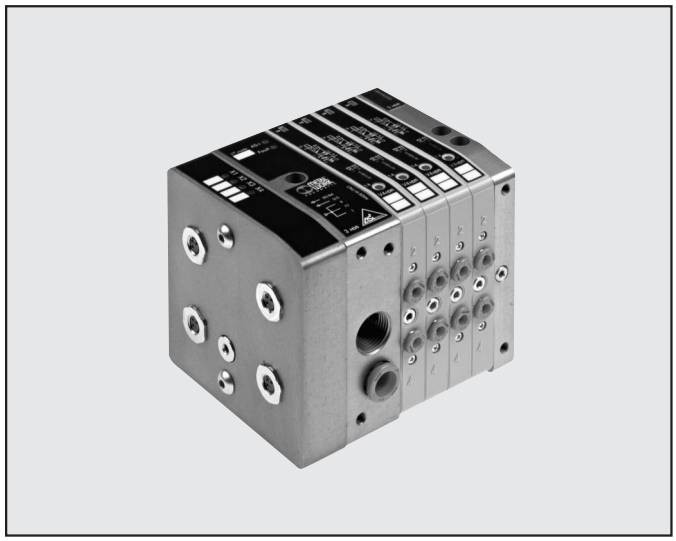


Code	Description	Ø Tube	Notes
2L17001	RL17	from Ø 3 to Ø 10	For R fitting and Fox fitting

NOTES

HDM + AS-INTERFACE
HEAVY DUTY MULTIMACH

The HDM+AS-Interface system has been designed in such a way that the pneumatic input terminal contains all the electronics, signals and AS-I connectors. It is a very compact and sturdy system where everything is housed in a thick casing aluminium to protect the delicate components against impact. The valves and accessories are HDM standard, which means that you only need to replace the input terminal to convert the valve island with multiple connector into an AS-I island. All the advantages of the HDM system can be exploited: the possibility of mounting valves of different size, with fittings for pipes 4, 6 or 8; the insertion of intermediate modules with separate power supply or outlets; aluminium valves with chemical nickel plating enclosed in a protective casing in reinforced technopolymer, with an index of protection IP65. The arrangement of the functions continues the traditional optimisation of the HDMs: the user interface of the valves and bus all on one side, so that the fitter and service engineer have everything within easy reach: all compressed air connections on the other side; the connectors for AS-I cables on the opposite side longitudinally, so that several valve islands can be arranged in line, fixed on a DIN bar.
There are many AS-I terminal variants to meet all possible requirements:
- with 1 node, for controlling up to 4 valve solenoid pilots;
- with 2 nodes, for controlling up to 8 solenoid pilots;
- with 1 note for output and input for controlling up to 4 solenoid pilots and receiving up to 4 input signals. The input connectors are M8 or M12;
- with 2 nodes for output and input for controlling up to 8 solenoid pilots and receiving up to 8 input signals with M8 connectors;
- power supply with the AS-I yellow cable only;
- power supply with two cables: the yellow AS-I cable and the black power supply cable.
- traditional V.2.1 addressing or extended AB V.3.0 address for an increase in the node numbers which can be connected up to 62 and for a better diagnostics

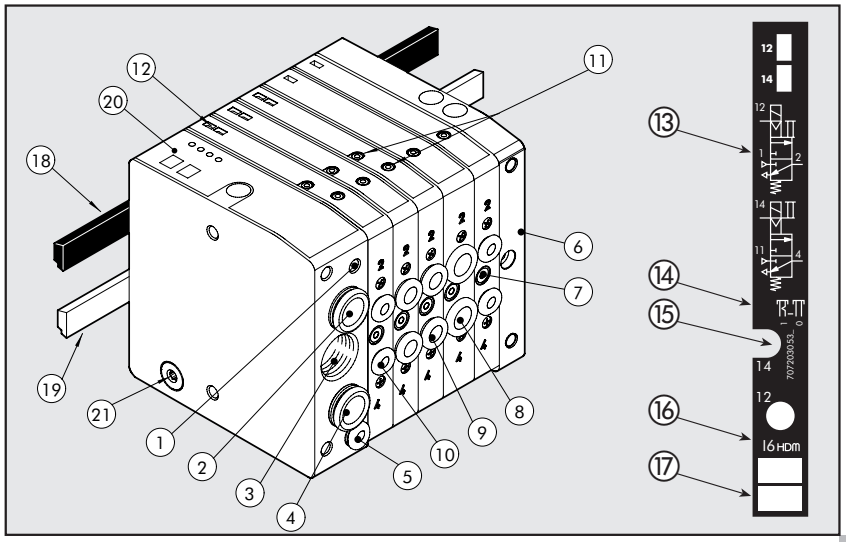


TECHNICAL DATA

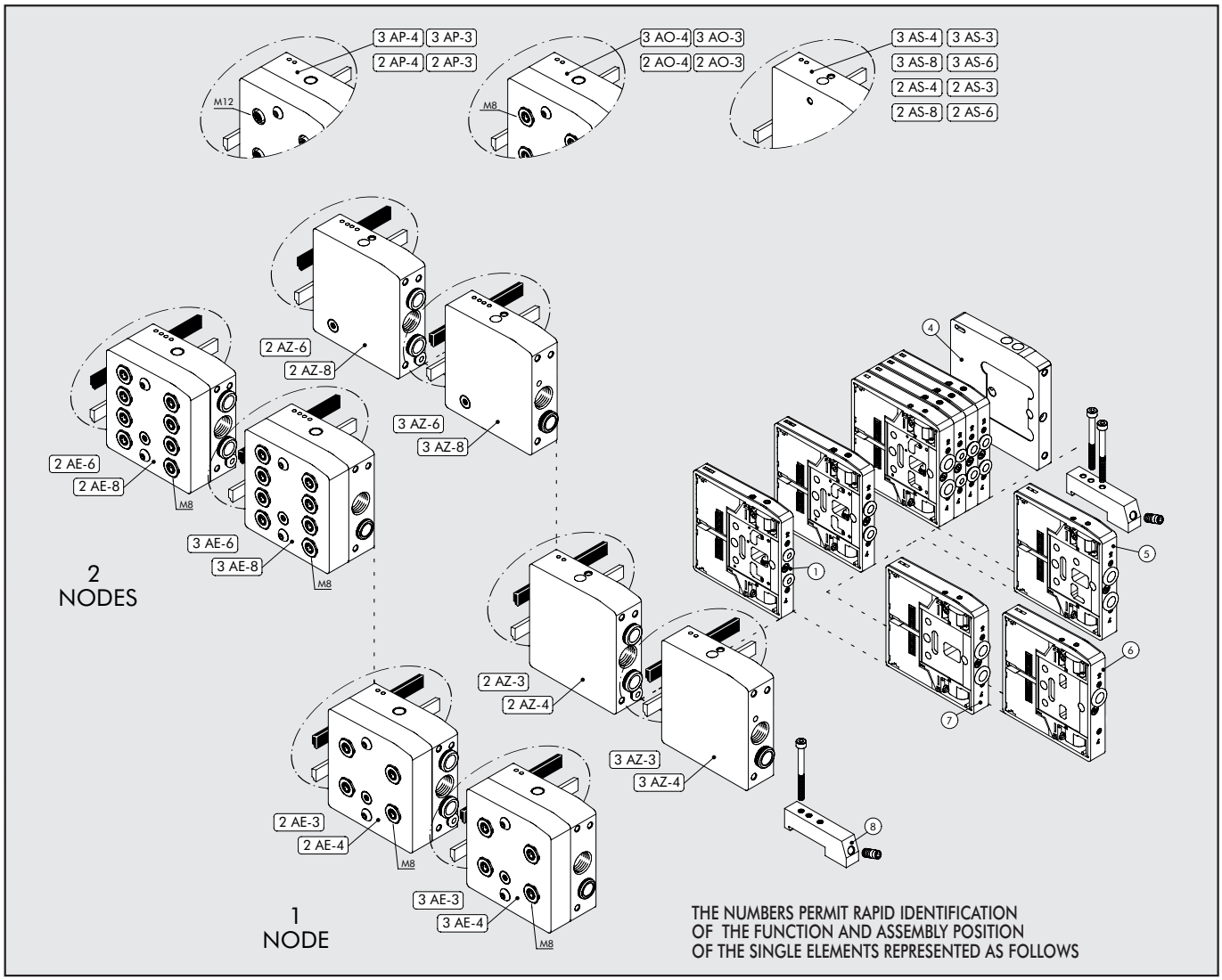
Valve port connections		quick-connection ports 2 and 4, Ø 4,6,8 mm / power supply port for Ø 8 fitting / threaded exhaust port 3/8 or fitting Ø8 mm		
Connection on the end-plate for the supply of pilots		Automatic fitting Ø 4 mm		
Maximum number of pilots		terminal with 1 node = 4 / terminal with 2 node = 8		
Maximum number of valves		terminal with 2 node = 4 (same as the max. no. of pilots) / terminal with 2 node = 8 (same as the max. no. of pilots)		
Operating temperature range	°C	-10 ÷ +60		
Fluid		Filtered air without lubrication; lubrication, if used, must be continuous		
Flow rate at 6 bar ΔP 1bar	Nl/min	11mm Ø 4 = 200	11mm Ø 6 = 500	14mm Ø 8 = 800
Pressure range		X (pilot supply)		1-11 (valve supply)
	- terminal 1-11	2 ÷ 7 bar		vacuum at 10 bar
	- terminal 1	2 ÷ 7 bar		
Voltage range		24 VDC ±10%		
Power for each pilot	W	0,6		
Solenoid Pilot Insulation class		F155		
Degree of protection		IP65 with common outlets		
Solenoid rating		100% ED		
TRA/TRR 2X3/2 monostable at 6 bar	ms	8 / 45		
TRA/TRR 5/2 monostable at 6 bar	ms	8 / 33		
TRA/TRR 5/2 bistable at 6 bar	ms	20 / 20		
TRA/TRR 5/3 cc monostable at 6 bar	ms	20 / 20		
Note on use		Insert the pipes in the fittings, before passing air through the valves, otherwise the basket may be pulled out of its seat by the flow of air.		

COMPONENTS

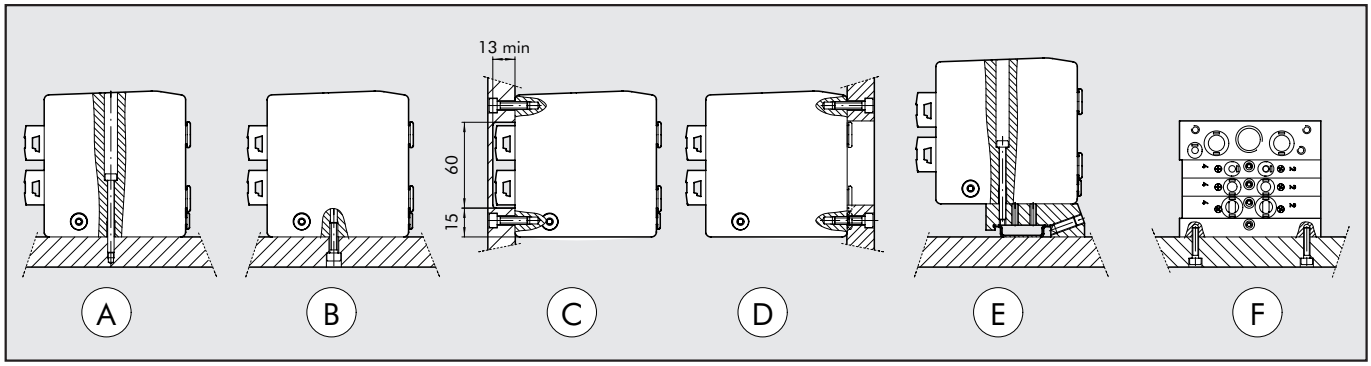
① Exhaust – Solenoid pilot 82/84
② Valve supply – port 1
③ Threaded connection of exhausts 3/5
④ Valve supply – port 11
⑤ Electrical control supply X
⑥ Blind end-plate
⑦ Screw for valve wall-mounting
⑧ Utility port for pipe Ø 8 mm
⑨ Utility port for pipe Ø 6 mm
⑩ Utility port for pipe Ø 4 mm
⑪ Manual control
⑫ LED (LED on, solenoid valve energised)
⑬ Pneumatic symbol
⑭ Identification of the monostable or bistable manual control
⑮ Valve ordering code
⑯ Valve identification code
⑰ Blank space for valve number
⑱ Black cable for 24V (if present)
⑲ AS-INTERFACE yellow cable
⑳ AS-INTERFACE led



THE MULTIMACH WORLD: FLEXIBILITY



FIXING THE BASE



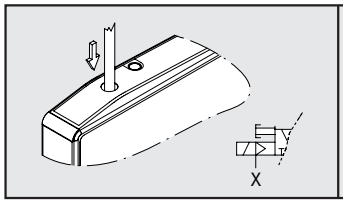
A: Fixing from above using the 1 or 1-1 input terminal and the blind terminal.
B-C: Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the bottom and the rear of the terminals.
D: Fixing from above using the 1 or 1-1 input terminal and the blind terminal, using the M5 threads on the front of the terminals. An opening for the pipes is made in the plate.
E: Fixing on the DIN bar with end-plate 1 or 1-11 and blind and plate , using the push-in bracket code 0227301600.
F: Lateral fixing using the blind terminal, and its the M4 threads on the side lateral.
Note: The sole fixing admitted is the one showed.

KEY TO CODE - MULTIMACH-UNIT HDM - AS-INTERFACE

H D M	2	AS-4	M	I6-W8-W6-O4-L8-5	16
VALVE	INPUT END-PLATE	SUPP. ELETT	MANUAL TYPE	TYPE OF VALVE	FURTHER DETAILS
Heavy duty Multimach IP65	2 End-plate 1-11 3 End-plate 1	**Version with standard address** ** AS-4 1 node, 4 OUT, yellow cable AS-8 2 nodes, 8 OUT, yellow cable ** AO-4 1 node, 4OUT and 4 IN, M8, yellow cable ** AP-4 1 node, 4OUT and 4 IN, M12, yellow cable ** AZ-4 1 node, 4OUT, yellow cable and black cable AZ-8 2 nodes, 8 OUT, yellow cable and black cable ** AE-4 1 node, 4 OUT and 4 IN, M8, yellow cable and black cable AE-8 2 nodes, 8 OUT and 8 in M8, yellow cable and black cable **Version with extended address** AS-3 1 node, 4 OUT, yellow cable AS-6 2 nodes, 8 OUT, yellow cable AO-3 1 node, 4 OUT and 4 IN, M8, yellow cable AP-3 1 node, 4 OUT and 4 IN, M12, yellow cable AZ-3 1 node, 4 OUT, yellow cable and black cable AZ-6 2 nodes, 8 OUT, yellow cable and black cable AE-3 1 node, 4 OUT and 4 IN, M8, yellow cable and black cable AE-6 2 nodes, 8 OUT and 8 in M8, yellow cable and black cable	M Monostable manual control B Bistable manual control	I n° 2 3/2 NC W n° 2 3/2 NO L 3/2 NO + 3/2 NC V 5/2 monostable K 5/2 bistable O 5/3 monostable *F 5/2 monostable 5 blind end-plate 6 Passing-intermed. 7 Blind intermediate 20 exhaust section. 4 cartridge 4 6 cartridge 6 8 cartridge 8	16 n° 2 brackets for DIN bar

*uses a single PIN (like the V) and occupies 2 signals **standard versions handled from stock

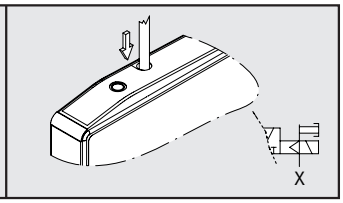
MANUAL CONTROLS



MONOSTABLE OVERRIDE PORT 2
with direct actuation on the spool

- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
  - With valves type I, W, L, V and F, the manual control returns to the home position, and the valve repositions.
  - With type K valves, the manual control remains in position and the valve remains switched.
  - With type O valves, the manual control does not return completely to the home position but the valve does reposition.

N.B.: The pilot power supply X need not be present.



MONOSTABLE OVERRIDE PORT 4
servo-assisted

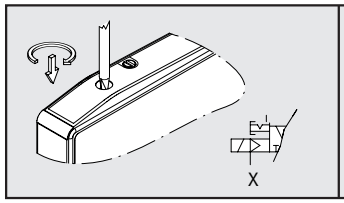
- Press and hold the manual control in position (not necessary for bistable type K valve)
- Release the manual control:
  - The manual control returns to the home position.
  - Valves type I, W, L, V and F reposition.
  - The type K valve remains switched

With type F and V valves, this manual control is not present.

N.B.: The pilot power supply X must be present.

- The reference code for the monostable control ends in 0 (2 for type F).

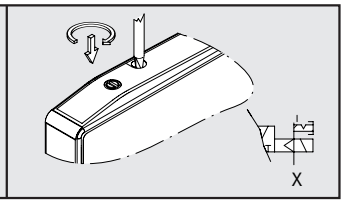
Example: 707203053_ 1 / 0



BISTABLE OVERRIDE PORT 2
with direct actuation on the spool

- Press the manual control right in then turn it fully clockwise and Leave it in position.
- Rotate the manual control fully anticlockwise, and then release it.
  - With valves type I, W, L, V and F, the manual control returns to the home position, and the valve repositions.
  - With type K valves, the manual control remains in position and the valve remains switched.
  - With type O valves, the manual control does not return completely to the home position but the valve does reposition.

N.B.: The pilot power supply X need not be present.



BISTABLE OVERRIDE PORT 4
servo-assisted

- Press the manual control right in then turn it fully clockwise and Leave it in position.
- Rotate the manual control fully anticlockwise, and then release it:
  - The manual control returns to the home position.
  - Valves type I, W, L and O reposition.
  - The type K valve remains switched

With type F and V valves, this manual control is not present.

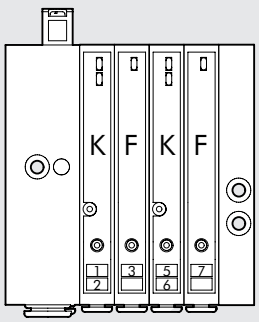
N.B.: The pilot power supply X must be present.

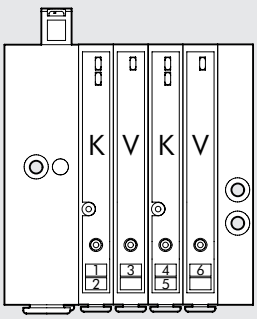
- The reference code for the monostable control ends in 1 (3 for type F).

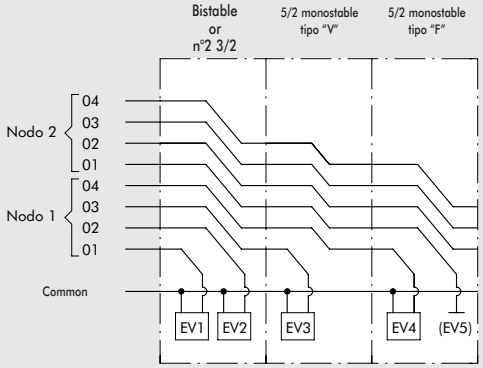
Example: 707203053_ 1 / 0

WIRING DIAGRAM

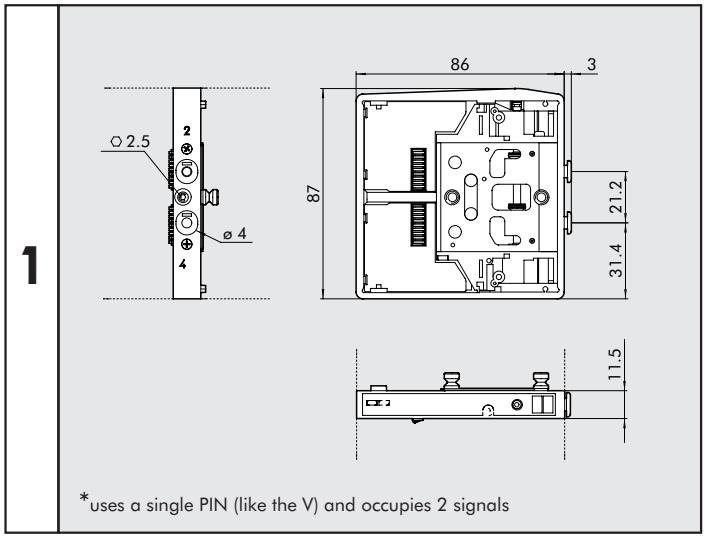
NOTE: The type f monostable valve uses one PIN only (like the V) but occupies 2 signals.







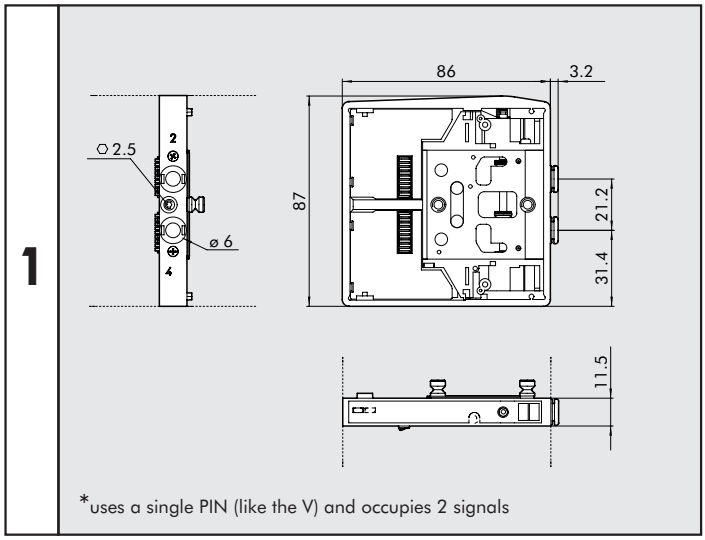
VALVE DIMENSIONS HDM Ø 4



*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I4 HDM		monostable	7071030530	130
		bistable	7071030531	
W4 HDM		monostable	7071030630	130
		bistable	7071030631	
L4 HDM		monostable	7071030730	130
		bistable	7071030731	
V4 HDM		monostable	7071030130	115
		bistable	7071030131	
***F4** HDM		monostable	7071030132	115
		bistable	7071030133	
K4 HDM		monostable	7071030110	130
		bistable	7071030111	
O4 HDM		monostable	7071030210	130
		bistable	7071030211	

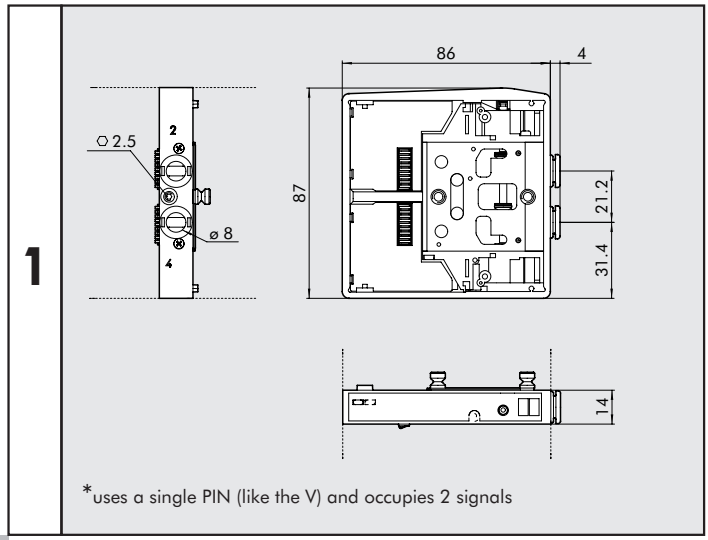
VALVE DIMENSIONS HDM Ø 6



*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I6 HDM		monostable	7072030530	130
		bistable	7072030531	
W6 HDM		monostable	7072030630	130
		bistable	7072030631	
L6 HDM		monostable	7072030730	130
		bistable	7072030731	
V6 HDM		monostable	7072030130	115
		bistable	7072030131	
***F6** HDM		monostable	7072030132	115
		bistable	7072030133	
K6 HDM		monostable	7072030110	130
		bistable	7072030111	
O6 HDM		monostable	7072030210	130
		bistable	7072030211	

VALVE DIMENSIONS HDM Ø 8



*uses a single PIN (like the V) and occupies 2 signals

	Symbol	Manual Control	Code	Weight [g]
I8 HDM		monostable	7073030530	140
		bistable	7073030531	
W8 HDM		monostable	7073030630	140
		bistable	7073030631	
L8 HDM		monostable	7073030730	140
		bistable	7073030731	
V8 HDM		monostable	7073030130	130
		bistable	7073030131	
***F8** HDM		monostable	7073030132	130
		bistable	7073030133	
K8 HDM		monostable	7073030110	140
		bistable	7073030111	
O8 HDM		monostable	7073030210	140
		bistable	7073030211	

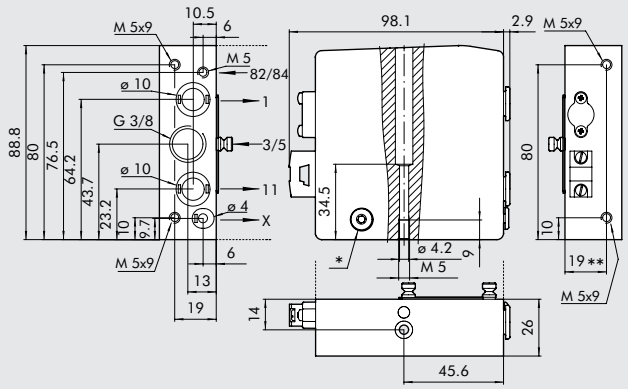
ACCESSORIES

TERMINAL 1-11AS-4, AS-8, AS-3, AS-6

2

AS3 AS4

AS6 AS8



Code	Description
0227301203	KIT TERMINAL HDM 1-11 AS-4
	1 node, 4 Out, yellow cable
0227301209	KIT TERMINAL HDM 1-11 AS-8
	2 nodes, 8 Out, yellow cable
0227301230	KIT TERMINAL HDM 1-11 AS-3
	1 node extended address, V3.0
	4 Out, yellow cable
0227301231	KIT TERMINAL HDM 1-11 AS-6
	2 nodes extended address, V3.0
	8 Out, yellow cable

* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only

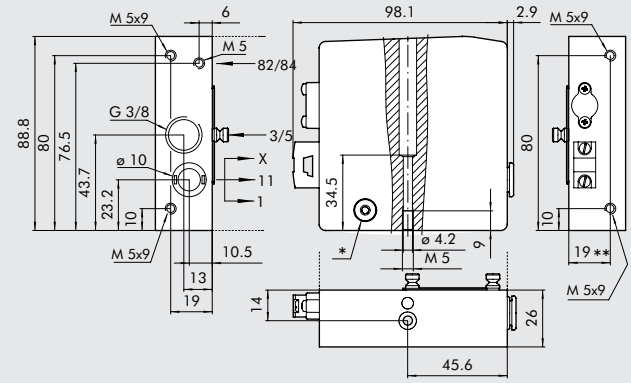
** 21 for AS-8

TERMINAL 1 AS-4, AS-8, AS-3, AS-6

3

AS3 AS4

AS6 AS8



Code	Description
0227301202 •	KIT TERMINAL HDM 1 AS-4
	1 node, 4 Out, yellow cable
0227301208	KIT TERMINAL HDM 1 AS-8
	2 nodes, 8 Out, yellow cable
0227301232	KIT TERMINAL HDM 1 AS-3
	1 node extended address, V3.0
	4 Out, yellow cable
0227301233	KIT TERMINAL HDM 1 AS-6
	2 nodes extended address, V3.0
	8 Out, yellow cable

* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only

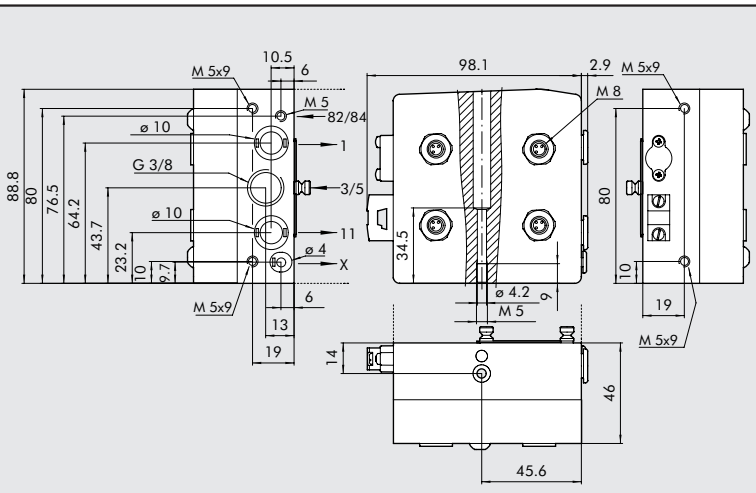
** 21 for AS-8

• standard versions handled from stock

TERMINAL 1-11 AO-4, AO-3 M8

2

AO3 AO4

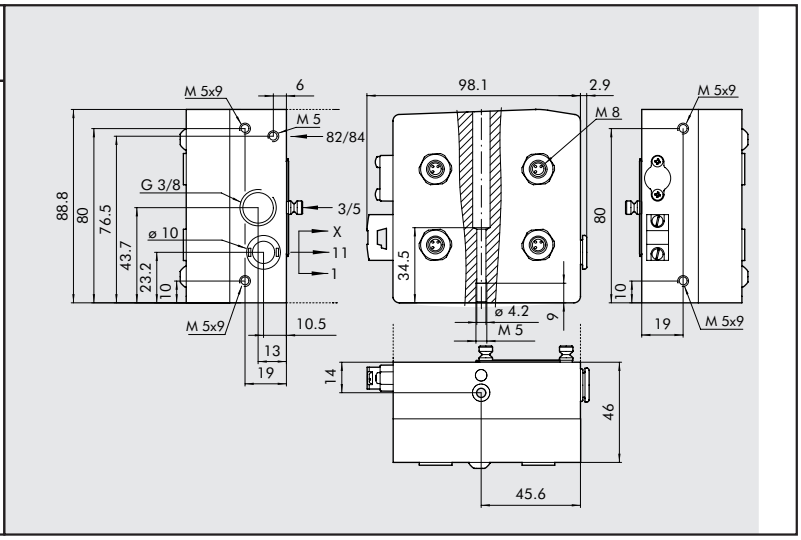


Code	Description
0227301219	KIT TERMINAL HDM 1-11 AO-4
	1 node, 4 Out and 4 In M8, yellow cable
0227301234	KIT TERMINAL HDM 1-11 AO-3
	1 node extended address, V3.0
	4 Out and 4 In M8, yellow cable

TERMINAL 1 AO-4, AO-3 M8

3

AO3 AO4



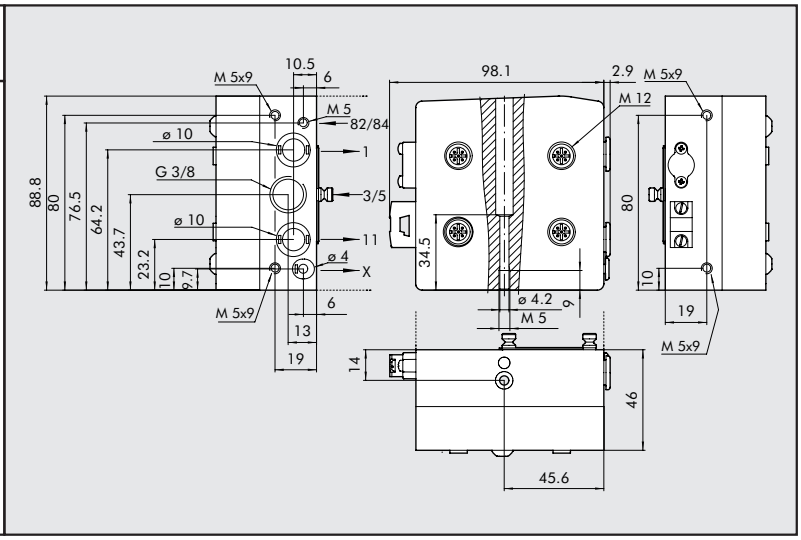
Code	Description
0227301218 •	KIT TERMINAL HDM 1 AO-4 1 node, 4 Out and 4 In M8, yellow cable
0227301235	KIT TERMINAL HDM 1 AO-3 1 node extended address, V3.0 4 Out and 4 In M8, yellow cable

• standard versions handled from stock

TERMINAL 1-11 AP-4, AP-3 M12

2

AP3 AP4

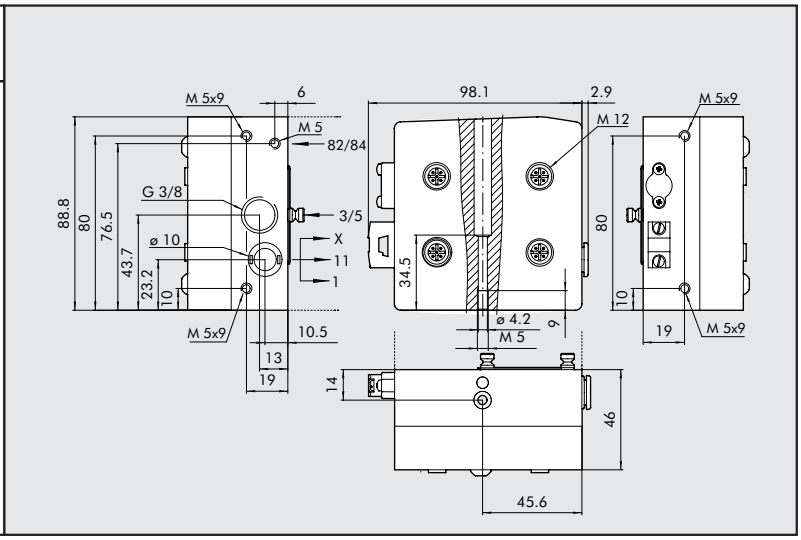


Code	Description
0227301213	KIT TERMINAL HDM 1-11 AP-4 1 node, 4 Out and 4 In M12, yellow cable
0227301236	KIT TERMINAL HDM 1 AP-3 1 node extended address, V3.0 4 Out and 4 In M12, yellow cable

TERMINAL 1 AP-4, AP-3 M12

3

AP3 AP4



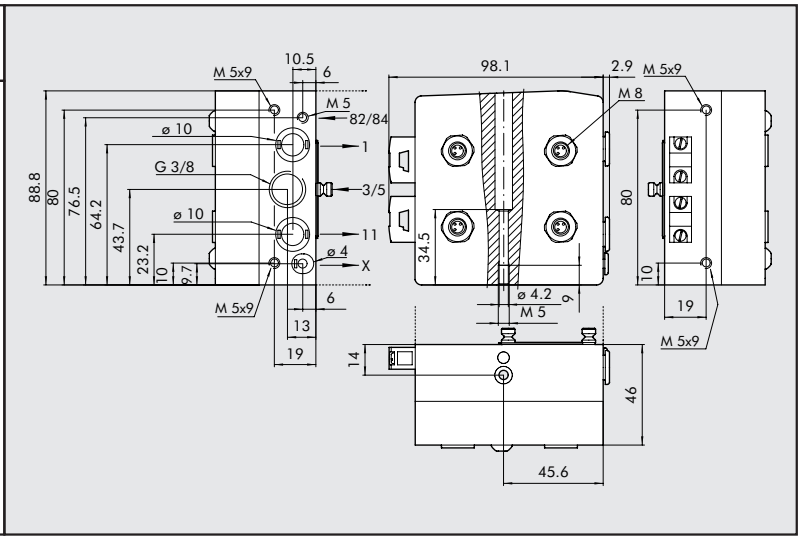
Code	Description
0227301212 •	KIT TERMINAL HDM 1 AP-4 1 node, 4 Out and 4 In M12, yellow cable
0227301237	KIT TERMINALE HDM 1 AP-3 1 node extended address, V3.0 4 Out and 4 In M12, yellow cable

• standard versions handled from stock

TERMINAL 1-11 AE-4, AE-3 M8

2

AE3 AE4

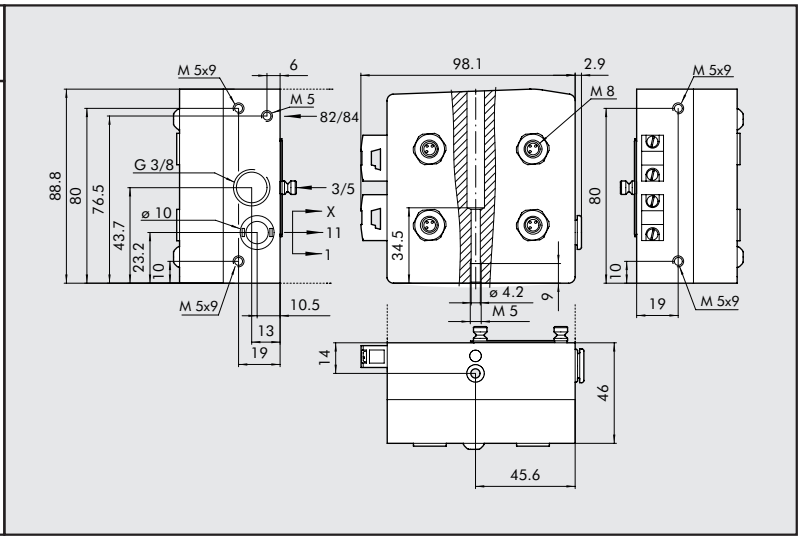


Code	Description
0227301215	KIT TERMINAL HDM 1-11 AE-4 1 node, 4 Out and 4 In M8, yellow cable and black cable
0227301238	KIT TERMINAL HDM 1-11 AE-3 1 node extended address, V3.0 4 Out and 3 In M8, yellow cable and black cable

TERMINAL 1 AE-4, AE-3 M8

3

AE3 AE4



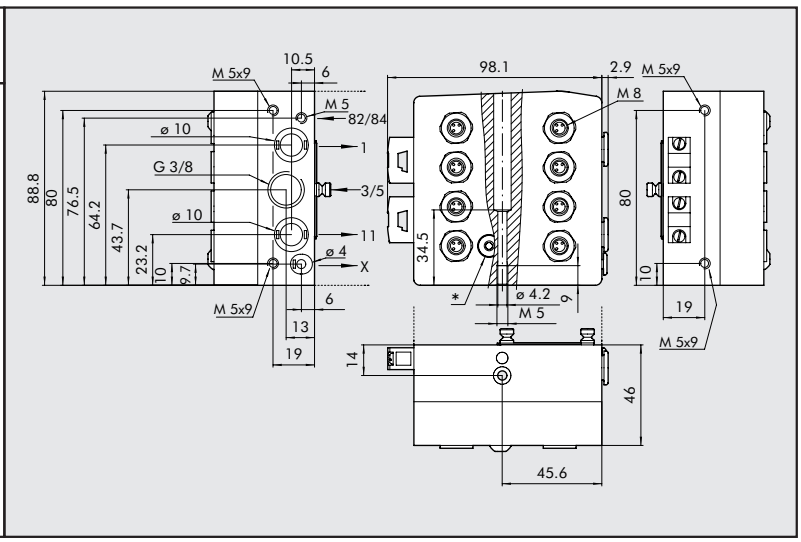
Code	Description
0227301214 •	KIT TERMINAL HDM 1 AE-4 1 node, 4 Out and 4 In M8, yellow cable and black cable
0227301239	KIT TERMINAL HDM 1 AE-3 1 node extended address, V3.0 4 Out and 3 In M8, yellow cable and black cable

• standard versions handled from stock

TERMINAL 1-11 AE-8, AE-6 M8

2

AE6 AE8

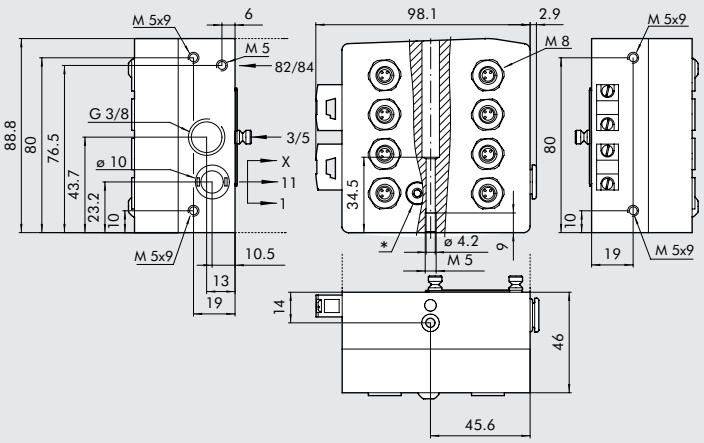


Code	Description
0227301217	KIT TERMINAL HDM 1-11 AE-8 2 nodes, 8 Out and 8 In M8, yellow cable and black cable
0227301240	KIT TERMINAL HDM 1-11 AE-6 2 nodes extended address, V3.0 8 Out and 8 In M8, yellow cable and black cable

TERMINAL 1 AE-8, AE-6 M8

3

AE6 AE8



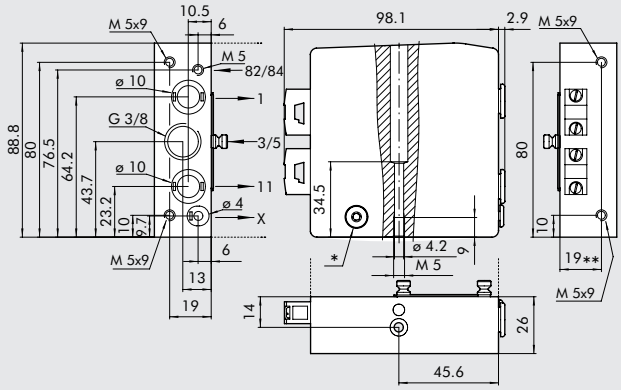
Code	Description
0227301216	KIT TERMINAL HDM 1 AE-8 2 nodes, 8 Out and 8 In M8, yellow cable and black cable
0227301241	KIT TERMINAL HDM 1 AE-6 2 nodes extended address, V3.0 8 Out and 8 In M8, yellow cable and black cable

TERMINAL 1-11 AZ-4, AZ-8, AZ-3, AZ-6

2

AZ3 AZ4

AZ6 AZ8



Code	Description
0227301205	KIT TERMINAL HDM 1-11 AZ-4 1 node, 4 Out, yellow cable and black cable
0227301211	KIT TERMINAL HDM 1-11 AZ-8 2 nodes, 8 Out, yellow cable and black cable
0227301242	KIT TERMINAL HDM 1-11 AZ-3 1 node extended address, V3.0 4 Out, yellow cable and black cable
0227301243	KIT TERMINAL HDM 1-11 AZ-6 2 nodes extended address, V3.0 8 Out, yellow cable and black cable

* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only

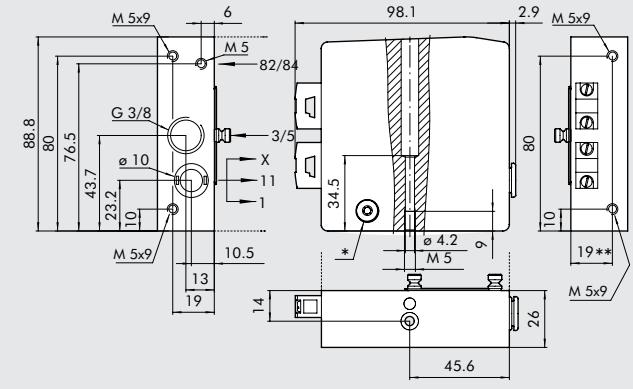
** 21 for AZ-8

TERMINAL 1 AZ-4, AZ-8, AZ-3, AZ-6

3

AZ3 AZ4

AZ6 AZ8



Code	Description
0227301204 •	KIT TERMINAL HDM 1 AZ-4 1 node, 4 Out, yellow cable and black cable
0227301210	KIT TERMINAL HDM 1 AZ-8 2 nodes, 8 Out, yellow cable and black cable
0227301244	KIT TERMINAL HDM 1 AZ-3 1 node extended address, V3.0 4 Out, yellow cable and black cable
0227301245	KIT TERMINAL HDM 1 AZ-6 2 nodes extended address, V3.0 8 Out, yellow cable and black cable

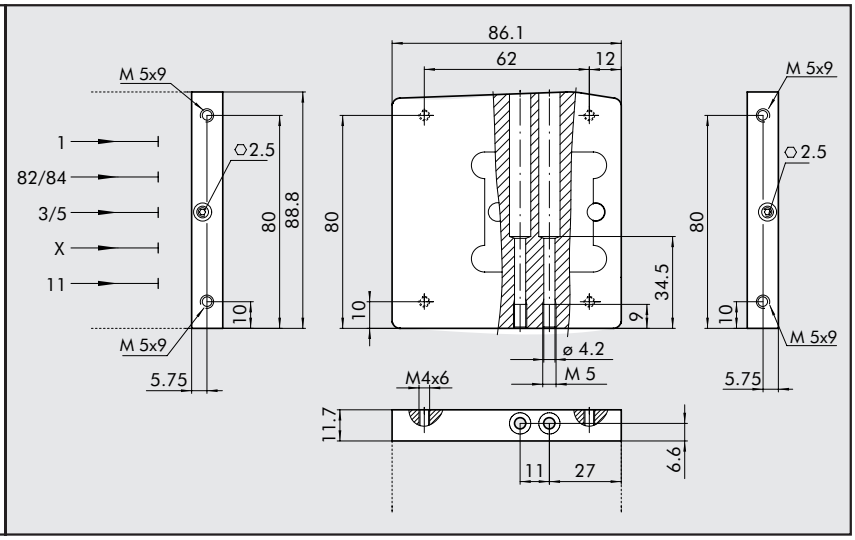
* M7 plug for 2nd node addressing.
N.B. For versions with 2 nodes only

** 21 for AZ-8

• standard versions handled from stock

BLIND END-PLATE

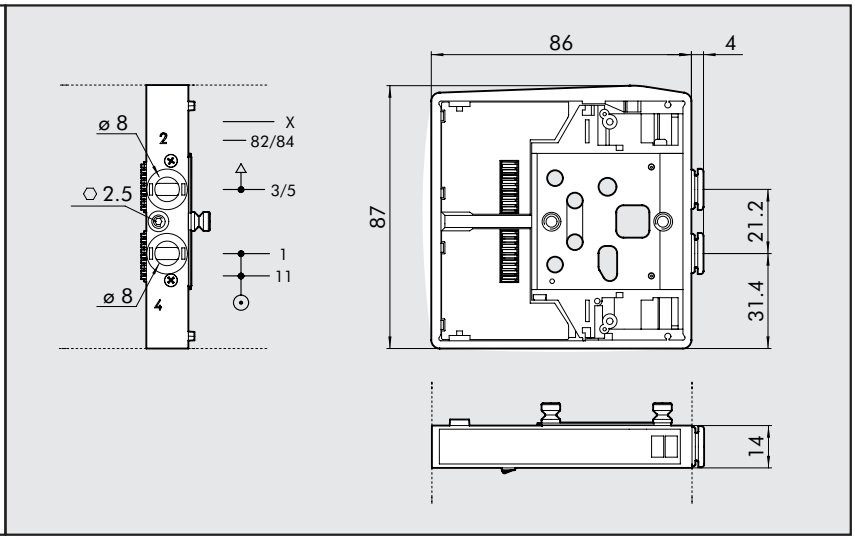
5



Code	Description	Weight [g]
0227301500	BLIND END-PLATE HDM	230

INTERMEDIATE THROUGHT

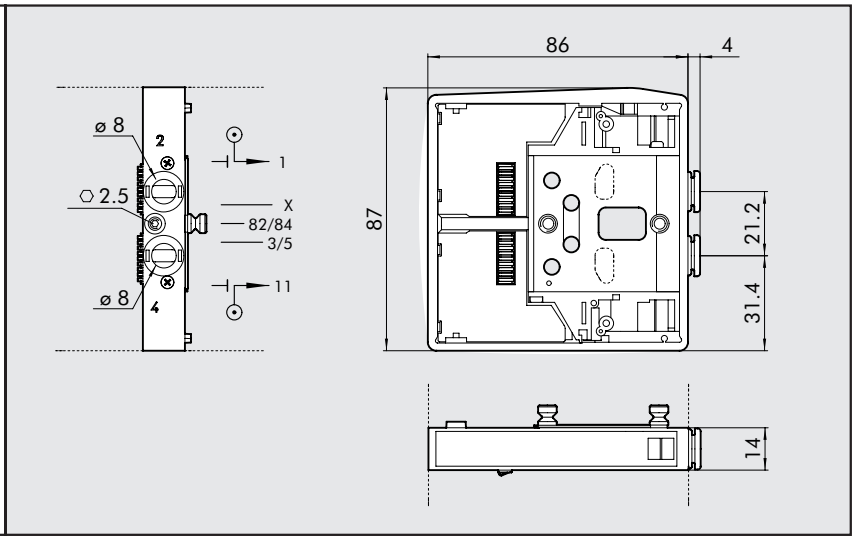
6



Code	Description	Weight [g]
0227301301	INTERMEDIATE THROUGHT HDM	120

INTERMEDIATE BLIND

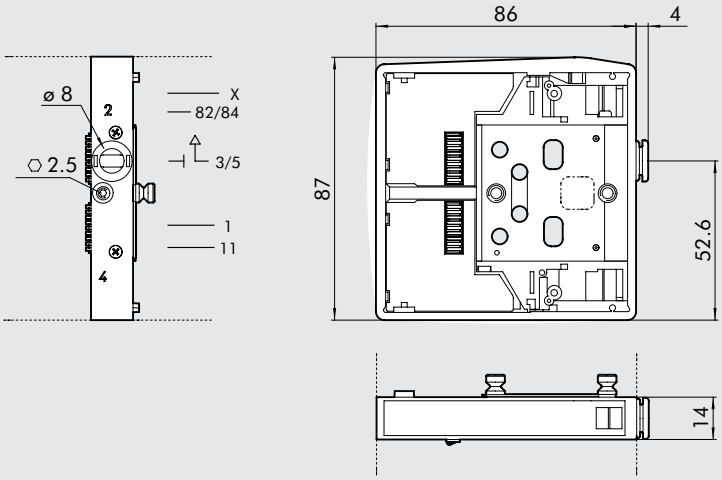
7



Code	Description	Weight [g]
0227301302	INTERMEDIATE BLIND HDM	117

INTERMEDIATE EXHAUST SWITCH

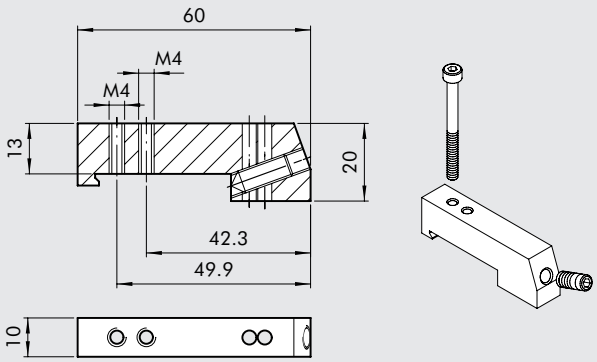
20



Code	Description	Weight [g]
0227301303	INTERMEDIATE EXHAUST SWITCH HDM	125

CONNECTION BRACKETS ON DIN BAR

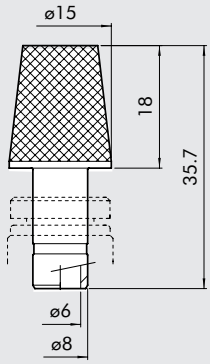
16



Code	Description	Weight [g]
0227301600	CONNECTION BRACKETS ON DIN BAR HDM/CM	30

Supplied complete with one M4x45 screws and one M6 grub screw Individually packed

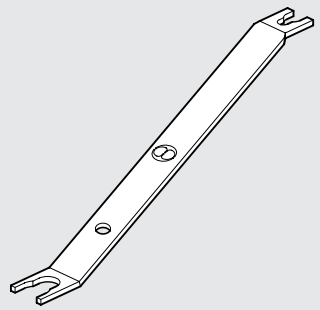
SILENCER FOR FITTING, Ø 8



Code	Description	Weight [g]
W0970530084	SILENCER FOR FITTING, Ø 8	15

At the 3/5-exhaust port of the intermediate through reference 6 and of the exhaust switch reference 20

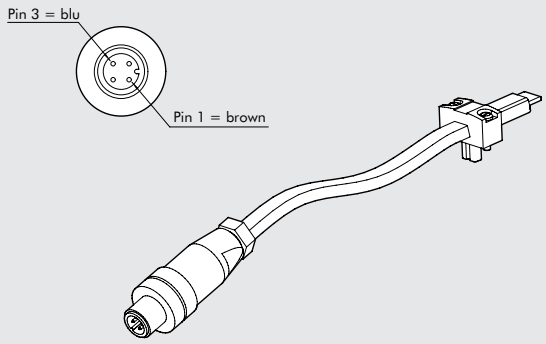
R17 - PIPE RELEASE SPANNER



LENGHT = 140 mm

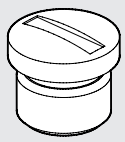
Code	Description	Ø Tube	Notes
2L17001	RL17	from Ø 3 to Ø 10	For R fitting and Fox fitting

AS-INTERFACE ADDRESS CONNECTOR KIT



Code	Description
0226950150	AS-INTERFACE ADDRESS CONNECTOR CABLE L=1 MT

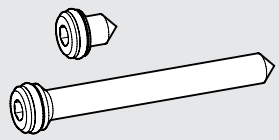
M8 - M12 PLUG



Code	Description
0240009039	PLUG M8
0240009040	PLUG M12

SPARES

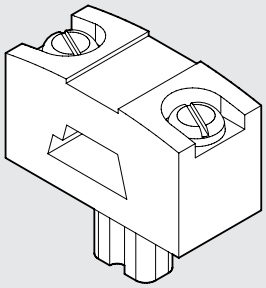
GRUB SCREW KIT



Code	Description
0227301800	GRUB SCREW FOR MULTIMACH HDM/CM

Comes in 1+1 pc. packs

AS-INTERFACE CONNECTOR KIT

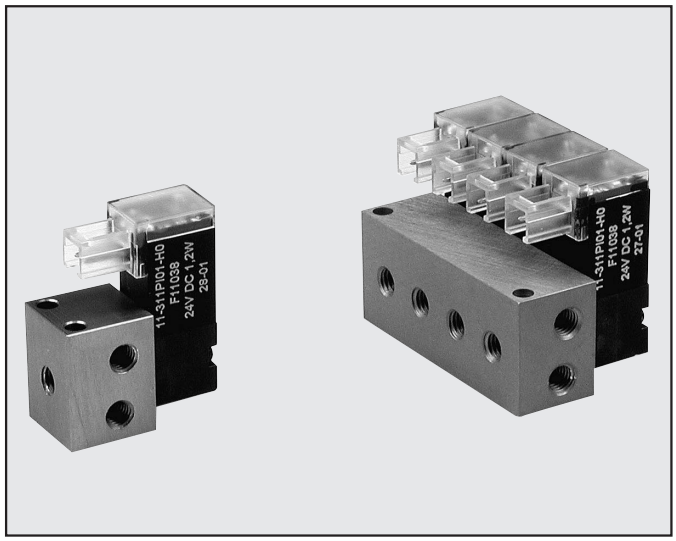


Code	Description
0226950151	AS-INTERFACE CONNECTOR KIT

NOTES

SOLENOID VALVES
PIV.P 10 mm

- 3/2 direct control microvalves
- Possible assembly on single and multiple bases
- Monostable manual actuation as standard
- Assembly in any position
- Operation with filtered lubricated or unlubricated air
- Maximum ambient temperature: 50°C
- With incorporated LED
- Low power absorption



2

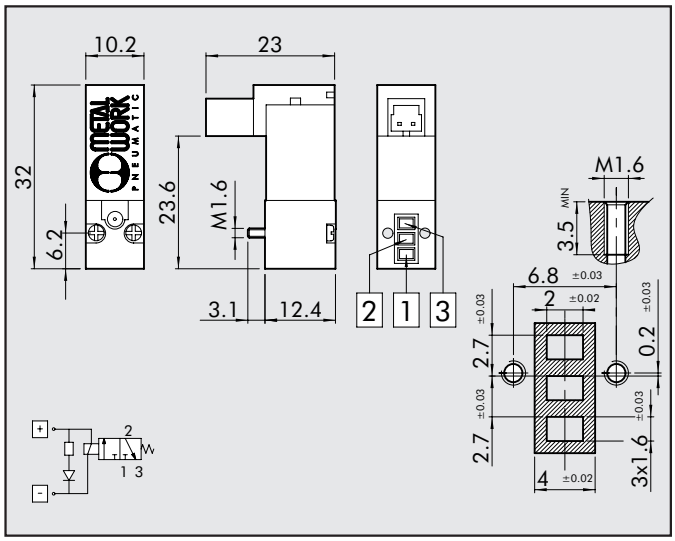
TECHNICAL DATA

Operating temperature range	Te	5°÷50°C
Fluid temperature	Tg	5°÷50°C
Fluid		Filtered lubricated or unlubricated air
Working life		More than 50 million cycles
Materials		Body: technopolymer PPS
		Mechanics: stainless steel AISI 405
		Gaskets NBR
Weight	[g]	10
Voltage tolerance	ΔV	± 10%
Maximum operation frequency	f	30 Hz
Use factor	ED	100%
Response time	t	≥ 10 msec.
Type of protection		IP 51
Electrical connection		PLUG IN
Flow rate at 6 bar ΔP=1 bar	Nl/min	15

KEY TO CODES

P I V	2	3	P	0	1	N C
FAMILY	AIR HOLE	NUMBER OF WAYS	DIMENSIONS	THREAD	VERSION	FURTHER DETAILS
	2 0.8 mm	3 3 ways	P 10x10	0 on base	1 24 VDC	NC normally closed

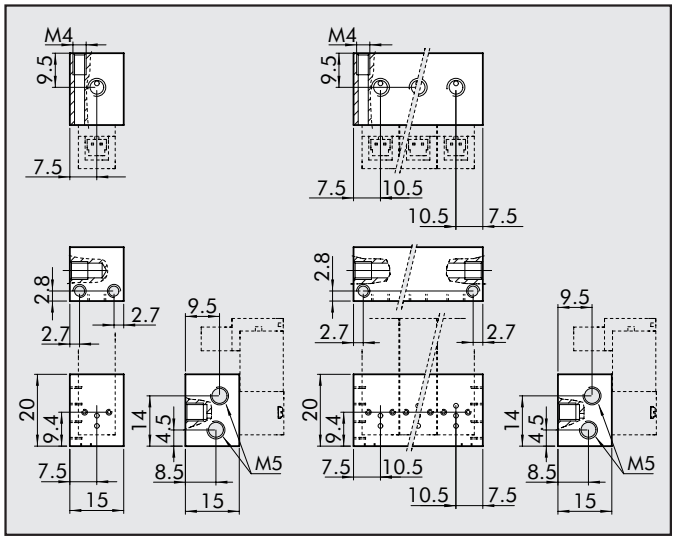
DIMENSIONS OF PILOT VALVE 3/2 10 mm



TECHNICAL DATA AND ORDERING

Code	Description	Voltage	Flow rate Watt	Hole diam. mm	Factor Kv	Operating pressure bar
W4005001000	PIV23P01NC	24VDC	1.2W	0.8	0.25	0÷7

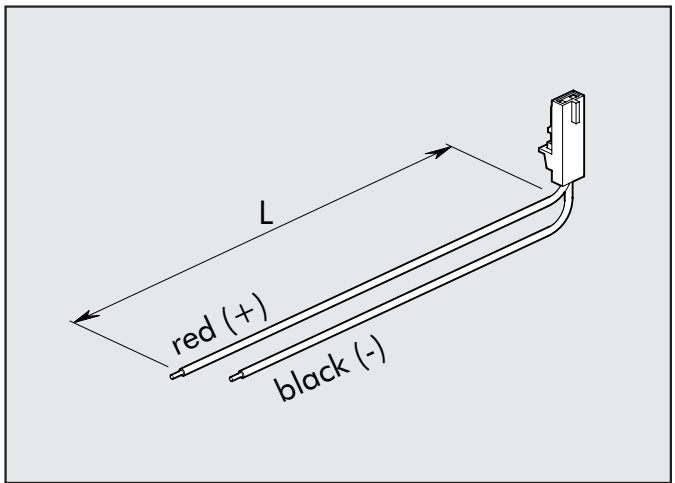
DIMENSIONS OF BASE FOR PIV.P 10 mm VALVE



Code	Description
W0400100101	ACC. FOR P1150 BASE, 1 POSN. FOR EV.PICOSOL
W0400100102	ACC. FOR P1150 BASE, 2 POSN. FOR EV.PICOSOL
W0400100103	ACC. FOR P1150 BASE, 3 POSN. FOR EV.PICOSOL
W0400100104	ACC. FOR P1150 BASE, 4 POSN. FOR EV.PICOSOL
W0400100105	ACC. FOR P1150 BASE, 5 POSN. FOR EV.PICOSOL
W0400100106	ACC. FOR P1150 BASE, 6 POSN. FOR EV.PICOSOL
W0400100107	ACC. FOR P1150 BASE, 7 POSN. FOR EV.PICOSOL
W0400100108	ACC. FOR P1150 BASE, 8 POSN. FOR EV.PICOSOL
W0400100109	ACC. FOR P1150 BASE, 9 POSN. FOR EV.PICOSOL
W0400100110	ACC. FOR P1150 BASE, 10 POSN. FOR EV.PICOSOL

ACCESSORIES

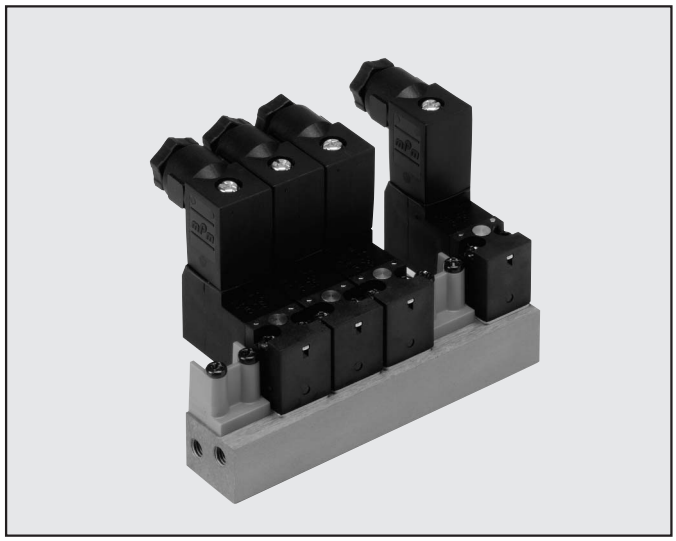
PLUG-IN CONNECTOR



Code	Description
W0970512000	PLUG-IN CONNECTOR FOR MACH 11 L= 300

SOLENOID VALVES
PIV.M 15 mm

- 3/2 NC/NO direct control microvalves
- Possible assembly on single and multiple bases
- Monostable manual actuation as standard
- Assembly in any position
- Operation with filtered lubricated or unlubricated air
- Maximum ambient temperature: 50°C
- Low power absorption



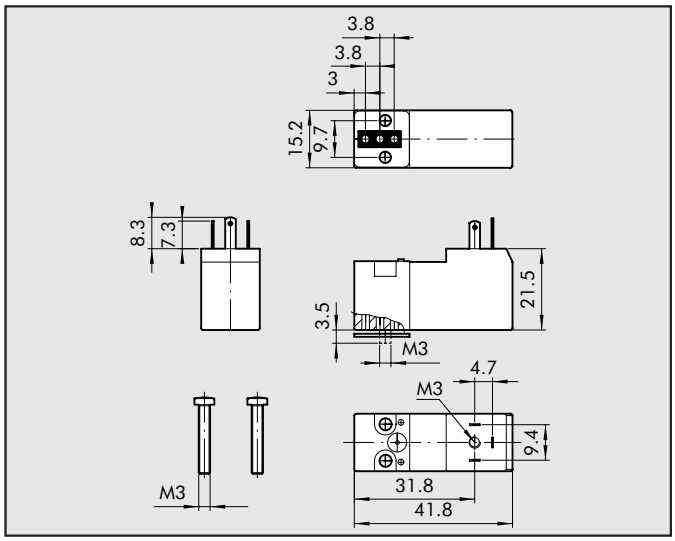
TECHNICAL DATA

Voltage tolerance	ΔV	–10-+15%
Alternating current frequency (AC)	f	50/60 Hz
Maximum operation frequency	f	30 Hz
Solenoid rating		100% ED
Response time	t	≈ 10 msec.
Type of protection		IP 65 EH 60529
Electrical connection		9.4 mm micro centre distance
Insulation class	F	155
Ambient temperature	Te	–10°C to 50°C
Fluid temperature	Tg	–10°C to 50°C
Fluid		Filtered lubricated or unlubricated air
Working life		100 million cycles
Materials		Body: PPS
		Spring: 302 stainless steel
		FKM/FPM gaskets
Weight	[g]	30 g
Manual control		monostable
Assembly position		in any position

KEY TO CODES

P I V	1	3	M	0	1	N C
FAMILY	AIR HOLE	NUMBER OF WAYS	PORT	THREAD	VERSION	FURTHER DETAILS
	1 1 mm 3 1.1 mm 6 1.5 mm	3 3 ways	M 15x15	0 on base	1 24 VDC 3 24 VAC 5 110 VAC 7 220 VAC	NC normally closed NO normally open

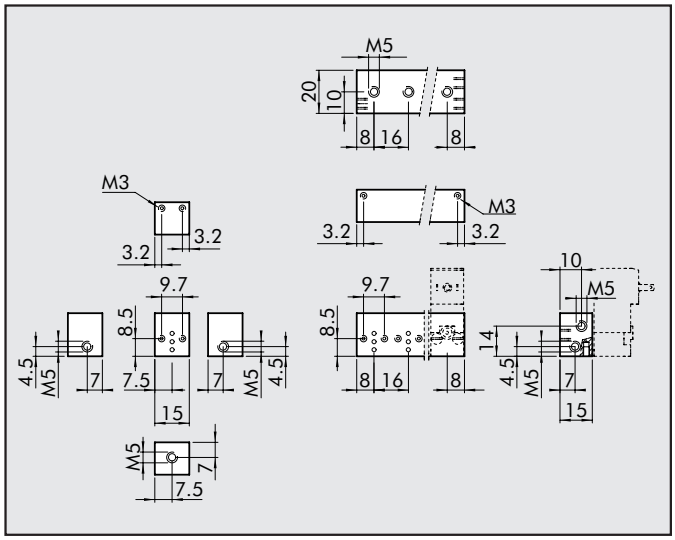
PIV.M STD DIMENSIONS



ORDERING CODES - SPECIFIC TECHNICAL DATA

Ordering code	Description	Voltage	Flow rate Watt	Hole diam. mm	Factor Kv	Operating pressure bar
W4015001000	PIV33M01 NC	24VDC	2.5W	1.1	0.42	0÷10
W4015001010	PIV33M03 NC	24VAC	2W - 3VA	1.1	0.42	0÷10
W4015001020	PIV33M05 NC	110VAC	2W - 3VA	1.1	0.42	0÷10
W4015001030	PIV33M07 NC	220VAC	2W - 3VA	1.1	0.42	0÷10
W4015001100	PIV63M01 NC	24VDC	2.5W	1.5	0.55	0÷6
W4015001110	PIV63M03 NC	24VAC	2W - 3VA	1.5	0.55	0÷6
W4015001120	PIV63M05 NC	110VAC	2W - 3VA	1.5	0.55	0÷6
W4015001130	PIV63M07 NC	220VAC	2W - 3VA	1.5	0.55	0÷6
W4015002000	PIV13M01 NO	24VDC	2.5W	1	0.33	0÷6
W4015002010	PIV13M03 NO	24VAC	2W - 3VA	1	0.33	0÷6
W4015002020	PIV13M05 NO	110VAC	2W - 3VA	1	0.33	0÷6
W4015002030	PIV13M07 NO	220VAC	2W - 3VA	1	0.33	0÷6

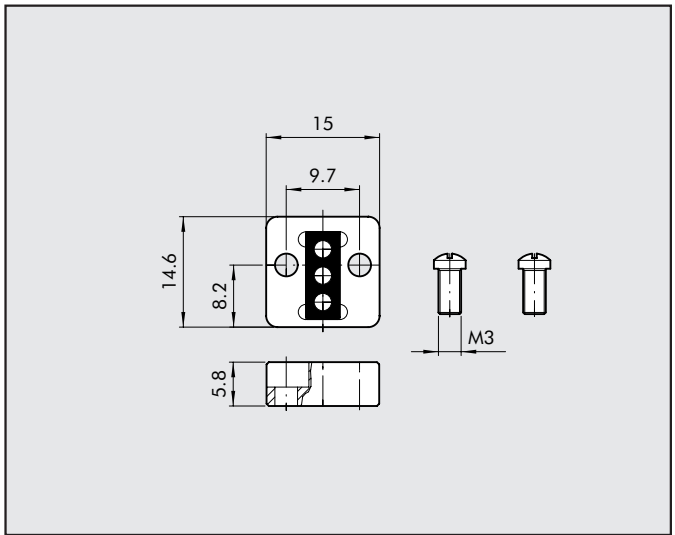
MULTIPLE BASE FOR PIV.M



ORDERING CODES - SPECIFIC TECHNICAL DATA

Code	Colour	Type	Weight [g]
W0400101001	Single base	B5001	6
W0400101002	Multiple base	B5002	24
W0400101003	Multiple base	B5003	34
W0400101004	Multiple base	B5004	46
W0400101005	Multiple base	B5005	58
W0400101006	Multiple base	B5006	70
W0400101007	Multiple base	B5007	82
W0400101008	Multiple base	B5008	98
W0400101009	Multiple base	B5009	106
W0400101010	Multiple base	B5010	114

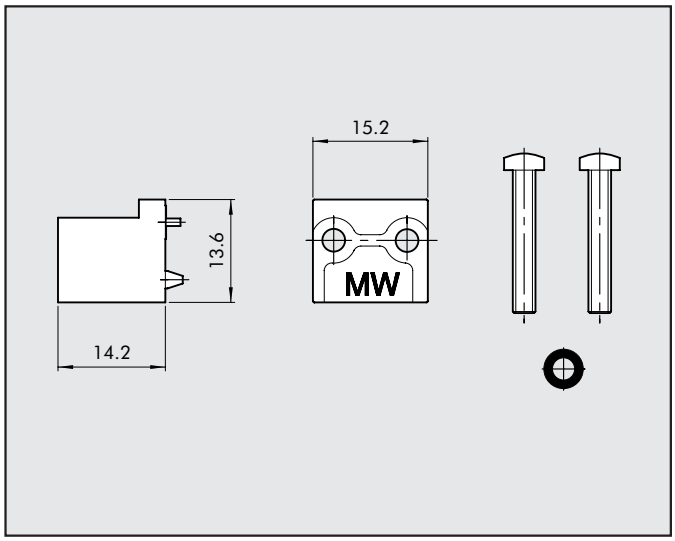
END PLUG – UNUSED POSITION



ORDERING CODES

Code	Description	Weight [g]
W0400102000	END PLUG	6

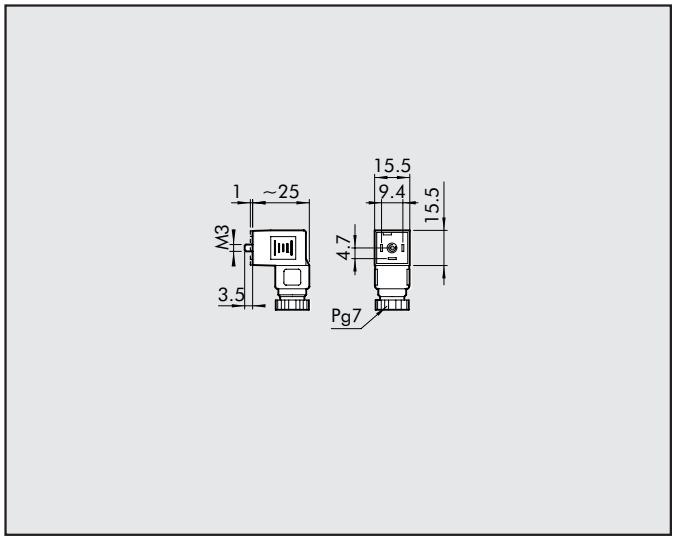
END PLUG – PORT 1



ORDERING CODES

Code	Description	Weight [g]
W0400102002	END PLUG – PORT 1	4

MICRO ELECTRIC CONNECTOR 15 mm



ORDERING CODES

Code	Colour	Type	
W0970500011	black	Standard	
W0970500012	Transparent	LED 24V	
W0970500013	Transparent	LED 110V	
W0970500015	Transparent	LED + VDR 24V	
W0970500016	Transparent	LED + VDR 110V	

NOTES

PIV VALVES ON BASE

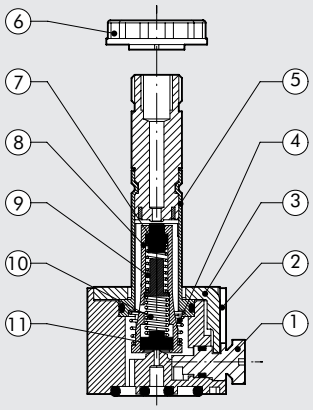
- PIV.I – PIV.T and PIV.B solenoid valves
- Assembly on base
- Bistable manual actuation
- Normally closed / normally open solenoid valves 2/2 – 3/2
- Installation in any position
- Particularly suitable for high operating frequencies and low response times



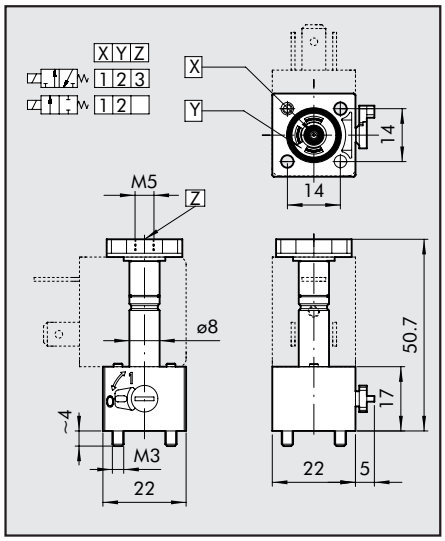
TECHNICAL DATA		PIV.I ON BASE	PIV.T ON BASE	PIV.B ON BASE
Absorption	W	2-5W - 5VA	3,8W - 2W - 6VA	10W - 16VA
Voltage available	V	12-24Vdc - 24-110-220 Vac	24Vdc - 24-110-220 Vac	24Vdc - 24-110-220 Vac
		50/60 Hz	50/60 Hz	50/60 Hz
Voltage tolerance	ΔV	–10 to +15%	–10 to +15%	–10 to +15%
Maximum operating frequency	f	30 Hz	30 Hz	15 Hz
Solenoid rating	ED	100%	100%	100%
Response time	t	8÷15 msec	8÷15 msec	10÷15 msec
Type of protection		IP 65	IP 65	IP 65
Type of coil		Coil side 22 Ø 8 DIN 43650	Coil side 22 Ø 9 DIN 43650	Coil side 30 DIN 43650
Insulation class	F	155	155	155
Ambient temperature	Te	–15÷50°C	–15÷50°C	–15÷50°C
Fluid temperature	Tg	–15÷50°C	–15÷50°C	–15÷50°C
Fluid		Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air	Filtered lubricated or unlubricated air
Working life		25 million cycles	25 million cycles	–
Weight	[g]	80 to120 g (according to the version)	85 g	250 g
Maximum coil/nut torque		1 Nm	1 Nm	1 Nm

COMPONENTS

① Manual control: technopolymer
② Body: technopolymer
③ Sleeve locking plate
④ Spring: stainless steel
⑤ Sleeve: brass OT 58
⑥ Ring nut for coil fixing
⑦ Gasket: NBR
⑧ Mobile core
⑨ Spring: stainless steel
⑩ Spring: stainless steel
⑪ Gasket: NBR

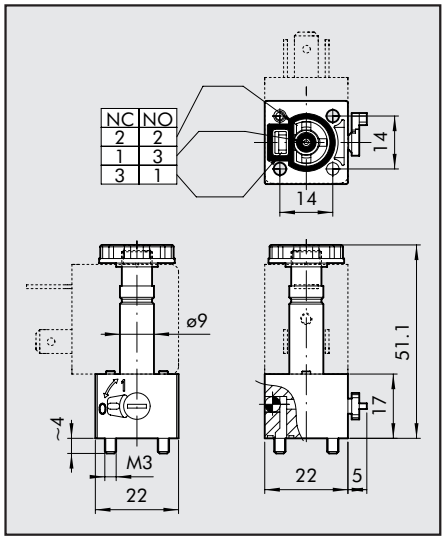


PIV.I VALVES, OPERATOR Ø 8, ON BASE



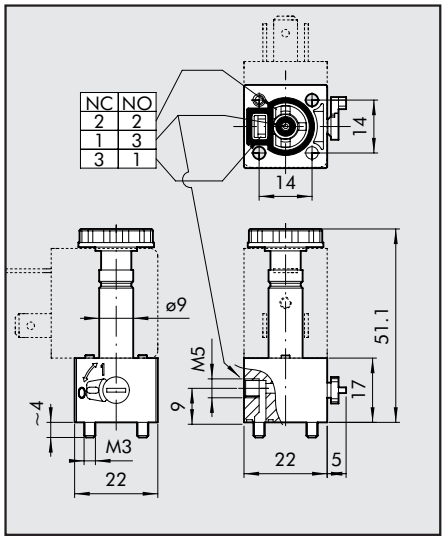
Symbol	Code	Description	Air hole diameter mm	Kv Factor	Maximum operating pressure (bar) DC= 5W	Maximum operating pressure (bar) AC 5VA
	W4018000200	PIV42I0S NC	1.2	0.65	10	10
	W4018000300	PIV72I0S NC	1.6	1	8	8
	W4018001200	PIV43I0S NC	1.2	0.65	10	10
	W4018001300	PIV73I0S NC	1.6	1	8	8

PIV.T VALVES, OPERATOR Ø 9, ON BASE



Symbol	Code	Description	Air hole diameter mm	Kv Factor	Pressure range (bar) DC = 3,8W	Pressure range (bar) AC 6,5VA
	W4025002101	PIV73T0B NO	1.6	0.75	0.5÷7	0.5÷7
	W4025002301	PIV83T0B NO	1.8	0.85	0.5÷6.5	0.5÷6.5
	W4025002100	PIV73T0B NC	1.6	0.8	0.5÷10	0.5÷10
	W4025002300	PIV83T0B NC	1.8	1	0.5÷8	0.5÷8

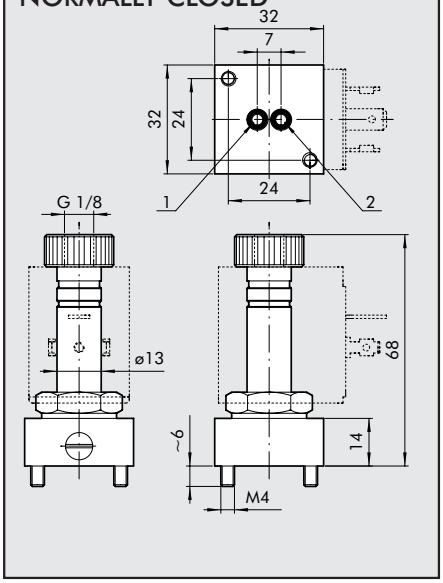
PIV.T VALVES, OPERATOR Ø 9, ON BASE WITH CONVEYED EXHAUST

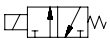


Symbol	Code	Description	Air hole diameter mm	Kv Factor	Pressure range (bar) DC = 3,8W	Pressure range (bar) AC 6,5VA
	W4025002001	PIV73T00 NO	1.6	0.75	0.5÷7	0.5÷7
	W4025002501	PIV83T00 NO	1.8	0.85	0÷6	0÷6
	W4025002000	PIV73T00 NC	1.6	0.8	0.5÷10	0.5÷10
	W4025002500	PIV83T00 NC	1.8	1	0.5÷8	0.5÷8

PIV.T VALVES, OPERATOR Ø 13, ON BASE

NORMALLY CLOSED



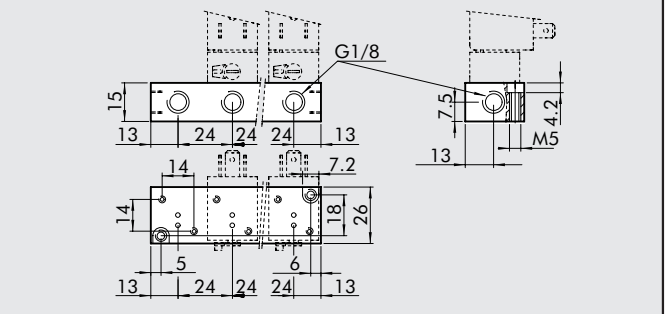
Symbol	Code	Description	Air hole diameter mm.	Kv Factor	Maximum operating pressure (bar) DC 10W	Maximum operating pressure (bar) AC 13VA
	W4026003000	PIVY3B0S NC	2.4	2.2	8	10

KEY TO CODES

P I V	5	3	T	0	O	N C
FAMILY	AIR HOLE	NUMBER OF WAYS	CONNECTION	THREAD	VERSION	FURTHER DETAILS
	2 0.8 mm 4 1.2 mm 5 1.4 mm 7 1.6 mm 8 1.8 mm Y 2.4 mm W 3 mm X 4 mm Z 6 mm	2 2 ways 3 3 ways	I 22x22 operator Ø 8 T 22x22 operator Ø 9 B 30x30 operator Ø 13	0 on base	O on base with conveyed exhaust B on base S standard	NC normally closed NO normally open

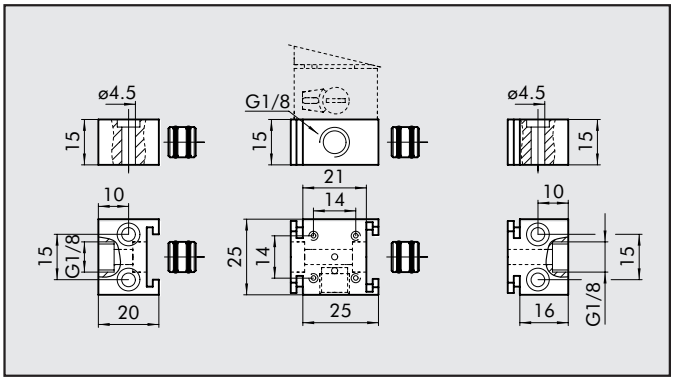
ACCESSORIES FOR PIV VALVES ON BASE

MULTIPLE BASES FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



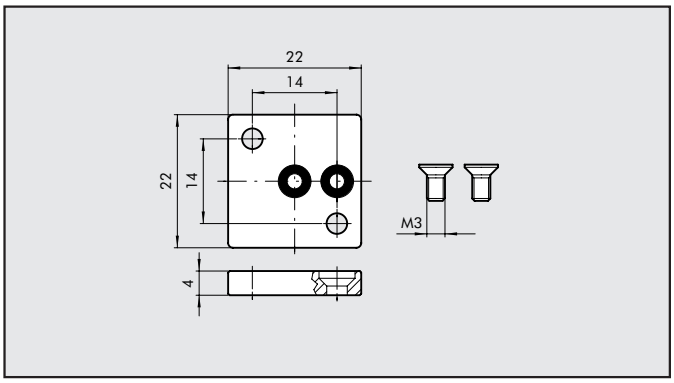
Code	Description	Abbrev.	Weight [g]
W0400111101	Base 1 positions	EB 6001	22
W0400111102	Base 2 positions	EB 6002	50
W0400111103	Base 3 positions	EB 6003	76
W0400111104	Base 4 positions	EB 6004	102
W0400111105	Base 5 positions	EB 6005	128
W0400111106	Base 6 positions	EB 6006	154
W0400111107	Base 7 positions	EB 6007	180
W0400111108	Base 8 positions	EB 6008	206
W0400111109	Base 9 positions	EB 6009	232
W0400111110	Base 10 positions	EB 6010	258

MANIFOLD BASES FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



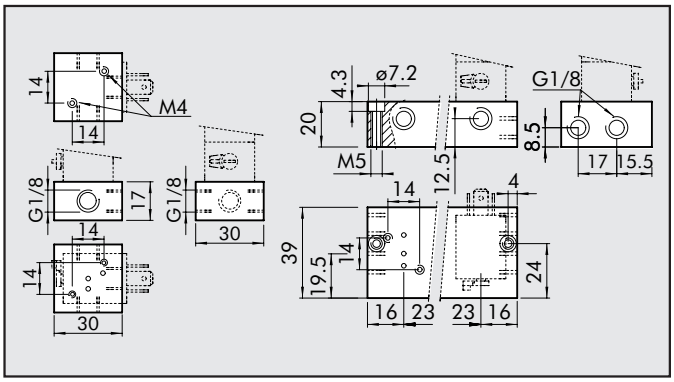
Code	Description	Abbrev.	Weight [g]
W0400111200	Manifold base	EB 8000 I	24
W0400111201	LH end plate	EB 8000 TI	17
W0400111202	RH end plate	EB 8000 T2	15

BLANKING PLATE FOR PIV.I PIV.T VALVES, UNUSED POSITION



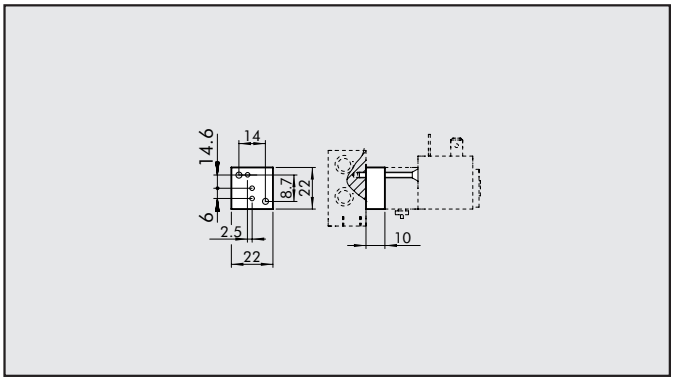
Code	Description	Abbrev.	Weight [g]
W0400112000	Unused position	EB 6000	5

MULTIPLE BASES FOR PIV.T SOLENOID VALVES, OPERATOR Ø 9



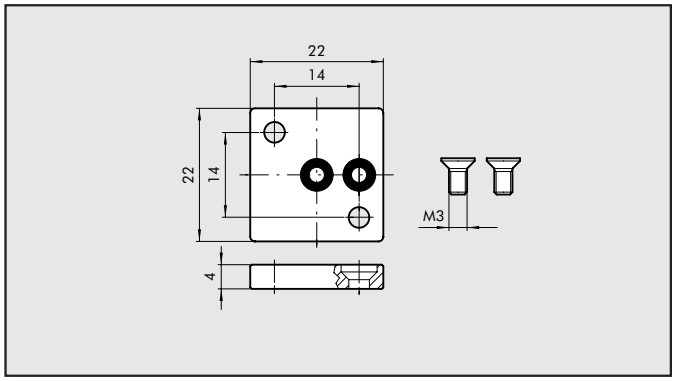
Code	Description	Posn.	Weight [g]
W0400101101	ACC. BASE 190, 1POSN. PIV.T	1	36
W0400101102	ACC. BASE 190, 2 POSN. PIV.T	2	104
W0400101103	ACC. BASE 190, 3 POSN. PIV.T	3	148
W0400101104	ACC. BASE 190, 4 POSN. PIV.T	4	192
W0400101105	ACC. BASE 190, 5 POSN. PIV.T	5	236
W0400101106	ACC. BASE 190, 6 POSN. PIV.T	6	280
W0400101107	ACC. BASE 190, 7 POSN. PIV.T	7	324
W0400101108	ACC. BASE 190, 8 POSN. PIV.T	8	368
W0400101109	ACC. BASE 190, 9 POSN. PIV.T	9	452
W0400101110	ACC. BASE 190, 10 POSN. PIV.T	10	456

NC/NO ADAPTER FOR PIV.T VALVES



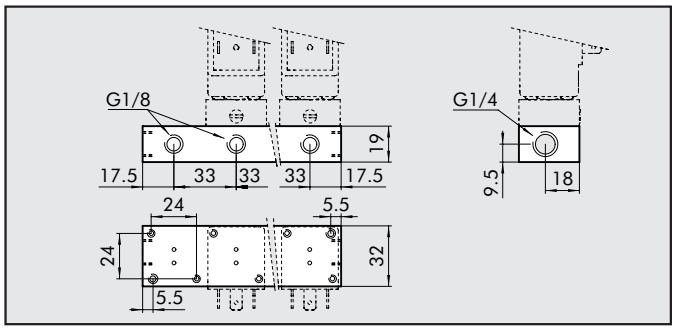
Code	Description	Abbrev.	Weight [g]
W0400101190	ACC. NC/NO ADAPTER	I-9000	15

BASE BLANKING PLATE FOR PIV.T VALVES, UNUSED POSITIONS



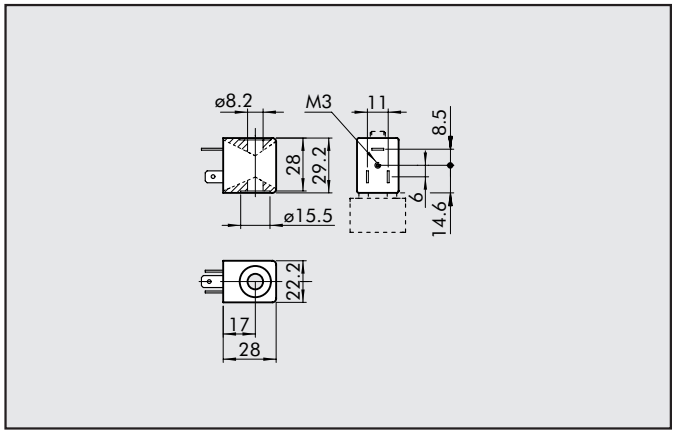
Code	Description	Abbrev.	Weight [g]
W0400112000	Accessories: blanking plate	B6000	5

MULTIPLE BASES FOR PIV.B VALVES



Code	Function	Sigla	Weight [g]
W0400101201	1 position	B4001	42
W0400101202	2 positions	B4002	94
W0400101203	3 positions	B4003	142
W0400101204	4 positions	B4004	188
W0400101205	5 positions	B4005	234
W0400101206	6 positions	B4006	280
W0400101207	7 positions	B4007	326
W0400101208	8 positions	B4008	372
W0400101209	9 positions	B4009	418

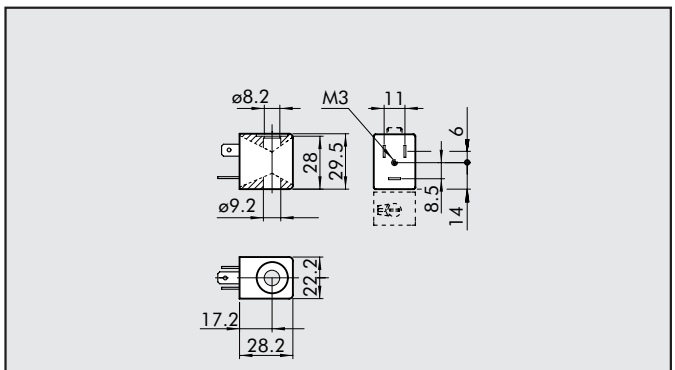
COILS, SIDE 22 mm FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



- Voltage tolerance: - 10 to + 15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents.
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature

Code	Nominal voltage	Absorption		Abbrev.
		Inrush	Holding	
W 0215 000151	12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC
W 0215 000101	24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC
W 0215 000111	24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC
W 0215 000121	110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC
W 0215 000131	220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC
W 0215 000051	12Vcc	5W	5W	Coil 22 Ø8 5W-12VDC
W 0215 000001	24Vcc	5W	5W	Coil 22 Ø8 5W-24VDC
W 0215 000011	24V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-24VAC
W 0215 000021	110V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-110VAC
W 0215 000031	220V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-220VAC

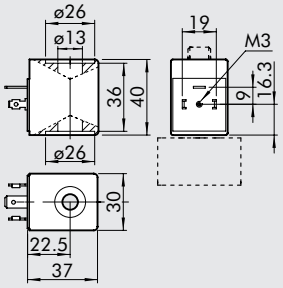
COILS, SIDE 22 mm FOR PIV.T SOLENOID VALVES, OPERATOR Ø 9



- Voltage tolerance: - 10 / + 15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature

Code	Nominal voltage	Absorption		Abbrev.
		Inrush	Holding	
W0216000101	24Vcc	2W	2W	Coil 22 Ø9 BA 2W-24VDC
W0216000111	24V 50/60Hz	5VA	3.6VA	Coil 22 Ø9 BA 3.6VA-24VAC
W0216000121	110V 50/60Hz	5VA	3.6VA	Coil 22 Ø9 BA 3.6VA-110VAC
W0216000131	220V 50/60Hz	5VA	3.6VA	Coil 22 Ø9 BA 3.6VA-220VAC
W0216000001	24Vcc	3.8W	3.8W	Coil 22 Ø9 3.8W-24VDC
W0216000011	24V 50/60Hz	9VA	6.5VA	Coil 22 Ø9 6.5VA-24VAC
W0216000021	110V 50/60Hz	9VA	6.5VA	Coil 22 Ø9 6.5VA-110VAC
W0216000031	220V 50/60Hz	9VA	6.5VA	Coil 22 Ø9 6.5VA-220VAC

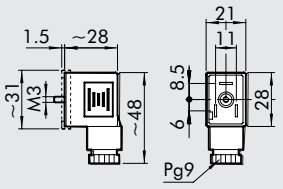
COILS, SIDE 22 mm FOR PIV.B SOLENOID VALVES



- Voltage tolerance: - 10 / + 15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

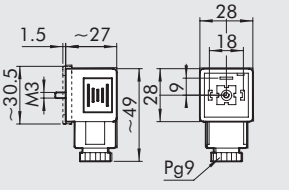
Code	Nominal voltage	Power absorption (average power input)	Abbrev.
W0216001001	24Vcc	10W	Coil 30 Ø13 10W-24VDC
W0216001011	24V 50/60Hz	13VA	Coil 30 Ø13 13VA-24VAC
W0216001021	110V 50/60Hz	13VA	Coil 30 Ø13 13VA-110VAC
W0216001031	220V 50/60Hz	13VA	Coil 30 Ø13 13VA-220VAC

CONNECTORS, SIDE 22 mm FOR PIV.I-PIV.T



Code	Colour	Cable diameter	Type
W0970510011	black	PG9	Standard
W0970510012	transparent	PG9	LED 24V
W0970510013	transparent	PG9	LED 110V
W0970510014	transparent	PG9	LED 220V
W0970510015	transparent	PG9	LED + VDR 24V
W0970510016	transparent	PG9	LED + VDR 110V
W0970510017	transparent	PG9	LED + VDR 220V

CONNECTORS, SIDE 30 mm FOR PIV.B



Code	Colour	Cable diameter	Type
W0970520033	black	PG9	Standard
W0970520034	transparent	PG9	LED 24V
W0970520035	transparent	PG9	LED 110V
W0970520036	transparent	PG9	LED 220V
W0970520037	transparent	PG9	LED + VDR 24V
W0970520038	transparent	PG9	LED + VDR 110V
W0970520039	transparent	PG9	LED + VDR 220V

PIV VALVES IN LINE

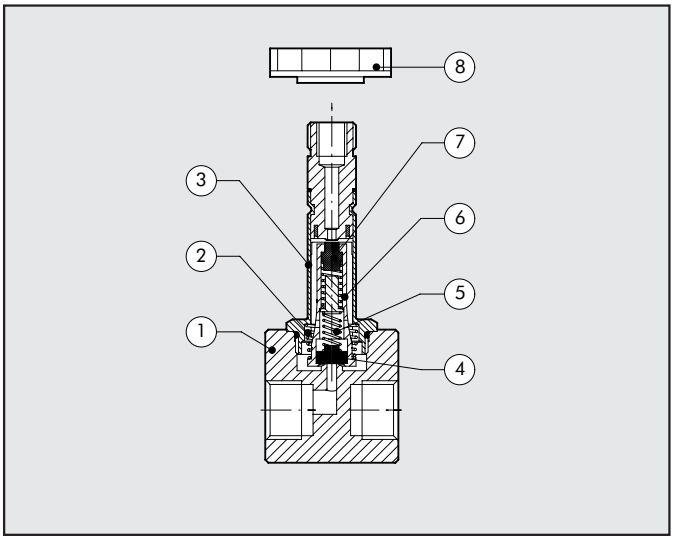
- PIV.I – PIV.B in-line solenoid valves
- Threaded ports: M5 G1/8" G1/4"
- 2/2 – 3/2 solenoid valves - normally closed/normally open
- Installation in any position
- Particularly suitable for high operating frequencies and low response times.



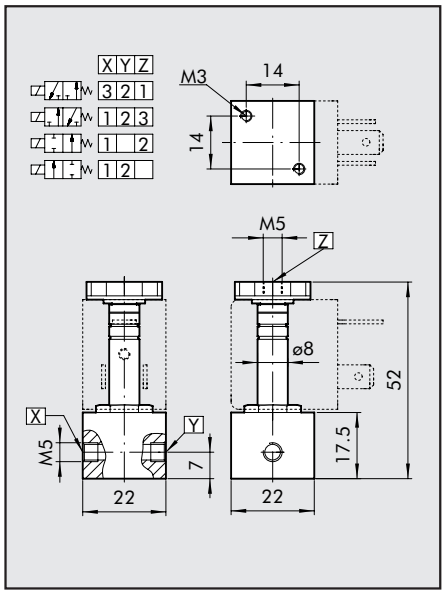
TECHNICAL DATA		PIV.I IN LINEA	PIV.B IN LINE
Absorption	W	5.5W - 5.5VA	10W - 13VA
Voltage available	V	24Vdc - 24-110-220 Vac - 50/60 Hz	24Vdc - 24-110-220 Vac - 50/60 Hz
Voltage tolerance	ΔV	–10 to +15%	–10 to +15%
Maximum operating frequency	f	30 Hz	15 Hz
Solenoid rating	ED	100%	100%
Response time	t	8÷15 msec	10÷15 msec
Type of protection		IP 65	IP 65
Type of coil		coil side 22 Ø 8 DIN 43650	coil side 30 DIN 43650
Insulation class	F	155	155
Ambient temperature	Te	–15÷50°C	–15÷50°C
Fluid temperature	Tg	–15÷50°C	–15÷50°C
Fluid		filtered lubricated or unlubricated air	filtered lubricated or unlubricated air
Working life		25 million cycles	–
Weight	[g]	35 to 140 g (depending on version)	130 g
Maximum coil/nut torque		1 Nm	1 Nm
Note on use		The 2/2 NC and 2/2 NO valves work only with inlet pressure ≥ outlet pressure	

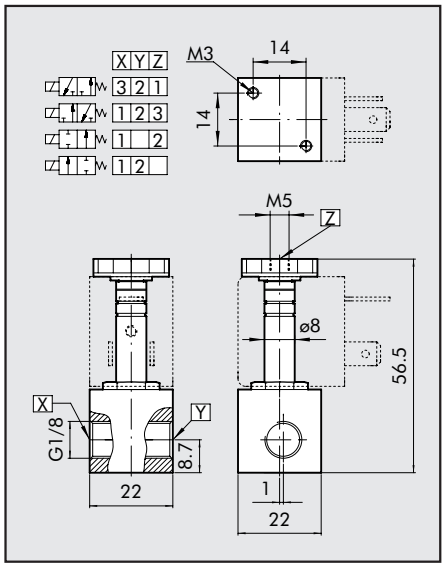
COMPONENTS

① Body: brass OT 58
② Springs: steel
③ Sleeve
④ Gasket: NBR
⑤ Springs: steel
⑥ Mobile core
⑦ Gasket: FKM/FPM
⑧ Coil locking ring



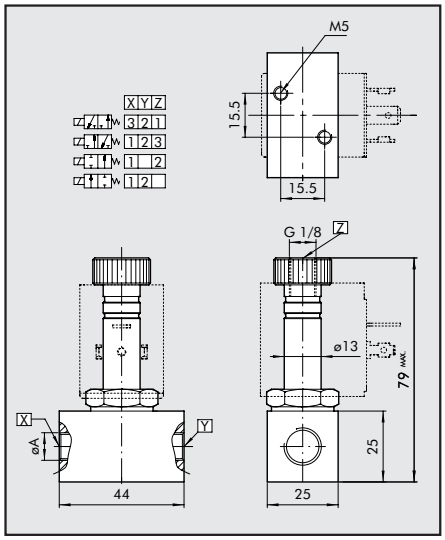
PIV.I VALVES, OPERATOR Ø 8 mm, IN LINE – M5 – 1/8"





Symbol	Ordesing code	Description	Input thread	Diameter of air hole mm	Kv factor	Maximum operating pressure (bar) DC = 5W	Maximum operating pressure (bar) AC 5VA
	W4017000100	PIV42I5S NC	M5	1.2	0.65	30	30
	W4017001300	PIV92I8S NC	G1/8"	2.4	2	6	7
	W4017001100	PIV42I8S NC	G1/8"	1.2	0.65	30	30
	W4017001200	PIV72I8S NC	G1/8"	1.6	1.2	15	14
	W4017000101	PIV72I5S NO	M5	1.4	0.8	10	10
	W4017001201	PIV72I8S NO	G1/8"	1.4	0.8	10	10
	W4017003100	PIV43I5S NC	M5	1.2	0.65	10	10
	W4017004100	PIV43I8S NC	G1/8"	1.2	0.65	10	10
	W4017004200	PIV73I8S NC	G1/8"	1.6	1	6.5	6.5
	W4017004201	PIV73I8S NO	G1/8"	1.4	0.7	6	7

PIV.B VALVES, OPERATOR Ø 13, IN LINE

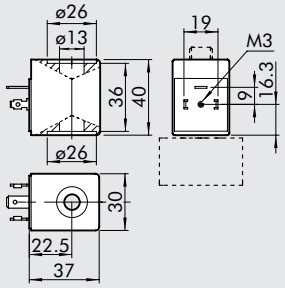


Symbol	Ordering code	Description	Input thread	Diameter of air hole mm	Kv factor	Maximum operating pressure (bar) DC = 10W	Maximum operating pressure (bar) AC 13VA
	W4026005001	PIV73B8S NO	G1/8"	1.6	1.2	6	12
	W4026005101	PIV73B4S NO	G1/4"	1.6	1.2	6	12
	W4026005111	PIV93B4S NO	G1/4"	2.4	2	3	4
	W4026005010	PIV93B8S NC	G1/8"	2.4	2.8	8	10
	W4026005020	PIVW3B8S NC	G1/8"	3	4	5.5	6
	W4026005000	PIV73B8S NC	G1/8"	1.6	1.4	14	17
	W4026005100	PIV73B4S NC	G1/4"	1.6	1.4	14	17
	W4026005110	PIV93B4S NC	G1/4"	2.4	2.8	8	8
	W4026005120	PIVW3B4S NC	G1/4"	3	4	5.5	6
	W4026004000	PIV92B4S NC	G1/4"	2.4	3	15	30
	W4026004010	PIVX2B4S NC	G1/4"	4	7	3	18
	W4026004020	PIVZ2B4S NC	G1/4"	6	9	1.5	5
	W4026004001	PIV92B4S NO	G1/4"	2.4	2.6	13	15

KEY TO CODES

P I V	7	2	B	4	S	N C
FAMILY	AIR HOLE	NUMBER OF WAYS	CONNECTION	THREAD	VERSION	FURTHER DETAILS
	4 1.2 mm 7 1.6 mm 9 2.4 mm W 3 mm X 4 mm Z 6 mm	2 2 ways 3 3 ways	I 22x22 operator Ø 8 B 30x30 operator Ø 13	5 M5 4 G1/4'' 8 G1/8''	S Standard	NC normally closed NO normally open

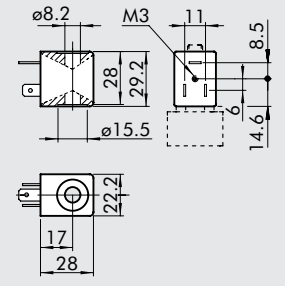
COIL, SIDE 30 mm - FOR PIV.B SOLENOID VALVES



- Voltage tolerance: - 10 / + 15%
- Insulation class: M180
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents

Code	Nominal voltage	Absorption (average)	Abbrev.
W0216001001	24Vcc	10W	Coil 30 Ø13 10W-24VDC
W0216001011	24V 50/60Hz	13VA	Coil 30 Ø13 13VA-24VAC
W0216001021	110V 50/60Hz	13VA	Coil 30 Ø13 13VA-110VAC
W0216001031	220V 50/60Hz	13VA	Coil 30 Ø13 13VA-220VAC

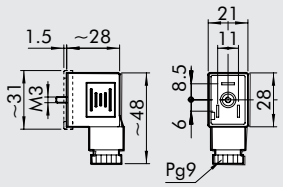
COIL, SIDE 30 mm - FOR PIV.I SOLENOID VALVES



- Voltage tolerance: - 10 / + 15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Maximum temperature of coil at 100% use: 70°C at 20° ambient temperature

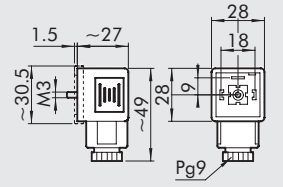
Code	Nominal voltage	Absorption		Abbrev.
		Inrush	Holding	
W 0215 000151	12Vcc	2W	2W	Coil 22 Ø8 BA 2W-12VDC
W 0215 000101	24Vcc	2W	2W	Coil 22 Ø8 BA 2W-24VDC
W 0215 000111	24V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-24VAC
W 0215 000121	110V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-110VAC
W 0215 000131	220V 50/60Hz	4VA	3VA	Coil 22 Ø8 BA 3VA-220VAC
W 0215 000051	12Vcc	5W	5W	Coil 22 Ø8 5W-12VDC
W 0215 000001	24Vcc	5W	5W	Coil 22 Ø8 5W-24VDC
W 0215 000011	24V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-24VAC
W 0215 000021	110V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-110VAC
W 0215 000031	220V 50/60Hz	8VA	5VA	Coil 22 Ø8 5VA-220VAC

CONNECTOR, SIDE 22 mm



Code	Colour	Ø Cable	Type
W0970510011	black	PG9	Standard
W0970510012	transparent	PG9	LED 24V
W0970510013	transparent	PG9	LED 110V
W0970510014	transparent	PG9	LED 220V
W0970510015	transparent	PG9	LED + VDR 24V
W0970510016	transparent	PG9	LED + VDR 110V
W0970510017	transparent	PG9	LED + VDR 220V

CONNECTOR, SIDE 30 mm



Code	Colour	Ø Cable	Type
W0970520033	black	PG9	Standard
W0970520034	transparent	PG9	LED 24V
W0970520035	transparent	PG9	LED 110V
W0970520036	transparent	PG9	LED 220V
W0970520037	transparent	PG9	LED + VDR 24V
W0970520038	transparent	PG9	LED + VDR 110V
W0970520039	transparent	PG9	LED + VDR 220V

NOTES

CNOMO SOLENOID VALVE

Solenoid valve to CNOMO 060580.
- 3/2 version normally closed
- Bistable and monostable manual actuation
- Assembly on manifold base

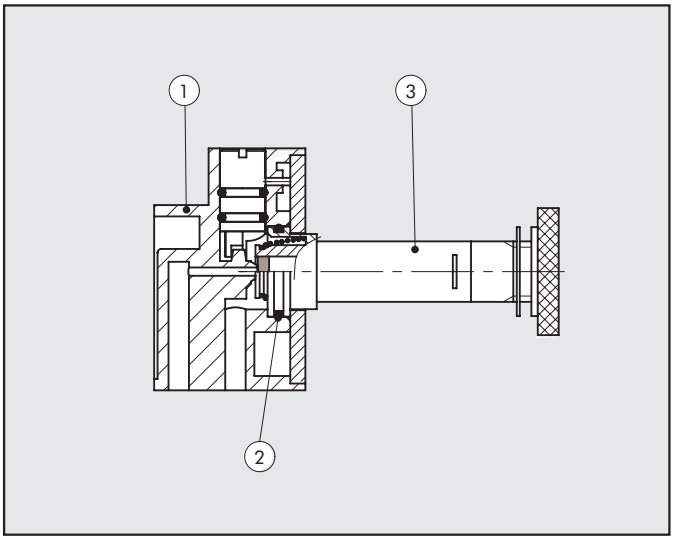


TECHNICAL DATA

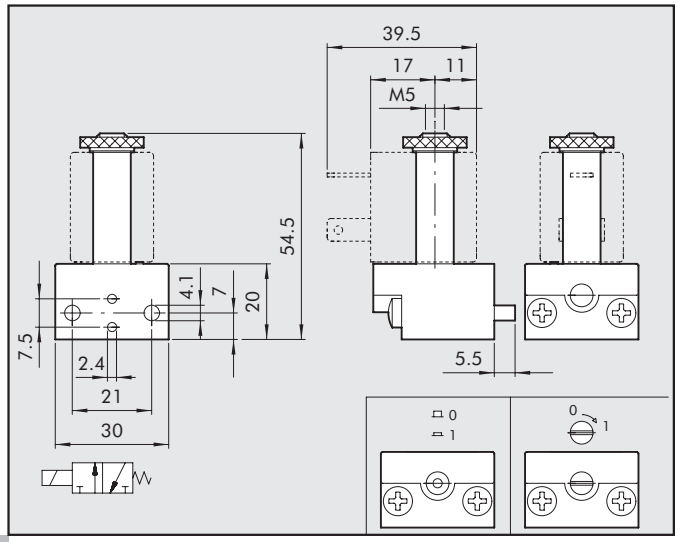
Operating pressure	P	Max 10 bar
Operating temperature range	T	–10°÷60°C
Solenoid rating		100% ED
Fluid		filtered lubricated or unlubricated air
System		with poppet
Nominal flow rate	Qn	40 Nl/min
Response times	msec	TRA 22 msec
		TRR 32 msec
Max. coil/nut torque		10 Nm

COMPONENTS

① VALVE BODY: HOSTAFORM®
② GASKETS: NBR nitrile rubber
③ OPERATOR: Brass pipe, stainless steel core

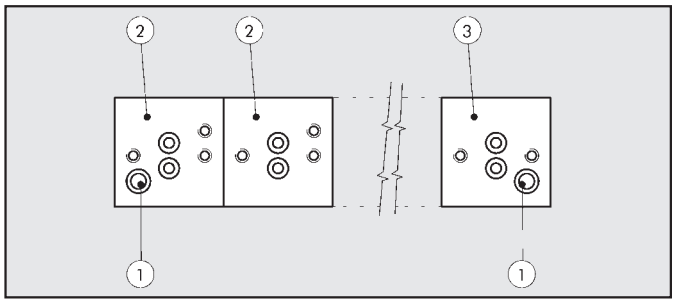


DIMENSIONS



Code	Description
9453920	CNOMO 3/2 WITH MONOSTABLE MANUAL ACTUATION
9453922	CNOMO 3/2 WITH BISTABLE MANUAL ACTUATION

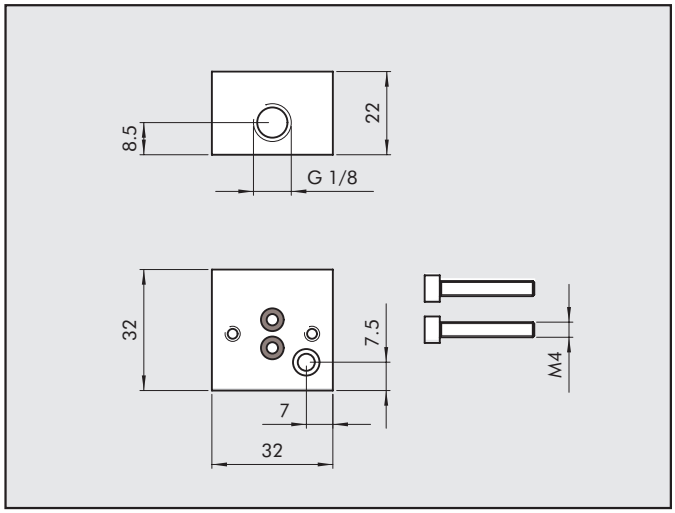
MODULAR CONFIGURATION OF CNOMO BASES



COMPONENTS

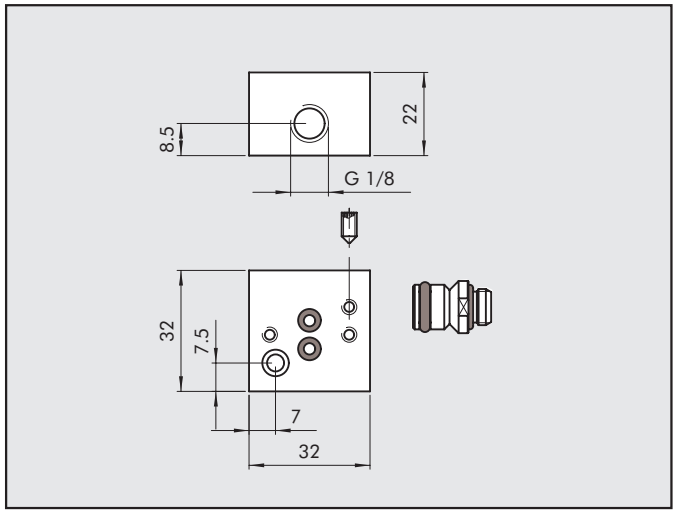
① Two fixing screws (included in input kit)
② CNOMO manifold base kit
③ CNOMO manifold base input kit

CNOMO MANIFOLD BASE INPUT KIT



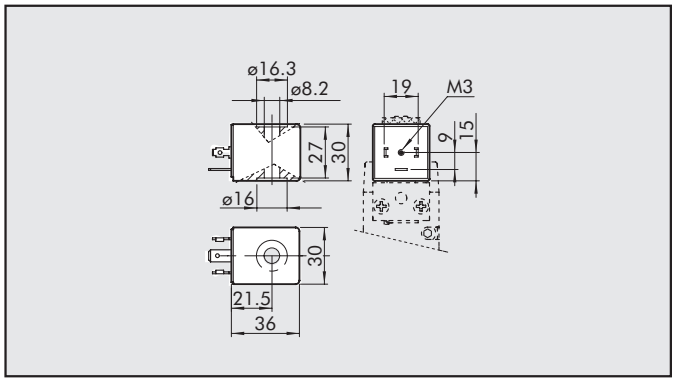
Code	Description
0227000200	CNOMO MANIFOLD BASE INPUT KIT

CNOMO MANIFOLD BASE KIT



Code	Description
0227000150	CNOMO MANIFOLD BASE KIT

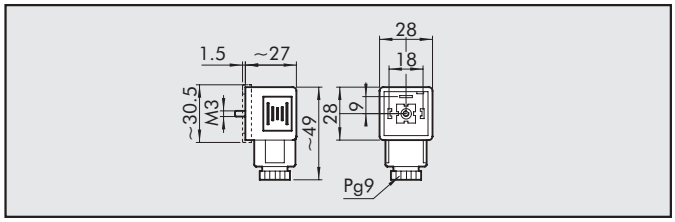
COILS, SIDE 30 mm



- Electric contact DIN 43650 Shape A
- Voltage tolerance: -10%/-10%
- Insulation class: F155
- Degree of protection: IP65 EN 60529 with connector
- Solenoid rating: 100% ED
- Maximum coil temperature at 100% ED use 70°C at 20° ambient temperature

Code	Nominal voltage	Absorption		Abbrev.
		Inrush	Holding	
W0210010100	24Vcc	5W	4W	Coil 30 Ø8 4W-24VDC
W0210011100	24V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-24VAC
W0210012100	110V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-110VAC
W0210013100	220V 50/60Hz	10VA	4VA	Coil 30 Ø8 4VA-220VAC

CONNECTOR ON SIDE 30 mm



Code	Colour	Cable diameter	Type
W0970520033	black	PG9	Standard
W0970520034	transparent	PG9	LED 24V
W0970520035	transparent	PG9	LED 110V
W0970520036	transparent	PG9	LED 220V
W0970520037	transparent	PG9	LED + VDR 24V
W0970520038	transparent	PG9	LED + VDR 110V
W0970520039	transparent	PG9	LED + VDR 220V

FIELDBUS

CHAPTER 2.2

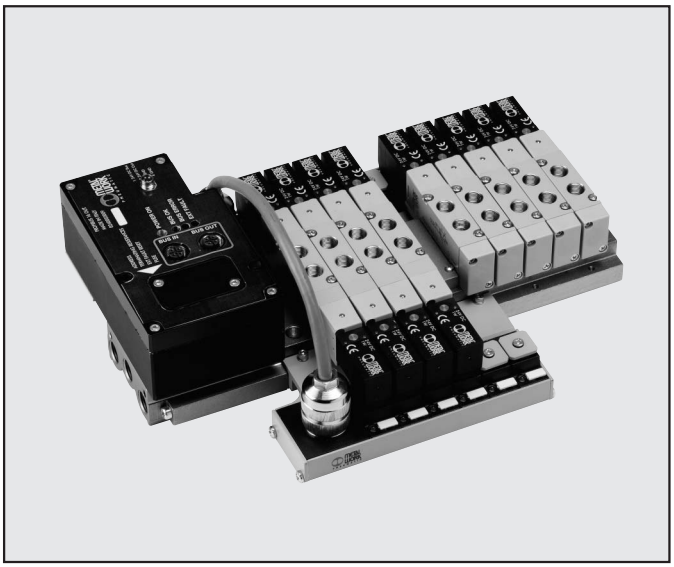

PROFIBUS-DP IP 65 MACH 16-DEDICATED PAGE 2.2/02


PROFIBUS-DP / INTERBUS-S / CAN-OPEN/DEVICE-NET FOR MULTIMACH PAGE 2.2/06


IP 67 PROFIBUS-DP PAGE 2.2/13

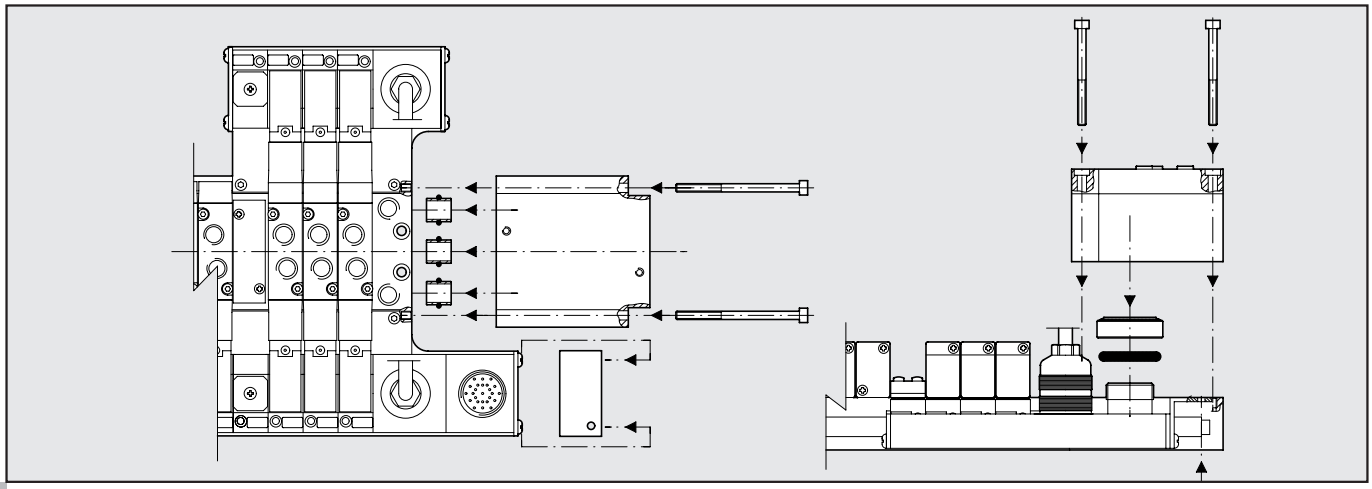
IP 65 PROFIBUS-DP MACH 16-DEDICATED

A high-integration robust system for Mach 16 batteries. The slave is fixed directly on the multiple connector so a valve island with multiple connection can be converted into an island with slaves. The slave is protected from polar inversion and overloads by a replaceable fuse, and the output drivers protect each valve against shortcircuiting. In the case of a short-circuit, which is indicated by the EXT FAULT red LED coming on, only the faulty valve is disconnected. The fuse and output restart button are situated below the rectangular cover, where the revolving switches for addressing and the dip switches for activating termination resistances are also located. Two versions of slave are available: the first one has a single power supply for bus and output, with a DIN-C connector; the second, is characterised by improved protection against electric disturbance, particularly harmful if the transfer rate is high. In this version, an M8 connector is used for the power supply; the power supply is separate from that of the bus, which means that when an alarm is generated, the power supply can be disconnected whereas the bus line remains active. A few important precautions must be borne in mind: the slave must be earthed through a threaded hole at the back of the slave; the M2 connectors of the bus must be the metal type to ensure electric insulation.



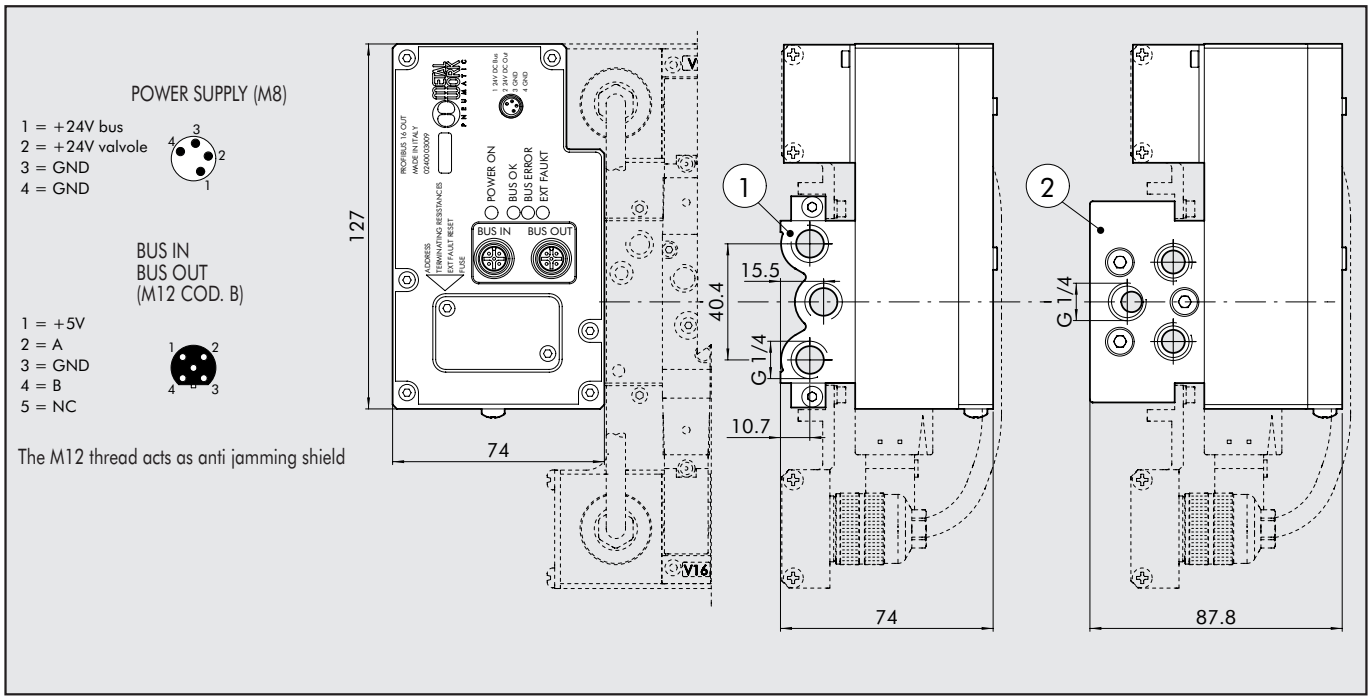
TECHNICAL DATA		PROFIBUS DP
Versions		16 outputs
Supply voltage		24 Vdc ± 10%, approx. 100 mA
Degree of protection		IP65
Temperature		-20÷55°C (-4÷131° F)
Field Bus Data	Transmission protocol	Profibus-DP DIN E 19245
	Transmission mode	synchronous or Freeze-Mode
	Transmission speed	12 MBit/s
	Addresses	rotating switches BCD, 0.....99
Output Technical Data	Voltage	24 VDC (from 18 to 30V) maximum voltage for each actuator
	Maximum current for each actuator	350mA
	Maximum current contemporary	450mA OUT 1÷8 + 450mA OUT 9÷16
	Maximum signal exchange frequency	100 Hz, Ohm 1 Hz induction
	Indicator LED	One LED for each output
	Protections	by short-circuit or overload of each single outel
Autotest	Field Bus	RUN-LED
	Bus error	LED + alarm signal to master
	Switch-on signal	Power LED
	Peripheral failure	LED + alarm signal to master
Protections		polar inversion, short-circuit or overload

SLAVE ASSEMBLY, MACH 16 DEDICATED



PROFIBUS-DP

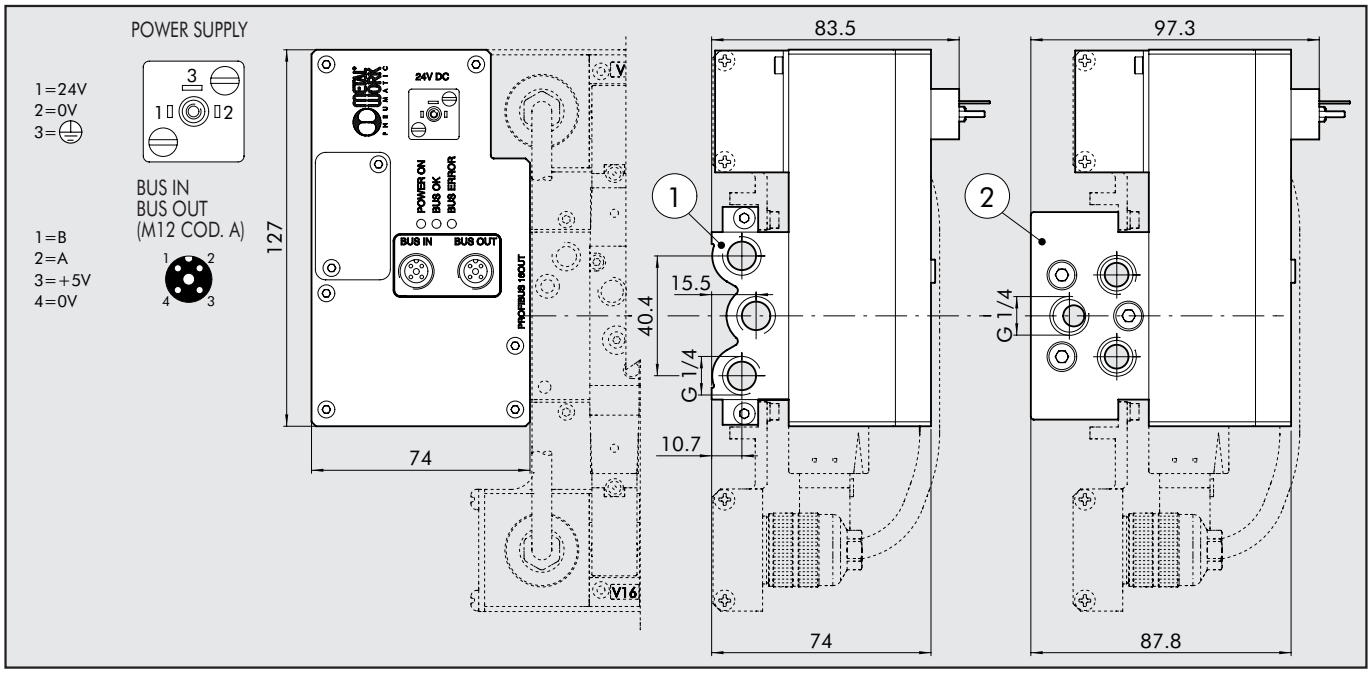
16-OUTPUT SLAVE "NEW"



	Code	Slave kit
①	0240003073	PROFIBUS-DP SLAVE 16 OUT FOR MULTIPLE BASE
②	0240003077	PROFIBUS-DP SLAVE 16 OUT FOR MODULAR BASE
	0240003070	SLAVE PROFIBUS-DP 16 OUT WITHOUT BASE

The slave kit includes the slave, the fixing screws and the adapter base.

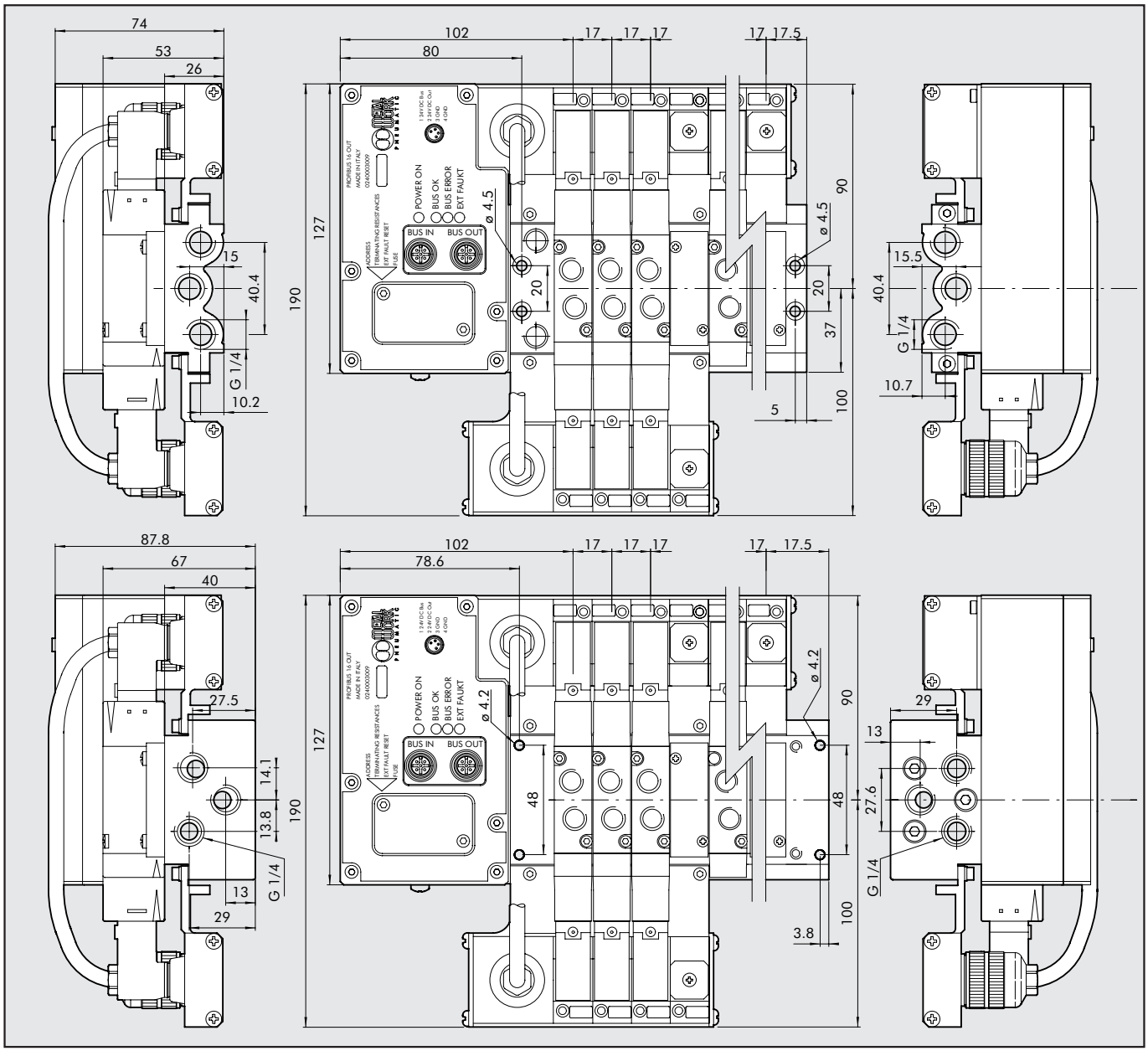
16-OUTPUT SLAVE "OLD"



	Code	Slave kit
①	0240003001	PROFIBUS-DP SLAVE 16 OUT FOR MULTIPLE BASE
②	0240003007	PROFIBUS-DP SLAVE 16 OUT FOR MODULAR BASE

The slave kit includes the slave, the fixing screws and the adapter base.

16-OUTPUT SLAVE, COMPLETE WITH VALVES



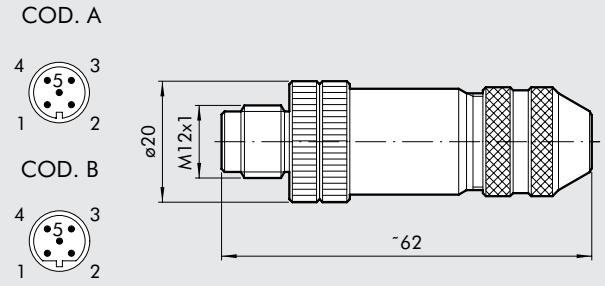
KEY TO CODES

BUS	P	V	1 6 O	A	M C N	0 4	M M 6 V L
	P Profibus I Interbus	V IP 65	16 OUT 16 IN+16 OUT	A Mach 16 Multiple base B Mach 16 Modular base	MCN electrical connector	04 4 posit. 06 6 posit. 08 8 posit. 10 10 posit. 12 12 posit.	M MSV 25 SMS 00 M6 MSV G5 SMS 00 M8 MSV H5 SMS 00 V MSV 25 SCS 00 L MSV 25 SMP 00 L6 SMV G5 SMP 00 L8 MSV H5 SMP 00 J MSV 25 SMB 00 J6 MSV G5 SMB 00 J8 MSV H5 SMB 00 K MSV 25 SCB 00 G MSV 26 SMS CC G6 MSV G6 SMS CC G8 MSV H8 SMS CC O MSV 26 SCS CC E MSV 26 SMS OC E6 MSV G6 SMS OC E8 MSV H8 SMS OC F MSV 26 SCS OC B MSV 26 SMS PC B6 MSV G6 SMS PC B8 MSV H8 SMS PC C MSV 26 SCS PC A BLANKING PLATE D INTERMEDIATE DIAPHRAGM

N.B. The valve connection order in the diagram above is as follows - from left to right, starting from the slave. The first left figure corresponds to the valve close to the slave on the base. There are 12 figures. When ordering a bottom base with less than 12 positions, complete the code entering 0 in the other boxes.

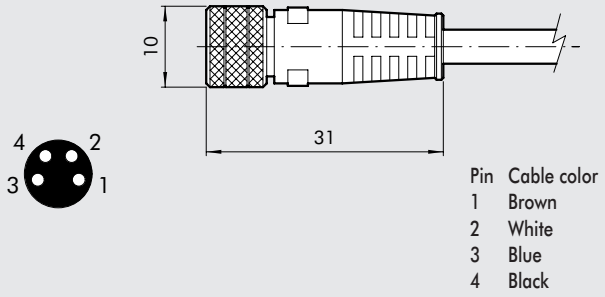
ACCESSORIES

M12 MALE CONNECTOR IN-OUT BUS



Code	Description
0240009038	Male connector IN-OUT Bus A coding
0240009035	Male connector IN-OUT Bus B coding

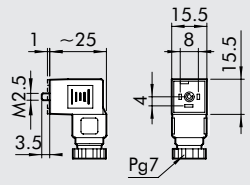
M8 CONNECTOR FOR FEEDING



Pin	Cable color
1	Brown
2	White
3	Blue
4	Black

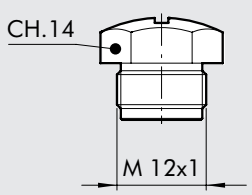
Code	Description
0240009037	M8 connector for feeding wire 5 m

SUPPLY CONNECTOR



Code	Description
W0970501021	CONNECTOR 15mm shape C DIN 43650

PLUG M12



Code	Description
0240009040	M12 plug

PROFIBUS-DP / INTERBUS-S / CAN-OPEN DEVICE-NET FOR MULTIMACH

The expandable modular slaves for Multimach follow the same application philosophy of total modularity common to the Multimach system. With full freedom, the slave can be configured by fitting the various modules offered:

• Slaves are available for 4 alternate bus systems:
PROFIBUS-DP, INTERBUS-S, CAN-OPEN, DEVICE NET.
Each of these can manage 24 outputs.

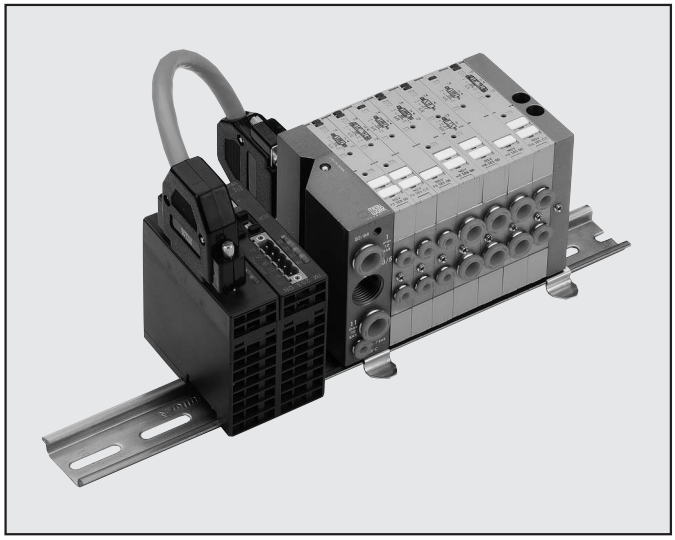
• The slaves are mounted on a 35 mm DIN bar, next to the Multimach unit.

• The electric connection between the slave and the unit is simply obtained with a kit comprised of pre-wired, 25-pin Sub-D connectors with a 25-core cable.

• Other modules – up to a maximum of 15 (31 for DeviceNet) can be fitted alongside the slaves to manage other inputs and outputs. These modules are electrically connected together, using a small plate-connector (housed under the modules, inside the DIN bar).

• There are 4 other types of modules available: for 8 digital inputs; for 8 digital outputs; for 4 analogue inputs and for 4 analogue outputs.

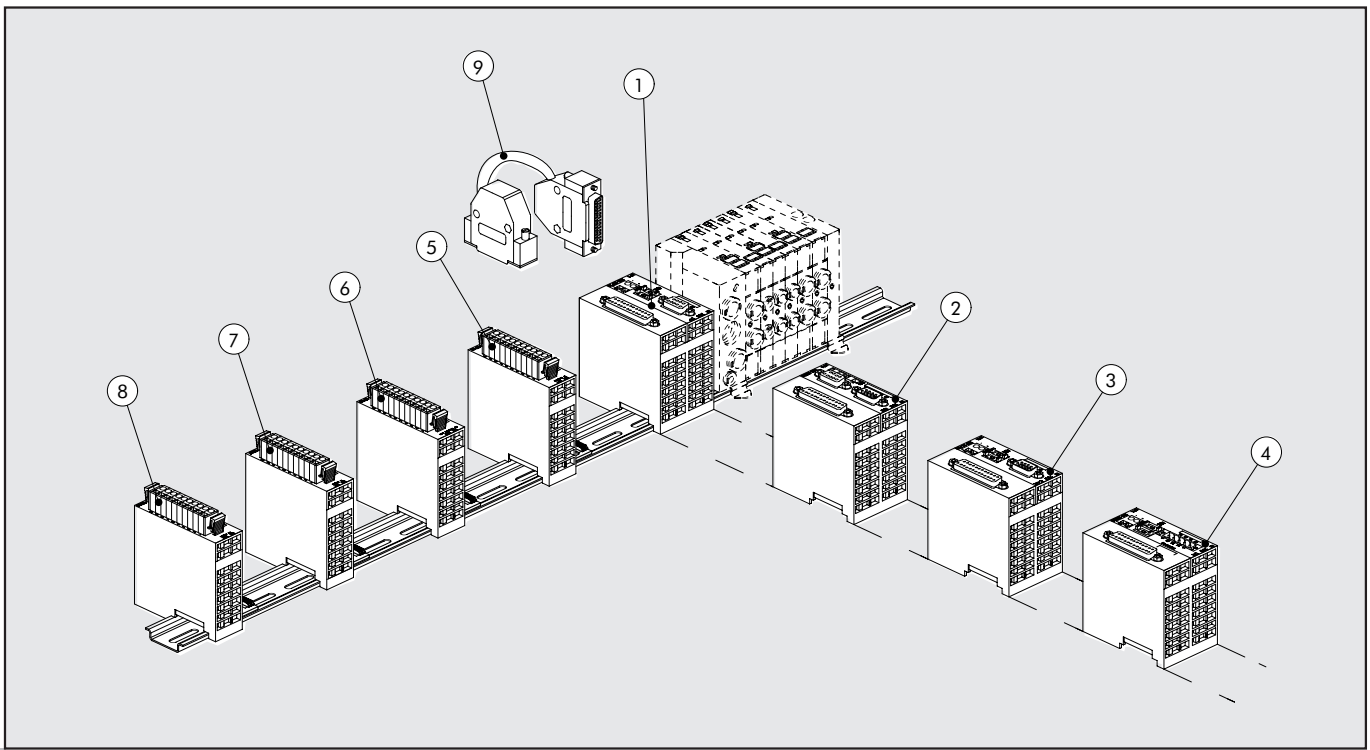
• With this system, a maximum of 144 Inputs/Outputs can be managed with just one slave!



TECHNICAL DATA

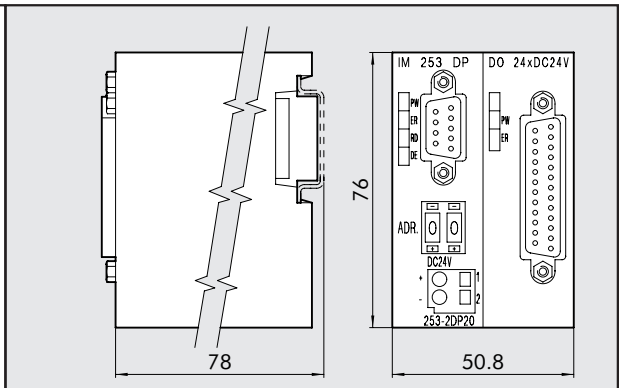
Supply voltage	24 V DC + 20% - 15%
EMC and ESD test	in compliance with IEC 801-2/IEC 801/4 (up to level 3: 8kV/2kV)
Resistance to vibration and impacts test	secondo IEC68-2-6/IEC 68-2-27 (1g/12g)
Operating temperature range	0 °C ÷ 60 °C
Storage temperature	-40 °C ÷ +85 °C
Admitted relative humidity	95%
Assembly	35 mm DIN bar

THE MULTIMACH WORLD: SLAVES, INPUTS AND OUTPUTS



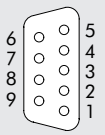
SLAVE PROFIBUS-DP 24 OUTPUT

1

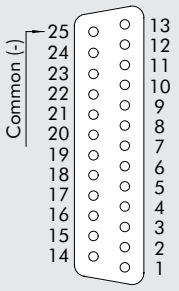


1=n.c.
2=n.c.
3=RxD/TxD-P
4=CNTR-P
5=GND
6=n.c.
7=n.c.
8=RxD/TxD-N
9=GND

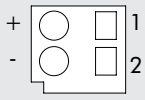
BUS 9 Sub-D socket



OUTPUTS 25 Sub-D socket



DC24V



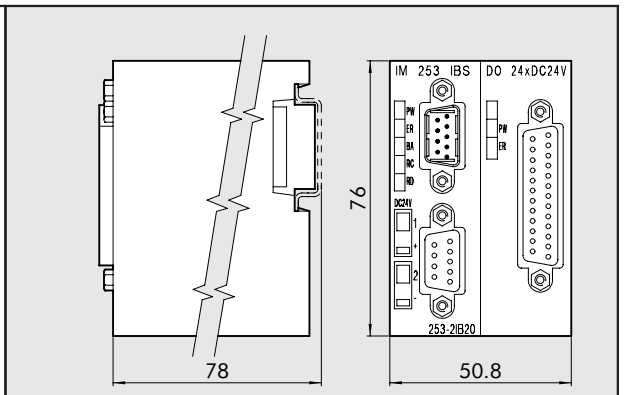
PROFI BUS PROCESS FIELD BUS

Code	Slave kit
0240004002	SLAVE PROFIBUS+DO24xDC24V

Tecnical Data	
PROFIBUS-Interface	RS485: 9 pins SubD
Transmission speed	9.6 kBaud up to 12 Mbaud
Maximum number of modules which can be connected	31 (depending on the maximun corrent)
Output interface	25 pins SubD
Number of outputs	24
Output data	4 Byte (3used +1)
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24V (out excluded)	800mA

SLAVE INTERBUS-S 24 OUTPUT

2

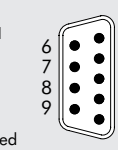


DC24V

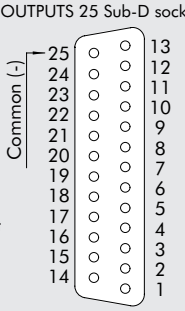


1=DO
2=DI
3=GND1
4=GND
5=n.c.
6=/DO
7=/DI
8=+5V
9=reserved

BUS IN 9 Sub-D plug

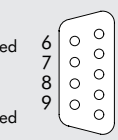


OUTPUTS 25 Sub-D socket



1=DO
2=DI
3=GND
4=reserved
5=+5V
6=/DO
7=/DI
8=reserved
9=RBST

BUS OUT 9 Sub-D socket



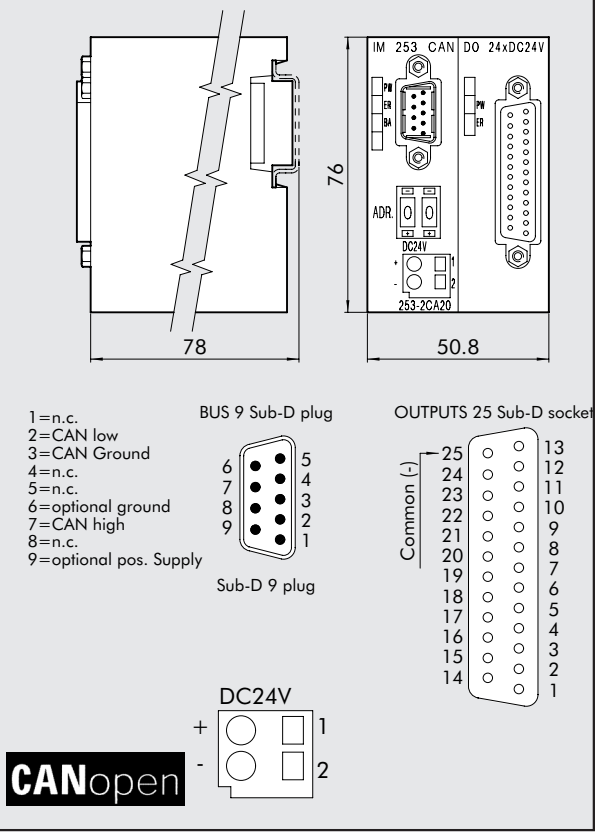
INTERBUS

Code	Slave kit
0240004012	SLAVE INTERBUS-S+DO24xDC24V

Tecnical Data	
INTERBUS-Interface	9 pins SubD
Transmission speed	500k Baud
Maximum number of modules which can be connected	15
Output interface	25 pins SubD
Number of outputs	24
Nominal supply voltage	24VDC
Maximum current for each output	1A, max total 4A
Absorption 24V (out excluded)	800mA

CAN-OPEN SLAVE, 24 OUTPUTS

3

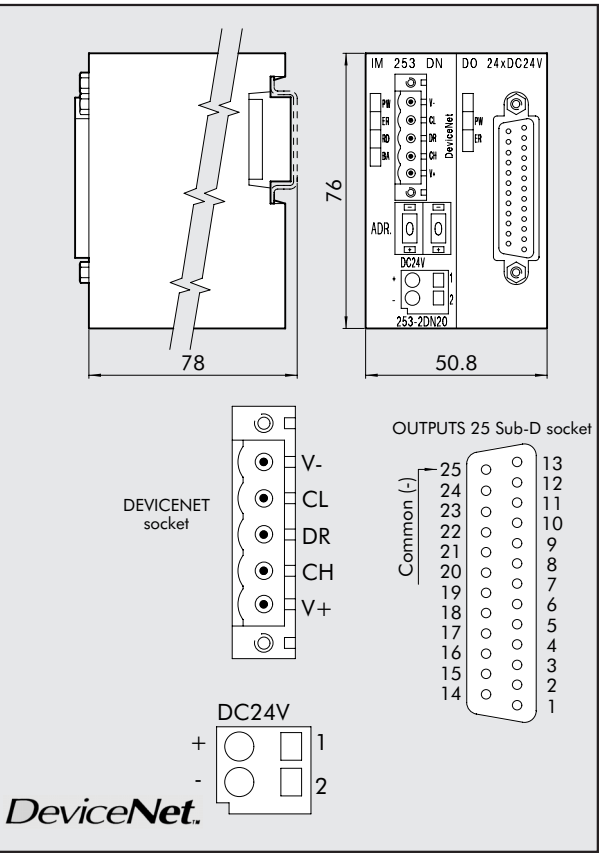


Code	Slave kit
0240004022	SLAVE CAN-OPEN+DO24xDC24V

Technical Data	
CANopen-Interface	9 pins SubD
Transmission speed	10kBaud up to 1 Mbaud
Maximum number of modules which can be connected	31 (depending on the maximun corrent)
Output interface	25 pins SubD
Number of outputs	24
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24 V (out excluded)	700mA

DEVICE NET SLAVE, 24 OUTPUTS

4

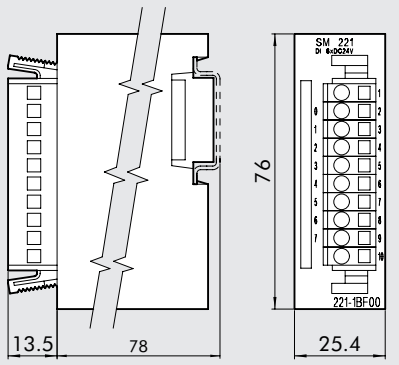


Code	Slave kit
0240004032	SLAVE DEVICE-NET+DO24xDC24V

Technical Data	
DEVICE-NET-Interface	DeviceNet Open Style
Transmission speed	125, 250, 500k Baud
Maximum number of modules which can be connected	31 (depending on the maximun corrent)
Output interface	25 pins SubD
Number of outputs	24
Nominal supply voltage	24 VDC
Maximum current for each output	1A, max total 4A
Absorption 24 V (out excluded)	800mA

8-DIGITAL INPUT MODULE

5

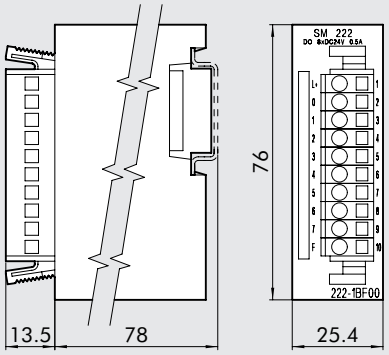


Code	Description
0240004053	DI 8XDC24V UNIT

Technical Data	
Nominal input voltage	DC 24V
Number of inputs	8
Input data	1 Byte
Input voltage at "1"	15...30V
Output voltage at "0"	0...5V
Response time	3 ms
Internal Bus voltage	5V
Absorption 5V BUS	20 mA

8-DIGITAL OUTPUT MODULE

6

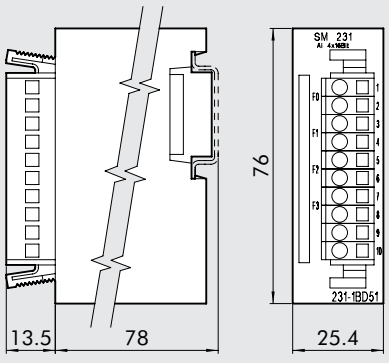


Code	Description
0240004051	DO 8XDC24V 0.5A UNIT

Technical Data	
Nominal voltage	DC 24V
Number of outputs	8
Output data	1 Byte
Absorption for each channel	1A (max 8A)
Internal Bus voltage	5V
Absorption 5V BUS	50 mA

4-ANALOG INPUT MODULE

7

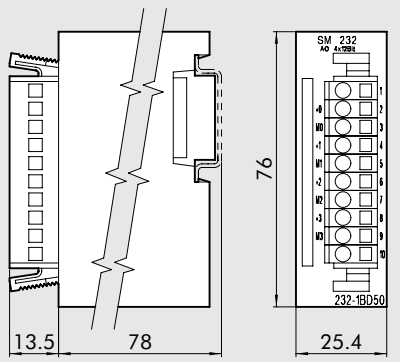


Code	Description
0240004054	AL 4X16 BIT UNIT

Technical Data	
Number of Inputs	4 o 2
Input data	8 Byte
Input range	Voltage 0÷50 mV, 0...10V, ±4mV, ±4V, ±10V,
	Current 0/4...20mA, +/-20mA
	Temperature Pt100, Pt1000, Ni100, Ni1000
	Resistance 60Ω, 600Ω, 3000Ω
	Thermoelements J, K, N, R, T, S
Resolution	12/16 Bit
Input resistance	2MΩ voltage, 50Ω current
Time	5...70ms
Internal Bus voltage	5 V
Absorption 5V BUS	280 mA

4-ANALOG OUTPUT MODULE

8

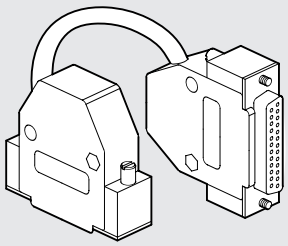


Code	Description
0240004055	AO 4X12 BIT UNIT

Technical Data	
Number of outputs	4
Output data	8 Byte
Output range	Voltage 0...10V, ±10V, 1...5V
	Current 0...20mA, 4...20 mA, ±20 mA
Resolution	12 Bit
Output resistance	Minimum voltage 500Ω, Maximum current 500Ω
Conversion time	3 ms
Internal Bus voltage	5 V
Absorption 5V BUS	20 mA

SLAVE/MULTIMACH CONNECTION KIT

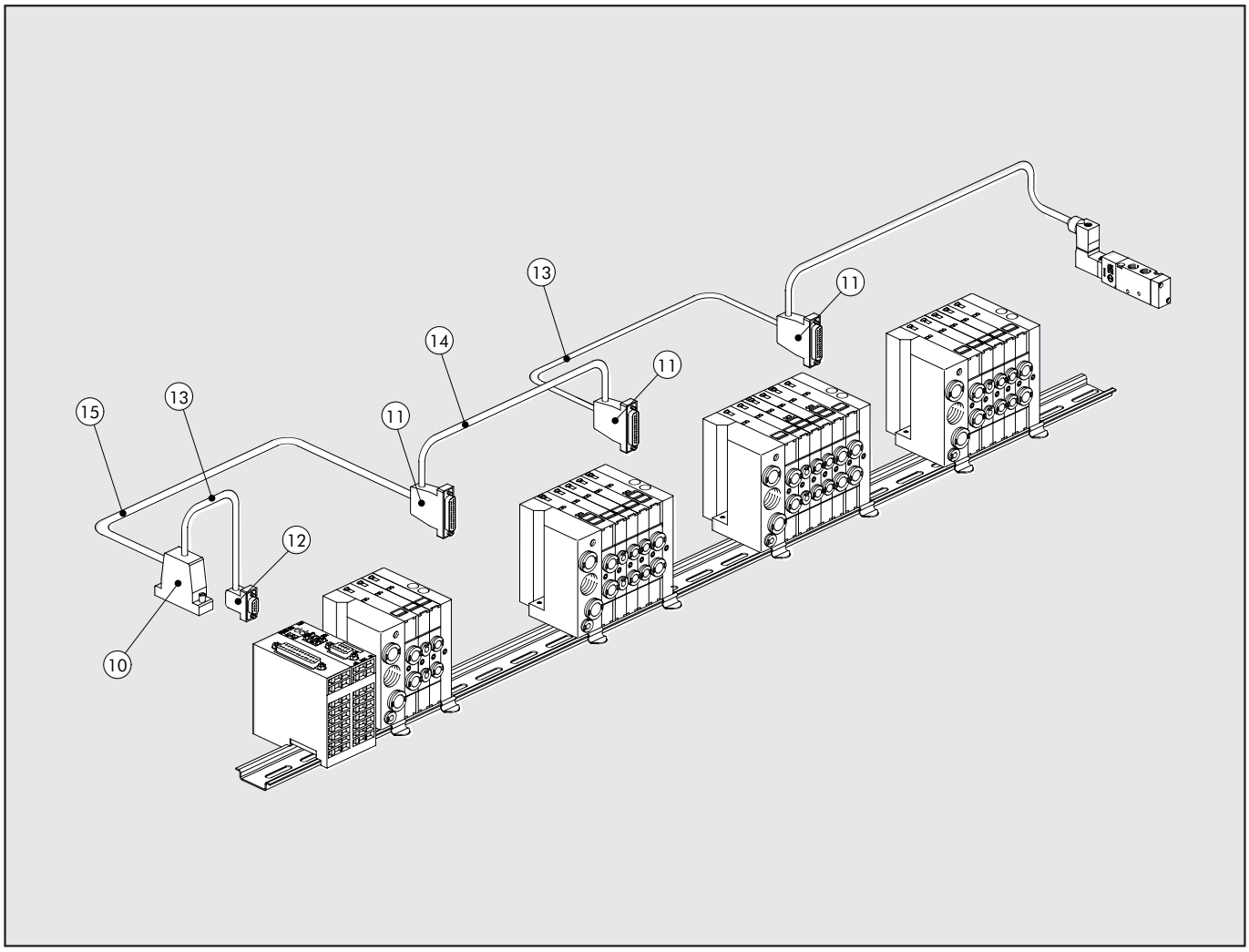
9



Code	Description
0226940000	SLAVE/MULTIMACH CONNECTION KIT

NOTES

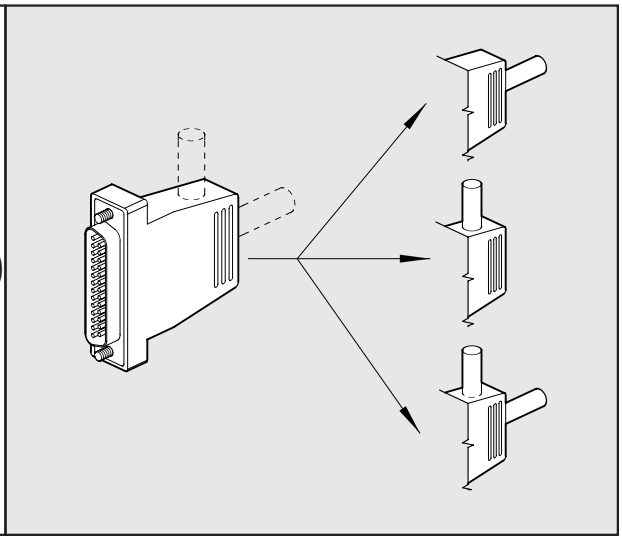
CONNECTING ONE SLAVE WITH SEVERAL VALVE UNITS



In order to make the best use of the available slave outputs, they can be distributed over several valve units using double-output connectors.
The above drawing refers to one possible configuration, but the user can combine cables and connectors as required.
The connector ⑩ mounted on the slave is used to distribute the outputs on two cables.
A cable for a certain number of outputs goes to connectors ⑪ and ⑫. Some wires are soldered to the connector pins and the unused ones can be soldered to the wires of another cable from the second output carrying signals to the next unit.

25-PIN PLUG CONNECTOR KIT, DOUBLE OUTPUT FOR SLAVE

10

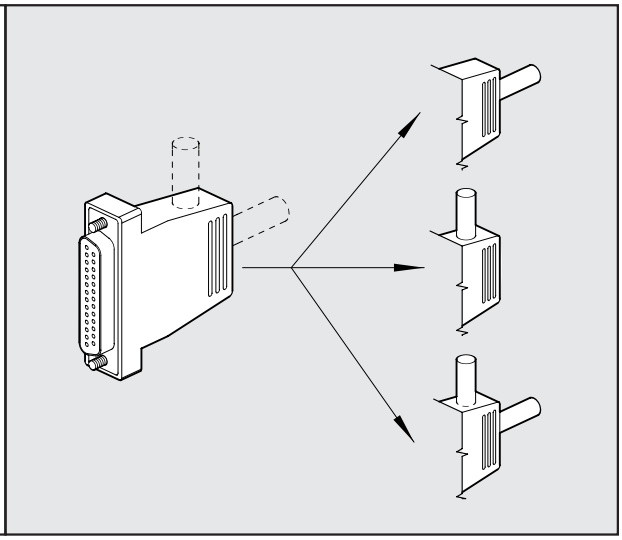


Code	Description
0226180105	25-PIN PLUG CONNECTOR FOR SLAVE

Complete with 2 cable clamps for wiring 2 cables

25-PIN PLUG CONNECTOR KIT, DOUBLE OUTPUT FOR MULTIMACH

11

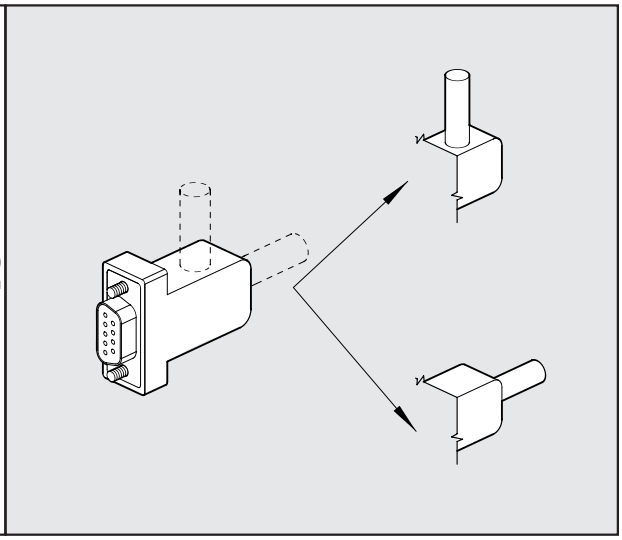


Code	Description
0226180106	25-WIRE CONNECTOR – DOUBLE OUTPUT KIT

Complete with 2 cable clamps for wiring 2 cables

9-PIN PLUG CONNECTOR, STRAIGHT OR 90° OUTPUT FOR MULTIMACH

12



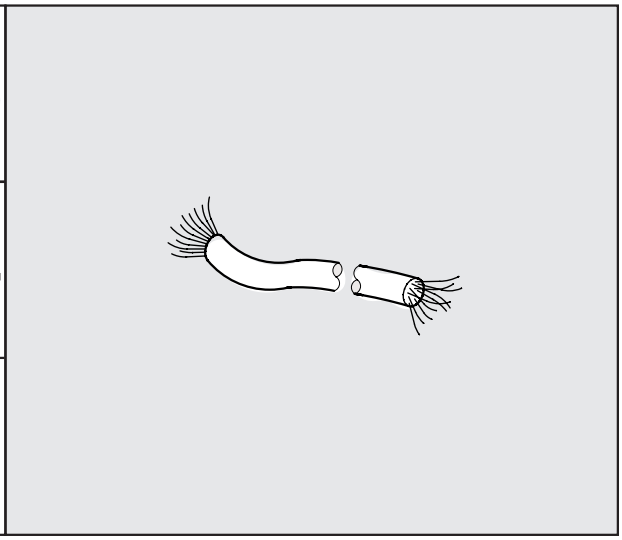
Code	Description
0226180102	9-PIN PLUG CONNECTOR

CABLES

13

14

15



Code	Description
0226107201	10-WIRE CABLE
0226107101	19-WIRE CABLE
0226107102	25-WIRE CABLE

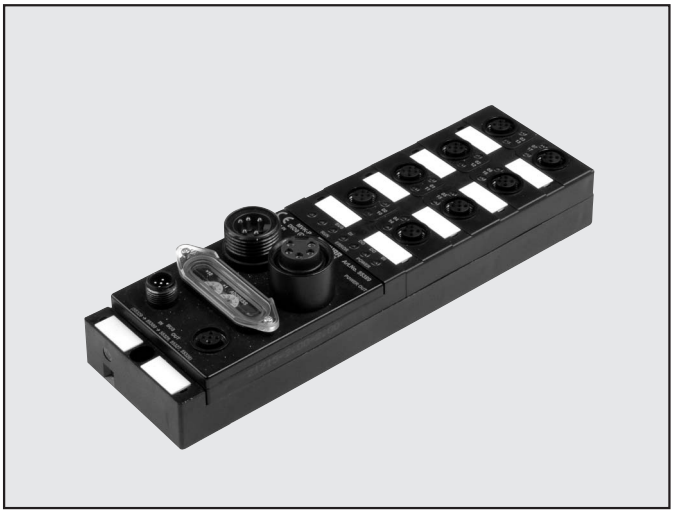
Indicate the desired length in metres

PROFIBUS-DP IP 67

The Profibus DP IP 67 is a robust slave that can be connected flexibly sing M12 connectors to outputs and solenoid valves and/or inputs.
Each connector can be used freely for:
- 1 Output + 1 diagnostic Input
- 2 Outputs
- 1 Output + 1 Input
- 2 Inputs
- 1 Input + 1 diagnostic Input

Each slave can handle a total of 16 signals, each according to one of the above combinations.
Diagnostics provides information on the type and location of the error of each channel with:
- de-activation of the coupling point "involved" and not the complete module;
- signal to the controller;
- display with local LEDs.

One single slave or an island of solenoid valves complete with slave and connectors can be ordered. The catalogue shows the 1/8"

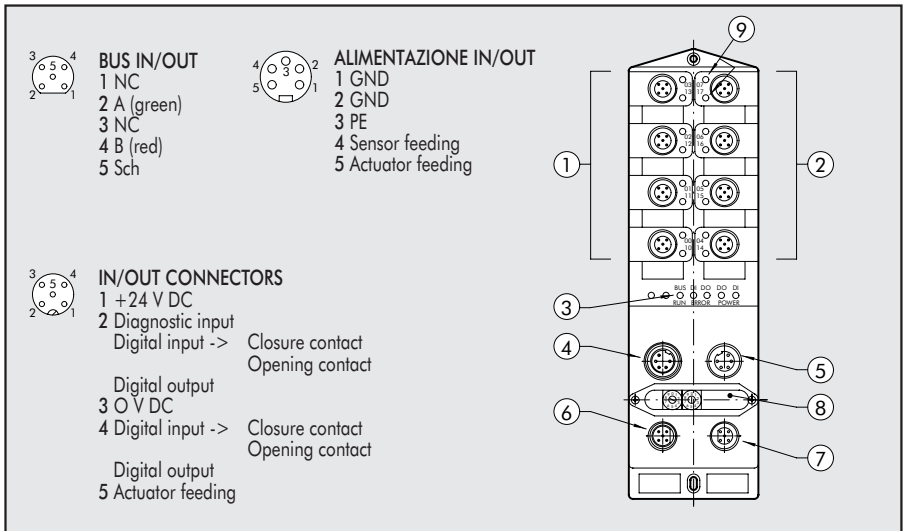


TECHNICAL DATA

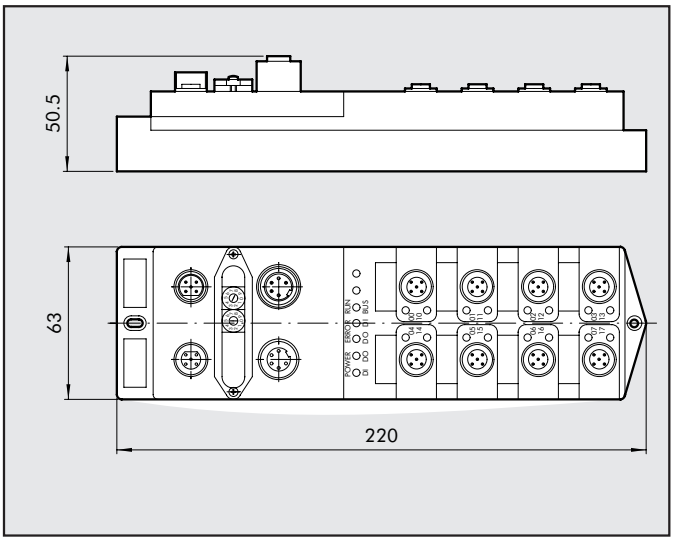
Utilizzo		8 inputs or outputs + 8 inputs or outputs or diagnostic
Supply voltage		24 VDC (18V.....30,2V), a norma EN 61131-2
Degree of protection		IP67
Temperature		0÷55°C (32÷131° F)
Field Bus Data	Transmission protocol	Profibus-DP EN 50170
	Transmission mode	synchronous or Freeze-Mode
	Transmission speed	12MBit/s
	Addresses	rotating switches BCD, 3.....99
Inputs Output Technical Data	Type	pnp proximnity sensors or IEE 1131-2 compatable mechanical limit switch
	Supply	24VDC (da 18 a 30,2V), a norma EN 61131-2 ; ≤ 200 mA per punto d'innesto M12
	Indicator	One LED for each output
Output Technical Data	Voltage	24VDC (da 18 a 30,2V), a norma EN 61131-2; I comulativa ≤9A
	Maximum current for each actuator	1.6 A, system protected by fuse in case of short-circuit
	Maximum current contemporary	10W
	Maximum signal exchange frequency	20 Hz Ohm, 20 Hz induction
	Indicator LED	One LED for each output
Autotest	Field bus	RUN-LED
	Insufficient voltage signal	Red LED for channel on M12 coupling point
	Short-circuit sensor INPUT or OUTPUTS	PIN 2 diagnostic with red LED for M12 coupling point and signal to master
Autotest	Desina® (pin 2)	
		N.B.: for the disposition of the contact, please look at the connectors at the following pages

COMPONENTS

① ② IN-OUT diagnostic connectors
③ Led Power, Error, Run
④ IN feeding connector
⑤ OUT feeding connector
⑥ IN BUS connector
⑦ OUT BUS connector
⑧ Rotaring switches for addressing
⑨ Diagnostic LED for single channel

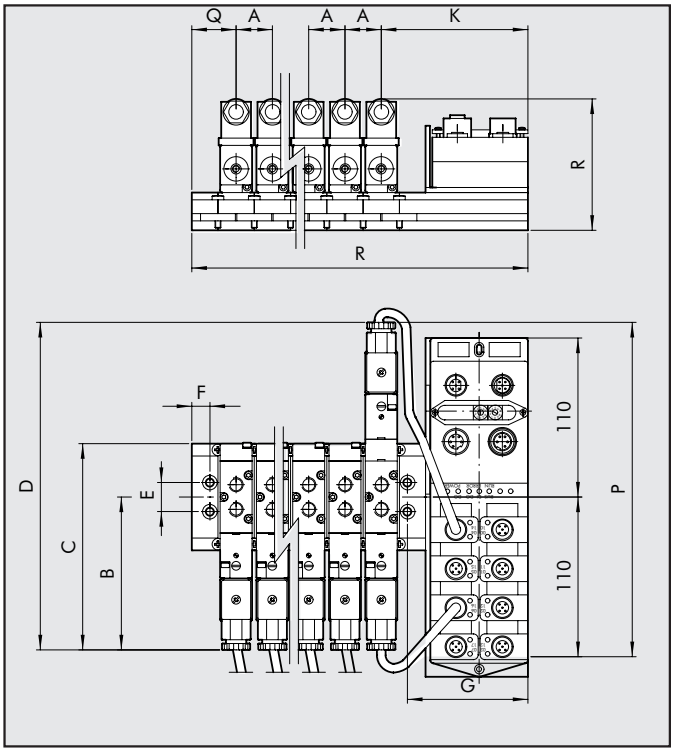


SLAVE IP67



Cod.	Descrizione
0240008001	8 I/O + 8 I/O/DIAGNOSI IP67 PROFIBUS

IP65 SLAVE, COMPLETE WITH SERIES 70 VALVES



A	B	C	D	E	F	G	K	P	Q	R
1/8'' Manifold										
25	105	142	225	20	12.5	85.8	103.5	230	305	Q+K+(A x *n°-1)
1/8'' Multiple										
25	105	142	225	20	7	98	115	230	24	Q+K+(A x *n°-1)
1/4'' Manifold										
27	112	156	239	25	10	85.5	104.5	237	31.5	Q+K+(A x *n°-1)
1/4'' Multiple										
27	112	156	239	25	7	98	118	237	27	Q+K+(A x *n°-1)

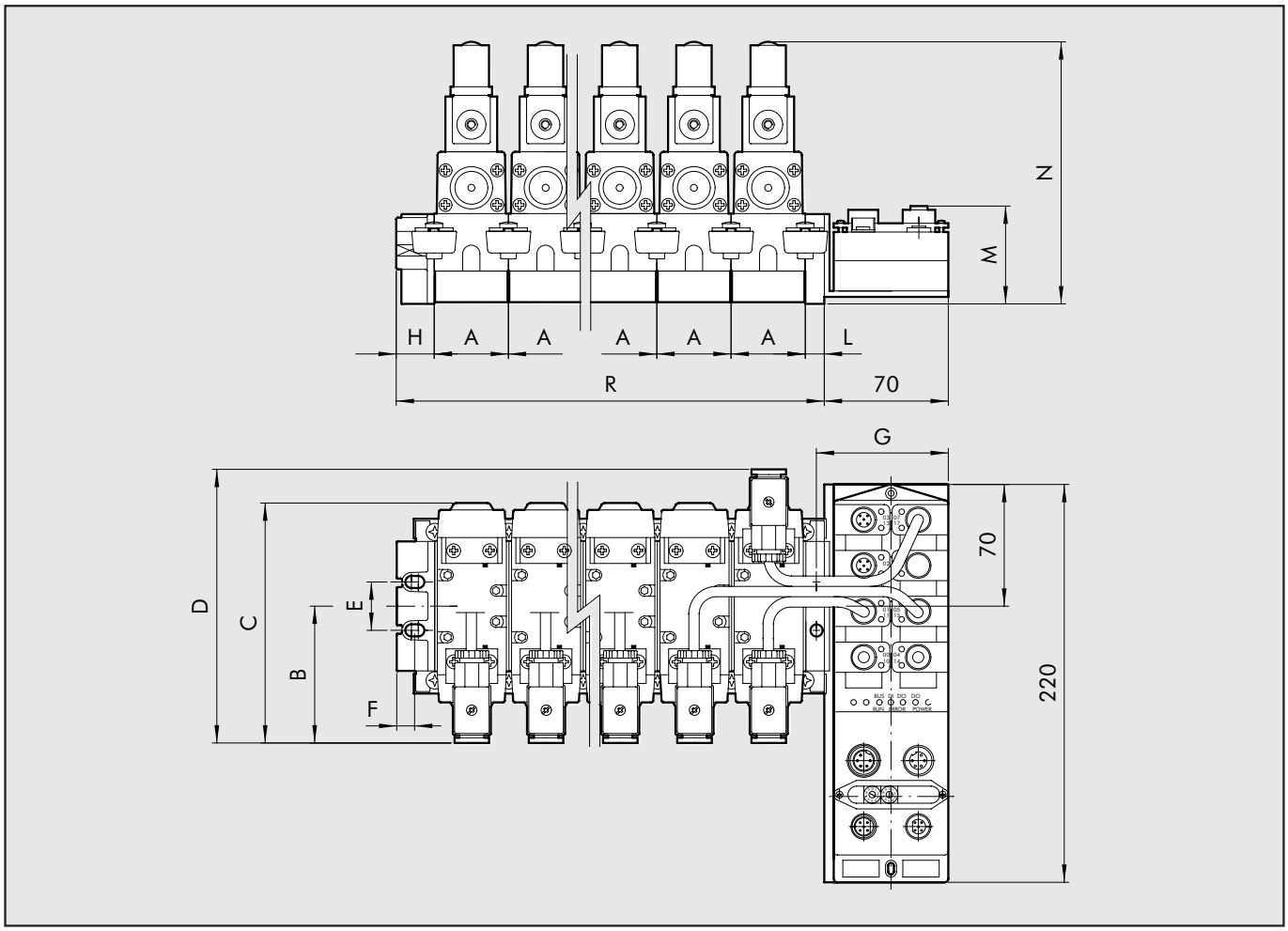
*n= number of mounted valves

N.B.: the unit is supplied complete with cables for valves

KEY TO CODES

BUS	P	V	B	0	0 2	
	P Profibus	V IP 67	B 70 1/8'' C 70 1/4''	0 multiple base	02 2 posit. 04 4 posit. 06 6 posit. 08 8 posit.	D SOV 23 SOS NO - SOV 33 SOS NO H SOV 23 SOS NC - SOV 33 SOS NC Z SOV 23 SOB 00 - SOV 33 SOB 00 M SOV 25 SOS 0 - SOV 35 SOS 00 J SOV 25 SOB 00 - SOV 35 SOB 00 G SOV 26 SOS CC - SOV 36 SOS CC E SOV 26 SOS OC - SOV 36 SOS OC B SOV 26 SOS PC - SOV 36 SOS PC A BLANKING PLATE

IP65 SLAVE, COMPLETE WITH ISO VALVES



	A	B	C	D	E	F	G	H	L	M	N	P	R
ISO1	43	80	140	158	28	10.5	76.4	22	11	58.5	150	230	H+L+(A x *n°)
ISO2	56	90	165	180	35	12.5	77.5	26	14	72.5	178	240	H+L+(A x *n°)

*n= number of mounted valves

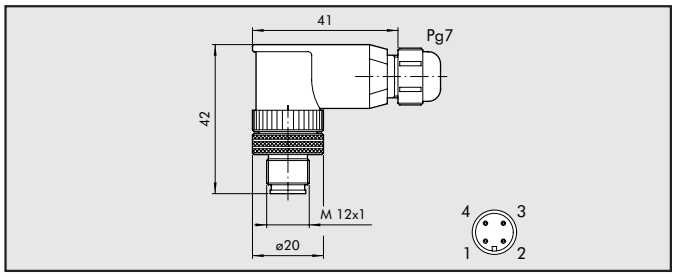
N.B.: the unit is supplied complete with cables for valves

KEY TO CODES

BUS	P	V	D	1	0 2	
	P Profibus	V IP 67	D ISO1 E ISO2	1 manifold base side	02 2 posit. 04 4 posit. 06 6 posit. 08 8 posit.	M ISV 55 SOS 00 - ISV 65 SOS 00 J ISV 55 SOB 00 - ISV 65 SOB 00 G ISV 56 SOS CC - ISV 66 SOS CC E ISV 56 SOS OC - ISV 66 SOS OC B ISV 56 SOS PC - ISV 66 SOS PC A BLANKING PLATE

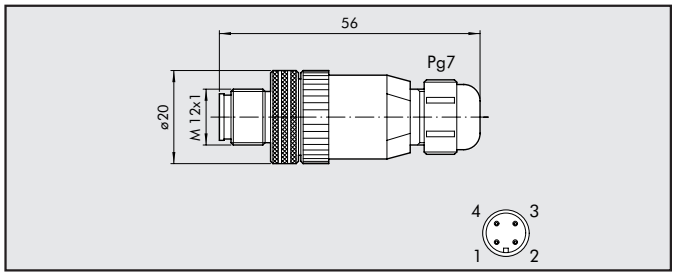
FIELD BUS ACCESSORIES

90° ELBOW WITHOUT CABLE



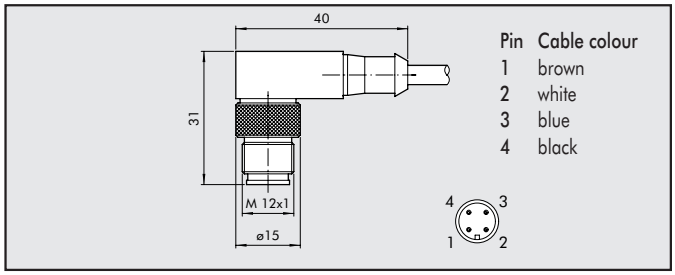
Code	Description
0240009001	90° Elbow without cable

STRAIGHT FITTING WITHOUT CABLE



Code	Description
0240009021	Straight fitting without cable

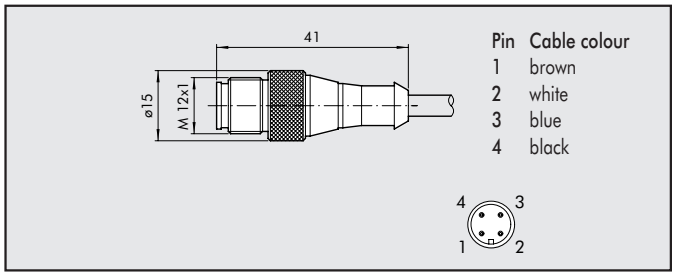
90° ELBOW WITH CABLE



Pin	Cable colour
1	brown
2	white
3	blue
4	black

Code	Description
0240009022	90° curve with cable 1.5 m
0240009023	90° curve with cable 5m

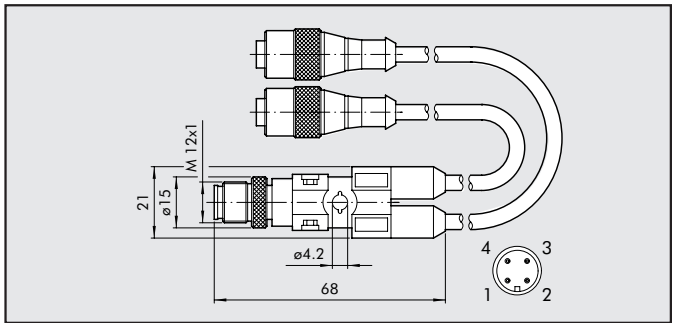
STRAIGHT FITTING WITH CABLE



Pin	Cable colour
1	brown
2	white
3	blue
4	black

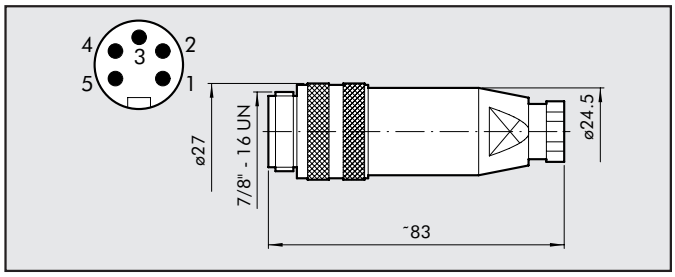
Code	Description
0240009002	Straight, with 1.5 m cable
0240009003	Straight, with 5m cable

Y-DISTRIBUTOR WITH CABLE AND M12 STRAIGHT CONNECTORS



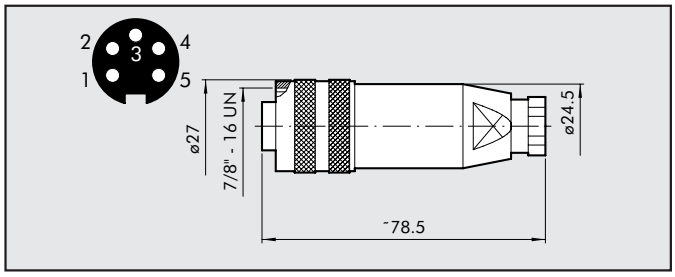
Code	Description
0240009031	Y-Distributor cable 1.5 m
0240009032	Y-Distributor cable 0.6m

MALE CONNECTOR FOR FEEDING “IN”



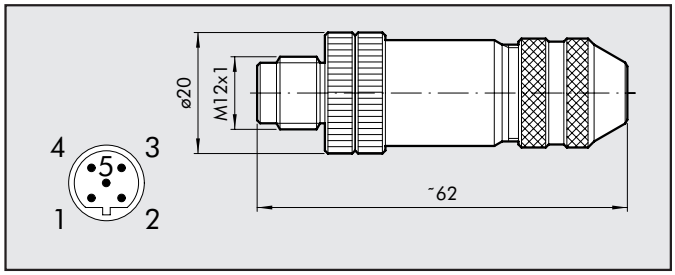
Code	Description
0240009033	Male connector “IN” feeding

FEMALE CONNECTOR FOR FEEDING “OUT”



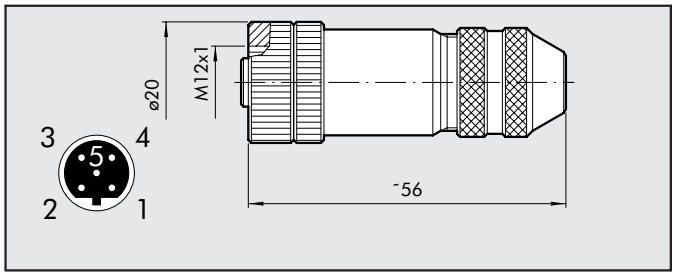
Code	Description
0240009034	Female connector “OUT” feeding

M12 MALE CONNECTOR IN-BUS



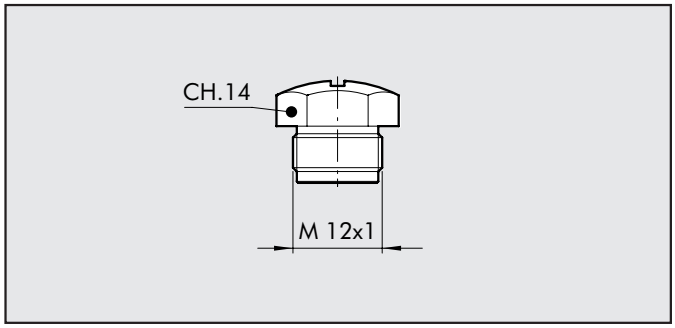
Code	Description
0240009035	Connettore M12 BUS-IN maschio codifica B

M12 FEMALE CONNECTOR OUT-BUS



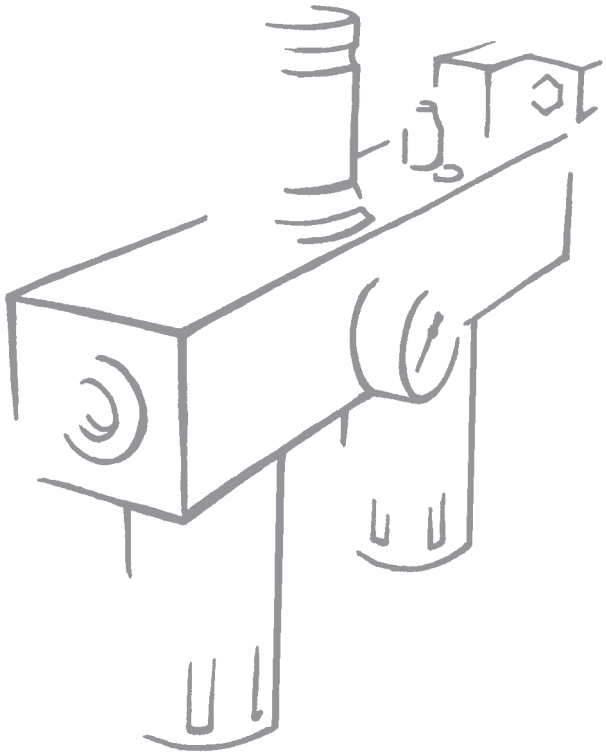
Code	Description
0240009036	Connettore M12 BUS-OUT femmina codifica B

PLUG M12



Code	Description
0240009040	M12 plug

METAL WORK
PNEUMATIC



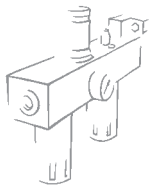
3

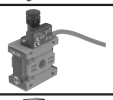
Skillair
bit
New deal
ONE

UNITS

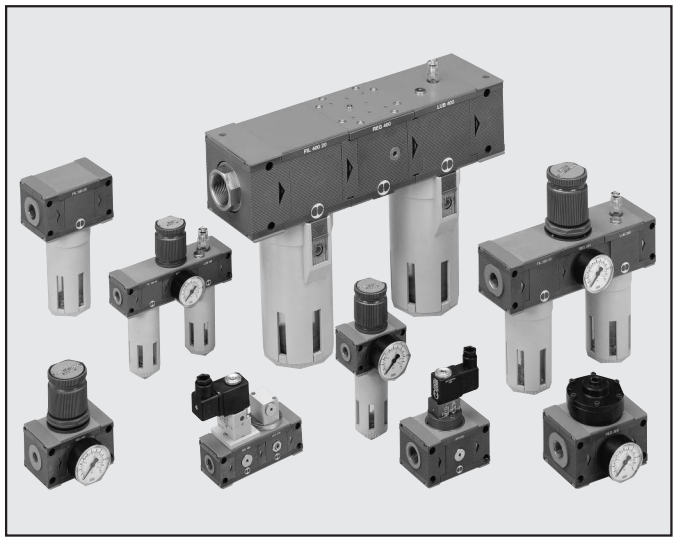
SUMMARY Skillair®

CHAPTER 3.1



	MAIN FEATURES	PAGE 3.1/02
	FILTER	PAGE 3.1/06
	PRESSURE REGULATOR	PAGE 3.1/11
	BATTERY REGULATOR	PAGE 3.1/16
	PILOT REGULATOR	PAGE 3.1/17
	PILOT OPERATED REGULATOR	PAGE 3.1/19
	SKILLTRONIC	PAGE 3.1/20
	FILTER-REGULATOR	PAGE 3.1/22
	LUBRICATOR	PAGE 3.1/25
	DEPURATOR	PAGE 3.1/32
	SHUT OFF VALVE	PAGE 3.1/36
	VALVE 2/2	PAGE 3.1/42
	SAFETY CONTROL VALVE	PAGE 3.1/44
	AIR TAKE-OFF	PAGE 3.1/48
	SKILLAIR PRESSURE SWITCHES	PAGE 3.1/50
	DIAPHRAGM DRIER SERIES DRY 100	PAGE 3.1/52
	MANIFOLD SUBBASE	PAGE 3.1/56
	ASSEMBLYES	PAGE 3.1/58
	PRESSURE SWITCHES	PAGE 3.1/74
	ACCESSORIES	PAGE 3.1/76
	SPARES	PAGE 3.1/78

The superior technology of Skillair® FRL units is the expression of Metal Work innovation. The FRL system is the brainchild of a joint study by Metal Work engineers and researchers from the Department of Mechanics in Turin. The integration of metal alloys and super-resistant techno-polymers is the result of co-operation between CESAP(European Centre for the Development of Plastic Applications) and leading international companies such as Du Pont, EMS Chemie and Hoechst.
The installation of advanced processing and quality control systems guarantees the reliability of Skillair® FRLs.



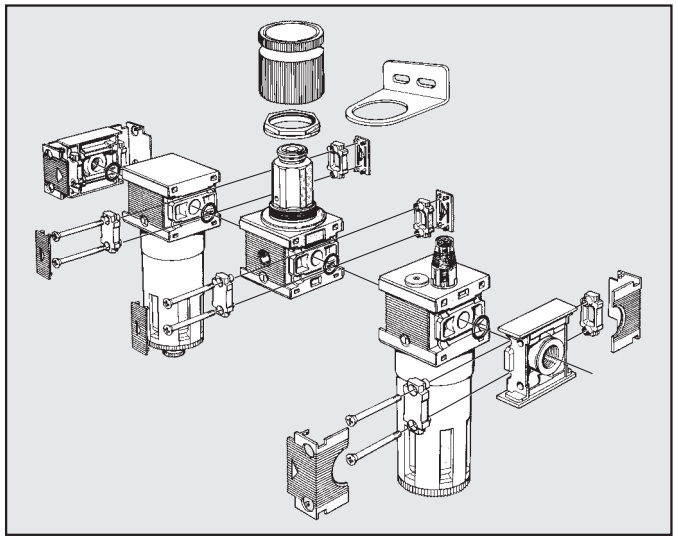
Technical features

The Skillair units incorporate very interesting technological features:
• **Compactness** – with the same flow capacity our unit is one of the smallest on the market.
• **Modularity** – various elements such as filters, reducers, lubricators, 3-way valves, progressive actuators and air take-offs can be combined at will.
With the modular system the FRL units can be removed without disturbing the pipes.
• **Easy maintenance** – Any of the elements or the entire unit can be removed without disturbing the remaining part or pipes.

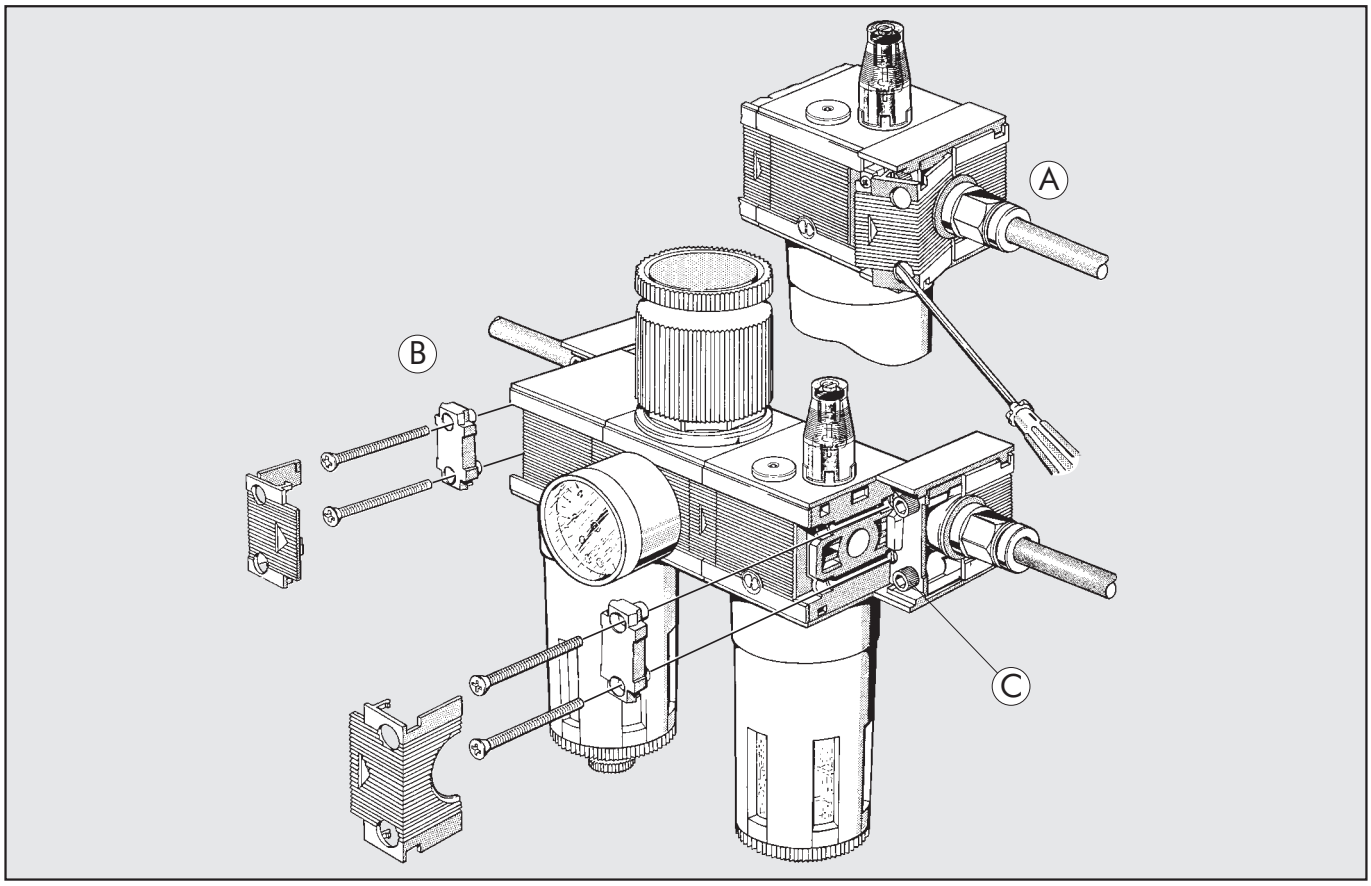
TECHNICAL DATA		SK 100	SK 100	SK 200	SK 200	SK 200	SK 300	SK 300	SK 300	SK 400	SK 400	SK 400	SK 400
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"	1"	1" 1/4"	1" 1/2"	2"
Degree of filtration		5µm 20µm 50µm											
Degree of purification		99.97% at 0.01 µm											
Setting range	bar	0-2 0-4 0-8 0-12											
Max. input pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188			188			188			
Flow rate at 6.3 bar (0.63 MPa-91 psi)		From 1100 to											
ΔP 0.5 bar (0.05 MPa – 7 psi)		20000 Nl/min.											
Fluid		Lubricated or unlubricated compressed air											
Temperature range at 1 MPa; 10 bar; 145 psi	°C	–10°C to +50°C											
	°F	14°F to 122°F											
Elements comprising the range		Filter, Depurator, Regulator, Pilot operated regulator, In-series Regulator, Filter-regulator, Lubricator with various lubricant filling systems, Circuit Shut-off Valve, Progressive Actuator.											

SKILLAIR MODULARITY

The FRL units can be removed from the system without disturbing the pipes. This can be done with a single element or with the entire system.
Assemble the unit so that the air flows in the direction marked by the arrows.



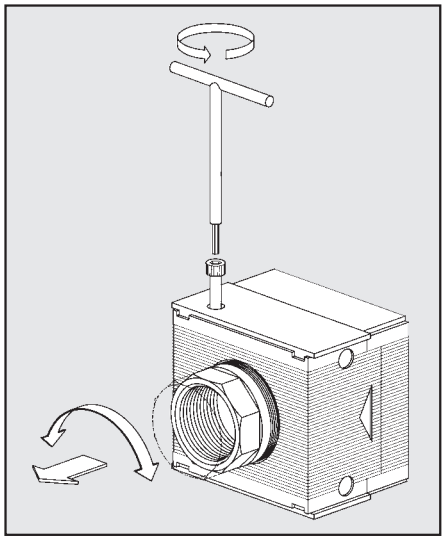
DISASSEMBLING THE UNIT – WALL FIXING



How to disassemble Skillair end plates:
- Remove the plate Ⓐ.
- Unscrew the screws and remove the cams Ⓑ to disassemble the unit.
- Screws to fix the end plates to the wall Ⓒ:

Series 100: M4x50
Series 200: M5x60
Series 300: M5x70
Series 400: M6x110

SKILLAIR 400 – ROTARY SLIDING JOINT



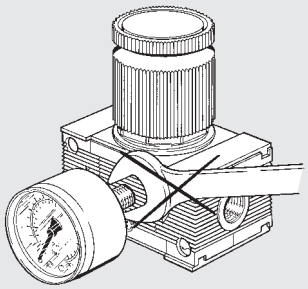
The series 400 comes with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance.
For correct assembly and disassembly, loosen the screw in the end plate before screwing in or unscrewing the bush.

METAL WORK PNEUMATIC

Skillair®

GENERAL RULES FOR USE AND MAINTENANCE

1

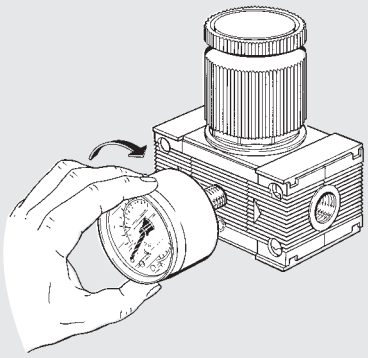


MOUNTING THE PRESSURE GAUGE

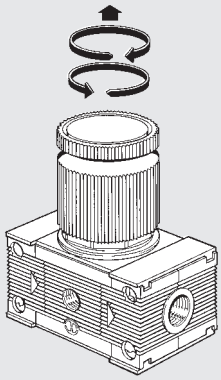
1 Do not use a spanner.

2 The gauge must be mounted by hand. Use liquid sealants only. Do not use Teflon.

2



3

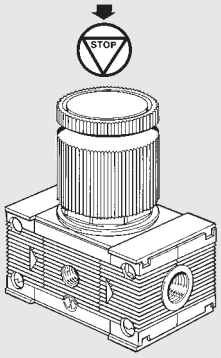


SETTING THE PRESSURE

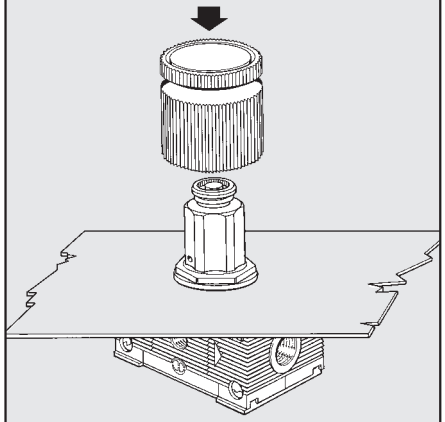
3 NB – The pressure in standard regulators must always be set upwards. Before setting the pressure, check that the knob is raised.

4 When the required pressure has been reached, press the knob downwards.

4



5

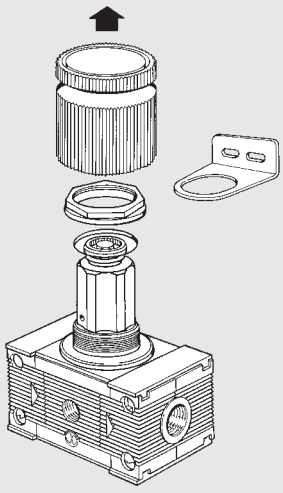


MOUNTING THE REGULATOR AND FILTER-REGULATOR

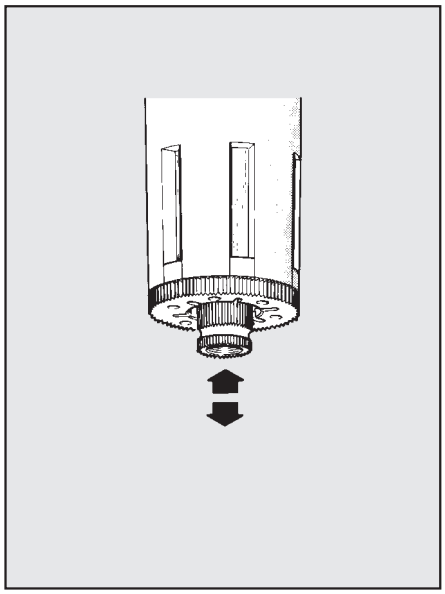
5 Panel mounting: remove the knob and lock the regulator with the ring nut.

6 Wall mounting: use a suitable bracket (see Skillair accessories).

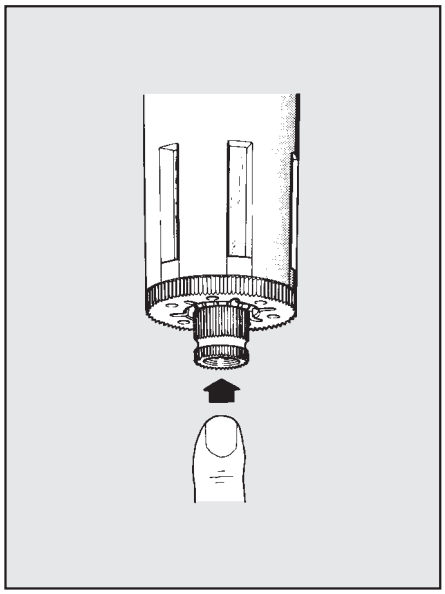
6



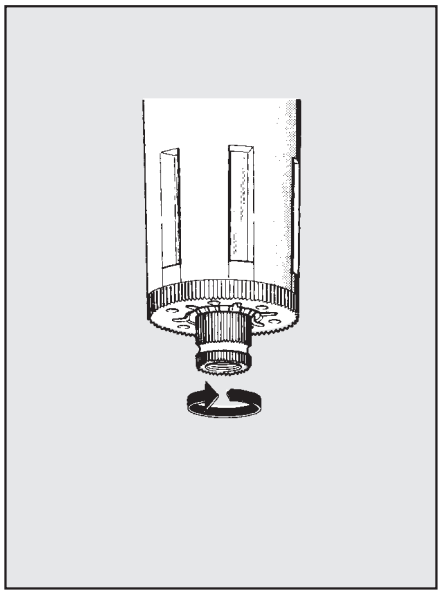
SEMI-AUTO CONDENSATE DRAIN FOR FILTER, FILTER-REGULATOR AND DEPURATOR



The semi-auto condensate drain is the normally open type. When there is pressure in the bowl, the drain closes. When there is no pressure in the bowl, it opens and the condensate drains out.

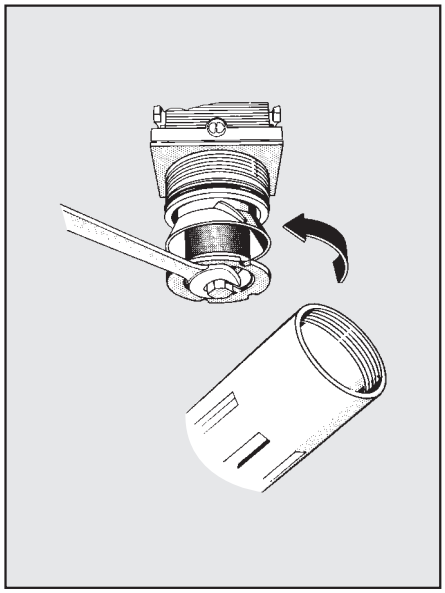


If necessary, it is possible to drain the condensate whilst the bowl is pressurised. The simple manual operation of "pushing up the valve" will allow the condensate to drain.



When rotating the button clockwise, the valve becomes in locked position, and can only work when the button is returned to the central position.

CLEANING AND/OR REPLACING THE FILTER ELEMENTS



Before unscrewing the bowl to replace the filter elements, check that the line is no longer pressurized. Replace as shown in the diagram.

Skillair® FILTER

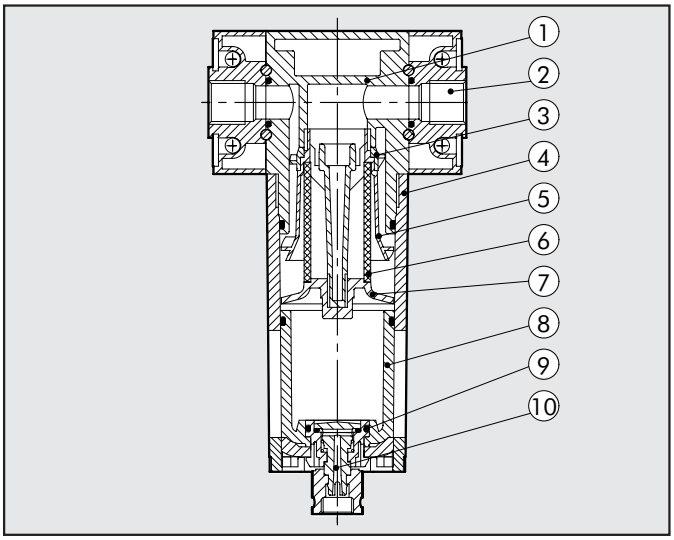
The Job of the filter is to remove any solid or liquid impurities from the air generated by the compressor.
Incoming air is rotated by the centrifuge unit. The heaviest liquid and solid particles are projected against the walls of the container and forced to adhere to it. As they accumulate they form drops that deposit on the bottom by gravity. The remaining solid particles are held back by the porous element depending on the filtering threshold. The condensate accumulation area is kept still to prevent previously deposited impurities from being re-circulated.
The accumulated condensate is drained out through the drain – automatically when there is no pressure in the filter, or by hand pressing the button. An automatic drain is available. It automatically eliminates condensate from the container whenever necessary, whatever the pressure.

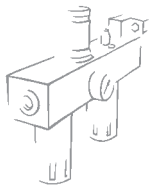


TECHNICAL DATA		FIL 100	FIL 100	FIL 200	FIL 200	FIL 200	FIL 300	FIL 300	FIL 300
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Degree of filtration		5µm 20µm 50µm		5µm 20µm 50µm			5µm 20µm 50µm		
Max. input pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1400		2400			3800		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	50		85			135		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	2000		3100			5300		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	71		110			188		
Fluid		Compressed air		Compressed air			Compressed air		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50			50		
	°F	122		122			122		
Weight	Kg	0.4		0.7			1.4		
Wall fixing screws		M4x50		M5x60			M5x70		
Mounting position		Vertical		Vertical			Vertical		
Drain		Manual		Manual			Manual		
		Manual/semi-auto (RMSA)		Manual/semi-auto (RMSA)			Manual/semi-auto (RMSA)		
		Automatic (SAC)		Automatic (SAC) - Automatic (RA)			Automatic (RA)		
Bowl capacity	cm^3	22		45			75		
NOTE ON USE		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							

COMPONENTS

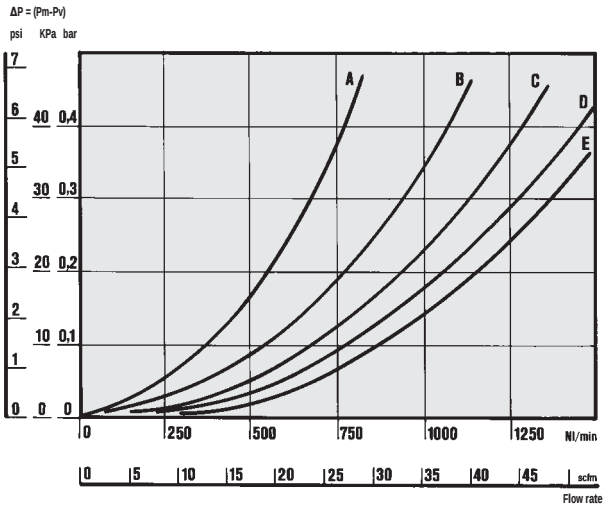
① Technopolymer body
② Zamak end plate
③ Technopolymer centrifuge
④ Bowl: technopolymer for FIL 100 and FIL 200, metal for FIL 300
⑤ Technopolymer baffle
⑥ Sintered bronze filter cartridge
⑦ Technopolymer screen
⑧ Clear technopolymer glass
⑨ NBR gaskets
⑩ Drain (RMSA)

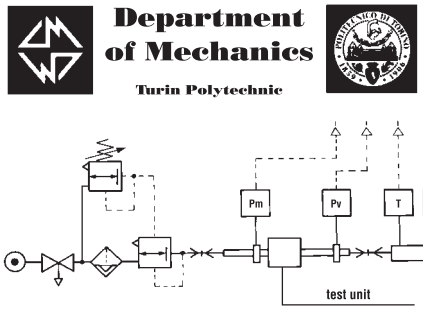




FLOW CHARTS

FIL 100 1/4 - 3/8

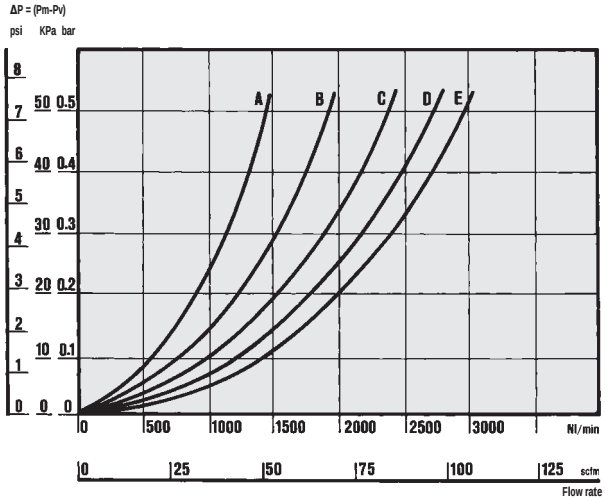




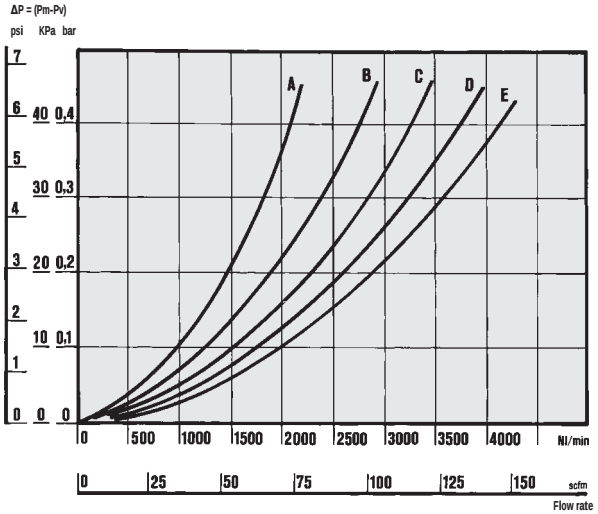
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

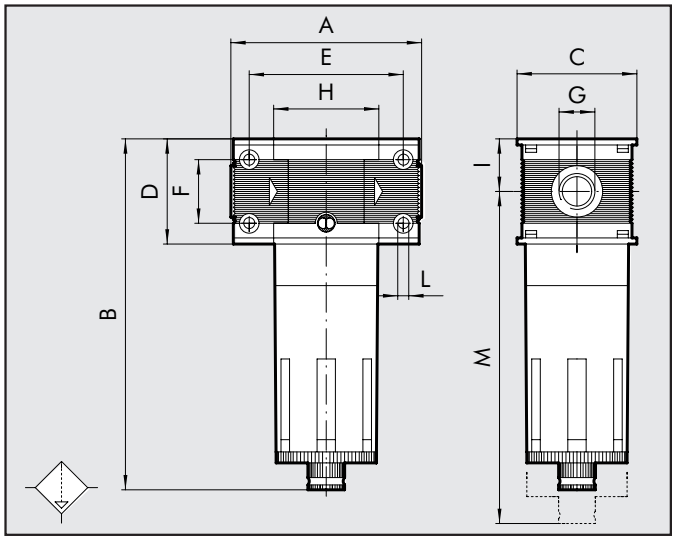
FIL 200 1/4 - 3/8 - 1/2



FIL 300 1/2 - 3/4 - 1



DIMENSIONS



	FIL 100	FIL 100	FIL 200	FIL 200	FIL 200	FIL 300	FIL 300	FIL 300
	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	144		175			195		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	43		55.5			65		
I	21.5		27.5			32.5		
L	M4 hole		M5 hole			M5 hole		
M	137		196			215		

Skillair® 400 FILTER

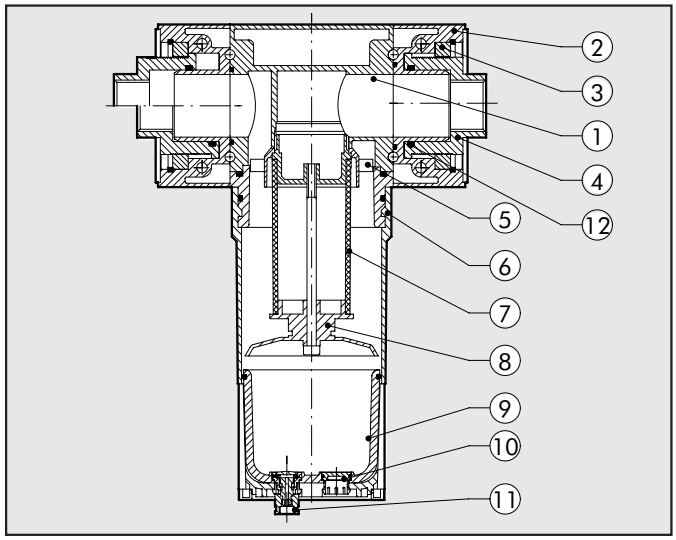
Filter with different degrees of impurity treatment and high performance:
- minimum load loss with changes in flow rate
- maximum degree of condensate separation
- 360° condensate level display
- semi-auto or auto condensate drain

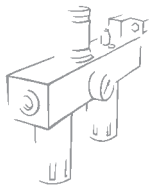


TECHNICAL DATA		FIL 400			
Threaded port		G1"	G1"1/4"	G1"1/2	G2"
Degree of filtration		5µm 20µm 50µm			5µm 20µm 50µm
Max. input pressure	MPa	1.3			1.3
	bar	13			13
	psi	188			188
Flow rate at 6 bar (0.6 MPa-87 psi)	Nl/min	16500			20000
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	590			710
Fluid		Compressed air			Compressed air
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50			50
	°F	122			122
Weight	Kg	5.2			6
Wall fixing screws		M6x110			M6x110
Mounting position		Vertical			Vertical
Drain		Manual/semi-auto (RMSA)			Manual/semi-auto (RMSA)
		Automatic (RA)			Automatic (RA)
Bowl capacity	cm^3	270			270
Notes on use		Series 400 end plates come with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance (see page 3.1/03).			
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			

COMPONENTS

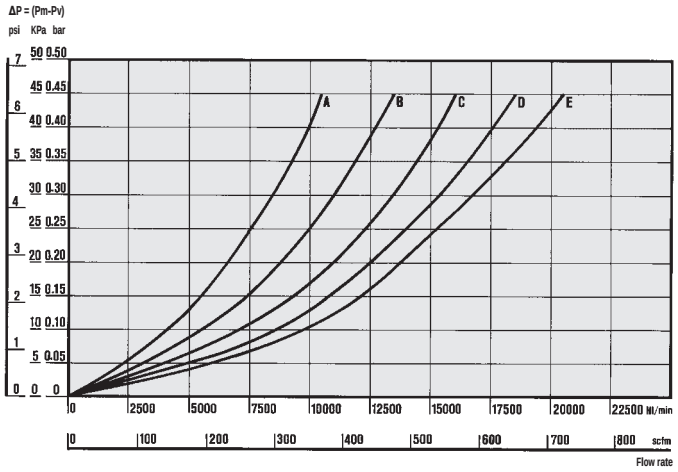
① Aluminium body
② Aluminium end plate
③ OT58 brass retaining ring
④ OT58 threaded bush, axial adjustment
⑤ Technopolymer centrifuge
⑥ Aluminium bowl
⑦ Sintered bronze filter cartridge
⑧ Aluminium screen
⑨ Clear technopolymer glass
⑩ Technopolymer plug
⑪ Drain (RMSA)
⑫ NBR gaskets



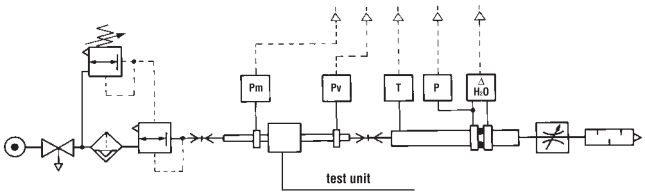


FLOW CHARTS

FIL 400 1''



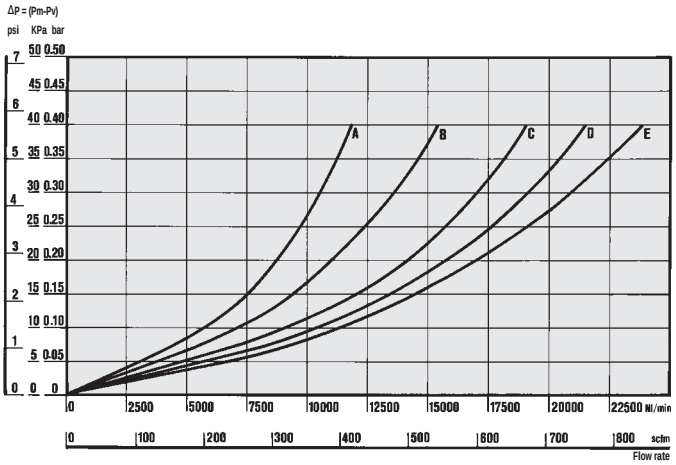
Department of Mechanics
Turin Polytechnic



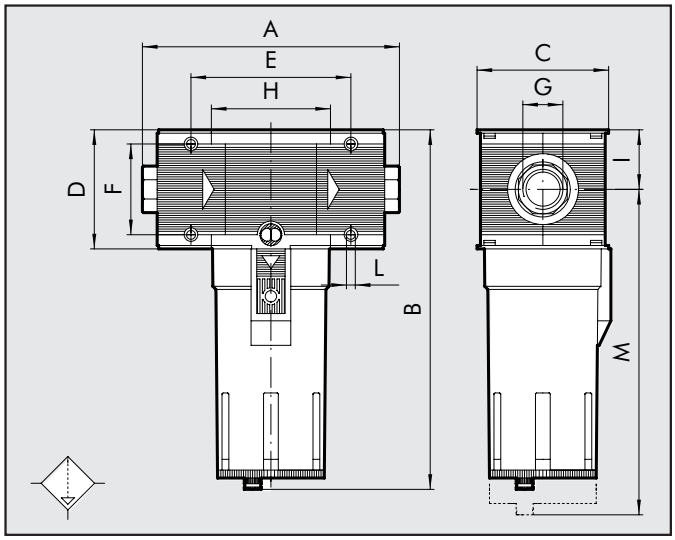
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

FIL 400 2''



DIMENSIONS



	FIL 400	FIL 400	FIL 400	FIL 400
Threaded port	G 1''	G 1''1/4	G 1''1/2	G 2''
A	225÷255			283÷313
B	320			
C	116			
D	105			
E	141.4			
F	80			
G	G 1''	G 1''1/4	G 1''1/2	G 2''
H	105.4			
I	52.5			
L	M6 hole			
M	378			

KEY TO CODES

FIL	100	1/4	20μm	RMSA
FILTER ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	TYPE OF DRAIN
FIL.	100	1/4 3/8	5 μm 20 μm 50 μm	RMSA SAC
	200	1/4 3/8 1/2		RMSA SAC RA*
	300	1/2 3/4 1		RMSA RA
	400	1 1 1/4 1 1/2 2		

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

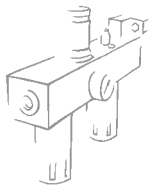
* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
SKILLAIR 100 FILTER	
3280001A	FIL 100 5 RMSA WITHOUT END PLATES
3280007A	FIL 100 5 SAC WITHOUT END PLATES
3280002A	FIL 100 20 RMSA WITHOUT END PLATES
3280008A	FIL 100 20 SAC WITHOUT END PLATES
3280003A	FIL 100 50 RMSA WITHOUT END PLATES
3280009A	FIL 100 50 SAC WITHOUT END PLATES
3280001	FIL 100 1/4 5 RMSA
3280007	FIL 1001/4 5 SAC
3280002	FIL 100 1/4 20 RMSA
3280008	FIL 100 1/4 20 SAC
3280003	FIL 100 1/4 50 RMSA
3280009	FIL 100 1/4 50 SAC
3380001	FIL 100 3/8 5 RMSA
3380007	FIL 100 3/8 5 SAC
3380002	FIL 100 3/8 20 RMSA
3380008	FIL 100 3/8 20 SAC
3380003	FIL 100 3/8 50 RMSA
3380009	FIL 100 3/8 50 SAC
SKILLAIR 200 FILTER	
3480001A	FIL 200 5 RMSA WITHOUT END PLATES
3480007A	FIL 200 5 SAC WITHOUT END PLATES
3480002A	FIL 200 20 RMSA WITHOUT END PLATES
3480008A	FIL 200 20 SAC WITHOUT END PLATES
3480003A	FIL 200 50 RMSA WITHOUT END PLATES
3480009A	FIL 200 50 SAC WITHOUT END PLATES
3480001	FIL 200 1/4 5 RMSA
3480007	FIL 200 1/4 5 SAC
3480002	FIL 200 1/4 20 RMSA
3480008	FIL 200 1/4 20 SAC
3480003	FIL 200 1/4 50 RMSA
3480009	FIL 200 1/4 50 SAC
3580001	FIL 200 3/8 5 RMSA
3580007	FIL 200 3/8 5 SAC
3580002	FIL 200 3/8 20 RMSA
3580008	FIL 200 3/8 20 SAC
3580003	FIL 200 3/8 50 RMSA
3580009	FIL 200 3/8 50 SAC
3680001	FIL 200 1/2 5 RMSA
3680007	FIL 200 1/2 5 SAC
3680002	FIL 200 1/2 20 RMSA
3680008	FIL 200 1/2 20 SAC
3680003	FIL 200 1/2 50 RMSA
3680009	FIL 200 1/2 50 SAC

Code	Description
SKILLAIR 300 FILTER	
4480001A	FIL 300 5 RMSA WITHOUT END PLATES
4480002A	FIL 300 20 RMSA WITHOUT END PLATES
4480003A	FIL 300 50 RMSA WITHOUT END PLATES
4480004A	FIL 300 5 RA WITHOUT END PLATES
4480005A	FIL 300 20 RA WITHOUT END PLATES
4480006A	FIL 300 50 RA WITHOUT END PLATES
4480001	FIL 300 1/2 5 RMSA
4480002	FIL 300 1/2 20 RMSA
4480003	FIL 300 1/2 50 RMSA
4480004	FIL 300 1/2 5 RA
4480005	FIL 300 1/2 20 RA
4480006	FIL 300 1/2 50 RA
4580001	FIL 300 3/4 5 RMSA
4580002	FIL 300 3/4 20 RMSA
4580003	FIL 300 3/4 50 RMSA
4580004	FIL 300 3/4 5 RA
4580005	FIL 300 3/4 20 RA
4580006	FIL 300 3/4 50 RA
4680001	FIL 300 1 5 RMSA
4680002	FIL 300 1 20 RMSA
4680003	FIL 300 1 50 RMSA

Code	Description
SKILLAIR 400 FILTER	
6180001A	FIL 400 5 RMSA WITHOUT END PLATES
6180002A	FIL 400 20 RMSA WITHOUT END PLATES
6180003A	FIL 400 50 RMSA WITHOUT END PLATES
6180004A	FIL 400 5 RA WITHOUT END PLATES
6180005A	FIL 400 20 RA WITHOUT END PLATES
6180006A	FIL 400 50 RA WITHOUT END PLATES
6180001	FIL 400 1 5 RMSA
6180002	FIL 400 1 20 RMSA
6180003	FIL 400 1 50 RMSA
6180004	FIL 400 1 5 RA
6180005	FIL 400 1 20 RA
6180006	FIL 400 1 50 RA
6280001	FIL 400 1 1/4 5 RMSA
6280002	FIL 400 1 1/4 20 RMSA
6280003	FIL 400 1 1/4 50 RMSA
6280004	FIL 400 1 1/4 5 RA
6280005	FIL 400 1 1/4 20 RA
6280006	FIL 400 1 1/4 50 RA
6380001	FIL 400 1 1/2 5 RMSA
6380002	FIL 400 1 1/2 20 RMSA
6380003	FIL 400 1 1/2 50 RMSA
6380004	FIL 400 1 1/2 5 RA
6380005	FIL 400 1 1/2 20 RA
6380006	FIL 400 1 1/2 50 RA
6480001	FIL 400 2 5 RMSA
6480002	FIL 400 2 20 RMSA
6480003	FIL 400 2 50 RMSA
6480004	FIL 400 2 5 RA
6480005	FIL 400 2 20 RA
6480006	FIL 400 2 50 RA



Skillair® REGULATORS

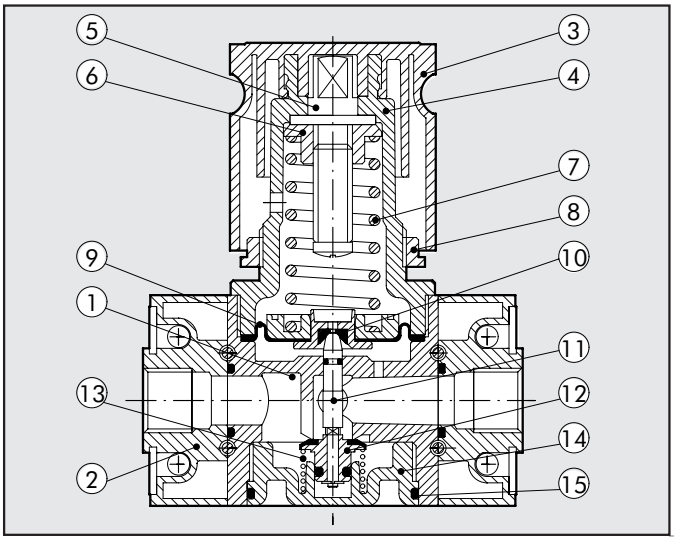
Each system served by the air supply mains (e.g. actuators and general appliances) requires its own constant operating pressure. It is necessary to use a regulator to regulate the pressure within a set range by means of regulating springs, with the pressure never exceeding the mains pressure.
The new Skillair regulator uses a rolling diaphragm which gives a much better performance than the flat version.
Advantages of this system:
• Increased stroke, increased valve opening and hence higher flow rate.
• Decreased dynamic and inrush friction; prompter, more sensitive operation.
• Reduced working stress and hence longer life allowing the use of thinner diaphragms (0.45 mm versus 1.5 mm for a flat one) which increases regulator sensitivity and prompt action.
• Increased accuracy in maintaining the set pressure with both variable flow rates and different feed pressures.
• Downstream overpressures relieved quickly.



TECHNICAL DATA		REG 100	REG 100	REG 200	REG 200	REG 200	REG 300	REG 300	REG 300
Threaded port		G 1/4''	G 3/8''	G 1/4''	G 3/8''	G 1/2''	G 1/2''	G 3/4''	G 1''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12		0÷2 - 0÷4 - 0÷8 - 0÷12			0÷2 - 0÷4 - 0÷8 - 0÷12		
Max. input pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1100		2500			3500		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	39		88			124		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1600		3500			7000		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	57		124			247		
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.							
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		50			50		
	°F	122		122			122		
Weight	Kg	0.4		0.7			1.4		
Wall fixing screws		M4x50		M5x60			M5x70		
Mounting		In any position							
Pressure gauge port		G 1/8''							
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from pressure gauge ports.							

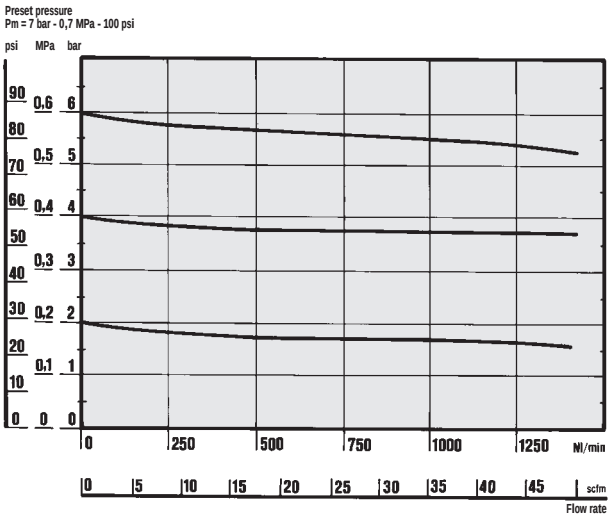
COMPONENTS

① Technopolymer body
② Zamak end plate
③ Technopolymer knob
④ Technopolymer bell
⑤ OT58 brass adjusting screw
⑥ OT58 brass scroll
⑦ Steel adjusting spring
⑧ Technopolymer ring nut
⑨ Rolling diaphragm
⑩ NBR relieving gaskets
⑪ OT58 brass stem
⑫ Valve with NBR vulcanized gasket
⑬ Stainless steel valve spring
⑭ Technopolymer plug
⑮ NBR gaskets

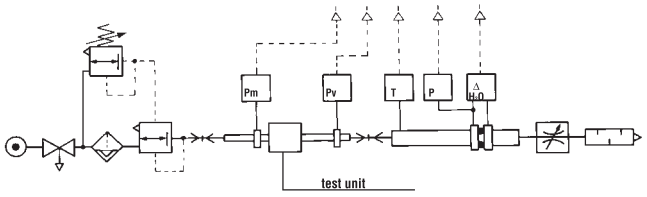


FLOW CHARTS

REG 100 1/4 - 3/8

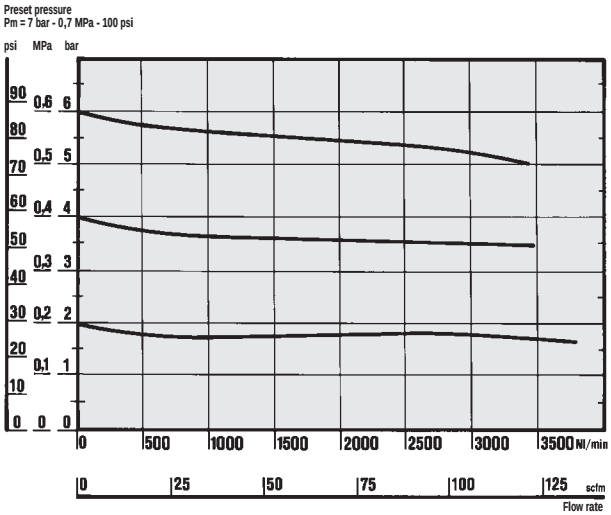


Department of Mechanics
Turin Polytechnic

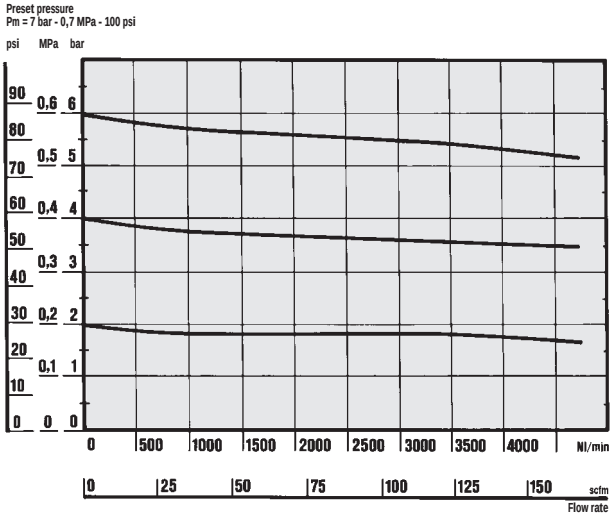


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

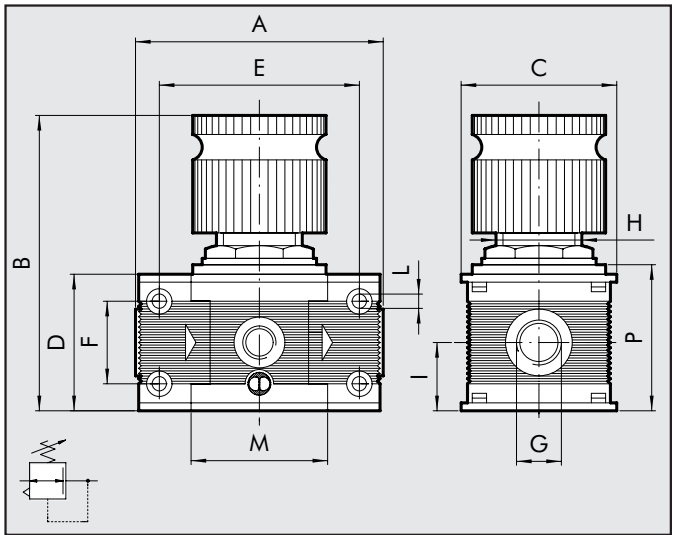
REG 200 1/4 - 3/8 - 1/2



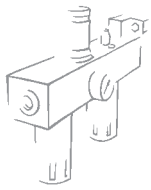
REG 300 1/2 - 3/4 - 1



DIMENSIONS



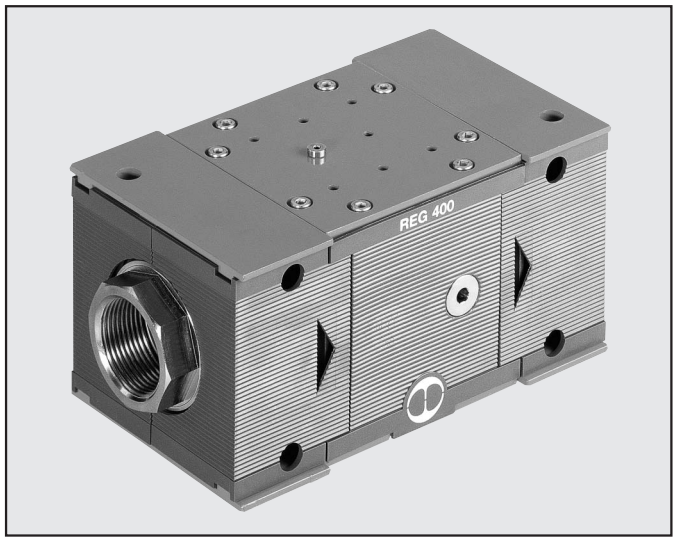
	REG 100	REG 100	REG 200	REG 200	REG 200	REG 300	REG 300	REG 300
	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	98		125			148		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	30x1.5		40x1.5			48x1.5		
I	21.5		27.5			32.5		
L	M4 hole		M5 hole			M5 hole		
M	43		55.5			65		
P	46		58			69		



Skillair® 400 REGULATOR

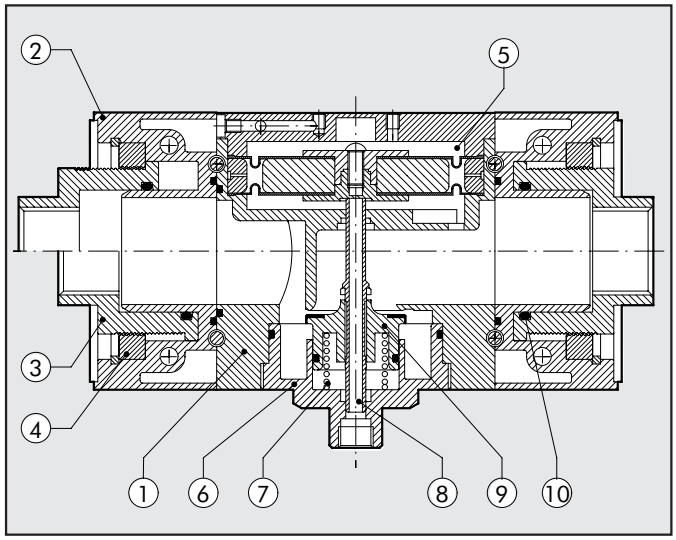
TECHNICAL DATA		REG 400	REG 400	REG 400	REG 400
Threaded port		G 1''	G 1''1/4	G 1''1/2	G 2''
Setting range		Depending on the pilot operated regulator			
Max. input pressure	MPa	1.3			
	bar	13			
	psi	188			
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	18000			20000
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	363			707
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.			
Max temperature	°C	50			
at 1 MPa; 10 bar; 145 psi	°F	122			
Weight	Kg	4.8			5.6
Wall fixing screws		M6x110			
Mounting		In any position			
Pressure gauge port		G1/4''			

Notes on use: The regulator pressure must always be set upwards.
Series 400 end plates come with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance.



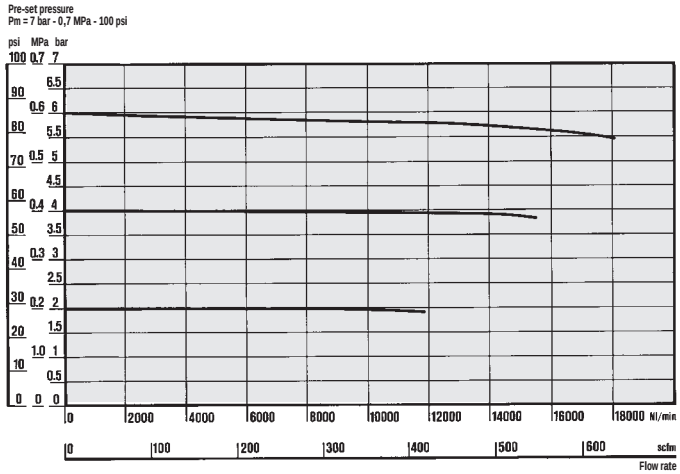
COMPONENTS

① Aluminium body
② Aluminium end plate
③ OT58 threaded bush, axial adjustment
④ OT58 brass retaining ring
⑤ Rolling diaphragm
⑥ OT58 brass plug
⑦ Stainless steel valve spring
⑧ OT58 brass stem with air relief hole
⑨ Valve with NBR vulcanized gasket
⑩ NBR gaskets.

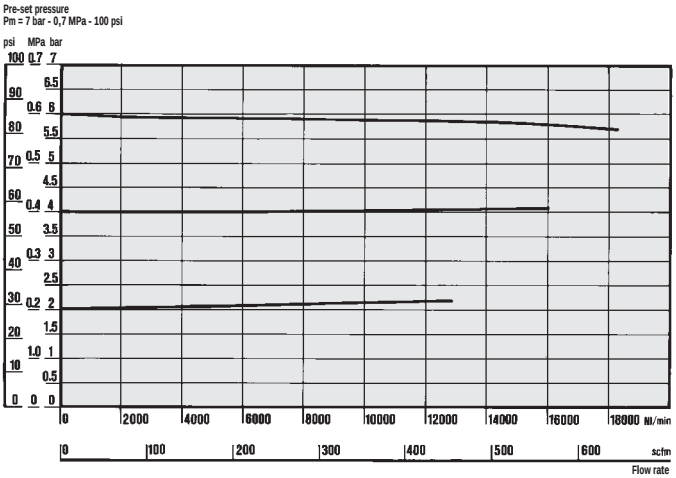


FLOW CHARTS

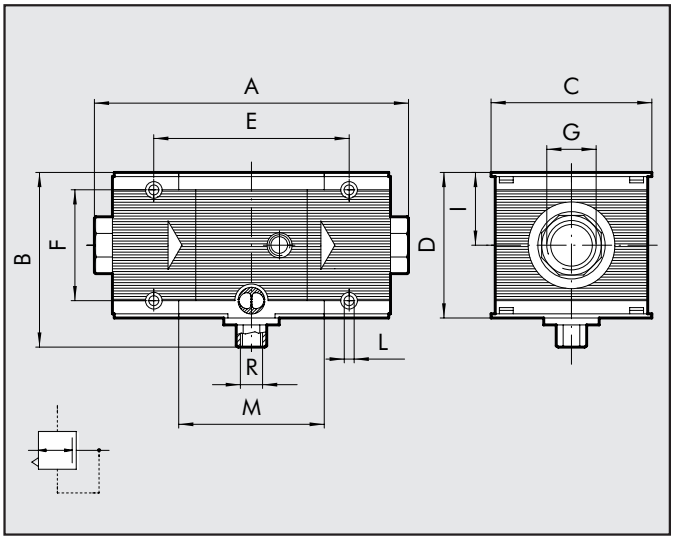
REG 400 1''



REG 400 2''

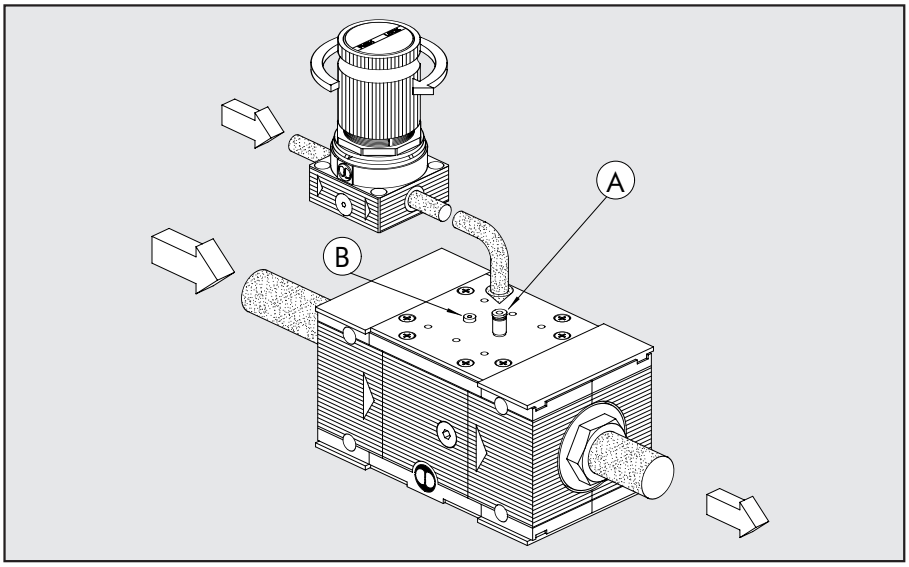


DIMENSIONS



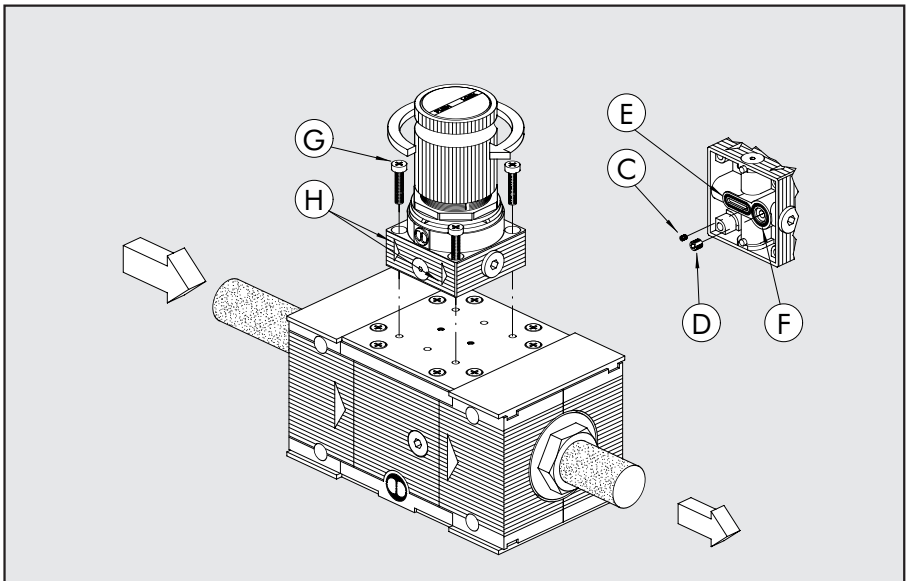
	REG 400	REG 400	REG 400	REG 400
Threaded port	G 1"	G 1"1/4	G 1"1/2	G 2"
A	225÷255			283÷313
B	127			
C	116			
D	105			
E	141.4			
F	80			
G	G 1"	G 1"1/4	G 1"1/2	G 2"
I	52.5			
L	M6 hole			
M	105.4			
P	G 1/4			
R	G 1/4			

INSTRUCTIONS FOR USE



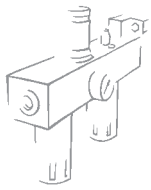
1 REMOTE PILOT

- Fit the A7 M5 plug into the threaded hole B (close to the entrance).
- Fit the M5 fitting into the threaded hole A as close to the entrance as possible.
- Connect the downstream circuit of the selected pilot operated regulator to the input A (R1 fitting).
- Set the required pressure on the pilot operated regulator.

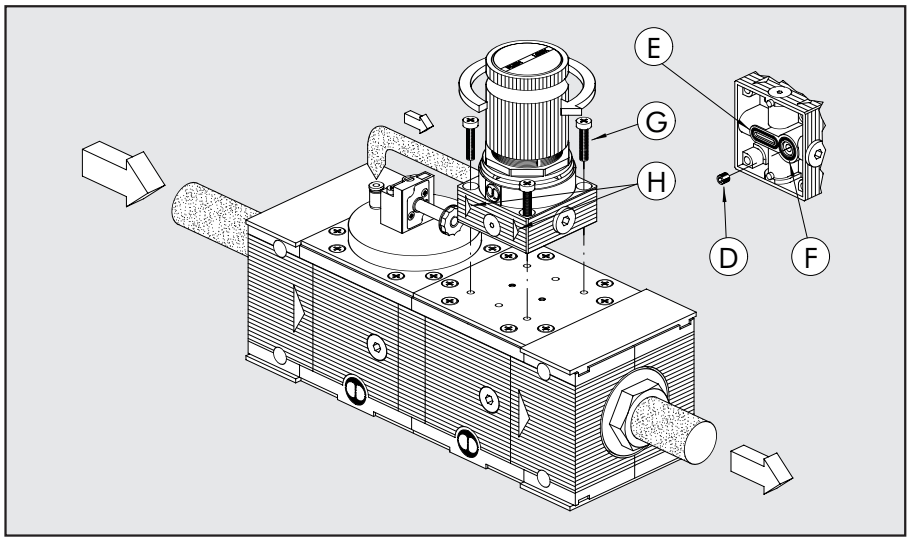


2 DIRECT PILOT WITH SKILLAIR PILOT OPERATED REGULATOR

- Remove the pins C and D under the pilot operated regulator.
- Check that the two gaskets E and F under the pilot are in place.
- Fix the pilot operated regulator to the base of the regulator using the self-threading screws G. Make sure the arrows H point in the same direction as the arrows in relief under the base of the regulator.



INSTRUCTIONS FOR USE



3 PILOT REGULATOR FOLLOW-UP LINK

This is used when the regulator is mounted downstream of a V3V valve or an APR. The air can be bled from the V3V or APR valves instead of from the regulator relieving system.
Remove only the stud pin marked with a letter D under the pilot regulator.
Check the two gaskets under the pilot marked E and F.
Secure the pilot regulator to the regulator base with the self-tapping screws marked with a letter G. Making sure the arrows marked H point in the same direction as the arrows in relief under the regulator base.
Remove the A7 M5 plug from the V3V or APR plate and remount the fitting.
Connect the pilot regulator supply to the fitting.

KEY TO CODES

REG	100	1/4	02
FILTER ELEMENT	SIZE	THREADED PORT	SETTING RANGE
REG	100	1/4 3/8	0 ÷ 2 bar 0 ÷ 4 bar
	200	1/4 3/8 1/2	0 ÷ 8 bar 0 ÷ 12 bar
	300	1/2 3/4	
	400	1 1 1/4 1 1/2 2	Depending on the pilot used

The pilot operated regulator is necessary for size 400.
See pag. 3.1/17.

ORDERING CODES

Code	Description
SKILLAIR 100 REGULATOR	
3202001A	REG 100 02 WITHOUT END PLATES
3202002A	REG 100 04 WITHOUT END PLATES
3202003A	REG 100 08 WITHOUT END PLATES
3202004A	REG 100 012 WITHOUT END PLATES
3202001	REG 100 1/4 02
3202002	REG 100 1/4 04
3202003	REG 100 1/4 08
3202004	REG 100 1/4 012
3302001	REG 100 3/8 02
3302002	REG 100 3/8 04
3302003	REG 100 3/8 08
3302004	REG 100 3/8 012

Code	Description
SKILLAIR 200 REGULATOR	
3402001A	REG 200 02 WITHOUT END PLATES
3402002A	REG 200 04 WITHOUT END PLATES
3402003A	REG 200 08 WITHOUT END PLATES
3402004A	REG 200 012 WITHOUT END PLATES
3402001	REG 200 1/4 02
3402002	REG 200 1/4 04
3402003	REG 200 1/4 08
3402004	REG 200 1/4 012
3502001	REG 200 3/8 02
3502002	REG 200 3/8 04
3502003	REG 200 3/8 08
3502004	REG 200 3/8 012
3602001	REG 200 1/2 02
3602002	REG 200 1/2 04
3602003	REG 200 1/2 08
3602004	REG 200 1/2 012

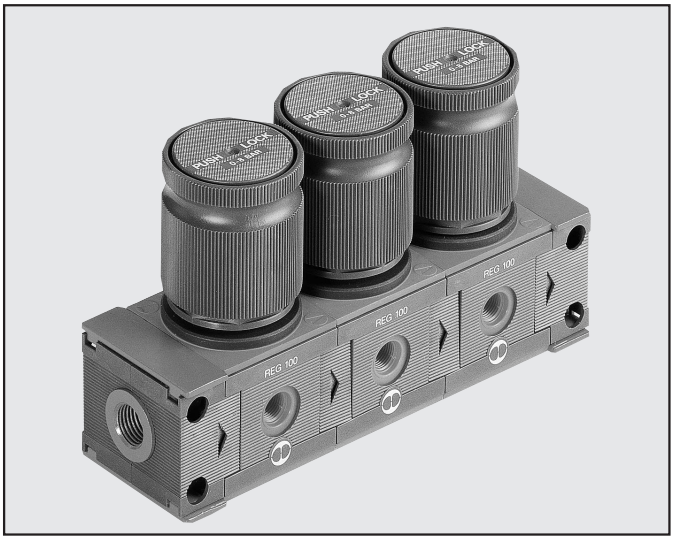
Code	Description
SKILLAIR 300 REGULATOR	
4402000A	REG 300 02 WITHOUT END PLATES
4402001A	REG 300 04 WITHOUT END PLATES
4402002A	REG 300 08 WITHOUT END PLATES
4402003A	REG 300 012 WITHOUT END PLATES
4402000	REG 300 1/2 02
4402001	REG 300 1/2 04
4402002	REG 300 1/2 08
4402003	REG 300 1/2 012
4502000	REG 300 3/4 02
4502001	REG 300 3/4 04
4502002	REG 300 3/4 08
4502003	REG 300 3/4 012
4602000	REG 300 1 02
4602001	REG 300 1 04
4602002	REG 300 1 08
4602003	REG 300 1 012

SKILLAIR 400 REGULATOR	
6102001A	REG 400 WITHOUT END PLATES
6102001	REG 400 1
6202001	REG 400 1 1/4
6302001	REG 400 1 1/2
6402001	REG 400 2

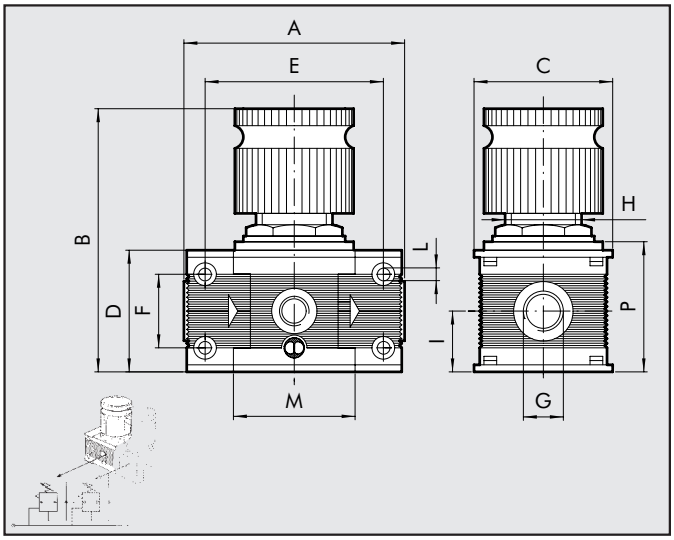
Skillair® 100
IN-SERIES REGULATOR

TECHNICAL DATA

Threaded inlet port		G 1/4''
Threaded user port		G 1/8''
Setting range		0-2 - 0-4 - 0-8 - 0-12
Max. input pressure		1.5 MPa - 15 bar - 217 psi
Flow rate at 6.3 bar (0.63 MPa-91 psi)		500 Nl/min
ΔP 0.5 bar (0.05 MPa – 7 psi)		18 scfm
Flow rate at 6.3 bar (0.63 MPa-91 psi)		950 Nl/min
ΔP 1 bar (0.1 MPa – 14 psi)		34 scfm
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.
Max temperature	°C	50
at 1 MPa; 10 bar; 145 psi	°F	122
Weight	Kg	0.4
Wall fixing screws		M4x50
Mounting		In any position
Pressure gauge port		G 1/8''
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.



DIMENSIONS

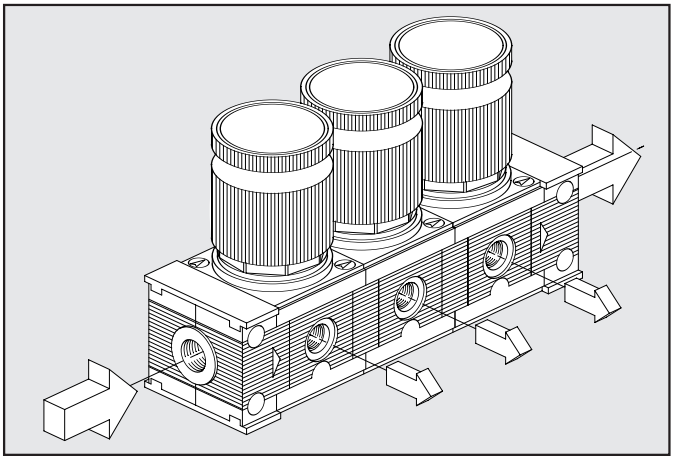


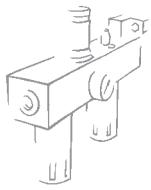
	REG 100	REG 100
Threaded port	G 1/4''	G 3/8''
A	78	
B	98	
C	50	
D	43	
E	63	
F	26	
G	G 1/4''	G 3/8''
H	30x1.5	
I	21.5	
L	M4 hole	
M	43	
P	46	

ORDERING CODES

Cod.	Descrizione
100 IN-SERIES REGULATOR	
3202101A	100 IN-SERIES REG. 0-2 WITHOUT TERMINALS
3202102A	100 IN-SERIES REG. 0-4 WITHOUT TERMINALS
3202103A	100 IN-SERIES REG. 0-8 WITHOUT TERMINALS
3202104A	100 IN-SERIES REG. 0-12 WITHOUT TERMINALS
3202101	100 IN-SERIES REG. 1/4 0-2
3202102	100 IN-SERIES REG. 1/4 0-4
3202103	100 IN-SERIES REG. 1/4 0-8
3202104	100 IN-SERIES REG. 1/4 0-12
3302101	100 IN-SERIES REG. 3/8 0-2
3302102	100 IN-SERIES REG. 3/8 0-4
3302103	100 IN-SERIES REG. 3/8 0-8
3302104	100 IN-SERIES REG. 3/8 0-12

Several of these Skillair® regulators can be mounted in series, all fed by the same pressure. They can give different set pressures, each independent of the previous regulator.
Operating compressed air can be taken from the pressure gauge ports (G 1/8").





Skillair® PILOT REGULATOR

The pilot regulator is used when great accuracy is required in maintaining the set pressure under changing operating conditions.
It is ideal for use as:
• a precision regulator for flow rates < 100 Nl/min.
• a pilot in general – typically for large size regulators (see REG 400)

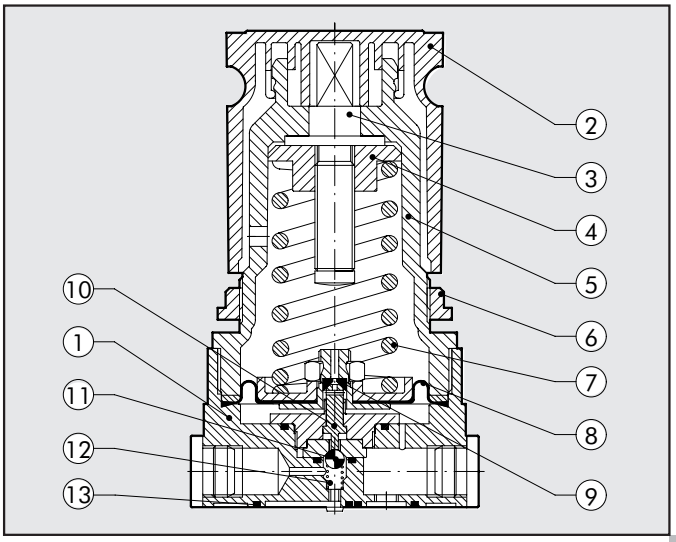
The system's high operating accuracy and low hysteresis are determined by the virtually total lack of friction. The presence of a slight air leak is necessary for the regulator to operate properly – it is not a malfunction.
It is advisable to use filtered air.



TECHNICAL DATA		PILOT REGULATOR
Threaded port		G 1/4''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12
Max. input pressure	MPa	1.3
	bar	13
	psi	188
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		120 Nl/min - 4,3 scfm
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		140 Nl/min - 5 scfm
Fluid		Filtered, lubricated or unlubricated compressed air.
		Lubrication, if used, must be continuous.
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Weight	Kg	0.6
Mounting		In any position
Pressure gauge port		G 1/8''
Notes on use		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take air from the pressure gauge ports. Mount directly on REG 400.

COMPONENTS

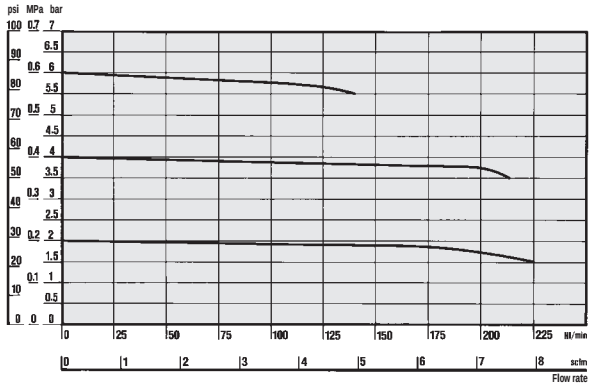
① Aluminium body
② Technopolymer knob
③ OT58 brass adjusting screw
④ OT58 brass scroll
⑤ Technopolymer bell
⑥ Technopolymer ring nut
⑦ Steel adjusting spring
⑧ Rolling diaphragm
⑨ NBR relieving gaskets
⑩ OT58 brass stem
⑪ Stainless steel ball valve
⑫ Stainless steel valve spring
⑬ NBR gaskets



FLOW CHARTS

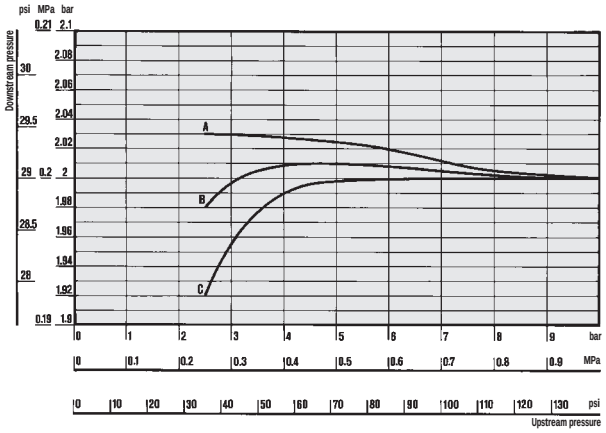
FLOW FEATURES REG. P 1/4''

Preset pressure
Pm = 7 bar - 0,7 MPa - 100 psi



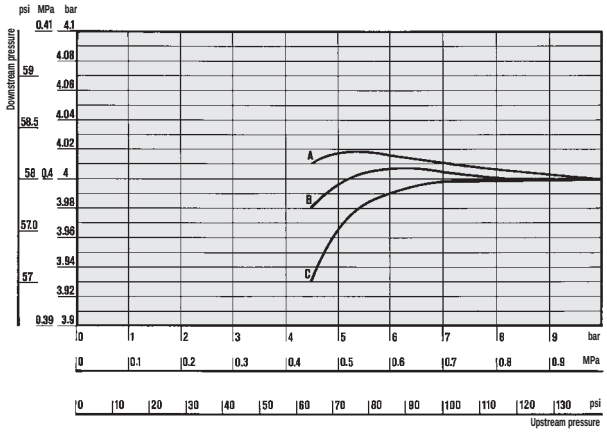
REGULATION FEATURES REG. P 1/4'' *

Flow: A = 0 Nl/min = 0 scfm
B = 25 Nl/min = 0,88 scfm - C = 50 Nl/min = 1,76 scfm



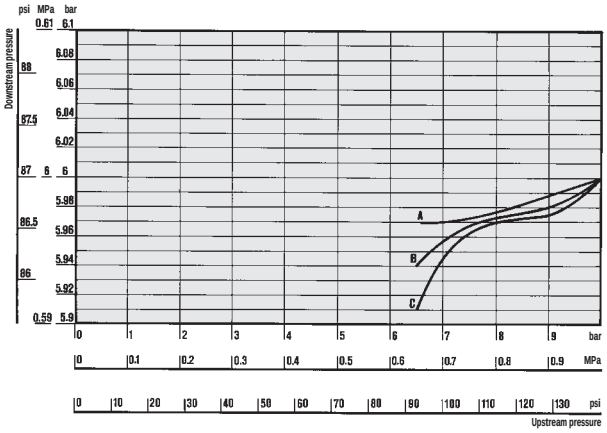
REGULATION FEATURES REG. P 1/4'' *

Flow: A = 0 Nl/mi n = 0 scfm
B = 25 Nl/min = 0,88 scfm - C = 50 Nl/min = 1,76 scfm

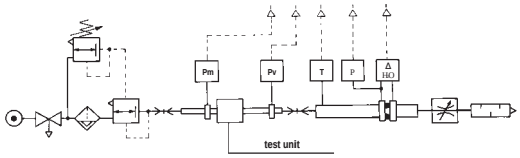


REGULATION FEATURES REG. P 1/4'' *

Flow: A = 0 Nl/min = 0 scfm
B = 25 Nl/min = 0,88 scfm - C = 50 Nl/min = 1,76 scfm



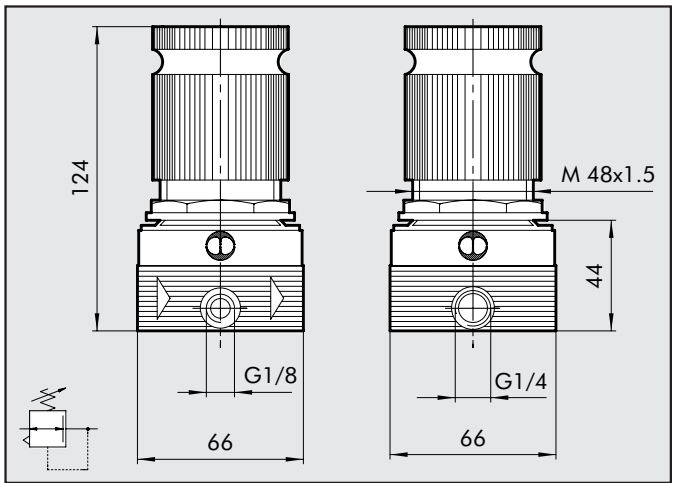
Department of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

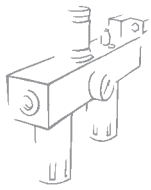
* Pressure stability adjusted according to changes in upstream pressure.

DIMENSIONS



ORDERING CODES

Code	Description
3206001	REG. P 1/4'' 02
3206002	REG. P 1/4'' 04
3206003	REG. P 1/4'' 08
3206004	REG. P 1/4'' 012



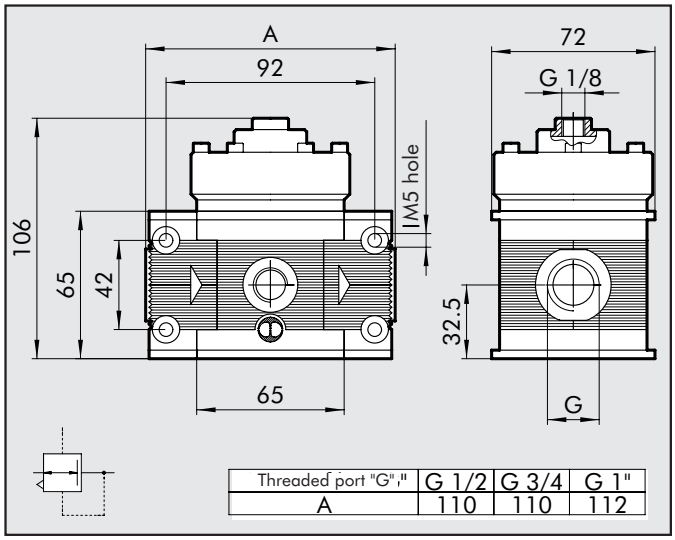
Skillair® 300 PILOT OPERATED REGULATOR

- Pilot-operated or servo-piloted regulator
- Twin rolling diaphragm to ensure improved opening and hence greater flow rate.
- Low load losses
- Excellent precision in pressure setting
- Excellent sensitivity during relieving.



TECHNICAL DATA		300 PILOT OPERATED REG		
Threaded port		G 1/2''	G 3/4''	G 1''
Setting range		Depending on the pilot regulator		
Max. input pressure	MPa	1.3		
	bar	13		
	psi	188		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	4500		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	160		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	7000		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	247		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Weight	gr	1.3		
Wall fixing screws		M5x70		
Mounting		In any position		
Pressure gauge port		G 1/8''		
Notes on use		The regulator pressure must always be set upwards. Do not take air from the pressure gauge ports.		

DIMENSIONS



Threaded port "G",''	G 1/2	G 3/4	G 1"
A	110	110	112

ORDERING CODES

Code	Description
4403003A	300 PILOT OPERATED REG WITHOUT END PLATES
4403003	300 1/2" PILOT OPERATED REG
4503003	300 3/4" PILOT OPERATED REG
4603003	300 1" PILOT OPERATED REG

Skillair® SKILLTRONIC

Skilltronic is an electronically-controlled pressure regulator equipped with an 8-bit microcontroller. The control signal can be analogic, digital via RS232 or digital from the keyboard. It is converted into a proportional pressure signal by means of solenoid valves. The regulator can be used alone within the indicated flow values, or in combination with a Skillair 300 or 400 pilot-operated pressure regulator (power stage).
The advantages are:
- Integration with analogic or digital control systems (PC, PLC, etc.).
- Extremely fast response times.
- Excellent repeatability and reliability.
- Low power absorption.

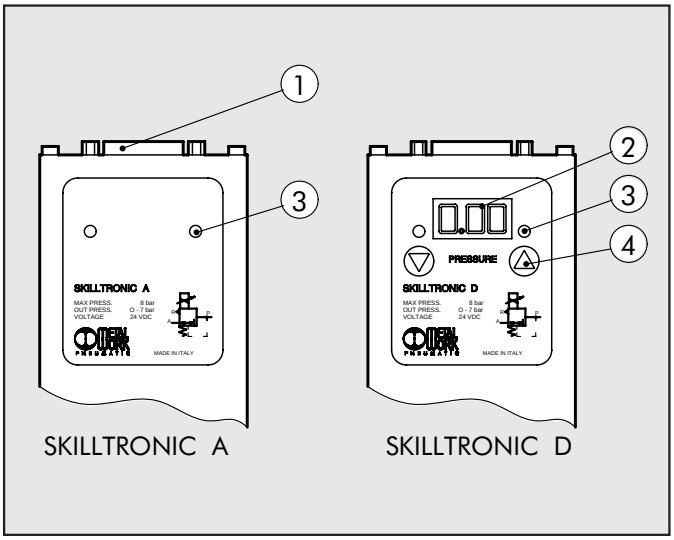
Skilltronic è disponibile in due versioni base:
Version A, with analogic control via voltage or RS232 serial line.
Version D, with control via RS232 serial line or keyboard or voltage, with display of the set and regulated pressures.

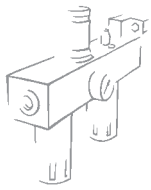


TECHNICAL DATA		SKILLTRONIC A and D	SKILLTRONIC 300 A and 300 D	SKILLTRONIC 400 A and 400 D
Setting range	MPa	0.03 - 0.7		
		0.3 - 7		
	psi	4 - 100		
		0.1 - 0.8		
	bar	1 - 8		
		15 - 115		
Temperature range	°C	-10°C to +50°C		
		14 - 122		
Degree of protection		IP 60	IP 65	IP 65
		0.4	1.9	5.6
Fluid		20 µm filtered air, de-humidified and unlubricated.		
		24 V DC		
Max. absorbed power	W	2		
		0-5V / 0-10V / RS 232		
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	60	4500	18000
		< 5	–	–
Response time – rise time*	ms	60	–	–
		100	–	–
** Volume 30 cm3 Pal= 8bar, from 4 to 2 bar				

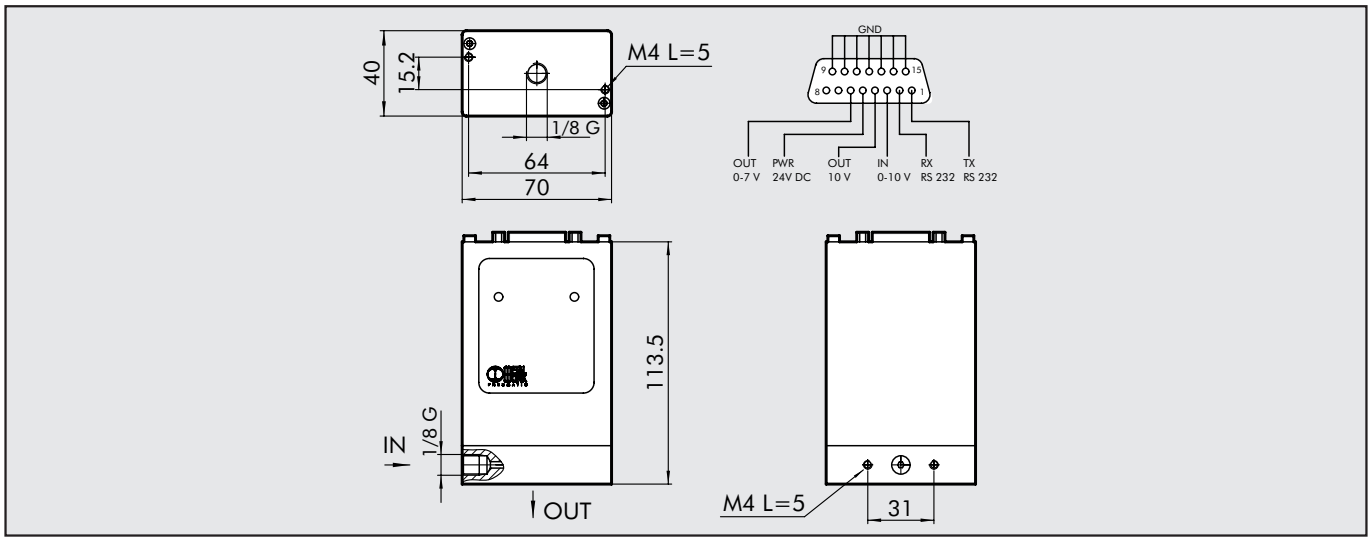
COMPONENTS

① Connection for power supply and serial line
② 3-digit digital display
③ Led
④ Instrument configuration and pressure setting keys

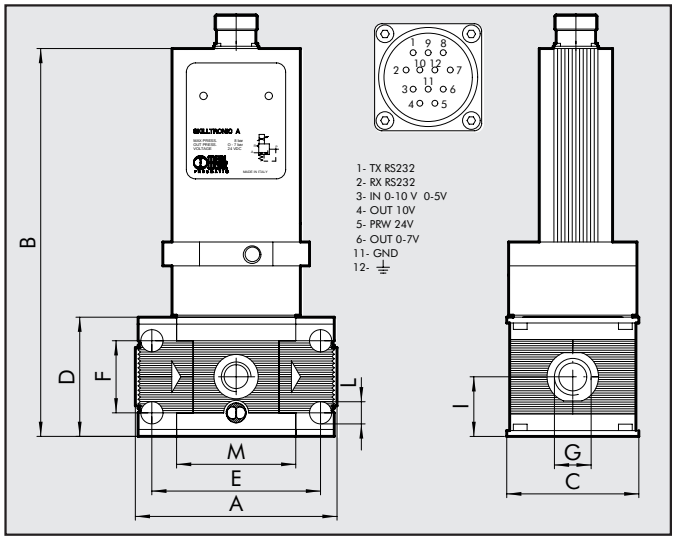




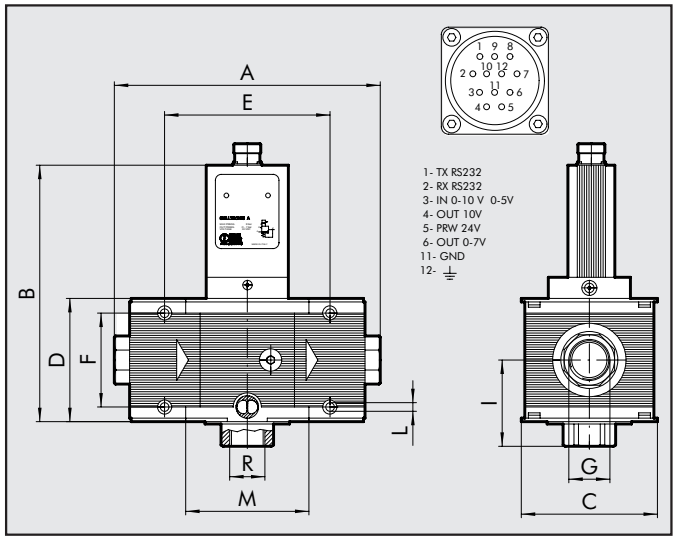
SKILLTRONIC A/D



SKILLTRONIC 300 A/D



SKILLTRONIC 400 A/D



DIMENSIONS

	SKILLTRONIC 300			SKILLTRONIC 400			
Threaded port	G1/2"	G3/4"	G1"	G1"	G1"1/4"	G1"1/2"	G2
A	110	110	112	225÷255			283÷313
B	227			234			
C	72			116			
D	65			105			
E	92			141.4			
F	42			80			
G	G1/2"	G3/4"	G1"	G1"	G1"1/4"	G1"1/2"	G2
I	32.5			74.5			
L	M5 hole			M6 hole			
M	65			105.4			

FEMALE CONNECTOR

Code	Description
W0214100200	IP60 90°-angle technopolymer connector, not shielded
W0214100000	IP straight metal connector, shielded

The above items are available in the pre-wired version on request.

ORDERING CODES

Code	Description
W0214000000	SKILLTRONIC A
W0214000100	SKILLTRONIC D
4403010	SKILLTRONIC 300 1/2" A
4503010	SKILLTRONIC 300 3/4" A
4603010	SKILLTRONIC 300 1" A
4403011	SKILLTRONIC 300 1/2" D
4503011	SKILLTRONIC 300 3/4" D
4603011	SKILLTRONIC 300 1" D
6102010	SKILLTRONIC 400 1" A
6202010	SKILLTRONIC 400 1" 1/4 A
6302010	SKILLTRONIC 400 1" 1/2 A
6402010	SKILLTRONIC 400 2" A
6102011	SKILLTRONIC 400 1" D
6202011	SKILLTRONIC 400 1" 1/4 D
6302011	SKILLTRONIC 400 1" 1/2 D
6402011	SKILLTRONIC 400 2" D

Skillair® FILTER REGULATOR

This device combines a filter and a pressure regulator in a single unit. It has the dual function of filtering and regulating air from the compressor.
As the filter regulator is made up of the same elements as the regulator and the filter, the performance is the same.

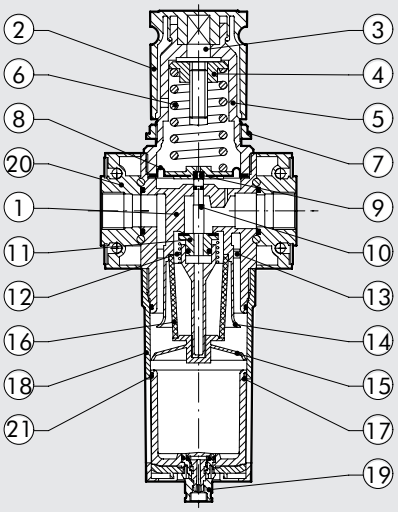
- High flow rates with low load loss.
- Special rolling diaphragm – higher flow rate, greater stability, improved sensitivity.
- Rapid relief of downstream overpressures.
- Stability of the regulated pressure as the mains pressure fluctuates.
- Maximum degree of condensate separation.
- 360° condensate level display.
- Condensate drain with manual/semi-automatic or automatic function.



TECHNICAL DATA		FR 100	FR 100	FR 200	FR 200	FR 200	FR 300	FR 300	FR 300
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12		0÷2 - 0÷4 - 0÷8 - 0÷12			0÷2 - 0÷4 - 0÷8 - 0÷12		
Degree of filtration		5µm - 20µm - 50µm		5µm - 20µm - 50µm			5µm - 20µm - 50µm		
Max. input pressure		1.5 MPa - 15 bar - 217 psi		1.3 MPa - 13 bar - 188 psi			1.3 MPa - 13 bar - 188 psi		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1100		1600			3500		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	39		57			125		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1600		3000			5600		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	57		71			200		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous.							
Max temperature	°C	50		50			50		
at 1 MPa; 10 bar; 145 psi	°F	122		122			122		
Weight	Kg	0.5		1			1.8		
Wall fixing screws		M4x50		M5x60			M5x70		
Mounting position		Vertical							
Pressure gauge port		G 1/8"		G 1/8"			G 1/8"		
Bowl capacity	cm^3	22		45			75		
Drain		Manual/semi-auto (RMSA)		Manual/semi-auto (RMSA)			Manual/semi-auto (RMSA)		
		Automatic (SAC)		Automatic (SAC) - Automatic (RA)			Automatic (RA)		
Notes		The regulator pressure must always be set upwards.							
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.							
		Do not take air from pressure gauge ports.							
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							

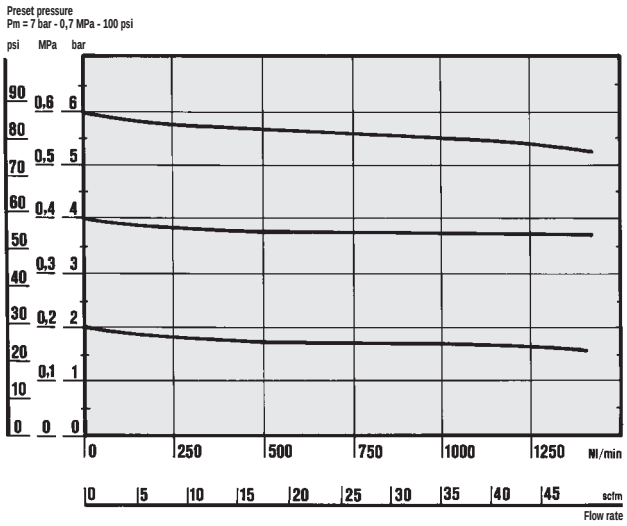
COMPONENTS

① Technopolymer body
② Technopolymer knob
③ OT58 brass adjusting screw
④ OT58 brass scroll
⑤ Technopolymer bell
⑥ Steel adjusting spring
⑦ Technopolymer ring nut
⑧ Rolling diaphragm
⑨ NBR relieving gasket
⑩ OT58 brass stem
⑪ Valve with NBR vulcanized gasket
⑫ Stainless steel valve spring
⑬ Technopolymer centrifuge
⑭ Technopolymer baffle plug
⑮ Technopolymer screen
⑯ Sintered bronze filtered cartridge
⑰ Clear technopolymer glass
⑱ Bowl: technopolymer for FR100 and FR200, metal for FR 300
⑲ Drain (RMSA)
⑳ Zamak end plate
㉑ NBR gaskets

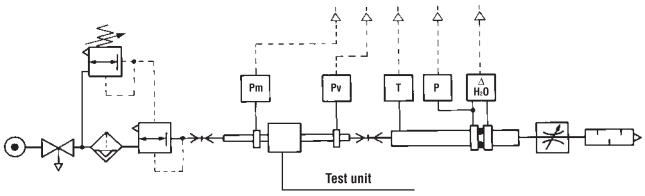


FLOW CHARTS

FR 100 1/4 - 3/8

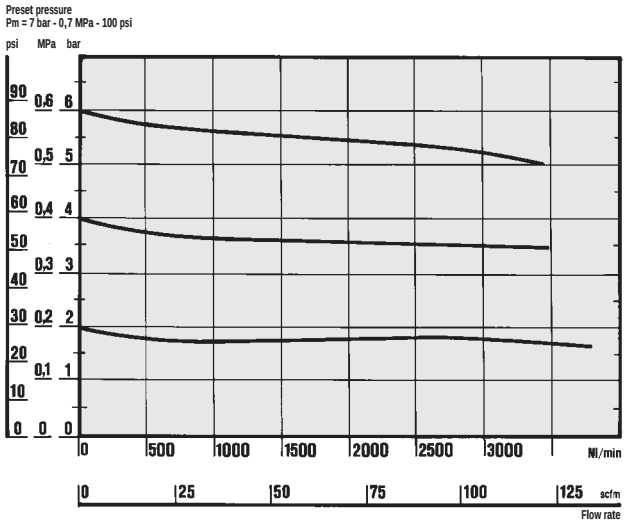


Departments of Mechanics
Turin Polytechnic

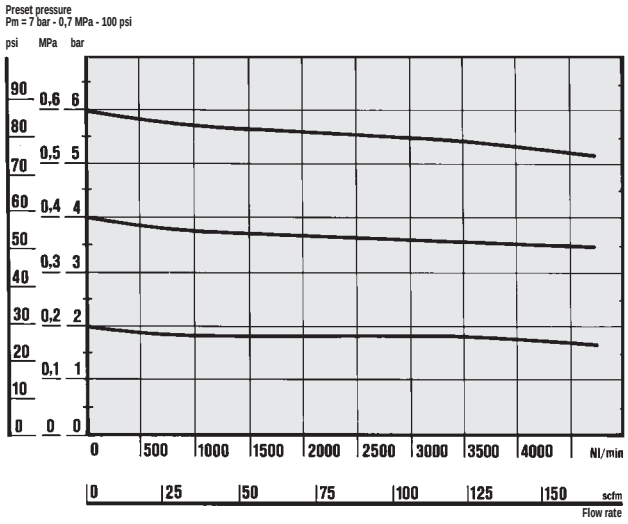


● Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

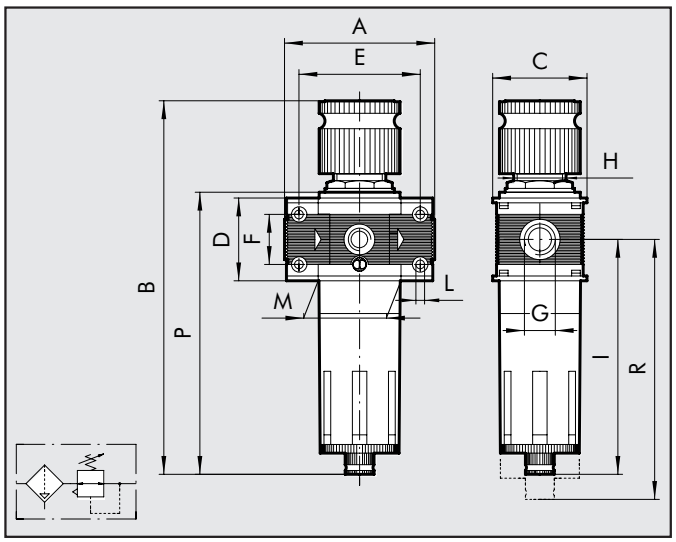
FR 200 1/4 - 3/8 - 1/2



FR 300 1/2 - 3/4 - 1



DIMENSIONS



	FR 100	FR 100	FR 200	FR 200	FR 200	FR 300	FR 300	FR 300
	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	199		245					
C	50		63			72		
D	43		55					
E	63		78.5			92		
F	26		36					
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	30X1.5		40x1.5					
I	122.5		147.5			162.5		
L	M4 hole		M5 hole					
M	43		55.5			65		
P	147		178					
R	137		196			215		

KEY TO CODES

FR	100	1/4	5µm	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF DRAIN
FR	100	1/4	5 µm	0÷2 bar	RMSA
		3/8	20 µm	0÷4 bar	SAC
	200	1/4	50 µm	0÷8 bar	RMSA
		3/8		0÷12 bar	SAC
		1/2			RA*
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: Semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Automatic drain for size 300. Float-type operation irrespective of the pressure and flow rate.

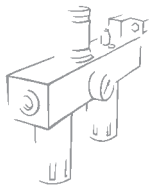
* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
SK 100 FILTER REGULATOR	
3283007A	FR 100 5 08 RMSA WITHOUT END PLATES
3283008A	FR 100 20 08 RMSA WITHOUT END PLATES
3283009A	FR 100 50 08 RMSA WITHOUT END PLATES
3283010A	FR 100 5 012 RMSA WITHOUT END PLATES
3283011A	FR 100 20 012 RMSA WITHOUT END PLATES
3283012A	FR 100 50 012 RMSA WITHOUT END PLATES
3283031A	FR 100 5 08 SAC WITHOUT END PLATES
3283032A	FR 100 20 08 SAC WITHOUT END PLATES
3283033A	FR 100 50 08 SAC WITHOUT END PLATES
3283034A	FR 100 5 012 SAC WITHOUT END PLATES
3283035A	FR 100 20 012 SAC WITHOUT END PLATES
3283036A	FR 100 50 012 SAC WITHOUT END PLATES
3283007	FR 100 1/4 5 08 RMSA
3283008	FR 100 1/4 20 08 RMSA
3283009	FR 100 1/4 50 08 RMSA
3283010	FR 100 1/4 5 012 RMSA
3283011	FR 100 1/4 20 012 RMSA
3283012	FR 100 1/4 50 012 RMSA
3283031	FR 100 1/4 5 08 SAC
3283032	FR 100 1/4 20 08 SAC
3283033	FR 100 1/4 50 08 SAC
3283034	FR 100 1/4 5 012 SAC
3283035	FR 100 1/4 20 012 SAC
3283036	FR 100 1/4 50 012 SAC
3383007	FR 100 3/8 5 08 RMSA
3383008	FR 100 3/8 20 08 RMSA
3383009	FR 100 3/8 50 08 RMSA
3383010	FR 100 3/8 5 012 RMSA
3383011	FR 100 3/8 20 012 RMSA
3383012	FR 100 3/8 50 012 RMSA
3383031	FR 100 3/8 5 08 SAC
3383032	FR 100 3/8 20 08 SAC
3383033	FR 100 3/8 50 08 SAC
3383034	FR 100 3/8 5 012 SAC
3383035	FR 100 3/8 20 012 SAC
3383036	FR 100 3/8 50 012 SAC

Code	Description
SK 200 FILTER REGULATOR	
3483007A	FR 200 5 08 RMSA WITHOUT END PLATES
3483008A	FR 200 20 08 RMSA WITHOUT END PLATES
3483009A	FR 200 50 08 RMSA WITHOUT END PLATES
3483010A	FR 200 5 012 RMSA WITHOUT END PLATES
3483011A	FR 200 20 012 RMSA WITHOUT END PLATES
3483012A	FR 200 50 012 RMSA WITHOUT END PLATES
3483031A	FR 200 5 08 SAC WITHOUT END PLATES
3483032A	FR 200 20 08 SAC WITHOUT END PLATES
3483033A	FR 200 50 08 SAC WITHOUT END PLATES
3483034A	FR 200 5 012 SAC WITHOUT END PLATES
3483035A	FR 200 20 012 SAC WITHOUT END PLATES
3483036A	FR 200 50 012 SAC WITHOUT END PLATES
3483007	FR 200 1/4 5 08 RMSA
3483008	FR 200 1/4 20 08 RMSA
3483009	FR 200 1/4 50 08 RMSA
3483010	FR 200 1/4 5 012 RMSA
3483011	FR 200 1/4 20 012 RMSA
3483012	FR 200 1/4 50 012 RMSA
3483031	FR 200 1/4 5 08 SAC
3483032	FR 200 1/4 20 08 SAC
3483033	FR 200 1/4 50 08 SAC
3483034	FR 200 1/4 5 012 SAC
3483035	FR 200 1/4 20 012 SAC
3483036	FR 200 1/4 50 012 SAC
3583007	FR 200 3/8 5 08 RMSA
3583008	FR 200 3/8 20 08 RMSA
3583009	FR 200 3/8 50 08 RMSA
3583010	FR 200 3/8 5 012 RMSA
3583011	FR 200 3/8 20 012 RMSA
3583012	FR 200 3/8 50 012 RMSA
3583031	FR 200 3/8 5 08 SAC
3583032	FR 200 3/8 20 08 SAC
3583033	FR 200 3/8 50 08 SAC
3583034	FR 200 3/8 5 012 SAC
3583035	FR 200 3/8 20 012 SAC
3583036	FR 200 3/8 50 012 SAC
3683007	FR 200 1/2 5 08 RMSA
3683008	FR 200 1/2 20 08 RMSA
3683009	FR 200 1/2 50 08 RMSA
3683010	FR 200 1/2 5 012 RMSA
3683011	FR 200 1/2 20 012 RMSA
3683012	FR 200 1/2 50 012 RMSA
3683031	FR 200 1/2 5 08 SAC
3683032	FR 200 1/2 20 08 SAC
3683033	FR 200 1/2 50 08 SAC
3683034	FR 200 1/2 5 012 SAC
3683035	FR 200 1/2 20 012 SAC
3683036	FR 200 1/2 50 012 SAC

Code	Description
SK 300 FILTER REGULATOR	
4483004A	FR 300 5 08 RMSA WITHOUT END PLATES
4483005A	FR 300 20 08 RMSA WITHOUT END PLATES
4483006A	FR 300 50 08 RMSA WITHOUT END PLATES
4483007A	FR 300 5 012 RMSA WITHOUT END PLATES
4483008A	FR 300 20 012 RMSA WITHOUT END PLATES
4483009A	FR 300 50 012 RMSA WITHOUT END PLATES
4483013A	FR 300 5 08 RA WITHOUT END PLATES
4483014A	FR 300 20 08 RA WITHOUT END PLATES
4483015A	FR 300 50 08 RA WITHOUT END PLATES
4483016A	FR 300 5 012 RA WITHOUT END PLATES
4483017A	FR 300 20 012 RA WITHOUT END PLATES
4483018A	FR 300 50 012 RA WITHOUT END PLATES
4483004	FR 300 1/2 5 08 RMSA
4483005	FR 300 1/2 20 08 RMSA
4483006	FR 300 1/2 50 08 RMSA
4483007	FR 300 1/2 5 012 RMSA
4483008	FR 300 1/2 20 012 RMSA
4483009	FR 300 1/2 50 012 RMSA
4483013	FR 300 1/2 5 08 RA
4483014	FR 300 1/2 20 08 RA
4483015	FR 300 1/2 50 08 RA
4483016	FR 300 1/2 5 012 RA
4483017	FR 300 1/2 20 012 RA
4483018	FR 300 1/2 50 012 RA
4583004	FR 300 3/4 5 08 RMSA
4583005	FR 300 3/4 20 08 RMSA
4583006	FR 300 3/4 50 08 RMSA
4583007	FR 300 3/4 5 012 RMSA
4583008	FR 300 3/4 20 012 RMSA
4583009	FR 300 3/4 50 012 RMSA
4583013	FR 300 3/4 5 08 RA
4583014	FR 300 3/4 20 08 RA
4583015	FR 300 3/4 50 08 RA
4583016	FR 300 3/4 5 012 RA
4583017	FR 300 3/4 20 012 RA
4583018	FR 300 3/4 50 012 RA
4683004	FR 300 1 5 08 RMSA
4683005	FR 300 1 20 08 RMSA
4683006	FR 300 1 50 08 RMSA
4683007	FR 300 1 5 012 RMSA
4683008	FR 300 1 20 012 RMSA
4683009	FR 300 1 50 012 RMSA
4683013	FR 300 1 5 08 RA
4683014	FR 300 1 20 08 RA
4683015	FR 300 1 50 08 RA
4683016	FR 300 1 5 012 RA
4683017	FR 300 1 20 012 RA
4683018	FR 300 1 50 012 RA



Skillair® LUBRICATOR

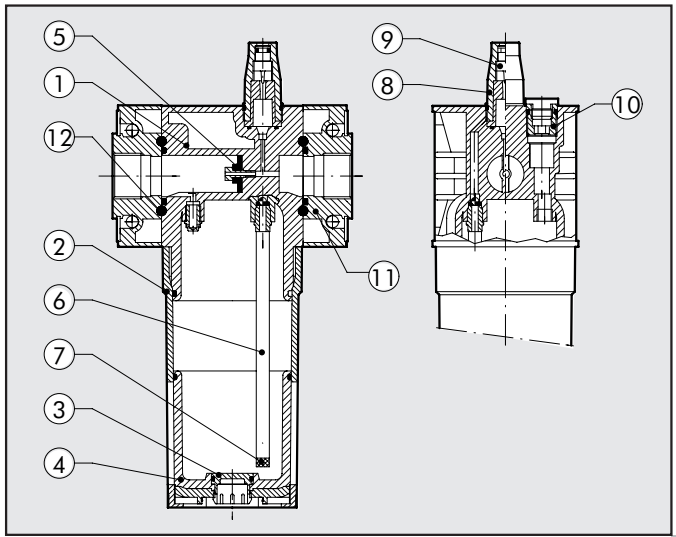
The pneumatic lubricator is the simplest way of properly lubricating actuators connected to a circuit.
As air flows from the mains through the lubricator, it encounters the diaphragm which obstruct the flow and the air is forced through the Venturi tube. The inside of the Venturi tube is connected to the inspection dome, which connects with the bowl via a tube with a regulating needle in between. The drop in pressure caused by the Venturi tube sucks up air through the dome, the tube and lastly into the bowl containing oil.
The quantity of oil controlled by the regulating needle then flows back from the bowl to the circuit.



TECHNICAL DATA		LUB 100	LUB 100	LUB 200	LUB 200	LUB 200	LUB 300	LUB 300	LUB 300
Threaded port		1/4''	3/8''	1/4''	3/8''	1/2''	1/2''	3/4''	1''
Type of lubrication		Mist		Mist			Mist		
Bowl capacity	cm^3	50		95			160		
Versions		Standard - CA - CD		Standard - CA - CD			Standard - CA - CD - ML CA ML - CDV - CDML		
Max. input pressure		1.5MPa - 15bar - 217psi		1.3MPa - 13bar - 188psi			1.3MPa - 13bar - 188psi		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1100		2200			3500		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	39		71			125		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1500		3700			5500		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	53		131			196		
Fluid		Filtered compressed air							
Max temperature	°C	50		50			50		
at 1 MPa; 10 bar; 145 psi	°F	122		122			122		
Weight	Kg	0.4		0.7			1.4		
Wall fixing screws		M4x50		M5x60			M5x70		
Mounting position		Vertical							
Recommended oils		ISO and UNI FD22 (Energol HPL ÷ Spinesso ÷ Mobil DTE ÷ Tellus Oil)							
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system. Do not use cleaning oils, brake fluid oils or solvents in general. For the best lubrication results, set the drip rate to one drop per 300-600 Nl							

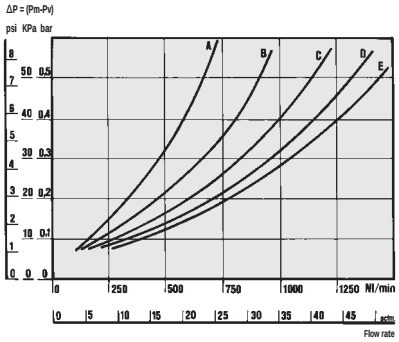
COMPONENTS

① Technopolymer body
② Bowl: technopolymer for LUB 100 and 200, metal for LUB 300
③ Technopolymer plug
④ Clear technopolymer glass
⑤ NBR Venturi tube diaphragm
⑥ Rilsan oil suction tube
⑦ Filter
⑧ Clear technopolymer inspection dome
⑨ OT58 brass oil flow regulating needle
⑩ OT58 brass oil filling plug
⑪ Zamak end plate
⑫ NBR gaskets

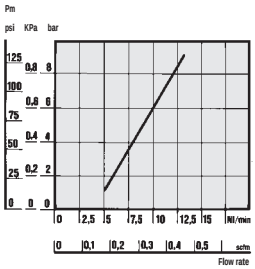


FLOW CHARTS

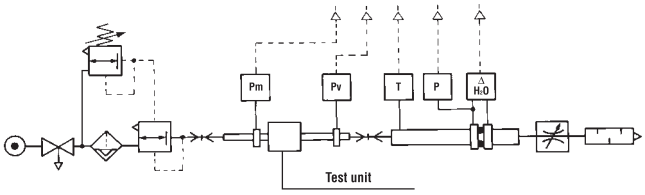
LUB 100 1/4 - 3/8



MINIMUM OPERATING FLOW CHART



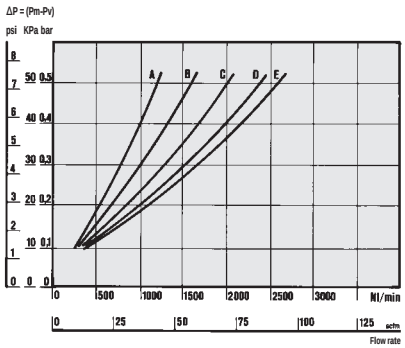
Department of Mechanics
Turin Polytechnic



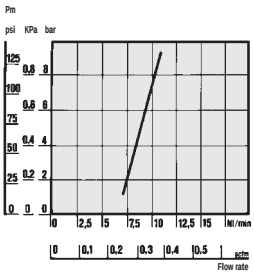
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

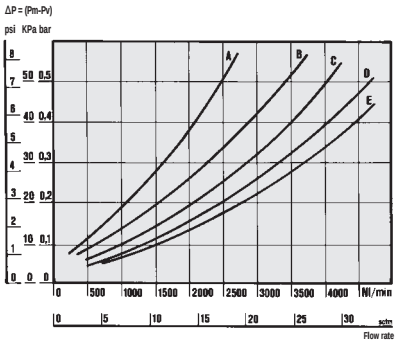
LUB 200 1/4 - 3/8 - 1/2



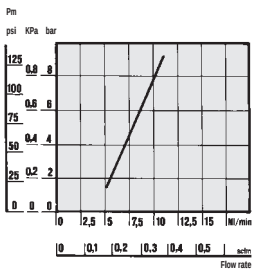
MINIMUM OPERATING FLOW CHART



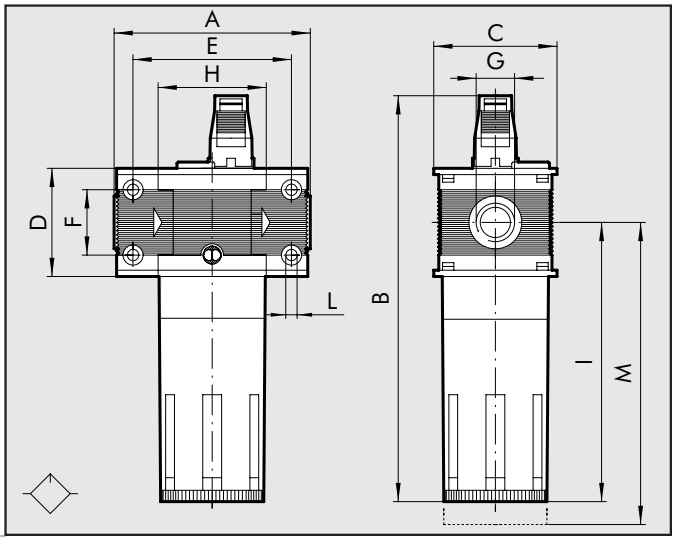
LUB 300 1/2 - 3/4 - 1



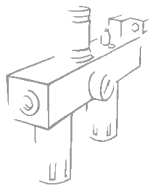
MINIMUM OPERATING FLOW CHART



DIMENSIONS

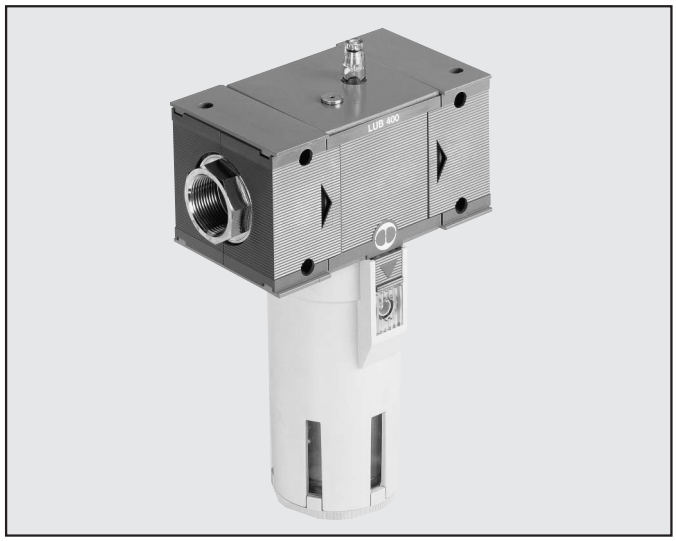


	LUB 100	LUB 100	LUB 200	LUB 200	LUB 200	LUB 300	LUB 300	LUB 300
T. Port	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	162		193			214		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	43		55.5			65		
I	112		137.5			153		
L	M4 hole		M5 hole			M5 hole		
M	130		150			160		



Skillair® 400 LUBRICATOR

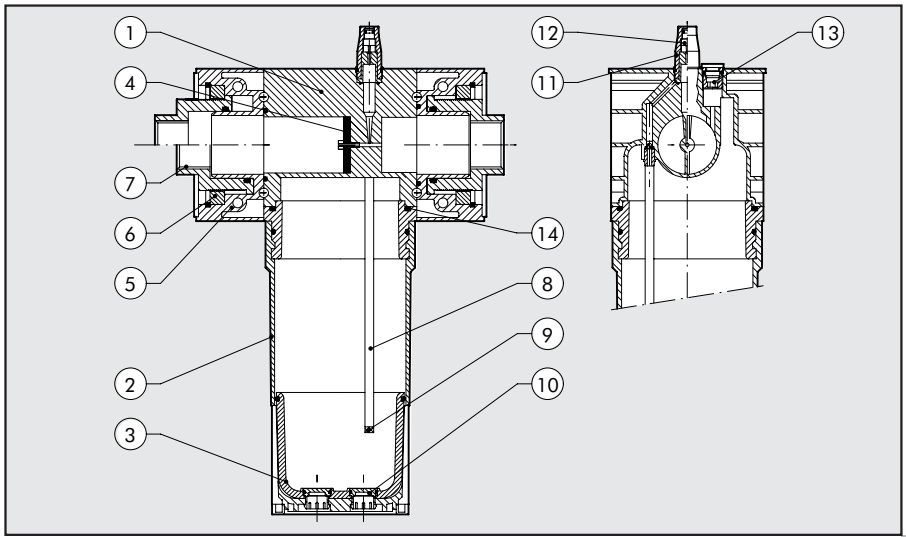
High-performance mist lubricator in various versions.
- Activation guaranteed at low flows
- High ratio of quantity of lubricant to air flow.
- Various oil filling configurations.



TECHNICAL DATA		LUB 400			
Threaded port		G 1"	G 1"1/4	G 1"1/2	G 2"
Type of lubrication		Mist			
Bowl capacity	cm^3	800			
Versions		Standard - CA - CD - ML - CA ML - CDV - CDML			
Max. input pressure	MPa	1.3			
	Bar	13			
	psi	188			
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	18.000			21.000
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	640			750
Fluid		Filtered compressed air			
Max temperature	°C	50			
at 1 MPa; 10 bar; 145 psi	°F	122			
Weight	Kg	4.9			5.7
Wall fixing screws		M6 x 110			
Mounting position		Vertical			
Recommended oils		ISO and UNI FD22 (Energol HPL ÷ Spinesso ÷ Mobil DTE ÷ Tellus Oil)			
Notes on use		Install the lubricator as close as possible to the point of use. Fill the lubricator bowl with oil before pressurizing the system. Do not use cleaning oils, brake fluid oils or solvents in general. For the best lubrication results, set the drip rate to one drop per 300-600 Nl			

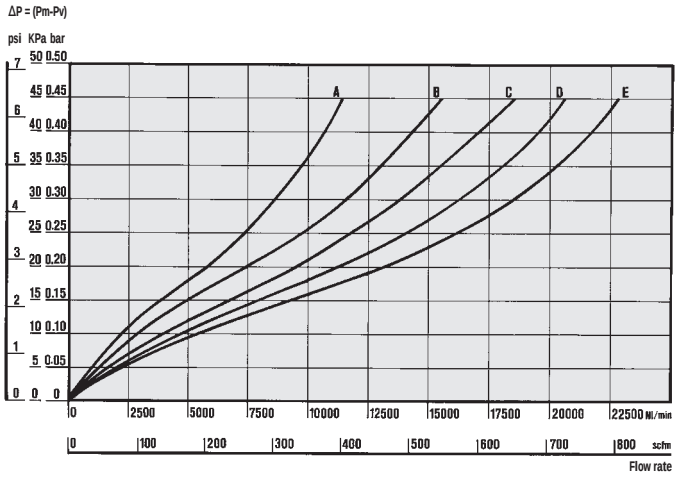
COMPONENTS

① Aluminium body
② Aluminium bowl
③ Clear technopolymer glass
④ NBR Venturi tube diaphragm
⑤ Aluminium end plate
⑥ OT58 brass retaining ring
⑦ OT48 brass threaded bush with axial adjustment
⑧ Rilsan oil suction pipe
⑨ Filter
⑩ Technopolymer plug
⑪ Clear technopolymer inspection dome
⑫ OT58 brass oil flow regulating needle
⑬ OT58 brass oil filling plug
⑭ NBR gaskets

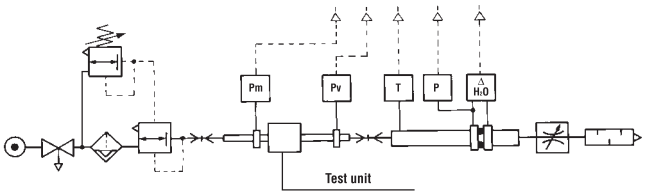


FLOW CHARTS

LUB 400 1''



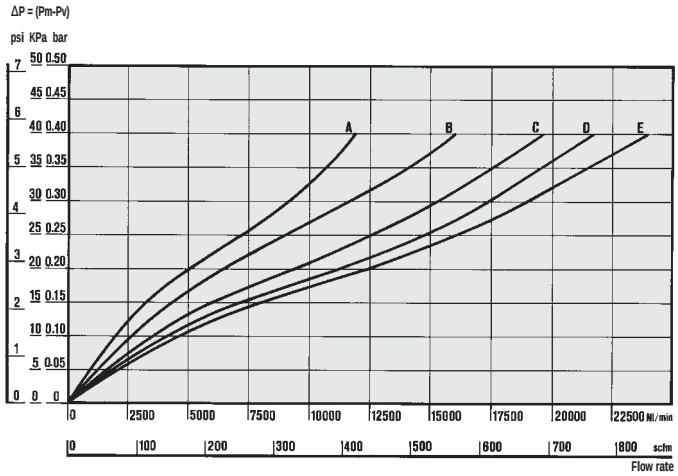
Department of Mechanics
Turin Polytechnic



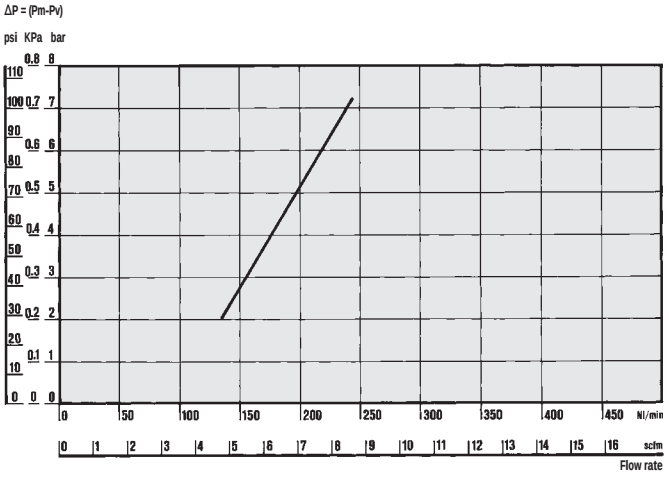
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

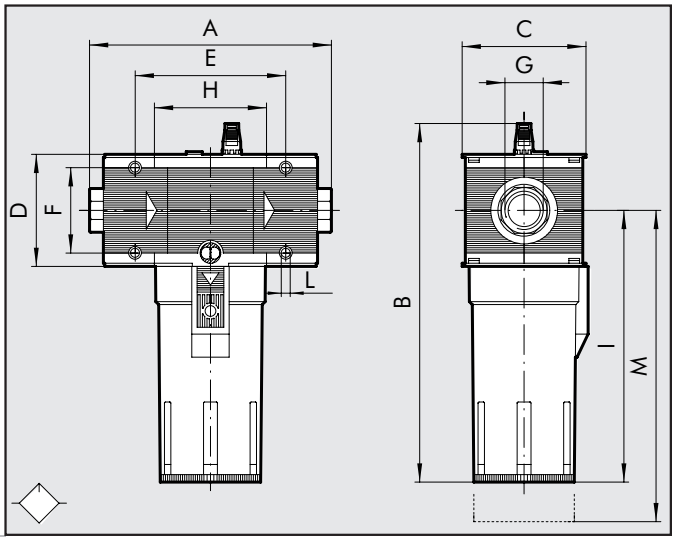
LUB 400 2''



MINIMUM OPERATING FLOW CHART



DIMENSIONS



	LUB 400	LUB 400	LUB 400	LUB 400
Threaded port	G 1''	G 1''1/4	G 1''1/2	G 2''
A	225÷255			283÷313
B	338			
C	116			
D	105			
E	141.4			
F	80			
G	G 1''	G 1''1/4	G 1''1/2	G 2''
H	105.4			
I	256			
L	M6 hole			
M	285			

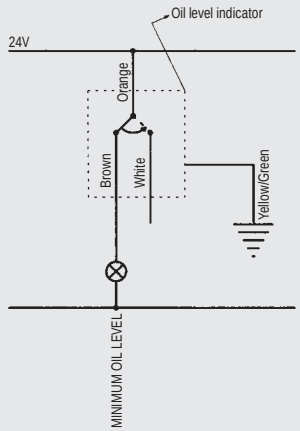
LUBRICATORS : MINUMUM LEVEL (ML)

Available in sizes 300 and 400.
This version gives two electric signals controlling maximum and minimum level. They can be used to control acoustic alarms, lights, etc. There is no signal between minimum and maximum level.

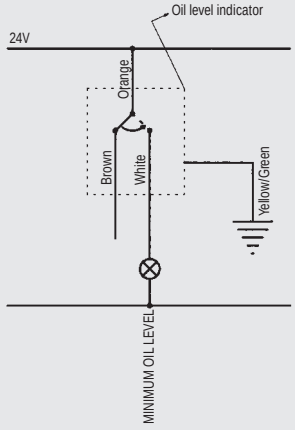
WIRING
Level indicator
White = 1st signal (maximum oil level)
Brown = 2nd signal (minimum oil level)
Orange = Common
Yellow/Green = Earth
Voltage = 24V
Contact = 0.75 A 10W

NB: The unused end plate must be suitably insulated.

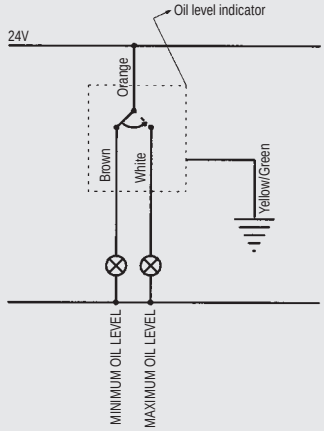
1.1 Minimum level signal



1.2 Maximum level signal



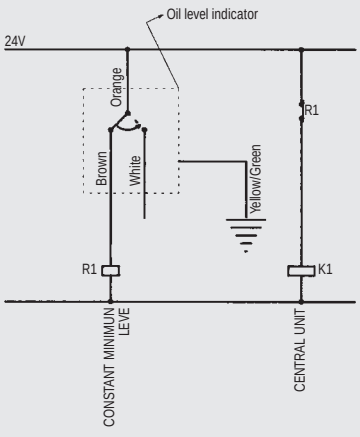
1.3 Minimum and maximum oil level signal



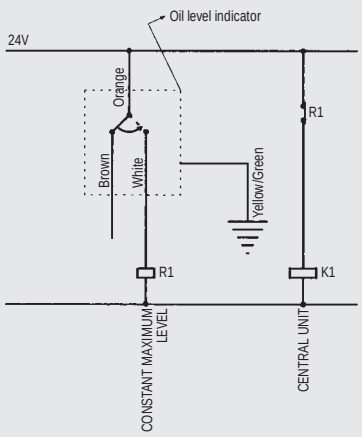
LUBRICATORS: AUTOMATIC MINIMUM LEVEL FILLING (CAML)

Available in size 300 and 400.
Used for filling the bowl with oil during operation of the system only if the oil inlet pressure is higher than the pressure inside the lubricator bowl.
The electric indicator inside the bowl sends an electric signal that is used to activate the oil unit.
When the oil reaches the maximum level, another signal disactivates the unit. In this case the lubrication system operates with the oil level between the maximum and minimum values. If it is necessary to keep the oil level in the bowl constant, only one of the two signals can be used. Pressure range 3-10 bar. Connect the pipe from the central unit to the G1/4 fitting on the bowl. The wiring features are the same as for model ML.

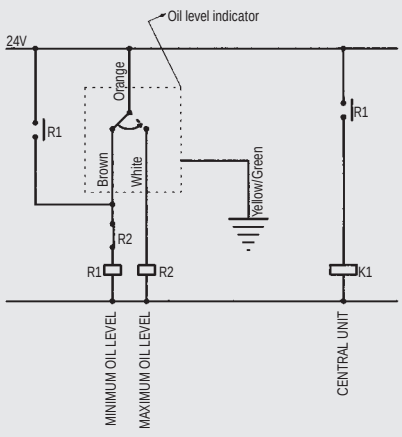
1.1 Constant minimun level



1.2 Constant maximun level



Oil level between maximun and minimum

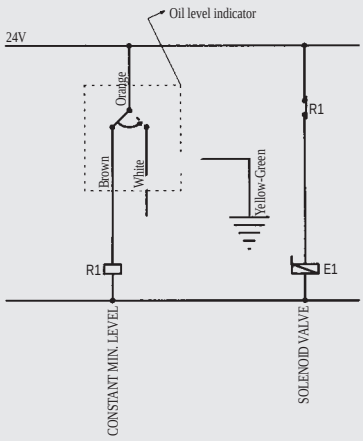


LUBRICATOR: DEPRESSION FILLING WITH MINIMUM LEVEL (CD ML)

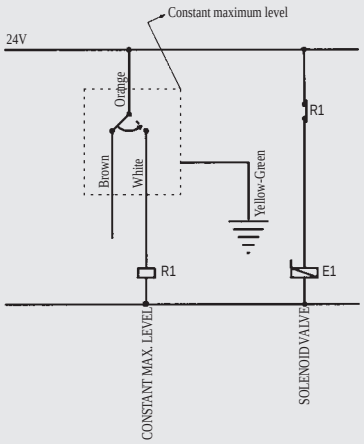
DEPRESSION FILLING WITH MINIMUM LEVEL

Available in sizes 300 and 400, this lubricator is controlled by a solenoid valve (2/2 NC minimum bore 3) situated on the lubricator body. It reduces pressure inside the bowl allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). The electric indicator inside the bowl sends an electric signal used to activate the valve. When the oil reaches the maximum level, another signal disactivates the valve. In this case, the lubricator system operates with the oil level between minimum and maximum. If it is necessary to keep the oil level in the bowl constant, only one of the two signals can be used. Pressure range 3-10 bar. Connect the oil tank to the G1/4 fitting on the bowl.

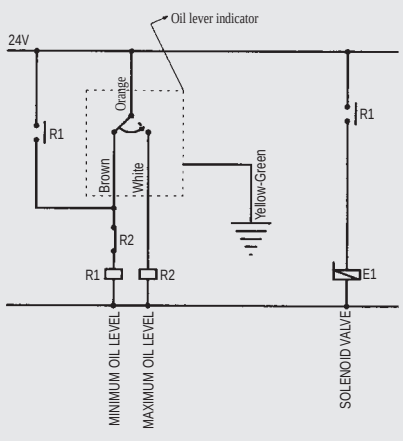
1.1 Constant minimum level



1.2 Constant maximum level



1.3 Oil level between maximum and minimum



OTHER VERSIONS SHOWN IN THE CATALOGUE

AUTOMATIC FILLING (CA)

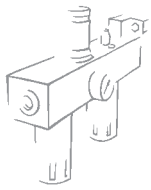
Available in all sizes. The bowl is only filled with oil during operation of the system if the oil inlet pressure is about 3 bar higher than the pressure inside the bowl. In any case, it must not exceed 15 bar.
The float opens and closes the oil intake valve. Lubrication continues during oil filling. The timer can be used to control the central unit so that cycles are performed between zero and the filling pressure. These timed cycles allow the oil level in the lubricator to be topped up.
Connect the tube from the central unit to the G1/8 fitting below the bowl.

FILLING BY DEPRESSION (CD)

Available in all sizes. It is operated by means of a button on the lubricator body. The pressure inside the bowl drops to allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). Oil filling stops when the level of oil raises the float and shuts off a specific valve.
Important – The SK4 lubricator is filled with oil by hand. Filling must stop when the oil level is visible through the spy-hole in the bowl release lever. Pressure range 3-10 bar. Lubrication is discontinued during filling. Connect the oil tank to the G1/4 fitting below the bowl.

FILLING BY DEPRESSION (CVD) WITH VALVE

Available in sizes 300 and 400. It is operated by means of a solenoid valve (2/2 NC minimum bore 3) situated on the lubricator body. The pressure inside the bowl drops to allow it to be filled with oil taken from a tank at ambient pressure, which can be located in a lower position than the lubricator (max. difference in height 2 m). Oil filling stops when the level of oil raises the float and shuts off a specific valve.
Important – The SK4 lubricator is filled with oil by hand. Filling must stop when the oil level is visible through the spy-hole in the bowl release lever. Pressure range 3-10 bar. Lubrication is discontinued during filling. Connect the oil tank to the G1/4 fitting below the bowl.



KEY TO CODES

LUB	100	1/4	STD
ELEMENT	SIZE	THREADED PORT	TYPE OF OIL FILLING
LUB	100	1/4 3/8	STD CA
	200	1/4 3/8 1/2	CD STD CA
	300	1/2 3/4 1	CD ML CA ML
	400	1 1 1/4 1 1/2 2	CDV CD ML

STD: Standard version filled with oil by removing the bowl or through the top cap. Requires circuit relieving.

ORDERING CODES

Code	Description
LUBRICATOR 100	
3281001A	LUB 100 WITHOUT END PLATES
3281002A	LUB 100 CA WITHOUT END PLATES
3281005A	LUB 100 CD MANUAL W/END PLATES
3281001	LUB 100 1/4
3281002	LUB 100 1/4 CA
3281005	LUB 100 1/4 CD MANUAL
3381001	LUB 100 3/8
3381002	LUB 100 3/8 CA
3381005	LUB 100 3/8 CD MANUAL
LUBRICATOR 200	
3481001A	LUB 200 WITHOUT END PLATES
3481002A	LUB 200 CA WITHOUT END PLATES
3481005A	LUB 200 CD MANUAL W/END PLATES
3481001	LUB 200 1/4
3481002	LUB 200 1/4 CA
3481005	LUB 200 1/4 CD MANUAL
3581001	LUB 200 3/8
3581002	LUB 200 3/8 CA
3581005	LUB 200 3/8 CD MANUAL
3681001	LUB 200 1/2
3681002	LUB 200 1/2 CA
3681005	LUB 200 1/2 CD MANUAL

Code	Description
LUBRICATOR 300	
4481001A	LUB 300 WITHOUT END PLATES
4481002A	LUB 300 CA WITHOUT END PLATES
4481003A	LUB 300 ML MANUAL W/END PLATES
4481005A	LUB 300 CD MANUAL W/END PLATES
4481006A	LUB 300 ML-CD AUTOMATIC W/END PLATES
4481007A	LUB 300 ML-CA WITHOUT END PLATES
4481008A	LUB 300 CD AUTOMATIC W/END PLATES
4481001	LUB 300 1/2
4481002	LUB 300 1/2 CA
4481003	LUB 300 1/2 ML
4481005	LUB 300 1/2 CD MANUAL
4481006	LUB 300 1/2 ML-CD AUTOMATIC
4481007	LUB 300 1/2 ML-CA
4481008	LUB 300 1/2 CD AUTOMATIC
4581001	LUB 300 3/4
4581002	LUB 300 3/4 CA
4581003	LUB 300 3/4 ML
4581005	LUB 300 3/4 CD MANUAL
4581006	LUB 300 3/4 ML-CD AUTOMATIC
4581007	LUB 300 3/4 ML-CA
4581008	LUB 300 3/4 CD AUTOMATIC
4681001	LUB 300 1
4681002	LUB 300 1 CA
4681003	LUB 300 1 ML
4681005	LUB 300 1 CD MANUAL
4681006	LUB 300 1 ML-CD AUTOMATIC
4681007	LUB 300 1 ML-CA
4681008	LUB 300 1 CD AUTOMATIC

Code	Description
LUBRICATOR 400	
6181001A	LUB 400 WITHOUT END PLATES
6181002A	LUB 400 CA WITHOUT END PLATES
6181003A	LUB 400 ML WITHOUT END PLATES
6181004A	LUB 400 CD MANUAL W/END PLATES
6181006A	LUB 400 ML-CD AUTOMATIC W/END PLATES
6181007A	LUB 400 ML-CA WITHOUT END PLATES
6181008A	LUB 400 CD AUTOMATIC W/END PLATES
6181001	LUB 400 1
6181002	LUB 400 1 CA
6181003	LUB 400 1 ML
6181004	LUB 400 1 CD MANUAL
6181006	LUB 400 1 ML-CD AUTOMATIC
6181007	LUB 400 1 ML-CA
6181008	LUB 400 1 CD AUTOMATIC
6281001	LUB 400 1 1/4
6281002	LUB 400 1 1/4 CA
6281003	LUB 400 1 1/4 ML
6281004	LUB 400 1 1/4 CD MANUAL
6281006	LUB 400 1 1/4 ML-CD AUTOMATIC
6281007	LUB 400 1 1/4 ML-CA
6281008	LUB 400 1 1/4 CD AUTOMATIC
6381001	LUB 400 1 1/2
6381002	LUB 400 1 1/2 CA
6381003	LUB 400 1 1/2 ML
6381004	LUB 400 1 1/2 CD MANUAL
6381006	LUB 400 1 1/2 ML-CD AUTOMATIC
6381007	LUB 400 1 1/2 ML-CA
6381008	LUB 400 1 1/2 CD AUTOMATIC
6481001	LUB 400 2
6481002	LUB 400 2 CA
6481003	LUB 400 2 ML
6481004	LUB 400 2 CD MANUAL
6481006	LUB 400 2 ML-CD AUTOMATIC
6481007	LUB 400 2 ML-CA
6481008	LUB 400 2 CD AUTOMATIC

Skillair® DEPURATOR

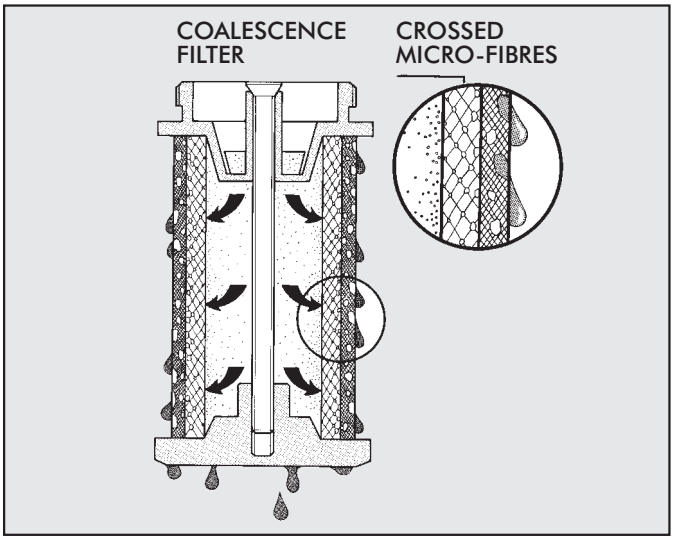
The role of the depurator is to separate the liquid and solid particles contained in the compressed air with a high degree of efficiency. This separation is carried out using a special filtering element called a "coalescence cartridge".

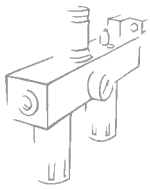


TECHNICAL DATA		DEP 100	DEP 100	DEP 200	DEP 200	DEP 200	DEP 300	DEP 300	DEP 300
Threaded port		G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
Degree of filtering		99.97% at 0.01 µm							
Max. inlet pressure	MPa	1.5		1.3					
	Bar	15		13					
	psi	217		188					
Maximun suggested flow rate		Please look at the flow rate curves at page 3.1/33							
Suggested flow at 6 bar	Nl/min	230		360			500		
Fluid		5µm filtered air							
Max temperature	°C	50							
at 1 MPa; 10 bar; 145 psi	°F	122							
Weight	Kg	0.4		0.9			1.4		
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70		
Mounting position		Vertical							
Bowl capacity	cm^3	22		45			75		
Drain		Manual/Semi-auto (RMSA)					Manual/Semi-auto (RMSA)		
		Automatic (SAC)					Automatic (RA)		
Notes on use		It is advisable to mount a 5mm pre-filter in order to separate the solid particles first.							
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							

HOW THE COALESCENCE CARTRIDGE WORKS

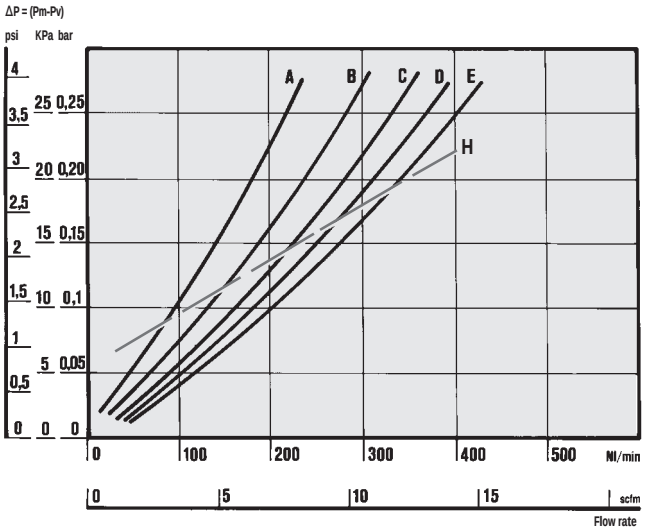
Air from the mains – full of impurities – flows into the coalescence cartridge and then passes through the crossed micro-fibres that make up the cartridge. During this movement the liquid particles come into contact with the crossed micro-fibres and adhere to them. Due to the air pressure and gravity they join up with other micro-drops at each cross-over point and gradually increase in volume, leading to the physical phenomenon called coalescence. When they stop moving, the drops deposit on the outside of the cartridge, from which they detach and drop to the bottom.
Since the volume of liquid leaving the cartridge is exactly the same as the drops arriving, the coalescence cartridge ought to work indefinitely. Solid particles are caught with the same efficiency but, unlike drops, they are not drained out and clog the cartridge. To get round this problem, it is necessary to mount a 5mm pre-filter before the fine oil filter to separate the solid particles first.

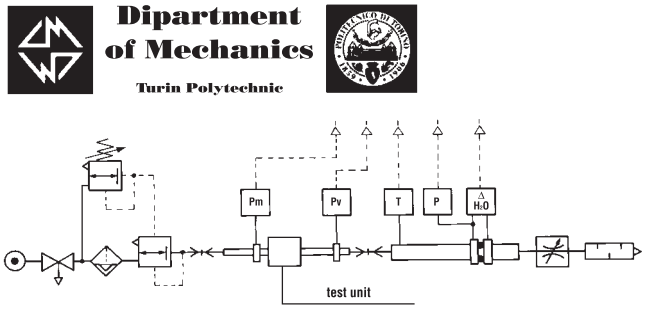




FLOW CHARTS

DEP 100 1/4 - 3/8

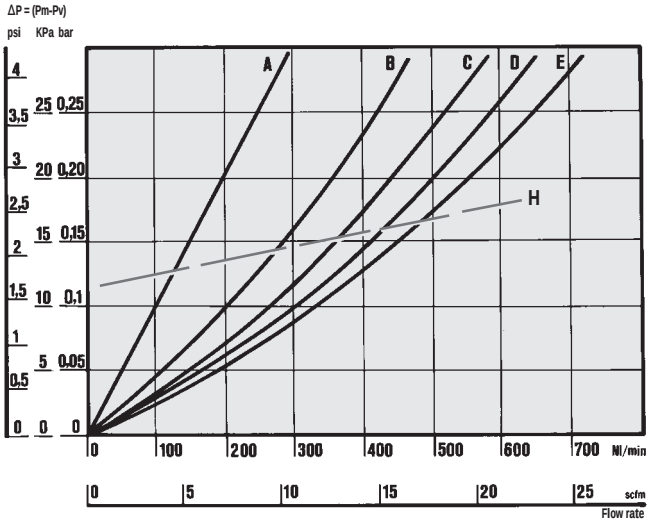




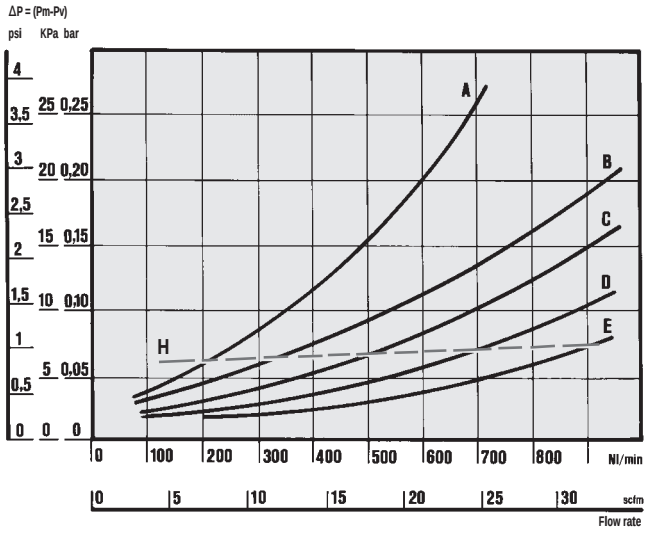
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi
(H) = maximum flow rate recommended for optimal operation

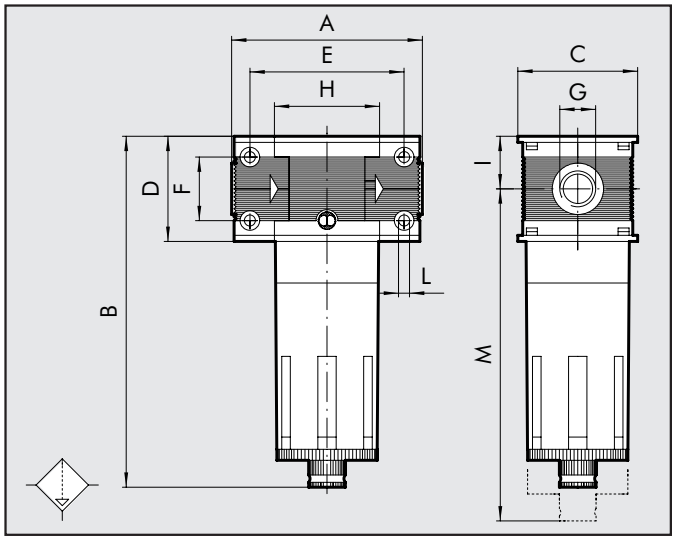
DEP 200 1/4 - 3/8 - 1/2



DEP 300 1/2 - 3/4 - 1



DIMENSIONS



	DEP 100	DEP 100	DEP 200	DEP 200	DEP 200	DEP 300	DEP 300	DEP 300
Th. p.	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	144		175			195		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	43		55.5			65		
I	21.5		27.5			32.5		
L	M4 hole		M5 hole			M5 hole		
M	137		196			215		

Skillair® 400 DEPURATOR

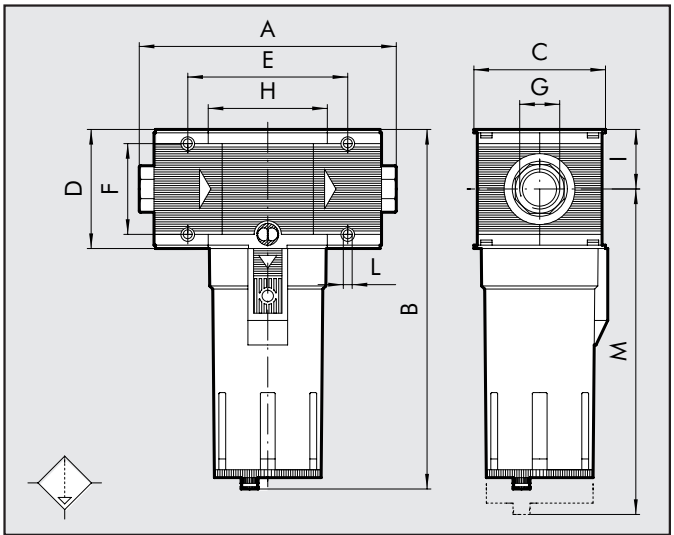
- Coalescence cartridge with a very high degree of filtration
- Metal bowl with bayonet coupling, safety lock and 360° condensate display
- Manual/semi-auto condensate drain
- Optional activated carbon cartridge with 0.003 ppm oil residue (food industry, pharmaceutics, cosmetics).



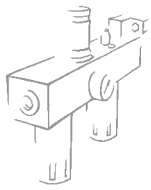
TECHNICAL DATA

		DEP 400			
Threaded port		G 1"	G 1"1/4	G 1"1/2	G 2"
Degree of filtration		99.99% at 0.01 µm			
Max. inlet pressure	MPa	1.3			
	Bar	13			
	psi	188			
Maximun suggested flow rate		Please look at the flow rate curves at page 3.1/35			
Suggested flow at 6 bar	Nl/min	2300			2250
Fluid		5 µm filtered air			
Max temperature	°C	50			
at 1 MPa; 10 bar; 145 psi	°F	122			
Weight	Kg	4.2			5
Wall fixing screws		M6x110			
Mounting position		Vertical			
Drain		Manual/semi-auto (RMSA) - Automatic (RA)			
Bowl capacity	cm^3	270			
Notes on use		It is advisable to mount a 5mm pre-filter in order to separate the solid particles first. Series 400 end plates come with a patented system with a rotary sliding end joint to allow the unit to be adapted to the pipe cutting distance (see page 3.1/03).			
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			

DIMENSIONS

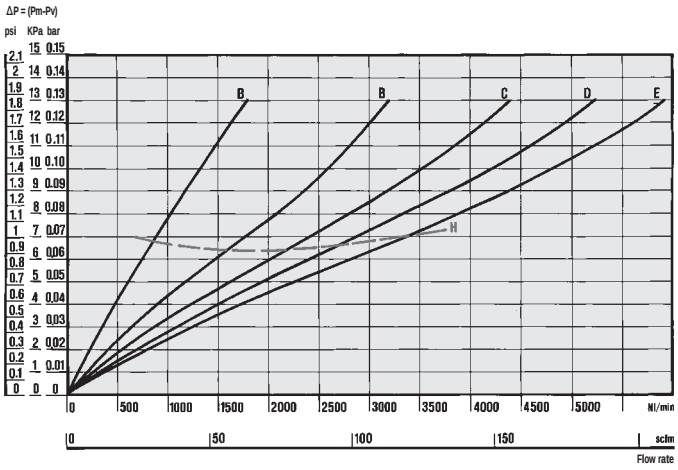


	LUB 400	LUB 400	LUB 400	LUB 400
Threaded port	G 1"	G 1"1/4	G 1"1/2	G 2"
A	225÷255			283÷313
B	320			
C	116			
D	105			
E	141.4			
F	80			
G	G 1"	G 1"1/4	G 1"1/2	G 2"
H	105.4			
I	52.5			
L	M6 hole			
M	378			



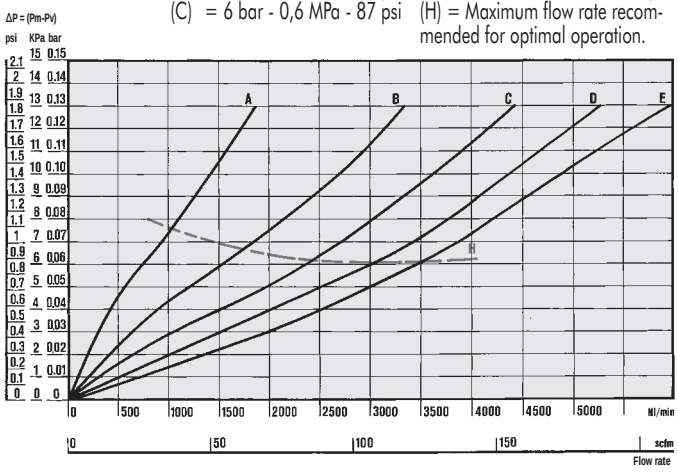
FLOW CHARTS

DEP 400 1''



DEP 400 2''

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi
(H) = Maximum flow rate recommended for optimal operation.



KEY TO CODES

DEP	100	1/4	RMSA
ELEMENT	SIZE	THREADED PORT	TYPE OF DRAIN
DEP	100	1/4 3/8	RMSA
	200	1/4 3/8 1/2	
	300	1/2 3/4 1	RMSA RA
	400	1 1 1/4 1 1/2 2	

RMSA: Manual/semi-auto drain
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

Code	Description
SKILLAIR 100 DEPURATOR	
3288001A	D 100 RMSA WITHOUT END PLATES
3288002A	D 100 SAC WITHOUT END PLATES
3288001	D 100 1/4 RMSA
3288002	D 100 1/4 SAC
3388001	D 100 3/8 RMSA
3388002	D 100 3/8 SAC
SKILLAIR 200 DEPURATOR	
3488001A	D 200 RMSA WITHOUT END PLATES
3488002A	D 200 SAC WITHOUT END PLATES
3488001	D 200 1/4 RMSA
3488002	D 200 1/4 SAC
3588001	D 200 3/8 RMSA
3588002	D 200 3/8 SAC
3688001	D 200 1/2 RMSA
3688002	D 200 1/2 SAC

Code	Description
SKILLAIR 300 DEPURATOR	
4488001A	D 300 RMSA WITHOUT END PLATES
4488002A	D 300 RA WITHOUT END PLATES
4488001	D 300 1/2 RMSA
4488002	D 300 1/2 RA
4588001	D 300 3/4 RMSA
4588002	D 300 3/4 RA
4688001	D 300 1 RMSA
4688002	D 300 1 RA

Code	Description
SKILLAIR 400 DEPURATOR	
6188001A	D 400 RMSA WITHOUT END PLATES
6188002A	D 400 RA WITHOUT END PLATES
6188001	D 400 1 RMSA
6188002	D 400 1 RA
6288001	D 400 1 1/4 RMSA
6288002	D 400 1 1/4 RA
6388001	D 400 1 1/2 RMSA
6388002	D 400 1 1/2 RA
6488001	D 400 2 RMSA
6488002	D 400 2 RA

Skillair® SHUT-OFF VALVE

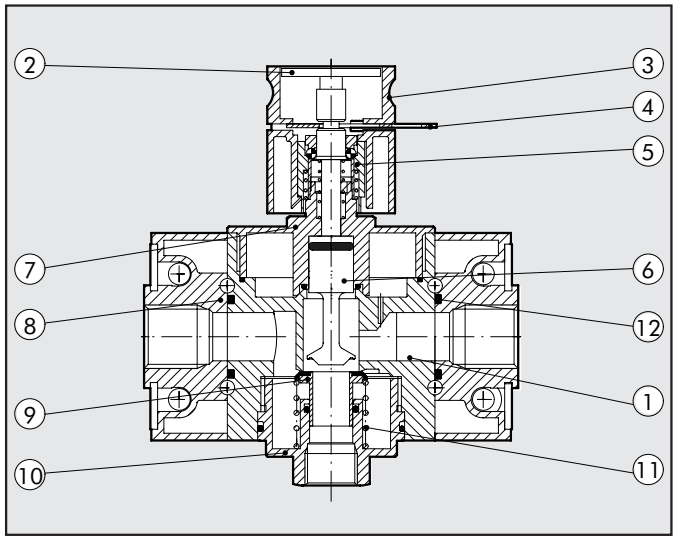
The job of this valve is to make the circuit independent from the air supply. It is basically a three-way valve. In the closed position, it cuts off the air supply and discharges the downstream circuit at the same time, which is means it is particularly useful during servicing operations. The hand-operated version can be padlocked to lock the knob in a closed position so that it can only be opened by someone with the right key. An interlocked version is available for low pressure operation.



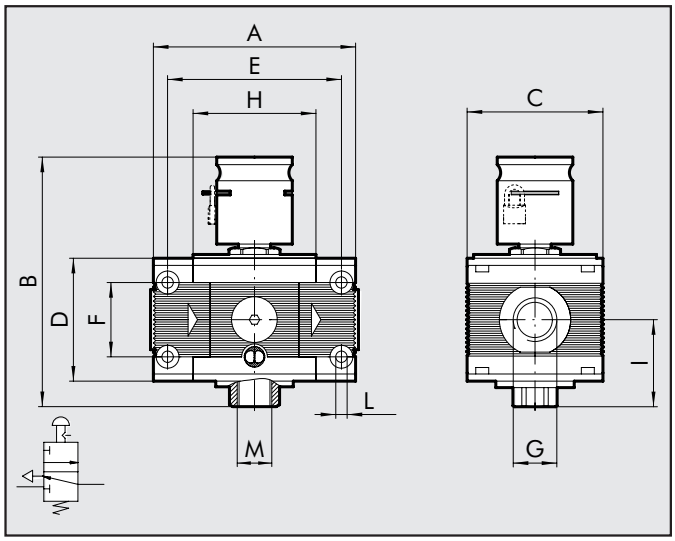
TECHNICAL DATA		V3V 100	V3V 100	V3V 200	V3V 200	V3V 200	V3V 300	V3V 300	V3V 300
Threaded port		G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
Min. inlet pressure for solenoid version **	MPa	0.3		0.3			0.2		
	bar	3		3			2		
	psi	43.5		43.5			29		
Max. inlet pressure*	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1300		2400			3200		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	46		85			113		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1650		3000			4700		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	58		106			166		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous							
Max temperature	°C	50		50			50		
	°F	122		122			122		
Weight	Kg	~ 0.5		~ 0.8			~ 1.2		
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70		
Mounting		In any position							
Type of control		Manual – Pneumatic – Solenoid – Solenoid pilot-assisted							
* 1 MPa – 10 bar – 145 psi for solenoid version									
** 0.01 MPa – 0.1 bar – 1.45 psi for manual, pneumatic and pilot-assisted versions with controls min. 0.3 MPa 3 bar 43.5 psi.									

COMPONENTS

① Technopolymer body
② Operating button
③ Technopolymer knob
④ Stainless steel safety lamination
⑤ Locking unit
⑥ OT58 brass piston rod
⑦ OT58 brass top plug
⑧ Zamak end plate
⑨ Valve with vulcanized NBR gasket
⑩ OT58 brass bottom plug
⑪ Stainless steel valve spring
⑫ NBR gaskets



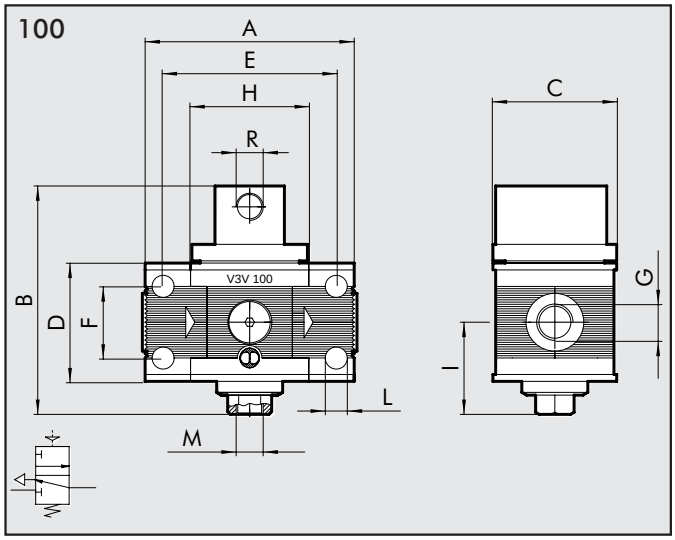
DIMENSIONS OF V3V MANUAL VERSION (LOCKABLE)



	V3V 100	V3V 100	V3V 200	V3V 200	V3V 200	V3V 300	V3V 300	V3V 300
Thr. p.	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	106		119			132		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	43		55.5			65		
I	33.5		40			46.5		
L	M4 hole		M5 hole			M5 hole		
M	G 1/8		G 1/4			G 3/8		
(relief)								

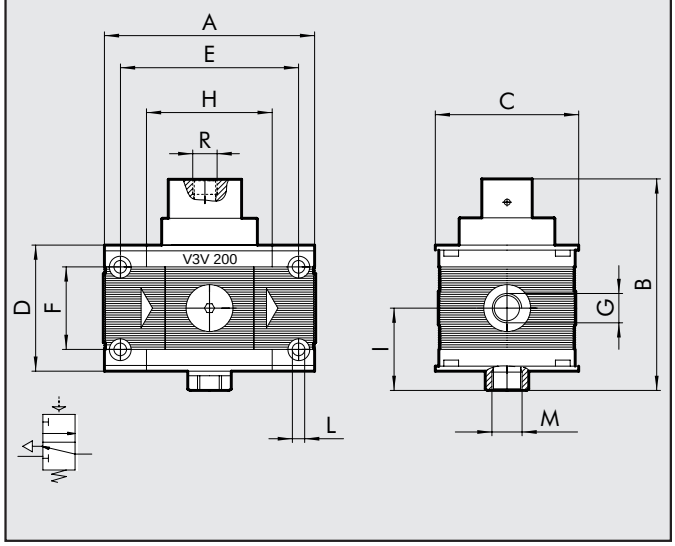
DIMENSIONS OF V3V PNEUMATIC VERSION

100

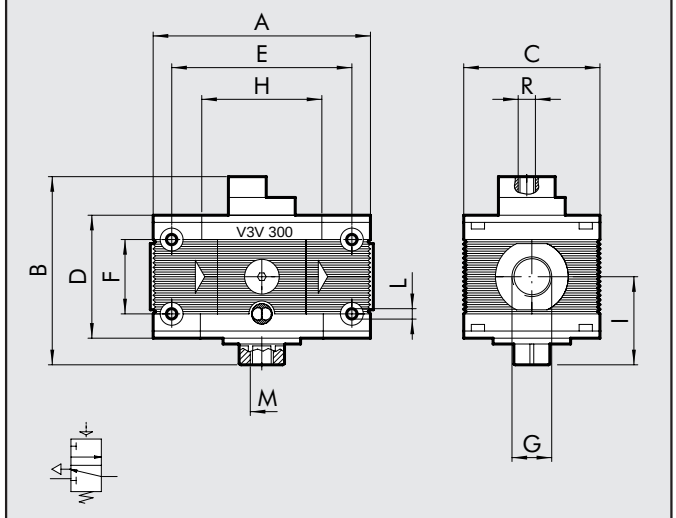


	V3V 100	V3V 100	V3V 200	V3V 200	V3V 200	V3V 300	V3V 300	V3V 300
Thr. p.	G 1/4	G 3/8	G1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	78		93.5			110		112
B	83		96			106		
C	50		63			72		
D	43		55			65		
E	63		78.5			92		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	43		55.5			65		
I	33.5		40			46.5		
L	M4 hole		M5 hole			M5 hole		
M	G 1/8		G 1/4			G 3/8		
(relief)								
R	G 1/8		G 1/8			G 1/8		
(pilot)								

200



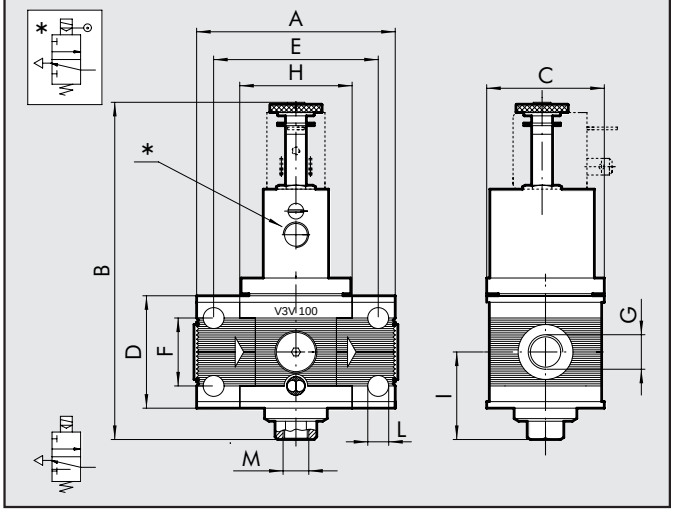
300



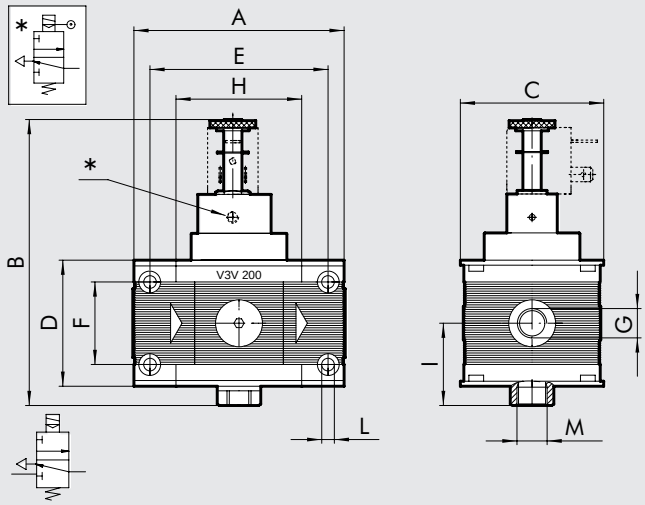
DIMENSIONS OF V3V SOLENOID/SOLENOID PILOT-ASSISTED VALVE

	V3V 100	V3V 200	V3V 300
Threaded port	G 1/4 | G 3/8	G1/4 | G 3/8 | G 1/2	G 1/2 | G 3/4 | G 1''
A	78	93.5	110 | 112
B Solenoid	128	129	152
Solenoid pilot-ass.	129	129	–
CNOMO control	–	123	125
CNOMO pilot-ass.	–	–	138
Microsol control	–	–	124
C	50	63	72
D	43	55	65
E	63	78.5	92
F	26	36	42
G	G 1/4 | G 3/8	G 1/4 | G 3/8 | G 1/2	G 1/2 | G 3/4 | G 1''
H	43	55.5	65
I	33.5	40	46.5
L	M4 hole	M5 hole	M5 hole
M (relief)	G 1/8	G 1/4	G 3/8
* (pilot)	G 1/8	M5	M5

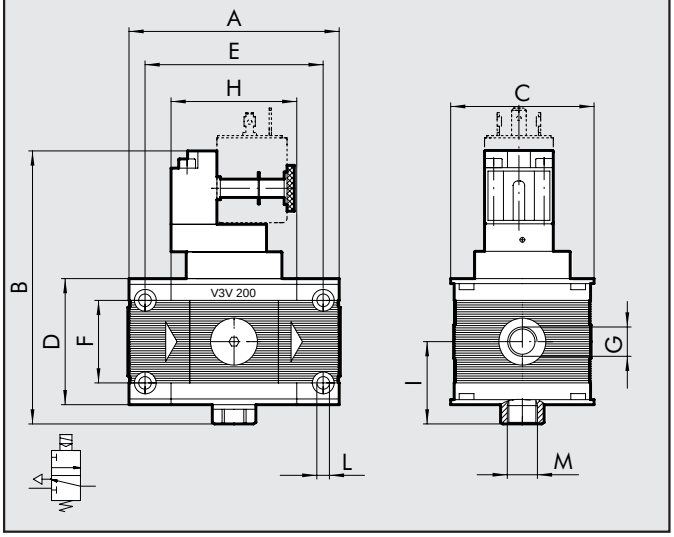
V3V 100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



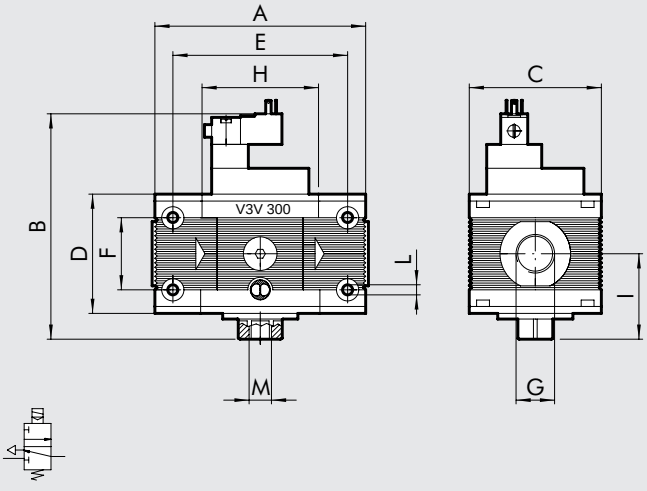
V3V 200 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



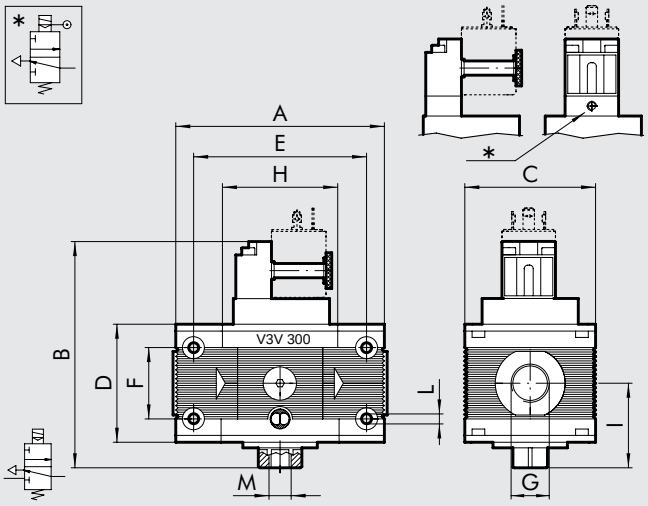
V3V 200 CNOMO

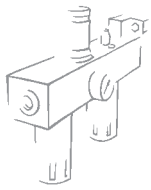


V3V 300 SOLENOID MICRO VALVE



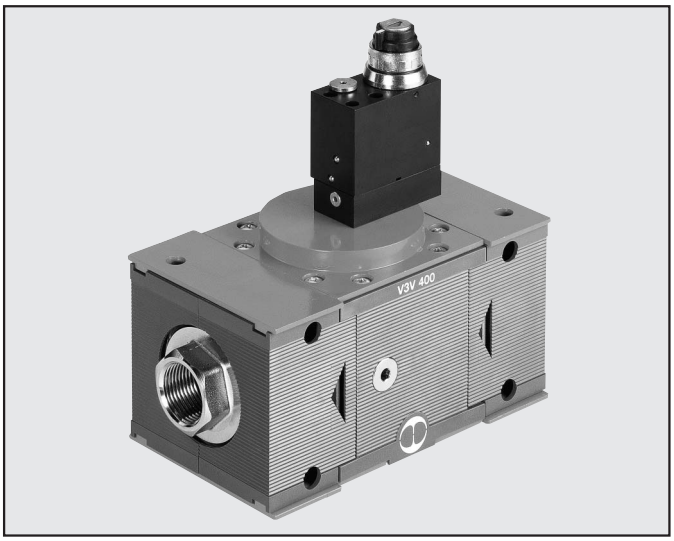
V3V 300 CNOMO SOLENOID VALVE/ CNOMO SOLENOID PILOT-ASSISTED





Skillair® 400 SHUT-OFF VALVE

The main module of size 400 is now available with manual key-operated, pneumatic, solenoid and solenoid pilot-assisted.
N.B. With size 400, when the V3V is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the V3V, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the V3V relief port.
For connecting instruction see page 3.1/15.



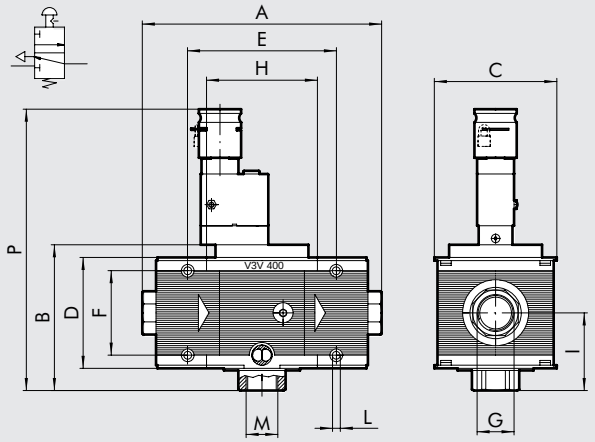
TECHNICAL DATA		V3V 400	V3V 400	V3V 400	V3V 400
Threaded port		G 1"	G 1"1/4	G 1"1/2	G 2"
Min. inlet pressure **	MPa	0.3			
	bar	3			
	psi	43.5			
Max. inlet pressure*	MPa	1.3			
	bar	13			
	psi	188			
Flow rate at 6.3 bar (0.63 MPa-91 psi)		13000 Nl/min			14000 Nl/min
ΔP 0.5 bar (0.05 MPa – 7 psi)		460 scfm			494 scfm
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous			
Temperatura max.	°C	50			
	°F	122			
Weight	Kg	4.8			5.6
Wall fixing screws		M6x110			
Mounting		In any position			
Type of control		Manual – Key-operated- Pneumatic – Solenoid – Solenoid pilot-assisted			
Notes:		The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance.			

* 1 MPa – 10 bar – 145 psi for solenoid version
** 0.01 MPa – 0.1 bar – 1.45 psi for pneumatic and pilot-assisted versions with controls at min. 0.3 MPa 3 bar 43.5 psi.

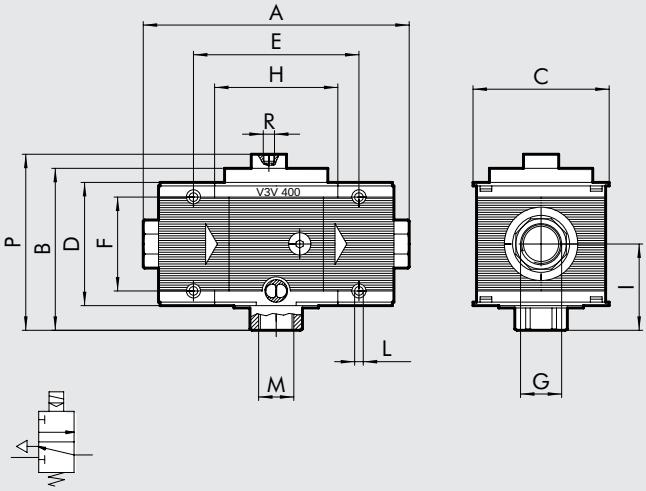
DIMENSIONS OF V3V 400 VALVE

	V3V 400	V3V 400	V3V 400	V3V 400
Threaded port	G 1"	G 1"1/4	G 1"1/2	G 2"
A	225÷255			283÷313
B	137			
C	116			
D	105			
E	141.4			
F	80			
G	G 1"	G 1"1/4	G 1"1/2	G 2"
H	105.4			
I	72.5			
L	M6 hole			
M (relief)	G 1"			
P Manual	266			
Key-operated	249			
CNOMO control	169			
Pneumatic control	150			
R (pilot)	G 1/8			
* (pilot-assisted)	M5			

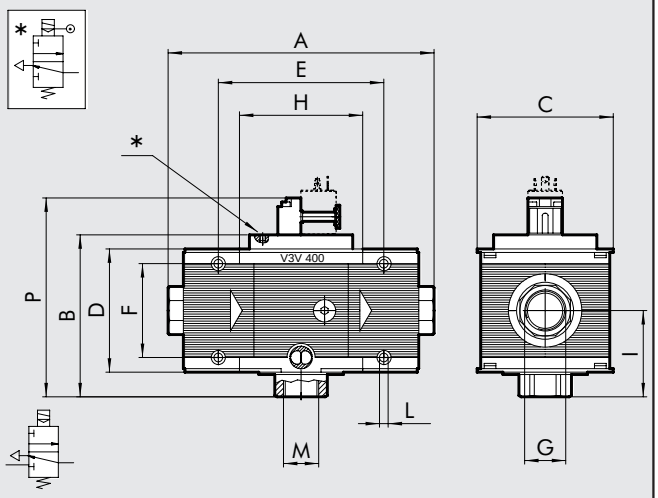
V3V 400 MANUAL (LOCKABLE)



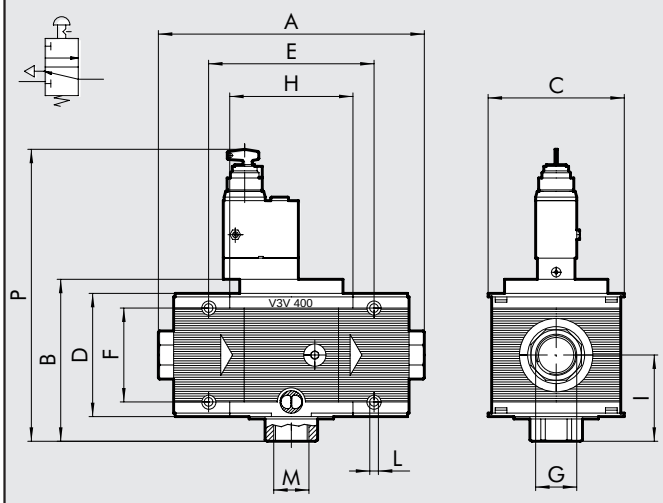
V3V 400 PNEUMATIC

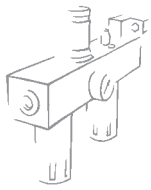


V3V 200 SOLENOID CNOMO/SOLENOID PILOT-ASSISTED



V3V 400 KEY-OPERATED





KEY TO CODES

V3V	100	1/4	MANUAL
ELEMENT	SIZE	THREADED PORT	TYPE OF COMMAND
V3V	100	1/4 3/8	MANUAL
	200	1/4 3/8 1	PNEUMATIC
	300	1/2 3/4 1	SOLENOID PILOT ASSISTED
	400	1 1 1/4 1 1/2 2	SOLENOID

ORDERING CODES

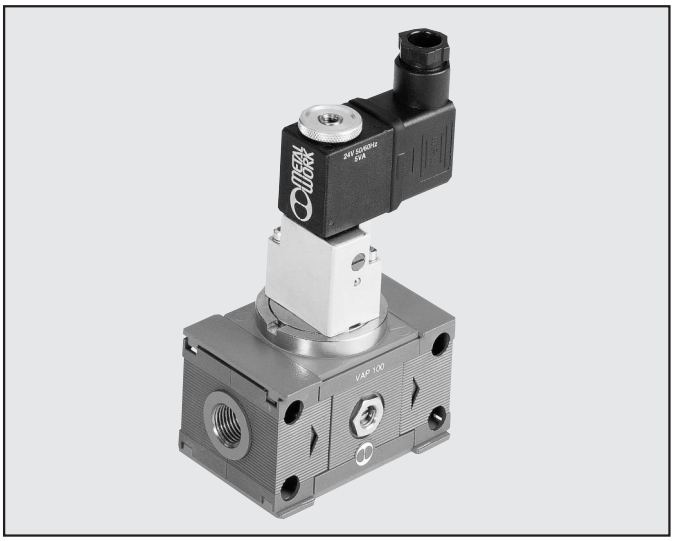
Code	Description
SKILLAIR 100 3-WAY VALVE	
3270001A	V3V 100 LOCKABLE WITHOUT END PLATES
3269000A	V3V 100 PNEUM. WITHOUT END PLATES
3269001A	V3V 100 SOLENOID WITHOUT END PLATES
3269002A	V3V 100 SOL. PILOT-ASS. W/END PLATES
3270001	V3V 100 1/4
3269000	V3V 100 1/4 PNEUM.
3269001	V3V 100 1/4 SOLENOID
3269002	V3V 100 1/4 SOLENOID PILOT-ASS.
3370001	V3V 100 3/8
3369000	V3V 100 3/8 PNEUM.
3369001	V3V 100 3/8 ELPN.
3369002	V3V 100 3/8 SOLENOID PILOT-ASS.
SKILLAIR 200 3-WAY VALVE	
3470001A	V3V 200 LOCKABLE WITHOUT END PLATES
3469000A	V3V 200 PNEUM. WITHOUT END PLATES
3469001A	V3V 200 SOL. WITHOUT END PLATES
3469002A	V3V 200 SOL. PILOT-ASS. W/END PLATES
3469004A	V3V 200 SOL. CNOMO COMM. W/END PLATES
3469005A	V3V 200 SOL. CNOMO COMM. ASS. W/END PLATES
3470001	V3V 200 1/4 LOCKABLE
3469000	V3V 200 1/4 PNEUM.
3469001	V3V 200 1/4 SOLENOID
3469002	V3V 200 1/4 SOLENOID PILOT-ASS.
3469004	V3V 200 1/4 SOL. CNOMO COM.
3469005	V3V 200 1/4 SOL. CNOMO PILOT-ASS.
3570001	V3V 200 3/8 LOCKABLE
3569000	V3V 200 3/8 PNEUM.
3569001	V3V 200 3/8 SOLENOID
3569002	V3V 200 3/8 SOLENOID PILOT-ASS.
3569004	V3V 200 3/8 SOLENOID CNOMO CMM.
3569005	V3V 200 3/8 SOL. CNOMO PILOT-ASS..
3670001	V3V 200 1/2 LOCKABLE
3669000	V3V 200 1/2 PNEUM.
3669001	V3V 200 1/2 SOLENOID
3669002	V3V 200 1/2 SOLENOID PILOT-ASS.
3669004	V3V 200 1/2 SOL. CNOMO COMM.
3669005	V3V 200 1/2 SOL. CNOMO PILOT-ASS.

Code	Description
SKILLAIR 300 3-WAY VALVE	
4470001A	V3V 300 LOCKABLE WITHOUT END PLATES
4469000A	V3V 300 PNEUM. WITHOUT END PLATES
4469006A	V3V 300 SOL. MICRO 24V DC W/END P.
4469007A	V3V 300 SOL. MICRO 24V 50/60HZ W/END P.
4469008A	V3V 300 SOL. MICRO 110V 50/60HZ W/END
P.4469009A	V3V 300 SOL. MICRO 220V 50/60HZ W/END
P.4469004A	V3V 300 SOL. CNOMO COMM. WI/ END P.
4469005A	V3V 300 SOL. CNOMO COMM. ASS. WI/ END P.
4470001	V3V 300 1/2 LOCKABLE
4469000	V3V 300 1/2 PNEUM.
4469006	V3V 300 1/2 SOLENOID MICRO 24V DC
4469007	V3V 300 1/2 SOL. MICRO 24V 50/60HZ
4469008	V3V 300 1/2 SOL. MICRO 110V 50/60HZ
4469009	V3V 300 1/2 SOL. MICRO 220V 50/60HZ
4469004	V3V 300 1/2 SOLENOID CNOMO
4469005	V3V 300 1/2 SOL. CNOMO ASS.
4570001	V3V 300 3/4 LOCKABLE
4569000	V3V 300 3/4 PNEUM.
4569006	V3V 300 3/4 SOL. MICRO 24V DC
4569007	V3V 300 3/4 SOL. MICRO 24V 50/60HZ
4569008	V3V 300 3/4 SOL. MICRO 110V 50/60HZ
4569009	V3V 300 3/4 SOL. MICRO 220V 50/60HZ
4569004	V3V 300 3/4 SOL. CNOMO
4569005	V3V 300 3/4 SOL. CNOMO ASS.
4669000	V3V 300 1 PNEUM.
4669006	V3V 300 1 SOL. MICRO 24V DC
4669007	V3V 300 1 SOL. MICRO 24V 50/60HZ
4669008	V3V 300 1 SOL. MICRO 110V 50/60HZ
4669009	V3V 300 1 SOL. MICRO 220V 50/60HZ
4669004	V3V 300 1 SOL. CNOMO
4669005	V3V 300 1 SOL. CNOMO ASS.
4670001	V3V 300 1 LOCKABLE

Code	Description
SKILLAIR 400 3-WAY VALVE	
6169010A	V3V 400 KEY-OPERATED WITHOUT END PLATES
6169000A	V3V 400 PNEUM. WITHOUT END PLATES
6169004A	V3V 400 SOL. PILOT-ASSISTED W/END PLATES
6169005A	V3V 400 SOLENOID CNOMO PILOT-ASSISTED WITHOUT END PLATES
6170002A	V3V 400 LOCKABLE WITHOUT END PLATES
6169010	V3V 400 1 KEY-OPERATED
6169000	V3V 400 1 PNEUMATIC
6169004	V3V 400 1 CNOMO SOLENOID
6169005	V3V 400 1 CNOMO SOL. PILOT-ASSISTED
6269010	V3V 400 1 1/4 KEY-OPERATED
6269000	V3V 400 1 1/4 PNEUMATIC
6269004	V3V 400 1 1/4 CNOMO SOLENOID
6269005	V3V 400 1 1/4 CNOMO SOLENOID PILOT-ASSISTED
6369010	V3V 400 1 1/2 KEY-OPERATED
6369000	V3V 400 1 1/2 PNEUMATIC
6369004	V3V 400 1 1/2 CNOMO SOLENOID
6369005	V3V 400 1 1/2 CNOMO SOLENOID PILOT-ASSISTED
6469010	V3V 400 2 KEY-OPERATED
6469000	V3V 400 2 PNEUMATIC
6469004	V3V 400 2 CNOMO SOLENOID
6469005	V3V 400 2 CNOMO SOLENOID PILOT-ASSISTED
6170002	V3V 400 1" LOCKABLE
6270002	V3V 400 1 1/4" LOCKABLE
6370002	V3V 400 1 1/2" LOCKABLE
6470002	V3V 400 2" LOCKABLE

Skillair® PROGRESSIVE START VALVE

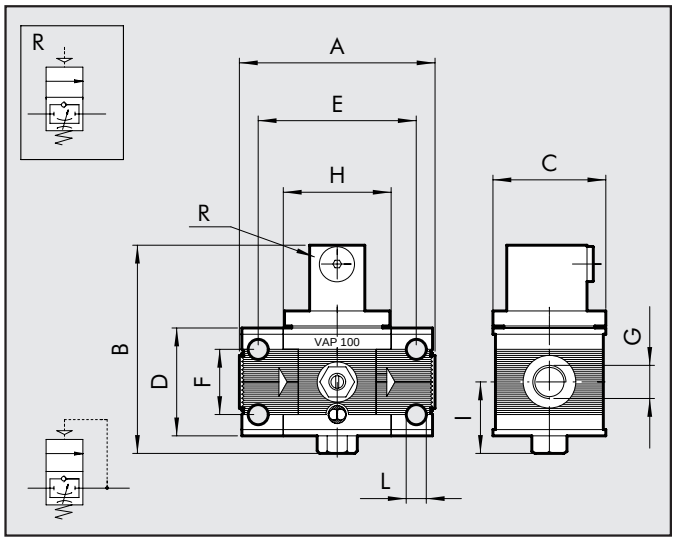
The 2/2 progressive valve comes in two versions, with solenoid or pneumatic actuation.
• STD progressive start valve: a differential balanced valve automatically opens the air port fully when the downstream pressure is about 50% of the upstream pressure.
• Progressive start valve with pneumatic or solenoid actuation: without a pilot, the upstream air flows downstream through the regulation needle. When an external or pneumatic solenoid signal is generated, the valve opens the main port to create full flow. It does not relieve the downstream circuit.



TECHNICAL DATA		VAP 100	
Threaded port		G 1/4"	G 3/8"
Min. inlet pressure **	MPa	0.3	
	bar	3	
	psi	43.5	
Max. inlet pressure*	MPa	1.5	
	bar	15	
	psi	217	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1300	
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	46	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	2000	
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	71	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous	
Max temperature	°C	50	
	°F	122	
Weight	Kg	0.5 ~	
Wall fixing screws		M4x50	
Mounting		In any position	
Type of control		Automatic - Pneumatic – Solenoid – Solenoid pilot-assisted	

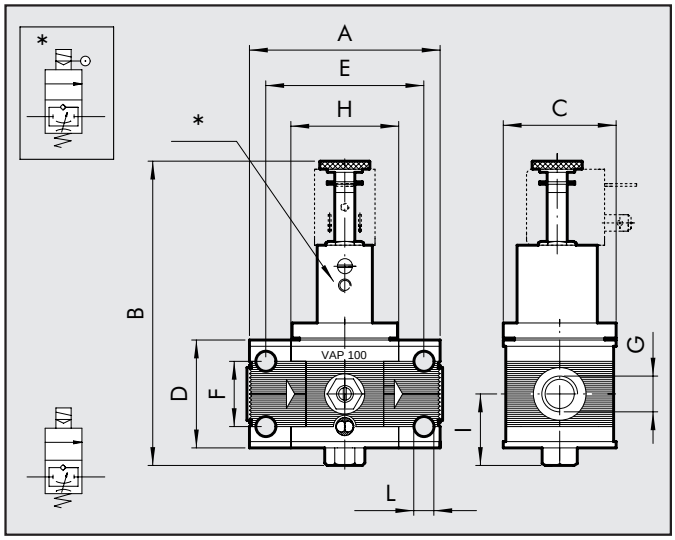
** 0.01 MPa – 0.1 bar – 1.45 psi for pneumatic and pilot-assisted versions with controls at min. 0.3 MPa 3 bar 43.5 psi.
* 1 MPa – 10 bar – 1.45 psi

DIMENSIONS OF VAP 100 STD/PNEUMATIC VALVE



	VAP 100	
Threaded port	G 1/4	G 3/8
A	78	
B	89	
C	50	
D	43	
E	63	
F	26	
G	G 1/4	G 3/8
H	43	
I	34.5	
L	M4 hole	
R (pilot - pneumatic version)	G 1/8	

DIMENSIONS OF VAP 100 SOLENOID/SOLENOID PILOT-ASSISTED VALVE



	VAP 100	
Threaded port	G 1/4	G 3/8
A	78	
B	128	
C	50	
D	43	
E	63	
F	26	
G	G 1/4	G 3/8
H	43	
I	34.5	
L	M4 hole	
M	G 1/8	
O	89	
* (pilot assisted)	M5	

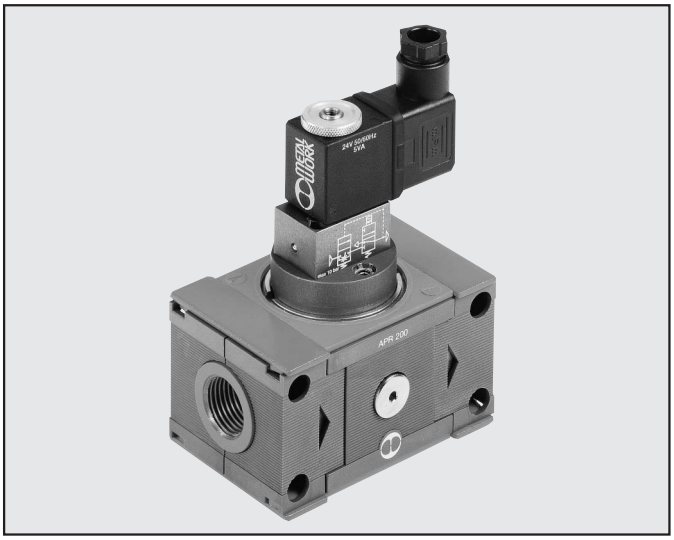
ORDERING CODES

Code	Description
3271000A	VAP 100 WITHOUT END PLATES
3271500A	VAP 100 PNEUM. WIHTOUT END PLATES
3271600A	VAP 100 SOLENOID WITHOUT END PLATES
3271700A	VAP 100 SOLENOID PILOT-ASS. WITHOUT END PLATES
3271000	VAP 100 1/4
3271500	VAP 100 1/4 PNEUM.
3271600	VAP 100 1/4 SOLENOID
3271700	VAP 100 1/4 SOLENOID PILOT-ASS.
3371000	VAP 100 3/8
3371500	VAP 100 3/8 PNEUM.
3371600	VAP 100 3/8 SOLENOID
3371700	VAP 100 3/8 SOLENOID PILOT-ASS.

NOTES

Skillair® PROGRESSIVE STARTER

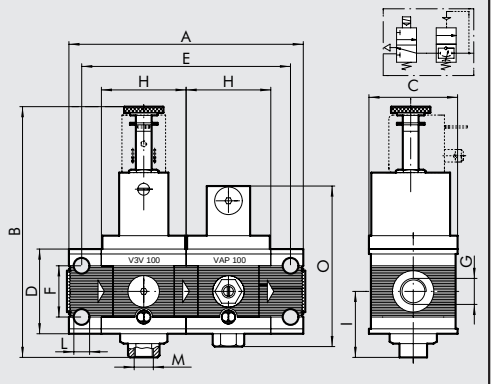
The job of the progressive starter is to feed air into the circuit gradually with controlled flow. It comes in two versions with solenoid or pneumatic actuation.
Both control signals cause the valve to open, which allows the air controlled by the flow regulator to flow slowly towards the downstream circuit. In the APR, when the pressure in the downstream circuit reaches 50%-60% of the upstream pressure, the valve opens the main inlet duct connecting it directly to the output duct. This supplies the circuit with the maximum pressure and flow rate available upstream.
The time elapsing between starting and opening the valve can be adjusted via the built-in flow regulator.
If it is necessary to relieve the downstream circuit quickly, merely operate the control valve which cuts off air flow in the pipe. This closes the valve and starts relieving the downstream circuit.
The progressive starter acts both as an actuator positioner, which eliminates the risk of sudden kickback, and as a safety valve that relieves the circuit quickly when the remote control is operated.



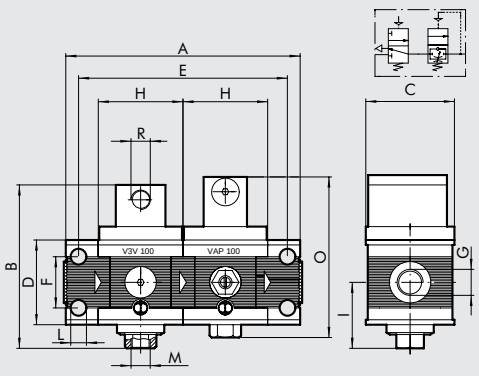
TECHNICAL DATA		APR 100	APR 100	APR 200	APR 200	APR 200	APR 300	APR 300	APR 300
Threaded port		G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1''
Min. inlet pressure		0.3MPa - 3bar - 43.5psi		0.3MPa - 3bar - 43.5psi			0.4MPa - 4bar - 58psi		
Max. inlet pressure*		1.5MPa - 15bar - 217psi		1.3MPa - 13bar - 188.5psi			1.3MPa - 13bar - 188.5psi		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1300		2000			2400		
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	46		71			85		
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	2000		3200			3600		
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	71		113			127		
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous							
Max temperature	°C	50		50			50		
	°F	122		122			122		
Weight	Kg	0.8 ~		0.9 ~			1.5 ~		
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70		
Mounting		In any position							
Type of control		Pneumaticc		Pneumatic			CNOMO solenoid		
		Solenoid		Solenoid			Microsol solenoid		
				CNOMO solenoid			Pneumatic		
Notes				For the pneumatic version 200 the pilot			For pneumatic version 300,		
				pressure must range between the inlet P			the pilot pressure must be greater		
				and the inlet P + 2 bar			or equal to the input pressure		
* 1 MPa – 10 bar – 145 psi for solenoid version									

APR 100 DIMENSIONS

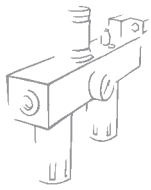
APR 100 SOLENOID



APR 100 PNEUMATIC



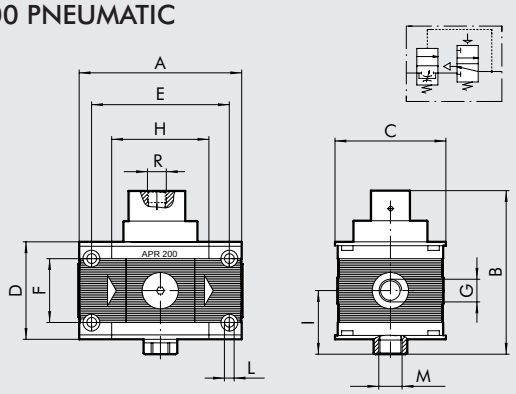
	APR 100	
Threaded port	G 1/4	G 3/8
A	121	
B APR 100 solenoid	128	
APR 100 pneumatic	83	
C	50	
D	43	
E	106	
F	26	
G	G 1/4	G 3/8
H	43	
I	34.5	
L	M4 hole	
M (relief)	G 1/8	
O	89	
R (pilot pneumatic version)	G 1/8	



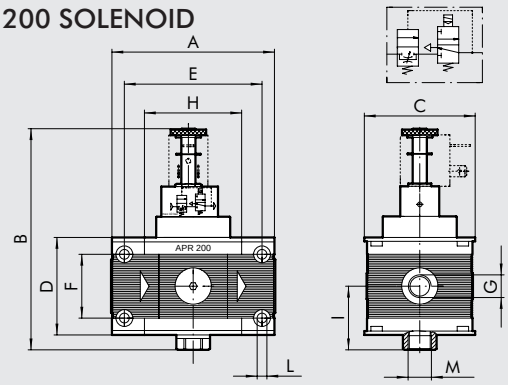
APR 200 DIMENSIONS

	APR 200 PN			APR 200 ELPN			APR 200 ELPN CNOMO		
Threaded port	G 1/4	G 3/8	G 1/2	G 1/4	G 3/8	G 1/2	G 1/4	G 3/8	G 1/2
A	93.5								
B	92			125			120		
C	63								
D	55								
E	78.5								
F	36								
G	G 1/4	G 3/8	G 1/2	G 1/4	G 3/8	G 1/2	G 1/4	G 3/8	G 1/2
H	55.5								
I	36								
L	M5 hole								
M (relief)	G 1/4								
R (pilot)	G 1/8			–			–		

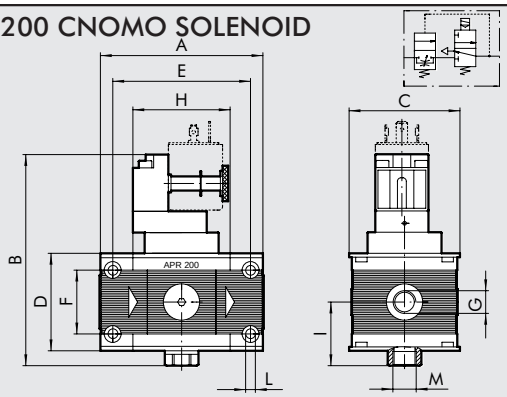
APR 200 PNEUMATIC



APR 200 SOLENOID



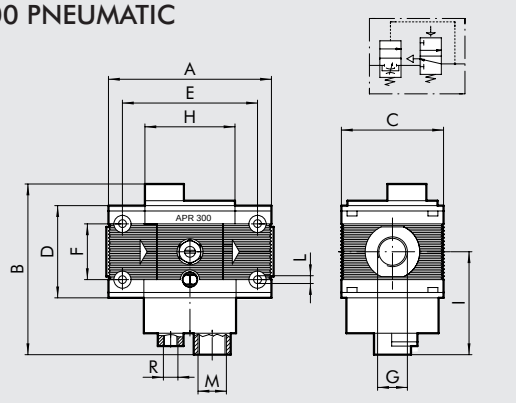
APR 200 CNOMO SOLENOID



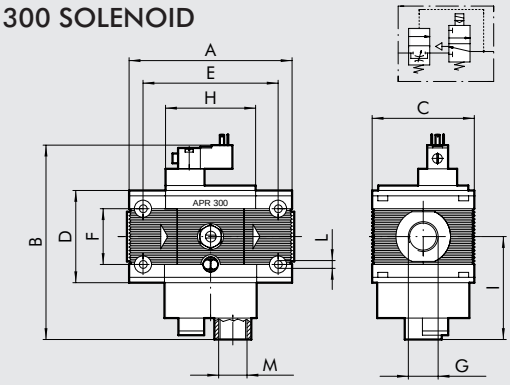
APR 300 DIMENSIONS

	APR 300 PN			APR 300 ELPN MICRO			APR 200 ELPN CNOMO		
Threaded port	G 1/2	G 3/4	G 1"	G 1/2	G 3/4	G 1"	G 1/2	G 3/4	G 1"
A	110		112	110		112	110		112
B	122			142			152		
C	72								
D	65								
E	92								
F	42								
G	G 1/2	G 3/4	G 1"	G 1/2	G 3/4	G 1"	G 1/2	G 3/4	G 1"
H	65								
I	74								
L	M5 hole								
M (relief)	G 1/2								
R (pilot)	G 1/4			–			–		

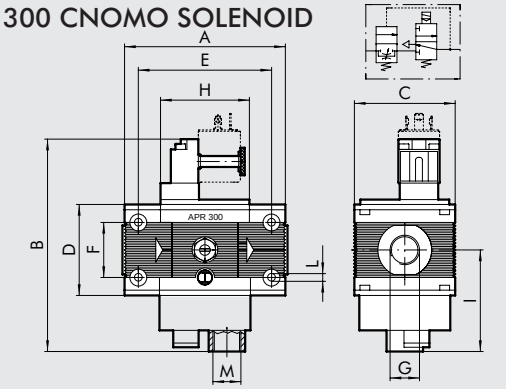
APR 300 PNEUMATIC



APR 300 SOLENOID

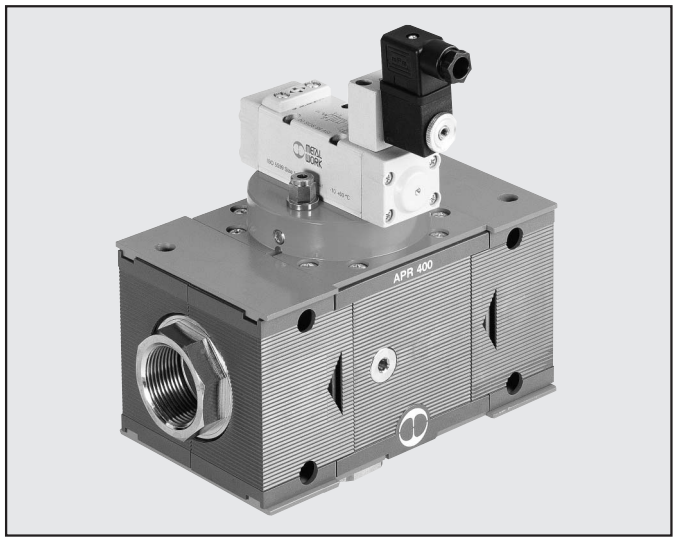


APR 300 CNOMO SOLENOID



Skillair® 400 PROGRESSIVE STARTER

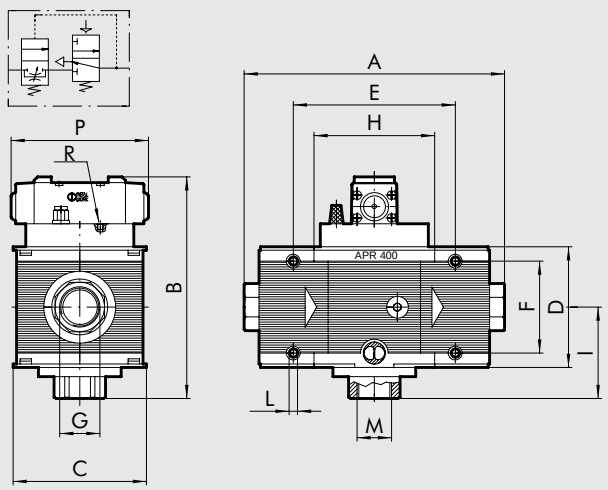
In the 400 series, an ISO1 monostable solenoid valve acts as solenoid actuator. With pneumatic actuation, the valve is the monostable pneumatic type and it is operated via the M5 thread in the plate.
N.B. With size 400, when the APR is mounted upstream of the regulator, the pilot regulator must be piloted at a pressure taken upstream of the APR, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the APR relief port.
For connecting instruction see page 3.1/15.



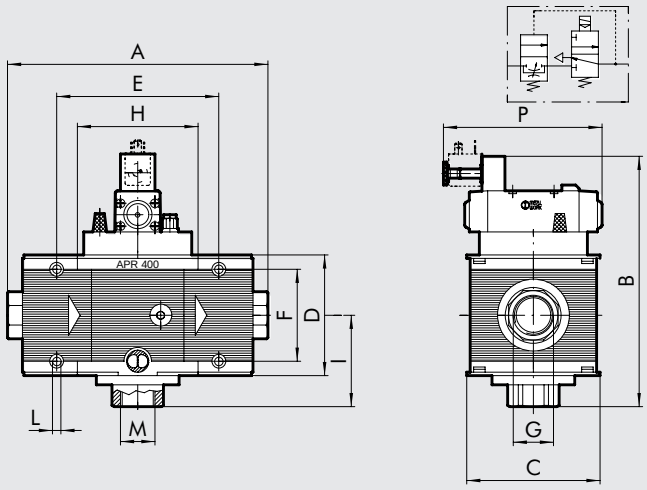
TECHNICAL DATA		APR 400			
Threaded port		G 1"	G 1"1/4"	G 1"1/2"	G 2"
Inlet pressure range	MPa	0.3 to 1.3			
	bar	3-13			
	psi	43.5-188.52			
Flow rate at 6.3 bar (0.63 MPa-91 psi)		13000 Nl/min		14000 Nl/min	
ΔP 0.5 bar (0.05 MPa – 7 psi)		460 scfm		494 scfm	
Fluid		Filtered, lubricated or unlubricated compressed air.			
		Lubrication, if used, must be continuous			
Max temperature	°C	50			
	°F	122			
Weight	Kg	5.6			6.4
Wall fixing screws		M6x110			
Mounting		In any position			
Type of control		Pneumatic/solenoid			

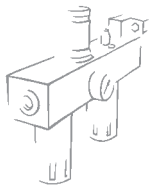
	DIMENSIONS APR 400 PN				DIMENSIONS APR 400 SOLENOID			
Th. p.	G 1"	G 1"1/4	G 1"1/2	G 2"	G 1"	G 1"1/4	G 1"1/2	G 2"
A	225-255			283-313	225-255			283-313
B	193				218			
C	116							
D	105							
E	141.4							
F	80							
G	G 1"	G 1"1/4	G 1"1/2	G 2"	G 1"	G 1"1/4	G 1"1/2	G 2"
H	105.4							
I	80							
L	M6 hole							
M	G 1"							
(relief)								
P	119				138			
R	M5				–			
(pilot)								

APR 400 PNEUMATIC



APR 400 SOLENOID





KEY TO CODES

APR	100	1/4	PNEUMATIC
ELEMENT	SIZE	THREADED PORT	TYPE OF CONTROL
APR	100	1/4 3/8	PNEUMATIC
	200	1/4 3/8 1/2	SOLENOID
	300	1/2 3/4 1	
	400	1 1 1/4 1 1/2 2	

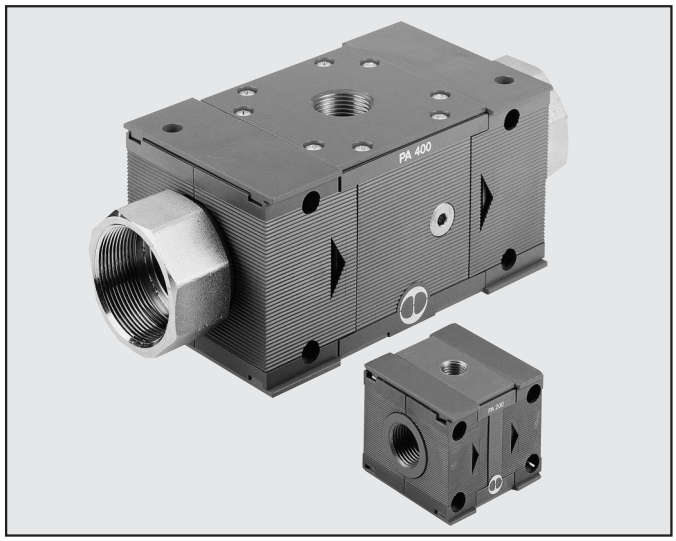
ORDERING CODES

Code	Description
PROGRESSIVE STARTER 100	
3267001A	APR 100 PNEUMATIC WITHOUT END PLATES
3267051A	APR 100 SOLENOID WITHOUT END PLATES
3267001	APR 100 1/4 PNEUMATIC
3267051	APR 100 1/4 SOLENOID
3367001	APR 100 3/8 PNEUMATIC
3367051	APR 100 3/8 SOLENOID
PROGRESSIVE STARTER 200	
3471000A	APR 200 PNEUMATIC WITHOUT END PLATES
3471001A	APR 200 SOLENOID WITHOUT END PLATES
3471004A	APR 200 SOLENOID CNOMO CONTROL WITHOUT END PLATES
3471000	APR 200 1/4 PNEUMATOC
3471001	APR 200 1/4 SOLENOID
3471004	APR 200 1/4 SOLENOID CNOMO CONTROL
3571000	APR 200 3/8 PNEUMATOC
3571001	APR 200 3/8 SOLENOID
3571004	APR 200 3/8 SOLENOID CNOMO CONTROL
3671000	APR 200 1/2 PNEUMATIC
3671001	APR 200 1/2 SOLENOID
3671004	APR 200 1/2 SOLENOID CNOMO CONTROL

Code	Description
PROGRESSIVE STARTER 300	
4471906A	APR 300 SOLENOID MICRO 24V DC WITHOUT END PLATES
4471907A	APR 300 SOLENOID MICRO 24V 50/60 HZ WITHOUT END PLATES
4471908A	APR 300 SOLENOID MICRO 110V 50/60 HZ WITHOUT END PLATES
4471909A	APR 300 SOLENOID MICRO 220V 50/60 HZ WITHOUT END PLATES
4471901A	APR 300 SOLENOID CONTROL CNOMO WITHOUT END PLATES
4471900A	APR 300 PNEUMATIC WITHOUT END PLATES
4471900	APR 300 1/2 PNEUMATIC
4471906	APR 300 1/2 SOLENOID MICRO 24V DC
4471907	APR 300 1/2 SOLENOID MICRO 24V 50/60 HZ
4471908	APR 300 1/2 SOLENOID MICRO 110V 50/60 HZ
4471909	APR 300 1/2 SOLENOID MICRO 220V 50/60 HZ
4471901	APR 300 1/2 SOLENOID CONTROL CNOMO
4571900	APR 300 3/4 PNEUMATIC
4571906	APR 300 3/4 SOLENOID MICRO 24V DC
4571907	APR 300 3/4 SOLENOID MICRO 24V 50/60 HZ
4571908	APR 300 3/4 SOLENOID MICRO 110V 50/60 HZ
4571909	APR 300 3/4 SOLENOID MICRO 220V 50/60 HZ
4571901	APR 300 3/4 SOLENOID CONTROL CNOMO
4671900	APR 300 1 PNEUMATIC
4671906	APR 300 1 SOLENOID MICRO 24V DC
4671907	APR 300 1 SOLENOID MICRO 24V 50/60 HZ
4671908	APR 300 1 SOLENOID MICRO 110V 50/60 HZ
4671909	APR 300 1 SOLENOID MICRO 220V 50/60 HZ
4671901	APR 300 1 SOLENOID CONTROL CNOMO
PROGRESSIVE STARTER 400	
6171002A	APR 400 PNEUMATIC WITHOUT END PLATES
6171003A	APR 400 SOLENOID WITHOUT END PLATES
6171002	APR 400 1 PNEUMATIC
6171003	APR 400 1 SOLENOID
6271002	APR 400 1''1/4 PNEUMATIC
6271003	APR 400 1''1/4 SOLENOID
6371002	APR 400 1''1/2 PNEUMATIC
6371003	APR 400 1''1/2 SOLENOID
6471002	APR 400 2'' PNEUMATIC
6471003	APR 400 2'' SOLENOID

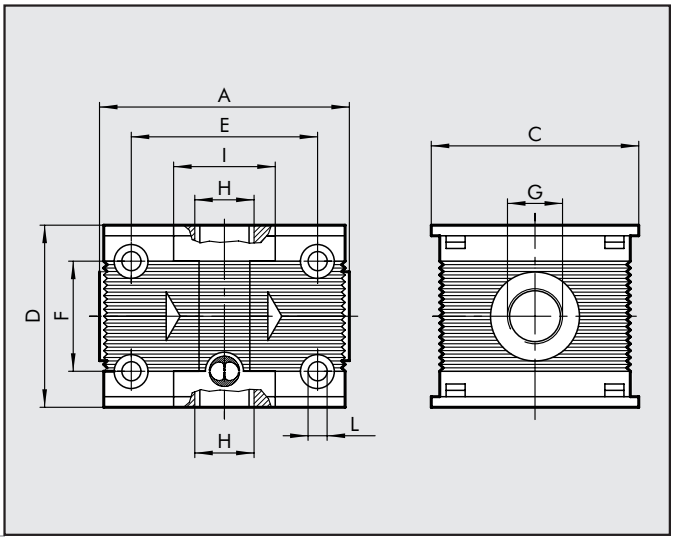
Skillair® AIR TAKE-OFF

The air take-off takes air from the SKILLAIR® FRL unit irrespective of the assembly position. It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered and regulated, lubricated, etc.). If used separately from the FRL unit, which is infinitely modular, it acts as a distributor allowing air take-off through the threaded ports.

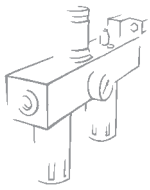


TECHNICAL DATA		PA 100	PA 100	PA 200	PA 200	PA 200	PA 300	PA 300	PA 300	PA 400	PA 400	PA 400	PA 400
Threaded port		G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"	G1"	G 1"1/4	G 1"1/2	G 2
Max. working temperature	°C	50		50			50			50			
at: 1 MPa; 10 bar; 145 psi	°F	122		122			122			122			
Max. operating pressure	MPa	1.5		1.3			1.3			1.3			
	bar	15		13			13			13			
	psi	217		188			188			188			
		M4 x 50		M5 x 60			M5 x 70			M6 x 110			
		G 1/4		G 1/4			G 3/8			G 1			
Weight	Kg	0.3		0.5			0.8			4.3			5.1
Wall fixing screws		M4 x 50		M5 x 60			M5 x 70			M6 x 110			

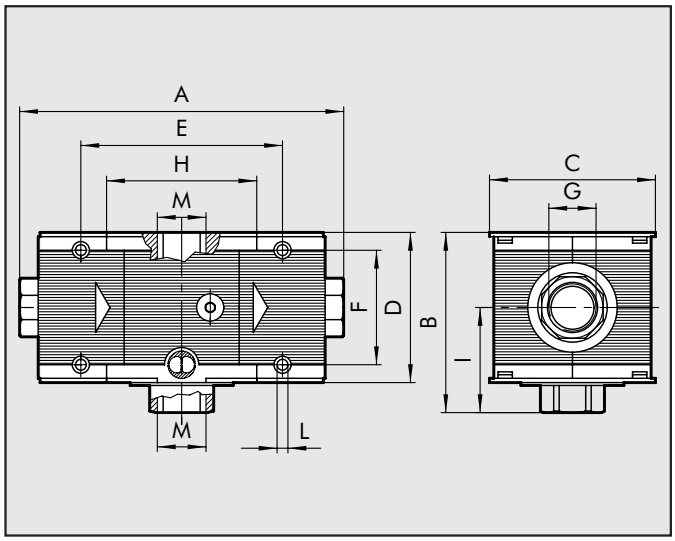
PA 100 – 200 – 300 DIMENSIONS



	PA 100	PA 100	PA 200	PA 200	PA 200	PA 300	PA 300	PA 300
Th. p.	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	59		63			177		179
C	50		63			72		
D	43		55			65		
E	44		48			59		
F	26		36			42		
G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
H	G 1/4		G 1/4			G 3/8		
I	24		25			32		
L	M4 hole		M5 hole			M5 hole		



PA 400 DIMENSIONS



	PA 400	PA 400	PA 400	PA 400
Threaded port	G 1"	G 1"1/4	G 1"1/2	G 2"
A	225÷255			283÷313
B	120			
C	116			
D	105			
E	141.4			
F	80			
G	G 1"	G 1"1/4	G 1"1/2	G 2"
H	105.4			
I	67.5			
L	M6 hole			
M	G 1"			

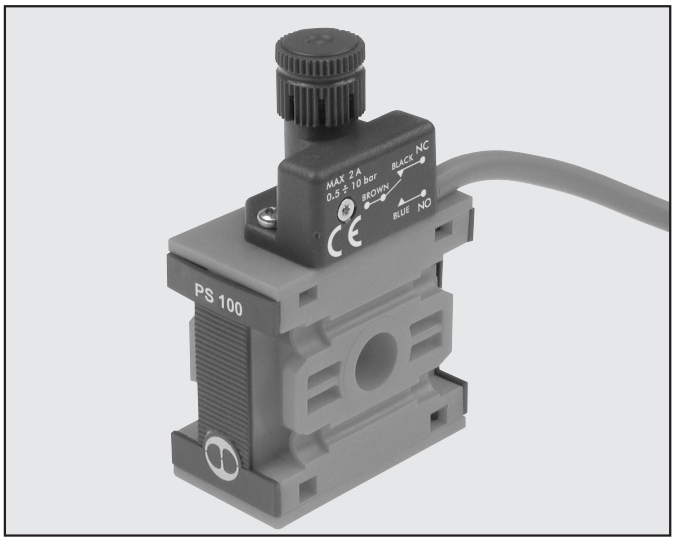
ORDERING CODES

Code	Description
AIR TAKE-OFF	
9200402A	PA 100 WITHOUT END PLATES
9200402	PA 100 1/4
9300401	PA 100 3/8
9300402A	PA 200 WITHOUT END PLATES
9300404	PA 200 1/2
9300402	PA 200 1/4
9300403	PA 200 3/8
9400402A	PA 300 WITHOUT END PLATES
9400402	PA 300 1/2
9500401	PA 300 3/4
9500402	PA 300 1
9700401A	PA 400 WITHOUT END PLATES
9700401	PA 400 1
9700402	PA 400 1 1/4
9700403	PA 400 1 1/2
9700404	PA 400 2

NOTES

Skillair® PRESSURE SWITCHES

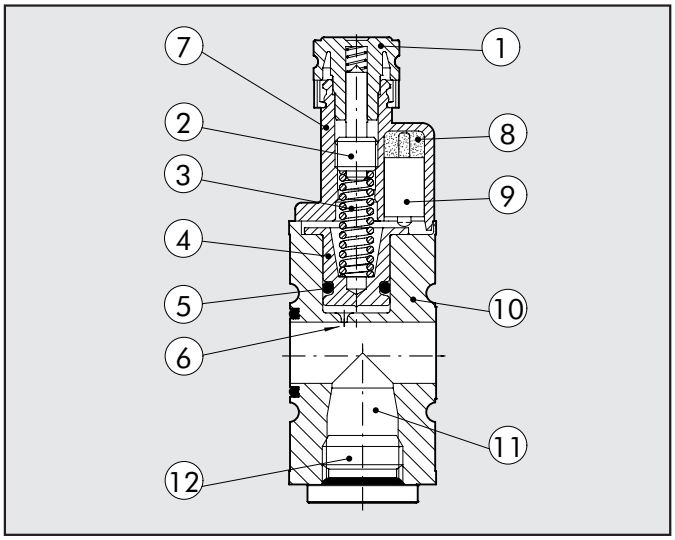
Skillair® pressure switches feature a high degree of miniaturisation and a modern attractive design.
As they are extremely modular, the Skillair series can be installed facing up or down.
They come ready assembled with a 2-metre cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.
It can be regulated via a knurled push-lock handle.
On the side opposite the regulation handle is a threaded air inlet port that can be used by removing the threaded plug.

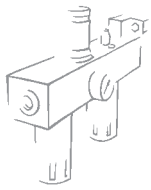


TECHNICAL DATA		PS 100	PS 200	PS 300
Adjustable pressure interval	bar	0.5 ÷ 10		
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)		
Maximum pressure	bar	15	13	13
	MPa	1.5	1.3	1.3
	psi	217	188	188
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Lower threaded port		G 1/4"	G 1/4"	G 3/8"
Maximum current	A	2		
Maximum voltage	V	250		
Outside diameter of cable	mm	4.9		
Number of wires and cross section		3x0.5 mm²		
Contacts		Normally-Open (NO) and Normally-Closed (NC)		
Protection		IP65		
Number of switchings		$5x10^6$		
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous		
Mounting position		In any position		
Weight	Kg	0.160	0.185	0.250

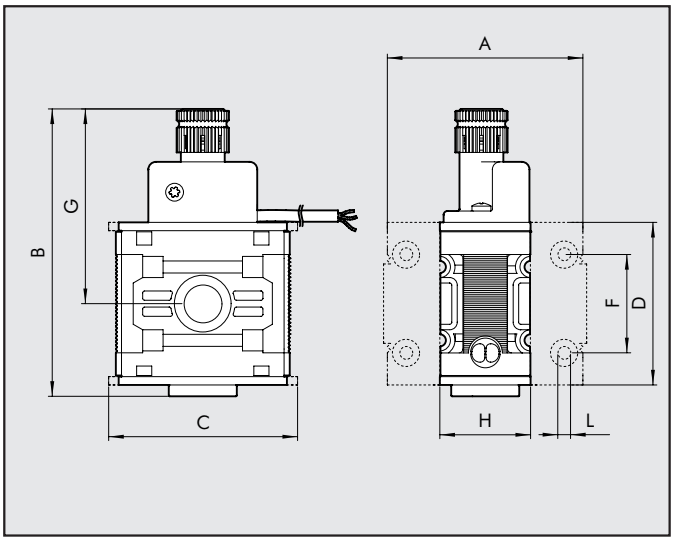
COMPONENTS

① Technopolymer adjusting push-lock handle
② Brass adjusting screw
③ Steel piston spring
④ Brass piston
⑤ NBR gasket
⑥ Choke to reduce peaks in pressure
⑦ Technopolymer pressure switch body
⑧ Resin finish for IP65
⑨ Electrical contact
⑩ Technopolymer body
⑪ Supplementary air inlet port
⑫ A7 plug





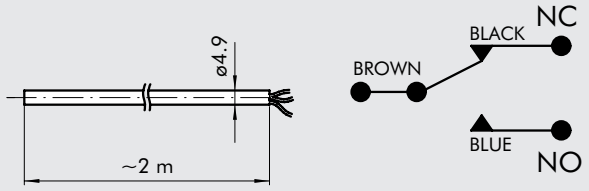
DIMENSIONS PS 100-200-300



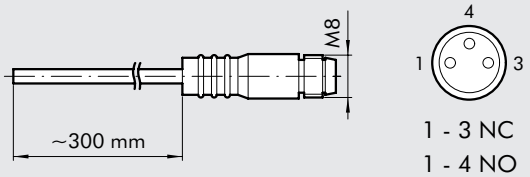
	PS 100	PS 200	PS 300
A	59	63	177
B	76	85	99
C	50	63	72
D	43	55	65
E	44	48	59
F	26	36	42
G	52	58	63
H	24	25	32
L	M4 hole	M5 hole	M5 hole

WIRING DIAGRAM

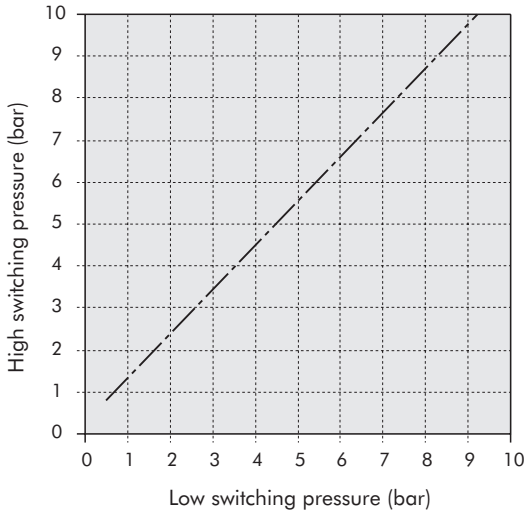
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH

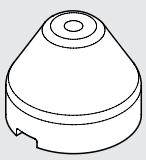


ACCESSORIES

ORDERING CODES

Code	Description
PRESSURE SWITCHES 100	
3240000A	PS 100 2A NO/NC , 2m CABLE WITHOUT END PLATES
3240001A	PS 100 2A NO/NC M8 CONNECTOR WITHOUT END PLATES
PRESSURE SWITCHES 200	
3440000A	PS 200 2A NO/NC , 2m CABLE WITHOUT END PLATES
3440001A	PS 200 2A NO/NC M8 CONNECTOR WITHOUT END PLATES
PRESSURE SWITCHES 300	
4440000A	PS 300 2A NO/NC , 2m CABLE WITHOUT END PLATES
4440001A	PS 300 2A NO/NC M8 CONNECTOR WITHOUT END PLATES

SECURITY KNOB



Code	Description
9200703	ACC. SECURITY KNOB

NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

DIAPHRAGM DRIER SERIES DRY 100 Skillair®

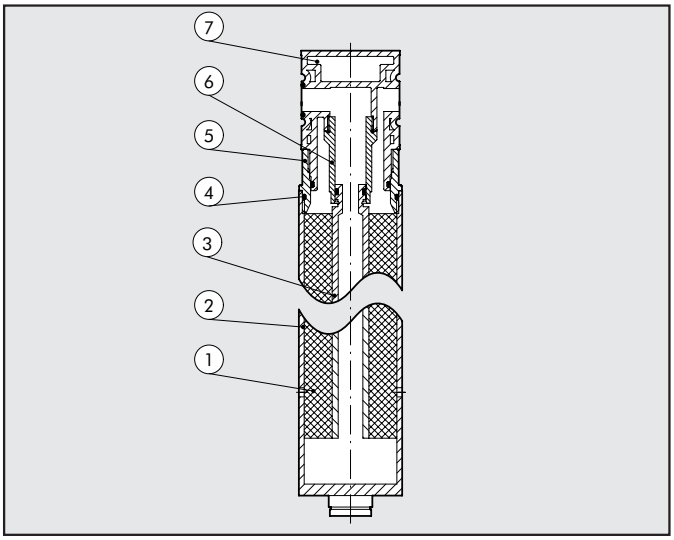
Skillair® diaphragm driers are used to reduce the air's moisture content by lowering the dew point, i.e. the temperature at which condensate starts to form. They use diaphragms with a new cross-fibre system that guarantees a lower consumption of regenerated air and hence power. This is an all-in-one unit complete with a filter, purifier, air intake and drier. The air intake uses air that has been filtered and purified, but not dried, and sends it to utilities not requiring dry air. This is a much more efficient system as only the required quantity of compressed air is dried. An alternative proposal is the drier by itself. As the Skillair® system is modular, it can be inserted in any type of assembly. It is important, however, to remember that only properly filtered and purified air must be supplied to the drier. It's advisable that the drier should be used at the highest pressure as possible



TECHNICAL DATA		DRY 100	FIL+DEP+PA+DRY 100
Threaded port		G 1/4" - G 3/8"	
Max input pressure		1,3 MPa / 13 bar /188 psi	
Flow rate at 6,3 bar (0,63 MPa, 91 psi) ΔP 0,5 bar (0,05 MPa, 7 psi)	Nl/min	230	
	scfm	8	
Fluid		Compressed air without condensate max solid particle size:1μm max oil residue: 0,01mg/m³	Compressed air
Consumption of compressed air for regeneration at 6,3 bar	Nl/min	20	
	scfm	0,7	
Minimum temperature		2°C / 35°F	
Maximum temperature at 1MPa; 10 bar; 145 psi		50°C / 122°F	
Noise level	dB(A)	<45	
Weight	Kg	0,84	1,24
Wall-mounting screws		M4 x 50	
Mounting position		In ogni posizione	Verticale
Condensate drain			Manual semiautomatic (RMSA
			Automatic, vacuum (SAC)
Filter bowl and purification bowl capacity	cm³		22
Important note		The drier must always be preceded by a 5 μm filter and a purifier	

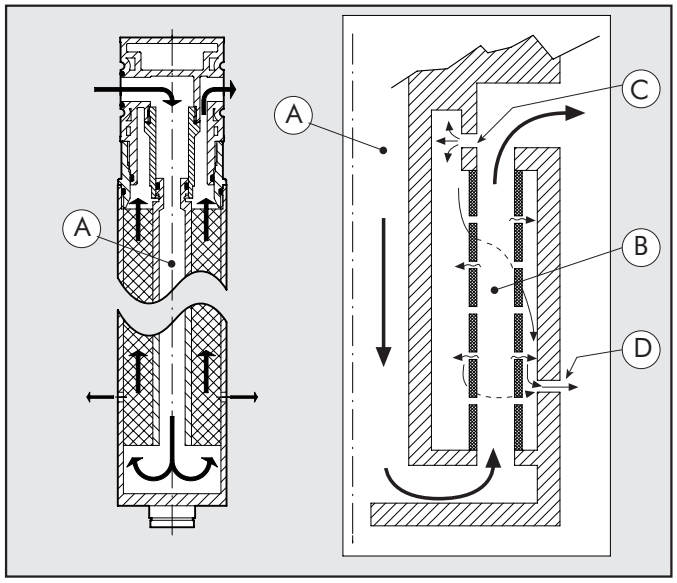
COMPONENTS

① Body: painted anodized aluminium
② Diaphragm: poliester sulfone resin
③ Inner tube: salt-water resistant aluminium
④ O-Ring seals: NBR
⑤ Adapter: anodized aluminium
⑥ Flanges: brass
⑦ Skillair® body: technopolymer



OPERATING PRINCIPLE

The drying element is comprised of cross-fibre diaphragms arranged around an inner tube.
The compressed air passes through the tube (A) and flows back through the hollow diaphragms (B). At the same time, the regeneration air required for drying is tapped from the outlet port, expands as it passes through a nozzle (C), which reduces the relative humidity, and flows back along the outer side of the fibres. This allows moist compressed air to flow through the diaphragms and the dry regeneration air outside. The difference in moisture content causes the water to pass from the compressed air to the regeneration air, which is drained through holes (D) at the bottom of the drier.



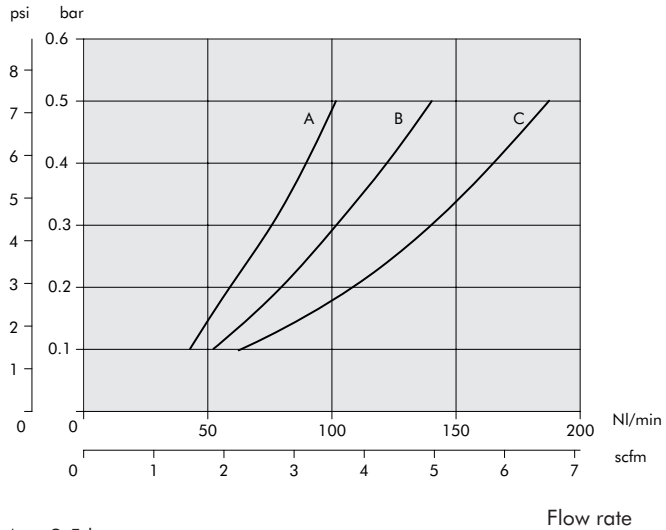
ADVANTAGES

- Drying is guaranteed as all the moisture is removed
- Minimum consumption of regeneration air
- Reduce drier maintenance as none of the components are subject to wear
- Environmentally friendly drying process.

FLOW CHARTS

DRY 100

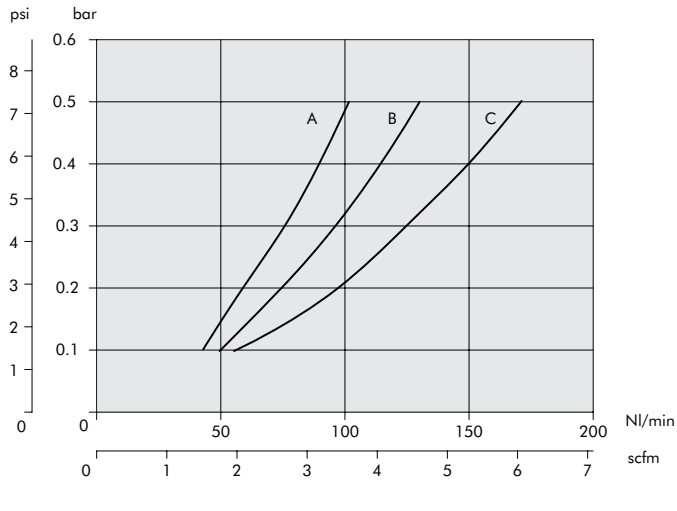
ΔP=(Pm-Pv)



A = 2.5 bar
B = 4 bar
C = 6.3 bar

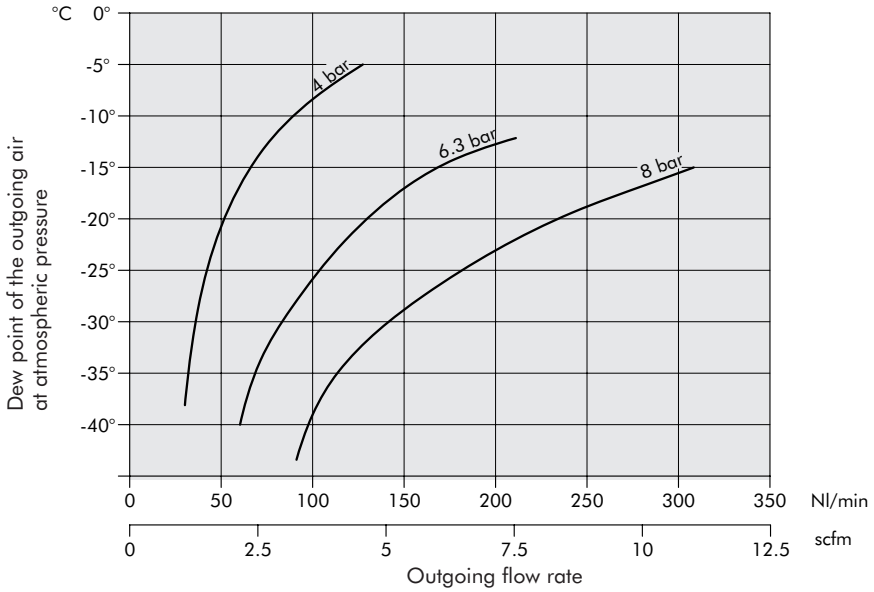
FIL (5μm)+DEP+PA+DRY 100

ΔP=(Pm-Pv)



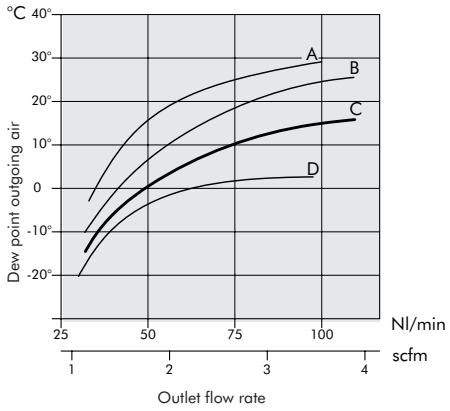
DRYING

Dew point of the outgoing air in nominal reference conditions:
- Dew point referred to atmospheric pressure
- Incoming air with dew point at 25°C (i.e. saturated at 25°C)
- Inlet pressure 7 bar (0,7 MPa)

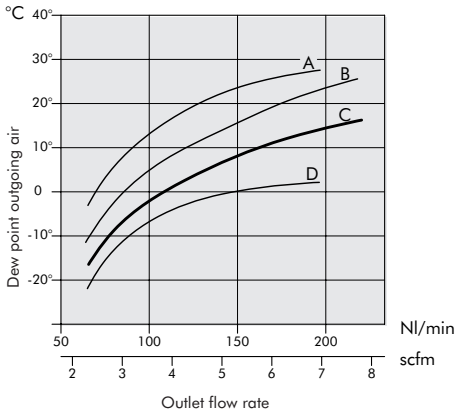


In the diagram below is indicated the dew point of the outgoing compressed air for various input air dew points, depending on the rate of flow of compressed air.

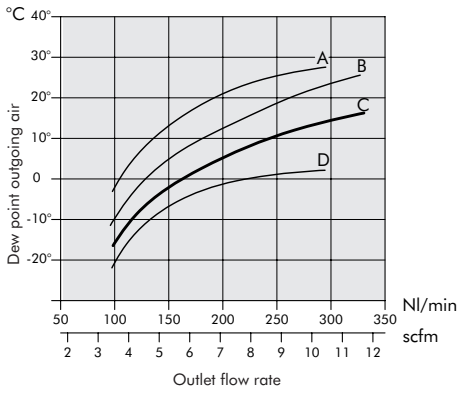
Inlet pressure: 4 bar



Inlet pressure: 6 bar



Inlet pressure: 8 bar

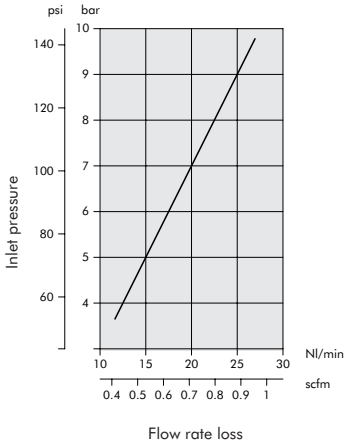


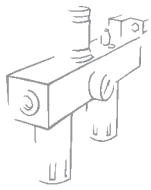
A : Incoming air with dew point at 45°C
B : Incoming air with dew point at 35°C
C : Incoming air with dew point at 25°C
D : Incoming air with dew point at 15°C

REGENERATION AIR

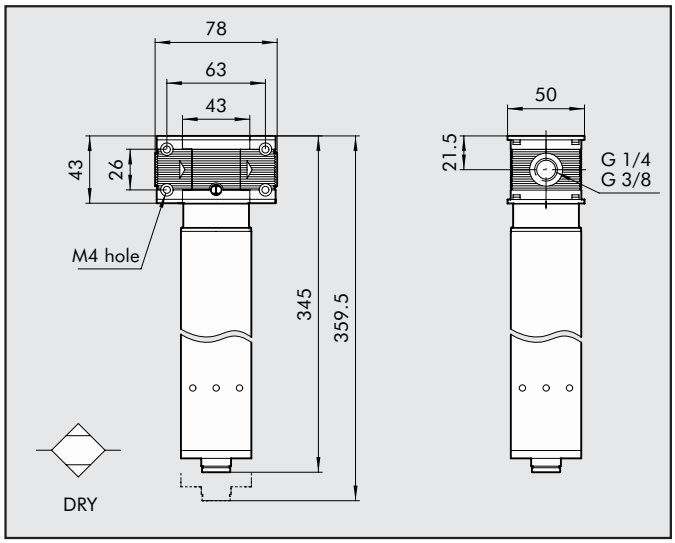
Thanks to the cross-fiber system, the flow rate loss is much lesser than in traditional linear-fibre systems.
In the diagram on the right is indicated the drop-in air flow according to the operating pressure

Notice: for the best drying efficiency the higest pressure possible is required, though this implies an increase of the regeneration air.





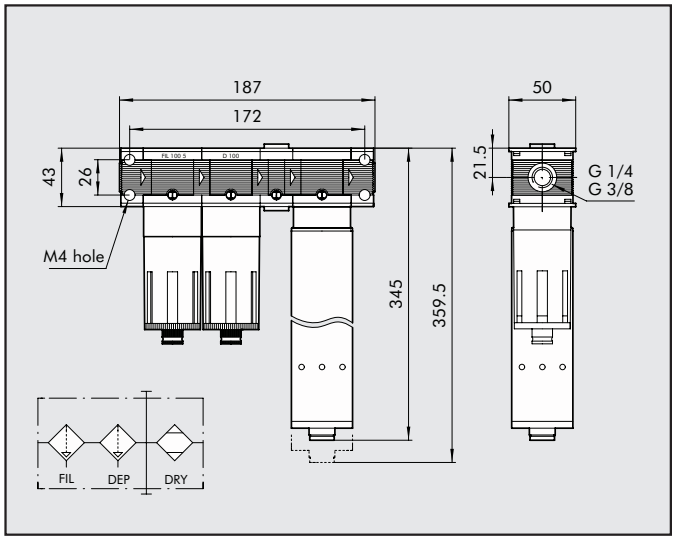
DRY 100 DIMENSIONS



ORDERING CODES

Cod.	Description
3290001A	DRY 100 RMSA WITHOUT END PLATES
3290001	DRY 100 1/4''RMSA
3390001	DRY 100 3/8''RMSA

FIL+DEP+PA+DRY 100 DIMENSIONS



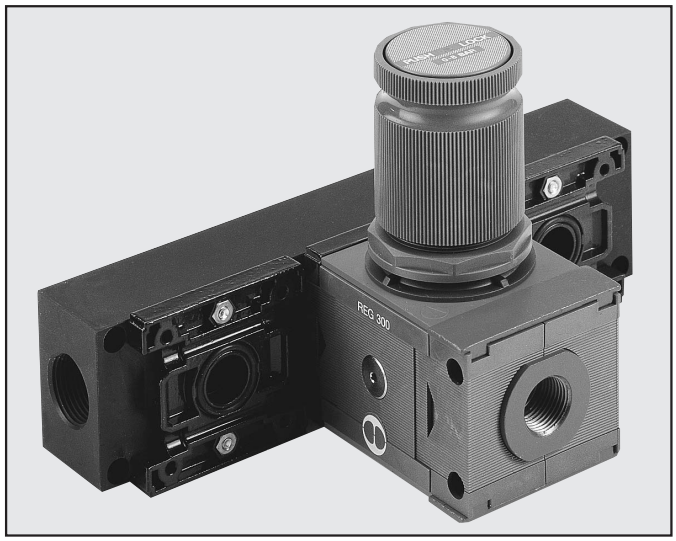
ORDERING CODES

Cod.	Description
3291001	F+D+PA+DRY 100 1/4'' RMSA-RMSA
3291005	F+D+PA+DRY 100 1/4'' SAC-RMSA
3291006	F+D+PA+DRY 100 1/4'' SAC-SAC
3391001	F+D+PA+DRY 100 3/8'' RMSA-RMSA
3391005	F+D+PA+DRY 100 3/8'' SAC-RMSA
3391006	F+D+PA+DRY 100 3/8'' SAC-SAC

NOTES

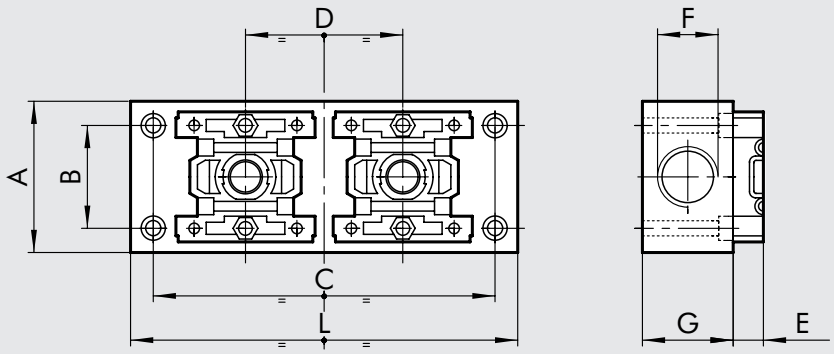
Skillair® SUB-BASE AND ADAPTER BASE

The adapter base is used to adapt the Skillair® FRL system to various assemblies without affecting modularity or servicing.
If you use the universal adopter base plus the intermediate plate, you can assemble several elements of different sizes.

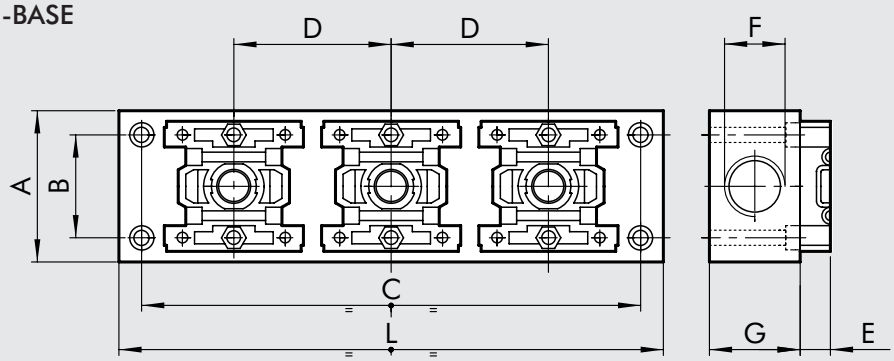


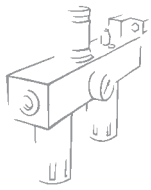
DIMENSIONS	100 - 2 POS.	100 - 3 POS	200 - 2 POS	200 - 3 POS	300 - 2 POS	300 - 3 POS
A	50	50	55	55	60	60
B	34	34	44	44	49	49
C	113	165	135	200	155	230
D	52	52	65	65	75	75
E	10	10	8.5	8.5	10.5	10.5
F	G 1/2	G 1/2	G 3/4	G 3/4	G 3/4	G 3/4
G	30	30	40	40	40	40
L	128	180	150	215	170	245

2-POSITION SUB-BASE

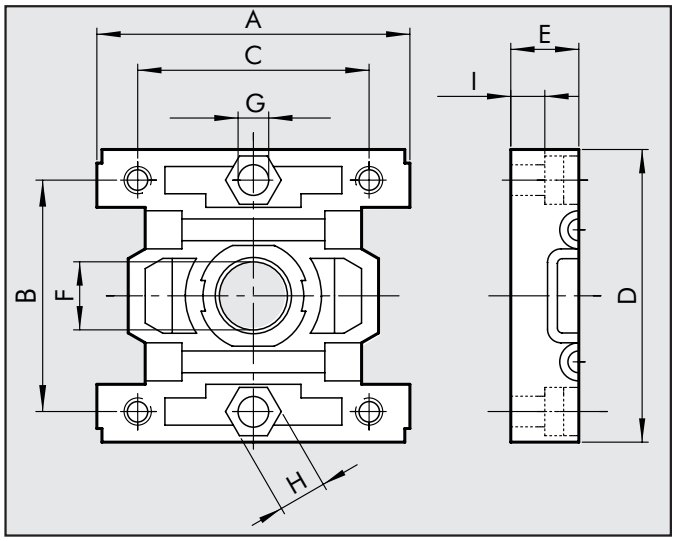


3-POSITION SUB-BASE



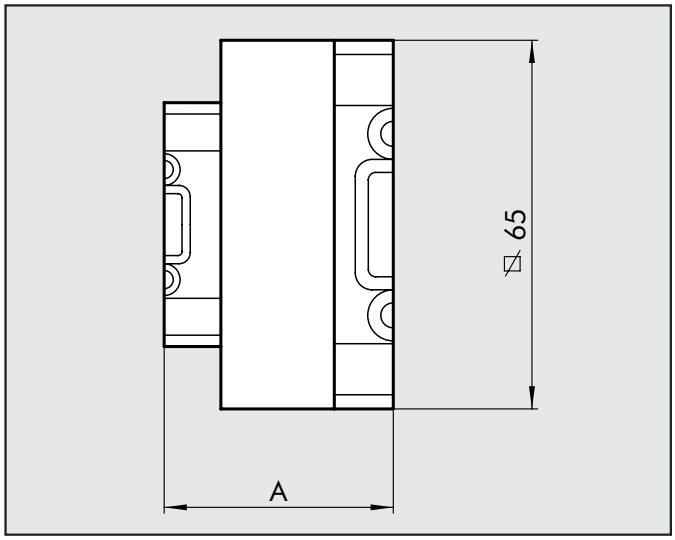


DIMENSIONS OF ADAPTER BASE



	BA 100	BA 200	BA 300
A	46	59	69
B	34	44	49
C	34	44	49
D	43	55	65
E	10	8.5	10.5
F	10	15	18
G	M4 hole	M4 hole	M5 hole
H	Es. 7	Es. 7	Es. 8
I	5	2	5

DIMENSIONS OF SIZE ADAPTERS



	BA 100 - 200	BA 100 - 300	BA 200 - 300
A	38.5	40.5	39

ORDERING CODES

Code	Description
MULTIPLE SUB-BASES FOR REGULATORS	
9200202	ACC. SB 2 100
9300202	ACC. SB 2 200
9400202	ACC. SB 2 300
9200302	ACC. SB 3 100
9300302	ACC. SB 3 200
9400302	ACC. SB 3 300
ADAPTER BASE	
9201801	BA 100
9321801	BA 200
9401801	BA 300
SIZE ADAPTER	
9301801	BA 100 - 200
9301802	BA 100 - 300
9301803	BA 200 - 300

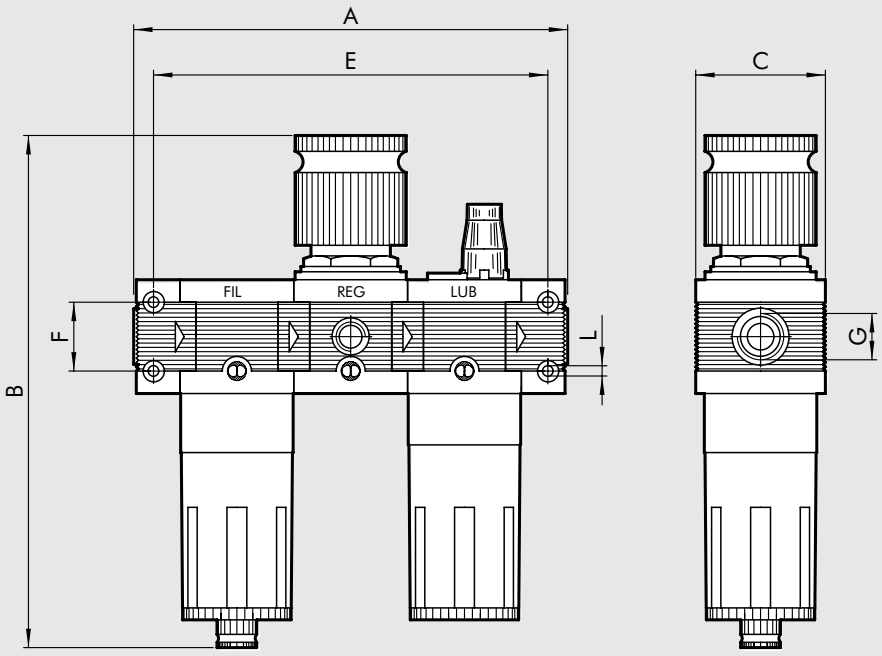
NOTES

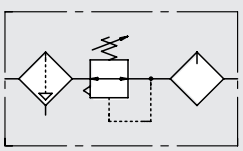
FIL+REG+LUB
Skillair® 100-200-300

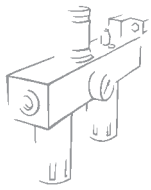
TECHNICAL DATA		FRL 100	FRL 200	FRL 300
Threaded port		1/4" | 3/8"	1/4" | 3/8" | 1/2"	1/2" | 3/4" | 1"
Setting range		0 to 8 0 to 12	0 to 8 0 to 12	0 to 8 0 to 12
Degree of filtration		5µm 20µm		
Max. inlet pressure	MPa	1.5	1.3	1.3
	bar	15	13	13
	psi	217	188	188
Flow rate at 6.3 bar	Nl/min	300	1300	2500
ΔP 0.5 bar	scfm	11	46	89
Flow rate at 6.3 bar	Nl/min	800	3000	4500
ΔP 1 bar	scfm	28	106	160
Fluid		Compressed air		
Max temperature	°C	50	50	50
at 10 bar	°F	122	122	122
Weight	Kg	0.75	1.5	2.9
Wall fixing screws		M4x50	M5x60	M5x70
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		



DIMENSIONS	FIL+REG+LUB 100		FIL+REG+LUB 200			FIL+REG+LUB 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	164		204.5			240		242
B	199		245			278		
C	50		63			72		
E	149		189.5			222		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		

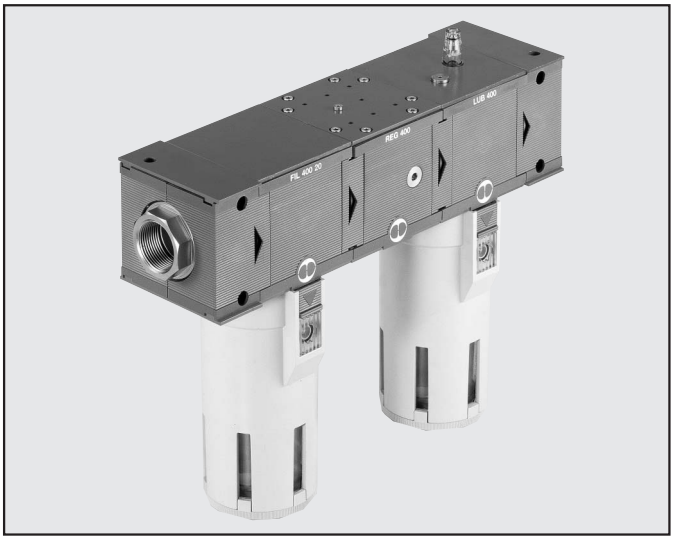




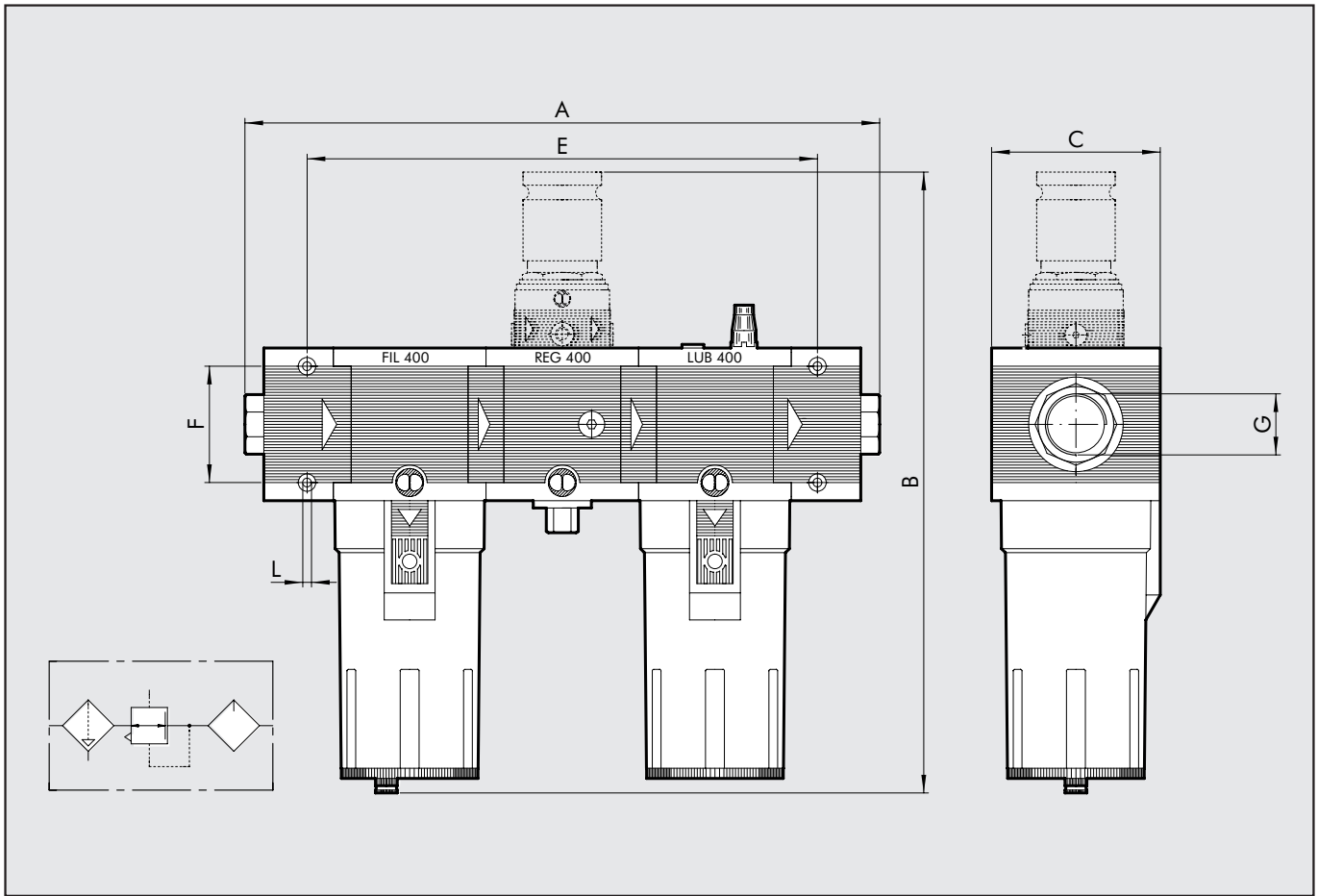


FIL+REG+LUB Skillair® 400

TECHNICAL DATA		FRL 400			
Threaded port		G1''	G1''1/4''	G1''1/2''	G2''
Setting range		Depending on pilot regulator			
Degree of filtration		5µm 20µm 50µm			
Max. inlet pressure	MPa	1.3			
	bar	13			
	psi	188			
Flow rate at 6.3 bar	Nl/min	9000			14000
ΔP 0.5 bar	scfm	320			500
Fluid		Compressed air			
Max temperature	°C	50			
at 10 bar	°F	122			
Weight	Kg	10~			
Wall fixing screws		M6x110			
Mounting		Vertical			
Bowl capacity	cm³	270			
Note on use		The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance. This unit does not include a pilot regulator.			
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			



DIMENSIONS	FIL+REG+LUB 400			
THREADED PORT G	G1''	G1''1/4''	G1''1/2''	G2''
A		436-466		494-524
B		444		
C		116		
E		352		
F		80		
L		M6 hole		



KEY TO CODES

FRL	100	1/4	5µm	0÷8	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDEN-SATION DRAIN
FRL	100	1/4 3/8	5µm 20µm 50µm	0÷8 bar 0÷12 bar	RMSA SAC
	200	1/4 3/8 1/2			RMSA SAC RA*
	300	1/2 3/4 1			RMSA RA
	400	1 1 1/4 1 1/2 2			

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

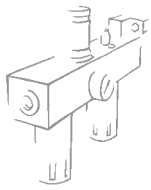
* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
3282007	FRL 100 1/4 5 08 RMSA
3282008	FRL 100 1/4 20 08 RMSA
3282009	FRL 100 1/4 50 08 RMSA
3282010	FRL 100 1/4 5 012 RMSA
3282011	FRL 100 1/4 20 012 RMSA
3282012	FRL 100 1/4 50 012 RMSA
3282107	FRL 100 1/4 5 08 SAC
3282108	FRL 100 1/4 20 08 SAC
3282109	FRL 100 1/4 50 08 SAC
3282110	FRL 100 1/4 5 012 SAC
3282111	FRL 100 1/4 20 012 SAC
3282112	FRL 100 1/4 50 012 SAC
3382007	FRL 100 3/8 5 08 RMSA
3382008	FRL 100 3/8 20 08 RMSA
3382009	FRL 100 3/8 50 08 RMSA
3382010	FRL 100 3/8 5 012 RMSA
3382011	FRL 100 3/8 20 012 RMSA
3382012	FRL 100 3/8 50 012 RMSA
3382107	FRL 100 3/8 5 08 SAC
3382108	FRL 100 3/8 20 08 SAC
3382109	FRL 100 3/8 50 08 SAC
3382110	FRL 100 3/8 5 012 SAC
3382111	FRL 100 3/8 20 012 SAC
3382112	FRL 100 3/8 50 012 SAC
3482007	FRL 200 1/4 5 08 RMSA
3482008	FRL 200 1/4 20 08 RMSA
3482009	FRL 200 1/4 50 08 RMSA
3482010	FRL 200 1/4 5 012 RMSA
3482011	FRL 200 1/4 20 012 RMSA
3482012	FRL 200 1/4 50 012 RMSA
3482107	FRL 200 1/4 5 08 SAC
3482108	FRL 200 1/4 20 08 SAC
3482109	FRL 200 1/4 50 08 SAC
3482110	FRL 200 1/4 5 012 SAC
3482111	FRL 200 1/4 20 012 SAC
3482112	FRL 200 1/4 50 012 SAC
3582007	FRL 200 3/8 5 08 RMSA
3582008	FRL 200 3/8 20 08 RMSA
3582009	FRL 200 3/8 50 08 RMSA
3582010	FRL 200 3/8 5 012 RMSA
3582011	FRL 200 3/8 20 012 RMSA
3582012	FRL 200 3/8 50 012 RMSA
3582107	FRL 200 3/8 5 08 SAC

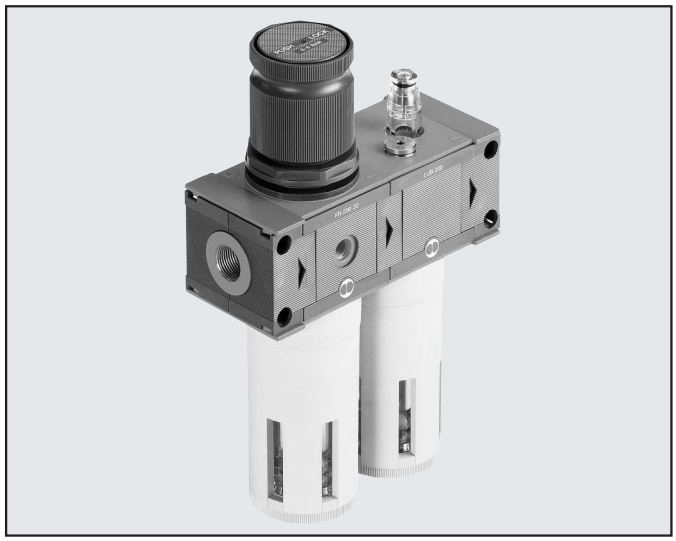
Code	Description
3582108	FRL 200 3/8 20 08 SAC
3582109	FRL 200 3/8 50 08 SAC
3582110	FRL 200 3/8 5 012 SAC
3582111	FRL 200 3/8 20 012 SAC
3582112	FRL 200 3/8 50 012 SAC
3682007	FRL 200 1/2 5 08 RMSA
3682008	FRL 200 1/2 20 08 RMSA
3682009	FRL 200 1/2 50 08 RMSA
3682010	FRL 200 1/2 5 012 RMSA
3682011	FRL 200 1/2 20 012 RMSA
3682012	FRL 200 1/2 50 012 RMSA
3682019	FRL 200 1/2 5 08 RA
3682020	FRL 200 1/2 20 08 RA
3682107	FRL 200 1/2 5 08 SAC
3682108	FRL 200 1/2 20 08 SAC
3682109	FRL 200 1/2 50 08 SAC
3682110	FRL 200 1/2 5 012 SAC
3682111	FRL 200 1/2 20 012 SAC
3682112	FRL 200 1/2 50 012 SAC
4482004	FRL 300 1/2 5 08 RMSA
4482005	FRL 300 1/2 20 08 RMSA
4482006	FRL 300 1/2 50 08 RMSA
4482007	FRL 300 1/2 5 012 RMSA
4482008	FRL 300 1/2 20 012 RMSA
4482009	FRL 300 1/2 50 012 RMSA
4482013	FRL 300 1/2 5 08 RA
4482014	FRL 300 1/2 20 08 RA
4482015	FRL 300 1/2 50 08 RA
4482016	FRL 300 1/2 5 012 RA
4482017	FRL 300 1/2 20 012 RA
4482018	FRL 300 1/2 50 012 RA
4582004	FRL 300 3/4 5 08 RMSA
4582005	FRL 300 3/4 20 08 RMSA
4582006	FRL 300 3/4 50 08 RMSA
4582007	FRL 300 3/4 5 012 RMSA
4582008	FRL 300 3/4 20 012 RMSA
4582009	FRL 300 3/4 50 012 RMSA
4582013	FRL 300 3/4 5 08 RA
4582014	FRL 300 3/4 20 08 RA
4582015	FRL 300 3/4 50 08 RA
4582016	FRL 300 3/4 5 012 RA
4582017	FRL 300 3/4 20 012 RA
4582018	FRL 300 3/4 50 012 RA

Code	Description
4682004	FRL 300 1 5 08 RMSA
4682005	FRL 300 1 20 08 RMSA
4682006	FRL 300 1 50 08 RMSA
4682007	FRL 300 1 5 012 RMSA
4682008	FRL 300 1 20 012 RMSA
4682009	FRL 300 1 50 012 RMSA
4682013	FRL 300 1 5 08 RA
4682014	FRL 300 1 20 08 RA
4682015	FRL 300 1 50 08 RA
4682016	FRL 300 1 5 012 RA
4682017	FRL 300 1 20 012 RA
4682018	FRL 300 1 50 012 RA
6182001	FRL 400 1 5 RMSA
6182002	FRL 400 1 20 RMSA
6182003	FRL 400 1 50 RMSA
6182004	FRL 400 1 5 RA
6182005	FRL 400 1 20 RA
6182006	FRL 400 1 50 RA
6282001	FRL 400 1 1/4 5 RMSA
6282002	FRL 400 1 1/4 20 RMSA
6282003	FRL 400 1 1/4 50 RMSA
6282004	FRL 400 1 1/4 5 RA
6282005	FRL 400 1 1/4 20 RA
6282006	FRL 400 1 1/4 50 RA
6382001	FRL 400 1 1/2 5 RMSA
6382002	FRL 400 1 1/2 20 RMSA
6382003	FRL 400 1 1/2 50 RMSA
6382004	FRL 400 1 1/2 5 RA
6382005	FRL 400 1 1/2 20 RA
6382006	FRL 400 1 1/2 50 RA
6482001	FRL 400 2 5 RMSA
6482002	FRL 400 2 20 RMSA
6482003	FRL 400 2 50 RMSA
6482004	FRL 400 2 5 RA
6482005	FRL 400 2 20 RA
6482006	FRL 400 2 50 RA

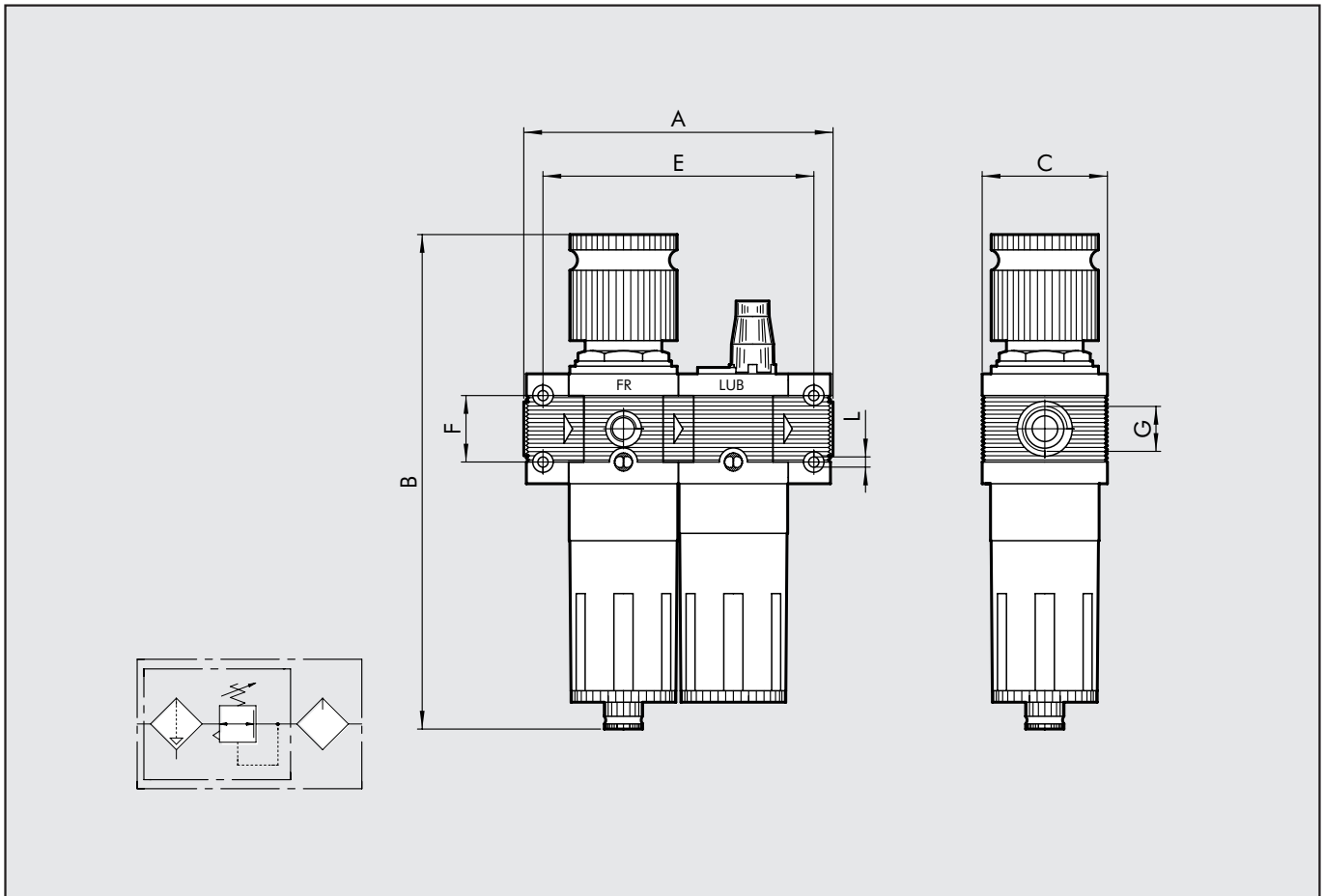


FR+LUB Skillair® 100-200-300

TECHNICAL DATA		FR+L 100		FR+L 200			FR+L 300		
Threaded port		1/4''	3/8''	1/4''	3/8''	1/2''	1/2''	3/4''	1''
Setting range		0 to 8 - 0 to 12		0 to 8	0 to 12		0 to 8	0 to 12	
Degree of filtration		5µm		20µm		50µm			
Max. inlet pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar	Nl/min	300		1200			2300		
ΔP 0.5 bar	scfm	11		43			82		
Flow rate at 6.3 bar	Nl/min	800		2400			4000		
ΔP 1 bar	scfm	28		85			142		
Fluid		Compressed air							
Max temperature	°C	50		50			50		
at 10 bar	°F	122		122			122		
Weight	Kg	0.7		1.35			2.7		
Wall fixing screws		M4x50		M4x60			M5x70		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							



DIMENSIONS	FR+LUB 100		FR+LUB 200			FR+LUB 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1''
A	121		149			175		177
B	199		245			278		
C	50		63			72		
E	106		134			157		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		



KEY TO CODES

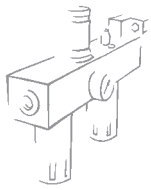
FR+L	100	1/4	5µm	0÷8	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDEN-SATION RANGE
FR+L	100	1/4	5µm	0÷8 bar	RMSA
		3/8	20µm	0÷12 bar	SAC
	200	1/4	50µm		RMSA
		3/8			SAC
		1/2			RA*
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

* For SK200 with RA, please contact our sales assistance department

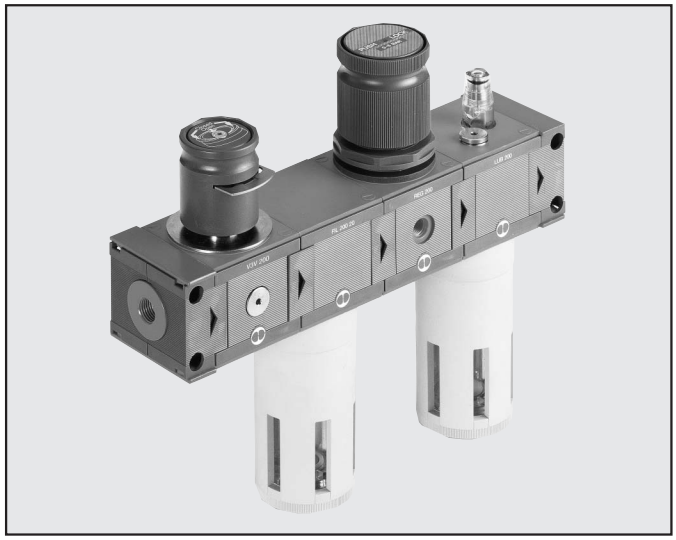
ORDERING CODES

Code	Description
3284007	FR+L 100 1/4 5 08 RMSA
3284008	FR+L 100 1/4 20 08 RMSA
3284009	FR+L 100 1/4 50 08 RMSA
3284010	FR+L 100 1/4 5 012 RMSA
3284011	FR+L 100 1/4 20 012 RMSA
3284012	FR+L 100 1/4 50 012 RMSA
3284107	FR+L 100 1/4 5 08 SAC
3284108	FR+L 100 1/4 20 08 SAC
3284109	FR+L 100 1/4 50 08 SAC
3284110	FR+L 100 1/4 5 012 SAC
3284111	FR+L 100 1/4 20 012 SAC
3284112	FR+L 100 1/4 50 012 SAC
3384007	FR+L 100 3/8 5 08 RMSA
3384008	FR+L 100 3/8 20 08 RMSA
3384009	FR+L 100 3/8 50 08 RMSA
3384010	FR+L 100 3/8 5 012 RMSA
3384011	FR+L 100 3/8 20 012 RMSA
3384012	FR+L 100 3/8 50 012 RMSA
3384107	FR+L 100 3/8 5 08 SAC
3384108	FR+L 100 3/8 20 08 SAC
3384109	FR+L 100 3/8 50 08 SAC
3384110	FR+L 100 3/8 5 012 SAC
3384111	FR+L 100 3/8 20 012 SAC
3384112	FR+L 100 3/8 50 012 SAC
3484007	FR+L 200 1/4 5 08 RMSA
3484008	FR+L 200 1/4 20 08 RMSA
3484009	FR+L 200 1/4 50 08 RMSA
3484010	FR+L 200 1/4 5 012 RMSA
3484011	FR+L 200 1/4 20 012 RMSA
3484012	FR+L 200 1/4 50 012 RMSA
3484107	FR+L 200 1/4 5 08 SAC
3484108	FR+L 200 1/4 20 08 SAC
3484109	FR+L 200 1/4 50 08 SAC
3484110	FR+L 200 1/4 5 012 SAC
3484111	FR+L 200 1/4 20 012 SAC
3484112	FR+L 200 1/4 50 012 SAC
3584007	FR+L 200 3/8 5 08 RMSA
3584008	FR+L 200 3/8 20 08 RMSA
3584009	FR+L 200 3/8 50 08 RMSA
3584010	FR+L 200 3/8 5 012 RMSA
3584011	FR+L 200 3/8 20 012 RMSA
3584012	FR+L 200 3/8 50 012 RMSA
3584107	FR+L 200 3/8 5 08 SAC
3584108	FR+L 200 3/8 20 08 SAC
3584109	FR+L 200 3/8 50 08 SAC
3584110	FR+L 200 3/8 5 012 SAC
3584111	FR+L 200 3/8 20 012 SAC
3584112	FR+L 200 3/8 50 012 SAC
3684007	FR+L 200 1/2 5 08 RMSA
3684008	FR+L 200 1/2 20 08 RMSA
3684009	FR+L 200 1/2 50 08 RMSA
3684010	FR+L 200 1/2 5 012 RMSA
3684011	FR+L 200 1/2 20 012 RMSA
3684012	FR+L 200 1/2 50 012 RMSA
3684107	FR+L 200 1/2 5 08 SAC
3684108	FR+L 200 1/2 20 08 SAC
3684109	FR+L 200 1/2 50 08 SAC
3684110	FR+L 200 1/2 5 012 SAC
3684111	FR+L 200 1/2 20 012 SAC
3684112	FR+L 200 1/2 50 012 SAC
3684019	FR+L 200 1/2 5 08 RA
3684020	FR+L 200 1/2 20 08 RA
4484004	FR+L 300 1/2 5 08 RMSA
4484005	FR+L 300 1/2 20 08 RMSA
4484006	FR+L 300 1/2 50 08 RMSA
4484007	FR+L 300 1/2 5 012 RMSA
4484008	FR+L 300 1/2 20 012 RMSA
4484009	FR+L 300 1/2 50 012 RMSA
4484013	FR+L 300 1/2 5 08 RA
4484014	FR+L 300 1/2 20 08 RA
4484015	FR+L 300 1/2 50 08 RA
4484016	FR+L 300 1/2 5 012 RA
4484017	FR+L 300 1/2 20 012 RA
4484018	FR+L 300 1/2 50 012 RA
4584004	FR+L 300 3/4 5 08 RMSA
4584005	FR+L 300 3/4 20 08 RMSA
4584006	FR+L 300 3/4 50 08 RMSA
4584007	FR+L 300 3/4 5 012 RMSA
4584008	FR+L 300 3/4 20 012 RMSA
4584009	FR+L 300 3/4 50 012 RMSA
4584013	FR+L 300 3/4 5 08 RA
4584014	FR+L 300 3/4 20 08 RA
4584015	FR+L 300 3/4 50 08 RA
4584016	FR+L 300 3/4 5 012 RA
4584017	FR+L 300 3/4 20 012 RA
4584018	FR+L 300 3/4 50 012 RA
4684004	FR+L 300 1 5 08 RMSA
4684005	FR+L 300 1 20 08 RMSA
4684006	FR+L 300 1 50 08 RMSA
4684007	FR+L 300 1 5 012 RMSA
4684008	FR+L 300 1 20 012 RMSA
4684009	FR+L 300 1 50 012 RMSA
4684013	FR+L 300 1 5 08 RA
4684014	FR+L 300 1 20 08 RA
4684015	FR+L 300 1 50 08 RA
4684016	FR+L 300 1 5 012 RA
4684017	FR+L 300 1 20 012 RA
4684018	FR+L 300 1 50 012 RA

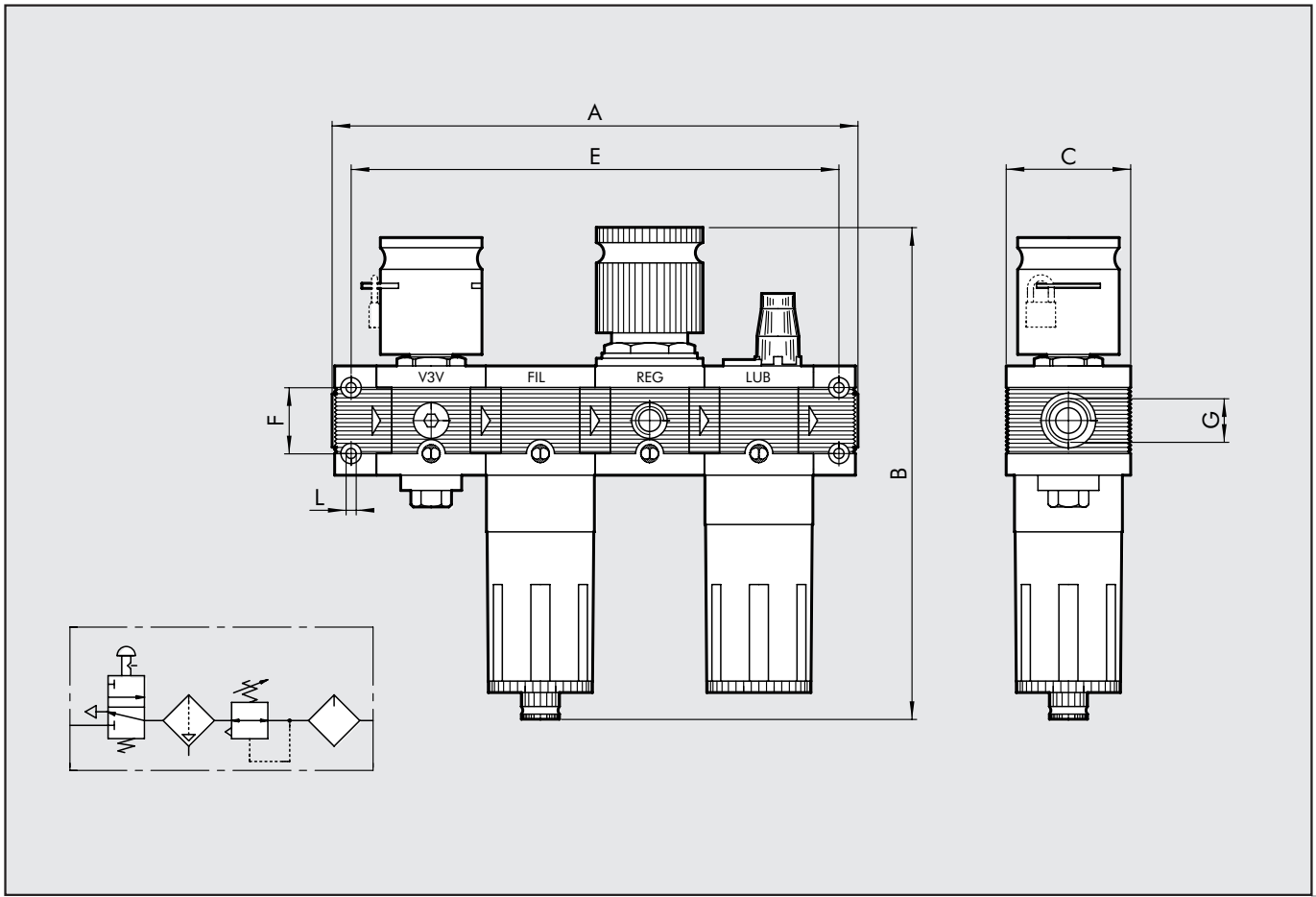


V3V+FIL+REG+LUB Skillair® 100-200-300

TECHNICAL DATA		VFRL 100	VFRL 200	VFRL 300
Threaded port		1/4'' | 3/8''	1/4'' | 3/8'' | 1/2''	1/2'' | 3/4'' | 1''
Setting range		0 to 8 - 0 to 12	0 to 8 0 to 12	0 to 8 0 to 12
Degree of filtration			5µm 20µm 50µm	
Max. inlet pressure	MPa	1.5	1.3	1.3
	bar	15	13	13
	psi	217	188	188
Flow rate at 6.3 bar	Nl/min	300	1300	2200
ΔP 0.5 bar	scfm	11	46	82
Flow rate at 6.3 bar	Nl/min	800	2500	4000
ΔP 1 bar	scfm	28	89	142
Fluid			Compressed air	
Max temperature	°C	50	50	50
at 10 bar	°F	122	122	122
Weight	Kg	1	2	3.5
Wall fixing screws		M4x50	M5x60	M5x70
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

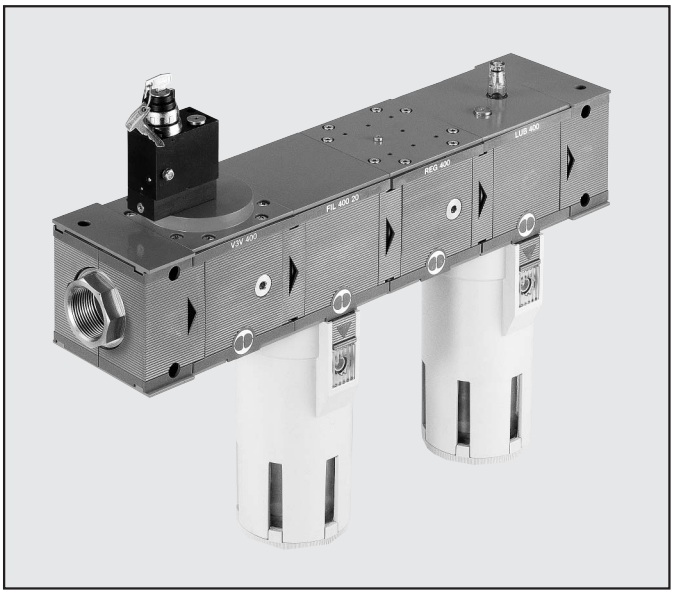


DIMENSIONS	V3V+FIL+ REG+LUB 100		V3V+FIL+REG+LUB 200			V3V+FIL+REG+LUB 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1''
A	207		260			305		307
B	199		245			278		
C	50		63			72		
E	192		245			287		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		



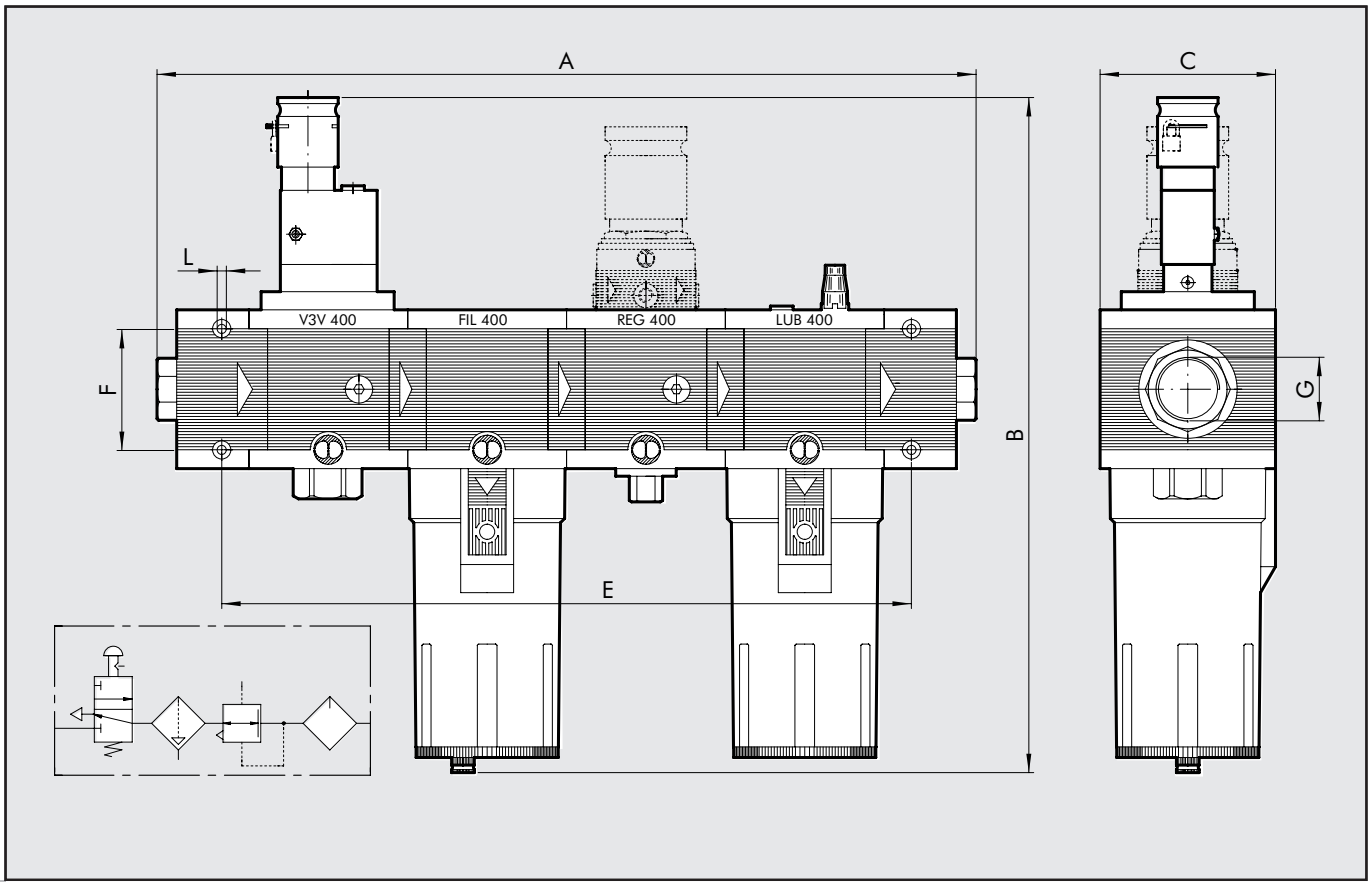
V3V+FIL+REG+LUB Skillair® 400

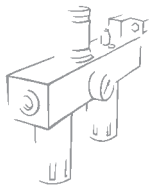
TECHNICAL DATA		VFRL 400			
Threaded port		G1″	G1″1/4″	G1″1/2″	G2″
Setting range		Depending on pilot regulator			
Degree of filtration		5µm 20µm 50µm			
Max. inlet pressure	MPa	1.3			
	bar	13			
	psi	188			
Flow rate at 6.3 bar		VFRL 400 1″: 9000 Nl/min = 320 scfm			
ΔP 0.5 bar		VFRL 400 2″: 14.000 Nl/min = 500 scfm			
Fluid		Compressed air			
Max temperature	°C	50			
at 10 bar	°F	122			
Weight	Kg	12~			
Wall fixing screws		M6x110			
Mounting		Vertical			
Bowl capacity	cm^3	270			
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			



Notes: The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance. This unit does not include a pilot regulator. The pilot regulator must be piloted at a pressure taken upstream of the V3V, otherwise when the system is relieved, most of the air downstream will be relieved by the regulator and not the V3V relief port.
For connecting instruction see page 3.1/15.

DIMENSIONS	V3V+FIL+REG+LUB 400			
THREADED PORT G	G1″	G1″1/4″	G1″1/2″	G2″
A		541-571		599-629
B		461		
E		457.5		
F		80		
L		M6 hole		





KEY TO CODES

VFRL	100	1/4	5μm	0÷8	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDEN-SATE DRAIN
VFRL	100	1/4 3/8	5μm 20μm 50μm	0÷8 bar 0÷12 bar	RMSA SAC
	200	1/4 3/8 1/2			RMSA SAC RA*
	300	1/2 3/4 1			RMSA RA
	400	1 1 1/4 1 1/2 2			

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

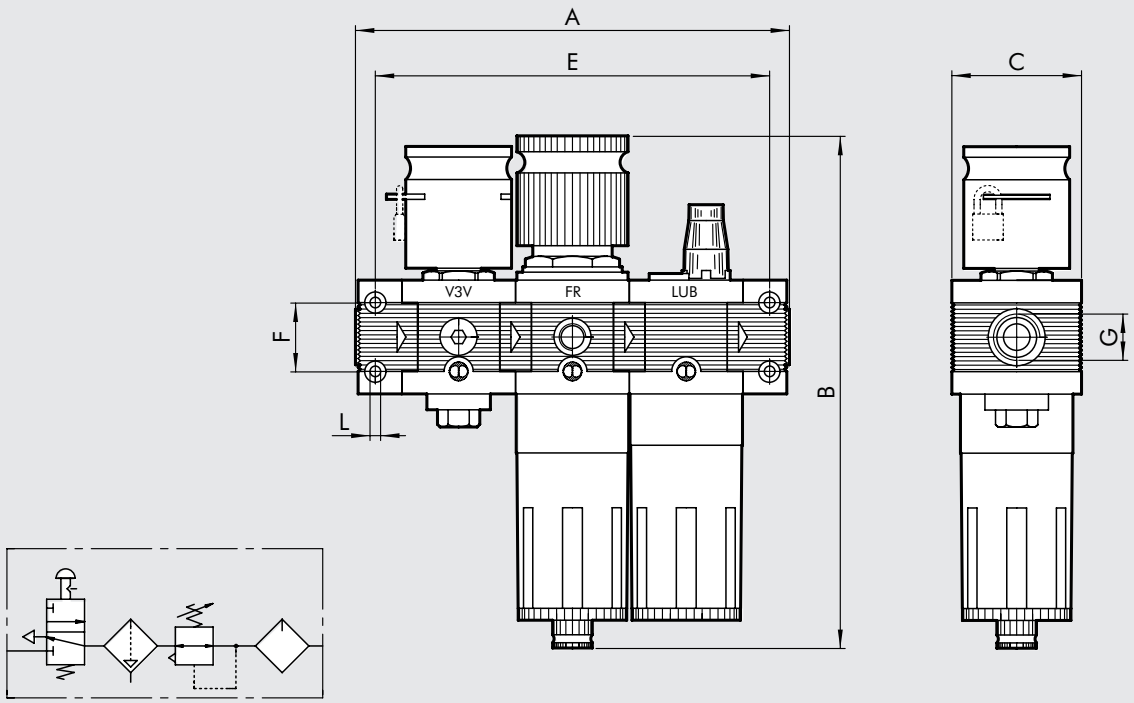
Code	Description
3273007	VFRL 100 1/4 5 08 RMSA
3273008	VFRL 100 1/4 20 08 RMSA
3273009	VFRL 100 1/4 50 08 RMSA
3273010	VFRL 100 1/4 5 012 RMSA
3273011	VFRL 100 1/4 20 012 RMSA
3273012	VFRL 100 1/4 50 012 RMSA
3273107	VFRL 100 1/4 5 08 SAC
3273108	VFRL 100 1/4 20 08 SAC
3273109	VFRL 100 1/4 50 08 SAC
3273110	VFRL 100 1/4 5 012 SAC
3273111	VFRL 100 1/4 20 012 SAC
3273112	VFRL 100 1/4 50 012 SAC
3373007	VFRL 100 3/8 5 08 RMSA
3373008	VFRL 100 3/8 20 08 RMSA
3373009	VFRL 100 3/8 50 08 RMSA
3373010	VFRL 100 3/8 5 012 RMSA
3373011	VFRL 100 3/8 20 012 RMSA
3373012	VFRL 100 3/8 50 012 RMSA
3373107	VFRL 100 3/8 5 08 SAC
3373108	VFRL 100 3/8 20 08 SAC
3373109	VFRL 100 3/8 50 08 SAC
3373110	VFRL 100 3/8 5 012 SAC
3373111	VFRL 100 3/8 20 012 SAC
3373112	VFRL 100 3/8 50 012 SAC
3473007	VFRL 200 1/4 5 08 RMSA
3473008	VFRL 200 1/4 20 08 RMSA
3473009	VFRL 200 1/4 50 08 RMSA
3473010	VFRL 200 1/4 5 012 RMSA
3473011	VFRL 200 1/4 20 012 RMSA
3473012	VFRL 200 1/4 50 012 RMSA
3473107	VFRL 200 1/4 5 08 SAC
3473108	VFRL 200 1/4 20 08 SAC
3473109	VFRL 200 1/4 50 08 SAC
3473110	VFRL 200 1/4 5 012 SAC
3473111	VFRL 200 1/4 20 012 SAC
3473112	VFRL 200 1/4 50 012 SAC
3573007	VFRL 200 3/8 5 08 RMSA
3573008	VFRL 200 3/8 20 08 RMSA
3573009	VFRL 200 3/8 50 08 RMSA
3573010	VFRL 200 3/8 5 012 RMSA
3573011	VFRL 200 3/8 20 012 RMSA
3573012	VFRL 200 3/8 50 012 RMSA
3573107	VFRL 200 3/8 5 08 SAC
3573108	VFRL 200 3/8 20 08 SAC
3573109	VFRL 200 3/8 50 08 SAC
3573110	VFRL 200 3/8 5 012 SAC
3573111	VFRL 200 3/8 20 012 SAC
3573112	VFRL 200 3/8 50 012 SAC
3673007	VFRL 200 1/2 5 08 RMSA
3673008	VFRL 200 1/2 20 08 RMSA
3673009	VFRL 200 1/2 50 08 RMSA
3673010	VFRL 200 1/2 5 012 RMSA
3673011	VFRL 200 1/2 20 012 RMSA
3673012	VFRL 200 1/2 50 012 RMSA
3673107	VFRL 200 1/2 5 08 SAC
3673108	VFRL 200 1/2 20 08 SAC
3673109	VFRL 200 1/2 50 08 SAC
3673110	VFRL 200 1/2 5 012 SAC
3673111	VFRL 200 1/2 20 012 SAC
3673112	VFRL 200 1/2 50 012 SAC
4473004	VFRL 300 1/2 5 08 RMSA
4473005	VFRL 300 1/2 20 08 RMSA
4473006	VFRL 300 1/2 50 08 RMSA
4473007	VFRL 300 1/2 5 012 RMSA
4473008	VFRL 300 1/2 20 012 RMSA
4473009	VFRL 300 1/2 50 012 RMSA
4473013	VFRL 300 1/2 5 08 RA
4473014	VFRL 300 1/2 20 08 RA
4473015	VFRL 300 1/2 50 08 RA
4473016	VFRL 300 1/2 5 012 RA
4473017	VFRL 300 1/2 20 012 RA
4473018	VFRL 300 1/2 50 012 RA
4573004	VFRL 300 3/4 5 08 RMSA
4573005	VFRL 300 3/4 20 08 RMSA
4573006	VFRL 300 3/4 50 08 RMSA
4573007	VFRL 300 3/4 5 012 RMSA
4573008	VFRL 300 3/4 20 012 RMSA
4573009	VFRL 300 3/4 50 012 RMSA
4573013	VFRL 300 3/4 5 08 RA
4573014	VFRL 300 3/4 20 08 RA
4573015	VFRL 300 3/4 50 08 RA
4573016	VFRL 300 3/4 5 012 RA
4573017	VFRL 300 3/4 20 012 RA
4573018	VFRL 300 3/4 50 012 RA
4673004	VFRL 300 1 5 08 RMSA
4673005	VFRL 300 1 20 08 RMSA
4673006	VFRL 300 1 50 08 RMSA
4673007	VFRL 300 1 5 012 RMSA
4673008	VFRL 300 1 20 012 RMSA
4673009	VFRL 300 1 50 012 RMSA
4673013	VFRL 300 1 5 08 RA
4673014	VFRL 300 1 20 08 RA
4673015	VFRL 300 1 50 08 RA
4673016	VFRL 300 1 5 012 RA
4673017	VFRL 300 1 20 012 RA
4673018	VFRL 300 1 50 012 RA
6173001	VFRL 400 1 5 RMSA
6173002	VFRL 400 1 20 RMSA
6173003	VFRL 400 1 50 RMSA
6173004	VFRL 400 1 5 RA
6173005	VFRL 400 1 20 RA
6173006	VFRL 400 1 50 RA
6273001	VFRL 400 1 1/4 5 RMSA
6273002	VFRL 400 1 1/4 20 RMSA
6273003	VFRL 400 1 1/4 50 RMSA
6273004	VFRL 400 1 1/4 5 RA
6273005	VFRL 400 1 1/4 20 RA
6273006	VFRL 400 1 1/4 50 RA
6373001	VFRL 400 1 1/2 5 RMSA
6373002	VFRL 400 1 1/2 20 RMSA
6373003	VFRL 400 1 1/2 50 RMSA
6373004	VFRL 400 1 1/2 5 RA
6373005	VFRL 400 1 1/2 20 RA
6373006	VFRL 400 1 1/2 50 RA
6473001	VFRL 400 2 5 RMSA
6473002	VFRL 400 2 20 RMSA
6473003	VFRL 400 2 50 RMSA
6473004	VFRL 400 2 5 RA
6473005	VFRL 400 2 20 RA
6473006	VFRL 400 2 50 RA

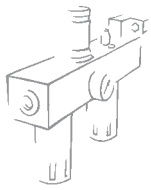
V3V+FR+LUB
Skillair® 100-200-300

TECHNICAL DATA		V+FR+L 100		V+FR+L 200			V+FR+L 300		
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Setting range		0 to 8	0 to 12	0 to 8	0 to 12		0 to 8	0 to 12	
Degree of filtration		5µm		20µm		50µm			
Max. inlet pressure	MPa	15		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar	Nl/min	300		1200			2300		
ΔP 0.5 bar		11		43			82		
Flow rate at 6.3 bar	Nl/min	800		2400			4000		
ΔP 1 bar		28		85			142		
Fluid		Compressed air							
Max temperature	°C	50		50			50		
at 10 bar	°F	122		122			122		
Weight	Kg	1		1.8			3.2		
Wall fixing screws		M4x50		M5x60			M5x70		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							



DIMENSIONS	V3V+FR 100		V3V+FR+LUB 200			V3V+FR+LUB 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	164		204.5			240		242
B	199		245			278		
C	50		63			72		
E	149		189.5			222		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		





KEY TO CODES

VFR+L	100	1/4	5µm	0÷8	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF CONDEN-SATE DRAIN
VFR+L	100	1/4	5µm	0÷8 bar	RMSA
		3/8	20µm	0÷12 bar	SAC
	200	1/4	50µm		RMSA
		3/8			SAC
		1/2			RA*
	300	1/2			RMSA
		3/4			RA
		1			

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

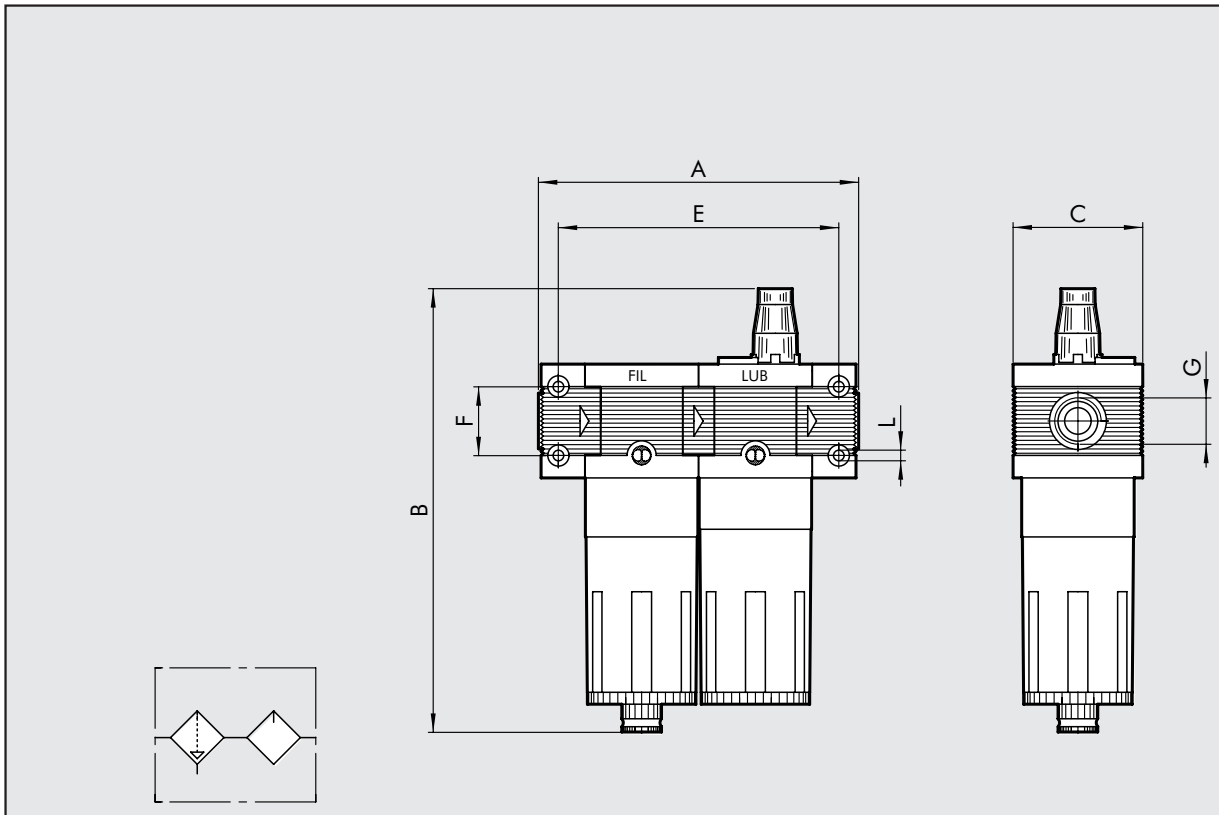
Code	Description
3272007	VFR+L 100 1/4 5 08 RMSA
3272008	VFR+L 100 1/4 20 08 RMSA
3272009	VFR+L 100 1/4 50 08 RMSA
3272010	VFR+L 100 1/4 5 012 RMSA
3272011	VFR+L 100 1/4 20 012 RMSA
3272012	VFR+L 100 1/4 50 012 RMSA
3272107	VFR+L 100 1/4 5 08 SAC
3272108	VFR+L 100 1/4 20 08 SAC
3272109	VFR+L 100 1/4 50 08 SAC
3272110	VFR+L 100 1/4 5 012 SAC
3272111	VFR+L 100 1/4 20 012 SAC
3272112	VFR+L 100 1/4 50 012 SAC
3372007	VFR+L 100 3/8 5 08 RMSA
3372008	VFR+L 100 3/8 20 08 RMSA
3372009	VFR+L 100 3/8 50 08 RMSA
3372010	VFR+L 100 3/8 5 012 RMSA
3372011	VFR+L 100 3/8 20 012 RMSA
3372012	VFR+L 100 3/8 50 012 RMSA
3372107	VFR+L 100 3/8 5 08 SAC
3372108	VFR+L 100 3/8 20 08 SAC
3372109	VFR+L 100 3/8 50 08 SAC
3372110	VFR+L 100 3/8 5 012 SAC
3372111	VFR+L 100 3/8 20 012 SAC
3372112	VFR+L 100 3/8 50 012 SAC
3472007	VFR+L 200 1/4 5 08 RMSA
3472008	VFR+L 200 1/4 20 08 RMSA
3472009	VFR+L 200 1/4 50 08 RMSA
3472010	VFR+L 200 1/4 5 012 RMSA
3472011	VFR+L 200 1/4 20 012 RMSA
3472012	VFR+L 200 1/4 50 012 RMSA
3472107	VFR+L 200 1/4 5 08 SAC
3472108	VFR+L 200 1/4 20 08 SAC
3472109	VFR+L 200 1/4 50 08 SAC
3472110	VFR+L 200 1/4 5 012 SAC
3472111	VFR+L 200 1/4 20 012 SAC
3472112	VFR+L 200 1/4 50 012 SAC
3572007	VFR+L 200 3/8 5 08 RMSA
3572008	VFR+L 200 3/8 20 08 RMSA
3572009	VFR+L 200 3/8 50 08 RMSA
3572010	VFR+L 200 3/8 5 012 RMSA
3572011	VFR+L 200 3/8 20 012 RMSA
3572012	VFR+L 200 3/8 50 012 RMSA
3572107	VFR+L 200 3/8 5 08 SAC
3572108	VFR+L 200 3/8 20 08 SAC
3572109	VFR+L 200 3/8 50 08 SAC
3572110	VFR+L 200 3/8 5 012 SAC
3572111	VFR+L 200 3/8 20 012 SAC
3572112	VFR+L 200 3/8 50 012 SAC
3672007	VFR+L 200 1/2 5 08 RMSA
3672008	VFR+L 200 1/2 20 08 RMSA
3672009	VFR+L 200 1/2 50 08 RMSA
3672010	VFR+L 200 1/2 5 012 RMSA
3672011	VFR+L 200 1/2 20 012 RMSA
3672012	VFR+L 200 1/2 50 012 RMSA
3672107	VFR+L 200 1/2 5 08 SAC
3672108	VFR+L 200 1/2 20 08 SAC
3672109	VFR+L 200 1/2 50 08 SAC
3672110	VFR+L 200 1/2 5 012 SAC
3672111	VFR+L 200 1/2 20 012 SAC
3672112	VFR+L 200 1/2 50 012 SAC
4472004	VFR+L 300 1/2 5 08 RMSA
4472005	VFR+L 300 1/2 20 08 RMSA
4472006	VFR+L 300 1/2 50 08 RMSA
4472007	VFR+L 300 1/2 5 012 RMSA
4472008	VFR+L 300 1/2 20 012 RMSA
4472009	VFR+L 300 1/2 50 012 RMSA
4472013	VFR+L 300 1/2 5 08 RA
4472014	VFR+L 300 1/2 20 08 RA
4472015	VFR+L 300 1/2 50 08 RA
4472016	VFR+L 300 1/2 5 012 RA
4472017	VFR+L 300 1/2 20 012 RA
4472018	VFR+L 300 1/2 50 012 RA
4572004	VFR+L 300 3/4 5 08 RMSA
4572005	VFR+L 300 3/4 20 08 RMSA
4572006	VFR+L 300 3/4 50 08 RMSA
4572007	VFR+L 300 3/4 5 012 RMSA
4572008	VFR+L 300 3/4 20 012 RMSA
4572009	VFR+L 300 3/4 50 012 RMSA
4572013	VFR+L 300 3/4 5 08 RA
4572014	VFR+L 300 3/4 20 08 RA
4572015	VFR+L 300 3/4 50 08 RA
4572016	VFR+L 300 3/4 5 012 RA
4572017	VFR+L 300 3/4 20 012 RA
4572018	VFR+L 300 3/4 50 012 RA
4672004	VFR+L 300 1 5 08 RMSA
4672005	VFR+L 300 1 20 08 RMSA
4672006	VFR+L 300 1 50 08 RMSA
4672007	VFR+L 300 1 5 012 RMSA
4672008	VFR+L 300 1 20 012 RMSA
4672009	VFR+L 300 1 50 012 RMSA
4672013	VFR+L 300 1 5 08 RA
4672014	VFR+L 300 1 20 08 RA
4672015	VFR+L 300 1 50 08 RA
4672016	VFR+L 300 1 5 012 RA
4672017	VFR+L 300 1 20 012 RA
4672018	VFR+L 300 1 50 012 RA

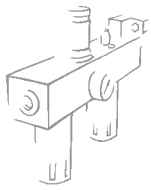
FIL+LUB Skillair® 100-200-300

TECHNICAL DATA		F+L 100		F+L 200			F+L 300		
Threaded port		1/4"	3/8"	1/4"	3/8"	1/2"	1/2"	3/4"	1"
Degree of filtration				5µm	20µm	50µm			
Max. inlet pressure	MPa	1.5		1.3			1.3		
	bar	15		13			13		
	psi	217		188			188		
Flow rate at 6.3 bar	Nl/min	600		1800			3200		
ΔP 0.5 bar	scfm	21		64			113		
Flow rate at 6.3 bar	Nl/min	1200		3200			4500		
ΔP 1 bar	scfm	42		113			160		
Fluid		Compressed air							
Max temperature	°C	50		50			50		
at 10 bar	°F	122		122			122		
Weight	Kg	0.5		1.1			2.2		
Wall fixing screws		M4x50		M5x60			M5x70		
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.							



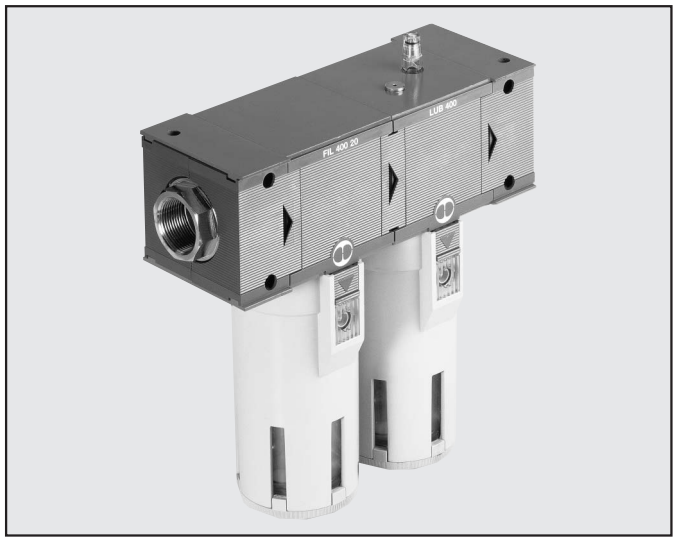
DIMENSIONS	FIL+LUB 100		FIL+LUB 200			FIL+LUB 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1"
A	121		149			175		177
B	172.5		203.5			223.5		
C	50		63			72		
E	106		134			157		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		



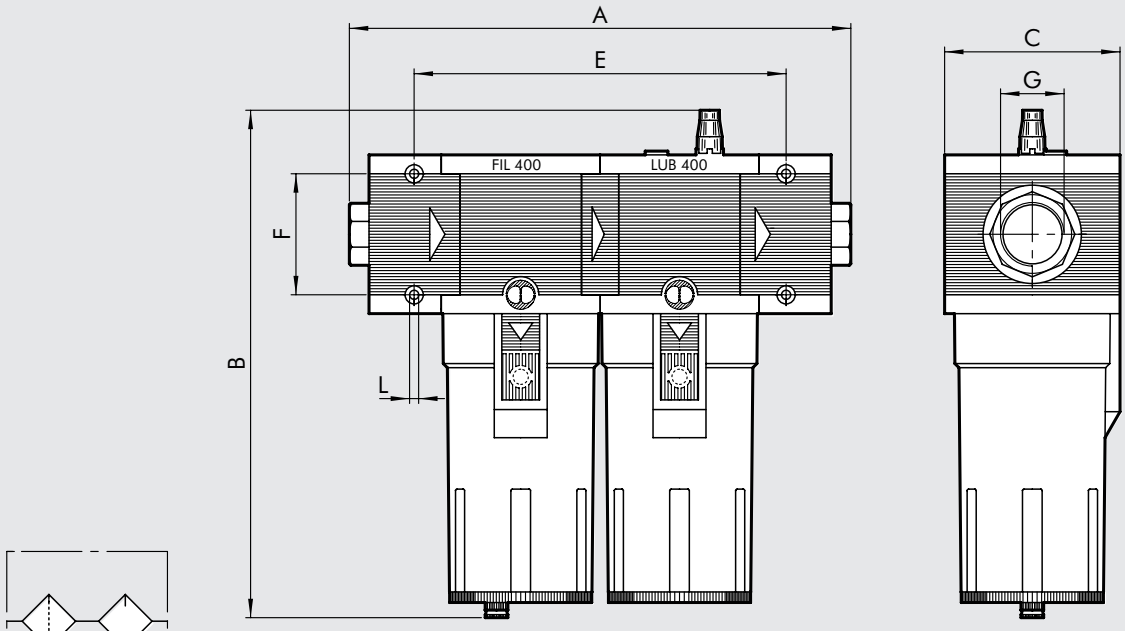


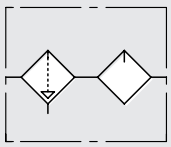
FIL+LUB Skillair® 400

TECHNICAL DATA		F+L 400			
Threaded port		G1''	G1''1/4''	G1''1/2''	G2''
Degree of filtration		5µm 20µm 50µm			
Max. inlet pressure	MPa	1.3			
	bar	13			
	psi	188			
Flow rate at 6.3 bar		F+L 400 1'': 9000 Nl/min = 320 scfm			
ΔP 0.5 bar		F+L 400 2'': 14.000 Nl/min = 500 scfm			
Fluid		Compressed air			
Max temperature	°C	50			
at 10 bar	°F	122			
Weight	Kg	8~			
Wall fixing screws		M6x110			
Mounting		Vertical			
Bowl capacity	cm^3	270			
Note on use		The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance.			
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			



DIMENSIONS	FIL+LUB 400			
THREADED PORT G	G1''	G1''1/4''	G1''1/2''	G2''
A		330-360		388-418
B		349.5		
C		116		
E		247		
F		80		
L		M6 hole		





KEY TO CODES

F+L	100	1/4	5µm	RMSA
ELEMENT	SIZE	THAREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDEN-SATE DRAIN
F+L	100	1/4	5µm	RMSA
		3/8	20µm	SAC
	200	1/4	50µm	RMSA
		3/8		SAC
		1/2		RA*
	300	1/2		RMSA
		3/4		RA
		1		
	400	1		
		1 1/4		
		1 1/2		
		2		

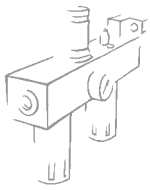
RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

* For SK200 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
3285001	F+L 100 1/4 5 RMSA
3285101	F+L 100 1/4 5 SAC
3285002	F+L 100 1/4 20 RMSA
3285102	F+L 100 1/4 20 SAC
3285003	F+L 100 1/4 50 RMSA
3285103	F+L 100 1/4 50 SAC
3385001	F+L 100 3/8 5 RMSA
3385101	F+L 100 3/8 5 SAC
3385002	F+L 100 3/8 20 RMSA
3385102	F+L 100 3/8 20 SAC
3385003	F+L 100 3/8 50 RMSA
3385103	F+L 100 3/8 50 SAC
3485001	F+L 200 1/4 5 RMSA
3485101	F+L 200 1/4 5 SAC
3485002	F+L 200 1/4 20 RMSA
3485102	F+L 200 1/4 20 SAC
3485003	F+L 200 1/4 50 RMSA
3485103	F+L 200 1/4 50 SAC
3585001	F+L 200 3/8 5 RMSA
3585101	F+L 200 3/8 5 SAC
3585002	F+L 200 3/8 20 RMSA
3585102	F+L 200 3/8 20 SAC
3585003	F+L 200 3/8 50 RMSA
3585103	F+L 200 3/8 50 SAC
3685001	F+L 200 1/2 5 RMSA
3685101	F+L 200 1/2 5 SAC
3685002	F+L 200 1/2 20 RMSA
3685102	F+L 200 1/2 20 SAC
3685003	F+L 200 1/2 50 RMSA
3685103	F+L 200 1/2 50 SAC
4485001	F+L 300 1/2 5 RMSA
4485002	F+L 300 1/2 20 RMSA
4485003	F+L 300 1/2 50 RMSA
4485004	F+L 300 1/2 5 RA
4485005	F+L 300 1/2 20 RA
4485006	F+L 300 1/2 50 RA
4585001	F+L 300 3/4 5 RMSA
4585002	F+L 300 3/4 20 RMSA
4585003	F+L 300 3/4 50 RMSA
4585004	F+L 300 3/4 5 RA
4585005	F+L 300 3/4 20 RA
4585006	F+L 300 3/4 50 RA
4685001	F+L 300 1 5 RMSA
4685002	F+L 300 1 20 RMSA
4685003	F+L 300 1 50 RMSA
4685004	F+L 300 1 5 RA
4685005	F+L 300 1 20 RA
4685006	F+L 300 1 50 RA
6185001	F+L 400 1 5 RMSA
6185002	F+L 400 1 20 RMSA
6185003	F+L 400 1 50 RMSA
6185004	F+L 400 1 5 RA
6185005	F+L 400 1 20 RA
6185006	F+L 400 1 50 RA
6285001	F+L 400 1 1/4 5 RMSA
6285002	F+L 400 1 1/4 20 RMSA
6285003	F+L 400 1 1/4 50 RMSA
6285004	F+L 400 1 1/4 5 RA
6285005	F+L 400 1 1/4 20 RA
6285006	F+L 400 1 1/4 50 RA
6385001	F+L 400 1 1/2 5 RMSA
6385002	F+L 400 1 1/2 20 RMSA
6385003	F+L 400 1 1/2 50 RMSA
6385004	F+L 400 1 1/2 5 RA
6385005	F+L 400 1 1/2 20 RA
6385006	F+L 400 1 1/2 50 RA
6485001	F+L 400 2 5 RMSA
6485002	F+L 400 2 20 RMSA
6485003	F+L 400 2 50 RMSA
6485004	F+L 400 2 5 RA
6485005	F+L 400 2 20 RA
6485006	F+L 400 2 50 RA

NOTES

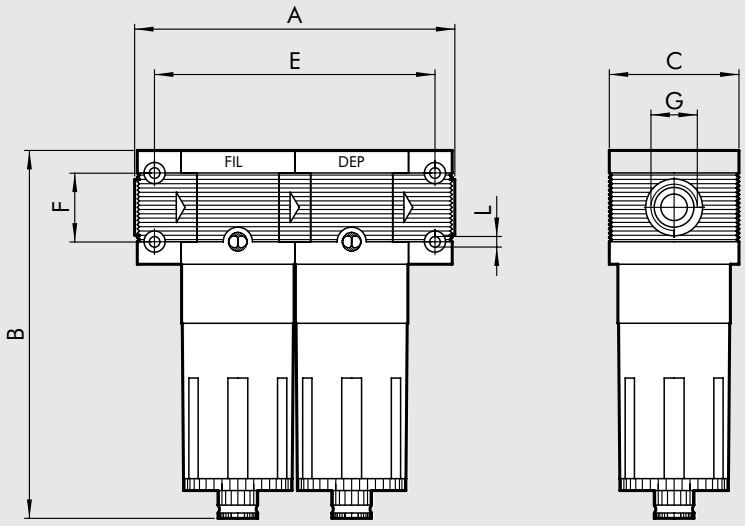


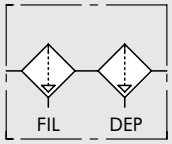
FIL+DEP Skillair® 100-200-300

TECHNICAL DATA		F+D 100	F+D 200	F+D 300
Threaded port		1/4'' | 3/8''	1/4'' | 3/8'' | 1/2''	1/2'' | 3/4'' | 1''
Degree of filtration		Filter: 5µm - Depurator: 0.01µm		
Max. inlet pressure	MPa	1.5	1.3	1.3
	bar	15	13	13
	psi	217	188	188
Maximum suggested flow rate		Please look at the flow rate curves at page 3.1/33		
Fluid		Compressed air		
Max temperature	°C	50	50	50
at 10 bar	°F	122	122	122
Weight	Kg	0.6	1.3	2.2
Wall fixing screws		M4x50	M5x60	M5x70
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		



DIMENSIONS	FIL+DEP 100		FIL+DEP 200			FIL+DEP 300		
THREADED PORT G	G 1/4	G 3/8	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1''
A	121		149			175		177
B	144		175			195		
C	50		63			72		
E	106		134			157		
F	26		36			42		
L	M4 hole		M5 hole			M5 hole		



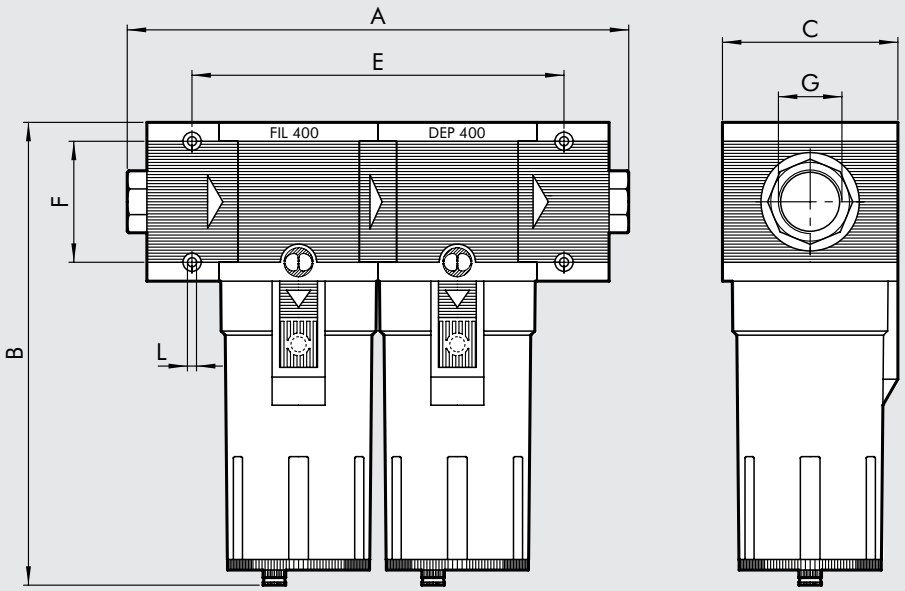


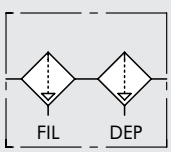
FIL+DEP Skillair® 400

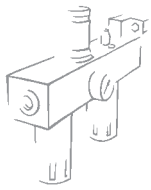
TECHNICAL DATA		F+D 400			
Threaded port		G1''	G1''1/4''	G1''1/2''	G2''
Degree of filtration		Filter: 5µm - Depurator: 0.01µm			
Max. inlet pressure	MPa	1.3			
	bar	13			
	psi	188			
Maximum suggested flow rate		Please look at the flow rate curves at page 3.1/35			
Fluid		Compressed air			
Max temperature	°C	50			
at 10 bar	°F	122			
Weight	Kg	7~			
Wall fixing screws		M6x110			
Mounting		Vertical			
Bowl capacity	cm^3	270			
Note on use		The end plates in the 400 series have a patented system with a rotary and sliding end joint to adapt the unit perfectly to the pipe cutting distance.			
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.			



DIMENSIONS	FIL+DEP 400			
THREADED PORT G	G1''	G1''1/4''	G1''1/2''	G2''
A		330-360		388-418
B		320		
C		116		
E		247		
F		80		
L		M6 hole		







KEY TO CODES

F+D	100	1/4	5µm	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDEN-SATE DRAIN
F+D	100	1/4 3/8	5µm	RMSA SAC
	200	1/4 3/8 1/2		
	300	1/2 3/4 1		RMSA RA
	400	1 1 1/4 1 1/2 2		

RMSA: Manual/semi-auto drain
SAC: Automatic drain for sizes 100 and 200. Operates by depression – requires variable air take-offs.
RA: Automatic drain for size 300 and 400. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

Code	Description
3289001	F+D 100 1/4 5 RMSA-RMSA
3289005	F+D 100 1/4 5 SAC-RMSA
3289006	F+D 100 1/4 5 SAC-SAC
3389001	F+D 100 3/8 5 RMSA-RMSA
3389005	F+D 100 3/8 5 SAC-RMSA
3389006	F+D 100 3/8 5 SAC-SAC
3489001	F+D 200 1/4 5 RMSA-RMSA
3489005	F+D 200 1/4 5 SAC-RMSA
3489006	F+D 200 1/4 5 SAC-SAC
3589001	F+D 200 3/8 5 RMSA-RMSA
3589005	F+D 200 3/8 5 SAC-RMSA
3589006	F+D 200 3/8 5 SAC-SAC
3689001	F+D 200 1/2 5 RMSA-RMSA
3689005	F+D 200 1/2 5 SAC-RMSA
3689006	F+D 200 1/2 5 SAC-SAC
4489001	F+D 300 1/2 5 RMSA-RMSA
4489002	F+D 300 1/2 5 RA-RA
4589001	F+D 300 3/4 5 RMSA-RMSA
4589002	F+D 300 3/4 5 RA-RA
4689001	F+D 300 1 5 RMSA-RMSA
4689002	F+D 300 1 5 RA-RA
6189001	F+D 400 1 5 RMSA-RMSA
6189002	F+D 400 1 5 RA-RA
6289001	F+D 400 1 1/4 5 RMSA-RMSA
6289002	F+D 400 1 1/4 5 RA-RA
6389001	F+D 400 1 1/2 5 RMSA-RMSA
6389002	F+D 400 1 1/2 5 RA-RA
6489001	F+D 400 2 5 RMSA-RMSA
6489002	F+D 400 2 5 RA-RA

NOTES

ACCESSOIRE
PRESSURE SWITCHES

This type of pressure switch features a high degree of miniaturisation and a modern attractive design.
It can be installed in any position and also mounted onto a wall by means of two transversal holes.
In order to reduce wiring times, it is supplied ready assembled with a 2-metre electric cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.
A knurled push-lock handle is provided for regulation

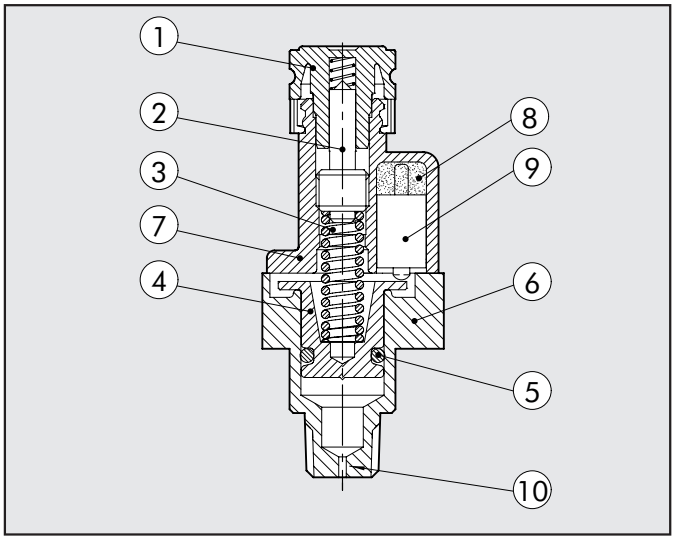


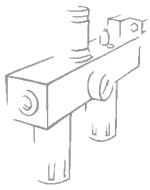
TECHNICAL DATA

Adjustable pressure interval	bar	0.5 ÷ 10
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)
Maximum pressure	bar	15
	MPa	1.5
	psi	217
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Lower threaded port		R 1/8"
Maximum current	A	2
Maximum voltage	V	250
Outside diameter of cable	mm	4.9
Number of wires and cross section		3x0.5 mm^2
Contacts		Normally-Open (NO) and Normally-Closed (NC)
Protection		IP65
Number of switchings		$5x10^6$
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Mounting position		In any position
Weight	Kg	0.121

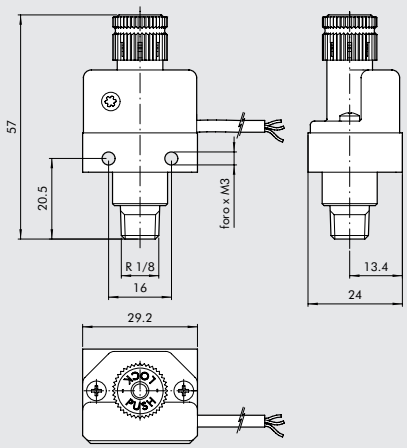
COMPONENTS

① Technopolymer adjusting push-lock handle
② Brass adjusting screw
③ Steel piston spring
④ Brass piston
⑤ NBR gasket
⑥ Body made of anodized aluminium
⑦ Technopolymer pressure switch body
⑧ Resin finish for IP65
⑨ Electrical contact
⑩ Choke to reduce peaks in pressure



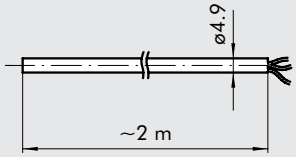


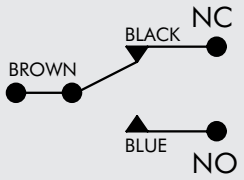
DIMENSIONS



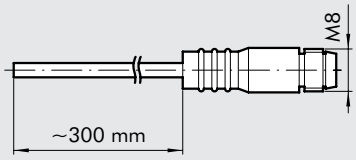
WIRING DIAGRAM

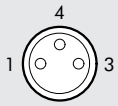
VERSION WITH CABLE





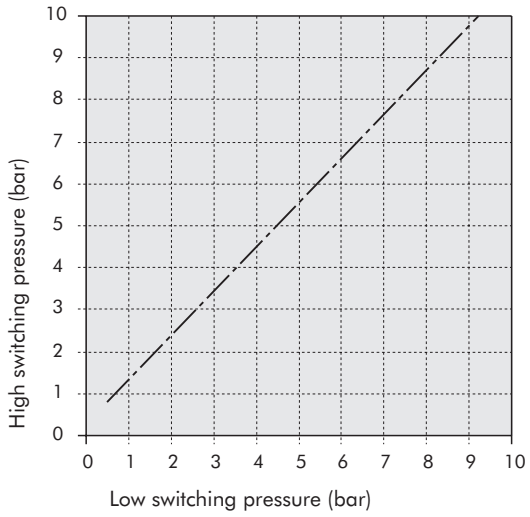
VERSION WITH M8 CONNECTOR





1 - 3 NC
1 - 4 NO

HYSTERESIS GRAPH

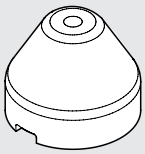


ORDERING CODES

Code	Description
9000401	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, 2-METRE CABLE
9000402	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, M8 CONNECTOR

ACCESSORIES

SECURITY KNOB



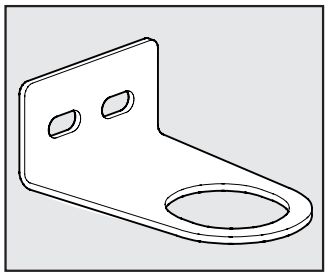
Code	Description
9200703	ACC. SECURITY KNOB

NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

NOTES

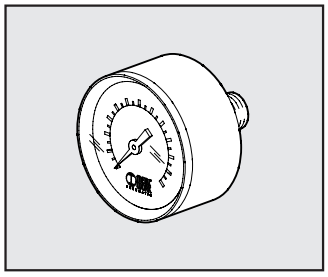
Skillair® ACCESSORIES

MOUNTING BRACKET FOR REG.



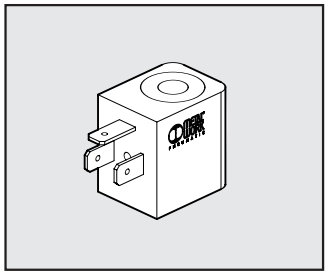
Code	Description
9200701	SF100- BIT-ND1/4
9400701	SF200-ND-3/8 1/2
9400702	SF300

PRESSURE GAUGES



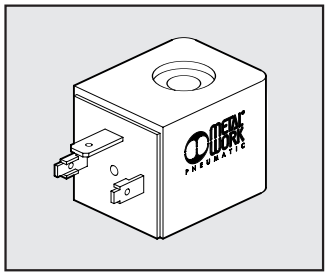
Code	Description
9700101	ACC. M 40 1/8 12
9700102	ACC. M 40 1/8 04
9800101	ACC. M 50 1/8 12
9800102	ACC. M 50 1/8 04
9900101	ACC. M 63 1/4 12

COIL FOR APR and V3V SOLENOID



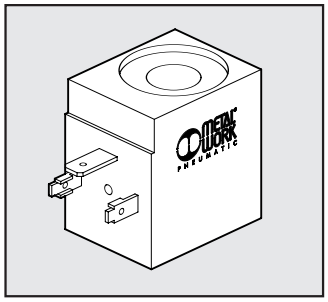
Code	Description
W0215000101	Coil 22 Ø8 BA 2W-24VDC
W0215000111	Coil 22 Ø8 BA 3VA-24VAC
W0215000121	Coil 22 Ø8 BA 3VA-110VAC
W0215000131	Coil 22 Ø8 BA 3VA-220VAC

COIL FOR V3V APR WITH CNOMO



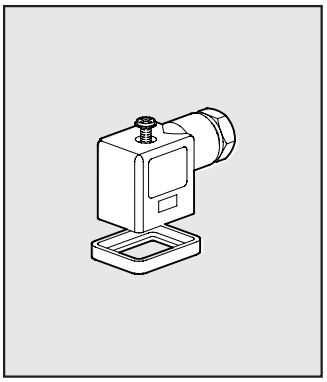
Code	Description
W0210010100	COIL 30 D8 4W-24VDC
W0210011100	COIL 30 D8 4VA-24VAC 50/60 HZ
W0210012100	COIL 30 D8 4VA-110VAC 50/60 HZ
W0210013100	COIL 30 D8 4VA-220VAC 50/60 HZ

COIL FOR CDV CDML LUBRICATOR



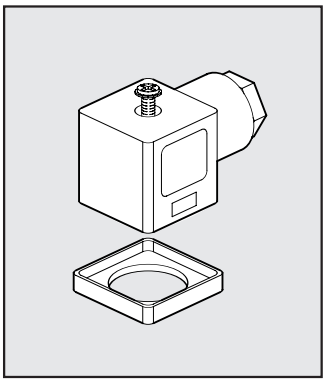
Code	Description
W0216001001	COIL 24 V CC
W0216001011	COIL 24V 50/60HZ
W0216001021	COIL 110V 50/60HZ
W0216001031	COIL 220V 50/60HZ

ELECTRIC CONNECTOR FOR V3V-APR ELPN



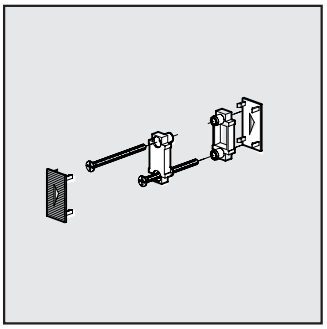
Code	Description
W0970510012	ACC. CONNECTOR 22 LED 24V
W0970510013	ACC. CONNECTOR 22 LED 110V
W0970510014	ACC. CONNECTOR 22 LED 220V
W0970510015	ACC. CONNECTOR 22 LED VDR 24V
W0970510016	ACC. CONNECTOR 22 LED VDR 110V
W0970510017	ACC. CONNECTOR 22 LED VDR 220V

ELECTRIC CONNECTOR FOR V3V APR WITH CNOMO



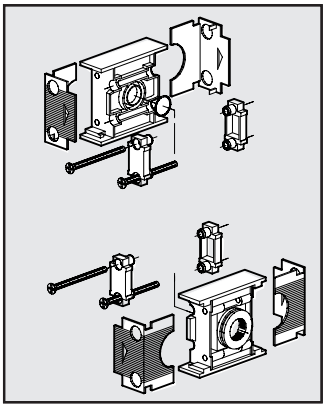
Code	Description
W0970520033	ACC. CONNECTOR 30 STD
W0970520034	ACC. CONNECTOR 30 LED 24V
W0970520035	ACC. CONNECTOR 30 LED 110V
W0970520036	ACC. CONNECTOR 30 LED 220V
W0970520037	ACC. CONNECTOR 30 LED VDR 24V
W0970520038	ACC. CONNECTOR 30 LED VDR 110V
W0970520039	ACC. CONNECTOR 30 LED VDR 220V

CONNECTOR KIT FOR SKILLAIR CODE A

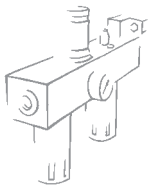


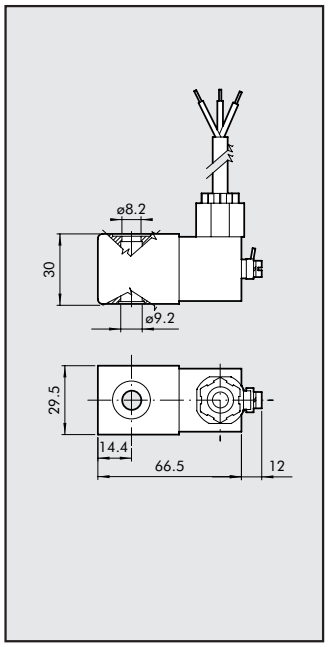
Code	Description
9230301	ACC. CONNECTOR KIT 100
9330301	ACC. CONNECTOR KIT 200
9430301	ACC. CONNECTOR KIT 300
9630301	ACC. CONNECTOR KIT 400

INPUT/OUTPUT END PLATE KIT



Code	Description
9230401	ACC. IN/OUT END PLATE KIT 100 1/4
9330501	ACC. IN/OUT END PLATE KIT 100 3/8
9330601	ACC. IN/OUT END PLATE KIT 200 1/4
9330701	ACC. IN/OUT END PLATE KIT 200 3/8
9330801	ACC. IN/OUT END PLATE KIT 200 1/2
9430701	ACC. IN/OUT END PLATE KIT 300 1/2
9530901	ACC. IN/OUT END PLATE KIT 300 3/4
9531001	ACC. IN/OUT END PLATE KIT 300 1"
9631001	ACC. IN/OUT END PLATE KIT 400 1"
9631101	ACC. IN/OUT END PLATE KIT 400 1"1/4"
9631201	ACC. IN/OUT END PLATE KIT 1"1/2"
9631301	ACC. IN/OUT END PLATE KIT 2"



KIT FOR COIL EEEXM FOR V3V-APR-LUB	Code	Description
	0227606913	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 3M
	0227606915	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 5M
	0227608013	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 3M
	0227608015	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 5M
	0227608023	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 3M
	0227608025	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 5M
	0227608033	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 3M
	0227608035	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 5M

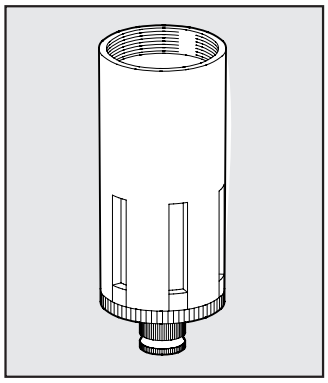
KIT FOR COIL SIDE 22 IP65 FOR V3V-APR-LUB	Code	Description
	0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

NOTES

METAL WORK PNEUMATIC

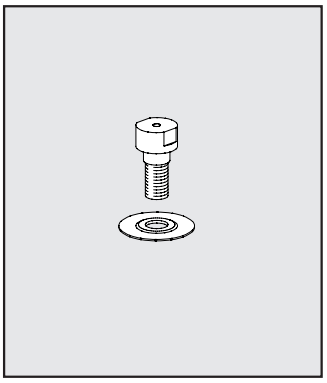
SPARES Skillair®

FILTER BOWL



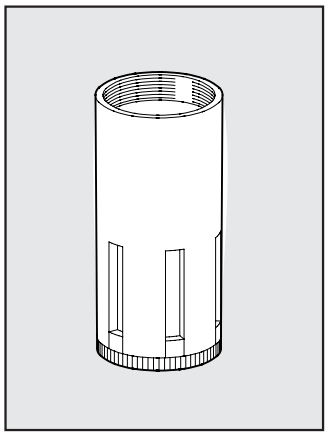
Code	Description
9253301	SPARES TF 100 RMSA
9255301	SPARES TF 100 SAC
9353301	SPARES TF 200 1/2 RMSA
9355301	SPARES TF 200 1/2 SAC
9453401	SPARES TF 300 RMSA
9453301	SPARES TF 300 RMSA
9653401	SPARES TF 400 RA
9653301	SPARES TF 400 RA

VENTURI LUBRICATOR DIAPHRAGM



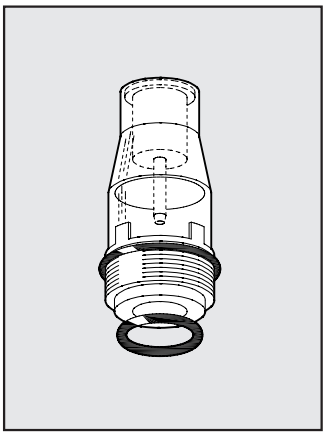
Code	Description
9252001	SPARES MB 100 ND 1/4
9352001	SPARES MB 200 N/D 3/8-1/2
9452001	SPARES MB 300 1/2 3/4
9652601	SPARES MB 400

LUBRICATOR BOWL



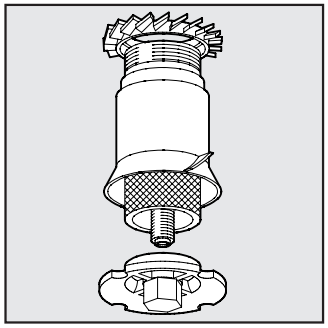
Code	Description
9253501	SPARES TL 100
9202503	SPARES TL 100 CA
9202502	SPARES TL 100 CD
9202501	SPARES TL 100 ML
9353501	SPARES TL 200
9302501	SPARES TL 200 CA
9302503	SPARES TL 200 CD
9302502	SPARES TL 200 ML
9453501	SPARES TL 300
9202403	SPARES TL 300 CA
9202401	SPARES TL 300 CD
9202402	SPARES TL 300 ML
9653501	SPARES TL 400
9653502	SPARES TL 400 CA
9653504	SPARES TL 400 CD
9653503	SPARES TL 400 ML

TRANSPARENT LUBRICATOR COVER



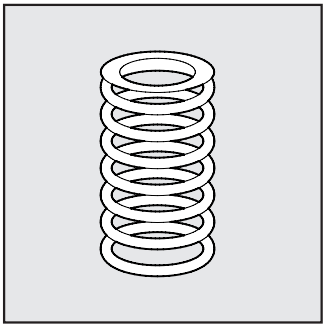
Code	Description
9251302	SPARES CVL 100-200-300-400 BIT

FILTERING ELEMENTS



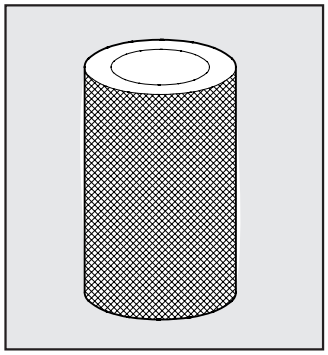
Code	Description
9251705	SPARES FP 100 5
9251706	SPARES FP 100 20
9251707	SPARES FP 100 50
9351705	SPARES FP 200 5
9351706	SPARES FP 200 20
9351707	SPARES FP 200 50
9451705	SPARES FP 300 5
9451706	SPARES FP 300 20
9451707	SPARES FP 300 50
9651706	SPARES FP 400 5
9651707	SPARES FP 400 20
9651705	SPARES FP 400 50

SPRINGS FOR REDUCERS AND FRs



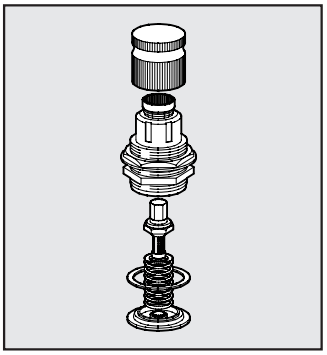
Code	Description
9250605	RIC.MO 100 02
9250606	RIC.MO 100 04
9250607	RIC.MO 100 08
9250608	RIC.MO 100 012
9350605	RIC.MO 200 02
9350606	RIC.MO 200 04
9350607	RIC.MO 200 08
9350608	RIC.MO 200 012
9450605	RIC.MO 300 04
9450606	RIC.MO 300 08
9450607	RIC.MO 300 012
9450608	RIC.MO 300 02

FILTERING/PURIFICATION ELEMENTS

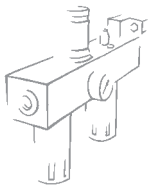


Code	Descrizione
9251711	SPARES FP DEP. 100
9351711	SPARES FP DEP. 200
9451711	SPARES FP DEP. 300
9651711	SPARES FP DEP. 400

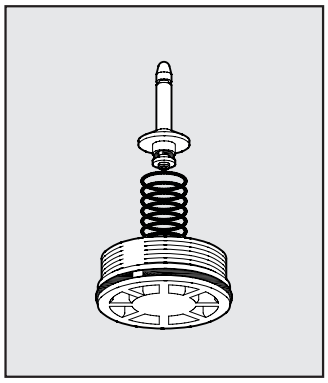
UPPER COVER FOR REGULATOR AND FR



Code	Description
9250800	RIC.CS 100 02
9250810	RIC.CS 100 04
9250811	RIC.CS 100 08
9250812	RIC.CS 100 012
9350800	RIC.CS 200 02
9350810	RIC.CS 200 04
9350811	RIC.CS 200 08
9350812	RIC.CS 200 012
9450805	RIC.CS 300 04
9450806	RIC.CS 300 08
9450807	RIC.CS 300 012
9450808	RIC.CS 300 02

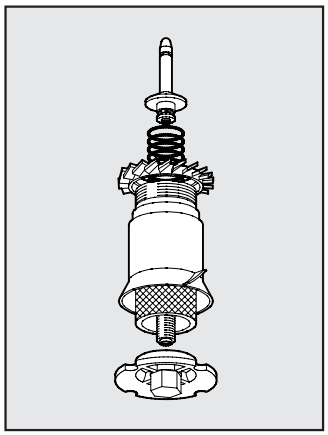


COMPLETE POPPET FOR REGULATORS



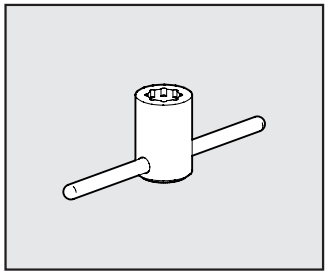
Code	Description
9250704	SPARES OTR 100
9350704	SPARES OTR 200
9450704	SPARES OTR 300
9650704	SPARES OTR 400

COMPLETE POPPET FOR FR



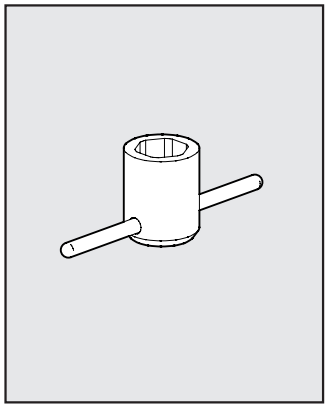
Code	Description
9250902	SPARES OTFR 100 1/4 3/8 5
9250903	SPARES OTFR 100 1/4 3/8 20
9250904	SPARES OTFR 100 1/4 3/8 50
9350902	SPARES OTFR 200 1/4 3/8 1/2 5
9350903	SPARES OTFR 200 1/4 3/8 1/2 20
9350904	SPARES OTFR 200 1/4 3/8 1/2 50
9450902	SPARES OTFR 300 1/2 3/4 5
9450903	SPARES OTFR 300 1/2 3/4 20
9450904	SPARES OTFR 300 1/2 3/4 50

UPPER COVER DISASSEMBLY SPANNER



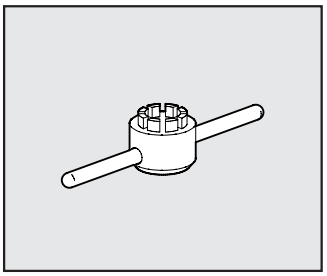
Code	Description
9220701	SPARES COVER SPANNER

REG and FR VISUAL DOME DISASSEMBLY SPANNER



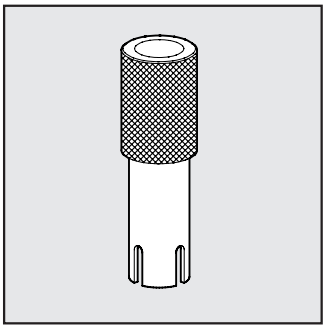
Code	Description
9220401	SPARES DOME DIS. SPANNER 100
9323401	SPARES DOME DIS. SPANNER 200
9420401	SPARES DOME DIS. SPANNER 300

POPPET DISASSEMBLY SPANNER (FOR REG.)



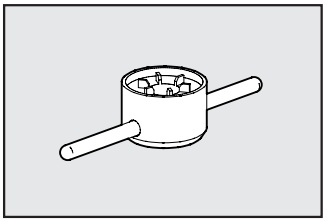
Code	Description
9220501	SPARES R CAP DISASS. WR. 100
9323501	SPARES R CAP DISASS. WR. 200
9420501	SPARES R CAP DISASS. WR. 300

POPPET DISASSEMBLY SPANNER (FOR FR)



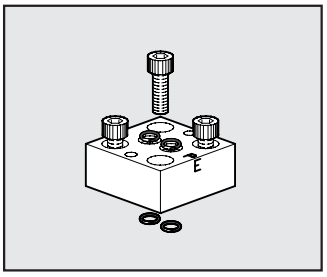
Code	Description
9220801	SPARES FR CAP DISASS. WR. 100
9320801	SPARES FR CAP DISASS. WR. 200
9420801	SPARES FR CAP DISASS. WR. 300

CAP DISASSEMBLY SPANNER



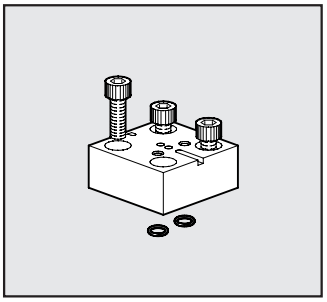
Code	Description
9220601	SPARES CAP DISASS. 100
9323601	SPARES CAP DISASS. 200
9420601	SPARES CAP DISASS. 300

PROVISION FOR SOLENOID CONTROL TO CNOMO FOR APR-300 AND V3V 300



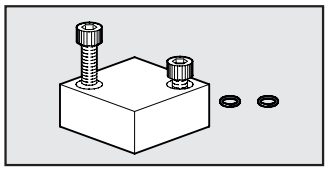
Code	Description
9454001	SPARES PCE TO CNOMO

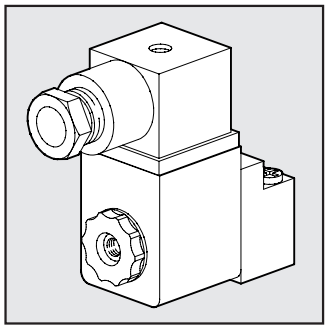
PROVISION FOR MICRO SOLENOID CONTROL FOR APR-300 and V3V 300

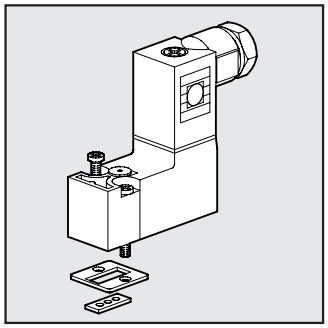


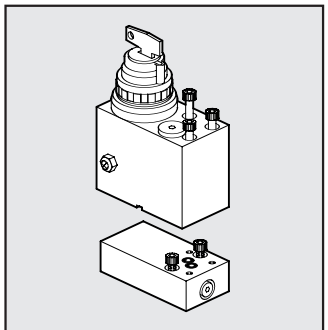
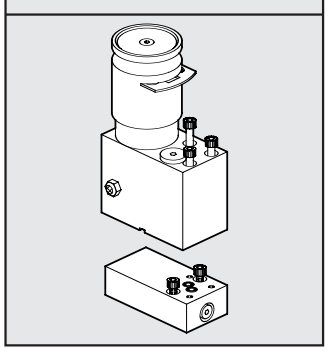
Code	Description
9453601	SPARES PCE MICRO

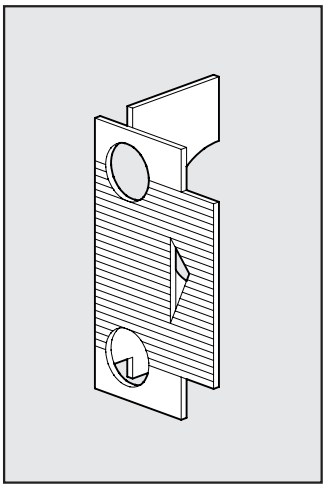
METAL WORK PNEUMATIC

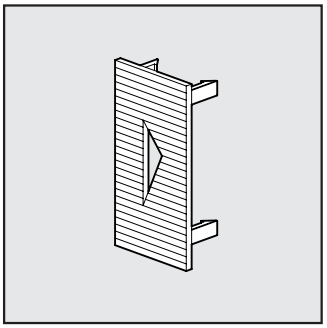
PROVISION FOR PNEUMATIC CONTROL FOR APR-300 and V3V 300	Code	Description
	9453701	SPARES PCP PNEUMATIC

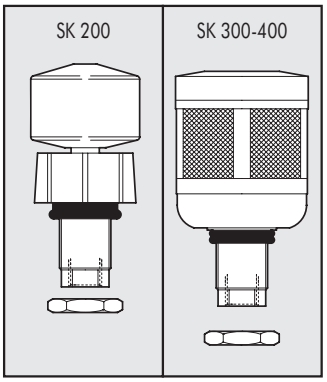
CNOMO SOLENOID CONTROL FOR APR-300 and V3V 300	Code	Description
	9453901	SPARES CEC CNOMO 24CC
	9453902	SPARES CEC CNOMO 24V
	9453903	SPARES CEC CNOMO 110V
	9453904	SPARES CEC CNOMO 220V

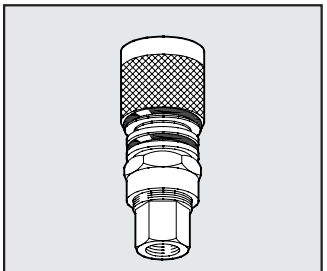
MICRO SOLENOID CONTROL FOR APR-300 and V3V 300	Code	Description
	9453801	SPARES CEM MICRO 24CC
	9453802	SPARES CEM MICRO 24V
	9453803	SPARES CEM MICRO 110V
	9453804	SPARES CEM MICRO 220V

V3V CONTROL 400	Code	Description
	9455401	SPARES KIT C.C. 400
	9455601	SPARES KIT LOCKABLE 400

INPUT/OUTPUT COVER PLATE	Code	Description
	9152103	SPARES OUTPUT COVER PLATE 100
	9152105	SPARES INPUT COVER PLATE 100
	9152115	SPARES OUTPUT COVER PLATE 200
	9152116	SPARES INPUT COVER PLATE 200
	9152104	SPARES OUTPUT COVER PLATE 300
	9152106	SPARES INPUT COVER PLATE 300
	9152118	SPARES OUTPUT COVER PLATE 400
	9152119	SPARES INPUT COVER PLATE 400

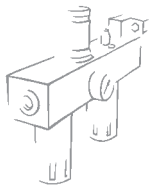
INTERMEDIATE COVER PLATE	Code	Description
	9152107	SPARES INTERMEDIATE COVER PLATE 100
	9152114	SPARES INTERMEDIATE COVER PLATE 200
	9152108	SPARES INTERMEDIATE COVER PLATE 300
	9152117	SPARES INTERMEDIATE COVER PLATE 400

AUTODRAIN (RA)	Code	Description
SK 200 SK 300-400 	9000802	RIC. RA 300-400
	9000805	RIC. RA 200-ONE

AUTODRAIN TAP (SAC)	Code	Description
	9000803	RIC. SAC 100-200

SUMMARY bit

CHAPTER 3.2

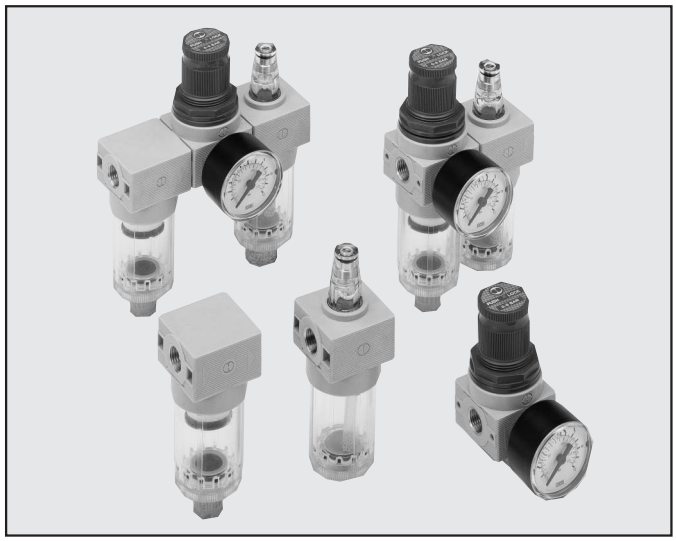


	INTRODUCTION	PAGE 3.2/02
	FILTER	PAGE 3.2/04
	MICROREGULATOR	PAGE 3.2/06
	LUBRICATOR	PAGE 3.2/08
	FILTER-REGULATOR	PAGE 3.2/11
	DEPURATOR	PAGE 3.2/13
	AIR TAKE-OFF	PAGE 3.2/15
	UNITS	PAGE 3.2/16
	PRESSURE SWITCHES	PAGE 3.2/22
	ACCESSORIES	PAGE 3.2/24
	SPARES	PAGE 3.2/25

bit

The units in the BIT range feature:
- reduced dimensions
- negligible load loss
- long life
- excellent quality-to-price ratio

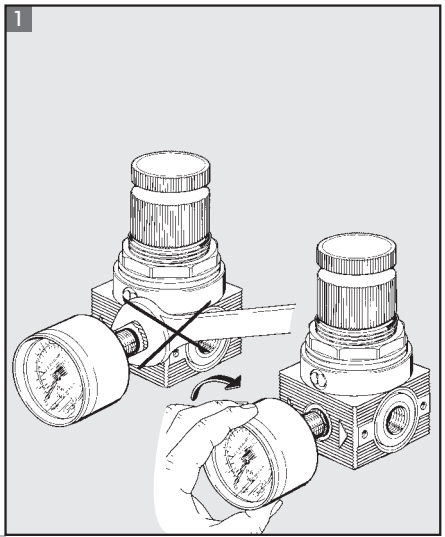
Thanks to its technical features the BIT air treatment range is particularly suitable for de-centralized use near the final actuators.



TECHNICAL DATA		BIT 1/8''	BIT 1/4''
Threaded port		1/8''	1/4''
Degree of filtration		5µm (yellow) 20µm (white) 50µm (blue)	
Degree of purification		99.97% a 0.01µm	
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa – 91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		350 Nl/min=12 scfm	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	–10°-+50°	
	°F	14°-122°	
Elements		Filter – Regulator – Lubricator – Filter-regulator – Depurator	
		Units: FRL, FR+L, F+L, F+D	
Mounting		By means of the bracket provided	

GENERAL RULES - USE AND MAINTENANCE

1



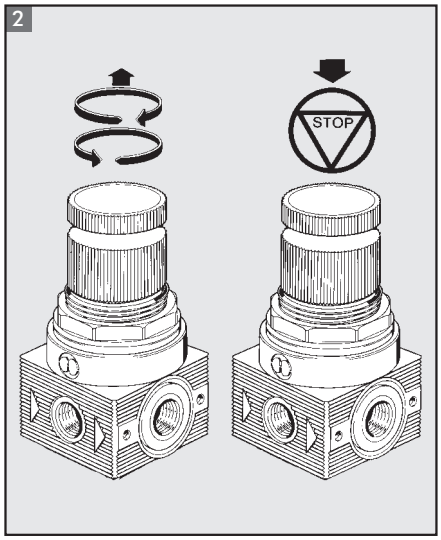
MOUNTING THE GAUGE

1 The gauge must be mounted by hand without using a spanner. Use fluid sealants to provide a good seal.
N.B. Do not use Teflon.

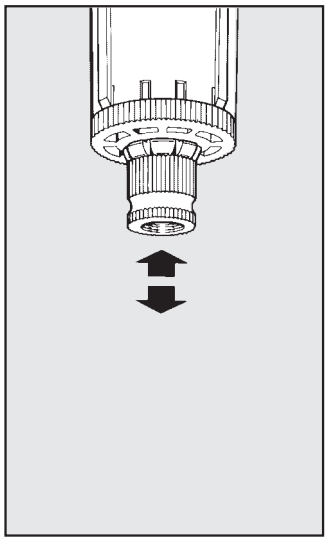
SETTING THE PRESSURE

2 The air pressure must always be set upwards. The knob can be locked so that the set pressure cannot be altered (see fig. 2).

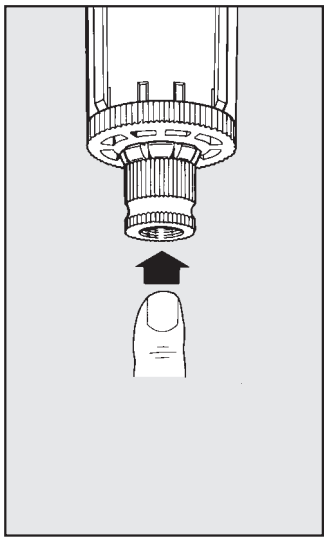
2



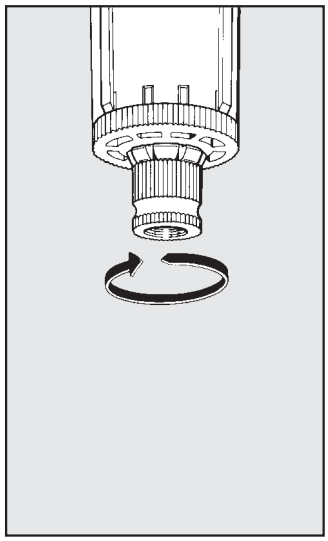
GENERAL RULES - USE AND MAINTENANCE



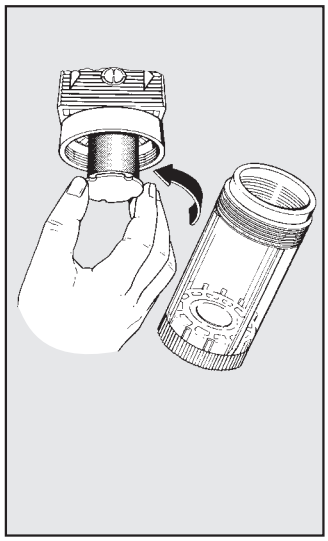
With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.

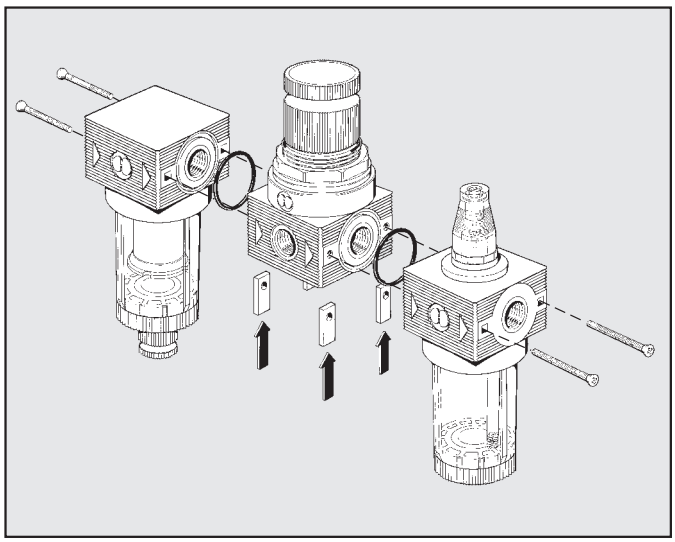


Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

ASSEMBLY



Use ASSEMBLY PLATES (code 9170201) to assemble the Bit elements correctly.
Assembly procedure:
- Fit the plates right into the slots under the body of the Bit element
- Check that there O-rings round the threaded outlet
- Assemble the elements, making sure that the flow run in the direction of the arrows marked on the body.

bit FILTER

Mini-filter with different degrees of filtration and two types of drain (semi-automatic, automatic).
- Minimum load loss as the flow rate varies
- All-round condensate level viewing.

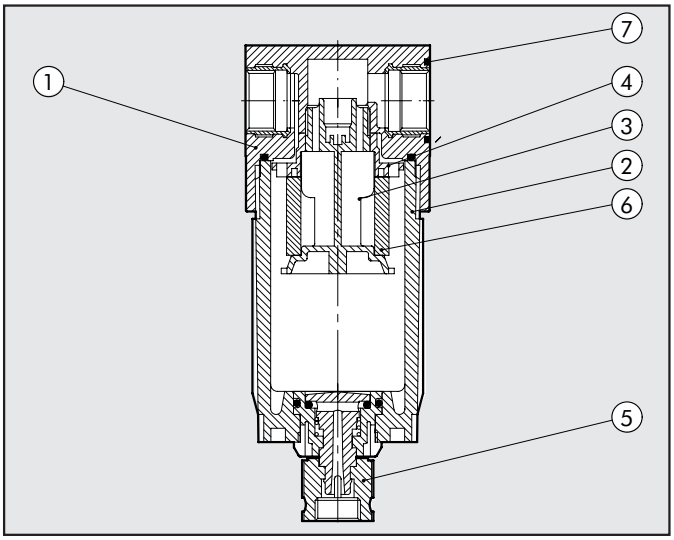
The degree of filtration is shown by the colour of the cartridge: yellow = 5µm, white = 20µm, blue = 50µm.

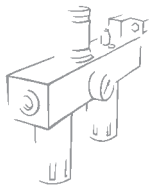


TECHNICAL DATA		BIT 1/8''	BIT 1/4''
Threaded port		1/8''	1/4''
Degree of filtration		5µm (giallo) 20µm (white) 50µm (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa – 91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)	Nl/min	860 Nl/min=30.5 scfm	
Flow rate at 6.3 bar (0.63 MPa – 91 psi) ΔP 1 bar (0.1 MPa – 14 psi)	Nl/min	1200 Nl/min=42.5 scfm	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	40	
Wall fixing screws		M 4	
Mounting position		Vertical	
Condensate drain		Manual/Semi-auto (RMSA)	
		Automatic (SAC)	
Bowl capacity	cm^3	16	

BIT FILTER ELEMENTS

① Technopolymer body with OT58 threaded element
② Clear technopolymer bowl
③ Technopolymer baffle plug
④ Technopolymer centrifuge
⑤ Condensate drain (RMSA)
⑥ HDPE sintered filter cartridge
⑦ NBR gaskets





FLOW CHARTS

FIL

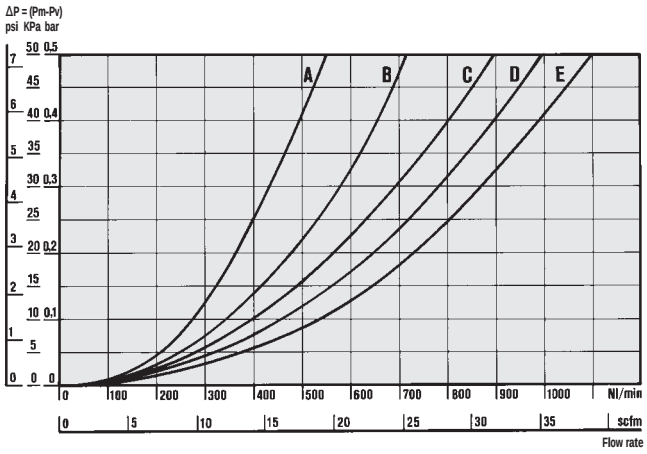
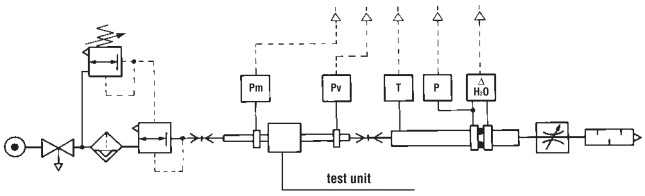


Chart referring to a filter with 1/4 ports

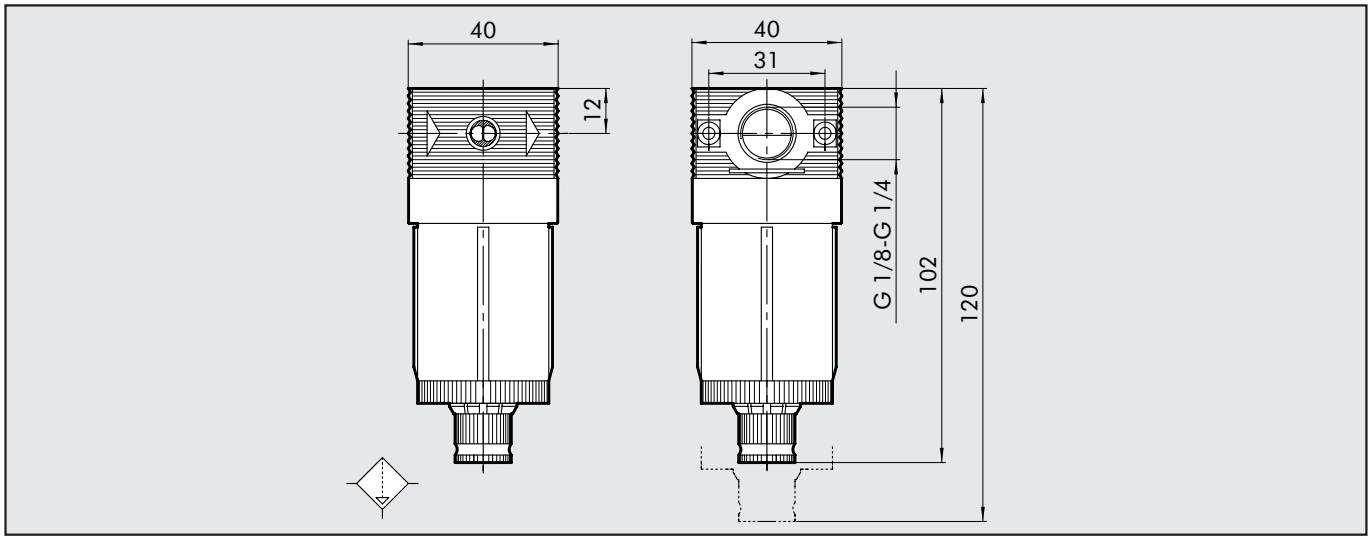




• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

A = 2 bar - 0,2 MPa - 29 psi
B = 4 bar - 0,4 MPa - 58 psi
C = 6 bar - 0,6 MPa - 87 psi
D = 8 bar - 0,8 MPa - 116 psi
E = 10 bar - 1 MPa - 145 psi

DIMENSIONS



KEY TO CODES

FIL	BIT	1/8	5 μm	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN
FIL	BIT	1/8 1/4	5 μm 20 μm 50 μm	RMSA SAC

RMSA: Semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
5101001	FIL BIT 1/8 5 RMSA
5101004	FIL BIT 1/8 5 SAC
5101002	FIL BIT 1/8 20 RMSA
5101005	FIL BIT 1/8 20 SAC
5101003	FIL BIT 1/8 50 RMSA
5101006	FIL BIT 1/8 50 SAC
5201001	FIL BIT 1/4 5 RMSA
5201004	FIL BIT 1/4 5 SAC
5201002	FIL BIT 1/4 20 RMSA
5201005	FIL BIT 1/4 20 SAC
5201003	FIL BIT 1/4 50 RMSA
5201006	FIL BIT 1/4 50 SAC

bit MICRO-REGULATOR

Micro-regulator with rolling diaphragm.
- Preset pressure stability as the upstream pressure varies.
- High flow rates with reduced pressure drops
- Quick overpressure exhaust

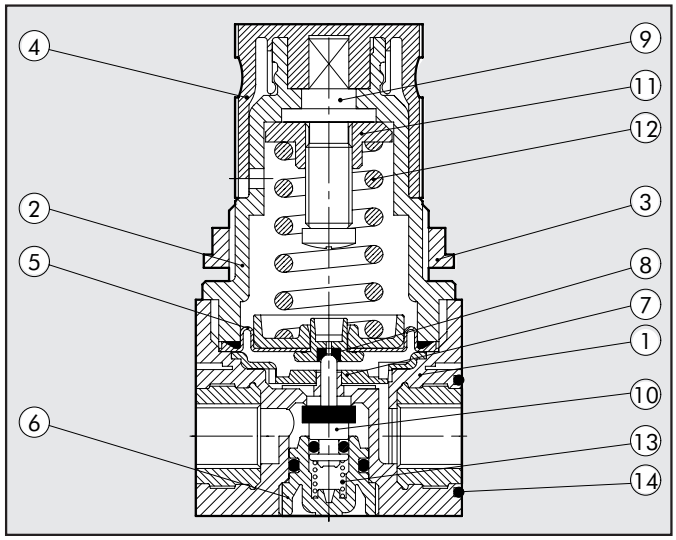
Versions available
Bit FC: controlled relief to allow greater accuracy in regulation by means of slight continuous air relief.
Bit for water: used to regulate the pressure in water circuits; without blowoff valve
Bit SR: for use when the downstream circuit needs to be relieved quickly as the upstream pressure drops. Mount the SR regulator between the power supply valve and the point of use.

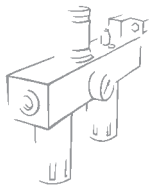


TECHNICAL DATA		MR BIT 1/8''	MR BIT 1/4''
Threaded port		1/8''	1/4''
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		340 Nl/min = 12 scfm	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		600 Nl/min = 21 scfm	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous	
Max temperature at 1 Mpa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	80	
Wall fixing screws		M 4	
Mounting		In any position	
Gauge port		G 1/8''	
Notes:		The regulator pressure must always be set upwards.	
		For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

COMPONENTS

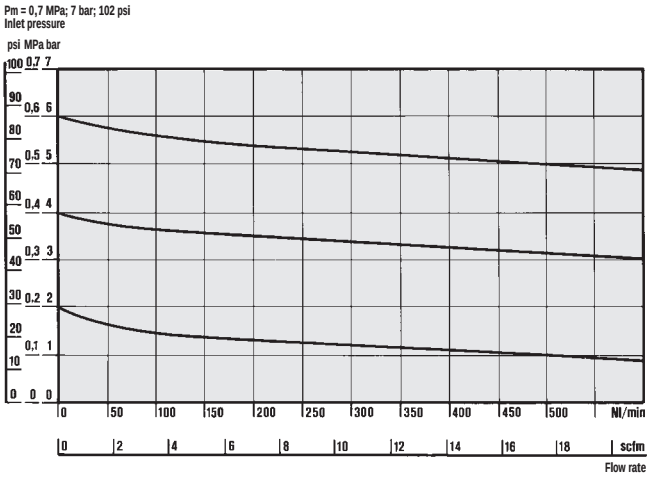
① Technopolymer body with OT58 threaded elements
② Technopolymer bell
③ Technopolymer fixing ring nut
④ Technopolymer knob
⑤ Rolling diaphragm
⑥ Technopolymer plug
⑦ Technopolymer anti-vibration screen
⑧ NBR relieving gasket
⑨ OT58 brass adjusting screws
⑩ OT58 valve with NBR vulcanized gasket
⑪ OT58 brass nut
⑫ Steel adjusting spring
⑬ Stainless steel valve compression spring
⑭ NBR gaskets



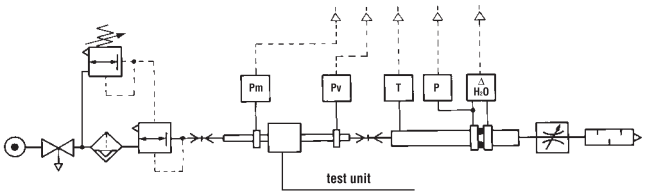


FLOW CHARTS

MR

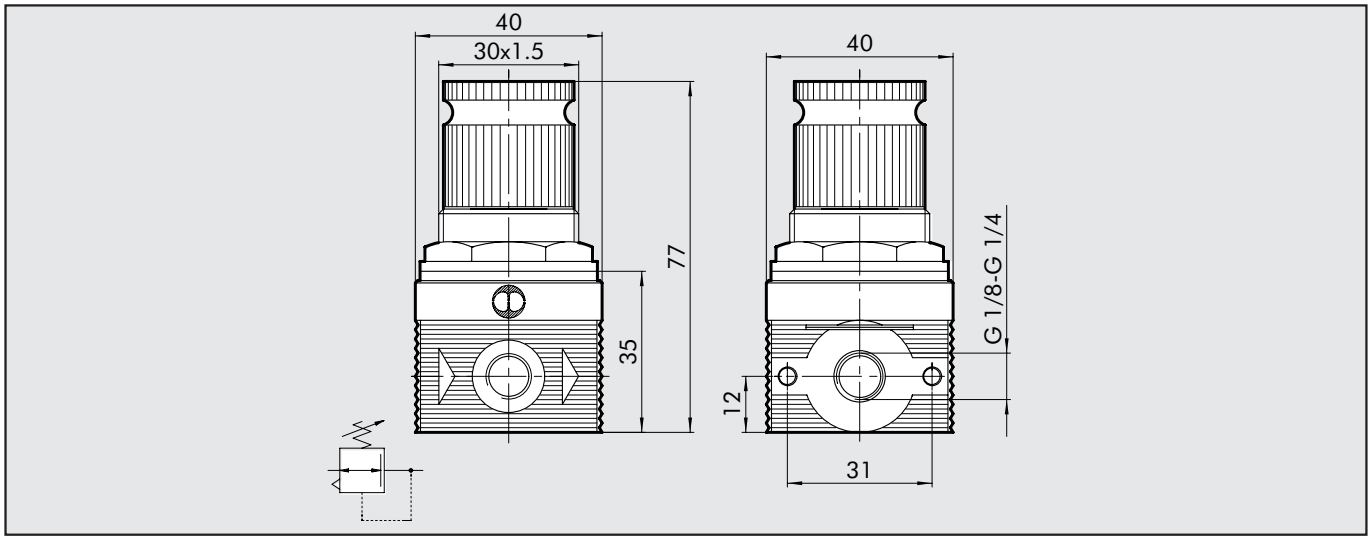


Department of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

DIMENSIONS



KEY TO CODES

MR	BIT	FC	1/8	02
ELEMENT	SIZE	VERSION	THREADED PORT	CONDENSATE DRAIN
MR	BIT	FC	1/8	02
	BIT	SR	1/4	04
	BIT			08
MRA	BIT	(for WATER)		012

FC: Controlled relief
SR: Quickly relieved
MRA: Without relief (for water)

ORDERING CODES

Code	Description
MICROREGULATOR (MR)	
5107001	MR BIT 1/8 02
5107002	MR BIT 1/8 04
5107003	MR BIT 1/8 08
5107004	MR BIT 1/8 012
5207001	MR BIT 1/4 02
5207002	MR BIT 1/4 04
5207003	MR BIT 1/4 08
5207004	MR BIT 1/4 012
MICROREGULATOR WITH CONTROLLED RELIEF	
5111001	MR BIT FC 1/8 02
5111002	MR BIT FC 1/8 04
5211001	MR BIT FC 1/4 02
5211002	MR BIT FC 1/4 04

Code	Description
MICROREGULATOR WITH QUICK RELIEF	
5102001	MR BIT SR 1/8 02
5102002	MR BIT SR 1/8 04
5102003	MR BIT SR 1/8 08
5102004	MR BIT SR 1/8 012
5202001	MR BIT SR 1/4 02
5202002	MR BIT SR 1/4 04
5202003	MR BIT SR 1/4 08
5202004	MR BIT SR 1/4 012
WATER MICROREGULATOR	
5108001	MRA BIT 1/8 02
5108002	MRA BIT 1/8 04
5108003	MRA BIT 1/8 08
5108004	MRA BIT 1/8 012
5208001	MRA BIT 1/4 02
5208002	MRA BIT 1/4 04
5208003	MRA BIT 1/4 08
5208004	MRA BIT 1/4 012

bit LUBRICATOR

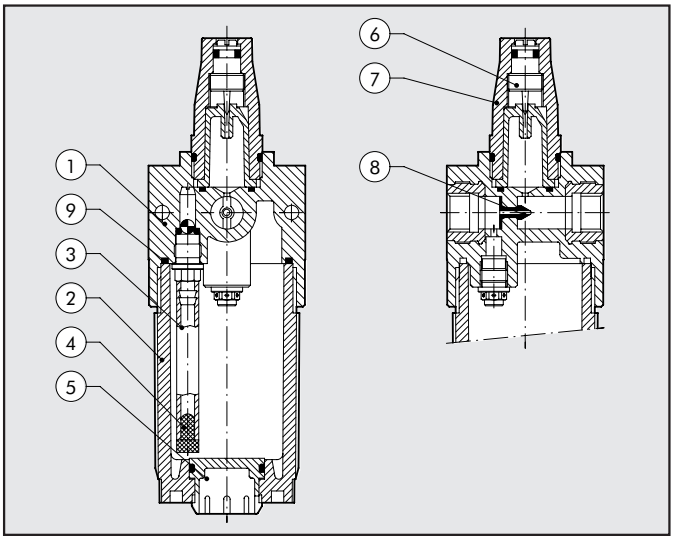
Mini-lubricator with high lubrication stability.
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates
- Micrometric regulation of lubricant flow
- All-round oil level viewing

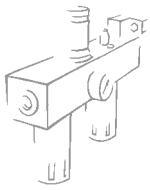


TECHNICAL DATA		LUB BIT 1/8''	LUB BIT 1/4''
Threaded port		1/8''	1/4''
Type of lubrication		Oil mist	
Bowl capacity	cm^3	26.5	
Lubricator version		Manual filling with the bowl disassembled	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		400 Nl/min = 14 scfm	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		710 Nl/min = 25 scfm	
Fluid		Filtered compressed air	
Max temperature at 1 Mpa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	40	
Wall fixing screws		M 4	
Mounting position		Vertical	

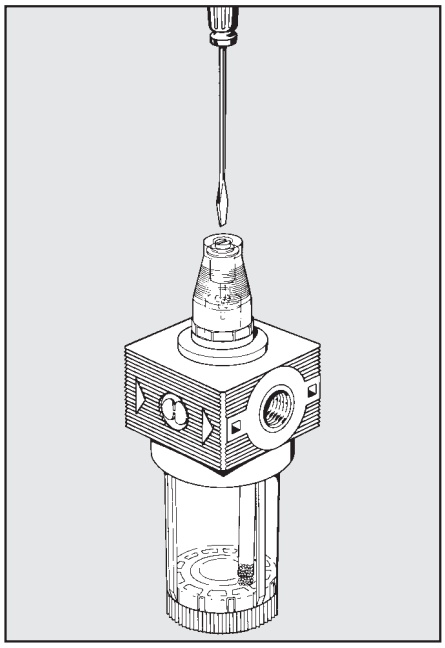
COMPONENTS

① Technopolymer body with OT58 threaded elements
② Clear technopolymer bowl
③ Rilsan oil suction pipe
④ Filter
⑤ Technopolymer plug
⑥ Oil flow adjustment regulation needle made of OT58 brass
⑦ Clear technopolymer cover
⑧ NBR Venturi diaphragm
⑨ NBR gaskets



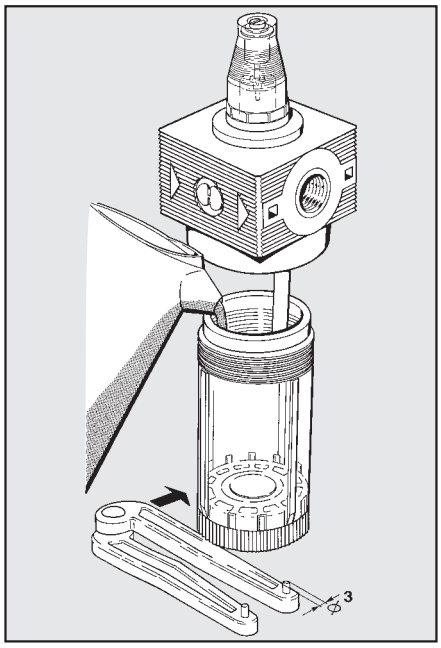


GENERAL RULES - USE AND MAINTENANCE



REGULATING LUBRICATION

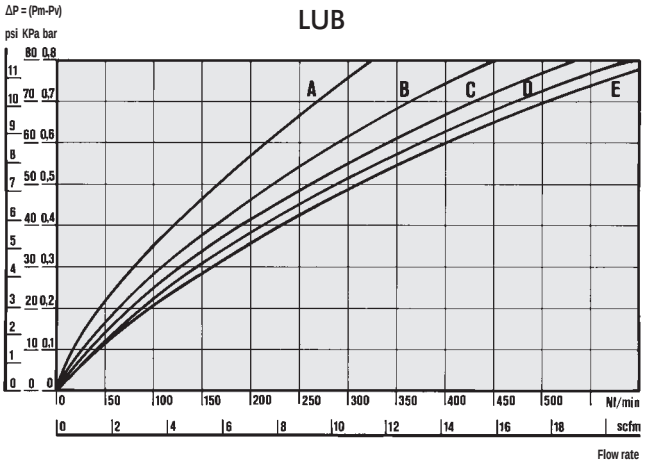
- Use a no. 3 compass spanner to unscrew the bowl.
- Fit the lubricator as close as possible to the point of use
- Fill the bowl with oil before pressurizing the system
- Do not use cleaning oil, brake fluid or solvents in general
- For correct lubrication, set the drip rate to approximately 1 drop every 300-600 Nl via the adjusting screw.
- Recommended lubricants:
ISO and UNI FD22
E.g. Energol HLP 22(BP) – Spinesso 22 (Esso) - Mobil DTE 22 (Mobil) – Tellus Oil 22 (Shell).

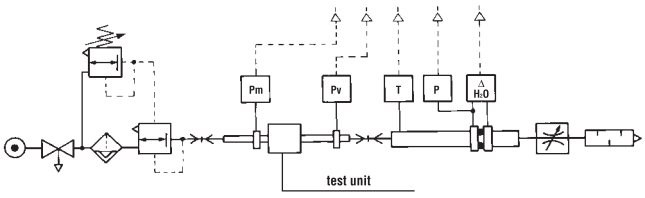


FILLING THE BOWL WITH OIL

FLOW CHARTS

LUB

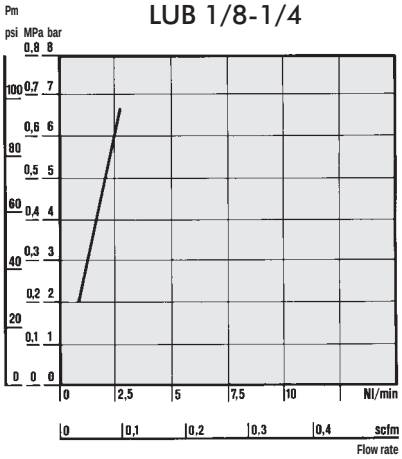




- Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

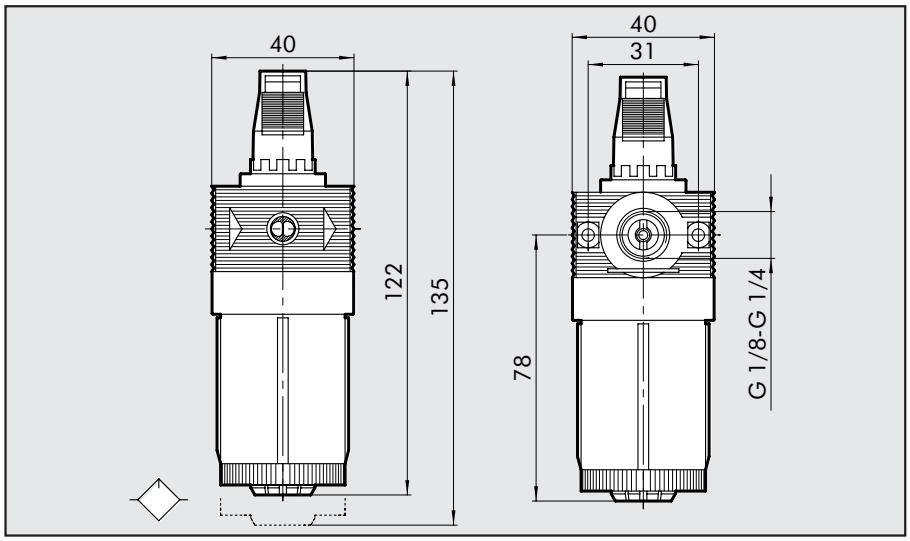
A = 2 bar - 0,2 MPa - 29 psi
B = 4 bar - 0,4 MPa - 58 psi
C = 6 bar - 0,6 MPa - 87 psi
D = 8 bar - 0,8 MPa - 116 psi
E = 10 bar - 1 MPa - 145 psi

LUB 1/8-1/4



MINIMUM OPERATION FLOW CHARTS
Minimum flow tests were performed in compliance with ISO/DP 6301/2.

DIMENSIONS

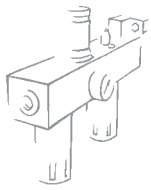


ORDERING CODES

Code	Description
5103001	LUB BIT 1/8
5203001	LUB BIT 1/4

NOTES

NOTES



bit FILTER REGULATOR

Filter regulator with rolling diaphragm.
- High flow rate with reduced pressure drop
- Excellent degree of condensate separation
- Semi-automatic or automatic drain
- All-round condensate level viewing

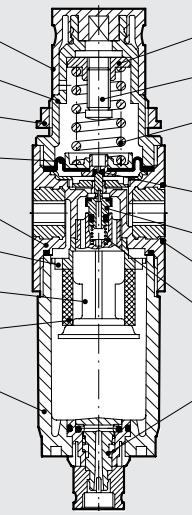
The degree of filtration is shown by the colour of the cartridge: yellow = 5µm, white = 20µm, blue = 50µm.



TECHNICAL DATA		FR BIT 1/8''	FR BIT 1/4''
Threaded port		1/8''	1/4''
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration		5µm (yellow) 20µm (white) 50µm (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		290 Nl/min = 10 scfm	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		600 Nl/min = 21 scfm	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	110	
Wall fixing screws		M 4	
Mounting position		Vertical	
Gauge port		G 1/8''	
Bowl capacity	cm^3	16	
Condensate drain		Manual/semi-automatic (RMSA)	
		Automatic (SAC)	
Notes:		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value.	

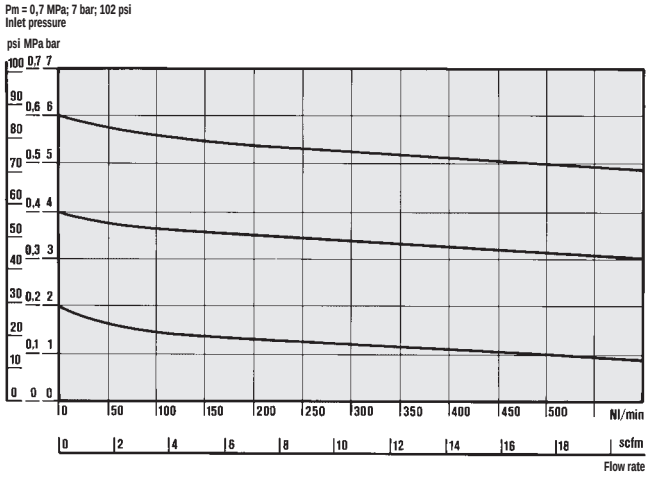
COMPONENTS

① Technopolymer body with OT58 threaded elements
② Clear technopolymer bowl
③ Technopolymer knob
④ Technopolymer dell
⑤ Technopolymer fixing ring nut
⑥ OT58 brass nut
⑦ OT58 brass adjusting screw
⑧ Steel adjusting spring
⑨ NBR relieving gasket
⑩ Rolling diaphragm
⑪ OT58 valve with NBR vulcanized gasket
⑫ Stainless steel valve compression spring
⑬ Technopolymer centrifuge
⑭ Technopolymer baffle plug
⑮ Sintered HDPE filter cartridge
⑯ Condensate drain (RMSA)
⑰ NBR gaskets

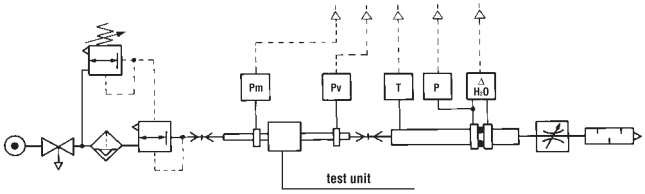


FLOW CHARTS

FR

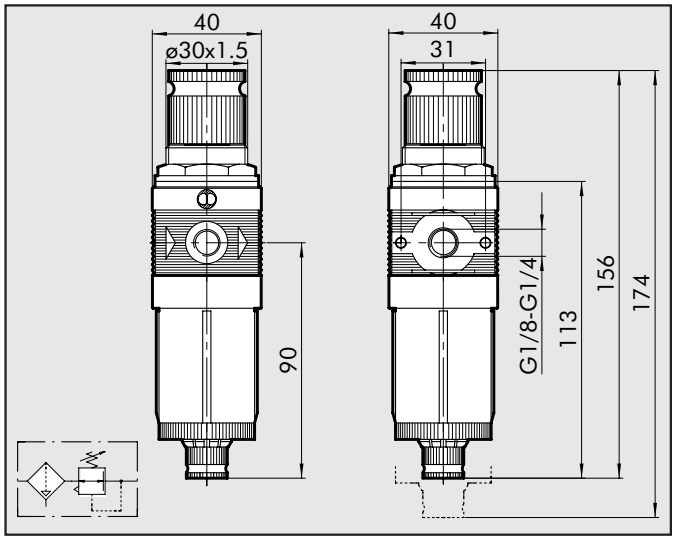


Department of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

DIMENSIONS



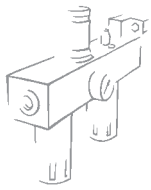
KEY TO CODES

FR	BIT	1/8	5µm	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FR	BIT	1/8 1/4	5µm 20µm 50µm	02 04 08 012	RMSA SAC

RMSA: Semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description	Code	Description	Code	Description
5105001	FR BIT 1/8 5 02 RMSA	5105022	FR BIT 1/8 5 012 SAC	5205008	FR BIT 1/4 20 08 RMSA
5105013	FR BIT 1/8 5 02 SAC	5105011	FR BIT 1/8 20 012 RMSA	5205020	FR BIT 1/4 20 08 SAC
5105002	FR BIT 1/8 20 02 RMSA	5105023	FR BIT 1/8 20 012 SAC	5205009	FR BIT 1/4 50 08 RMSA
5105014	FR BIT 1/8 20 02 SAC	5105012	FR BIT 1/8 50 012 RMSA	5205021	FR BIT 1/4 50 08 SAC
5105003	FR BIT 1/8 50 02 RMSA	5105024	FR BIT 1/8 50 012 SAC	5205010	FR BIT 1/4 5 012 RMSA
5105015	FR BIT 1/8 50 02 SAC	5205001	FR BIT 1/4 5 02 RMSA	5205022	FR BIT 1/4 5 012 SAC
5105004	FR BIT 1/8 5 04 RMSA	5205013	FR BIT 1/4 5 02 SAC	5205011	FR BIT 1/4 20 012 RMSA
5105016	FR BIT 1/8 5 04 SAC	5205002	FR BIT 1/4 20 02 RMSA	5205023	FR BIT 1/4 20 012 SAC
5105005	FR BIT 1/8 20 04 RMSA	5205014	FR BIT 1/4 20 02 SAC	5205012	FR BIT 1/4 50 012 RMSA
5105017	FR BIT 1/8 20 04 SAC	5205003	FR BIT 1/4 50 02 RMSA	5205024	FR BIT 1/4 50 012 SAC
5105006	FR BIT 1/8 50 04 RMSA	5205015	FR BIT 1/4 50 02 SAC		
5105018	FR BIT 1/8 50 04 SAC	5205004	FR BIT 1/4 5 04 RMSA		
5105007	FR BIT 1/8 5 08 RMSA	5205016	FR BIT 1/4 5 04 SAC		
5105019	FR BIT 1/8 5 08 SAC	5205005	FR BIT 1/4 20 04 RMSA		
5105008	FR BIT 1/8 20 08 RMSA	5205017	FR BIT 1/4 20 04 SAC		
5105020	FR BIT 1/8 20 08 SAC	5205006	FR BIT 1/4 50 04 RMSA		
5105009	FR BIT 1/8 50 08 RMSA	5205018	FR BIT 1/4 50 04 SAC		
5105021	FR BIT 1/8 50 08 SAC	5205007	FR BIT 1/4 5 08 RMSA		
5105010	FR BIT 1/8 5 012 RMSA	5205019	FR BIT 1/4 5 08 SAC		



bit DEPURATOR

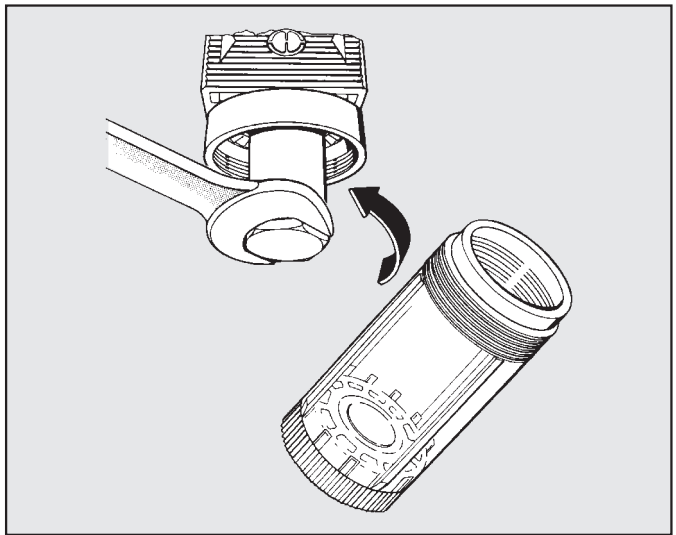
Coalescing mini-depurator
- Space saving
- Minimum load loss as the flow rate varies
- All-round condensate level viewing



TECHNICAL DATA		DEP BIT 1/8''	DEP BIT 1/4''
Threaded port		1/8''	1/4''
Degree of filtration		99.97% 0,01µm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Maximum suggested flow rate		please look at the flow rate curves at page 3.2/14	
Suggested flow at 6 bar		200 Nl/min = 7 scfm	
Fluid		Filtered 5µm compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	65	
Wall fixing screws		M4	
Mounting position		Vertical	
Condensate drain		Manual/semi-automatic (RMSA) - Automatic (SAC)	
Bowl capacity	cm3	16	
Notes:		A It is advisable to mount a 5m filter upstream the depurator acting as a rough filter.	

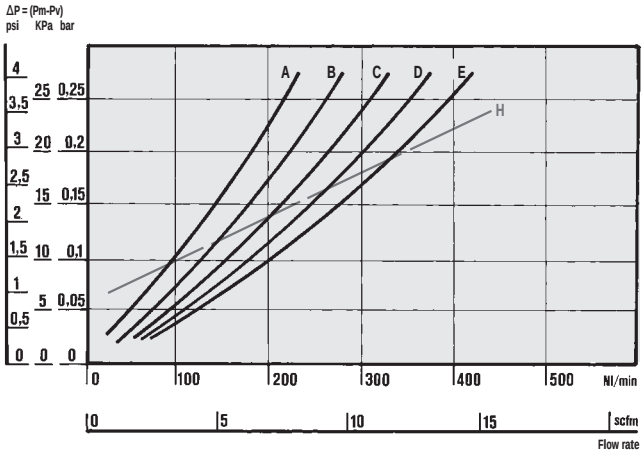
USE AND MAINTENANCE

When replacing the coalescing cartridge, unscrew the bowl and then unscrew the screen of the cartridge assembly. Then replace the cartridge. Use a no. 3 compass spanner to unscrew the bowl.



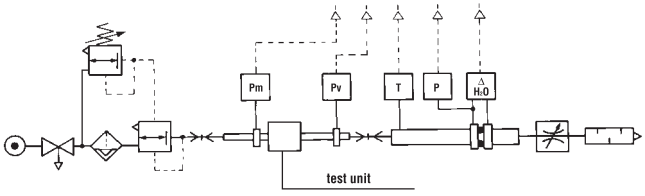
FLOW CHARTS

DEP



H = Maximum recommended flow for optimal operation

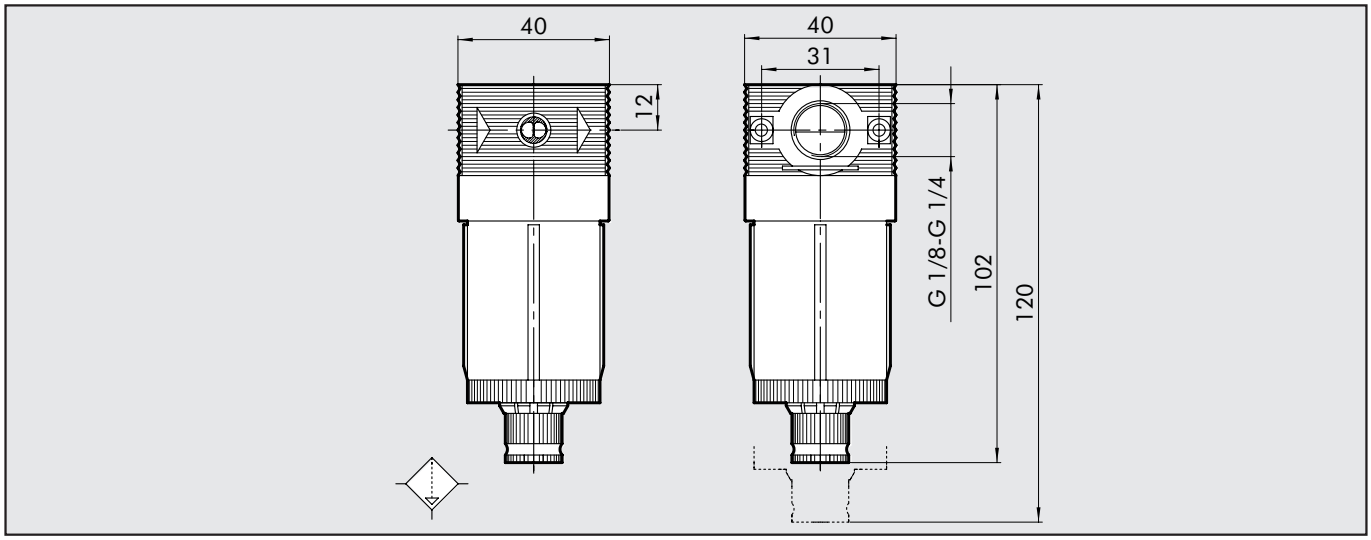
Department of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

A = 2 bar - 0,2 MPa - 29 psi
B = 4 bar - 0,4 MPa - 58 psi
C = 6 bar - 0,6 MPa - 87 psi
D = 8 bar - 0,8 MPa - 116 psi
E = 10 bar - 1 MPa - 145 psi

DIMENSIONS

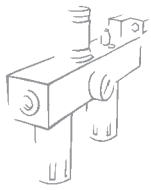


KEY TO CODES

DED	BIT	1/8	RMSA
ELEMENT	SIZE	THREADED PORT	CONDENSATE DRAIN
DED	BIT	1/8 1/4	RMSA

ORDERING CODES

Code	Description
5112001	DEP BIT 1/8 RMSA
5212001	DEP BIT 1/4 RMSA



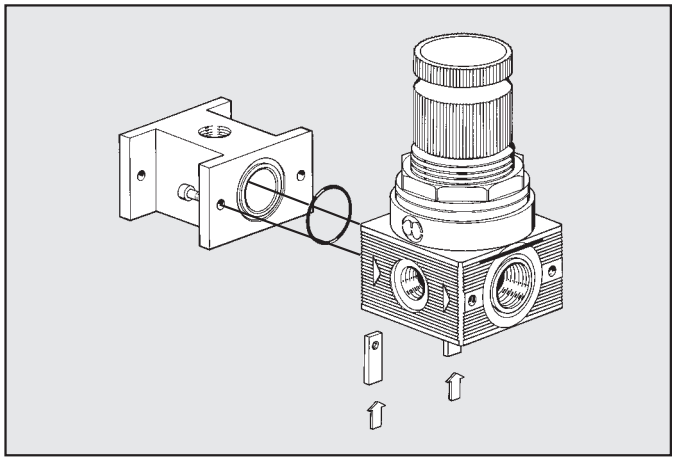
bit TAKE-OFF

• The air take-off takes air from the SKILLAIR® FRL unit irrespective of the assembly position.
• It is necessary when air needs to be taken from the FRL unit at any stage of the treatment (normal, filtered, regulated, lubricated, etc.).

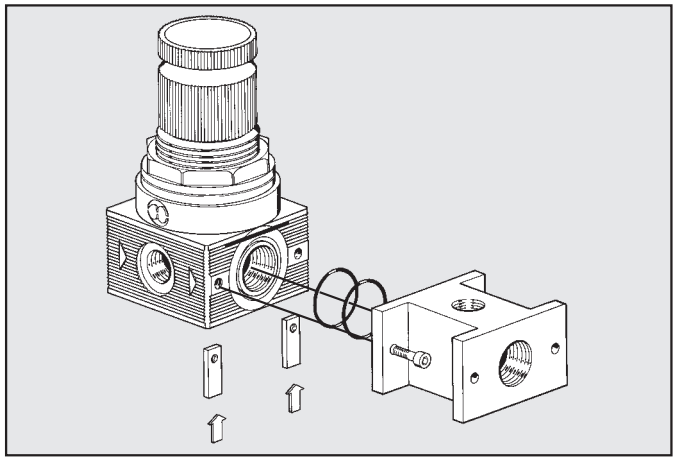


TECHNICAL DATA		PA
Maximum operating pressure	MPa	1.3
	bar	13
	psi	188
Maximum working temperature at	°C	50
at 1 MPa; 10 bar; 145 psi	°F	122

CONNECTION DIAGRAMS AND APPLICATION

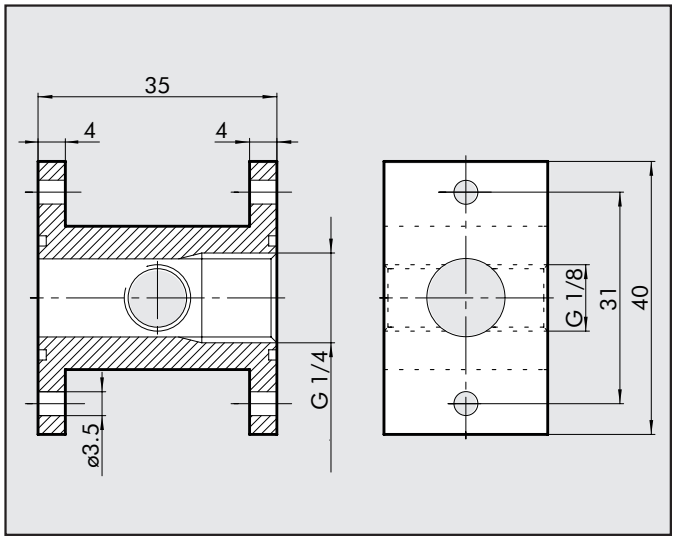


Mounting the air take-off at the inlet: only use two screws and the O-rings supplied in the PA kit.



Mounting the air take-off at the outlet: only use two screws and the O-rings supplied in the PA kit. Seal is provided by the contact between O-rings.

DIMENSIONS



ORDERING CODES

Code	Description
9100401	PA 1/8 - 1/4 BIT

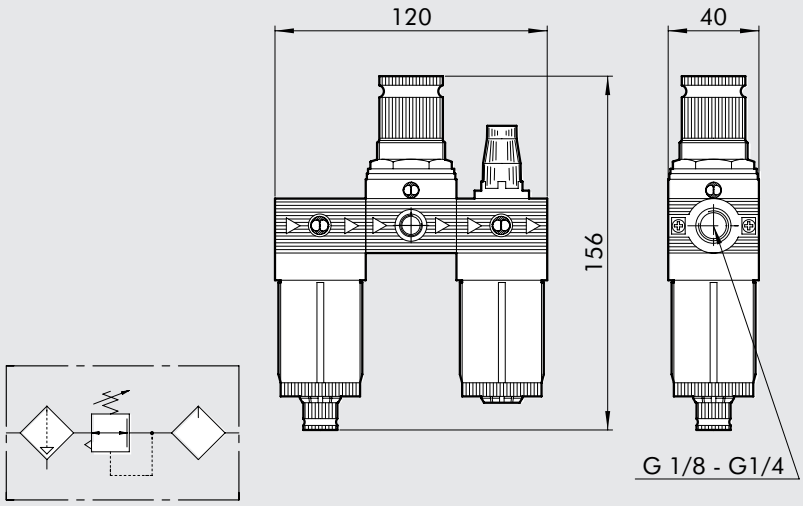
FIL+REG+LUB bit

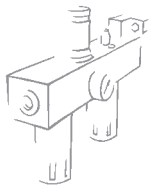
Complete mini-FRL unit with rolling diaphragm.
- High flow rates with reduced pressure drop
- Excellent degree of condensate separation
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates



TECHNICAL DATA		F+R+L BIT 1/8''	F+R+L BIT 1/4''
Threaded port		1/8''	1/4''
Setting range		0 to 2 - 0 to 4 - 0 to 8 - 0 to 12	
Degree of filtration		5µm (yellow) 20µm (white) 50µm (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		150 Nl/min = 5.3 scfm	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		280 Nl/min = 10 scfm	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	160	
Wall fixing screws		M 4	
Mounting position		Verticale	
Gauge port		G1/8'	
Notes		See chapters regarding individual elements	

DIMENSIONS





KEY TO CODES

FRL	BIT	1/8	5µm	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FRL	BIT	1/8 1/4	5µm 20µm 50µm	02 04 08 012	RMSA SAC

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description	Code	Description
5104001	FRL BIT 1/8 5 02 RMSA	5204001	FRL BIT 1/4 5 02 RMSA
5104013	FRL BIT 1/8 5 02 SAC	5204013	FRL BIT 1/4 5 02 SAC
5104004	FRL BIT 1/8 5 04 RMSA	5204004	FRL BIT 1/4 5 04 RMSA
5104016	FRL BIT 1/8 5 04 SAC	5204016	FRL BIT 1/4 5 04 SAC
5104007	FRL BIT 1/8 5 08 RMSA	5204007	FRL BIT 1/4 5 08 RMSA
5104019	FRL BIT 1/8 5 08 SAC	5204019	FRL BIT 1/4 5 08 SAC
5104010	FRL BIT 1/8 5 012 RMSA	5204010	FRL BIT 1/4 5 012 RMSA
5104022	FRL BIT 1/8 5 012 SAC	5204022	FRL BIT 1/4 5 012 SAC
5104002	FRL BIT 1/8 20 02 RMSA	5204002	FRL BIT 1/4 20 02 RMSA
5104014	FRL BIT 1/8 20 02 SAC	5204014	FRL BIT 1/4 20 02 SAC
5104005	FRL BIT 1/8 20 04 RMSA	5204005	FRL BIT 1/4 20 04 RMSA
5104017	FRL BIT 1/8 20 04 SAC	5204017	FRL BIT 1/4 20 04 SAC
5104008	FRL BIT 1/8 20 08 RMSA	5204008	FRL BIT 1/4 20 08 RMSA
5104020	FRL BIT 1/8 20 08 SAC	5204020	FRL BIT 1/4 20 08 SAC
5104011	FRL BIT 1/8 20 012 RMSA	5204011	FRL BIT 1/4 20 012 RMSA
5104023	FRL BIT 1/8 20 012 SAC	5204023	FRL BIT 1/4 20 012 SAC
5104003	FRL BIT 1/8 50 02 RMSA	5204003	FRL BIT 1/4 50 02 RMSA
5104015	FRL BIT 1/8 50 02 SAC	5204015	FRL BIT 1/4 50 02 SAC
5104006	FRL BIT 1/8 50 04 RMSA	5204006	FRL BIT 1/4 50 04 RMSA
5104018	FRL BIT 1/8 50 04 SAC	5204018	FRL BIT 1/4 50 04 SAC
5104009	FRL BIT 1/8 50 08 RMSA	5204009	FRL BIT 1/4 50 08 RMSA
5104021	FRL BIT 1/8 50 08 SAC	5204021	FRL BIT 1/4 50 08 SAC
5104012	FRL BIT 1/8 50 012 RMSA	5204012	FRL BIT 1/4 50 012 RMSA
5104024	FRL BIT 1/8 50 012 SAC	5204024	FRL BIT 1/4 50 012 SAC

NOTES

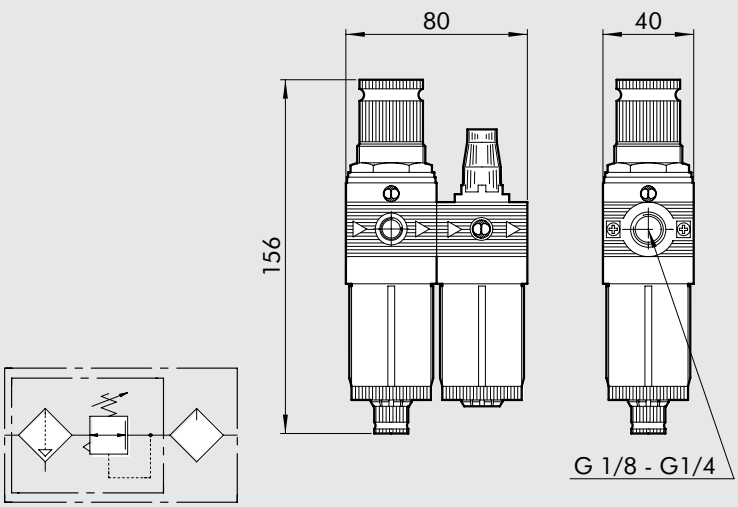
FR+LUB bit

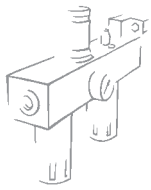
Compact FR+L unit with rolling diaphragm.
- High flow rates with reduced pressure drop
- Excellent degree of condensate separation
- Quantity of lubricant proportioned to air flow
- Activates at low flow rates



TECHNICAL DATA		FR+L BIT 1/8''	FR+L BIT 1/4''
Threaded port		1/8''	1/4''
Setting range		0÷2 - 0÷4 - 0÷8 - 0÷12	
Degree of filtration		5µm (yellow) 20µm (white) 50µm (blue)	
Type of lubrication		Oil mist	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 0.5 bar (0.05 MPa – 7 psi)		140 Nl/min = 5 scfm	
Flow rate at 6.3 bar (0.63 MPa-91 psi) ΔP 1 bar (0.1 MPa – 14 psi)		260 Nl/min = 9.2 scfm	
Fluid		Compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	gr	170	
Wall fixing screws		M 4	
Mounting position		Vertical	
Gauge port		G 1/8''	
Notes		See chapters regarding individual elements	

DIMENSIONS





KEY TO CODES

FR+L	BIT	1/8	5µm	02	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONSENDATE DRAIN
FR+L	BIT	1/8 1/4	5µm 20µm 50µm	02 04 08 012	RMSA SAC

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

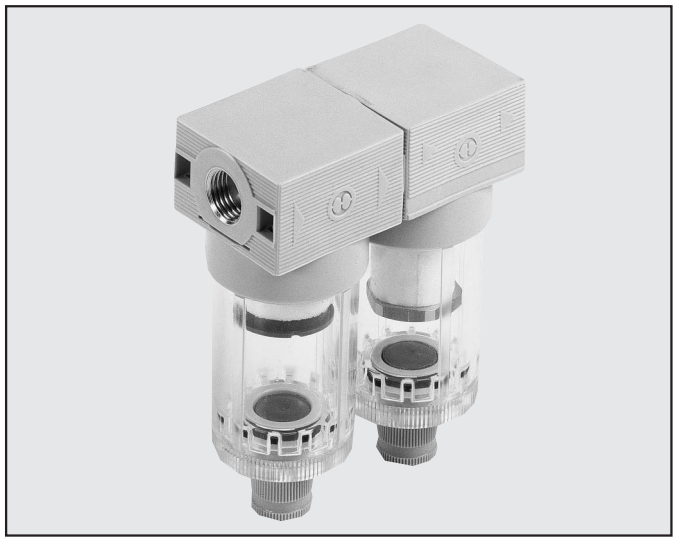
ORDERING CODES

Code	Description	Code	Description
5106001	FR+L BIT 1/8 5 02 RMSA	5206001	FR+L BIT 1/4 5 02 RMSA
5106013	FR+L BIT 1/8 5 02 SAC	5206013	FR+L BIT 1/4 5 02 SAC
5106004	FR+L BIT 1/8 5 04 RMSA	5206004	FR+L BIT 1/4 5 04 RMSA
5106016	FR+L BIT 1/8 5 04 SAC	5206016	FR+L BIT 1/4 5 04 SAC
5106007	FR+L BIT 1/8 5 08 RMSA	5206007	FR+L BIT 1/4 5 08 RMSA
5106019	FR+L BIT 1/8 5 08 SAC	5206019	FR+L BIT 1/4 5 08 SAC
5106010	FR+L BIT 1/8 5 012 RMSA	5206010	FR+L BIT 1/4 5 012 RMSA
5106022	FR+L BIT 1/8 5 012 SAC	5206022	FR+L BIT 1/4 5 012 SAC
5106002	FR+L BIT 1/8 20 02 RMSA	5206002	FR+L BIT 1/4 20 02 RMSA
5106014	FR+L BIT 1/8 20 02 SAC	5206014	FR+L BIT 1/4 20 02 SAC
5106005	FR+L BIT 1/8 20 04 RMSA	5206005	FR+L BIT 1/4 20 04 RMSA
5106017	FR+L BIT 1/8 20 04 SAC	5206017	FR+L BIT 1/4 20 04 SAC
5106008	FR+L BIT 1/8 20 08 RMSA	5206008	FR+L BIT 1/4 20 08 RMSA
5106020	FR+L BIT 1/8 20 08 SAC	5206020	FR+L BIT 1/4 20 08 SAC
5106011	FR+L BIT 1/8 20 012 RMSA	5206011	FR+L BIT 1/4 20 012 RMSA
5106023	FR+L BIT 1/8 20 012 SAC	5206023	FR+L BIT 1/4 20 012 SAC
5106003	FR+L BIT 1/8 50 02 RMSA	5206003	FR+L BIT 1/4 50 02 RMSA
5106015	FR+L BIT 1/8 50 02 SAC	5206015	FR+L BIT 1/4 50 02 SAC
5106006	FR+L BIT 1/8 50 04 RMSA	5206006	FR+L BIT 1/4 50 04 RMSA
5106018	FR+L BIT 1/8 50 04 SAC	5206018	FR+L BIT 1/4 50 04 SAC
5106009	FR+L BIT 1/8 50 08 RMSA	5206009	FR+L BIT 1/4 50 08 RMSA
5106021	FR+L BIT 1/8 50 08 SAC	5206021	FR+L BIT 1/4 50 08 SAC
5106012	FR+L BIT 1/8 50 012 RMSA	5206012	FR+L BIT 1/4 50 012 RMSA
5106024	FR+L BIT 1/8 50 012 SAC	5206024	FR+L BIT 1/4 50 012 SAC

NOTES

FIL+DEP bit

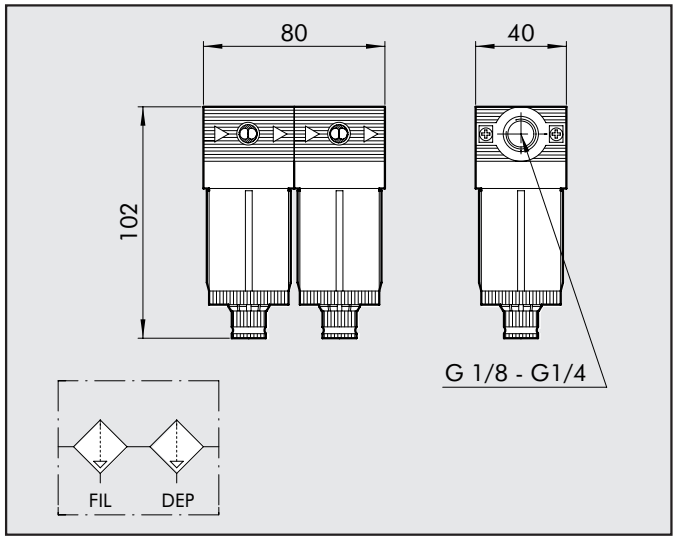
Compact filter + depurator unit for fine filtering followed by purification by coalescence.
- All-round condensate level viewing
- Condensate drainage - manual/semi-auto (RMSA) or automatic (SAC) on the filter
- 5 mm filter element.



TECHNICAL DATA

		F+D BIT 1/8''	F+D BIT 1/4''
Threaded port		1/8''	1/4''
Degree of purification		5µ filter – 99.97% depurator at 0.01 µm	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Maximum suggested flow rate		please look at the flow rate curves at page 3.2/14	
Fluid		Compressed air	
Max temperature	°C	50	
at 1 MPa; 10 bar; 145 psi	°F	122	
Weight	gr	110	
Mounting position		Vertical	
Condensate drain		Manual – Semi-auto (RMSA) - Automatic (SAC)	
Notes		See chapters regarding individual elements	

DIMENSIONS



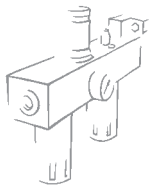
KEY TO CODES

F+D	BIT	1/4	5µm	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN
F+D	BIT	1/8 1/4	5µm	RMSA SAC

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

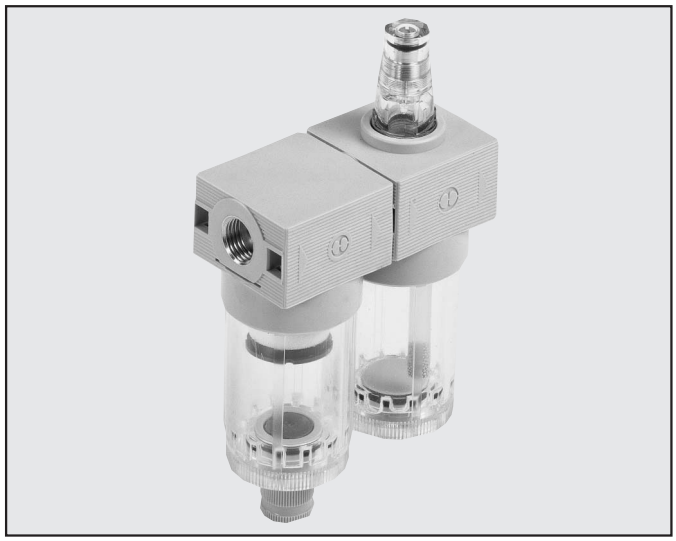
ORDERING CODES

Code	Description
5114001	F+D BIT 1/8 5 RMSA-RMSA
5114002	F+D BIT 1/8 5 SAC-RMSA
5214001	F+D BIT 1/4 5 RMSA-RMSA
5214002	F+D BIT 1/4 5 SAC-RMSA



FIL+LUB bit

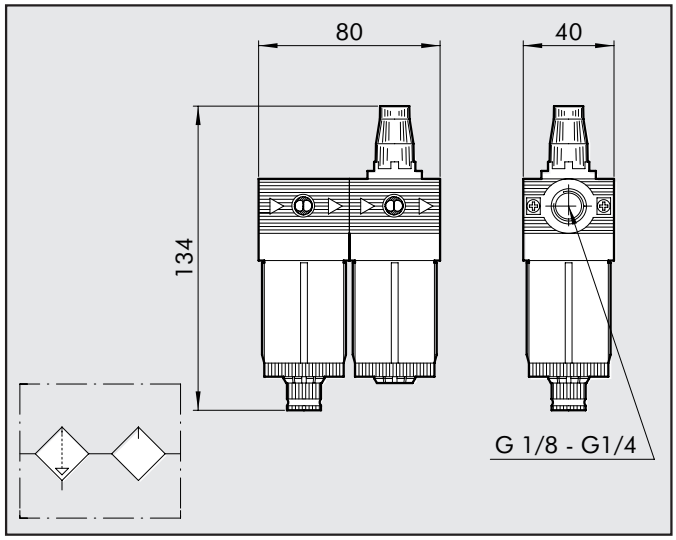
Compact filter + lubricator unit with different degrees of filtration and high lubrication stability.
- Excellent degree of condensate separation
- Semi-automatic and automatic condensate drainage
- Lubrication activates at low flow rates
- All-round oil and condensate level viewing



TECHNICAL DATA

		F+L BIT 1/8''	F+L BIT 1/4''
Threaded port		1/8''	1/4''
Degree of filtration		5µm (yellow) 20µm (white) 50µm (blue)	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6 bar (0.6 MPa-87 psi)	Nl/min	300	
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	10.6	
Flow rate at 6 bar (0.6 MPa-87 psi)	Nl/min	600	
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	21.2	
Fluid		Compressed air	
Max temperature	°C	50	
at 1 MPa; 10 bar; 145 psi	°F	122	
Weight	gr	90	
Wall fixing screws		M 4	
Mounting position		Vertical	
Notes		See chapters Bit Filter and Bit Lubricator	

DIMENSIONS



KEY TO CODES

F+L	BIT	1/8	5µm	RMSA
ELEMENT	SIZE	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN
F+L	BIT	1/8 1/4	5µm 20µm 50µm	RMSA SAC

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.

ORDERING CODES

Code	Description
5113001	F+L BIT 1/8 5 RMSA
5113004	F+L BIT 1/8 5 SAC
5113002	F+L BIT 1/8 20 RMSA
5113005	F+L BIT 1/8 20 SAC
5113003	F+L BIT 1/8 50 RMSA
5113006	F+L BIT 1/8 50 SAC
5213001	F+L BIT 1/4 5 RMSA
5213004	F+L BIT 1/4 5 SAC
5213002	F+L BIT 1/4 20 RMSA
5213005	F+L BIT 1/4 20 SAC
5213003	F+L BIT 1/4 50 RMSA
5213006	F+L BIT 1/4 50 SAC

ACCESSOIRE
PRESSURE SWITCHES

This type of pressure switch features a high degree of miniaturisation and a modern attractive design.
It can be installed in any position and also mounted onto a wall by means of two transversal holes.
In order to reduce wiring times, it is supplied ready assembled with a 2-metre electric cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.
A knurled push-lock handle is provided for regulation

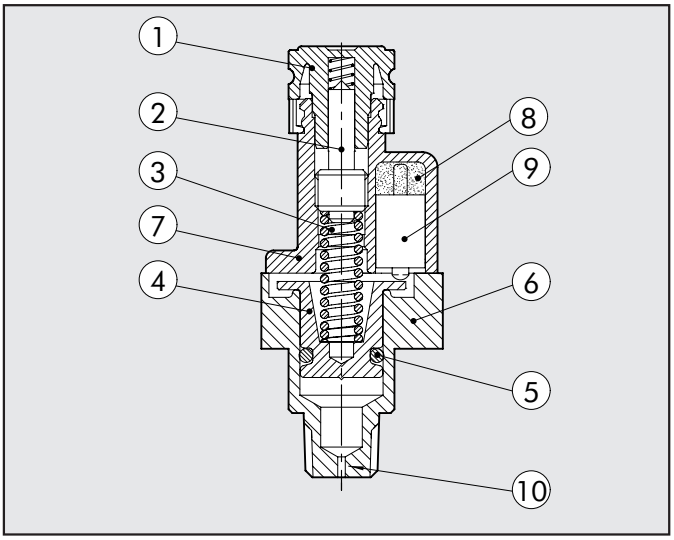


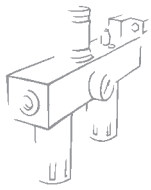
TECHNICAL DATA

Adjustable pressure interval	bar	0.5 ÷ 10
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)
Maximum pressure	bar	15
	MPa	1.5
	psi	217
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Lower threaded port		R 1/8"
Maximum current	A	2
Maximum voltage	V	250
Outside diameter of cable	mm	4.9
Number of wires and cross section		3x0.5 mm^2
Contacts		Normally-Open (NO) and Normally-Closed (NC)
Protection		IP65
Number of switchings		$5x10^6$
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Mounting position		In any position
Weight	Kg	0.121

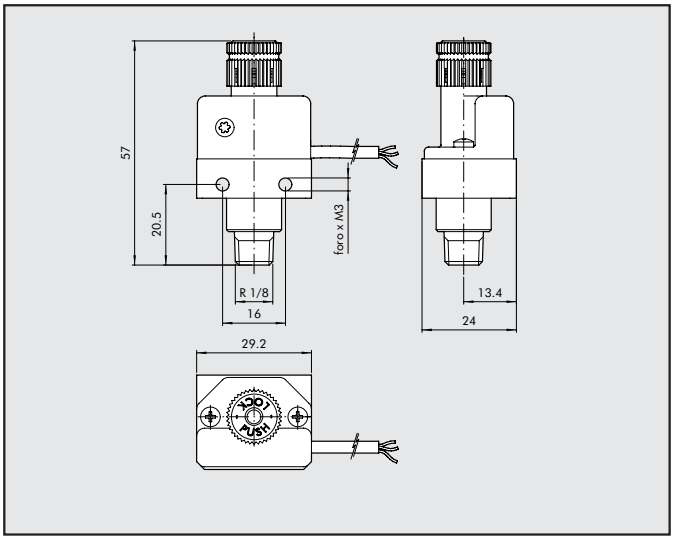
COMPONENTS

① Technopolymer adjusting push-lock handle
② Brass adjusting screw
③ Steel piston spring
④ Brass piston
⑤ NBR gasket
⑥ Body made of anodized aluminium
⑦ Technopolymer pressure switch body
⑧ Resin finish for IP65
⑨ Electrical contact
⑩ Choke to reduce peaks in pressure



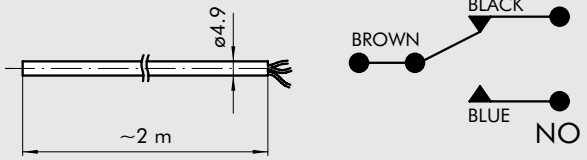


DIMENSIONS

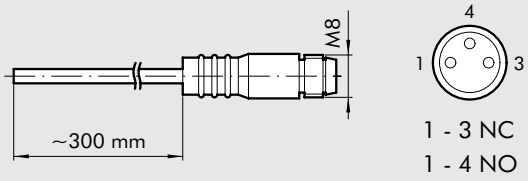


WIRING DIAGRAM

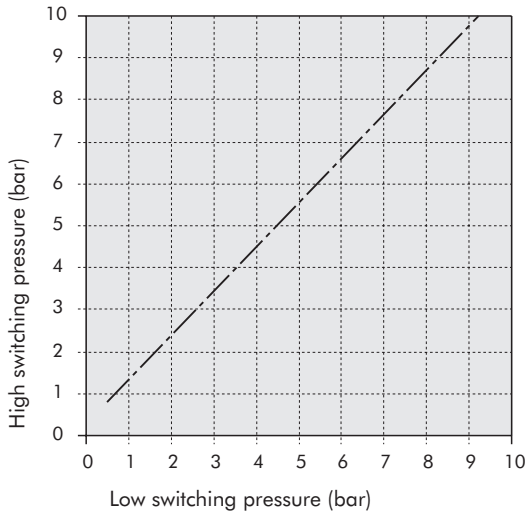
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH

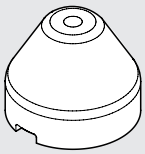


ORDERING CODES

Code	Description
9000401	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, 2-METRE CABLE
9000402	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, M8 CONNECTOR

ACCESSORIES

SECURITY KNOB

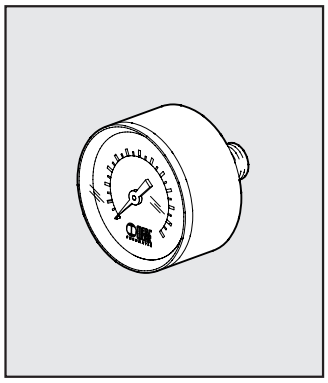


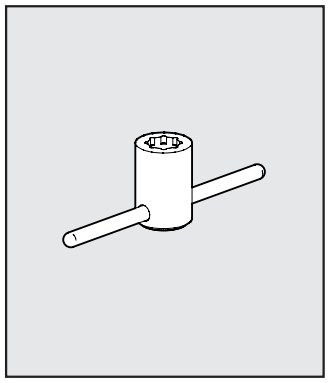
Code	Description
9200703	ACC. SECURITY KNOB

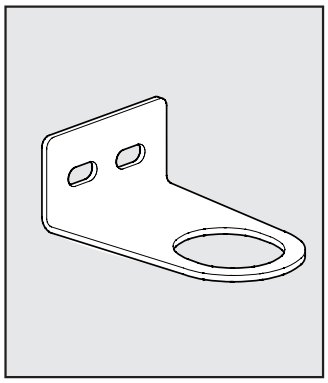
NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

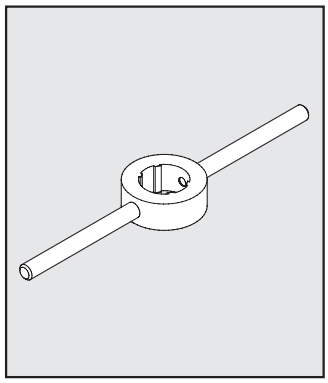
NOTES

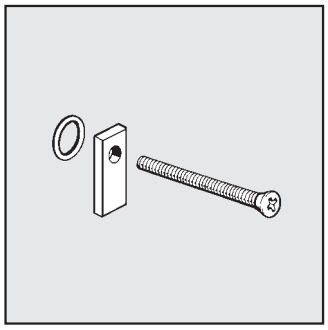
bit ACCESSORIES

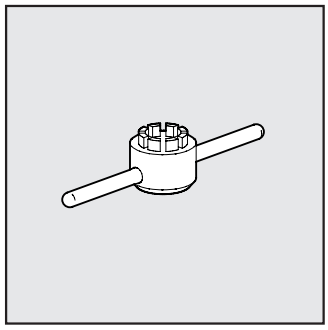
PRESSURE GAUGE	Code	Description
	9700102	ACC.M 40 1/8 04
	9700101	ACC.M 40 1/8 12

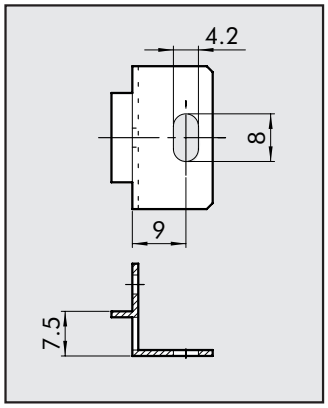
DOME DISASSEMBLY SPANNER	Code	Description
	9220701	ACC COVER LUB SPANNER

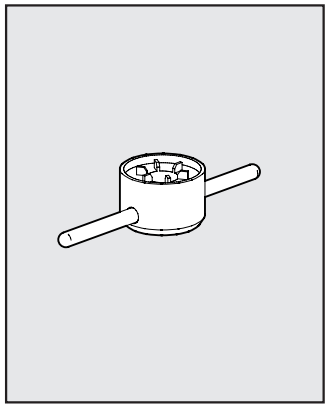
R/FR FIXING BRACKET	Code	Description
	9200701	ACC. SF100 - BIT - ND 1/4

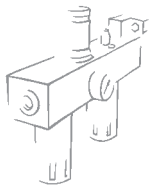
COVER DISASSEMBLY SPANNER	Code	Description
	9170401	ACC CS CS BIT

ASSEMBLY PLATE (PAIR)	Code	Description
	9170201	ACC PA 1/8 - 1/4 BIT

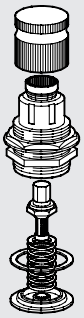
REDUCER PLUG DISASSEMBLY SPANNER	Code	Description
	9170501	ACC CS OTR BIT

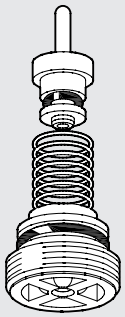
WALL MOUNTING BRACKET (PAIR)	Code	Description
	9170301	ACC SF 1/8 - 1/4 BIT

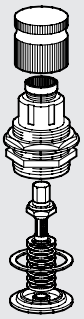
BOWL DISASSEMBLY SPANNER	Code	Description
	9170601	ACC CS TF - TL BIT

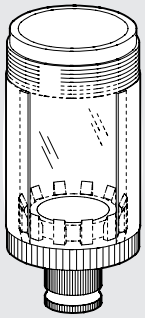


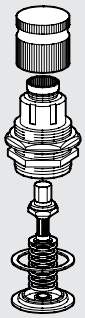
bit SPARE PARTS

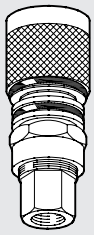
UPPER COVER FOR MR	Code	Description
	9250805	SPARES CS 1/8 1/4 BIT 02
	9250806	SPARES CS 1/8 1/4 BIT 04
	9250807	SPARES CS 1/8 1/4 BIT 08
	9250808	SPARES CS 1/8 1/4 BIT 012

COMPLETE POPPET FOR MR AND MRA	Code	Description
	9250705	SPARES POPPET FOR MR
	9250706	SPARES POPPET FOR MR-SR (RAPID DRAIN)
	9250708	SPARE POPPET FOR MRA

UPPER COVER FOR MR FC	Code	Description
	9250817	SPARES CS FC 1/8 1/4 BIT 02
	9250818	SPARES CS FC 1/8 1/4 BIT 04

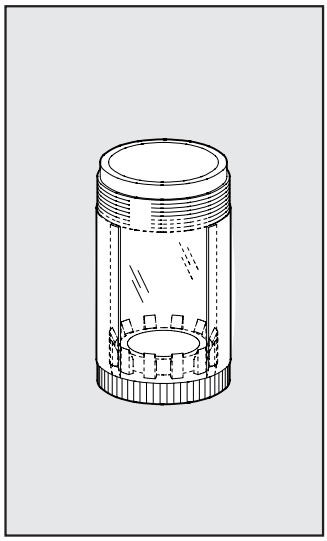
FILTER AND FILTER-REGULATOR BOWL	Code	Description
	9255001	SPARES TF 1/8 1/4 BIT RMSA
	9255101	SPARES TF 1/8 1/4 BIT SAC

UPPER COVER FOR MRA	Code	Description
	9250809	CSA 1/8 - 1/4 BIT 02
	9250814	CSA 1/8 - 1/4 BIT 04
	9250815	CSA 1/8 - 1/4 BIT 08
	9250816	CSA 1/8 - 1/4 BIT 012

AUTOMATIC DRAIN	Code	Description
	9000803	SPARES SAC BIT

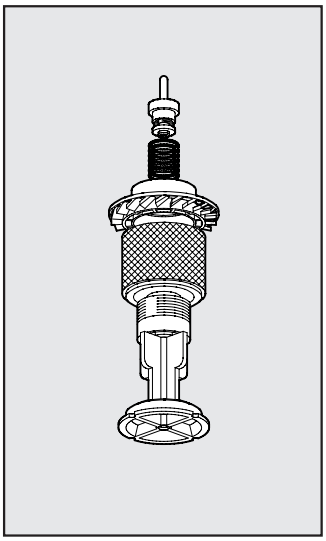
METAL WORK PNEUMATIC

LUBRICATOR BOWL



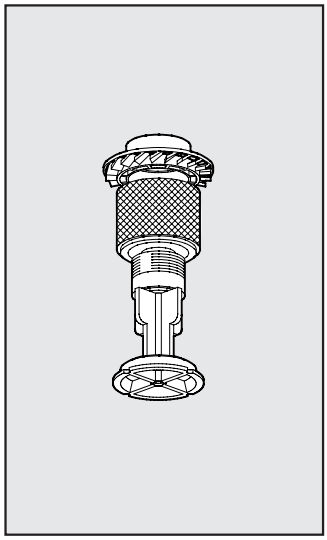
Code	Description
9251402	SPARES TL 1/8 1/4 BIT

COMPLETE POPPET FOR FR



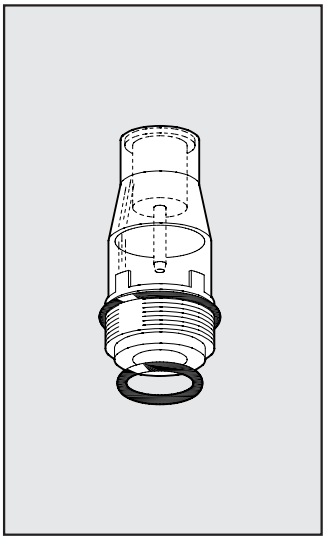
Code	Description
9250905	SPARES OTFR 1/8 1/4 BIT 5
9250906	SPARES OTFR 1/8 1/4 BIT 20
9250907	SPARES OTFR 1/8 1/4 BIT 50

FILTER ELEMENT



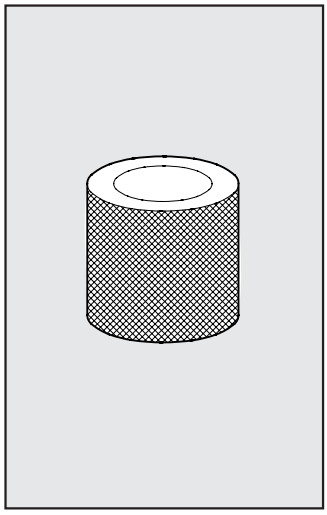
Code	Description
9251708	SPARES FP 1/8-1/4 BIT 5 (YELLOW)
9251709	SPARES FP 1/8-1/4 BIT 20 (WHITE)
9251710	SPARES FP 1/8-1/4 BIT 50 (BLUE)

TRANSPARENT LUBRICATOR COVER



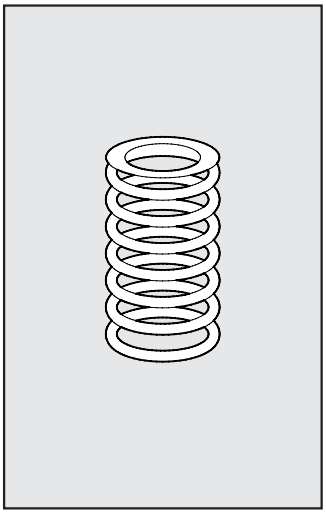
Code	Description
9251302	SPARES CVL 100-200-300-400 BIT

DEPURATOR FILTER ELEMENT



Code	Description
9251712	SPARES FP DEP. 1/8 1/4 BIT

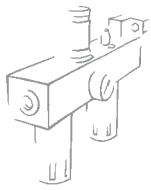
SPRING FOR MR AND FR



Code	Description
9250610	SPARES MO 02 BIT
9250611	SPARES MO 04 BIT
9250612	SPARES MO 08 BIT
9250613	SPARES MO 012 BIT

SUMMARY Newdeal

CHAPTER 3.3

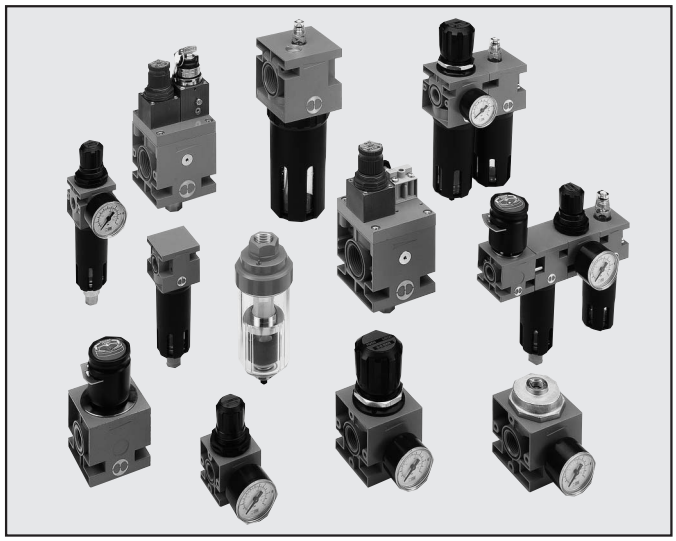


	INTRODUCTION	PAGE 3.3/02
	FILTER	PAGE 3.3/04
	REGULATOR	PAGE 3.3/07
	PILOT-ASSISTED REGULATOR	PAGE 3.3/10
	REGULATOR 3/4" AND 1" REGULATOR WITH V3V	PAGE 3.3/11
	NEWTRONIC ELECTRIC REGULATOR	PAGE 3.3/15
	FILTER REGULATOR	PAGE 3.3/17
	LUBRICATOR	PAGE 3.3/20
	DEPURATOR	PAGE 3.3/23
	CIRCUIT SHUT-OFF VALVE	PAGE 3.3/25
	V3V 3/4" AND 1" CIRCUIT SHUT-OFF VALVE	PAGE 3.3/27
	AIR TAKE-OFF	PAGE 3.3/29
	SUB-BASE	PAGE 3.3/30
	AUTOMATIC CONDENSATE DRAIN	PAGE 3.3/31
	UNITS	PAGE 3.3/32
	PRESSURE SWITCHES	PAGE 3.3/46
	ACCESSORIES	PAGE 3.3/48
	SPARE PARTS	PAGE 3.3/51

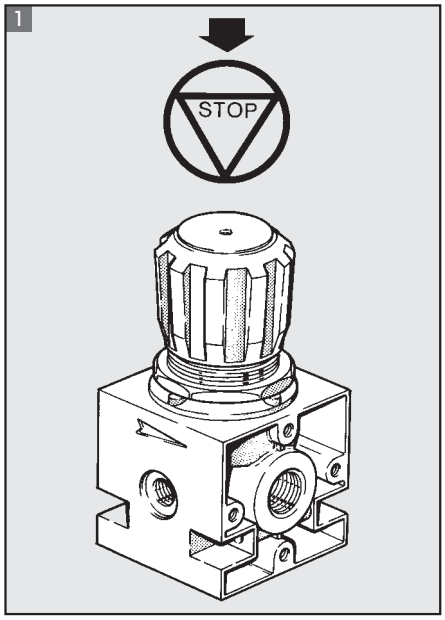
Newdeal

Newdeal is the forerunner of all air treatment units by Metal Work.
The entire range is top quality, heavy-duty and reliable. These units are designed for use at high pressures* and in applications where the temperature and quality of the ambient area are critical.

*For further details, refer to the Specification for the item in question.

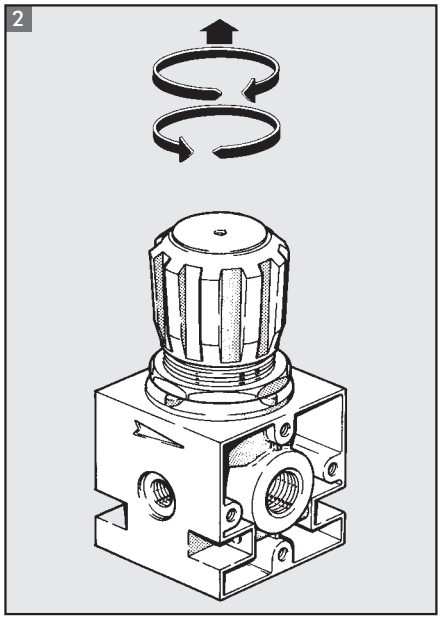


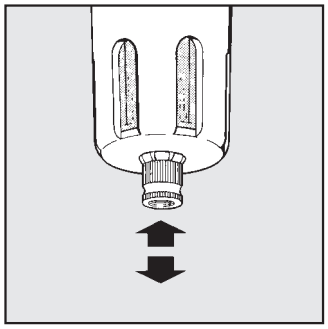
GENERAL RULES - USE AND MAINTENANCE



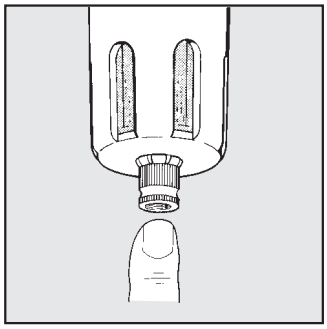
1 The knob can be locked so that the set pressure cannot be altered.

2 The air pressure must always be set upwards.

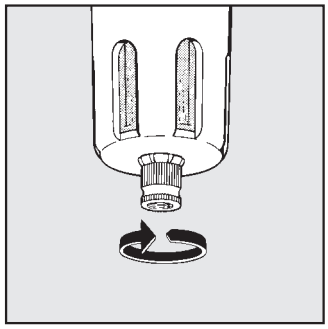




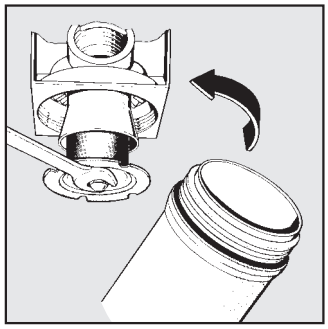
With the knob in the centre position, the drain is semi-automatic. The drain operates when the bowl is not pressurized and closes when it is.



Press the button to drain condensate when the bowl is pressurized.

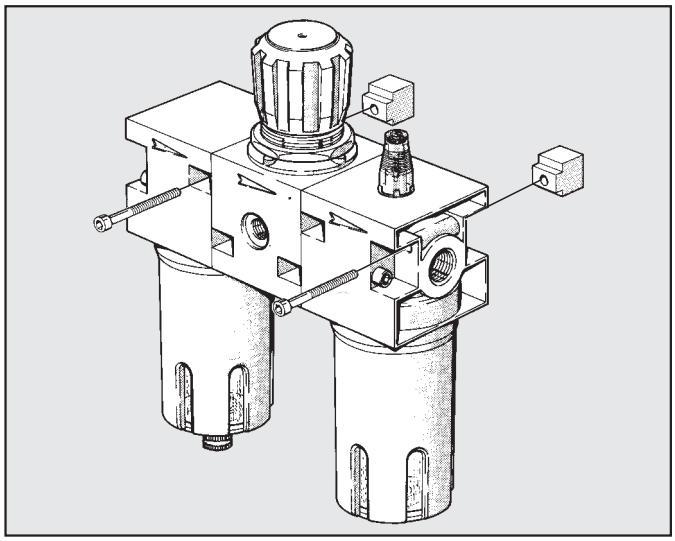


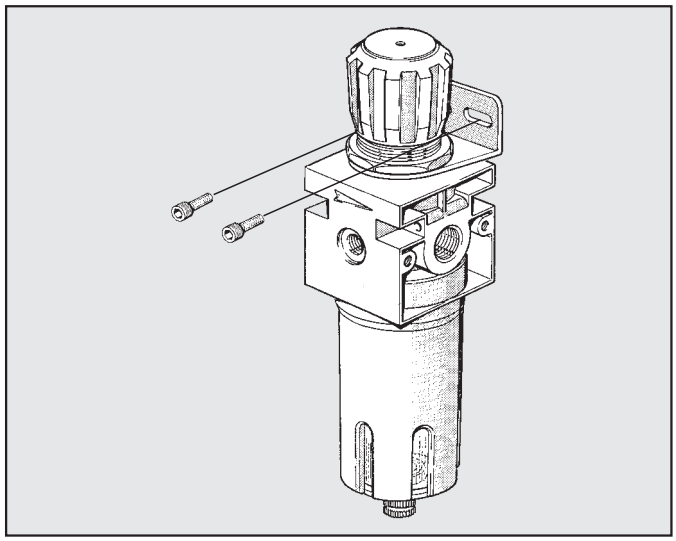
Turn the knob anticlockwise to close the valve with bowl pressurized or not pressurized.



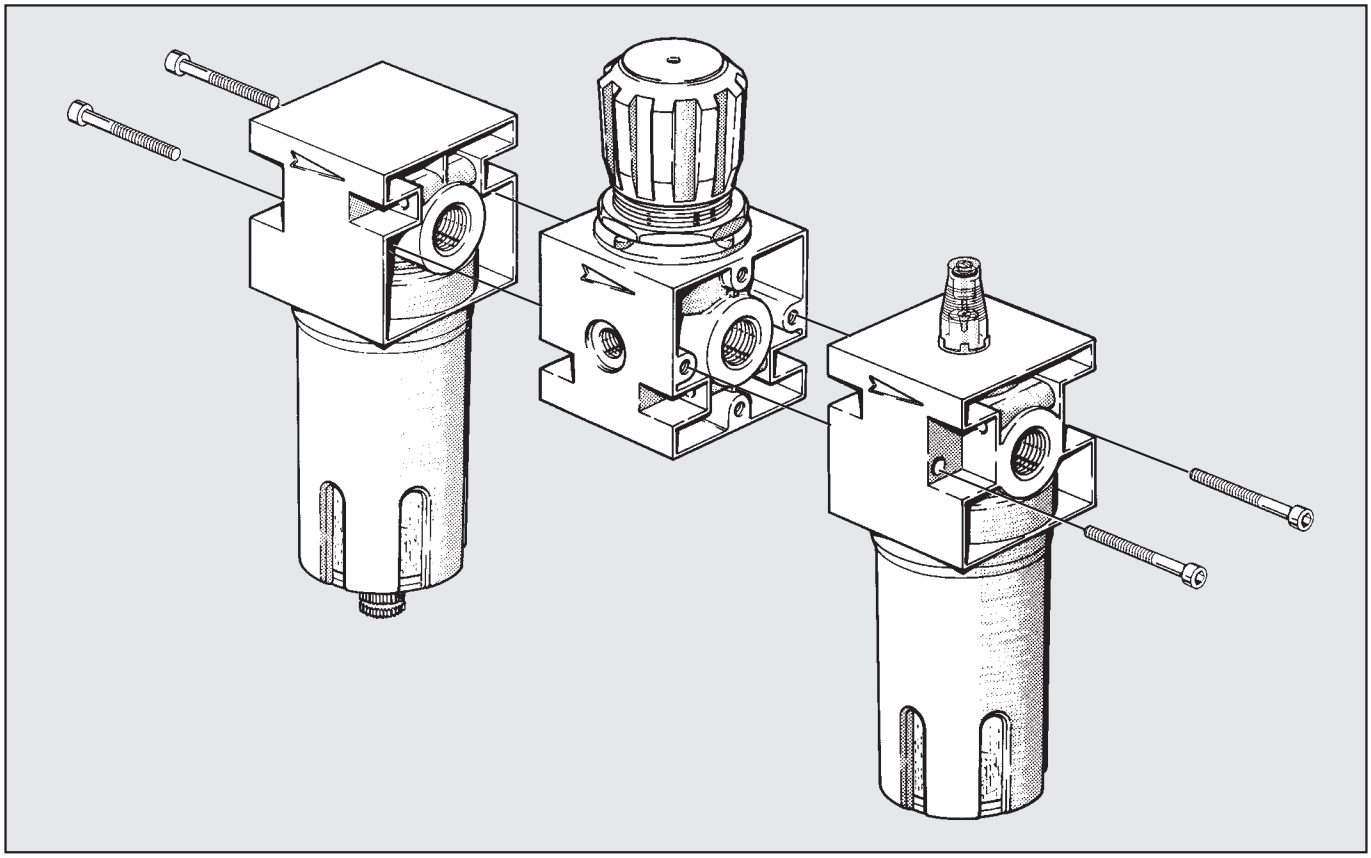
To clean or replace the filter element unscrew the screen of the centrifuge assembly. Use a no. 3 compass spanner to unscrew the bowl.

WALL MOUNTING

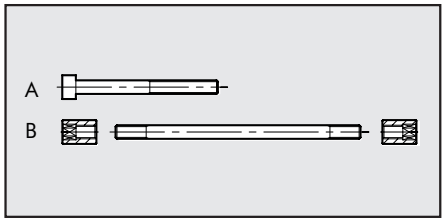




ASSEMBLY DIAGRAM



ASSEMBLY TIE RODS



Elements that can be assembled	1/4			3/8-1/2			3/4-1		
	Type	Code	Ref.	Type	Code	Ref.	Type	Code	Ref.
F/L+R/FR	A	9250001	CVA 1/4 4x40	A	9450001	CVA 1/2 5x55	A	9650001	CVA 1 6x70
V3V+R/FR	A	9250001	CVA 1/4 4x40	A	9450002	CVA 1/2 5x60			
V3V+F/L+R/FR	A	9250002	CVA 1/4 4x82	A	9450003	CVA 1/2 5x120			
F/L/D+F/L/D	B	9200901	F+L T 1/4	B	9400901	F+L T 3/8-1/2	B	9600901	F+L T 3/4-1

Newdeal FILTER

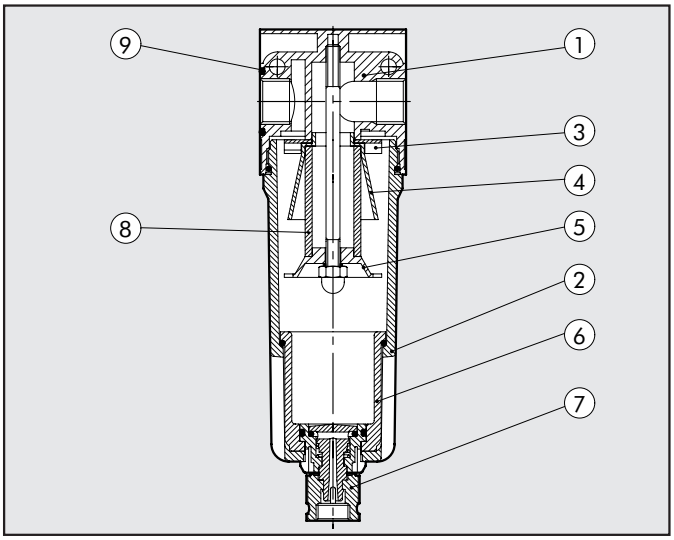
Filter with different impurity filtration degrees.
- Metal bowl with external viewing
- Semi-automatic and condensate drainage

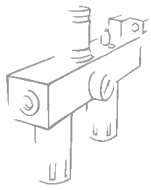


TECHNICAL DATA		FIL. ND 1/4''	FIL. ND 3/8''	FIL. ND 1/2''	FIL. ND 3/4''	FIL. ND 1''
Threaded port		1/4''	3/8''	1/2''	3/4''	1''
Degree of filtration		4µm 20µm 50µm			4µm; 20µm; 50µm	
Max. inlet pressure	MPa	1.8			1.8	
	bar	18			18	
	psi	261			261	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1300	3100		9100	
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	46	110		324	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1720	4100		11000	
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	61	146		391	
Fluid		Compressed air				
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°				
	°F	122°				
Weight	Kg	0.4	0.9		1.2	
Wall fixing screws		M4x40	M4x55		M6x75	
Mounting position		Vertical				
Drain		Manual - Semi-auto			Manual - Semi-auto	
		Automatic (SAC o RA)			Automatic (RA)	
Bowl capacity	cm^3	10	45		170	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

COMPONENTS

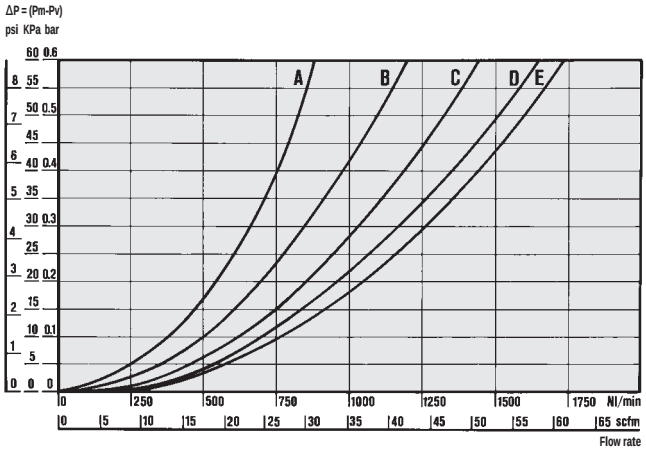
① Zamak body
② Aluminium bowl
③ Technopolymer centrifuge
④ Technopolymer baffle plug
⑤ Technopolymer screen
⑥ Clear technopolymer bowl
⑦ Drain (RMSA)
⑧ Sintered bronze filter cartridge
⑨ NBR gaskets



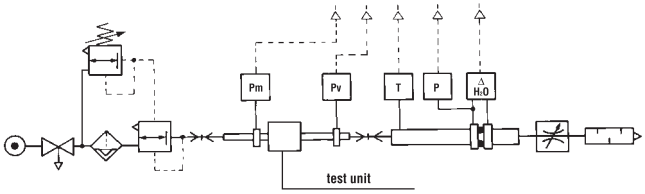


FLOW CHARTS

FIL 1/4



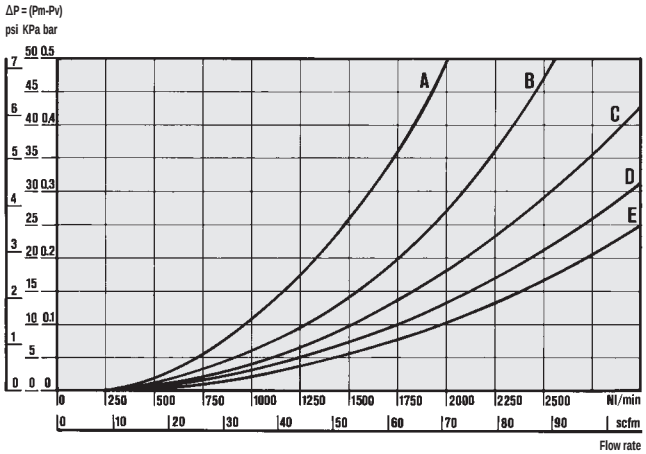
Department of Mechanic
Turin Polytechnic



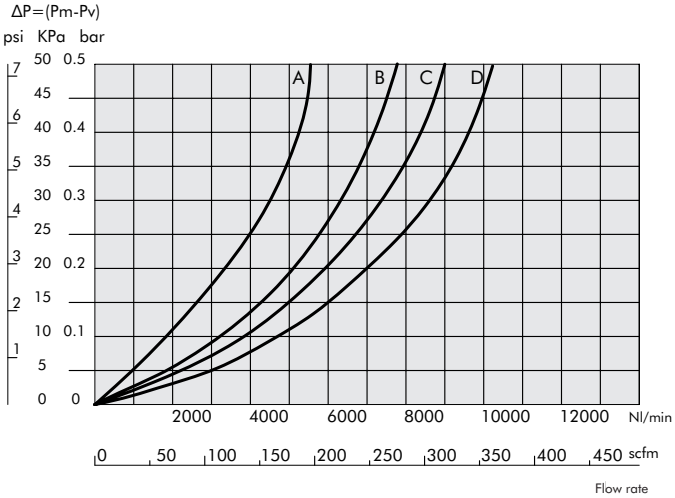
• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

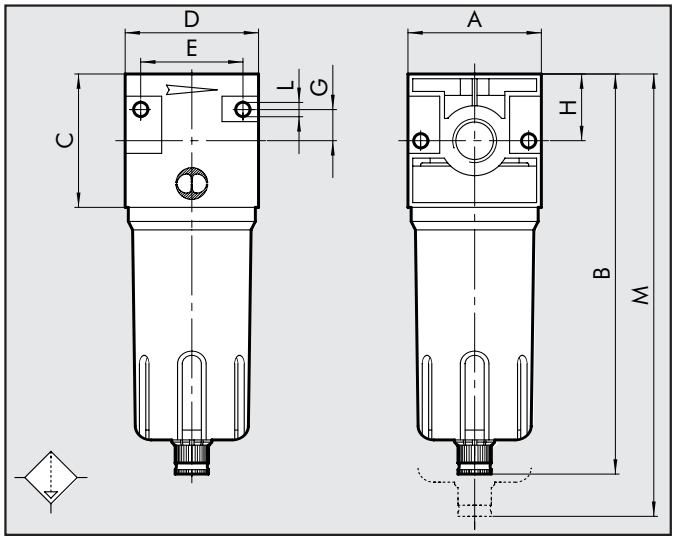
FIL 3/8 - 1/2



FIL 3/4 - 1''



DIMENSIONS



	G 1/4	G 3/8	G 1/2	G 3/4	G 1''
A	42	60		80	
B	142	180		235	
C	42	60		80	
D	42	60		80	
E	32	46		66	
G	10	14		22	
H	21	30		40	
L	M4 hole	M4 hole		M6 hole	
M	185	230		325	

KEY TO CODES

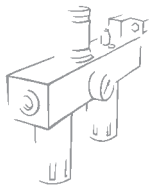
FIL	1/4	4µm	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	TYPE OF CONDENSATE DRAIN
FIL	1/4	4µm	RMSA - SAC
	3/8	20µm	RMSA - SAC - RA
	1/2	50µm	
	3/4		RMSA
	1		RA

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

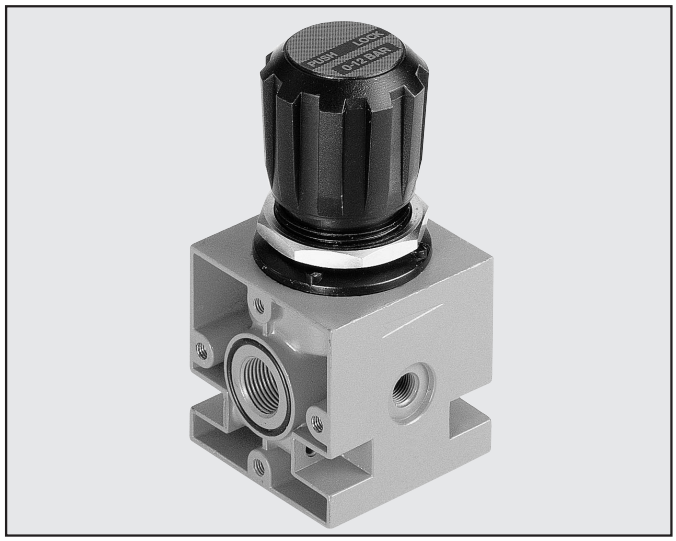
Code	Description
1221005	FIL 1/4 4 RMSA TMV
1221013	FIL 1/4 4 SAC TMV
1221006	FIL 1/4 20 RMSA TMV
1221014	FIL 1/4 20 SAC TMV
1221008	FIL 1/4 50 RMSA TMV
1221016	FIL 1/4 50 SAC TMV
1321005	FIL 3/8 4 RMSA TMV
1321009	FIL 3/8 4 RA TMV
1321013	FIL 3/8 4 SAC TMV
1321006	FIL 3/8 20 RMSA TMV
1321010	FIL 3/8 20 RA TMV
1321014	FIL 3/8 20 SAC TMV
1321008	FIL 3/8 50 RMSA TMV
1321012	FIL 3/8 50 RA TMV
1321016	FIL 3/8 50 SAC TMV
1421005	FIL 1/2 4 RMSA TMV
1421009	FIL 1/2 4 RA TMV
1421013	FIL 1/2 4 SAC TMV
1421006	FIL 1/2 20 RMSA TMV
1421010	FIL 1/2 20 RA TMV
1421014	FIL 1/2 20 SAC TMV
1421008	FIL 1/2 50 RMSA TMV
1421012	FIL 1/2 50 RA TMV
1421016	FIL 1/2 50 SAC TMV
1521005	FIL 3/4 4 RMSA TMV
1521009	FIL 3/4 4 RA TMV
1521006	FIL 3/4 20 RMSA TMV
1521010	FIL 3/4 20 RA TMV
1521008	FIL 3/4 50 RMSA TMV
1521012	FIL 3/4 50 RA TMV
1621005	FIL 1 4 RMSA TMV
1621009	FIL 1 4 RA TMV
1621006	FIL 1 20 RMSA TMV
1621010	FIL 1 20 RA TMV
1621008	FIL 1 50 RMSA TMV
1621012	FIL 1 50 RA TMV

NOTES



Newdeal REGULATOR

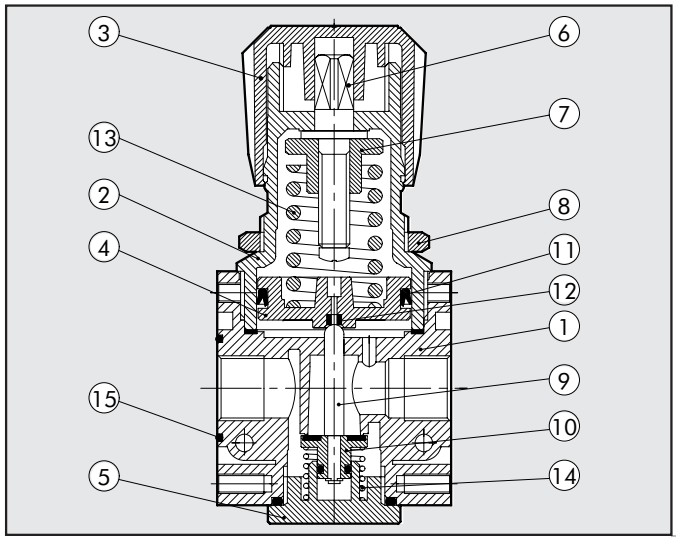
Highly reliable, heavy-duty piston-operated regulator.
• Stability of the set pressure as the upstream pressure varies
• Standard overpressure blowoff valve
• Can be fixed to the wall using the holes is the sides of the body.



TECHNICAL DATA		REG. ND 1/4''	REG. ND 3/8''	REG. ND 1/2''	REG. ND 3/4''	REG. ND 1''
Threaded port		1/4''	3/8''	1/2''	3/4''	1''
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12				
Max. inlet pressure	MPa	1.8				
	bar	18				
	psi	261				
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	200	1100		2500	
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	7	39		89	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	650	2500		4500	
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	23	89		160	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous				
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°				
	°F	122°				
Weight	Kg	0.3	0.8		1.5	
Wall fixing screws		M4x40	M4x55		M6x75	
Mounting		In any position				
Gauge port		G 1/8''	G 1/8''	G 1/8''	1/4''	1/4''
Notes:		The regulator pressure must always be set upwards. For increased sensitivity, use a pressure regulator with a rated pressure as close as possible to the required value. Do not take off air from gauge ports.				

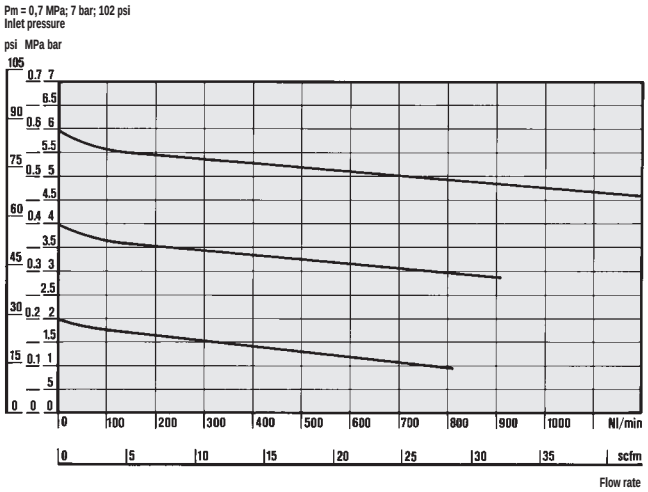
COMPONENTS

① Zamak body
② Technopolymer bell
③ Technopolymer knob
④ Technopolymer piston rod
⑤ Technopolymer plug
⑥ OT58 brass adjusting screw
⑦ OT58 brass nut
⑧ Technopolymer ring nut
⑨ OT brass rod
⑩ Valve with NBR vulcanized gasket
⑪ NBR lip seal
⑫ NBR relieving seal
⑬ Steel adjusting spring
⑭ Steel valve compression spring
⑮ NBR gaskets

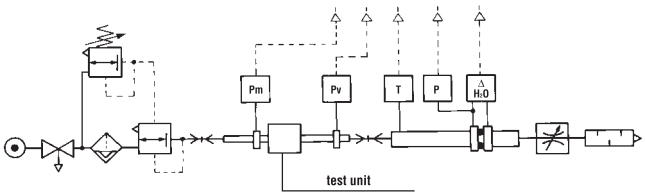


FLOW CHARTS

REG 1/4

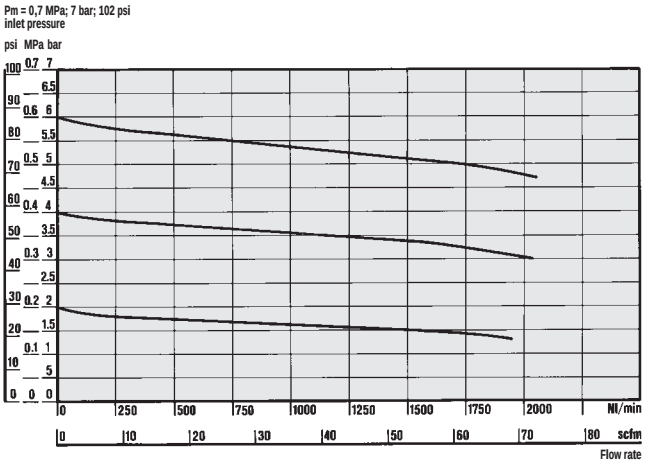


Department of Mechanics
Turin Polytechnic

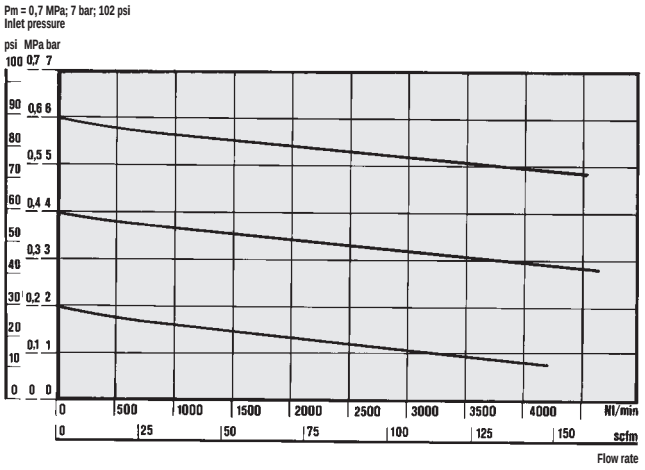


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

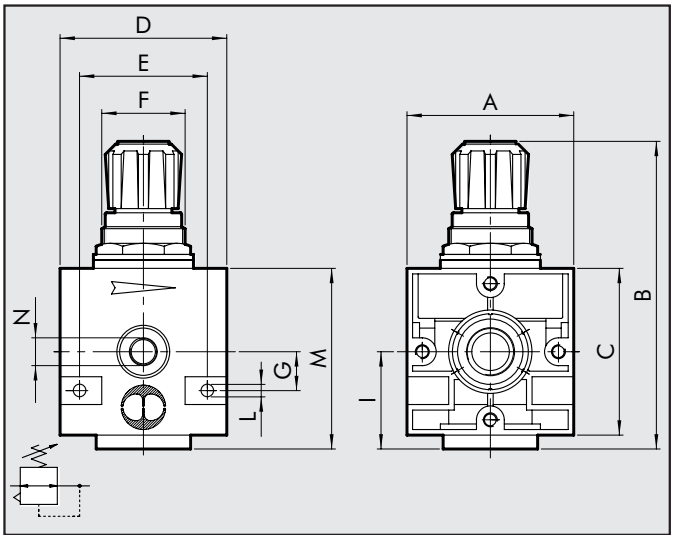
REG 3/8 - 1/2



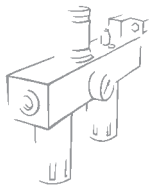
REG 3/4 - 1''



DIMENSIONS



	G 1/4	G 3/8	G 1/2	G 3/4	G 1''
A	42	60		80	
B	94	130		184	
C	42	60		80	
D	42	60		80	
E	32	46		66	
F	30x1.5	38x2		55x2	
G	10	14		22	
I	25	35		47	
L	M4 hole	M4 hole		M6 hole	
M	49	70		94	
N	1/8	1/8		1/4	



KEY TO CODES

REG	1/4	02
ELEMENT	THREADED PORT	SETTING RANGE
REG	1/4 3/8 1/2 3/4 1	02 04 08 012

ORDERING CODES

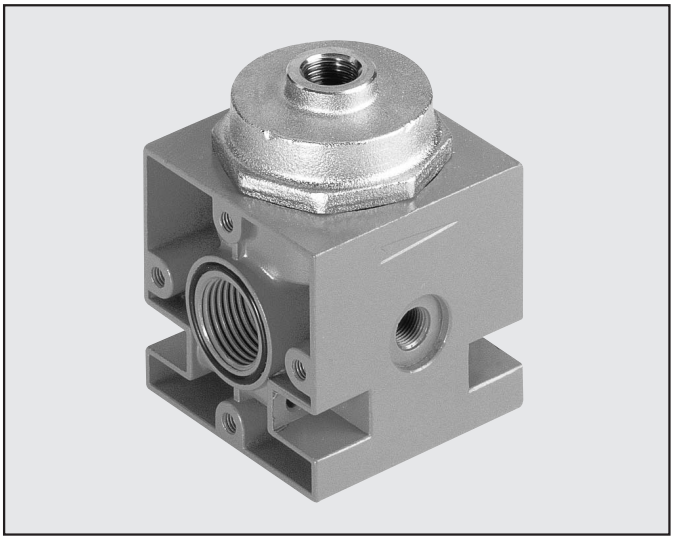
Code	Description
1202001	REG 1/4 04
1202002	REG 1/4 08
1202003	REG 1/4 012
1202004	REG 1/4 02
1302001	REG 3/8 04
1302002	REG 3/8 08
1302003	REG 3/8 012
1402001	REG 1/2 04
1402002	REG 1/2 08
1402003	REG 1/2 012
1502001	REG 3/4 04
1502002	REG 3/4 08
1502003	REG 3/4 012
1602001	REG 1 04
1602002	REG 1 08
1602003	REG 1 012

NOTES

NOTES

Newdeal
PILOT-ASSISTED REGULATOR

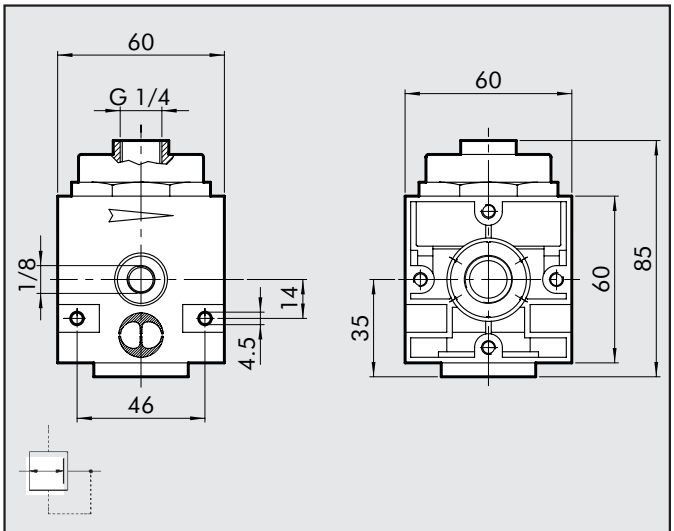
Remote pilot-assisted piston regulator for heavy-duty use.
• Stability of the set pressure as the upstream pressure varies;
• Can be fixed to the wall using the holes is the sides of the body.



TECHNICAL DATA

		REG. PIL. 3/8'' 1/2''
Threaded port		3/8''-1/2"
Setting range	bar	Depending on pilot
Max. inlet pressure	MPa	1.8
	bar	18
	psi	261
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	3500
ΔP 0,5 bar (0,05 MPa÷7 psi)	scfm	124
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	4500
ΔP 1 bar (0,1 MPa÷14 psi)	scfm	160
Fluid		Filtered, lubricated or unlubricated compressed air.
		Lubrication, if used, must be continuous
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Weight	Kg	0.8
Wall fixing screws		M4x55
Mounting		In any position
Gauge port		G 1/8''
Notes:		The regulator pressure must always be set upwards.
		Overpressure relieving from the pilot.

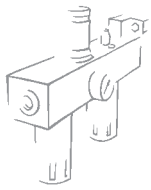
DIMENSIONS



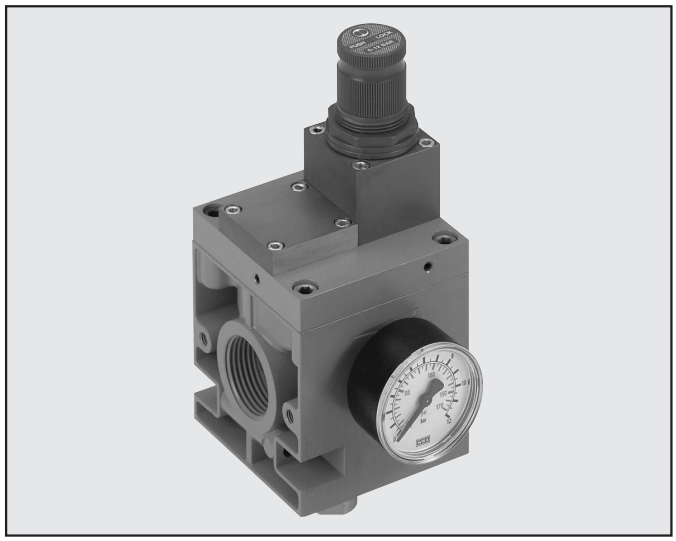
ORDERING CODES

Code	Description
1302004	RP 3/8 PILOT-ASSISTED REGULATOR
1402004	RP 1/2 PILOT-ASSISTED REGULATOR

New deal REGULATOR-
REGULATOR WITH V3V 3/4" and 1"



Piloted regulator with integrated function, manual, electropneumatic or pneumatic stop valve as required.
It performs two functions in the space usually occupied by a single module, which ensures a high flow rate at all P values including low ones.
Extremely quick responses in both discharge and feed.
The integrated pilot regulator is available with controlled leak.



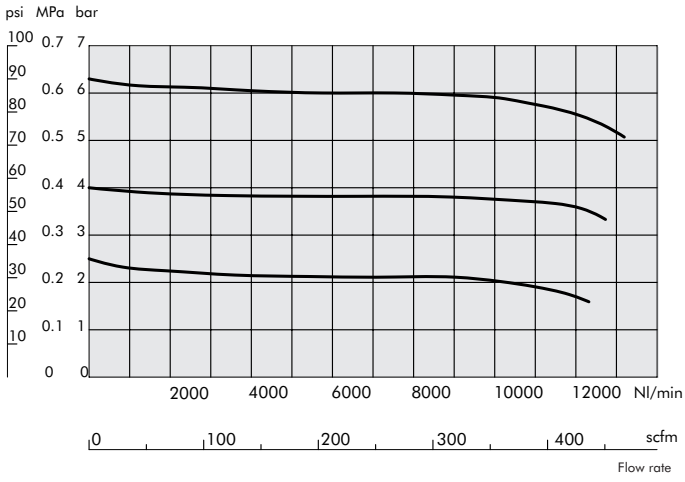
TECHNICAL DATA

		3/4"	1"
Threaded port	G	3/4"	1"
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12	
*Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	12000	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	423	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	13000	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	460	
Fluid		Lubricated or unlubricated filtered air.	
		If lubrication is used, it must be continous.	
Drain flow rate at 6 bar	Nl/min	1800	
(0.6 MPa÷87psi)	scfm	64	
Temperature rage	°C	-10°÷+50°C	
(1 MPa÷145psi)	°F	14°F÷122°F	
Weight	Kg	1.7	
Wall fixing screws		M6x75	
Position of montage		In any position	

*Version Reg+V3V Cnomo (1 Mpa - 10bar -145psi)
Version Reg with solenoid (0.8 Mpa - 8 bar - 116 psi)

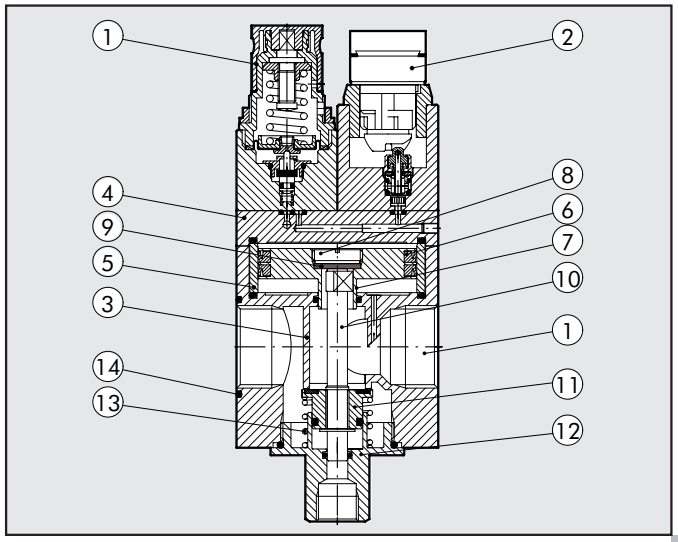
FLOW CHARTS

Regulated pressure
Pm=7 bar - 0.7 MPa - 100 psi

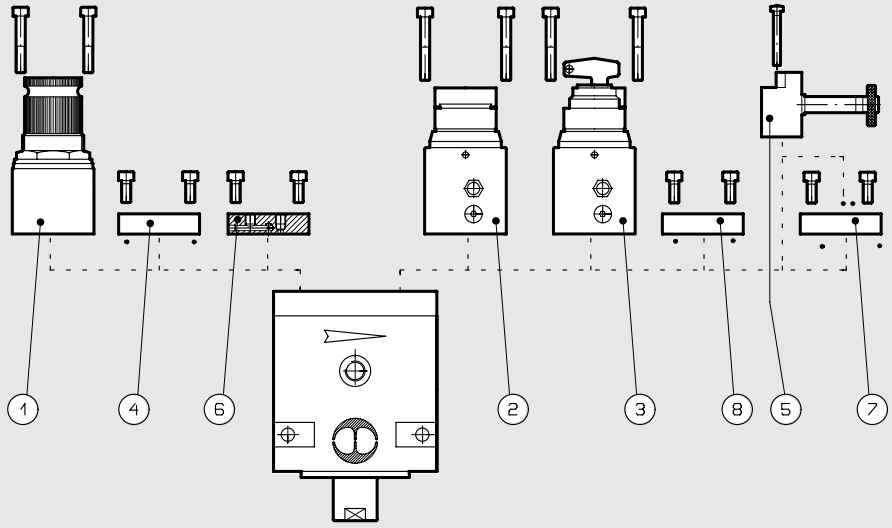


COMPONENTS

① Pilot Reg. sub-assembly
② Manual V3V control sub-assembly
③ Aluminium regulator body
④ Aluminium upper plate
⑤ Aluminium spacer
⑥ NBR lip seal
⑦ Aluminium Ø 63 piston rod
⑧ Cap for OT 58 brass plain gasket
⑨ NBR plain gasket
⑩ OT 58 brass rod
⑪ OT 58 brass valve
⑫ Aluminium lower cap
⑬ Steel valve spring
⑭ NBR gaskets



ASSEMBLY OPTIONS



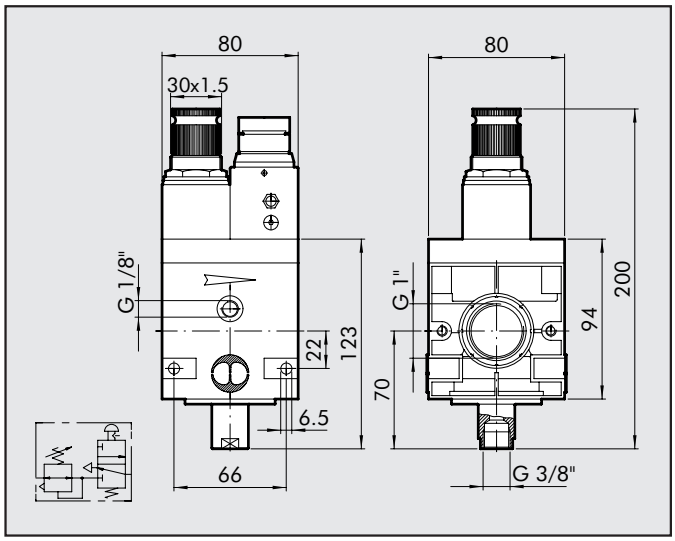
This modular system makes it possible to make the following combinations:
A) Regulator with pilot regulator ① or remote control ⑥, the end plate is mounted on the right-hand side ⑧.
B) V3V with manual lever-operated control ② or key control ③ or solenoid CNOMO ⑤. the end plate is mounted on the left-hand side ④.
C) Regulator + V3V is the result of the free combination of the versions specified above.

TECHNICAL DATA

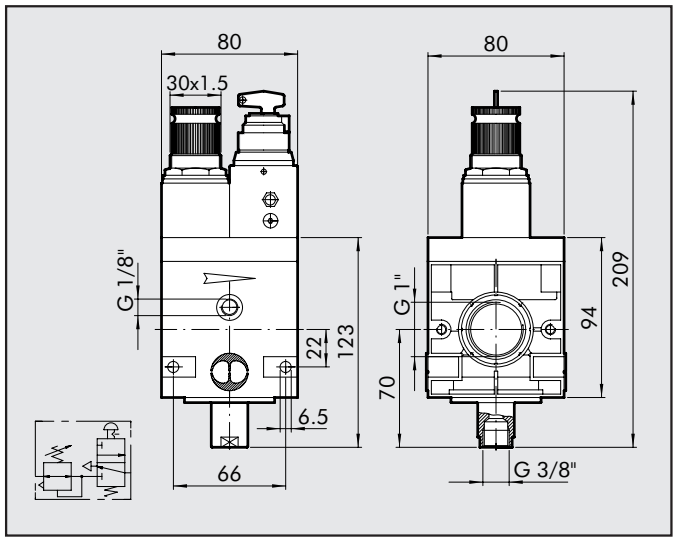
	Code	Description
①	9640501-02-03-04	Pilot regulator kit
②	9640401	V3V manual lever-operated control kit
③	9640301	V3V manual key-operated control kit
④	9640101	End plate kit for V3V
⑤	9453922	V3V ELPN CNOMO bistable control kit
⑤	9453920	V3V ELPN CNOMO monostable control kit
⑥	9640001	Remote control plate kit
⑦	9640201	Plate kit to mount Cnomo rotated by 180°
⑧	9640101	End plate kit for piloted regulator

NOTES

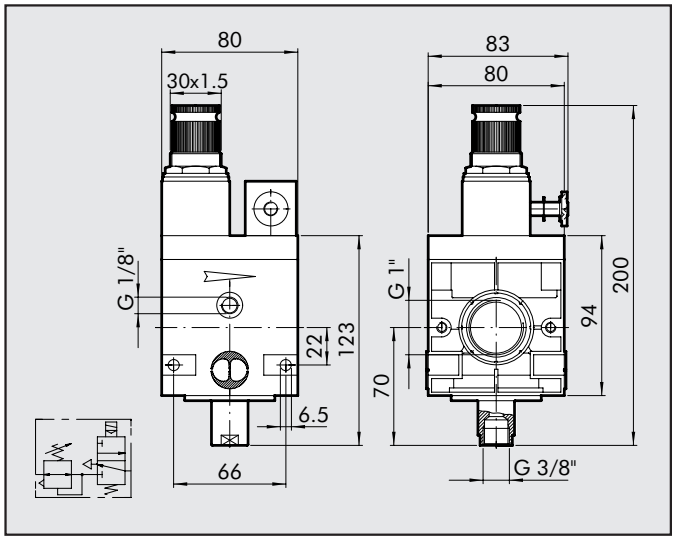
REG P + V3V MANUAL



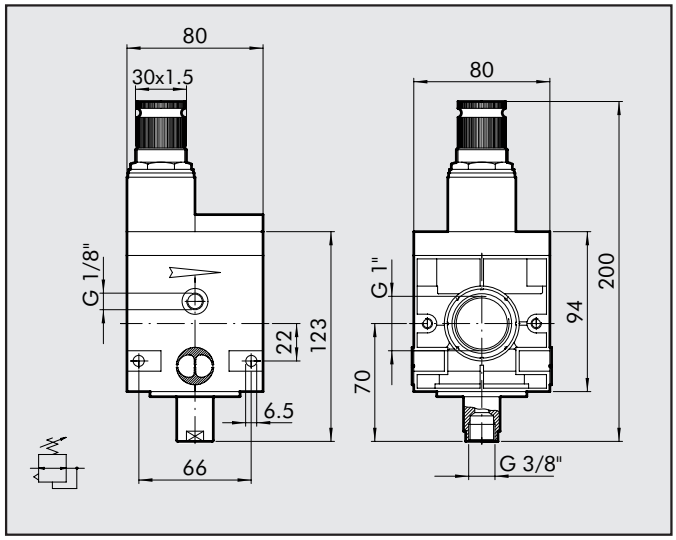
REG P + V3V KEY



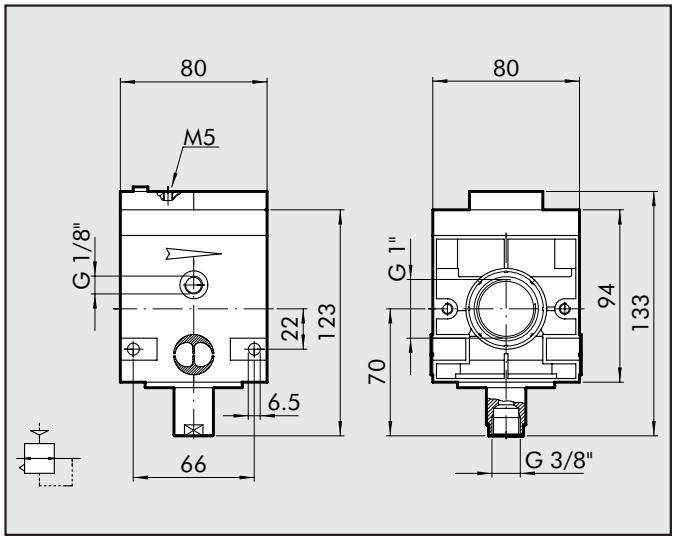
REG P + V3V ELPN CNOMO



REG P



REG P 00



KEY TO CODES

RV3V	1	02	ELPN
ELEMENT	THREADED PORT	SETTING RANGE	ELPN V3V CONTROL
RV3V REGP	1″ 3/4″	00 02 04 08 012	ELPN KEY MANUAL

RV3V: Regulator with built-in shut-off valve.
ELPN: CNOMO solenoid
REGP: Piloted regulator

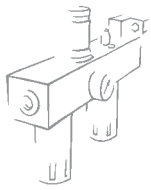
ORDERING CODES

Code	Description
1519001	REGP 3/4 00
1518001	REGP 3/4 02
1518002	REGP 3/4 04
1518003	REGP 3/4 08
1518004	REGP 3/4 012
1517001	RV3V 3/4 02 ELPN
1517002	RV3V 3/4 04 ELPN
1517003	RV3V 3/4 08 ELPN
1516101	RV3V 3/4 02 KEY
1516102	RV3V 3/4 04 KEY
1516103	RV3V 3/4 08 KEY
1516104	RV3V 3/4 012 KEY
1516001	RV3V 3/4 02 MANUAL
1516002	RV3V 3/4 04 MANUAL
1516003	RV3V 3/4 08 MANUAL
1516004	RV3V 3/4 012 MANUAL

Code	Description
1619001	REGP 1 00
1618001	REGP 1 02
1618002	REGP 1 04
1618003	REGP 1 08
1618004	REGP 1 012
1617001	RV3V 1 02 ELPN
1617002	RV3V 1 04 ELPN
1617003	RV3V 1 08 ELPN
1616101	RV3V 1 02 KEY
1616102	RV3V 1 04 KEY
1616103	RV3V 1 08 KEY
1616104	RV3V 1 012 KEY
1616001	RV3V 1 02 MANUAL
1616002	RV3V 1 04 MANUAL
1616003	RV3V 1 08 MANUAL
1616004	RV3V 1 012 MANUAL

NOTES

NEWTRONIC Newdeal
ELECTRONIC CONTROL REGULATOR



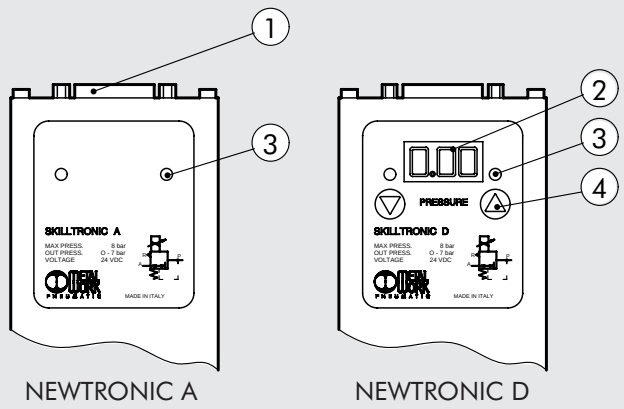
The Newtronic is an electronically-controlled pressure regulator equipped with an 8-bit microcontroller. The control signal can be analogic, digital via RS232 or digital from the keyboard. It is converted into a proportional pressure signal by means of high-rate solenoid valves. The regulator can be used alone within the indicated flow values, or in combination with a New deal 1"-3/4" pilot-assisted pressure regulator (power stage).
The advantages are:
• Integration with analogic or digital control systems (PC, PLC, etc.)
• Extremely fast response times
• Excellent repeatability and reliability
• Low power absorption
Skilltronic comes in two basic versions:
- Version A, with analogic control via the mains or RS232 serial line.
- Version D, with control via RS232 serial line or keyboard or mains, with display of the set and regulated pressures.



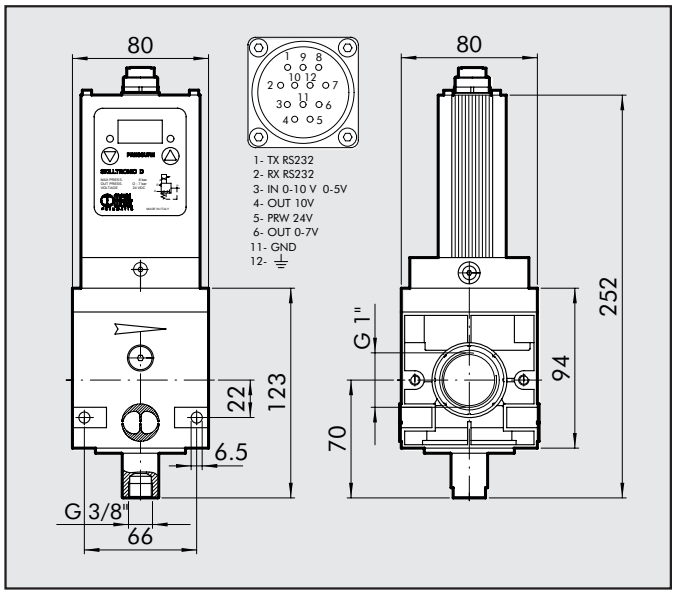
TECHNICAL DATA		NEWTRONIC A e D 3/4"-1"
Setting range	MPa	0.03÷0.7
	bar	0.3÷7
	psi	4÷100
Control pressure	MPa	0.1÷0.8
	bar	1÷8
	psi	15÷115
Temperature range	°C	-10°C÷+50°C
	°F	14°F÷122°F
Degree of protection		IP65
Weight	Kg	2.5
Fluid		20 µm filtered air, de-humidified and unlubricated.
Supply voltage	V	24VDC
Max. absorbed power	W	2
Control		0÷5V / 0÷10 V / RS 232
Flow rate at 6.3 bar (0.63 MPa, 91 psi)	Nl/min	12000
ΔP 0.5 bar (0.05 MPa, 7 psi)	scfm	426

COMPONENTS

① Connection for power supply and serial line
② 3-digit digital display
③ Led
④ Keys for equipment configuration and pressure setting.



DIMENSIONS

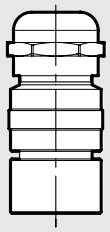


ORDERING CODES

Code	Description
1520001	NEWTRONIC 3/4 A
1520002	NEWTRONIC 3/4 D
1620001	NEWTRONIC 1 A
1620002	NEWTRONIC 1 D

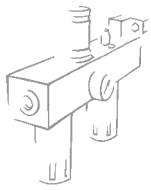
ACCESSORIES

CONNECTOR IP65



Code	Description
W0214100200	CONNECTOR IP 60 90° ELBOW
W0214100000	CONNECTOR IP 65 STRAIGHT

NOTES



Newdeal FILTER REGULATOR

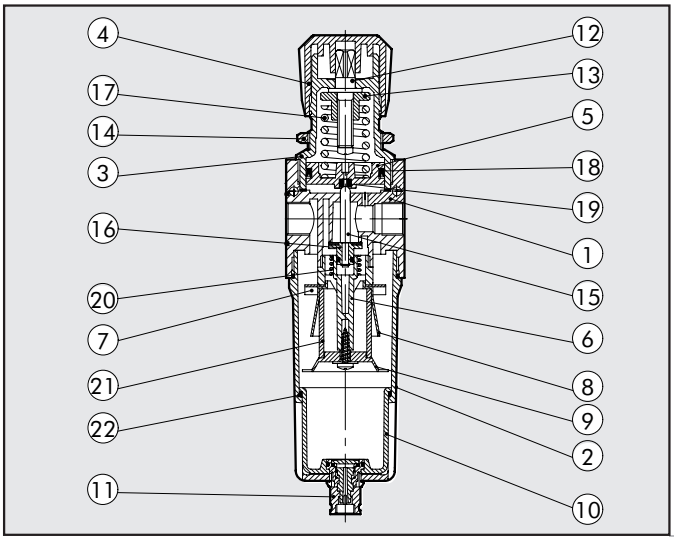
Highly reliable piston-operated filter regulator.
• Stability of the set pressure as the upstream pressure varies
• Standard overpressure blow-off valve
• Can be fixed to the wall using the holes is the sides of the body
• Metal bowl with external viewing
• Manual/semi-auto or automatic condensate drainage



TECHNICAL DATA		FR ND 1/4	FR ND 3/8''	FR ND 1/2''
Threaded port		1/4''	3/8''	1/2''
Setting range	bar	0 to 2 - 0 to 4 - 0 to 8 - 0 to 12		
Degree of filtration		4µm 20µm 50µm		
Max. inlet pressure	MPa	1.8		
	bar	18		
	psi	261		
Flow rate at 6.3 bar (0.63 MPa÷91 psi) ΔP 0,5 bar (0,05 MPa÷7 psi)	Nl/min	260	1000	
	scfm	9.2	35.5	
Flow rate at 6.3 bar (0.63 MPa÷91 psi) ΔP 1 bar (0.1 MPa÷14 psi)	Nl/min	700	2500	
	scfm	25	88.5	
Fluid		Compressed air		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°		
	°F	122°		
Weight	Kg	0.5	1	
Wall fixing screws		M4x40	M4x55	
Mounting position		Vertical		
Gauge port		G 1/8''	G 1/8''	
Bowl capacity	cm^3	10	45	
Condensate drain		Manual – Semi-automatic (RMSA) / Automatic (SAC or RA)		
Notes:		The regulator pressure must always be set upwards.		
		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

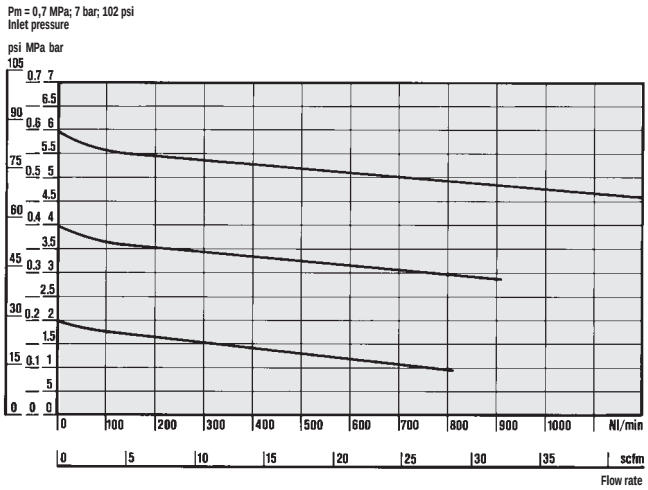
COMPONENTS

① Zamak body
② Aluminium bowl
③ Technopolymer bell
④ Technopolymer knob
⑤ Technopolymer piston rod
⑥ Technopolymer plug
⑦ Technopolymer centrifuge
⑧ Technopolymer baffle plug
⑨ Technopolymer screen
⑩ Technopolymer bowl
⑪ Drain (RMSA)
⑫ OT 58 adjustind screw
⑬ OT 58 brass nut
⑭ Technopolymer ring nut
⑮ OT58 brass rod
⑯ Valve with NBR vulcanized gasket
⑰ Steel adjusting spring
⑱ NBR lip seal
⑲ NBR relieving seal
⑳ Steel valve compression spring
㉑ Sintered bronze filter cartridge
㉒ NBR gaskets

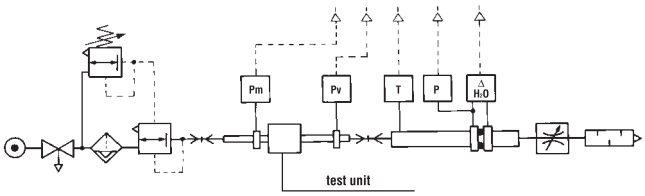


FLOW CHARTS

FR 1/4

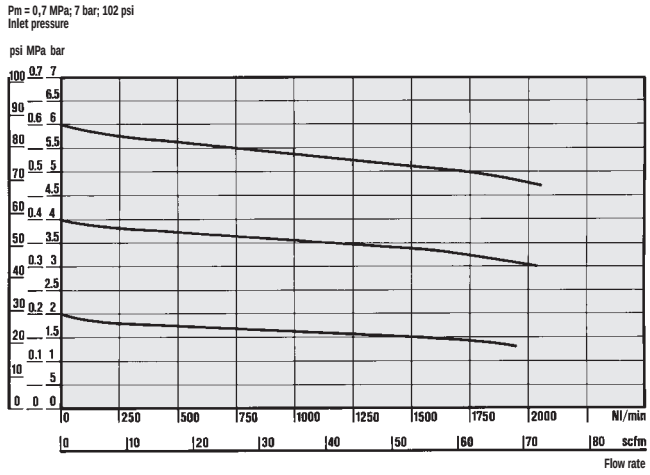


Department of Mechanics
Turin Polytechnic

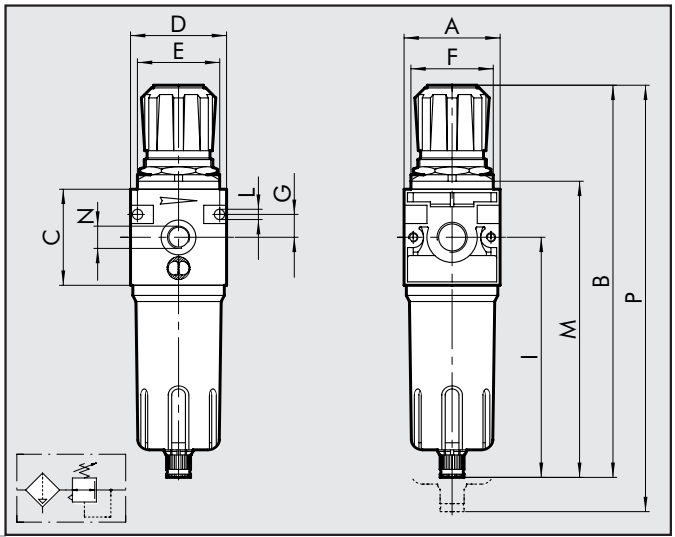


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

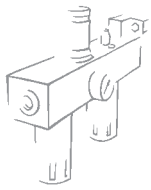
FR 3/8 - 1/2



DIMENSIONS



	G 1/4	G 3/8	G 1/2
A	42	60	
B	190	245	
C	42	60	
D	42	60	
E	36	52	
F	30x1.5	38x2	
G	10	14	
I	121	150	
L	M4 hole	M4 hole	
M	145	185	
N	1/8	1/8	
P	233	295	



KEY TO CODES

FR	1/4	4µm	02	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FR	1/4	4µm	02	RMSA
	3/8	20µm	04	SAC
	1/2	50µm	08	RA*
			012	

RMSA: Manual/semi-auto drain.
SAC: Automatic drain. Operates by depression - requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

* For ND 3/8 and 1/2 with RA, please contact our sales assistance department

ORDERING CODES

Code	Description
1225029	FR 1/4 4 08 RMSA TMV
1225509	FR 1/4 4 08 SAC TMV
1225053	FR 1/4 4 012 RMSA TMV
1225513	FR 1/4 4 012 SAC TMV
1225030	FR 1/4 20 08 RMSA TMV
1225510	FR 1/4 20 08 SAC TMV
1225054	FR 1/4 20 012 RMSA TMV
1225514	FR 1/4 20 012 SAC TMV
1225032	FR 1/4 50 08 RMSA TMV
1225511	FR 1/4 50 08 SAC TMV
1225056	FR 1/4 50 012 RMSA TMV
1225516	FR 1/4 50 012 SAC TMV
1325029	FR 3/8 4 08 RMSA TMV
1325509	FR 3/8 4 08 SAC TMV
1325053	FR 3/8 4 012 RMSA TMV
1325513	FR 3/8 4 012 SAC TMV
1325030	FR 3/8 20 08 RMSA TMV
1325510	FR 3/8 20 08 SAC TMV
1325054	FR 3/8 20 012 RMSA TMV
1325514	FR 3/8 20 012 SAC TMV
1325032	FR 3/8 50 08 RMSA TMV
1325512	FR 3/8 50 08 SAC TMV
1325056	FR 3/8 50 012 RMSA TMV
1325516	FR 3/8 50 012 SAC TMV
1425029	FR 1/2 4 08 RMSA TMV
1425509	FR 1/2 4 08 SAC TMV
1425053	FR 1/2 4 012 RMSA TMV
1425513	FR 1/2 4 012 SAC TMV
1425030	FR 1/2 20 08 RMSA TMV
1425510	FR 1/2 20 08 SAC TMV
1425054	FR 1/2 20 012 RMSA TMV
1425514	FR 1/2 20 012 SAC TMV
1425032	FR 1/2 50 08 RMSA TMV
1425512	FR 1/2 50 08 SAC TMV
1425056	FR 1/2 50 012 RMSA TMV
1425516	FR 1/2 50 012 SAC TMV

NOTES

Newdeal LUBRICATOR

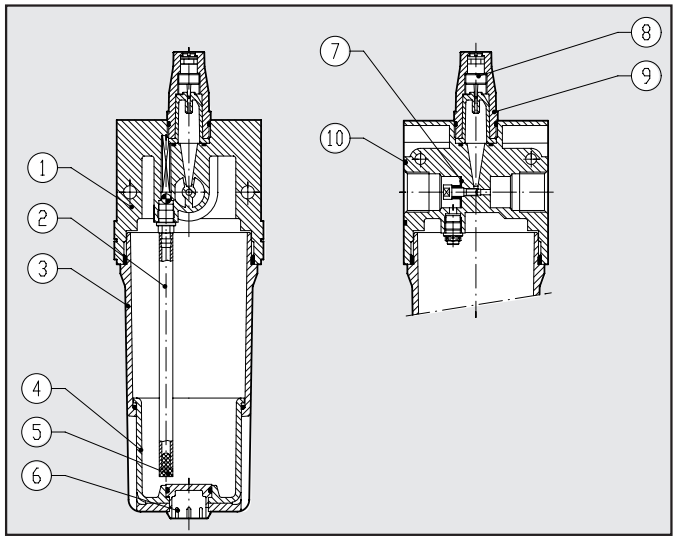
Lubricator with high lubrication stability.
- Quantity of lubricant proportioned to air flow
- Micrometric regulation of lubricant flow
- Activates at low flow rates
- All-round oil level viewing

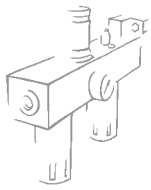


TECHNICAL DATA		LUB ND 1/4''	LUB ND 3/8''	LUB ND 1/2''	LUB ND 3/4''	LUB ND 1''
Threaded port		1/4''	3/8''	1/2''	3/4''	1''
Type of lubrication		mist				
Bowl capacity	cm^3	50	150		380	
Max. inlet pressure		1.8 MPa - 18 bar - 261 psi				
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	700	3000		12800	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	25	107		452	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	1100	4300		16000	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	39	153		565	
Fluid		Filtered compressed air				
Max temperature at 1 MPa; 10 bar; 145 psi		50°C - 122°F				
Weight	Kg	0.4	0.9		1.3	
Wall fixing screws		M4x40	M4x55		M6x75	
Mounting position		Vertical				
Notes:		• Use the screw provided to set the drip rate to drop every 300-600 Nl.				
		• Fit the lubricator as close as possible to the point of use				
		• Fill the bowl with oil before pressurizing the system				
		• Do not use cleaning oil, brake fluid or solvents in general				
		• Recommended lubricants:				
		ISO and UNI FD22 - E.g. Energol HLP 22 (BP) - Spinesso 22 (Esso) - Mobil DTE 22 (Mobil) - Tellus Oil 22 (Shell)				
On request:		• Automatic filling lubricator and minimum level lubricator.				

COMPONENTS:

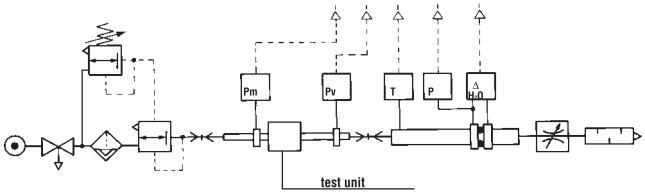
① Zamak body
② Rilsan oil suction pipe
③ Aluminium bowl
④ Clear technopolymer bowl
⑤ Filter
⑥ Technopolymer plug
⑦ Venturi NBR diaphragm
⑧ OT 58 brass oil flow regulation needle
⑨ Clear technopolymer cover
⑩ NBR gaskets





FLOW CHARTS

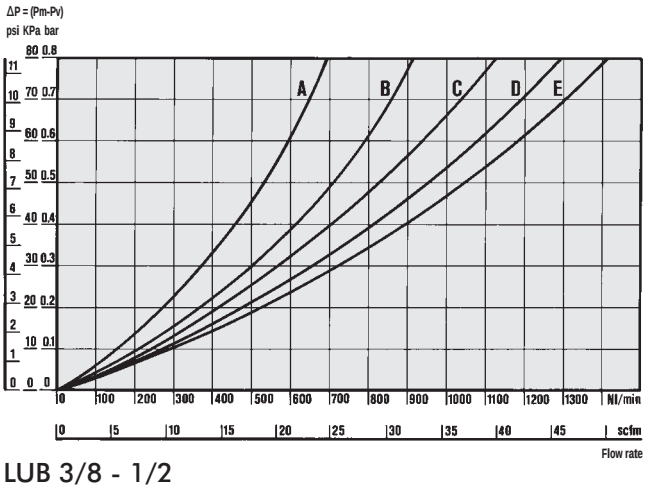
Department of Mechanics
Turin Polytechnic

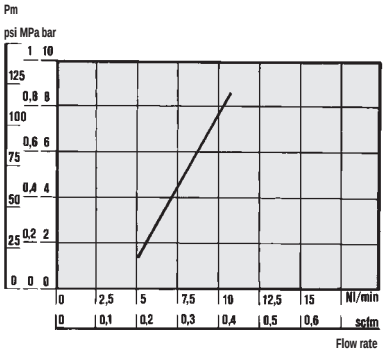


• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

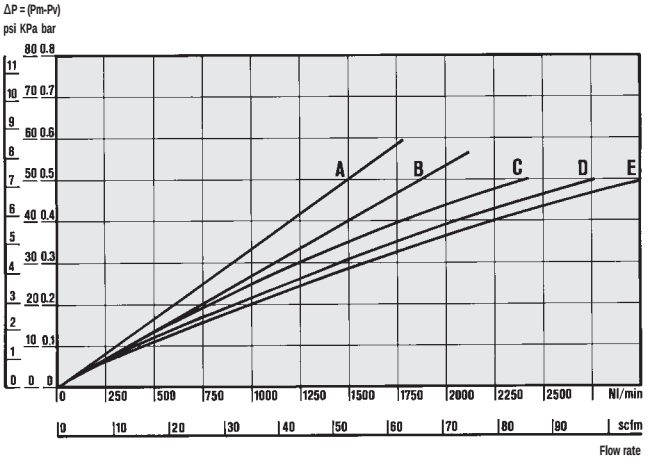
LUB 1/4

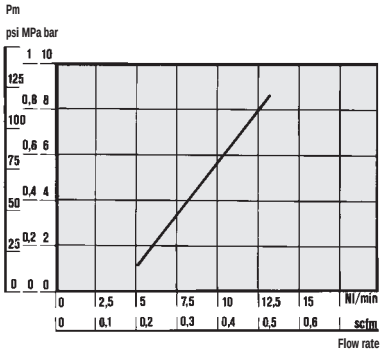




• MINIMUM ACTIVATION FLOW CHARTS
The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

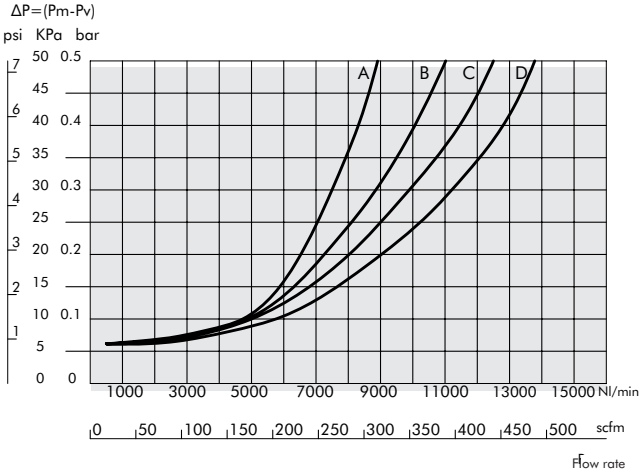
LUB 3/8 - 1/2

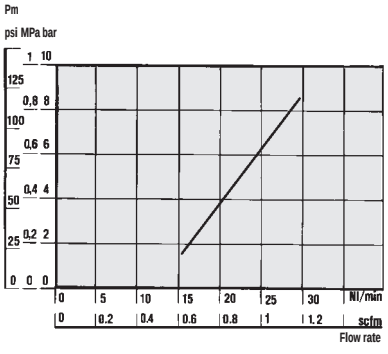




• MINIMUM ACTIVATION FLOW CHARTS
The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

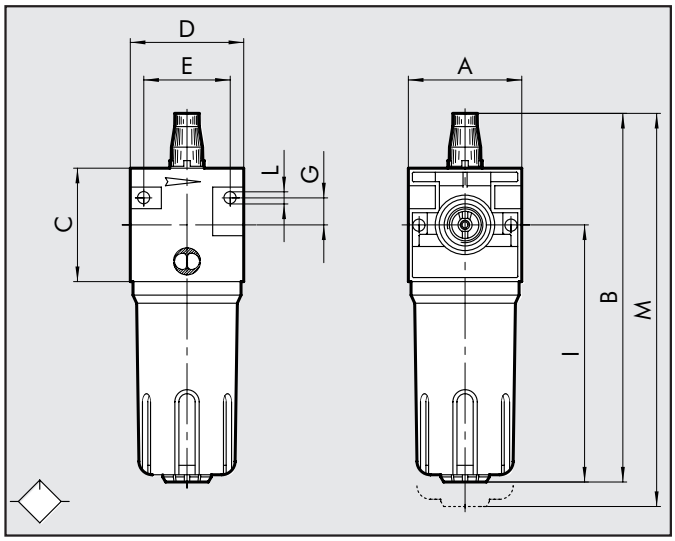
LUB 3/4 - 1"





• MINIMUM ACTIVATION FLOW CHARTS
The minimum activation flow charts were carried out in compliance with ISO/DP 6301/2

DIMENSIONS

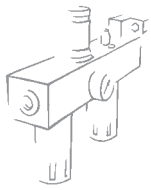


	G 1/4	G 3/8	G 1/2	G 3/4	G 1"
A	42	60		80	
B	156	195		260	
C	42	60		80	
D	42	60		80	
E	32	46		66	
G	10	14		22	
I	107	136		182	
L	M4 hole	M4 hole		M6 hole	
M	176	220		290	

ORDERING CODES

Code	Description
1223001	LUB 1/4 N TMV
1323001	LUB 3/8 N TMV
1423001	LUB 1/2 N TMV
1523001	LUB 3/4 N TMV
1623001	LUB 1 N TMV

NOTES



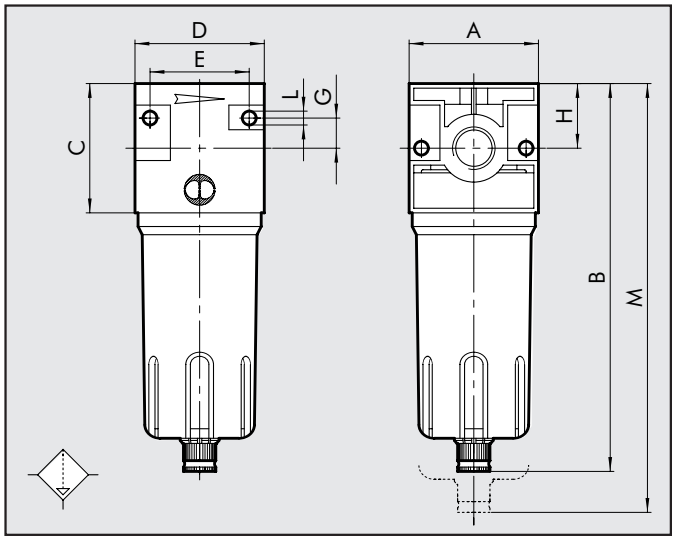
Newdeal DEPURATOR

Oil-proof depurator with coalescing cartridge
- Metal bowl with external viewing
- Manual/semi-auto or automatic condensate drain



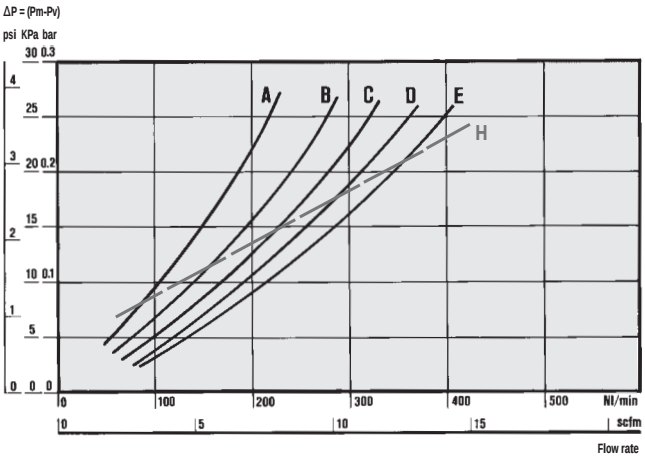
TECHNICAL DATA		DEP ND 3/8''	DEP ND 1/2''
Threaded port		3/8''	1/2''
Degree of depuration		99,97% at 0,01µm	
Max. inlet pressure		1.8 MPa - 18 bar - 261 psi	
Maximum suggested flow rate		please look at the flow rate curves at page 3.2/24	
Fluid		Filtered 4µm compressed air	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°	
	°F	122°	
Weight	Kg	0.9	
Wall fixing screws		M4x55	
Mounting position		Vertical	
Condensate drain		Manual/semi-automatic (RMSA) - Automatic (RA o SAC)	
Bowl capacity	cm^3	45	
Notes:		It is advisable to mount a 4µ filter upstream the depurator acting as a rough filter.	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	

DIMENSIONS	G 3/8	G 1/2
A	60	
B	180	
C	60	
D	60	
E	46	
G	14	
H	30	
L	4M hole	
M	230	



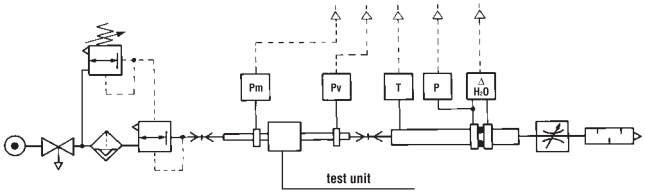
FLOW CHARTS

D 3/8 - 1/2



(H) Maximum flow rate recommended for optimal operation.

Department of Mechanics
Turin Polytechnic



• Flow tests carried out at the Department of Mechanics, Turin Polytechnic, using the computerized test bench following CETOP RP50R recommendations (ISO DIS 6358-2-approved) with ISO 5167 diaphragm gauge.

(A) = 2 bar - 0,2 MPa - 29 psi
(B) = 4 bar - 0,4 MPa - 58 psi
(C) = 6 bar - 0,6 MPa - 87 psi
(D) = 8 bar - 0,8 MPa - 116 psi
(E) = 10 bar - 1 MPa - 145 psi

KEY TO CODES

DEP	3/8	RMSA
ELEMENT	THREADED PORT	CONDENSATE DRAIN
DEP	3/8 1/2	RMSA RA SAC

RMSA: Manual/semi-auto drain
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

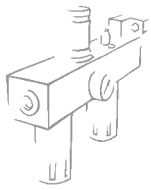
ORDERING CODES

Code	Description
1322002	D. DEP 3/8 RMSA TMV
1322003	D. DEP 3/8 RA TMV
1322004	D. DEP 3/8 SAC
1422002	D. DEP 1/2 RMSA TMV
1422003	D. DEP 1/2 RA TMV
1422004	D. DEP 1/2 SAC

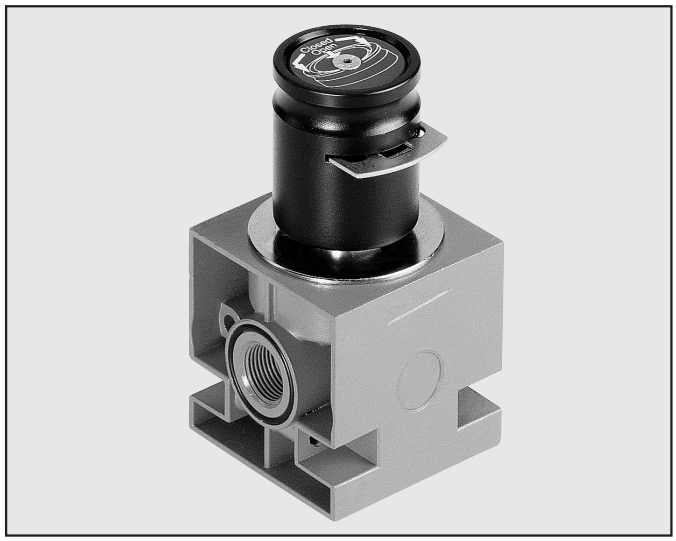
NOTES

NOTES

Newdeal
CIRCUIT SHUT-OFF VALVE



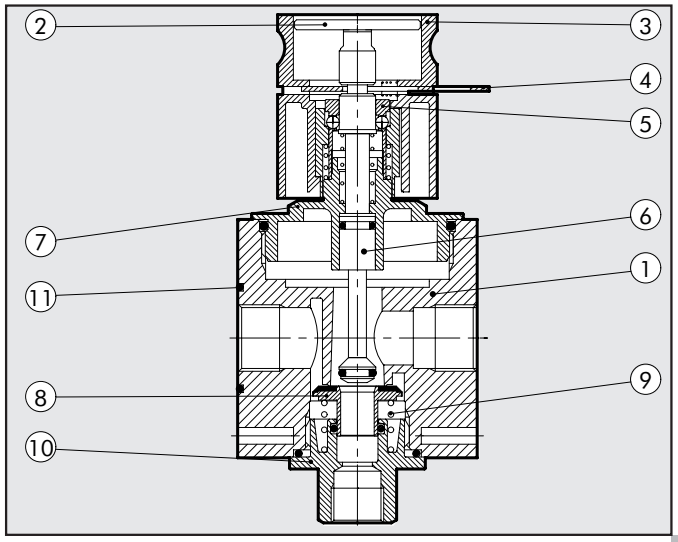
Manually-operated circuit shut-off valve.
- Poppet seat system to ensure high flow rate
- Quick-actuation knob
- Possible triple locking
- The valve is actuated by pressing the actuation disk until it clicks. Press the knob downwards to relieve pressure. In this position you can extract the shim and fit a lock to avoid accidental operation.



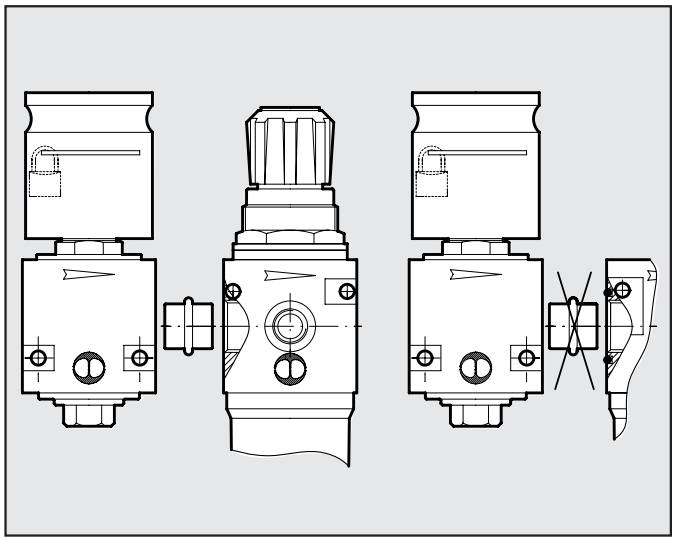
TECHNICAL DATA		V3V ND 1/4''	V3V ND 3/8''-1/2''
Threaded port		1/4''	3/8'' - 1/2''
Max. inlet pressure	MPa	1.8	
	bar	18	
	psi	261	
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1100	2200
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	38.8	78
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	1500	2900
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	53	103
Flow rate on relieving at 6 bar (0.6 MPa – 87 psi)		1600	2900
with direct rilieving into the atmosphere		56.5	103
Fluid		Filtered, lubricated or unlubricated compressed air.	
		Lubrication, if used, must be continuous	
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50	50
	°F	122	122
Weight	Kg	0.35	0.8
Wall fixing screws		M4x40	M4x55
Mounting		In any position	
Type of control		Manual	

COMPONENTS

① Zamak body
② Actuation disk
③ Technopolymer knob
④ Stainless steel safety shim
⑤ Clutching unit
⑥ OT brass rod
⑦ Upper OT 58 brass plug
⑧ V3V valve with NBR vulcanized gasket
⑨ Stainless steel valve compression spring
⑩ Lower OT58 brass plug
⑪ NBR gaskets

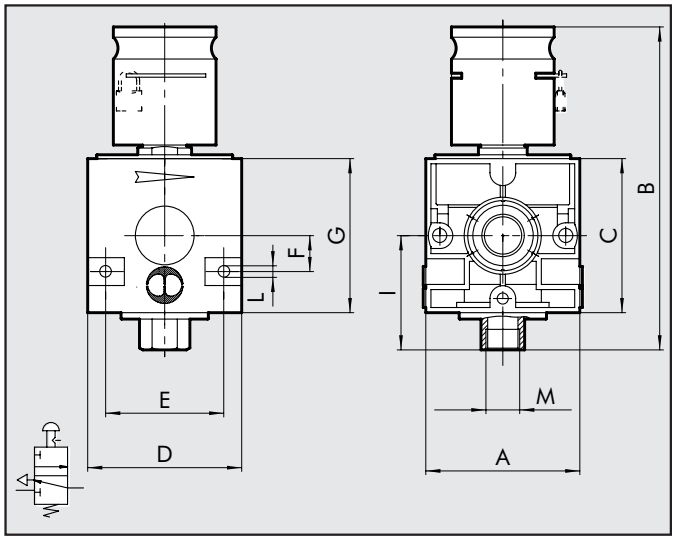


ASSEMBLY DIAGRAM



To assemble the V3V to the regulator filter, use the adopter provided (see the assembly diagram at the left)
Adaptor V3V + FR 1/4" - code 9201001
Adaptor V3V + FR 3/8" - code 9401001
Adaptor V3V + FR 1/2" - code 9401002

DIMENSIONS



	G 1/4	G 3/8	G 1/2
A	42	60	
B	105	126	
C	42	60	
D	42	60	
E	32	46	
F	10	14	
G	42	60	
I	32	43	
L	M4 hole	M4 hole	
M	G 1/8	G 1/4	

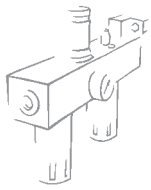
ORDERING CODES

Code	Description
1270001	V3V ND 1/4
1370001	V3V ND 3/8
1470001	V3V ND 1/2

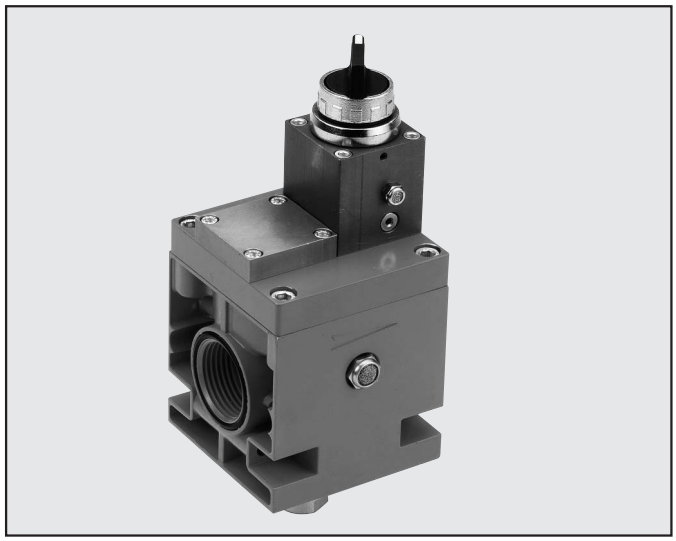
NOTES

NOTES

V3V – 3/4" and 1"
CIRCUIT SHUT-OFF VALVE Newdeal



Circuit cut-off valve with three different controls:
- CNOMO electropneumatic
- Manual key-operated
- Manual lever-operated

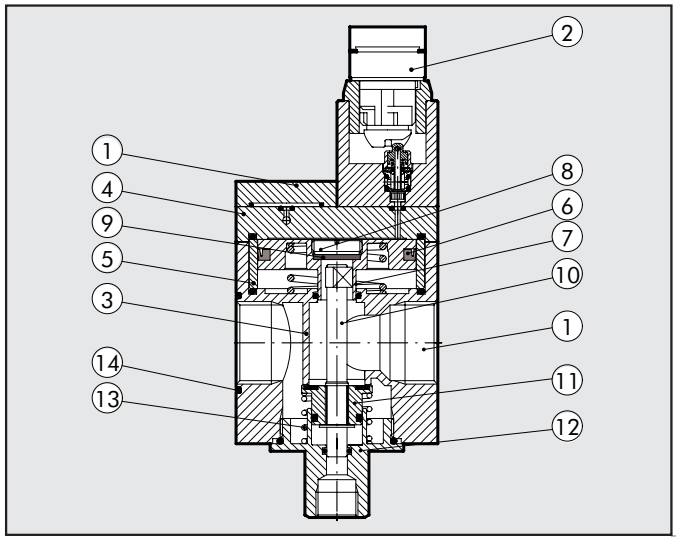


TECHNICAL DATA		V3V ND 3/4	V3V ND 1
Threaded port		3/4"	1"
Max. inlet pressure*	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	7600	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	268	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	10200	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	360	
Flow rate on relief at 6 bar (0.6 MPa; 87 psi)	Nl/min	1800	
	scfm	64	
Fluid		Filtered, lubricated or unlubricated compressed air. Lubrication, if used, must be continuous	
Weight	Kg	2.2	
Wall fixing screws		M6x75	
Mounting		In any position	

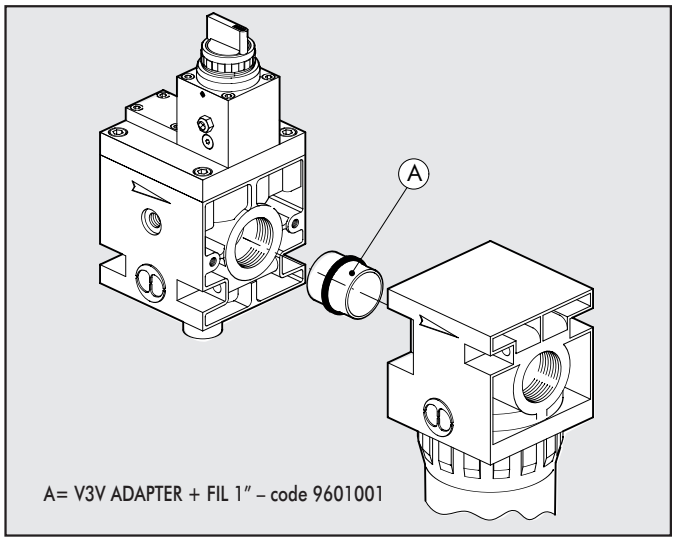
* VERSION V3V CNOMO (1 MPa - 145 psi)

COMPONENTS

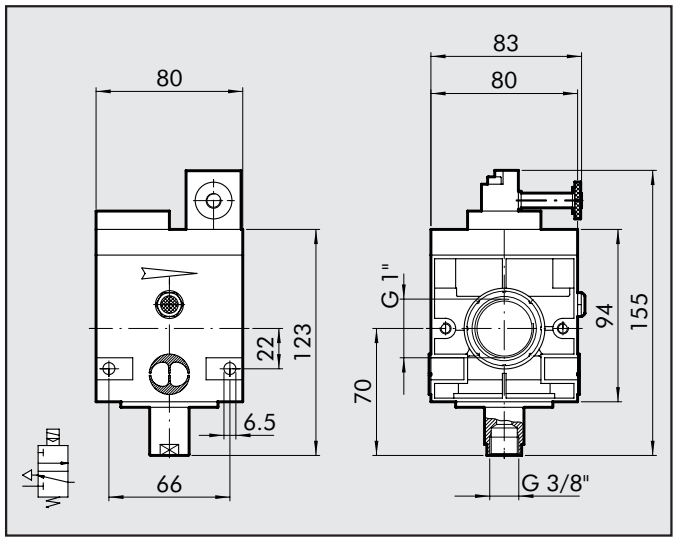
① V3V plate
② V3V manual sub-assembly control
③ V3V aluminium body
④ Aluminium top plate
⑤ Aluminium spacer
⑥ NBR lip seal
⑦ Aluminium Ø 63 piston rod
⑧ Cap for OT 58 brass plain gasket
⑨ NBR plain gasket
⑩ OT 58 brass rod
⑪ OT 58 brass valve
⑫ Aluminium bottom cap
⑬ Steel valve spring
⑭ NBR gaskets



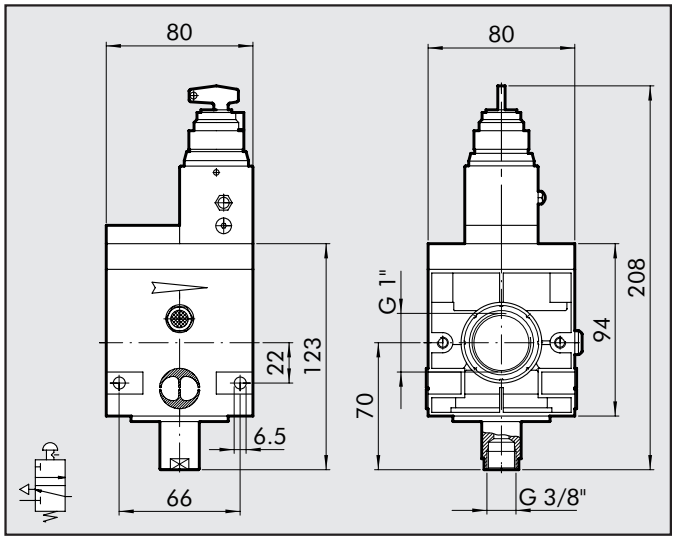
ASSEMBLY DIAGRAM



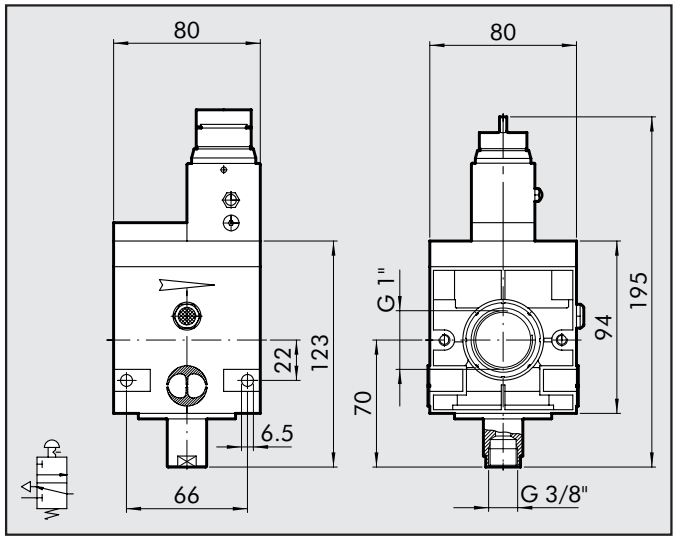
DIMENSIONS OF V3V 3/4" and 1" ELPN CNOMO



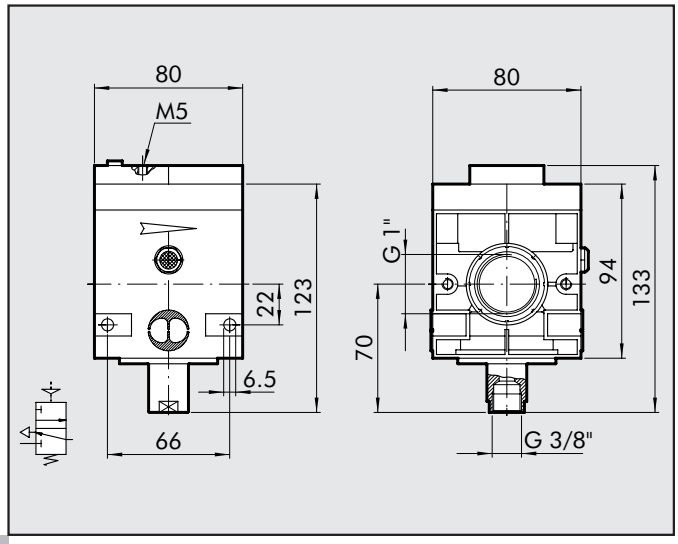
DIMENSIONS OF V3V 3/4" and 1" KEY-OPERATED CONTROL



DIMENSIONS OF V3V 3/4" and 1" - MANUAL CONTROL



DIMENSIONS OF V3V 3/4" and 1" PNEUMATIC

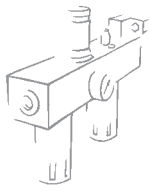


KEY TO CODES

RV3V	1	ELPN
ELEMENT	THREADED PORT	CONTROL V3V
V3V	1" 3/4"	ELPN KEY MANUAL PNEUMATIC

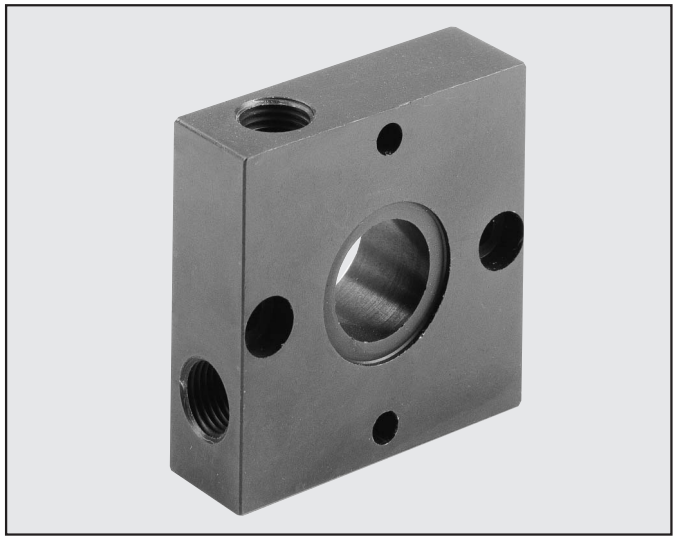
ORDERING CODES

Code	Description
1575001	V3V 3/4 ELPN CNOMO
1574101	V3V 3/4 KEY
1574001	V3V 3/4 MANUAL
1576001	V3V 3/4 PNEUMATIC
1675001	V3V 1 ELPN CNOMO
1674101	V3V 1 KEY
1674001	V3V 1 MANUAL
1676001	V3V 1 PNEUMATIC



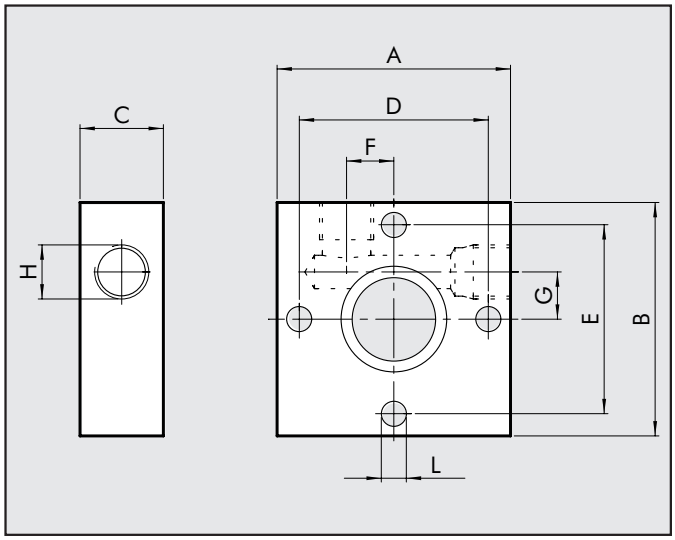
Newdeal AIR TAKE-OFF

The air take-off has the job to take off the air from the Newdeal FRL unit irrespective of the position where it is assembled.
It is required whenever you need to take off air from the FRL unit at different stages of the treatment (normal, filtered, filtered regulated, lubricated, etc.)



TECHNICAL DATA		PA ND 1/4	PA ND 3/8''-1/2''	PA ND 3/4''-1''
Threaded port		G 1/8''	G 1/4''	G 1/2''
Maximum working temperature	°C	50	50	50
at 1 Mpa; 10 bar; 145 psi	°F	122	122	122
Maximum admissible pressure	MPa	1.8	1.8	1.8
	bar	18	18	18
	psi	261	261	261
Weight	[kg]	0.068	0.181	0.413

DIMENSIONS



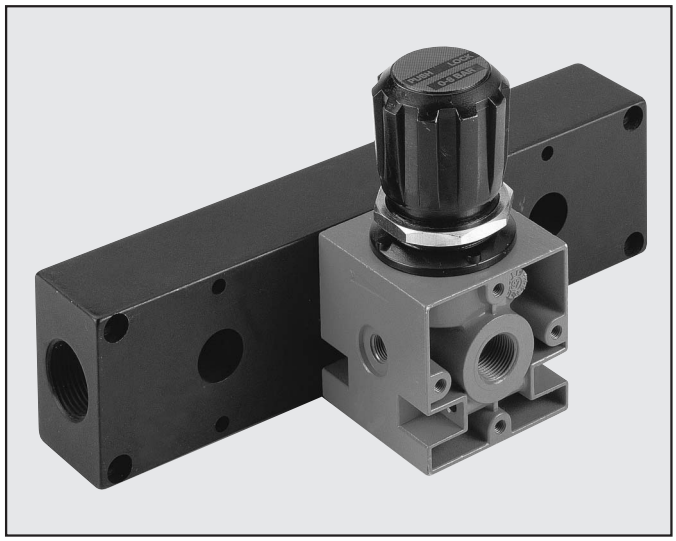
	G 1/4	G 3/8-1/2	G 3/4-1''
A	42	60	80
B	42	60	80
C	15	20	30
D	34	49	64
E	34	49	64
F	8.5	14	16
G	8.5	14	16
H (n° 2 pos.)	G 1/8	G 1/4	G 1/2
L	M4 hole	M5 hole	M6 hole

ORDERING CODES

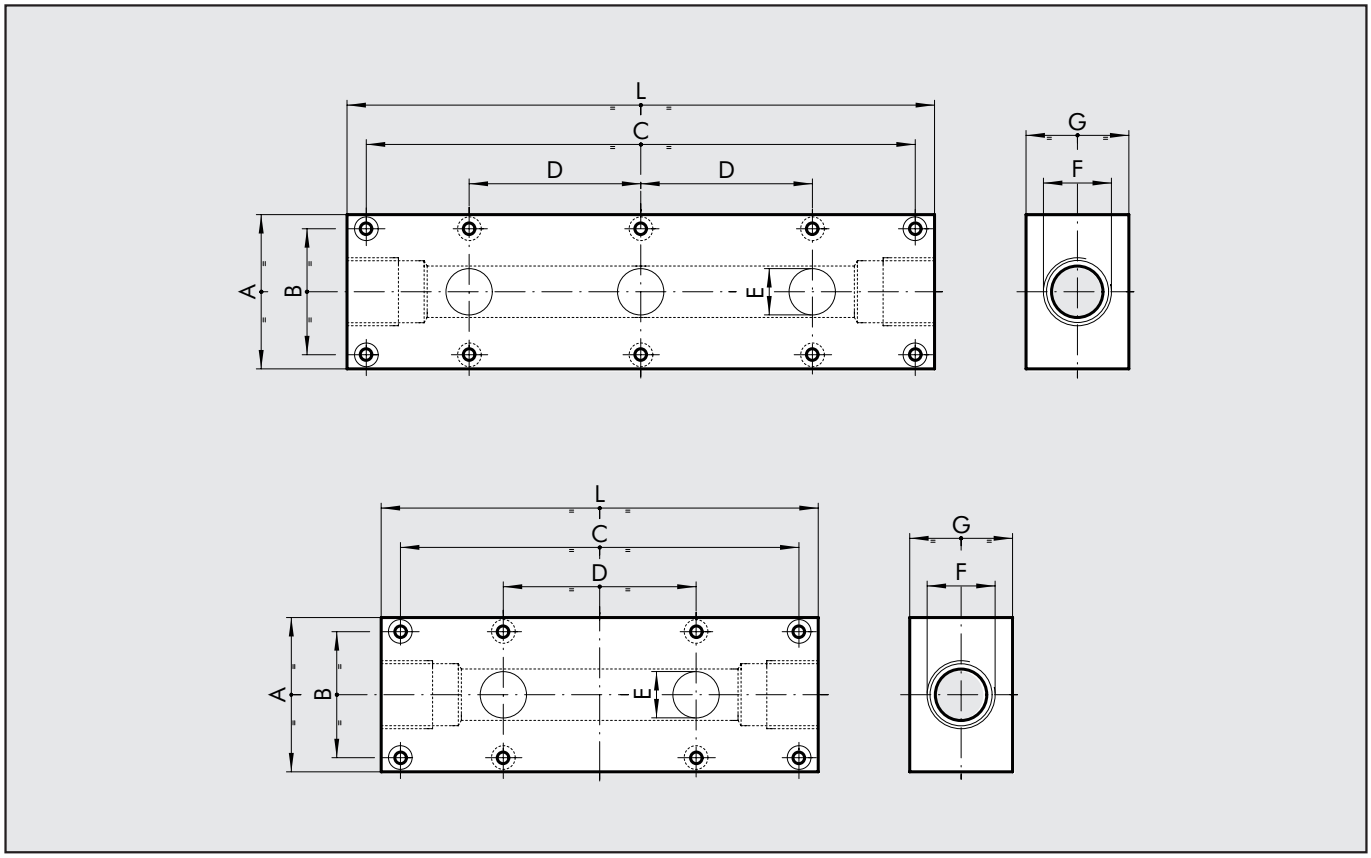
Code	Description
9200401	ACC.PA 1/4 TAKE-OFF
9400401	ACC.PA 1/2 TAKE-OFF
9600401	ACC.PA 3/4 TAKE-OFF

Newdeal SUB-BASE

With the Newdeal sub-base, more than one regulators can be mounted in parallel using a single pressure supply source.



DIMENSIONS

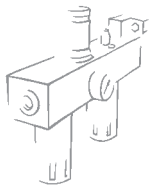


	ND 1/4		ND 3/8-1/2		ND 3/4-1	
	2 positions	3 positions	2 positions	3 positions	2 positions	3 positions
A	50	50	60	60	80	80
B	34	34	49	49	64	64
C	113	165	155	230	190	280
D	52	52	75	75	90	90
E	G 1/4	G 1/4	18	18	31	31
F	G 1/2	G 1/2	G 3/4	G 3/4	G 1" 1/4	G 1" 1/4
G	30	30	40	40	50	50
L	128	180	170	245	210	300
Weight [kg]	0.4	0.6	0.9	1.4	1.5	1.7

ORDERING CODES

Code	Description
9200201	ACC.SB 1/4 SUB-BASE 2 POS.
9400201	ACC.SB 1/2 SUB-BASE 2 POS
9600201	ACC.SB 3/4 SUB-BASE 2 POS
9200301	ACC.SB 1/4 SUB-BASE 3 POS
9400301	ACC.SB 1/2 SUB-BASE 3 POS
9600301	ACC.SB 3/4 SUB-BASE 3 POS

Newdeal
AUTOMATIC CONDENSATE DRAIN



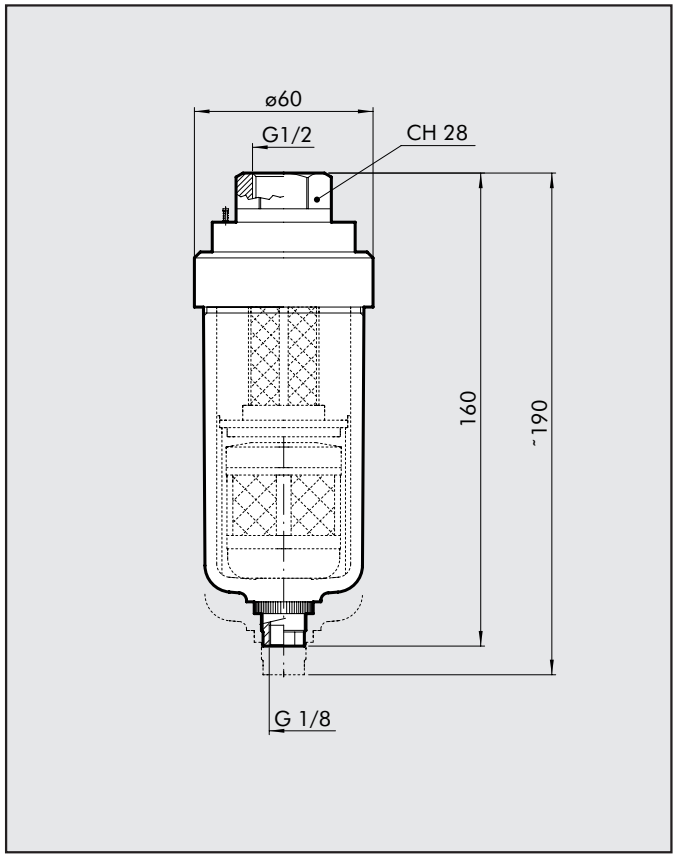
System supply condensate drain:
- All-round condensate level viewing
- Automatic drain from inside the bowl
- Axial coupling



TECHNICAL DATA

		SCAL ND 1/2"
Threaded port		G 1/2"
Maximum working temperature	°C	50
at 1 Mpa; 10 bar; 145 psi	°F	122
Maximum admissible pressure	MPa	1.3
	bar	13
	psi	188
Wall fixing screws		M6x75
Weight	[kg]	0.5

DIMENSIONS



ORDERING CODES

Code	Description
4589003	ACC. AUTOM. COND. DRAIN 1/2 IN LINE

NOTES

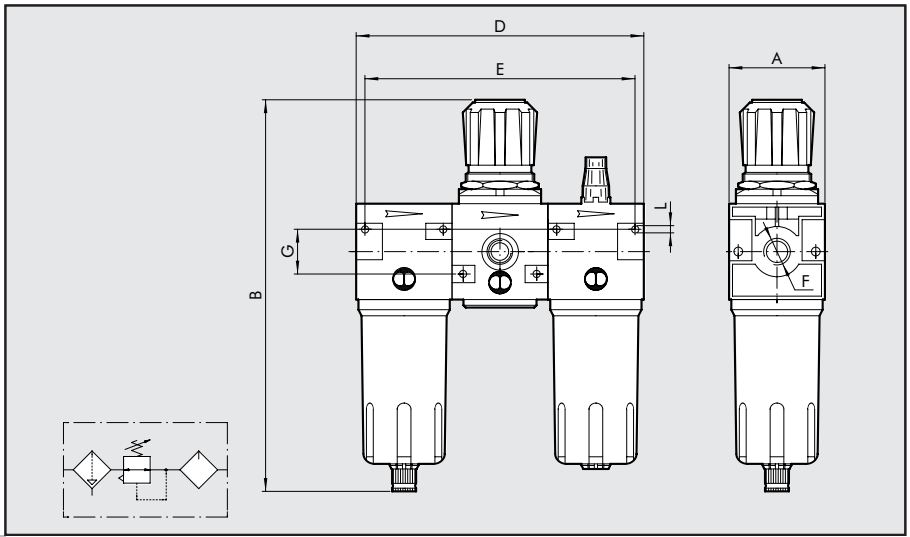
FIL+REG+LUB Newdeal

Highly reliable heavy-duty piston-operated FRL unit.
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Lubrication proportional to flow rate
- Micrometric lubrication regulation
- Activation guaranteed with low flow rates

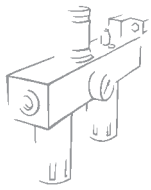


TECHNICAL DATA		FRL ND 1/4''	FRL ND 3/8''	FRL ND 1/2''	FRL ND 3/4''	FRL ND 1''
Threaded port		1/4''	3/8''	1/2''	3/4''	1''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12				
Degree of filtration		4µm 20µm 50µm				
Max. inlet pressure	MPa	1.8				
	bar	18				
	psi	261				
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	140	1300		1900	2000
ΔP 0.5 bar (0.05 MPa – 7 psi)	scfm	5	46		68	71
Flow rate at 6.3 bar (0.63 MPa-91 psi)	Nl/min	400	2000		3600	3700
ΔP 1 bar (0.1 MPa – 14 psi)	scfm	14.2	71		128	132
Fluid		Compressed air				
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50°				
	°F	122°				
Weight	Kg	1	2.5		4	
Wall fixing screws		M4x40	M4x55		M6x75	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

DIMENSIONS



	G 1/4''	G 3/8'' G 1/2''	G 3/4'' G 1''
A	42	60	80
B	190	245	332
D	126	180	240
E	116	166	226
G	20	28	44
L	M4 hole	M4 hole	M6 hole



KEY TO CODES

FRL	1/4	4µm	08	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	CONDENSATE DRAIN
FRL	1/4	4µm	08	RMSA SAC
	3/8	20µm	012	RMSA
	1/2	50µm		SAC
				RA
	3/4			RMSA
	1			RA

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression - requires variable air take offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow.

ORDERING CODES

Code	Description
1224029	FRL 1/4 4 08 RMSA N TMV
1224409	FRL 1/4 4 08 SAC N TMV
1224030	FRL 1/4 20 08 RMSA N TMV
1224410	FRL 1/4 20 08 SAC N TMV
1224032	FRL 1/4 50 08 RMSA N TMV
1224412	FRL 1/4 50 08 SAC N TMV
1224053	FRL 1/4 4 012 RMSA N TMV
1224413	FRL 1/4 4 012 SAC N TMV
1224054	FRL 1/4 20 012 RMSA N TMV
1224414	FRL 1/4 20 012 SAC N TMV
1224056	FRL 1/4 50 012 RMSA N TMV
1224416	FRL 1/4 50 012 SAC N TMV
1324029	FRL 3/8 4 08 RMSA N TMV
1324033	FRL 3/8 4 08 RA N TMV
1324409	FRL 3/8 4 08 SAC N TMV
1324030	FRL 3/8 20 08 RMSA N TMV
1324034	FRL 3/8 20 08 RA N TMV
1324410	FRL 3/8 20 08 SAC N TMV
1324032	FRL 3/8 50 08 RMSA N TMV
1324036	FRL 3/8 50 08 RA N TMV
1324412	FRL 3/8 50 08 SAC N TMV
1324053	FRL 3/8 4 012 RMSA N TMV
1324057	FRL 3/8 4 012 RA N TMV
1324413	FRL 3/8 4 012 SAC N TMV
1324054	FRL 3/8 20 012 RMSA N TMV
1324058	FRL 3/8 20 012 RA N TMV
1324414	FRL 3/8 20 012 SAC N TMV
1324056	FRL 3/8 50 012 RMSA N TMV
1324060	FRL 3/8 50 012 RA N TMV
1324416	FRL 3/8 50 012 SAC N TMV
1424029	FRL 1/2 4 08 RMSA N TMV
1424033	FRL 1/2 4 08 RA N TMV
1424409	FRL 1/2 4 08 SAC N TMV
1424030	FRL 1/2 20 08 RMSA N TMV
1424034	FRL 1/2 20 08 RA N TMV
1424410	FRL 1/2 20 08 SAC N TMV
1424032	FRL 1/2 50 08 RMSA N TMV
1424036	FRL 1/2 50 08 RA N TMV
1424412	FRL 1/2 50 08 SAC N TMV
1424053	FRL 1/2 4 012 RMSA N TMV
1424057	FRL 1/2 4 012 RA N TMV
1424413	FRL 1/2 4 012 SAC N TMV
1424054	FRL 1/2 20 012 RMSA N TMV

Code	Description
1424058	FRL 1/2 20 012 RA N TMV
1424414	FRL 1/2 20 012 SAC N TMV
1424056	FRL 1/2 50 012 RMSA N TMV
1424060	FRL 1/2 50 012 RA N TMV
1424416	FRL 1/2 50 012 SAC N TMV
1524017	FRL 3/4 4 08 RMSA N TMV
1524021	FRL 3/4 4 08 RA N TMV
1524018	FRL 3/4 20 08 RMSA N TMV
1524022	FRL 3/4 20 08 RA N TMV
1524020	FRL 3/4 50 08 RMSA N TMV
1524024	FRL 3/4 50 08 RA N TMV
1524029	FRL 3/4 4 012 RMSA N TMV
1524033	FRL 3/4 4 012 RA N TMV
1524030	FRL 3/4 20 012 RMSA N TMV
1524034	FRL 3/4 20 012 RA N TMV
1524032	FRL 3/4 50 012 RMSA N TMV
1524036	FRL 3/4 50 012 RA N TMV
1624017	FRL 1 4 08 RMSA N TMV
1624021	FRL 1 4 08 RA N TMV
1624018	FRL 1 20 08 RMSA N TMV
1624022	FRL 1 20 08 RA N TMV
1624020	FRL 1 50 08 RMSA N TMV
1624024	FRL 1 50 08 RA N TMV
1624029	FRL 1 4 012 RMSA N TMV
1624033	FRL 1 4 012 RA N TMV
1624030	FRL 1 20 012 RMSA N TMV
1624034	FRL 1 20 012 RA N TMV
1624032	FRL 1 50 012 RMSA N TMV
1624036	FRL 1 50 012 RA N TMV

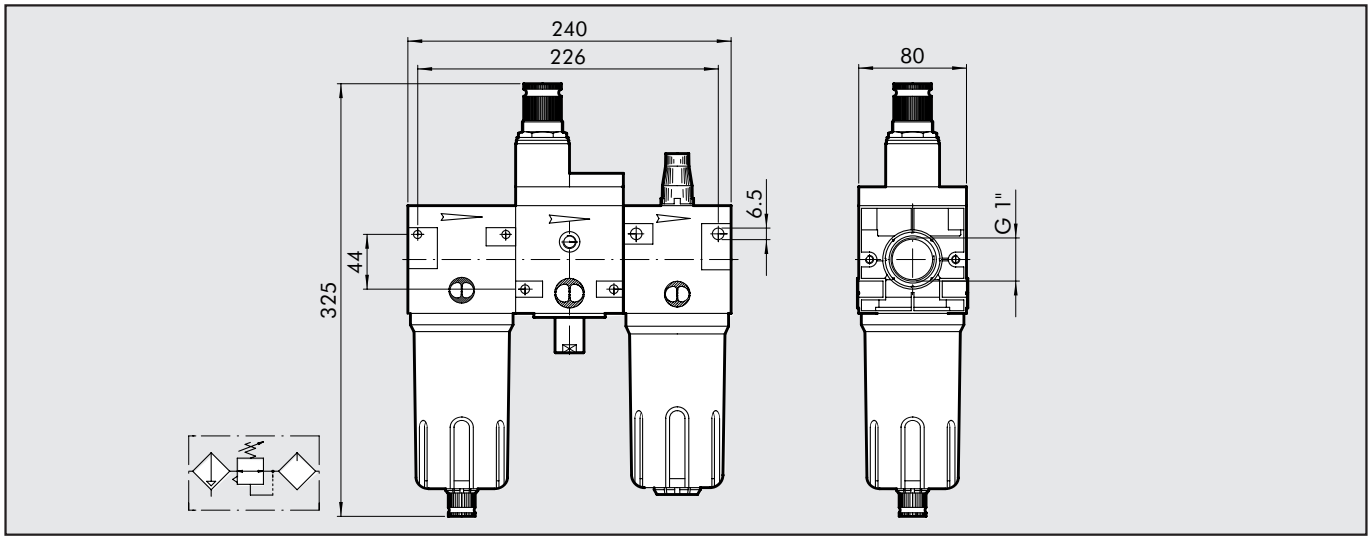
NOTES

UNITS - FRPL 3/4" and 1" Newdeal

TECHNICAL DATA		FRPVL ND 3/4	FRPVL ND 1
Threaded port		3/4"	1"
Setting range		0÷8 - 0÷12	
Max. temperature at 1 MPa, 10 bar, 145 psi		50°C-122°F	
Degree of filtration		4µm; 20µm; 50µm;	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	7500	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	265	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	8500	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	300	
Fluid		Compressed air	
Weight	Kg	5.2	
Wall fixing screws		M6x75	
Drain		Manual – Semi-automatic	
Bowl capacity	cm^3	170	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	



DIMENSIONS



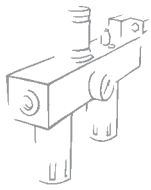
KEY TO CODES

FRPL	1	4	02	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF DRAIN
FRPL	1" 3/4"	4 µm 20 µm 50 µm	08 012	RMSA RA

RMSA: Manual/semi-auto drain
RA: Automatic float-type drain, operating irrespective of the pressure and flow rate.
FRPVL: Filter + pilotable regulator + lubricator

ORDERING CODES

Code	Description	Code	Description
1528007	FRPL 3/4 4 08 RMSA	1628007	FRPL 1 4 08 RMSA
1528019	FRPL 3/4 4 08 RA	1628019	FRPL 1 4 08 RA
1528010	FRPL 3/4 4 012 RMSA	1628010	FRPL 1 4 012 RMSA
1528022	FRPL 3/4 4 012 RA	1628022	FRPL 1 4 012 RA
1528008	FRPL 3/4 20 08 RMSA	1628008	FRPL 1 20 08 RMSA
1528020	FRPL 3/4 20 08 RA	1628020	FRPL 1 20 08 RA
1528011	FRPL 3/4 20 012 RMSA	1628011	FRPL 1 20 012 RMSA
1528023	FRPL 3/4 20 012 RA	1628023	FRPL 1 20 012 RA
1528009	FRPL 3/4 50 08 RMSA	1628009	FRPL 1 50 08 RMSA
1528021	FRPL 3/4 50 08 RA	1628021	FRPL 1 50 08 RA
1528012	FRPL 3/4 50 012 RMSA	1628012	FRPL 1 50 012 RMSA
1528024	FRPL 3/4 50 012 RA	1628024	FRPL 1 50 012 RA



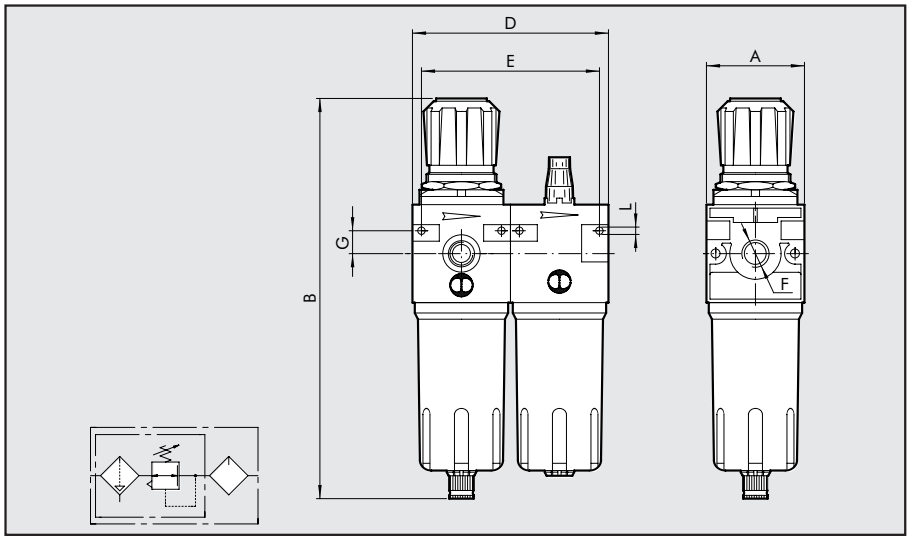
Newdeal FR+LUB UNITS

Heavy duty and reliable piston-operated FR+L unit.
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportioned to air flow
- Micrometric lubrication regulation
- Activation guaranteed with low flow rates



TECHNICAL DATA		FR+L ND 1/4''	FR+L ND 3/8''	FR+L ND 1/2''
Threaded port		G 1/4''	G 3/8''	G 1/2''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12		
Degree of filtration		4µm 20µm 50µm		
Max. inlet pressure	MPa	1.8		
	bar	18		
	psi	261		
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	150	1300	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	5.3	46	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	500	2200	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	18	78	
Fluid		Compressed air		
Max temperature at 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Weight	Kg	0.9	2	
Wall fixing screws		M4x40	M4x55	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

DIMENSIONS	G 1/4''	G 3/8''	G 1/2''
A	42	60	
B	190	245	
D	84	120	
E	76	109	
G	10	14	
L	M4 hole	M4 hole	



KEY TO CODES

FR+L	1/4	4µm	08	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	SETTING RANGE	CONDENSATE DRAIN
FR+L	1/4	4µm	08	RMSA
		20µm	012	SAC
	3/8	50µm		RMSA
	1/2			SAC
				RA

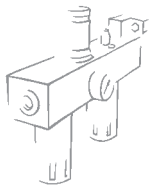
RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression - requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

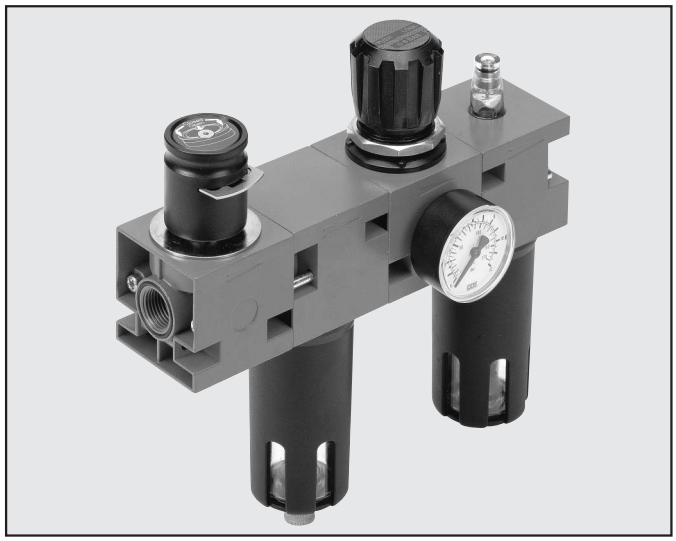
Code	Description
1226029	FR+L 1/4 4 08 RMSA N TMV
1226409	FR+L 1/4 4 08 SAC N TMV
1226053	FR+L 1/4 4 012 RMSA N TMV
1226413	FR+L 1/4 4 012 SAC N TMV
1226030	FR+L 1/4 20 08 RMSA N TMV
1226410	FR+L 1/4 20 08 SAC N TMV
1226054	FR+L 1/4 20 012 RMSA N TMV
1226414	FR+L 1/4 20 012 SAC N TMV
1226032	FR+L 1/4 50 08 RMSA N TMV
1226412	FR+L 1/4 50 08 SAC N TMV
1226056	FR+L 1/4 50 012 RMSA N TMV
1226416	FR+L 1/4 50 012 SAC N TMV
1326029	FR+L 3/8 4 08 RMSA N TMV
1326409	FR+L 3/8 4 08 SAC N TMV
1326053	FR+L 3/8 4 012 RMSA N TMV
1326413	FR+L 3/8 4 012 SAC N TMV
1326030	FR+L 3/8 20 08 RMSA N TMV
1326034	FR+L 3/8 20 08 RA N TMV
1326410	FR+L 3/8 20 08 SAC N TMV
1326054	FR+L 3/8 20 012 RMSA N TMV
1326058	FR+L 3/8 20 012 RA N TMV
1326414	FR+L 3/8 20 012 SAC N TMV
1326032	FR+L 3/8 50 08 RMSA N TMV
1326412	FR+L 3/8 50 08 SAC N TMV
1326056	FR+L 3/8 50 012 RMSA N TMV
1326416	FR+L 3/8 50 012 SAC N TMV
1426029	FR+L 1/2 4 08 RMSA N TMV
1426409	FR+L 1/2 4 08 SAC N TMV
1426053	FR+L 1/2 4 012 RMSA N TMV
1426413	FR+L 1/2 4 012 SAC N TMV
1426030	FR+L 1/2 20 08 RMSA N TMV
1426034	FR+L 1/2 20 08 RA N TMV
1426410	FR+L 1/2 20 08 SAC N TMV
1426054	FR+L 1/2 20 012 RMSA N TMV
1426058	FR+L 1/2 20 012 RA N TMV
1426414	FR+L 1/2 20 012 SAC N TMV
1426032	FR+L 1/2 50 08 RMSA N TMV
1426412	FR+L 1/2 50 08 SAC N TMV
1426056	FR+L 1/2 50 012 RMSA N TMV
1426416	FR+L 1/2 50 012 SAC N TMV

NOTES

Newdeal
V3V+FIL+REG+LUB UNITS

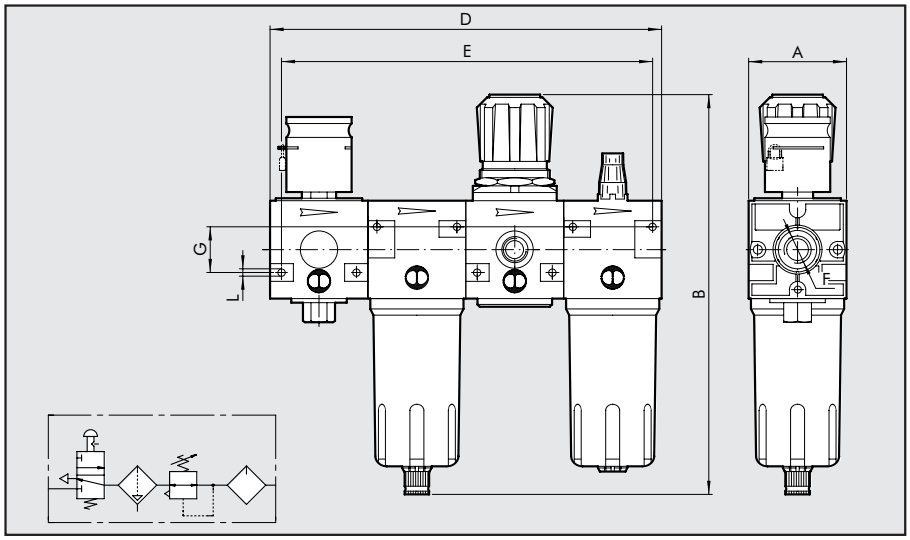


Highly reliable heavy-duty piston-operated FRFL unit.
- Stability of the set pressure as the upstream pressure varies
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportionate to the air flow
- Micrometric lubrication regulation
- Activation guaranteed at low air flows
- Quick filling and drainage of the downstream circuit with the V3V element



TECHNICAL DATA		VFRL ND 1/4''	VFRL ND 3/8''	VFRL ND 1/2''
Threaded port		G 1/4''	G 3/8''	G 1/2''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12		
Degree of filtration		4µm 20µm 50µm		
Max. inlet pressure	MPa	1.8		
	bar	18		
	psi	261		
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	130	800	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	4.6	28	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	390	1700	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	14	60	
Fluid		Compressed air		
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Weight	Kg	1.5	3.3	
Wall fixing screws		M4x40	M4x55	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

DIMENSIONS	G 1/4''	G 3/8''	G 1/2''
A	42	60	
B	190	245	
D	168	240	
E	158	226	
G	20	28	
L	M4 hole	M4 hole	



KEY TO CODES

VFRL	1/4	4µm	08	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	SETTING RANGE	CONDENSATE DRAIN
VFRL	1/4	4µm	08	RMSA
		20µm	012	SAC
	3/8	50µm		RMSA
	1/2			SAC
				RA

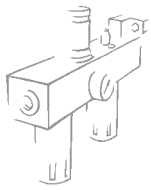
RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

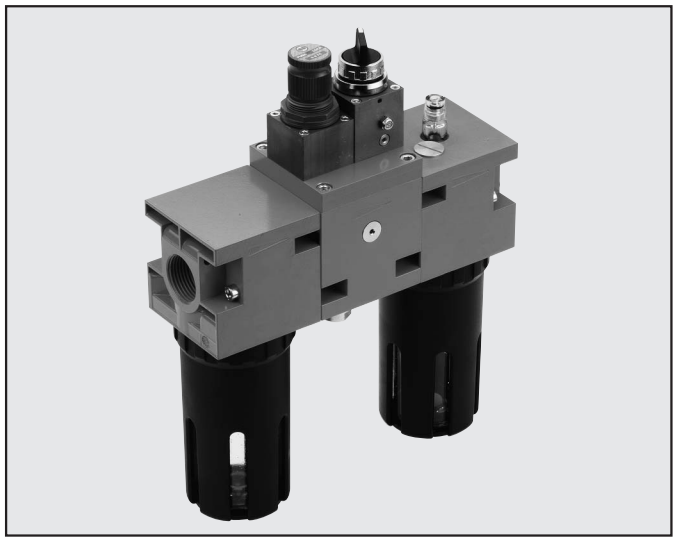
Code	Description	Code	Description
1273029	VFRL 1/4 4 08 RMSA N TMV	1473036	VFRL 1/2 50 08 RA N TMV
1273409	VFRL 1/4 4 08 SAC N TMV	1473412	VFRL 1/2 50 08 SAC N TMV
1273053	VFRL 1/4 4 012 RMSA N TMV	1473056	VFRL 1/2 50 012 RMSA N TMV
1273413	VFRL 1/4 4 012 SAC N TMV	1473060	VFRL 1/2 50 012 RA N TMV
1273030	VFRL 1/4 20 08 RMSA N TMV	1473416	VFRL 1/2 50 012 SAC N TMV
1273410	VFRL 1/4 20 08 SAC N TMV		
1273054	VFRL 1/4 20 012 RMSA N TMV		
1273414	VFRL 1/4 20 012 SAC N TMV		
1273032	VFRL 1/4 50 08 RMSA N TMV		
1273412	VFRL 1/4 50 08 SAC N TMV		
1273056	VFRL 1/4 50 012 RMSA N TMV		
1273416	VFRL 1/4 50 012 SAC N TMV		
1373029	VFRL 3/8 4 08 RMSA N TMV		
1373033	VFRL 3/8 4 08 RA N TMV		
1373409	VFRL 3/8 4 08 SAC N TMV		
1373053	VFRL 3/8 4 012 RMSA N TMV		
1373057	VFRL 3/8 4 012 RA N TMV		
1373413	VFRL 3/8 4 012 SAC N TMV		
1373030	VFRL 3/8 20 08 RMSA N TMV		
1373034	VFRL 3/8 20 08 RA N TMV		
1373410	VFRL 3/8 20 08 SAC N TMV		
1373054	VFRL 3/8 20 012 RMSA N TMV		
1373058	VFRL 3/8 20 012 RA N TMV		
1373414	VFRL 3/8 20 012 SAC N TMV		
1373032	VFRL 3/8 50 08 RMSA N TMV		
1373036	VFRL 3/8 50 08 RA N TMV		
1373412	VFRL 3/8 50 08 SAC N TMV		
1373056	VFRL 3/8 50 012 RMSA N TMV		
1373060	VFRL 3/8 50 012 RA N TMV		
1373416	VFRL 3/8 50 012 SAC N TMV		
1473029	VFRL 1/2 4 08 RMSA N TMV		
1473033	VFRL 1/2 4 08 RA N TMV		
1473409	VFRL 1/2 4 08 SAC N TMV		
1473053	VFRL 1/2 4 012 RMSA N TMV		
1473057	VFRL 1/2 4 012 RA N TMV		
1473413	VFRL 1/2 4 012 SAC N TMV		
1473030	VFRL 1/2 20 08 RMSA N TMV		
1473034	VFRL 1/2 20 08 RA N TMV		
1473410	VFRL 1/2 20 08 SAC N TMV		
1473054	VFRL 1/2 20 012 RMSA N TMV		
1473058	VFRL 1/2 20 012 RA N TMV		
1473414	VFRL 1/2 20 012 SAC N TMV		
1473032	VFRL 1/2 50 08 RMSA N TMV		

NOTES

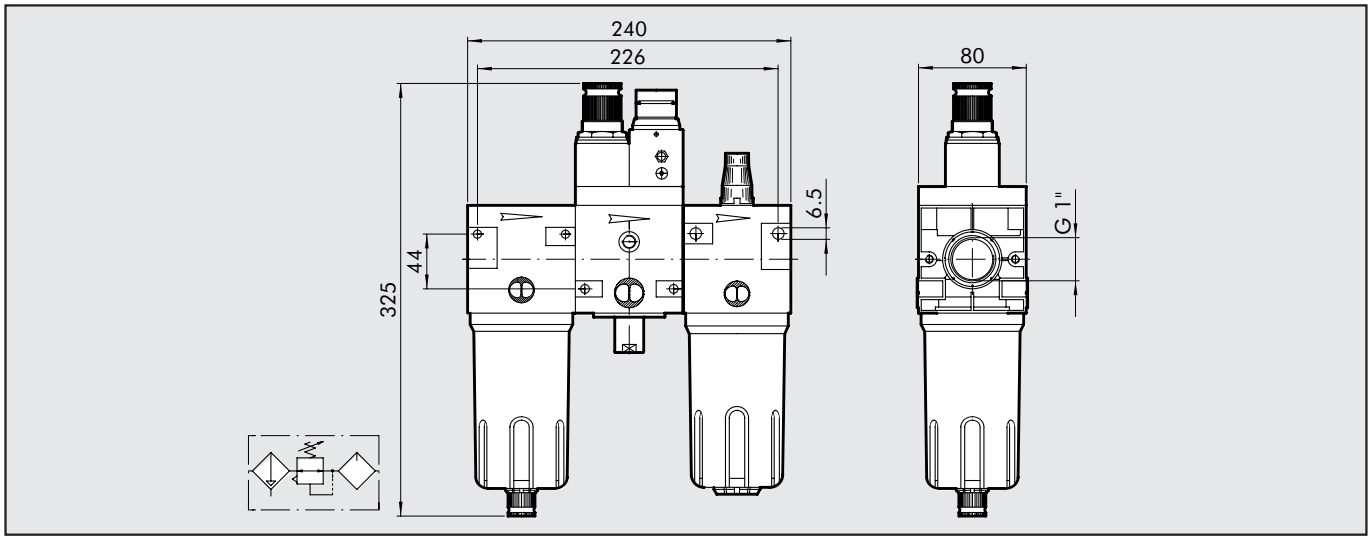
UNITS - FRPVL 3/4" and 1" Newdeal



TECHNICAL DATA		FRPVL ND 3/4	FRPVL ND 1
Threaded port		3/4"	1"
Setting range		0÷8 - 0÷12	
Max. temperature at 1 MPa, 10 bar, 145 psi		50°C-122°F	
Degree of filtration		4µm; 20µm; 50µm;	
Max. inlet pressure	MPa	1.3	
	bar	13	
	psi	188	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	7500	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	265	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	8500	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	300	
Fluid		Compressed air	
Weight	Kg	3.8	
Wall fixing screws		M6x75	
Drain		Manual – Semi-automatic	
Bowl capacity	cm^3	170	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	



DIMENSIONS



KEY TO CODES

FRPVL	1	4	02	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	SETTING RANGE	TYPE OF DRAIN
FRPVL	1" 3/4"	4 µm 20 µm 50 µm	08 012	RMSA RA

RMSA: Manual/semi-auto drain
RA: Automatic float-type drain, operating irrespective of the pressure and flow rate.
FRPVL: Filter + pilotable regulator with cut-off valve + lubricator

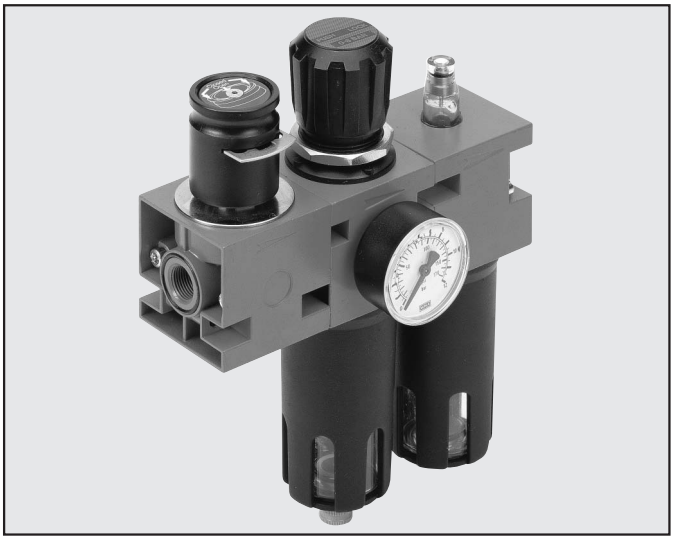
N.B.: The V3V in the unit is manually operated.

ORDERING CODES

Code	Description	Code	Description
1529007	FRPVL 3/4 4 08 RMSA	1629007	FRPVL 1 4 08 RMSA
1529019	FRPVL 3/4 4 08 RA	1629019	FRPVL 1 4 08 RA
1529010	FRPVL 3/4 4 012 RMSA	1629010	FRPVL 1 4 012 RMSA
1529022	FRPVL 3/4 4 012 RA	1629022	FRPVL 1 4 012 RA
1529008	FRPVL 3/4 20 08 RMSA	1629008	FRPVL 1 20 08 RMSA
1529020	FRPVL 3/4 20 08 RA	1629020	FRPVL 1 20 08 RA
1529011	FRPVL 3/4 20 012 RMSA	1629011	FRPVL 1 20 012 RMSA
1529023	FRPVL 3/4 20 012 RA	1629023	FRPVL 1 20 012 RA
1529009	FRPVL 3/4 50 08 RMSA	1629009	FRPVL 1 50 08 RMSA
1529021	FRPVL 3/4 50 08 RA	1629021	FRPVL 1 50 08 RA
1529012	FRPVL 3/4 50 012 RMSA	1629012	FRPVL 1 50 012 RMSA
1529024	FRPVL 3/4 50 012 RA	1629024	FRPVL 1 50 012 RA

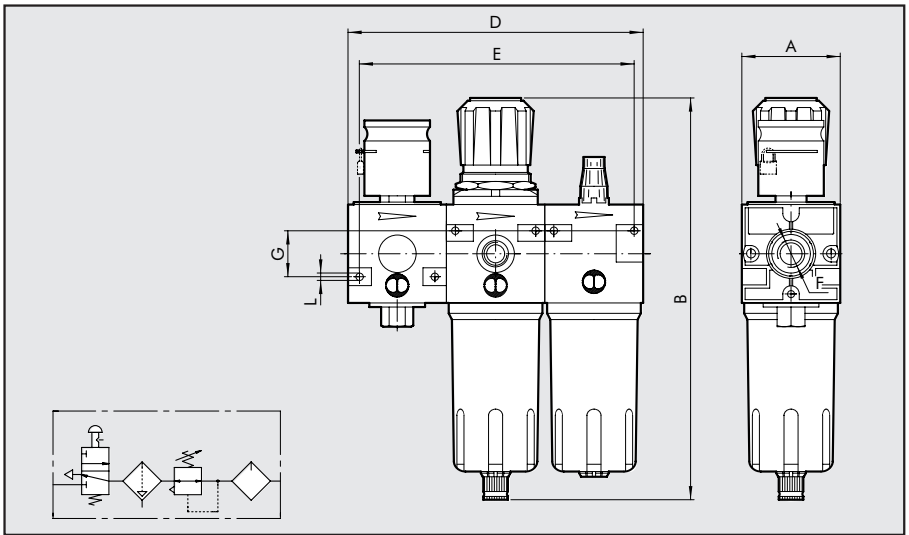
New deal
V3V+FR+LUB UNITS

Highly reliable heavy-duty piston-operated VRF+L
- Stability of the set pressure depending on the upstream pressure
- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Quantity of lubricant proportionate to the air flow
- Micrometric lubrication regulation
- Activation guaranteed at low air flows
- Quick filling and drainage of the downstream circuit with the V3V element

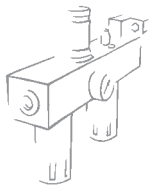


TECHNICAL DATA		VFR+L ND 1/4''	VFR+L ND 3/8''	VFR+L ND 1/2''
Threaded port		G 1/4''	G 3/8''	G 1/2''
Setting range	bar	0÷2 - 0÷4 - 0÷8 - 0÷12		
Degree of filtration		4µm 20µm 50µm		
Max. inlet pressure	MPa	1.8		
	bar	18		
	psi	261		
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	140	1000	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	5	35.5	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	480	1900	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	17	67.5	
Fluid		Compressed air		
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50		
	°F	122		
Weight	Kg	1.1	1.8	
Wall fixing screws		M4x40	M4x55	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.		

DIMENSIONS



	G 1/4''	G 3/8''	G 1/2''
A	42	60	
B	190	245	
D	126	180	
E	116	166	
G	20	28	
L	M4 hole	M4 hole	



KEY TO CODES

VFR+L	1/4	4µm	08	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	SETTING RANGE	CONDENSATE DRAIN
VFR+L	1/4	4µm	08	RMSA
		20µm	012	SAC
	3/8	50µm		RMSA
	1/2			SAC
				RA

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

Code	Description
1272029	VFR+L 1/4 4 RMSA 08 N TMV
1272509	VFR+L 1/4 4 SAC 08 N TMV
1272053	VFR+L 1/4 4 RMSA 012 N TMV
1272513	VFR+L 1/4 4 SAC 012 N TMV
1272030	VFR+L 1/4 20 RMSA 08 N TMV
1272510	VFR+L 1/4 20 SAC 08 N TMV
1272054	VFR+L 1/4 20 RMSA 012 N TMV
1272514	VFR+L 1/4 20 SAC 012 N TMV
1272032	VFR+L 1/4 50 RMSA 08 N TMV
1272512	VFR+L 1/4 50 SAC 08 N TMV
1272056	VFR+L 1/4 50 RMSA 012 N TMV
1272516	VFR+L 1/4 50 SAC 012 N TMV
1372029	VFR+L 3/8 4 RMSA 08 N TMV
1372509	VFR+L 3/8 4 SAC 08 N TMV
1372053	VFR+L 3/8 4 RMSA 012 N TMV
1372513	VFR+L 3/8 4 SAC 012 N TMV
1372030	VFR+L 3/8 20 RMSA 08 N TMV
1372034	VFR+L 3/8 20 RA 08 N TMV
1372510	VFR+L 3/8 20 SAC 08 N TMV
1372054	VFR+L 3/8 20 RMSA 012 N TMV
1372060	VFR+L 3/8 20 RA 012 N TMV
1372514	VFR+L 3/8 20 SAC 012 N TMV
1372032	VFR+L 3/8 50 RMSA 08 N TMV
1372512	VFR+L 3/8 50 SAC 08 N TMV
1372056	VFR+L 3/8 50 RMSA 012 N TMV
1372516	VFR+L 3/8 50 SAC 012 N TMV
1472029	VFR+L 1/2 4 RMSA 08 N TMV
1472509	VFR+L 1/2 4 SAC 08 N TMV
1472053	VFR+L 1/2 4 RMSA 012 N TMV
1472513	VFR+L 1/2 4 SAC 012 N TMV
1472030	VFR+L 1/2 20 RMSA 08 N TMV
1472034	VFR+L 1/2 20 RA 08 N TMV
1472510	VFR+L 1/2 20 SAC 08 N TMV
1472054	VFR+L 1/2 20 RMSA 012 N TMV
1472060	VFR+L 1/2 20 RA 012 N TMV
1472514	VFR+L 1/2 20 SAC 012 N TMV
1472032	VFR+L 1/2 50 RMSA 08 N TMV
1472512	VFR+L 1/2 50 SAC 08 N TMV
1472056	VFR+L 1/2 50 RMSA 012 N TMV
1472516	VFR+L 1/2 50 SAC 012 N TMV

NOTES

Newdeal FIL+LUB UNITS

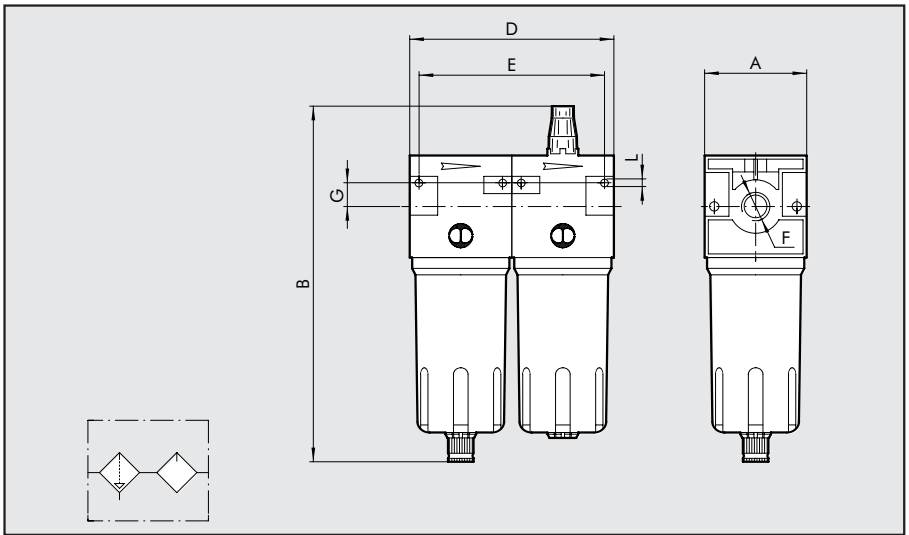
Filter+lubricator unit offering various degrees of filtration and high lubrication stability.

- Metal bowl with external sight glass
- Semi-automatic and automatic condensate drain
- Micrometric lubrication regulation
- Activation guaranteed at low air flows

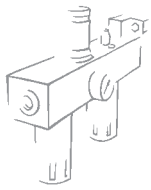


TECHNICAL DATA		F+L ND 1/4''	F+L ND 3/8''	F+L ND 1/2''	F+L ND 3/4''	F+L ND 1''
Threaded port		1/4''	3/8''	1/2''	3/4''	1''
Lubrication		mist				
Degree of filtration	bar	4µm 20µm 50µm				
Max. inlet pressure	MPa	1.8				
	bar	18				
	psi	261				
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	600	2500		8000	
ΔP 0.5 bar (0.05 MPa÷7 psi)	scfm	21	89		282	
Flow rate at 6.3 bar (0.63 MPa÷91 psi)	Nl/min	1000	3500		9500	
ΔP 1 bar (0.1 MPa÷14 psi)	scfm	35.5	124		335	
Fluid		Compressed air				
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50°				
	°F	122°				
Weight	Kg	0.8	1.8		2.5	
Wall fixing screws		M4x40	M4x55		M6x75	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.				

DIMENSIONS



	G 1/4''	G 3/8''	G 1/2''	G 3/4''	G 1''
A	42	60		80	
B	170	209		273	
D	84	120		160	
E	74	106		146	
G	10	14		22	
L	M4 hole	M4 hole		M6 hole	



KEY TO CODES

F+L	1/4	4µm	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTERING	CONDENSATE DRAIN
F+L	1/4	4µm	RMSA
		20µm	SAC
	3/8	50µm	RMSA
	1/2		SAC
			RA
	3/4		RMSA
	1		RA

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

Code	Description
1233005	F+L 1/4 4 RMSA N TMV
1233213	F+L 1/4 4 SAC N TMV
1233006	F+L 1/4 20 RMSA N TMV
1233214	F+L 1/4 20 SAC N TMV
1233008	F+L 1/4 50 RMSA N TMV
1233216	F+L 1/4 50 SAC N TMV
1333005	F+L 3/8 4 RMSA N TMV
1333009	F+L 3/8 4 RA N TMV
1333213	F+L 3/8 4 SAC N TMV
1333006	F+L 3/8 20 RMSA N TMV
1333010	F+L 3/8 20 RA N TMV
1333214	F+L 3/8 20 SAC N TMV
1333008	F+L 3/8 50 RMSA N TMV
1333012	F+L 3/8 50 RA N TMV
1333216	F+L 3/8 50 SAC N TMV
1433005	F+L 1/2 4 RMSA N TMV
1433009	F+L 1/2 4 RA N TMV
1433213	F+L 1/2 4 SAC N TMV
1433006	F+L 1/2 20 RMSA N TMV
1433010	F+L 1/2 20 RA N TMV
1433214	F+L 1/2 20 SAC N TMV
1433008	F+L 1/2 50 RMSA N TMV
1433012	F+L 1/2 50 RA N TMV
1433216	F+L 1/2 50 SAC N TMV
1533005	F+L 3/4 4 RMSA N TMV
1533009	F+L 3/4 4 RA N TMV
1533006	F+L 3/4 20 RMSA N TMV
1533010	F+L 3/4 20 RA N TMV
1533008	F+L 3/4 50 RMSA N TMV
1533012	F+L 3/4 50 RA N TMV
1633005	F+L 1 4 RMSA N TMV
1633009	F+L 1 4 RA N TMV
1633006	F+L 1 20 RMSA N TMV
1633010	F+L 1 20 RA N TMV
1633008	F+L 1 50 RMSA N TMV
1633012	F+L 1 50 RA N TMV

NOTES

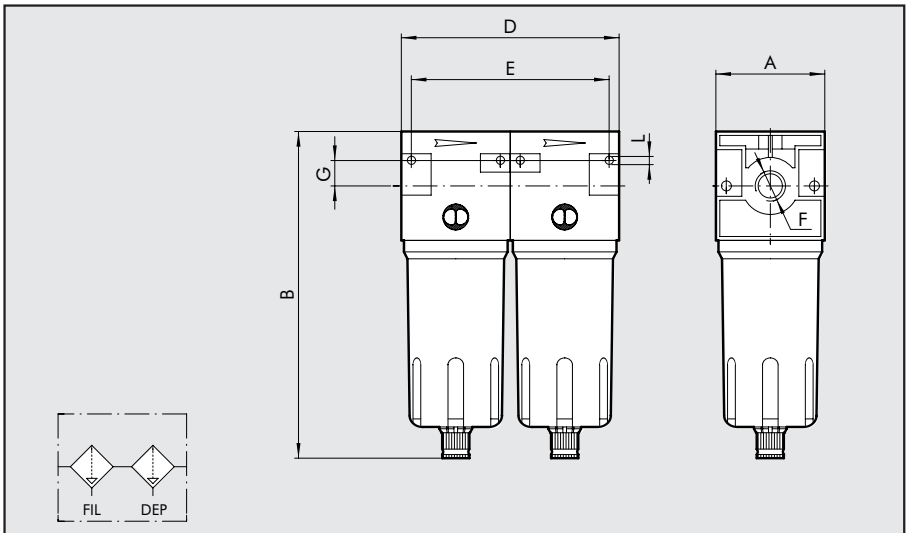
Newdeal FIL+DEP UNITS

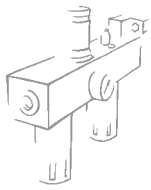
Filter+depurator unit for fine filtering followed by purification by coalescence
- Metal bowl with external sight glass
- Semi-automatic condensate drain



TECHNICAL DATA		F+D ND 3/8''	F+D ND -1/2''
Threaded port		3/8''	1/2''
Degree of filtration		4µm	
Degree of purification		99.97% 0.01µm	
Max. inlet pressure	MPa	1.8	
	bar	18	
	psi	261	
Maximum suggested flow rate		please look at the flow rate curves at page 3.3/24	
Fluid		Compressed air	
Max. temperature at 1 MPa; 10 bar; 145 psi	°C	50	
	°F	122	
Weight	Kg	1.8	
Wall fixing screws		M4x55	
Note on use		The maximum inlet pressure for the version with RA automatic condensate drainage must not exceed 10 bar.	

DIMENSIONS	G 3/8''	G 1/2''
A	60	
B	180	
D	120	
E	106	
G	14	
L	M4 hole	





ORDERING CODES

F+D	3/8	4µm	RMSA	RMSA
ELEMENT	THREADED PORT	DEGREE OF FILTRATION	CONDENSATE DRAIN	CONDENSATE DRAIN
F+D	3/8 1/2	4µm	RMSA SAC RA	RMSA RA

RMSA: Manual/semi-auto drain
SAC: Automatic drain. Operates by depression – requires variable air take-offs.
RA: Automatic drain. Float-type operation irrespective of the pressure and flow rate.

ORDERING CODES

Code	Description
1327004	F+D 3/8 4 RMSA-RMSA TMV
1327007	F+D 3/8 4 RA-RA TMV
1327104	F+D 3/8 4 SAC-RMSA TMV
1427004	F+D 1/2 4 RMSA-RMSA TMV
1427007	F+D 1/2 4 RA-RA TMV
1427104	F+D 1/2 4 SAC-RMSA TMV

NOTES

ACCESSOIRE
PRESSURE SWITCHES

This type of pressure switch features a high degree of miniaturisation and a modern attractive design.
It can be installed in any position and also mounted onto a wall by means of two transversal holes.
In order to reduce wiring times, it is supplied ready assembled with a 2-metre electric cable or an M8 connector with a 300-mm cable.
The contact is the switching type, which means it can be normally open or normally closed.
A knurled push-lock handle is provided for regulation

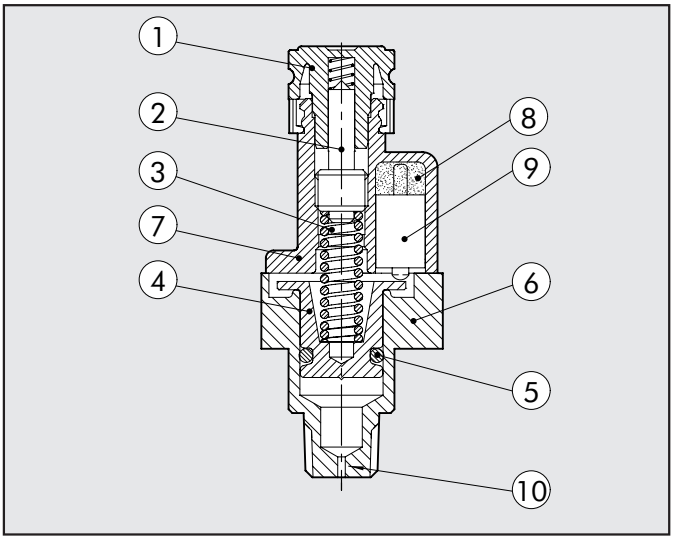


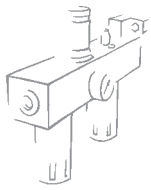
TECHNICAL DATA

Adjustable pressure interval	bar	0.5 ÷ 10
Hysteresis (not adjustable)	bar	from 0.4 to 0.8 (See diagram)
Maximum pressure	bar	15
	MPa	1.5
	psi	217
Operating temperature range at: 1 MPa; 10 bar; 145 psi	°C	50
	°F	122
Lower threaded port		R 1/8"
Maximum current	A	2
Maximum voltage	V	250
Outside diameter of cable	mm	4.9
Number of wires and cross section		3x0.5 mm^2
Contacts		Normally-Open (NO) and Normally-Closed (NC)
Protection		IP65
Number of switchings		$5x10^6$
Fluid		Filtered lubricated or unlubricated compressed air. Lubrication, if used, must be continuous
Mounting position		In any position
Weight	Kg	0.121

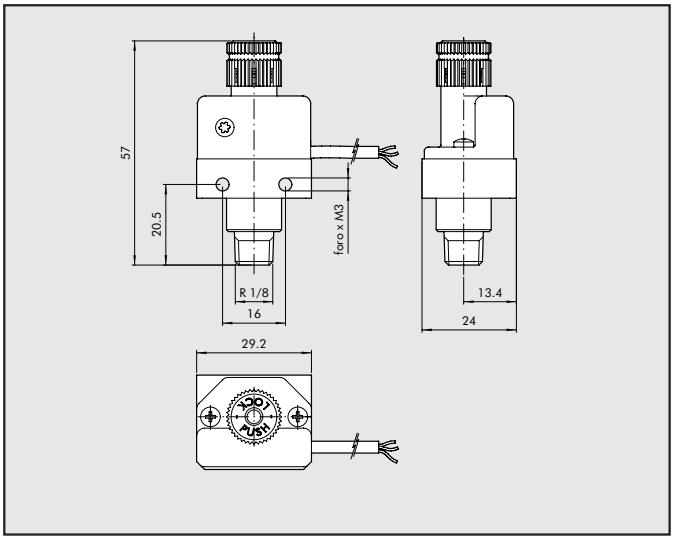
COMPONENTS

① Technopolymer adjusting push-lock handle
② Brass adjusting screw
③ Steel piston spring
④ Brass piston
⑤ NBR gasket
⑥ Body made of anodized aluminium
⑦ Technopolymer pressure switch body
⑧ Resin finish for IP65
⑨ Electrical contact
⑩ Choke to reduce peaks in pressure



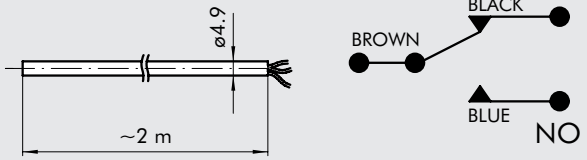


DIMENSIONS

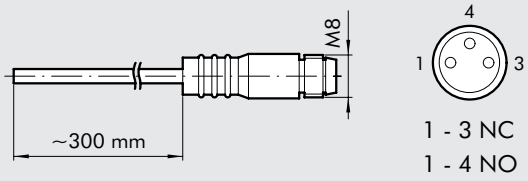


WIRING DIAGRAM

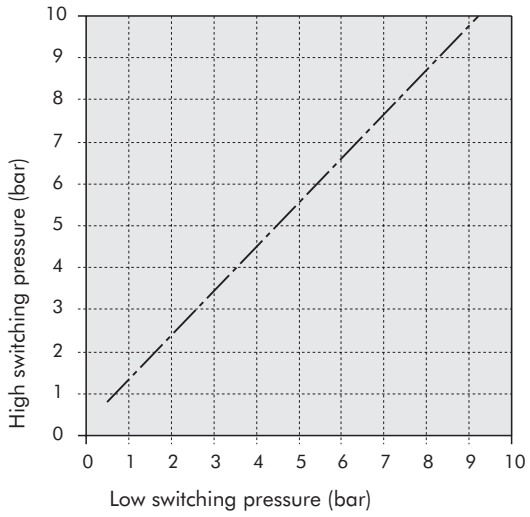
VERSION WITH CABLE



VERSION WITH M8 CONNECTOR



HYSTERESIS GRAPH

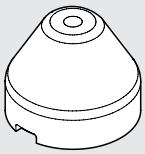


ORDERING CODES

Code	Description
9000401	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, 2-METRE CABLE
9000402	ACC. - 1/8 2A NO/NC PRESSURE SWITCH, M8 CONNECTOR

ACCESSORIES

SECURITY KNOB



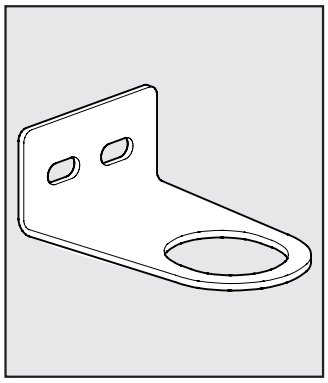
Code	Description
9200703	ACC. SECURITY KNOB

NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

NOTES

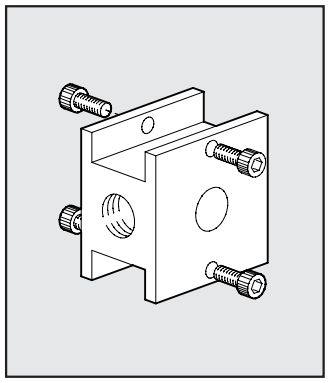
Newdeal ACCESSORIES

MOUNTING BRACKET FOR REG.



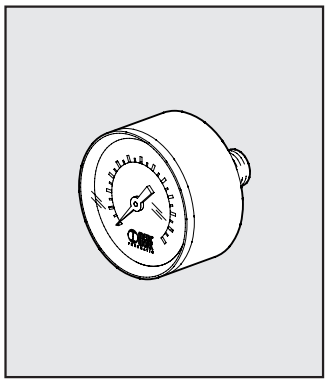
Code	Description
9200701	ACC.SF 1/4
9400701	ACC.SF 1/2

REGULATOR CONNECTION BLOCK



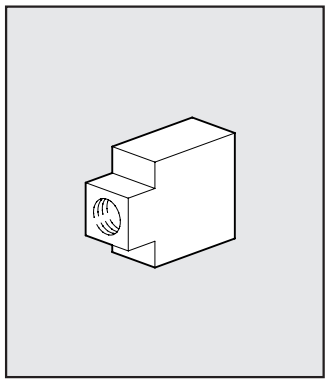
Code	Description	Weight [g]
9200501	ACC.BC 1/4 BLOCK	90
9400501	ACC.BC 1/2 BLOCK	244
9600501	ACC.BC 3/4 BLOCK	428

PRESSURE GAUGE



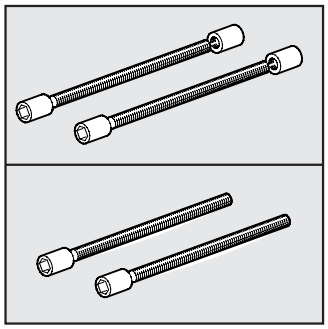
Code	Description
9700102	ACC.M 40 1/8 04
9700101	ACC.M 40 1/8 12
9800102	ACC.M 50 1/8 04
9800101	ACC.M 50 1/8 12
9900101	ACC.M 63 1/4 12

SPACERS FOR FRL WALL MOUNTING



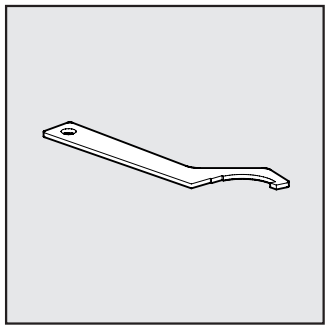
Code	Description
9200601	ACC.DF 1/4 SPACER
9400601	ACC.DF 1/2 SPACER
9600601	ACC.DF 3/4 SPACER

TIE RODS



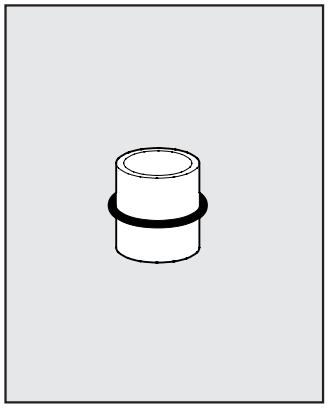
Code	Description
9200901	ACC.T 1/4 F+L TIE RODS
9400901	ACC.T 1/2 F+L TIE RODS
9600901	ACC.T 3/4 F+L TIE RODS
9604402	ACC. T 3/4-1" V3V+F+R TIE RODS

DISASSEMBLY TOOL FOR BOWL



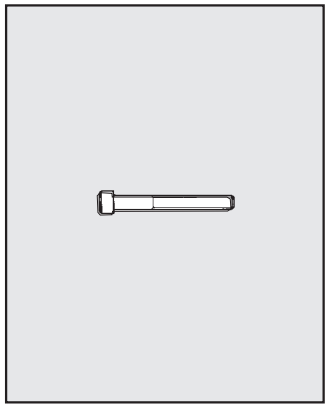
Code	Description
9601501	ACC. DISASSEMBLOY KEY

ADAPTER FOR V3V

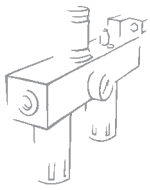


Code	Description
9201001	ACC. ADAPT. X V3V+FR 1/4
9401001	ACC. ADAPT. X V3V+FR 3/8
9401002	ACC. ADAPT. X V3V+FR 1/2
9601001	ACC. ADAPT. X V3V+F 1"

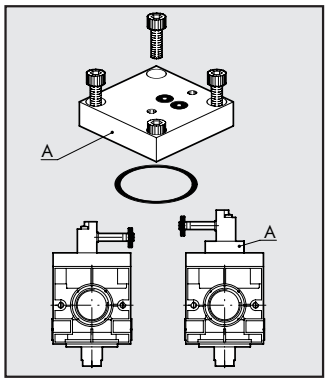
ASSEMBLY SCREWS (2 PIECES)



Code	Description
9250001	ACC.CVA 1/4 SCREW M4x40
9250002	ACC.CVA 1/4 SCREW M4x82 V3V+F+R
9450001	ACC.CVA 1/2 SCREW M5x55
9450002	ACC.CVA 3/8 1/2 SCREW M5x60 V3V+R
9450003	ACC.CVA 3/8 1/2 SCREW M5x120 V3V+F+R
9650001	ACC.CVA 3/4 SCREW M6X70

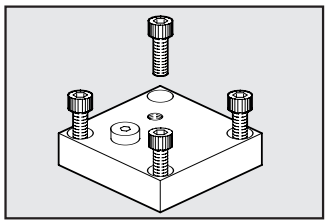


REVERSE PLATE CNOMO CONTROL FOR V3V 3/4"-1"



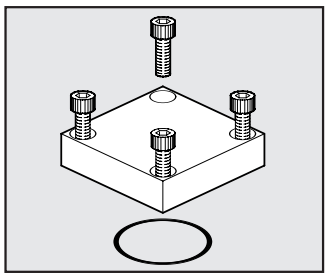
Code	Description	Weight [g]
9640201	REVERSE PLATE KIT V3V CNOMO CONTROL	86

PLATE FOR REMOTE CONTROL FOR V3V 3/4"-1"



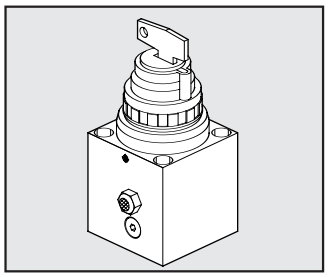
Code	Description	Weight [g]
9640001	REMOTE CONTROL PLATE KIT	84

REG OR V3V END PLATE



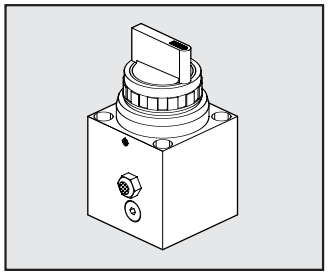
Code	Description	Weight [g]
9640101	END PLATE KIT FOR REGULATOR OR V3V	82

KEY CONTROL FOR V3V 3/4"-1"



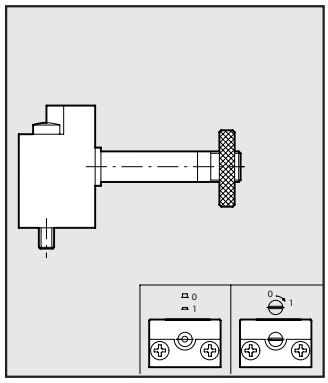
Code	Description	Weight [g]
9640301	KEY CONTROL KIT FOR V3V	364

MANUAL CONTROL FOR V3V 3/4"-1"



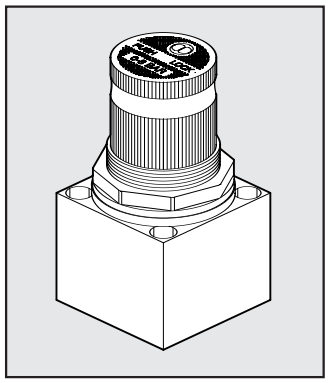
Code	Description	Weight [g]
9640401	MANUAL CONTROL KIT FOR V3V	340

CNOMO CONTROL FOR V3V 3/4"-1"



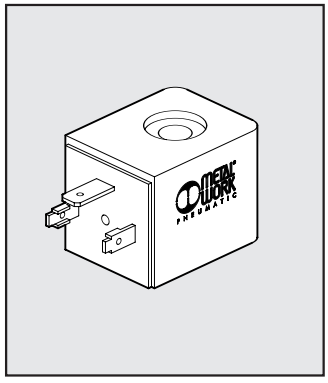
Code	Description
9453920	ELPN CNOMO CONTROL KIT, MANUAL MONOSTABLE
9453922	ELPN CNOMO CONTROL KIT, MANUAL BISTABLE

PILOT REGULATOR



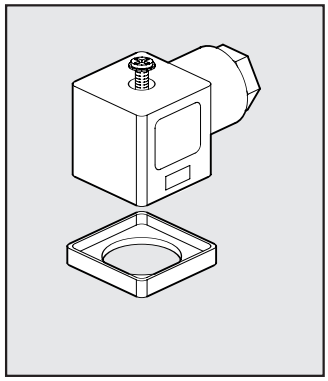
Code	Description	Weight [g]
9640501	02 PILOT	220
9640502	REGULATOR KIT	
9640503	04 PILOT	220
9640504	REGULATOR KIT	
	08 PILOT	220
	REGULATOR KIT	
	012 PILOT	220
	REGULATOR KIT	

REEL FOR CNOMO CONTROL V3V

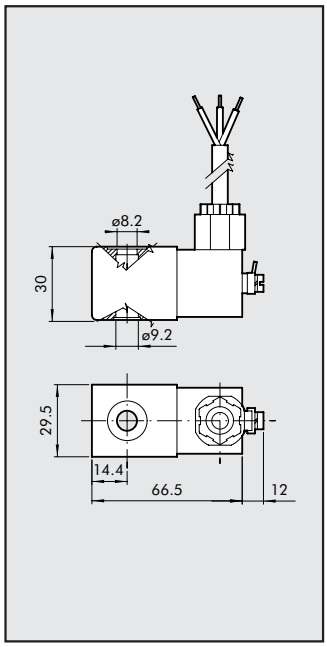


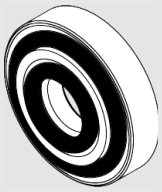
Code	Description
W0210010100	REEL 30 4W 24VDC
W0210011100	REEL 30 4VA 24VAC 50/60HZ
W0210012100	REEL 30 4VA 110VAC 50/60HZ
W0210013100	REEL 30 4VA 220VAC 50/60HZ

ELECTRIC CONNECTOR FOR CNOMO CONTROL V3V



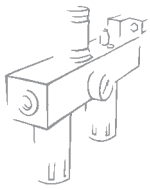
Code	Description
W0970520034	CONNECTOR 30 LED 24V
W0970520035	CONNECTOR 30 LED 110V
W0970520036	CONNECTOR 30 LED 220V
W0970520037	CONNECTOR 30 VDR 24V
W0970520038	CONNECTOR 30 VDR 110V
W0970520039	CONNECTOR 30 VDR 220V

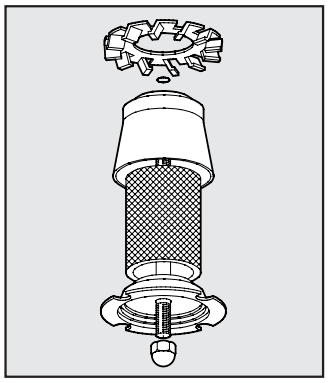
KIT FOR COIL EEEXM	Code	Description
	0227606913	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 3M
	0227606915	KIT FOR COIL 30 24 VDC EEEXMT5 CABLE 5M
	0227608013	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 3M
	0227608015	KIT FOR COIL 30 24 VAC EEEXMT5 CABLE 5M
	0227608023	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 3M
	0227608025	KIT FOR COIL 30 110 VAC EEEXMT5 CABLE 5M
	0227608033	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 3M
	0227608035	KIT FOR COIL 30 230 VAC EEEXMT5 CABLE 5M

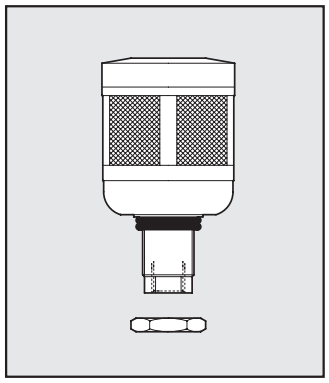
KIT FOR COIL SIDE 22 IP65	Code	Description
	0222100100	KIT FOR COILS 22 - IP65 (WITH TECHNOPOL CONTROL)

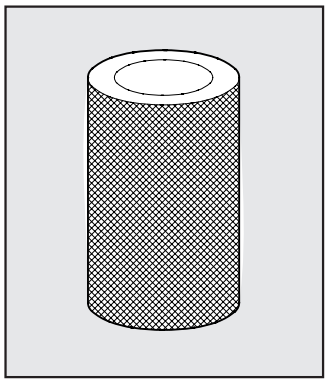
NOTES

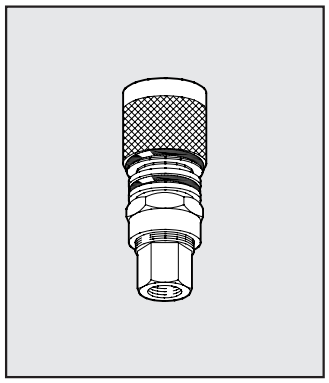
Newdeal SPARE PARTS

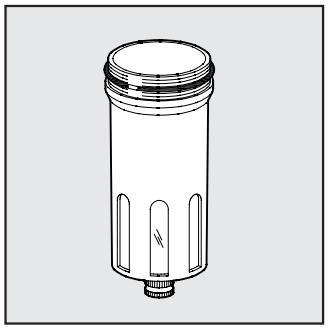


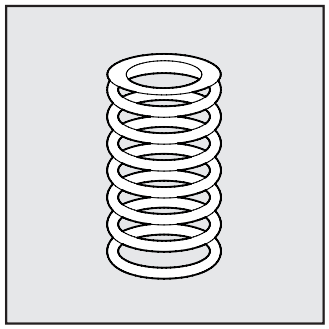
F and FR FILTERING ELEMENT	Code	Description
	9450103	SPARES FP 1/2 4
	9450102	SPARES FP 1/2 20
	9450101	SPARES FP 1/2 50
	9250103	SPARES FP 1/4 4
	9250102	SPARES FP 1/4 20
	9250101	SPARES FP 1/4 50
	9650103	SPARES FP 3/4 4
	9650102	SPARES FP 3/4 20
	9650101	SPARES FP 3/4 50

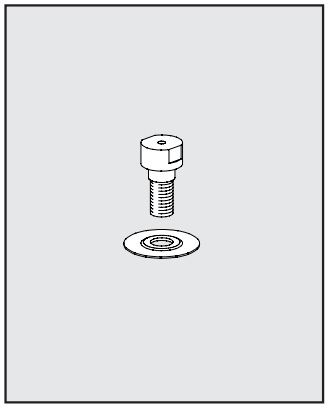
RA AUTOMATIC DRAIN	Code	Description
	9000801	SPARES RA 3/8-1/2-3/4-1

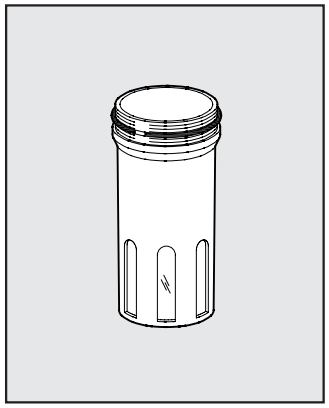
FILTERING ELEMENT FOR DEPURATOR	Code	Description
	9450105	SPARES KIT FP DEP. 3/8

SAC AUTOMATIC DRAIN	Code	Description
	9000803	SAC 1/4'' 3/8'' 1/2''

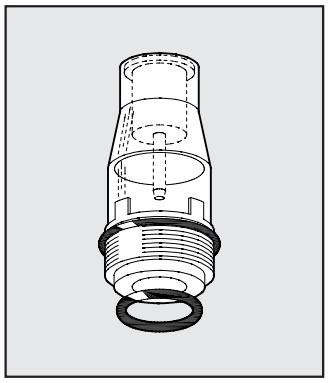
METAL FILTER BOWL	Code	Description
	9450301	SPARES TMVF 1/2 RMSA
	9455201	SPARES TMVF 1/2 SAC
	9250301	SPARES TMVF 1/4 RMSA
	9255201	SPARES TMVF 1/4 SAC
	9650301	SPARES TMVF 3/4 1 RMSA

SPRINGS FOR REGULATORS AND FR	Code	Description
	9250601	SPARES MO 02 1/4
	9250602	SPARES MO 04 1/4
	9250603	SPARES MO 08 1/4
	9250604	SPARES MO 12 1/4
	9450601	SPARES MO 04 1/2
	9450602	SPARES MO 08 1/2
	9450603	SPARES MO 12 1/2
	9650601	SPARES MO 04 3/4
	9650602	SPARES MO 08 3/4
	9650603	SPARES MO 12 3/4

VENTURI LUBRICATOR DIAPHRAGM	Code	Description
	9252001	SPARES MB 100 1/4
	9352001	SPARES MB 200 1/4 3/8 1/2
	9652002	SPARES MB 3/4-1"

METAL LUBRICATOR BOWL	Code	Description
	9251201	SPARES TMVL 1/4
	9451201	SPARES TMVL 1/2
	9651201	SPARES TMVL 3/4

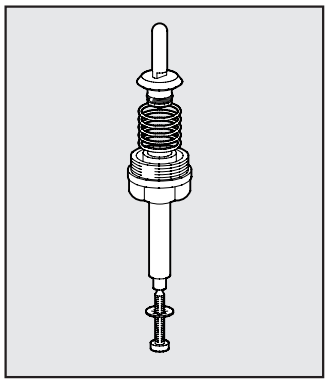
TRANSPARENT LUBRICATOR COVER



Code	Description
9251301	SPARES CVL 1/4
9651301	SPARES CVL 3/4
9251302*	SPARES CVL 100-200-300-400 BIT

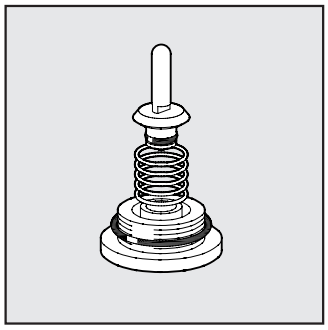
*SOSTITUTE CODE:
9251301-9651301

COMPLETE POPPET FOR FR



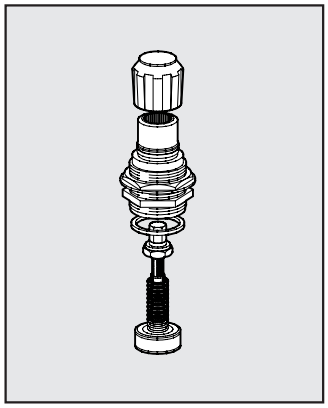
Code	Description
9250901	SPARES OTFR 1/4
9450901	SPARES OTFR 1/2

COMPLETE POPPER FOR REGULATOR



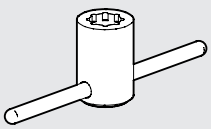
Code	Description
9250701	SPARES OTR 1/4
9450701	SPARES OTR 1/2 REG
9650701	SPARES OTR 3/4 OTTURATORE

UPPER COVER FOR REGULATOR AND FR



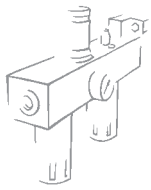
Code	Description
9250801	SPARES CS 1/4 02
9250802	SPARES CS 1/4 04
9250803	SPARES CS 1/4 08
9250804	SPARES CS 1/4 012
9450801	SPARES CS 1/2 04
9450802	SPARES CS 1/2 08
9450803	SPARES CS 1/2 12
9650801	SPARES CS 3/4 04
9650802	SPARES CS 3/4 08
9650803	SPARES CS 3/4 12

DOME DISASSEMBLY SPANNER



Code	Description
9220701	ACC COVER LUB SPANNER

NOTES



SUMMARY ONE

CHAPTER 3.4

LEARNING ABOUT ONE	PAGE 3.4/02
SPECIFICATIONS	PAGE 3.4/06
HOW TO ORDER ONE	PAGE 3.4/10
ACCESSORIES	PAGE 3.4/12
SPARE PARTS	PAGE 3.4/13

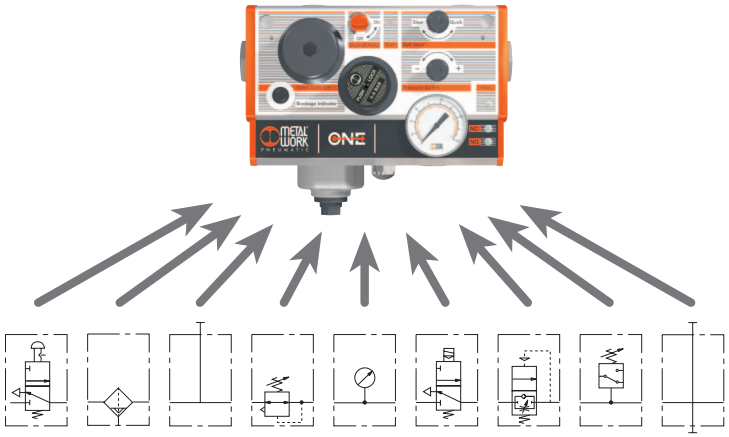
LEARNING ABOUT

In the world of pneumatics, which is considered mature, it is rare to encounter completely new and different products. ONE a compressed air treatment unit with a high degree of integration, that encompassed numerous pneumatic functions. In fact, it contains so many innovations that a single patent is not enough to safeguard it against imitation – three separate patent applications have been registered with a total of 39 claims. This unit is so innovative that it won the international novelty award at Fluidtrans Compomac.
ONE has a single high-performance valve on the main flow that handles all the functions from regulation to relief. It is controlled by a high-precision pilot regulator with controlled relief, in series with the manual on-off valve, the electric valve and the progressive actuator. Unification of the valve has led to a significant reduction in overall dimensions, enhanced capacity, precision and response speed.

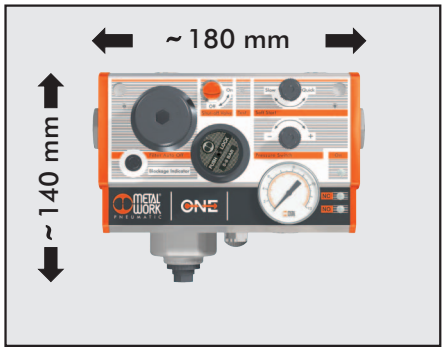


INTEGRATION

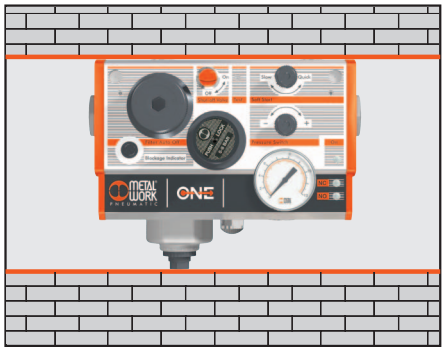
One single unit houses the threaded ports, filter, condensate drain, pressure regulator, shut-off valve, soft start valve, pressure switch and three supplementary air intakes.



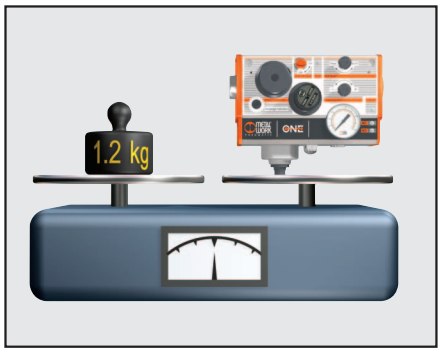
MINIATURISATION



Extremely reduced dimensions, considering the extra-high performance and flow rate reachable.



No clearance is required above and below it to make adjustments or change the filter or other components. The actual space occupied is thus further reduced.



It weighs slightly more than one kilo instead of the 4÷8 kilos of conventional units.

EASY ADJUSTMENTS AND LITTLE MAINTENANCE



The entire user interface is at the front, which means that everything is visible and easy to reach.
All the adjustments are made using the push-lock knobs (no need for wrenches or screwdrivers), thus preventing accidental operations or manoeuvres.

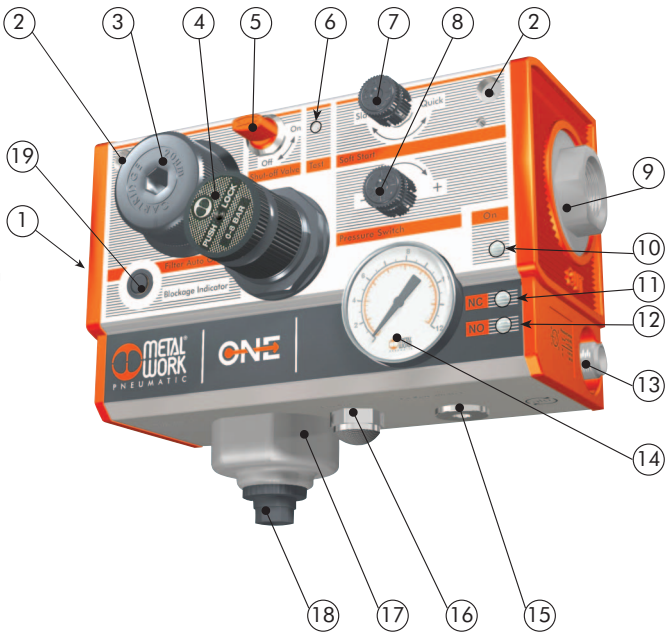
CONFIGURABILITY

Considering that ONE is reduced in size but highly performing, and it can integrate tenths of functions, a single unit can cover the entire range of applications, with cut-clear advantages in terms of standardisation and reduction of the number of codes handled and goods in stock.
With a single size there are thousands of different configurations. For example, there is choice between 1/4", 3/8", 1/2", 3/4" or 1" threaded ports, manual and/or electric on-off or progressive valves, etc.
The customer decides the configuration he wants and creates the code, using the key-to-coding table shown below in this catalogue.
He will receive the unit he wants marked with its code and the correct pneumatic diagram.

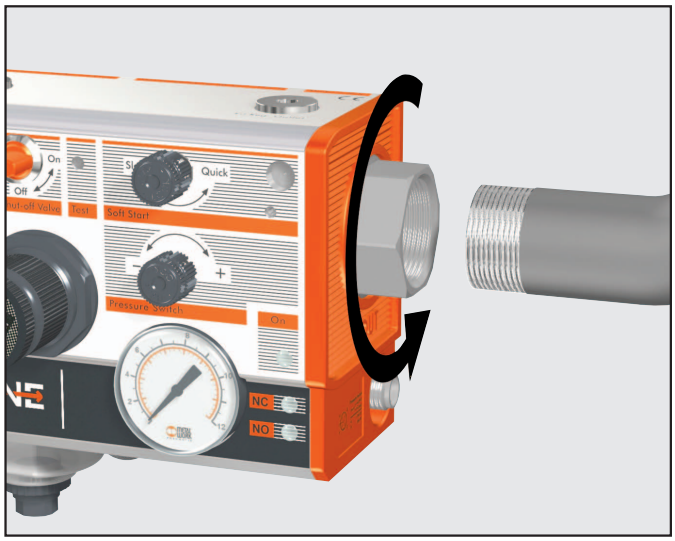
3

WHAT YOU CAN SEE FROM THE OUTSIDE

① Air intake, with swivel threaded port
② Fixing hole
③ Access to filter cartridge
④ Pressure regulation
⑤ Shut-off valve (manual)
⑥ Manual override (shut-off valve electrical)
⑦ Soft start valve regulation
⑧ Switching pressure regulation
⑨ Air outlet, with swivel threaded port
⑩ LED signalling unit ON
⑪ LED signalling pressure below the value set on pressure switch
⑫ LED signalling pressure over the value set on pressure switch
⑬ 5-pin M12x1 electrical connector
⑭ Pressure gauge
⑮ 1/4" air intake. Another regulated air intake and a filtered non-regulated air intake are situated on the top
⑯ Air exhaust with a G1/4"silencer
⑰ Condensate tank
⑱ Condensate drain with G1/8" thread (for RA only)
⑲ Clogged filter signal

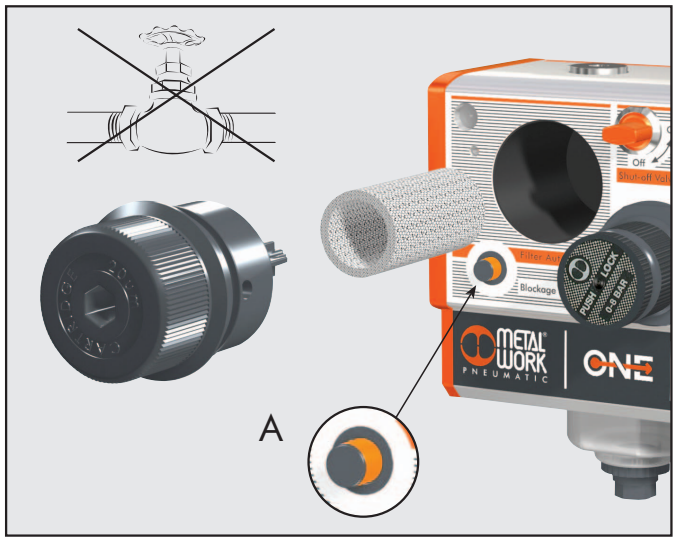


THREADED PORTS



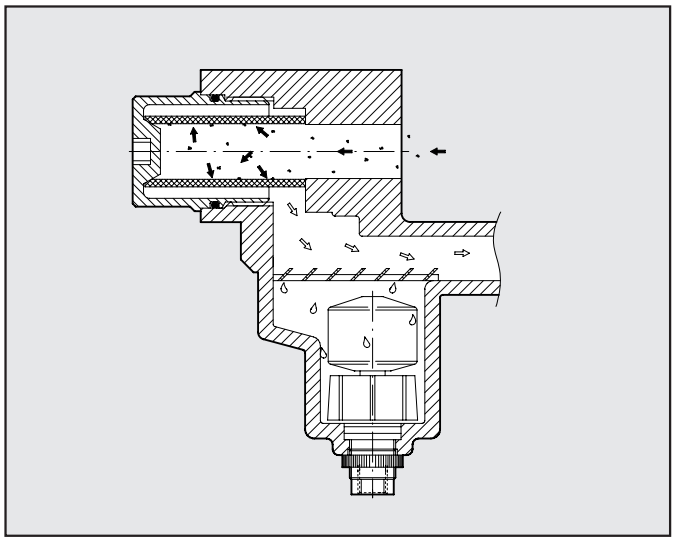
• The threaded ports at the air intake and outlet are the swivel type to facilitate coupling with the supply and delivery pipes. In this way, the unit can be mounted or removed without dismounting the pipes.
• A range of 5 different threads, 1/4", 3/8", 1/2", 3/4" and 1" is also available.
• The thread for the supply pipe may differ from that of the delivery one.

FILTER CHANGE



• If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the optical filter blockage indicator will project (see detail A) to indicate that the filter cartridge must be replaced.
• The cartridge can be replaced by unscrewing a plug at the front. This system is functional and, unlike conventional filters, does not require manoeuvring space below the unit.
• An automatic stop on-off valve is incorporated in the unit: when the filter plug is unscrewed, the valve closes automatically. This means there is not need to a tap upstream and there is no risk of the plug being ejected violently.

CONDENSATE DRAIN



• The condensate drain is located downstream of the filter and thus uses cleaner air. This prevents the known problem of air leaks due to the deposit of dirt on the condensate discharge valve.
• You can request ONE with two types of condensate drain:
- semi-automatic, type RMSA
- automatic, of the floating type RA

SINGLE AIR EXHAUST



The air in the circuit is relieved via one outlet situated below the unit and fitted with silencer. If you want to convey air relief to prevent the emission of polluted air into the atmosphere, you can replace the silencer and install a fitting. (a pipe with a diameter of at least 6 mm is recommended)
Next to the air outlet there is the condensate drain, which in the RA version can be connected to the thread with a 1/8" fitting.

SUPPLEMENTARY PORTS



In addition to the main outlet, there are three supplementary air ports with a 1/4" thread.
- one for filtered non-regulated air (A) for use, for example, with a compressed air gun.
- two for filtered regulated air (B).
The unit comes complete with supplementary plugged ports for use with A7 fittings.

PANEL MOUNTING



ONE can be mounted inside the guard of the machine leaving only the front visible. This is a considerable advantage in terms of functionality and aesthetics as the user interface is entirely at the front. Among the accessories to be ordered separately, there is the kit of brackets for panel mounting.

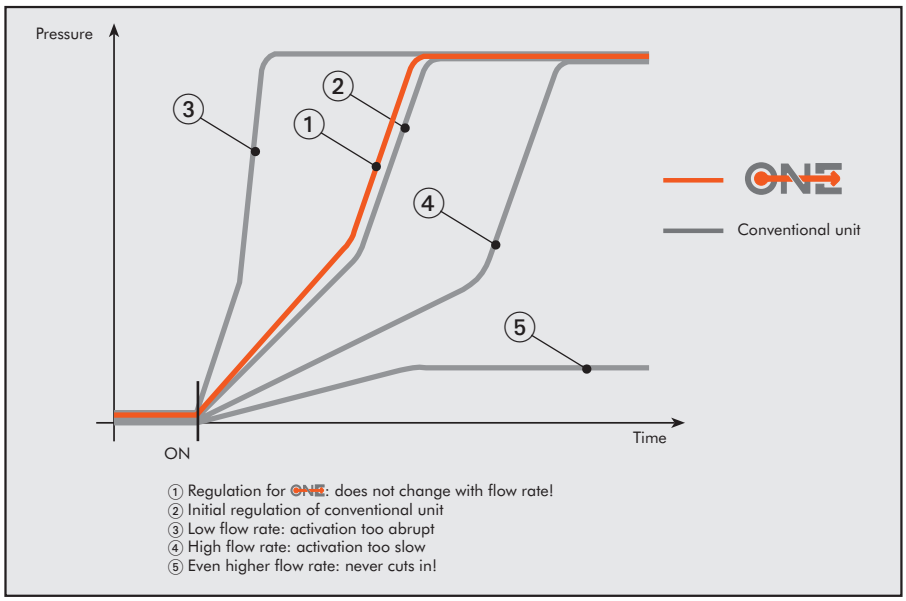
3

ELECTRICAL CONNECTION



A standard five-pin M12x1 connector, with IP67 protection is used for the opening solenoid valve and the pressure switch. One cable only is required, thus improving reliability and reducing wiring times.

SOFT START VALVE



The soft start valve is an absolutely innovative feature among the functions provided by ONE. Soft start valve available from the trade are generally based on the principle of leaving the passage of a small amount of air until the downstream pressure reaches a set value, and then opening the passage fully. In this way, the rate at which the pressure increases depends on the flow rate of the utilities, which often feature a continuous flow rate, for example a blow, and thus the starter can hardly activate. The solution offered by One is such that the pressure increases gradually and it is independent of the flow rate of the utilities. Pressure increase can be regulated precisely via the knob at the front.
Another piece of news, among the several possible configurations you can have the soft start valve operated by the manual V3V

SPECIFICATIONS

TECHNICAL DATA		1/4''	3/8''	1/2''	3/4''	1''
Flow rate at 6.3 bar (0.6 Mpa; 91 psi) ΔP 0.5 bar (0.05 Mpa; 7 psi)	Nl/min	2200	2900		3600	
	scfm	78	102		127	
Flow rate at 6.3 bar (0.6 Mpa; 91 psi) ΔP 1 bar (0.1 Mpa; 14 psi)	Nl/min	2400	3300		4000	
	scfm	85	116		141	
Flow rate on discharge at 6 bar (0.1 Mpa; 14 psi)	Nl/min	1600				
	scfm	56				
1/4" port flow rate of non-regulated filtered air	Nl/min	1800				
at 6.3 bar (0.6 Mpa; 91 psi) ΔP 1 bar	scfm	64				
*Flow rate of each supplementary 1/4" filtered	Nl/min	2400				
and regulated air port at 6.3 bar (0.6 Mpa; 91 psi) ΔP 1 bar	scfm	85				
Fluid		compressed air				
Setting range	bar		0,5÷ 2	0,5 ÷ 4	0,5 ÷ 8	
Degree of filtration		5 μm or 20 μm				
Maximum inlet pressure		10 bar – 1 Mpa – 145 psi				
Operating temperature range	°C	-10° ÷ 50°				
	°F	-14° ÷ 122°				
Class of protection		IP 65 with connector				
Insulation class of the solenoid valve		F155				
Switching time		100% ED				
Electrical connector		M12 x 1.5-pin to CEI IEC 60947-5-2				
Solenoid valve power	W	1,2				
Solenoid valve voltage	V	24 VDC± 10%				
Pressure interval settable on the pressure switch	bar	0,5 ÷ 10				
Pressure switch hysteresis (not adjustable)	bar	bar 0,4 to 0,8 (see diagram)				
Maximum pressure switch current	A	0,5				
Maximum pressure switch voltage	V	3÷30 AC/DC				
Pressure switch contacts		normally open (NO) and normally closed (NC)				
Number of switching		5 x 10^6				
Weight	kg	from 1,15 to 1,25 according to configurations				
Wall fixing (max. panel thickness 10 mm):		Front, with M5 x 75 screws or back, with M6 x 70 screws				
		The screws are included in the supply				
Mounting position		vertical				
Direction of flow		from left to right				

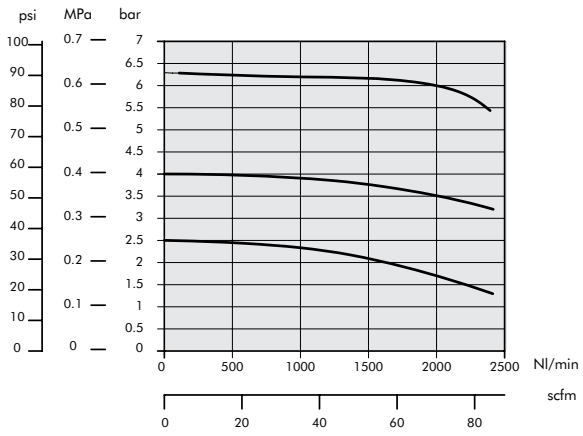
* total flow rate from two supplementary outlets and the main one cannot exceed 4000 Nl/min at 6.3 bar with ΔP=1

FLOW CHARTS

1/4"

Pm= 8 bar - 0.8 MPa - 116 psi

PRESET PRESSURE

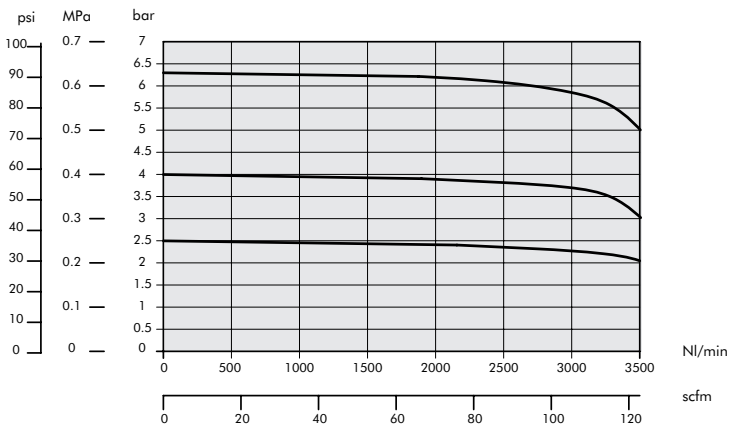


FLOW RATE

3/8"

Pm= 8 bar - 0.8 MPa - 116 psi

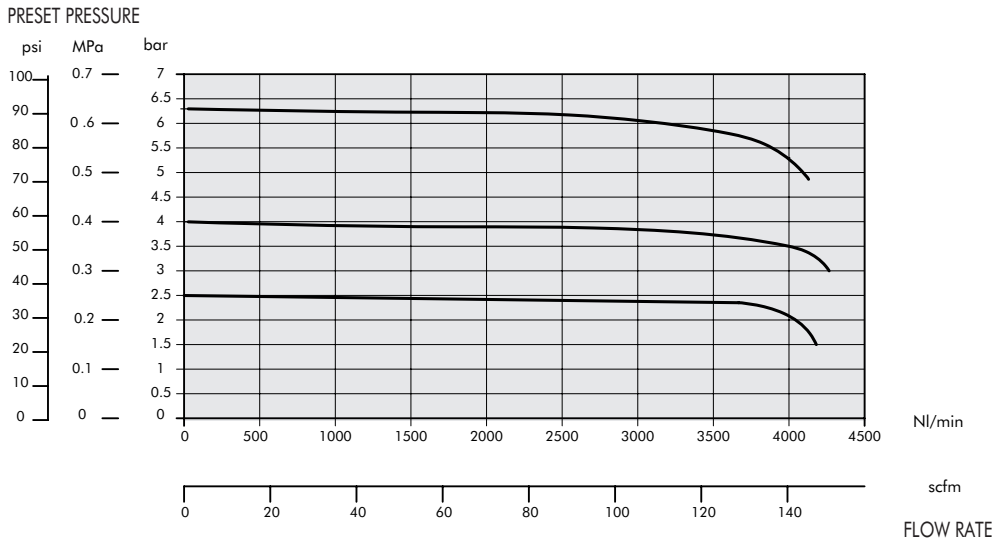
PRESET PRESSURE



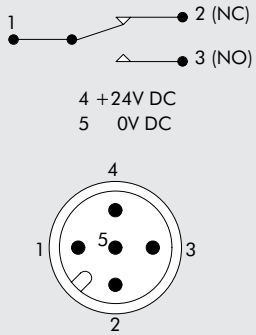
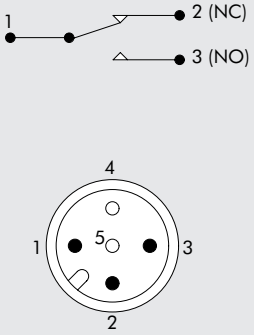
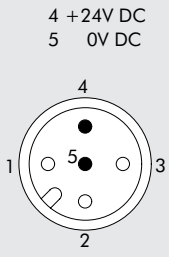
FLOW RATE

1/2" - 3/4" - 1"

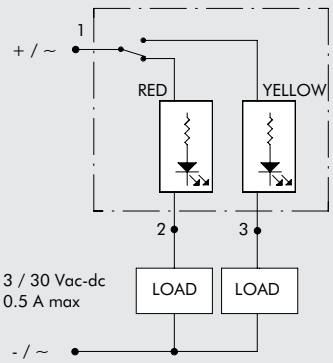
Pm= 8 bar - 0.8 MPa - 116 psi



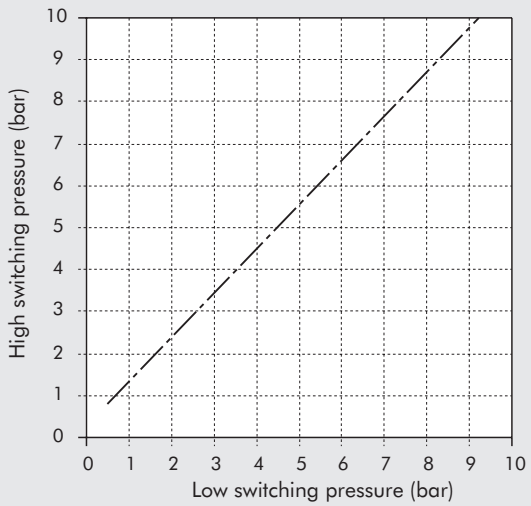
WIRING DIAGRAM

Version with solenoid valve and pressure switch	Version with pressure switch	Version with solenoid valve
		

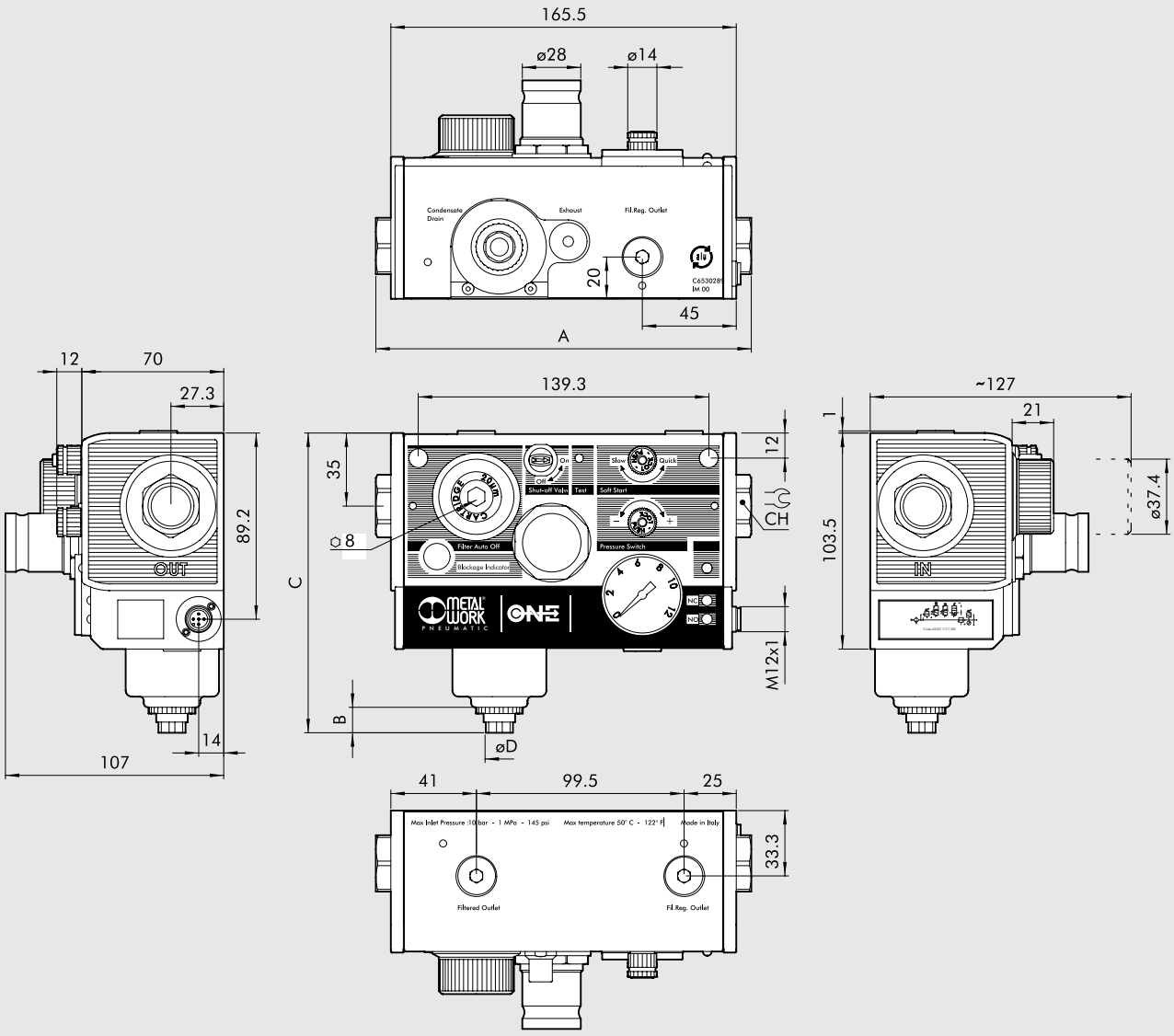
PRESSURE SWITCH WIRING DIAGRAM



PRESSURE SWITCH HYSTERESIS CHART



DIMENSIONS

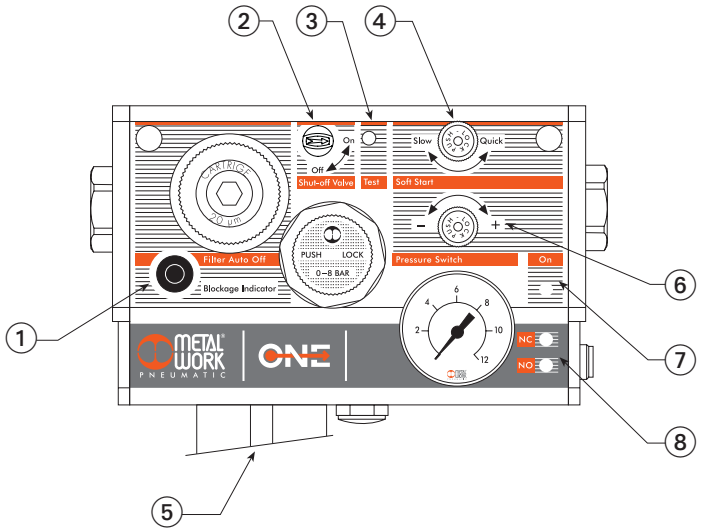


	1/4"	3/8"	1/2"	3/4"	1"
A		180		195	
CH	19	22	27	32	36

	RA	RMSA
B	12.2	16.4
C	144	148
øD	15	15

EXTERNAL DESIGN

You can get thousands of different configurations. The external design differs according on the versions chosen.

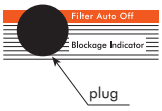


CLOGGED FILTER SIGNAL ①

PRESENT

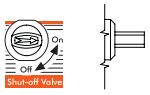


NOT PRESENT

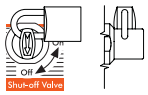


V3V MANUAL ②

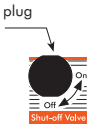
STANDARD



LOCKABLE

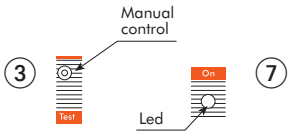


NOT PRESENT

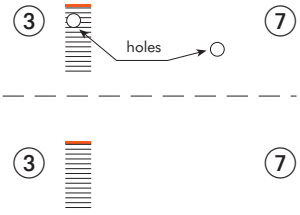


V3V ELECTRICAL

PRESENT



NOT PRESENT
in some versions holes are present



SOFT START VALVE ④

PRESENT

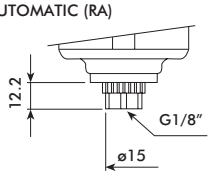


NOT PRESENT

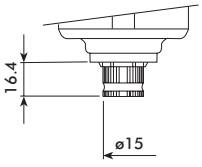


CONDENSATE DRAIN ⑤

AUTOMATIC (RA)

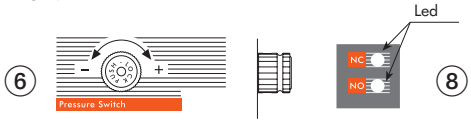


RMSA

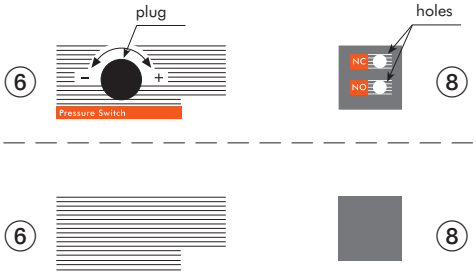


PRESSURE SWITCH

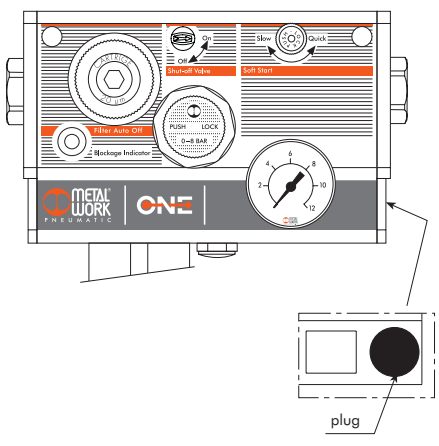
PRESENT



NOT PRESENT
in some versions holes are present



ONE NON-ELECTRICAL



HOW TO ORDER

ORDERING CODES

You can choose among numerous variants and options. The product code so personalised is made up by compiling the diagram below. The code so compiled must be specified on the order. A label showing the code and its pneumatic diagram is affixed onto the product.

	A	B	C	D	E	F	G	H	I	L	
	ONE electrical or ONE non-electrical	Air intake	Degree of filtration	Clogged filter signal	Condensate drain	Pressure regulation	Valves	Pressure switch	Air outlet	Varie, versioni speciali	
EXAMPLE	54	3	2	1	1	2	7	1	3	0	0
	53 ONE non-electric	1 1/4″	2 20µm	0 NO	0 RMSA	2 0,5÷2 bar	0 None	0 NO	1 1/4″	00 Standard	
	54 ONE electric*	2 3/8″	5 5µm	1 YES	1 auto-matic (RA)	4 0,5÷4 bar	1 V3V manual	1 YES ●	2 3/8″		
		3 1/2″				8 0,5÷8 bar	2 V3V manual with padlock		3 1/2″		
		4 3/4″					3 V3V manual and soft start valve		4 3/4″		
		5 1″					4 V3V manual with padlock and soft start valve		5 1″		
							5 V3V manual and V3V electric ●				
							6 V3V manual with padlock and V3V electric ●				
							7 V3V manula and APR electric ●				
							8 V3V manual with padlock and APR electric ●				
							9 only V3V electric ●				
							A only APR electric ●				

* a pressure switch version and/or electric V3V and/or electric progressive actuator.

● NB: versions valid only for the electric ONE (code 54…)

A **ONE electric or non-electric**
ONE non-electric: there is no component actuated electrically: select code 53. In this case, the unit comes without any M12x1 connector, LED, pressure switch,or electric V3V.
ONE electric: there is at least one component actuated electrically, and thus the pressure switch and/or electric V3V (and/or the electrical soft start valve) select code 54. In this case, the unit comes with the M12x1 connector and 3 LEDs. Only the LEDs associated with the functions installed will be active.

B **Air intake**
There are 5 different gas cylindrical threads: 1/4", 3/8", 1/2", 3/4" and 1".

C **Degree of filtration**
A cartridge with a degree of filtering of 5 μm or 20 μm is available. This value is marked on both the plug and cartridge.

D **Clogged filter signal**
If the filter gets so clogged up that it causes an excessive drop in pressure as the air passes through, the orange indicator will project from the body by a few millimetres.

E **Condensate drain**
RMSA: the condensate is drained out automatically only by relieving the air pull the knurled knob for having the same result.
Automatic (RA): a floating system that automatically drains the condensate out whenever the level of water in the bowl reaches the set value.

F **Pressure regulation**
There are three possible regulation fields.
The value is marked on the regulation knob.

G **Valves**
There are 11 different combinations. The electric valves are clearly selectable only if the initial code is 54, i.e. ONE electric.
- 0 - No valves present
- 1 - V3V manual: is a 3/2 valve that in a set position allows the air to flow and in the other it closes the passage and discharges the pressure downstream.
- 2 - V3V manual with padlock: like the previous one, with the possibility of inserting a padlock (included in the supply with 2 keys) in the valve closed position.
- 3 - V3V manual and soft start valve: when the manual V3V valve is operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
- 4 - V3V manual with padlock and soft start valve: like the previous, with the padlock device on the manual V3V in "OFF" position.
- 5 - V3V manual and V3V electric: two V3V in series are present, one is manual the other electrical. By operating both the valve the air flow is allowed. If one or two are switched OFF, the air downstream is relieved. The electrical one can also be operated manually by reefing pushed the "TEST" button
- 6 - V3V manual with padlock and V3V electric: like the previous, with the padlock device in "OFF" position.
- 7 - V3V manual and APR electric: One manual V3V and one soft start valve are present. When both are operated, the pressure starts to increase slowly, with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.
- 8 - V3V manual with padlock and APR electric: like the previous, with the padlock device on the manual V3V in "OFF" position.
- 9 - V3V elettric:It's present only the electrical V3V. The valve will open if it is powered on. When the power supply is switched off, the valve closes and air downstream is relieved. The valve can also be operated manually by keeping pushed the test button.
- A -APR elettric:It's present only the electric soft start valve. Whent it is powered ON, the pressure starts to increase slowly,with a fine adjustable ramp, and when it reaches about 30-40% of the set value, the valve opens completely and the pressure rises to the set value.

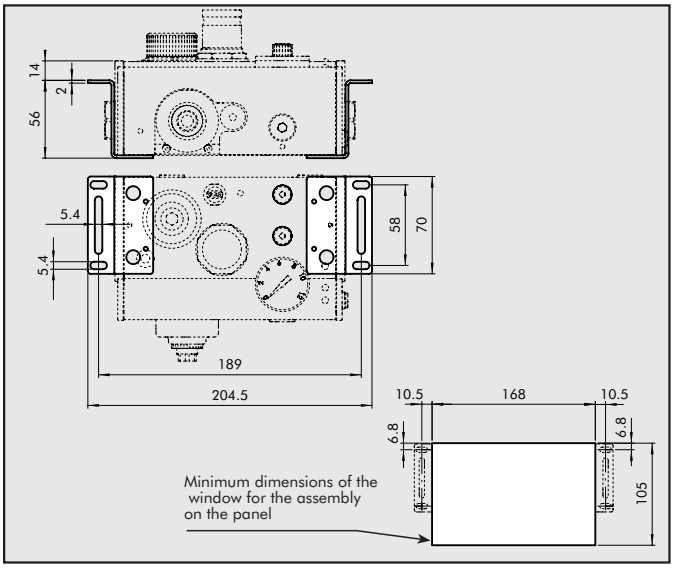
H **Pressure switch**
The pressure switch has a switching contact, which means you can have a normally-open signal or a normally-close signal. It is also connected to the NC and NO LEDs which come on if the actual pressure is less or greater than the set pressure, respectively. The LEDs only come on if an electric charge is connected to them.

I **Air outlet**
Five different gas cylindrical threads are available: 1/4", 3/8", 1/2", 3/4" and 1". It is possible to choose a thread other than the one on the inlet port.

L Free positions for special executions.

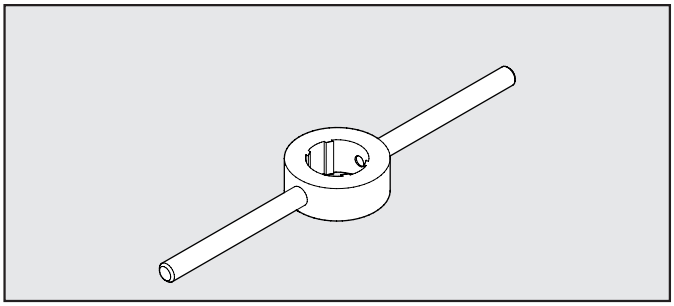
ACCESSORIES

PANEL MOUNTING BRACKETS



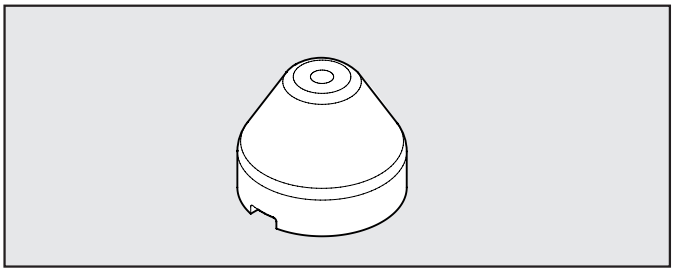
Code	Description
9170401	ACC. KIT – PANEL MOUNTING BRACKETS
	NB: fixing screws included

COVER DISASSEMBLY WRENCH



Code	Description
9170401	ACC. COVER DISASSEMBLY WRENCH

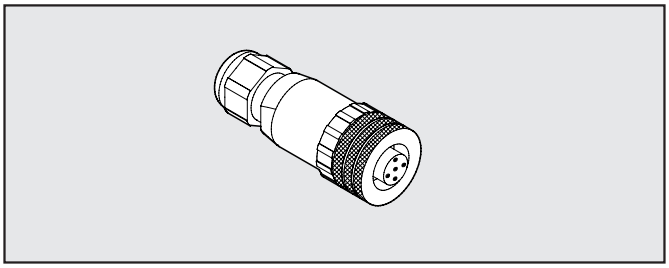
SECURITY KNOB



Code	Description
9200703	ACC. SECURITY KNOB APR/PRESSURE SWITCH

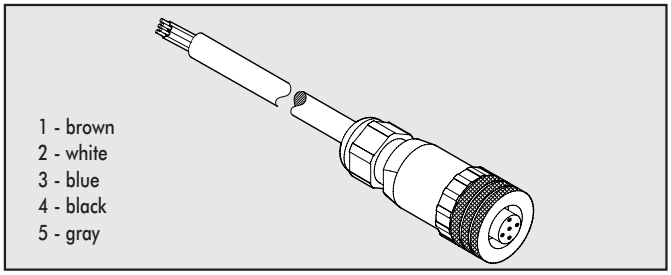
NOTE: Pull outwards to remove the knob from the APR/pressure switch on the unit. Insert the security knob and regulate the APR/ pressure switch. Then press the handle firmly to lock it in position. If the APR/pressure switch needs to be reset, remove the security knob by forcing it laterally with a screwdriver.

STRAIGHT CONNECTOR



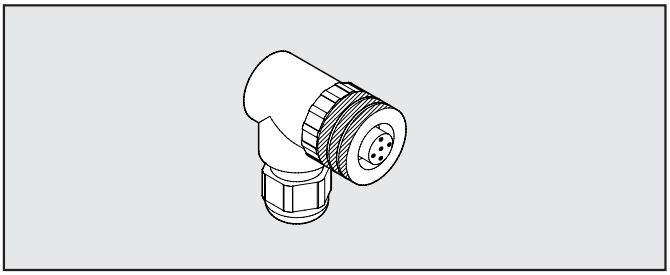
Code	Description
W0970513001	ACC. 5-PIN M12x1 STRAIGHT CONNECTOR

STRAIGHT CONNECTOR WITH WIRE



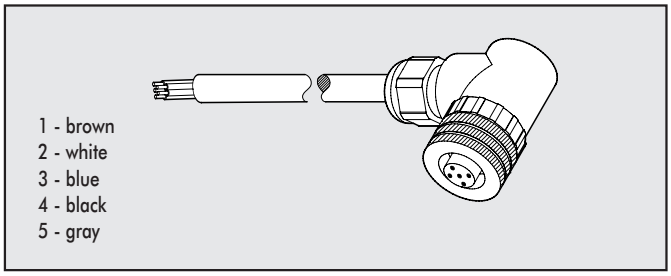
Code	Description
W0970513002	ACC. 5-PIN M12x1 STRAIGHT CONNECTOR WITH WIRE L=5 m

90° CONNECTOR



Code	Description
W0970513003	ACC. M12x1 5-PIN 90° CONNECTOR

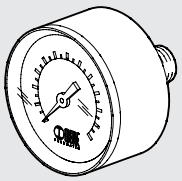
90° CONNECTOR WITH WIRE



Code	Description
W0970513004	ACC. M12X1 5-PIN 90° CONNECTOR WITH WIRE L=5M

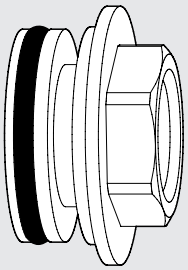
SPARE PARTS

PRESSURE GAUGE



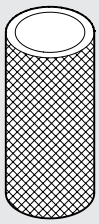
Code	Description
9700106	ACC. M 39 1/8 0-4
9700107	ACC. M 39 1/8 0-12

THREADED PORT



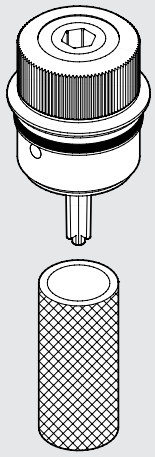
Code	Description
9232001	1/4" SPARE THR. PORT FOR ONE
9232002	3/8" SPARE THR. PORT FOR ONE
9232003	1/2" SPARE THR. PORT FOR ONE
9232004	3/4" SPARE THR. PORT FOR ONE
9232005	1" SPARE THR. PORT FOR ONE

FILTER ELEMENT



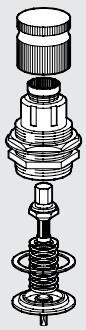
Code	Description
9251720	SPARE FILTER ELEMENT 5 µm for ONE
9251721	SPARE FILTER ELEMENT 20 µm for ONE

FILTER PLUG WITH FILTER ELEMENT



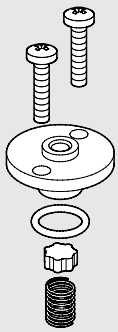
Code	Description
9251723	SPARE PLUG + FILTER ELEMENT 5 µm for ONE
9251724	SPARE PLUG + FILTER ELEMENT 20 µm for ONE

PILOT REGULATOR



Code	Description
9250820	SPARE PILOT REG. 0.5÷2 bar for ONE
9250821	SPARE PILOT REG. 0.5÷4 bar for ONE
9250822	SPARE PILOT REG. 0.5÷8 bar for ONE

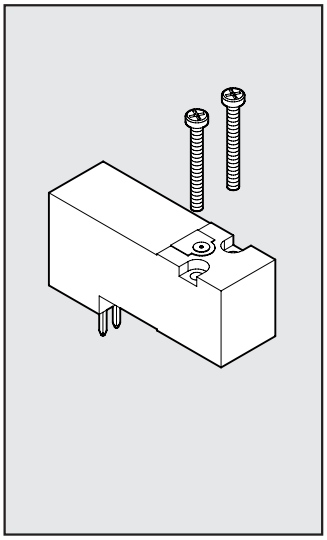
POPPET



Code	Description
9250707	SPARE POPPET for ONE

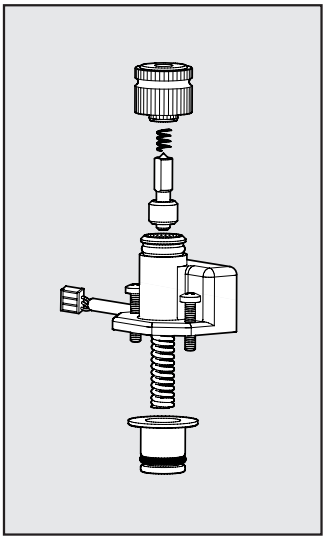
SPARE PARTS

SOLENOID VALVE



Code	Description
W4005001150	SPARE SOL. VALVE for ONE

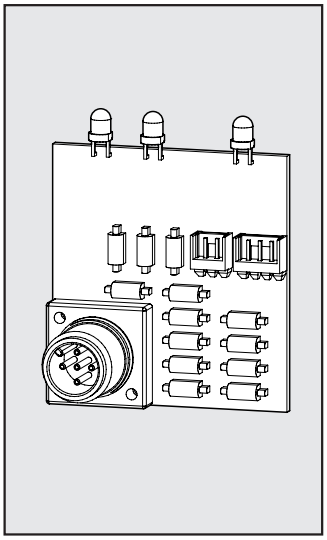
PRESSURE SWITCH



Code	Description
9000500	SPARE PRESS. SWITCH for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

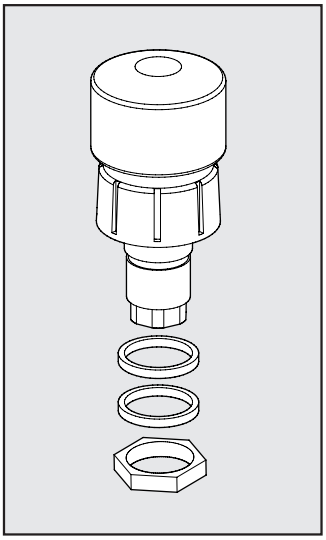
ELECTRIC BOARD



Code	Description
9232010	SPARE ELECTRIC BOARD for ONE

Note: with this kit we suggest you should order also the gauge, as it could get damaged during the disassembly.

AUTOMATIC CONDENSATE DRAIN



Code	Description
9000805	SPARE AUT. CONDENSATE DRAIN

NOTES

METAL WORK PNEUMATIC



4

FITTINGS
lineonline®
ACCESSORIES

FITTINGS AND ACCESSORIES

FITTINGS

CHAPTER 4.1

	INTRODUCTION PUSH-IN FITTINGS	PAGE 4.1/02
	PUSH-IN FITTINGS	PAGE 4.1/06
	SERIES "F" PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY	PAGE 4.1/24
	STANDARD ADAPTORS "A"	PAGE 4.1/30
	COMPRESSION FITTINGS "B"	PAGE 4.1/35
	QUICK FITTINGS "C"	PAGE 4.1/38
	BANJO FITTINGS "D"	PAGE 4.1/42

PUSH-IN FITTINGS

Series R push-in fittings and series Fox miniature fittings by Metal Work are the best elements for connecting pipes and actuators.
Quick and easy to use, the Metal Work push-in fitting can be re-used thousands of times without affecting the pneumatic and mechanical seal in any way. It comes in various configurations and guarantees a virtually unlimited, highly flexible use. The clamping spring with its special shape grips the pipe without scratching or deforming it, which facilitates release.
In the RL fittings Ø 4 and Ø 8, the release bushing has patented screwdriver slots to facilitate release in applications not accessible to the fingers. Configurations RL21 and RL22 (elbow and tee) have a ring for fixing to the wall asymmetrically in order to contain the head of a screw within the overall dimensions of the fitting.

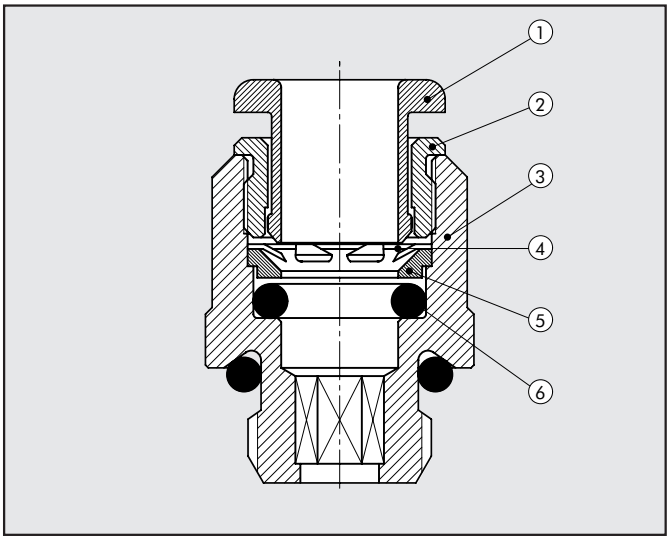


TECHNICAL DATA

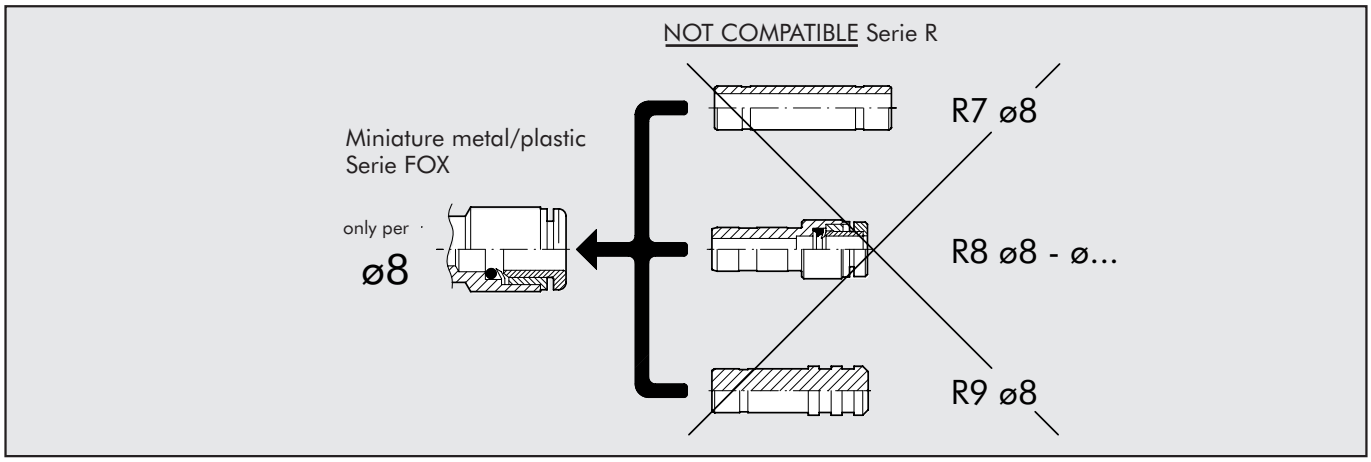
Threaded coupling		M3 - M5 - M7 - 1/8'' - 1/4'' - 3/8'' - 1/2''
Diameter	mm	∅ 3 - ∅ 3,17 - ∅ 4 - ∅ 5 - ∅ 6 - ∅ 8 - ∅ 10 - ∅ 12 - ∅ 14
Temperature range for brass fittings	°C	–20°C +80°C
	°F	–4°F÷162°F
Temperature range for technopolymer fittings	°C	–20°C +60°C
	°F	–4°F÷132°F
Pressure range for brass fittings		–0,99 bar ... 16 bar / –0,099 MPa ... 1,6 MPa
Pressure range for technopolymer fittings		–0,99 bar ... 12 bar / –0,099 MPa ... 1,2 MPa
Recommended pipe		RilsanPA 11 - Nylon 6 - Polyamide 12 - Polypropylene
Fluid		Vacuum - Compressed air

COMPONENTS

① Ring or release bushing: technopolymer
② Locking bushing: brass or technopolymer
③ Body: brass or technopolymer
④ Clamping spring: stainless steel (for pipes ∅ 3 and ∅ 3,17 and R31 and R32: brass gripper)
⑤ Spring supporting ring: technopolymer
⑥ Seal: NBR



FOR Ø 8 PUSH-IN FITTINGS ONLY



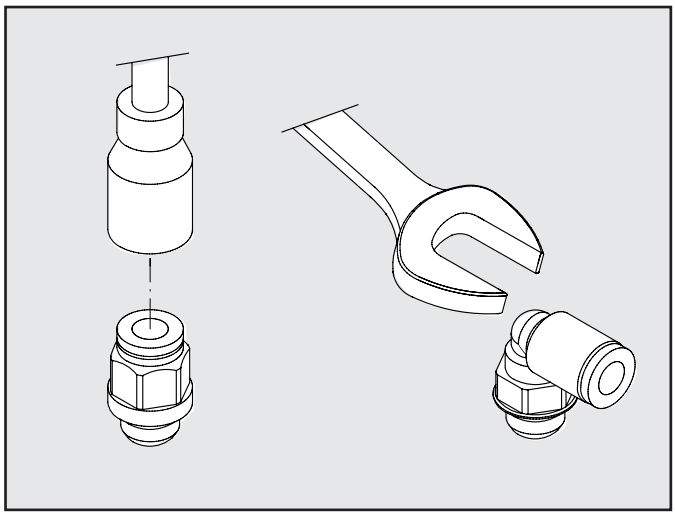
The new series of Ø 8 miniature push-in fittings, identified in the code by a letter L and visually by the screwdriver slot on the release ring, are not compatible with fittings R7, R8 and R9 Ø 8 in the old series.

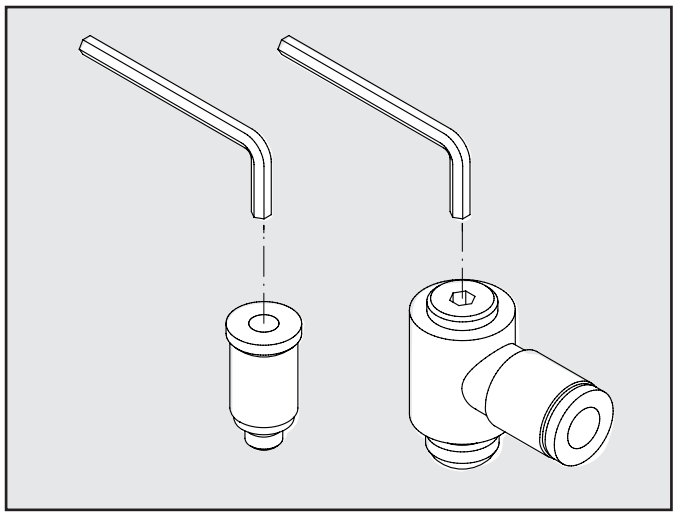
O-ring BELOW R FITTINGS

Thread	Initials	Dimensions of O-ring
M3	.....	2.6x1
M5 (for Ø 3-Ø 3.17)	.....	3x1.2
M5	.....	3.5x1.2
M7	.....	5x1.5
M12x1,5	.....	9.75x1.78

Thread	Initials	Dimensions of O-ring
1/8	2031	7.66x1.78
1/4	2043	10.82x1.78
3/8	2056	14x1.78
1/2	3068	17.13x2.62

SCREWING METHOD



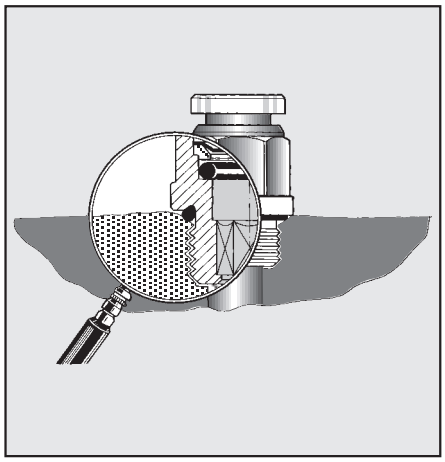


Thread	Max. Torque [Nm]
M3	0.4
M5	1.8
M7	2.5
M12x1,5	8
G 1/8"	6
G 1/4"	8
G 3/8"	10
G 1/2"	15

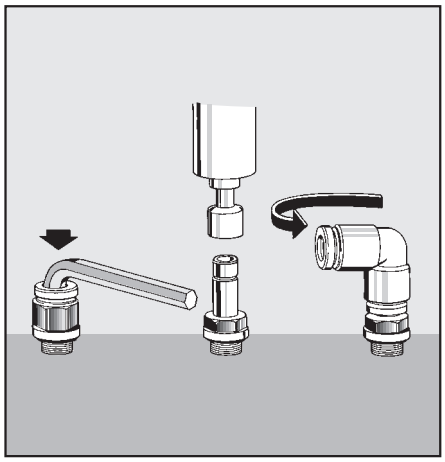
CH [mm]	Max. Torque [Nm]
1.5	0.4
2	1.8
2.5	2.5
3	8
4	6
5	8
Over 5	See the values concerning threads

NB: When using a socket spanner, the torque must not exceed that of the thread (e.g. fitting RL1 6 M7, with a 4 mm thread, has a maximum torque of 2.5 Nm).

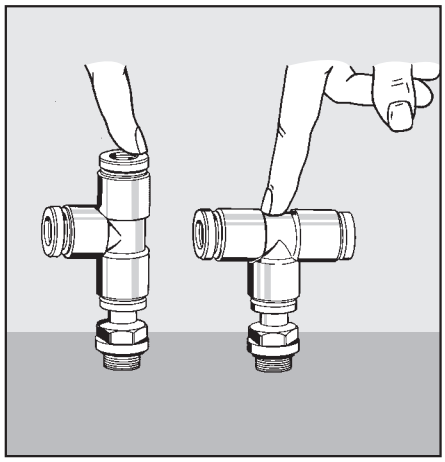
GENERAL FEATURES



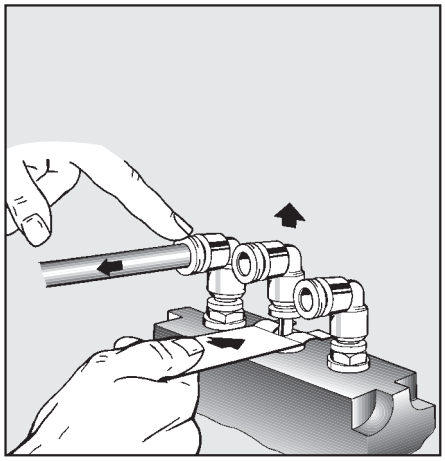
All fittings have cylindrical threading and incorporate a O-ring (Metal Work patent). The use of an O-ring considerably improves the seal of angled, rough, and slightly convex surfaces. Teflon (PTFE) is no longer used.



Mounting fittings with an Allen wrench or pneumatic tool. All the elbows and tees are rotary. Drastic reduction in assembly times.

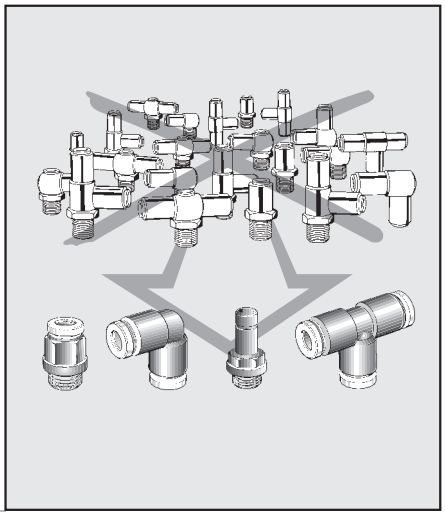


A single tee can give central tees and lateral tees.

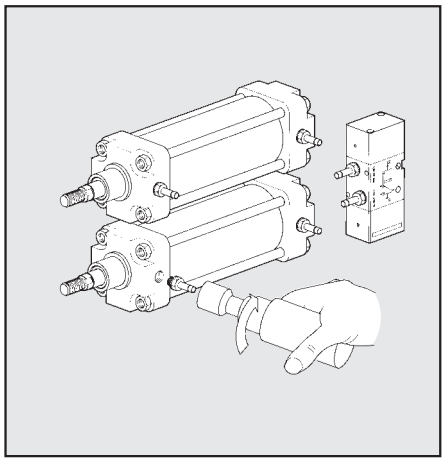


The pipe is easy to assemble by pressing lightly on the pusher ring. To remove the fitting, merely push radially on the key.

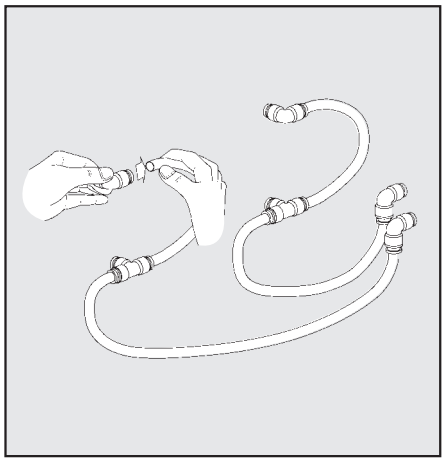
FROM AN IDEA, A SYSTEM



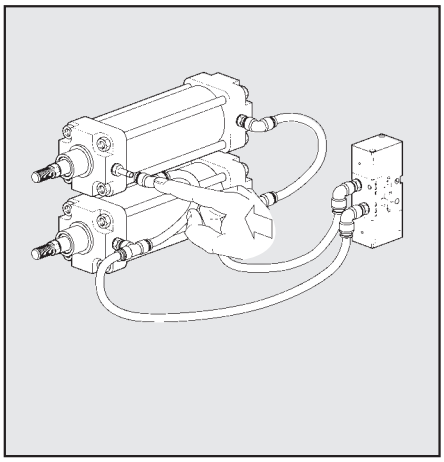
ASSEMBLY DIAGRAM



Pre-assembling fittings on the workbench with pneumatic tool even with very close centre distances.

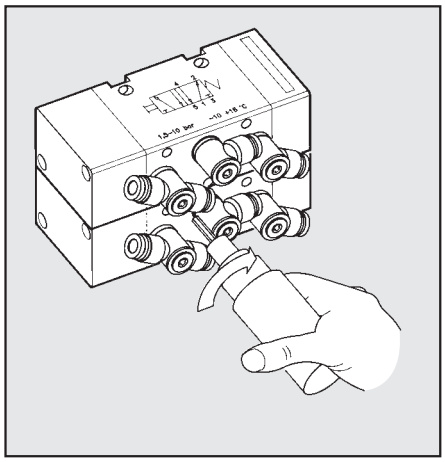


Pre-assembling fittings and pipe sections on the workbench. Pre-assembled configurations can be stocked for assembly in series.

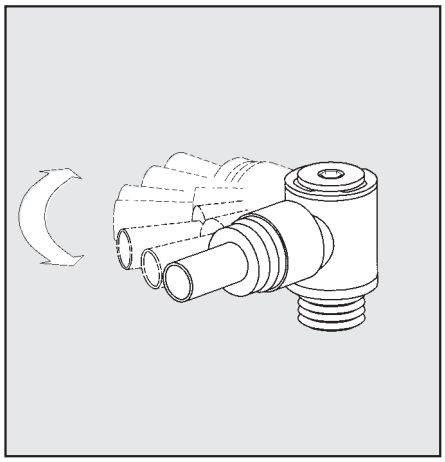


Quick connection and completion of the pneumatic circuit.

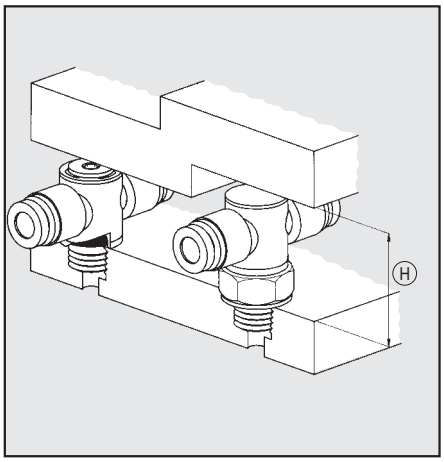
FROM A SYSTEM, INNOVATION



An Allen wrench is used to assemble rotary fittings even with very close centre distances.



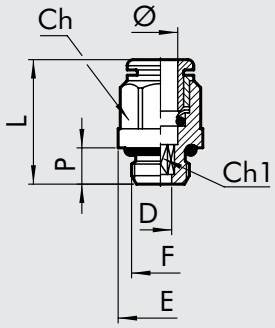
The special configuration with two O-rings allows maximum orientation so as to follow pipe movement in the specific application.



Fittings with a built-in gasket and reduced height (H) with the same threaded coupling and pipe diameter.

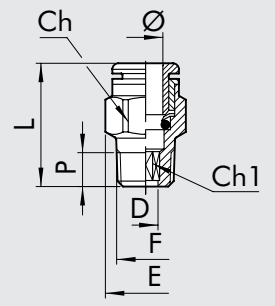
BRASS FITTINGS

STRAIGHT, CYLINDRICAL, MALE (R1)



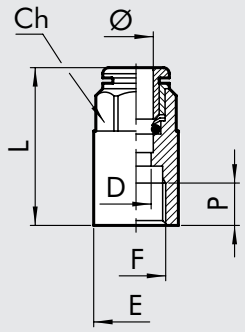
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
MINIATURE SERIES FOX									
2001B01	R1	3	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001B02	R1	3	M5	Ø 5.8	2	3.5	13.0	2	5.8
2001A01	R1	3.17	M3	Ø 5.8	1.5	3	12.6	1.5	5.8
2001A02	R1	3.17	M5	Ø 5.8	2	3.5	13.0	2	5.8
2L01001	RL1	4	M5	Ø 9	2.5	4	19.3	2.6	9
2L01020	RL1	4	M7	Ø 9	3	5	17.9	3.1	9.8
2L01002	RL1	4	1/8	10	3	6	17	3.1	14
2L01003	RL1	4	1/4	10	3	8	19	3.1	18
2L01000	RL1	6	M5	Ø 11	2.5	4	20.9	2.6	11
2L01021	RL1	6	M7	Ø 11	4	5	22	4.1	11
2L01101	RL1	6	M12x1,5	12	4	8	22.2	4.1	17
2L01007	RL1	6	1/8	12	4	6	20.6	4.1	14
2L01008	RL1	6	1/4	12	4	8	19.3	4.1	18
2L01102	RL1	8	M12x1,5	14	6	8	24.1	6.2	17
2L01009	RL1	8	1/8	13	5	6	24.5	5.2	14
2L01010	RL1	8	1/4	14	6	8	24.4	6.2	18
2L01011	RL1	8	3/8	14	6	9	21.9	6.2	22
2L01012	RL1	10	1/4	16	7	8	28.5	7.2	18
2L01013	RL1	10	3/8	16	8	9	25.8	8.2	22
2001019	RL1	12	1/4	19	7	8	30	7.2	21
2001014	RL1	12	3/8	19	10	9	27.6	10.2	22
2001015	RL1	12	1/2	19	10	11	28.8	10.2	26
2001016	RL1	14	3/8	22	10	9	33.6	10.2	24.6
2001017	RL1	14	1/2	22	12	11	31.3	12.2	26
SERIES R									
2001001	R1	4	M5	Ø 10.9	2.5	4.0	21.5	2.6	10.9
2001002	R1	4	1/8	12	3	6.0	21.5	3.1	14.0
2001003	R1	4	1/4	12	3	8.0	22.0	3.1	18.0
2001004	R1	5	M5	Ø 12	2.5	4.0	22.5	2.6	12.0
2001005	R1	5	1/8	13	3	6.0	22.0	3.1	15.0
2001006	R1	5	1/4	12	3	8.0	24.0	3.1	18.0
2001000	R1	6	M5	Ø 13	2.5	4.0	22.0	2.6	13.0
2001007	R1	6	1/8	13	4	6.0	24.0	4.2	15.0
2001008	R1	6	1/4	13	4	8.0	24.0	4.2	18.0
2001101	R1	6	M12X1,5	13	4	8.0	24.0	4.2	17.0
2001009	R1	8	1/8	15	5	6.0	27.5	5.2	16.5
2001010	R1	8	1/4	15	6	8.0	25.5	6.2	18.0
2001011	R1	8	3/8	15	6	9.0	25.0	6.2	22.0
2001102	R1	8	M12X1,5	15	6	8.0	26.0	6.2	17.0
2001012	R1	10	1/4	18	7	8.0	32.0	7.2	20.0
2001013	R1	10	3/8	18	8	9.0	31.5	8.2	22.0

STRAIGHT, CONICAL, MALE (R1C)



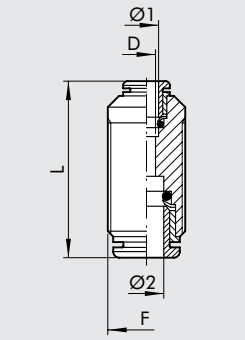
Code	Ref.	Ø	F	Ch	Ch1	D	E	L	P
MINIATURE SERIES FOX									
2L01C02	RL1C	4	1/8	10	3	3.1	11.1	17.5	6.2
2L01C07	RL1C	6	1/8	12	4	4.1	13.3	21.5	6.2
2L01C08	RL1C	6	1/4	12	4	4.1	13.4	21.3	8.5
2L01C09	RL1C	8	1/8	13	5	5.2	14.3	25.1	6.2
2L01C10	RL1C	8	1/4	14	6	6.2	15.4	24.6	8.5
2L01C11	RL1C	8	3/8	14	6	6.2	16.6	24.1	9.0
2L01C13	RL1C	10	1/4	16	7	7.2	17.7	28.2	8.5
2L01C14	RL1C	10	3/8	16	8	7.2	17.7	25.3	9.0
2001C15	RL1C	12	3/8	19	10	10.2	21	27	9.0
2001C16	RL1C	12	1/2	19	10	10.2	21.3	26.1	11.0
SERIES R									
2001Z07	R1Z	6	12x1 con.	13	–	12.5	–	24	9.0
2001Z08	R1Z	6	12x1.25 con.	13	–	12.5	–	24	9.0

STRAIGHT, FEMALE (R2)



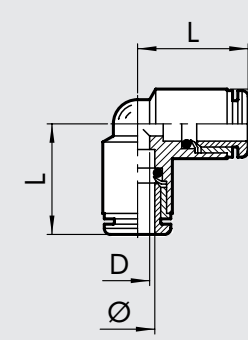
Code	Ref.	Ø	F	Ch	P	L	D	E
MINIATURE SERIES FOX								
2002B02	R2	3	M5	7	4.5	15.7	2.5	7.8
2002A02	R2	3.17	M5	7	4.5	15.7	2.5	7.8
2L02001	RL2	4	1/8	10	7	25.2	3	14
2L02002	RL2	4	1/4	10	8	27.5	3	17
2L02005	RL2	6	1/8	12	7	26.1	5	14
2L02006	RL2	6	1/4	12	8	28.3	5	17
2L02007	RL2	8	1/8	13	7	27.3	7	14
2L02008	RL2	8	1/4	14	8	29.1	7	17
SERIES R								
2002001	R2	4	1/8	11	7.0	28.0	3.0	14.0
2002002	R2	4	1/4	11	8.0	30.5	3.0	17.0
2002003	R2	5	1/8	12	7.0	27.0	4.0	14.0
2002004	R2	5	1/4	12	8.0	29.5	4.0	17.0
2002005	R2	6	1/8	13	7.0	27.0	5.0	15.0
2002006	R2	6	1/4	13	8.0	29.5	5.0	17.0
2002007	R2	8	1/8	15	7.0	30.0	7.0	17.0
2002008	R2	8	1/4	15	8.0	32.0	7.0	17.0

STRAIGHT, INTERMEDIATE (R3)



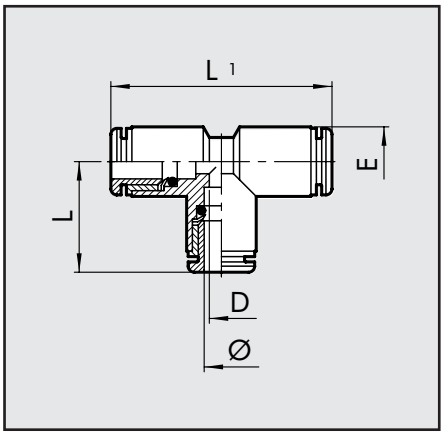
Code	Ref.	Ø1	Ø2	F	L	D
MINIATURE SERIES FOX						
2003A02	R3	3	3	M8x0.75	18.4	2
2003A01	R3	3.17	3.17	M8x0.75	18.4	2
2L03001	RL3	4	4	M11x1	28.6	2.5
2L03003	RL3	6	6	M13x1	31.2	4.5
2L03004	RL3	8	8	M15x1	33.9	6.5
2L03005	RL3	10	10	M17x1	37.8	8
2003006	RL3	12	12	M20X1	39.7	10
2003007	RL3	14	14	M24X1	45.5	12
2L03301	RL3	4	6	M13x1	31	2.5
2L03302	RL3	4	8	M15x1	33	2.5
2L03303	RL3	6	8	M15x1	33.7	4.5
2L03304	RL3	6	10	M17x1	36	4.5
2L03305	RL3	8	10	M17x1	36.6	6.5
SERIES R						
2003001	R3	4	4	M13x1	34.0	3
2003002	R3	5	5	M14x1	33.5	4
2003003	R3	6	6	M15x1	33.5	5
2003004	R3	8	8	M17x1	40.0	7
2003005	R3	10	10	M20x1	44.5	9

ELBOW, INTERMEDIATE (R4)



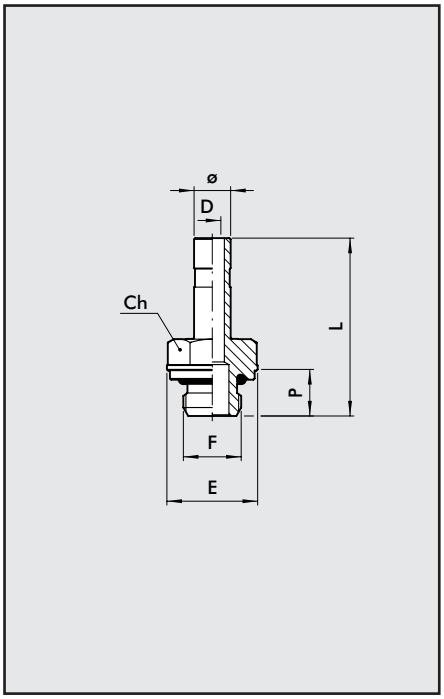
Code	Ref.	Ø	L	D	E
MINIATURE SERIES FOX					
2004A02	R4	3	10.4	2	6.3
2004A01	R4	3.17	10.4	2	6.3
2L04001	RL4	4	16	2.5	9.5
2L04003	RL4	6	18.3	4.5	11.5
2L04004	RL4	8	20.7	6.5	13.5
2L04005	RL4	10	23	8	15.5
2004006	RL4	12	25.5	10	20.5
2004007	RL4	14	29.1	12	22
SERIES R					
2004001	R4	4	18.2	3	11.5
2004002	R4	5	19.2	3	13.5
2004003	R4	6	19.7	4.5	13.5
2004004	R4	8	23.2	6	15.5
2004005	R4	10	27.5	8	18.0

TEE, INTERMEDIATE (R5)



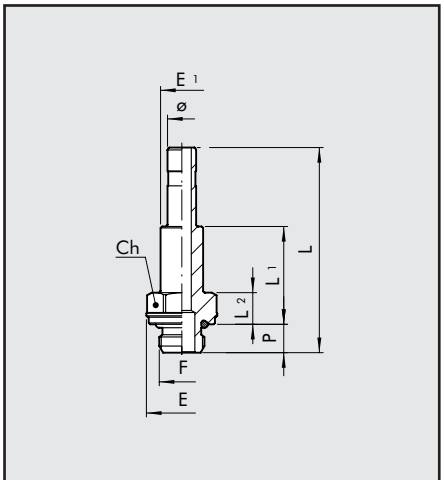
Code	Ref.	Ø	L	L1	D	E
MINIATURE SERIES FOX						
2005A02	R5	3	10.4	20.8	2	6.3
2005A01	R5	3.17	10.4	20.8	2	6.36
2L05001	RL5	4	16	32	2.5	9.5
2L05003	RL5	6	18.3	36.6	4.5	11.5
2L05004	RL5	8	20.7	41.4	6.5	13.5
2L05005	RL5	10	23	46	8	15.5
2005006	RL5	12	25.5	51	10	20.5
2005007	RL5	14	29.1	58.2	12	22
SERIES R						
2005001	R5	4	18.2	36.4	3	11.5
2005002	R5	5	19.2	38.4	3	13.5
2005003	R5	6	19.7	39.4	4.5	13.5
2005004	R5	8	23.2	46.4	6	15.5
2005005	R5	10	27.5	55	8	18.0

THREADED ADAPTER (R6)



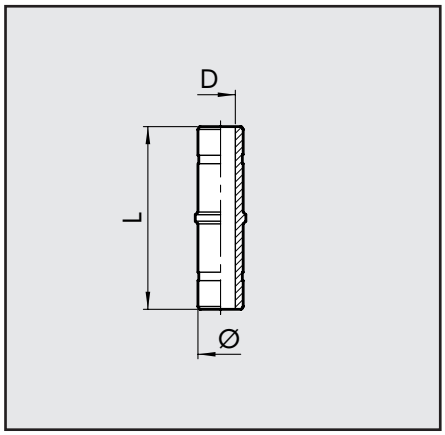
Code	Ref.	Ø	F	Ch	P	L	D	E
2006A02	R6	3	M5	5	3.5	17.1	2.0	5.8
2006A01	R6	3.17	M5	5	3.5	17.1	2.0	5.8
2006001	R6	4	M5	8	4.0	25.2	2.5	9.0
2006020	R6	4	M7	8	5.0	26.5	2.5	9.8
2006002	R6	4	1/8	13	6.0	28.9	2.5	15.0
2006003	R6	4	1/4	14	8.0	32.4	2.2	18.0
2006004	R6	5	M5	8	4.0	25.2	2.7	9.0
2006005	R6	5	1/8	13	6.0	28.9	3.0	15.0
2006006	R6	5	1/4	14	8.0	32.4	3.0	18.0
2006000	R6	6	M5	9	4.0	25.7	2.7	10.0
2006021	R6	6	M7	8	5.0	27	4	9.8
2006007	R6	6	1/8	13	6.0	29.4	4.0	15.0
2006008	R6	6	1/4	14	8.0	32.9	4.0	18.0
2006009	R6	8	1/8	13	6.0	30.6	5.5	15.0
2006010	R6	8	1/4	14	8.0	34.0	6.0	18.0
2006011	R6	8	3/8	17	9.0	35.4	6.0	22.0
2006012	R6	10	1/4	14	8.0	38.2	7.8	18.0
2006013	R6	10	3/8	17	9.0	38.7	8.0	22.0
2006019	R6	12	1/4	14	8	40.7	7.8	18.0
2006014	R6	12	3/8	17	9.0	42.2	10.0	22.0
2006015	R6	12	1/2	22	11.0	44.2	10.0	26.0
2006016	R6	14	3/8	17	9.0	46.2	10.0	22.0
2006017	R6	14	1/2	22	11.0	48.2	12.0	26.0
2006101	R6	6	M12X1.5	13	8	33.0	4.0	17.0
2006102	R6	8	M12X1.5	13	8	33.7	6.0	17.0

EXTENDED THREADED ADAPTER (R18)



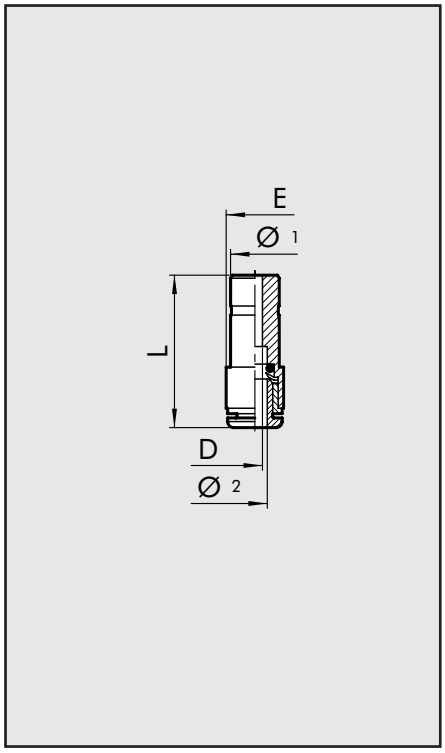
Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
2018002	R18	4	1/8	13	6	40.4	18.2	6.7	15	7
2018007	R18	6	1/8	13	6	43.4	20.7	6.7	15	9
2018008	R18	6	1/4	14	8	46.9	22.2	8.2	18	9
2018009	R18	8	1/8	13	6	46.5	22.7	6.7	15	11
2018010	R18	8	1/4	14	8	50.0	24.2	8.2	18	11
2018011	R18	8	3/8	17	9	51.4	24.7	8.7	22	13
2018012	R18	10	1/4	14	8	57.2	27.2	8.2	18	12
2018013	R18	10	3/8	17	9	58.7	27.7	8.7	22	12

EXTENSION (R7)



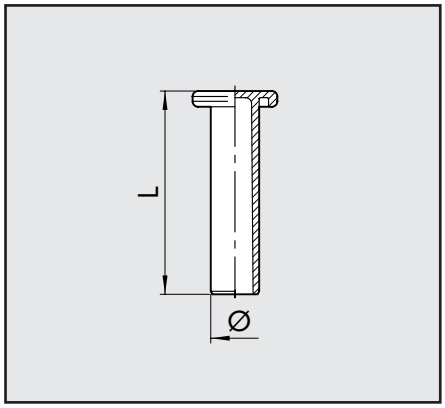
Code	Ref.	Ø	L	D
2007001	R7	4	34.0	2
2007002	R7	5	34.0	3
2007003	R7	6	37.5	4
2L07004	RL7	8	37.5	6
2007005	R7	10	45.0	8
2007006	R7	12	48.0	10
2007007	R7	14	58.0	12

REDUCER (R8)



Code	Ref.	Ø1	Ø2	L	D	E
MINIATURE SERIES FOX						
2008A01	R8	4	3	26	2	6.3
2008A02	R8	4	3.17	26	2	6.3
2L08002	RL8	6	4	28.9	2.5	9.5
2L08004	RL8	8	4	28	2.5	9.5
2L08006	RL8	8	6	31.6	4.5	11.5
2L08007	RL8	10	6	35.5	5.0	11.5
2L08008	RL8	10	8	37.1	7.0	13.5
2008018	R8	14	12	43.8	10.0	19.5
SERIES R						
2008001	R8	5	4	34.5	3.0	11.5
2008002	R8	6	4	35.0	3.0	11.5
2008003	R8	6	5	36.0	4.0	12.0
2008004	R8	8	4	36.0	3.0	11.5
2008005	R8	8	5	34.5	4.0	12.0
2008006	R8	8	6	38.0	5.0	13.5
2008007	R8	10	6	37.0	5.0	13.5
2008008	R8	10	8	42.5	7.0	15.5
2008009	R8	12	4	38.0	3.0	13.0
2008010	R8	12	6	39.0	5.0	13.5
2008011	R8	12	8	40.0	7.0	15.5
2008015	R8	12	10	46.0	9	18.0
2008014	R8	14	8	40.5	7.0	15.5
2008017	R8	14	10	42.5	9.0	18.0
ADDITION						
2009001	R8/M	4	6	35.0	2.5	13.5

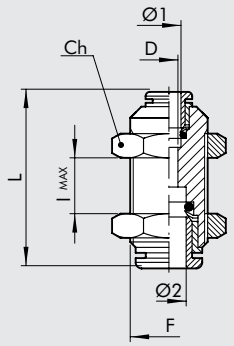
PLUG (R9)



Code	Ref.	Ø	L
2010A02	R9	3	20
2L10A01*	RL9T	3.17	19.6
2L10001*	RL9T	4	27.0
2010002	R9	5	27.0
2L10003*	RL9T	6	29.8
2L10004*	RL9T	8	33.6
2L10005*	RL9T	10	36.8
2L10006*	RL9T	12	39
2010007	R9	14	39.5

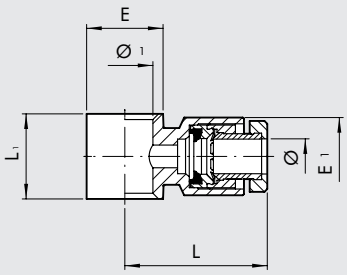
* MADE OF TECHNOPOLYMER

STRAIGHT, INTERMEDIATE, BULKMTAD (R10)



Code	Ref.	Ø1	Ø2	F	Ch	L	D	Imax
MINIATURE SERIES FOX								
2011A02	R10	3	3	M8x0.75	10	18.4	2	5
2011A01	R10	3.17	3.17	M8x0.75	10	18.4	2	5
2L11001	RL10	4	4	M11x1	13	28.6	2.5	11
2L11003	RL10	6	6	M13x1	16	31.2	4.5	12
2L11004	RL10	8	8	M15x1	17	33.9	6.5	13.5
2L11005	RL10	10	10	M17x1	20	37.8	8	17
2011006	RL10	12	12	M20X1	24	39.7	10	20.3
2011007	RL10	14	14	M24x1	27	45.5	12	21.9
2L11301	RL10	4	6	M13x1	16	31	2.5	11
2L11302	RL10	4	8	M15x1	17	33	2,5	12
2L11303	RL10	6	8	M15x1	17	33.7	4.5	13
2L11304	RL10	6	10	M17x1	20	36	4.5	14.5
2L11305	RL10	8	10	M17x1	20	36.6	6.5	15
SERIES R								
2011001	R10	4	4	M13x1	16	34.0	3	11
2011002	R10	5	5	M14x1	17	33.5	4	8
2011003	R10	6	6	M15x1	17	33.5	5	10.5
2011004	R10	8	8	M17x1	20	40.0	7	17
2011005	R10	10	10	M20x1	24	44.5	9	17

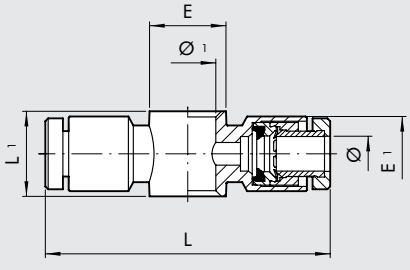
SINGLE RING (R13)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
SERIES R							
2012A02	R13	3	M5	12.9	9.0	9.0	7.0
2012A01	R13	3.17	M5	12.9	9.0	9.0	7.0
2012001	R13	4	M5	23.5	9.0	9.5	10.9
2012002	R13	4	1/8	25.0	15.0	14.0	11.5
2012003	R13	5	M5	23.8	9.0	9.5	12.0
2012004	R13	5	1/8	24.8	15.0	14.0	12.0
2012005	R13	6	1/8	25.0	15.0	14.0	13.5
2012006	R13	6	1/4	27.5	17.0	18.0	13.5
2012007	R13	8	1/8	30.3	15.0	14.0	15.5
2012008	R13	8	1/4	32.3	17.0	18.0	15.5
2012009	R13	8	3/8	31.8	20.0	21.0	15.5
2012010	R13	10	1/4	34.3	17.0	18.0	18.0
2012011	R13	10	3/8	36.1	20.0	21.0	18.0
2012013	RL13	12	1/4	32.5	17.0	18.0	19.5
2012012	RL13	12	3/8	34.8	20.0	21.0	19.5
2012014	RL13	12	1/2	36.5	24.0	26.0	19.5

For the rods series D, see page 4.1/43

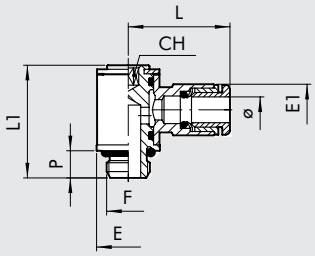
DUAL RING (R14)



Code	Ref.	Ø	Ø 1	L	L1	E	E1
SERIES R							
2013001	R14	4	M5	47.0	9.0	9.5	10.9
2013002	R14	4	1/8	50.0	15.0	14.0	11.5
2013003	R14	5	M5	48.0	9.0	9.5	12.0
2013004	R14	5	1/8	49.5	15.0	14.0	13.5
2013005	R14	6	1/8	50.0	15.0	14.0	13.5
2013006	R14	6	1/4	55.0	17.0	18.0	13.5
2013007	R14	8	1/8	60.0	15.0	14.0	15.5
2013008	R14	8	1/4	64.0	17.0	18.0	15.5
2013009	R14	8	3/8	63.0	20.0	21.0	15.5
2013010	R14	10	1/4	68.6	17.0	18.0	18.0
2013011	R14	10	3/8	73.0	20.0	21.0	18.0

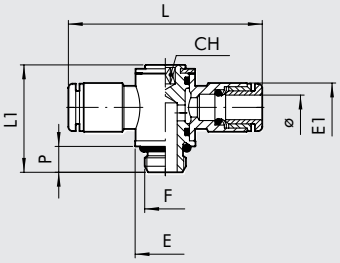
For the rods series D, see page 4.1/43

ROD, MALE
SINGLE ROTARY RING (R15)



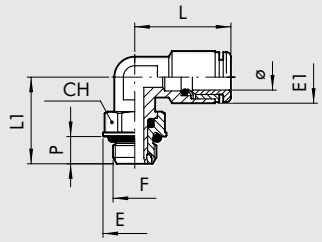
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
MINIATURE SERIES FOX									
2014101	R15	3	M3	1.5	3	12.2	13.2	5.8	5.8
2014102	R15	3.17	M3	1.5	3	12.2	13.2	5.8	5.8
2014103	R15	3	M5	2	3.5	12.7	13.7	5.8	7.0
2014104	R15	3.17	M5	2	3.5	12.7	13.7	5.8	7.0
2L14001	RL15	4	M5	2	4	18.7	18.4	9.5	9.5
2L14020	RL15	4	M7	3	5	18.7	18.5	9.8	9.5
2L14002	RL15	4	1/8	3	6	20.3	24.9	14	9.5
2L14106	RL15	6	M5	2	4	22.7	18.4	9.5	11.3
2L14021	RL15	6	M7	3	5	22.7	18.5	9.8	11.3
2L14005	RL15	6	1/8	3	6	22.5	24.9	14	11.3
2L14007	RL15	6	1/4	4	8	24.2	29.4	18	11.3
2L14006	RL15	8	1/8	3	6	24.4	24.9	14	13.8
2L14008	RL15	8	1/4	4	8	26.1	29.4	18	13.8
2L14013	RL15	8	3/8	5	9	28.3	35.6	22	13.8
2L14009	RL15	10	1/4	4	8	31.3	29.4	18	16.5
2L14014	RL15	10	3/8	5	9	32	35.6	22	15.5
2014010	RL15	12	1/4	4	8	32.5	29.4	18	19.5
2014011	RL15	12	3/8	5	9	34.8	35.6	22	19.5
2014012	RL15	12	1/2	8	11	36.5	40.8	26	19.5
SERIES R									
2014001	R15	4	M5	2	4	23.5	16.8	9.9	10.9
2014002	R15	4	1/8	3	6	25.0	27.0	14.0	11.5
2014003	R15	5	M5	2	4	24.0	19.0	9.9	12.0
2014004	R15	5	1/8	3	6	25.0	27.0	14.0	12.0
2014106	R15	6	M5	2	4	23.8	19.0	9.9	13.3
2014005	R15	6	1/8	3	6	25.0	27.0	14.0	13.5
2014007	R15	6	1/4	4	8	27.5	31.5	18.0	13.5
2014006	R15	8	1/8	3	6	30.0	27.0	14.0	15.5
2014008	R15	8	1/4	4	8	32.0	31.5	18.0	15.5
2014013	R15	8	3/8	5	9	31.5	36.0	22.0	15.5
2014009	R15	10	1/4	4	8	34.5	31.5	18.0	18.0
2014014	R15	10	3/8	5	9	36.5	36.0	22.0	18.0

ROD, MALE
DUAL ROTARY RING (R16)



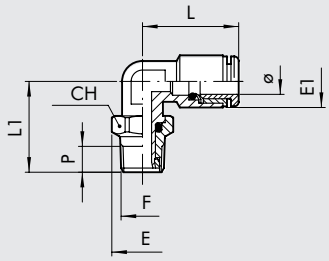
Code	Ref.	Ø	F	CH	P	L	L1	E	E1
MINIATURE SERIES FOX									
2L15001	RL16	4	M5	2	4	37.5	18.4	9.5	9.5
2L15020	RL16	4	M7	3	5	37.4	18.5	9.8	9.5
2L15002	RL16	4	1/8	3	6	40.6	24.9	14.0	9.5
2L15106	RL16	6	M5	2	4	45.4	18.4	9.5	11.3
2L15021	RL16	6	M7	3	5	45.4	18.5	9.8	9.5
2L15005	RL16	6	1/8	3	6	45	24.9	14.0	11.3
2L15007	RL16	6	1/4	4	8	48.4	29.4	18.0	11.3
2L15006	RL16	8	1/8	3	6	48.8	24.9	14.0	13.8
2L15008	RL16	8	1/4	4	8	56.2	29.4	18.0	13.8
2L15013	RL16	8	3/8	5	9	56.6	35.6	18.0	16.5
2L15009	RL16	10	1/4	4	8	62.6	29.4	22.0	15.5
2L15014	RL16	10	3/8	5	9	64	35.6	22.0	13.8
2015010	RL16	12	1/4	4	8	65	29.4	18	19.5
2015011	RL16	12	3/8	5	9	69.6	35.6	22	19.5
2015012	RL16	12	1/2	8	11	73	40.8	26	19.5
SERIES R									
2015001	R16	4	M5	2	4	47.0	16.8	9.9	10.9
2015002	R16	4	1/8	3	6	50.0	27.0	14.0	11.5
2015003	R16	5	M5	2	4	47.6	18.8	9.9	12.0
2015004	R16	5	1/8	3	6	49.5	27.0	14.0	13.5
2015005	R16	6	1/8	3	6	50.0	27.0	14.0	13.5
2015007	R16	6	1/4	4	8	56.0	31.5	18.0	13.5
2015006	R16	8	1/8	3	6	60.0	27.0	14.0	15.5
2015008	R16	8	1/4	4	8	64.0	31.5	18.0	15.5
2015009	R16	10	1/4	4	8	70.0	31.5	18.0	18.0

ROTARY ELBOW, MALE, CYLINDRICAL (R31)



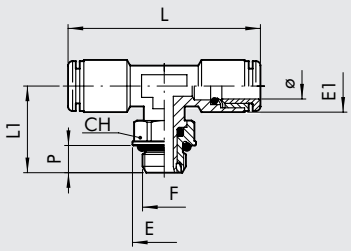
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L31001	RL31	4	M5	9	9.9	9.5	17.6	15.3	4
2L31002	RL31	4	1/8	12	14	9.5	17.6	19.1	6
2L31003	RL31	4	1/4	14	18	9.5	17.6	21.1	8
2L31007	RL31	6	M5	9	9.9	11.3	20.9	15.3	4
2L31008	RL31	6	1/8	12	14	11.3	20.9	19.1	6
2L31009	RL31	6	1/4	14	18	11.3	20.9	21.1	8
2L31010	RL31	8	1/8	12	14	13.5	24.3	19.1	6
2L31011	RL31	8	1/4	14	18	13.5	24.3	21.1	8
2L31012	RL31	8	3/8	17	22	13.8	23.7	27.1	9
2L31013	RL31	10	1/4	14	18	15.5	26.5	24.8	8
2L31014	RL31	10	3/8	17	22	15.5	26.5	27.1	9
2031016	RL31	12	1/4	14	18	20	29.5	25.6	8
2031017	RL31	12	3/8	17	22	20	29.5	27.1	9
2031018	RL31	12	1/2	22	26	20	29.5	30.7	11
2031019	RL31	14	1/2	22	26	21.3	32.8	32.3	11
SERIES R (NOT COMPATIBLE WITH R6-R18-R24 E RL7 Ø8 - RL8)									
2031001	R31	4	M5	9	10	10	22.5	17.5	4
2031002	R31	4	1/8	13	15	10	22.5	21	6
2031003	R31	4	1/4	16	18	10	22.5	23	8
2031004	R31	5	M5	9	10	11.5	23	17.5	4
2031005	R31	5	1/8	13	15	11.5	23	21	6
2031006	R31	5	1/4	16	18	11.5	23	24.5	8
2031007	R31	6	M5	9	10	12.5	24.5	17.5	4
2031008	R31	6	1/8	13	15	12.5	24.5	21	6
2031009	R31	6	1/4	16	18	12.5	26	24.5	8
2031010	R31	8	1/8	13	15	14.5	27.5	22.5	6
2031011	R31	8	1/4	16	18	14.5	27.5	24.5	8
2031012	R31	8	3/8	19	22	14.5	29.5	30.5	9
2031013	R31	10	1/4	16	18	17	31.5	26.5	8
2031014	R31	10	3/8	19	22	17	31.5	30.5	9
2031015	R31	10	1/2	22	26	17	32.5	32.5	11

ROTARY ELBOW, MALE, CONICAL (R31C)



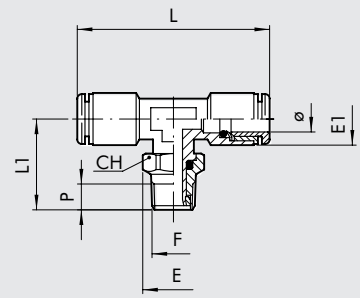
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L31C02	RL31/C	4	1/8	12	13.3	9.5	17.6	19.8	6.2
2L31C03	RL31/C	4	1/4	14	15.4	9.5	17.6	22.6	8.5
2L31C08	RL31/C	6	1/8	12	13.3	11.3	20.9	19.8	6.2
2L31C09	RL31/C	6	1/4	14	15.4	11.3	20.9	22.6	8.5
2L31C10	RL31/C	8	1/8	12	13.3	13.5	24.3	19.8	6.2
2L31C11	RL31/C	8	1/4	14	15.4	13.5	24.3	23.6	8.5
2L31C12	RL31/C	8	3/8	17	19.2	13.8	23.7	27.1	9
2L31C13	RL31/C	10	1/4	14	15.4	15.5	26.5	26.3	8.5
2L31C14	RL31/C	10	3/8	17	19.2	15.5	26.5	27.1	9
2031C15	RL31/C	12	3/8	17	19.2	20	29.5	27.1	9
2031C16	RL31/C	12	1/2	22	24.6	20	29.5	31.9	11
SERIES R (NOT COMPATIBLE WITH R6-R18-R24 E RL7 Ø 8 - RL8)									
2031C13	R31/C	10	1/4	16	17	17	31.5	28	11
2031C14	R31/C	10	3/8	19	17	17	31.5	30	11.5

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY (R32)



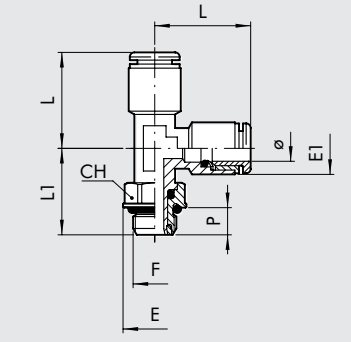
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L32002	RL32	4	1/8	12	14	9.5	35.2	19.1	6
2L32003	RL32	4	1/4	14	18	9.5	35.2	21.1	8
2L32008	RL32	6	1/8	12	14	11.3	41.8	19.1	6
2L32009	RL32	6	1/4	14	18	11.3	41.8	21.1	8
2L32010	RL32	8	1/8	12	14	13.5	48.6	19.1	6
2L32011	RL32	8	1/4	14	18	13.5	48.6	21.1	8
2L32012	RL32	8	3/8	17	22	13.8	47.4	27.1	9
2L32013	RL32	10	1/4	14	18	15.5	53	21.8	8
2L32014	RL32	10	3/8	17	22	15.5	53	27.1	9
2032017	RL32	12	3/8	17	22	20	59	27.1	9
2032018	RL32	12	1/2	22	26	20	59	30.7	11
2032019	RL32	14	1/2	22	26	21.3	65.6	32.3	11
SERIES R (NOT COMPATIBLE WITH R6-R18-R24 E RL7 Ø 8 - RL8)									
2032002	R32	4	1/8	13	15	10	45	21	6
2032005	R32	5	1/8	13	15	11.5	46	21	6
2032008	R32	6	1/8	13	15	12.5	49	21	6
2032009	R32	6	1/4	16	18	12.5	52	24.5	8
2032010	R32	8	1/8	13	15	14.5	55	22.5	6
2032011	R32	8	1/4	16	18	14.5	55	24.5	8
2032012	R32	8	3/8	19	22	14.5	59	30.5	9
2032013	R32	10	1/4	16	18	17	63	26.5	8
2032014	R32	10	3/8	19	22	17	63	30.5	9

CENTRAL TEE, MALE, CONICAL, ROTARY (RL32C)



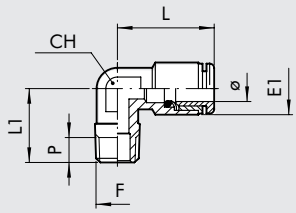
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L32C02	RL32/C	4	1/8	12	13.3	9.5	35.2	19.8	6.2
2L32C03	RL32/C	4	1/4	14	15.4	9.5	35.2	22.6	8.5
2L32C08	RL32/C	6	1/8	12	13.3	11.3	41.8	19.8	6.2
2L32C09	RL32/C	6	1/4	14	15.4	11.3	41.8	22.6	8.5
2L32C10	RL32/C	8	1/8	12	13.3	13.5	48.6	19.8	6.2
2L32C11	RL32/C	8	1/4	14	15.4	13.5	48.6	23.6	8.5
2L32C12	RL32/C	8	3/8	17	19.2	13.8	47.4	27.1	9
2L32C13	RL32/C	10	1/4	14	15.4	15.5	53	26.3	8.5
2L32C14	RL32/C	10	3/8	17	19.2	15.5	53	27.1	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY (R38)



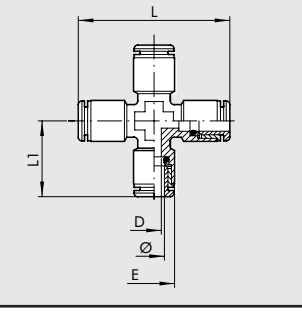
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L38002	RL38	4	1/8	12	14	9.5	17.6	19.1	6
2L38008	RL38	6	1/8	12	14	11.3	20.9	19.1	6
2L38009	RL38	6	1/4	14	18	11.3	20.9	21.1	8
2L38010	RL38	8	1/8	12	14	13.5	24.3	19.1	6
2L38011	RL38	8	1/4	14	18	13.5	24.3	22.1	8
2L38013	RL38	10	1/4	14	18	15.5	26.5	21.8	8
2L38014	RL38	10	3/8	17	22	15.5	26.5	27.1	9
2038015	RL38	12	3/8	17	22	20	29.5	27.1	9
2038016	RL38	12	1/2	22	26	20	29.5	30.7	11

ELBOW, MALE, CONICAL (R39C)



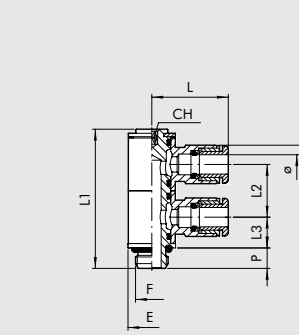
Code	Ref.	Ø	F	CH	E1	L	L1	P
MINIATURE SERIES FOX								
2L39C02	RL39/C	4	1/8	10	9.5	17.6	16	6.2
2L39C08	RL39/C	6	1/8	10	11.3	20.9	16	6.2
2L39C09	RL39/C	6	1/4	10	11.3	20.9	18.5	8.5
2L39C10	RL39/C	8	1/8	10	13.5	24.3	16	6.2
2L39C11	RL39/C	8	1/4	10	13.5	24.3	18.5	8.5
2L39C13	RL39/C	10	1/4	14	15.5	26.5	22	8.5
SERIES R								
2039Z07	R39/Z	6	12x1 con.	12	14	25	18.2	7
2039Z08	R39/Z	6	12x1.25 con.	12	14	25	18.2	8

CROSS FITTING (RL40)



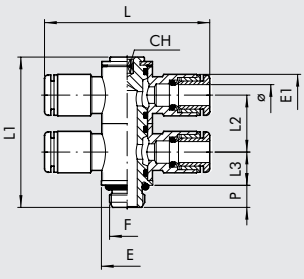
Code	Ref.	Ø	D	E	L	L1
MINIATURE SERIES FOX						
2L40003	RL40	6	4.5	11.3	41.8	20.9
2L40004	RL40	8	6.5	14	48.6	24.3

DUAL ROD SINGLE ROTARY RINGS (R50)



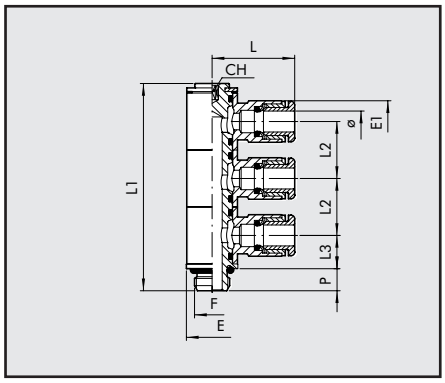
Code	Ref.	Ø	F	CH	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L50001	RL50	4	M5	2	9.5	9.5	18.7	30.3	11.5	6.8	4
2L50002	RL50	4	1/8	3	14	9.5	20.3	40.9	15.5	9.1	6
2L50007	RL50	6	M5	2	9.5	11.3	22.5	30.3	11.5	6.8	4
2L50008	RL50	6	1/8	3	14	11.3	22.5	40.9	15.5	9.1	6
2L50009	RL50	6	1/4	4	18	11.3	24.2	47	17.2	10.2	8
2L50010	RL50	8	1/8	3	14	13.8	24.4	40.9	15.5	9.1	6
2L50011	RL50	8	1/4	4	18	13.8	26.1	47	17.2	10.2	8
2L50013	RL50	10	1/4	4	18	16.5	31.3	47	17.2	10.2	8
SERIES R											
2033001	R33	4	1/8	5	14	11.5	25	42	15	10.5	6
2033002	R33	5	1/8	5	14	12	25	42	15	10.5	6
2033003	R33	6	1/8	5	14	13.5	25	42	15	10.5	6
2033004	R33	6	1/4	6	18	13.5	27.5	49	17	11.5	8
2033005	R33	8	1/8	5	14	15.5	30	42	15	10.5	6
2033006	R33	8	1/4	6	18	15.5	32	49	17	11.5	8

DUAL ROD DUAL ROTARY RINGS (RL51)



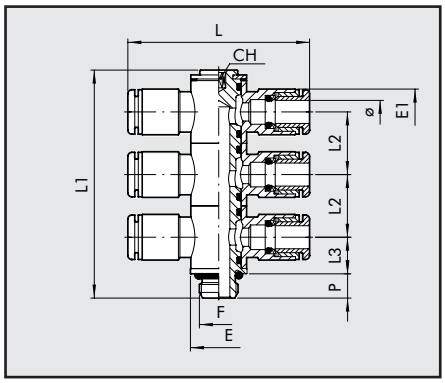
Code	Ref.	Ø	F	Ch	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L51001	RL51	4	M5	2	9.5	9.5	37.4	30.3	11.5	6.8	4
2L51002	RL51	4	1/8	3	14	9.5	40.6	40.9	15.5	9.1	6
2L51007	RL51	6	M5	2	9.5	11.3	45	30.3	11.5	6.8	4
2L51008	RL51	6	1/8	3	14	11.3	45	40.9	15.5	9.1	6
2L51009	RL51	6	1/4	4	18	11.3	48.4	47	17.2	10.2	8
2L51010	RL51	8	1/8	3	14	13.8	48.8	40.9	15.5	9.1	6
2L51011	RL51	8	1/4	4	18	13.8	52.2	47	17.2	10.2	8
2L51013	RL51	10	1/4	4	18	16.5	62.6	47	17.2	10.2	8

TRIPLE ROD SINGLE ROTARY RINGS (RL52)



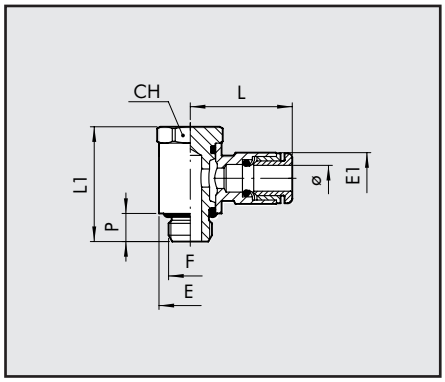
Code	Ref.	Ø	F	Ch	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L52002	RL52	4	1/8	3	14	9.5	20.3	56.7	15.5	9.1	6
2L52008	RL52	6	1/8	3	14	11.3	22.5	56.7	15.5	9.1	6
2L52009	RL52	6	1/4	4	18	11.3	24.2	64.3	17.2	10.2	8
2L52010	RL52	8	1/8	3	14	13.8	24.4	56.7	15.5	9.1	6
2L52011	RL52	8	1/4	4	18	13.8	26.1	64.3	17.2	10.2	8
2L52013	RL52	10	1/4	4	18	16.5	31.3	64.3	17.2	10.2	8

TRIPLE ROD DUAL ROTARY RINGS (RL53)



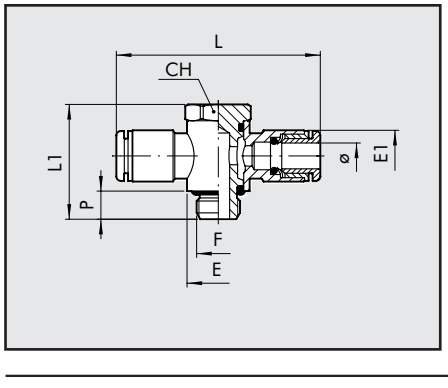
Code	Ref.	Ø	F	Ch	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L53002	RL53	4	1/8	3	14	9.5	40.6	56.7	15.5	9.1	6
2L53008	RL53	6	1/8	3	14	11.3	45	56.7	15.5	9.1	6
2L53009	RL53	6	1/4	4	18	11.3	48.4	64.3	17.2	10.2	8
2L53010	RL53	8	1/8	3	14	13.8	48.8	56.7	15.5	9.1	6
2L53011	RL53	8	1/4	4	18	13.8	52.2	64.3	17.2	10.2	8
2L53013	RL53	10	1/4	4	18	16.5	62.6	64.3	17.2	10.2	8

MALE ROD, SINGLE SWIVEL RING (RL54)



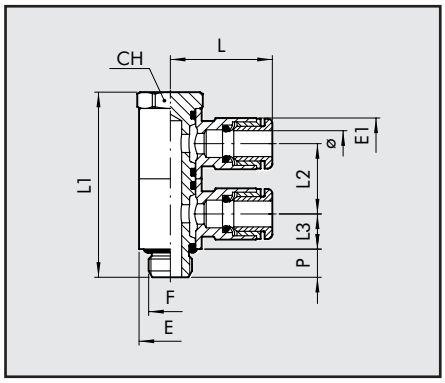
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L54001	RL54	4	M5	9	9.5	9.5	18.7	18.7	4.5
2L54002	RL54	4	1/8	13	14	9.5	20.3	25.3	6.2
2L54007	RL54	6	M5	9	9.5	11.3	22.5	18.7	4.5
2L54008	RL54	6	1/8	13	14	11.3	22.5	25.3	6.2
2L54009	RL54	6	1/4	16	18	11.3	24.2	29.2	8
2L54010	RL54	8	1/8	13	14	13.8	24.4	25.3	6.2
2L54011	RL54	8	1/4	16	18	13.8	26.1	29.2	8
2L54012	RL54	8	3/8	20	21	13.8	28.3	35.4	9
2L54013	RL54	10	1/4	16	18	16.5	31.3	29.2	8
2L54014	RL54	10	3/8	20	21	15.5	32	35.4	9
2L54018	RL54	12	1/4	16	18	19.5	32.5	29.2	8
2L54016	RL54	12	3/8	20	21	19.5	34.8	35.4	9
2L54017	RL54	12	1/2	25	26	19.5	36.5	40	11

MALE ROD, DUAL SWIVEL RING (RL55)



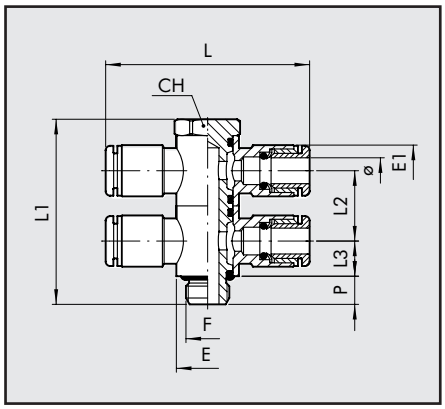
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L55001	RL55	4	M5	9	9.5	9.5	37.4	18.7	4.5
2L55002	RL55	4	1/8	13	14	9.5	40.6	25.3	6
2L55007	RL55	6	M5	9	9.5	11.3	45	18.7	4.5
2L55008	RL55	6	1/8	13	14	11.3	45	25.3	6
2L55009	RL55	6	1/4	16	18	11.3	48.4	29.2	8
2L55010	RL55	8	1/8	13	14	13.8	48.8	25.3	6
2L55011	RL55	8	1/4	16	18	13.8	52.2	29.2	8
2L55012	RL55	8	3/8	20	21	13.8	56.6	35.4	9
2L55013	RL55	10	1/4	16	18	16.5	62.6	29.2	8
2L55014	RL55	10	3/8	20	21	15.5	64	35.4	9
2L55018	RL55	12	1/4	16	18	19.5	65	29.2	8
2L55016	RL55	12	3/8	20	21	19.5	69.6	35.4	9
2L55017	RL55	12	1/2	25	26	19.5	73	40	11

DUAL ROD, MALE SINGLE SWIVEL RINGS (RL56)



Code	Ref.	∅	F	Ch	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L56001	RL56	4	M5	9	9.5	9.5	18.7	30.2	11.5	5.8	4.5
2L56002	RL56	4	1/8	13	14	9.5	20.3	41	15.5	7.8	6
2L56007	RL56	6	M5	9	9.5	11.3	22.5	30.2	11.5	5.8	4.5
2L56008	RL56	6	1/8	13	14	11.3	22.5	41	15.5	7.8	6
2L56009	RL56	6	1/4	16	18	11.3	24.2	46.4	17.2	8.6	8
2L56010	RL56	8	1/8	13	14	13.8	24.4	41	15.5	7.8	6
2L56011	RL56	8	1/4	16	18	13.8	26.1	46.4	17.2	8.6	8
2L56012	RL56	8	3/8	20	21	13.8	28.3	56.8	21.4	10.7	9
2L56013	RL56	10	1/4	16	18	16.5	31.3	46.4	17.2	8.6	8
2L56014	RL56	10	3/8	20	21	15.5	32	56.8	21.4	10.7	9
2L56016	RL56	12	3/8	20	21	19.5	34.8	56.8	21.4	10.7	9
2L56017	RL56	12	1/2	25	26	19.5	36.5	64	24	12	11

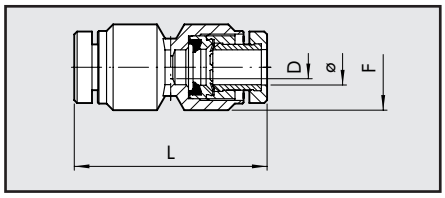
DUAL ROD, MALE DUAL SWIVEL RINGS (RL57)



Code	Ref.	∅	F	Ch	E	E1	L	L1	L2	L3	P
MINIATURE SERIES FOX											
2L57001	RL57	4	M5	9	9.5	9.5	37.4	30.2	11.5	5.8	4.5
2L57002	RL57	4	1/8	13	14	9.5	40.6	41	15.5	7.8	6
2L57007	RL57	6	M5	9	9.5	11.3	45	30.2	11.5	5.8	4.5
2L57008	RL57	6	1/8	13	14	11.3	45	41	15.5	7.8	6
2L57009	RL57	6	1/4	16	18	11.3	48.4	46.4	17.2	8.6	8
2L57010	RL57	8	1/8	13	14	13.8	48.8	41	15.5	7.8	6
2L57011	RL57	8	1/4	16	18	13.8	52.2	46.4	17.2	8.6	8
2L57012	RL57	8	3/8	20	21	13.8	56.6	56.8	21.4	10.7	9
2L57013	RL57	10	1/4	16	18	16.5	62.6	46.4	17.2	8.6	8
2L57014	RL57	10	3/8	20	21	15.5	64	56.8	21.4	10.7	9
2L57016	RL57	12	3/8	20	21	19.5	69.6	56.8	21.4	10.7	9
2L57017	RL57	12	1/2	25	26	19.5	73	64	24	12	11

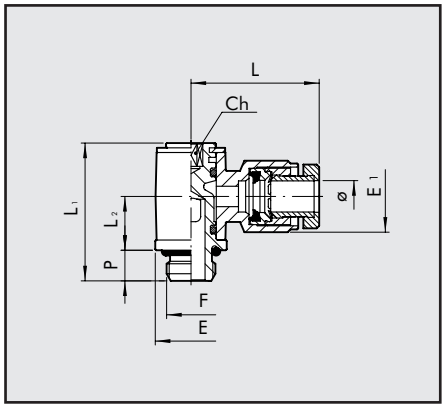
TECHNOPOLYMER FITTINGS

STRAIGHT, INTERMEDIATE, TECHNOPOLYMER (R19)



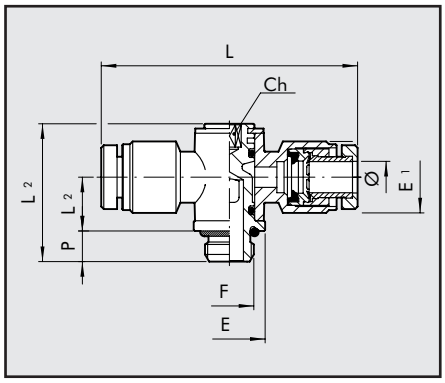
Code	Ref.	∅	F	L	D
SERIES R					
2019001	R19	4	∅ 12.5	33.5	2
2019002	R19	5	∅ 14	33.5	4
2019003	R19	6	∅ 15	33.5	4
2019004	R19	8	∅ 16.5	40.0	6
2019005	R19	10	∅ 20	45.2	8
2019006	R19	12	∅ 22	50.5	10

MALE ROD, SINGLE ROTARY RING, TECHNOPOLYMER (R20)



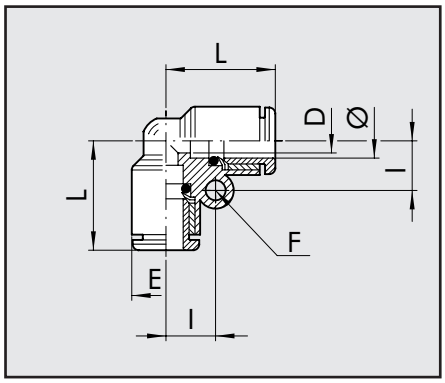
Code	Ref.	∅	F	Ch	P	L	L1	L2	E	E1
SERIES R										
2020001	R20	4	M5	2	4	20.0	16.8	6.5	9.9	10.9
2020002	R20	4	1/8	3	6	22.5	27.0	10.5	14.0	12.5
2020003	R20	5	M5	2	4	21.5	18.8	8.5	9.9	13.5
2020004	R20	5	1/8	3	6	23.0	27.0	10.5	14.0	13.5
2020016	R20	6	M5	2	4	22.0	18.8	8.5	9.9	15.0
2020005	R20	6	1/8	3	6	22.5	27.0	10.5	14.0	15.0
2020007	R20	6	1/4	4	8	24.0	31.5	11.5	18.0	15.0
2020006	R20	8	1/8	3	6	25.5	27.0	10.5	14.0	16.5
2020008	R20	8	1/4	4	8	27.0	31.5	11.5	18.0	16.5
2020009	R20	10	1/4	4	8	32.0	31.5	11.5	18.0	18.5
2020010	R20	12	1/4	4	8	32.0	31.5	11.5	18.0	21.0
2020011	R20	12	3/8	5	9	34.0	36.0	13.5	22.0	21.0
2020012	R20	12	1/2	8	11	36.0	42.0	16.2	26.0	21.0

MALE ROD, DUAL ROTARY RING, TECHNOPOLYMER (R20/A)



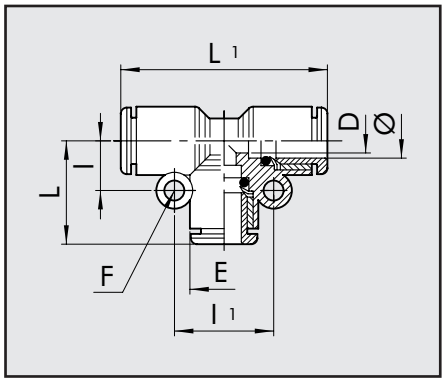
Code	Ref.	Ø	F	Ch	P	L	L1	L2	E	E1
SERIES R										
2020A01	R20/A	4	M5	2	4	40	16.8	6.5	9.9	10.9
2020A02	R20/A	4	1/8	3	6	45	27	10.5	14	12.5
2020A03	R20/A	5	M5	2	4	43	18.8	8.5	9.9	13.5
2020A04	R20/A	5	1/8	3	6	46	27	10.5	14	13.5
2020A05	R20/A	6	1/8	3	6	45	27	10.5	14	15
2020A07	R20/A	6	1/4	4	8	48	31.5	11.5	18	15
2020A06	R20/A	8	1/8	3	6	51	27	10.5	14	16.3
2020A08	R20/A	8	1/4	4	8	54	31.5	11.5	18	16.3
2020A09	R20/A	10	1/4	4	8	64	31.5	11.5	18	18.5
2020A10	R20/A	12	1/4	4	9	64	31.5	11.5	18	21
2020A11	R20/A	12	3/8	5	11	68	36	13.5	22	21
2020A12	R20/A	12	1/2	8		72	42	16.2	26	21

ELBOW, INTERMEDIATE, TECHNOPOLYMER (R21)



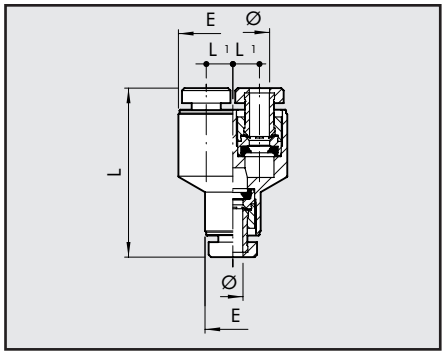
Code	Ref.	Ø	L	D	E	I	F
MINIATURE SERIES FOX							
2L21001	RL21	4	15.8	2.5	9.2	7.2	3.3
2L21003	RL21	6	18.1	4.2	11.3	8.2	3.3
2L21004	RL21	8	20.5	6.2	13.8	9.6	3.3
2021005	RL21	10	24.0	8.5	16.0	10.9	3.3
SERIES R							
2021001	R21	4	19	3	12.5	–	–
2021002	R21	5	20	3.5	13.5	–	–
2021003	R21	6	20	4	15	–	–
2021004	R21	8	23.5	6	16.5	–	–
2021006	R21	12	32.5	10	21	–	–

INTERMEDIATE TEE, TECHNOPOLYMER (R22)



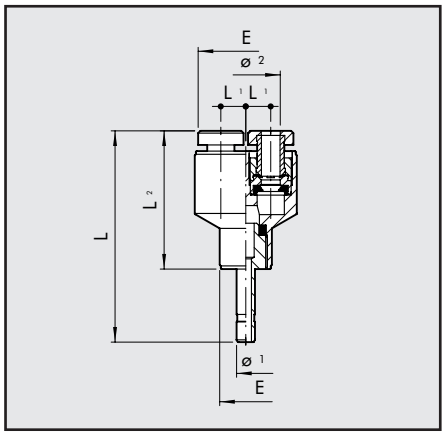
Code	Ref.	Ø	L	L1	D	E	I	I1	F
MINIATURE SERIES FOX									
2L22001	RL22	4	15.8	31.6	2.5	9.2	7.2	14.4	3.3
2L22003	RL22	6	18.1	36.2	4.2	11.3	8.2	16.4	3.3
2L22004	RL22	8	20.5	41	6.2	13.8	9.6	19.2	3.3
2022005	RL22	10	24	48	8.5	16	10.9	21.8	3.3
SERIES R									
2022001	R22	4	19	38	3	12.5	–	–	–
2022002	R22	5	20	40	3.5	13.5	–	–	–
2022003	R22	6	20	40	4	15	–	–	–
2022004	R22	8	23.5	47	6	16.5	–	–	–
2022006	R22	12	32.5	65	10	21	–	–	–

WYE (R23)



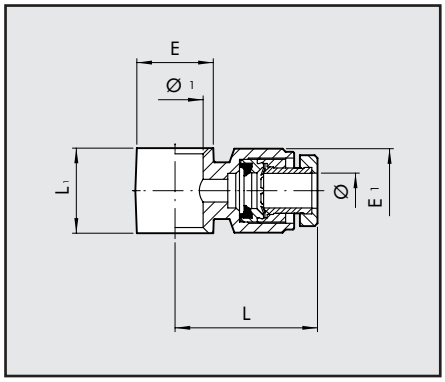
Code	Ref.	Ø	L	L1	E
SERIES R					
2023001	R23	4	34	5.5	11
2023002	R23	5	35.5	6.5	13.5
2023003	R23	6	35.5	7	14
2023004	R23	8	44	8	16

Y BRANCH WITH ADAPTER, TECHNOPOLYMER (R24)



Code	Ref.	∅ 1	∅ 2	L	L1	L2	E
SERIES R							
2024001	R24	4	4	46.5	5.5	30.0	11
2024003	R24	6	6	48.5	7.0	31.5	14

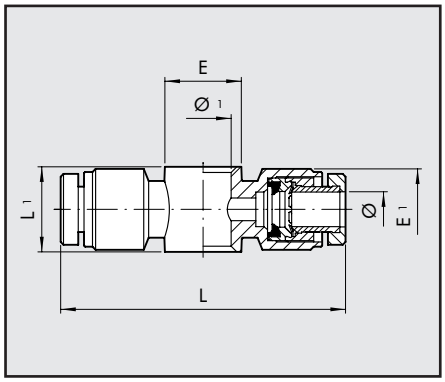
SINGLE RING, TECHNOPOLYMER (R28)



Code	Ref.	∅	∅1	L	L1	E	E1
SERIES R							
2012102	R28	4	1/8	22.5	17	15	12.5
2012104	R28	5	1/8	23	17	15	13.5
2012106	R28	6	1/8	22.5	17	15	15
2012107	R28	6	1/4	24	19	18	15
2012108	R28	8	1/8	25.5	17	15	16.5
2012109	R28	8	1/4	27	19	18	16.5
2012110	R28	8	3/8	29	22	21.5	16.5
2012111	R28	10	1/4	32	19	18	18.5
2012112	R28	10	3/8	32	22	21.5	18.5
2012113	R28	12	1/4	32	19	18	21
2012114	R28	12	3/8	34	22	21.5	21
2012115	R28	12	1/2	36	24	26	21

For the rods series D, see page 4.1/43

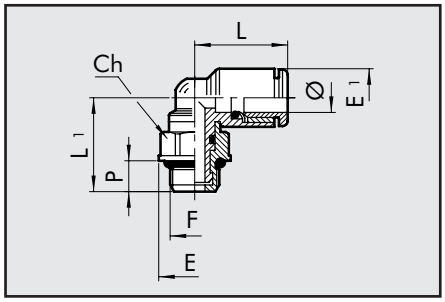
DUAL RING, TECHNOPOLYMER (R29)



Code	Ref.	∅	∅1	L	L1	E	E1
SERIES R							
2013102	R29	4	1/8	45	17	15	12.5
2013104	R29	5	1/8	46	17	15	13.5
2013106	R29	6	1/8	45	17	15	15
2013107	R29	6	1/4	48	19	18	15
2013108	R29	8	1/8	51	17	15	16.5
2013109	R29	8	1/4	54	19	18	16.5
2013110	R29	8	3/8	58	22	21.5	16.5
2013111	R29	10	1/4	64	19	18	18.5
2013112	R29	10	3/8	64	22	21.5	18.5
2013113	R29	12	1/4	64	19	18	21
2013114	R29	12	3/8	68	22	21.5	21
2013115	R29	12	1/2	72	24	26	21

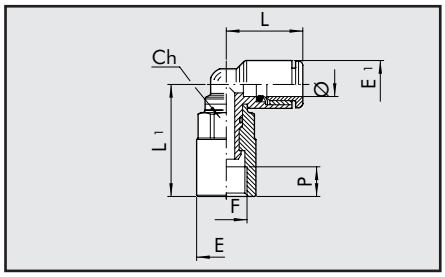
For the rods series D, see page 4.1/43

ROTARY ELBOW, MALE, TECHNOPOLYMER (RL 34)



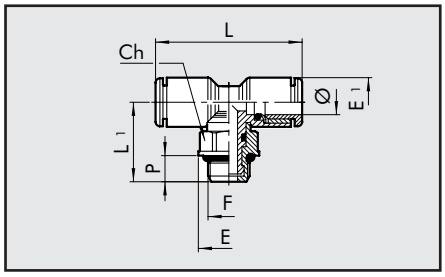
Code	Ref.	∅	F	Ch	P	L	L1	E	E1
MINIATURE SERIES FOX									
2L34001	RL34	4	M5	8	4	15.5	15.2	9	9.2
2L34020	RL34	4	M7	8	5	15.5	16.2	9.8	9.2
2L34002	RL34	4	1/8	12	6	15.5	17.2	14	9.2
2L34003	RL34	4	1/4	14	8	15.5	20.1	18	9.2
2L34006	RL34	6	M5	8	4	17.1	16.3	9	11.3
2L34021	RL34	6	M7	9	5	18.1	17.5	9.9	11.3
2L34007	RL34	6	1/8	12	6	18.1	18.3	14	11.3
2L34008	RL34	6	1/4	14	8	18.1	21.2	18	11.3
2L34009	RL34	8	1/8	12	6	19.3	19.5	14	13.8
2L34010	RL34	8	1/4	14	8	19.3	22.4	18	13.8
2L34011	RL34	8	3/8	17	9	19.3	24.4	22	13.8

ELBOW, FEMALE, ROTARY, TECHNOPOLYMER (RL34/F)



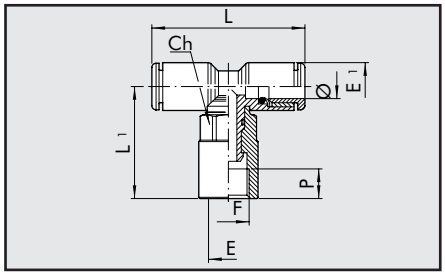
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L34F01	RL34/F	4	M5	8	9	9.2	15.5	15.3	4
2L34F06	RL34/F	6	M5	8	9	11.3	17.1	16.4	4
2L34F07	RL34/F	6	1/8	12	14	11.3	18.1	26.5	7
2L34F08	RL34/F	6	1/4	14	17	11.3	18.1	28.2	8
2L34F09	RL34/F	8	1/8	12	14	13.8	19.3	27.7	7
2L34F10	RL34/F	8	1/4	14	17	13.8	19.3	29.4	8

CENTRAL TEE, MALE, TECHNOPOLYMER (RL35)



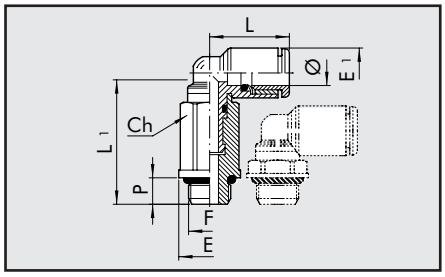
Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
MINIATURE SERIES FOX									
2L35001	RL35	4	M5	8	4	31	15.2	9	9.2
2L35020	RL35	4	M7	8	5	31	16.2	9.8	9.2
2L35002	RL35	4	1/8	12	6	31	17.2	14	9.2
2L35003	RL35	4	1/4	14	8	31	20.1	18	9.2
2L35006	RL35	6	M5	8	4	34.2	16.3	9	11.3
2L35007	RL35	6	1/8	12	6	36.2	18.3	14	11.3
2L35008	RL35	6	1/4	14	8	36.2	21.2	18	11.3
2L35009	RL35	8	1/8	12	6	38.6	19.5	14	13.8
2L35010	RL35	8	1/4	14	8	38.6	22.4	18	13.8
2L35011	RL35	8	3/8	17	9	38.6	24.4	22	13.8

CENTRAL TEE, FEMALE, ROTARY, TECHNOPOLYMER (RL35/F)



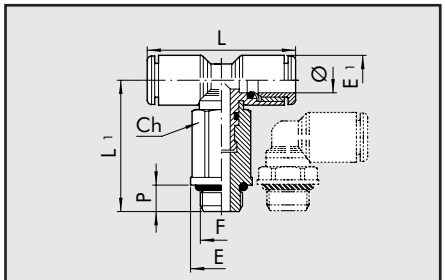
Code	Ref.	Ø	F	CH	E	E1	L	L1	P
MINIATURE SERIES FOX									
2L35F01	RL35/F	4	M5	8	9	9.2	31	15.3	4
2L35F06	RL35/F	6	M5	8	9	11.3	34.2	16.4	4
2L35F07	RL35/F	6	1/8	12	14	11.3	36.2	26.5	7
2L35F08	RL35/F	6	1/4	14	17	11.3	36.2	28.2	8
2L35F09	RL35/F	8	1/8	12	14	13.8	38.6	27.7	7
2L35F10	RL35/F	8	1/4	14	17	13.8	38.6	29.4	8

ROTARY ELBOW, MALE, EXTENDED, TECHNOPOLYMER (RL 36)



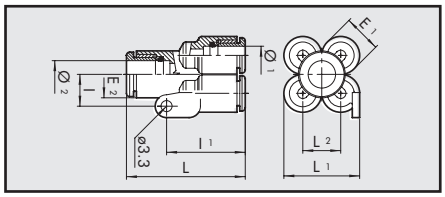
Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
MINIATURE SERIES FOX									
2L36001	RL36	4	M5	8	4	15.5	26.7	9	9.2
2L36020	RL36	4	M7	8	5	15.5	27.7	9.8	9.2
2L36002	RL36	4	1/8	12	6	15.5	25.3	14	9.2
2L36006	RL36	6	M5	8	4	17.1	27.8	9	11.3
2L36021	RL36	6	M7	9	5	18.1	29.3	9.9	11.3
2L36007	RL36	6	1/8	12	6	18.1	30.9	14	11.3
2L36008	RL36	6	1/4	14	8	18.1	33.2	18	11.3
2L36009	RL36	8	1/8	12	6	19.3	32.1	14	13.8
2L36010	RL36	8	1/4	14	8	19.3	34.4	18	13.8

CENTRAL TEE, MALE, ROTARY, EXTENDED, TECHNOPOLYMER (RL37)



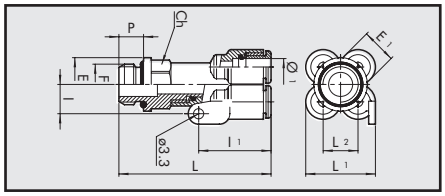
Code	Ref.	Ø	F	Ch	P	L	L1	E	E1
MINIATURE SERIES FOX									
2L37001	RL37	4	M5	8	4	31	26.7	9	9.2
2L37020	RL37	4	M7	8	5	31	27.5	9.8	9.2
2L37002	RL37	4	1/8	12	6	31	25.3	14	9.2
2L37006	RL37	6	M5	8	4	34.2	27.8	9	11.3
2L37007	RL37	6	1/8	12	6	36.2	30.9	14	11.3
2L37008	RL37	6	1/4	14	8	36.2	33.2	18	11.3
2L37009	RL37	8	1/8	12	6	38.6	32.1	14	13.8
2L37010	RL37	8	1/4	14	8	38.6	34.4	18	13.8

DUAL Y BRANCH TECHNOPOLYMER (RL42)



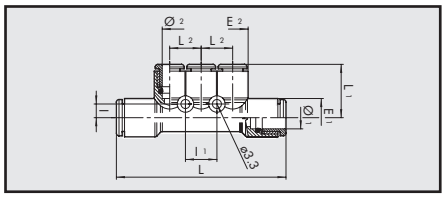
Code	Ref.	$\varnothing_1$	$\varnothing_2$	E1	E2	L	L1	L2	I	I1
MINIATURE SERIES FOX										
2L42001	RL42	4	4	9.2	9.2	28.8	17.9	8.7	8	21.3
2L42002	RL42	4	6	9.2	11.3	31.3	17.9	8.7	8	21.3
2L42004	RL42	6	6	11.3	11.3	33.4	22.6	11.3	9.5	25.6
2L42005	RL42	6	8	11.3	14	34.8	22.6	11.3	9.5	25.6

DUAL Y BRANCH TECHNOPOLYMER, THREADED INPUT (RL43)



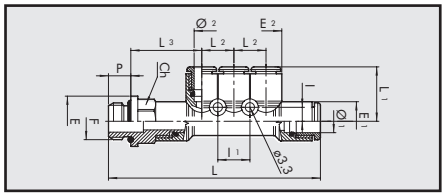
Code	Ref.	$\varnothing_1$	F	E1	E	Ch	P	L	L1	L2	I	I1
MINIATURE SERIES FOX												
2L43001	RL43	4	M5	9.2	8	9	4	35.5	17.9	8.7	8	21.3
2L43002	RL43	4	1/8	9.2	14	12	6	41.6	17.9	8.7	8	21.3
2L43003	RL43	4	1/4	9.2	18	14	8	44.6	17.9	8.7	8	21.3
2L43008	RL43	6	1/8	11.3	14	12	6	43.7	22.6	11.3	9.5	25.6
2L43009	RL43	6	1/4	11.3	18	14	8	46.7	22.6	11.3	9.5	25.6

MULTIPLE MANIFOLD, TECHNOPOLYMER (RL44)



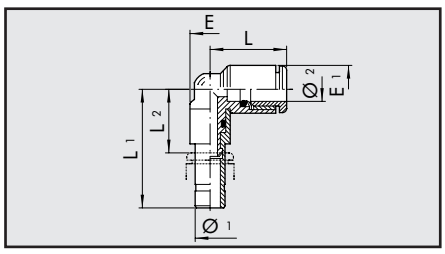
Code	Ref.	Ø1	Ø2	E1	E2	L	L1	L2	I	I1
MINIATURE SERIES FOX										
2L44001	RL44	6	4	11.3	9.2	53.2	17.2	9.4	4.3	9.4
2L44003	RL44	8	6	14	11.3	61.4	19.6	11.5	5	11.5

MULTIPLE MANIFOLD, INPUT, THREADED, TECHNOPOLYMER (RL45)



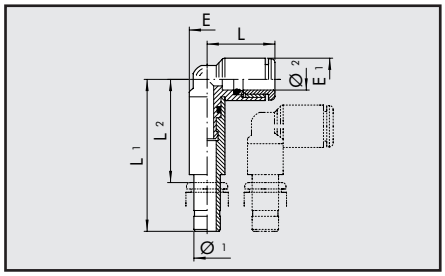
Code	Ref.	F	Ø1	Ø2	E1	E2	E	Ch	P	L	L1	L2	L3	I	I1
MINIATURE SERIES FOX															
2L45001	RL45	1/8	6	4	11.3	9.2	14	12	6	63.5	17.2	9.4	21.5	4.3	9.4
2L45002	RL45	1/4	6	4	11.3	9.2	18	14	8	66.5	17.2	9.4	22.5	4.3	9.4
2L45007	RL45	1/8	8	6	14	11.3	15	14	6	71.2	19.6	11.5	23	5	11.5
2L45008	RL45	1/4	8	6	14	11.3	18	14	8	75.6	19.6	11.5	25.4	5	11.5
2L45009	RL45	3/8	8	6	14	11.3	22	17	9	77.2	19.6	11.5	26	5	11.5

PLUG-IN ELBOWS (RL46)



Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
MINIATURE SERIES FOX								
2L46001	RL46	4	4	15.5	26.9	13.4	7.7	9.2
2L46002	RL46	6	6	18.1	28.8	14.1	9.3	11.3
2L46003	RL46	8	8	19.3	30.4	14.3	9.7	13.8

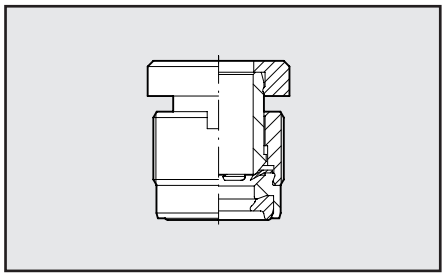
EXTENDED PLUG-IN ELBOWS (RL47)



Code	Ref.	Ø1	Ø2	L	L1	L2	E	E1
MINIATURE SERIES FOX								
2L47001	RL47	4	4	15.5	36.9	23.4	7.7	9.2
2L47002	RL47	6	6	18.1	40.6	25.9	9.3	11.3
2L47003	RL47	8	8	19.3	44.9	28.8	9.7	13.8

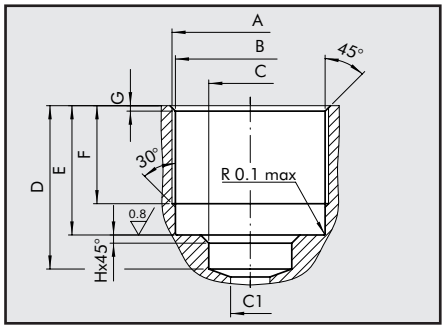
CARTRIDGES AND ACCESSORIES

BRASS CARTRIDGE WITH THREAD (R26)



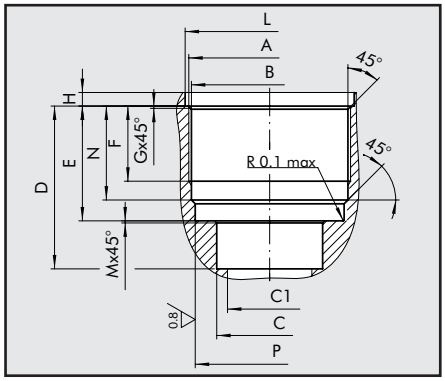
Code	Ref.	Ø	Brace of serration on centers in plastic material (Nm)	Brace of serration on metallic centers (Nm)
SERIES R				
2026A02	R26	3	0.6	0.8
2026A01	R26	3.17	0.6	0.8
2026001	R26	4	0.8	1
2026002	R26	5	0.8	1.5
2026003	R26	6	0.8	1.2
2026004	R26	8	1	1.8
2026005	R26	10	0.8	2
2026006	R26	12	0.8	2

CARTRIDGE SLOT R26 Ø 3-3.17-4-6-8



Ref.	Ø	A	B	C	C1	D	E	F	G	H
SE.CA. R26	3-3.17	M7x0,75	$Ø6.5^{\pm0,1}$	$Ø4.5^{+0,12}_{-0}$	Ø4 max	$10.5^{+0,3}_{-0}$	$9,5^{+0,1}_{-0,3}$	$7^{\pm0,20}$	0,5	–
SE.CA. R26	4	M9,5x0,75	$Ø9^{+0,10}_{-0}$	$Ø4,1^{+0,10}_{-0}$	Ø3 max	$12^{+0}_{-0,20}$	$9,5^{+0,15}_{-0,05}$	$7,5^{\pm0,20}$	0,4	0,6
SE.CA. R26	6	M11,5x0,75	$Ø11^{+0,10}_{-0}$	$Ø6,1^{+0,10}_{-0}$	Ø5 max	$12^{\pm0,1}$	$9,5^{\pm0,1}$	$7,5^{\pm0,20}$	0,4	0,6
SE.CA. R26	8	M13,5x0,75	$Ø13^{+0,10}_{-0}$	$Ø8,1^{+0,10}_{-0}$	Ø7 max	$15^{+0}_{-0,20}$	$10,5^{+0,15}_{-0,05}$	$8,5^{\pm0,20}$	0,4	0,6

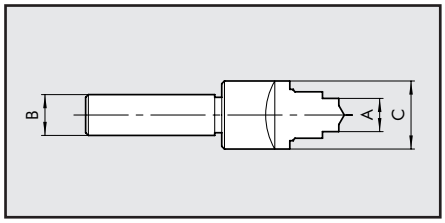
CARTRIDGE SLOT R26 Ø 5-10-12



Ref.	Ø	A	B	C	C1	D	E	F	G	H
SE.CA. R26	5	M10,5x0,75	$Ø10^{+0,1}_{-0}$	$Ø5,1^{+0,15}_{-0}$	Ø4 max	$11,8^{\pm0,1}$	$8,9^{+0,10}_{-0}$	$5,8^{+0,3}_{-0}$	0,3	$0,9^{+0}_{-0,3}$
SE.CA. R26	10	M15,5x0,75	$Ø15^{+0,1}_{-0}$	$Ø10,1^{+0,15}_{-0}$	Ø9 max	$15,6^{\pm0,1}$	$11^{+0,05}_{-0}$	$7,5^{+0,3}_{-0}$	0,3	$1,3^{+0}_{-0,3}$
SE.CA. R26	12	M18x1	$Ø17,5^{+0,05}_{-0,1}$	$Ø12,1^{+0,05}_{+0,15}$	Ø11 max	$18^{\pm0,1}$	$12^{\pm0,05}$	$6,8^{+0,3}_{-0}$	0,6	$1,3^{+0}_{-0,3}$

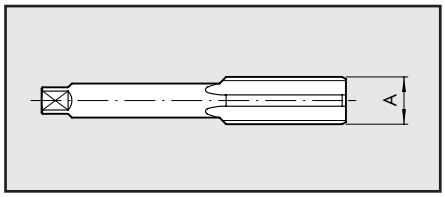
L	M	N	P
$Ø11,2^{+0,12}_{+0,02}$	0,1	$7,8^{\pm0,05}$	$Ø9,7^{\pm0,05}$
$Ø16,2^{+0,1}_{-0,05}$	0,2	$9^{\pm0,05}$	$Ø14,9^{+0,10}_{-0}$
$Ø18,8^{+0,1}_{-0}$	0,2	$9,75^{+0}_{-0,15}$	$Ø17^{+0,1}_{-0}$

TOOL FOR SLOT R26



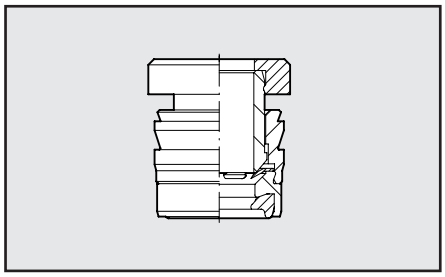
Code	Ref.	A	B	C
2025010	UT.SE. R26 3-3.17	4,5	Ø 10	Ø 10
2025011	UT.SE. R26 4	4,1	Ø 12	Ø 15
2025012	UT.SE. R26 5	5,1	Ø 15	Ø 19
2025013	UT.SE. R26 6	6,1	Ø 16	Ø 19
2025014	UT.SE. R26 8	8,1	Ø 16	Ø 21
2025015	UT.SE. R26 10	10,1	Ø 18	Ø 25
2025016	UT.SE. R26 12	12,1	Ø 15	Ø 25

MALE FOR CARTRIDGE SLOT R26



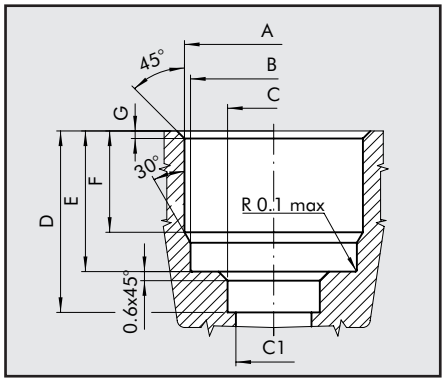
Code	Ref.	Ø	A
2025020	MA R26 3-3.17	3-3.17	M7x0,75
2025021	MA R26 4	4	M9,5x0,75
2025022	MA R26 5	5	M10,5x0,75
2025023	MA R26 6	6	M11,5x0,75
2025024	MA R26 8	8	M13,5x0,75
2025025	MA R26 10	10	M15,5x0,75
2025026	MA R26 12	12	M18x1

BRASS COMPRESSION CARTRIDGE (R27)



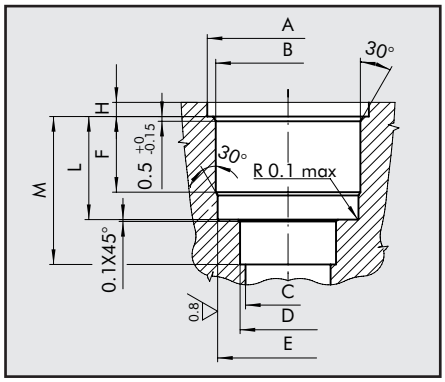
Code	Ref.	Ø
SERIES R		
2027001	R27	4
2027002	R27	5
2027003	R27	6
2027004	R27	8
2027005	R27	10
2027006	R27	12

CARTRIDGE SLOT R27 Ø 4-6-8



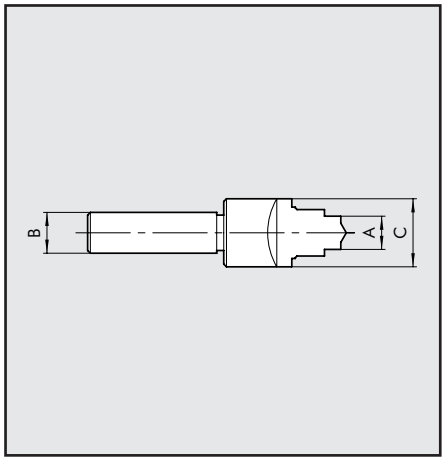
Ref.	Ø	A	B	C	C1	D	E	F	G
Aluminium									
SE.CA. R27 4	4	$\varnothing 9{,}2^{+0}_{-0{,}10}$	$\varnothing 9^{+0{,}10}_{-0}$	$\varnothing 4{,}1^{+0{,}10}_{-0}$	Ø3 max	$12^{+0}_{-0{,}20}$	$9{,}3^{+0}_{-0{,}10}$	$6{,}7^{+0{,}10}_{-0}$	0,5
SE.CA. R27 6	6	$\varnothing 11{,}3^{+0}_{-0{,}08}$	$\varnothing 11^{+0{,}10}_{-0}$	$\varnothing 6{,}1^{+0{,}10}_{-0}$	Ø5 max	$12^{+0}_{-0{,}20}$	$9{,}3^{+0}_{-0{,}10}$	$6{,}7^{+0{,}10}_{-0}$	0,5
SE.CA. R27 8	8	$\varnothing 13{,}3^{+0}_{-0{,}08}$	$\varnothing 13^{+0{,}10}_{-0}$	$\varnothing 8{,}1^{+0{,}10}_{-0}$	Ø7 max	$15^{+0}_{-0{,}20}$	$10{,}3^{+0}_{-0{,}10}$	$7{,}7^{+0{,}10}_{-0}$	0,5
Plastic									
SE.CA. R27 4	4	$\varnothing 9{,}2^{+0}_{-0{,}10}$	$\varnothing 9^{+0{,}10}_{-0}$	$\varnothing 4{,}1^{+0{,}10}_{-0}$	Ø3 max	$12^{+0}_{-0{,}20}$	$9{,}3^{+0}_{-0{,}10}$	$6{,}7^{+0{,}10}_{-0}$	0,5
SE.CA. R27 6	6	$\varnothing 11{,}2^{+0}_{-0{,}10}$	$\varnothing 11^{+0{,}10}_{-0}$	$\varnothing 6{,}1^{+0{,}10}_{-0}$	Ø5 max	$12^{+0}_{-0{,}20}$	$9{,}3^{+0}_{-0{,}10}$	$6{,}7^{+0{,}10}_{-0}$	0,5
SE.CA. R27 8	8	$\varnothing 13{,}2^{+0}_{-0{,}10}$	$\varnothing 13^{+0{,}10}_{-0}$	$\varnothing 8{,}1^{+0{,}10}_{-0}$	Ø7 max	$15^{+0}_{-0{,}20}$	$10{,}3^{+0}_{-0{,}10}$	$7{,}7^{+0{,}10}_{-0}$	0,5

CARTRIDGE SLOT R27 Ø 5-10-12



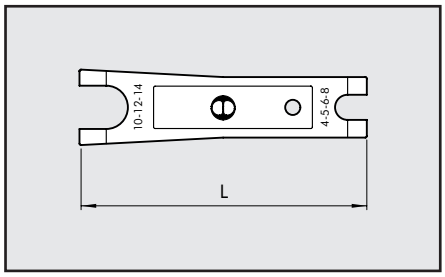
Ref.	Ø	A	B	C	D	E	F	H	L	M
Technopolymer										
SE.CA. R27	5	$\varnothing 12{,}1^{+0{,}15}_{-0}$	$\varnothing 10{,}2^{+0}_{-0{,}10}$	$\varnothing 4^{MAX}$	$\varnothing 5{,}1^{+0{,}15}_{-0}$	$\varnothing 9{,}7^{\pm 0{,}05}$	$6^{+0{,}2}_{-0}$	$1{,}2^{-0}_{-0{,}2}$	$8{,}75^{-0}_{-0{,}1}$	$11{,}8^{\pm 0{,}10}$
SE.CA. R27	10	$\varnothing 17{,}1^{+0{,}15}_{-0}$	$\varnothing 15{,}15^{+0}_{-0{,}08}$	$\varnothing 9^{MAX}$	$\varnothing 10{,}15^{+0{,}1}_{-0}$	$\varnothing 14{,}9^{\pm 0{,}05}$	$8^{+0{,}2}_{-0}$	$1{,}5^{-0}_{-0{,}2}$	$10{,}9^{-0}_{-0{,}1}$	$15{,}6^{\pm 0{,}10}$
SE.CA. R27	12	$\varnothing 19{,}7^{+0{,}15}_{-0}$	$\varnothing 17{,}55^{+0}_{-0{,}08}$	$\varnothing 11^{MAX}$	$\varnothing 12{,}15^{+0{,}1}_{-0}$	$\varnothing 17{,}1^{\pm 0{,}05}$	$9^{+0{,}2}_{-0}$	$1{,}5^{-0}_{-0{,}2}$	$11{,}85^{-0}_{-0{,}1}$	$18^{\pm 0{,}10}$
Aluminium										
SE.CA. R27	5	$\varnothing 12{,}1^{+0{,}15}_{-0}$	$\varnothing 10{,}3^{+0}_{-0{,}08}$	$\varnothing 4^{MAX}$	$\varnothing 5{,}1^{+0{,}15}_{-0}$	$\varnothing 9{,}7^{\pm 0{,}05}$	$6^{+0{,}2}_{-0}$	$1{,}2^{-0}_{-0{,}2}$	$8{,}75^{-0}_{-0{,}1}$	$11{,}8^{\pm 0{,}10}$
SE.CA. R27	10	$\varnothing 17{,}1^{+0{,}15}_{-0}$	$\varnothing 15{,}4^{+0}_{-0{,}08}$	$\varnothing 9^{MAX}$	$\varnothing 10{,}15^{+0{,}1}_{-0}$	$\varnothing 14{,}9^{\pm 0{,}05}$	$8^{+0{,}2}_{-0}$	$1{,}5^{-0}_{-0{,}2}$	$10{,}9^{-0}_{-0{,}1}$	$15{,}6^{\pm 0{,}10}$
SE.CA. R27	12	$\varnothing 19{,}7^{+0{,}15}_{-0}$	$\varnothing 17{,}8^{+0}_{-0{,}08}$	$\varnothing 11^{MAX}$	$\varnothing 12{,}15^{+0{,}1}_{-0}$	$\varnothing 17{,}1^{\pm 0{,}05}$	$9^{+0{,}2}_{-0}$	$1{,}5^{-0}_{-0{,}2}$	$11{,}85^{-0}_{-0{,}1}$	$18^{\pm 0{,}10}$

TOOL FOR SLOT R27



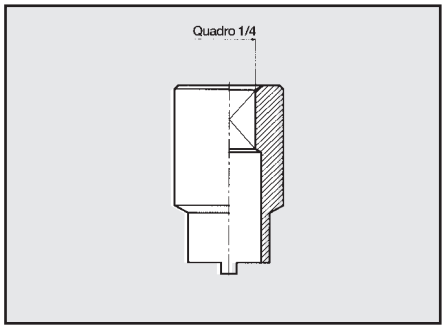
Code	Ref.	A	B	C
Aluminium				
2027021	UT.SE. R27 AL. 4	4,1	Ø 10	11.5
2027022	UT.SE. R27 AL. 5	5,1	Ø 12	16
2027023	UT.SE. R27 AL. 6	6,1	Ø 12	13.5
2027024	UT.SE. R27 AL. 8	8,1	Ø 12	15.5
2027025	UT.SE. R27 AL. 10	10,1	Ø 16	20
2027026	UT.SE. R27 AL. 12	12,1	Ø 16	22
Plastic				
2027011	UT.SE. R27 P. 4	4,1	Ø 10	11.5
2027012	UT.SE. R27 P. 5	5,1	Ø 12	16
2027013	UT.SE. R27 P. 6	6,1	Ø 12	13.5
2027014	UT.SE. R27 P. 8	8,1	Ø 12	15.5
2027015	UT.SE. R27 P. 10	10,1	Ø 16	20
2027016	UT.SE. R27 P. 12	12,1	Ø 16	22

R17 – DISASSEMBLY KEY



Code	Ref.	L	Ø TUBE	NOTES
2L17001	RL40	140	from ø 3 to ø 10	FOR R FITTING AND FOX FITTING
2017001	R40	95.0	from ø 4 to ø 14	ONLY FOR R FITTING

R41 – CARTRIDGE KEY R26



Code	Ref.	
2041001	R41	4
2041002	R41	5
2041003	R41	6
2041004	R41	8
2041005	R41	10
2041006	R41	12

NOTES

SERIES F PUSH-IN FITTINGS FOR USE IN THE FOOD INDUSTRY

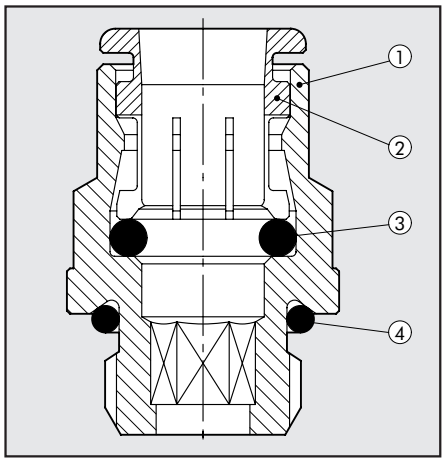
The materials of which these fittings are made can be used in the food industry. The brass parts are chemically treated with phosphorus nickel-plating according to the NSF®/ANSI 51 standard of the food programme. The seals are made of FDA-approved FKM/FPM. There is no technopolymer in the fitting, which solves the problems of incompatibility with detergents and other chemicals. With these materials, the fittings can be used up to 150°C, which make them suitable for high-temperature applications other than the food industry.
The threads are cylindrical and under-head O-rings provide a pneumatic seal. This avoids the need for sealants (e.g. Teflon®), which could release solid fragments during screwing and unscrewing that would contaminate the environment or the fluid. Our fittings can be screwed and unscrewed any number of times and still remain clean and pneumatically sealed.
This choice of materials and treatments make these fittings suitable for use in the chemical, pharmaceutical, medical and electronics industry.
A standard range of fittings is available, but other designs can be developed on specific request.



TECHNICAL FEATURES

Threaded port		M5 - G1/8'' - G1/4'' -G 3/8'' - G1/2''
Pipe diameter	mm	∅ 4 - ∅ 6 - ∅ 8 - ∅ 10
Temperature range	°C	–20 ÷ +150
	°F	–4÷302
Pressure range		–0,99 bar ÷ 16 bar / –0,099 MPa ÷ 1,6 MPa
Recommended pipe		RilsanPA 11 - Nylon 6 - Polyamide 12 - Polypropylene

COMPONENTS



① Body: chemically nickel-plated brass to NSF®/ANSI 51 standards
② Gripper: chemically nickel-plated brass to NSF®/ANSI 51 standards
③ Fitting seal: FKM/FPM
④ Port seal: FKM/FPM

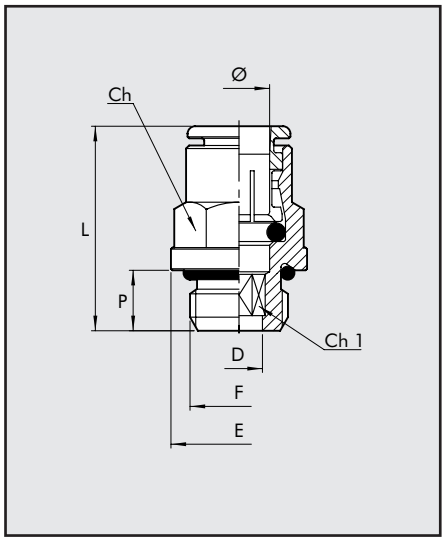
ADVANTAGES

Under-head O-ring
Can be screwed and unscrewed any number of times; no fragments of Teflon® or sealant will contaminate the fluid.

Corrosion proof
Chemical nickel-plating + FKM/FPM compatible with numerous substances

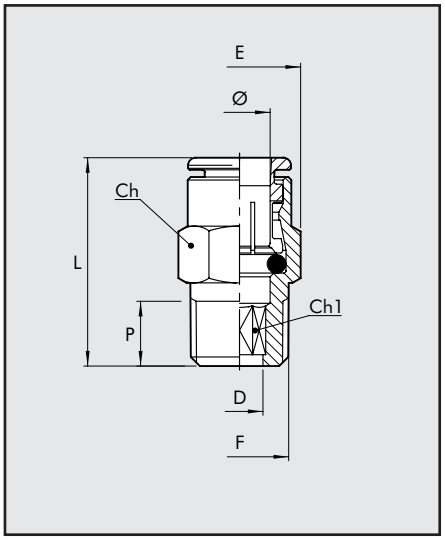
No plastic parts
No risk of incompatibility

STRAIGHT, CYLINDRICAL, MALE R1 NSF



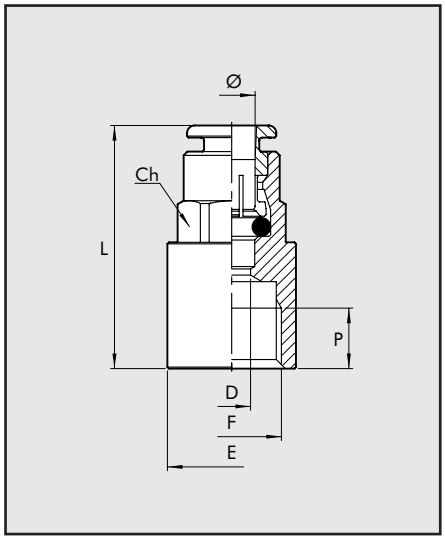
Code	Ref.	Ø	F	Ch	Ch1	P	L	D	E
2F01001	R1 NSF	4	M5	Ø9.9	2.5	4	21.5	2.6	9.9
2F01002	R1 NSF	4	1/8	11	3	6	20.5	3.1	15
2F01003	R1 NSF	4	1/4	12	3	8	22.5	3.1	18
2F01000	R1 NSF	6	M5	Ø10.9	2.5	4	25	2.6	10.9
2F01007	R1 NSF	6	1/8	13	4	6	27.5	4.2	15
2F01008	R1 NSF	6	1/4	13	4	8	26.5	4.2	18
2F01009	R1 NSF	8	1/8	14	5	6	28.5	5.2	15.6
2F01010	R1 NSF	8	1/4	15	6	8	27	6.2	18
2F01011	R1 NSF	8	3/8	15	6	9	28	6.2	21
2F01012	R1 NSF	10	1/4	17	7	8	33.5	7.2	20
2F01013	R1 NSF	10	3/8	17	8	9	30.5	8.2	21
2F01022	R1 NSF	10	1/2	17	10	11	31.5	10.2	26

STRAIGHT, CONICAL, MALE RL1C NSF



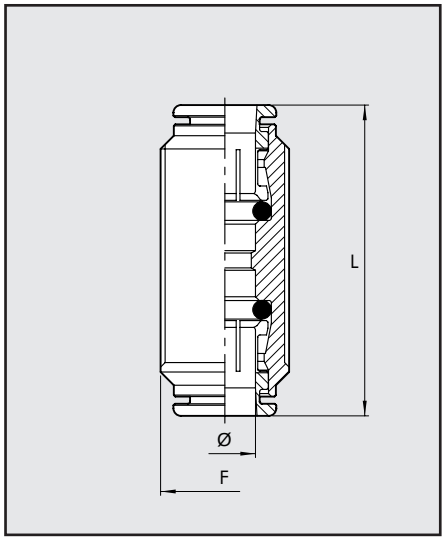
Code	Ref.	Ø	F	Ch	Ch 1	P	L	D	E
2F01C02	R1C NSF	4	1/8	10	2.5	6.2	20.5	3.1	11.5
2F01C07	R1C NSF	6	1/8	12	4	6.2	24	4.2	13.8
2F01C08	R1C NSF	6	1/4	14	4	8.5	25.5	4.2	16
2F01C09	R1C NSF	8	1/8	14	5	6.2	27.5	5.2	16
2F01C10	R1C NSF	8	1/4	14	6	8.5	27.5	6.2	16
2F01C11	R1C NSF	8	3/8	17	6	9	27	6.2	19.6
2F01C13	R1C NSF	10	1/4	17	7	8.5	34.5	7.2	19.6
2F01C14	R1C NSF	10	3/8	17	7	9	30.5	7.2	19.6

STRAIGHT, FEMALE R2 NSF



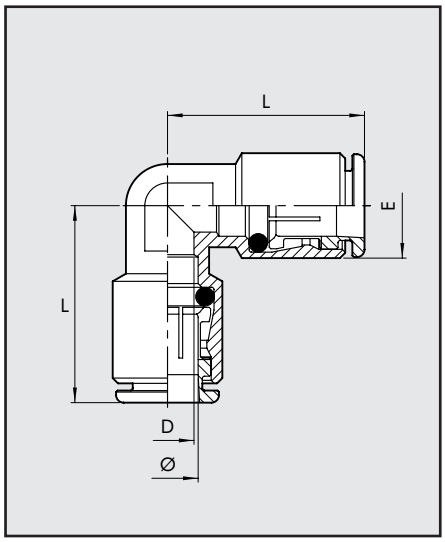
Code	Ref.	Ø	F	Ch	P	L	D	E
2F02001	R2 NSF	4	1/8	10	7	27	3	14
2F02005	R2 NSF	6	1/8	13	7	30	5	15
2F02006	R2 NSF	6	1/4	13	8	32	5	17
2F02007	R2 NSF	8	1/8	14	7	30	7	17
2F02008	R2 NSF	8	1/4	14	8	32	7	17
2F02011	R2 NSF	10	1/4	17	8	35	9	20

STRAIGHT, INTERMEDIATE R3 NSF



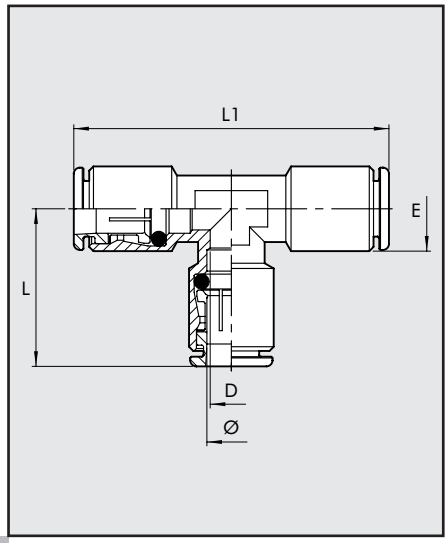
Code	Ref.	Ø	F	L
2F03001	R3 NSF	4	M13X1	33
2F03003	R3 NSF	6	M15X1	40
2F03004	R3 NSF	8	M17X1	41
2F03005	R3 NSF	10	M20X1	47

ELBOW, INTERMEDIATE R4 NSF



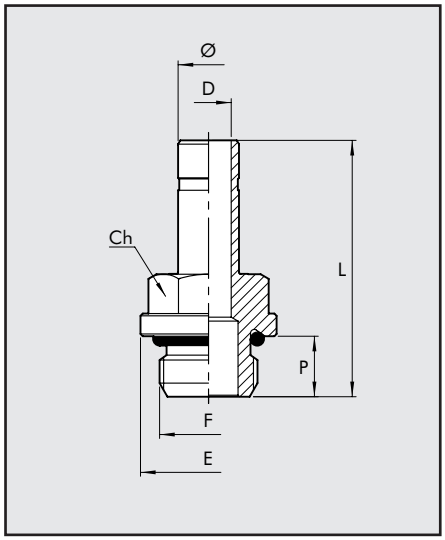
Code	Ref.	Ø	D	E	L
2F04001	R4 NSF	4	2.5	9.5	18
2F04003	R4 NSF	6	4.5	13.5	22
2F04004	R4 NSF	8	7	14	26
2F04005	R4 NSF	10	9	17	30

TEE, INTERMEDIATE R5 NSF



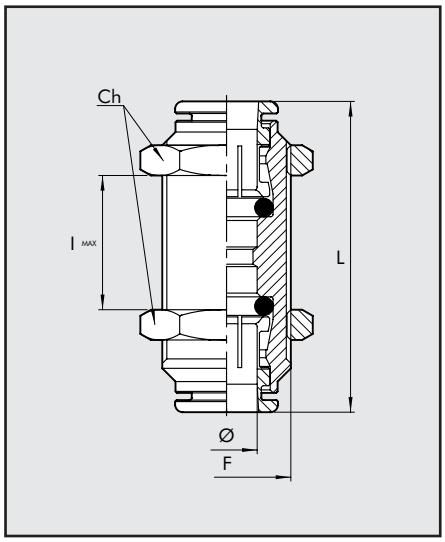
Code	Ref.	Ø	L	L1	D	E
2F05001	R5 NSF	4	21	42	3.5	9.5
2F05003	R5 NSF	6	24	48	5	12.5
2F05004	R5 NSF	8	26	52	7	14
2F05005	R5 NSF	10	30	60	9	17

THREADED ADAPTER R6 NSF



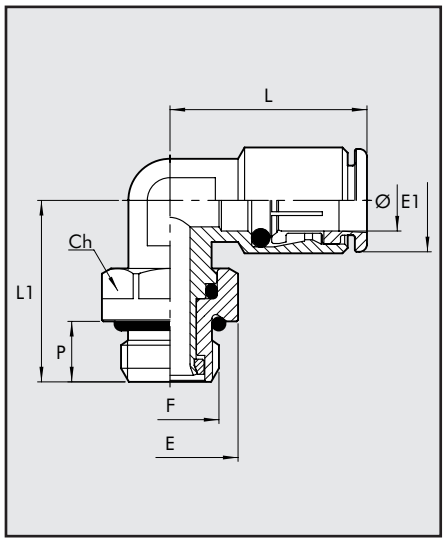
Code	Ref.	Ø	F	Ch	P	L	D	E
2F06001	R6 NSF	4	M5	8	4	25.2	2.5	9
2F06002	R6 NSF	4	1/8	13	6	28.9	2.5	15
2F06003	R6 NSF	4	1/4	14	8	32.4	2.2	18
2F06000	R6 NSF	6	M5	9	4	25.7	2.7	10
2F06007	R6 NSF	6	1/8	13	6	29.4	4	15
2F06008	R6 NSF	6	1/4	14	8	32.9	4	18
2F06009	R6 NSF	8	1/8	13	6	30.6	5.5	15
2F06010	R6 NSF	8	1/4	14	8	34	6	18
2F06011	R6 NSF	8	3/8	17	9	35.4	6	22
2F06012	R6 NSF	10	1/4	14	8	35.6	7.8	18
2F06013	R6 NSF	10	3/8	17	9	37.1	8	22

STRAIGHT, INTERMEDIATE, BULKHEAD UNIONS R10 NSF



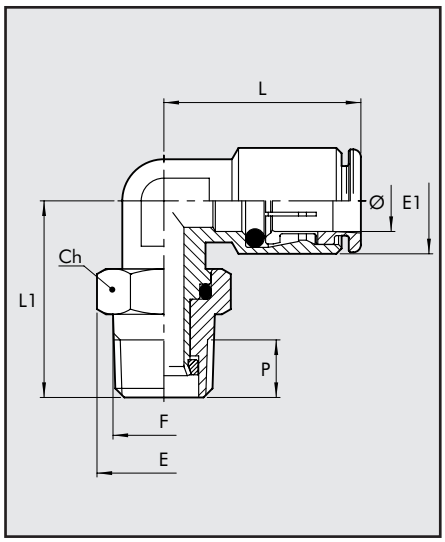
Code	Ref.	Ø	F	Ch	L	Imax
2F11001	R10 NSF	4	M13x1	16	33	11
2F11003	R10 NSF	6	M15x1	17	40	16
2F11004	R10 NSF	8	M17x1	20	41	19
2F11005	R10 NSF	10	M20x1	24	47	21

ROTARY ELBOW, MALE, CYLINDRICAL R31 NSF



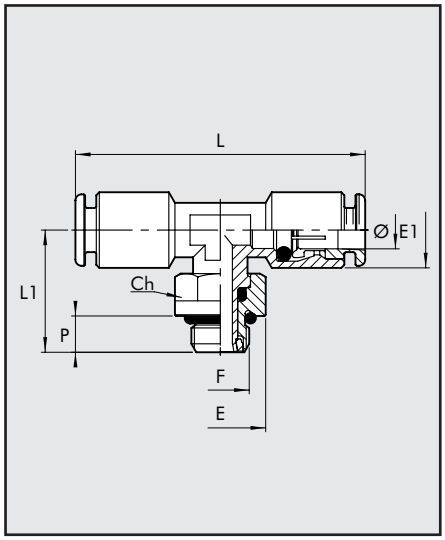
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2F31001	R31 NSF	4	M5	9	9	10	21	19	4
2F31002	R31 NSF	4	1/8	13	15	10	21	21	6
2F31003	R31 NSF	4	1/4	16	18	10	21	25	8
2F31007	R31 NSF	6	M5	9	8	11.8	24	17.5	4
2F31008	R31 NSF	6	1/8	13	15	12.5	24	21	6
2F31009	R31 NSF	6	1/4	16	18	12.5	25.5	25	8
2F31010	R31 NSF	8	1/8	13	15	14	26	22.5	6
2F31011	R31 NSF	8	1/4	16	18	14	26	25	8
2F31012	R31 NSF	8	3/8	19	22	14	27.5	30.5	9
2F31013	R31 NSF	10	1/4	16	18	16.5	30	27	8
2F31014	R31 NSF	10	3/8	19	22	16.5	30	30.5	9
2F31015	R31 NSF	10	1/2	22	26	16.5	31	32	11

ROTARY ELBOW, MALE, CONICAL R31C NSF



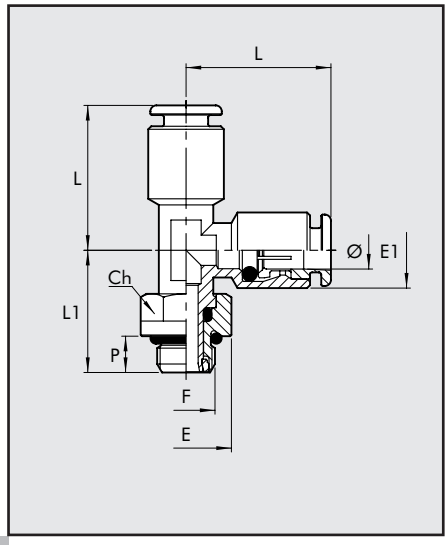
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2F31C02	R31C NSF	4	1/8	12	13.3	10	21	22	6.2
2F31C03	R31C NSF	4	1/4	16	17.7	10	21	27	8.5
2F31C08	R31C NSF	6	1/8	12	13.3	11.8	24	22	6.2
2F31C09	R31C NSF	6	1/4	16	17.7	12.5	25.5	27	8.5
2F31C10	R31C NSF	8	1/8	12	13.3	14	26	23.5	6.2
2F31C11	R31C NSF	8	1/4	16	17.7	14	26	27	8.5
2F31C12	R31C NSF	8	3/8	19	22	14	27.5	31	9
2F31C13	R31C NSF	10	1/4	16	17.7	16.5	30	29	8.5
2F31C14	R31C NSF	10	3/8	19	22	16.5	30	31	9

CENTRAL TEE, MALE, CYLINDRICAL, ROTARY R32 NSF



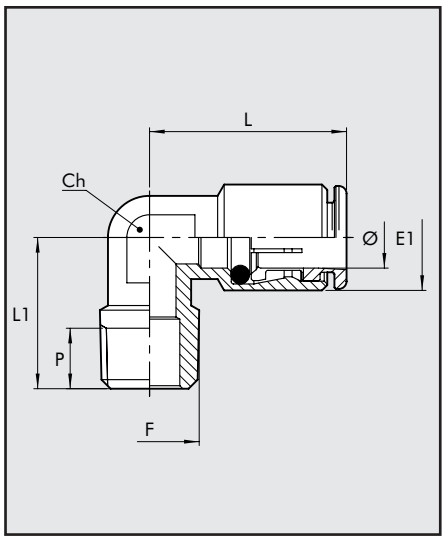
Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2F32002	R32 NSF	4	1/8	13	15	10	41.5	21	6
2F32008	R32 NSF	6	1/8	13	15	12.5	47.5	21	6
2F32009	R32 NSF	6	1/4	16	18	12.5	50.5	25	8
2F32010	R32 NSF	8	1/8	13	15	14	52	22.5	6
2F32011	R32 NSF	8	1/4	16	18	14	52	25	8
2F32012	R32 NSF	8	3/8	19	22	14	56	30.5	9
2F32013	R32 NSF	10	1/4	16	18	16.5	60.5	27	8
2F32014	R32 NSF	10	3/8	19	22	16.5	60.5	30.5	9

LATERAL TEE, MALE, CYLINDRICAL, ROTARY R38 NSF



Code	Ref.	Ø	F	Ch	E	E1	L	L1	P
2F38002	R38 NSF	4	1/8	13	15	9.5	22.5	21	6
2F38008	R38 NSF	6	1/8	13	15	12.5	24.5	21	6
2F38009	R38 NSF	6	1/4	16	18	12.5	26	25	8
2F38010	R38 NSF	8	1/8	13	15	14.5	27.5	22.5	6
2F38011	R38 NSF	8	1/4	16	18	14.5	27.5	25	8
2F38013	R38 NSF	10	1/4	16	18	17	31.5	27	8
2F38014	R38 NSF	10	3/8	19	22	17	31.5	30.5	9

ELBOW, MALE, CONICAL R39 NSF



Code	Ref.	Ø	F	Ch	E1	L	L1	P
2F39C02	R39 NSF	4	1/8	10	9.5	21	16	6.2
2F39C08	R39 NSF	6	1/8	10	11.8	23.5	16	6.2
2F39C09	R39 NSF	6	1/4	10	11.8	24	18.5	8.5
2F39C10	R39 NSF	8	1/8	12	14	26	17	6.2
2F39C11	R39 NSF	8	1/4	12	14	26	20	8.5
2F39C12	R39 NSF	8	3/8	14	14	27.5	22.5	9
2F39C13	R39 NSF	10	1/4	14	17	30.5	22	8.5

NOTES

FITTINGS Series A

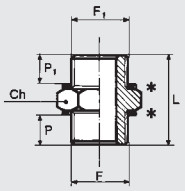
STANDARD FITTING

- Body: OT58 brass
- Maximum pressure 870 psi, 6000 KPa 60 bar



OVERALL DIMENSIONS AND ORDERING CODES

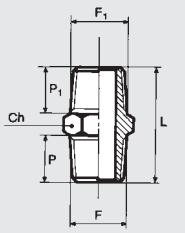
NIPPLE, PARALLEL (A1)



✱ WASHER D11 CAN BE USED

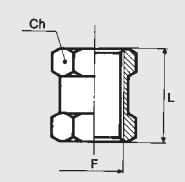
Code	Ref.	F	F1	Ch	P	P1	L
2101A00	A1	M5	M5	8	4.0	4.0	11.5
2101000	A1	M5	1/8	14	4.0	6.0	14.5
2101001	A1	1/8	1/8	14	6.0	6.0	17.0
2101002	A1	1/8	1/4	17	6.0	8.0	19.0
2101003	A1	1/8	3/8	20	6.0	9.0	20.0
2101004	A1	1/4	1/4	17	8.0	8.0	21.0
2101005	A1	1/4	3/8	20	8.0	9.0	22.0
2101006	A1	1/4	1/2	25	8.0	10.0	24.0
2101007	A1	3/8	3/8	20	9.0	9.0	24.0
2101008	A1	3/8	1/2	25	9.0	10.0	25.5
2101009	A1	1/2	1/2	25	10.0	10.0	26.5
2101010	A1	1/2	3/4	30	10.0	11.0	27.0
2101011	A1	3/4	3/4	30	11.0	11.0	28.0

NIPPLE, CONICAL (A2)



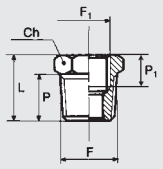
Code	Ref.	F	F1	Ch	P	P1	L
2102001	A2	1/8	1/8	12	8.0	8.0	21.0
2102002	A2	1/8	1/4	14	8.0	11.0	24.0
2102003	A2	1/8	3/8	17	8.0	11.5	25.0
2102004	A2	1/4	1/4	14	11.0	11.0	27.0
2102005	A2	1/4	3/8	17	11.0	11.5	28.0
2102006	A2	1/4	1/2	22	11.0	14.0	32.0
2102007	A2	3/8	3/8	17	11.5	11.5	29.0
2102008	A2	3/8	1/2	22	11.5	14.0	32.5
2102009	A2	1/2	1/2	22	14.0	14.0	35.0
2102010	A2	1/2	3/4	27	14.0	16.5	37.5
2102011	A2	3/4	3/4	27	16.5	16.5	40.0

SLEEVE (A3)



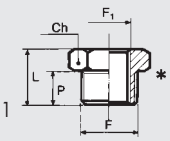
Code	Ref.	F	Ch	L
2103000	A3	M5	8	11.0
2103001	A3	1/8	14	15.0
2103002	A3	1/4	17	22.0
2103003	A3	3/8	22	24.0
2103004	A3	1/2	27	30.0

REDUCER, CONICAL (A4)



Code	Ref.	F	F1	Ch	P	P1	L
2104001	A4	1/4	1/8	14	11.0	7.0	16.0
2104002	A4	3/8	1/8	17	11.5	7.0	17.0
2104003	A4	3/8	1/4	17	11.5	8.0	17.0
2104004	A4	1/2	1/4	22	14.0	8.0	20.0
2104005	A4	1/2	3/8	22	14.0	10.0	20.0
2104006	A4	3/4	1/2	27	16.5	11.0	23.5

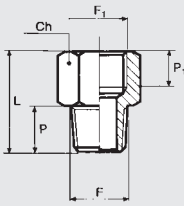
REDUCER, PARALLEL (A4/Z)



* WASHER D11 CAN BE USED

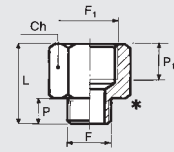
Code	Ref.	F	F1	Ch	P	L
2151000	A4/Z	1/8	M5	14	6.0	10.0
2151001	A4/Z	1/4	1/8	17	8.0	13.0
2151002	A4/Z	3/8	1/8	20	9.0	14.0
2151003	A4/Z	3/8	1/4	20	9.0	14.0
2151004	A4/Z	1/2	1/4	25	10.0	15.5
2151005	A4/Z	1/2	3/8	25	10.0	15.5

REDUCER, CONICAL (A5)



Code	Ref.	F	F1	Ch	P	P1	L
2105001	A5	1/8	1/8	14	8.0	7.0	20.0
2105002	A5	1/8	1/4	17	8.0	8.0	22.5
2105003	A5	1/4	1/4	17	11.0	8.0	25.0
2105004	A5	1/4	3/8	22	11.0	10.0	28.5
2105005	A5	3/8	3/8	22	11.5	10.0	28.5
2105006	A5	3/8	1/2	24	11.5	11.0	32.0
2105007	A5	1/2	1/2	24	14.0	11.0	34.0

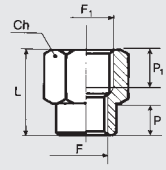
REDUCER, PARALLEL (A5/Z)



* WASHER D11 CAN BE USED

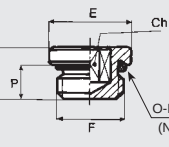
Code	Ref.	F	F1	Ch	P	P1	L
2152001	A5/Z	M5	1/8	12	4.0	7.0	17.0
2152002	A5/Z	1/8	1/8	14	6.0	7.0	18.5
2152003	A5/Z	1/8	1/4	17	6.0	8.0	21.5
2152004	A5/Z	1/4	1/4	17	8.0	8.0	22.5
2152005	A5/Z	1/4	3/8	22	8.0	10.0	26.0
2152006	A5/Z	3/8	3/8	22	9.0	10.0	26.5
2152007	A5/Z	3/8	1/2	24	9.0	11.0	29.5
2152008	A5/Z	1/2	1/2	25	10.0	11.0	29.5

REDUCER A6



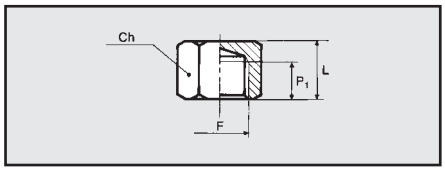
Code	Ref.	F	F1	Ch	P	P1	L
2106001	A6	1/8	1/4	17	8.0	8.0	21.5
2106002	A6	1/8	3/8	22	7.0	10.0	23.5
2106003	A6	1/4	3/8	22	9.0	10.0	25.5
2106004	A6	1/4	1/2	24	9.0	11.0	28.5
2106005	A6	3/8	1/2	24	11.0	11.0	29.5

PLUG WITH EXAGON EMBEDEDDED (A7)



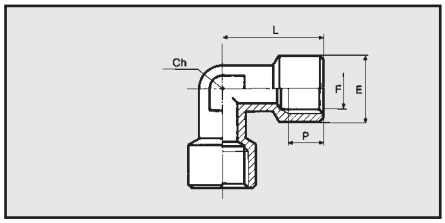
Code	Ref.	F	Ch	P	L	E	O ring
2107000	A7	M5	2.5	4.0	6.5	8	3.5x1.2
2107001	A7	1/8	3	7.0	9.5	15	2031
2107002	A7	1/4	6	8.0	11.0	18	2043
2107003	A7	3/8	8	9.0	12.5	21	2056
2107004	A7	1/2	10	11.0	14.5	26	3068

NUB (A8)



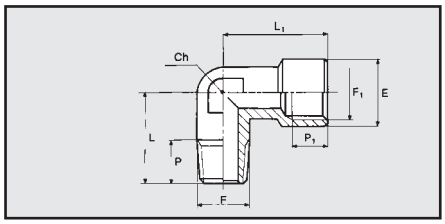
Code	Ref.	F	Ch	P1	L
2108001	A8	1/8	14	7.0	13.0
2108002	A8	1/4	17	8.0	15.0
2108003	A8	3/8	20	10.0	17.5
2108004	A8	1/2	24	11.0	20.0

ELBOW, FEMALE (A9)



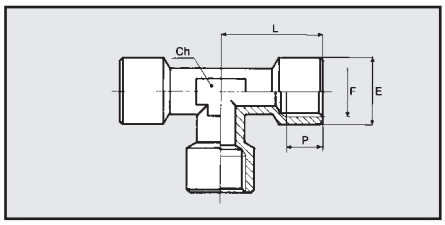
Code	Ref.	F	Ch	P	L	E
2109001	A9	1/8	10	7.0	20.5	13.5
2109002	A9	1/4	13	8.0	26.0	17.0
2109003	A9	3/8	15	10.0	30.0	20.5
2109004	A9	1/2	20	11.0	36.0	25.5

ELBOW, MALE-FEMALE (A10)



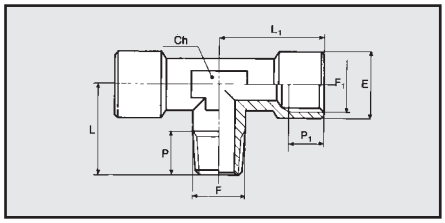
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2110001	A10	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2110002	A10	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2110003	A10	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2110004	A10	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, FEMALE (A11)



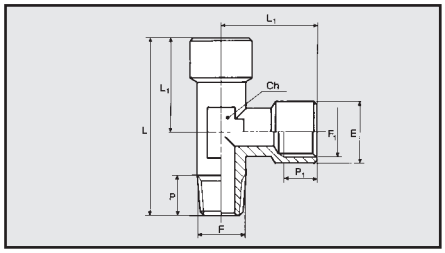
Code	Ref.	F	Ch	P	L	E
2111001	A11	1/8	10	7.0	20.5	13.5
2111002	A11	1/4	13	8.0	26.0	17.0
2111003	A11	3/8	15	10.0	30.0	20.5
2111004	A11	1/2	20	11.0	36.0	25.5

TEE, CENTRAL MALE (A12)



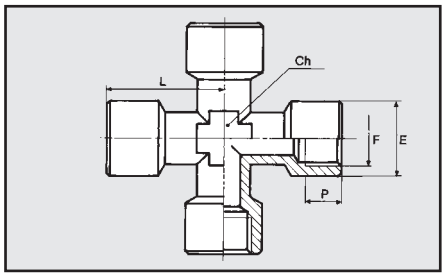
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2112001	A12	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2112002	A12	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0
2112003	A12	3/8	3/8	15	11.0	10.0	26.0	30.0	20.5
2112004	A12	1/2	1/2	20	13.0	11.0	30.0	36.0	25.5

TEE, LATERAL MALE (A13)



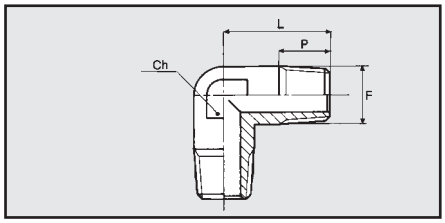
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2113001	A13	1/8	1/8	10	8.0	7.0	37.0	20.5	13.5
2113002	A13	1/4	1/4	13	10.5	8.0	50.5	26.0	17.0
2113003	A13	3/8	3/8	15	11.0	10.0	56.0	30.0	20.5
2113004	A13	1/2	1/2	20	13.0	11.0	66.0	36.0	25.5

EQUAL FEMALE CROSS (A14)



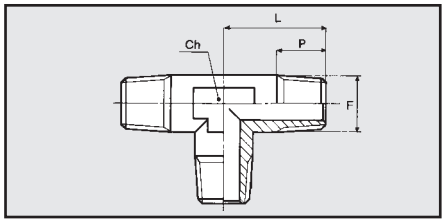
Code	Ref.	F	Ch	P	L	E
2114001	A14	1/8	10	7.0	20.5	13.5
2114002	A14	1/4	13	8.0	26.0	17.0
2114003	A14	3/8	15	10.0	28.0	20.5

ELBOW, MALE (A15)



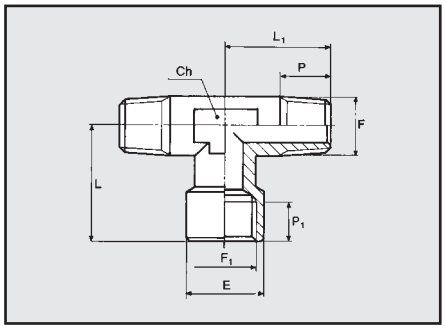
Code	Ref.	F	Ch	P	L
2115001	A15	1/8	10	8.0	16.5
2115002	A15	1/4	13	10.5	24.5
2115003	A15	3/8	15	11.0	26.0
2115004	A15	1/2	20	13.0	30.0

TEE, MALE (A16)



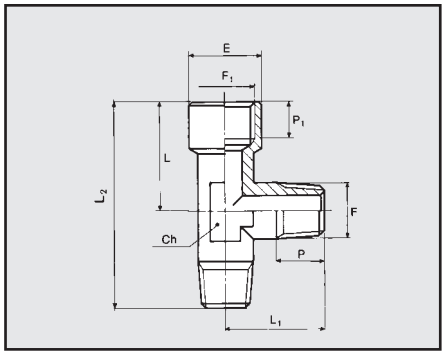
Code	Ref.	F	Ch	P	L
2116001	A16	1/8	10	8.0	16.5
2116002	A16	1/4	13	10.5	24.5
2116003	A16	3/8	15	11.0	26.0
2116004	A16	1/2	20	13.0	30.0

TEE, CENTRAL FEMALE (A17)



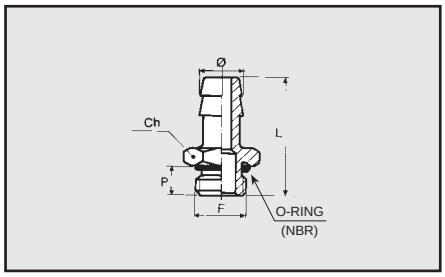
Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2117001	A17	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0
2117002	A17	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5
2117003	A17	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5
2117004	A17	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5

TEE, LATERAL FEMALE (A18)



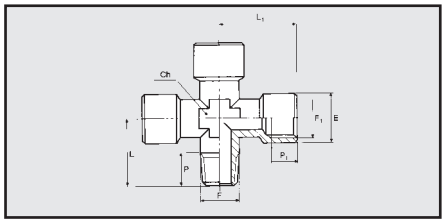
Code	Ref.	F	F1	Ch	P	P1	L	L1	E	L2
2118000	A18	1/8	1/8	10	8.0	7.0	20.5	16.5	13.5	37.0
2118001	A18	1/4	1/4	13	10.5	8.0	26.0	24.5	17.0	50.5
2118002	A18	3/8	3/8	15	11.0	10.0	30.0	26.0	20.5	56.0
2118003	A18	1/2	1/2	20	13.0	11.0	36.0	30.0	25.5	66.0

HOSE ADAPTER, PARALLEL (A19)



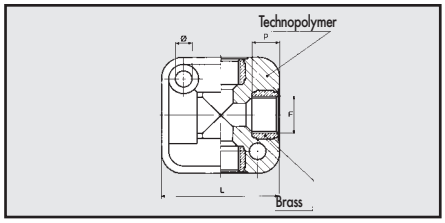
Code	Ref.	Ø	F	Ch	P	L	O ring
2119001	A19	7	1/8	15	6.0	31.0	2031
2119002	A19	7	1/4	18	8.0	33.0	2043
2119003	A19	8	1/8	15	6.0	31.0	2031
2119004	A19	9	1/8	15	6.0	31.0	2031
2119005	A19	9	1/4	18	8.0	33.0	2043
2119006	A19	9	3/8	21	9.0	34.0	2056
2119007	A19	12	1/4	18	8.0	33.0	2043
2119008	A19	12	3/8	21	9.0	34.0	2056
2119009	A19	12	1/2	26	11.0	36.0	3068
2119010	A19	17	3/8	21	11.0	34.0	2056
2119011	A19	17	1/2	26	9.0	36.0	3068

MALE-FEMALE EQUAL CROSS (A20)



Code	Ref.	F	F1	Ch	P	P1	L	L1	E
2120001	A20	1/8	1/8	10	8.0	7.0	16.5	20.5	13.5
2120002	A20	1/4	1/4	13	10.5	8.0	24.5	26.0	17.0

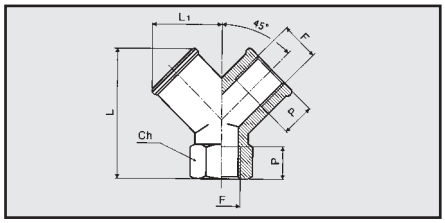
TEE CROSS (A21)



Code	Ref.	F	Ø	P	L	spess.
2121001	A21	1/8	4.5	8.0	31.0	17.5
2121002	A21	1/4	5.5	9.0	40.0	24.0
2121003	A21	3/8	5.5	12.0	50.0	28.0
2121004	A21	1/2	5.5	12.0	50.0	34.0

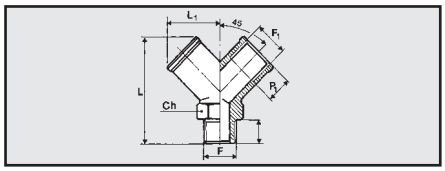
Maximum operating conditions for the A21s are different from other A-series fittings, namely max P13 bar, max T 50°C

Y, FEMALE 90° (A23)



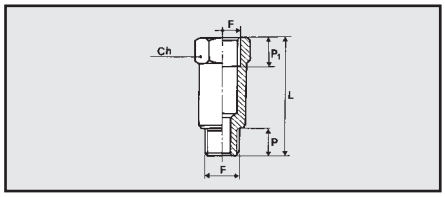
Cod.	Ref.	F	Ch	P	L	L1
2123001	A23	1/8	13	8	26.5	14.5
2123002	A23	1/4	17	11	32.0	18.0
2123003	A23	3/8	20	11.5	36.5	20.5
2123004	A23	1/2	25	14	44.5	26.5

Y, MALE 90° (A24)



Cod.	Ref.	F	F1	Ch	P	P1	L	L1
2124001	A24	1/8	1/8	13	8.0	8.0	32.0	14.5
2124002	A24	1/4	1/4	17	11.0	11.0	38.0	18.0
2124003	A24	3/8	3/8	20	11.5	11.5	42.0	20.5
2124004	A24	1/2	1/2	25	14.0	14.0	53.0	26.5

EXTENSION (A25)



Cod.	Ref.	F	Ch	P	L	P1
2150003	A25	1/8	14	6.0	22.0	8.0
2150004	A25	1/8	14	6.0	42.0	8.0
2150005	A25	1/8	14	6.0	51.0	8.0
2150006	A25	1/4	17	8.0	35.0	11.0
2150007	A25	1/4	17	8.0	51.0	11.0

FITTINGS Series B

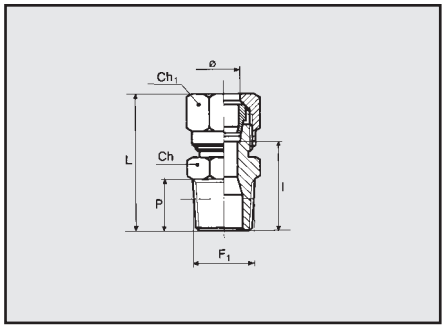
BICONICAL FITTINGS

- Body: OT58 brass
- Maximum pressure 870 psi, 6000 kPa 60 bar



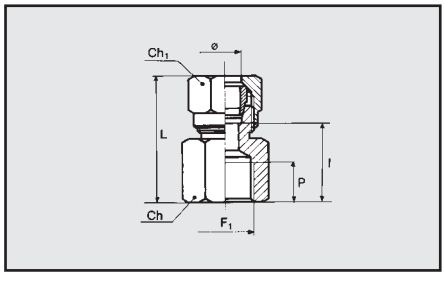
OVERALL DIMENSIONS AND ORDERING CODES

STRAIGHT, MALE CONICAL (B1)



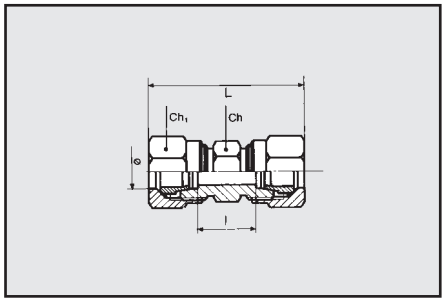
Code	Ref.	∅	F1	Ch	Ch1	P	L	l
2201001	B1	4/2	1/8	10	10	8.0	27.5	16.0
2201002	B1	6/4	1/8	12	12	8.0	28.0	14.5
2201003	B1	6/4	1/4	14	12	11.0	31.0	17.5
2201004	B1	8/6	1/8	12	14	8.0	30.0	16.5
2201005	B1	8/6	1/4	14	14	11.0	33.0	19.5
2201006	B1	8/6	3/8	17	14	11.5	33.5	20.0
2201007	B1	10/8	1/4	17	19	11.0	38.5	20.0
2201008	B1	10/8	3/8	17	19	11.5	39.0	20.5
2201009	B1	10/8	1/2	22	19	14.0	42.5	24.0
2201010	B1	12/10	3/8	19	22	11.5	38.5	20.5
2201011	B1	12/10	1/2	22	22	14.0	42.0	24.0
2201012	B1	15/12	1/2	22	27	14.0	43.5	25.0

STRAIGHT, FEMALE (B2)



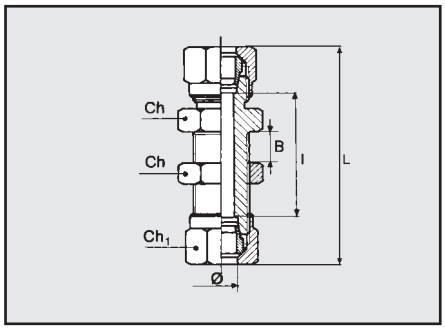
Code	Ref.	∅	F1	Ch	Ch1	P	L	l
2202001	B2	6/4	1/8	14	12	7	28.5	15.0
2202002	B2	6/4	1/4	17	12	8	31.5	18.0
2202003	B2	8/6	1/8	14	14	7	29.5	16.0
2202004	B2	8/6	1/4	17	14	8	32.0	18.5
2202005	B2	8/6	3/8	22	14	10	36.0	22.5
2202006	B2	10/8	1/4	17	19	8	37.5	19.0
2202007	B2	10/8	3/8	22	19	10	41.0	22.5

STRAIGHT, CONNECTOR (B3)



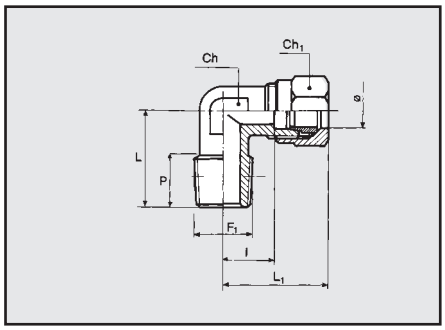
Code	Ref.	∅	Ch	Ch1	L	l
2203001	B3	4/2	10	10	35	12.0
2203002	B3	6/4	12	12	36	9.0
2203003	B3	8/6	14	14	39	12.0
2203004	B3	10/8	17	19	50	13.0
2203005	B3	12/10	19	22	50	14.0
2203006	B3	15/12	24	27	53	16.0

BULKHEAD CONNECTOR (B4)



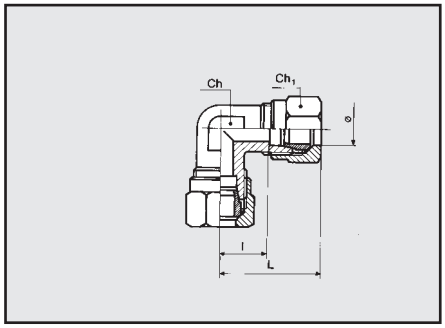
Code	Ref.	Ø	Ch	Ch1	L	l
2204001	B4	6/4	14	12	53.0	26
2204002	B4	8/6	16	14	56.0	29
2204003	B4	10/8	19	19	66.5	29.5
2204004	B4	12/10	22	22	67.0	31
2204005	B4	15/12	25	27	73.5	36.5

ELBOW, MALE (B5)



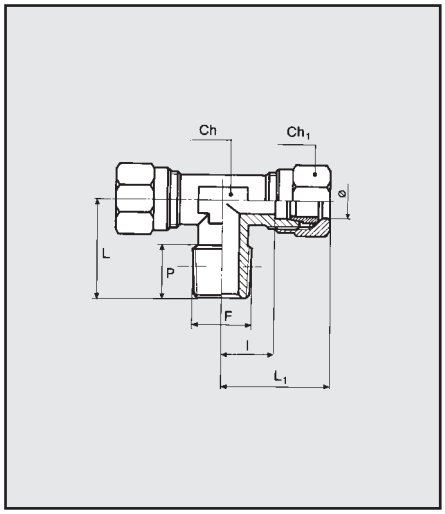
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	l
2205001	B5	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2205002	B5	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2205003	B5	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2205004	B5	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2205005	B5	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2205006	B5	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2205007	B5	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2205008	B5	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2205009	B5	10/8	1/2	20	19	13.0	30.0	39.0	20.5
2205010	B5	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2205011	B5	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2205012	B5	15/12	1/2	20	27	13.0	30.0	38.5	20.0

ELBOW, FEMALE (B6)



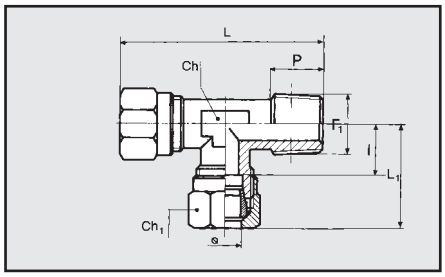
Code	Ref.	Ø	Ch	Ch1	L	l
2206001	B6	4/2	9	10	21.5	10.0
2206002	B6	6/4	9	12	22.0	8.5
2206003	B6	8/6	11	14	24.0	10.5
2206004	B6	10/8	13	19	32.0	13.5
2206005	B6	12/10	15	22	33.5	15.5
2006006	B6	15/12	20	27	38.5	20.0

TEE, CENTRAL MALE (B7)



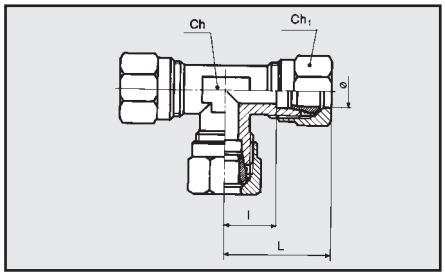
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	l
2207001	B7	4/2	1/8	9	10	8.0	16.0	21.5	10.0
2207002	B7	6/4	1/8	9	12	8.0	16.0	22.0	8.5
2207003	B7	6/4	1/4	11	12	11.0	20.0	23.5	10.0
2207004	B7	8/6	1/8	11	14	8.0	17.0	24.0	10.5
2207005	B7	8/6	1/4	11	14	11.0	20.0	24.0	10.5
2207006	B7	8/6	3/8	13	14	12.0	23.5	27.0	13.5
2207007	B7	10/8	1/4	13	19	11.0	22.5	32.0	13.5
2207008	B7	10/8	3/8	13	19	12.0	23.5	32.0	13.5
2207010	B7	12/10	3/8	15	22	11.5	24.0	33.5	15.5
2207011	B7	12/10	1/2	20	22	13.0	30.0	38.0	20.0
2207012	B7	15/12	1/2	20	27	13.0	30.0	38.5	20.0

TEE, LATERAL MALE (B8)



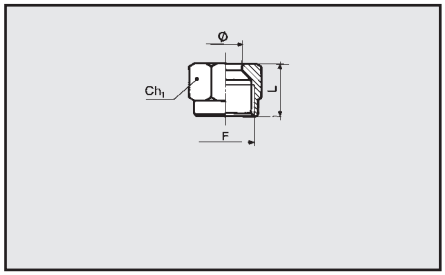
Code	Ref.	Ø	F1	Ch	Ch1	P	L	L1	I
2208000	B8	4/2	1/8	9	10	8.0	37.5	21.5	10.0
2208001	B8	6/4	1/8	9	12	8.0	38.5	22.0	8.5
2208002	B8	6/4	1/4	9	12	11.0	43.5	23.5	10.0
2208003	B8	8/6	1/8	11	14	8.0	41.0	24.0	10.5
2208004	B8	8/6	1/4	11	14	11.0	44.0	24.0	10.5
2208005	B8	8/6	3/8	13	14	12.0	50.5	27.0	13.5
2208006	B8	10/8	1/4	13	19	11.0	54.5	32.0	13.5
2208007	B8	10/8	3/8	13	19	12.0	55.5	32.0	13.5
2208009	B8	12/10	3/8	15	22	11.5	57.5	33.5	15.5
2208010	B8	12/10	1/2	20	22	13.0	68.0	38.0	20.0
2208011	B8	15/12	1/2	20	27	13.0	68.5	38.5	20.0

TEE, MALE (B9)



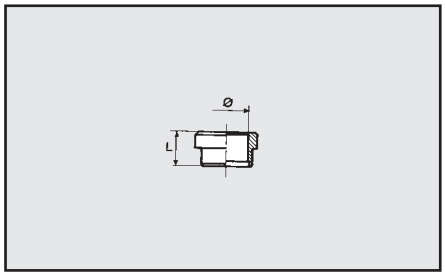
Code	Ref.	Ø	Ch	Ch1	L	I
2209001	B9	4/2	9	10	21.5	10.0
2209002	B9	6/4	9	12	22.0	8.5
2209003	B9	8/6	11	14	24.0	10.5
2209004	B9	10/8	13	19	32.0	13.5
2209005	B9	12/10	15	22	33.5	15.5
2209006	B9	15/12	20	27	38.5	20.0

NUT (B10)



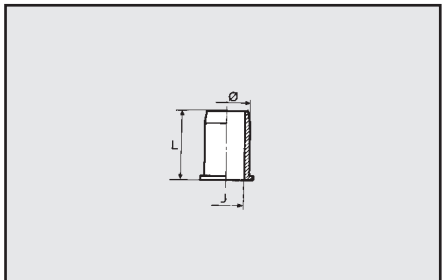
Code	Ref.	Ø	Ch1	L	F
2210001	B10	4/2	10	11.0	8x1
2210002	B10	6/4	12	11.5	10x1
2210003	B10	8/6	14	13.0	12x1
2210004	B10	10/8	19	15.5	16x1.5
2210005	B10	12/10	22	15.5	18x1.5
2210006	B10	15/12	27	17.0	22x1.5

OLIVE (B11)



Code	Ref.	Ø	L
2211001	B11	4/2	6
2211002	B11	6/4	7
2211003	B11	8/6	7
2211004	B11	10/8	10
2211005	B11	12/10	10
2211006	B11	15/12	10

INTERNAL BUSH (B12)

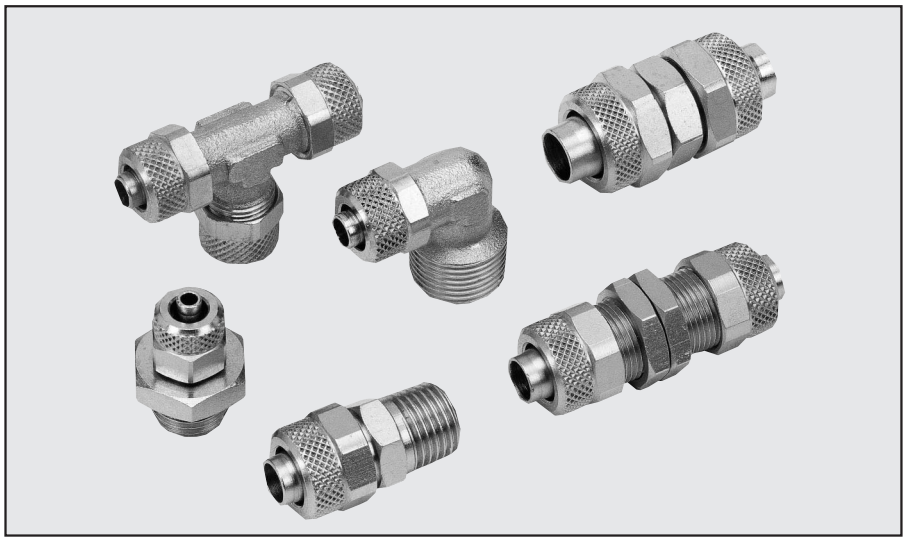


Code	Ref.	Ø	J	L
2212001	B12	6/4	3	12.0
2212002	B12	8/6	5	14.0
2212003	B12	10/8	7	15.0
2212004	B12	12/10	9	16.0
2212005	B12	15/12	11	17.0

FITTINGS Series C

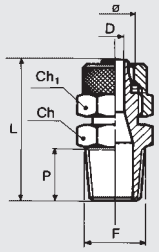
PUSH-IN FITTINGS

- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar



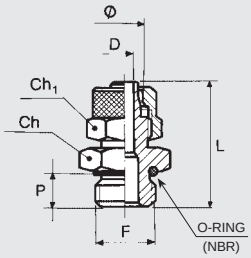
OVERALL DIMENSIONS AND ORDERING CODES

STRAIGHT, MALE CONICAL (C1)



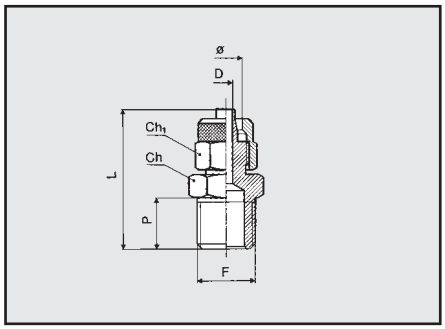
Code	Ref.	∅	F	Ch	Ch1	P	L	D
2301001	C1	6/4	1/8	12	12	8.0	26.5	3.0
2301002	C1	6/4	1/4	14	12	11.0	30.0	3.0
2301003	C1	8/6	1/8	12	14	8.0	26.5	5.0
2301004	C1	8/6	1/4	14	14	11.0	30.0	5.0
2301005	C1	8/6	3/8	17	14	11.5	31.0	5.0
2301020	C1	10/8	1/8	14	16	8.0	29.0	5.0
2301006	C1	10/8	1/4	14	16	11.0	32.0	6.8
2301007	C1	10/8	3/8	17	16	11.5	33.0	6.8
2301008	C1	10/8	1/2	22	16	14.0	36.0	6.8
2301009	C1	12/10	3/8	17	19	11.5	35.0	8.5
2301010	C1	12/10	1/2	22	19	14.0	38.0	8.5
2301015	C1	15/12.5	1/2	22	22	14.0	39.5	11.0
2301017	C1	5/3	1/8	12	8	8.0	24.5	2.0
2301019	C1	8/6	1/2	22	14	14.0	34.0	5.0

STRAIGHT, MALE PARALLEL WITH O-RING (C1/Z)



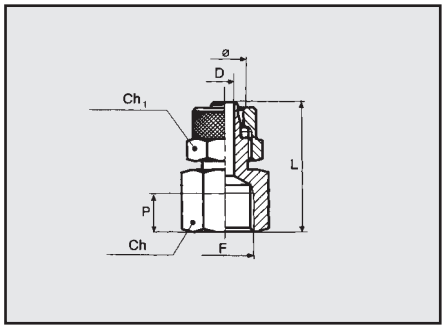
Code	Ref.	∅	F	Ch	Ch1	P	L	D	O ring
2351001	C1/Z	4/2	M5	9	9	4.0	23.0	1.5	4x1.5
2351002	C1/Z	6/4	M5	9	9	4.0	23.0	2.7	4x1.5
2351003	C1/Z	6/4	1/8	13	12	6.0	25.0	3.0	2031
2351004	C1/Z	6/4	1/4	16	12	8.0	27.0	3.0	2043
2351005	C1/Z	8/6	1/8	14	14	6.0	25.0	5.0	2031
2351006	C1/Z	8/6	1/4	16	14	8.0	27.0	5.0	2043
2351007	C1/Z	8/6	3/8	19	14	9.0	29.0	5.0	2056
2351008	C1/Z	10/8	1/4	16	16	8.0	29.0	6.8	2043
2351009	C1/Z	10/8	3/8	19	16	9.0	31.0	6.8	2056
2351010	C1/Z	10/8	1/2	24	16	11.0	33.0	6.8	3068
2351011	C1/Z	12/10	3/8	19	19	9.0	33.0	8.5	2056
2351012	C1/Z	12/10	1/2	24	19	11.0	35.0	8.5	3068

STRAIGHT, MALE METRIC THREAD (C1/C)



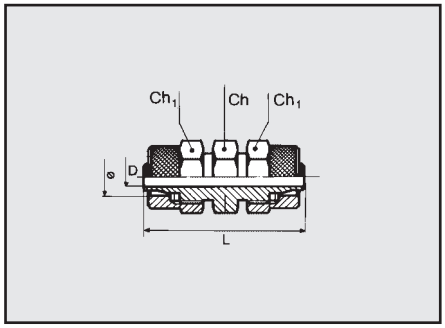
Code	Ref.	∅	F	Ch	Ch1	P	L	D
2356001	C1/C	5/3	M5	8	8	4	20	2
2356002	C1/C	6/4	M6	8	9	5	22	3
2356003	C1/C	6/4	M12x1.5	17	12	8	28	3
2356004	C1/C	6/4	3/8	19	12	9	29	3
2356005	C1/C	8/6	M12x1.5	17	14	8	28	5

STRAIGHT, FEMALE (C2)



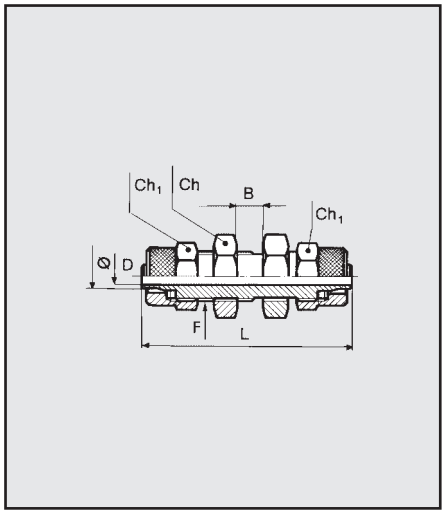
Code	Ref.	∅	F	Ch	Ch1	P	L	D
2302001	C2	6/4	1/8	14	12	7.0	26.5	3.0
2302002	C2	6/4	1/4	17	12	8.0	29.5	3.0
2302003	C2	8/6	1/8	14	14	7.0	26.5	5.0
2302004	C2	8/6	1/4	17	14	8.0	29.0	5.0
2302005	C2	8/6	3/8	20	14	10.0	33.0	5.0
2302006	C2	10/8	1/4	17	16	8.0	31.0	6.8
2302007	C2	10/8	3/8	20	16	10.0	35.0	6.8
2302008	C2	10/8	1/2	24	16	11.0	38.0	6.8

STRAIGHT, CONNECTOR (C3)



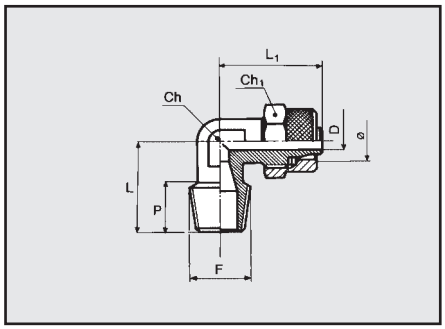
Code	Ref.	∅	Ch	Ch1	L	D
2303001	C3	6/4	12	12	33.0	3.0
2303002	C3	8/6	12	14	33.0	5.0
2303003	C3	10/8	14	16	37.0	6.8
2303004	C3	12/10	17	19	42.0	8.5

BULKHEAD CONNECTOR (C4)



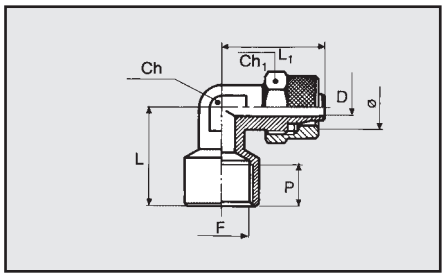
Code	Ref.	∅	Ch	Ch1	L	D	B	F
2304001	C4	6/4	14	12	47.0	3.0	11.0	M10x1
2304002	C4	8/6	16	14	48.0	5.0	12.0	M12x1
2304003	C4	10/8	17	16	49.0	6.8	9.0	M14x1
2304004	C4	12/10	19	19	53.0	8.5	9.0	M16x1

ELBOW, MALE CONICAL (C5)



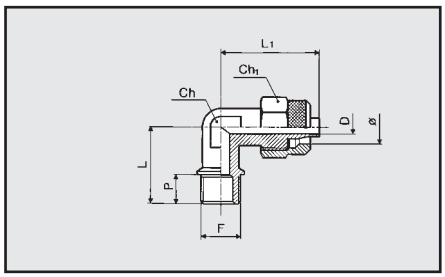
Code	Ref.	∅	F	Ch	Ch1	P	L	L1	D
2305016	C5	5/3	1/8	8	8	8.0	17.0	21.5	2.0
2305001	C5	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2305002	C5	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2305003	C5	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2305004	C5	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2305005	C5	8/6	3/8	12	14	12.0	22.0	23.0	5.0
2305006	C5	10/8	1/4	12	16	11.0	21.0	25.0	6.8
2305007	C5	10/8	3/8	12	16	12.0	22.0	25.0	6.8
2305008	C5	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2305009	C5	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2305010	C5	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2305017	C5	15/12.5	1/2	17	22	14.0	28.0	34.0	11.0

ELBOW FEMALE (C5/F)



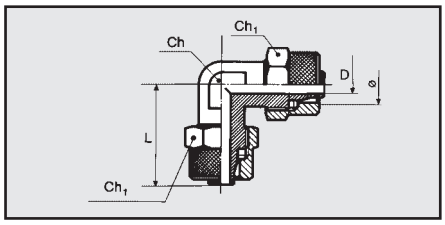
Code	Ref.	∅	F	Ch	Ch1	L	L1	D	P
2352001	C5/F	6/4	1/8	9	12	21.0	22.0	3.0	7.0
2352002	C5/F	8/6	1/4	12	14	24.0	23.0	5.0	7.0

ELBOW, MALE METRIC THREAD (C5/C)



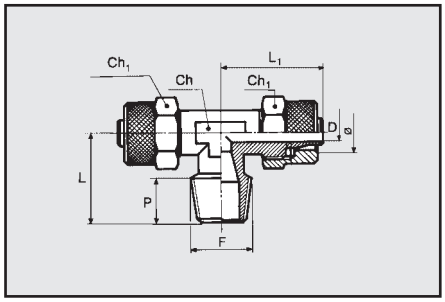
Code	Ref.	∅	F	Ch	Ch1	P	L	L1	D
2357001	C5/C	6/4	M12x1.5	10	12	9	22	22.5	3
2357002	C5/C	8/6	M12x1.5	10	14	9	22	22.5	5

ELBOW CONNECTOR (C6)



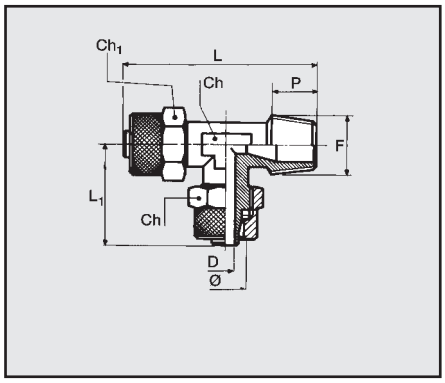
Code	Ref.	∅	Ch	Ch1	L	D
2306001	C6	6/4	9	12	22.0	3.0
2306002	C6	8/6	12	14	22.0	5.0
2306003	C6	10/8	12	16	25.0	6.8
2306004	C6	12/10	17	19	31.0	8.5
2306006	C6	15/12.5	17	22	34.0	11.0

TEE, CENTRAL MALE (C7)



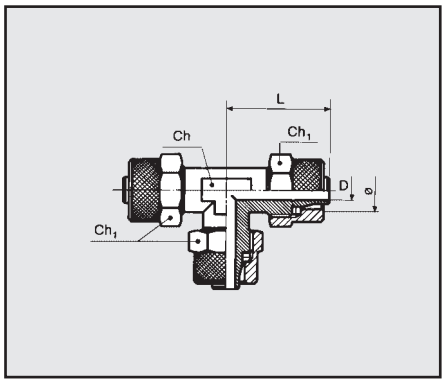
Code	Ref.	∅	F	Ch	Ch1	P	L	L1	D
2307015	C7	5/3	1/8	8	8	8.0	17.0	21.5	2.0
2307001	C7	6/4	1/8	9	12	8.0	17.0	22.0	3.0
2307002	C7	6/4	1/4	9	12	11.0	20.0	22.0	3.0
2307003	C7	8/6	1/8	12	14	8.0	17.0	22.0	5.0
2307004	C7	8/6	1/4	12	14	11.0	20.0	22.0	5.0
2307005	C7	8/6	3/8	12	14	12.0	22.0	23.0	5.0
2307006	C7	10/8	1/4	12	16	11.0	21.0	25.0	6.8
2307007	C7	10/8	3/8	12	16	12.0	22.0	25.0	6.8
2307008	C7	10/8	1/2	17	16	14.0	26.0	28.5	6.8
2307009	C7	12/10	3/8	17	19	12.0	24.0	31.0	8.5
2307010	C7	12/10	1/2	17	19	14.0	26.0	31.0	8.5
2307016	C7	15/12.5	1/2	17	22	14.0	28.0	34.0	11.0

TEE, LATERAL MALE (C8)



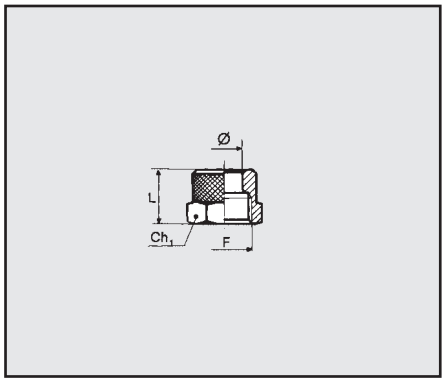
Code	Ref.	Ø	F	Ch	Ch1	P	L	L1	D
2308012	C8	5/3	1/8	8	12	8.0	38.5	21.5	2.0
2308001	C8	6/4	1/8	9	12	8.0	39.0	22.0	3.0
2308002	C8	6/4	1/4	9	12	11.0	42.0	22.0	3.0
2308003	C8	8/6	1/8	12	14	8.0	39.0	22.0	5.0
2308004	C8	8/6	1/4	12	14	11.0	42.0	22.0	5.0
2308005	C8	8/6	3/8	12	14	12.5	45.0	23.0	5.0
2308006	C8	10/8	1/4	12	16	11.5	46.0	25.0	6.8
2308007	C8	10/8	3/8	12	16	12.5	47.0	25.0	6.8
2308008	C8	10/8	1/2	17	16	13.5	54.5	28.5	6.8
2308009	C8	12/10	3/8	17	19	11.5	55.0	31.0	8.5
2308010	C8	12/10	1/2	17	19	13.5	57.0	31.0	8.5

TEE CONNECTOR (C9)



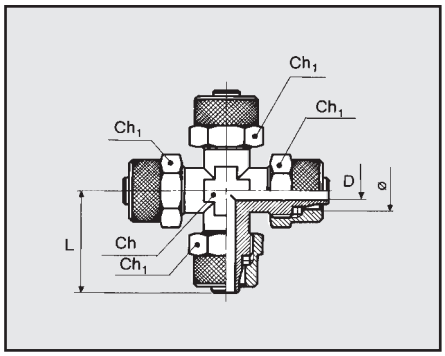
Code	Ref.	Ø	Ch	Ch1	L	D
2309001	C9	6/4	9	12	22.0	3.0
2309002	C9	8/6	12	14	22.0	5.0
2309003	C9	10/8	12	16	25.0	6.8
2309004	C9	12/10	17	19	31.0	8.5
2309007	C9	15/12.5	17	22	34.0	11.0

NUT (C10)



Code	Ref.	Ø	F	Ch1	L
2310001	C10	4/2	M7x0.5	9	9.0
2310009	C10	5/3	M7x0.5	9	9.0
2310002	C10	6/4- M5	M8x0.5	9	9.0
2310003	C10	6/4	M10x1	12	11.0
2310004	C10	8/6	M12x1	14	11.0
2310005	C10	10/8	M14x1	16	12.0
2310006	C10	12/10	M16x1	19	12.0
2310011	C10	15/12.5	M20x1	22	16.0

EQUAL CROSS CONNECTOR (C11)



Code	Ref.	Ø	Ch	Ch1	L	D
2311001	C11	6/4	8	12	21.0	3.0
2311002	C11	8/6	10	14	23.5	5.0
2311003	C11	10/8	12	16	26.5	6.8

FITTINGS Series D

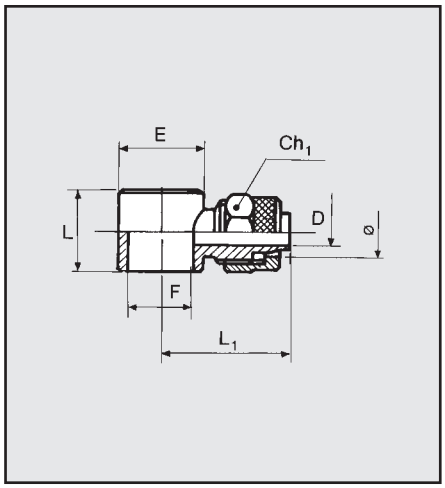
ADJUSTABLE PUSH-IN FITTINGS

- Body: OT58 brass
- Maximum pressure 261 psi, 1800 kPa 18 bar



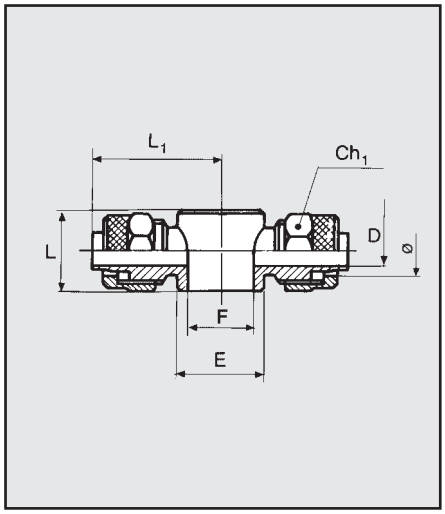
OVERALL DIMENSIONS AND ORDERING CODES

SINGLE BANJO BODY (D5)



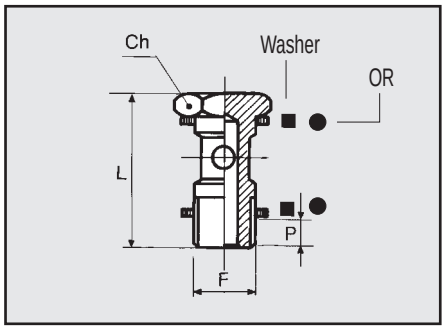
Code	Ref.	Ø	F	Ch1	L	L1	D	E
2405000	D5	4/2	M5	9	9.0	20.5	1.5	9.5
2405013	D5	5/3	1/8	9	15.0	24.3	2.0	14.0
2405018	D5	5/3	M5	9	9.0	20.7	2.0	9.5
2405001	D5	6/4	M5	9	9.0	20.5	3.0	9.5
2405002	D5	6/4	1/8	12	15.0	24.5	3.0	14.0
2405003	D5	6/4	1/4	12	17.0	26.5	3.0	18.0
2405005	D5	8/6	1/8	14	15.0	24.0	5.0	14.0
2405006	D5	8/6	1/4	14	17.0	26.0	5.0	18.0
2405007	D5	8/6	3/8	14	20.0	28.5	5.0	21.0
2405009	D5	10/8	1/4	16	17.0	28.0	6.8	18.0
2405010	D5	10/8	3/8	16	20.0	29.0	6.8	21.0
2405011	D5	10/8	1/2	16	24.0	30.5	6.8	26.0
2405012	D5	12/10	1/2	19	24.0	33.5	8.5	26.0
2405017	D5	12/10	3/8	19	20.0	31.0	8.5	21.0

DOUBLE BANJO BODY (D6)



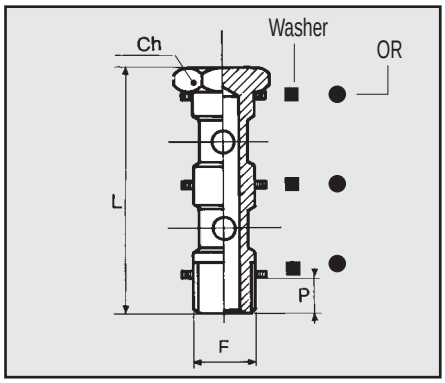
Code	Ref.	Ø	F	Ch1	L	L1	D	E
2406001	D6	6/4	1/8	12	15.0	24.5	3.0	14.0
2406002	D6	6/4	1/4	12	17.0	26.5	3.0	18.0
2406004	D6	8/6	1/8	14	15.0	25.0	5.0	14.0
2406005	D6	8/6	1/4	14	17.0	26.0	5.0	18.0
2406006	D6	8/6	3/8	14	20.0	28.5	5.0	21.0
2406008	D6	10/8	1/4	16	17.0	27.5	6.8	18.0
2406009	D6	10/8	3/8	16	20.0	29.0	6.8	21.0
2406010	D6	10/8	1/2	16	24.0	30.5	6.8	26.0
2406011	D6	12/10	1/2	19	24.0	33.5	8.5	26.0

BANJO STEM SINGLE (D7)



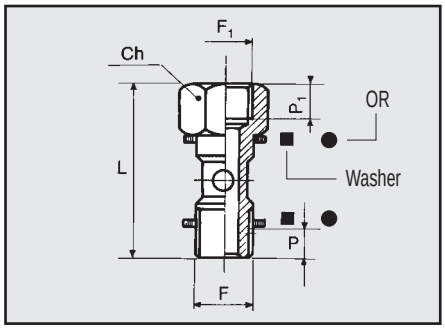
Code	Ref.	F	Ch	L	P
Version with washer D11 for models R13-R14-D12-D17-D5-D6					
2407001	D7	M5	8	18.0	3
2407002	D7	1/8	14	28.0	6
2407003	D7	1/4	17	33.0	8
2407004	D7	3/8	20	37.0	9
2407005	D7	1/2	27	42.0	10
2407006	D7	M12x1.5	17	33.0	8
Version with O-ring for models R28-R29					
2407102	D7 con OR	1/8	14	28.0	6
2407103	D7 con OR	1/4	17	33.0	8
2407104	D7 con OR	3/8	20	37.0	9

BANJO STEM DOUBLE (D8)



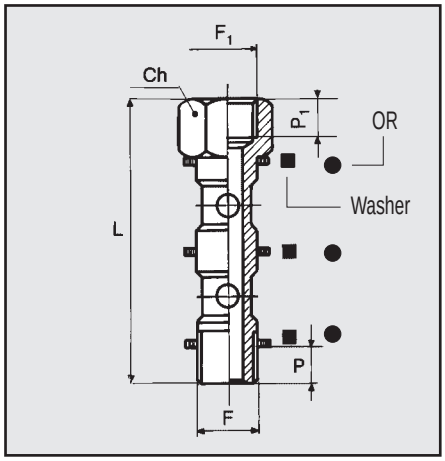
Cod.	Ref.	F	Ch	L	P
Version with washer D11 for models R13-R14-D5-D6-D12-D17					
2408001	D8	1/8	14	44.5	6
2408002	D8	1/4	17	51.5	8
2408003	D8	3/8	20	58.5	9
2408004	D8	1/2	27	67.5	10
Version with O-ring for models R28-R29					
2408102	D8 con OR	1/8	14	44.5	6
2408103	D8 con OR	1/4	17	51.5	8
2408104	D8 con OR	3/8	20	58.5	9

BANJO PASSING TROUGHT SINGLE (D9)



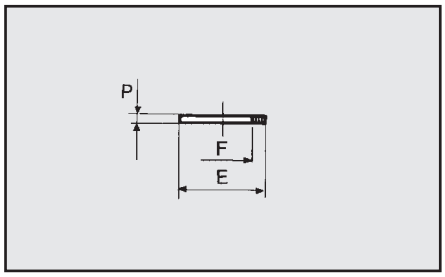
Cod.	Ref.	F	F1	Ch	L	P	P1
Version with washer D11 for models R13-R14-D5-D6-D12-D17							
2409001	D9	1/8	1/8	14	36.5	6	7
2409002	D9	1/4	1/4	17	42.5	8	8
2409003	D9	3/8	3/8	20	49.5	9	10
2409004	D9	1/2	1/2	27	56.5	10	11
Version with O-ring for models R28-R29							
2409102	D9	1/8	1/8	14	36.5	6	7
2409103	D9	1/4	1/4	17	42.5	8	8
2409104	D9	3/8	3/8	20	49.5	9	10

BANJO PASSING TROUGHT STEM DOUBLE (D10)



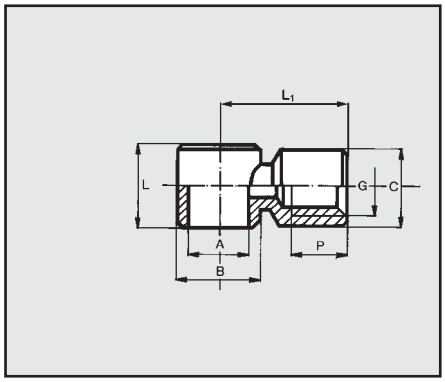
Code	Ref.	F	F1	Ch	L	P	P1
Version with washer D11 for models R13-R14-D5-D6-D12-D17							
2410001	D10	1/8	1/8	14	53.0	6	7.0
2410002	D10	1/4	1/4	17	61.0	8	8.0
2410003	D10	3/8	3/8	20	71.0	9	10.0
2410004	D10	1/2	1/2	27	82.0	10	11.0
Version with O-ring for models R28-R29							
2410102	D10 con OR	1/8	1/8	14	53.0	6	7.0
2410103	D10 con OR	1/4	1/4	17	61.0	8	8.0
2410104	D10 con OR	3/8	3/8	20	71.0	9	10.0

WASHER (D11)



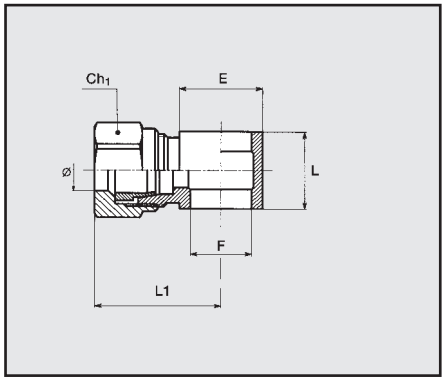
Code	Ref.	F	E	P
2411001	D11	M5	9	1.5 (nylon)
2411002	D11	1/8	13.8	1.5
2411003	D11	1/4	17.8	1.5
2411004	D11	3/8	21.0	1.5
2411005	D11	1/2	26.0	1.5

SINGLE BANJO PASSING TROUGHT BODY (D12)



Code	Ref.	A	G	B	C	L	L1	P
2412001	D12	1/8	1/8	14	13.5	15	21.5	7
2412002	D12	1/4	1/4	18	17.0	17	25.5	8
2412003	D12	3/8	3/8	21	20.5	20	31.0	10

SINGLE BANJO WITH "B" INTERFACE (D17)



Code	Ref.	Ø	F	Ch1	L	L1	E
2417006	D17	4/2	1/8	10	15	24.5	14
2417002	D17	6/4	1/8	12	15	26.0	14
2417003	D17	6/4	1/4	12	17	28.0	18
2417004	D17	8/6	1/8	14	15	26.0	14
2417005	D17	8/6	1/4	14	17	28.0	18

NOTES

SUMMARY lineonline®

CHAPTER 4.2

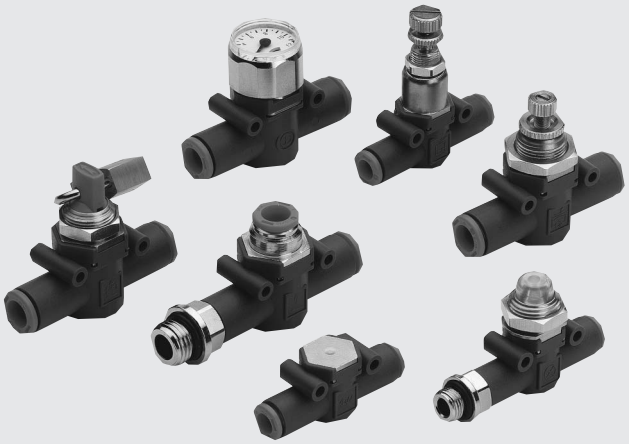
	INTRODUCTION	PAGE 4.2/02
	LINE-MOUNTED MICRO FLOW REGULATOR SERIES “RFL-R”	PAGE 4.2/04
	MINIATURE REDUCER SERIES “RML-RMS-RMC”	PAGE 4.2/08
	IN-LINE QUICK-EXHAUST VALVES SERIES “VSR L”	PAGE 4.2/12
	IN-LINE CHECK VALVE SERIES “VNR L”	PAGE 4.2/15
	IN-LINE SHUTOFF VALVES SERIES “V2V L”“V3V L”	PAGE 4.2/18
	IN-LINE PRESSURE GAUGE SERIES “MAN L”	PAGE 4.2/22
	IN-LINE PRESSURE INDICATOR SERIES “LAM L”	PAGE 4.2/24
	IN-LINE SOLENOID VALVES SERIES “SOV L”	PAGE 4.2/26
	LINE-ON-LINE ACCESSORIES	PAGE 4.2/29

METAL WORK PNEUMATIC

lineonline®

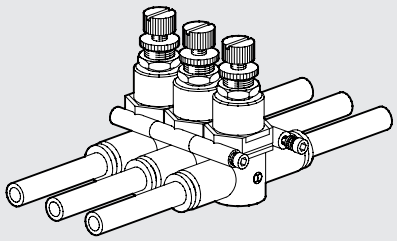
LINE OF PRODUCTS ON LINE

Line on Line is an exclusive range of products for mounting on pneumatic circuits. With these small, highly efficient components it is possible to perform all pneumatic functions at any point of the circuit.
Line on Line is ultra-modular - the components can be connected in parallel, in series or combined parallel/series.
All Line on Line products are available for pipe-pipe connection with two FOX push-in fittings, or for thread-pipe connection with a brass nickel-plated male thread and a FOX push-in fitting.
The body is made of technopolymer, giving a product that is extremely lightweight and compact.
One side of the body is marked with an indelible pneumatic symbol to facilitate identification and indicate the direction of flow.

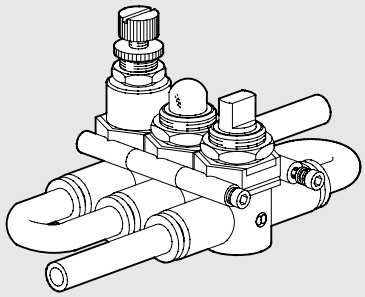


CONNECTION FREE

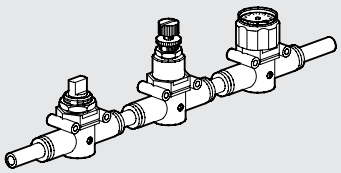
PARALLEL LINES



SERIAL LINE PARALLEL FITTING



SERIAL LINE IN-LINE FITTING



FIXING FREE

WALL FIXING

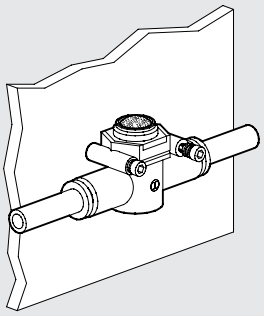
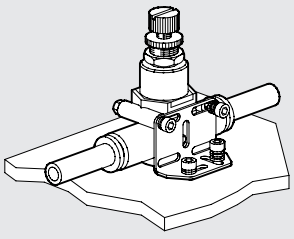
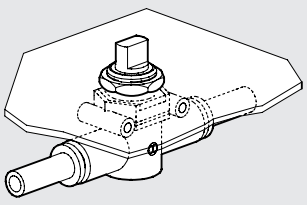


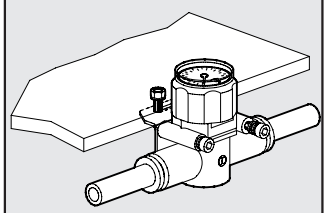
PLATE FIXING



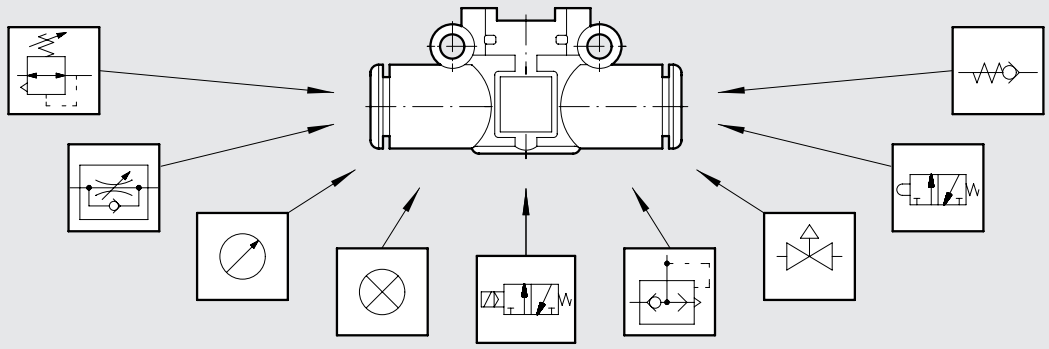
PANEL FIXING



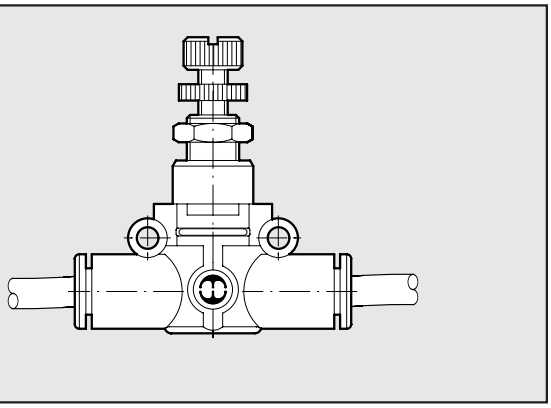
UNDER WALL FIXING



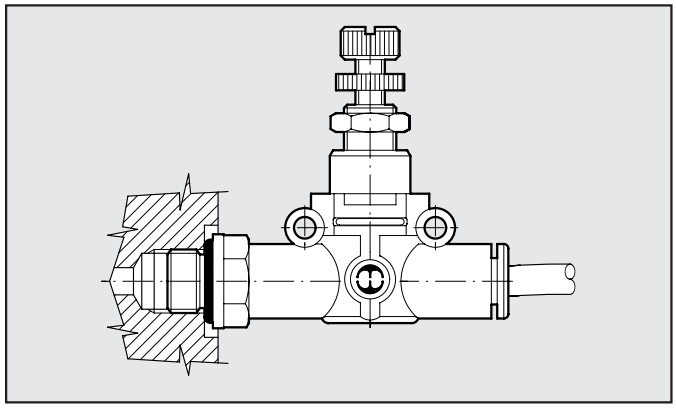
ALL THE PNEUMATIC FUNCTIONS WITH THE SAME EXTERNAL DIMENSIONS



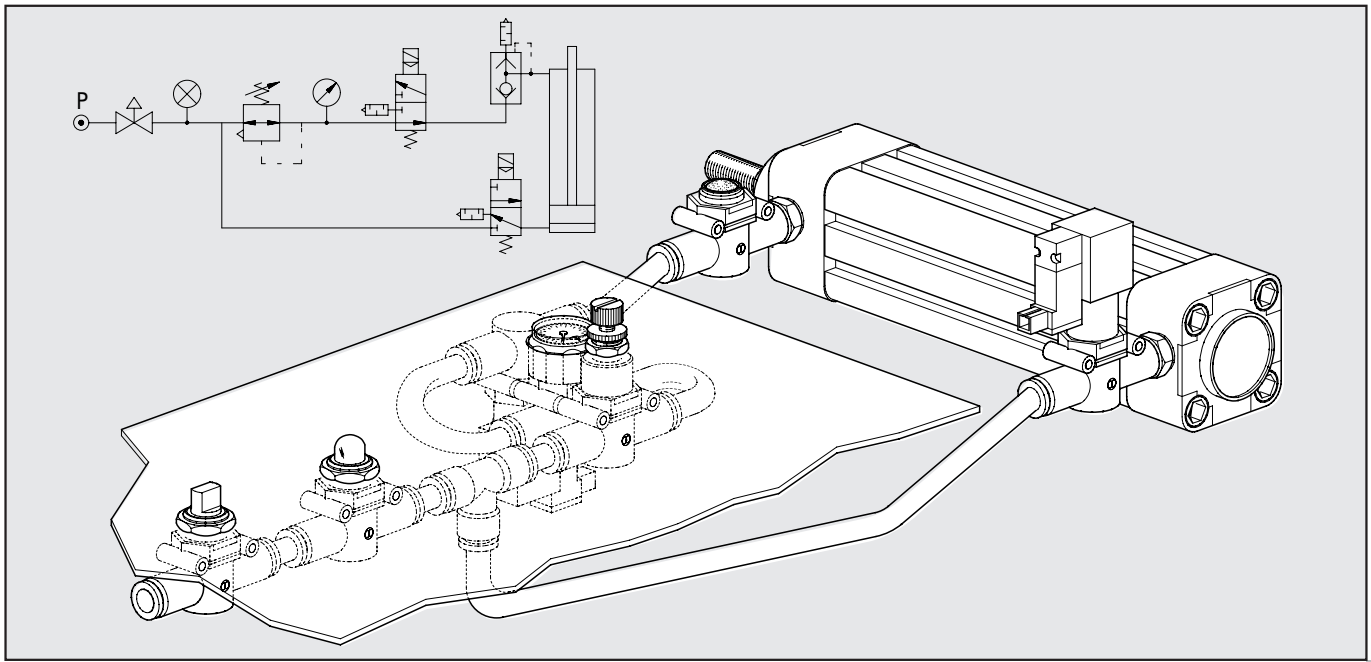
PIPE-PIPE



THREAD-PIPE



APPLICATION EXAMPLE



LINE-MOUNTED FLOW MICRO-REGULATOR WITH PUSH-IN FITTING
Serie RFL R

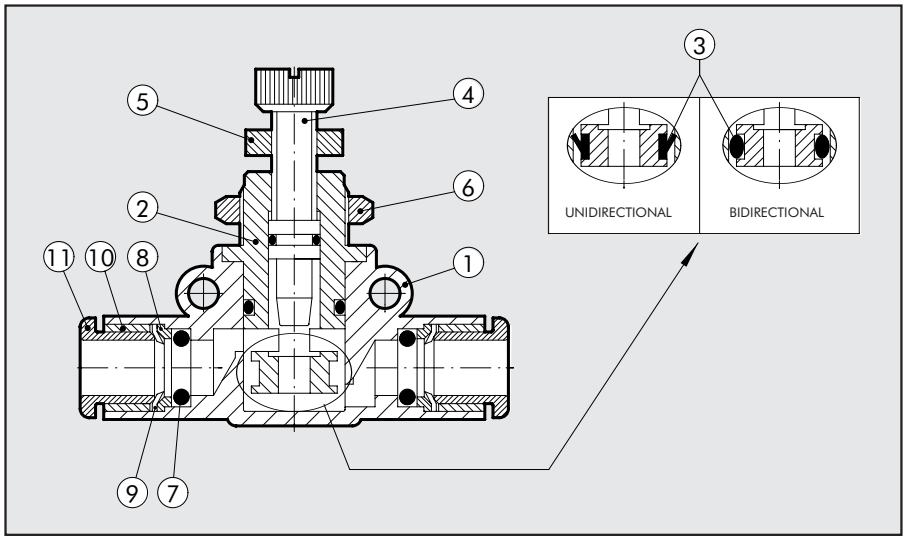
The RLF R flow micro-regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products.
The RFL R regulates the air input and thus the speed in pneumatic actuators. Two versions are available:
• Type U (unidirectional) regulates the flow only in one of the two directions of air flow. The following types of fitting can be mounted:
- Push-in input and output fitting
- Push-in input fitting and threaded port on the exhaust (cylinder type)
- Input threaded port and push-in fitting on the exhaust (valve type)
• Type B (bidirectional) regulates the flow in both directions of air flow. The following types of fitting can be mounted:
- Push-in input and output fitting
- Threaded port and push-in fitting
There are four possible types of assembly (see example on the following page).



TECHNICAL DATA		Ø 4	Ø 6	Ø 8
Max. operating pressure	MPa		1	
	bar		10	
	psi		145	
Temperature range	°C		–20°C÷+60°C	
	°F		–4°F÷+140°F	
Max flow rate on regulation at 6.3 bar	Nl/min	155	450	850
Flow rate on relief at 6.3 bar	Nl/min	160	550	950
Adjustment			Manual or using a screwdriver	
Internal system			Tapered needle	
Recommended pipe			Rilsan PA 11 – Nylon 6 – Polyamide 12 - Polypropylene	
Fluid			Lubricated or unlubricated filtered air	

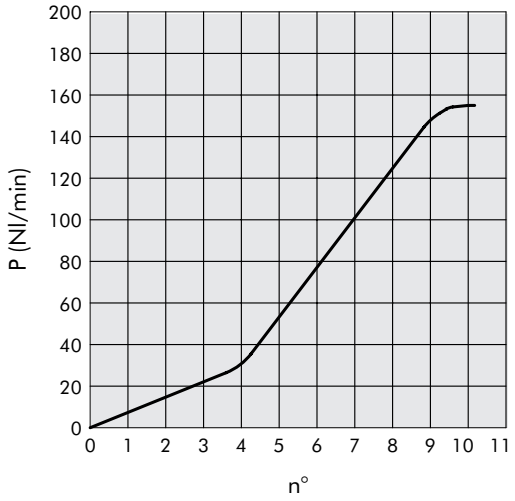
COMPONENTS

① Technopolymer body
② Nickel-plated brass seal support
③ NBR gasket
④ Brass adjusting needle
⑤ Nickel-plated brass needle ring nut
⑥ Wall fixing ring nut
⑦ NBR seal
⑧ Technopolymer spring ring
⑨ Stainless steel clip-on spring
⑩ Technopolymer stop bushing
⑪ Technopolymer release bushing

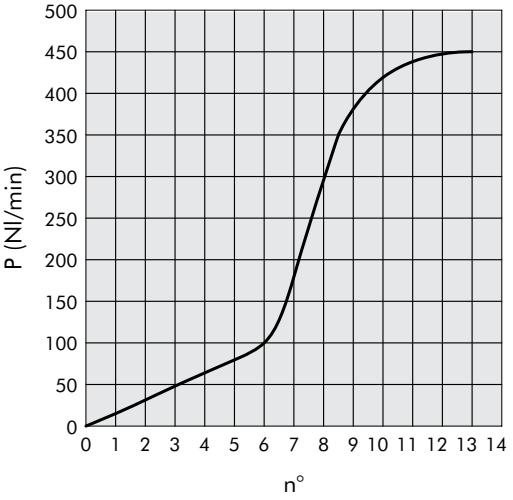


FLOW CHARTS

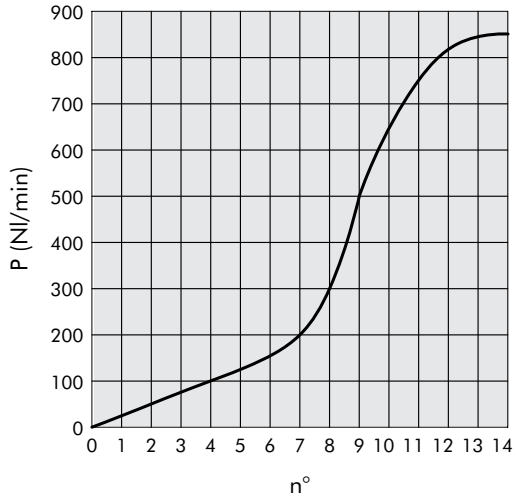
RFL R Ø 4



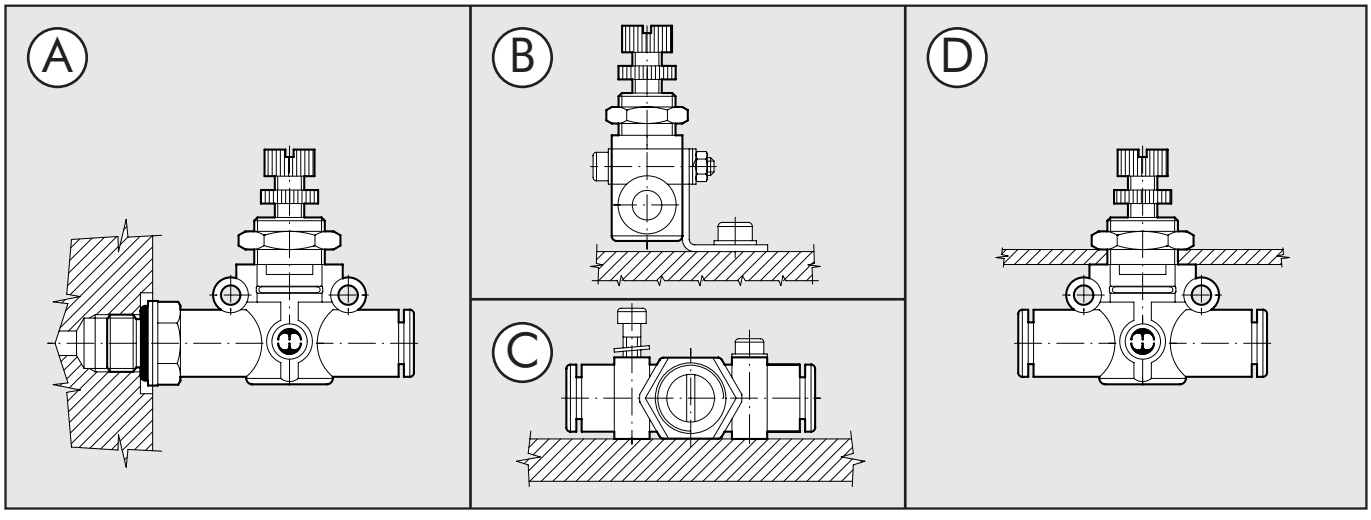
RFL R Ø 6



RFL R Ø 8

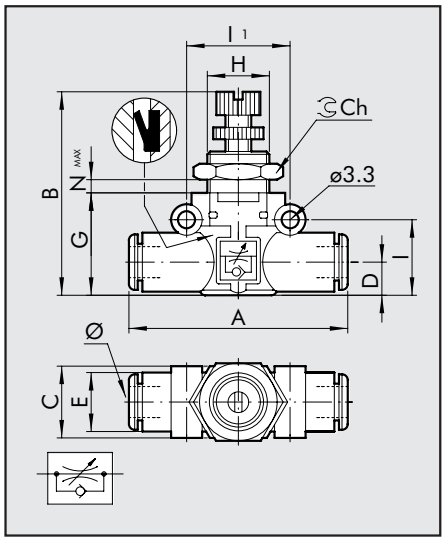


ASSEMBLY OPTIONS



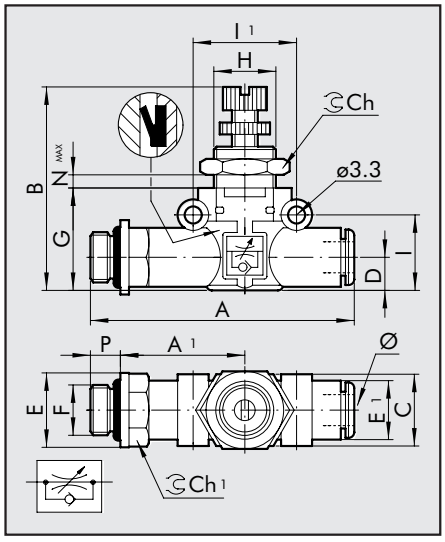
How to mount the RFL R:
- Fig. A: With the male threaded port it is possible to mount the RFL R straight onto the actuator or the control valve.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the RFL R straight onto the wall.
- Fig. D: The ring nut is screwed onto the threaded metal part of the RFL R body for panel mounting.

RFL R PIPE-PIPE UNIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9041301	RFL R U 4-4	4	40	33.5÷36.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041316	RFL R U 6-6	6	47	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041324	RFL R U 8-8	8	55.5	44÷49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5

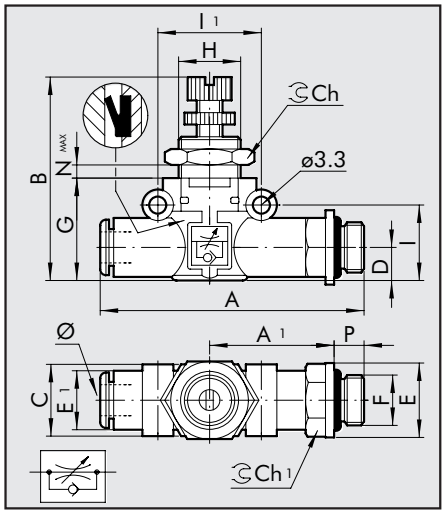
RFL R THREAD-PIPE UNIDIRECTIONAL CYLINDER VERSION



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1
9041401	RFL R U M5-4	M5	4	4	46.7	22.7	33.5÷36.5	10.7	5.6	9.9	10
9041402	RFL R U 1/8-4	1/8	4	6	50.6	24.6	33.5÷36.5	10.7	5.6	14	10
9041408	RLF R U 1/8-6	1/8	6	6	57.3	27.8	36÷41	14.7	6.4	14	11.4
9041409	RFL R U 1/4-6	1/4	6	8	60.3	28.8	36÷41	14.7	6.4	18	11.4
9041410	RFL R U 1/8-8	1/8	8	6	65.3	31.8	44÷49	18.7	9.1	15	13.8
9041411	RFL R U 1/4-8	1/4	8	8	69.7	34.2	44÷49	18.7	9.1	18	13.8
9041412	RFL R U 3/8-8	3/8	8	9	71.3	34.8	44÷49	18.7	9.1	22	13.8

G	H	I	I1	Ch	Ch1	Nmax
17.5	M9x0.75	12.8	16	11	9	4
17.5	M9x0.75	12.8	16	11	12	4
20	M12x0.75	14.6	20	15	12	4
20	M12x0.75	14.6	20	15	14	4
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	17	4.5

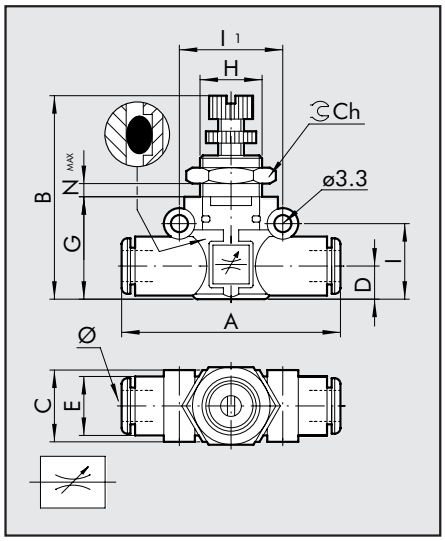
RFL R PIPE-THREAD UNIDIRECTIONAL VALVE VERSION



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1
9041501	RFL R U 4-M5	4	M5	4	46.7	22.7	33.5÷36.5	10.7	5.6	9.9	10
9041502	RFL R U 4-1/8	4	1/8	6	50.6	24.6	33.5÷36.5	10.7	5.6	14	10
9041508	RFL R U 6-1/8	6	1/8	6	57.3	27.8	36÷41	14.7	6.4	14	11.4
9041509	RFL R U 6-1/4	6	1/4	8	60.3	28.8	36÷41	14.7	6.4	18	11.4
9041510	RFL R U 8-1/8	8	1/8	6	65.3	31.8	44÷49	18.7	9.1	15	13.8
9041511	RFL R U 8-1/4	8	1/4	8	69.7	34.2	44÷49	18.7	9.1	18	13.8
9041512	RFL R U 8-3/8	8	3/8	9	71.3	34.8	44÷49	18.7	9.1	22	13.8

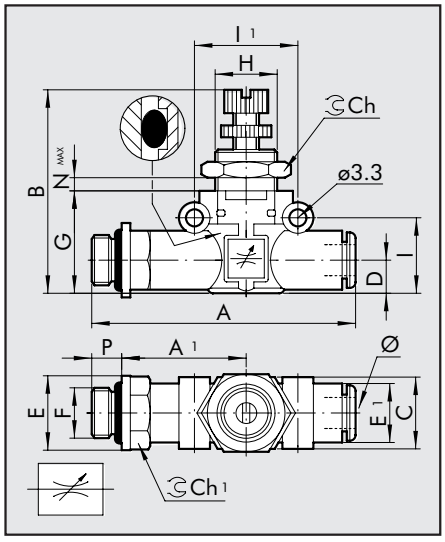
G	H	I	I1	Ch	Ch1	Nmax
17.5	M9x0.75	12.8	16	11	9	4
17.5	M9x0.75	12.8	16	11	12	4
20	M12x0.75	14.6	20	15	12	4
20	M12x0.75	14.6	20	15	14	4
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	17	4.5

RFL R PIPE-PIPE BIDIRECTIONAL



Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9041601	RFL R B 4-4	4	40	33.5÷36.5	10.7	5.6	10	17.5	M9x0.75	12.8	16	11	4
9041616	RFL R B 6-6	6	47	36÷41	14.7	6.4	11.4	20	M12x0.75	14.6	20	15	4
9041624	RFL R B 8-8	8	55.5	44÷49	18.7	9.1	13.8	26	M15x1	18.7	24	20	4.5

RFL R THREAD-PIPE BIDIRECTIONAL



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1
9041701	RFL R B M5-4	M5	4	4	46.7	22.7	33.5÷36.5	10.7	5.6	9.9	10
9041702	RFL R B 1/8-4	1/8	4	6	50.6	24.6	33.5÷36.5	10.7	5.6	14	10
9041708	RFL R B 1/8-6	1/8	6	6	57.3	27.8	36÷41	14.7	6.4	14	11.4
9041709	RFL R B 1/4-6	1/4	6	8	60.3	28.8	36÷41	14.7	6.4	18	11.4
9041710	RFL R B 1/8-8	1/8	8	6	65.3	31.8	44÷49	18.7	9.1	15	13.8
9041711	RFL R B 1/4-8	1/4	8	8	69.7	34.2	44÷49	18.7	9.1	18	13.8
9041712	RFL R B 3/8-8	3/8	8	9	71.3	34.8	44÷49	18.7	9.1	22	13.8

G	H	I	I1	Ch	Ch1	Nmax
17.5	M9x0.75	12.8	16	11	9	4
17.5	M9x0.75	12.8	16	11	12	4
20	M12x0.75	14.6	20	15	12	4
20	M12x0.75	14.6	20	15	14	4
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	14	4.5
26	M15x1	18.7	24	20	17	4.5

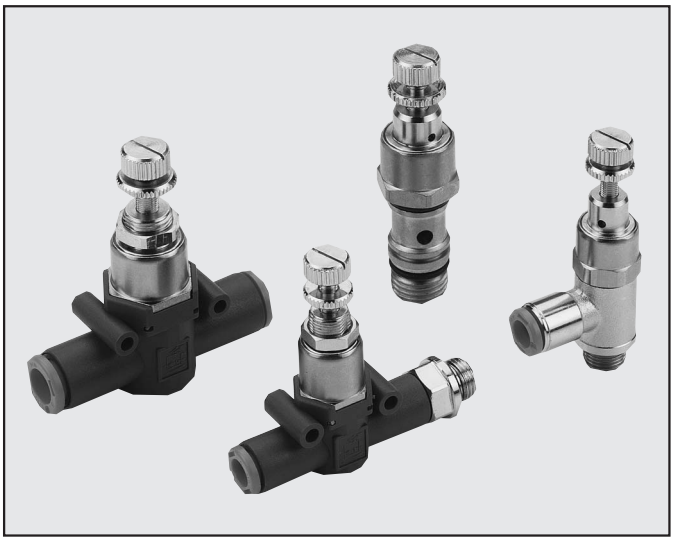
NOTES

MINIATURE REDUCER, Series "RML" and "RMC"

The RML R miniature pressure regulator belongs to the LINE ON LINE® family and can be connected in series or in parallel with all the other products.
The miniature pressure regulator is available in five different types:
- In-line with push-in input and output fitting
- In-line with threaded input port and push-in output fitting
- In-line with push-in input fitting and threaded output port
- At an angle with threaded input port and push-in output fitting
- Cartridge type for direct assembly in suitably worked slot

The miniature pressure regulator is fitted with a relief valve for over-pressure exhaust.
- Particularly suitable for use between the valve and actuator and as a pressure regulator in secondary branches of the pneumatic system.

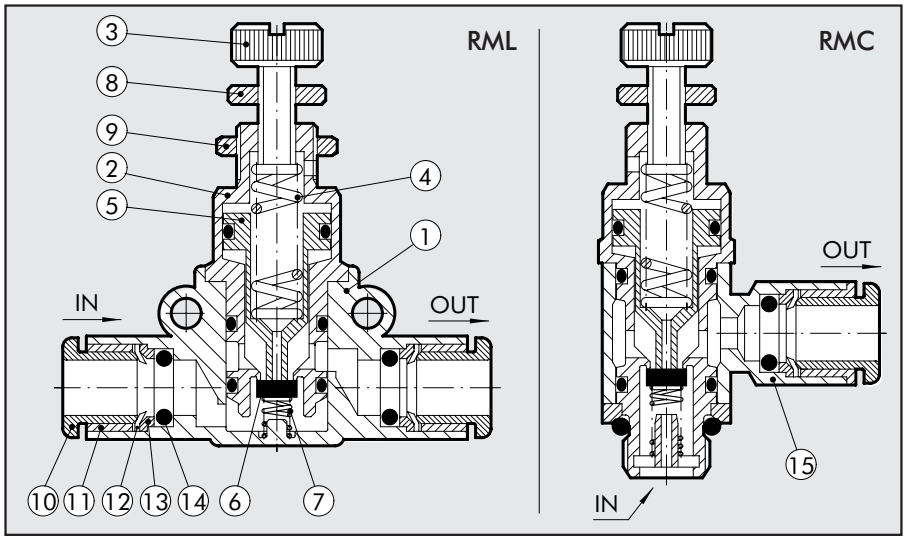
The data in brackets refer to the angle version.



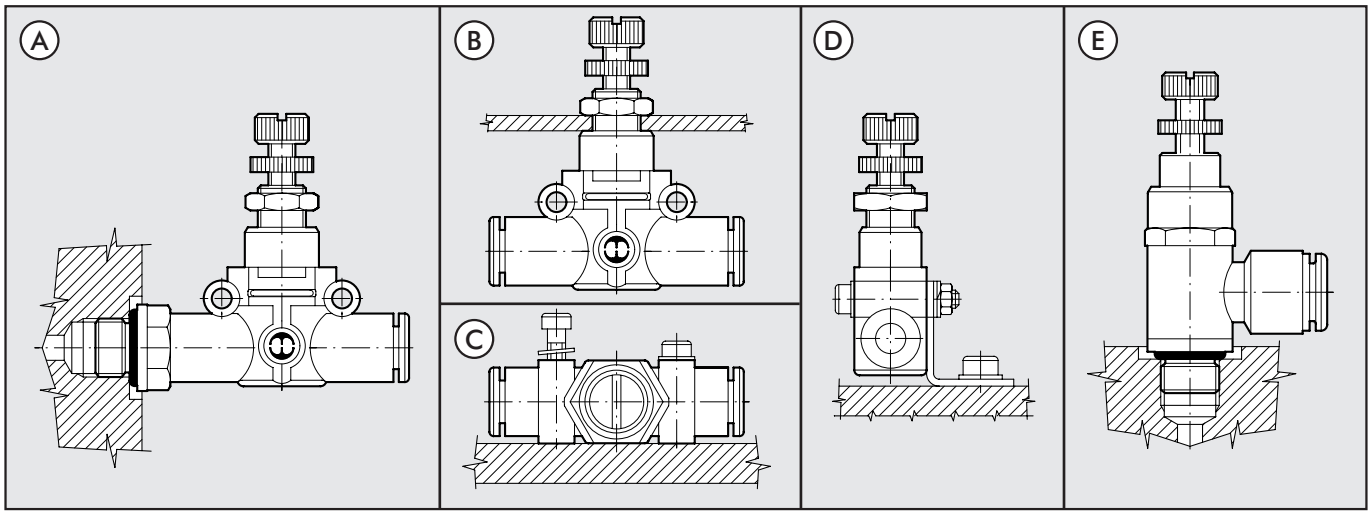
TECHNICAL DATA		RML Ø 6	RMC 1/8	RMS 1/8	RML Ø 8	RMC 1/4	RMS 1/4
Threaded ports		1/8"-1/4"	1/8"	1/8"	1/8"-1/4"-3/8"	1/4"	1/4"
Pipe coupling		Ø 6	Ø 4 - Ø 6 - Ø 8	–	Ø 8	Ø 6 - Ø 8 - Ø 10	–
Regulation range		1÷8 bar - 0.1÷0.8 MPa - 14.5÷116 psi					
Inlet pressure	MPa	0.2÷1 MPa					
	bar	2÷10 bar					
	psi	29÷145 psi					
Flow rate at 6.3 bar (0.63 MPa÷91 psi) ΔP 1 bar		1/8": 150 Nl/min				1/4": 260 Nl/min	
Flow rate on relief at 6.3 bar (0.63 MPa÷91 psi)		1/8": 400 Nl/min				1/4": 600 Nl/min	
Fluid		lubricated or unlubricated filtered air					
Max. temperature at 1 MPa, 10 bar, 145 psi	°C	–20°C÷+60°C					
	°F	–4°F÷+140°F					
Assembly position		available					
Comments		In the miniature regulator the pressure must always be set upwards.					

COMPONENTS

① Technopolymer body (brass)
② Nickel-plated brass insert
③ Nickel-plated brass adjusting screw
④ Steel adjusting spring
⑤ Brass piston rod
⑥ NBR shutter
⑦ Stainless steel shutter spring
⑧ Adjusting screw ring nut
⑨ Nickel-plated brass wall ring nut
⑩ Technopolymer release bushing
⑪ Technopolymer stop bushing (brass)
⑫ Stainless steel crimping spring
⑬ Technopolymer spring ring
⑭ NBR gasket
⑮ Nickel-plated brass rotating ring
In brackets data relevant RMC version



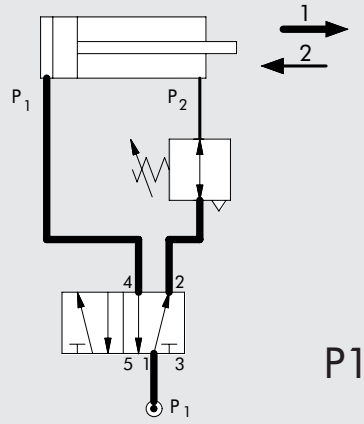
ASSEMBLY OPTION



How to assembly RML/RMC
- Fig. A: Thanks to the male threaded part it's possible to assembly directly on the actuator or on the valve.
- Fig. B: By using the ring nut screwed on the threaded body it's possible the assembling on panels
- Fig C: On the plastic body there are two strong ring for the direct wall assembly
- Fig. D: Fixing on plate trought the proper small square SQU L
- Fig. E: For maintaining the tube the most parallel possible to the system , had been designed a specific version (RMC) with inlet and outlet at 90°.

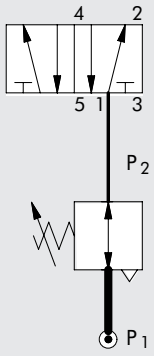
POSSIBLE APPLICATIONS

ECONOMIZER

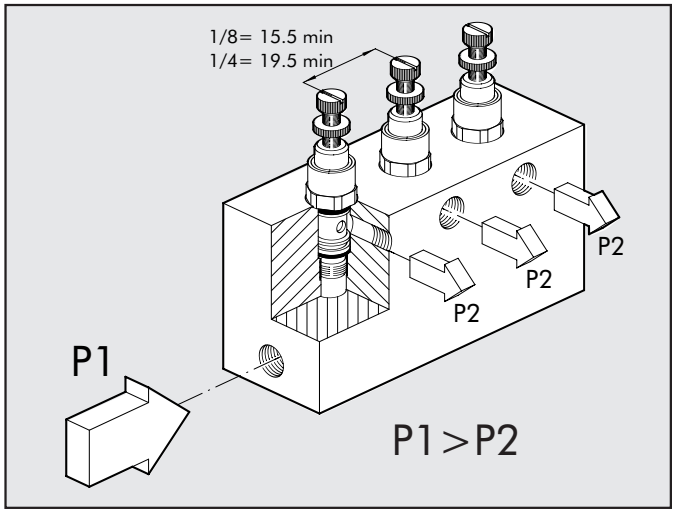


P1 > P2

REMOTE REDUCER



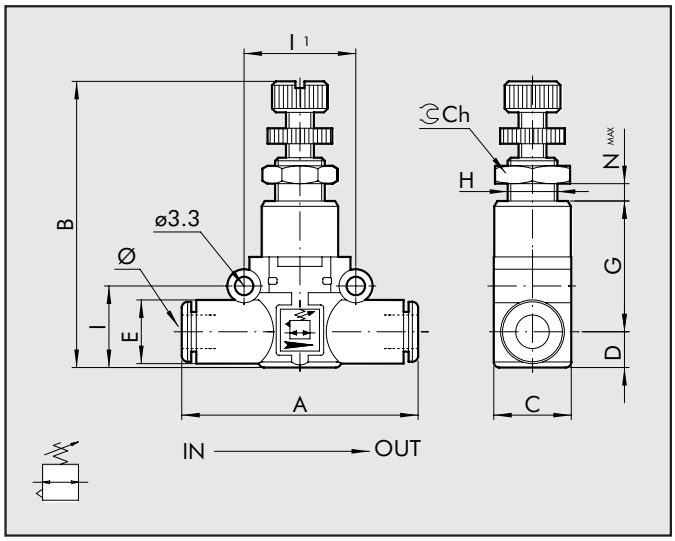
P1 > P2



P1 > P2

The cartridge regulator can be used:
- Fitted directly into the structure or along the air supply ducting, or
- Package with common feed and separate regulated outlets.

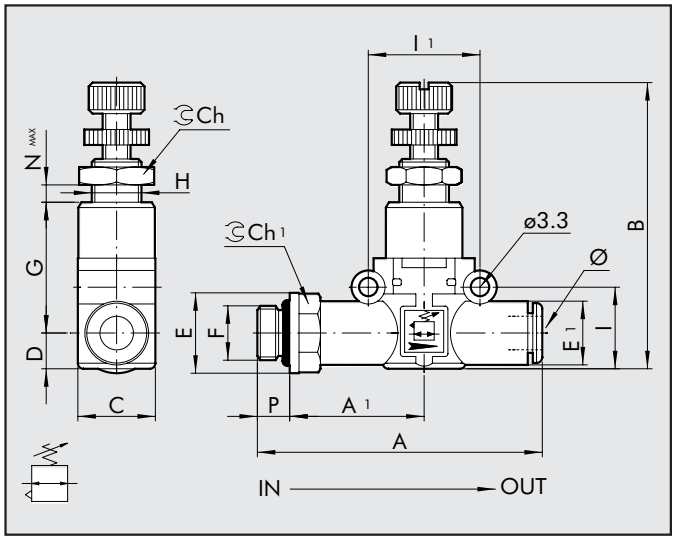
LINE-MOUNTED MINIATURE REDUCER, SERIES RML



Code	Ref.	Ø	A	B	C	D	E
9061316	RML 6-6	6	47	46÷52	14.7	6.4	11.4
9061324	RML 8-8	8	55.5	52÷58	18.7	9.1	13.8

G	H	I	I1	Ch	Nmax
24.8	M9x0.75	14.6	20	11	4.5
27.4	M11x1	18.7	24	13	3.8

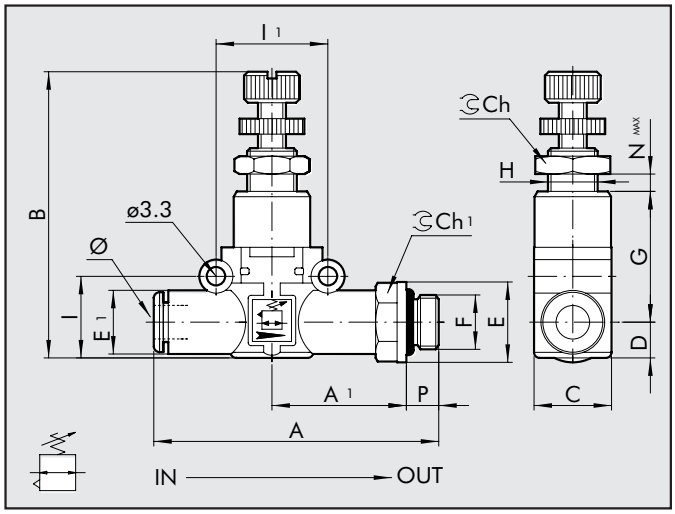
LINE-MOUNTED R/F MINIATURE REDUCER SERIES RML



Code	Ref.	F	Ø	P	A	A1	B	C	D
9061408	RML 1/8-6	1/8	6	6	57.3	27.8	46÷52	14.7	6.4
9061409	RML 1/4-6	1/4	6	8	60.3	28.8	46÷52	14.7	6.4
9061410	RML 1/8-8	1/8	8	6	65.3	31.8	52÷58	18.7	9.1
9061411	RML 1/4-8	1/4	8	8	69.7	34.2	52÷58	18.7	9.1
9061412	RML 3/8-8	3/8	8	9	71.3	34.8	52÷58	18.7	9.1

E	E1	G	H	I	I1	Ch	Ch1	Nmax
14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
15	13.8	27.4	M11x1	18.7	24	13	14	3.8
18	13.8	27.4	M11x1	18.7	24	13	14	3.8
22	13.8	27.4	M11x1	18.7	24	13	17	3.8

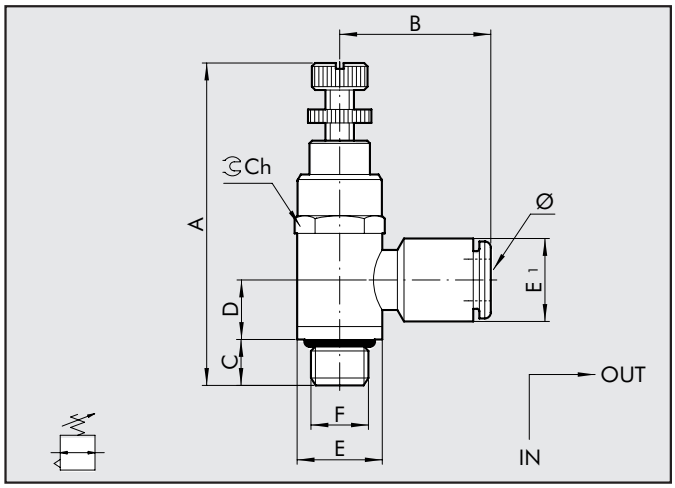
LINE-MOUNTED F/R MINIATURE REDUCER, SERIES RML



Code	Ref.	Ø	F	P	A	A1	B	C	D
9061508	RML 6-1/8	6	1/8	6	57.3	27.8	46÷52	14.7	6.4
9061509	RML 6-1/4	6	1/4	8	60.3	28.8	46÷52	14.7	6.4
9061510	RML 8-1/8	8	1/8	6	65.3	31.8	52÷58	18.7	9.1
9061511	RML 8-1/4	8	1/4	8	69.7	34.2	52÷58	18.7	9.1
9061512	RML 8-3/8	8	3/8	9	71.3	34.8	52÷58	18.7	9.1

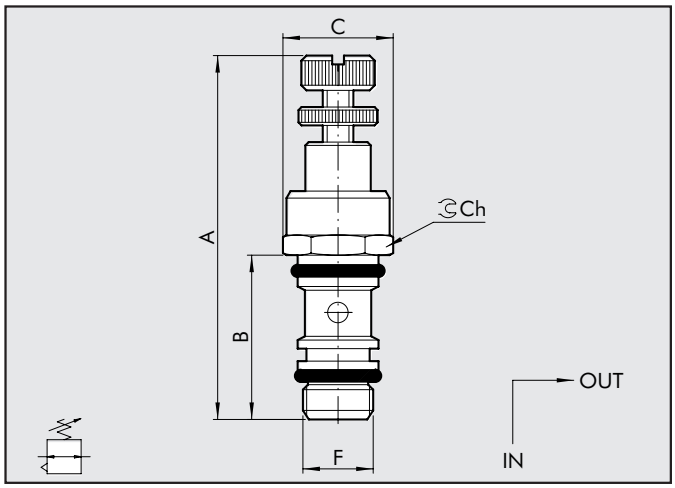
E	E1	G	H	I	I1	Ch	Ch1	Nmax
14	11.4	24.8	M9x0.75	14.6	20	11	12	4.5
18	11.4	24.8	M9x0.75	14.6	20	11	14	4.5
15	13.8	27.4	M11x1	18.7	24	13	14	3.8
18	13.8	27.4	M11x1	18.7	24	13	14	3.8
22	13.8	27.4	M11x1	18.7	24	13	17	3.8

MINIATURE REDUCER, SERIES RMC



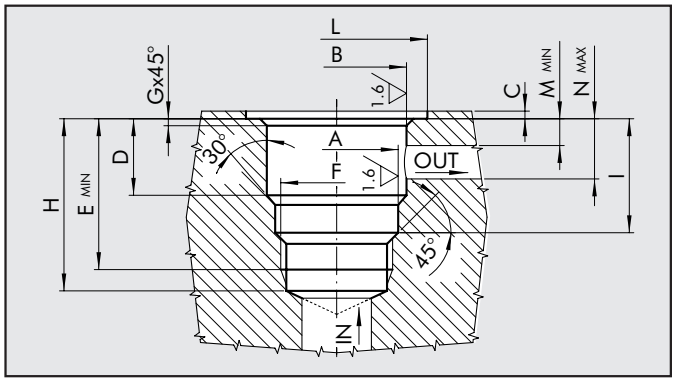
Code	Ref.	Ø	A	B	C	D	E	E1	Ch
9061102	RMC 1/8-4	4	51÷57	20.3	6	12.7	14	9.5	14
9061108	RMC 1/8-6	6	51÷57	22.5	6	12.7	14	11.3	14
9061110	RMC 1/8-8	8	51÷57	24.4	6	12.7	14	13.8	14
9061109	RMC 1/4-6	6	57÷63	24.2	8	11	18	11.3	17
9061111	RMC 1/4-8	8	57÷63	26.1	8	11	18	13.8	17
9061112	RMC 1/4-10	10	57÷63	31.3	8	11	18	16.5	17

CARTRIDGE REDUCER, SERIES RMS



Code	Ref.	F	A	B	C	Ch
9061001	RMS 1/8	1/8	51÷57	24.3	15	14
9061002	RMS 1/4	1/4	57÷63	27.8	19	17

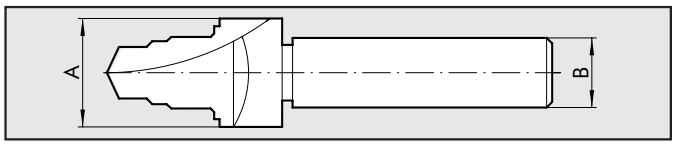
SEAT OF A MINIATURE CARTRIDGE REDUCER



	F	A	B	C	D
SE.RMS 1/8	1/8	9.8 +0.1/-0	11.2 ±0.05	0.5 ±0.5	15.6 ±0.07
SE.RMS 1/4	1/4	13.5 +0.1/-0	14.4 ±0.05	0.5 ±0.5	17.5 ±0.07

E	G	H	I	L	M	N
24.6	0.3	27	18.1 ±0.2	15.4	3.5	12
28	0.4	31.2	20.8 ±0.2	19.4	3.5	13.5

TOOL FOR RMS SEAT



Code	Ref.	A	B
9062001	UT.SE 1/8	16	12
9062002	UT.SE 1/4	20	15

IN-LINE QUICK-EXHAUST VALVES
Series VSR L

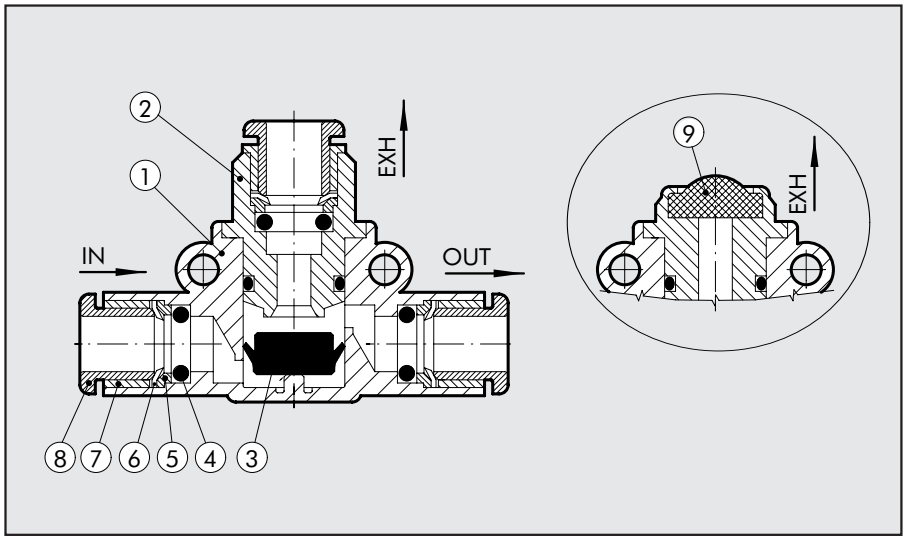
The VSR L quick-exhaust valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
Exhaust can be silenced using a STAINLESS steel wire silencer, or conveyed using a FOX push-in fitting.



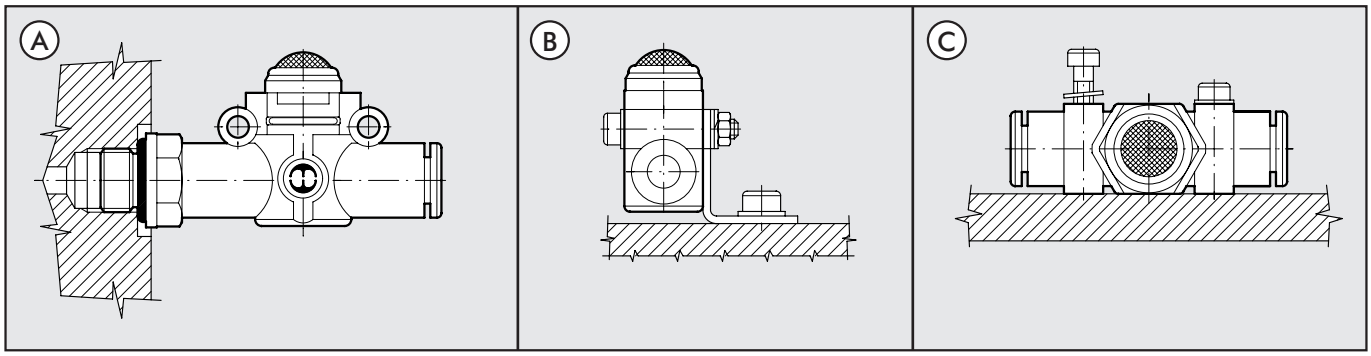
TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	0.1 to 1	
	bar	1 to 10	
	psi	7.2 to 145	
Temperature range	°C	–20°C to +60°C	
	°F	–4°F to +140°F	
Inlet Flow rate at 6.3 bar ΔP 1 bar	Nl/min	270	400
Exhaust Flow rate at 6.3 bar	Nl/min	700	1000
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide 12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air; if used, must be continuous	

COMPONENT PARTS

① Technopolymer body
② Nickel-plated brass insert
③ NBR valve
④ NBR gasket
⑤ Technopolymer spring ring
⑥ Stainless steel folding spring
⑦ Brass or technopolymer locking bushing
⑧ Technopolymer release bushing
⑨ Stainless steel wire silencer



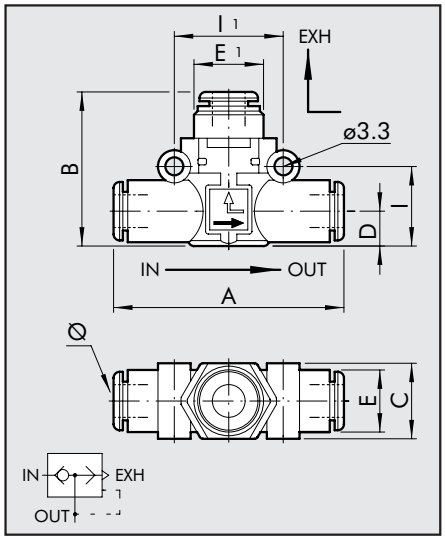
ASSEMBLY OPTIONS



How to mount the VSR L:
- Fig. A: With the male threaded port it is possible to mount the RFL R straight onto the actuator.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the RFL R straight onto the wall.

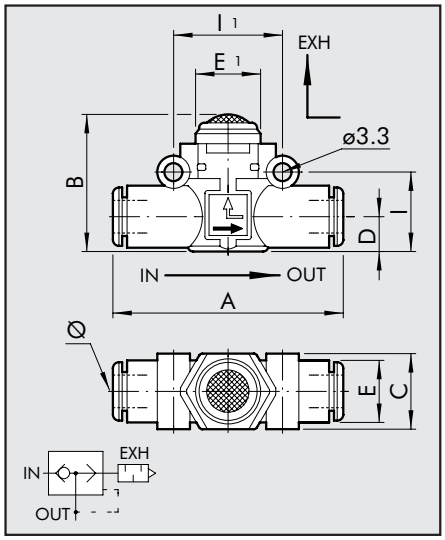
OVERALL DIMENSIONS AND ORDERING CODES

VSR L PIPE-PIPE, CONVEYED EXHAUST



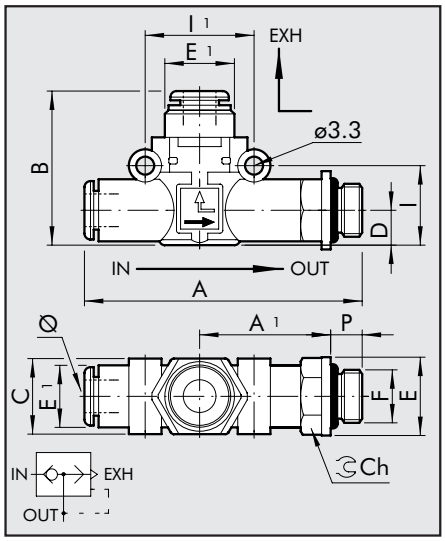
Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063016	VSR L 6-6-6	6	47	29	14.7	6.4	11.4	13	14.6	20
9063024	VSR L 8-8-8	8	55.5	35	18.7	9.1	13.8	15	18.7	24

VSR L PIPE-PIPE, SILENCED EXHAUST



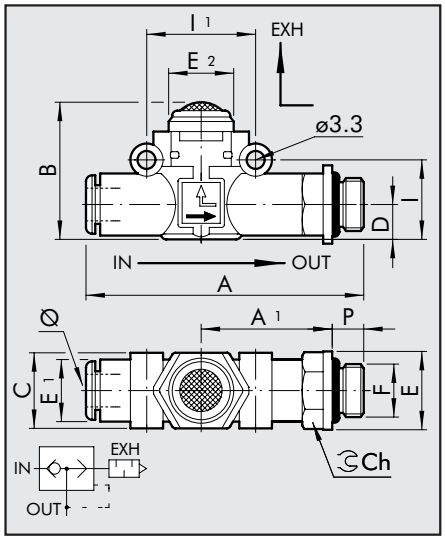
Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9063116	VSR L 6-6-SIL	6	47	25.5	14.7	6.4	11.4	14	14.6	20
9063124	VSR L 8-8-SIL	8	55.5	31.5	18.7	9.1	13.8	18	18.7	24

VSR L PIPE-THREAD, CONVEYED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063208	VSR L 6-1/8-6	6	1/8	6	57.3	27.8	29	14.7	6.4	14	11.4	13	14.6	20	12
9063209	VSR L 6-1/4-6	6	1/4	8	60.3	28.8	29	14.7	6.4	18	11.4	13	14.6	20	14
9063210	VSR L 8-1/8-8	8	1/8	6	65.3	31.8	35	18.7	9.1	15	13.8	15	18.7	24	14
9063211	VSR L 8-1/4-8	8	1/4	8	69.7	34.2	35	18.7	9.1	18	13.8	15	18.7	24	14
9063212	VSR L 8-3/8-8	8	3/8	9	71.3	34.8	35	18.7	9.1	22	13.8	15	18.7	24	17

VSR L PIPE-THREAD, SILENCED EXHAUST

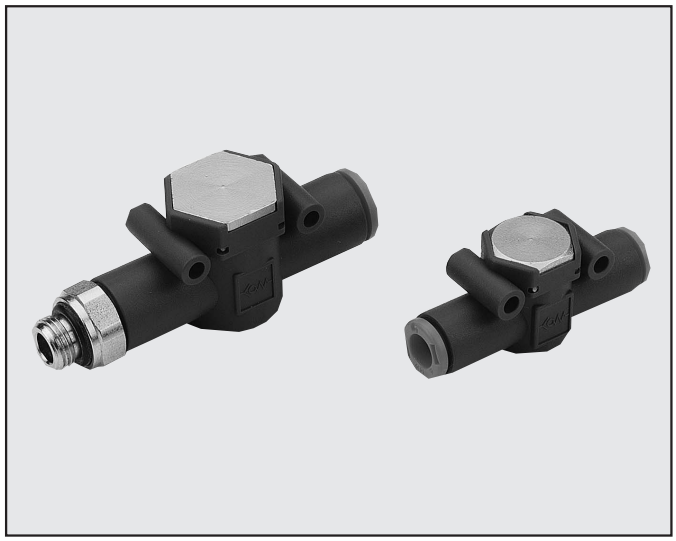


Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9063308	VSR L 6-1/8-SIL	6	1/8	6	57.3	27.8	25.5	14.7	6.4	14	11.4	14	14.6	20	12
9063309	VSR L 6-1/4-SIL	6	1/4	8	60.3	28.8	25.5	14.7	6.4	18	11.4	14	14.6	20	14
9063310	VSR L 8-1/8-SIL	8	1/8	6	65.3	31.8	31.5	18.7	9.1	15	13.8	18	18.7	24	14
9063311	VSR L 8-1/4-SIL	8	1/4	8	69.7	34.2	31.5	18.7	9.1	18	13.8	18	18.7	24	14
9063312	VSR L 8-3/8-SIL	8	3/8	9	71.3	34.8	31.5	18.7	9.1	22	13.8	18	18.7	24	17

NOTE

IN-LINE CHECK VALVE
Series VNR L

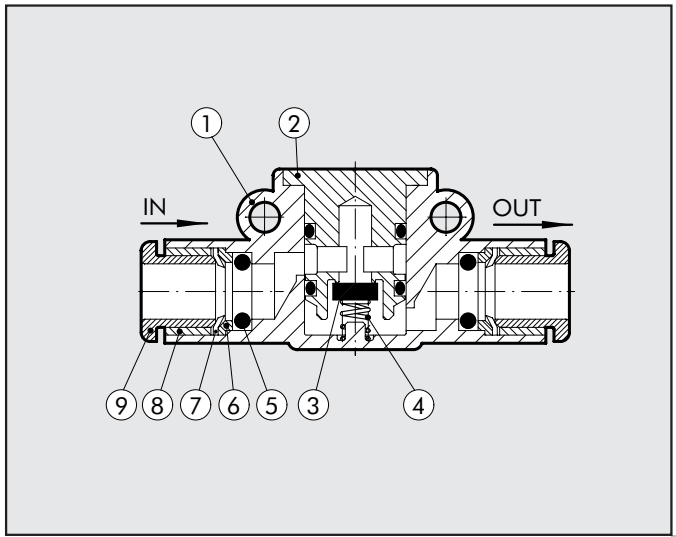
The VNR L check valve belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
It is still the only check valve with holes for wall mounting.



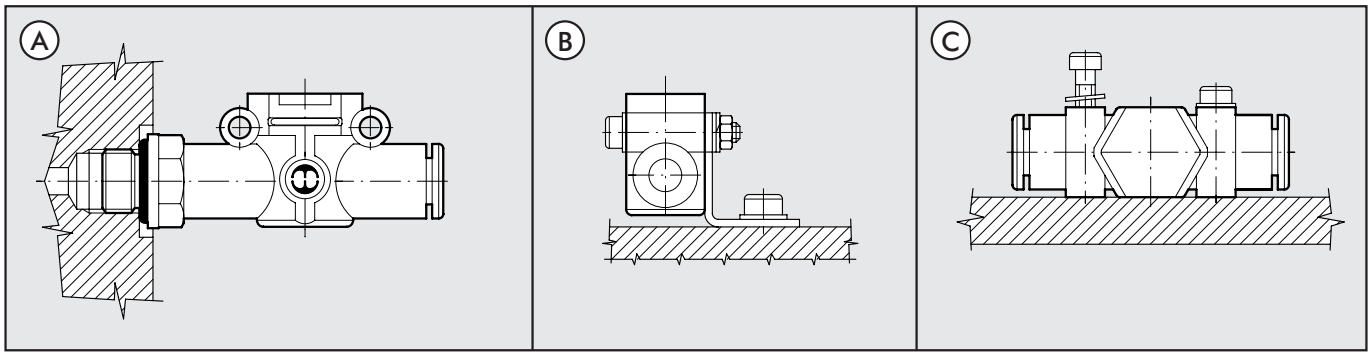
TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	0.05 to 1.2	
	bar	0.5 to 12	
	psi	7.2 to 174	
Temperature range	°C	–20°C to +60°C	
	°F	–4°F to +140°F	
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	320	480
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air	

COMPONENT PARTS

① Technopolymer body
② Nickel-plated brass insert
③ NBR valve
④ Stainless steel valve compression spring
⑤ NBR gasket
⑥ Technopolymer spring ring
⑦ Stainless steel folding spring
⑧ Technopolymer locking bushing
⑨ Technopolymer release bushing



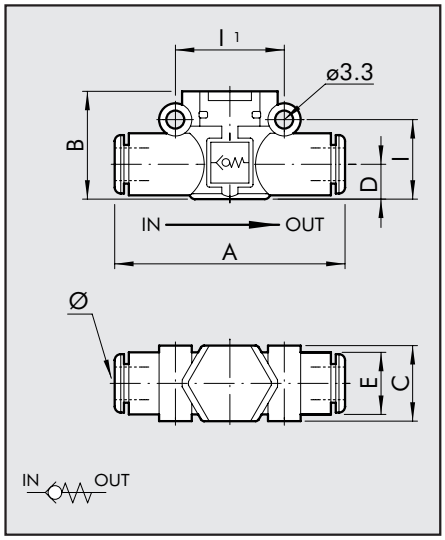
ASSEMBLY OPTIONS



How to mount the VNR L:
- Fig. A: With the male threaded port it is possible to mount the VNR L straight onto the female thread.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the VNR L straight onto the wall.

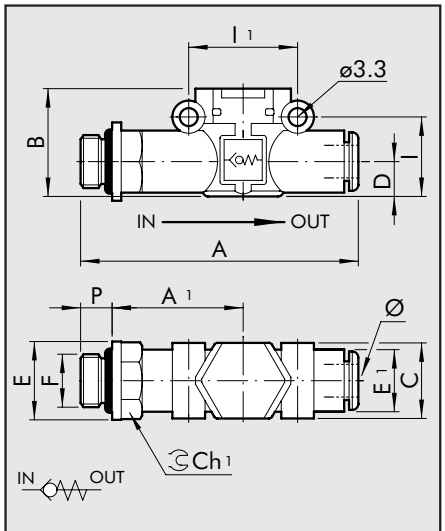
OVERALL DIMENSIONS AND ORDERING CODES

VNR L PIPE-PIPE



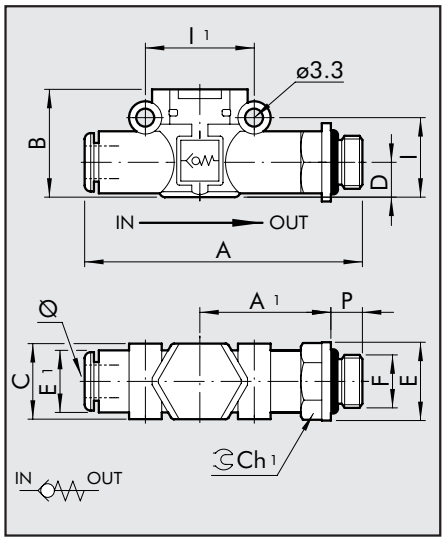
Code	Ref.	Ø	A	B	C	D	E	I	I1
9064016	VNR L 6-6	6	47	20	14.7	6.4	11.4	14.6	20
9064024	VNR L 8-8	8	55.5	25.5	18.7	9.1	13.8	18.7	24

VNR L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	E	E1	I	I1	Ch
9064108	VNR L 1/8-6	1/8	6	6	57.3	27.8	20	14.7	14	11.4	14.6	20	12
9064109	VNR L 1/4-6	1/4	6	8	60.3	28.8	20	14.7	18	11.4	14.6	20	14
9064110	VNR L 1/8-8	1/8	8	6	65.3	31.8	25.5	18.7	15	13.8	18.7	24	14
9064111	VNR L 1/4-8	1/4	8	8	69.7	34.2	25.5	18.7	18	13.8	18.7	24	14
9064112	VNR L 3/8-8	3/8	8	9	71.3	34.8	25.5	18.7	22	13.8	18.7	24	17

VNR L PIPE-THREAD

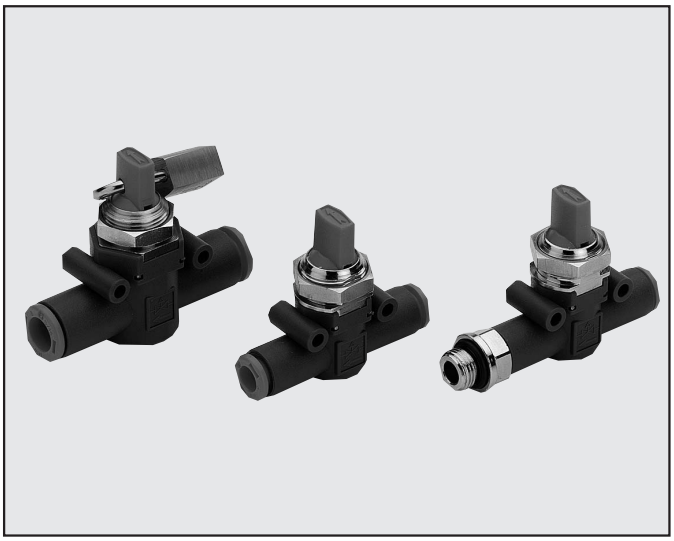


Code	Ref.	Ø	F	P	A	A1	B	C	E	E1	I	I1	Ch
9064208	VNR L 6-1/8	6	1/8	6	57.3	27.8	20	14.7	14	11.4	14.6	20	12
9064209	VNR L 6-1/4	6	1/4	8	60.3	28.8	20	14.7	18	11.4	14.6	20	14
9064210	VNR L 8-1/8	8	1/8	6	65.3	31.8	25.5	18.7	15	13.8	18.7	24	14
9064211	VNR L 8-1/4	8	1/4	8	69.7	34.2	25.5	18.7	18	13.8	18.7	24	14
9064212	VNR L 8-3/8	8	3/8	9	71.3	34.8	25.5	18.7	22	13.8	18.7	24	17

NOTES

IN-LINE SHUTOFF VALVE
Series "V2V L" and "V3V L"

V2V L and V3V L shutoff valves belong to the LINE ON LINE® family which means they can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
V2V is a two-way unidirectional valve, while V3V is a three-way valve with free discharge in the area around the control knob.
The locked version is probably the smallest available on the market. A lock is provided to ensure the valve is kept in the closed position during machine maintenance. The valve is supplied complete with a lock and two keys.

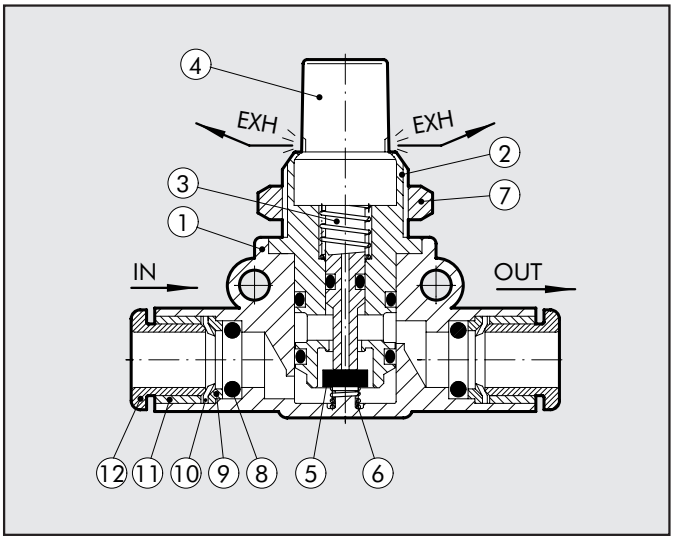


TECHNICAL DATA

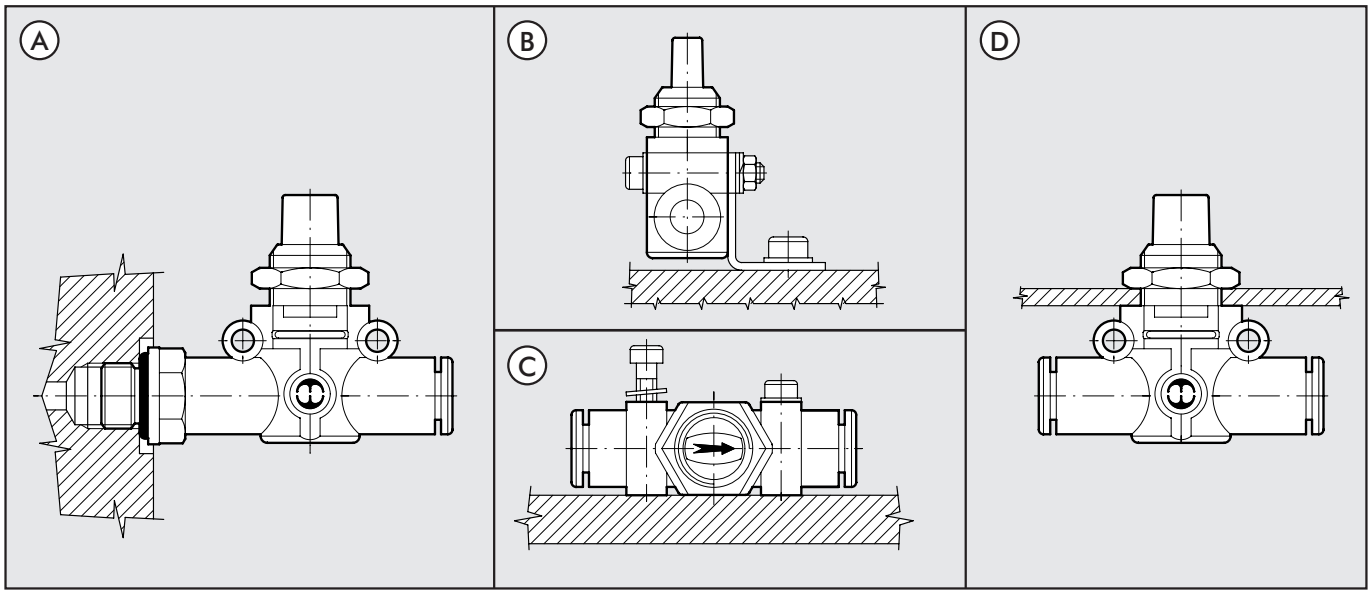
		Ø 6	Ø 8
Operating pressure	MPa	1	
	bar	10	
	psi	145	
Temperature range	°C	–20°C to +60°C	
	°F	–4°F to +140°F	
Inlet Flow rate at 6.3 bar ΔP 1 bar	Nl/min	280	470
Exhaust Flow rate 6.3 bar	Nl/min	110	110
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide 12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air; if used, must be continuous	

COMPONENT PARTS

① Technopolymer body
② Nickel-plated brass insert
③ Brass rod
④ Technopolymer knob
⑤ NBR valve
⑥ Stainless steel valve compression spring
⑦ Nickel-plated brass wall-mount ring nut
⑧ NBR gasket
⑨ Technopolymer spring ring
⑩ Stainless steel folding spring
⑪ Technopolymer locking bushing
⑫ Technopolymer release bushing



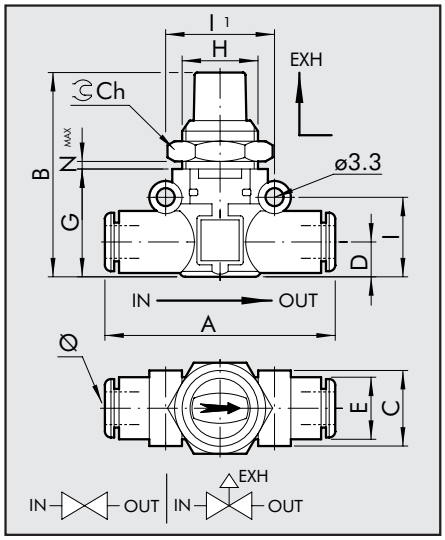
ASSEMBLY OPTIONS



How to mount the V2V/V3V L:
- Fig. A: With the male threaded port it is possible to mount the V2V/V3V L straight onto the female thread.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the V2V/V3V L straight onto the wall.
- Fig. D: the rig nut is screwed onto the threaded metal part of the V2V/V3V L body for panel mounting.

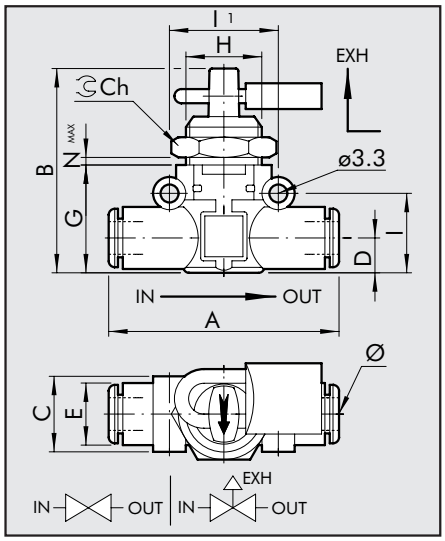
OVERALL DIMENSIONS AND ORDERING CODES

V2V/V3V L PIPE-PIPE



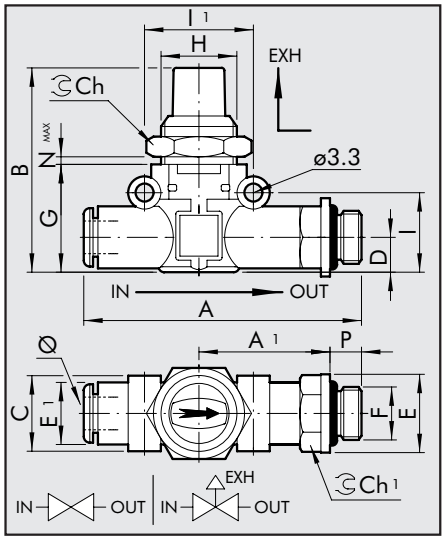
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9065016	V2V L 6-6	6	47	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066016	V3V L 6-6												
9065024	V2V L 8-8	8	55.5	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066024	V3V L 8-8												

V2V/V3V L PIPE-PIPE PADLOCKED



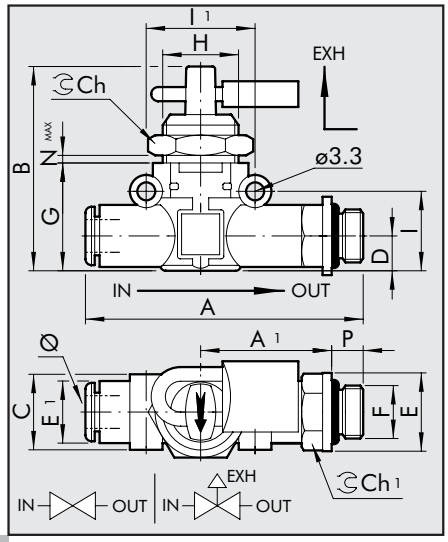
Code	Ref.	Ø	A	B	C	D	E	G	H	I	I1	Ch	Nmax
9065116	V2V L 6-6 KEY	6	47	41	14.7	6.4	11.4	21	M15x1	14.6	20	17	5.5
9066116	V3V L 6-6 KEY												
9065124	V2V L 8-8 KEY	8	55.5	46	18.7	9.1	13.8	26	M15x1	18.7	24	17	5.5
9066124	V3V L 8-8 KEY												

V2V/V3V L PIPE-THREAD



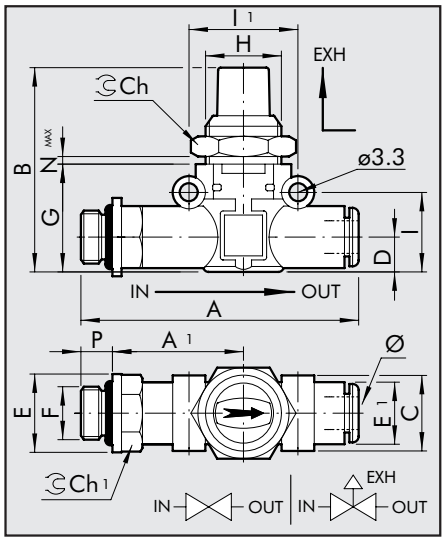
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065208	V2V L 6-1/8	6	1/8	6	57.3	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066208	V3V L 6-1/8																	
9065209	V2V L 6-1/4	6	1/4	8	60.3	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066209	V3V L 6-1/4																	
9065210	V2V L 8-1/8	8	1/8	6	65.3	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066210	V3V L 8-1/8																	
9065211	V2V L 8-1/4	8	1/4	8	69.7	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066211	V3V L 8-1/4																	
9065212	V2V L 8-3/8	8	3/8	9	71.3	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066212	V3V L 8-3/8																	

V2V/V3V L PIPE-THREAD PADLOCKED



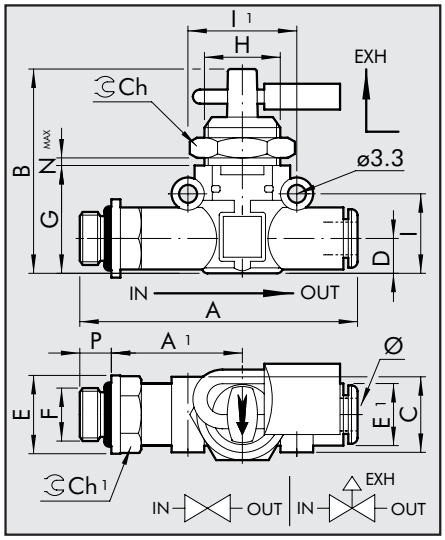
Code	Ref.	Ø	F	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065308	V2V L 6-1/8 KEY	6	1/8	6	57.3	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066308	V3V L 6-1/8 KEY																	
9065309	V2V L 6-1/4 KEY	6	1/4	8	60.3	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066309	V3V L 6-1/4 KEY																	
9065310	V2V L 8-1/8 KEY	8	1/8	6	65.3	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066310	V3V L 8-1/8 KEY																	
9065311	V2V L 8-1/4 KEY	8	1/4	8	69.7	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066311	V3V L 8-1/4 KEY																	
9065312	V2V L 8-3/8 KEY	8	3/8	9	71.3	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066312	V3V L 8-3/8 KEY																	

V2V/V3V L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065408	V2V L 1/8-6	1/8	6	6	57.3	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066408	V3V L 1/8-6																	
9065409	V2V L 1/4-6	1/4	6	8	60.3	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066409	V3V L 1/4-6																	
9065410	V2V L 1/8-8	1/8	8	6	65.3	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066410	V3V L 1/8-8																	
9065411	V2V L 1/4-8	1/4	8	8	69.7	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066411	V3V L 1/4-8																	
9065412	V2V L 3/8-8	3/8	8	9	71.3	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066412	V3V L 3/8-8																	

V2V/V3V L THREAD-PIPE PADLOCKED



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	G	H	I	I1	Ch	Ch1	Nmax
9065508	V2V L 1/8-6 KEY	1/8	6	6	57.3	27.8	41	14.7	6.4	14	11.4	21	M15x1	14.6	20	17	12	5.5
9066508	V3V L 1/8-6 KEY																	
9065509	V2V L 1/4-6 KEY	1/4	6	8	60.3	28.8	41	14.7	6.4	18	11.4	21	M15x1	14.6	20	17	14	5.5
9066509	V3V L 1/4-6 KEY																	
9065510	V2V L 1/8-8 KEY	1/8	8	6	65.3	31.8	46	18.7	9.1	15	13.8	26	M15x1	18.7	24	17	14	5.5
9066510	V3V L 1/8-8 KEY																	
9065511	V2V L 1/4-8 KEY	1/4	8	8	69.7	34.2	46	18.7	9.1	18	13.8	26	M15x1	18.7	24	17	14	5.5
9066511	V3V L 1/4-8 KEY																	
9065512	V2V L 3/8-8 KEY	3/8	8	9	71.3	34.8	46	18.7	9.1	22	13.8	26	M15x1	18.7	24	17	17	5.5
9066512	V3V L 3/8-8 KEY																	

NOTES

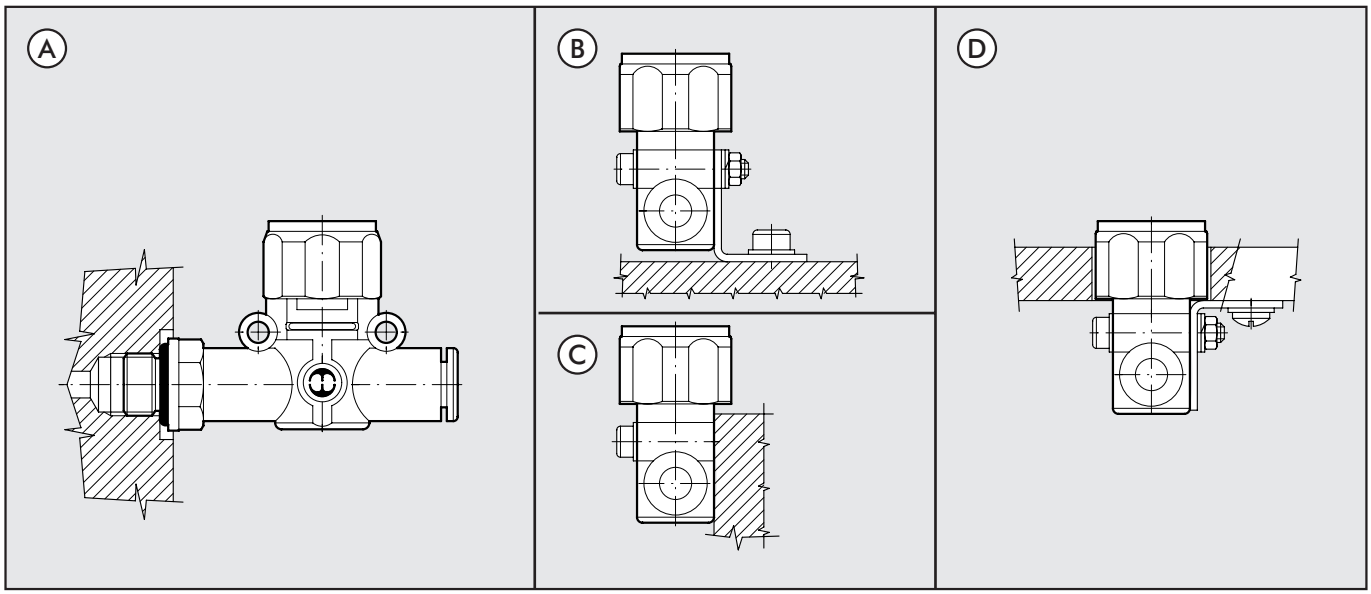
IN-LINE PRESSURE GAUGE
Series MAN L

The MAN L pressure gauge belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
Though small in size, this pressure gauge, which is supplied in a metal casing, ensures accurate reading. It can be angled in any direction simply by rotating manually.



TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	1.2	
	bar	12	
	psi	174	
Temperature range	°C	–20°C to +60°C	
	°F	–4°F to +140°F	
Precision		±4% full scale	
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide 12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air	

ASSEMBLY OPTIONS

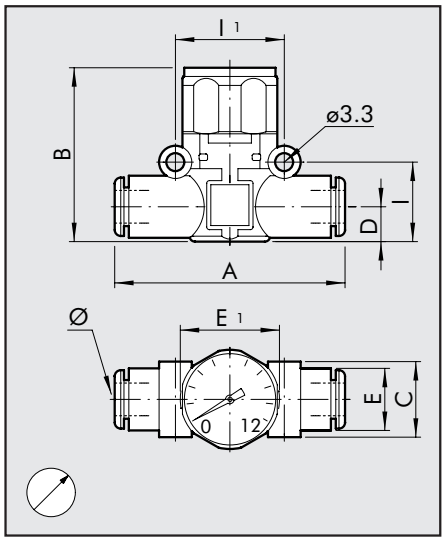


How to mount the MAN L:
- Fig. A: With the male threaded port it is possible to mount the MAN L straight onto the female thread.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the MAN L straight onto the wall.
- Fig. D: Use the SQL L bracket for panel mounting the MAN L.



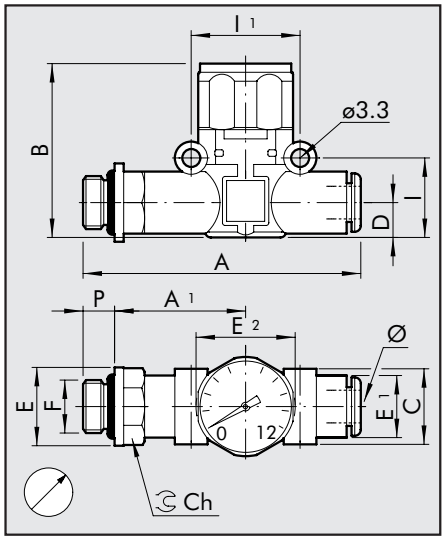
OVERALL DIMENSIONS AND ORDERING CODES

MAN L PIPE-PIPE



Code	Ref.	Ø	A	B	C	D	E	E1	I	I1
9067016	MAN L 6-6	6	47	35	14.7	6.4	11.4	23	14.6	20
9067024	MAN L 8-8	8	55.5	41	18.7	9.1	13.8	23	18.7	24

MAN L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	I	I1	Ch
9067108	MAN L 1/8-6	1/8	6	6	57.3	27.8	35	14.7	6.4	14	11.4	23	14.6	20	12
9067109	MAN L 1/4-6	1/4	6	8	60.3	28.8	35	14.7	6.4	18	11.4	23	14.6	20	14
9067110	MAN L 1/8-8	1/8	8	6	65.3	31.8	41	18.7	9.1	15	13.8	23	18.7	24	14
9067111	MAN L 1/4-8	1/4	8	8	69.7	34.2	41	18.7	9.1	18	13.8	23	18.7	24	14
9067112	MAN L 3/8-8	3/8	8	9	71.3	34.8	41	18.7	9.1	22	13.8	23	18.7	24	17

NOTES

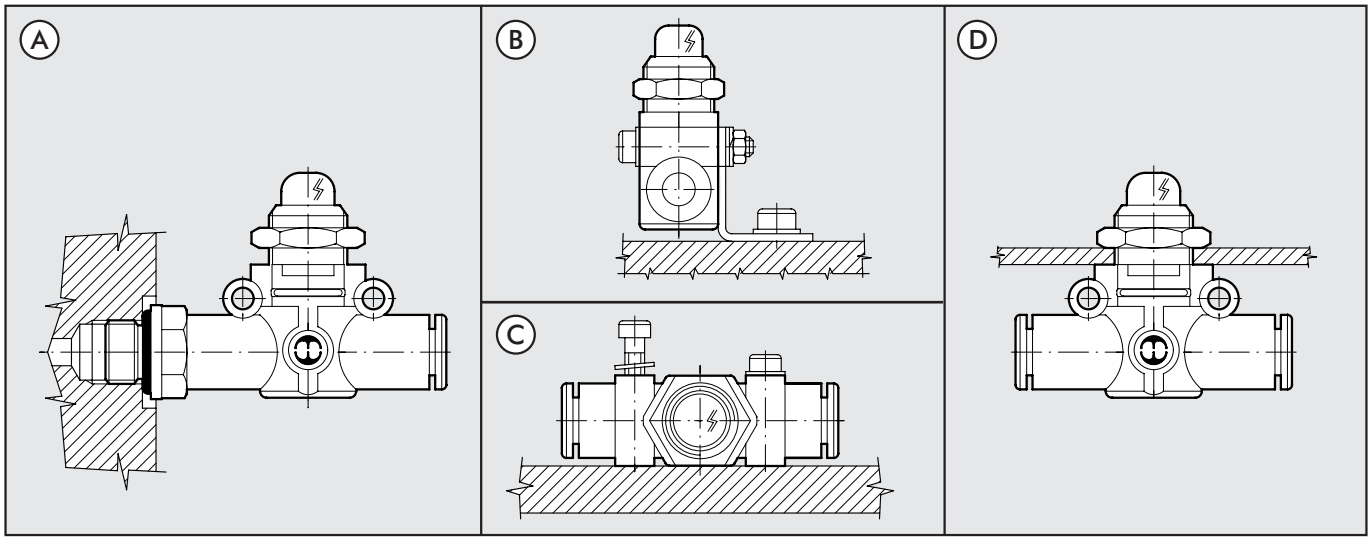
IN-LINE PRESSURE INDICATOR
Series LAM L

The LAM L pneumatic light indicator belongs to the LINE ON LINE® family, which means it can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
When there is no pressure, the clear technopolymer bell looks empty. When there is pressure, a red signal appears.
The clear bell can be cleaned using normal detergents or ethyl alcohol, as the technopolymer used is fully compatible.



TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	0.2 to 1	
	bar	2 to 10	
	psi	29 to 145	
Temperature range	°C	–20°C to +60°C	
	°F	–4°F to +140°F	
Flow rate at 6.3 bar ΔP1 bar	Nl/min	420	800
Colour with pressure		orange - green	
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide 12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air; if used, must be continuous	

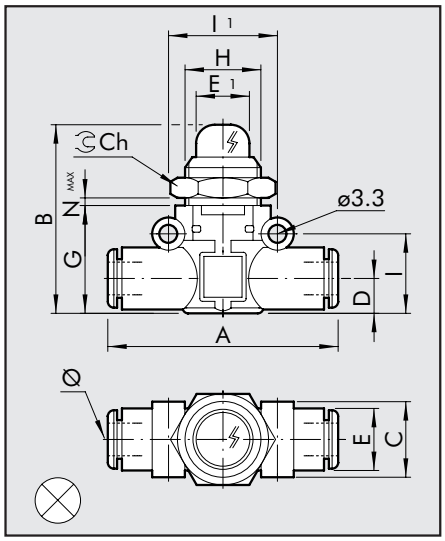
ASSEMBLY OPTIONS



How to mount the LAM L:
- Fig. A: With the male threaded port it is possible to mount the LAM L straight onto the female thread.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the LAM L straight onto the wall.
- Fig. D: The ring nut is screwed onto the threaded metal part of the LAM L body for panel mounting.

OVERALL DIMENSIONS AN ORDERING CODES

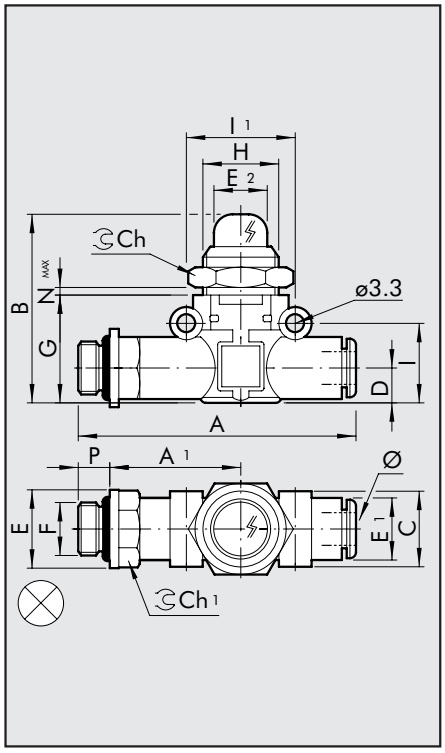
LAM L PIPE-PIPE



Code	Ref.	Ø	A	B	C	D	E	E1	G	H	I	I1	Ch	Nmax
9068016	LAM L 6-6-A	6	47	37	14.7	6.4	11.4	10.6	21	M15x1	14.6	20	17	4.5
9068216	LAM L 6-6-V													
9068024	LAM L 8-8-A	8	55.5	41	18.7	9.1	13.8	10.6	26	M15x1	18.7	24	17	4.5
9068224	LAM L 8-8-V													

A = ORANGE
V = GREEN

LAM L THREAD-PIPE



Code	Ref.	F	Ø	P	A	A1	B	C	D	E	E1	E2	G	H
9068108	LAM L 1/8-6-A	1/8	6	6	57.3	27.8	37	14.7	6.4	14	11.4	10.6	21	M15x1
9068308	LAM L 1/8-6-V													
9068109	LAM L 1/4-6-A	1/4	6	8	60.3	28.8	37	14.7	6.4	18	11.4	10.6	21	M15x1
9068309	LAM L 1/4-6-V													
9068110	LAM L 1/8-8-A	1/8	8	6	65.3	31.8	41	18.7	9.1	15	13.8	10.6	26	M15x1
9068310	LAM L 1/8-8-V													
9068111	LAM L 1/4-8-A	1/4	8	8	69.7	34.2	41	18.7	9.1	18	13.8	10.6	26	M15x1
9068311	LAM L 1/4-8-V													
9068112	LAM L 3/8-8-A	3/8	8	9	71.3	34.8	41	18.7	9.1	22	13.8	10.6	26	M15x1
9068312	LAM L 3/8-8-V													

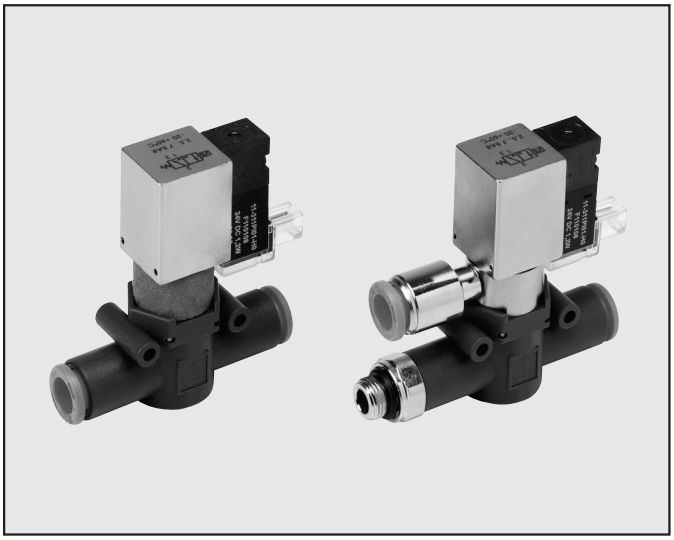
Code	Ref.	I	I1	Ch	Ch1	Nmax
9068108	LAM L 1/8-6-A	14.6	20	17	12	4.5
9068308	LAM L 1/8-6-V					
9068109	LAM L 1/4-6-A	14.6	20	17	14	4.5
9068309	LAM L 1/4-6-V					
9068110	LAM L 1/8-8-A	18.7	24	17	14	4.5
9068310	LAM L 1/8-8-V					
9068111	LAM L 1/4-8-A	18.7	24	17	14	4.5
9068311	LAM L 1/4-8-V					
9068112	LAM L 3/8-8-A	18.7	24	17	17	4.5
9068312	LAM L 3/8-8-V					

A = ORANGE
V = GREEN

NOTES

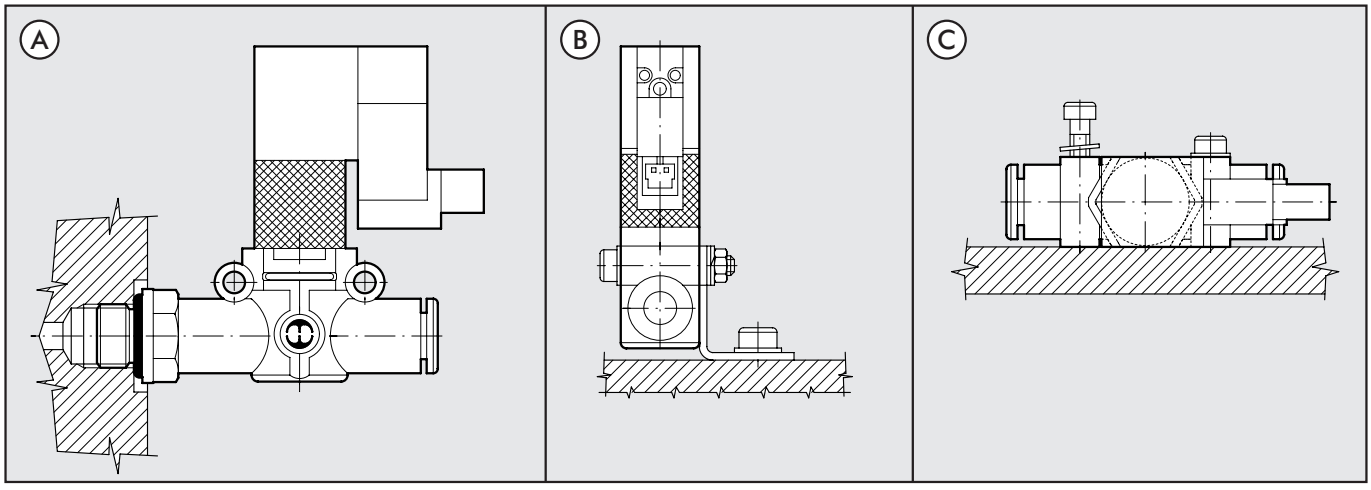
IN-LINE SOLENOID VALVE
Series SOV L

SOV L solenoid valves belong to the LINE ON LINE® family, which means they can be connected to all the other components in series or in parallel.
Available in the version for pipe-pipe connection with two FOX push-in fittings, and in the version for thread-pipe connection with a brass nickel-plated male thread and a push-in fitting.
Though small in size, SOV L valves are solenoid-piloted and feature very high performance.
The spool distributor is fitted with special polyurethane gaskets to ensure a very long working life.
Each valve comes complete with a monostable manual control and LED.
Exhaust can be damped with an annular silencer or conveyed via a pipe fitting. The fitting for conveyed exhaust can be oriented freely.



TECHNICAL DATA		Ø 6	Ø 8
Operating pressure	MPa	0.25 to 0.7	
	bar	2.5 to 7	
	psi	36 to 101	
Temperature range	°C	–10°C to +60°C	
	°F	+14°F to +140°F	
Flow rate at 6.3 bar ΔP 0.5 bar	Nl/min	270	500
Flow rate at 6.3 bar ΔP 1 bar	Nl/min	380	700
Conductance C	Nl/min*bar	95.8	178.1
Coefficient b	bar/bar	0.145	0.129
Voltage	VDC	24	
Power	W	1.2	
Recommended pipe		Rilsan PA 11 – Nylon 6 – Polyamide 12 – Polypropylene	
Fluid		lubricated or unlubricated filtered compressed air	

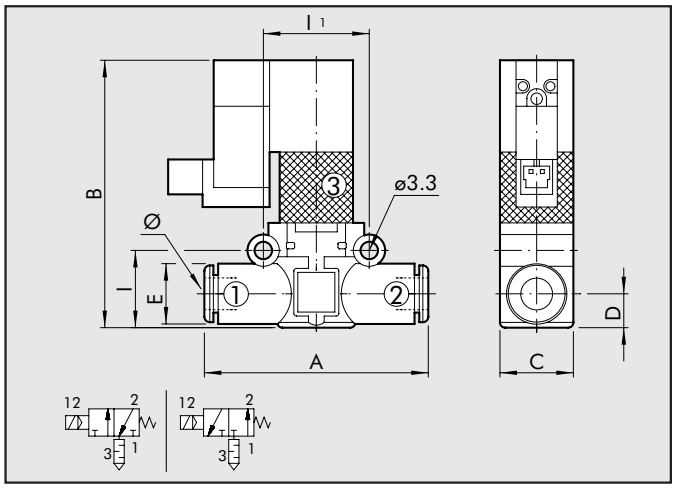
ASSEMBLY OPTIONS



How to mount the SOV L:
- Fig. A: With the male threaded port it is possible to mount the SOV L straight onto the actuator.
- Fig. B: Fixing to the plate with the special SQU L bracket.
- Fig. C: There are two robust rings on the plastic body for fixing the SOV L straight onto the wall.

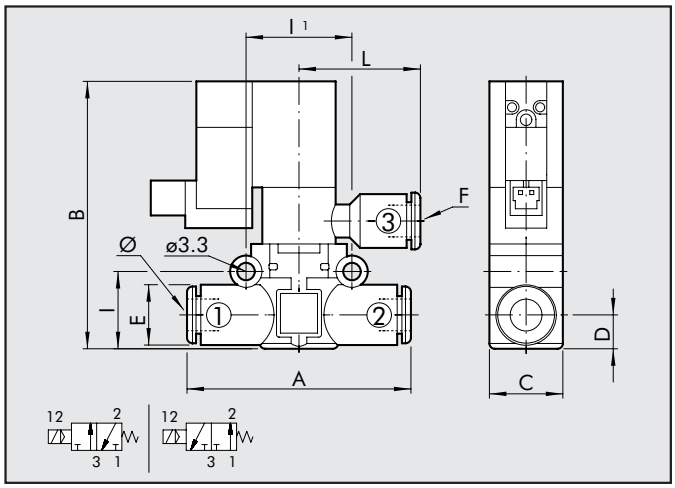
OVERALL DIMENSIONS AND ORDERING CODES

SOV L 3/2 NC-NO PIPE-PIPE SILENCED EXHAUST



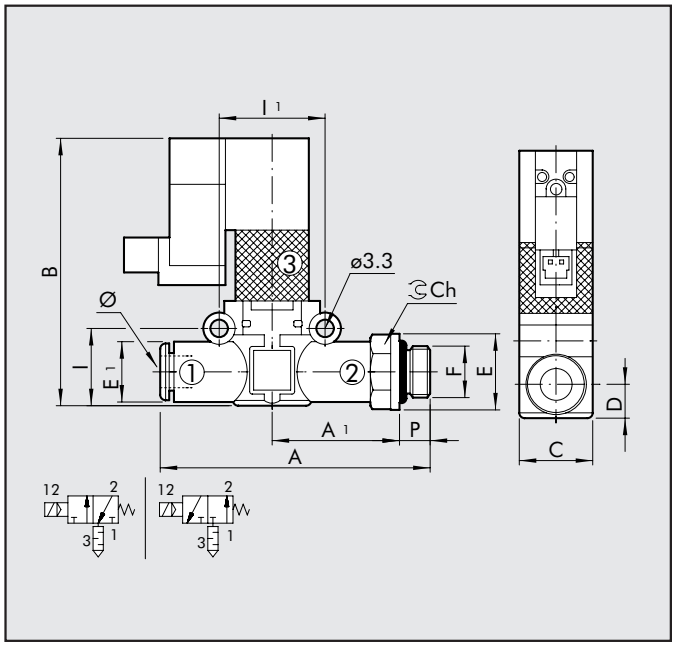
Code	Ref.	Ø	A	B	C	D	E	I	I1
9069016	SOV L 3/2 NC 6-6	6	47	55.5	14.7	6.4	11.4	14.6	20
9069116	SOV L 3/2 NO 6-6								
9069024	SOV L 3/2 NC 8-8	8	55.5	63.5	18.7	9.1	13.8	18.7	24
9069124	SOV L 3/2 NO 8-8								

SOV L 3/2 NC-NO PIPE-PIPE CONVEYED EXHAUST



Code	Ref.	Ø	A	B	C	D	E	F	I	I1	L
9069216	SOV L 3/2 NC 6-6-6	6	47	55.5	14.7	6.4	11.4	Ø6	14.6	20	27
9069316	SOV L 3/2 NO 6-6-6										
9069224	SOV L 3/2 NC 8-8-8	8	55.5	63.5	18.7	9.1	13.8	Ø8	18.7	24	30
9069324	SOV L 3/2 NO 8-8-8										

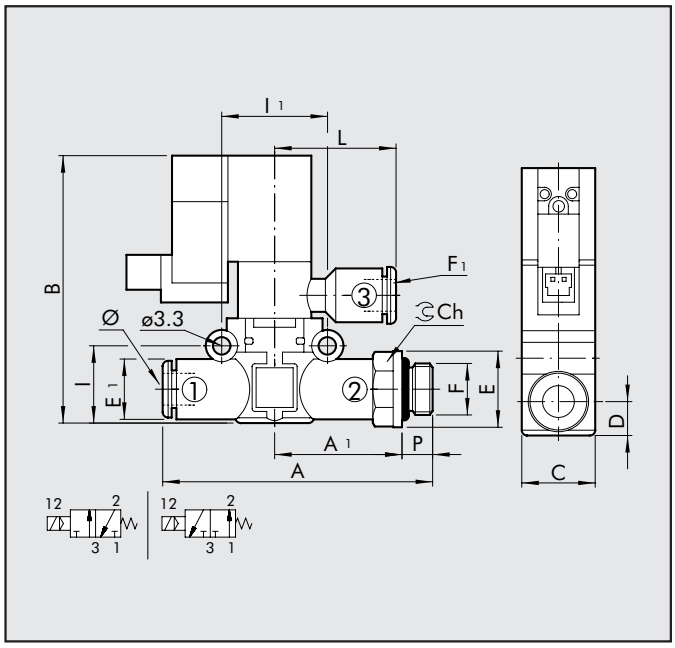
SOV L 3/2 NC-NO PIPE-THREAD SILENCED EXHAUST



Code	Ref.	Ø	F	P	A	A1	B	C	D	E
9069408	SOV L 3/2 NC 6-1/8	6	1/8	6	57.3	27.8	55.5	14.7	6.4	14
9069508	SOV L 3/2 NO 6-1/8									
9069409	SOV L 3/2 NC 6-1/4	6	1/4	8	60.3	28.8	55.5	14.7	6.4	18
9069509	SOV L 3/2 NO 6-1/4									
9069410	SOV L 3/2 NC 8-1/8	8	1/8	6	65.3	31.3	63.5	18.7	9.1	15
9069510	SOV L 3/2 NO 8-1/8									
9069411	SOV L 3/2 NC 8-1/4	8	1/4	8	69.7	34.2	63.5	18.7	9.1	18
9069511	SOV L 3/2 NO 8-1/4									
9069412	SOV L 3/2 NC 8-3/8	8	3/8	9	71.3	34.8	63.5	18.7	9.1	22
9069512	SOV L 3/2 NO 8-3/8									

Code	Ref.	E1	I	I1	Ch1
9069408	SOV L 3/2 NC 6-1/8	11.4	14.6	20	12
9069508	SOV L 3/2 NO 6-1/8				
9069409	SOV L 3/2 NC 6-1/4	11.4	14.6	20	14
9069509	SOV L 3/2 NO 6-1/4				
9069410	SOV L 3/2 NC 8-1/8	13.8	18.7	24	14
9069510	SOV L 3/2 NO 8-1/8				
9069411	SOV L 3/2 NC 8-1/4	13.8	18.7	24	14
9069511	SOV L 3/2 NO 8-1/4				
9069412	SOV L 3/2 NC 8-3/8	13.8	18.7	24	17
9069512	SOV L 3/2 NO 8-3/8				

SOV L 3/2 NC-NO PIPE-THREAD CONVEYED EXHAUST

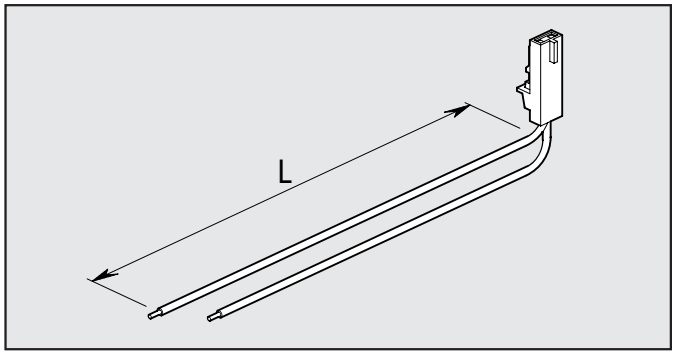


Code	Ref.	Ø	F	P	A	A1	B	C	D
9069608	SOV L 3/2 NC 6-1/8-6	6	1/8	6	57.3	27.8	55.5	14.7	6.4
9069708	SOV L 3/2 NO 6-1/8-6								
9069609	SOV L 3/2 NC 6-1/4-6	6	1/4	8	60.3	28.8	55.5	14.7	6.4
9069709	SOV L 3/2 NO 6-1/4-6								
9069610	SOV L 3/2 NC 8-1/8-8	8	1/8	6	65.3	31.8	63.5	18.7	9.1
9069710	SOV L 3/2 NO 8-1/8-8								
9069611	SOV L 3/2 NC 8-1/4-8	8	1/4	8	69.7	34.2	63.5	18.7	9.1
9069711	SOV L 3/2 NO 8-1/4-8								
9069612	SOV L 3/2 NC 8-3/8-8	8	3/8	9	71.3	34.8	63.5	18.7	9.1
9069712	SOV L 3/2 NO 8-3/8-8								

Code	Ref.	E	E1	F1	I	I1	L	Ch1
9069608	SOV L 3/2 NC 6-1/8-6	14	11.4	Ø6	14.6	20	27	12
9069708	SOV L 3/2 NO 6-1/8-6							
9069609	SOV L 3/2 NC 6-1/4-6	18	11.4	Ø6	14.6	20	27	14
9069709	SOV L 3/2 NO 6-1/4-6							
9069610	SOV L 3/2 NC 8-1/8-8	15	13.8	Ø8	18.7	24	30	14
9069710	SOV L 3/2 NO 8-1/8-8							
9069611	SOV L 3/2 NC 8-1/4-8	18	13.8	Ø8	18.7	24	30	14
9069711	SOV L 3/2 NO 8-1/4-8							
9069612	SOV L 3/2 NC 8-3/8-8	22	13.8	Ø8	18.7	24	30	17
9069712	SOV L 3/2 NO 8-3/8-8							

ACCESSORIES

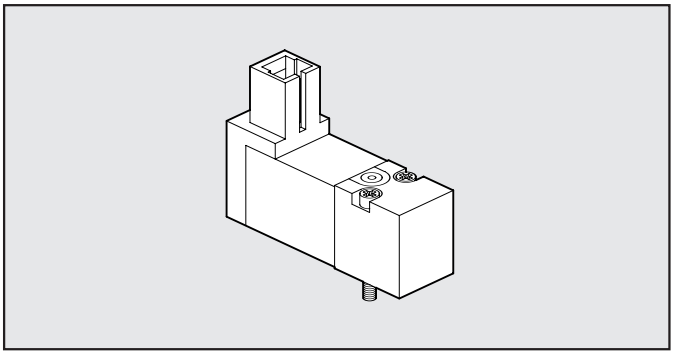
PLUG-IN CONNECTOR



Code	Description
W0970512000	PLUG-IN CONNECTOR MACH 11 L=300

SPARES

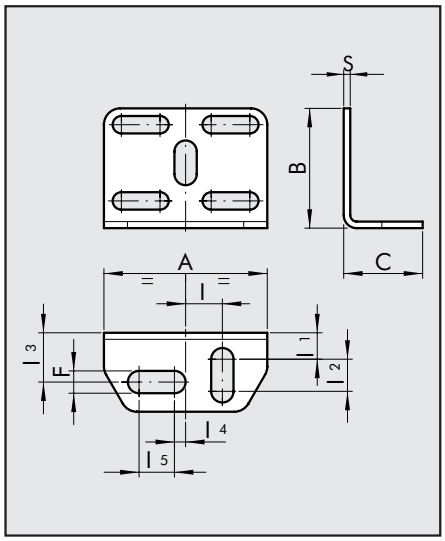
PLUG-IN PILOT



Code	Description
W4005001100	PLUG-IN PILOT B01 24VDC LED

NOTES

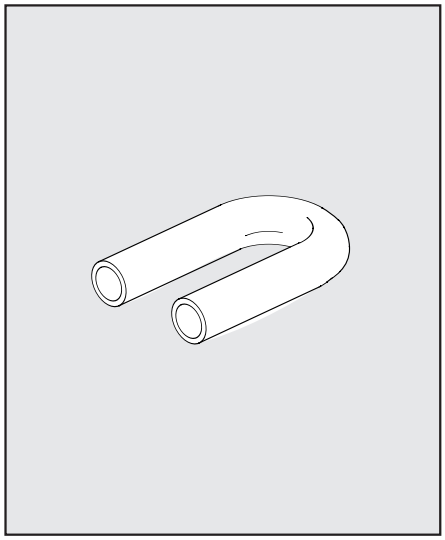
FIXING SQUARE KIT



Code	Description	A	B	C	F	I	I1	I2	I3	I4	I5	S
9062110	SQU L	30	22	14.5	4.2	6.8	4.8	5.9	9.1	2	6.5	1.2

NOTE: comes with two m3x16 screws (for L.O.L. Ø 6 - 8), two m3 hexagonal nuts, 2 groovers, 4 washers.

U-BOLT



Code	Description
9062216	TUB L 6-6
9062224	TUB L 8-8

NOTES

ACCESSORIES

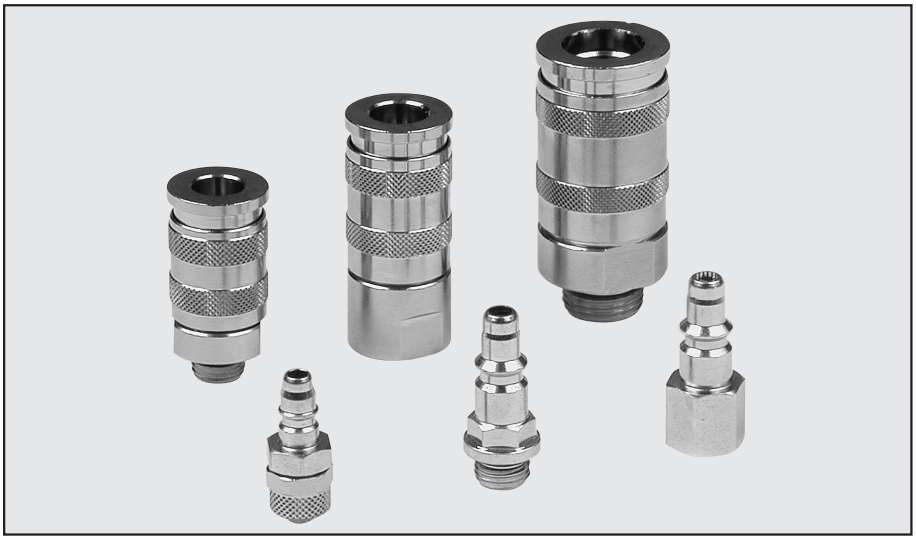
CHAPTER 4.3

	QUICK COUPLING “IAC”	PAGE 4.3/02
	QUICK COUPLING “ICS”	PAGE 4.3/06
	FLOW MICRO-REGULATOR SERIES “MRF N”	PAGE 4.3/10
	FLOW MICRO-REGULATOR SERIES “MRF O”	PAGE 4.3/15
	IN-LINE FLOW MICRO-REGULATOR SERIES “RFL”	PAGE 4.3/18
	REDUCER WITH GAUGE FOR VALVES SERIES “RMV”	PAGE 4.3/19
	QUICK EXHAUST VALVES SERIES “VSR”	PAGE 4.3/20
	STOP VALVES SERIES “STP”	PAGE 4.3/21
	SLIDE VALVES SERIES “VCS”	PAGE 4.3/24
	CIRCUIT SELECTOR VALVES SERIES “VOR”	PAGE 4.3/25
	CHECK VALVE SERIES “VNR”	PAGE 4.3/26
	PNEUMATIC LOGIC	PAGE 4.3/27
	DISTRIBUTION FRAMES AND ROTARY JOINTS	PAGE 4.3/31
	PNEUMO-BUS	PAGE 4.3/36
	SILENCERS	PAGE 4.3/39

COUPLINGS Series IAC

COMPRESSED AIR QUICK-FIT COUPLINGS

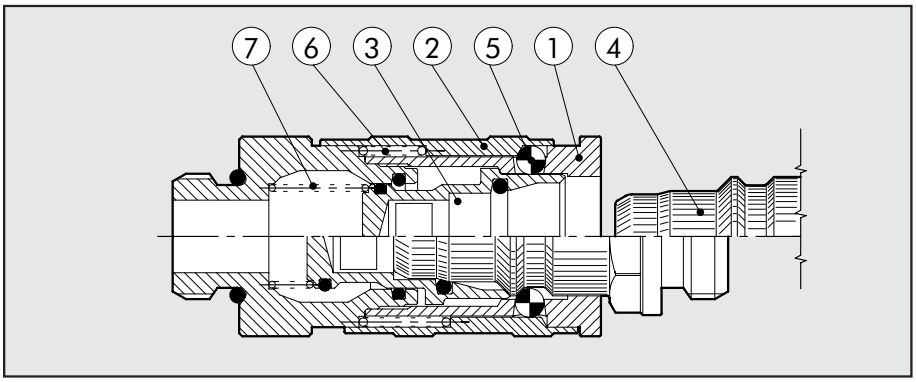
The compressed air quick-fit coupling by Metal Work allows quick replacement of pneumatic equipment (drills, milling machines, screwers and actuators in general) without having to set the line pressure to zero each time. Rapid tool changeover can be easily obtained by fitting a female body on the branch under pressure and the male coupling on the actuator. The presence of a female coupling with a safety valve on the branch under pressure prevents air dispersion during disconnection.



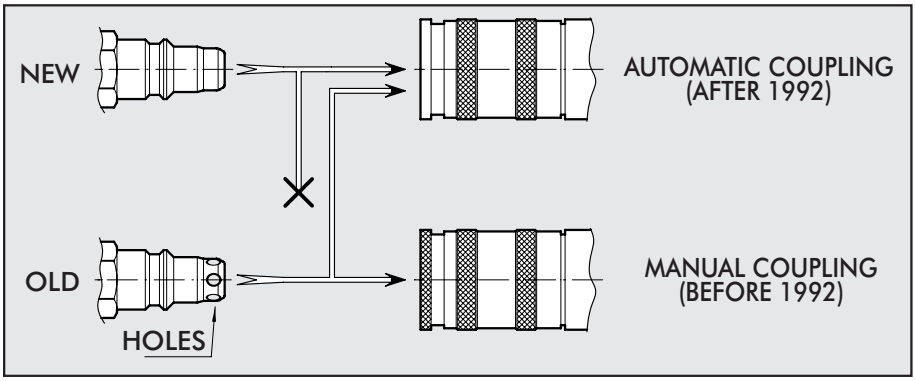
TECHNICAL DATA		MINI		100	200	300
Threaded coupling		1/8"	1/4"	1/4"	3/8"	1/2"
Maximum inlet pressure	MPa	3 MPa			3 MPa	
	bar	30 bar			30 bar	
	psi	435 psi			435 psi	
Flow rate at 6 bar (0.6 MPa - 87 psi)		480 Nl/min		750 Nl/min	1450 Nl/min	1750 Nl/min
ΔP = 1 bar (0.1 MPa - 14 psi)						
Maximum temperature	°C	80°			80°	
	°F	176			176	

COMPONENTS

① Body: nickel-plated brass
② Ring nut: nickel-plated brass
③ Valve: nickel-plated brass
④ Coupling: carbonitrured and zinc-plated steel
⑤ Ball: stainless steel
⑥ Ring nut spring: AISI 302
⑦ Valve spring: AISI 302

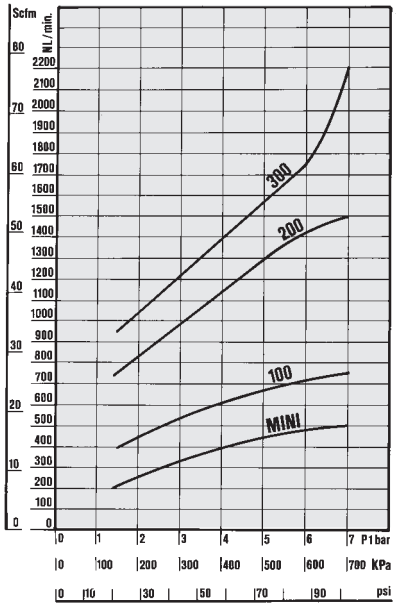


The actual male couplings don't have lateral holes. They cannot be coupled with the manual ports old production.

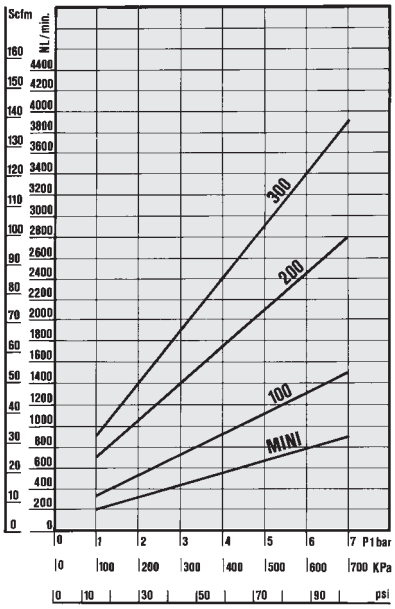


FLOW CHARTS

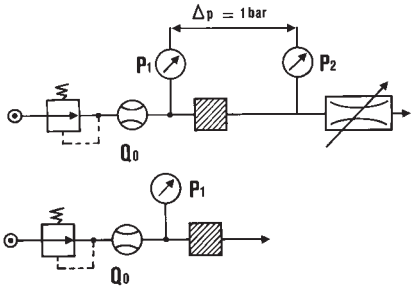
CURVE WITH ΔP = 1 bar



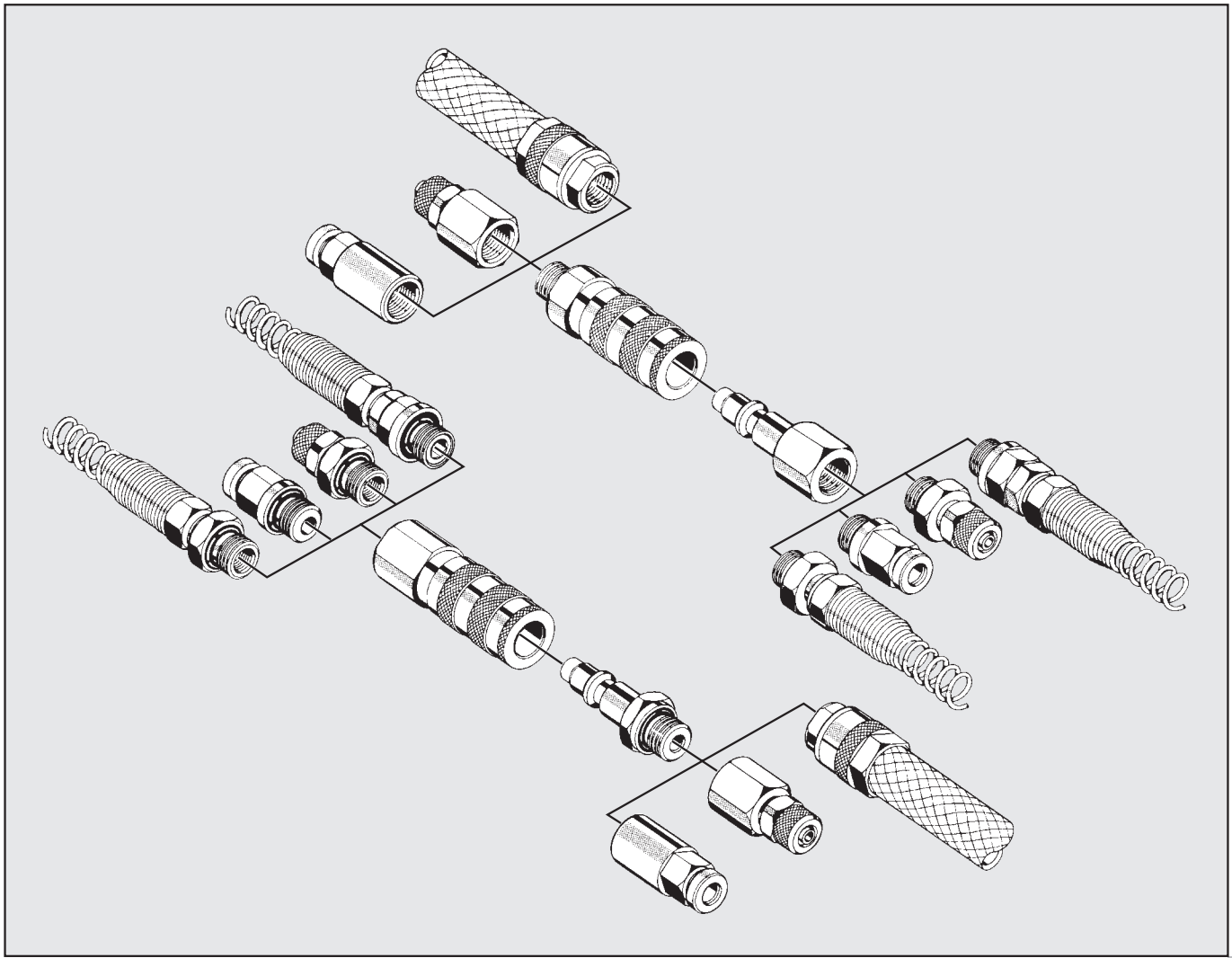
CURVE WITH FREE EXHAUST



FLOW TEST DIAGRAMS



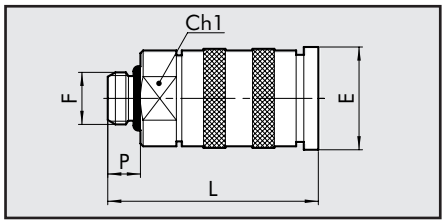
TYPICAL ASSEMBLIES



METAL WORK PNEUMATIC

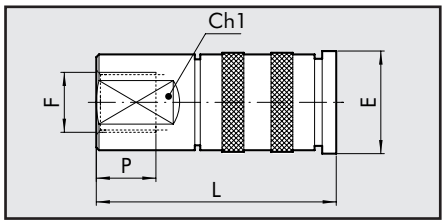
OVERALL DIMENSIONS AND ORDERING CODES

QUICK-FIT PORT, MALE



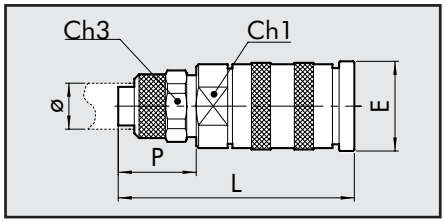
Code	Ref.	Mod.	F	Ch1	P	L	E	O-ring
0101001	01	mini	1/8	16	6.0	38.0	18.8	2031
0101002	02	mini	1/4	16	8.0	40.0	18.8	2043
0201101	101	100	1/4	21	8.0	50.0	24.4	2043
0301201	201	200	3/8	23	9.0	57.6	26.4	2056
0300202	201/A	200	1/4	23	8.0	56.6	26.4	2043
0401301	301	300	1/2	30	11.0	70.8	33.0	3068

QUICK-FIT PORT, FEMALE



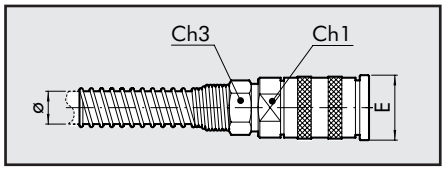
Code	Ref.	Mod.	F	Ch1	P	L	E
0101003	03	mini	1/8	16	7.0	40.5	18.8
0101004	04	mini	1/4	16	8.0	42.0	18.8
0201102	102	100	1/4	21	8.0	52.0	24.4
0301202	202	200	3/8	23	10.0	60.7	26.4
0401302	302	300	1/2	30	11.0	73.8	33.0

QUICK-FIT PORT, NYLON PIPE



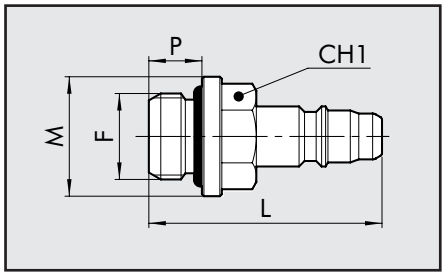
Code	Ref.	Mod.	Ø	Ch1	Ch3	P	L	E
0101005	05	mini	6/4	16	12	14.0	46.0	18.8
0101006	06	mini	8/6	16	14	14.0	46.0	18.8

QUICK-FIT PORT, NYLON PIPE WITH SPRING



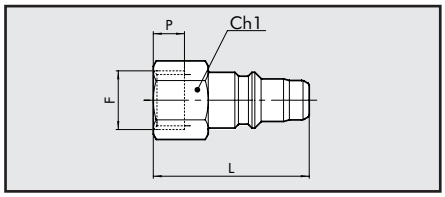
Code	Ref.	Mod.	Ø	Ch1	Ch3	E
0101007	07	mini	6/4	16	12	18.8
0101008	08	mini	8/6	16	14	18.8

QUICK-FIT COUPLING, MALE



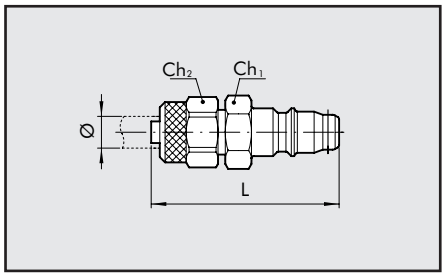
Code	Ref.	Mod.	F	Ch1	P	L	M	O-ring
0102011	11	mini	1/8	13	6.0	29.3	15	2031
0102012	12	mini	1/4	14	8.0	32.7	18	2043
0202111	111	100	1/4	14	8.0	42.2	18	2043
0302211	211	200	3/8	17	9.0	45.8	20	2056
0303205	211/A	200	1/4	16	8.0	46.2	18	2043
0402311	311	300	1/2	22	11.0	55.2	26	3068

QUICK-FIT COUPLING, FEMALE



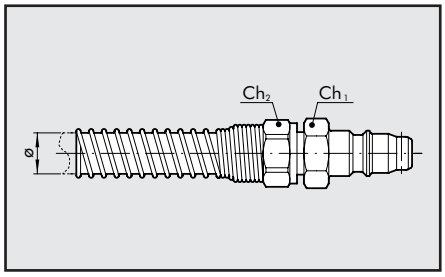
Code	Ref.	Mod.	F	Ch1	P	L
0102013	13	mini	1/8	14	7.0	29.5
0102014	14	mini	1/4	17	8.0	30.5
0202112	112	100	1/4	17	8.0	42.0
0302212	212	200	3/8	20	10.0	48.0
0402312	312	300	1/2	24	11.0	55.0

QUICK-FIT COUPLING, NYLON PIPE



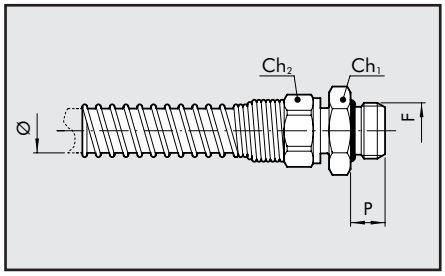
Code	Ref.	Mod.	Ø	Ch1	Ch2	L
0102015	15	mini	6/4	12	12	35.5
0102016	16	mini	8/6	14	14	35.5

QUICK-FIT COUPLING, NYLON PIPE WITH SPRING



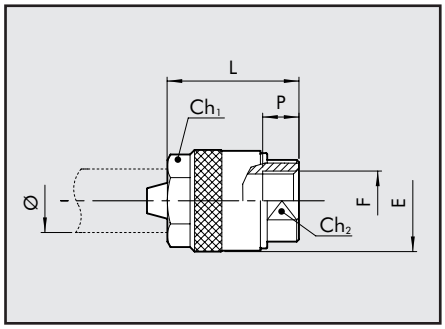
Code	Ref.	Mod.	Ø	Ch1	Ch2
0102017	17	mini	6/4	12	12
0102018	18	mini	8/6	14	14

NYLON PIPE FITTING WITH SPRING



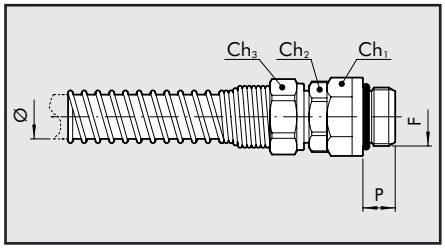
Code	Ref.	F	Ø	Ch1	Ch2	P
0010001	C1/Z	1/4	8	18	14	8
0010002	C1/Z	3/8	8	21	14	9
0010003	C1/Z	1/4	10	18	17	8
0010004	C1/Z	3/8	10	21	17	9
0010005	C1/Z	3/8	12	21	19	9

HOSE FITTING



Code	Ref.	F	Ø	Ch1	Ch2	P	L	E
2601001	40	1/4	6x14	18	16	8.0	29.0	23.0
2601002	41	1/4	8x17	21	16	8.0	31.0	25.0
2601003	42	1/4	10x19	23	17	8.0	31.0	27.0
2601004	43	1/2	13x23	27	24	11.0	35.5	31.0

SWIVEL NYLON PIPE FITTING WITH SPRING



Code	Ref.	F	Ø	Ch1	Ch2	Ch3	P	O-ring
2501010	50	1/4	6/4	16	14	12	8.0	2043
2501011	51	1/4	8/6	16	14	14	8.0	2043
2501012	52	3/8	10/8	19	17	17	9.0	2056
2501013	53	3/8	12/10	19	17	19	9.0	2056

COUPLINGS Series ICS

QUICK-FIT COUPLINGS FOR MOULD CONDITIONING

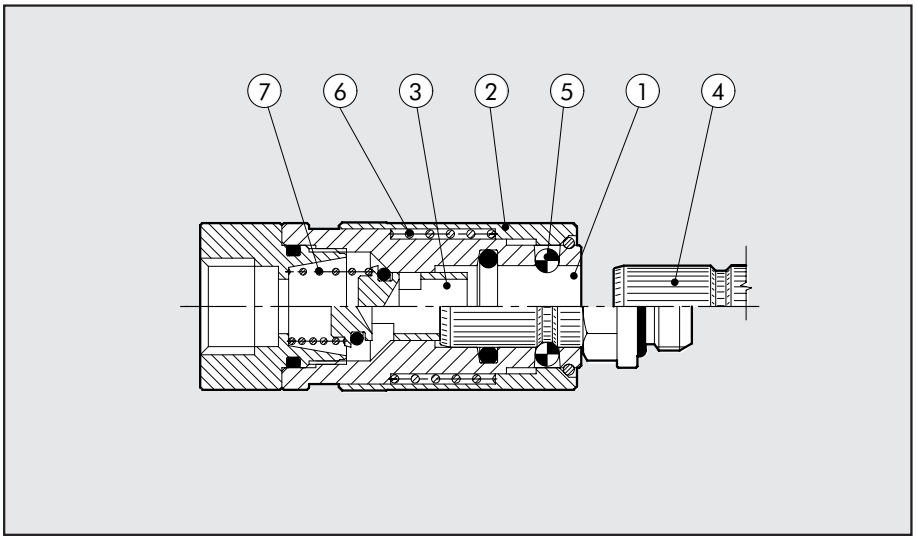
The mould conditioning coupling was specifically designed to speed up and facilitate the replacement of moulds in injection moulding machines. Rapid mould changeover can be easily obtained by fitting a female body at the end of the pipes conveying the thermoregulating fluid and a male coupling to the moulds. With this configuration, each mould can be connected and disconnected from the thermoregulation circuit rapidly. The presence of a female coupling with a safety valve on the pipework prevents the outflow of fluid when coupling with or releasing from the mould.



TECHNICAL DATA		501 V with valve	401 V with valve	503 V without valve	403 V without valve
Threaded coupling		1/8	1/4	1/8	1/4
Maximum temperature at: 1.8 MPa; 18 bar; 261 psi	°F	+248			
	°C	+120			
Minimum temperature at: 1.8 MPa; 18 bar; 261 psi	°F	–68			
	°C	–20			
Maximum pressure	MPa	1,8			
	bar	18			
	psi	261			
Type of gasket		FKM/FPM			

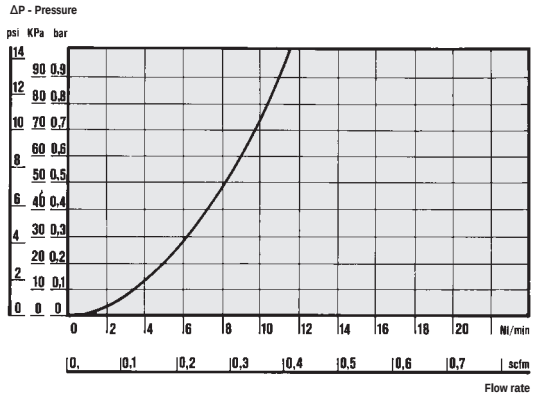
COMPONENTS

① Body: nickel-plated brass
② Ring nut: nickel-plated brass
③ Valve: nickel-plated brass
④ Coupling: nickel-plated brass
⑤ Ball: stainless steel
⑥ Ring nut spring: AISI 302
⑦ Valve spring: AISI 302.

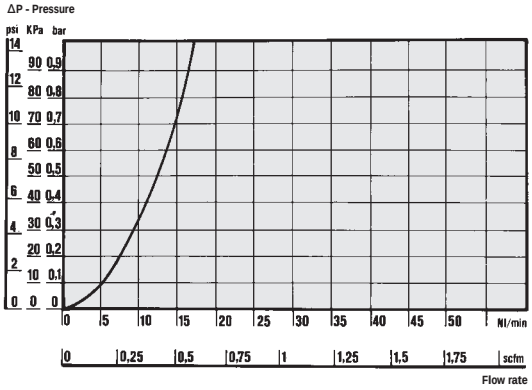


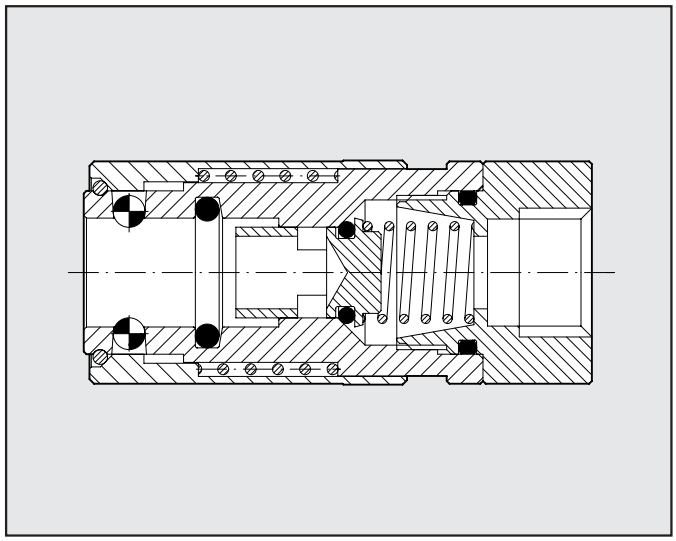
ICS WATER FLOW CHARTS WITH SAFETY VALVE

ICS/500 1/8''



ICS/400 1/4''

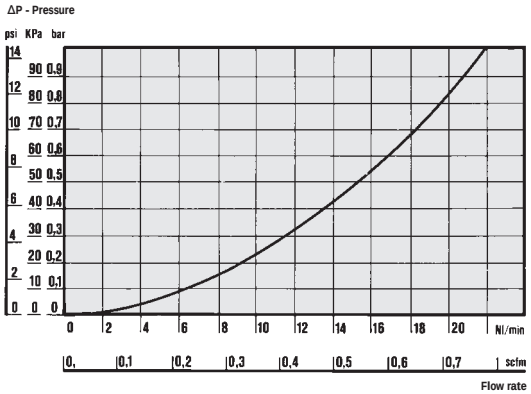




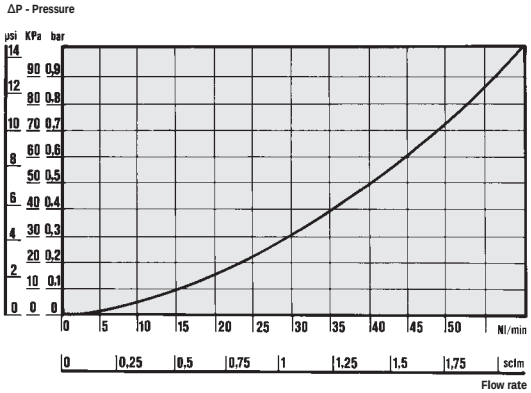
WITH SAFETY VALVE - The female body with safety valve prevents the outflow of thermoregulator fluid when coupling with or releasing from the mould.

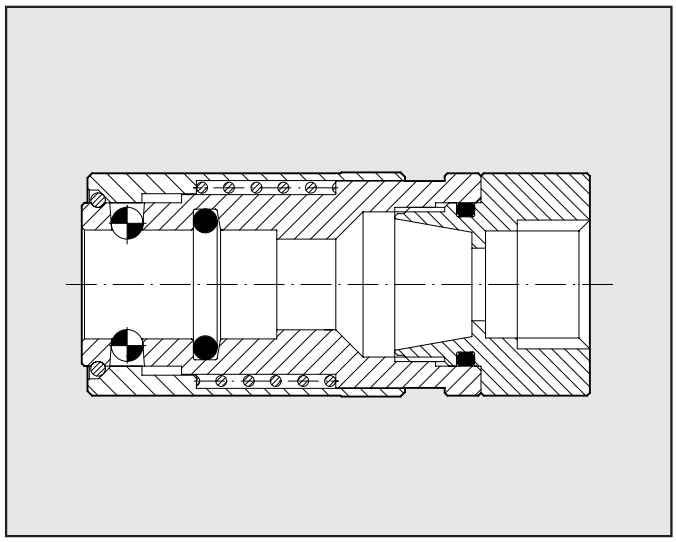
ICS WATER FLOW CHARTS WITHOUT SAFETY VALVE

ICS/500 1/8''



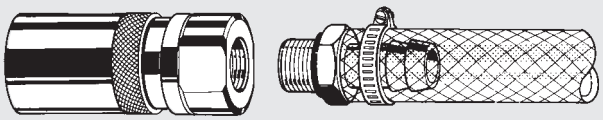
ICS/400 1/4''



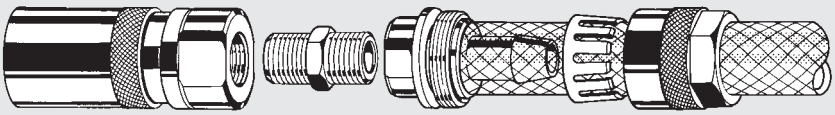


WITHOUT SAFETY VALVE - A version having a female body without a safety valve is available for when a high flow rate is required. This version allows a greater thermoregulator fluid flow rate but does not act as a fluid check valve when coupling with or releasing from the mould.

GENERAL FEATURES



Female body plus conventional hose fitting (pipe locked with metal circlip).



Female body plus self-locking hose fitting patented by Metal Work. When the outer ring nut is tightened, the gripper locks on the pipe.

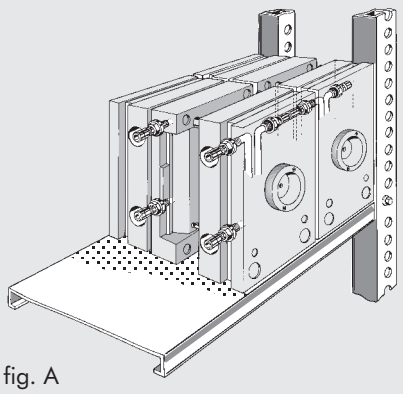


fig. A

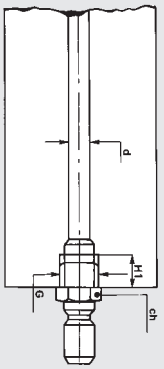


fig. 1

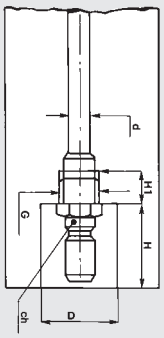


fig. 2

The male fitting should be coupled with the mould so that it remains embedded (Fig. 2-4). This saves space and protects the coupling. The mould has no projecting parts, which would occupy more space on the storage shelving (Fig. A).

d	G	H1	ch	D	H
4/6	1/8	7	13	20	23
7/9	1/4	9	14	26	30

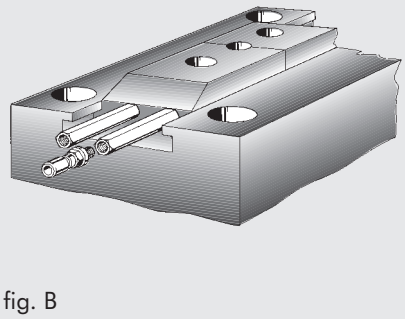


fig. B

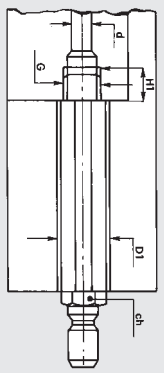


fig. 3

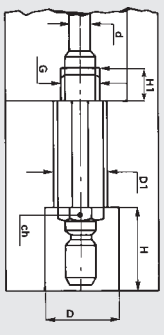


fig. 4

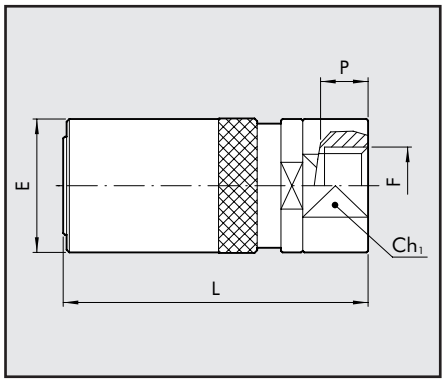
The Extension (see A25 fittings) is available as an accessory. It is extremely useful when parts inside the moulds need to be thermoregulated or when the presence of trucks makes it impossible to connect the moulds to the rubber pipe. (Fig. B).

d	G	H1	ch	D	H	D1
4/6	1/8	7	13	20	23	17
7/9	1/4	9	14	26	30	21



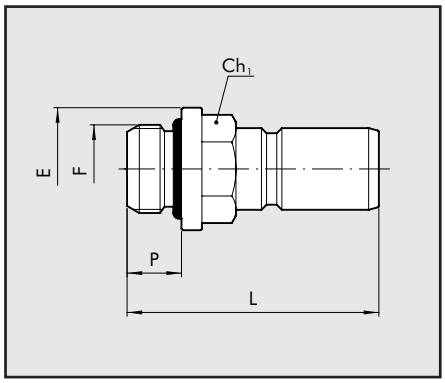
OVERALL DIMENSIONS AND ORDERING CODES

FEMALE PORT



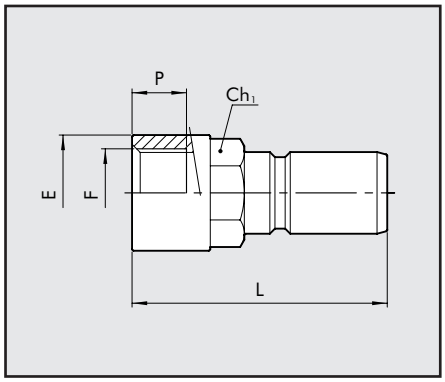
Code	Ref.	F	Safety valve	CH1	P	L	E
0601040	501V	1/8	yes	16	7.0	45.0	19.0
0501040	401V	1/4	yes	21	8.0	56.0	25.0
0600040	503V	1/8	no	16	7.0	45.0	19.0
0500040	403V	1/4	no	21	8.0	56.0	25.0

MALE COUPLING



Code	Ref.	F	CH1	P	L	E	O-ring FKM/FPM
0602001	511	1/8	13	6.0	28.5	15.0	2031
0502001	411	1/4	14	8.0	37.0	18.0	2043

FEMALE COUPLING



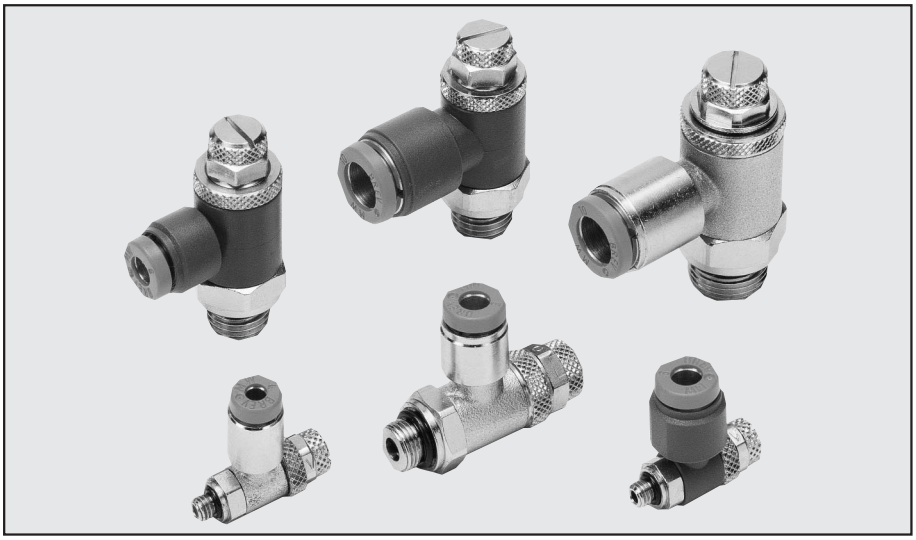
Code	Ref.	F	CH1	P	L	E
0602002	512	1/8	12	7.0	28.0	14
0502002	412	1/4	14	8.0	37.5	17

NOTES

FLOW MICRO-REGULATOR
Series MRF N

FLOW MICRO-REGULATOR

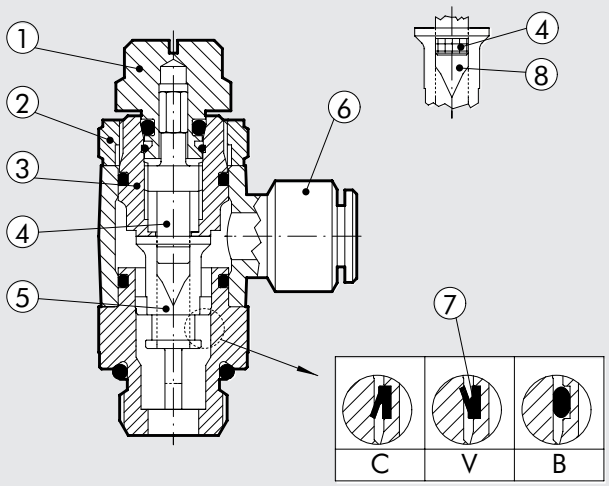
The flow micro-regulator regulates the speed of the piston rod in the pneumatic cylinders.
The configuration of micro-regulators type C (to mount on the cylinder inlet) and type V (to mount on the valve ports) gives full flow during supply and regulated flow during exhaust. With type B (bidirectional) both the supply and exhaust flow rates can be adjusted. The adjusting knobs on Metal Work MFRs allows triple adjustment: manual operation on the milled section, screwdriver inserted in the relevant slot, and using a hex. spanner. The MRF ring can be orientated even when mounted.



TECHNICAL DATA		M5	1/8"	1/4"	3/8"	1/2"
Pipe		Ø 4 | Ø 5 | Ø 6	Ø 4 | Ø 5 | Ø 6 | Ø 8	Ø 6 | Ø 8 | Ø 10 | Ø 12	Ø 10 | Ø 12	Ø 12
Threaded ring		M5	1/8"	1/4"	3/8"	1/2"
Max. inlet pressure	MPa	1				
	bar	10				
	psi	145				
Max. flow rate during regulation at 6 bar	Nl/min	95	340	600	870	1400
Fluid		Compressed air, filtered, lubricated or unlubricated				
Temperature range: technopolymer ring	°C	–10° to +50°				
	°F	+14° to +122°				
brass ring	°C	–10° to +70°				
	°F	+14° to +158°				

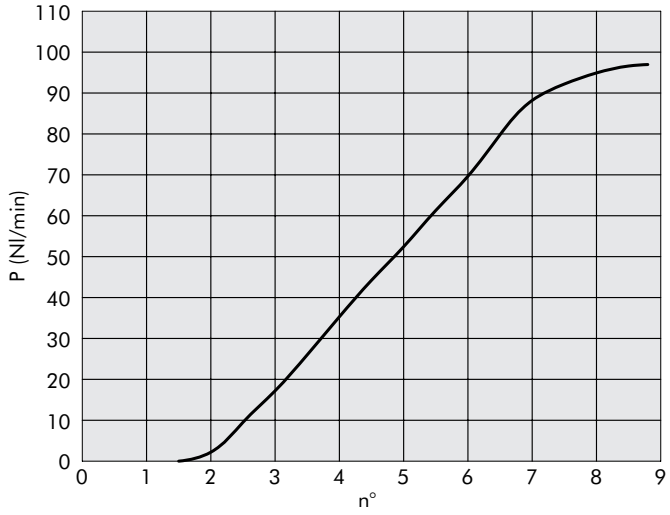
COMPONENTS

① Brass knob
② Ring nut for securing knob or ring (brass)
③ Brass body
④ Brass plunger
⑤ Technopolymer insert with progressive flow window
⑥ Brass or technopolymer rotary ring.
⑦ NBR gasket



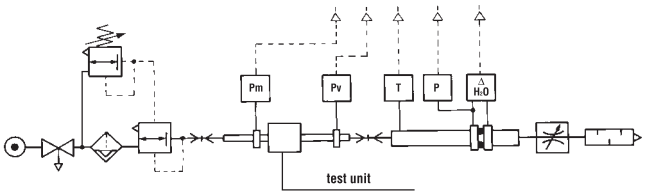
FLOW CHARTS

MRF M5



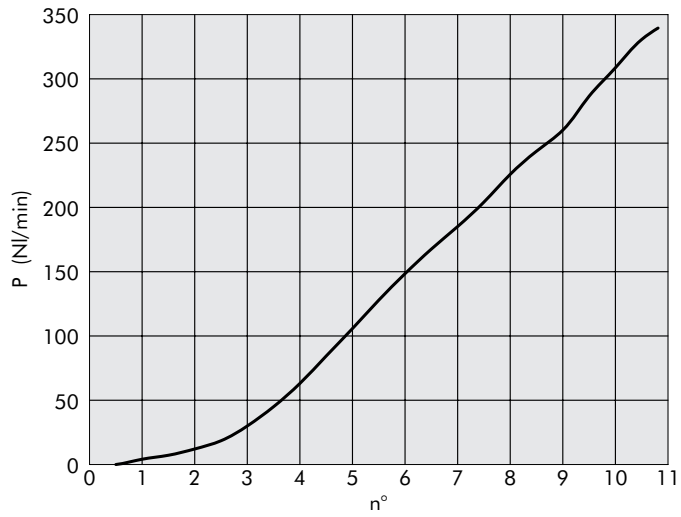
FLOW RATE FOR Ø6 PIPE

Dipartment of Mechanic
Turin Polytechnic



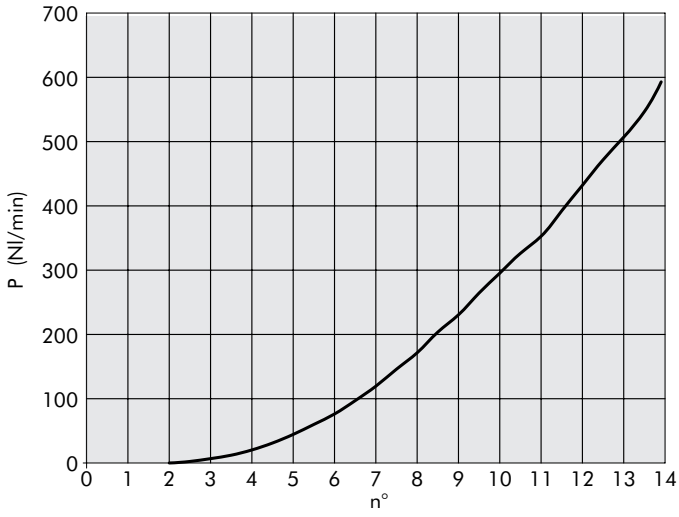
• Flow rate tests carried out by the Department of Mechanics at the Turin Polytechnic using a computerized test station and in compliance with CETOP RP50R recommendations (approved by ISO DIS 6358-2) with ISO 5167 diaphragm gauge.

MRF G 1/8"



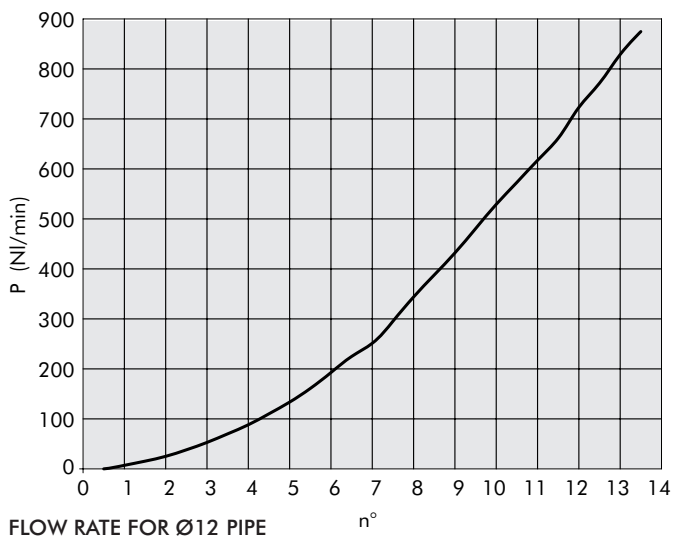
FLOW RATE FOR Ø6 PIPE

MRF G 1/4"



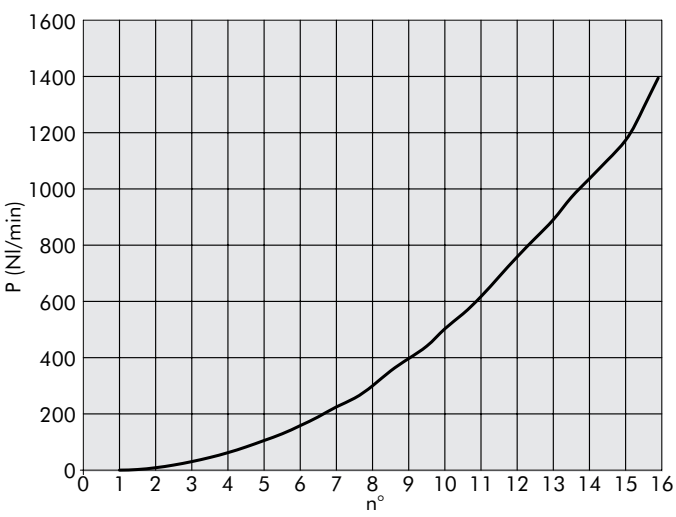
FLOW RATE FOR Ø10 PIPE

MRF G 3/8"



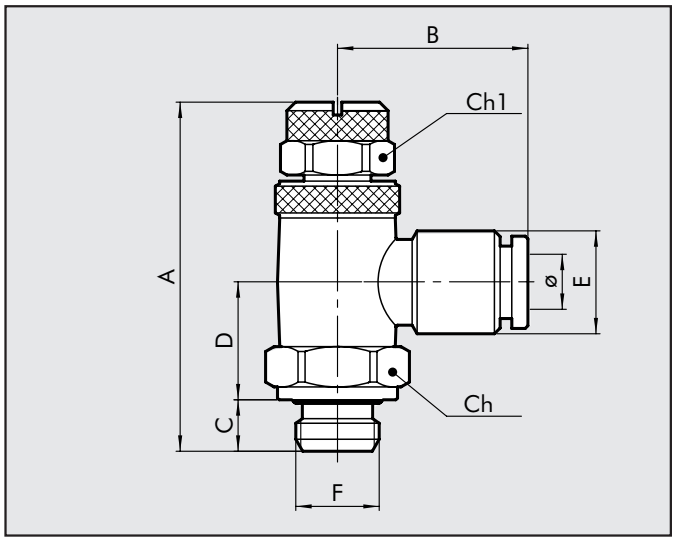
FLOW RATE FOR Ø12 PIPE

MRF G 1/2"



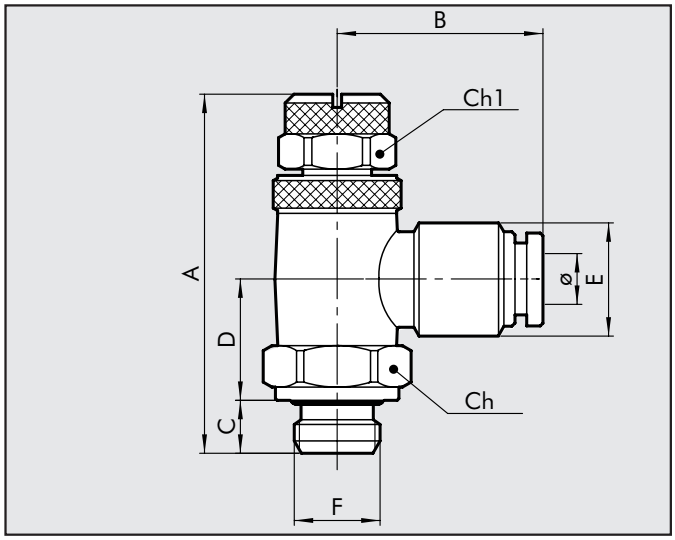
FLOW RATE FOR Ø12 PIPE

OVERALL DIMENSIONS: BRASS RING



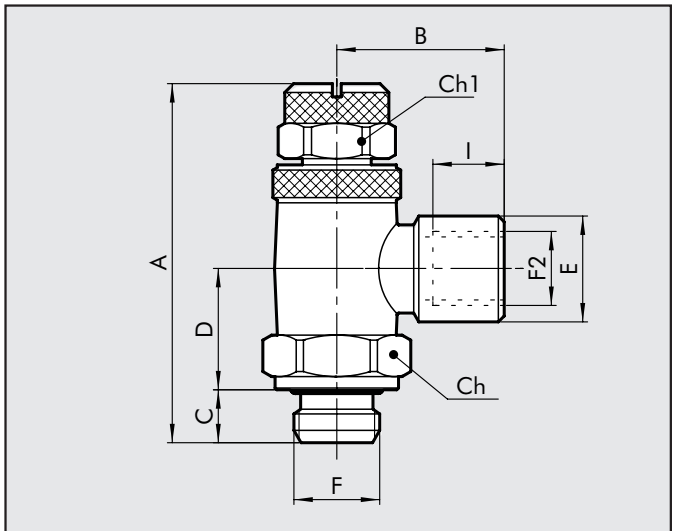
F	∅	Ch	Ch1	E	B	A	D	C
M5	4	9	9	10.9	23.5	28.2	9.3	4
M5	5	9	9	12	24.5	28.2	9.3	4
M5	6	9	9	13.5	24.5	28.2	9.3	4
G 1/8	4	15	12	11.5	25	42	13.7	6
G 1/8	5	15	12	12.0	25	42	13.7	6
G 1/8	6	15	12	13.5	25	42	13.7	6
G 1/8	8	15	12	15.5	30	42	13.7	6
G 1/4	6	18	12	13.5	27.5	48	16	8
G 1/4	8	18	12	15.5	32	48	16	8
G 1/4	10	18	12	18	34.3	48	16	8
G 1/4	12	18	12	20.2	37.5	48	16	8
G 3/8	10	21	14	18	36.3	53	19	9
G 3/8	12	21	14	20.2	40.5	53	19	9
G 1/2	12	26	17	20.2	40.5	60.5	22	11

OVERALL DIMENSIONS: TECHNOPOLYMER RING



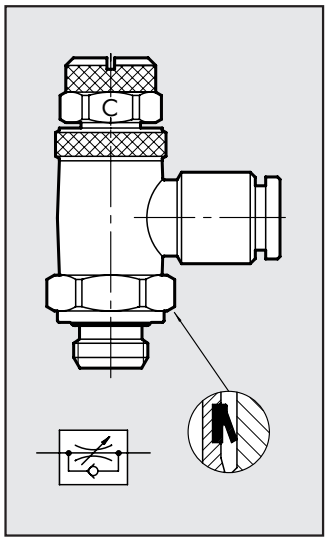
F	∅	Ch	Ch1	E	B	A	D	C
M5	4	9	9	10.9	20	28.2	9.3	4
M5	5	9	9	13.5	21.5	28.2	9.3	4
M5	6	9	9	15	22	28.2	9.3	4
G 1/8	4	15	12	12.5	22.5	42	14.7	6
G 1/8	5	15	12	13.5	23	42	14.7	6
G 1/8	6	15	12	15	22.5	42	14.7	6
G 1/8	8	15	12	16.3	25.5	42	14.7	6
G 1/4	6	18	12	15	24	48	17	8
G 1/4	8	18	12	16.3	27	48	17	8
G 1/4	10	18	12	18.5	31	48	17	8
G 1/4	12	18	12	21	32	48	17	8
G 3/8	10	21	14	18.5	31	53	20	9
G 3/8	12	21	14	21	33	53	20	9
G 1/2	12	26	17	21	35	60.5	22	11

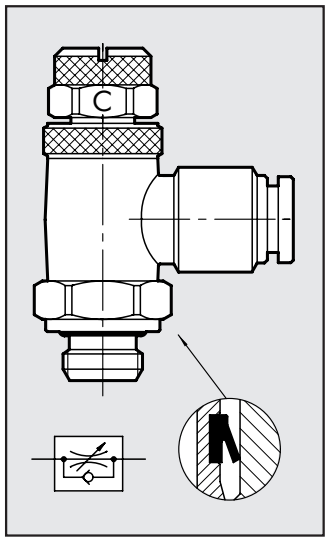
OVERALL DIMENSIONS: THREADED RING

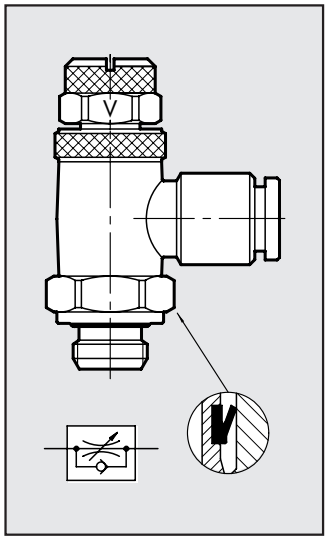


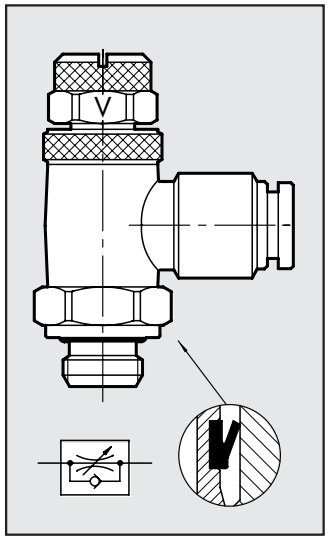
F	F_2	Ch	Ch1	E	B	A	D	C	I
G 1/8	G 1/8	15	12	13.3	21.4	42	13.7	6	6.7
G 1/4	G 1/4	18	12	16.7	25.5	48	16	8	8
G 3/8	G 3/8	21	14	20.2	31.5	53	19	9	10

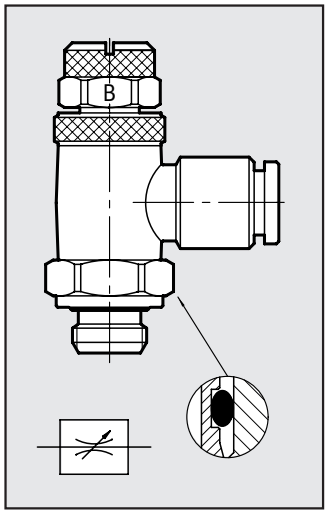
ORDERING CODES

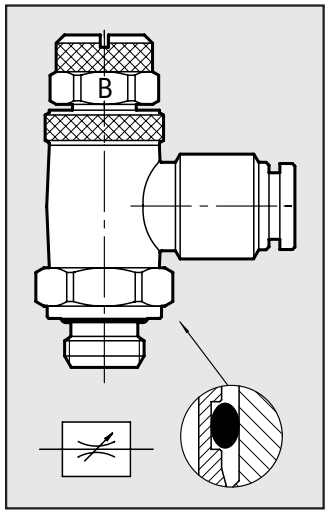
MRF/C (BRASS RING)	Code	Ref.
	9031001	MRF/C 4 M5
	9031002	MRF/C 4 1/8
	9031003	MRF/C 5 M5
	9031004	MRF/C 5 1/8
	9031005	MRF/C 6 M5
	9031006	MRF/C 6 1/8
	9031007	MRF/C 6 1/4
	9031008	MRF/C 8 1/8
	9031009	MRF/C 8 1/4
	9031011	MRF/C 10 1/4
	9031012	MRF/C 10 3/8
	9031014	MRF/C 12 1/4
	9031015	MRF/C 12 3/8
	9031016	MRF/C 12 1/2

MRFT/C (TECHNOPOLYMER RING)	Code	Ref.
	9021001	MRFT/C 4 M5
	9021002	MRFT/C 4 1/8
	9021003	MRFT/C 5 M5
	9021004	MRFT/C 5 1/8
	9021005	MRFT/C 6 M5
	9021006	MRFT/C 6 1/8
	9021007	MRFT/C 6 1/4
	9021008	MRFT/C 8 1/8
	9021009	MRFT/C 8 1/4
	9021011	MRFT/C 10 1/4
	9021012	MRFT/C 10 3/8
	9021014	MRFT/C 12 1/4
	9021015	MRFT/C 12 3/8
	9021016	MRFT/C 12 1/2

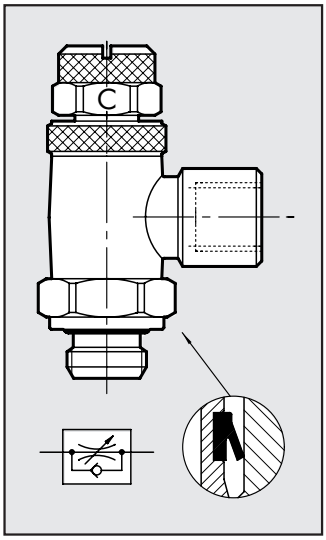
MRF/V (BRASS RING)	Code	Ref.
	9031101	MRF/V 4 M5
	9031102	MRF/V 4 1/8
	9031103	MRF/V 5 M5
	9031104	MRF/V 5 1/8
	9031105	MRF/V 6 M5
	9031106	MRF/V 6 1/8
	9031107	MRF/V 6 1/4
	9031108	MRF/V 8 1/8
	9031109	MRF/V 8 1/4
	9031111	MRF/V 10 1/4
	9031112	MRF/V 10 3/8
	9031114	MRF/V 12 1/4
	9031115	MRF/V 12 3/8
	9031116	MRF/V 12 1/2

MRFT/V (TECHNOPOLYMER RING)	Code	Ref.
	9021101	MRFT/V 4 M5
	9021102	MRFT/V 4 1/8
	9021103	MRFT/V 5 M5
	9021104	MRFT/V 5 1/8
	9021105	MRFT/V 6 M5
	9021106	MRFT/V 6 1/8
	9021107	MRFT/V 6 1/4
	9021108	MRFT/V 8 1/8
	9021109	MRFT/V 8 1/4
	9021111	MRFT/V 10 1/4
	9021112	MRFT/V 10 3/8
	9021114	MRFT/V 12 1/4
	9021115	MRFT/V 12 3/8
	9021116	MRFT/V 12 1/2

MRF/B (BRASS RING)	Code	Ref.
	9031201	MRF/B 4 M5
	9031202	MRF/B 4 1/8
	9031203	MRF/B 5 M5
	9031204	MRF/B 5 1/8
	9031205	MRF/B 6 M5
	9031206	MRF/B 6 1/8
	9031207	MRF/B 6 1/4
	9031208	MRF/B 8 1/8
	9031209	MRF/B 8 1/4
	9031211	MRF/B 10 1/4
	9031212	MRF/B 10 3/8
	9031214	MRF/B 12 1/4
	9031215	MRF/B 12 3/8
	9031216	MRF/B 12 1/2

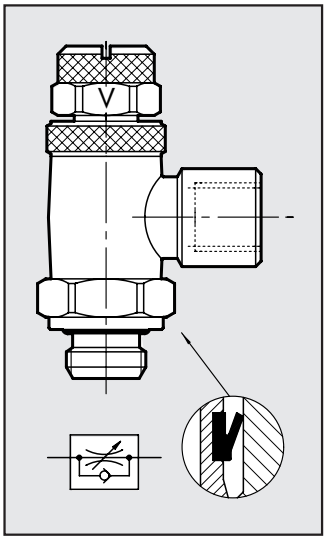
MRFT/B (TECHNOPOLYMER RING)	Code	Ref.
	9021201	MRFT/B 4 M5
	9021202	MRFT/B 4 1/8
	9021203	MRFT/B 5 M5
	9021204	MRFT/B 5 1/8
	9021205	MRFT/B 6 M5
	9021206	MRFT/B 6 1/8
	9021207	MRFT/B 6 1/4
	9021208	MRFT/B 8 1/8
	9021209	MRFT/B 8 1/4
	9021211	MRFT/B 10 1/4
	9021212	MRFT/B 10 3/8
	9021214	MRFT/B 12 1/4
	9021215	MRFT/B 12 3/8
	9021216	MRFT/B 12 1/2

MRF/CF (BRASS RING)



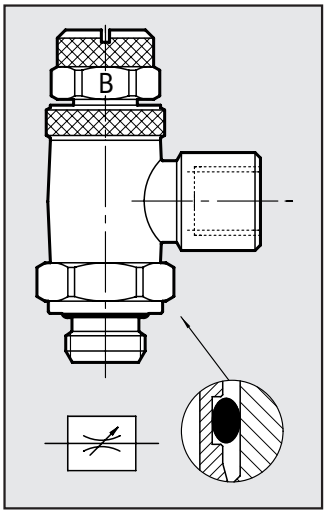
Code	Ref.
9031301	MRF/CF 1/8 1/8
9031302	MRF/CF 1/4 1/4
9031303	MRF/CF 3/8 3/8

MRF/VF (BRASS RING)



Code	Ref.
9031401	MRF/VF 1/8 1/8
9031402	MRF/VF 1/4 1/4
9031403	MRF/VF 3/8 3/8

MRF/BF (BRASS RING)



Code	Ref.
9031501	MRF/BF 1/8 1/8
9031502	MRF/BF 1/4 1/4
9031503	MRF/BF 3/8 3/8

NOTES

FLOW MICRO-REGULATOR
Serie MRF O

FLOW MICRO-REGULATOR

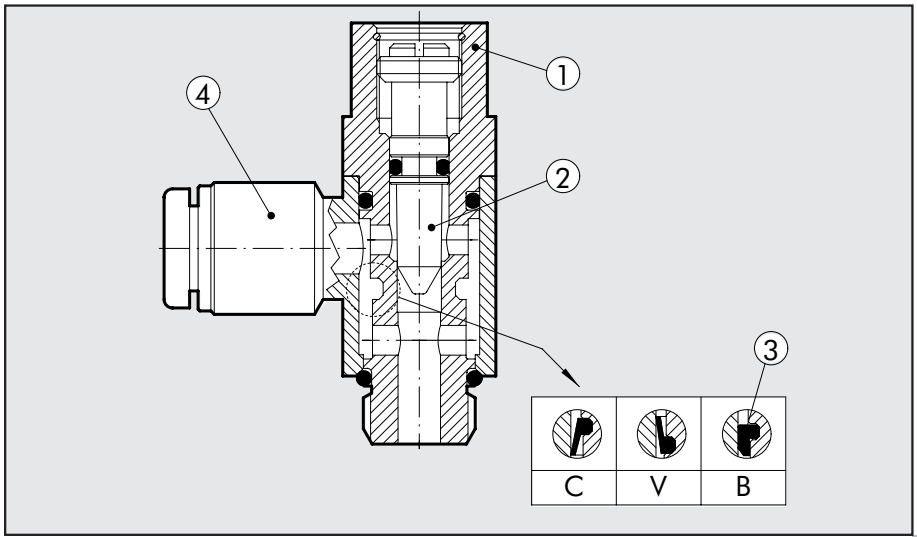
This type of MRF, which can be adjusted using a screwdriver only, prevents unintentional modifications to the setting.
Due to their special configuration, they can be mounted using an automatic screwer, which reduces assembly times.
Once the ring is mounted, it remains fixed in the required position.
As MRF N (see pag. 4/45), there are three types:
C = cylinder
V = valve
B = bidirectional



TECHNICAL DATA		M5	1/8''	1/4''
Max. pressure	bar		10	
	MPa		1	
Max. temperature	°C		70	
	°F		158	
Max. flow rate during regulation at 6 bar	Nl/min	105	500	1150
Actuation			Screw with frictioning	
Internal system			Tapered needle	

COMPONENTS

① Body: nickel-plated brass
② Regulation needle: brass
③ Gasket: NBR
④ Rotary ring: nickel-plated brass

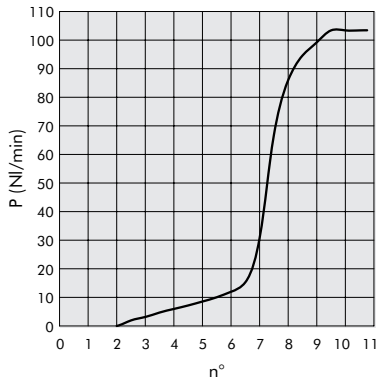


METAL WORK PNEUMATIC

FLOW CHARTS

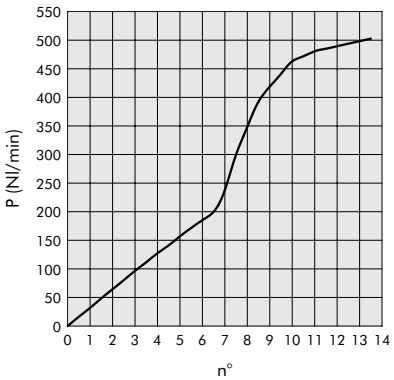
MRF M5

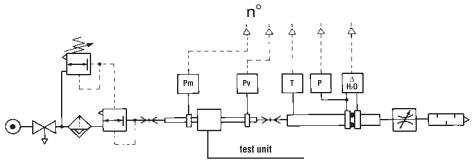
FLOW RATE FOR Ø5 PIPE



MRF 1/8"

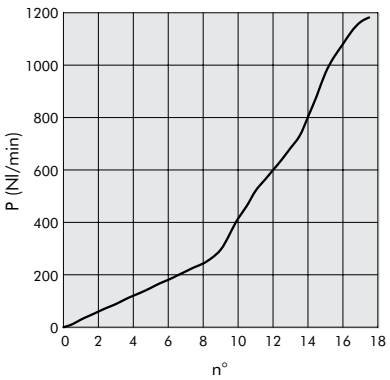
FLOW RATE FOR Ø6 PIPE





MRF 1/4"

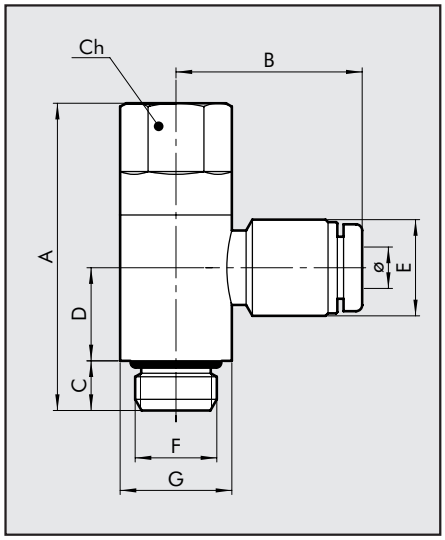
FLOW RATE FOR Ø8 PIPE



Dipartment of Mechanic
Turin Polytechnic

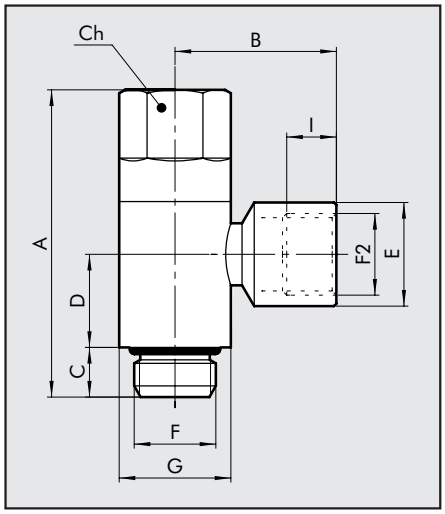
• Flow rate tests carried out by the Department of Mechanics at the Turin Polytechnic using a computerized test station and in compliance with CETOP RP50R recommendations (approved by ISO DIS 6358-2) with ISO 5167 diaphragm gauge.

OVERALL DIMENSIONS: MRF "R" RING



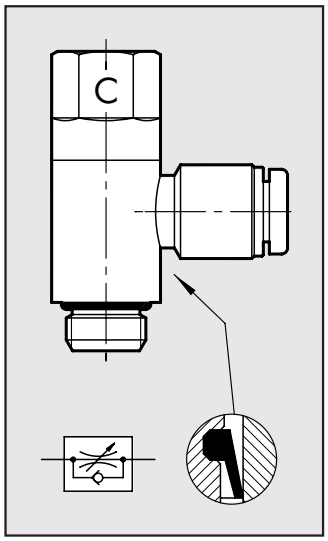
F	Ø	A	B	C	D	E	G	CH
M5	4	28	24	5	5.5	10	10	9
1/8	4	37	25	7	11.5	11	14	12
M5	5	28	25	5	5.5	11	10	9
1/8	5	37	25	7	11.5	12	14	12
1/8	6	37	26	7	11.5	13	14	12
1/4	6	50	28	9	15	13	18	16
1/8	8	37	31	7	11.5	15	14	12
1/4	8	50	31	9	15	15	18	16
1/4	10	50	36	9	15	18	18	16

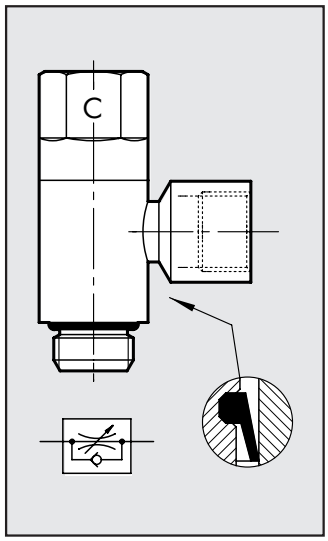
OVERALL DIMENSIONS: THREADED RING

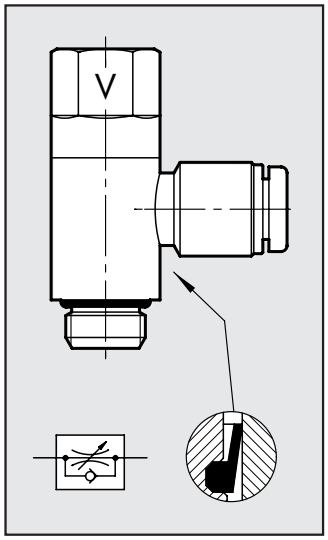


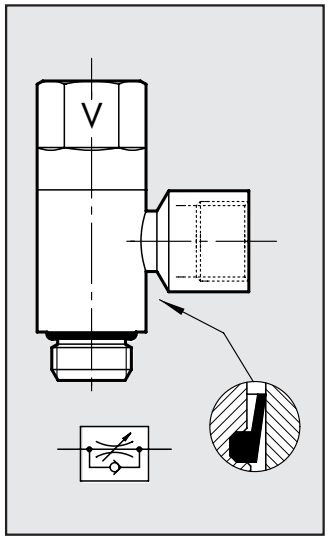
F	F2	A	B	C	D	E	G	I	CH
1/8	1/8	37	20.5	7	11.5	13.5	14	7	12
1/4	1/4	50	24.5	9	15	17	18	8	16

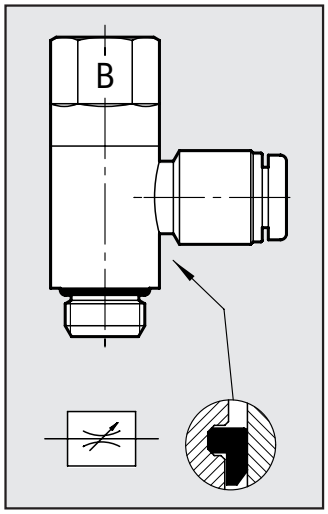
ORDERING CODES

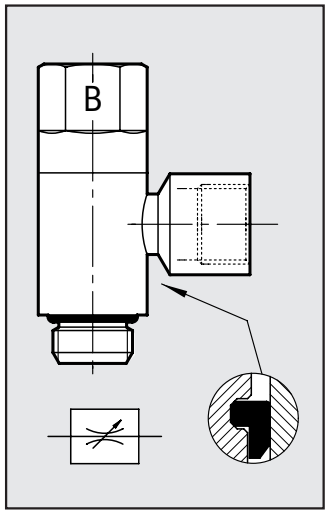
UNIDIRECTIONAL CYLINDER VERSION WITH PUSH-IN FITTING	Code	Ref.
	9001001	MRFO C 4 M5
	9001011	MRFO C 4 1/8
	9001002	MRFO C 5 M5
	9001012	MRFO C 5 1/8
	9001003	MRFO C 6 1/8
	9001004	MRFO C 6 1/4
	9001005	MRFO C 8 1/8
	9001006	MRFO C 8 1/4
	9001008	MRFO C 10 1/4

UNIDIRECTIONAL CYLINDER VERSION WITH FEMALE PORT	Code	Ref.
	9001020	MRFO CF 1/8 - 1/8
	9001021	MRFO CF 1/4 - 1/4

UNIDIRECTIONAL VALVE VERSION WITH PUSH-IN FITTING	Code	Ref.
	9001111	MRFO V 4 1/8
	9001112	MRFO V 5 1/8
	9001101	MRFO V 6 1/8
	9001102	MRFO V 6 1/4
	9001103	MRFO V 8 1/8
	9001104	MRFO V 8 1/4
	9001106	MRFO V 10 1/4

UNIDIRECTIONAL VALVE VERSION WITH FEMALE PORT	Code	Ref.
	9001120	MRFO VF 1/8 - 1/8
	9001121	MRFO VF 1/4 - 1/4

BIDIRECTIONAL VERSION WITH PUSH-IN FITTING	Code	Ref.
	9001601	MRFO B 4 M5
	9001602	MRFO B 4 1/8
	9001603	MRFO B 5 M5
	9001604	MRFO B 5 1/8
	9001605	MRFO B 6 1/8
	9001606	MRFO B 6 1/4
	9001607	MRFO B 8 1/8
	9001608	MRFO B 8 1/4
	9001609	MRFO B 10 1/4

BIDIRECTIONAL VERSION WITH FEMALE PORT	Code	Ref.
	9001620	MRFO BF 1/8 - 1/8
	9001621	MRFO BF 1/4 - 1/4

IN-LINE FLOW MICRO-REGULATOR Series RFL

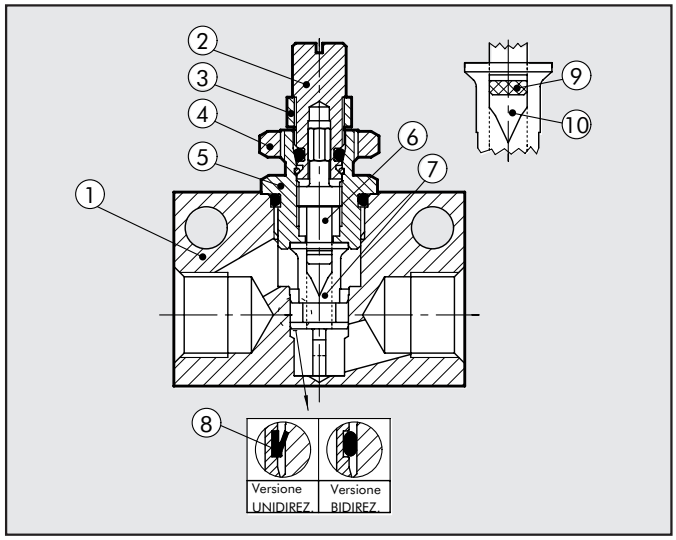
IN-LINE FLOW REGULATOR

The in-line flow regulator regulates the speed of the piston rod in the pneumatic cylinders.
Two versions are available:
• type U (unidirectional) regulates the flow only in one of the two directions of air flow.
• type B (bidirectional) regulates the flow in both directions of air flow.
Regulation: manual or with a screwdriver.
Max. temperature 70°C (158°F)
Max. pressure: 10 bar (1MPa-145 psi)

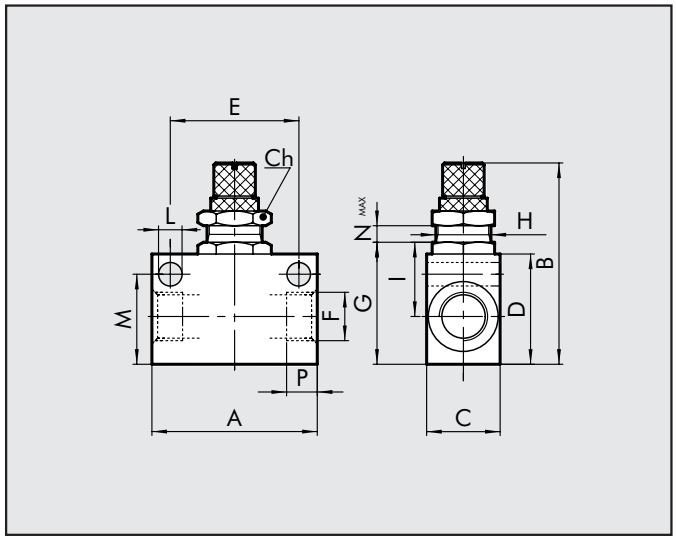


COMPONENTS

① Aluminium block
② Brass knob locking ring nut
③ Brass wall locking ring nut
④ Brass nipple
⑤ Brass adjusting knob
⑥ Technopolymer gasket insert
⑦ NBR gasket
⑧ Brass regulation needle
⑨ Part of needle
⑩ Flow window

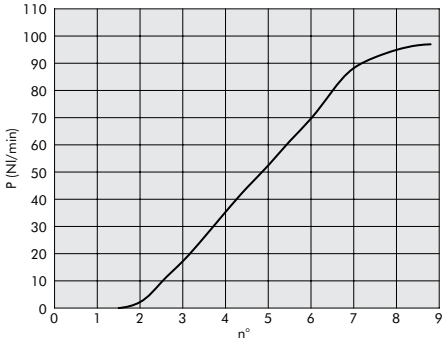


OVERALL DIMENSIONS F	M5	1/8	1/4	3/8	1/2
P	4.2	7	8	10	11
E	15	25	35	35	44
H	M10x0.75	M12x1	M12x1	M15x1	M15x1
Nmax	3.3	5.5	5	7.5	7.5
A	21	31	45	50	59
B	37	48	53.5	59	67
C	14	16	20	25	30
G	18	25	33	34	43.5
I	11.6	15	22	22	24
D	16	22	30	30	40
M	12.5	18.2	24.5	25.5	35
CH	12	16	16	20	20
L	4.2	4.2	6.5	6.5	6.5

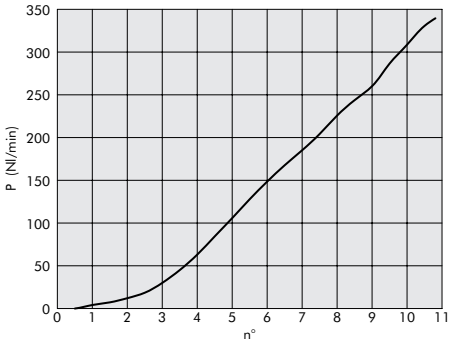


FLOW CHARTS

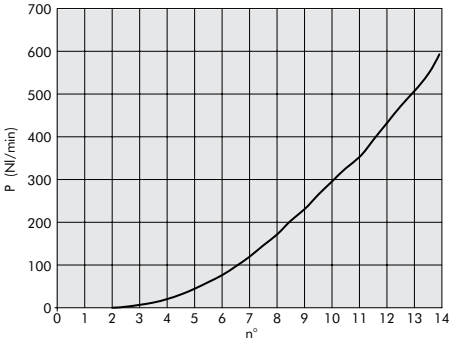
RFL M5



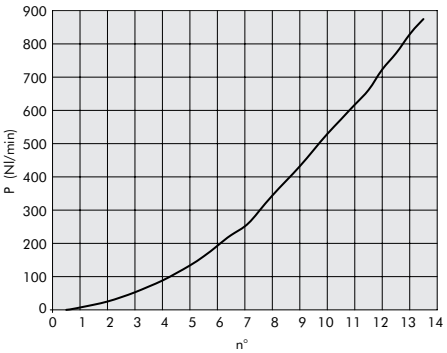
RFL G 1/8"



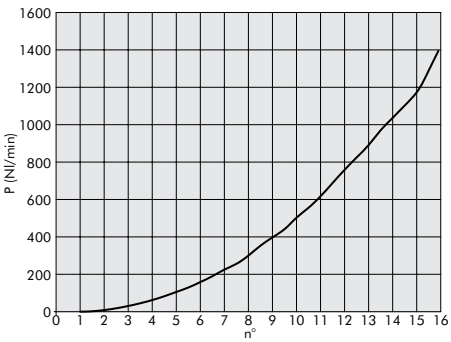
RFL G 1/4"



RFL G 3/8"

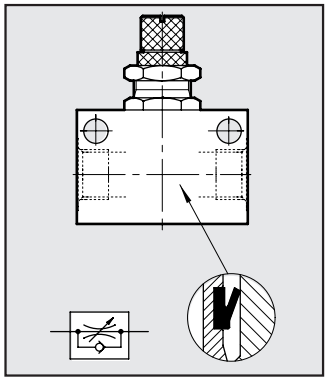


RFL G 1/2"



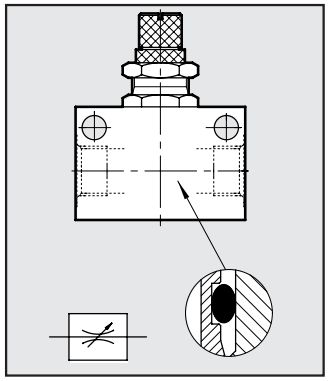
ORDERING CODES

RFL U (UNIDIRECTIONAL)



Code	Ref.
9041001	RFL U M5
9041002	RFL U 1/8
9041003	RFL U 1/4
9041004	RFL U 3/8
9041005	RFL U 1/2

RFL B (BIDIRECTIONAL)



Code	Ref.
9041201	RFL B M5
9041202	RFL B 1/8
9041203	RFL B 1/4
9041204	RFL B 3/8
9041205	RFL B 1/2

REDUCER WITH GAUGE FOR VALVES, SERIES "RMV"

The RMV-series miniature pressure regulator with pressure gauge for valves is specifically conceived for mounting on the outlets of valves with a 1/8" port. With limited cross dimension, it can be fitted to a series of small valves. The body is 16.5 mm wide and fits exactly on the valves of the Mach 16 series for multiple electrical connection.
Using the RMV, it is possible to differentiate the pressure of each single output of the valves. For example, if you mount it on port 2 and not on port 4, the pressure can be reduced on port 2 only. If you mount one for each port, the pressure on port 2 will differ from that on port 4, which in turn is less than the feed pressure (outlet 1).
There are three 1/8" threaded RMV ports that are pneumatically connected in parallel. A small pressure gauge is mounted in one port; another port is plugged by an A7-type fitting and a third can take a fitting. The user, however, can decide whether the layout of components is to be modified or not. He might, for example, decide to mount three fittings to create a three-port reduced-pressure distributor.
For information please see pag. 2.1/108.



QUICK EXHAUST VALVES
Series VSR

QUICK EXHAUST VALVES

Used to evacuate air in the cylinder quickly, which increases cylinder speed.
- Temperature 0-80°C (32°-176°F)
- Max. pressure 12 bar (1200 KPa)
- Min. pressure 0.5 bar (50 KPa)

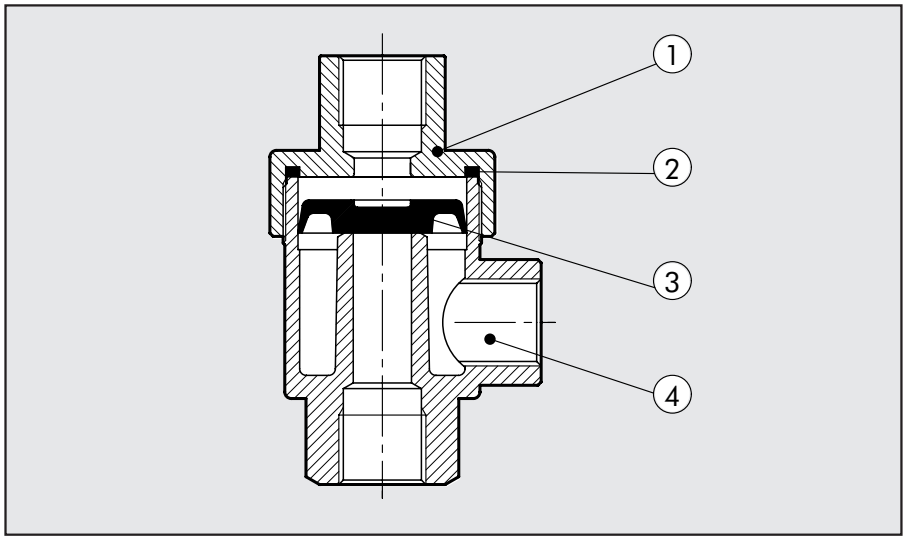


Nominal flow rate (P->A):			
AP =1			
Pm =	6 bar	4 bar	2 bar
1/8 =	900	700	500 Nl/min'
1/4 =	1500	1300	900 Nl/min'
1/2 =	3500	3000	2100 Nl/min'

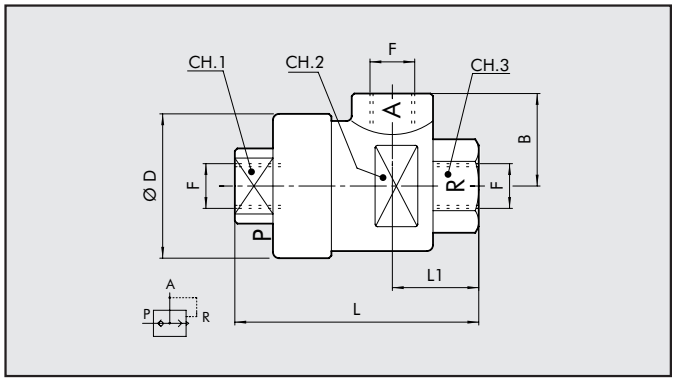
Empty flow rate (A->R):			
P =	6 bar	4 bar	2 bar
1/8 =	1700	1200	700 Nl/min'
1/4 =	3400	2450	1400 Nl/min'
1/2 =	7800	5500	3250 Nl/min'

COMPONENTS

① Cap: nickel-plated brass
② Flat gasket: NBR
③ Lip-seal: Adiprene
④ Body: nickel-plated brass

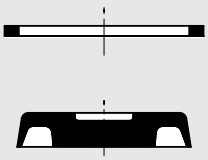


OVERALL DIMENSIONS AND ORDERING CODES



Code	Ref.	F	B	D	CH1	CH2	CH3	L	L1
9101201	VSR 1/8	1/8	18.5	28.5	16	26	16	48	16.8
9201201	VSR 1/4	1/4	24	34	19	30	20	65	24.5
9401201	VSR 1/2	1/2	30	44	27	40	27	82	33

SPARE GASKETS



Code	Ref.
9151501	MBVSR 1/8
9251501	MBVSR 1/4
9451501	MBVSR 1/2

STOP VALVES
Series STP

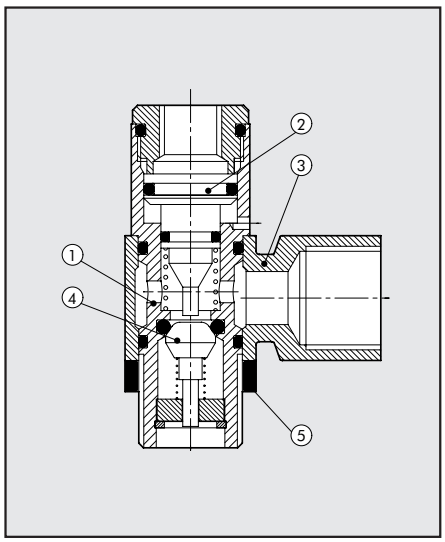
STOP VALVES

Stop valves mounted on the cylinder inlets allow a flow of air only in the presence of an pneumatic pilot. Unidirectional and bidirectional versions are available.
This item is mainly used as a safety valve. When pressure drops in the pneumatic pilot, all cylinder movement is halted.



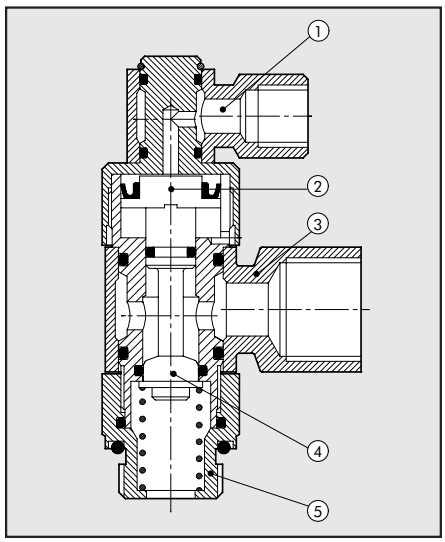
TECHNICAL DATA		1/8	1/4	3/8	1/2	1/8	1/4	3/8	1/2
		UNIDIRECTIONAL				BIDIRECTIONAL			
Operating pressure	bar	0,5 to 10							
	MPa	0,05 to 1							
Operating temperature	°C	–10° to 60°							
	°F	14°F to 148°							
Fluid		Lubricated or unlubricated filtered air							
Flow rate (6 bar)	Nl/min	250	350	950	1450	320	700	1060	1700
Type		Female threaded ports - R automatic cartridge							
Installation		In any position							

UNIDIRECTIONAL STOP VALVE COMPONENTS



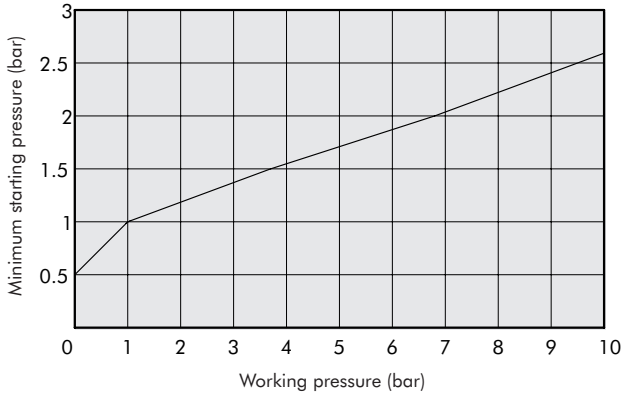
① Body: nickel-plated brass
② Piston rod: steel
③ Rotary ring: nickel-plated brass
④ Valve: steel
⑤ Gasket: technopolymer

BIDIRECTIONAL STOP VALVE COMPONENTS

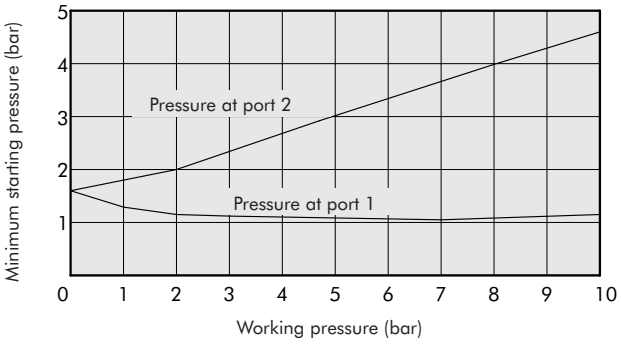


① Pilot ring: nickel-plated brass
② Piston rod: nickel-plated brass
③ Rotary ring: nickel-plated brass
④ Stem with valve: brass
⑤ Body: nickel-plated brass
Seals: NBR

STARTING PRESSURE UNIDIRECTIONAL VALVE

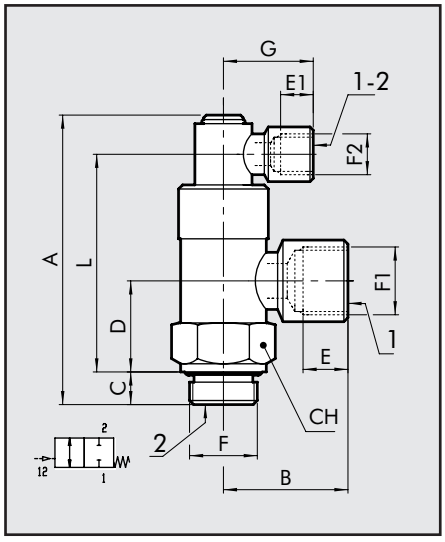


STARTING PRESSURE BIDIRECTIONAL VALVE



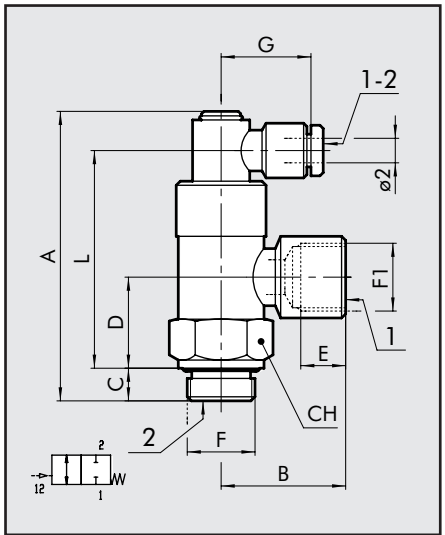
DIMENSIONS

BIDIRECTIONAL THREADED STOP VALVE



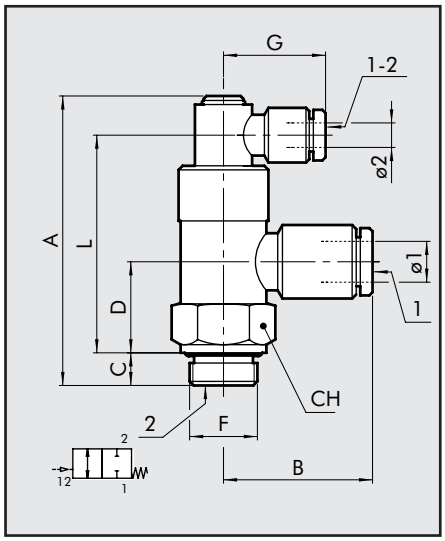
Code	Description	F	F1	F2	A	B	C	D	E	E1	G	L	CH
W6001101001	STP-B 1/8 108	G 1/8	G 1/8	G 1/8	57.5	21.5	6.9	16	7	7	21.5	41.9	14
W6001111011	STP-B 1/4 104	G 1/4	G 1/4	G 1/8	65.7	25.5	8	19.5	8	7	21.5	48.1	17
W6001121021	STP-B 3/8 138	G 3/8	G 3/8	G 1/8	70.9	31	8	22.3	10	7	21.5	53.3	22

THREAD + PIPE BIDIRECTIONAL STOP VALVE



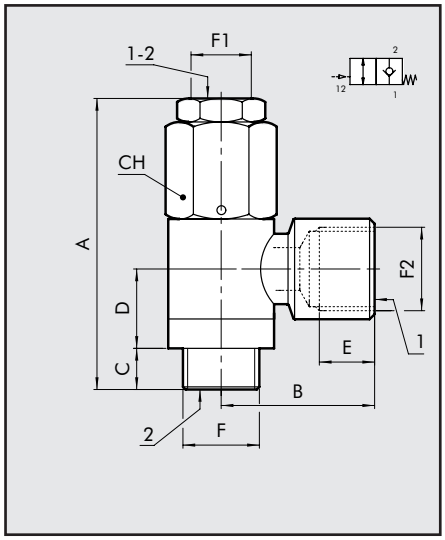
Code	Description	F	F1	∅2	A	B	C	D	E	G	L	CH
W6001101002	STP-BX 1/8-1/8 04	G 1/8	G 1/8	4	57.5	21.5	6.9	16	7	25	41.9	14
W6001111012	STP-BX 1/4-1/4 04	G 1/4	G 1/4	4	65.7	25.5	8	19.5	8	25	48.1	17
W6001121022	STP-BX 3/8-3/8 04	G 3/8	G 3/8	4	70.9	31	8	22.3	10	25	53.3	22

PIPE BIDIRECTIONAL STOP VALVE



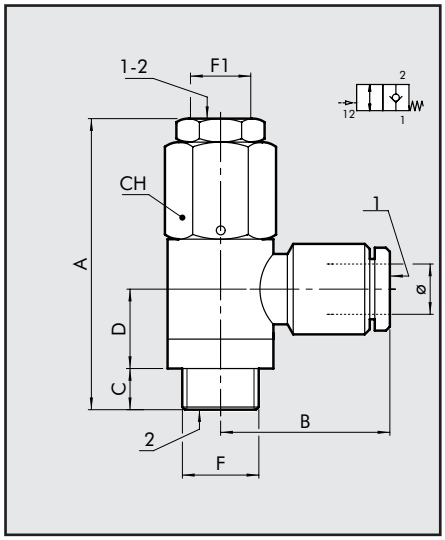
Code	Description	F	∅1	∅2	A	B	C	D	G	L	CH
W6001101106	STP-B 1/8 006	G 1/8	6	4	57.5	25	6.9	16	25	41.9	14
W6001111106	STP-B 1/4 006	G 1/4	6	4	65.7	27.5	8	19.5	25	48.1	17
W6001111108	STP-B 1/4 008	G 1/4	8	4	65.7	32	8	19.5	25	48.1	17
W6001121108	STP-B 3/8 008	G 3/8	8	4	70.9	31.5	8	22.3	25	53.3	22
W6001121110	STP-B 3/8 010	G 3/8	10	4	70.9	36.5	8	22.3	25	53.3	22
W6001131112	STP-B 1/2 012	G 1/2	12	4	83.5	41.5	12	27	25	71.5	27

UNIDIRECTIONAL THREADED STOP VALVE



Code	Description	F	F2	A	B	C	D	E	F1	CH
W6001001001	STP-U 1/8 108	G 1/8	G 1/8	43.5	21.5	6	13	7	M5	14
W6001011011	STP-U 1/4 114	G 1/4	G 1/4	49.5	25.5	7	13.5	8	G 1/8	17
W6001021021	STP-U 3/8 138	G 3/8	G 3/8	54.9	31	9	15	10	G 1/8	19

UNIDIRECTIONAL PIPE STOP VALVE



Code	Description	F	∅	A	B	C	D	F1	CH
W6001001106	STP-U 1/8 006	G 1/8	6	43.5	25	6	13	M5	14
W6001011106	STP-U 1/4 006	G 1/4	6	49.5	27.5	7	13.5	G 1/8	17
W6001011108	STP-U 1/4 008	G 1/4	8	49.5	32	7	13.5	G 1/8	17
W6001021108	STP-U 3/8 008	G 3/8	8	54.9	31.5	9	15	G 1/8	19
W6001021110	STP-U 3/8 010	G 3/8	10	54.9	36.5	9	15	G 1/8	19
W6001031112	STP-U 1/2 012	G1/2	12	61.4	41.5	10	17	G 1/8	24

SLIDE VALVES, Series VCS

SLIDE VALVES

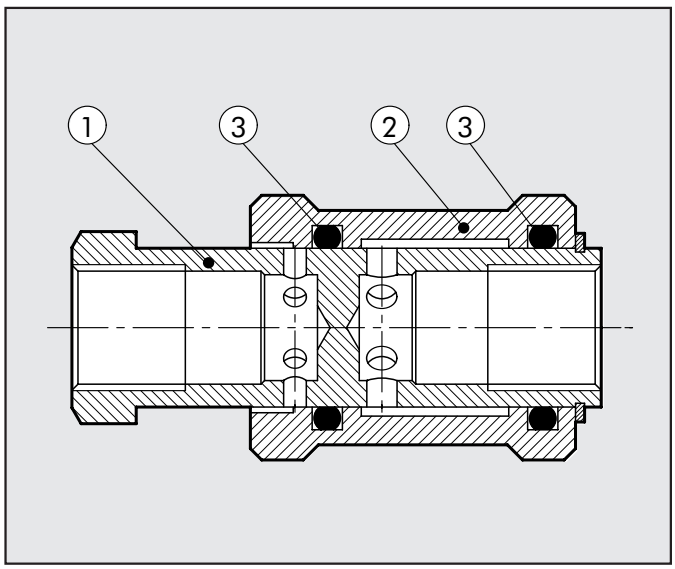
The 3/2 slide valve is normally used as a circuit on-off valve. When the ring nut is moved back, the system downstream is relieved; when the ring nut is moved forward, the system is supplied with compressed air.



TECHNICAL DATA

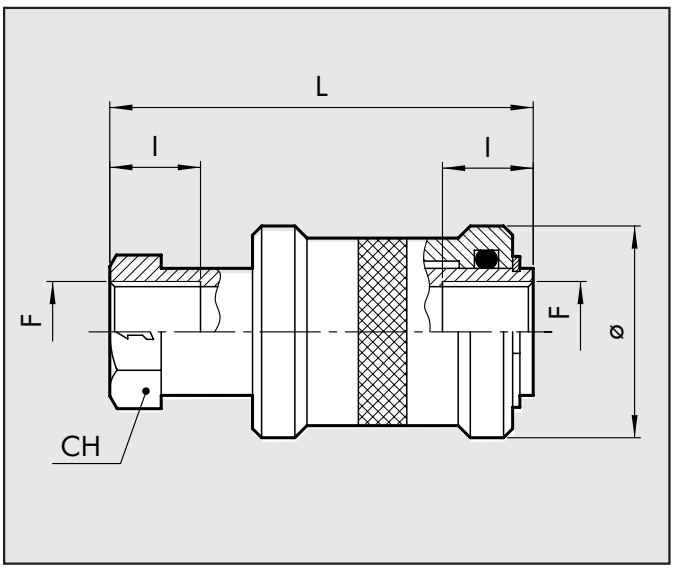
		1/8″	1/4″	3/8″	1/2″
Operating pressure		0÷10 bar (0÷1 MPa)			
Operating temperature range		–10÷80°C			
Fluid		Lubricated or unlubricated filtered air			
Flow rate at 6.3 bar (0.63 Mpa÷91 psi) ΔP 0.5 bar	Nl/min	430	680	1400	2200
Flow rate at 6.3 bar (0.63 Mpa÷91psi) ΔP 1bar	Nl/min	630	1040	2070	3330
Conductance C	[Nl/min · bar]	170	247	537	833
Critical ratio b	bar/bar	0.2	0.3	0.1	0.2

COMPONENTS



① Body: chromium-plated brass
② Ring nut: anodized aluminium
③ Seals: NBR

DIMENSIONS AND ORDERING CODES

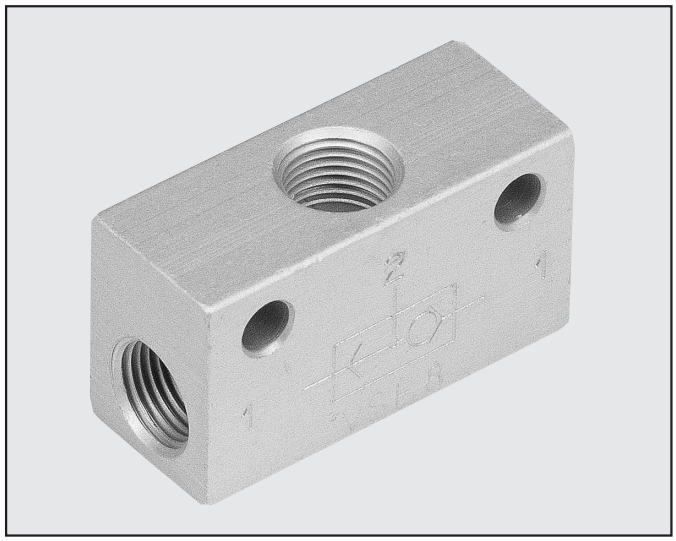


Code	Description	F	Ø	I	L	CH
W0970050001	SLIDE VALVES 3/2	1/8″	25	10	48	11
W0970050002	SLIDE VALVES 3/2	1/4″	30	12	58	19
W0970050003	SLIDE VALVES 3/2	3/8″	35	12	68	22
W0970050004	SLIDE VALVES 3/2	1/2″	40	15	80	27

CIRCUIT SELECTOR VALVES
Series VOR

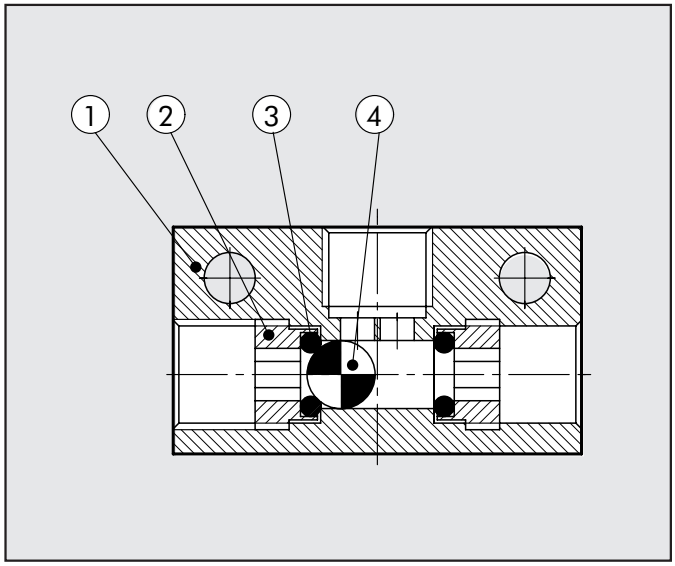
CIRCUIT SELECTOR VALVES

Circuit selector valves select two separate input signal without creating reciprocal interference, giving a single output signal.



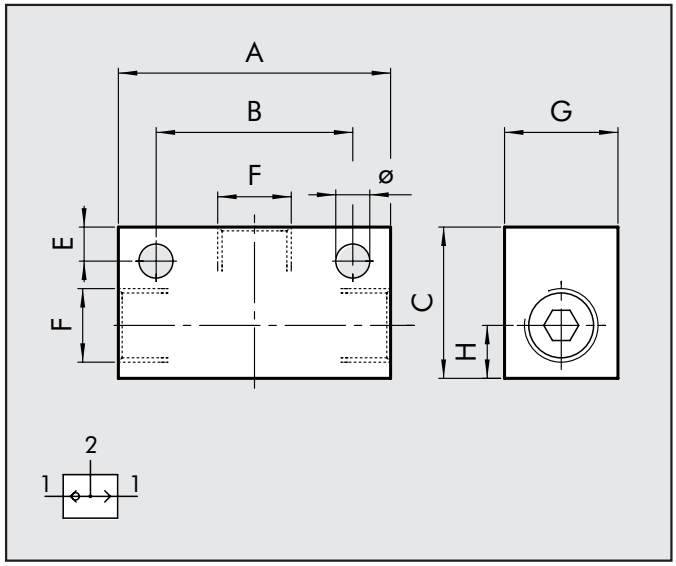
TECHNICAL DATA		1/8"	1/4"
Nominal flow rate at 6.3 bar ΔP 1 bar	Nl/min	400	1300
Operating temperature range	°C	–10° to 80°	
Operating pressure	bar	14° to 176°	
	MPa	2 to 10	
Fluid		0,2 to 1	
		Lubricated or unlubricated filtered air	

COMPONENTS



① Body: anodized aluminium
② Insert: brass
③ Seal: NBR
④ Ball: technopolymer

DIMENSIONS AND ORDERING CODES



Code	Descript.	A	C	G	H	E	B	F	∅
W3603000001	VOR 1/8	36	20	15	7.5	4	25	G 1/8	4.5
W3603000002	VOR 1/4	43	25	20	8.5	6.5	25	G 1/4	4.5

CHECK VALVES
Series VNR

CHECK VALVES

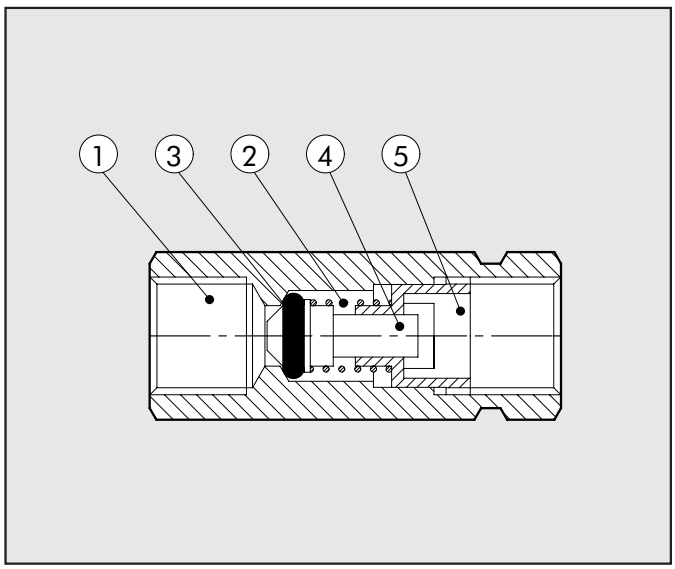
This allow air flow in only one of the two directions.



TECHNICAL DATA

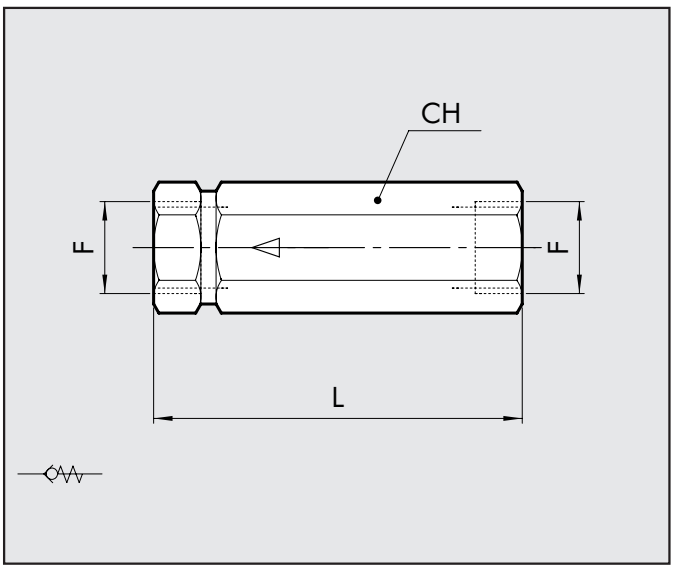
		1/8"	1/4"
Ports		G 1/8"	G 1/4"
Nominal diameter	mm	5.2	7
Nominal flow rate	Nl/min	900	1100
Operating temperature range	°C	–10° to 70°	
	°F	14° to 158°	
Operating pressure	bar	2 to 10	
	MPa	0,2 to 1	
Opening pressure	bar	0,05 (5 KPa)	
Fluid		Lubricated or unlubricated filtered air	

COMPONENTS



① Body: OT58 brass
② Valve spring: steel
③ Seal: NBR for 1/8 valve - Viton® for 1/4 valve
④ Stem with OT58 brass valve
⑤ Stem insert: OT58 brass

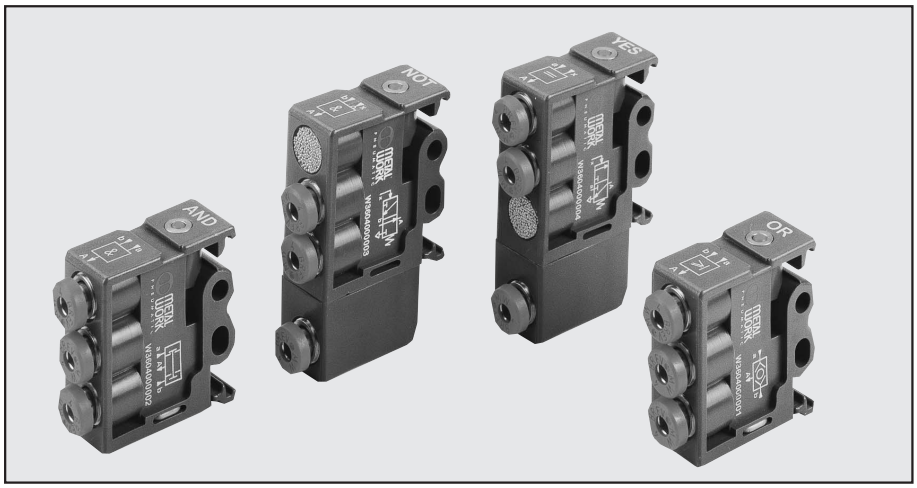
DIMENSIONS AND ORDERING CODES



Code	Descript.	F	L	CH
W3601000001	VNR 1/8	1/8	35	13
W3601000002	VNR 1/4	1/4	43	17

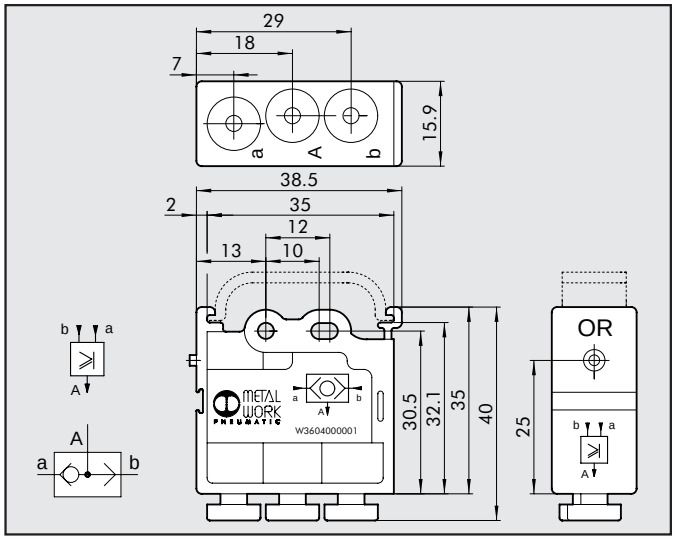
PNEUMATIC LOGIC

Metal Work logic elements are available with 5 different functions: OR, AND, NOT, YES, MEMORY.
Main features common to all elements:
• Adaptor for Ω bar (DIN EN 50022) integral with the body.
• Built-in pressure indicator.
• Pipe locking system using Ø 4 built-in fittings.



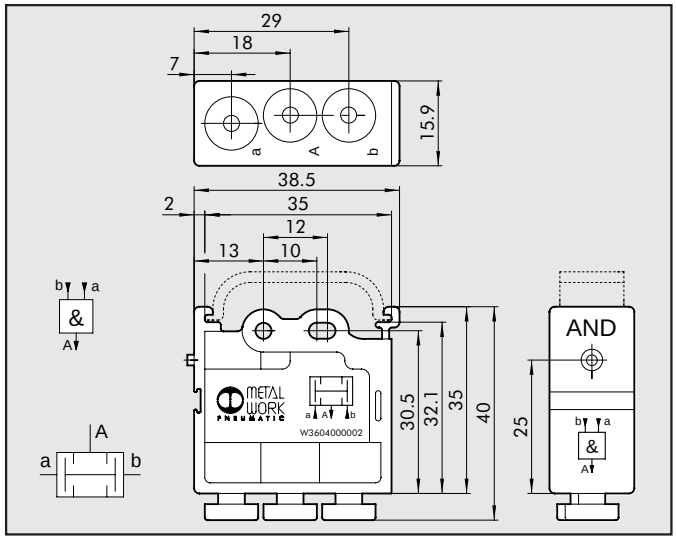
TECHNICAL DATA		AND - OR - YES - NOT - MEMORY
Operating temperature		–10÷+60°C (14°÷140°F)
Valve fitting		Push-in fitting for Ø 4 pipe
Pressure range	bar	OR - AND: from 1.5 to 8 bar
		YES-NOT -MEMORY: from 0 to 8 bar, pilot pressure from 1.5 to 8 bar
		NOT: 6 bar switching thereshold = 0.4
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 MPa÷87 psi)	Nl/min	100 Nl/min
ΔP 1 bar (0.1 Mpa÷14.5 psi)		
Fluid		Lubricated or unlubricated filtered compressed air; must be uninterrupted when lubricated
Recommended lubricant		ISO e UNI FD22
Actionament		Via compressed air
Reset		AND-OR: via compressed air/YES-NOT via mechanical spring
		MEMORY: via compressed air.
Installation		In any position
Mounted		On Omega bar (DIN EN 50022) size 35x7 or 35x15
		Wall-mounted with Ø 4.2 holes
Body		Technopolymer
Spool		Aluminium
Seal		NBR (FKM/FPM on request)

LOGIC ELEMENT: OR



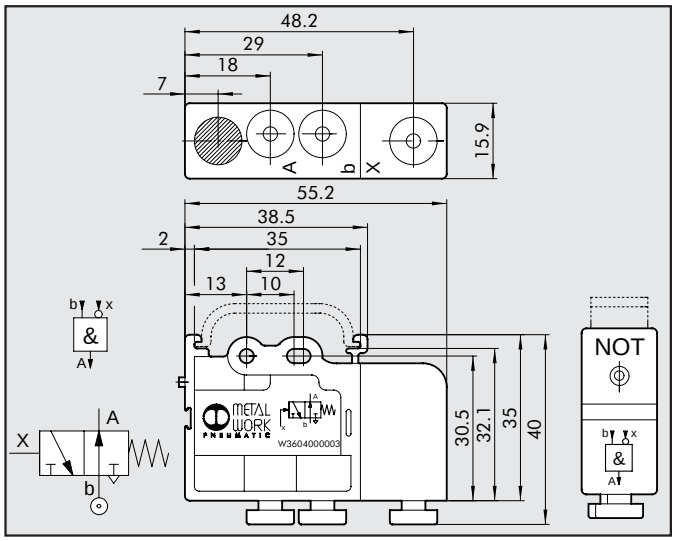
Code	Description
W3604000001	OR - LOGIC PRODUCT

LOGIC ELEMENT: AND



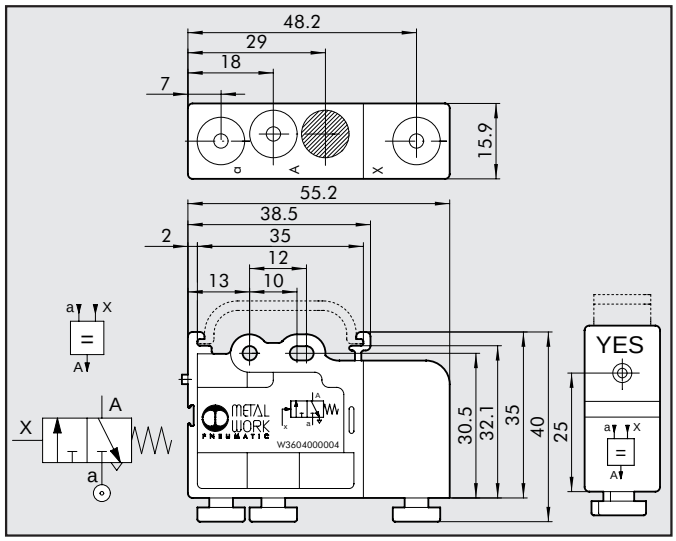
Code	Description
W3604000002	AND - LOGIC SUM

LOGIC ELEMENT: NOT



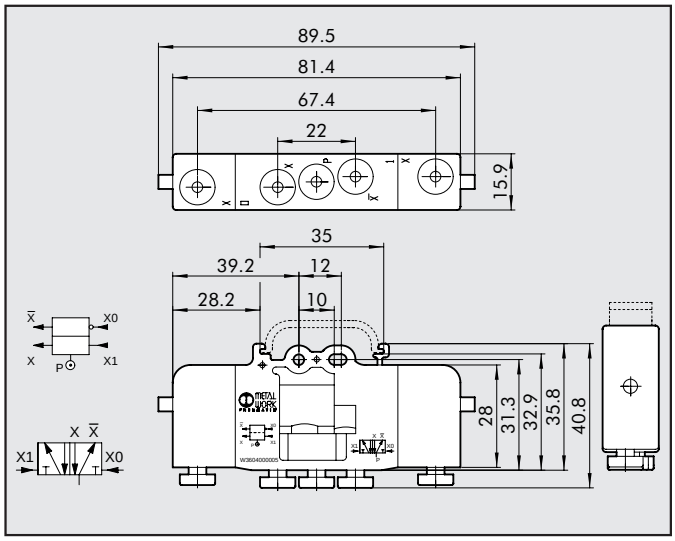
Code	Description
W3604000003	NOT - NEGATION

LOGIC ELEMENT: YES



Code	Description
W3604000004	YES - AFFIRMATION

LOGIC ELEMENT: MEMORY



Code	Description
W3604000005	MEMORY

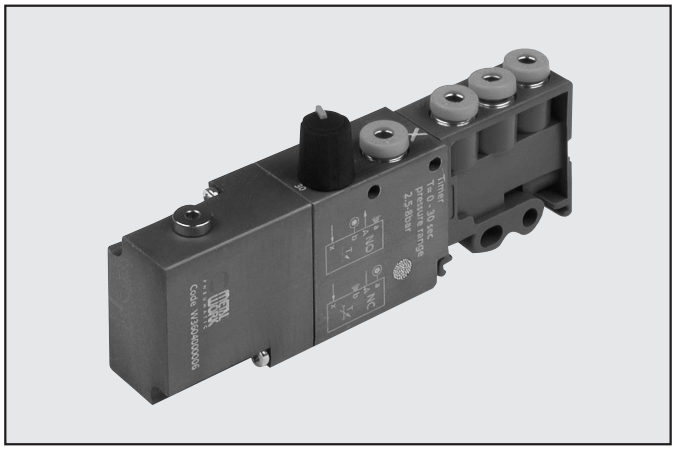
NOTES

NOTES

TIMER

The Timer is part of Metal Work range of logic elements, which also includes OR, AND, NOT, YES, MEMORY. The value of the signal output delay is set by rotating a knob. It can work both as 3/2 NC and 3/2 NO, depending on whether feeding is through port "a" or port "b". The maximum delay time can be increased by unscrewing a plug and connecting the port to an external auxiliary tank.

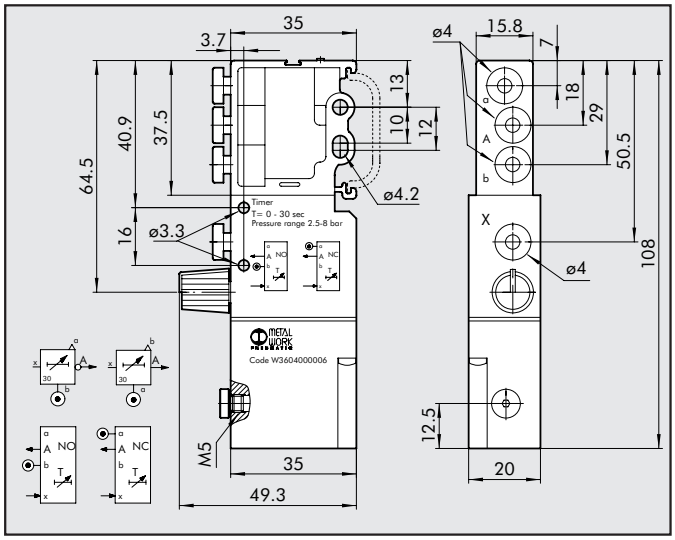
- Adaptor for Ω bar (DIN EN 50022) integrated in the body.
- Pressure indicator via an orange pin
- Pipe clamping system using Ø 4 built-in push-on fittings.



TECHNICAL DATA

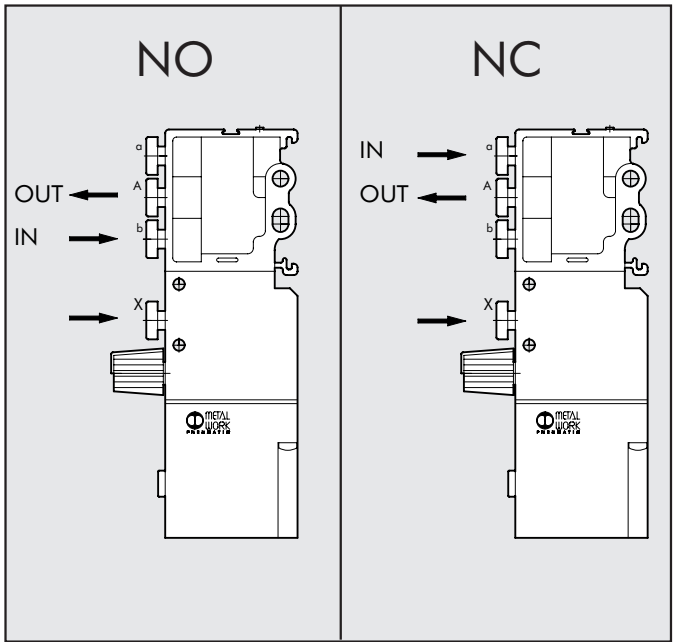
Temperature range	°C	-10 ÷ +60
Valve coupling	mm	Push-in fitting for Ø4 pipe
Pressure range	bar	from 2.5 to 8
Nominal diameter	mm	2.7
Flow rate at 6 bar (0.6 Mpa, 87 psi) ΔP 1 bar (0.1 Mpa, 14.5 psi)	Nl/min	100
Delay setting range	s	from 0 to 30, at 6 bar
Signal shutoff time	s	<0.1
Repeatability	s	±0.4
Fluid		Filtered, lubricated or unlubricated compressed air. If used, must be continuous
Operating		By compressed air
Repositioning		By mechanical spring
Installation		In any direction
Assembly		On Ω bar (DIN EN 50022) size 35x7 o 35x15 - Wall mounting using Ø4.2 holes
MATERIALS		
Body		Anodised aluminium / Technopolymer
Internal parts		Brass / Technopolymer
Gaskets		NBR
Spring		Spring steel

DIMENSIONS AND ORDERING CODES

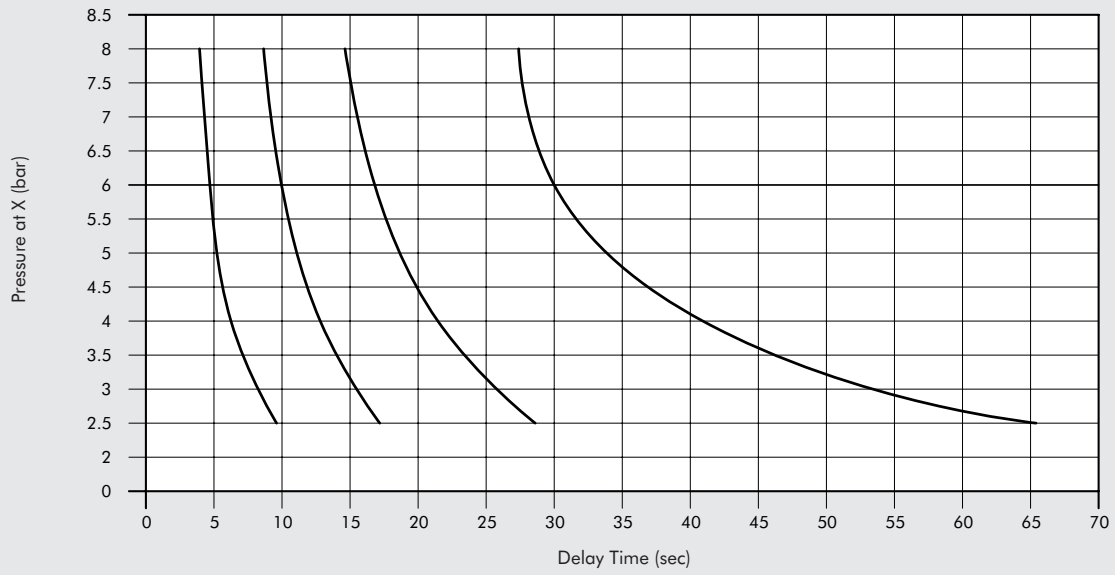


Code	Description
W3604000006	TIMER

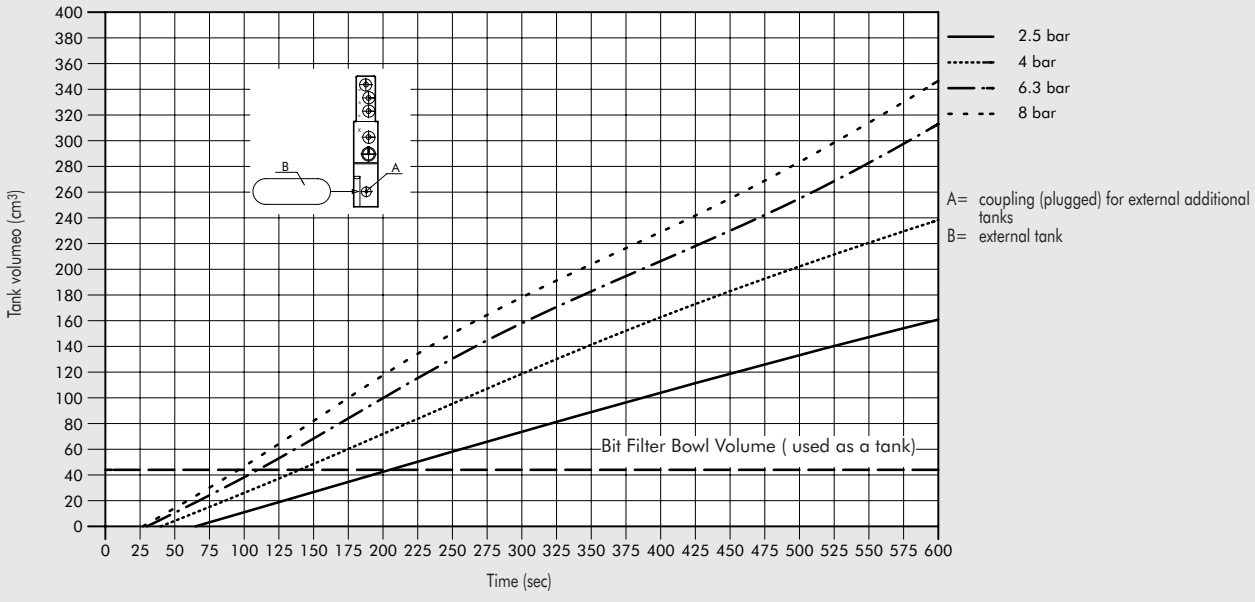
NORMALLY OPEN AND NORMALLY CLOSED OPERATION



CHANGE IN THE DELAY WITH CHANGE IN PRESSURE



HOW TO INCREASE THE DELAY

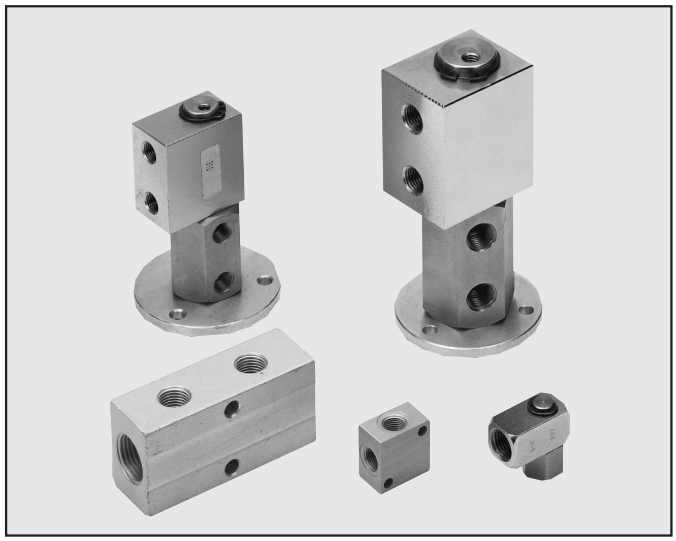


NOTES

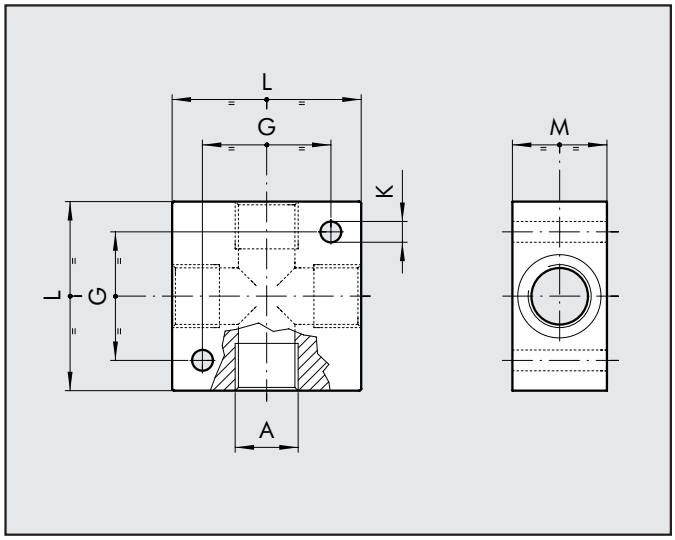
DISTRIBUTION FRAMES
ROTARY JOINTS

TECHNICAL DATA

Threaded ports		1/8 | 1/4 | 3/8 | 1/2
Max pressure	bar	0÷12
	MPa	0÷1.2
Operating temperature	°C	–10°÷80 (14÷176°F)
Fluid		Lubricated or unlubricated filtered air
Body		Nickel-plated brass
Gaskets		NBR

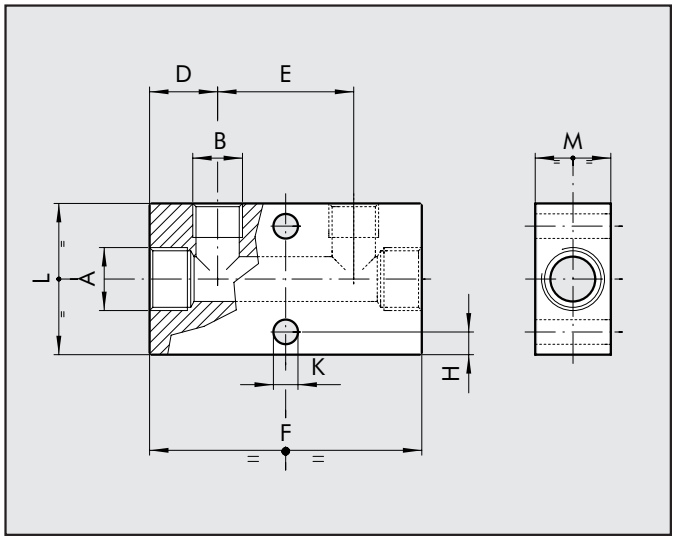


4-WAY DISTRIBUTION FRAME



Code	A	G	K	L	M
W0501101001	G 1/8	17	4.5	25	15
W0501111002	G 1/4	26	5.5	40	20
W0501121003	G 3/8	34	5.5	50	25
W0501131004	G 1/2	34	5.5	50	30

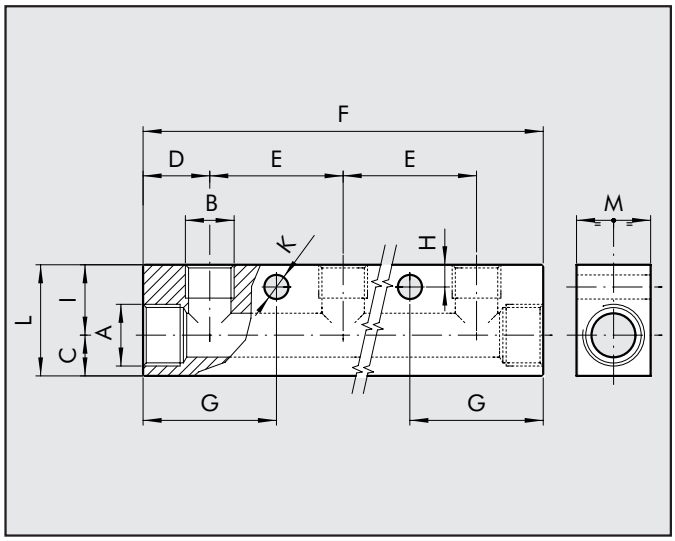
DISTRIBUTION FRAME WITH 2 STRAIGHT 1/8" OUTLETS



Code	INLETS N°	INLETS A	OUTLETS N°	OUTLETS B	D	E	F	H	K	L	M
W0502111001	2	G 1/4	2	G 1/8	15	30	60	4.5	5.3	30	20
W0502121002	2	G 3/8	2	G 1/4	18	36	72	6	6.5	40	20
W0502131002	2	G 1/2	2	G 1/4	22	36	80	6	6.5	40	30

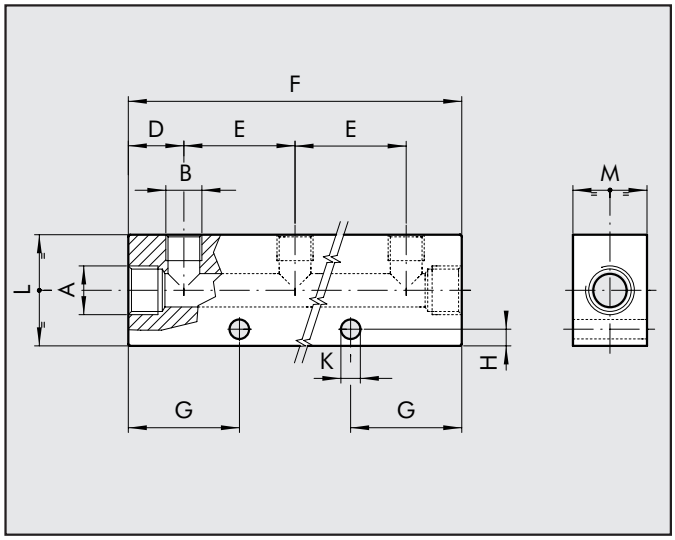
DISTRIBUTION FRAME

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/4" OUTLETS



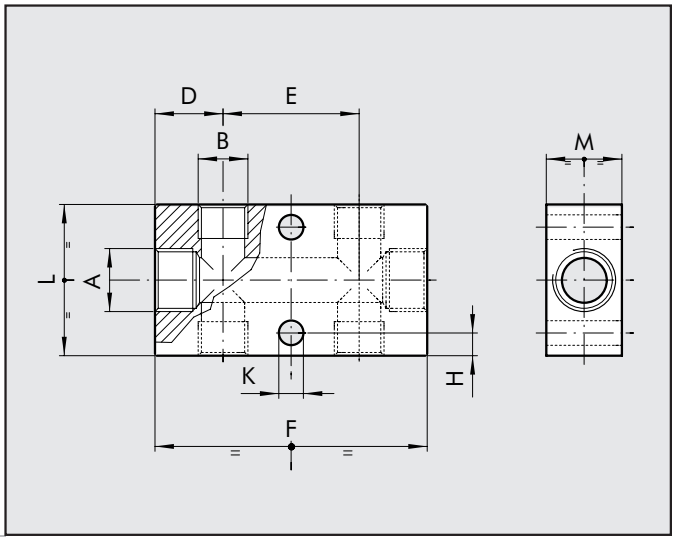
Code	INLETS N°	A	OUTLETS N°	B	D	E	F	G	H	K	I	C	L	M
W0502121006	2	G 3/8	3	G 1/4	18	36	108	36	6	6.5	19	11	30	20
W0502121008	2	G 3/8	4	G 1/4	18	36	144	36	6	6.5	19	11	30	20
W0502121010	2	G 3/8	5	G 1/4	18	36	180	36	6	6.5	19	11	30	20
W0502121012	2	G 3/8	6	G 1/4	18	36	216	36	6	6.5	19	11	30	20
W0502131006	2	G 1/2	3	G 1/4	18	36	108	36	6	6.5	24	16	40	30
W0502131008	2	G 1/2	4	G 1/4	18	36	144	36	6	6.5	24	16	40	30
W0502131010	2	G 1/2	5	G 1/4	18	36	180	36	6	6.5	24	16	40	30
W0502131012	2	G 1/2	6	G 1/4	18	36	216	36	6	6.5	24	16	40	30

DISTRIBUTION FRAME WITH MULTIPLE STRAIGHT 1/8" OUTLETS



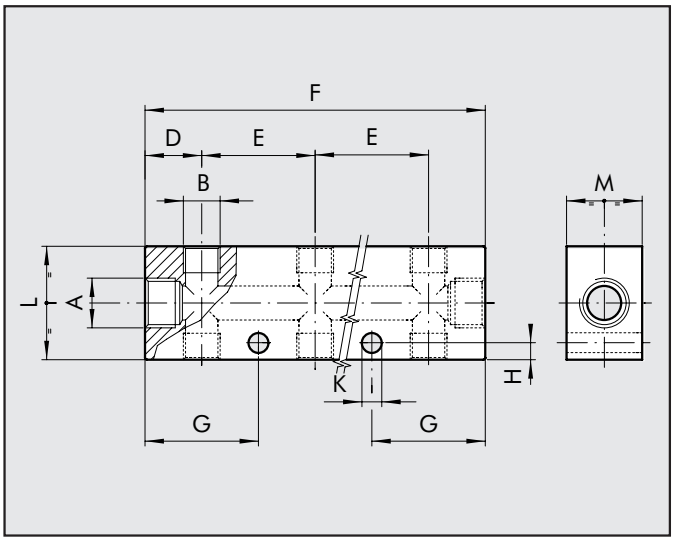
Code	INLETS N°	A	OUTLETS N°	B	D	E	F	G	H	K	L	M
W0502111005	2	G 1/4	3	G 1/8	15	30	90	30	4.5	5.3	30	20
W0502111007	2	G 1/4	4	G 1/8	15	30	120	30	4.5	5.3	30	20
W0502111009	2	G 1/4	5	G 1/8	15	30	150	30	4.5	5.3	30	20
W0502111011	2	G 1/4	6	G 1/8	15	30	180	30	4.5	5.3	30	20

DISTRIBUTION FRAME WITH 2 OPPOSED OULETS



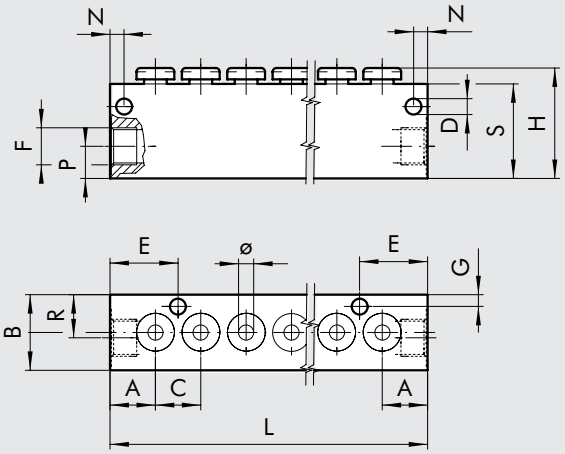
Code	INLETS N°	A	OUTLETS N°	B	D	E	F	H	K	L	M
W0503111013	2	G 1/4	2+2	G 1/8	15	30	60	4.5	5.3	30	20
W0503121014	2	G 3/8	2+2	G 1/4	18	36	72	6	6.5	40	20
W0503131014	2	G 1/2	2+2	G 1/4	22	36	80	6	6.5	40	30

DISTRIBUTION FRAME WITH 1/8”-1/4” OPPOSED OUTLETS



Code	INLETS N°	A	OUTLETS N°	B	D	E	F	G	H	K	L	M
W0503111015	2	G 1/4	3+3	G 1/8	15	30	90	30	4.5	5.3	30	20
W0503111017	2	G 1/4	4+4	G 1/8	15	30	120	30	4.5	5.3	30	20
W0503111019	2	G 1/4	5+5	G 1/8	15	30	150	30	4.5	5.3	30	20
W0503121016	2	G 3/8	3+3	G 1/4	18	36	108	36	6	6.5	40	20
W0503121018	2	G 3/8	4+4	G 1/4	18	36	144	36	6	6.5	40	20
W0503121020	2	G 3/8	5+5	G 1/4	18	36	180	36	6	6.5	40	20
W0503131016	2	G 1/2	3+3	G 1/4	22	36	116	40	6	6.5	40	30
W0503131018	2	G 1/2	4+4	G 1/4	22	36	152	40	6	6.5	40	30
W0503131020	2	G 1/2	5+5	G 1/4	22	36	188	40	6	6.5	40	30

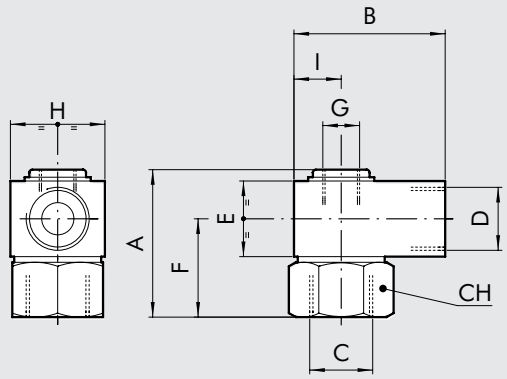
DISTRIBUTOR, ∅ 4-6-8 mm



Code	N. positions	Ø	F	A	B	C	D	E	G	H	L	M	N	P	R	S
7304106	6	4	1/8	12	20	12	4.2	3.7	3.1	29	84	6	3.7	8.5	11.4	25
7304112	12	4									156					
7306206	6	6	1/4	14	20	14.6	4.2	21.3	3.1	34	101	6	3.7	10	11	30
7306212	12	6									188.6					
7308306	6	8	3/8	18	25	16.6	4.2	26.3	4.2	39	119	5	5	14	14	35
7308312	12	8									218.6					

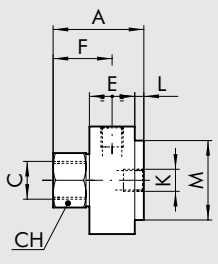
ROTARY JOINT

SINGLE ROTARY JOINT



Code	A	B	C	D	E	F	G	H	I	CH	r.p.m.
W0511101101	32	30	G 1/8	G 1/8	16	22	–	16	8	16	550
W0511121121	32	30	G 1/4	G 1/4	16	22	–	16	8	16	550
W0511131131	39	40	G 3/8	G 3/8	20	26	G 1/8	25	12.5	24	300
W0511141141	55	65	G 1/2	G 1/2	30	35	G 3/8	40	20	30	200
W0511151151	70	65	G 3/4	G 3/4	40	45	G 1/2	40	20	36	160
W0511161161	80	80	G 1	G 1	45	52.5	G 3/4	50	26	45	140

MULTIPLE ROTARY JOINT



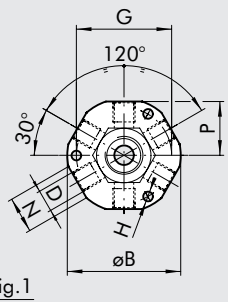


Fig.1

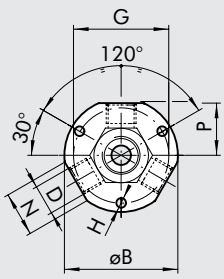
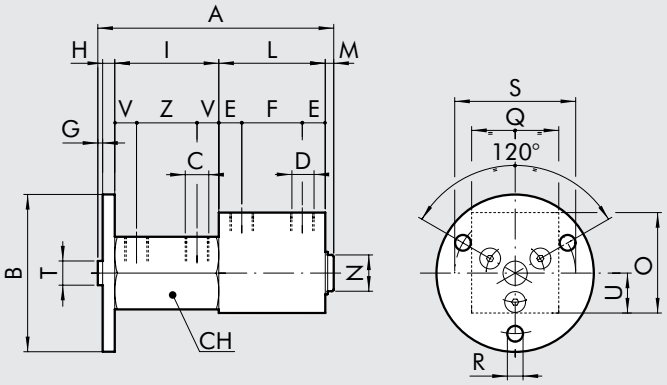


Fig. 2

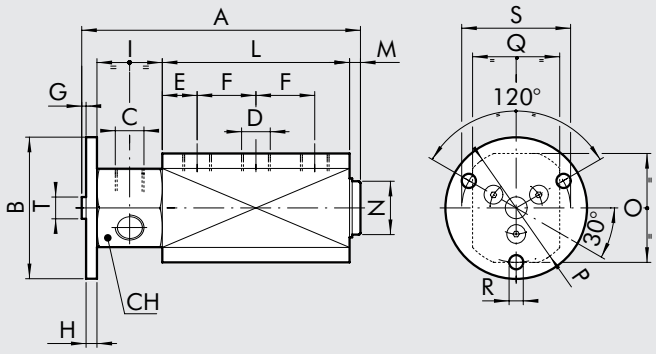
Code	Figure	A	B	INLET N°	INLET C	OUTLET N°	OUTLET D	E	F	G	H	K	L	M	N	P	CH	r.p.m.
W0513131101	1	40	50	1	G 3/8	6	G 1/8	20	26	42	4.2	G 1/8	4	35	16	23.7	24	300
W0512131121	2	40	50	1	G 3/8	3	G 1/4	20	26	42	4.2	G 1/4	4	35	19	23	24	300

2 INDEPENDENT WAY ROTARY JOINTS



Code	A	B	INLETS N°	INLETS C	OUTLETS N°	OUTLETS D	E	F	G	H	I	L	M	N	O	Q	R	S	T	U	V	Z	CH	r.p.m.
W0514101101	97.5	64	2	G 1/8	2	G 1/8	9.5	25	2	5	43	44	3.5	15	25	25	6.3	50	10	12.5	9	25	30	300
W0514121121	132	64	2	G 1/4	2	G 1/4	15	30	2	5	60	60	5	24.5	40	40	6.3	50	10	20	15	30	36	200

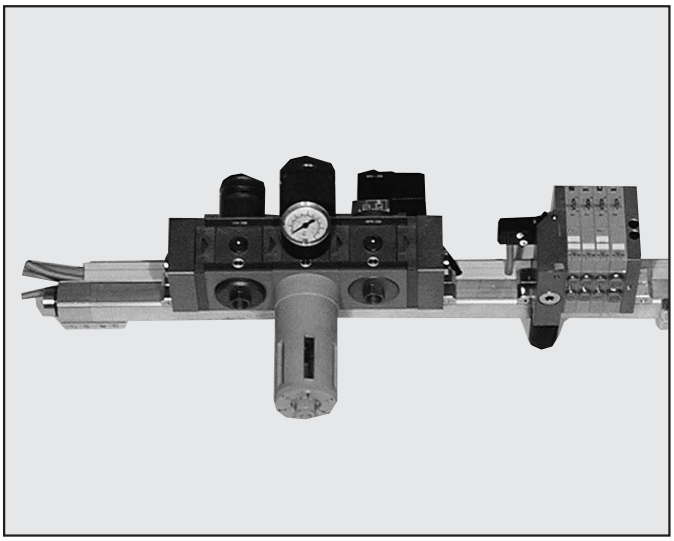
3 INDEPENDENT WAY ROTARY JOINTS



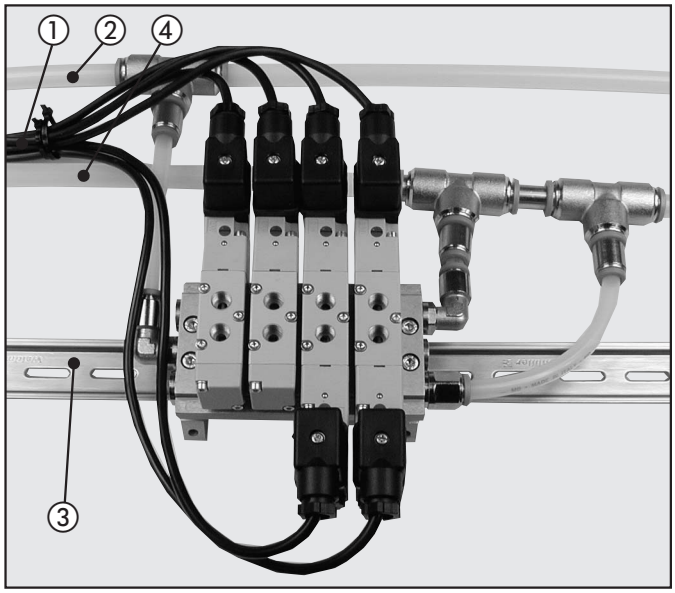
Code	A	B	INLETS N°	INLETS C	OUTLETS N°	OUTLETS D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	CH	r.p.m.
W0515121121	128	64	3	G 1/4	3	G 1/4	16	27	2	5	30	86	5	24.5	50	54	40	6.3	50	10	36	200

PNEUMO-BUS

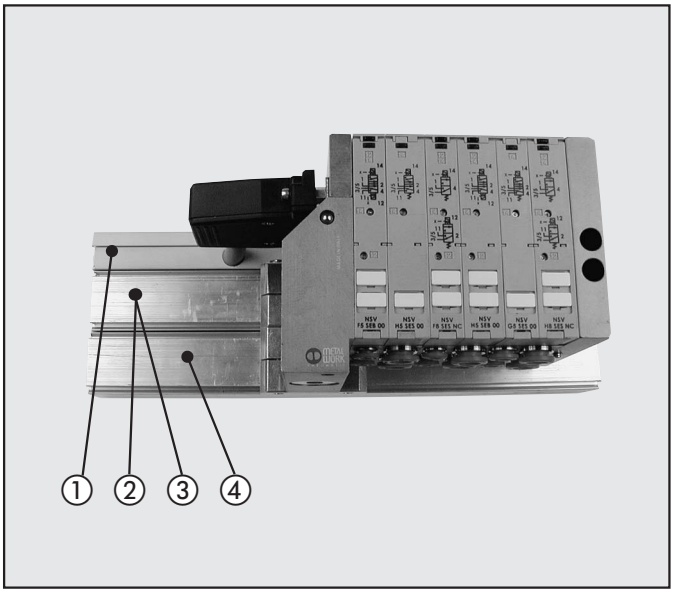
Pneumo-bus is an integrated connection system between compressed air treatment units, valves and accessories.
The system includes a Skillair 200 air treatment unit version and one for the Multimach valve islands arranged for direct fitting to the Teseo.
AP 25 profile pipe. These Teseo patented aluminium profile pipes are known for their rapid installation time, for the numerous accessories. The profile is symmetrical, can be used on all sides and is easy to cut and bend. The new arrangement system for Metal Work products therefore reaches interesting objectives:
• Valves and units fitted directly to the pipe which acts both as a robust mechanical support and an air supply.
• The elimination of all polyamide pipes and their fittings and assembly.
• The 25 mm. passage hole guarantees valve supply with reduced pressure drop and also acts as a pneumatic "tank".
• It is possible to install a second pipe, parallel and adjacent to the first one, to convey air to the exhaust, connected directly to the Multimach exhaust port.
• It is also possible to fix a conduit for electric cables to the pipe.



FROM THE TRADITIONAL SYSTEM

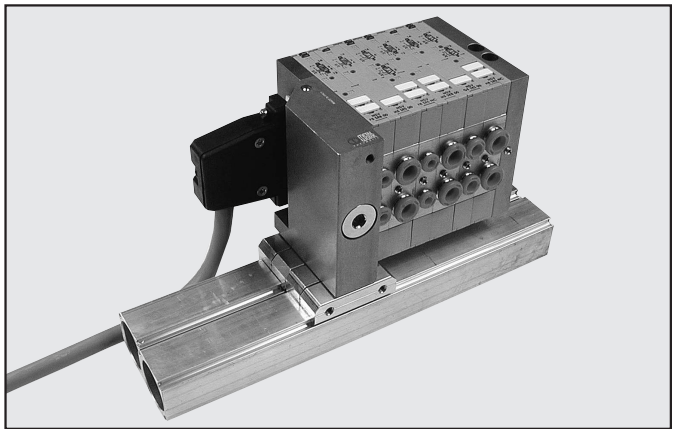


TO THE PNEUMO-BUS

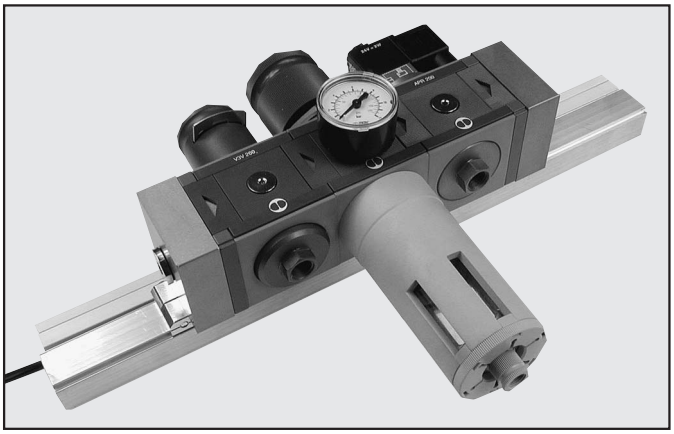


① ELECTRICAL WIRES ② PNEUMATIC SUPPLY ③ VALVE SUPPORT ④ PNEUMATIC EXHAUST

MULTIMACH

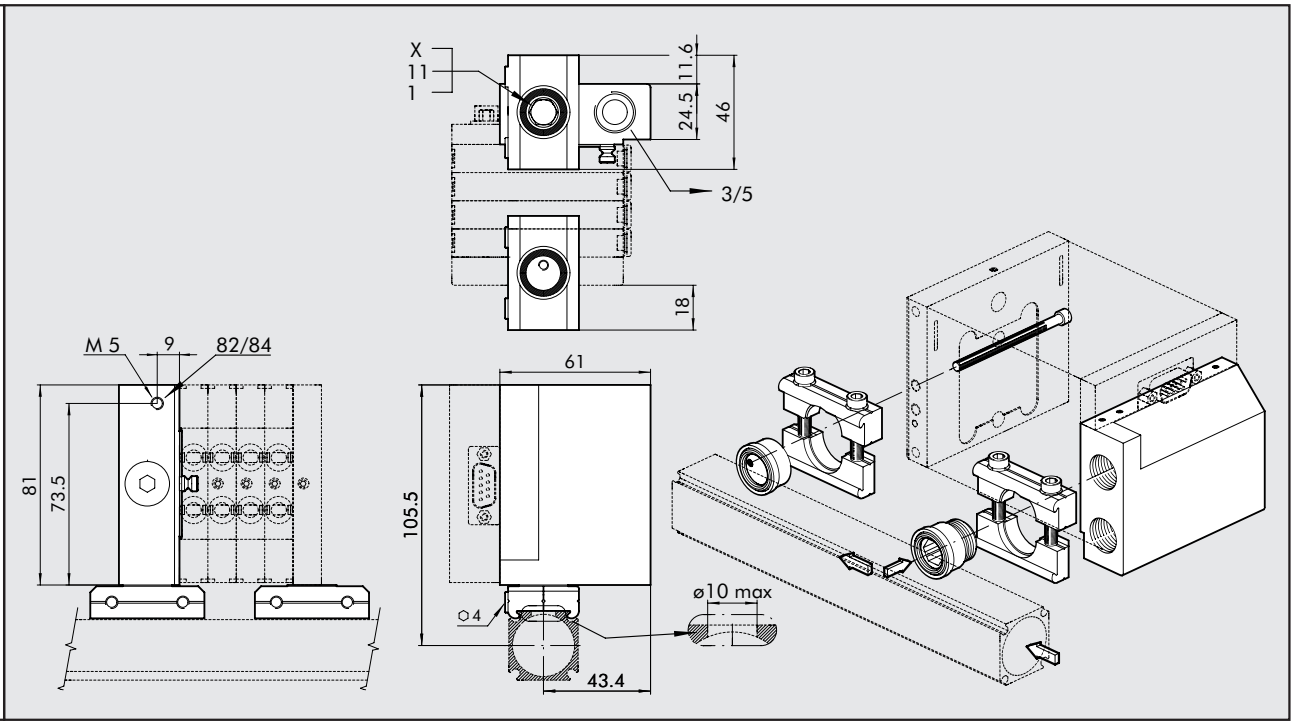


SKILLAIR 200



MULTIMACH END PLATE FOR PNEUMO-BUS

21

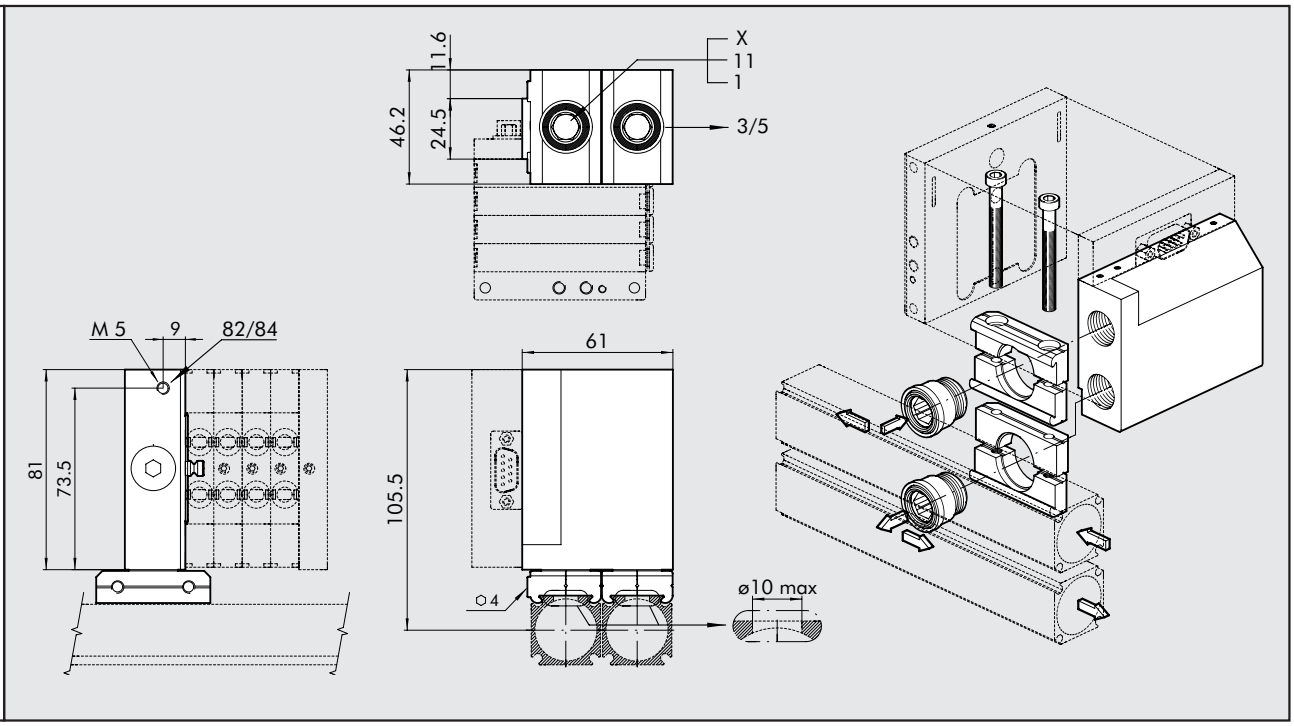


Code	Description
0227300203	PNEUMO-BUS END PLATE KIT

N.B. When ordering a Multimach unit with this end plate, specify the identification number 21:M51-21...

MULTIMACH END PLATE FOR PNEUMO-BUS + CONVEYED EXHAUST

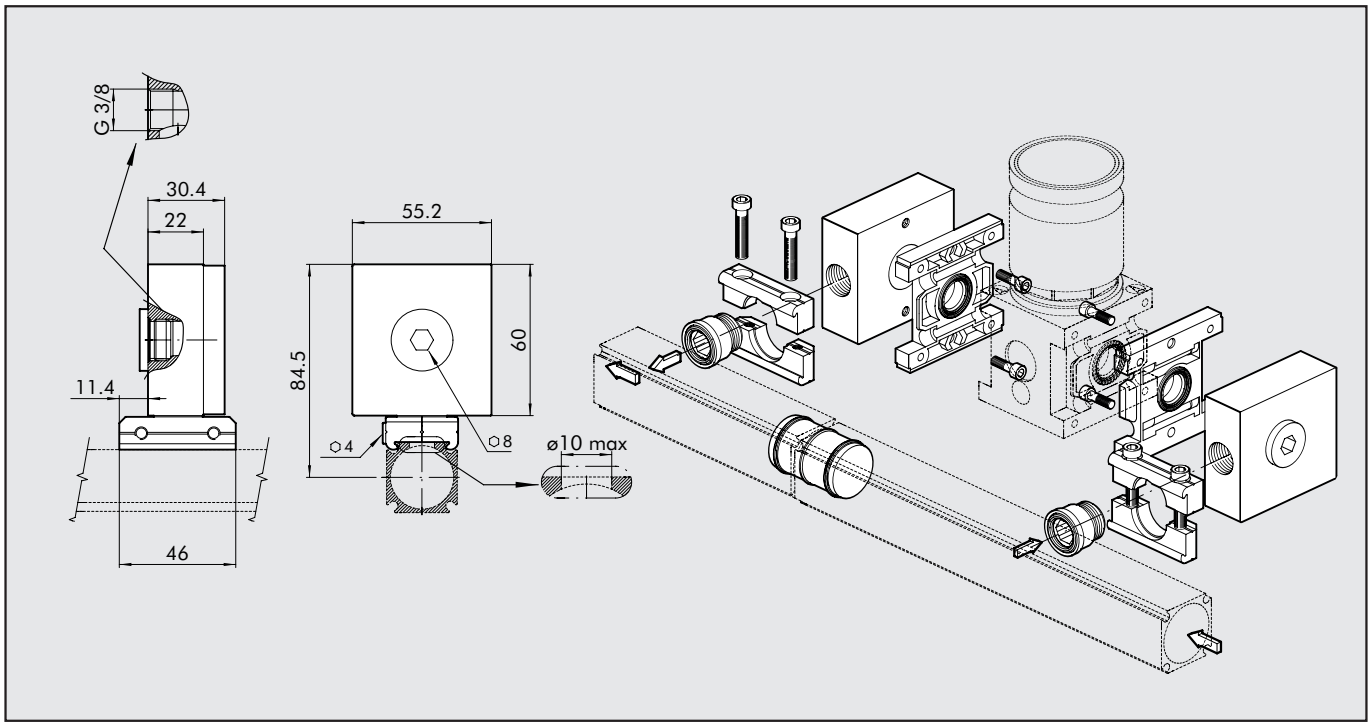
22



Code	Description
0227300204	PNEUMO-BUS END PLATE KIT + CONVEYED EXHAUST

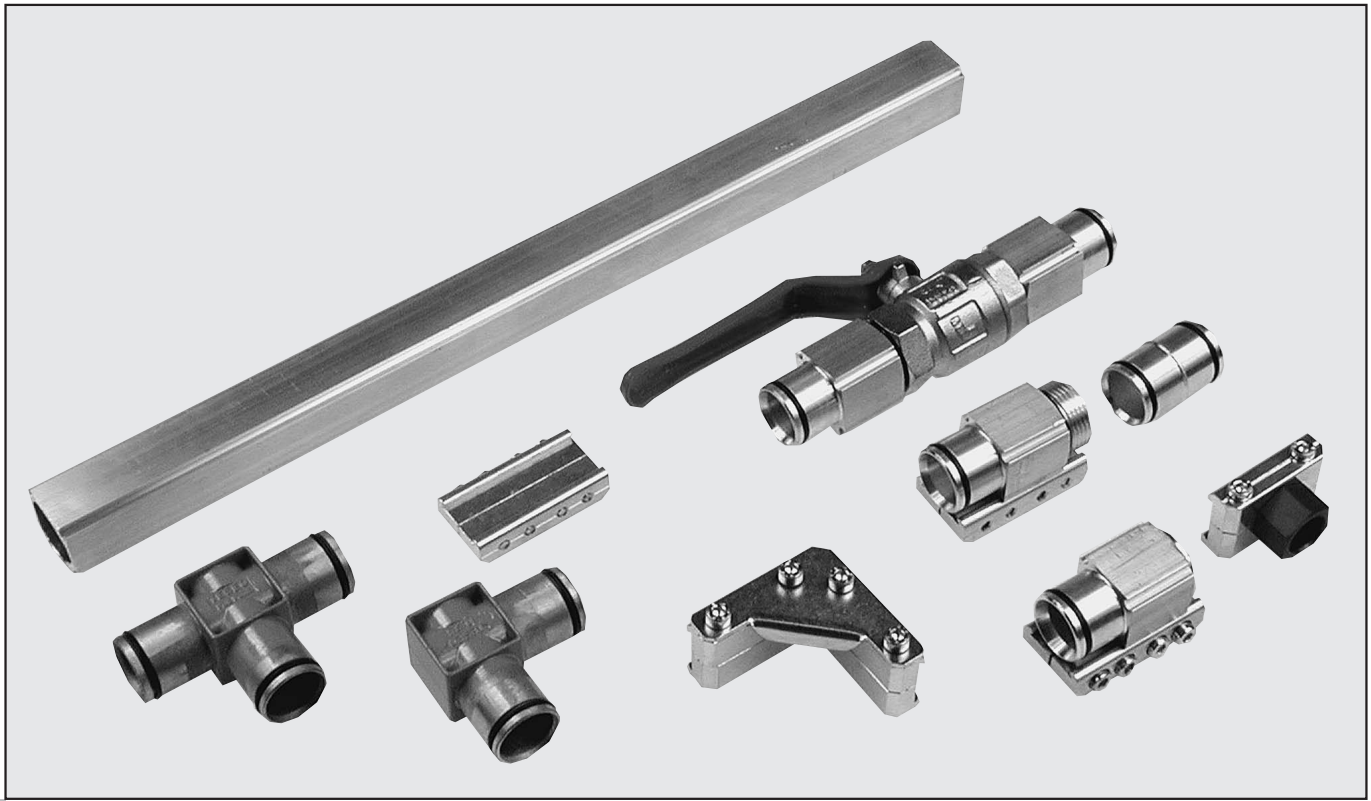
N.B. When ordering a Multimach unit with this end plate, specify the identification number 22:M51-22...

SKILLAIR 200 END PLATE FOR PNEUMO-BUS



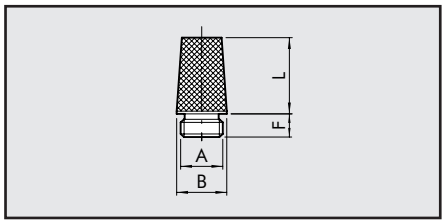
Code	Description
9330901	PNEUMO-BUS SK 200 END PLATE KIT

THE ACCESSORIES FOR AP 25 BY TESEO Aluminium Pipework (www.teseoair.com)



SILENCERS

SILENCER MW SC

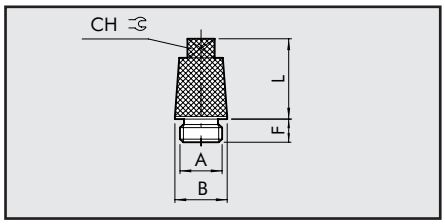


Materials:
Nickel-plated brass
Sintered nickel-plated bronze

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

A	B±0.2	F	L±3%	Code
M5	6	4.5 ±0.5	10	W 097053 0001
G1/8	12	6 ±0.5	15	W 097053 0002
G1/4	15	6.7 ±0.5	19	W 097053 0003
G3/8	19	8.5 ±0.5	28.5	W 097053 0004
G1/2	23	8.7 ±0.5	33	W 097053 0005
G3/4	29	11 ±1	40.5	W 097053 0006
G1	36	11.5±1	50.5	W 097053 0007

SILENCER MW SCQ

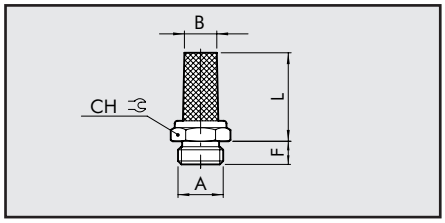


Materials:
Nickel-plated brass
Sintered nickel-plated bronze

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

A	B±0.2	F	L±3%	CH	Code
G1/8	12	6 ±0.5	15	7	W 097053 0012
G1/4	15	7.5 ±0.5	19	8	W 097053 0013
G3/8	19	8.5 ±0.5	29.2	10	W 097053 0014
G1/2	23	9 ±0.5	31.5	14	W 097053 0015
G3/4	29	10 ±1	41.5	17	W 097053 0016
G1	36	12 ±1	51.2	23	W 097053 0017

SILENCER MW SE

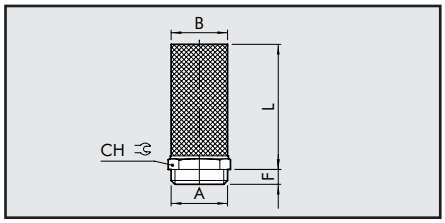


Materials:
Nickel-plated brass
Sintered nickel-plated bronze

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

A	B±0.5	F	L±5%	CH	Code
M5	4	4 ±0.5	13	8	W 097053 0021
M7	5	5 ±0.5	21	10	W 097053 0020
G1/8	7	6 ±0.5	21	13	W 097053 0022
G1/4	8.5	8 ±0.5	23.5	16	W 097053 0023
G3/8	11	8 ±0.5	33	19	W 097053 0024
G1/2	15	10 ±0.5	37	24	W 097053 0025
G3/4	21.5	10 ±1	43.5	30	W 097053 0026
G1	27	11.5±1	56	36	W 097053 0027

HIGH-CAPACITY SILENCER MW SL

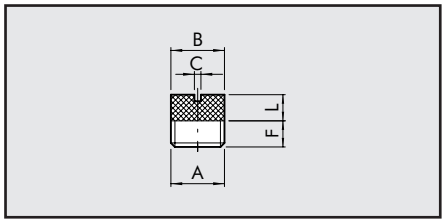


Materials:
Nickel-plated brass
Sintered nickel-plated bronze

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

A	B±1	F	L±5%	CH	Code
G3/4	37	12 ±1	215	50	W 097053 0036
G1	37	12 ±1	215	50	W 097053 0037
G1 1/4	37	15 ±1.5	215	50	W 097053 0038
G1 1/2	37	15 ±1.5	215	50	W 097053 0039
G2	37	17 ±1.5	220	65	W 097053 0040

SILENCER MW STT

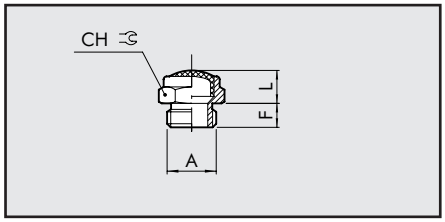


Materials:
Nickel-plated brass
Sintered nickel-plated bronze

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

A	B±0.2	F	L±3%	C	Code
G1/8	9.5	6.5±0.5	6	2	W 097053 0042
G1/4	12.6	6 ±0.5	7	1.5	W 097053 0043
G3/8	16.2	7.5±0.5	8.5	1.5	W 097053 0044
G1/2	20.5	10 ±0.5	9.6	2.5	W 097053 0045
G3/4	26	11 ±1	12	1.5	W 097053 0046
G1	33	13 ±1	11	–	W 097053 0047

SILENCER MW SFE

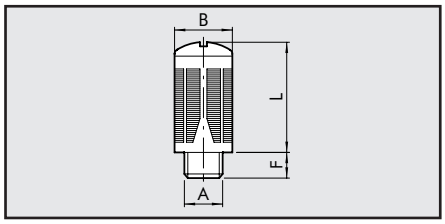


Materials:
Nickel-plated brass
Stainless steel wire

Features:
Pmax: 12 bar
Temp.: –10°C÷+80°C

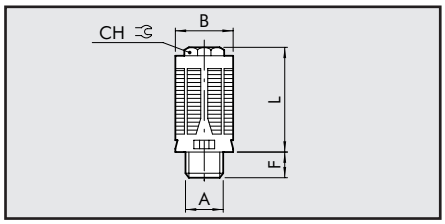
A	F	L±3%	CH	Code
M5	3.7 ±0.5	4.7	8	W 097053 0051
G1/8	6.2 ±0.5	8.2	13	W 097053 0052
G1/4	7.7 ±0.5	11.3	16	W 097053 0053
G3/8	8 ±0.5	11.5	19	W 097053 0054
G1/2	10.3±0.5	13	24	W 097053 0055
G3/4	10 ±1	15	30	W 097053 0056
G1	12 ±1	18	36	W 097053 0057

DYNAMIC SILENCER MW SPL



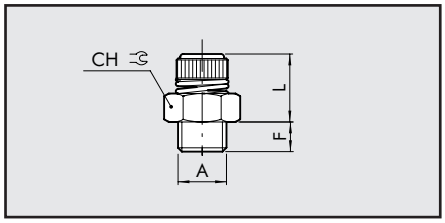
A	$B^{\pm 0.2}$	F	$L^{\pm 3\%}$	Code
Materials:				
Black acetal resin				
Acoustic insulation				
Features:				
Pmax: 6 bar				
Temp.: –10°C÷+60°C				
G1/8	15.4	6.2 $^{\pm 0.5}$	27	W 097053 0062
G1/4	19.6	8 $^{\pm 0.5}$	35	W 097053 0063
G3/8	24.7	11.3 $^{\pm 0.5}$	47	W 097053 0064
G1/2	24.7	10.7 $^{\pm 0.5}$	47	W 097053 0065
G3/4	48	18 $^{\pm 1}$	96	W 097053 0066
G1	48	18 $^{\pm 1}$	97	W 097053 0067

SILENCER MW SPL-F



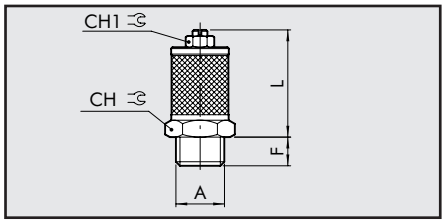
A	$B^{\pm 0.2}$	$F^{\pm 0.5}$	$L^{\pm 3\%}$	CH	Code
Materials:					
Black acetal resin					
Felt					
Features:					
Pmax: 12 bar					
Temp.: –10°C÷+60°C					
G1/8	16.3	5.5	29	10	W 097053 0072
G1/4	20	7.4	36.5	13	W 097053 0073
G3/8	24.8	11	47	17	W 097053 0074
G1/2	24.8	11	47	17	W 097053 0075

SILENCED EXHAUST REGULATOR MW SVE



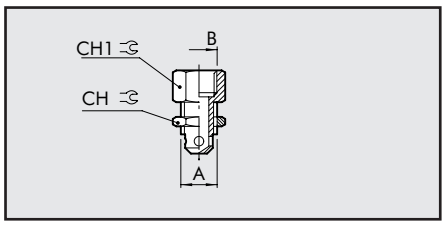
A	F	$L^{\pm 0.5}$	CH	Code
Materials:				
Nickel-plated brass				
Sintered nickel-plated bronze				
Stainless steel spring				
Features:				
Pmax: 12 bar				
Temp.: –10°C÷+80°C				
G1/8	6.7 $^{\pm 0.5}$	19-23	13	W 097052 0001
G1/4	7.4 $^{\pm 0.5}$	21-24.5	15	W 097052 0002
G3/8	9.7 $^{\pm 0.5}$	23.5-29.5	22	W 097052 0003
G1/2	10.6 $^{\pm 0.5}$	23-28	22	W 097052 0004
G3/4	12 $^{\pm 1}$	29-35	30	W 097052 0005
G1	13.8 $^{\pm 1}$	27-34	36	W 097052 0006

SILENCED EXHAUST REGULATOR MW SVL



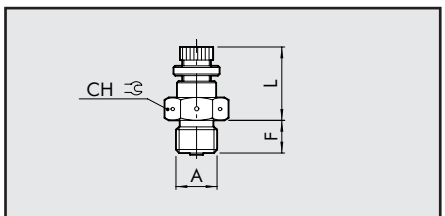
A	F	$L^{\pm 0.5}$	CH	CH1	Code
Materials:					
Nickel-plated brass					
Sintered nickel-plated bronze					
Features:					
Pmax: 12 bar					
Temp.: –10°C÷+80°C					
M5	4 $^{\pm 0.5}$	17-27	8	6	W 097052 0010
G1/8	7 $^{\pm 0.5}$	31-40	16	9	W 097052 0011
G1/4	7.5 $^{\pm 0.5}$	30-37.5	16	9	W 097052 0012
G3/8	10.5 $^{\pm 0.5}$	37.5-51.5	22	9	W 097052 0013
G1/2	12.4 $^{\pm 0.5}$	39.5-47.5	22	9	W 097052 0014
G3/4	12.4 $^{\pm 1}$	56.5-81	30	13	W 097052 0015
G1	12.4 $^{\pm 1}$	58.5-84.5	36	13	W 097052 0016

EXHAUST REGULATOR MW DSN



A	B	CH	CH1	Code
Materiali:				
Nickel-plated brass				
Features:				
Pmax: 12 bar				
Temp.: –10°C÷+80°C				
G1/8	G1/8	12	12	W 097052 0021
G1/4	G1/8	14	16	W 097052 0022
G3/8	G1/4	19	17	W 097052 0023
G1/2	G1/4	24	22	W 097052 0024

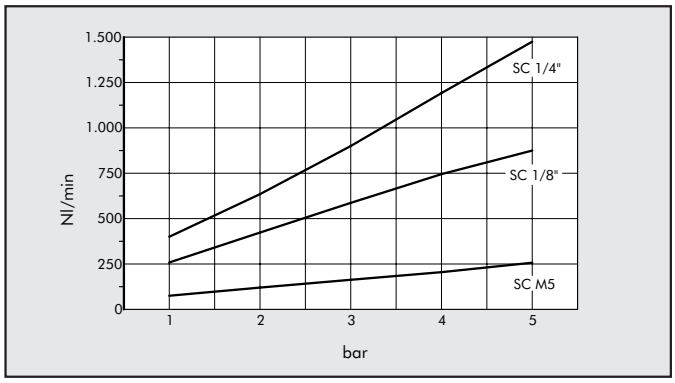
EXHAUST REGULATOR MW DSE

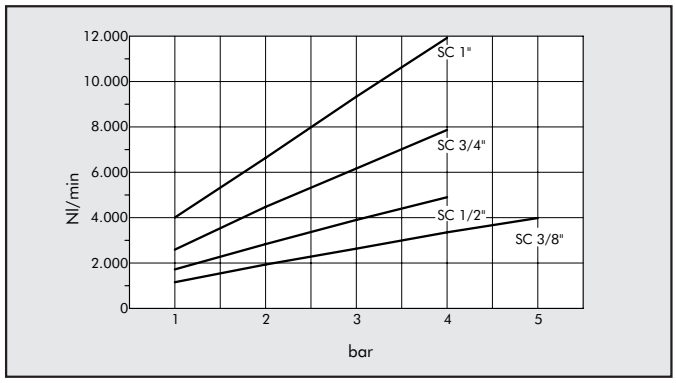


A	F	$L^{\pm 3\%}$	CH	Code
Materiali:				
Nickel-plated brass				
Features:				
Pmax: 12 bar				
Temp.: –10°C÷+80°C				
G1/8	7.5 $^{\pm 0.5}$	16.8-20	14	W 097052 0031
G1/4	10 $^{\pm 0.5}$	21.5-29	17	W 097052 0032

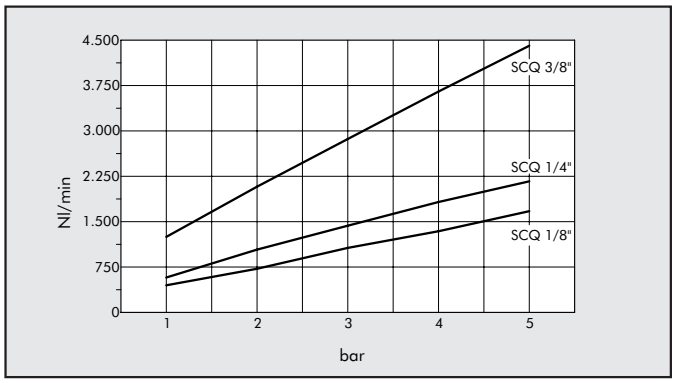
SILENCER: FLOW CHARTS

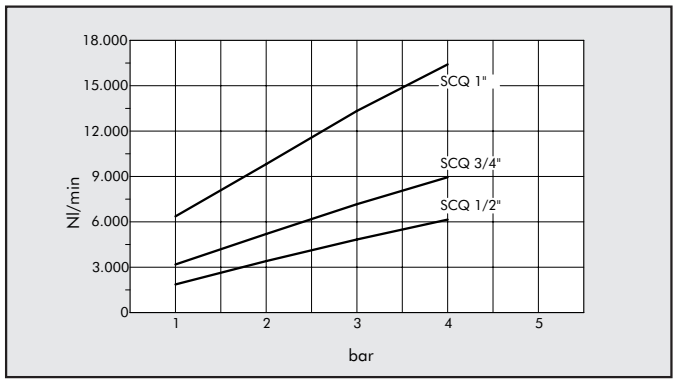
SILENCER MW SC



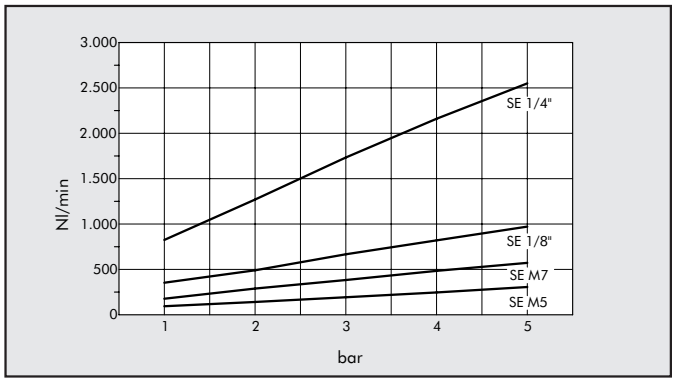


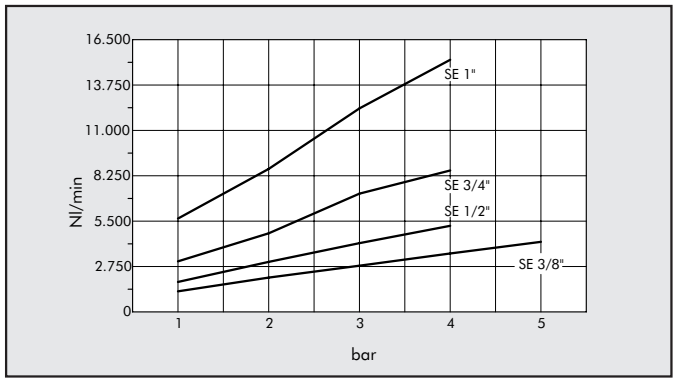
SILENCER MW SCQ



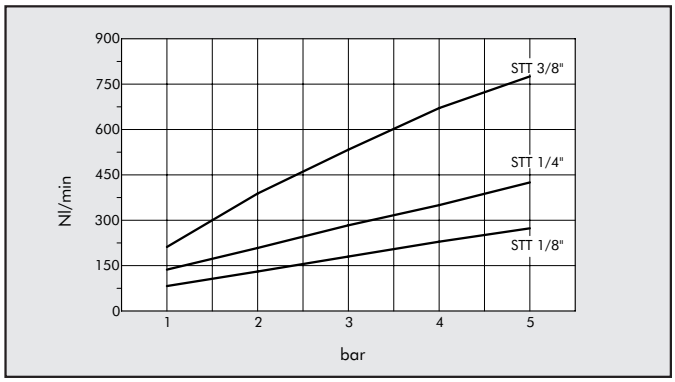


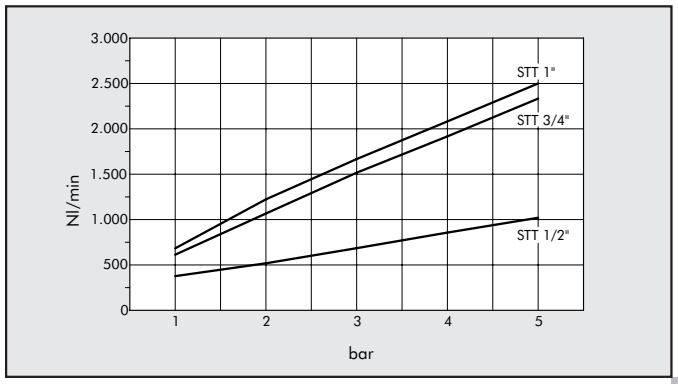
SILENCER MW SE



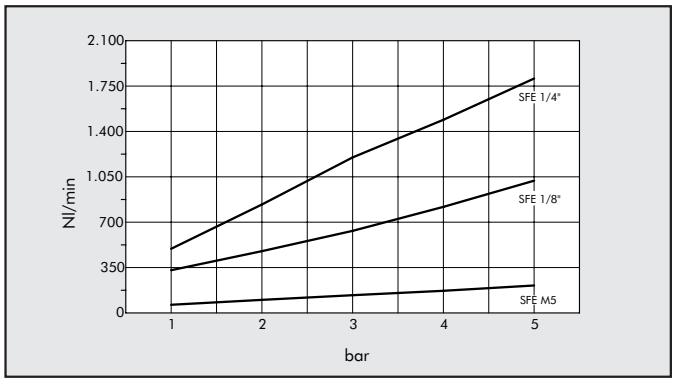


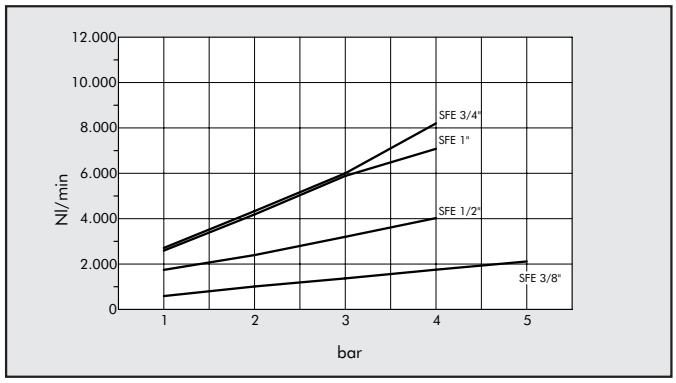
SILENCER MW STT



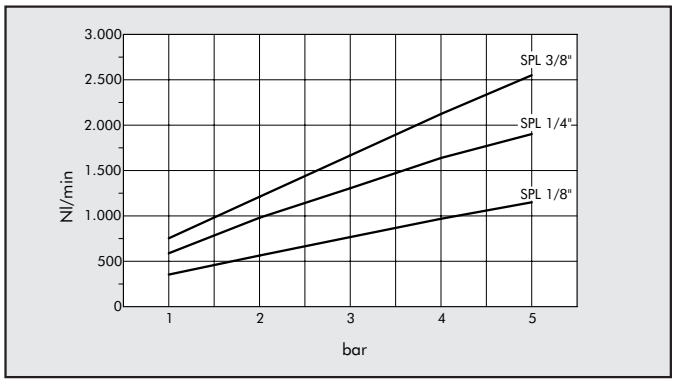


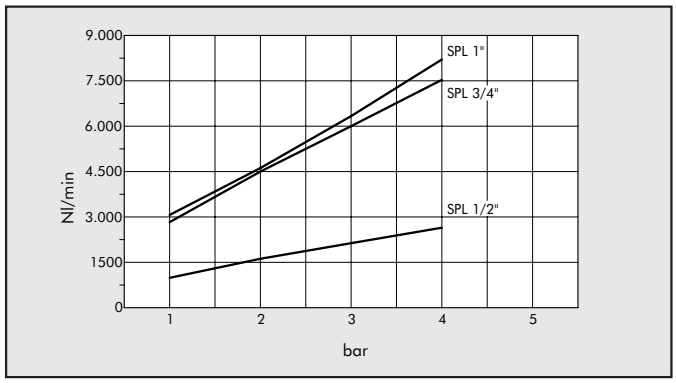
SILENCER MW SFE



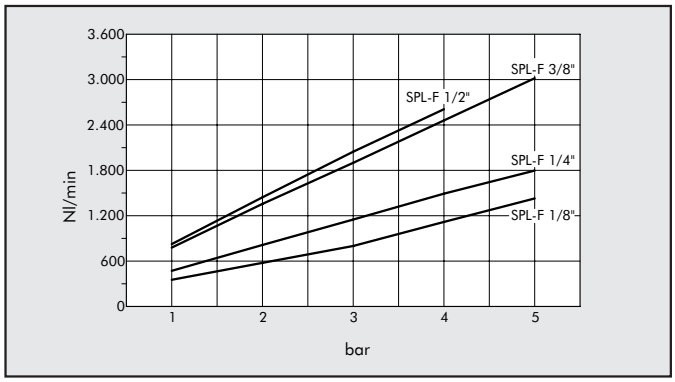


SILENCER MW SPL

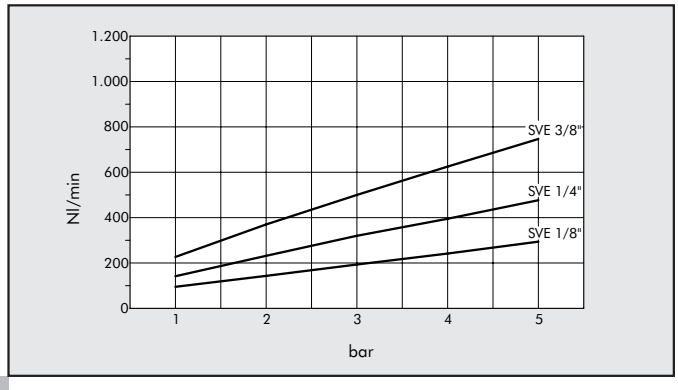


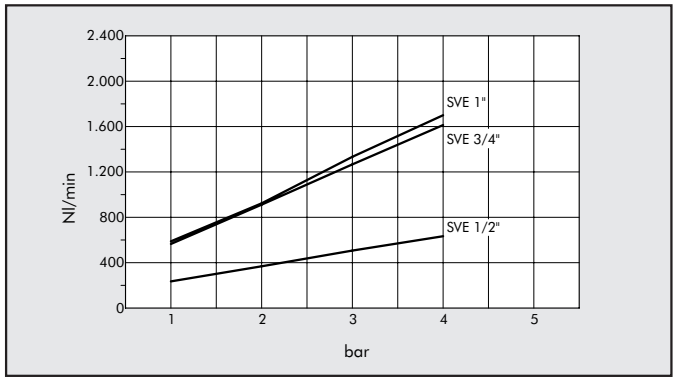


SILENCER MW SPL-F

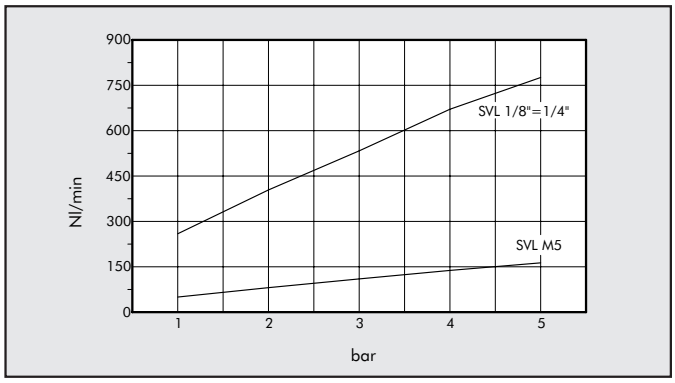


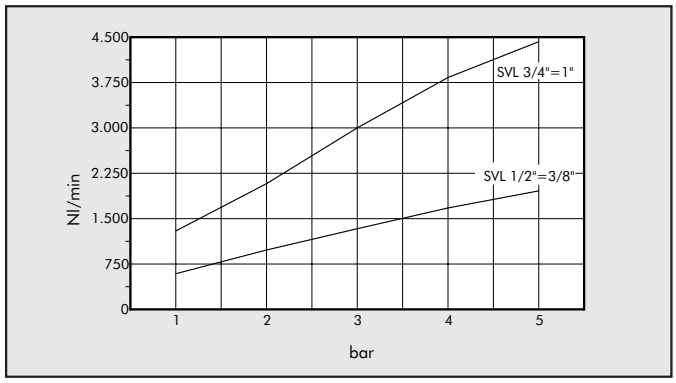
SILENCER MW SVE





SILENCER MW SVL





NOTES

METAL WORK PNEUMATIC

EUROPEAN DIRECTIVE 94/9/EC (ATEX)

PNEUMATICS AND POTENTIALLY EXPLOSIVE ATMOSPHERES: EUROPEAN DIRECTIVE 94/9/EC (ATEX)

As from 1st July 2003, all products marketed in the European Union and intended for use in potentially explosive atmospheres must be approved in compliance with European Directive 94/9/EC, also known as ATEX.

This new directive also applies to non-electrical components, such as pneumatic controls, for which approval is mandatory.

The main innovations introduced by the new directive 94/9/EC are:

- Inclusion of non-electrical equipment and devices, such as pneumatic cylinders.
- Each device is assigned a category associated to certain potentially explosive atmospheres.
- All products must bear the CE marking.
- Instructions for use and declarations of conformity must be supplied for each product sold for use in potentially explosive atmospheres.
- Products intended for use in potentially explosive atmospheres due to the presence of dust come under this directive, as do products destined for areas in which hazardous gases are present.

A potentially explosive atmosphere may contain gases, mists, vapours or dust that form in factories or other areas in which flammable substances are continuously or occasionally present.
An explosion can occur when flammable substances and a source of ignition are present simultaneously in a potentially explosive atmosphere.

A source of ignition can be:

- of electrical origin (electric arcs, induced currents, heat generated by the Joule effect)
- of mechanical origin (hot surfaces generated by friction, sparks generated by impact between metal bodies, electrostatic discharge, adiabatic compression)
- of chemical origin (exothermic reactions between materials)
- a naked flame

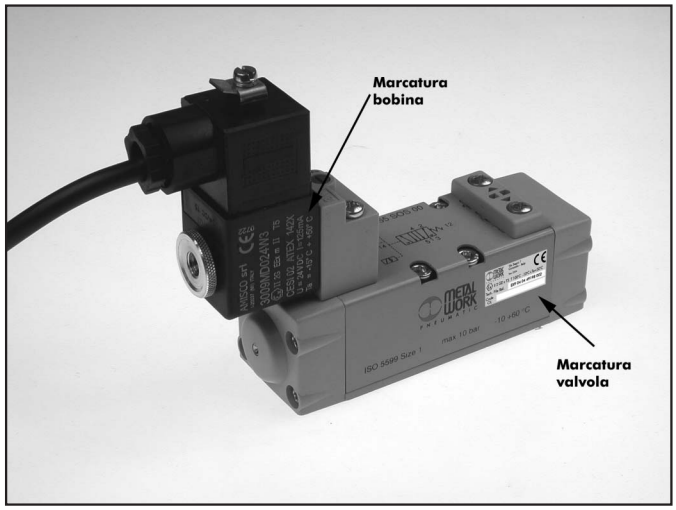
Products subject to approval are all those which, during normal use or due to a malfunction, present one or more sources of ignition for potentially explosive atmospheres.

Responsibility lies both with the manufacturer of the device and whoever installs it in equipment that is to operate in a hazardous atmosphere.
This requires co-operation between the parties to ensure correspondence between the category of device and the hazardous area in which it is to operate.

The manufacturer of the device must comply with the specifications and classify the product according to directive 94/9/EC. The manufacturer of the equipment, who knows the area in which the device will be operating, must select a suitable device according to the category, pursuant to directive 99/92/EC.

THE COMBINATION OF ELECTRICAL AND MECHANICAL PARTS

According to Directive 94/9/EC, both electrical and mechanical devices are subject to approval.
Marcatura bobina = coil marking
Marcatura valvola = valve marking
It is important to note that the component which is classified in the lowest category defines the category of the entire device of which it is a part.
If, for example, the coil is marked Ex II 2 ...'85 and the valve is marked Ex II 3...'85 the coil+valve assembly must not be put into service in zone 1 or 21, only in zone 2 or 22.



GROUPS AND CATEGORIES

Devices for use in potentially explosive areas are divided into the following groups:
- GROUP I: devices used in mines
- GROUP II: devices used in surface installations

DEVICES FOR MINES GROUP I

Explosive gas content	No limit	Below a set limit
CATEGORY OF DEVICE TO BE USED ACCORDING TO 94/9/EC	M1	M2

DEVICES FOR SURFACE INSTALLATIONS GROUP II

ZONES	0	20	1	21	2	22
TYPE OF ATMOSPHERE	G GAS	D DUST	G GAS	D DUST	G GAS	D DUST
PRESENCE OF HAZARDOUS ATMOSPHERE	Continuously (>1000 h/year)*		Not present during normal operation (>10 <1000 h/year)*		Accidental presence (>0,1<10 h/year)*	
Category of devices to use according to 94/9/EC	1		2		3	

*indicative

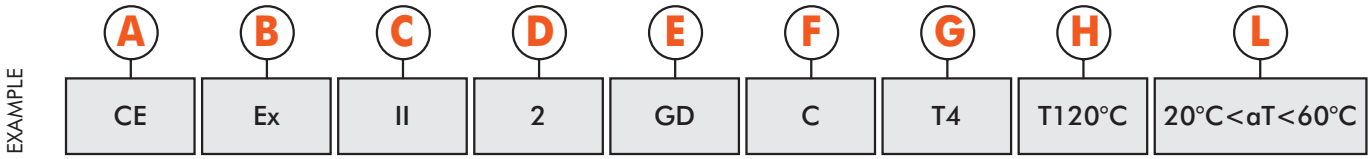
CORRESPONDENCE BETWEEN ZONES AND CATEGORIES ACCORDING TO 94/9/EC.

ZONE 0/ZONE 20 → CATEGORY 1: devices in this category ensure an adequate degree of safety even in the presence of rare malfunctions. These devices are used in zones in which an explosive atmosphere is present continuously for long periods.

ZONE 1/ZONE 21 → CATEGORY 2: devices in this category ensure an adequate degree of safety even in the presence of a probable malfunction. These devices are used in zones in which an explosive atmosphere is present occasionally.

ZONE 2/ZONE 22 → CATEGORY 3: devices in this category ensure an adequate degree of safety during normal operation. These devices are used in zones in which an explosive atmosphere is rarely present and only for brief periods.

MARKING: HOW TO READ IT



(A) = Ce mark

(B) = This means the device can be used in a hazardous area

(C) = Group to which the device belongs (mines or surface installations)

(D) = Category: indicates use in different hazardous areas

(E) = The type of explosive atmosphere: G=gas; D=dust

(F) = Type of protection against sources of ignition

(G) = Temperature class: maximum surface temperature

(H) = Max temperature for use in areas that are hazardous due to dust

(L) = Temperature range within which the device can be used in a hazardous atmosphere

TYPE OF PROTECTION AGAINST SOURCES OF IGNITION

Protection symbol		ZONES						DESCRIPTION
		0	20	1	21	2	22	Protection through constructional safety (prEN13463-5).
c				X	X	X	X	Flameproof enclosure Type of protection of an electrical apparatus that contains parts capable of triggering an explosion in an enclosure able to withstand the pressures generated by internal explosions.
d				X	X	X	X	Enhanced safety Electrical appliance with a high safety coefficient.
e				X	X	X	X	Intrinsic safety Electrical circuit in which neither sparks nor temperatures can trigger an explosion during normal operation or a malfunction.
i	ia	X	X	X	X	X	X	
	ib			X	X	X	X	Encapsulation Special casing in which the parts that could trigger an explosion are immersed in a substance that prevents contact with the explosive atmosphere.
m				X	X	X	X	Type of protection for electrical appliances designed so that they do not ignite the surrounding explosive atmosphere during normal operation and in specific conditions of malfunction. There are 5 categories: nA (non-scintillating); nC (hermetic seal); nR (limited respiration); nL (limited energy); nP (pressurisation).
n						X	X	Immersion Electrical appliance immersed in oil.
o				X	X	X	X	Pressurised enclosure Pressurisation with respect to the external pressure is maintained by means of an inert gas.
p				X	X	X	X	Enclosure containing filling powder
q				X	X	X	X	

TEMPERATURE CLAS

GROUP I: Temperature =150 °C or =450 °C according to the layer of dust accumulated on the device.

GROUP II

Temperature classes for gas (G)	Admissible surface temperature
T1	450 °C
T2	300 °C
T3	200 °C
T4	135 °C
T5	100 °C
T6	85 °C

USER AND SUPPLIER: OBLIGATIONS AND RESPONSIBILITIES

It is important to highlight the need for the user and supplier to collaborate and to exchange all the information required to define the types of products that can be used in full compliance with the safety standards.

USER: after performing a company-wide risk analysis (pursuant to directive 99/92/EC) and identifying the risk zone in which the purchased part will be operating, the user must inform the **SUPPLIER**, who must check that the products supplied are compatible with the zone indicated and that the environmental conditions are within the set operating range for the parts.
It is also important to make sure that the operating instructions are always attached to the products supplied.

DECLARATION OF CONFORMITY

Declaration of conformity

Directive 94/9/CE
"Potentially esplosive atmosphere"

TÜV CERTIFICATE
N° EX9 04 04 49198 004

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio(BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive

94/9/CE

COUNCIL DIRECTIVE.. IN POTENTIALLY EXPLOSIVE ATMOSPHERE
In its current form

The models supplied by METAL WORK of the following products types

Pneumatic actuators

- MICRO-CYLINDERS SERIES ISO 6432 ø 8 – 25 mm
- ROUND CYLINDERS SERIES RNDC ø 32 – 50 mm
- CARTRIDGE MICRO-CYLINDER SERIES CRTC ø 6- 16
- SHORTS-STROKE CYLINDERS SERIES SSCY ø 12 – 100 mm
- COMPACT CYLINDER ø 12 – 100 mm
- CYLINDERS SERIES ISO 6431 VDMA ø 32 – 125 mm
- CYLINDERS SERIES ISO 6431 VDMA ø 160 – 200 mm
- TWIN-ROD CYLINDER SERIES "TWNC" ø32÷100 mm
- COMPACT GUIDED CYLINDERS ø12÷100 mm
- RODLESS CYLINDER ø16-63*

As referred to in this declaration,
Complies with the following standards and normative documentsIn they current form

EN 13463-1:2001	Non electrical equipment for use in explosion-hazard areas Part 1: Fundamentals and requirements
PrEN 13463-5:2000	Non electrical equipment for use in explosion-hazard areas Part 5: Protection through safe design

Products are marked additionally with the following characteristics:

Ex II 2 GD c T5 T100°C -10°C<Ta<50°C

*rodless will be marked Ex II 2 G c T5 T100°C -10°C<Ta<50°C

Concesio, December 2003
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT12e Date: 09/06/04

Declaration of conformity

Directive 94/9/CE
"Potentially esplosive atmosphere"

TÜV CERTIFICATE
N° EX9 04 04 49198 003

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio(BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive

94/9/CE

COUNCIL DIRECTIVE.. IN POTENTIALLY EXPLOSIVE ATMOSPHERE
In its current form

The models supplied by METAL WORK of the following products types

- MINIVALVES, SERIES VME-1 MECHANICALLY /HAND OPERATED
- VALVES, SERIES PEV, PEDAL OPERATED
- VALVES, SERIES 70
- VALVES, SERIES NAMUR
- VALVES ISO 5599/1 SERIES IPV-ISV
- VALVES MACH 18
- VALVES MACH 11
- VALVES MACH 16

Exclusively in their NOT- ELECTRICAL part
As referred to in this declaration,
Complies with the following standards and normative documents
In they current form

EN 13463-1:2001	Non electrical equipment for use in explosion-hazard areas Part 1: Fundamentals and requirements
PrEN 13463-5:2000	Non electrical equipment for use in explosion-hazard areas Part 5: Protection through safe design

Products are marked additionally with the following characteristics:

Ex II 2 GD c T5 T100°C -10°C<Ta<50°C

Awaiting for deposition of the technical folder at TÜV

Concesio, December 2003
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT22e Date 09/06/04

Declaration of conformity

"Potentially esplosive atmosphere"
Directive 94/9/CE

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio(BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive

94/9/CE

COUNCIL DIRECTIVE.. IN POTENTIALLY EXPLOSIVE ATMOSPHERE
In its current form

The models supplied by METAL WORK of the following products types:

- HDM
- MACH 16 SOLENOID/PNEUMATIC 24V AC/DC
- MACH 18 SOLENOID/PNEUMATIC 24V AC/DC
- PROFIBUS/INTERBUS IP65 MACH 16 DEDICATED
- HDM with AS-Interface

As referred to in this declaration,
Comply with the following standards and normative documents
In the current form

EN 13463-1:2001	Non electrical equipment for use in explosion-hazard areas Part 1: Fundamentals and requirements
PrEN 13463-5:2000	Non electrical equipment for use in explosion-hazard areas Part 5: Protection through safe design
CEI EN 50014	Electrical apparatus for potentially explosive atmospheres General requirements
CEI EN 50021	Electrical apparatus for potentially explosive atmospheres Type of protection "n"
CEI EN 50281-1-1	Electrical apparatus for use in the presence of combustible dust Electrical apparatus protected by enclosures – Construction and testing

Products are marked additionally with the following characteristics:

Ex II 3 GD Eex nA II T5 X –10°C ≤Ta≤ 50° C T100 °C IP65

Concesio, April 2005
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT61e Date 28/04/05

Declaration of conformity

"Potentially esplosive atmosphere"
Directive

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio (BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive

94/9/CE

COUNCIL DIRECTIVE.. IN POTENTIALLY EXPLOSIVE ATMOSPHERE

The models supplied by METAL WORK of the following products types

- COIL 22 – 30 MM 12-24 V AC/DC 2W

as referred to in this declaration,
Comply with the following standards and normative documents
In the current form

CEI EN 50014	Electrical apparatus for potentially explosive atmospheres General requirements
CEI EN 50021	Electrical apparatus for potentially explosive atmospheres Type of protection "n"
CEI EN 50281-1-1	Electrical apparatus for use in the presence of combustible dust Electrical apparatus protected by enclosures – Construction and testing

Products are marked additionally with the following characteristics:

Ex II 3 GD Eex nA II T5 X –10°C ≤Ta ≤50° C T100 °C IP65

Concesio, April 2005
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT63e Date 28/04/05

Certificate
Issued by
METAL WORK S.p.A
Via Segni, 5 - 25062 Concesio, Brescia
ITALY

Concerning the use of non-electrical equipment in potentially explosive atmosphere.

EQUIPMENT TO BE USED IN ZONE 1,2 e 21,22

MECHANICAL ACCESSORIES FOR CYLINDERS:
LEGS: models A / AS / AC
FLANGE: model C
MALE HINGE: models BA / BAS
FEMALE HINGE: model B
COUNTER-HINGE: models BC / EN / EL / GL / GS
NUT FOR HEADS : model D
NUT FOR PISTON ROD: models DA / S
FORK: model GK-M
SPHERICAL JOINT: model GA-M
ARTICULATED JOINT model GA-K
FLEXIBLE COLLAR: model GA
PISTON ROD LOCK
OTHER EVENTUAL MODELS ASSIMILABLE TO THE PREVIOUS.

PNEUMATIC ACCESSORIES
FLOW REGULATORS: models RFL-R / MRF-N / MRF-O / RFL
CHECK VALVE: models VNR-L / VNR
STOP VALVES: model STP
PRESSURE GAUGE: models MAN-L
CIRCUIT SELECTOR VALVE: models VOR
PNEUMATIC LOGIC
QUICK COUPLINGS: models IAC / ICS
FITTINGS: series R / A / B / C / D
OTHER EVENTUAL MODELS ASSIMILABLE TO THE PREVIOUS

EQUIPMENT TO BE USED IN ZONE 1,2

FLOW MICRO-REGULATORS: models RML / RMS / RMC / RMV
QUICK EXHAUST VALVES: models VSR-L / VSR
SHUTOFF VALVES: models V2VL / V3VL
SLIDE VALVES: model VCS
PRESSURE INDICATOR: model LAM L
DISTRIBUTION FRAMES AND ROTARY JOINTS
OTHER EVENTUAL MODELS ASSIMILABLE TO THE PREVIOUS

The above-mentioned products do not fall within the scope of Directive 94/9/CE.
AN explosion hazard analysis has demonstrated that the devices do not have any internal potential ignition source.
Provided that the instructions in the relevant product documentation are observed, the products may be used in the zones previously indicated.

The basis for this certificate is an explosion hazard analysis of representative test samples of the above mentioned product families.

Permissible technical data listed in the catalogue for the specified devices, as well as the following instructions, must be adhered to:

- The devices may only be operated with compressed air.
- All metal parts must be connected to equipotential bonding in order to prevent electrostatic charging and potential differences resulting from transient electrical current.
- Compressed air must not be exhausted into dusty, potentially explosive atmospheres. Exhaust air must be vented via tubing lines out of the explosive dust atmosphere.

Concesio, DECEMBER 2004
Engineer's manager

Ing. Giorgio Guzzoni.

Document n° AT40e Date: 30/11/04

Declaration of conformity

"Potentially explosive atmosphere"
Directive 94/9/CE

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio(BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive
94/9/CE
COUNCIL DIRECTIVE...IN POTENTIALLY EXPLOSIVE ATMOSPHERE

In its current form

The models supplied by METAL WORK of the following products types:

- SKILLAIR®
- ONE

As referred to in this declaration,
Complies with the following standards and normative documents
In they current form

EN 13463-1:2001	Non electrical equipment for use in explosion-hazard areas Part 1: Fundamentals and requirements
PrEN 13463-5:2000	Non electrical equipment for use in explosion-hazard areas Part 5: Protection through safe design

Products are marked additionally with the following characteristics:

Ex II 3 G c T5 T100°C -10°C<Ta<50°C

Electrical pilot and pressure switch in ONE models, and pressure switch in SKILLAIR® models, will comply with the following directive:
CEI EN 50014 Electrical apparatus for potentially explosive atmosphere – General requirements
CEI EN 50021 Electrical apparatus for potentially explosive atmosphere – Type of protection "n"

SKILLAIR® units designed for use with solenoids, requires ones that are suitable for the same fields of application

Concesio, December 2004
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT50e Date: 26/11/04

Declaration of conformity

Directive 94/9/CE
"Potentially esplosive atmosphere"

TÜV CERTIFICATE
N° EX9 04 04 49198 002

The Company
METAL WORK S.p.A.
Via Segni 5
25062 Concesio(BS)
ITALY

As the solely responsible party herewith declares that under the provision of CE directive
94/9/CE
COUNCIL DIRECTIVE.. IN POTENTIALLY EXPLOSIVE ATMOSPHERE
In its current form

The models supplied by METAL WORK of the following products types

- BIT
- NEW DEAL

Exclusively in their NOT- ELECTRICAL part
As referred to in this declaration,
Complies with the following standards and normative documents
In they current form

EN 13463-1:2001	Non electrical equipment for use in explosion-hazard areas Part 1: Fundamentals and requirements
PrEN 13463-5:2000	Non electrical equipment for use in explosion-hazard areas Part 5: Protection through safe design

Products are marked additionally with the following characteristics:

Ex II 2 GD c T5 T100°C -10°C<Ta<50°C

Awaiting for deposition of the technical folder at TÜV

Concesio, December 2003
Chief Engineer

Ing. Giorgio Guzzoni.

Document n° AT32e Date: 09/06/04

METAL WORK®
PNEUMATIC

TECHNICAL DOCUMENTATION

PRINCIPLES OF PNEUMATICS

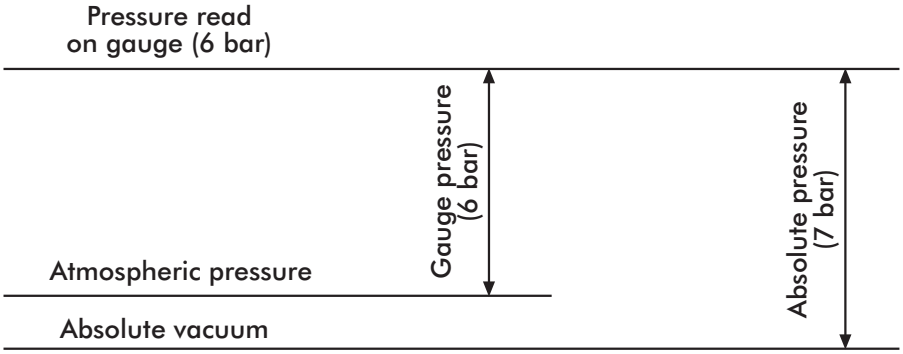
Pressure: The ratio between a force and the surface on which it acts.

$$P = \frac{F\ (N)}{S\ (m^2)} = Pa$$

Atmospheric pressure: Equivalent to the pressure exerted on a surface at sea level at 20°C and with 65% humidity: 10.33 m H_2O; 760 mm Hg; 1.013 x 10^5 Pa.

Absolute pressure: The pressure above the absolute zero value - pressure 0 = absolute vacuum.

Gauge pressure: The pressure referring to ambient atmospheric pressure: it is normally indicated by the pressure gauges used in pneumatic circuits.



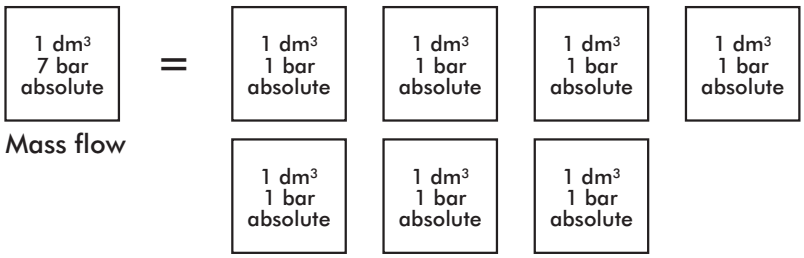
Gauge pressure = (absolute P) - (atmospheric P.)

Upstream pressure: Pressure of the compressed air at the pneumatic component inlet

Downstream pressure: Pressure of the compressed air at the pneumatic component outlet

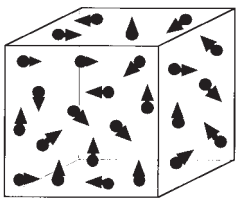
ΔP pressure drop: Difference between upstream and downstream pressure

FLOW RATE: The volume of air passing through a given section in a unit of time. In pneumatics, the volume unit of measurement is Nl (Normal litre). In practice it represents the volumetric capacity of the air referring to ambient atmospheric pressure. **E.g.** in a conduit of a given section, there is a mass flow of 1 litre of air (1 dm^3) at 7 bar absolute pressure. This value expressed as volume of air corresponds to 7 litres of air (7 dm^3) at the ambient atmospheric pressure (1 bar).



- With the same pressure, the flow rate is directly proportional to the port cross section.
- With the same cross section, the pressure is directly proportional to the flow rate.
- Without a ΔP (difference between upstream and downstream pressure), there can be no flow rate.

Pascal's law: A confined fluid transmits externally applied pressure uniformly in all directions.



- Density of air, measured to 20°C to the atmospheric pressure:

$1.275\ \frac{kg}{m^3}$

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENT K_V

Coefficient k_V gives approximate values when used for compressed air.
The flow rate Q_N at a normal volume through a valve is:

Subsonic flow: $P_2 > \frac{P_1}{2}$

$$Q_N = 28{,}6 \cdot k_v \cdot \sqrt{P_2 \cdot \Delta P} \sqrt{\frac{293}{273 + t}}$$

Supersonic flow: $P_2 < \frac{P_1}{2}$

$$Q^*_N = 14{,}3 \cdot k_v \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where
Q_N = flow rate at a normal volume [Nl/min]
Q_N^* = critical flow rate at a normal volume [Nl/min]
k_V = hydraulic coefficient in $\frac{l}{min}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$
P_1 = absolute upstream pressure [bar]
P_2 = absolute downstream pressure [bar]
ΔP = difference in pressure $P_1 - P_2$ [bar]
t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C and b

The flow rate Q_N at a normal volume through a valve is:

Subsonic flow: $P_2 > b \cdot P_1$

$$Q_N = C \cdot P_1 \cdot \sqrt{1 - \left(\frac{r - b}{1 - b}\right)^2} \cdot \sqrt{\frac{293}{273 + t}}$$

Supersonic flow: $P_2 < b \cdot P_1$

$$Q_N^* = C \cdot P_1 \cdot \sqrt{\frac{293}{273 + t}}$$

where
Q_N = flow rate at a normal volume [Nl/min]
Q_N^* = critical flow rate at a normal volume [Nl/min]
C = conductance in [Nl/min · bar]
P_1 = absolute upstream pressure [bar]
P_2 = absolute downstream pressure [bar]
r = upstream pressure : downstream pressure ratio P_2 / P_1
b = critical pressure ratio $b = P_2^* / P_1$
t = input air temperature [°C]

CALCULATING THE FLOW RATE OF A VALVE USING FLOW COEFFICIENTS C_V

The flow rate Q_N at a normal volume through a valve is:

Subsonic flow: $P_2 > 0{,}528 \cdot P_1$

$$Q_N = 400 \cdot C_V \cdot \sqrt{P_2 \Delta P} \cdot \sqrt{\frac{273}{273 + t}}$$

Supersonic flow: $P_2 < 0{,}528 \cdot P_1$

$$Q_N^* = 200 \cdot C_V \cdot P_1 \cdot \sqrt{\frac{273}{273 + t}}$$

where
Q_N = flow rate at a normal volume [Nl/min]
Q_N^* = critical flow rate at a normal volume [Nl/min]
C_V = coefficient of flow [*US · GPM / p.s.i.*]
P_1 = absolute upstream pressure [bar]
P_2 = absolute downstream pressure [bar]
t = input air temperature [°C]

CALCULATING THE NOMINAL FLOW RATE

The nominal flow rate Q_{Nm} of a valve, i.e. the flow at normal volume passing through a valve with $P_1 = 6$[bar] ($P_1 = 7$ [bar] absolute) and $\Delta P = 1$ [bar], can be obtained from the previous formula as follows:

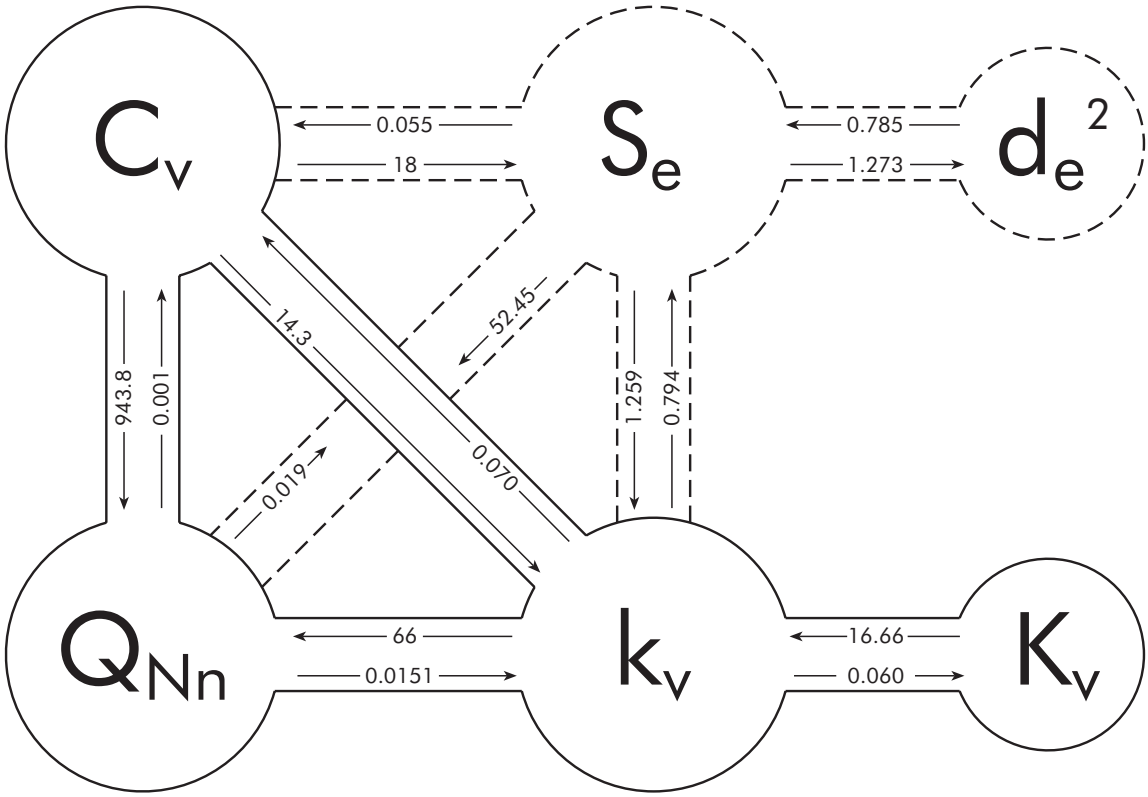
$Q_{Nn} = 66 \cdot k_v$

$Q_{Nn} = 943{,}8 \cdot C_V$

$$Q_{Nn} = 7 \cdot C \cdot \sqrt{1 - \left(\frac{0{,}857 - b}{1 - b}\right)^2}$$

Equalising the first two formulae gives: $k_V = 14{,}3 \cdot C_V \cdot$

• REACTIONS BETWEEN QNn - C_V - k_v - K_V - S - de^2



Q_{Nn} = flow rate in [Nl/min] with $p_1 = 6$ [bar] (P_1=7 [bar] absolute) and $\Delta P = 1$ [bar]

k_v hydraulic coefficient in $\frac{l}{min}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$

K_V hydraulic coefficient in $\frac{m^3}{h}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$

C_V coefficient of flow [*US · GPM / p.s.i.*]

S_e equivalent cross section [mm²]

$d_e^2 = S \cdot \frac{4}{\pi}$ through diameter² in [mm²] obtained from the equivalent cross section

CONVERSION TABLES

TABLE 1 – CONVERSION BETWEEN SYSTEMS OF MEASUREMENT

	Technical system and CGS system	Multiply by →	International system	Multiply by ←	British system
Length	m	1	m	0,0254	in (inch)
			m	0,3048	ft (foot)
Time	s	1	s	1	s
Area	m^2	1	m^2	0,000645	in^2
			m^2	0,0929	ft^2
Volume	m^3	1	m^3	$16,39 \cdot 10^{-4}$	in^2
			m^3	0,02832	ft^2
Speed	$m \cdot s^{-1}$	1	$m \cdot s^{-1}$	0,3048	$ft \cdot s^{-1}$
Acceleration	$m \cdot s^{-2}$	1	$m \cdot s^{-2}$	0,3048	$ft \cdot s^{-2}$
Mass	$kg \cdot s^2 \cdot m^{-1}$	9,81	kg	0,4536	lb (pound)
			kg	14,594	slug = lb $f \cdot s^2 \cdot ft^{-1}$
Force	kg o kp	9,81	N	4,4483	lb f (pound)
	kg	0,981	da N = 10 N		
Torque	$kg \cdot m$	9,81	$N \cdot m$	1,356	lb $f \cdot ft$
Density	$kg \cdot s^2 \cdot m^{-1}$	9,81	$kg \cdot m^{-3}$	16,02	$lb \cdot ft^{-3}$
Specific weight	$kg \cdot m^{-1}$	9,81	$N \cdot m^{-3}$	157,16	lb $f \cdot ft^{-3}$
Work, energy	$kg \cdot m$	9,81	J	1,356	lb $f \cdot ft$
			KWh=$3,6 \cdot 10^6$J		
Heat	Cal	4186	J	1055,1	BTU
Power	$kg \cdot m \cdot s^{-1}$	9,81	W	1,3558	lb $f \cdot ft \cdot s^{-1}$
	CV	735	W	745,7	HP
Pressure	$kg \cdot m^{-2}$	9,81	Pa	6,8948·10	p.s.i.=lb $f \cdot in^{-2}$
	$kg \cdot cm^{-2}$	$9,81 \cdot 10$	Pa		
	$kg \cdot cm^{-2}$	0,981	bar = 10^5Pa		
Mass flow	$kg \cdot s \cdot m^{-1}$	9,81	$kg \cdot s^{-1}$	0,4536	$lb \cdot s^{-2}$
Volume flow	$m^3 \cdot s^{-1}$	1	$m^3 \cdot s^{-1}$	0,02832	$ft \cdot s^{-1}$
Dynamic viscosity	Nl/min^{-1}	0,0000167	$Nm^3 \cdot S^{-1}$	0,000472	SCFM
	$kg \cdot s \cdot m^{-2}$	9,81	Pa·s	6,896	lb $f \cdot s \cdot in^{-2}$
Kinematic viscosity	Po (poise-system CGS)	0,1	Pa·s		
	$m^2 \cdot s^{-2}$	1	$m^2 \cdot s^{-2}$	0,0929	$ft^2 \cdot s^{-1}$
	St (stokes-system CGS)	10^{-4}	$m^2 \cdot s^{-2}$		
	Technical system and CGS system	← Divide by	International system	Divide by →	British system

TABLE 2 – TEMPERATURE CONVERSION

°F = [1,8 · °C] + 32
°C = [°F - 32] · 0,55
°K = °C + 273

°C = degrees Celsius

°K = degrees Kelvin

°F = degrees Fahrenheit

TABLE 3 – MULTIPLES AND SUB-MULTIPLES

Name	Symbol	Value
tera	T	10^{12}
giga	G	10^9
mega	M	10^6
kilo	k	10^3
etto	h	10^2
deca	da	10
deci	d	10^{-1}
centi	c	10^{-2}
milli	m	10^{-3}
micro	µ	10^{-6}
nano	n	10^{-9}
pico	p	10^{-12}

TABLE 4 – PRESSURE UNIT CONVERSION FACTORS

To obtain the pressure for the following units, multiply the number given for the source units by the coefficient shown.

Source units	Pa	kPa	MPa	bar	mbar	kp/cm²	cm H_2O	mm H_2O	mm Hg	p.s.i.
Pa	1	10^{-3}	10^{-5}	10^{-5}	10^{-2}	$10,1972 \cdot 10^{-6}$	$10,1972 \cdot 10^{-3}$	$101,972 \cdot 10^{-3}$	$7,50062 \cdot 10^{-3}$	$0,145038 \cdot 10^{-3}$
kPa	10^3	1	10^{-3}	10^{-2}	10	$10,1972 \cdot 10^{-3}$	10,1972	101,972	7,50062	0,145038
MPa	10^6	10^3	1	10	10^4	10,1972	$10,1972 \cdot 10^3$	$101,972 \cdot 10^3$	$7,50062 \cdot 10^3$	$0,145038 \cdot 10^3$
bar	10^5	10^2	10^{-1}	1	10^3	1,01972	$1,01972 \cdot 10^3$	$10,1972 \cdot 10^3$	750,062	14,5038
mbar	100	0,1	10^{-4}	10^{-3}	1	$1,01972 \cdot 10^{-3}$	1,01972	10,1972	0,750062	$14,5038 \cdot 10^{-3}$
kp/cm²	98.066,5	98,0665	$98,0665 \cdot 10^{-3}$	0,989665	980,665	1	1000	10.000	735,559	14,2233
cm H_2O	98,0665	$98,0665 \cdot 10^{-3}$	$98,0665 \cdot 10^{-6}$	$0,98665 \cdot 10^{-3}$	0,98665	10^{-3}	1	10	0,735559	$14,2233 \cdot 10^{-3}$
mm H_2O	9,80665	$9,80665 \cdot 10^{-3}$	$9,80665 \cdot 10^{-6}$	$98,0665 \cdot 10^{-6}$	$98,0665 \cdot 10^{-3}$	10^{-4}	0,1	1	$73,5559 \cdot 10^{-3}$	$14,2233 \cdot 10^{-3}$
mm Hg	133,322	$133,322 \cdot 10^{-3}$	$133,322 \cdot 10^{-3}$	$1,33322 \cdot 10^{-3}$	1,33322	$1,35951 \cdot 10^{-3}$	1,35951	13,5951	1	$19,3368 \cdot 10^{-3}$
p.s.i.	6.894,76	6,89476	$6,89476 \cdot 10^{-3}$	$68,9476 \cdot 10^{-3}$	68,9476	$70,307 \cdot 10^{-3}$	70,307	703,07	51,7149	1

TABLE 5 – AIR CONSTANTS

Entity	Symbol	Value	
Dynamic viscosity		$17,89 \cdot 10^{-6}$	Pa s
Kinematic viscosity	μ	$14,61 \cdot 10^{-6}$	$m^2 s^{-1}$
Density	γ	1,225	kg m^{-3}
Specific heat at constant pressure	ρ	1,004	KJ kg^{-1} K^{-1}
Speed of sound	Cp	340,29	m s^{-1}
Gas constant	a	287,1	J kg^{-1} K^{-1}
	R		

TABLE 6 – CONTENT OF WATER VAPOUR IN SATURATED COMPRESSED AIR

Grams of water vapour per cubic metre (g / m^3) of air at ambient atmospheric pressure 1.013 bar (0 bar gauge pressure), saturated and compressed at the given pressures and temperatures.

	Pressure - bar												
Temperature °C	0	0,4	0,63	1	1,6	2,5	4	6,3	8	10	12,5	16	20
0	4,82	3,45	2,97	2,42	1,87	1,39	0,97	0,67	0,54	0,44	0,36	0,29	0,23
5	6,88	4,93	4,24	3,46	2,68	1,99	1,39	0,95	0,77	0,63	0,52	0,41	0,33
10	9,41	6,74	5,80	4,73	3,66	2,72	1,90	1,30	1,06	0,87	0,70	0,56	0,45
15	12,7	9,08	7,83	6,39	4,94	3,67	2,56	1,76	1,43	1,17	0,95	0,76	0,61
20	17,4	12,5	10,7	8,75	6,77	5,02	3,51	2,41	1,95	1,60	1,30	1,04	0,84
25	23,6	16,9	14,6	11,9	9,18	6,82	4,77	3,27	2,65	2,17	1,77	1,40	1,14
30	30,5	21,8	18,8	15,3	11,9	8,81	6,16	4,22	3,43	2,81	2,29	1,81	1,47
35	39	27,9	24	19,6	15,2	11,3	7,87	5,40	4,38	3,59	2,92	2,32	1,88
40	49,6	35,5	30,6	24,9	19,3	14,3	10	6,87	5,57	4,55	3,72	2,95	2,39
45	63,5	45,45	39,2	31,9	24,7	18,3	12,8	8,79	7,13	5,84	4,76	3,77	3,06
50	81	58	49,9	40,7	31,5	23,4	16,4	11,2	9,10	7,45	6,07	4,82	3,90

TABLE 7 – VOLUME FLOW UNIT CONVERSION FACTORS

To obtain volume flow for the following units, multiply the number given for the source units by the coefficient shown.

Source units	m_3/s	l/s	cm^3/s	m^3/h	m^3/min	l/h	l/min	ft^3/min (scfm)	gallone/ min UK	gallone/ min USA
m^3/s	1	10^3	10^6	3600	60	$3,6 \cdot 10^3$	$60 \cdot 10^3$	$2,1188 \cdot 10^3$	$13,198 \cdot 10^3$	$15,850 \cdot 10^3$
l/s	10^{-3}	1	10^3	3,6	$60 \cdot 10^{-3}$	$3,6 \cdot 10^3$	60	2,1188	13,198	15,850
cm^3/s	10^{-6}	10^{-3}	1	$3600 \cdot 10^{-6}$	$60 \cdot 10^{-6}$	3,6	$60 \cdot 10^{-3}$	$2,1188 \cdot 10^{-3}$	$13,198 \cdot 10^{-3}$	$15,850 \cdot 10^{-3}$
m^3/h	$0,277778 \cdot 10^{-3}$	0,27778	$0,277778 \cdot 10^3$	1	$16,667 \cdot 10^{-3}$	10^3	16,667	0,58856	3,6661	4,4028
m^3/min	$16,667 \cdot 10^{-3}$	16,667	$16,667 \cdot 10^3$	60	1	$6 \cdot 10^4$	10^3	35,313	219,97	$264,17^{-3}$
l/h	$0,27778 \cdot 10^{-6}$	$0,27778 \cdot 10^{-3}$	0,27778	10^{-3}	$16,667 \cdot 10^{-6}$	1	$16,667 \cdot 10^{-3}$	$0,58856 \cdot 10^{-3}$	$3,6661 \cdot 10^{-3}$	$4,4028 \cdot 10^{-3}$
l/min	$16,667 \cdot 10^{-6}$	$16,667 \cdot 10^{-3}$	$16,667^{-6}$	$60 \cdot 10^{-3}$	10^{-3}	60^{-3}	1	$35,313 \cdot 10^{-3}$	$219,97 \cdot 10^{-3}$	$264,17 \cdot 10^{-3}$
ft^3/min	$0,47195 \cdot 10^{-3}$	0,47195	$0,47195 \cdot 10^3$	1,6990	$28,317 \cdot 10^{-3}$	$1,6990 \cdot 10^3$	28,317	1	6,2288	7,4804
UK gallon/min	$75,768 \cdot 10^{-6}$	$75,768^{-3}$	75,768	0,27276	$4,5461 \cdot 10^{-3}$	272,76	4,5461	0,16054	1	1,2009
US gallon/min	$63,090 \cdot 10^{-6}$	$63,090 \cdot 10^{-3}$	63,090	0,22712	$3,7854 \cdot 10^{-3}$	227,12	3,7854	0,13368	0,83266	1

TABLE 8 - RECOMMENDED FLOW RATE

Maximum recommended flow rate in Nl/min for pneumatic circuit piping. Flow rate values are calculated as follows:
- pipes Ø 2 to Ø 12 with a pressure drop equal to 0.3% of operating pressure per metre of pipe.
- pipes Ø 15 to Ø 40 with a pressure drop equal to 0.15% of the operating pressure per metre of pipe.

Inside diameter in mm - Nominal diameter in gas inches

Pressure bar	Ø 2	Ø 4	1/8'' Ø 6	1/4'' Ø 8	3/8'' Ø 10	Ø 12	1/2'' Ø 15	3/4'' Ø 20	1'' Ø 25	1 1/4'' Ø 32	1 1/2'' Ø 40
2	3,5	19	53	110	190	300	370	750	1350	2500	4300
4	6,2	35	97	200	350	550	700	1400	2400	4500	7800
6	9	50	140	290	500	800	1000	2000	3500	6500	11500
8	11,8	66	185	380	660	1050	1300	2600	4500	8500	15000
10	14,5	82	230	470	820	1300	1600	3250	5700	10500	18500

TABLE 9 - INDICATIVE AIR CONSUMPTION FOR DIFFERENT TYPES OF EQUIPMENT

Type of equipment	Consumption at full load Nl/min.	Type of equipment	Consumption at full load Nl/min.
6 mm Ø drill	300	Bench tamper	350
12 mm Ø drill	500	8 kg tamper	700
20 mm Ø drill	1150	10 mm Ø riveting machine	450
45 mm Ø drill	1650	20 mm Ø riveting machine	1000
M6 screwdriver or bolt screwer	300	4 kg chisel	380
M10 screwdriver or bolt screwer	400	6 kg chisel	500
M16 impulse screwer	1150	Small paint-spray gun	160
M25 impulse screwer	1650	Industrial paint-spray gun	500
1" Ø wheel grinder	350	1 mm Ø cleaning bellows	65
6" Ø disk grinder	1500	2 mm Ø cleaning bellows	250
9" Ø disk grinder	2100	5 mm Ø nozzle sandblasting machine	1600
Polishing machine	1200	8 mm Ø nozzle sandblasting machine	4200
1000 kg hoist	2150	Plaster sprayer	500
Spot welder	300	Heavy-duty concrete vibrator	2500
		35 kg concrete breaker	1650
		18 kg breaker	1850
		30 kg breaker	2850

DEGREE OF PROTECTION

Norma EN 60529 e CEI 529

IP 6 5

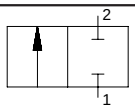
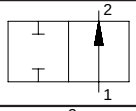
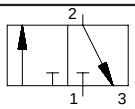
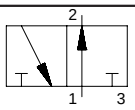
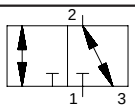
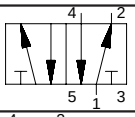
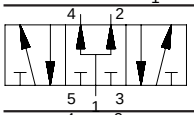
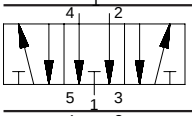
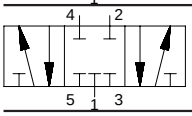
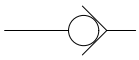
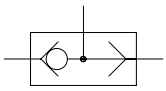
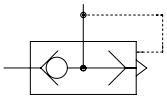
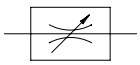
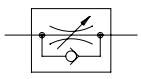
DEGREE OF PROTECTION AGAINST THE PENETRATION OF LIQUIDS

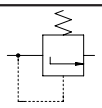
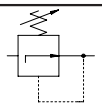
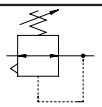
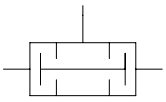
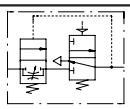
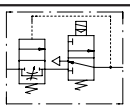
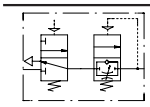
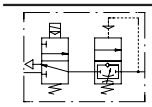
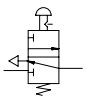
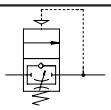
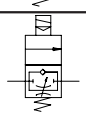
DEGREE OF PROTECTION AGAINST THE PENETRATION OF FOREIGN BODIES COMING INTO CONTACT WITH LIVE PARTS.

1st No.	DESCRIPTION	2nd No.	DESCRIPTION
0	Not protected	0	Not protected
1	Protected against solid bodies greater than ∅ 50 mm	1	Protected against water falling vertically (condensate)
2	Protected against solid bodies greater than ∅ 12 mm	2	Protected against drops of water falling up to 15° off the vertical
3	Protected against solid bodies greater than ∅ 2.5 mm	3	Protected against rain water up to 60° off the vertical
4	Protected against solid bodies greater than ∅ 1 mm	4	Protected against sprays of water from any direction.
5	Protected against dust	5	Protected against jets of water fired from any direction
6	Totally protected against dust	6	Protected against sea waves or the like
		7	Protected against the effects of immersion

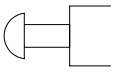
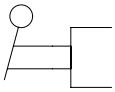
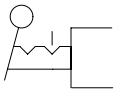
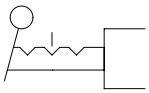
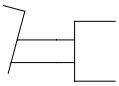
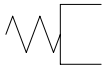
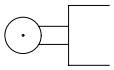
PNEUMATIC SYMBOLS

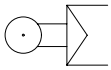
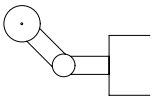
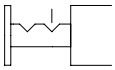
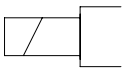
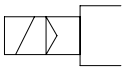
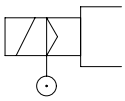
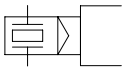
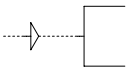
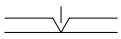
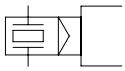
DISTRIBUTION AND REGULATION

	2-way/ 2 positions valve(2/2) normally closed
	2-way/ 2 positions valve(2/2) normally open
	3-way/ 2 positions valve(3/2) normally closed
	3-way/ 2 positions valve(3/2) normally open
	3-way/ 2 positions valve(3/2) NC-NO
	5-way /2 positions valve(5/2)
	5-way/ 3 positions valve(5/3) pressurized centres
	5-way/ 3 positions valve(5/3) open centres
	5-way /3 positions valve(5/3) closed centres
	Unidirectional valve
	Check valve with spring
	Circuit selector valve (OR element)
	Quick-release valve
	Flow regulator with variable choke
	Unidirectional flow regulator with variable throat

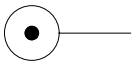
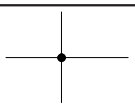
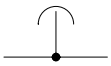
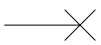
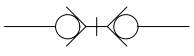
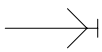
	Sequence valve
	Pressure reducer without blowoff valve
	Pressure reducer with blowoff relief valve
	Pressure piloted reducer with blowoff relief valve
	Shutoff valve
	Dual pressure valve (AND element)
	Progressive pneumatic starter (APR)
	Progressive solenoid starter (APR)
	Progressive pneumatic starter (APR) (SK 100 only)
	Progressive solenoid starter (APR) (SK 100 only)
	3-way shutoff valve (V3V) with lockable control
	3-way shutoff valve (V3V) with pneumatic control
	3-way shutoff valve (V3V) with solenoid control
	2/2 progressive pneumatic valve (VAP) (SK 100 only)
	2/2 progressive solenoid valve (VAP) (SK 100 only)

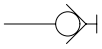
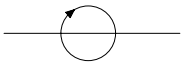
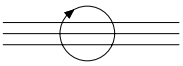
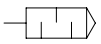
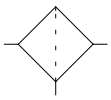
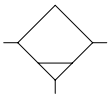
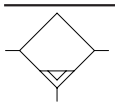
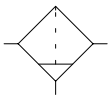
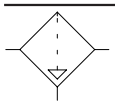
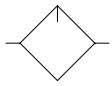
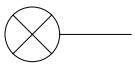
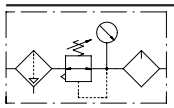
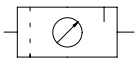
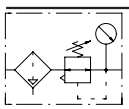
CONTROLS

	Manual control
	Manual pushbutton control
	Manual lever control
	Manual control with 2-position lever
	Manual control with 3-position lever
	Manual pedal-operated control
	Mechanical control with ferrule
	Mechanical control with sensitive ferrule
	Mechanical control with spring
	Mechanical control with roller lever

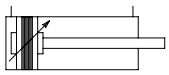
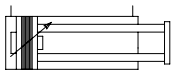
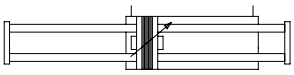
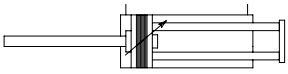
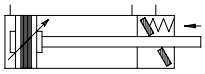
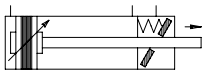
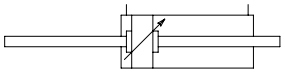
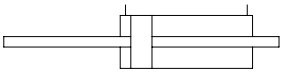
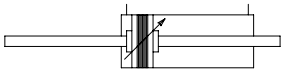
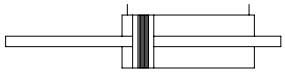
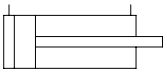
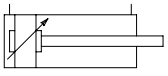
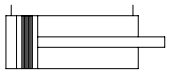
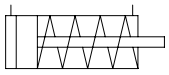
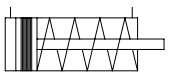
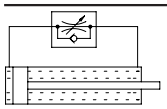
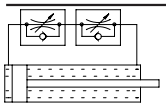
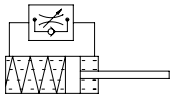
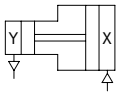
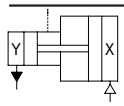
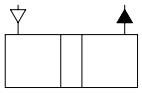
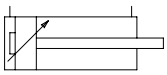
	Mechanical control with sensitive roller lever
	Mechanical control with unidirectional roller lever
	Mechanical control with drawer
	Electrical control
	Solenoid control
	Solenoid, pilot-assisted control
	Piezoelectric control
	Pneumatic control
	Mechanical stop
	Release device

TRANSMISSION AND PREPARATION

	Pneumatic pressure source
	Operating line
	Pilot line
	Discharge line
	Flexible line connection
	Electric cable
	Line connection (welding, screwing)
	Line connection (welding, screwing)
	Crossing of unconnected lines
	Discharge point
	Discharge hole without connection
	Discharge hole with connection
	Power pick-up point with closing cap
	Power pick-up point with port
	Quick-fit coupling without unidirectional valve
	Quick-fit coupling with unidirectional valve
	Quick-fit coupling (de-coupling with open terminal section)

	Quick-fit (de-coupling with closed terminal section)
	1-way swivel coupling
	3-way swivel coupling
	Silencer
	Tank
	Filter
	Condensate separator with manual discharge
	Condensate separator with automatic discharge
	Filter with condensate separator with manual discharge
	Filter with condensate separator with automatic discharge
	Lubricator
	Pressure gauge
	Pressure switch
	Optical tester
	FRL+pressure gauge maintenance unit
	FRL+pressure gauge simplified maintenance unit
	FR+pressure gauge maintenance unit

TRANSFORMATION

	DE magnetic cylinder with adjustable bilateral cushioning
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning
	DE magnetic twin-rod cylinder with adjustable bilateral cushioning-single through rod
	DE magnetic cylinder with adjustable bilateral cushioning + DZB mechanical lock
	DE magnetic cylinder with adjustable bilateral cushioning + DZBA mechanical lock
	DE cylinder with adjustable bilateral cushioning, through-rod
	DE through-rod cylinder
	DE magnetic cylinder with adjustable bilateral cushioning, through-rod
	DE magnetic cylinder, through-rod
	DE cylinder
	DE cylinder with cushioning
	DE magnetic cylinder
	SE cylinder
	SE magnetic cylinder
	Hydraulic brake with adjustment in one direction only
	Hydraulic brake with adjustment in both directions
	Cushion
	Pressure multiplier for fluids with identical characteristics
	Pressure multiplier for fluids with different characteristics
	Pneumatic/hydraulic transducer
	Constant volume compressor
	Constant volume pneumatic motor, unidirectional flow
	Constant volume pneumatic motor, bidirectional flow
	Variable volume pneumatic motor, unidirectional flow
	Variable volume pneumatic motor, bi-directional flow
	Rotary pneumatic motor
	Cylinder with adjustable single cushioning

Cod. 9910204 - N. 2500 - IM09 - 09/2006
Stampa: Euroteam (Bs)