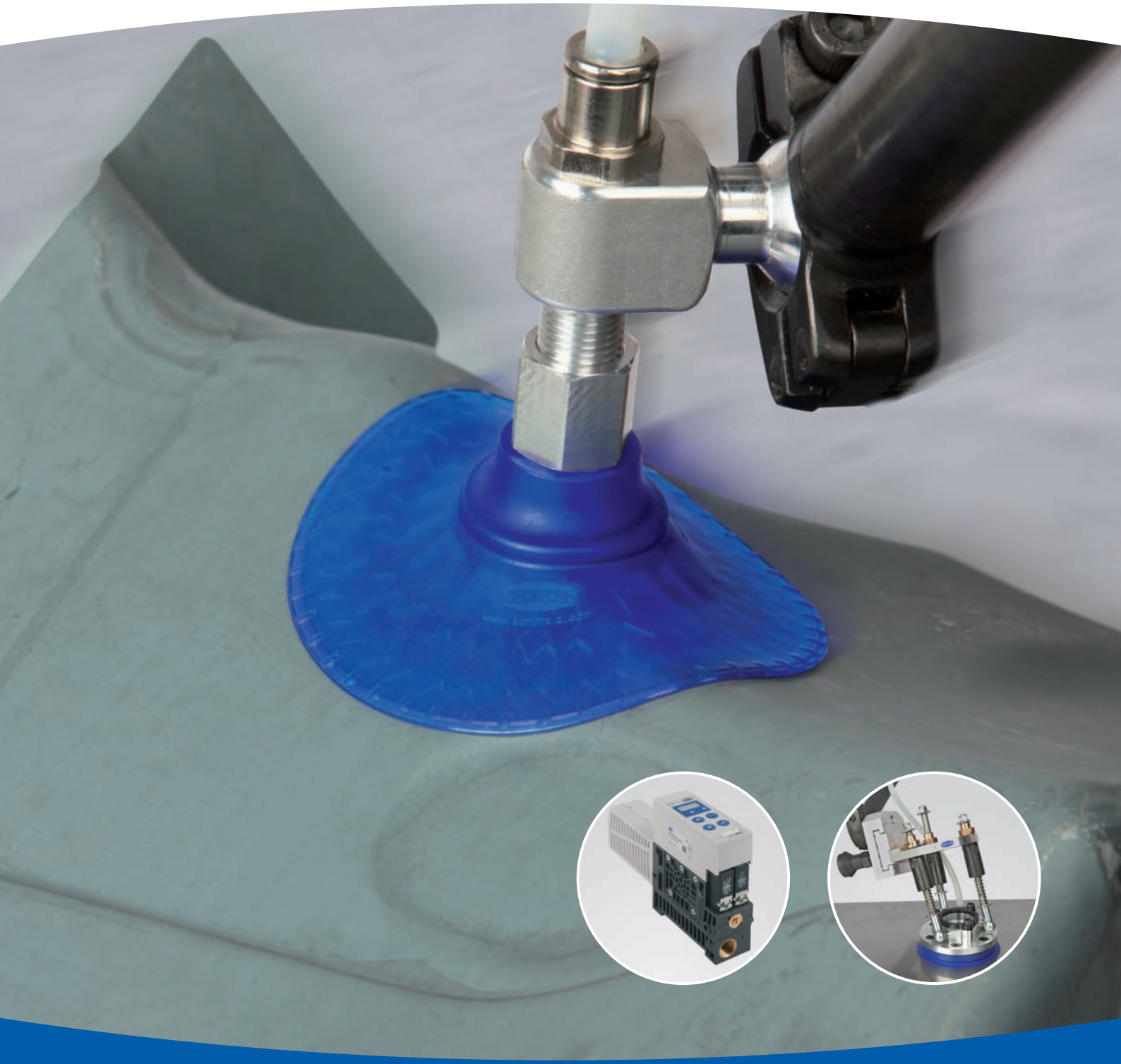
Innovative Vacuum for Automation

SCHMALZ



Vacuum Components

News for the Automotive and Sheet Metal Industry 2011

Schmalz – World of Vacuum Technology

Strict customer-orientation and trend-setting innovations, excellent quality and comprehensive advisory skills make Schmalz the world's leading partner for vacuum technology in automation, handling and clamping technology.

As a worldwide active company with excellent products and services, we offer our customers trend-setting solutions. We have many enthusiastic customers in all sectors where production processes are made more efficient with the aid of vacuum technology.

Solutions for Automotive and Sheet Metal Industry

Automation processes become more profitable with vacuum components from Schmalz. They increase process speed and system availability while reducing energy consumption at the same time.

Vacuum generation

Centralized or decentralized, optionally with air-saving function, condition monitoring and IO-Link

System monitoring

Switches and measuring equipment for optimal monitoring and protection of the system

Mounting elements

Fast and flexible connection of vacuum components to all common tooling systems

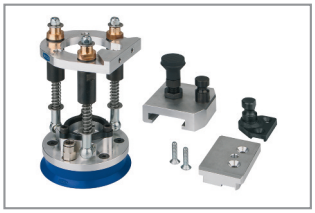
Vacuum suction pads

A wealth of versions and materials for dynamic and safe sheet metal handling. For composite materials, perforated sheets and other difficult-to-hold workpieces **special grippers** are available.

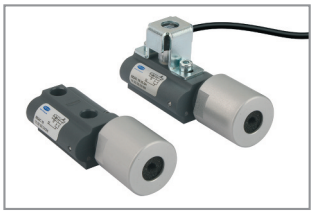
Contents

Suction Pads for Handling Sheet Metal

Double-Blank Detection



Vacuum Generators



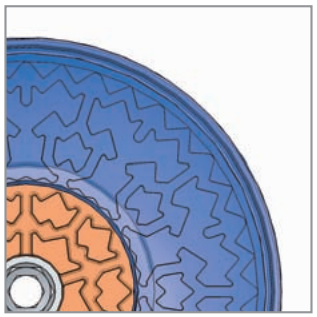
Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

High-speed suction pads for handling sheet metal

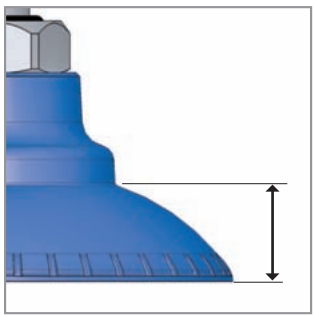
The new SAXM series of suction pads from Schmalz optimizes performance for handling sheet metal parts. Their bell shape allows flexible adaption to complex contours. They are extremely wear-resistant and can be obtained either assembled or as single parts if needed. They thus help lower the life cycle costs of a production system. The bell-shaped suction pad SAXM is 100% recyclable.

Strongly increased lateral forces on oily sheets



Innovative internal structure

Extreme adaptability to complex contours

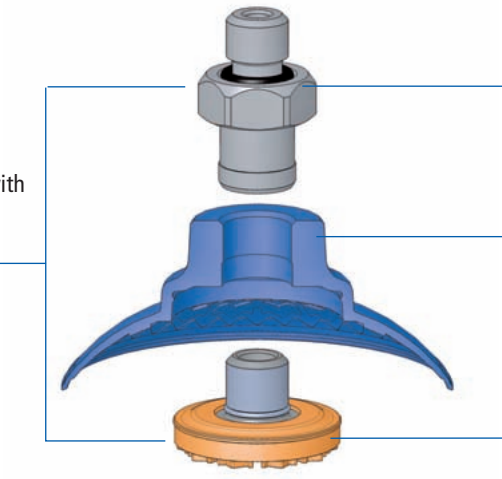


Very high stroke of the suction pad

Significantly higher service life than standard materials

Wear-resistant material Elastodur

Modular structure



Two-part Schmalz connector with snap ring for loss prevention, suitable for reuse

Connector upper part

Available with various thread connections

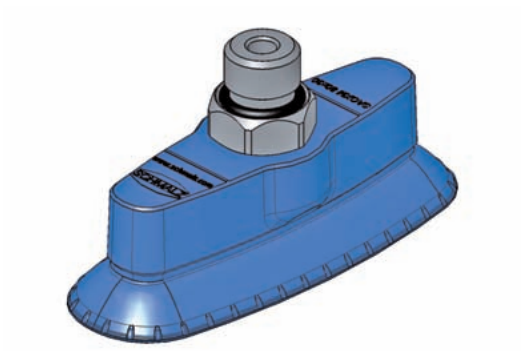
Elastomer part

Flexible sealing lip,
innovative internal structure,
wear-resistant material Elastodur ED-85

Connector lower part

Overmolded friction disc made of the
wear-resistant material Elastodur ED-65

For narrow sheet-metal parts: the oval flat suction pad SAOXM



Application

- Dynamic handling of narrow and elongated formed parts, especially thin sheet metal, tubes or profiles

Highlights

- Optimal adaptation to complex contours
- Extremely low wear
- Minimal spare parts costs due to individually procurable wear parts

Sizes

- 60x20 mm, 80x30 mm, 100x40 mm, 125x50 mm

Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

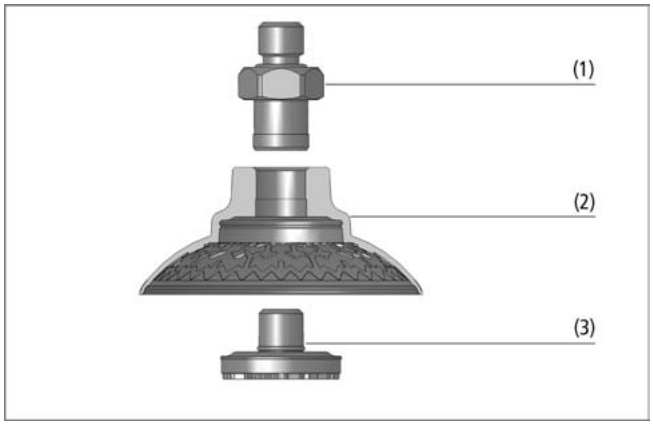
Suction area (Ø) from 30 mm to 115 mm

Suitability for Industry-Specific Applications

Bell-shaped suction pads SAXM

Applications

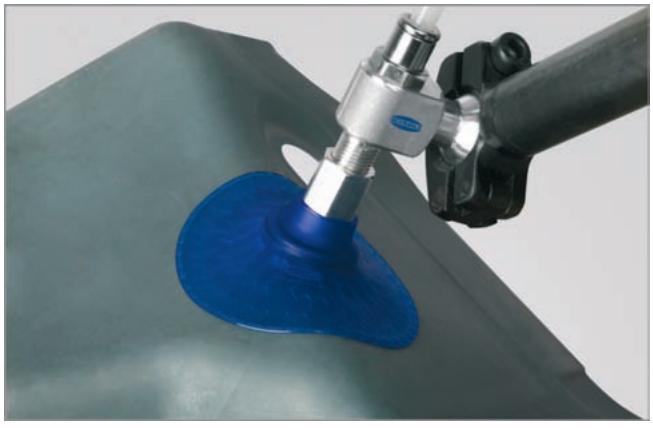
- High-speed suction pads with requirements of highest holding and shear forces for fast handling of sheet metal and car body parts
- Handling of workpieces with oily surfaces
- Loading and unloading CNC metal and laser cutting machines
- Handling of blanks at destackers



System design bell-shaped suction pads SAXM

Design

- Round bell-shaped suction pad (2) with flexible sealing lip, optimum internal structure, special oil groove and inner support
- Wear-resistant material Elastodur of the suction pad (ED-85) and friction disc (ED-65)
- Two-part Schmalz connector (SC) consisting of connector upper part (1) and lower part including a friction disc (3)
- Captive connector with snap ring
- Connection elements with male thread have an integrated seal on the thread
- Available as a mounted suction pad or as individual parts



Bell-shaped suction pad SAXM for handling formed sheet metal parts

Our Highlights...	Your Advantages...
• Significantly increased stroke of suction pad	>Very good adjustment to different workpiece contours
• Optimum internal structure	>Highest transmission of holding forces and adaptation of shear forces, especially on oily sheet metal
• Large-area and structured inner support	>Avoidance of deep-drawing, even with thin sheets
• Innovative material	>Highly wear-resistant, resistant to the effects of ozone or aggressive draw oils
• Environmental friendly, modular design	>Minimum costs, quick replacement of individual components, 100% recyclable

Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

Suction area (Ø) from 30 mm to 115 mm

Designation Code Bell-Shaped Suction Pads SAXM

Short designation	Suction area Ø in mm	Material and shore hardness	Connection thread		Product addition
Example of SAXM 30 ED-85 G1/4-IG: **SAXM**	**30**	**ED-85**	**G1/4-IG**		
SAXM	30 to 115	ED-85	G1/4-IG G3/8-IG M10x1.5-AG M14x1.5-AG RA	IG = female thread AG = male thread Rectangular adapter	-

Ordering Data Bell-Shaped Suction Pad SAXM (Mounted)

Type	Connection				
	G1/4"-F	G3/8"-F	M10x1.5-M	M14x1.5-M	Rectangular adapter
SAXM 30 ED-85...	10.01.19.00014	10.01.19.00015	10.01.19.00016	10.01.19.00017	10.01.19.00018
SAXM 40 ED-85...	10.01.19.00019	10.01.19.00020	10.01.19.00021	10.01.19.00022	10.01.19.00023
SAXM 50 ED-85...	10.01.19.00024	10.01.19.00025	10.01.19.00026	10.01.19.00027	10.01.19.00028
SAXM 60 ED-85...	10.01.19.00029	10.01.19.00030	10.01.19.00031	10.01.19.00032	10.01.19.00033
SAXM 80 ED-85...	10.01.19.00034	10.01.19.00035	10.01.19.00036	10.01.19.00037	10.01.19.00038
SAXM 100 ED-85...	10.01.19.00039	10.01.19.00040	10.01.19.00041	10.01.19.00042	10.01.19.00043
SAXM 115 ED-85...	10.01.19.00044	10.01.19.00045	10.01.19.00046	10.01.19.00047	10.01.19.00048

Ordering Data Bell-Shaped Suction Pads SAXM (in Single Components)

As an alternative to the mounted suction pads, the individual parts can also be ordered separately. To do this, the following ordering steps are required:

- Bell-shaped suction pad of type SAXM (step 1) - elastomer part, available in various diameters
- Connector upper part (step 2) - available with various threads
- Connector lower part (step 3) - including molded friction disc

Ordering Data Single Component Bell-Shaped Suction Pad SAXM (Step 1)

Type	Article No.
SAXM 30 ED-85	10.01.19.00004
SAXM 40 ED-85	10.01.19.00005
SAXM 50 ED-85	10.01.19.00006
SAXM 60 ED-85	10.01.19.00007
SAXM 80 ED-85	10.01.19.00008
SAXM 100 ED-85	10.01.19.00009
SAXM 115 ED-85	10.01.19.00010

Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

Suction area (Ø) from 30 mm to 115 mm

Ordering Data Single Component Connector Upper Part (Step 2)

Type	SAXM 30	SAXM 40	SAXM 50	SAXM 60	SAXM 80	SAXM 100	SAXM 115
SC-A 045 G1/4-AG	10.01.06.02818	10.01.06.02818	-	-	-	-	-
SC-A 055 G1/4-AG	-	-	10.01.06.02821	10.01.06.02821	10.01.06.02821	-	-
SC-A 065 G1/4-AG	-	-	-	-	-	10.01.06.02824	10.01.06.02824
SC-A 045 G1/4-IG	10.01.06.02736	10.01.06.02736	-	-	-	-	-
SC-A 055 G1/4-IG	-	-	10.01.06.02742	10.01.06.02742	10.01.06.02742	-	-
SC-A 065 G1/4-IG	-	-	-	-	-	10.01.06.02774	10.01.06.02774
SC-A 045 G3/8-AG	10.01.06.02807	10.01.06.02807	-	-	-	-	-
SC-A 055 G3/8-AG	-	-	10.01.06.02809	10.01.06.02809	10.01.06.02809	-	-
SC-A 065 G3/8-AG	-	-	-	-	-	10.01.06.02810	10.01.06.02810
SC-A 045 G3/8-IG	10.01.06.02737	10.01.06.02737	-	-	-	-	-
SC-A 055 G3/8-IG	-	-	10.01.06.02743	10.01.06.02743	10.01.06.02743	-	-
SC-A 065 G3/8-IG	-	-	-	-	-	10.01.06.02648	10.01.06.02648
SC-A 045 M10x1.5-AG	10.01.06.02819	10.01.06.02819	-	-	-	-	-
SC-A 055 M10x1.5-AG	-	-	10.01.06.02822	10.01.06.02822	10.01.06.02822	-	-
SC-A 065 M10x1.5-AG	-	-	-	-	-	10.01.06.02825	10.01.06.02825
SC-A 045 M14x1.5-AG	10.01.06.02820	10.01.06.02820	-	-	-	-	-
SC-A 055 M14x1.5-AG	-	-	10.01.06.02823	10.01.06.02823	10.01.06.02823	-	-
SC-A 065 M14x1.5-AG	-	-	-	-	-	10.01.06.02826	10.01.06.02826
SC-A 045 RA	10.01.06.02813	10.01.06.02813	-	-	-	-	-
SC-A 055 RA	-	-	10.01.06.02815	10.01.06.02815	10.01.06.02815	-	-
SC-A 065 RA	-	-	-	-	-	10.01.06.02817	10.01.06.02817

Ordering Data Single Component Connector Lower Part (Step 3)

Type	SAXM 30	SAXM 40	SAXM 50	SAXM 60	SAXM 80	SAXM 100	SAXM 115
SC-FDC 045	10.01.06.02803	10.01.06.02803	-	-	-	-	-
SC-FDC 055	-	-	10.01.06.02804	10.01.06.02804	10.01.06.02804	-	-
SC-FDC 065	-	-	-	-	-	10.01.06.02805	10.01.06.02805

Technical Data Bell-Shaped Suction Pads SAXM

Type	Suction force [N]*	Lateral force [N]**	Lateral force oily surface [N]**	Volume [cm³]	Min. curve radius [mm] (convex)	Recom. internal hose diameter d [mm]***
SAXM 30 ED-85	39	32	41	3.4	18	5
SAXM 40 ED-85	69	38	71	7.1	25	5
SAXM 50 ED-85	109	58	110	14.4	25	6
SAXM 60 ED-85	154	85	155	24.2	30	6
SAXM 80 ED-85	270	150	269	51.9	33	6
SAXM 100 ED-85	412	230	414	95.5	40	6
SAXM 115 ED-85	549	320	584	141.5	50	6

*The specified suction forces are theoretical values at a vacuum of -0.6 bar and with a smooth, dry workpiece surface - they do not include a safety factor

**The specified lateral forces are values measured at a vacuum of -0.6 bar with a dry or oily, smooth, flat workpiece surface. Depending on the workpiece surface and its quality, the actual values may deviate from these values.

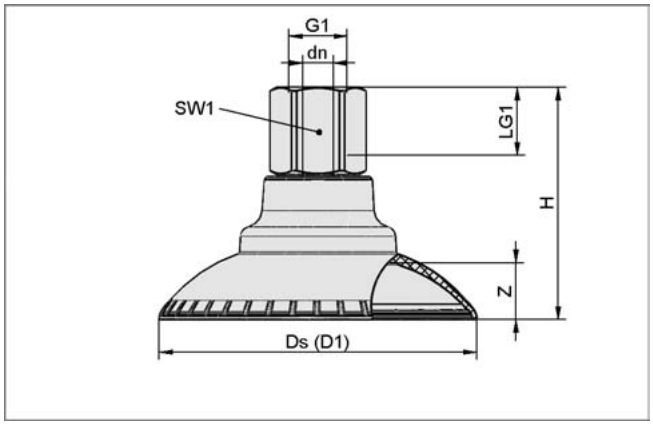
***The recommended hose diameter refers to a hose length of approx. 2 m

Suction Pads for Handling Sheet Metal

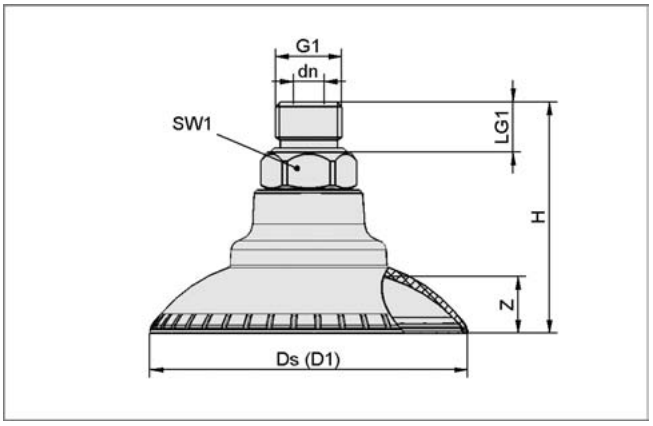
Bell-shaped suction pads SAXM

Suction area (Ø) from 30 mm to 115 mm

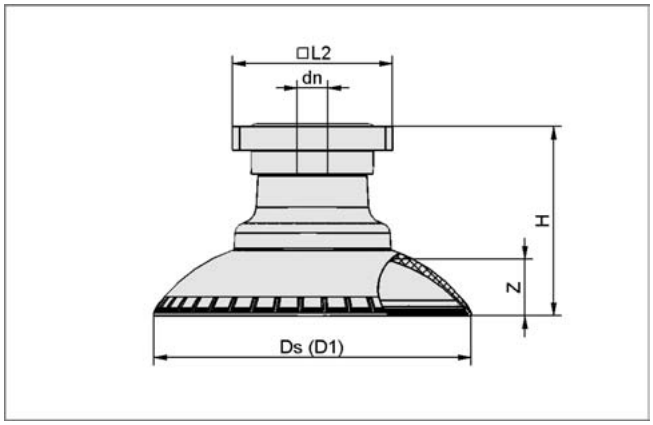
Design Data Bell-Shaped Suction Pads SAXM (Mounted)



SAXM 30 to 115 F



SAXM 30 to 115 M



SAXM 30 to 115 RA

Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

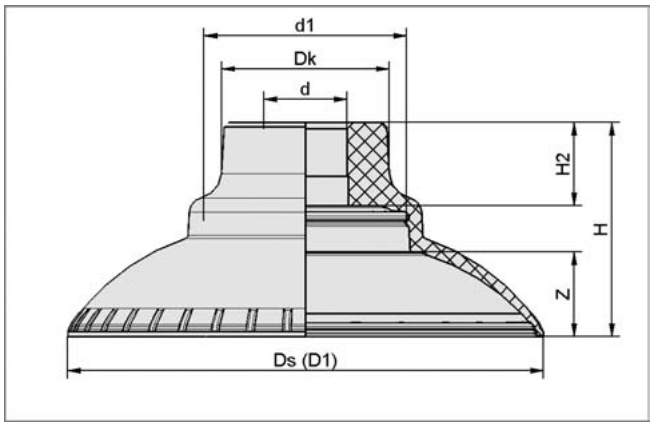
Suction area (Ø) from 30 mm to 115 mm

Type	Dimensions in mm*								
	dn	Ds	D1**	G1	H	LG1	L2	SW1	Z
SAXM 30 ED-85 G1/4-IG	5	33.0	35.2	G1/4"-F	35	12	-	17	4.3
SAXM 30 ED-85 G3/8-IG	5	33.0	35.2	G3/8"-F	35	12	-	22	4.3
SAXM 30 ED-85 M10x1.5-AG	5	33.0	35.2	M10x1.5-M	35	10	-	17	4.3
SAXM 30 ED-85 M14x1.5-AG	5	33.0	35.2	M14x1.5-M	35	10	-	17	4.3
SAXM 30 ED-85 RA	5	33.0	35.2	Rectangular adapter	27	-	32	-	4.3
SAXM 40 ED-85 G1/4-IG	5	42.5	45.4	G1/4"-F	38	12	-	17	6.9
SAXM 40 ED-85 G3/8-IG	5	42.5	45.4	G3/8"-F	38	12	-	22	6.9
SAXM 40 ED-85 M10x1.5-AG	5	42.5	45.4	M10x1.5-M	37	10	-	17	6.9
SAXM 40 ED-85 M14x1.5-AG	5	42.5	45.4	M14x1.5-M	37	10	-	17	6.9
SAXM 40 ED-85 RA	5	42.5	45.4	Rectangular adapter	30	-	32	-	6.9
SAXM 50 ED-85 G1/4-IG	6	53.0	58.4	G1/4"-F	43	12	-	17	8.4
SAXM 50 ED-85 G3/8-IG	6	53.0	58.4	G3/8"-F	43	12	-	22	8.4
SAXM 50 ED-85 M10x1.5-AG	6	53.0	58.4	M10x1.5-M	43	10	-	17	8.4
SAXM 50 ED-85 M14x1.5-AG	6	53.0	58.4	M14x1.5-M	43	10	-	17	8.4
SAXM 50 ED-85 RA	6	53.0	58.4	Rectangular adapter	35	-	32	-	8.4
SAXM 60 ED-85 G1/4-IG	6	63.0	69.7	G1/4"-F	45	12	-	17	10.9
SAXM 60 ED-85 G3/8-IG	6	63.0	69.7	G3/8"-F	45	12	-	22	10.9
SAXM 60 ED-85 M10x1.5-AG	6	63.0	69.7	M10x1.5-M	45	10	-	17	10.9
SAXM 60 ED-85 M14x1.5-AG	6	63.0	69.7	M14x1.5-M	45	10	-	17	10.9
SAXM 60 ED-85 RA	6	63.0	69.7	Rectangular adapter	38	-	32	-	10.9
SAXM 80 ED-85 G1/4-IG	6	83.0	92.2	G1/4"-F	48	12	-	17	13.9
SAXM 80 ED-85 G3/8-IG	6	83.0	92.2	G3/8"-F	48	12	-	22	13.9
SAXM 80 ED-85 M10x1.5-AG	6	83.0	92.2	M10x1.5-M	48	10	-	17	13.9
SAXM 80 ED-85 M14x1.5-AG	6	83.0	92.2	M14x1.5-M	48	10	-	17	13.9
SAXM 80 ED-85 RA	6	83.0	92.2	Rectangular adapter	41	-	32	-	13.9
SAXM 100 ED-85 G1/4-IG	6	102.4	111.1	G1/4"-F	57	12	-	22	17.1
SAXM 100 ED-85 G3/8-IG	6	102.4	111.1	G3/8"-F	57	12	-	22	17.1
SAXM 100 ED-85 M10x1.5-AG	6	102.4	111.1	M10x1.5-M	57	12	-	22	17.1
SAXM 100 ED-85 M14x1.5-AG	6	102.4	111.1	M14x1.5-M	57	12	-	22	17.1
SAXM 100 ED-85 RA	6	102.4	111.1	Rectangular adapter	49	-	32	-	17.1
SAXM 115 ED-85 G1/4-IG	6	118.0	129.4	G1/4"-F	60	12	-	22	20.0
SAXM 115 ED-85 G3/8-IG	6	118.0	129.4	G3/8"-F	60	12	-	22	20.0
SAXM 115 ED-85 M10x1.5-AG	6	118.0	129.4	M10x1.5-M	60	12	-	22	20.0
SAXM 115 ED-85 M14x1.5-AG	6	118.0	129.4	M14x1.5-M	60	12	-	22	20.0
SAXM 115 ED-85 RA	6	118.0	129.4	Rectangular adapter	52	-	32	-	20.0

*Acceptable dimensional tolerances for rubber parts concerning to DIN ISO 3302-1 M3

**D1 is the external dimension of the suction pad when it is pressed against the workpiece by the vacuum

Design Data Bell-Shaped Suction Pad SAXM (Single Component)



SAXM 30 to 115

Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

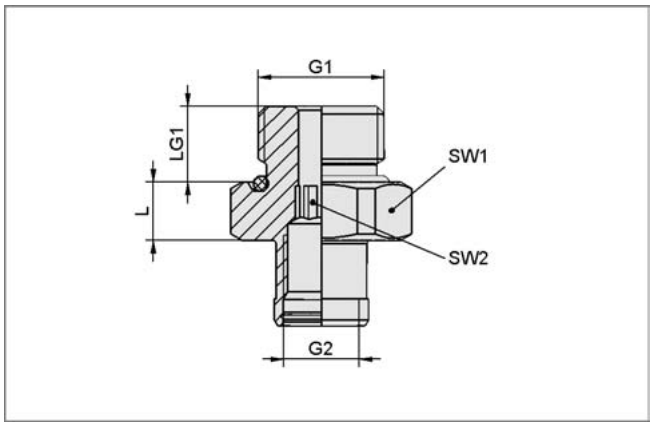
Suction area (Ø) from 30 mm to 115 mm

Type	Dimensions in mm*							
	d	d1	Dk	Ds	D1**	H	H2	Z
SAXM 30 ED-85	9.7	15.0	19.2	30	35.2	18	7.5	4.3
SAXM 40 ED-85	9.7	15.0	19.2	40	45.4	21	7.5	6.9
SAXM 50 ED-85	11.0	26.8	22.2	50	58.4	26	11.0	8.4
SAXM 60 ED-85	11.0	26.8	22.2	60	69.7	28	11.0	10.9
SAXM 80 ED-85	11.0	26.8	22.0	80	92.2	31	11.0	13.9
SAXM 100 ED-85	14.0	37.2	25.6	100	111.1	39	14.8	17.1
SAXM 115 ED-85	14.0	37.2	28.9	115	129.4	42	14.8	20.0

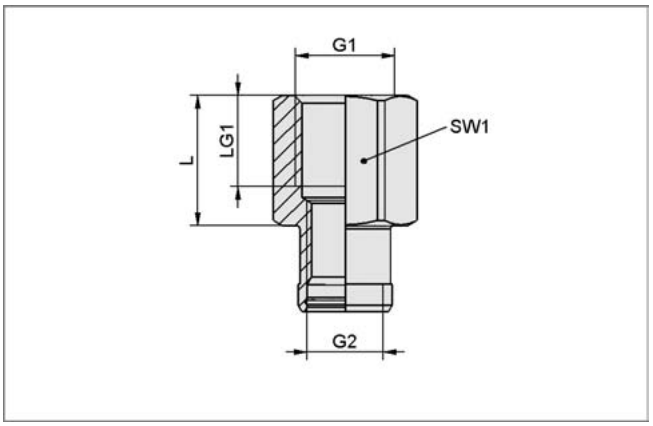
*Acceptable dimensional tolerances for rubber parts concerning to DIN ISO 3302-1 M3

**D1 is the external dimension of the suction pad when it is pressed against the workpiece by the vacuum

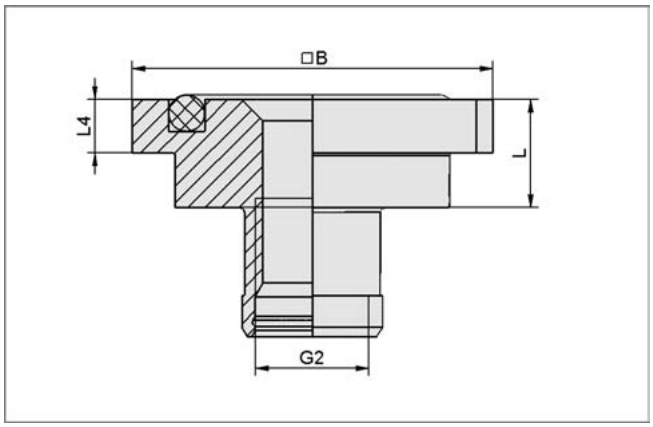
Design Data Connector Upper Part (Single Component)



SC-A ... M



SC-A ... F



SC-A ... RA

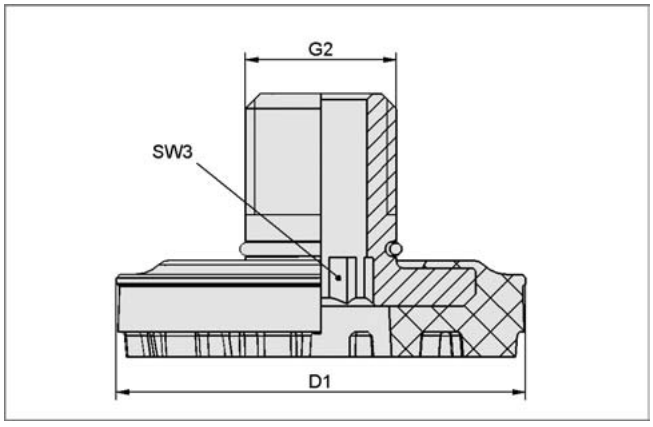
Suction Pads for Handling Sheet Metal

Bell-shaped suction pads SAXM

Suction area (Ø) from 30 mm to 115 mm

Type	Dimensions in mm							
	B	G1	G2	L	L4	LG1	SW1	SW2
SC-A 045 G1/4-AG	-	G1/4"-M	M8x1-F	7.2	-	10	17	5
SC-A 055 G1/4-AG	-	G1/4"-M	M10x1-F	7.2	-	10	17	6
SC-A 065 G1/4-AG	-	G1/4"-M	M10x1-F	8.0	-	10	22	6
SC-A 045 G1/4-IG	-	G1/4"-F	M8x1-F	17.2	-	12	17	-
SC-A 055 G1/4-IG	-	G1/4"-F	M10x1-F	17.2	-	12	17	-
SC-A 065 G1/4-IG	-	G1/4"-F	M10x1-F	18.0	-	12	22	-
SC-A 045 G3/8-AG	-	G3/8"-M	M8x1-F	7.7	-	10	22	5
SC-A 055 G3/8-AG	-	G3/8"-M	M10x1-F	7.7	-	10	22	6
SC-A 065 G3/8-AG	-	G3/8"-M	M10x1-F	8.0	-	10	22	6
SC-A 045 G3/8-IG	-	G3/8"-F	M8x1-F	17.2	-	12	17	-
SC-A 055 G3/8-IG	-	G3/8"-F	M10x1-F	17.2	-	12	22	-
SC-A 065 G3/8-IG	-	G3/8"-F	M10x1-F	18.0	-	12	22	-
SC-A 045 M10x1.5-AG	-	M10x1.5-M	M8x1-F	7.2	-	10	17	4
SC-A 055 M10x1.5-AG	-	M10x1.5-M	M10x1-F	7.2	-	10	17	4
SC-A 065 M10x1.5-AG	-	M10x1.5-M	M10x1-F	8.0	-	10	22	4
SC-A 045 M14x1.5-AG	-	M14x1.5-M	M8x1-F	7.2	-	10	17	5
SC-A 055 M14x1.5-AG	-	M14x1.5-M	M10x1-F	7.2	-	10	17	6
SC-A 065 M14x1.5-AG	-	M14x1.5-M	M10x1-F	8.0	-	10	22	6
SC-A 045 RA	31.8	-	M8x1-F	9.5	4.7	-	-	-
SC-A 055 RA	31.8	-	M10x1-F	9.5	4.7	-	-	-
SC-A 065 RA	31.8	-	M10x1-F	9.5	4.7	-	-	-

Design Data Connector Lower Part (Single Component)



SC-FDC 045 ... 065

Type	Dimensions in mm		
	D1	G2	SW3
SC-FDC 045	16	M8x1-M	5
SC-FDC 055	27	M10x1-M	6
SC-FDC 065	40	M10x1-M	6

Double-Blank Detection

Double-blank detection DBD

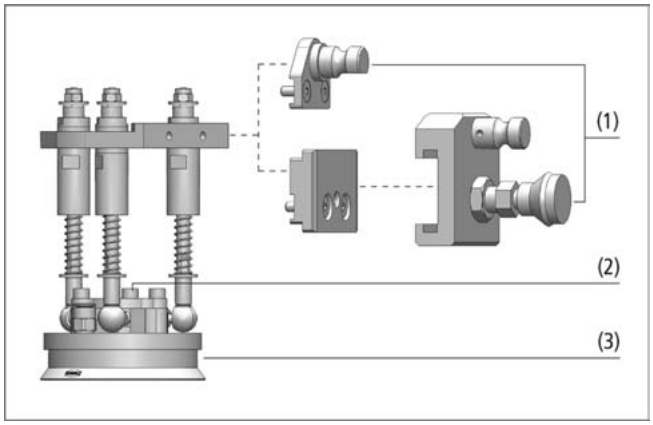
Suction area (Ø) of suction ring 100 mm

Suitability for Industry-Specific Applications

Double-blank detection DBD

Applications

- Double-blank detection ensuring process reliable detection of individual sheets during destacking process, e.g. in a press-shop
- Holder for the integration of a sensor with M42 thread (M36 thread available on request)



System design double-blank detection DBD

Design

- Double-blank detection in a jointed and spring-mounted design
- Changable bell-shaped suction ring made of oil resistant NBR (3)
- Sensor holder (2) for sensors with M42 thread (M36 thread available on request)
- Flexible tooling connection (1) with different holders (with quick-change coupling and 19 mm pin, alternatively permanent attached with 19 mm pin)

Double-blank detection DBD ensuring process reliable detection of individual sheets

Our Highlights...	Your Advantages...
• Jointed fixture of sensor attachment	>Exact positioning of the sensor: reduction of false signals and downtime
• Spring-mounted design with anti-blocking device	>Levels out differences in height, avoiding damages of the spring
• Special bell-shaped suction ring to separate the vacuum circuit from the sensor circuit	>No leakage around the sensor screw fitting
• Simple replacement of suction ring	>Reduced downtime
• For sensors with M42 thread	>Compatible with standard double-blank sensors
• Quick-change coupling with 19 mm pin	>Extremely quick replacement and installation on toolings

Double-Blank Detection

Double-blank detection DBD

Suction area (Ø) of suction ring 100 mm

Designation Code Double-Blank Detection DBD

Short designation	Dimentions in mm	Stroke in mm	Product addition
Example of DBD 100x143 36:			
DBD	**100x143**	**36**	
DBD	100x143	36	-

Ordering Data Double-Blank Detection DBD

Type	Article No.
DBD 100x143 36	10.01.04.00409

Ordering Data Accessories Double-Blank Detection DBD

Type	Article No.
HTS-A2 D DBD	10.01.04.00411
HTS-A2 D DBD QC1_PL	10.01.04.00412
HTS-A2 D DBD QC1_A	10.01.04.00413

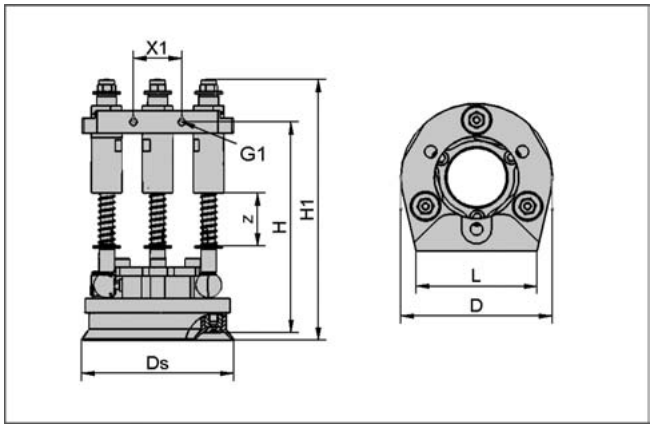
Ordering Data Spare Parts Double-Blank Detection DBD

Type	Suction ring
DBD 100x143 36	10.01.01.12591

Technical Data Double-Blank Detection DBD

Type	Suction force [N]	Weight [g]	Stroke [mm]	Angular compensation [°]
DBD 100x143 36	258	1013	36	25

Design Data Double-Blank Detection DBD



Double-blank detection DBD 100x143 36

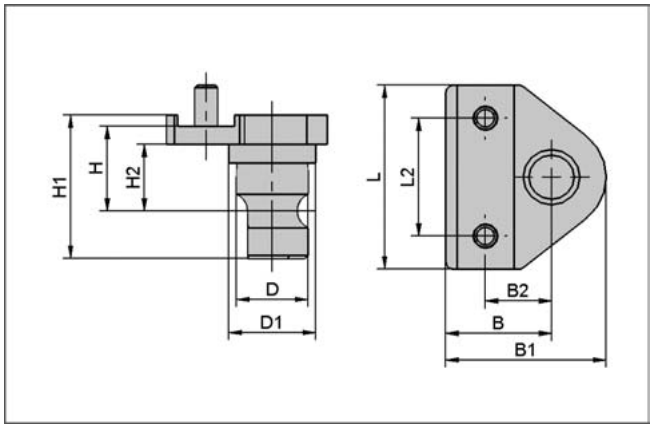
Type	Dimensions in mm							
	D	Ds	G1	H	H1	L	X1	Z
DBD 100x143 36	100	100	M6-F	143	178	80	32	36

Double-Blank Detection

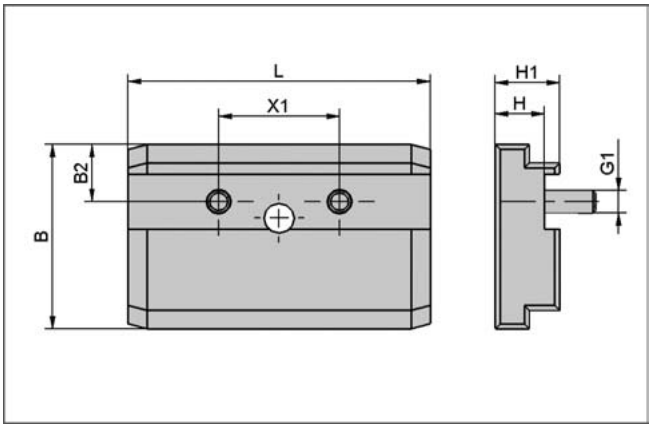
Double-blank detection DBD

Suction area (Ø) of suction ring 100 mm

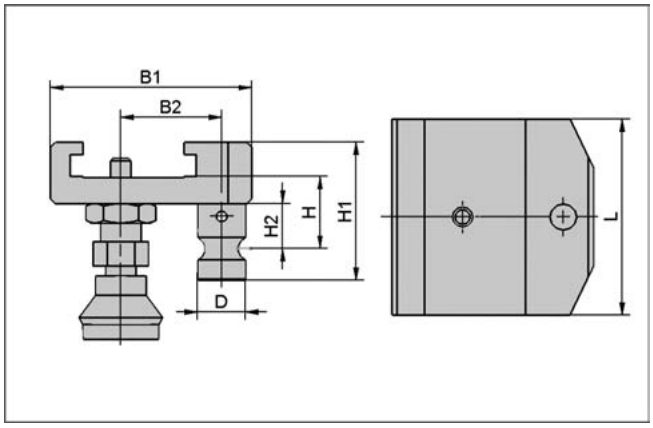
Design Data Accessories Double-Blank Detection DBD



Holder system HTS-A2 D DBD



Holder system HTS-A2 D DBD QC1_PL



Holder system HTS-A2 D DBD QC1_A

Type	Dimensions in mm					
	B	B1	B2	D	D1	G1
HTS-A2 D DBD	28	42.5	17.5	19	23	-
HTS-A2 D DBD QC1_PL	50	-	15.5	-	-	M6-M
HTS-A2 D DBD QC1_A	-	80.0	35.0	19	-	-

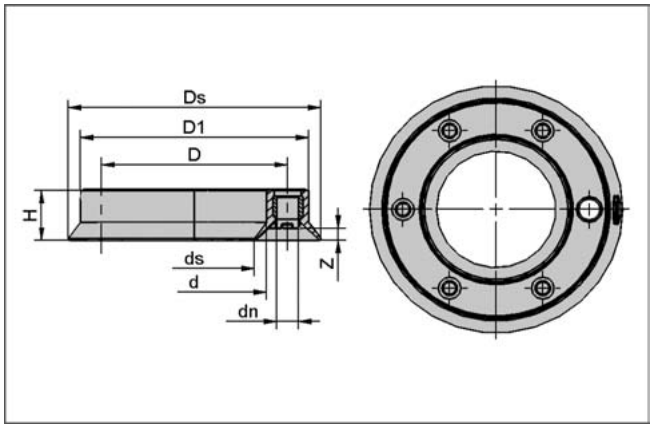
Type	Dimensions in mm					
	H	H1	H2	L	L2	X1
HTS-A2 D DBD	23.0	39.0	18.0	50	32	-
HTS-A2 D DBD QC1_PL	13.0	17.0	-	80	-	32
HTS-A2 D DBD QC1_A	29.5	26.3	18.5	80	-	-

Double-Blank Detection

Double-blank detection DBD

Suction area (Ø) of suction ring 100 mm

Design Data Spare Parts Double-Blank Detection DBD



Suction ring SR-DBD 100 NBR-60

Type	Dimensions in mm							
	d	dn	ds	D	Ds	D1	H	Z
SR-DBD 100 NBR-60	57.4	10.5	47.6	74.0	100	91	21	5

IO-Link

The future of process communication

IO-Link is the new standard in process communication. The interface between sensors and actuators transmits signals from the field level to higher-level controllers and bus systems. In comparison to the currently typical I/O mode, IO-Link offers crucial advantages over the entire life cycle of a system.

System life cycle with IO-Link

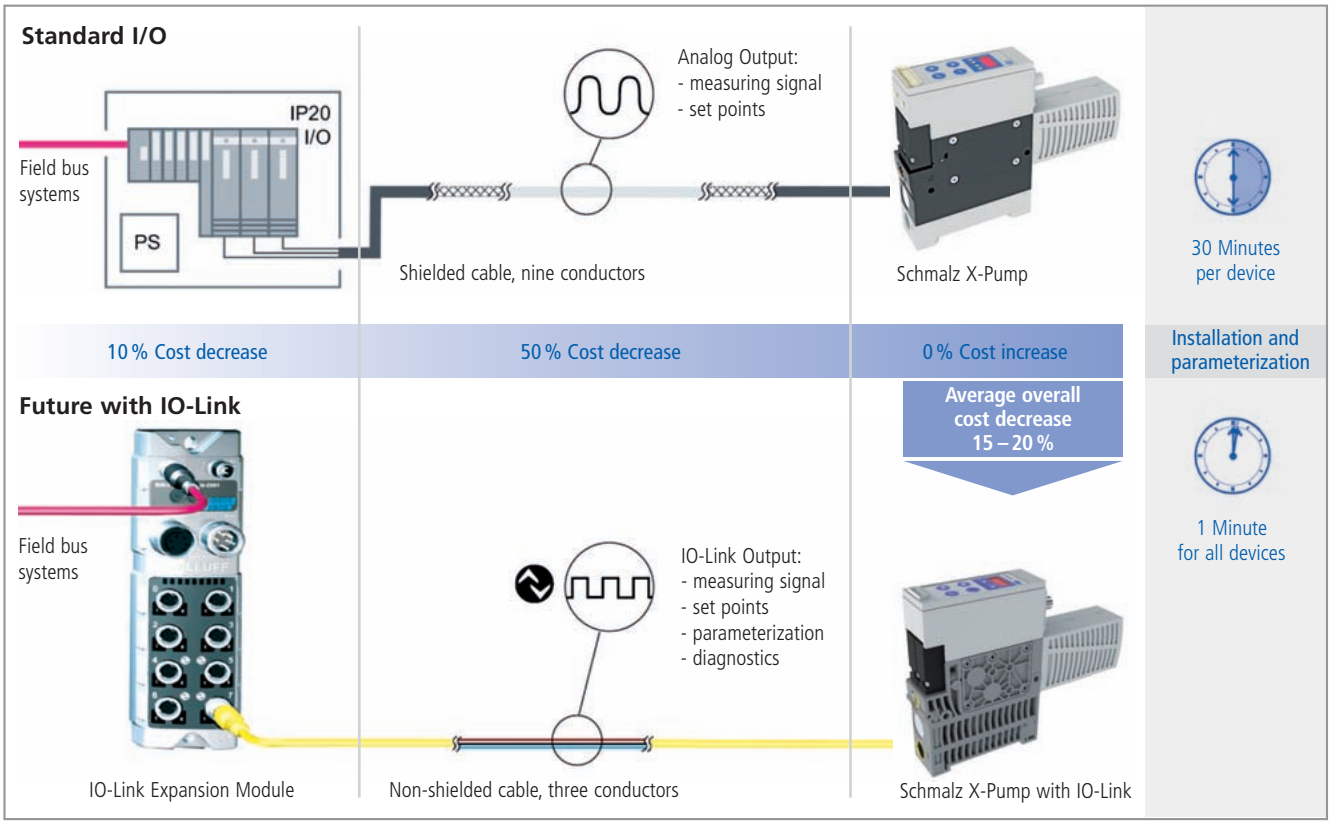
Market and demand	Development and design	Assembly and start of operations	Operation	Maintenance and repair
↓ Set-up times	↑ Standardization	↓ Time	↓ Downtime	↑ Remote access
↓ Downtime	↓ Components	↓ Components	↑ Productivity	
↑ Productivity	↓ Design expense	↓ Errors	↑ Access	

IO-Link

Advantages of IO-Link

- Reduced wiring expense by using non-shielded 3-pole standard cables
- Transparent process data for a wide variety of bus systems
- Simplified uploading, downloading and management of parameters
- Reduced start-up times for fastest possible tool changings
- Central monitoring of the entire system
- Minimized downtime due to early fault recognition and localization
- Significant cost savings

Standard I/O in comparison with IO-Link



Compact Ejectors

Compact ejectors X-Pump SXPi/SXMPi with IO-Link

Schmalz X-Pump with IO-Link: New standards for vacuum generators

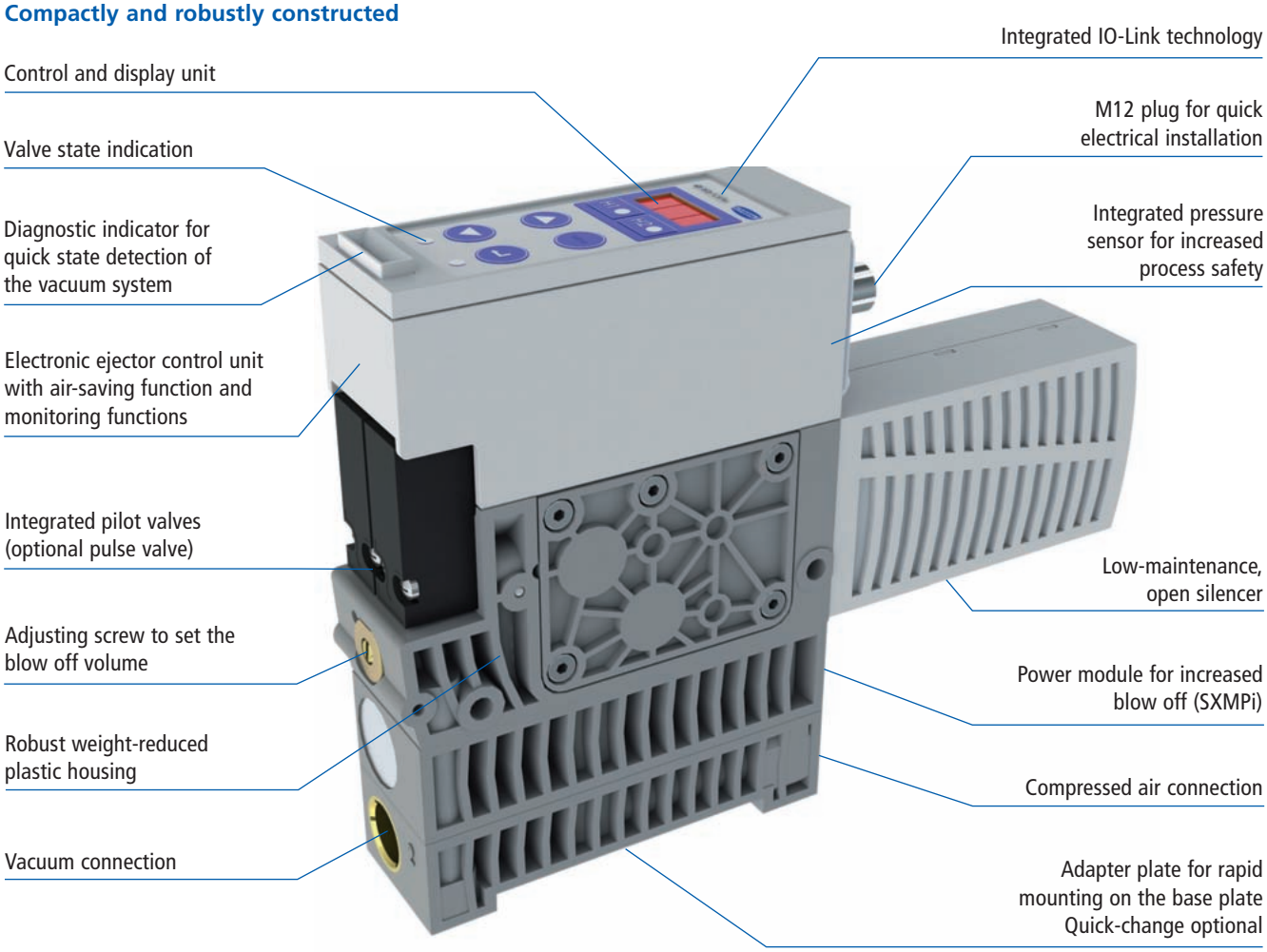
The new generation of Schmalz X-Pumps with IO-Link technology is strengthening its leading position among compact vacuum generators. It makes the various diagnostic functions visible and usable on the control level. That increases system availability and makes automation processes even more capable.

Active condition monitoring:
IO-Link creates process transparency

- Central monitoring of the vacuum system
- Monitoring of the diagnostic functions on the master control system
- Preventive maintenance to avoid downtime
- External parameterization
- Bidirectional process communication

Result: Reduced process costs and significantly encreased energy efficiency

Compactly and robustly constructed

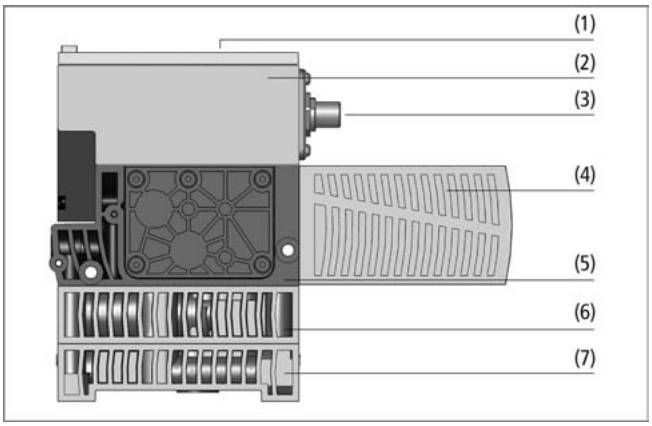


Compact Ejectors

Compact ejectors X-Pump SXPi / SXMPi with IO-Link

Suction rate from 185 l/min to 220 l/min

Compact ejectors X-Pump SXPi/SXMPi with IO-Link



System design compact ejector X-Pump SXMPi with IO-Link and power blow off module

Compact ejector SXPi for handling sheet metal

Suitability for Industry-Specific Applications

Applications

- High-performance vacuum generator for handling suction-tight workpieces under extreme conditions, e.g. in vacuum systems in press lines for handling metal sheets
- In pick-and-place applications with short cycle times
- In automated systems for preparation and precise monitoring of the vacuum system

Design

- User display (1) with large-scale operating and display elements
- Control electronics (2) with diverse monitoring functions
- Electrical connection (3) via M12 plug
- Removable silencer (4)
- Basic body (5) made of extremely robust plastic (lightweight)
- Compact ejector SXMPi is additionally equipped with the power blow off module (6)
- Horizontal connection plate with vacuum and compressed air connection (7); optional with quick-change adapter
- Optional integrated pressure sensor

Our Highlights...	Your Advantages...
• Communication via IO-Link technology	>Input and output of process-specific data; active condition monitoring via existing bus system on PLC
• Extremly wear-resistant and low maintenance	>Improved system availability
• Integrated air-saving function	>Significant reduction of energy consumption
• Condition monitoring functions with internal and external evaluation options	>Process and system monitoring to avoid downtimes
• Integrated voltage regulator	>Compensation of variations in voltage
• Integrated pressure monitoring (optional)	>Additional information on operating status
• Suction function as impulse version (optional)	>No undesired air consumption in the event of power loss

Compact Ejectors

Compact ejectors X-Pump SXPi / SXMPi with IO-Link

Suction rate from 185 l/min to 220 l/min

Designation Code Compact Ejectors X-Pump SXPi / SXMPi with IO-Link

Short designation	Nozzle size	Idle position suction valve	Pneumatic connection	Electric connection	Product addition
Example of SXPi 25 NO H M12-8: **SXPi**	**25**	**NO**	**H**	**M12-8**	
SXPi without power blow off modul **SXMPi** with power blow off modul	25 = 2.5 mm 30 = 3.0 mm	IMP bistabil, switched with pulse NC normally open NO normally closed	H horizontal Q quick change	M12-8 M12, 8-pole 2xM12-5 2xM12 5-pole	-

Ordering Data Compact Ejectors X-Pump SXPi / SXMPi with IO-Link

SXPi 25		SXPi 30	
Type	**Article No.**	**Type**	**Article No.**
SXPi 25 NO H M12-8	10.02.02.03776	**SXPi 30 NO H M12-8**	10.02.02.03780
SXPi 25 NO Q M12-8	10.02.02.03777	**SXPi 30 NO Q M12-8**	10.02.02.03781
SXPi 25 NO H 2xM12-5	10.02.02.03778	**SXPi 30 NO H 2xM12-5**	10.02.02.03782
SXPi 25 NO Q 2xM12-5	10.02.02.03779	**SXPi 30 NO Q 2xM12-5**	10.02.02.03783
SXPi 25 NC H M12-8	10.02.02.03784	**SXPi 30 NC H M12-8**	10.02.02.03788
SXPi 25 NC Q M12-8	10.02.02.03785	**SXPi 30 NC Q M12-8**	10.02.02.03789
SXPi 25 NC H 2xM12-5	10.02.02.03786	**SXPi 30 NC H 2xM12-5**	10.02.02.03790
SXPi 25 NC Q 2xM12-5	10.02.02.03787	**SXPi 30 NC Q 2xM12-5**	10.02.02.03791
SXPi 25 IMP H M12-8	10.02.02.03792	**SXPi 30 IMP H M12-8**	10.02.02.03796
SXPi 25 IMP Q M12-8	10.02.02.03793	**SXPi 30 IMP Q M12-8**	10.02.02.03797
SXPi 25 IMP H 2xM12-5	10.02.02.03794	**SXPi 30 IMP H 2xM12-5**	10.02.02.03798
SXPi 25 IMP Q 2xM12-5	10.02.02.03795	**SXPi 30 IMP Q 2xM12-5**	10.02.02.03799

SXMPi 25		SXMPi 30	
Type	**Article No.**	**Type**	**Article No.**
SXMPi 25 NO H M12-8	10.02.02.03800	**SXMPi 30 NO H M12-8**	10.02.02.03804
SXMPi 25 NO Q M12-8	10.02.02.03801	**SXMPi 30 NO Q M12-8**	10.02.02.03805
SXMPi 25 NO H 2xM12-5	10.02.02.03802	**SXMPi 30 NO H 2xM12-5**	10.02.02.03806
SXMPi 25 NO Q 2xM12-5	10.02.02.03803	**SXMPi 30 NO Q 2xM12-5**	10.02.02.03807
SXMPi 25 NC H M12-8	10.02.02.03808	**SXMPi 30 NC H M12-8**	10.02.02.03812
SXMPi 25 NC Q M12-8	10.02.02.03809	**SXMPi 30 NC Q M12-8**	10.02.02.03813
SXMPi 25 NC H 2xM12-5	10.02.02.03810	**SXMPi 30 NC H 2xM12-5**	10.02.02.03814
SXMPi 25 NC Q 2xM12-5	10.02.02.03811	**SXMPi 30 NC Q 2xM12-5**	10.02.02.03815
SXMPi 25 IMP H M12-8	10.02.02.03816	**SXMPi 30 IMP H M12-8**	10.02.02.03820
SXMPi 25 IMP Q M12-8	10.02.02.03817	**SXMPi 30 IMP Q M12-8**	10.02.02.03821
SXMPi 25 IMP H 2xM12-5	10.02.02.03818	**SXMPi 30 IMP H 2xM12-5**	10.02.02.03822
SXMPi 25 IMP Q 2xM12-5	10.02.02.03819	**SXMPi 30 IMP Q 2xM12-5**	10.02.02.03823

Ordering Data Accessories Compact Ejectors X-Pump SXPi / SXMPi with IO-Link

Accessories	Article No.	Weight [kg]
Connecting cable M12, 8-pole	21.04.05.00079	0,28
Connecting cable M12, 5-pole	21.04.05.00080	0,24
Connecting cable M12, 8-pole to 5-pole*	21.04.05.00167	0,35
Single base plate with quick-change connections	10.02.02.02473	0,18
Double base plate with quick-change connections	10.02.02.02154	0,47
Ejector tester	10.02.02.03588	0,75

*For IO-Link

Compact Ejectors

Compact ejectors X-Pump SXPi / SXMPi with IO-Link

Suction rate from 185 l/min to 220 l/min

Technical Data Compact Ejectors X-Pump SXPi / SXMPi with IO-Link

Type	Nozzle-Ø [mm]	Degree of evacuation [%]	Max. suction rate [l/min]	Max. suction rate [m³/h]	Air consumpt. during evac. [l/min]*	Air consumpt. during evac. [m³/h]*	Max. air consumption blow off [l/min]
SXPi 25	2.5	85	185	11.1	290	17.4	200
SXPi 30	3.0	85	220	13.2	380	22.8	200
SXMPi 25	2.5	85	185	11.1	290	17.4	320
SXMPi 30	3.0	85	220	13.2	380	22.8	320

!The supply voltage for vacuum switches and solenoid valves is 24V DC

*At optimal operating pressure

**For max. length 2 m

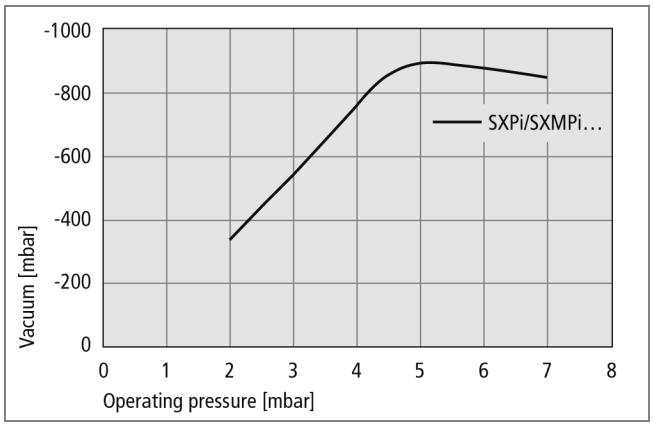
Type	Noise level free [db(A)]	Operating pressure [bar]	Recomm. int. hose diameter compr. air [mm]**	Recomm. int. hose diameter vacuum [mm]**	Weight [kg]	Operating temperature [°C]
SXPi 25	67	3...6	8	9	0.77	0...50
SXPi 30	72	3...6	8	9	0.77	0...50
SXMPi 25	67	3...6	8	9	0.91	0...50
SXMPi 30	72	3...6	8	9	0.91	0...50

!The supply voltage for vacuum switches and solenoid valves is 24V DC

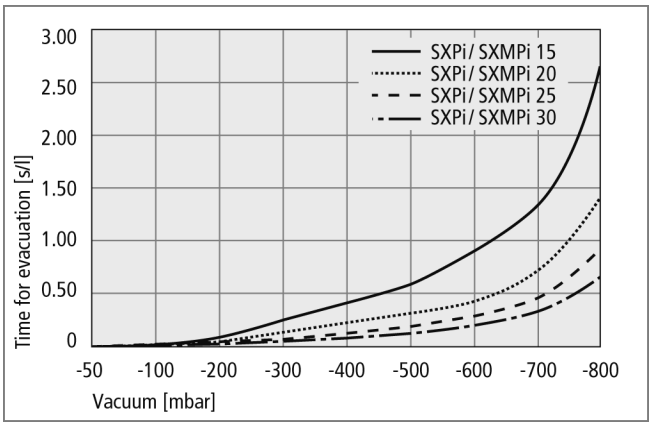
*At optimal operating pressure

**For max. length 2 m

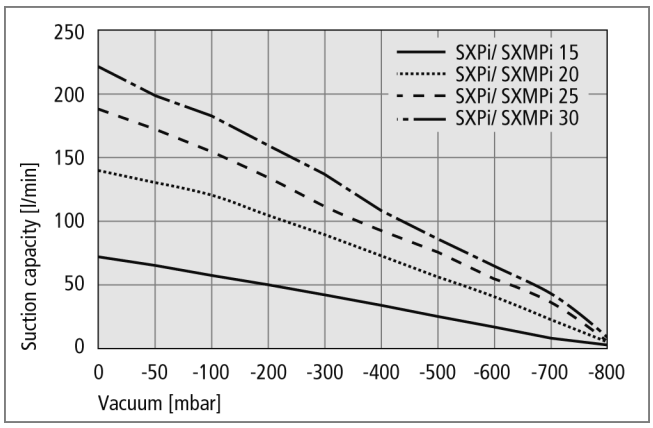
Performance Data Compact Ejectors X-Pump SXPi / SXMPi with IO-Link



Achievable vacuum at various operating pressures



Evacuation times for various vacuum ranges



Suction capacity at various degrees of evacuation

Compact Ejectors

Compact ejectors X-Pump SXPi / SXMPi with IO-Link

Suction rate from 185 l/min to 220 l/min

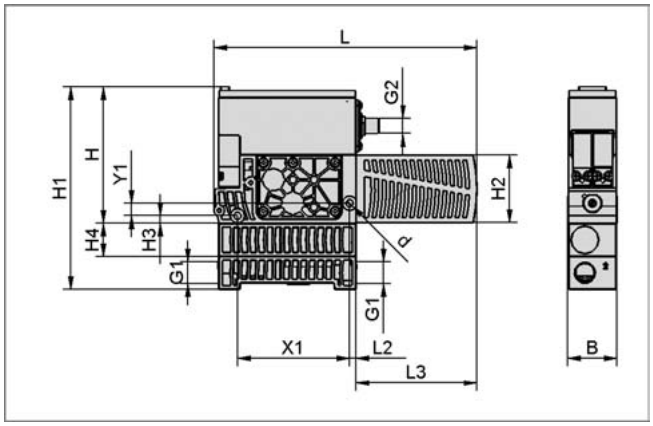
Suction Capacity in l/min at Various Degrees of Evacuation

Type	Degree of evacuation in mbar									
	0	-50	-100	-200	-300	-400	-500	-600	-700	-800
SXPi/SXMPi 25	185	170	158	135	114	95	76	56	33	10
SXPi/SXMPi 30	220	199	184	160	138	115	91	63	39	15

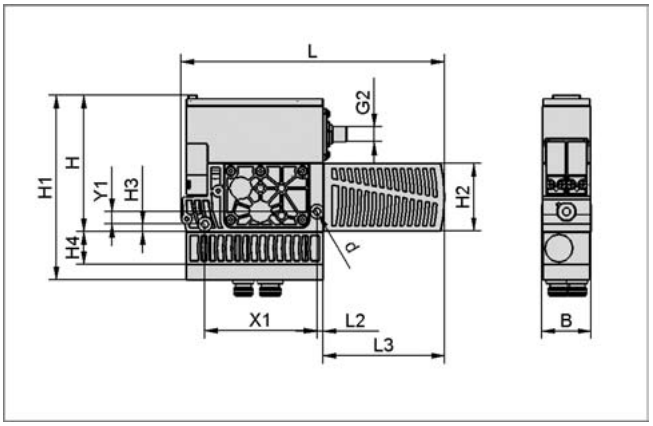
Evacuation Time in s/l for Various Vacuum Ranges

Type	Degree of evacuation in mbar								
	-50	-100	-200	-300	-400	-500	-600	-700	-800
SXPi/SXMPi 25	0.02	0.03	0.06	0.10	0.15	0.18	0.26	0.46	0.87
SXPi/SXMPi 30	0.01	0.02	0.05	0.08	0.11	0.15	0.22	0.37	0.69

Design Data Compact Ejectors X-Pump SXPi / SXMPi with IO-Link



SXMPi H



SXPi Q

Type	Dimensions in mm													
	B	d	G1	G2	H	H1	H2	H3	H4	L	L2	L3	X1	Y1
SXPi...H...	39	5.5	G3/8"-F	M12-M	108	134	54	6	-	210	5	97	89	10
SXPi...Q...	39	5.5	-	M12-M	108	120	54	6	-	210	5	97	89	10
SXMPi...H...	39	5.5	G3/8"-F	M12-M	108	160	54	6	26	210	5	97	89	10
SXMPi...Q...	39	5.5	-	M12-M	108	146	54	6	26	210	5	97	89	10

Ejectors

Ejectors with active blow off SEAC

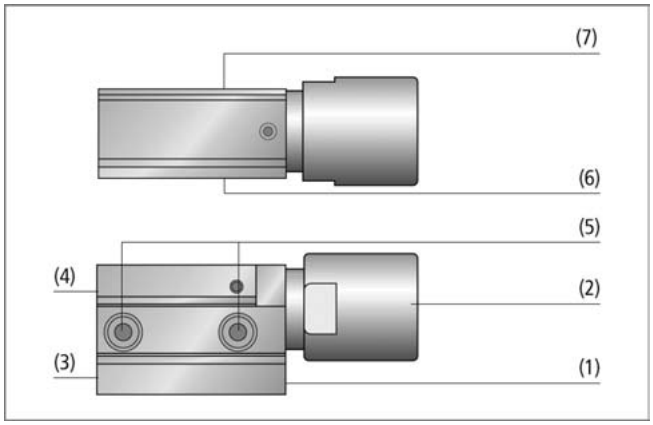
Suction rate 35 l/min

Suitability for Industry-Specific Applications

Ejectors with active blow off SEAC / SEAC VE-SH

Applications

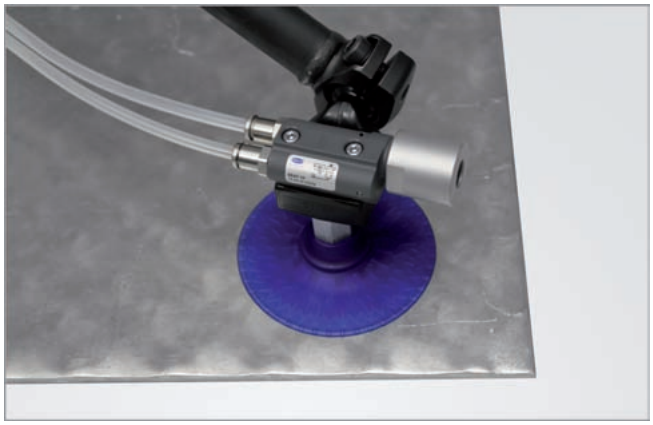
- Many different applications with active blow off to realize shortest cycle times, e.g. in sheet-metal handling, the automotive industry, in packaging machines and robot technology



System design ejector with active blow off SEAC

Design

- Main body (1) made of plastic; smallest possible dimensions and low weight
- Silencer (2) made of anodized aluminium
- Compressed air connection for blow off (3)
- Compressed air connection for suction (4)
- Two holes (5) for connecting to tooling (5)
- Vacuum connection (6)
- Two M4 mounting screws included in delivery
- Optional with vacuum switch (7) with fixed switching point at 600 mbar, 3 m connection cable and protective cover with pull-relief (SEAC VE-SH)



Decentral vacuum generation by ejector SEAC directly at the suction pad

Our Highlights...	Your Advantages...
• Short gripping and blow off times	>Very short cycle times in automated operations
• Main body made of plastic	>Minimum size and low weight particularly suitable for highly dynamic systems
• Suitable for modular holder system HTS	>Direct mounting of suction pad and connector
• With silencer	>Reduced noise level
• Optional available with vacuum switch	>Part present signal for optimization of processes

Ejectors

Ejectors with active blow off SEAC

Suction rate 35 l/min

Designation Code Ejectors with Active Blow Off SEAC

Short designation	Nozzle size	System check	Product addition
Example of SEAC 10 VE-SH: **SEAC**	**10**	**VE-SH**	
SEAC	10 = 1.0 mm	VE-SH with vacuum switch incl. protection hood	-

Ordering Data Ejectors with Active Blow Off SEAC

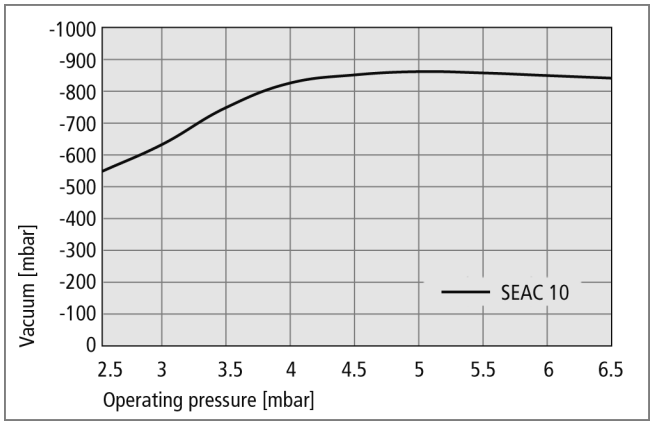
Type	Ejector
SEAC 10	10.02.02.03058
SEAC 10 VE-SH	10.02.02.03219

Technical Data Ejectors with Active Blow Off SEAC

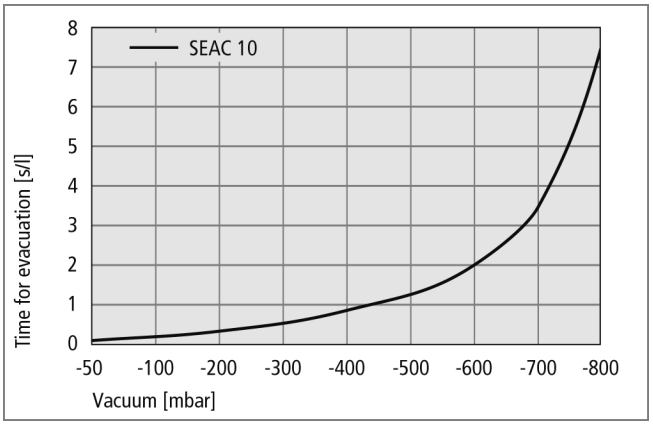
Type	Nozzle-Ø [mm]	Degree of evacuation [%]	Max. suction rate [l/min]	Max. suction rate [m³/h]	Air consumpt. during evac. [l/min]*	Max. air consumption blow off [l/min]	Operating pressure [bar]	Weight [g]
SEAC 10	1.0	85	35	2.1	52	60	4...6 bar	62
SEAC 10 VE-SH	1.0	85	35	2.1	52	60	4...6 bar	157

*At optimal operating pressure (4,5 bar)

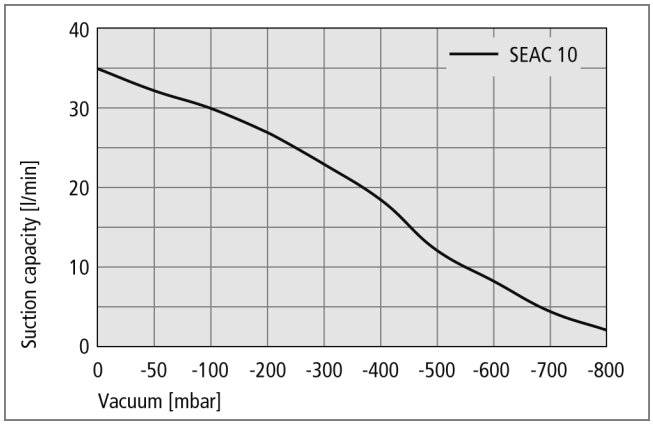
Performance Data Ejectors with Active Blow Off SEAC



Achievable vacuum at various operating pressures



Evacuation times for various vacuum ranges



Suction capacity at various degrees of evacuation

Ejectors

Ejectors with active blow off SEAC

Suction rate 35 l/min

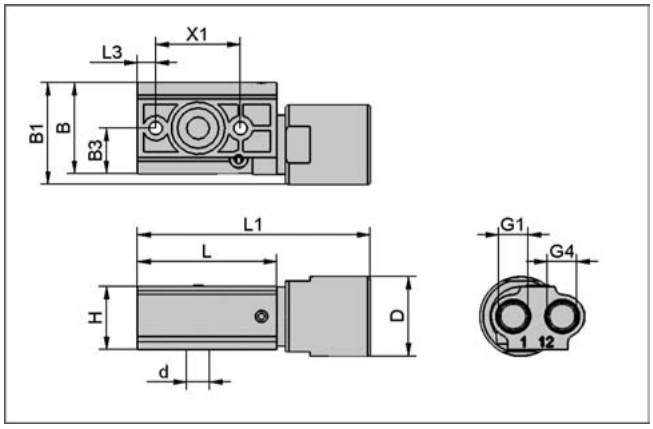
Suction Capacity in l/min at Various Degrees of Evacuation

Typ	Degree of evacuation in mbar									
	0	-50	-100	-200	-300	-400	-500	-600	-700	-800
SEAC 10	35.0	32.0	**30.0**	27.0	23.5	18.0	12.0	8.0	4.5	2.0

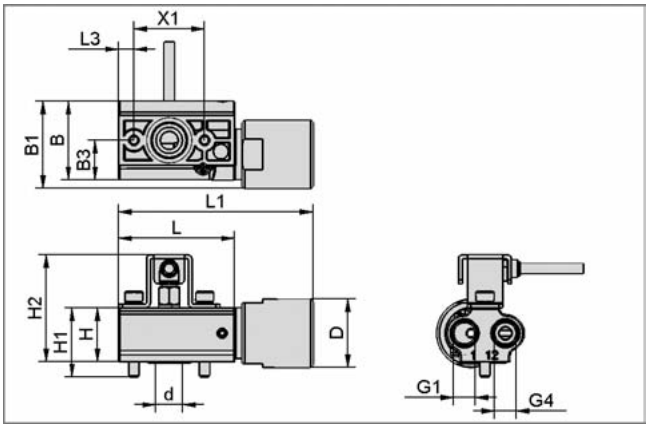
Evacuation Time in s/l for Various Vacuum Ranges

Typ	Degree of evacuation in mbar								
	-50	-100	-200	-300	-400	-500	-600	-700	-800
SEAC 10	0.09	0.16	0.34	0.59	0.96	1.42	2.03	3.30	7.36

Design Data Ejectors with Active Blow Off SEAC



SEAC 10



SEAC 10 VE-SH

Type	Dimensions in mm													
	B	B1	B3	d	D	G1	G4	H	H1	H2	L	L1	L3	X1
SEAC 10	31	34.6	15.5	7.5	27	G1/8"-F	G1/8"-F	21.5	-	-	46	77	6	28
SEAC 10 VE-SH	31	34.6	15.5	7.5	27	G1/8"-F	G1/8"-F	21.5	27.5	42.5	46	77	6	28

Ejectors

Ejectors with atmospheric ventilation SEAC ECO

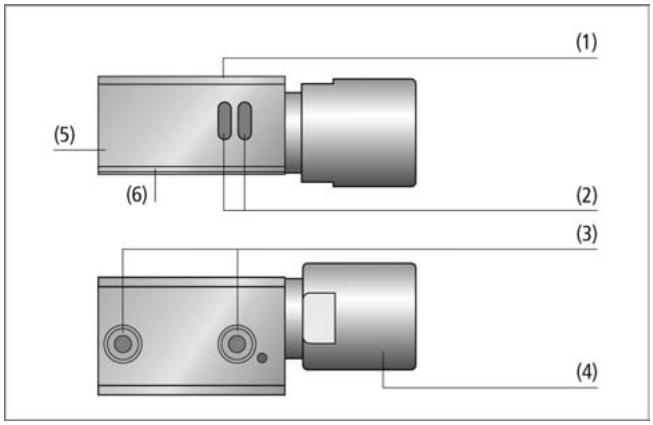
Suction rate 35 l/min

Suitability for Industry-Specific Applications

Ejectors with atmospheric ventilation SEAC ECO

Applications

- Ejector for decentralized vacuum generation for the use in many different applications with short cycle times
- In vacuum systems as economic solution thanks to the automatic release using atmospheric ventilation



System design ejector with atmospheric ventilation SEAC ECO

Design

- Main body (1) made of anodized aluminum; smallest possible dimensions and low weight
- Openings for atmospheric ventilation (2)
- Two holes for connecting to holder (3)
- Silencer (4) made of anodized aluminum
- Compressed air connection (5)
- Vacuum connection (6)
- Two securing screws and one o-ring included in delivery

Decentral vacuum generation by ejector SEAC ECO directly at the suction pad

Our Highlights...	Your Advantages...
• Operation with only one compressed air line	>Half installation effort and reduced costs for pn. installation material such as valves, hoses etc.
• Atmospheric ventilation	>Reduced energy costs by more than 50%, since no air is consumed during quick and occurate release of parts
• Connection to holder system HTS with the proven "backpack concept"	>Flexible adaption to all common toolings; holder does not have to be adjusted again if the ejector is replaced
• No filter, no spare parts	>Maintenance-free operation, thus reduced costs of maintenance and spare parts

Ejectors

Ejectors with atmospheric ventilation SEAC ECO

Suction rate 35 l/min

Designation Code Ejectors with Atmospheric Ventilation SEAC ECO

Short designation	Nozzle size	Product addition
Example of SEAC ECO 10: **SEAC ECO**	**10**	
SEAC ECO	10 = 1.0 mm	-

Ordering Data Ejectors with Atmospheric Ventilation SEAC ECO

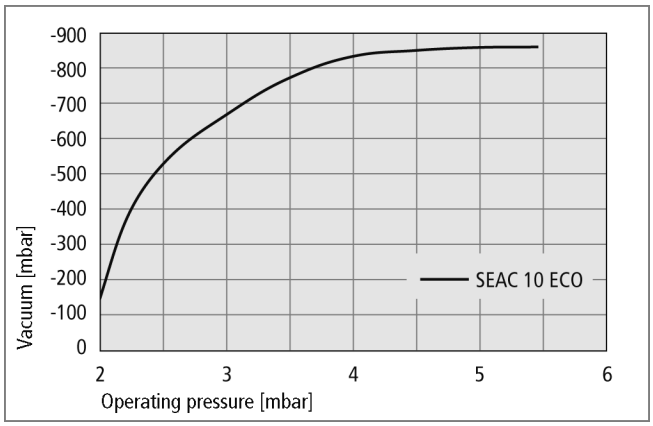
Type	Article No.
SEAC 10 ECO	10.02.02.03702

Technical Data Ejectors with Atmospheric Ventilation SEAC ECO

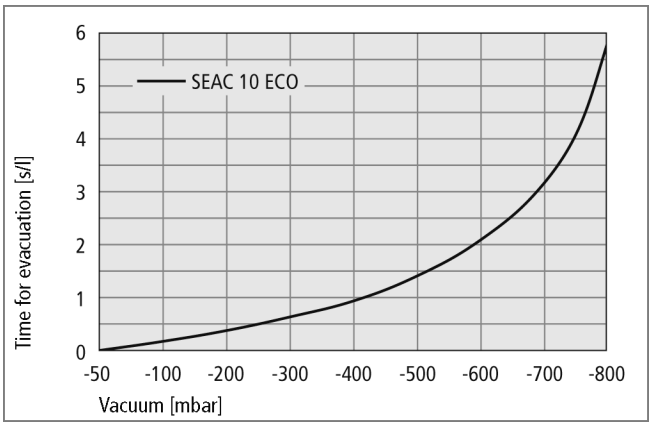
Type	Nozzle-Ø [mm]	Degree of evacuation [%]	Max. suction rate [l/min]	Max. suction rate [m³/h]	Air consumpt. during evac. [l/min]*	Operating pressure [bar]	Weight [g]
SEAC 10 ECO	1.0	85	35	2.1	52	4...6	95

*At optimal operating pressure (4,5 bar)

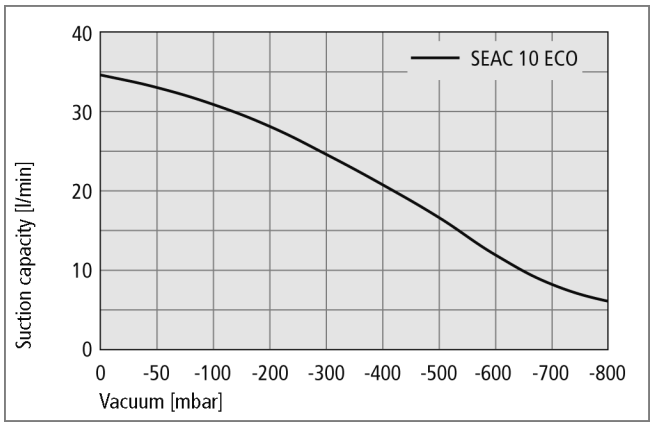
Performance Data Ejectors with Atmospheric Ventilation SEAC ECO



Achievable vacuum at various operating pressures



Evacuation times for various vacuum ranges



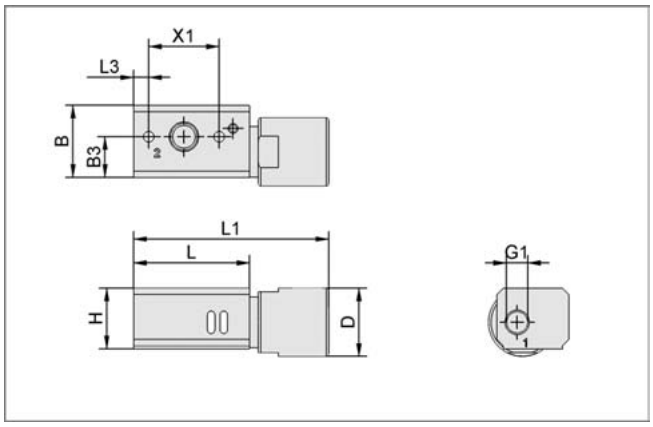
Suction capacity at various degrees of evacuation

Ejectors

Ejectors with atmospheric ventilation SEAC ECO

Suction rate 35 l/min

Design Data Ejectors with Atmospheric Ventilation SEAC ECO



SEAC 10 ECO

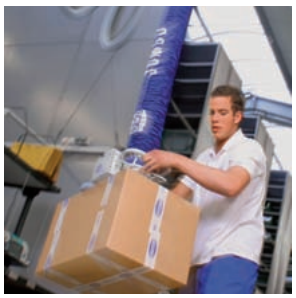
Type	Dimensions in mm								
	B	B3	D	G1	H	L	L1	L3	X1
SEAC 10 ECO	28.5	16.1	27	G1/8"-F	24	46	77.5	6	28

Vacuum Components

Innovative vacuum components from Schmalz offer many users in various sectors of industry reliable support in the solution of automation and handling tasks. The wide range of components extends from suction pads and vacuum generators to mounting elements and system monitoring devices.

Vacuum Gripping Systems

Complex vacuum gripping systems from Schmalz permit decisive productivity improvements to be achieved. The range extends from layer and large-area gripping systems to complete vacuum spiders, delivered ready for connection, for use in all areas of automation.



Vacuum Handling Systems

Ergonomical vacuum lifting devices Jumbo and VacuMaster for effortless, damage-free handling of workpieces. Crane systems to supplement these to form complete system solutions which are precisely matched to the planned application. Workshop equipment as practical aids in trade and industry.

Vacuum Clamping Systems

Future-oriented vacuum clamping technology from Schmalz is the intelligent response to the continually increasing demands for more productivity and economic operation of CNC machine tools.

Download now!
PDF brochure

J. Schmalz GmbH
Aacher Strasse 29
D-72293 Glatten
Tel. +49 (0)7443 2403 0
Fax +49 (0)7443 2403 259
schmalz@schmalz.de
www.schmalz.com