

Standardized valve series



Series MN-06

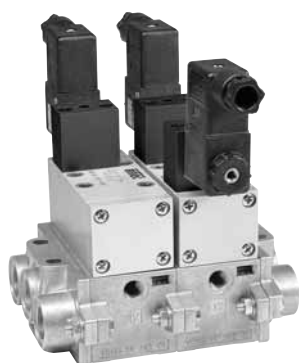
3/2-, 5/2- and 5/3-way
according to **NAMUR**,
750 NI/min (0.762 Cv)

Technical data	5.020
Dimensions	5.022
Accessories	5.024

Series KN-05

3/2-, 5/2- and 5/3-way
according to **NAMUR**,
900 NI/min (0.915 Cv)

Technical data	5.040
Dimensions	5.042
Accessories	5.044



Series MI-01

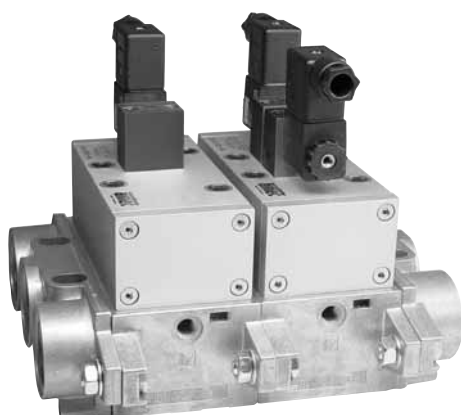
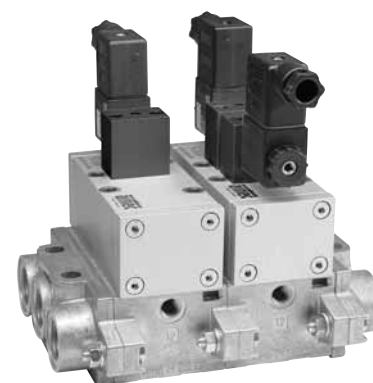
5/2- and 5/3-way
according to **ISO 5599/1**,
1700 NI/min (1.728 Cv)

Technical data	5.060
Dimensions	5.061
Accessories	5.062

Series MI-02

5/2- and 5/3-way
according to **ISO 5599/1**,
2020 NI/min (2.052 Cv)

Technical data	5.081
Dimensions	5.082
Accessories	5.083



Series MI-03

5/2- and 5/3-way
according to **ISO 5599/1**,
4150 NI/min (4.217 Cv)

Technical data	5.100
Dimensions	5.101
Accessories	5.102

NAMUR

ISO

Technical data for series

MN-06



Order code

MN-06-310-HN-142

Series and function

Coil options

Standard coil¹⁾

(with plug socket 28-ST-01)

141 = 12 V DC, 4.2 W
142 = 24 V DC, 4.2 W
152 = 24 V AC, 7/4 VA
156 = 115 V AC, 7/4 VA
157 = 230 V AC, 7/4 VA
161 = 12 V DC, 2.2 W²⁾
162 = 24 V DC, 2.2 W²⁾

Coils with M12 connector and LED

O42 = 24 V DC, 4.8 W

O62 = 24 V DC, 2.5 W²⁾

Coils with higher humidity resistance

742 = 24 V DC, 4.2 W without plug socket

757 = 230 V AC, 7/4 VA without plug socket

842 = 24 V DC, 4.2 W (with plug socket 28-ST-01)

857 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)

Without coil and plug socket

570 = Power consumption 4.2 W, 7/4 VA

560 = Power consumption 2.2 W²⁾

¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.024.

Design and function

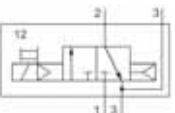
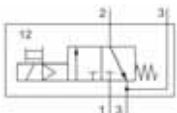
Spool valve for single acting actuators switched by an electrical signal.

The exhaust air is guided into the spring chamber of the actuator. The standard coil, plug socket (see page 5.024), locating pin, screws and seals are included.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1 or 23-SP-012-1 (see page 5.120).

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number	MN-06-310-HN	MN-06-311-HN
Please complete according to order code.		
Function	 <p>3/2-way, normally closed single solenoid, air spring return</p>	 <p>3/2-way, normally closed single solenoid, spring return</p>
Connection	G 1/4 at 1 and 3; flange to NAMUR at 2	
Nominal size	6 mm	
Flow rate	750 NI/min (0.762 Cv)	
Pressure range	2 ... 10 bar ²⁾ (29 ... 145 psi) ²⁾	3 ... 10 bar ²⁾ (43 ... 145 psi) ²⁾
Actuating force at 6 bar	on 13 ms off 16 ms	
Temperature range	- 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)	
Materials	Body: Al (anodized), Seals: NBR and POM, Inner parts: Al, stainless steel, brass	
Degree of protection	IP 65 according to EN 60529	
Weight	0.320 kg (0.705 lb.)	

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

Standardized valve series
5/2- and 5/3-way
acc. to NAMUR, 750 NI/min (0.762 Cv)



Technical data for series

MN-06



Order code

MN-06-510-HN-142

Series and function

Coil options

Standard coil ¹⁾

(with plug socket 28-ST-01)

- 141** = 12 V DC, 4.2 W
- 142** = 24 V DC, 4.2 W
- 152** = 24 V AC, 7/4 VA
- 156** = 115 V AC, 7/4 VA
- 157** = 230 V AC, 7/4 VA
- 161** = 12 V DC, 2.2 W²⁾
- 162** = 24 V DC, 2.2 W²⁾

Without coil and plug socket

- 570** = Power consumption 4.2 W, 7/4 VA
- 560** = Power consumption 2.2 W²⁾

Coils with M12 connector and LED

- 042** = 24 V DC, 4.8 W
- 062** = 24 V DC, 2.5 W²⁾

Coils with higher humidity resistance

- 742** = 24 V DC, 4.2 W without plug socket
- 757** = 230 V AC, 7/4 VA without plug socket
- 842** = 24 V DC, 4.2 W (with plug socket 28-ST-01)
- 857** = 230 V AC, 7/4 VA (with plug socket 28-ST-01)

¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.024.

Design and function

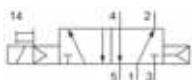


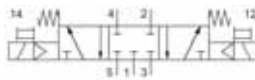
Spool valve for double acting actuators switched by an electrical signal.

The standard coil, plug socket (see page 5.024), locating pin, screws and seals are included.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1 or 23-SP-012-1 (see page 5.120).

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number <small>Please complete according to order code.</small>	MN-06-510-HN	MN-06-511-HN	MN-06-520-HN	MN-06-530-HN
Function	 5/2-way air spring return	 5/2-way spring return	 5/2-way double solenoid	 5/3-way center position closed
Connection	G 1/4 at 1, 3, 5; flange to NAMUR at 2 and 4			
Nominal size	6 mm			
Flow rate	750 NI/min (0.762 Cv)			650 NI/min (0.661 Cv)
Pressure range	2 ... 10 bar ²⁾ (29 ... 145 psi)	3 ... 10 bar ²⁾ (43 ... 145 psi)	2 ... 10 bar ²⁾ (29 ... 145 psi)	3 ... 10 bar ²⁾ (43 ... 145 psi)
Actuating force at 6 bar	on 13 ms off 16 ms		12 ms	on 13 ms off 15 ms
Temperature range	- 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)			
Materials	Body: Al (anodized), Seals: NBR and POM, Inner parts: Al, stainless steel, brass			
Degree of protection	IP 65 according to EN 60529			
Weight	0.320 kg (0.705 lb.)		0.460 kg (1.014 lbs.)	

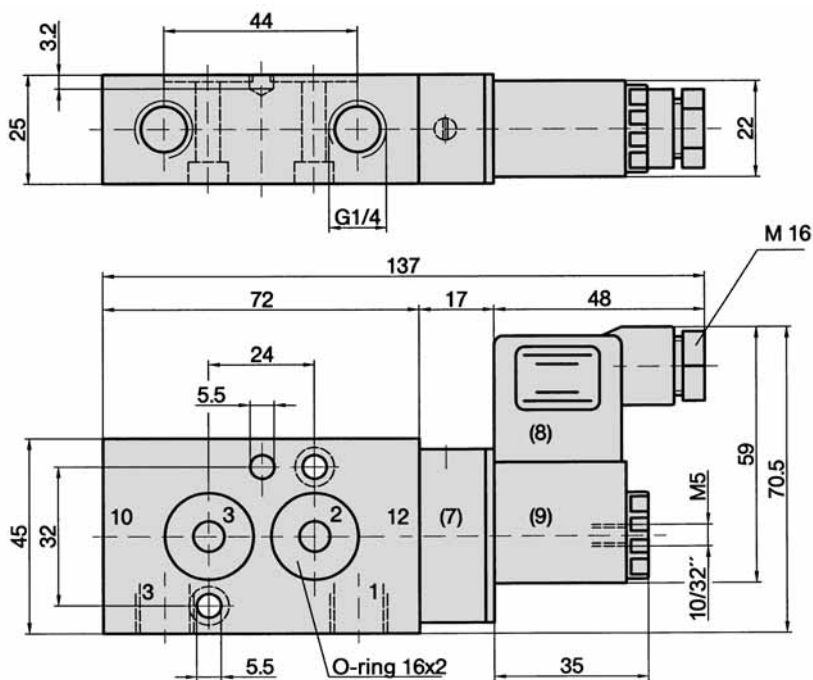
²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

Dimensions for series

MN-06

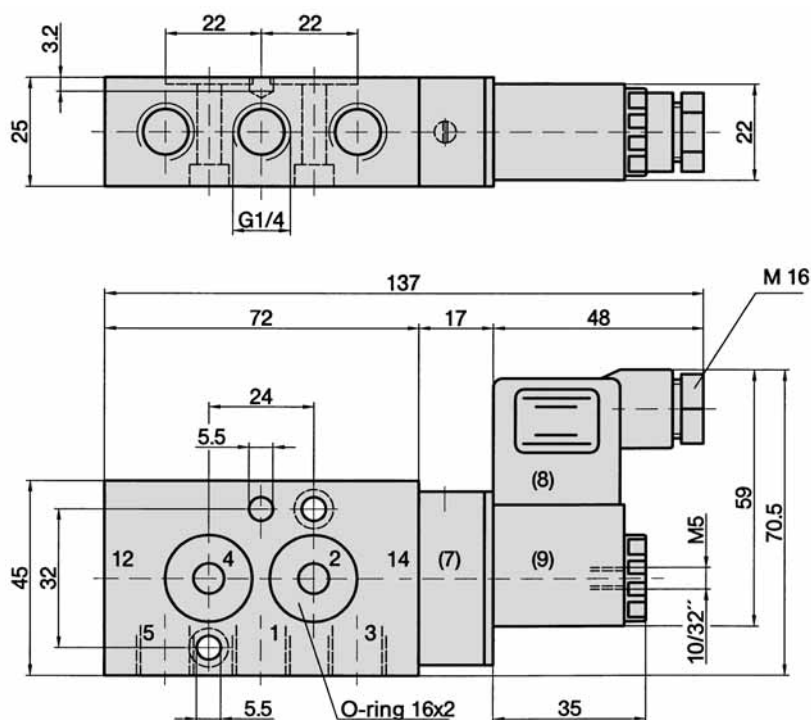
MN-06-310-HN, MN-06-311-HN

- 1 = pressure inlet
- 2 = outlet
- 3 = exhaust
- (7) = manual override (detent)
can be repositioned by 180°
- (8) = plug socket can be
repositioned by 180°
- (9) = solenoid coil can be
repositioned 4 x 90°

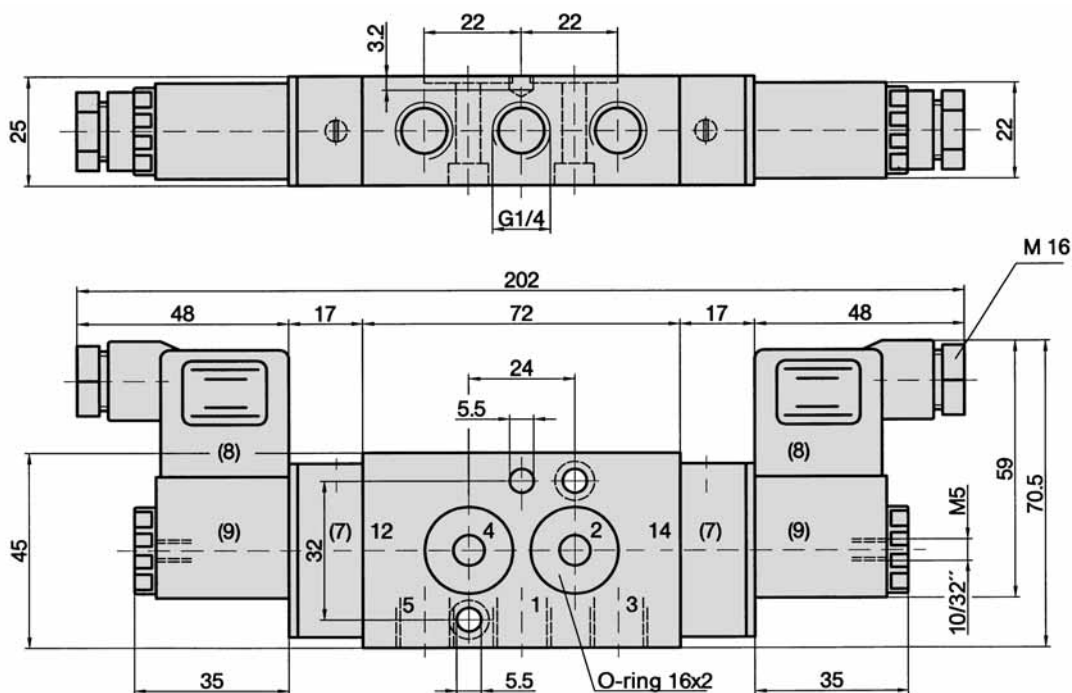


MN-06-510-HN, MN-06-511-HN

- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
can be repositioned by 180°
- (8) = plug socket can be
repositioned by 180°
- (9) = solenoid coil can be
repositioned 4 x 90°



MN-06



- (7) = manual override (detent) can be repositioned by 180°
- (8) = plug socket can be repositioned by 180°
- (9) = solenoid coil can be repositioned 4 x 90°

Accessories for series

MN-06

Solenoid coils, actuators



Standard coil
23-SP-011-...
page 4.280



Coil with 2.2 W
power consumption
23-SP-012-...
page 4.280



Coil with M-12 plug
connection, 4.8 W, LED
and circuit protection
23-SP-011-5-O12
page 4.280



Coil with M-12 plug
connection, 2.5 W, LED
and circuit protection
23-SP-012-5-O32
page 4.280



Valves with explosion
proof actuator see
chapter 12.



Standard
actuator
23-R-011



Low power
actuator
23-R-012

Plug sockets



Standard plug socket
28-ST-01
page 4.281



Plug socket with LED
28-ST-04-...
page 4.281



Plug socket with LED
and circuit protection
28-ST-06-...
page 4.281



Plug socket with LED,
circuit protection and cable
28-ST-06-K3-...
page 4.281

User information

Low power consumption coils (2.2 W or 2.5 W) are for pressures up to 8 bar (116 psi) only. Valve actuator 23-R-012 is required. The actuator 23-R-012 is nickel plated. Make sure that the coils with the right power consumption are used.

When using explosion proof coils the dimensions of the corresponding valve change.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1-... or 23-SP-012-1-... (see page 5.120).

The following types are available on request

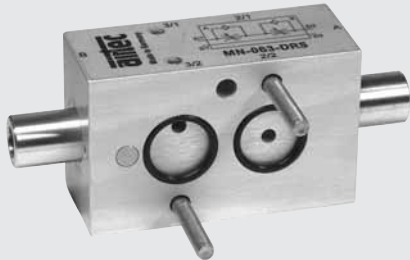
Coils and sockets with contacts according to DIN EN 175301-803 type B (U-form).

Plug sockets with molded cable.

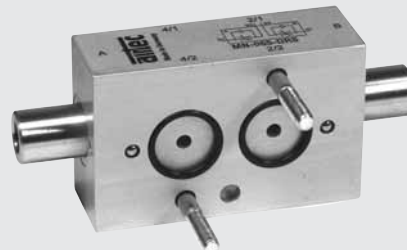
Accessories for series

MN-06

Speed regulation plates



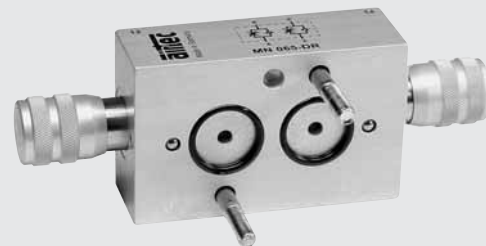
Speed regulator plate for
single acting actuators
MN-063-DRS
page 5.026



Speed regulator plate for
double acting actuators
MN-065-DRS
page 5.026



Speed regulator plate for
single acting actuators
MN-063-DR
page 5.027



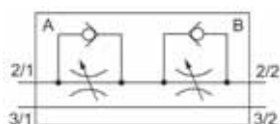
Speed regulator plate for
double acting actuators
MN-065-DR
page 5.027

Other single elements: **20-MN-06-01**

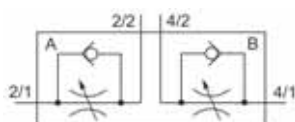
NAMUR seals disc to convert a 5/2-way valve into a 3/2-way function.

Technical data and dimensions for series

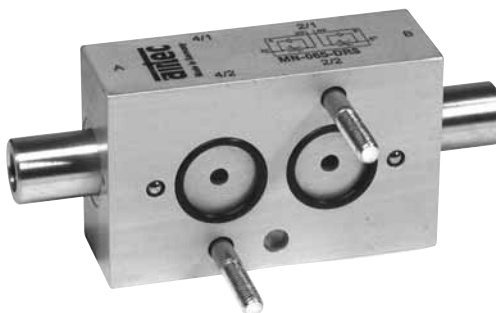
MN-063-DRS, MN-065-DRS



MN-063-DRS



MN-065-DRS



Design and function

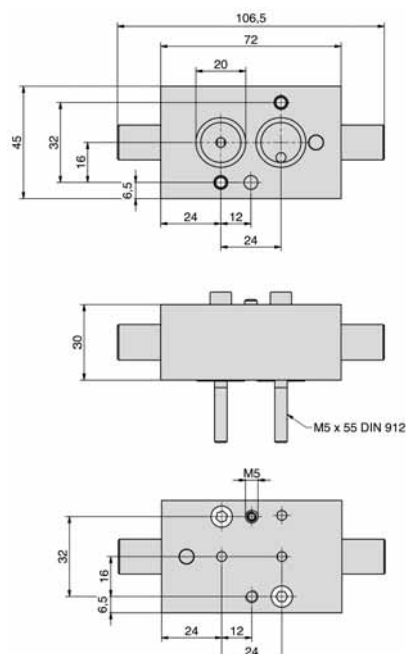
The locating pin, screws and seals are included.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

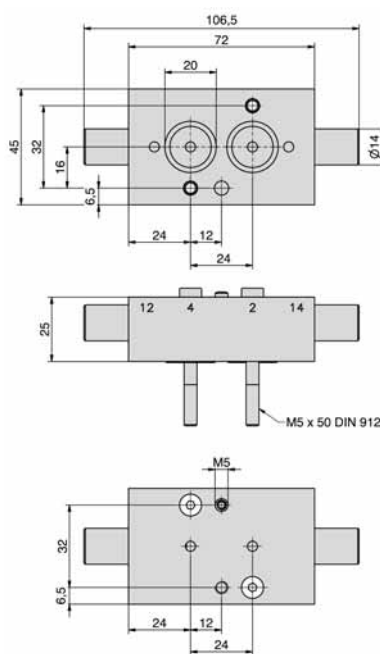
The unit can only be adjusted with a screw driver.

Order number	MN-063-DRS	MN-065-DRS
Function	Speed regulation plate for single acting actuators	Speed regulation plate for double acting actuators
Nominal size	4 mm	
Nominal flow controlled flow direction free flow direction	0 ... 180 NI/min (0 ... 0.183 Cv)	0 ... 240 NI/min (0 ... 0.244 Cv)
	235 NI/min (0.239 Cv)	250 NI/min (0.254 Cv)
Temperature range	- 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)	
Materials	Body: Al, Inner parts: brass, Seals: NBR and PU	
Weight	0.330 kg (0.727 lb.)	0.285 kg (0.628 lb.)

MN-063-DRS

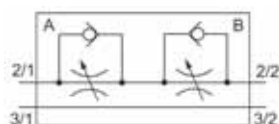


MN-065-DRS

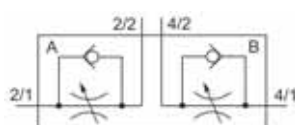


Technical data and dimensions for series

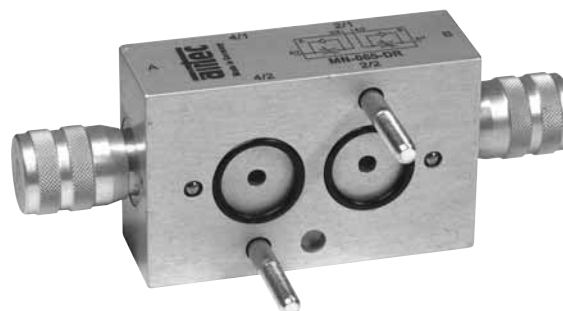
MN-063-DR, MN-065-DR



MN-063-DR



MN-065-DR



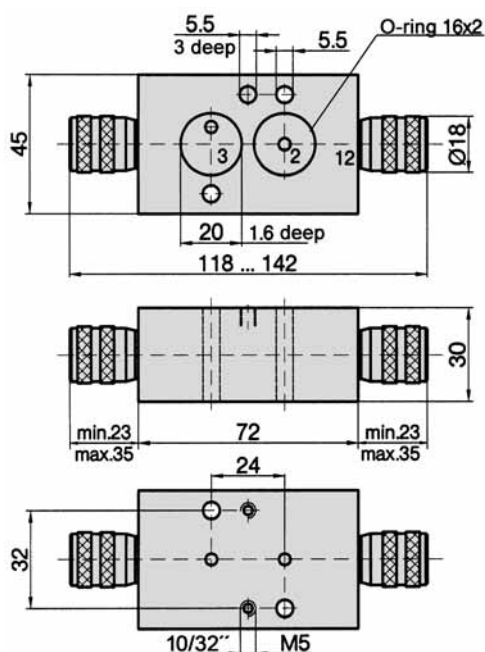
Design and function

The locating pin, screws and seals are included.

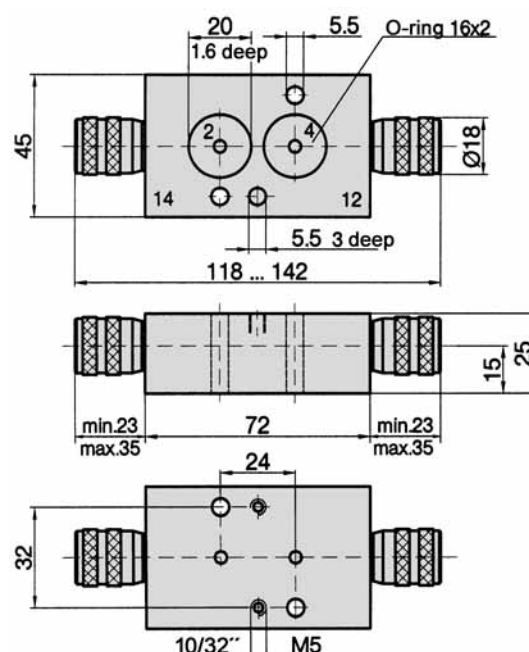
Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number	MN-063-DR	MN-065-DR
Function	Speed regulation plate for single acting actuators	Speed regulation plate for double acting actuators
Nominal size	4 mm	
Nominal flow	controlled flow direction	0 ... 180 NI/min (0 ... 0.183 Cv)
	free flow direction	235 NI/min (0.239 Cv)
Nominal flow	controlled flow direction	0 ... 240 NI/min (0 ... 0.244 Cv)
	free flow direction	250 NI/min (0.254 Cv)
Temperature range	- 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)	
Materials	Body: Al, Inner parts: brass, Seals: NBR and PU	
Weight	0.350 kg (0.772 lb.)	0.305 kg (0.672 lb.)

MN-063-DR



MN-065-DR



Technical data for series

KN-05



Order code

KN-05-310-HN-142

Series and function

Coil options

Standard coil ¹⁾

(with plug socket 28-ST-01)

141 = 12 V DC, 4.2 W

142 = 24 V DC, 4.2 W

152 = 24 V AC, 7/4 VA

156 = 115 V AC, 7/4 VA

157 = 230 V AC, 7/4 VA

161 = 12 V DC, 2.2 W ²⁾

162 = 24 V DC, 2.2 W ²⁾

Coils with M12 connector and LED

O42 = 24 V DC, 4.8 W

O62 = 24 V DC, 2.5 W ²⁾

Coils with higher humidity resistance

742 = 24 V DC, 4.2 W without plug socket

757 = 230 V AC, 7/4 VA without plug socket

842 = 24 V DC, 4.2 W (with plug socket 28-ST-01)

857 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)

Without coil and plug socket

570 = Power consumption 4.2 W, 7/4 VA

560 = Power consumption 2.2 W ²⁾

¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.044.

In high humidity environments please use the KN-55-... series with special coils and seals.

All dimensions are equal to the KN-05 series.

Information about electrical datas see page 4.280.

Design and function

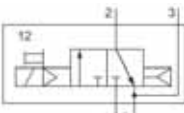
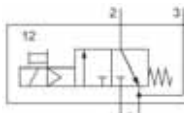
Spool valve for single acting actuators switched by an electrical signal.

The exhaust air is guided into the spring chamber of the actuator. The standard coil, plug socket (see page 5.044), locating pin, screws and seals are included.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1 or 23-SP-012-1 (see page 5.120).

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number	KN-05-310-HN	KN-55-310-HN	KN-05-311-HN	KN-55-311-HN
Please complete according to order code.				
Function	 <p>3/2-way, normally closed single solenoid, air spring return</p>		 <p>3/2-way, normally closed single solenoid, spring return</p>	
Connection	G 1/4 at 1 and 3; flange to NAMUR at 2 and 3			
Nominal size	6 mm			
Flow rate	780 NI/min (0.792 Cv)			
Pressure range	3 ... 10 bar (8 bar at 2.2 W); 43 ... 145 psi (116 psi at 2.2 W)			
Actuating force at 6 bar	on 16 ms off 18 ms		on 13 ms off 16 ms	
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)			
Materials	Body: Al (anodized), Seals: NBR, Inner parts: Al, stainless steel, brass			
Degree of protection	IP 65 according to EN 60529			
Weight	0.320 kg (0.705 lb.)			

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

Standardized valve series
5/2- and 5/3-way
acc. to NAMUR, 900 NI/min (0.915 Cv)



Technical data for series

KN-05



Order code

KN-05-510-HN-142

Series and function

Coil options

Standard coil¹⁾ (with plug socket 28-ST-01) 141 = 12 V DC, 4.2 W 142 = 24 V DC, 4.2 W 152 = 24 V AC, 7/4 VA 156 = 115 V AC, 7/4 VA 157 = 230 V AC, 7/4 VA 161 = 12 V DC, 2.2 W ²⁾ 162 = 24 V DC, 2.2 W ²⁾ Without coil and plug socket 570 = Power consumption 4.2 W, 7/4 VA 560 = Power consumption 2.2 W ²⁾	Coils with M12 connector and LED 042 = 24 V DC, 4.8 W 062 = 24 V DC, 2.5 W ²⁾ Coils with higher humidity resistance 742 = 24 V DC, 4.2 W without plug socket 757 = 230 V AC, 7/4 VA without plug socket 842 = 24 V DC, 4.2 W (with plug socket 28-ST-01) 857 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)
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¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.044.

In high humidity environments please use the KN-55-... series with special coils and seals.

All dimensions are equal to the KN-05 series.

Information about electrical datas see page 4.280.

Design and function

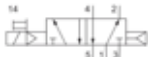
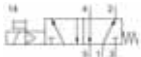

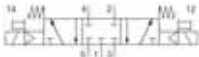

Spool valve for double acting actuators switched by an electrical signal.

The standard coil, plug socket (see page 5.044), locating pin, screws and seals are included.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1 or 23-SP-012-1 (see page 5.120).

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number Please complete according to order code.	KN-05-510-HN KN-05-510-HN	KN-05-511-HN KN-05-511-HN	KN-05-520-HN KN-05-520-HN	KN-05-530-HN KN-05-530-HN	KN-05-533-HN KN-05-533-HN
Function	 5/2-way single solenoid air spring return	 5/2-way single solenoid spring return	 5/2-way double solenoid	 5/3-way center position closed	 5/3-way center position exhausted
Connection	G 1/4 at 1, 3 and 5; flange to NAMUR at 2 and 4				
Nominal size	6 mm				
Flow rate	900 NI/min (0.915 Cv)	800 NI/min (0.813 Cv)	900 NI/min (0.915 Cv)	680 NI/min (0.691 Cv)	
Pressure range	3 ... 10 bar ²⁾ (43 ... 145 psi)		2 ... 10 bar ²⁾ (29 ... 145 psi)	3 ... 10 bar ²⁾ (43 ... 145 psi)	
Actuating force at 6 bar	on 16 ms off 17 ms	on 16 ms off 18 ms	14 ms	on 14 ms off 16 ms	
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)				
Materials	Body: Al (anodized), Seals: NBR, Inner parts: Al, stainless steel, brass				
Degree of protection	IP 65 according to EN 60529				
Weight	0.320 kg (0.705 lb.)		0.440 kg (0.970 lb.)		

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

KN-05

Technical drawing of the 1600 Series Hydraulic Cylinder, showing front and side views with dimensions.

Front View Dimensions:

- Overall length: 139
- Distance from front face to first rod end: 74
- Distance between rod ends: 17
- Distance from second rod end to mounting bracket: 48
- Mounting bracket width: 35
- Mounting bracket height: 59
- Mounting bracket mounting holes: M16
- Mounting bracket mounting holes: M5
- Mounting bracket mounting holes: 10/32"
- Mounting bracket mounting holes: 32
- Mounting bracket mounting holes: 10
- Mounting bracket mounting holes: 2
- Mounting bracket mounting holes: 3
- Mounting bracket mounting holes: 12
- Mounting bracket mounting holes: (7)
- Mounting bracket mounting holes: (8)
- Mounting bracket mounting holes: (9)

Side View Dimensions:

- Overall height: 40
- Distance from front face to first rod end: 32
- Distance between rod ends: 24
- Distance from second rod end to mounting bracket: 5.5
- Mounting bracket width: 22
- Mounting bracket height: 5.5
- Mounting bracket mounting holes: 3 deep
- Mounting bracket mounting holes: 3
- Mounting bracket mounting holes: 1
- Mounting bracket mounting holes: 2
- Mounting bracket mounting holes: 3
- Mounting bracket mounting holes: 12
- Mounting bracket mounting holes: (7)
- Mounting bracket mounting holes: (8)
- Mounting bracket mounting holes: (9)

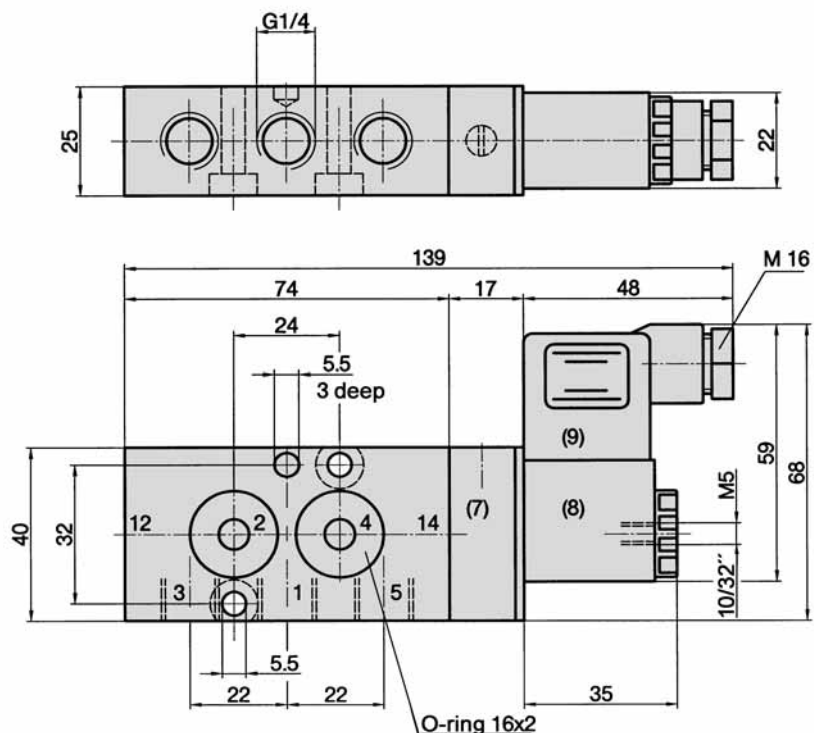
Other Dimensions:

- Overall width: 25
- Mounting bracket width: 22
- Mounting bracket height: 59
- Mounting bracket mounting holes: M16
- Mounting bracket mounting holes: M5
- Mounting bracket mounting holes: 10/32"
- Mounting bracket mounting holes: 32
- Mounting bracket mounting holes: 10
- Mounting bracket mounting holes: 2
- Mounting bracket mounting holes: 3
- Mounting bracket mounting holes: 12
- Mounting bracket mounting holes: (7)
- Mounting bracket mounting holes: (8)
- Mounting bracket mounting holes: (9)

Notes:

- G1/4
- O-ring 16x2

- KN-05-510-HN, KN-05-511-HN, KN-55-510-HN, KN-55-511-HN**

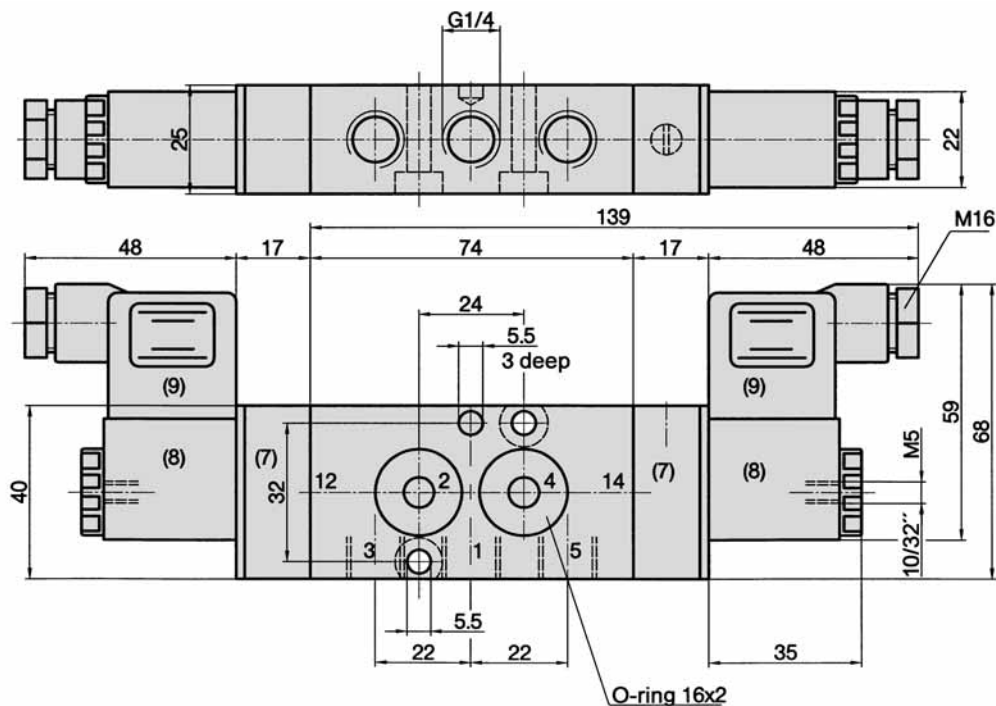


- Subject to change

Dimensions for series

KN-05

KN-05-520-HN, KN-05-530-HN, KN-05-533-HN, KN-55-520-HN, KN-55-530-HN, KN-55-533-HN



1 = pressure inlet
2, 4 = outlets
3, 5 = exhausts

(7) = manual override (detent) can be repositioned by 180°
(8) = solenoid coil can be repositioned by 4 x 90°
(9) = plug socket can be repositioned by 180°

Accessories for series

KN-05

Solenoid coils, actuators



Standard coil
23-SP-011-...
 page 4.280



Coil with 2.2 W
 power consumption
23-SP-012-...
 page 4.280



Coil with M-12 plug
 connection, 4.8 W, LED
 and circuit protection
23-SP-011-5-O12
 page 4.280



Coil with M-12 plug
 connection, 2.5 W, LED
 and circuit protection
23-SP-012-5-O32
 page 4.280



Valves with explosion
 proof actuator see
 chapter 12.



Standard
 actuator
23-R-011



Low power
 actuator
23-R-012

Plug sockets



Standard plug socket
28-ST-01
 page 4.281



Plug socket with LED
28-ST-04-...
 page 4.281



Plug socket with LED
 and circuit protection
28-ST-06-...
 page 4.281



Plug socket with LED,
 circuit protection and cable
28-ST-06-K3-...
 page 4.281

User information

Low power consumption coils (2.2 W or 2.5 W) are for pressures up to 8 bar (116 psi) only. Valve actuator 23-R-012 is required. The actuator 23-R-012 is nickel plated. Make sure that the coils with the right power consumption are used.

When using explosion proof coils the dimensions of the corresponding valve change.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1-... or 23-SP-012-1-... (see page 5.120).

The following types are available on request

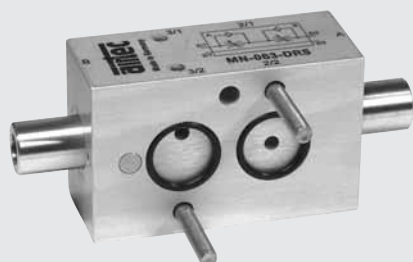
Coils and sockets with contacts according to DIN EN 175301-803 type B (U-form).

Plug sockets with molded cable.

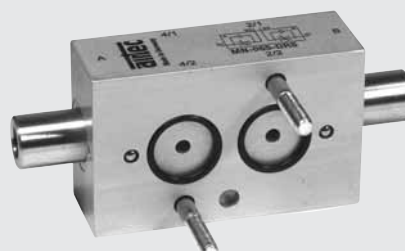
Accessories for series

KN-05

Speed regulation plates



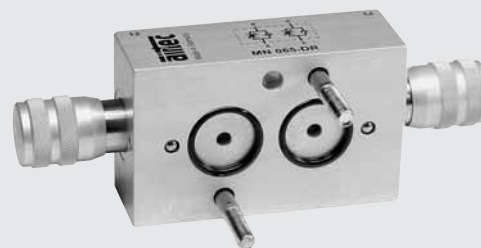
Speed regulator plate for
single acting actuators
MN-063-DRS
page 5.026



Speed regulator plate for
double acting actuators
MN-065-DRS
page 5.026



Speed regulator plate for
single acting actuators
MN-063-DR
page 5.027



Speed regulator plate for
double acting actuators
MN-065-DR
page 5.027

Other single elements: 20-MN-06-01

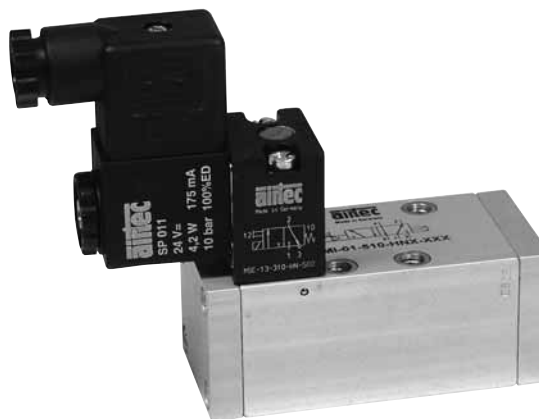
NAMUR seals disc to convert a 5/2-way valve into a 3/2-way function.

Standardized valve series
5/2- and 5/3-way, 1700 NI/min (1.728 Cv)
ISO 5599/1, size 1



Technical data for series

MI-01



Order code

MI-01-510-HN-112

Series and function

Coil options

Standard coil¹⁾
(with plug socket 28-ST-01)

111 = 12 V DC, 4.2 W
112 = 24 V DC, 4.2 W
122 = 24 V AC, 7/4 VA
126 = 115 V AC, 7/4 VA
127 = 230 V AC, 7/4 VA
131 = 12 V DC, 2.2 W²⁾
132 = 24 V DC, 2.2 W²⁾

Coils with M12 connector and LED

O12 = 24 V DC, 4.8 W
O32 = 24 V DC, 2.5 W²⁾

Coils with higher humidity resistance

712 = 24 V DC, 4.2 W without plug socket
727 = 230 V AC, 7/4 VA without plug socket
812 = 24 V DC, 4.2 W (with plug socket 28-ST-01)
827 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)

Without coil and plug socket

500 = Power consumption 4.2 W, 7/4 VA
530 = Power consumption 2.2 W²⁾

¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.102.

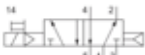
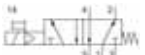
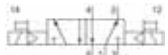
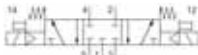
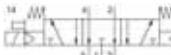
Design and function

Spool valve actuated by an electrical signal.

The standard coil and socket (see page 5.102), mounting screws and seals are included.

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

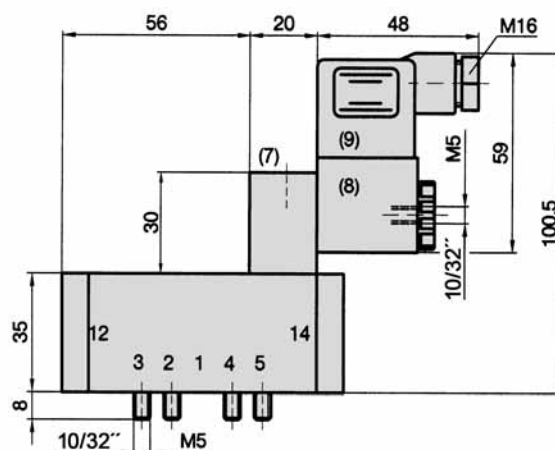
Order number	MI-01-510-HN	MI-01-511-HN	MI-01-520-HN	MI-01-530-HN	MI-01-533-HN
Please complete according to order code.					
Function	5/2-way single solenoid air spring return	5/2-way single solenoid spring return	5/2-way double solenoid	5/3-way center position closed	5/3-way center position exhausted
Nominal size	9 mm				
Flow rate	1700 NI/min (1.728 Cv)			1610 NI/min (1.636 Cv)	
Pressure range	2 ... 10 bar ²⁾ (29 ... 145 psi)	2.5 ... 10 bar ²⁾ (36 ... 145 psi)	2 ... 10 bar ²⁾ (29 ... 145 psi)	3 ... 10 bar ²⁾ (34 ... 145 psi)	
Actuating force at 6 bar	on 16 ms off 22 ms	on 15 ms off 27 ms	13 ms	on 17 ms off 19 ms	
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)				
Materials	Body: Al (anodized), Seals: NBR and POM, Inner parts: Al, stainless steel, brass				
Degree of protection	IP 65 according to EN 60529				
Weight	0.469 kg (1.034 lbs.)	0.480 kg (1.058 lbs.)	0.645 kg (1.422 lbs.)	0.620 kg (1.367 lbs.)	

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

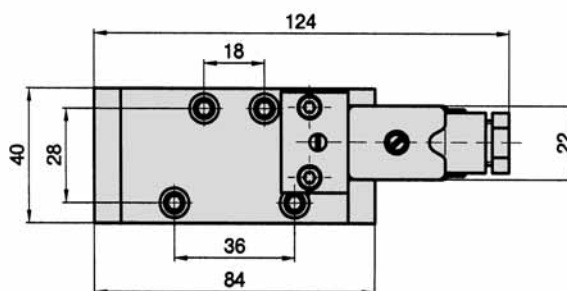
Dimensions for series

MI-01

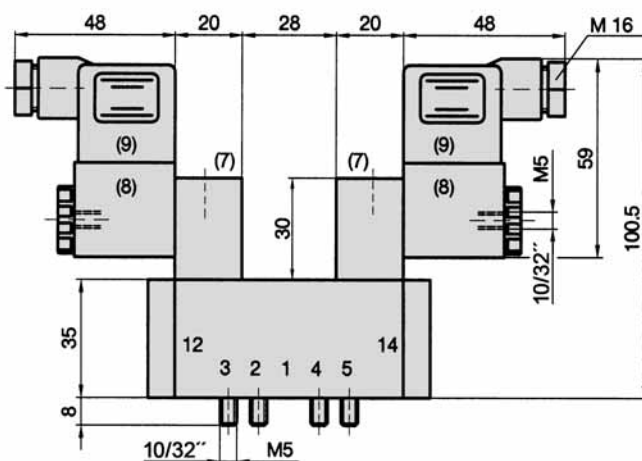
MI-01-510-HN, MI-01-511-HN



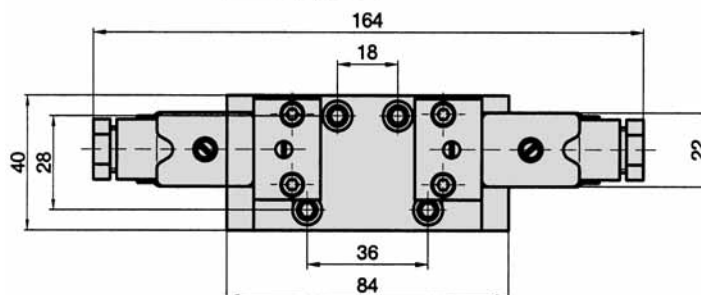
- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = solenoid coil can be repositioned by 2 x 90°
- (9) = plug socket can be repositioned by 180°



MI-01-520-HN, MI-01-530-HN, MI-01-533-HN



- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = solenoid coil can be repositioned by 2 x 90°
- (9) = plug socket can be repositioned by 180°



Standardized valve series
5/2- and 5/3-way, 1700 NI/min (1.728 Cv)
ISO 5599/1, size 1



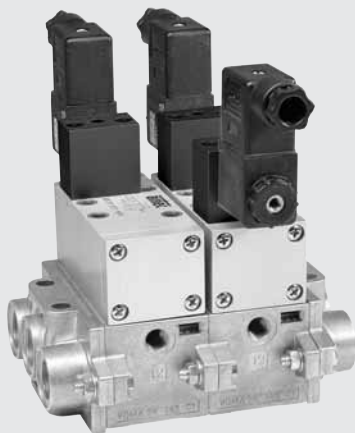
Accessories for series

MI-01

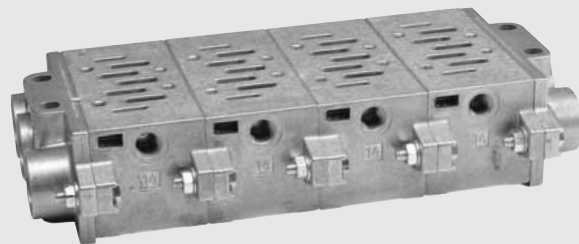
Remark:

Accessories for solenoid coils, actuators and plug sockets see page 5.102.

Sub-base mounting



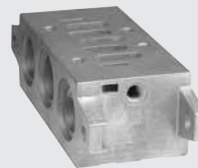
Sub-base will be delivered completely assembled with valves if requested.



Assembled sub-base with "n"-stations.
 ISO 5599/1, VDMA 24345 type C and D
MI-013/n



Single sub-base, ports 1, 3, 5 on side, ports 2 and 4 on bottom
 ISO 5599/1, VDMA 24345 type A
MI-011



Modular element, one station
 ISO 5599/1, VDMA 24345 type C
MI-013



Single sub-base, all ports on bottom
 ISO 5599/1, VDMA 24345 type B
MI-012



Modular element, one station ports 2 and 4 on front
 ISO 5599/1, VDMA 24345
MI-014
 1 pair of end plates (model-no. MI-015) is available on request.



End plate (1 pair)
 ISO 5599/1, VDMA 24345 type D
MI-01/E
 (Only to be used with MI-013)



Blind plate for blank valve station
MI-01-V

Other single elements:

20-I-01-02

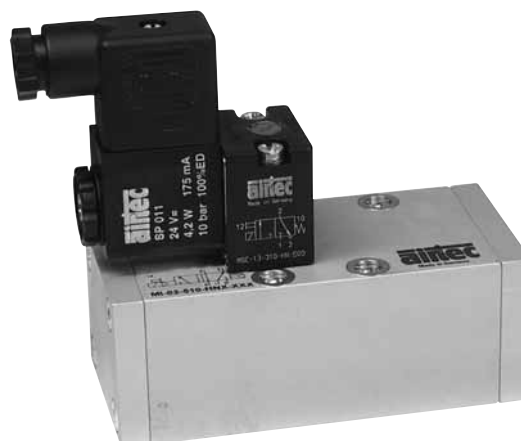
Seal disc for use between valve and sub-base.

Standardized valve series
5/2- and 5/3-way, 2020 NI/min (2.052 Cv)
ISO 5599/1, size 2



Technical data for series

MI-02



Order code

MI-02-510-HN-112

Series and function

Coil options

Standard coil¹⁾ (with plug socket 28-ST-01) 111 = 12 V DC, 4.2 W 112 = 24 V DC, 4.2 W 122 = 24 V AC, 7/4 VA 126 = 115 V AC, 7/4 VA 127 = 230 V AC, 7/4 VA 131 = 12 V DC, 2.2 W ²⁾ 132 = 24 V DC, 2.2 W ²⁾ Without coil and plug socket 500 = Power consumption 4.2 W, 7/4 VA 530 = Power consumption 2.2 W ²⁾	Coils with M12 connector and LED O12 = 24 V DC, 4.8 W O32 = 24 V DC, 2.5 W ²⁾ Coils with higher humidity resistance 712 = 24 V DC, 4.2 W without plug socket 727 = 230 V AC, 7/4 VA without plug socket 812 = 24 V DC, 4.2 W (with plug socket 28-ST-01) 827 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)
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¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.102.

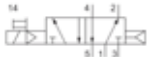
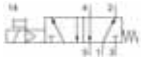

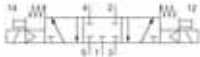

Design and function

Spool valve actuated by an electrical signal.

The standard coil and socket (see page 5.102), mounting screws and seals are included.

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

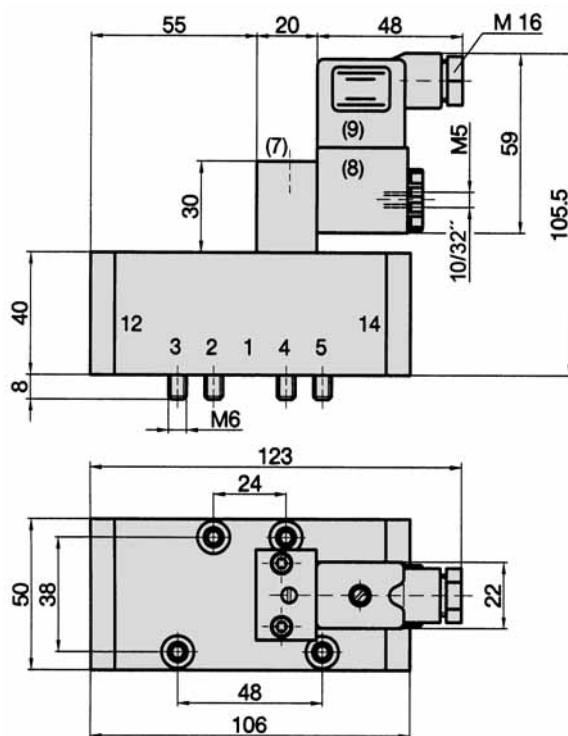
Order number Please complete according to order code.	MI-02-510-HN	MI-02-511-HN	MI-02-520-HN	MI-02-530-HN	MI-02-533-HN
					
Function	5/2-way single solenoid air spring return	5/2-way single solenoid spring return	5/2-way double solenoid	5/3-way center position closed	5/3-way center position exhausted
Nominal size	13 mm				
Flow rate	2020 NI/min (2.052 Cv)				
Pressure range	2 ... 10 bar ²⁾ 29 ... 145 psi			3 ... 10 bar ²⁾ 34 ... 145 psi	
Actuating force at 6 bar	on 29 ms off 52 ms	on 29 ms off 57 ms	17 ms	on 20 ms off 27 ms	
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)				
Materials	Body: Al (anodized), Seals: NBR and POM, Inner parts: Al, stainless steel, brass				
Degree of protection	IP 65 according to EN 60529				
Weight	0.697 kg (1.536 lbs.)	0.708 kg (1.561 lbs.)	0.850 kg (1.874 lbs.)	0.847 kg (1.867 lbs.)	

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

Dimensions for series

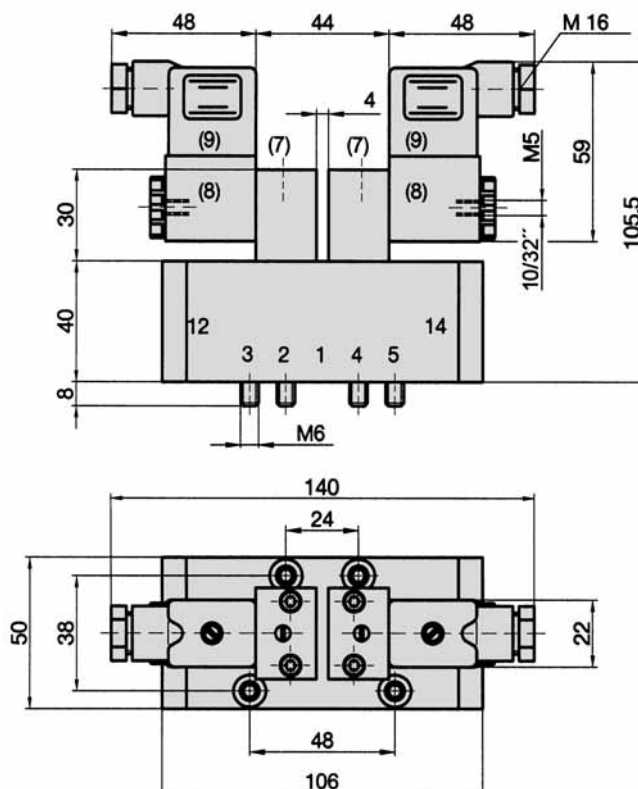
MI-02

MI-02-510-HN, MI-02-511-HN



- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = solenoid coil can be repositioned by 2 x 90°
- (9) = plug socket can be repositioned by 180°

MI-02-520-HN, MI-02-530-HN, MI-02-533-HN



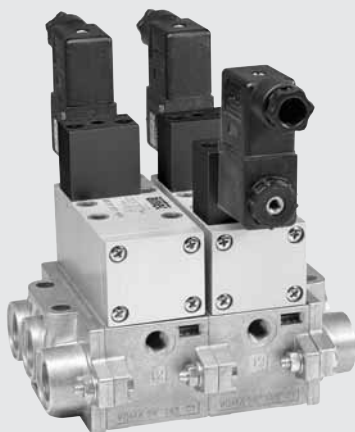
- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = solenoid coil can be repositioned by 2 x 90°
- (9) = plug socket can be repositioned by 180°

Accessories for series

MI-02

Remark:
 Accessories for solenoid coils, actuators and plug sockets see page 5.102.

Sub-base mounting



Sub-base will be delivered completely assembled with valves if requested.



Assembled sub-base with "n"-stations.
 ISO 5599/1, VDMA 24345 type C and D
MI-023/n



Single sub-base, ports 1, 3, 5 on side, ports 2 and 4 on bottom
 ISO 5599/1, VDMA 24345 type A
MI-021



Single sub-base, all ports on bottom
 ISO 5599/1, VDMA 24345 type B,
MI-022



Modular element, one station
 ISO 5599/1, VDMA 24345 type C
MI-023



End plate (1 pair)
 ISO 5599/1, VDMA 24345 type D
MI-02/E



Blind plate for blank valve station
MI-02-V

Other single elements:

20-I-02-02

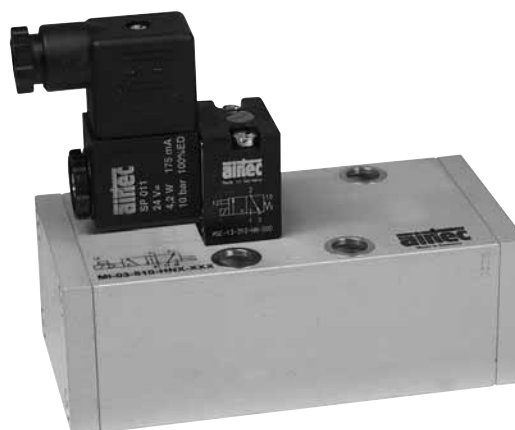
Seal disc for use between valve and sub-base.

Standardized valve series
5/2- and 5/3-way, 4150 NI/min (4.217 Cv)
ISO 5599/1, size 3



Technical data for series

MI-03



Order code

MI-03-510-HN-112

Series and function

Coil options

Standard coil¹⁾ (with plug socket 28-ST-01) 111 = 12 V DC, 4.2 W 112 = 24 V DC, 4.2 W 122 = 24 V AC, 7/4 VA 126 = 115 V AC, 7/4 VA 127 = 230 V AC, 7/4 VA 131 = 12 V DC, 2.2 W ²⁾ 132 = 24 V DC, 2.2 W ²⁾ Without coil and plug socket 500 = Power consumption 4.2 W, 7/4 VA 530 = Power consumption 2.2 W ²⁾	Coils with M12 connector and LED O12 = 24 V DC, 4.8 W O32 = 24 V DC, 2.5 W ²⁾ Coils with higher humidity resistance 712 = 24 V DC, 4.2 W without plug socket 727 = 230 V AC, 7/4 VA without plug socket 812 = 24 V DC, 4.2 W (with plug socket 28-ST-01) 827 = 230 V AC, 7/4 VA (with plug socket 28-ST-01)
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¹⁾ When the valve is requested without the plug socket, the first digit of the order code for standard coils must be changed from 1 to 4. For optional plug sockets see page 5.102.

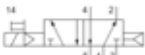
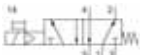
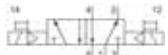
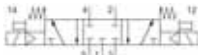
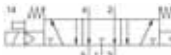
Design and function

Spool valve actuated by an electrical signal.

The standard coil and socket (see page 5.102), mounting screws and seals are included.

Please specify required control voltage when ordering.

Valves of this series are available in explosion proof design in accordance with 94/9/EG (ATEX). For further details see chapter 12 of this catalogue.

Order number Please complete according to order code.	MI-03-510-HN	MI-03-511-HN	MI-03-520-HN	MI-03-530-HN	MI-03-533-HN
					
Function	5/2-way single solenoid air spring return	5/2-way single solenoid spring return	5/2-way double solenoid	5/3-way center position closed	5/3-way center position exhausted
Nominal size	14 mm				
Flow rate	4150 NI/min (4.217 Cv)				
Pressure range	2 ... 10 bar ²⁾ 29 ... 145 psi			3 ... 10 bar ²⁾ 34 ... 145 psi	
Actuating force at 6 bar	on 34 ms off 52 ms	on 32 ms off 57 ms	20 ms	on 22 ms off 55 ms	
Temperature range	– 10 °C ... + 70 °C (+ 14 °F ... + 158 °F)				
Materials	Body: Al (anodized), Seals: NBR and POM, Inner parts: Al, stainless steel, brass				
Degree of protection	IP 65 according to EN 60529				
Weight	1.105 kg (2.436 lbs.)	1.115 kg (2.458 lbs.)	1.287 kg (2.837 lbs.)	1.277 kg (2.815 lbs.)	

²⁾ max. 8 bar (max. 116 psi) at 2.2 W and 2.5 W.

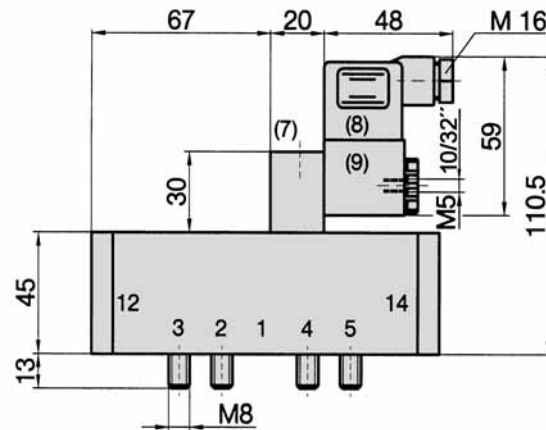
Standardized valve series
5/2- and 5/3-way, 4150 NI/min (4.217 Cv)
ISO 5599/1, size 3



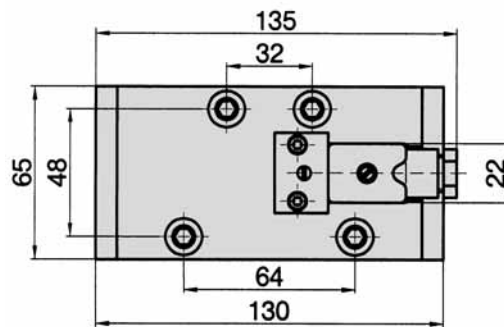
Dimensions for series

MI-03

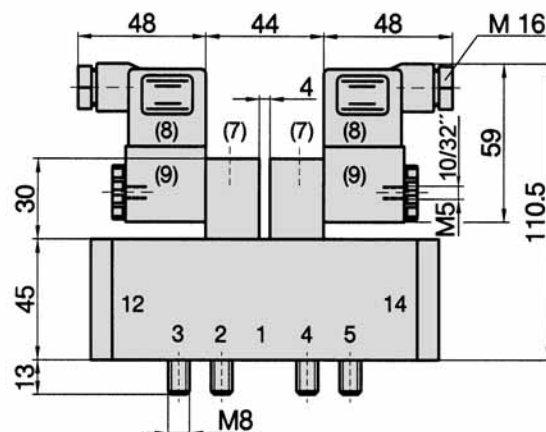
MI-03-510-HN, MI-03-511-HN



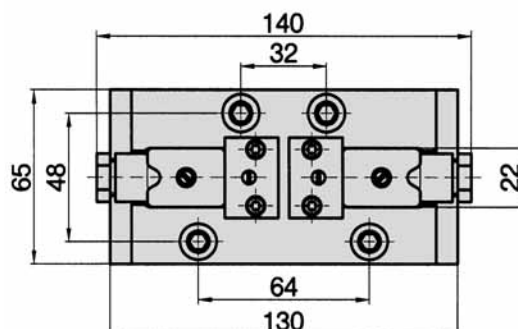
- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = plug socket can be repositioned by 180°
- (9) = solenoid coil can be repositioned by 4 x 90°



MI-03-520-HN, MI-03-530-HN, MI-03-533-HN



- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (7) = manual override (detent)
- (8) = plug socket can be repositioned by 180°
- (9) = solenoid coil can be repositioned by 4 x 90°



Accessories for series

MI-01, MI-02, MI-03

Solenoid coils, actuators



Standard coil
23-SP-011-...
page 4.280



Coil with 2.2 W
power consumption
23-SP-012-...
page 4.280



Coil with M-12 plug
connection, 4.8 W, LED
and circuit protection
23-SP-011-5-O12
page 4.280



Coil with M-12 plug
connection, 2.5 W, LED
and circuit protection
23-SP-012-5-O32
page 4.280



Standard actuator
23-R-013



Low power actuator
23-R-014

Plug sockets



Standard plug socket
28-ST-01
page 4.281



Plug socket with LED
28-ST-04-...
page 4.281



Plug socket with LED
and circuit protection
28-ST-06-...
page 4.281



Plug socket with LED,
circuit protection and cable
28-ST-06-K3-...
page 4.281

User information

Low power consumption coils (2.2 W or 2.5 W) are for pressures up to 8 bar (116 psi) only. Valve actuator 23-R-014 is required. The actuator 23-R-014 is nickel plated. Make sure that the coils with the right power consumption are used.

For outdoor applications or in areas with high humidity use coil 23-SP-011-1-... or 23-SP-012-1-... (see page 5.120).

The following types are available on request

Coils and sockets with contacts according to DIN EN 175301-803 type B (U-form).

Plug sockets with molded cable.

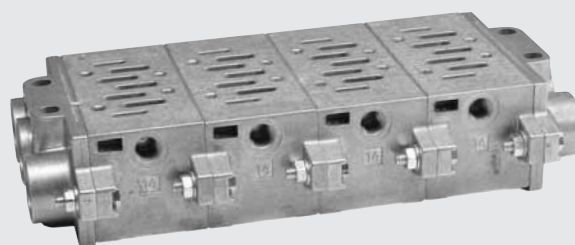
Accessories for series

MI-03

Sub-base mounting



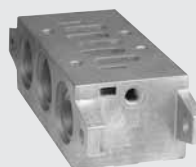
Sub-base will be delivered completely assembled with valves if requested.



Assembled sub-base with "n"-stations.
 ISO 5599/1, VDMA 24345 type C and D
MI-033/n



Single sub-base, ports on side
 ISO 5599/1, VDMA 24345 type A
MI-031



Modular element, one station
 ISO 5599/1, VDMA 24345 type C
MI-033



End plate (1 pair)
 ISO 5599/1, VDMA 24345 type D
MI-03/E



Blind plate for blank
 valve station
MI-03-V

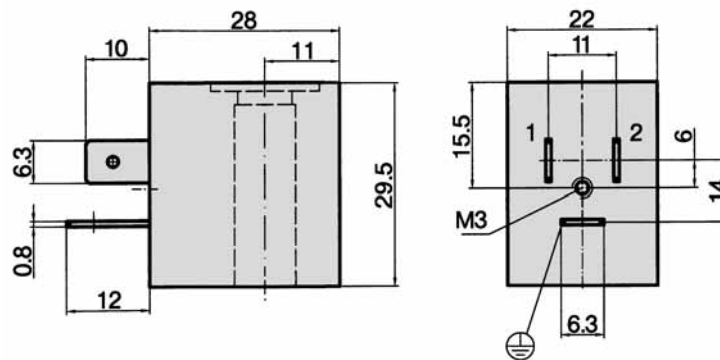
Other single elements:

20-I-03-02

Seal disc for use between valve and sub-base.

Accessories

Solenoid coil with higher humidity resistance



Solenoid coil with pin distance of 11 mm.

This coil is designed for outdoor applications in high humidity environments.

Order number	23-SP-011-1-711	23-SP-011-1-712	23-SP-011-1-722	23-SP-011-1-726	23-SP-011-1-727	23-SP-012-1-732
Standard voltages	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC	24 V DC
Power consumption	4.6 W	4.8 W	7/4 VA			2.5 W
Degree of protection	IP 65 according to VDE 0470 / EN 60529, with connected plugs and additional O-rings					
Duty cycle	100 % continuous operation					
Material	Duroplast					
Temperature range	− 20 °C ... + 50 °C					
Voltage tolerance	± 10 %					

Other voltages on request.