

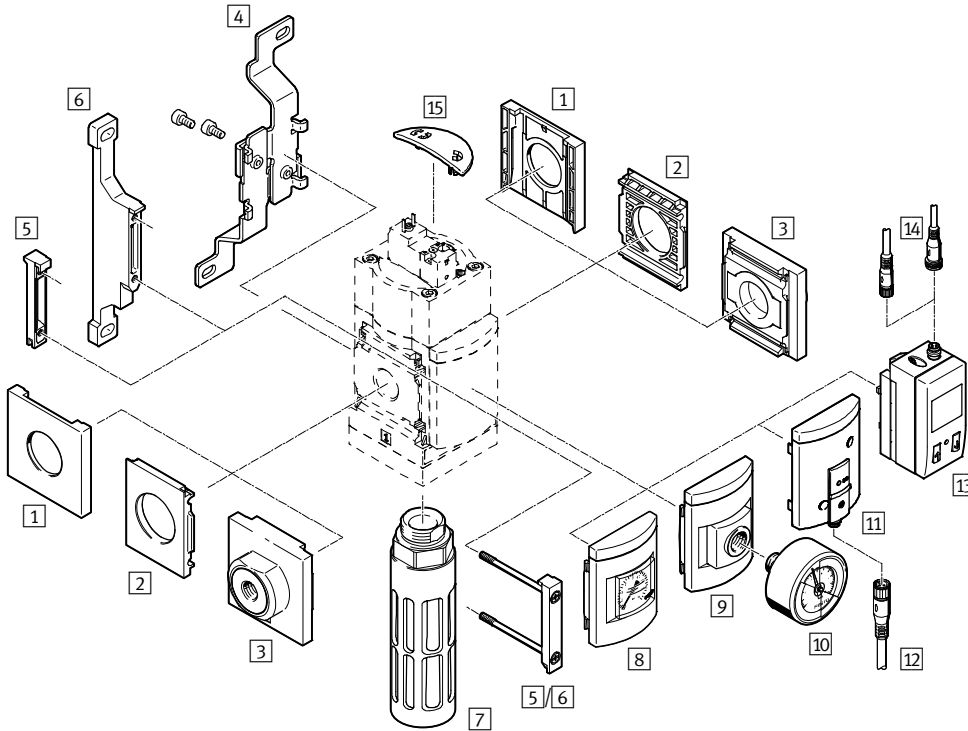
Soft-start and exhaust valves MS-SV, MS series, NPT



Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Peripherals overview

Soft-start and quick exhaust valve MS6N-SV-C



Note

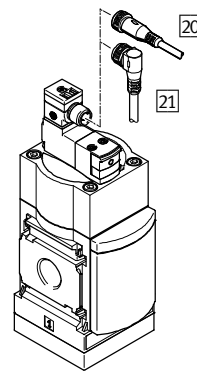
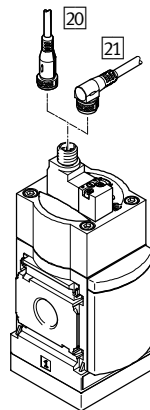
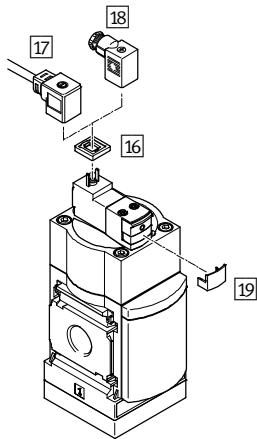
Additional accessories:

- Module connector for combination with size MS4/MS6 or size MS9 → Internet: amv, rmv, armv
- Adapter plate for mounting on profiles → Internet: ipm-80, ipm-40-80, ipm-80-80

Supply voltage
V24/10V24/V110/V230

Supply voltage
10V24P

Supply voltage
V24P



Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	-	-	■	-	ms6-end
2	Mounting plate MS6-AEND	■ ¹⁾	-	■ ¹⁾	-	ms6-aend
3	Connecting plate-SET MS6-AQ...	-	■ ¹⁾	-	■ ¹⁾	ms6-aq
4	Mounting bracket MS6-WB	■	■	-	-	ms6-wb
5	Module connector MS6-MV	-	■	■	■	ms6-mv
6	Mounting bracket MS6-WP	■	■	■	■	ms6-wp
	Mounting bracket (not shown) MS6-WPB/WPE/WPM	■	■	■	■	ms6-wp
7	Silencer U-3/4-B-NPT	■	■	■	■	38
8	MS pressure gauge AG/RG	■	■	■	■	10
9	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	10
10	Pressure gauge MA	■	■	■	■	39
11	Pressure sensor with operational status indicator AD7 ... AD10	■	■	■	■	10
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	39
13	Pressure sensor with LCD display AD1 ... AD4	■	■	■	■	10
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	39
15	Cover MS6-SV-C-MK	■	■	■	■	37
16	Illuminating seal MEB-LD	■	■	■	■	38
17	Plug socket with cable KMEB	■	■	■	■	38
18	Plug socket MSSD-EB	■	■	■	■	38
19	Locking clip CPV18-HV	■	■	■	■	39
20	Connecting cable NEBU-M12G5	■	■	■	■	39
21	Connecting cable NEBU-M12W5	■	■	■	■	39

1) Module connector MS6-MV [5] or mounting bracket MS6-WP/WPB/WPE/WPM [6] is required for mounting.

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Type codes

		MS	6	N	-	SV	-	1/2	-	C	-	10V24	-	S
Series														
MS	Standard service unit													
Size														
6	Grid dimension 62 mm													
Thread														
N	NPT thread													
Service function														
SV	Soft-start and quick exhaust valve													
Pneumatic connection														
1/2	Female thread G1/2													
Performance level														
C	Category 1, to EN ISO 13849-1													
Supply voltage														
10V24	Supply voltage 24 V DC													
Silencer														
S	Silencer													

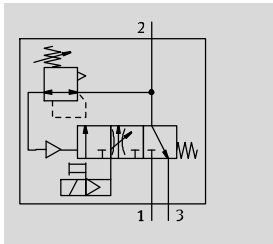
Additional variants can be ordered using the modular product system → 10

- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Tamper protection
- Flow direction

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Technical data

Function



- Flow rate
5,700 l/min
- Temperature range
0 ... +60 °C
- Operating pressure
3 ... 18 bar
- www.festo.com



Electro-pneumatic soft-start and quick exhaust valve for gradual pressurisation and quick exhausting of system components (single channel).

The main flow control valve in the cover permits a gradual build-up of output pressure p2. Once the output pressure p2 has reached the set pressure switchover point (switching pressure), the valve opens and the full operating pressure p1 is present at the output.

- Suitable for applications with high flow rates and restricted space with medium safety requirements up to controller category 1, performance level "c"
- High volumetric flow rate for pressurisation and venting
- The filling flow rate can be set via a flow control valve for gradual pressure build-up
- Adjustable pressure switchover point
- Optional pressure sensor
- Optional cover for the control sections as tamper protection

Safety characteristics	
Conforms to standard	EN ISO 13849-1
Safety function	Venting
Performance level (PL)	Venting: up to category 1, PL c
Proven component	Yes
Shock resistance	Shock test with severity level 2 according to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 according to FN 942017-4 and EN 60068-2-6

General technical data		
Pneumatic connection 1, 2	NPT $\frac{1}{2}$ -14 (female thread)	NPT $\frac{1}{4}$ -18 ... NPT $\frac{3}{4}$ -14 (with connecting plate AQ...)
Pneumatic connection 3	NPT $\frac{3}{4}$ -14	
Actuation type	Electric	
Design	Piston spool valve	
Type of mounting	Via accessories In-line installation	
Mounting position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output	
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output	
	Via pressure gauge for displaying output pressure	
	Via pressure gauge with red/green scale for displaying output pressure	
	G $\frac{1}{4}$ prepared	
Valve function	3/2-way valve, closed, single solenoid	
	Soft-start function, adjustable	
Non-overlapping	Yes	
Exhaust function	No flow control	
Reset method	Mechanical spring	
Type of control	Piloted	
Pilot air supply	Internal	
Sealing principle	Soft	

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

FESTO

Technical data

Flow rate characteristics	
Pneumatic connection	Female thread NPT1/2-14
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 → 2	5,700
In venting direction 2 → 3	7,600 ²⁾
C value [l/s*min]	
In main flow direction 1 → 2	23.2
In venting direction 2 → 3	25.6
b value	
In main flow direction 1 → 2	0.4
In venting direction 2 → 3	0.4

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

2) Measured with respect to atmosphere with silencer S

Electrical data		
Coil characteristics	V24, V24P	24 V DC: 1.5 W; permissible voltage fluctuations $\pm 10\%$
	10V24, 10V24P	24 V DC: 1.8 W; permissible voltage fluctuations $-15\%/+10\%$
	V110	110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; permissible voltage fluctuations $\pm 10\%$
	V230	230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; permissible voltage fluctuations $-14\%/+10\%$
Electrical connection	V24, 10V24	Plug, 2-pin, to EN 175301-803, type C
	V110, V230	Plug, 3-pin, to EN 175301-803, type C
	10V24P	M12x1, 2-pin, to IEC 61076-2-101
	V24P	M12x1, 2-pin, to EN 60947-5-2
Protection class	IP65 with plug socket	
Duty cycle	[%]	100
Switching time off	[ms]	65
Switching time on	[ms]	370

Operating and environmental conditions			
Variant	Coil characteristic V24, V24P	Coil characteristic 10V24, 10V24P	Coil characteristic V110, V230
Operating pressure [bar]	3 ... 18 (3 ... 10) ²⁾	3 ... 10	3 ... 18 (3 ... 10) ²⁾
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)		
Ambient temperature [°C]	0 ... +60 (0 ... +50) ²⁾		
Temperature of medium [°C]	0 ... +60 (0 ... +50) ²⁾		
Storage temperature [°C]	-10 ... +60 (0 ... +50) ²⁾		
Corrosion resistance class CRC ¹⁾	2		
CE marking (see declaration of conformity)	-	-	To EU Low Voltage Directive

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) With pressure sensor AD...

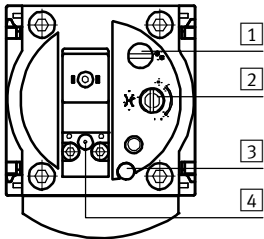
Weight [g]	
Soft-start and quick exhaust valve	886
Soft-start and quick exhaust valve with silencer S	1,006

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Technical data

Materials	
Housing	Die-cast aluminium
Piston rod	High-alloy stainless steel
Seals	Nitrile rubber
Note on materials	RoHS-compliant

Adjusting elements



- 1 Screw for adjusting the pressure switchover point
- 2 Flow control screw for adjusting the filling time
- 3 Manual override at the soft-start and quick exhaust valve:
 - Detenting/self-resetting as soon as the solenoid coil or manual override at the pilot solenoid valve is actuated.
- 4 Manual override at the pilot solenoid valve:
 - Non-detenting, actuation from above (with 10V24)
 - Non-detenting/detenting, actuation from the front (with V24/V24P/V110/V230)

Dimensions – Basic design

Download CAD data → www.festo.com

With female thread NPT $\frac{1}{2}$, with cover plate

Supply voltage
V24/10V24/V110/V230

Supply voltage
10V24P

Supply voltage
V24P

With silencer S

- 1 Plug connection to EN 175301-803
- 2 Electrical connection to IEC 61076-2-101, plug M12x1, 2-pin for NEBU-M12
- 3 Electrical connection to EN 60947-5-2, plug M12x1, 2-pin for NEBU-M12

→ Flow direction

Supply voltage V24/V24P/V110/V230

Supply voltage 10V24/10V24P

- - Note

For detenting manual override, remove the grey cover 6 and push the slide 5 downwards.

- 4 Non-detenting manual override (as supplied) at the pilot solenoid valve
- 5 Slide
- 6 Cover
- 7 Non-detenting and detenting manual override (variant 10V24 non-detenting only) at the pilot solenoid valve

Type	B1	B4	B5	D1	D2	D5	L1	L2	L4
MS6N-SV-C	62	31	76	NPT $\frac{1}{2}$ -14	M12x1	NPT $\frac{3}{4}$ -14	144	71	135

Type	L8				L9		
	V24/V110/V230	10V24	10V24P	V24P	V24/V110/V230	10V24	10V24P
MS6N-SV-C	37	33	37	48	26	24	26

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

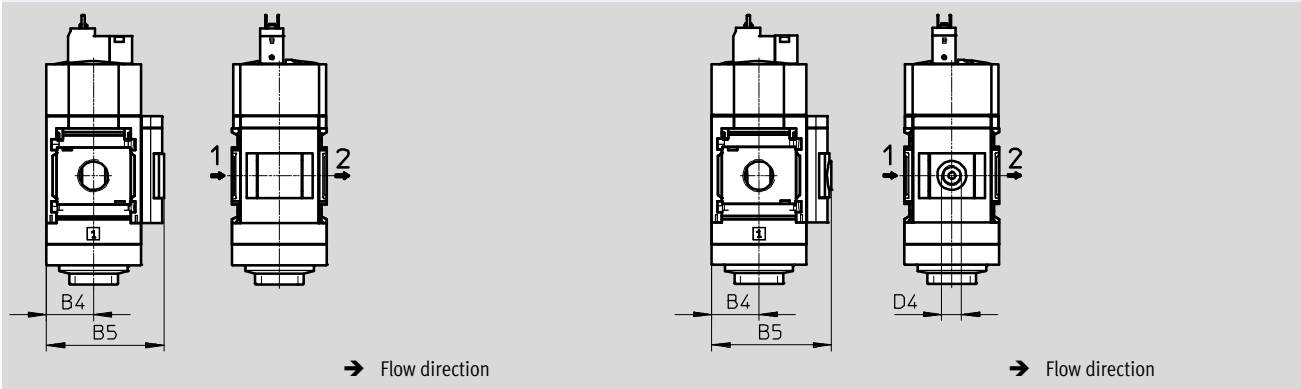
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red/green scale RG, display unit [bar]

Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge

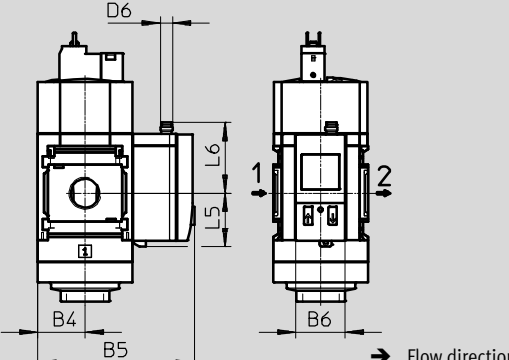


Type	B4	B5	D4
MS6N-SV-...-AG	31	77	-
MS6N-SV-...-RG	31	78.5	-
MS6N-SV-...-A4	31	78.5	G1/4

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com
 Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: [sde1](#)



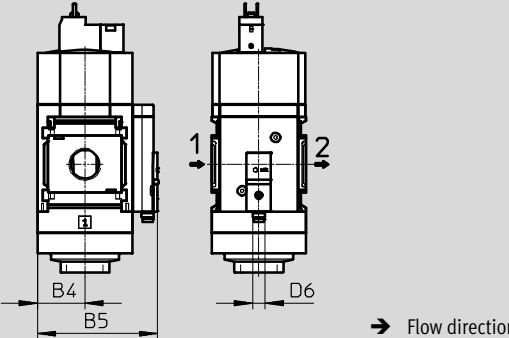
Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switching output PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with 3-pin plug M8x1, 1 switching output NPN

Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switching output PNP and 4 ... 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with 4-pin plug M12x1, 1 switching output NPN and 4 ... 20 mA analogue

Pressure sensor with operational status indicator AD7 ... AD10 Technical data → Internet: [sde5](#)



Variant AD7:
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

Type	B4	B5	B6	D6	L5	L6
MS6N-SV-...-AD1/AD2	31	102	32.3	M8x1	35.1	46.7
MS6N-SV-...-AD3/AD4				M12x1		55.8
MS6N-SV-...-AD7/AD8/AD9/AD10	31	79	–	M8x1	–	–

Ordering data		
Size	Connection	With silencer
		Part No. Type
Cover plate		
MS6	NPT $\frac{1}{2}$ -14	8001470 MS6N-SV-$\frac{1}{2}$-C-10V24-S

Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT



Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Thread	Function	Pneumatic connection	Performance level	Supply voltage
548714	MS	6	N	SV	1/2, AQN, AQP, AQR, AQS	C	V24, V24P, 10V24, 10V24P, V110, V230
Ordering example							
548714	MS	6	N	- SV	- AQP	- C	- 10V24

Ordering table

Grid dimension	[mm]	62	Condi- tions	Code	Enter code
M Module No.	548714				
Series	Standard			MS	MS
Size	6			6	6
Thread	NPT thread			N	N
Function	Soft-start and quick exhaust valve			-SV	-SV
Pneumatic connection	Female thread NPT1/2			-1/2	
	Connecting plate NPT1/4			-AQN	
	Connecting plate NPT3/8			-AQP	
	Connecting plate NPT1/2			-AQR	
	Connecting plate NPT3/4			-AQS	
Performance level	Category 1, 1-channel, to EN ISO 13849-1			-C	-C
Supply voltage	24 V DC (pin allocation to EN 175301), 3 ... 18 bar			-V24	
	24 V DC with M12 plug socket adapter (pin allocation to EN 60947-5-2), 3 ... 18 bar			-V24P	
	24 V DC (pin allocation to EN 175301), 3 ... 10 bar			-10V24	
	24 V DC, M12 to IEC 61076-2-101, 3 ... 10 bar			-10V24P	
	110 V AC (pin allocation to EN 175301), 3 ... 18 bar			-V110	
	230 V AC (pin allocation to EN 175301), 3 ... 18 bar			-V230	

Transfer order code

548714	MS	6	N	- SV	-	C	-
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Soft-start and quick exhaust valves MS6N-SV-C, MS series, NPT

Ordering data – Modular products

Options					
Silencer	Pressure gauge/ pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Tamper protection	Flow direction
S	AG, A4, RG, AD1, AD2, AD3, AD4, AD7, AD8, AD9, AD10	PSI, MPA	WP, WPM, WB	MK	Z
- S	- AG	-	- WP	-	-

Ordering table					
Grid dimension	[mm]	62	Condi- tions	Code	Enter code
0	Silencer	Silencer		-S	
	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4	
		Integrated pressure gauge, red/green scale	1	-RG	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	2	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	2	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	2	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	2	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	2	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	2	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	2	-AD9	
	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	2	-AD10		
	Alternative pressure gauge scale	psi	3	-PSI	
		MPa	3	-MPA	
	Type of mounting	Mounting bracket, connecting kit		-WP	
		Mounting bracket, connecting kit	4	-WPM	
		Mounting bracket, housing		-WB	
	Tamper protection	Complete (manual override at soft-start/quick exhaust valve locked, adjusting screw locked, manual override at pilot solenoid valve locked (only with supply voltage 10V24, 10V24P))		-MK	
	Flow direction	Flow direction from right to left		-Z	

1 RG Not with alternative pressure gauge scale PSI, PSI scale serves only as an auxiliary scale

2 AD1 ... AD4, AD7 ... AD10 Measuring range max. 10 bar

3 PSI, MPA Not with pressure gauge/pressure gauge alternatives A4, AD1, AD2, AD3, AD4, AD7, AD8, AD9, AD10

4 WPM Only with connecting plate AQN, AQP, AQR or AQS

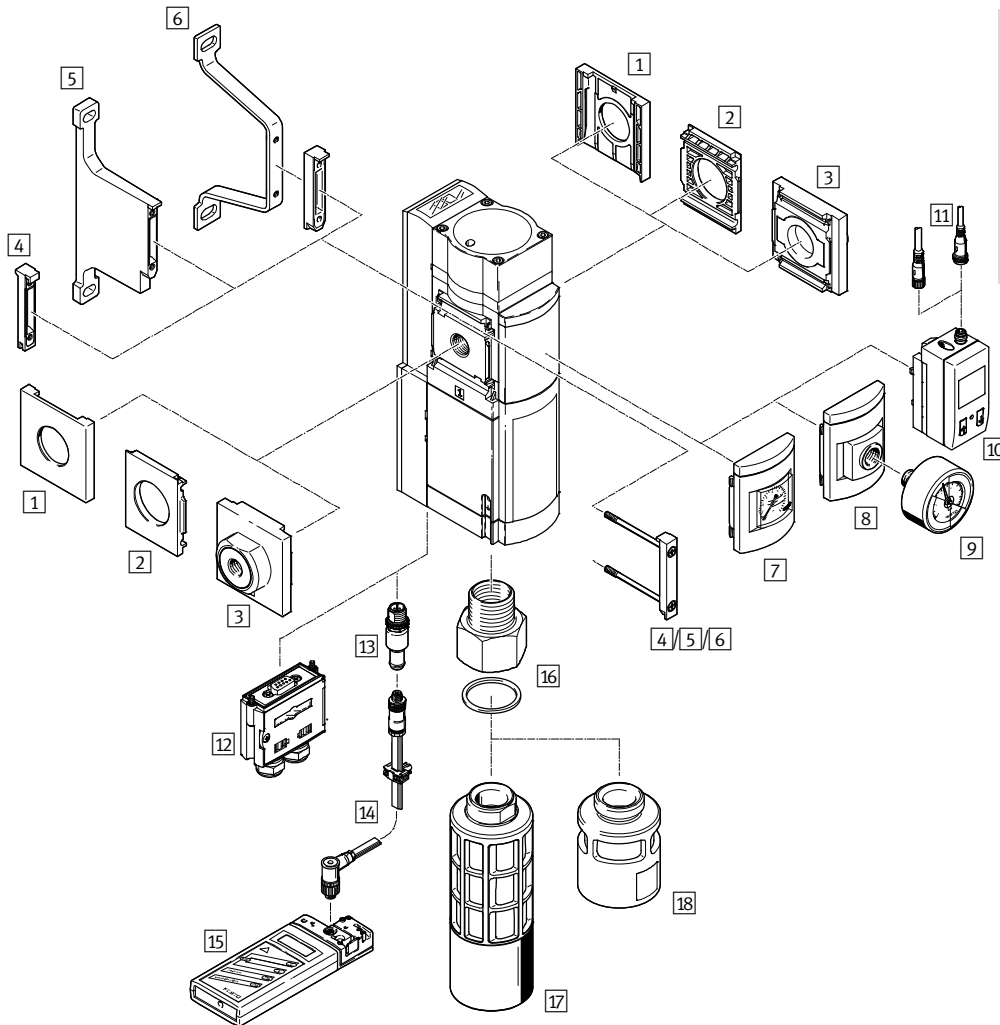
Transfer order code

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Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Peripherals overview

Soft-start and quick exhaust valve MS6N-SV-E



Note

Additional accessories:

- Module connector for combination with size MS4/MS6 or size MS9 → Internet: amv, rmv, armv
- Adapter plate for mounting on profiles → Internet: ipm-80, ipm-40-80, ipm-80-80

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Peripherals overview

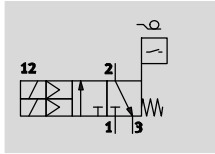
Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connect- ing plate	With connecting plate	Without connect- ing plate	With connecting plate	
1	Cover cap MS6-END	-	-	■	-	ms6-end
2	Mounting plate MS6-AEND	■ ¹⁾	-	■ ¹⁾	-	ms6-aend
3	Connecting plate-SET MS6-AQ...	-	■ ¹⁾	-	■ ¹⁾	ms6-aq
4	Module connector MS6-MV	-	-	■	■	ms6-mv
5	Mounting bracket MS6-WPB	■	■	■	■	ms6-wpb
6	Mounting bracket MS6-WPE	■	■	■	■	ms6-wpe
7	MS pressure gauge AG	■	■	■	■	22
8	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	22
9	Pressure gauge MA	■	■	■	■	39
10	Pressure sensor with LCD display AD1 ... AD4	■	■	■	■	22
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	39
12	Multi-pin plug socket NECA	■	■	■	■	34
13	AS-i configuration plug CACC	■	■	■	■	37
14	Addressing cable KASI-ADR	■	■	■	■	kasi-asi
15	Addressing device ASI-PRG-ADR	■	■	■	■	asi-prg-adr
16	Adapter AD	■	■	■	■	38
17	Silencer UOS-1	■	■	■	■	36
18	Silencer UOS-1-LF	■	■	■	■	36

1) Module connector MS6-MV or mounting bracket MS6-WPB/WPE is required for mounting.

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

Function



- - Flow rate
4,300 l/min
- - Temperature range
-10 ... +50 °C
- - Operating pressure
3.5 ... 10 bar
- - www.festo.com



The electro-pneumatic soft-start and quick exhaust valve is used to reduce pressure quickly and reliably and to build up pressure gradually in industrial pneumatic systems and terminals. The device is a self-testing, redundant mechatronic system conforming to the

requirements of EN ISO 13849-1. The safety-related pneumatic protection objective of safe venting is also guaranteed in the event of faults inside the valve (e.g. due to wear, contamination, electronic faults). Thanks to the 2-channel design and its monitoring, the device fulfils controller category 3

and 4 requirements. This enables a performance level of max. "e" to be attained. The device receives the secure enable signals (EN1/EN2) via the electrical connection (multi-pin plug socket NECA Sub-D, 9-pin or AS-i connecting cable). The signals in question come

from commercially available electronic or electromechanical safety switching devices which monitor the protective equipment of the machine (e.g. emergency stop, light curtain, electrical door switch of a protective enclosure, etc.).

Note
The MS6N-SV-...-E-10V24 should only be used in combination with the multi-pin plug socket NECA approved for it. The multi-pin plug socket can be ordered via the modular product system (MP... → 42) or as an accessory (NECA → 54).

Note
To avoid back pressures, it is recommended that the device be operated together with the silencer UOS-1. The silencer can be ordered via the modular product system (SO → 42) or as an accessory (UOS-1 → 56).

Note
Only devices that do not impair the pneumatic protective measure – safe venting – may be placed downstream of the MS6N-SV-...-E. The MS6N-SV-...-E is not permitted for use as a press safety valve.

- Performance level "e"/category 4 according to EN ISO 13849-1
- Conforms to standard IEC 61508
- Switching time delay adjustable via a flow control valve for gradual pressure build-up
- Optional pressure sensor

Safety characteristics		
Type	MS6N-SV-...-E-10V24	MS6N-SV-...-E-ASIS
Conforms to standard	EN ISO 13849-1	
Safety function	Venting	
Performance level (PL)	Venting: category 4, PL e	
Safety integrity level (SIL)	Venting: SIL 3	
Note on forced dynamisation	Switching frequency min. 1/month	
Certificate issuing authority	BGIA 0904020	-
CE marking (see declaration of conformity)	To EU Machinery Directive	
	To EU EMC Directive	
Shock resistance	Shock test with severity level 2 according to FN 942017-5 and EN 60068-2-27	
Vibration resistance	Transport application test with severity level 2 according to FN 942017-4 and EN 60068-2-6	

Note on forced dynamisation: switching frequency min. 1/month
The mechanical system is not tested in the controlled (i.e. pressurised) state. If the process-related switching frequency (safe venting) is less than once a month, the machine operator must carry out a forced switch-off.

- Additional functions of MS6N-SV-...-E-ASIS:**
- Integrated pressure sensors via AS-i protocol
 - Pressure monitoring (under/over-shooting)

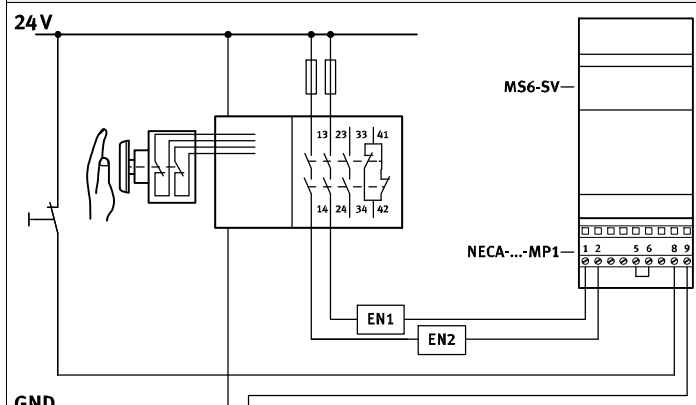
Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

Operational principle of the multi-pin plug socket NECA				
Status of enable signal		Status of MS6N-SV-...-E-10V24 with multi-pin plug		
EN1	EN2	NECA-...- MP1	NECA-...- MP3	NECA-...- MP5
0 V	0 V	Unpressurized	MS6N-SV-...-E-10V24 goes into the fault mode.	MS6N-SV-...-E-10V24 does not go into the fault mode, but remains in the safe, unpressurized status. Note: Cross-circuit detection and error detection/evaluation via external controller necessary.
0 V	24 V	MS6N-SV-...-E-10V24 goes into the fault mode.	Pressurized	Pressurized
24 V	24 V	Pressurized	MS6N-SV-...-E-10V24 goes into the fault mode.	MS6N-SV-...-E-10V24 does not go into the fault mode, but remains in the safe, unpressurized status. Note: Cross-circuit detection and error detection/evaluation via external controller necessary.
24 V	0 V	MS6N-SV-...-E-10V24 goes into the fault mode.	Unpressurized	Unpressurized

MS6N-SV-...-E-10V24 with multi-pin plug socket NECA

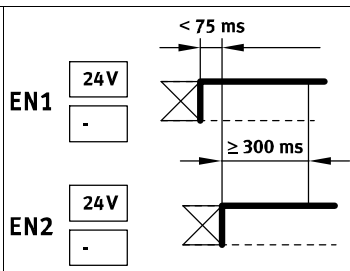
NECA-...- MP1



24 V

GND

– Static enable signals (EN1 = 24 V, EN2 = 24 V).



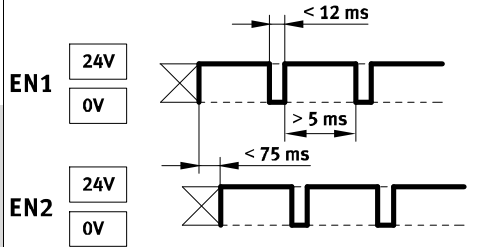
EN1 24V
.

EN2 24V
.

– Clocked enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) for cross-circuit detection. Cross-circuit detection with clock signals is in principle carried out by the safety switching device/safety PLC used.

Note

Given the fact that clock outputs from different controller manufacturers are not standardised, their usability must be checked in each case. If the clock pulse is outside of the described limits, this is recognised by the MS6N-SV-...-E-10V24 as an error and a safe switch-off is performed.



EN1 24V
0V

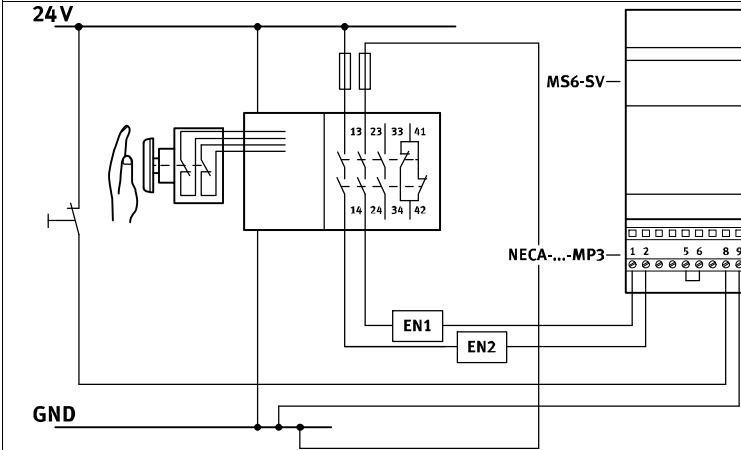
EN2 24V
0V

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

MS6N-SV-...-E-10V24 with multi-pin plug socket NECA

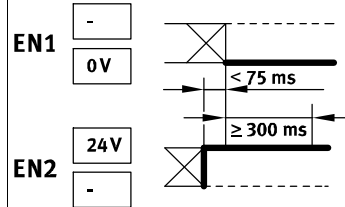
NECA-...-MP3



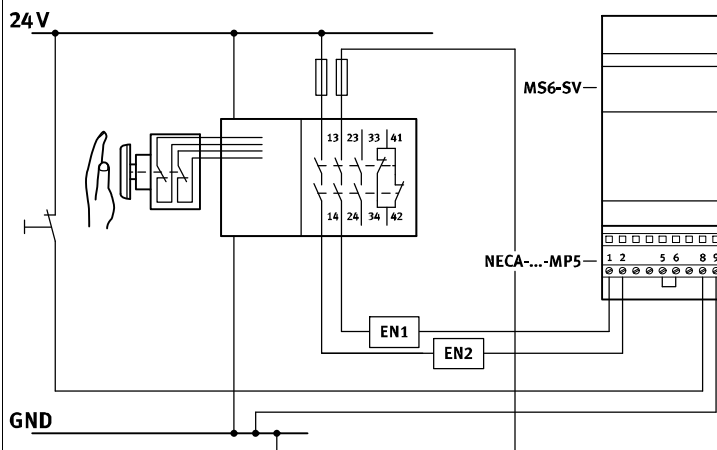
Note

The multi-pin plug socket NECA-S1G9-P9-MP3 is intended for conventional circuitry with electromechanical safety relays. If problems arise in use with bipolar semiconductor outputs, use the multi-pin plug socket NECA-S1G9-P9-MP5.

- Static enable signals with opposite potentials.
- The time delay of the level change of the enable signals is monitored.
- Behaviour on detection of a cross circuit:
 - MS6N-SV-...-E-10V24 in the exhausted status: remains in the safe status and goes into the fault mode.
 - MS6N-SV-...-E-10V24 in the pressurized status: goes into the safe status and goes into the fault mode.



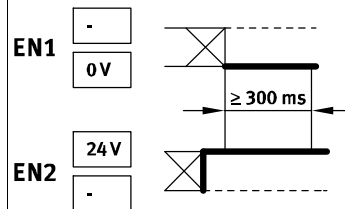
NECA-...-MP5



Note

A cross circuit between the enable signals (EN1/EN2) is not detected and does not cause an error response. The system can be pressurized only when the enable signals are applied correctly.

- Static enable signals with opposite potentials.
- The time delay of the level change of the enable signals is not monitored.
- Behaviour on detection of a cross circuit (through upstream safety switching device/safety PLC):
 - MS6N-SV-...-E-10V24 in the exhausted status: remains in the safe status and does not go into the fault mode.
 - MS6N-SV-...-E-10V24 in the pressurized status: goes into the safe status and does not go into the fault mode.
- Enable signal are galvanically separated from the supply voltage.



Note

The time delay between EN1 and EN2 must be automatically determined. The duration of the delay is not evaluated.

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

FESTO

MS6N-SV-...-E-ASIS in the actuator-sensor interface (AS-i)

The actuator-sensor interface (AS-i) is a system for networking sensors and actuators on the lowest level of the automation hierarchy. It is a non-proprietary, open bus system and enables transfer of data and energy on just one line. This simple method permits an efficient configuration with simultaneously reliable performance. The network topology of the AS-i system can be expanded as desired without any difficulty.

An AS-i network consists of a control

unit, a so-called master and the associated sensor and actuator components, namely the slaves. The master cyclically polls all configured slaves and exchanges input and output data with them. A telegram consists of 4 bits of user data. The master communicates with the slaves via a serial transmission protocol.

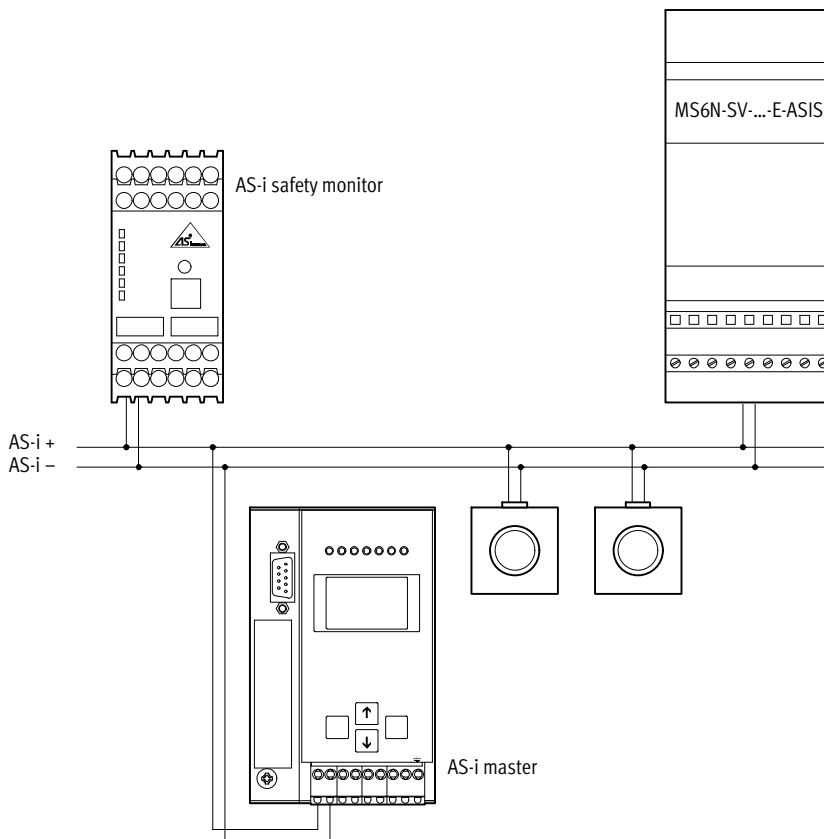
AS-i Safety at Work is a certified standard that enables safety-related components to be used in the AS-i system. The safe AS-i system is designed

for safety applications up to category 4 according to EN ISO 13849-1 PL "e". Mixed operation of standard components and safety-oriented components is possible. The AS-interface master considers the safety-oriented slaves just like all other slaves and incorporates them into the network. The transmission protocol and the cables in the AS-i system are laid out so that they are also capable of transmitting safety-oriented telegrams.

The AS-i safety monitor is the central

safe component and monitors the safety-oriented slaves assigned to it within an AS-i system. The safety function is ensured via additional signal transmission between the safety-oriented slaves and the AS-i safety monitor. This transmission takes place with a special safety protocol.

In the case of a stop request or defect, the AS-i safety monitor in protection mode reliably switches the system off with a maximum reaction time of 40 ms.



Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

General technical data		
Pneumatic connection 1, 2	NPT1/2-14 (female thread)	NPT1/4-18 ... NPT3/4-14 (with connecting plate AQ...)
Pneumatic connection 3	NPT1-11 1/2	
Actuation type	Electric	
Design	Piston seat	
Type of mounting	Via accessories In-line installation	
Mounting position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output	
	Via pressure gauge for displaying output pressure	
	G3/4 prepared	
Position sensing principle	Solenoid piston principle	
Valve function	3/2-way valve, closed, single solenoid	
	Soft-start function, adjustable	
Non-overlapping	No	
Exhaust function	No flow control	
Manual override	None	
Reset method	Mechanical spring	
Type of control	Piloted	
Pilot air supply	Internal	
Sealing principle	Soft	

Flow rate characteristics		
Pneumatic connection	Female thread NPT1/2-14	
Standard nominal flow rate q_{nN^1} [l/min]		
In main flow direction 1 \rightarrow 2	4,300	
In venting direction 2 \rightarrow 3	9,000 ²⁾	
C value [l/s*min]		
In main flow direction 1 \rightarrow 2	19.3	
In venting direction 2 \rightarrow 3	24.6	
b value		
In main flow direction 1 \rightarrow 2	0.21	
In venting direction 2 \rightarrow 3	0.4	

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

2) Measured with respect to atmosphere with silencer UOS-1

Electrical data		
Type	MS6N-SV-...-E-10V24	MS6N-SV-...-E-ASIS
Electrical connection	Sub-D, 9-pin	2x M12
Nominal operating voltage [V DC]	24	-
Permissible voltage fluctuations [%]	± 10	-
Operating voltage range for AS-interface [V DC]	-	22 ... 31.6
Duty cycle [%]	100	
Max. switching frequency [Hz]	1	
Switching time off [ms]	40	
Switching time on [ms]	130	
Switching position display	LED and floating contact	LED and via AS-i
Protection class	IP65 with plug socket	

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

FESTO

Technical data

AS-i Safety-specific data	
Type	MS6N-SV-...-E-ASIS
Fieldbus interface	Socket M12 (AS-i Out) and plug M12 (AS-i In)
LED displays	AS-i and status
Device-specific diagnostics	Inputs for cyclical digital data (exhausted, pressurised, fault) Cyclical analogue values (supply pressure p1, output pressure p2) Acyclical values (counter, pressure monitoring, fault, switching frequency exceeded, status)
Product identification	IO code: 0x7 Profile: 7.5.5 ID code: 0x5 ID1: 0xF ID2: 0x5
Vendor ID AS-interface	0x014D
Device ID AS-interface	0x03A6
Addressing range	Standard slave: 1 ... 31

Operating and environmental conditions		
Type	MS6N-SV-...-E-10V24	MS6N-SV-...-E-ASIS
Operating pressure [bar]	3.5 ... 10	3.5 ... 10
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]	
Note on operating/ pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]	-10 ... +50 (0 ... +50) ²⁾	0 ... +50
Temperature of medium [°C]	-10 ... +50 (0 ... +50) ²⁾	0 ... +50
Storage temperature [°C]	-10 ... +50 (0 ... +50) ²⁾	0 ... +50
Corrosion resistance class CRC ¹⁾	2	
Noise level [dB(A)]	75 (with silencer UOS-1)	
CE marking (see declaration of conformity)	To EU EMC Directive	
	To EU Machinery Directive	
Certification (variant UL1)	cULus recognized (OL)	
Certification	C-Tick	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) With pressure sensor AD...

Weight [g]	
Soft-start and quick exhaust valve	2,000
Soft-start and quick exhaust valve with silencer UOS-1	2,200

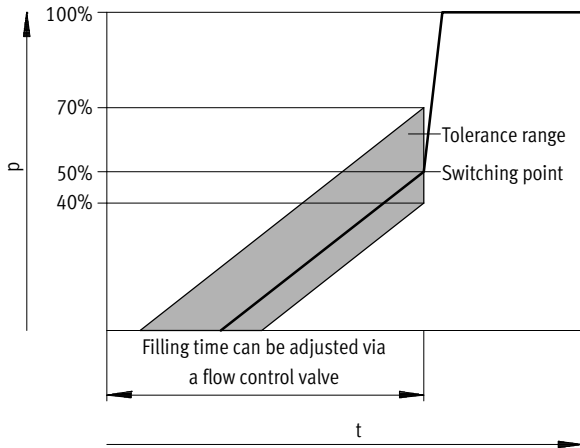
Materials	
Housing	Die-cast aluminium
Piston rod	High-alloy stainless steel
Seals	NBR
Note on materials	RoHS-compliant

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Technical data

Switching point

Pressure p as a function of time t



Note

The +20%/−10% switching point tolerance refers to the operating pressure p_1 .

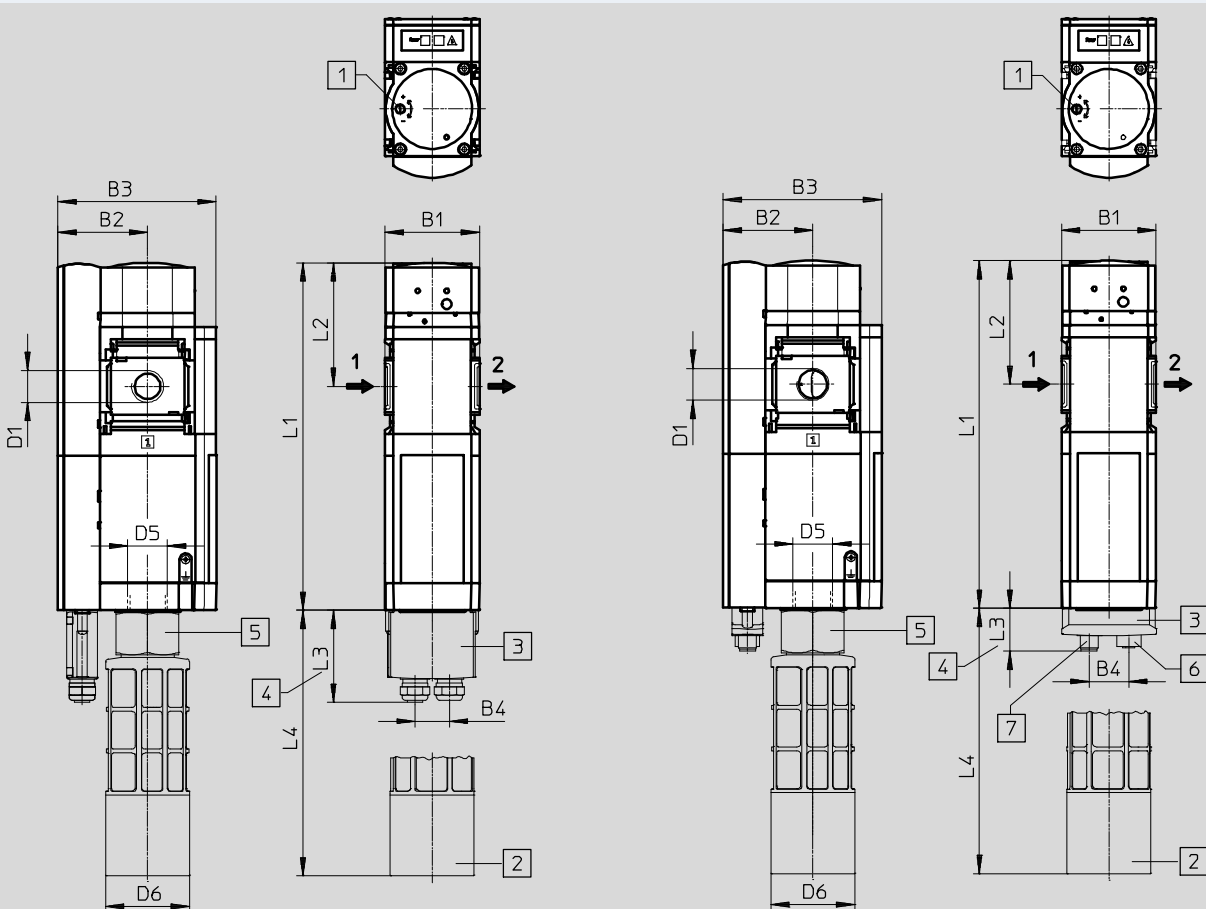
Example: A switching point from 1.6 bar to 2.8 bar is permissible at an operating pressure of 4 bar.

Dimensions – Basic design

With supply voltage 10V24,
with female thread NPT $\frac{1}{2}$, with cover plate

Download CAD data → www.festo.com

With supply voltage ASIS,
with female thread NPT $\frac{1}{2}$, with cover plate



1 Regulating screw for flow control valve

3 Multi-pin plug socket NECA or AS-i configuration plug CACC

5 Adapter AD

→ Flow direction

2 Silencer UOS-1

4 Dimension without cable

6 M12 socket, 5-pin

7 M12 pin, 5-pin

Type	B1	B2	B3	B4	D1	D5	D6	L1	L2	L3	L4
MS6N-SV- $\frac{1}{2}$ -E-10V24	62	59	104	22.5	NPT $\frac{1}{2}$ -14	NPT1-11 $\frac{1}{2}$	55	228	81	61	174.3
MS6N-SV- $\frac{1}{2}$ -E-ASIS				26.1						28.3	

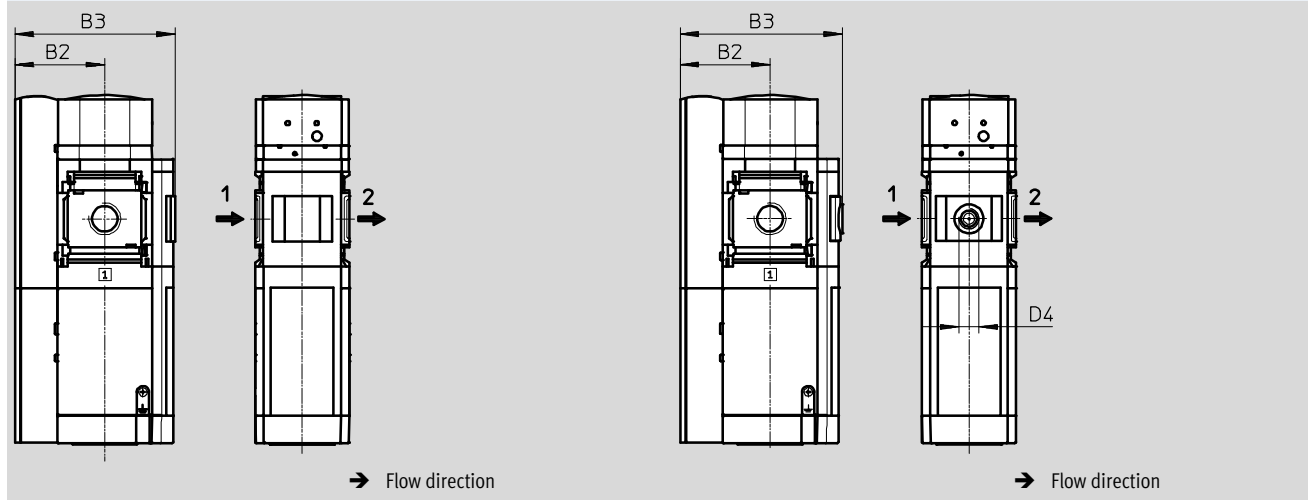
Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

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Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar] Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge

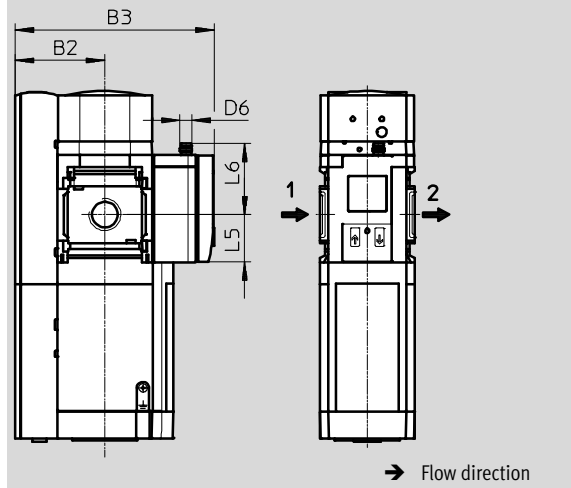


→ Flow direction → Flow direction

Type	B2	B3	D4
MS6N-SV-...-E-...-AG	59	105	-
MS6N-SV-...-E-...-A4		106.5	G ¹ / ₄

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: sde1



→ Flow direction

Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switching output PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with 3-pin plug M8x1, 1 switching output NPN

Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switching output PNP and 4 ... 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with 4-pin plug M12x1, 1 switching output NPN and 4 ... 20 mA analogue

Type	B2	B3	D6	L5	L6
MS6N-SV-...-E-...-AD1/AD2	59	131	M8x1	31.2	46.7
MS6N-SV-...-E-...-AD3/AD4			M12x1		55.8

Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Thread	Function	Pneumatic connection	Performance level	Supply voltage
548714	MS	6	N	SV	1/2, AQN, AQP, AQR, AQS	E	10V24, ASIS
Ordering example							
548714	MS	6	N	- SV	- AQP	- E	- 10V24

Ordering table		Grid dimension [mm]	62	Condi-tions	Code	Enter code
M	Module No.	548714				
	Series	Standard			MS	MS
	Size	6			6	6
	Thread	NPT thread			N	N
	Function	Soft-start and quick exhaust valve			-SV	-SV
	Pneumatic connection	Female thread NPT1/2			-1/2	
		Connecting plate NPT1/4			-AQN	
		Connecting plate NPT3/8			-AQP	
		Connecting plate NPT1/2			-AQR	
		Connecting plate NPT3/4			-AQS	
	Performance level	Category 4, 2-channel with self-monitoring, to EN ISO 13849-1			-E	-E
	Supply voltage	24 V DC (pin allocation to EN 175301)			-10V24	
		22 ... 31.6 V DC, AS-i Safety at Work, SPEC3.0 Profile 7.5.5			-ASIS	

Transfer order code

548714	MS	6	N	- SV	-	E	-
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Soft-start and quick exhaust valves MS6N-SV-E, MS series, NPT

Ordering data – Modular products

FESTO

0 Options						
Silencer	Pressure gauge/ pressure gauge alternatives	Alternative pres- sure gauge scale	Multi-pin plug socket	Type of mounting	UL certification	Flow direction
SO	AG, A4, AD1, AD2, AD3, AD4	PSI, MPA	MP1, MP3, MP5	WPB	UL1	Z
- SO	- AG	-	- MP1	- WPB	-	-

Ordering table						
Grid dimension	[mm]	62	Condi- tions	Code	Enter code	
0 Silencer		Open silencer		-SO		
Pressure gauge/pressure gauge alternatives		MS pressure gauge		-AG		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4		
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin	1	-AD1		
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin	1	-AD2		
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	1	-AD3		
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	1	-AD4		
Alternative pressure gauge scale		psi	2	-PSI		
		MPa	2	-MPA		
Multi-pin plug socket		Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 24 V, EN2 = 24 V)	1	-MP1		
		Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible	1	-MP3		
		Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), galvanic isolation of the enable signals from the supply voltage	1	-MP5		
Type of mounting		Mounting bracket, large clearance		-WPB		
UL certification		cULus, ordinary location for Canada and USA	1	-UL1		
Flow direction		Flow direction from right to left		-Z		

1 **AD1, AD2, AD3, AD4, MP1, MP3, MP5, UL1**

Now with supply voltage ASIS.

2 **PSI, MPA** Not with pressure gauge/pressure gauge alternatives A4, AD1, AD2, AD3, AD4

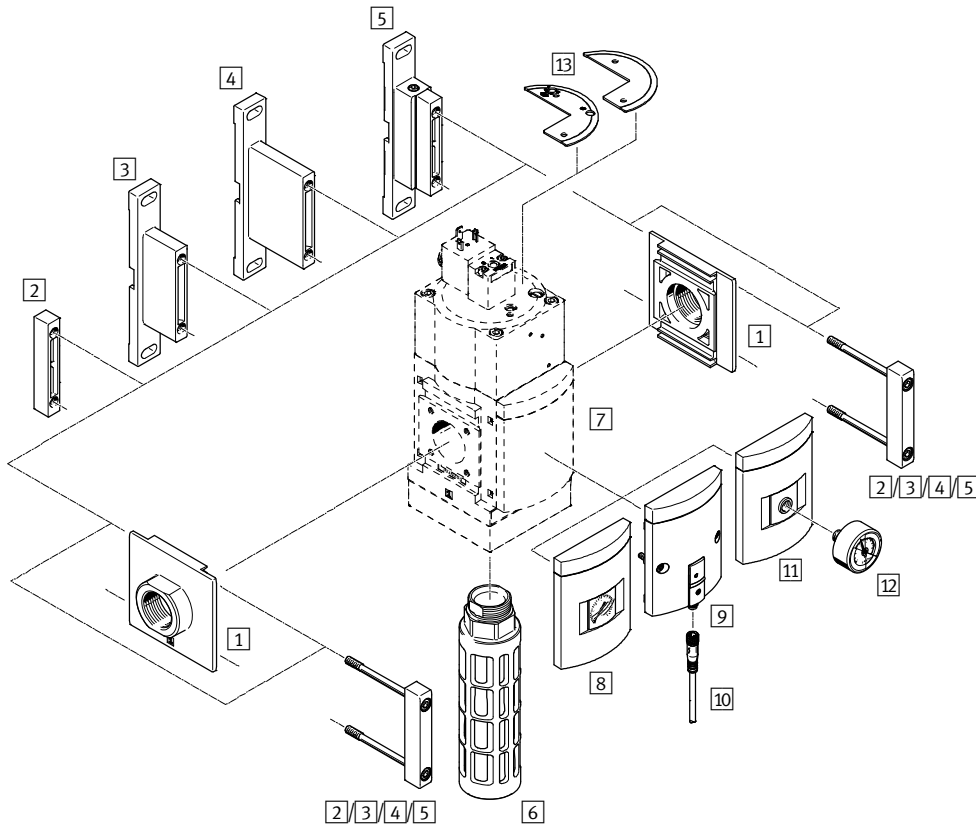
Transfer order code

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Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Peripherals overview

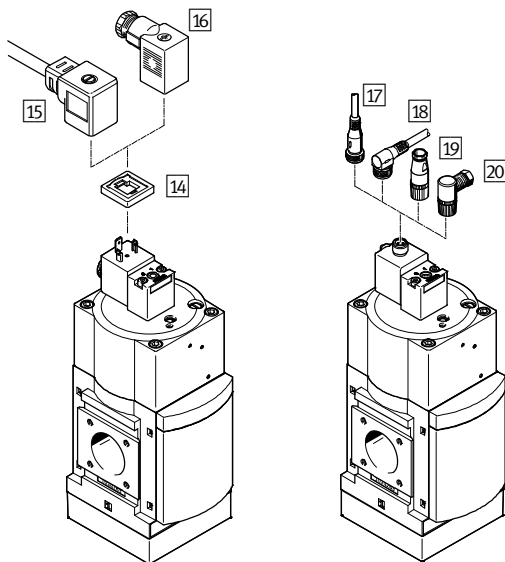
Soft-start and quick exhaust valve MS9-SV-C



Note
 Additional accessories:
 - Module connector for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

Supply voltage
 V24/V110/V230

Supply voltage
 10V24P



Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Peripherals overview

Mounting attachments and accessories					
		Individual device		Combination	→ Page/ Internet
		With female thread N¾ or N1	With connecting plate AQ...	Module without connecting thread, without connecting plate NG	
1	Connecting plate-SET MS9-AQ...	-	■	■	ms9-aq
2	Module connector MS9-MV	-	-	■	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	■	■	ms9-wp
6	Silencer U-1-B	■	■	■	38
7	Cover plate VS	■	■	■	32
8	MS pressure gauge AG/RG	■	■	■	32
9	Pressure sensor with operational status indicator AD7 ... AD10	■	■	■	32
10	Connecting cable NEBU-M8...-LE3	■	■	■	39
11	Adapter plate for EN pressure gauge ¼ A4	■	■	■	32
12	Pressure gauge MA	■	■	■	39
13	Cover MS9-SV-MH/MK	■	■	■	37
14	Illuminating seal MC-LD	■	■	■	38
15	Plug socket with cable KMC	■	■	■	38
16	Plug socket MSSD-C	■	■	■	38
17	Connecting cable NEBU-M12G5	■	■	■	39
18	Connecting cable NEBU-M12W5	■	■	■	39
19	Sensor socket SIE-GD	■	■	■	39
20	Angled socket SIE-WD	■	■	■	39

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Type codes

		MS	9	-	SV	-	NG	-	C	-	V24	-	S	-	VS
Series															
MS	Standard service unit														
Size															
9	Grid dimension 90 mm														
Service function															
SV	Soft-start and quick exhaust valve														
Pneumatic connection															
NG	Module without connecting thread, without connecting plate														
Performance level															
C	Category 1, to EN ISO 13849-1														
Supply voltage															
V24	Supply voltage 24 V DC														
Silencer															
S	Silencer														
Pressure gauge/pressure gauge alternatives															
VS	Cover plate														

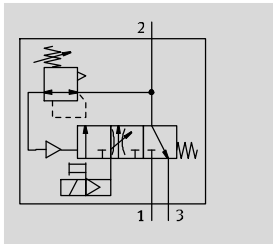
Additional variants can be ordered using the modular product system → 32

- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Tamper protection
- UL certification
- Flow direction

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Technical data

Function



- Flow rate
8,300 ... 16,550 l/min
- Temperature range
0 ... +60 °C
- Operating pressure
3.5 ... 16 bar
- www.festo.com



Electro-pneumatic soft-start and quick exhaust valve for gradual pressurisation and quick exhausting of system components (single channel).

The main flow control valve in the end cap permits a gradual build-up of output pressure p2. Once the output pressure p2 has reached the set pressure switchover point (switching pressure), the valve opens and the full operating pressure p1 is present at the output.

- Suitable for applications with high flow rates and restricted space with medium safety requirements up to controller category 1, performance level "c"
- High volumetric flow rate for pressurisation and venting
- The filling flow rate can be set via a flow control valve for gradual pressure build-up
- Adjustable pressure switchover point
- Optional pressure sensor
- Optional cover for the control sections as tamper protection

Safety characteristics	
Conforms to standard	EN ISO 13849-1
Safety function	Venting
Performance level (PL)	Venting: up to category 1, PL c
Shock resistance	Shock test with severity level 1 according to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 1 to FN 942017-4 and EN 60068-2-6

General technical data				
Pneumatic connection 1, 2	NPT3/4-14 (female thread)	NPT1-11 1/2 (female thread)	NPT1/2-14 ... NPT1 1/2-11 1/2 (with connecting plate AQ...)	– (module without connecting thread, without connecting plate NG)
Pneumatic connection 3	G1			
Actuation type	Electric			
Design	Piston spool valve			
Type of mounting	Via accessories In-line installation			
Mounting position	Any			
Pressure indicator	Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G1/4 prepared			
Valve function	3/2-way valve, closed, single solenoid Soft-start function, adjustable			
Exhaust function	No flow control			
Reset method	Mechanical spring			
Type of control	Piloted			
Sealing principle	Soft			

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

FESTO

Technical data

Electrical data		
Coil characteristics	V24	24 V DC: 8.4 W; permissible voltage fluctuations $\pm 10\%$
	10V24P	24 V DC: 2.7 W; permissible voltage fluctuations $\pm 10\%$
	V110	110 V AC: 50/60 Hz; pick-up power 14.5 VA; holding power 10.5 VA; permissible voltage fluctuations $\pm 10\%$
	V230	230 V AC: 50/60 Hz; pick-up power 14.5 VA; holding power 10.5 VA; permissible voltage fluctuations $\pm 10\%$
Electrical connection	V24, V110, V230	Plug, square design to EN 175301-803, type A
	10V24P	M12x1, 4-pin, to IEC 61076-2-101, to DESINA
Protection class	IP65 with plug socket	
Duty cycle	[%]	100

Flow rate characteristics							
Pneumatic connection	Female thread		Connecting plate				
	NPT $\frac{3}{4}$ -14	NPT1-11 $\frac{1}{2}$	AQR	AQS	AQT	AQU	AQV
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]							
In main flow direction 1 \rightarrow 2	14,150	16,460	8,300	13,250	16,340	16,550	15,910
Standard flow rate q_n [l/min]							
For exhaust 6 \rightarrow 0 bar with silencer S	21,450	20,870	21,720	20,900	20,370	19,730	19,850
C value [l/s*min]							
In main flow direction 1 \rightarrow 2	57.61	69.59	31.43	54.24	68.24	68.45	66.07
In venting direction 2 \rightarrow 3	55.52	54.01	56.22	54.07	52.73	51.06	51.36
b value							
In main flow direction 1 \rightarrow 2	0.37	0.32	0.47	0.37	0.34	0.35	0.35
In venting direction 2 \rightarrow 3	0.49	0.46	0.60	0.49	0.47	0.45	0.44

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

Operating and environmental conditions			
Variant	Coil characteristic V24	Coil characteristic 10V24P	Coil characteristic V110, V230
Operating pressure [bar]	3.5 ... 16 (3.5 ... 10) ²⁾	3.5 ... 10	3.5 ... 16 (3.5 ... 10) ²⁾
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]		
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)		
Ambient temperature [°C]	0 ... +60 (0 ... +50) ²⁾		
Temperature of medium [°C]	0 ... +60 (0 ... +50) ²⁾		
Storage temperature [°C]	0 ... +60 (0 ... +50) ²⁾		
Corrosion resistance class CRC ¹⁾	2		
Noise level ³⁾ [dB(A)]	93 (with silencer S)		
CE marking (see declaration of conformity)	-		To EU Low Voltage Directive
Certification (variant UL1)	cULus recognized (OL)		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) With pressure sensor AD...

3) Venting at 10 bar at a distance of 1 m

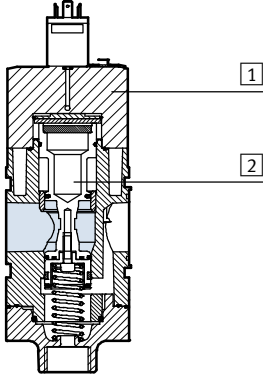
Weight [g]	
Soft-start/quick exhaust valve	2,970
Soft-start/quick exhaust valve with silencer S	3,200

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Technical data

Materials

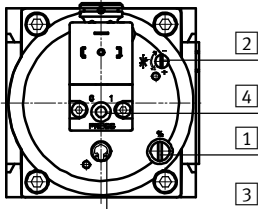
Sectional view



Soft-start and quick exhaust valve

1	Housing	Die-cast aluminium
2	Piston spool	Brass
-	Seals	Nitrile rubber
Note on materials		RoHS-compliant

Adjusting elements



- 1 Screw for adjusting the pressure switchover point
- 2 Flow control screw for adjusting the filling time
- 3 Manual override at the soft-start and quick exhaust valve:
 - Detenting/self-resetting as soon as the solenoid coil or manual override at the pilot solenoid valve is actuated.
- 4 Manual override at the pilot solenoid valve:
 - Non-detenting, actuation from above

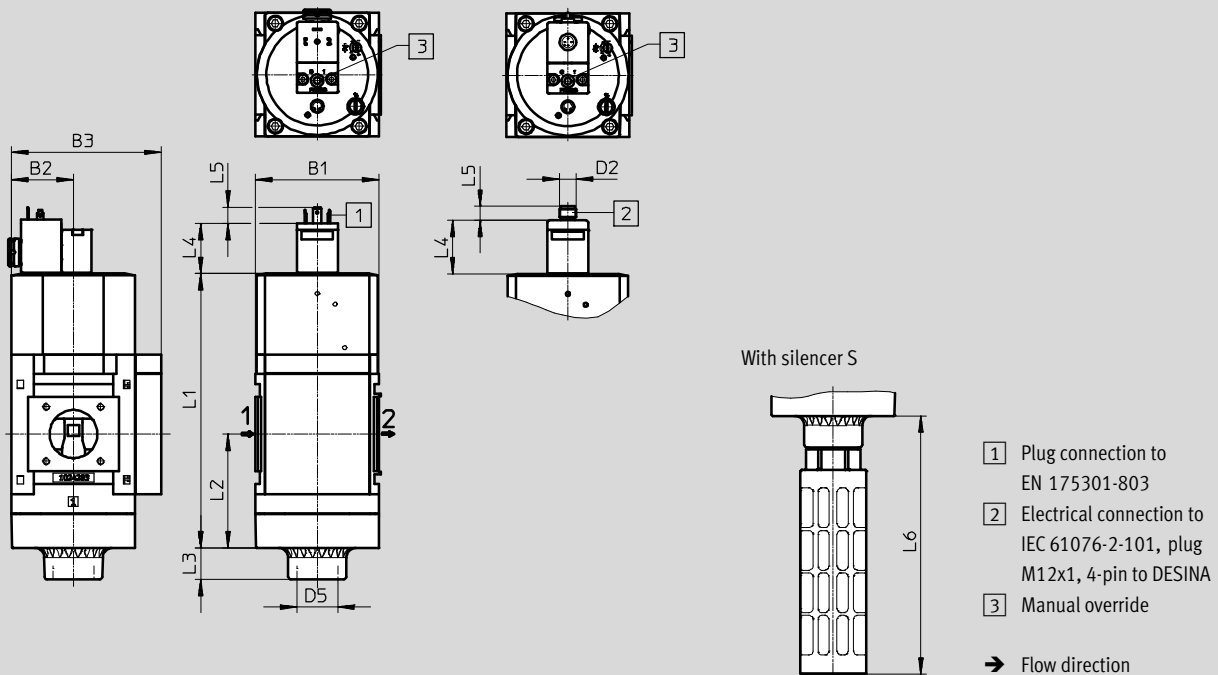
Dimensions – Basic design

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate NG, with cover plate VS

Supply voltage V24/V110/V230

Supply voltage 10V24P



- 1 Plug connection to EN 175301-803
 - 2 Electrical connection to IEC 61076-2-101, plug M12x1, 4-pin to DESINA
 - 3 Manual override
- Flow direction

Type	B1	B2	B3	D2	D5	L1	L2	L3	L4	L5	L6
MS9-SV-NG-...-V24/V110/V230	90	45	109	-	G1	200	83	23	36.4	12	189
MS9-SV-NG-...-10V24P				M12x1					39.2	10	

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Technical data

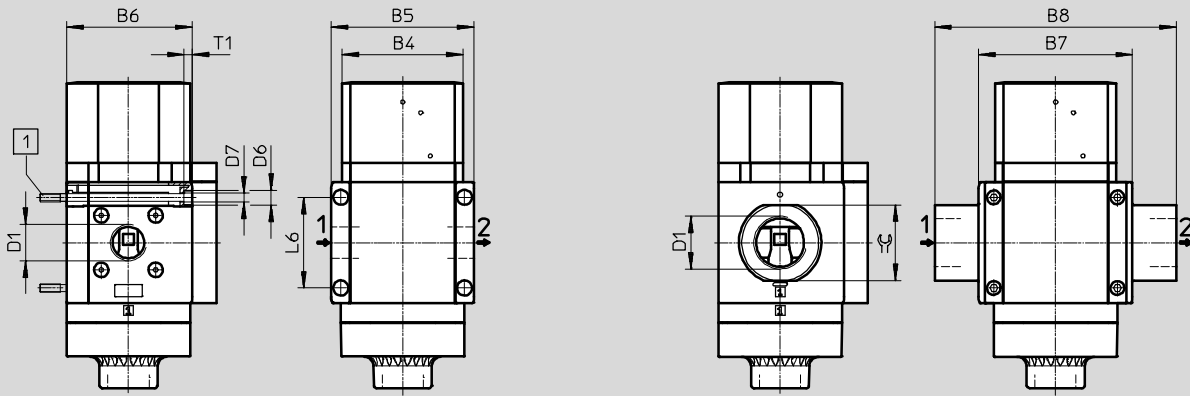
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Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With female thread N $\frac{3}{4}$ or N1

With connecting plate AQ...



1 Mounting screw M6x11.90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

→ Flow direction

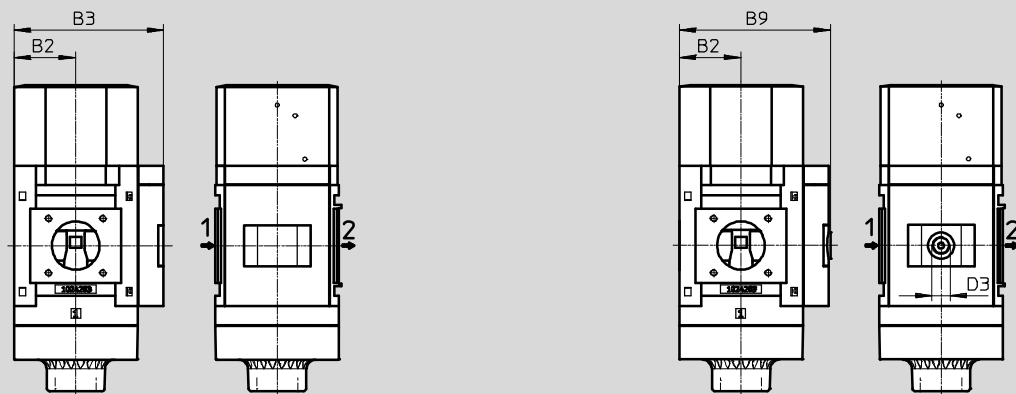
Type	B4	B5	B6	B7	B8	D1	D6	D7	L6	T1	∅C
MS9-SV-N $\frac{3}{4}$	90	104	91.5	-	-	NPT $\frac{3}{4}$ -14	11	6.5	66	6	-
MS9-SV-N1						NPT1-11 $\frac{1}{2}$					
MS9-SV-AQR	-	-	-	112	132	NPT $\frac{1}{2}$ -14	-	-	-	-	30
MS9-SV-AQS					132	NPT $\frac{3}{4}$ -14					36
MS9-SV-AQT					142	NPT1-11 $\frac{1}{2}$					41
MS9-SV-AQU					162	NPT1 $\frac{1}{4}$ -11 $\frac{1}{2}$					50
MS9-SV-AQV					176	NPT1 $\frac{1}{2}$ -11 $\frac{1}{2}$					55

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red/green scale RG

Adapter plate A4 for EN pressure gauge $\frac{1}{4}$, without pressure gauge



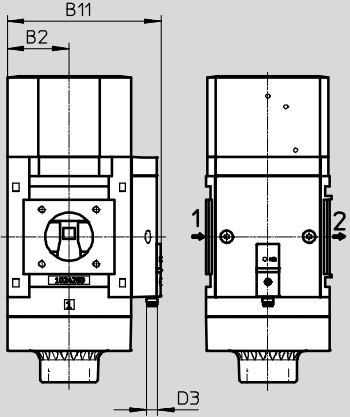
→ Flow direction

Type	B2	B3	B9	D3
MS9-SV-...-AG/RG	45	109	-	-
MS9-SV-...-A4		-	110	G $\frac{1}{4}$

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com
 Pressure sensor with operational status indicator AD7 ... AD10 Technical data → Internet: sde5



→ Flow direction

Variant AD7:
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

Type	B2	B11	D3
MS9-SV-...-AD7/AD8/AD9/AD10	45	112	M8

Ordering data			
Size	Connection	With silencer	
		Part No.	Type
Cover plate			
MS9	-	570739	MS9-SV-NG-C-V24-S-VS

Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT



Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Function	Pneumatic connection	Performance level	Supply voltage
562176	MS	9	SV	N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, NG	C	V24, 10V24P, V110, V230
Ordering example						
562176	MS	9	- SV	- NG	- C	- V24

Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code
M	Module No.	562176					
	Series	Standard				MS	MS
	Size	9				9	9
	Function	Soft-start and quick exhaust valve				-SV	-SV
	Pneumatic connection	Female thread NPT $\frac{3}{4}$				-N$\frac{3}{4}$	
		Female thread NPT1				-N1	
		Connecting plate NPT $\frac{1}{2}$				-AQR	
		Connecting plate NPT $\frac{3}{4}$				-AQS	
		Connecting plate NPT1				-AQT	
		Connecting plate NPT $\frac{1}{4}$				-AQU	
		Connecting plate NPT $\frac{1}{2}$				-AQV	
		Module without connecting thread, without connecting plate				-NG	
	Performance level	Category 1, 1-channel, to EN ISO 13849-1				-C	-C
	Supply voltage	24 V DC (pin allocation to EN 175301), 16 bar				V24	
		24 V DC, M12 to IEC 61076-2-101, 10 bar				10V24P	
		110 V AC (pin allocation to EN 175301), 16 bar				V110	
		230 V AC (pin allocation to EN 175301), 16 bar				V230	

Transfer order code

562176	MS	9	- SV	-	C	-	
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Soft-start and quick exhaust valves MS9-SV-C, MS series, NPT

Ordering data – Modular products

Mandatory data		Options				
Silencer	Pressure gauge/ pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Tamper protection	UL certification	Flow direction
S	AG, VS, A4, RG, AD7, AD8, AD9, AD10	PSI, MPA, BAR	WP, WPM, WPB	MH, MK	UL1	Z
- S	- AG	-	-	-	-	-

Ordering table						
Grid dimension	[mm]	90	Condi- tions	Code	Enter code	
M	Silencer	Silencer		-S		-S
	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG		
		Cover plate		-VS		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4		
		Integrated pressure gauge, red/green scale	1	-RG		
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	2	-AD7		
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	2	-AD8		
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	2	-AD9		
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	2	-AD10		
	Alternative pressure gauge scale	Psi	3	-PSI		
		MPa	3	-MPA		
		Bar	3	-BAR		
	Type of mounting	Mounting bracket	4	-WP		
		Mounting bracket	4	-WPM		
		Mounting bracket for large wall gap	4	-WPB		
	Tamper protection	Without manual override (manual override at soft-start/quick exhaust valve locked, adjusting screws open, manual override at pilot solenoid valve locked)		-MH		
		Complete (manual override at soft-start/quick exhaust valve locked, adjusting screws locked, manual override at pilot solenoid valve locked)		-MK		
	UL certification	cULus, ordinary location for Canada and USA	5	-UL1		
	Flow direction	Flow direction from right to left		-Z		

- | | | | |
|------------------------------|--|------------------------|---|
| 1 RG | Not with alternative pressure gauge scale PSI, PSI scale serves only as an auxiliary scale | 3 PSI, MPA, BAR | Not with pressure gauge/pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10 |
| 2 AD7, AD8, AD9, AD10 | Measuring range max. 10 bar | 4 WP, WPM, WPB | Not with module NG |
| | | 5 UL1 | Not with supply voltage V110, V230 |

Transfer order code

- S - - - - - - - - - -

Soft-start and quick exhaust valves MS-SV, MS series, NPT

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Accessories

Multi-pin plug socket NECA

(order code in the modular product system: MP1/MP3/MP5)

- For soft-start and quick exhaust valve MS6N-SV-E-10V24



Technical data		
Type of mounting		Via through-hole
Electrical connection 1		Sub-D 9-pin
Electrical connection 2		Screw terminal 9-pin
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Acceptable current load	[A]	1.0
Connection cross section	[mm ²]	0.34 ... 1.0 without wire end sleeves
	[mm ²]	0.34 ... 0.5 with wire end sleeves
Permissible cable diameter	[mm]	5.0 ... 10.0
Protection class to IEC 60529		IP65

Operating and environmental conditions		
Relative air humidity		95%, non-condensing
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	-20 ... +70
Corrosion resistance class CRC ¹⁾		2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

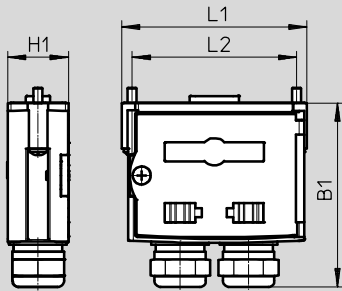
Materials	
Housing	PA reinforced
Screws	Steel
Union nut	Brass
Seals	NBR

Soft-start and quick exhaust valves MS-SV, MS series, NPT

Accessories


Dimensions

Download CAD data → www.festo.com



B1	H1	L1	L2
61	20	61	54.1

Ordering data

Description	Connection	Weight [g]	Part No.	Type
For MS6N-SV-E-10V24	Without cable, static enable signals (EN1 = 24 V, EN2 = 24 V)	60	548719	NECA-S1G9-P9-MP1
	Without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), cross-circuit detection possible	60	552703	NECA-S1G9-P9-MP3
	Without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), galvanic isolation of the enable signals from the supply voltage	60	573695	NECA-S1G9-P9-MP5 

Soft-start and quick exhaust valves MS-SV, MS series, NPT

Accessories

Silencer UOS-1

(order code in the modular product system: S0)

- For soft-start and quick exhaust valve MS6N-SV-E

Silencer UOS-1-LF

- For soft-start and quick exhaust valve MS6N-SV-E

Note
The space-saving silencer UOS-1-LF may only be used for applications with low exhaust rates. Pneumatic port 2 at the soft-start and quick exhaust valve MS6N-SV-E must be reduced to NPT $\frac{1}{4}$ using a connecting plate MS6-AQN.



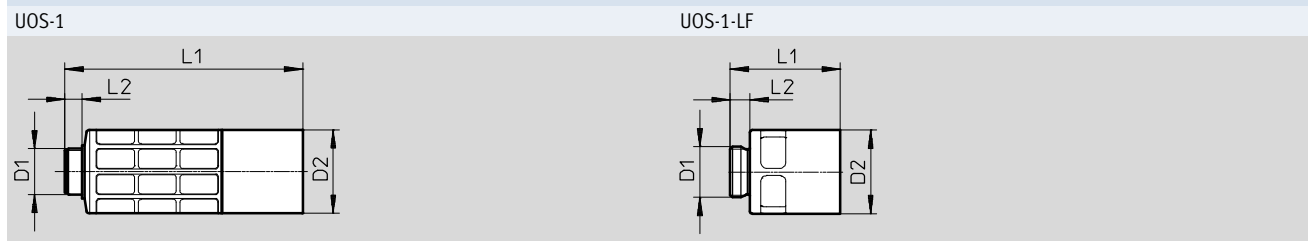
Technical data	
Pneumatic connection	G1
Design	Open silencer
Type of mounting	Via male thread
Mounting position	Any
Type of seal on threaded collar	No seal

Operating and environmental conditions	
Operating pressure [bar]	0 ... 10
Operating medium	Compressed air to ISO 8573-1:2010 [-:-:-]
Ambient temperature [°C]	-10 ... +50
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Materials		
Type	UOS-1	UOS-1-LF
Housing	POM	Wrought aluminium alloy
Sleeve	Wrought aluminium alloy	-
Silencer insert	PE	
Note on materials	RoHS-compliant	
	Free of copper and PTFE	

Dimensions Download CAD data → www.festo.com



Type	D1	D2	L1	L2
UOS-1	G1	∅	156.5	11.5
UOS-1-LF	G1	55	72.2	13

Ordering data				
Description		Weight [g]	Part No.	Type
For MS6N-SV-E	For high exhaust rate	200	552252	UOS-1
	For low exhaust rate	157.9	1901207	UOS-1-LF

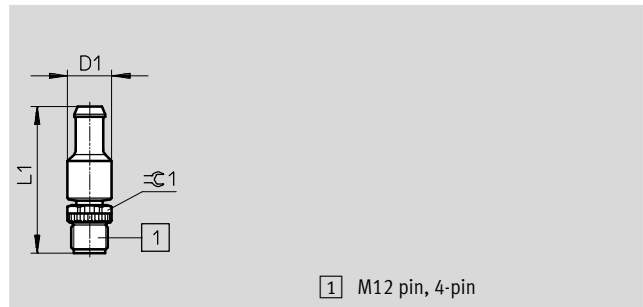
Soft-start and quick exhaust valves MS-SV, MS series, NPT

Accessories

AS-i configuration plug CACC

- For soft-start and quick exhaust valve MS6N-SV-E-ASIS

Note on materials: RoHS-compliant



1 M12 pin, 4-pin

Dimensions and ordering data					
Description	D1	L1	⌀C1	Part No.	Type
For MS6N-SV-E-ASIS	14.5	48.3	13	573923	CACC-CP-AS

Cover MS-SV-MH/MK

(order code in the modular product system: MH/MK)

- For soft-start and quick exhaust valve MS6N-SV-C/MS9-SV-C

Note on materials: RoHS-compliant



MS6-SV-C-MK



MS9-SV-MK



MS9-SV-MH


Ordering data					
Description		CRC ¹⁾	Part No.	Type	
For MS6N-SV-C	Tamper protection for manual override at the soft-start and quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve (MS6N-SV-...-C-10V24/10V24P only)	2	8001479	MS6-SV-C-MK	
For MS9-SV-C	Tamper protection for manual override at the soft-start and quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve	2	1457669	MS9-SV-MK	
	Tamper protection for manual override at the soft-start and quick exhaust valve and manual override at the pilot solenoid valve	2	1457670	MS9-SV-MH	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Soft-start and quick exhaust valves MS-SV, MS series, NPT

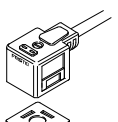
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
Accessories

Ordering data – Adapter AD					
	Description	Pneumatic connection		Part No.	Type
		1	2		
	For MS6N-SV-E	NPT1-11½	G1	546547	AD-1NPT-G1-I

Ordering data – Silencer U-...-B					Technical data → Internet: u
	Description	Pneumatic connection	Order code in the modular product system	Part No.	Type
	For MS9-SV-C	G1	S	151990	U-1-B


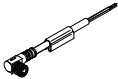
Ordering data – Plug socket MSSD				Technical data → Internet: mssd	
	Description	Electrical connection	Type of mounting for cable connection	Part No.	Type
		4-pin	Insulation displacement connectors	192745	MSSD-EB-S-M14
		3-pin	Clamping screws	539712	MSSD-EB-M12
	For MS9-SV-C	3-pin	Clamping screws	34583	MSSD-C
		4-pin	Insulation displacement connectors	192748	MSSD-C-S-M16



Ordering data – Plug socket with cable KMEB/KMC						Technical data → Internet: kmeb, kmc	
	Description	Operating voltage	Electrical connection	Switching status display	Cable length [m]	Part No.	Type
					5	547269	KMEB-3-24-5-LED
				–	2.5	547270	KMEB-3-24-2,5
					5	547271	KMEB-3-24-5
			3-pin	LED	2.5	151688	KMEB-1-24-2,5-LED
					5	151689	KMEB-1-24-5-LED
					10	193457	KMEB-1-24-10-LED
		230 V AC	3-pin	–	2.5	151690	KMEB-1-230AC-2,5
					5	151691	KMEB-1-230AC-5
	For MS9-SV-C	24 V DC	3-pin	LED	2.5	30931	KMC-1-24DC-2,5-LED
					5	30933	KMC-1-24DC-5-LED
					10	193459	KMC-1-24-10-LED
		230 V AC	3-pin	–	2.5	30932	KMC-1-230AC-2,5
					5	30934	KMC-1-230AC-5


Ordering data – Illuminating seal MEB-LD/MC-LD				Technical data → Internet: meb, mc	
	Description	Operating voltage range		Part No.	Type
			For plug socket with cable KMEB and plug socket MSSD-EB		
				151718	MEB-LD-230AC
	For plug socket with cable KMC and plug socket MSSD-C	12 ... 24 V DC		19145	MC-LD-12-24DC
		230 V DC/AC ±10%		19146	MC-LD-230AC


Soft-start and quick exhaust valves MS-SV, MS series, NPT


Accessories


Ordering data – Connecting cable NEBU-M8				Technical data → Internet: nebu	
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type
	M8x1, straight socket	3	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	M8x1, angled socket	3	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3

Ordering data – Connecting cable NEBU-M12				Technical data → Internet: nebu	
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type
	M12x1, straight socket	4	2.5	550326	NEBU-M12G5-K-2.5-LE4
			5	541328	NEBU-M12G5-K-5-LE4
	M12x1, angled socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4

Ordering data – Sensor socket SIE-GD		Technical data → Internet: sie-gd	
	Electrical connection	Part No.	Type
	M12x1, 4-pin	18494	SIE-GD

Ordering data – Angled socket SIE-WD		Technical data → Internet: sie-wd	
	Electrical connection	Part No.	Type
	M12x1, 4-pin	12956	SIE-WD-TR

Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Display range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, EN 837-1				Technical data → Internet: ma	
	40	R $\frac{1}{4}$	0 ... 16	0 ... 232	187080	MA-40-16-R $\frac{1}{4}$ -EN
		G $\frac{1}{4}$	0 ... 16	0 ... 232	183901	MA-40-16-G $\frac{1}{4}$ -EN
Pressure gauge MA, EN 837-1, with red/green range				Technical data → Internet: ma		
50	R $\frac{1}{4}$	0 ... 16	–	525729	MA-50-16-R $\frac{1}{4}$ -E-RG	

Ordering data – Locking clip CPV18-HV			Technical data → Internet: cpv18-hv			
	Description	Part No.	Type	PU ¹⁾		
	For MS6N-SV-C-...-V24		Cover for the manual override, the clip prevents actuation	530056	CPV18-HV	10

1) Packaging unit

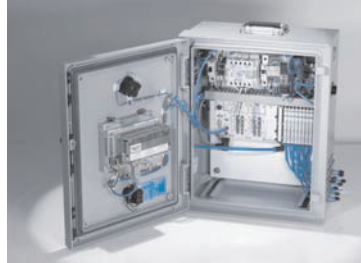
Product Range and Company Overview

A Complete Suite and Company Overview

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.



Custom Automation Components
Complete custom engineered solutions



Custom Control Cabinets
Comprehensive engineering support and on-site services



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Electromechanical actuators, motors, controllers & drivers



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PLCs and I/O Devices
PLC's, operator interfaces, sensors and I/O devices

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To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.

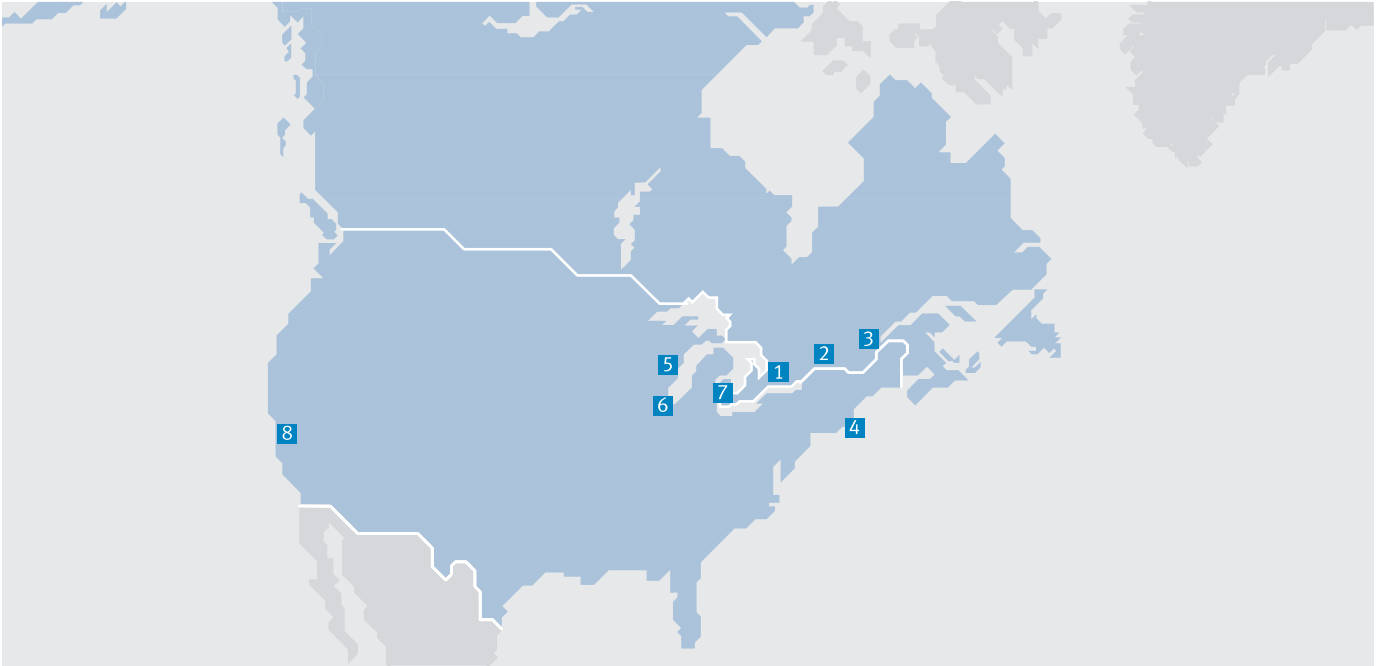


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Printed on recycled paper at New Horizon Graphic, Inc., FSC certified as an environmental friendly printing plant.

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