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

Type codes

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Thread type	
N	NPT thread	

004	Function	
SV	Soft-start/quick exhaust valve	

005	Pneumatic connection, inch	
1/2	Female thread NPT 1/2	
AQN	Sub-base NPT1/4	
AQP	Sub-base NPT3/8	
AQR	Sub-base NPT1/2	
AQS	Sub-base NPT3/4	

006	Performance Level	
C	Category 1, 1-channel to ISO 13849-1	
E	Category 4, 2-channel with self-monitoring to ISO 13849-1	

007	Supply voltage	
10V24	24 V DC, 10 bar, connection pattern to EN 175301	
10V24C	24 V DC, 10 bar (connection pattern to EN 175301) without manual override	
10V24D	24V DC, 10 bar, M12 (connection pattern according to IEC 61076-2-101) without manual override	
10V24E	24 V DC, 10 bar, M12 (connection pattern according to IEC 61076-2-101) without manual override on the pilot actuator. With detenting internal manual override (can only be reset via 24 V)	
10V24F	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101). Non-detenting manual override on the pilot actuator	
10V24P	24 V DC, 10 bar, M12 (connection pattern to IEC 61076-2-101)	
ASIS	22 V - 31.6 V DC, AS-i Safety at Work, SPEC3.0 Profile 7.5.5	

008	Silencer	
	None	
S	Silencer	
SO	Open silencer	

009	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O	
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C	
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O	
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C	
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA	
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA	
AG	MS pressure gauge	
RG	Integrated pressure gauge, red/green scale	

010	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	

011	Multi-pin plug socket	
	None	
MP1	Multi-pin plug socket, Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 24 V, EN2 = 24 V)	
MP3	Multi-pin plug socket, Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), cross-circuit detection possible	

012	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPB	Mounting bracket for large wall gap	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required	

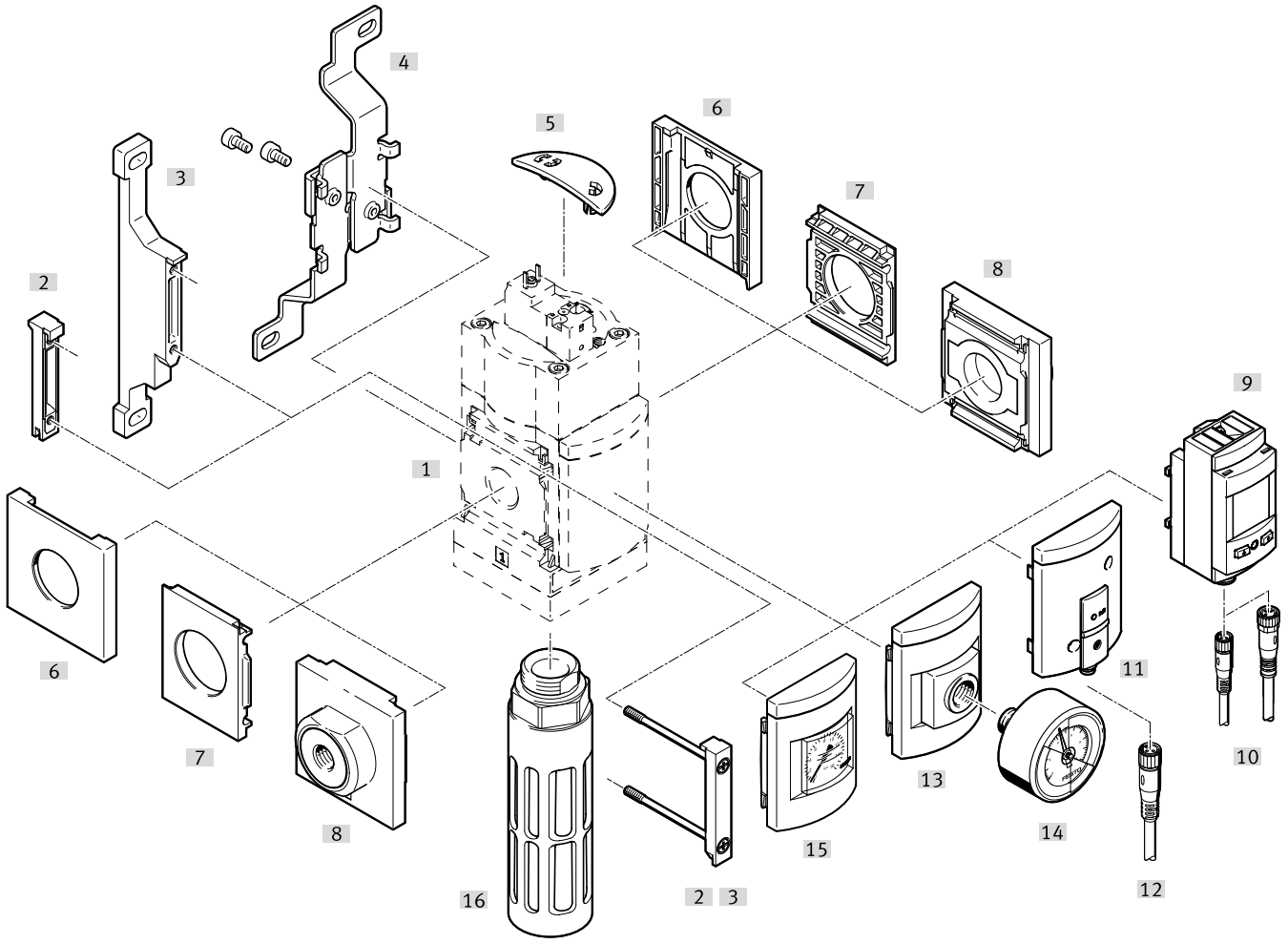
013	Tamper protection	
	None	
MK	Full	

014	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	

015	EU certification	
	None	
EX2	II 3GD	

016	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Peripherals overview MS6N-SV-C



Mounting attachments and accessories

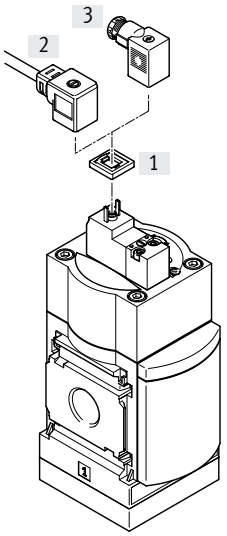
			Single device		Combination		→ Page/ Internet
			Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	MS6N-SV-C	Soft-start/quick exhaust valve	■	■	■	■	5
[2]	MS6-MV	Module connector	–	■	■	■	ms6-mv
[3]	MS6-WP, MS6-WPB, MS6-WPE, MS6-WPM	Mounting bracket	■	■	■	■	ms6-wp
[4]	MS6-WB	Mounting bracket	■	■	–	–	ms6-wb
[5]	MS6-SV-C-MK	Covering	■	■	■	■	25
[6]	MS6-END	Cover cap	–	–	■	–	ms6-end
[7]	MS6-AEND	Mounting plate	■[1]	–	■[1]	–	ms6-aend
[8]	MS6-AG...	Connecting plate SET	–	■[1]	–	■[1]	ms6-ag
	MS6-AQ...	Connecting plate SET	–	■[1]	–	■[1]	ms6-aq
[9]	AD11 ... AD12	Pressure sensor SPAU with LCD display	■	■	■	■	10
[10]	NEBA-M8...-LE4/NEBA-M12...-LE4	Connecting cable	■	■	■	■	27
[11]	AD7 ... AD10	Pressure sensor SDE5 with switching status indicator	■	■	■	■	10
[12]	NEBA-M8...-LE3	Connecting cable	■	■	■	■	27
[13]	A4	Adapter for EN pressure gauge 1/4	■	■	■	■	10
[14]	MA	Pressure gauge	■	■	■	■	27
[15]	AG, RG	MS pressure gauge	■	■	■	■	10
[16]	U-3/4-B	Silencer	■	■	■	■	26

1) Module connector MS6-MV [2] or mounting bracket MS6-WP, MS6-WPB, MS6-WPE, MS6-WPM [3] is required for mounting.

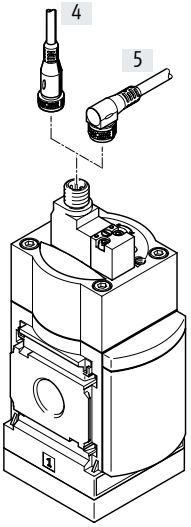
Peripherals overview MS6N-SV-C

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

Supply voltage
Code: 10V24, 10V24C



Supply voltage
Code: 10V24D, 10V24F, 10V24P



Note

Additional accessories:

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

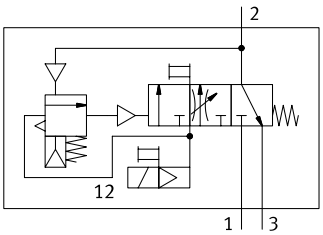
Mounting attachments and accessories

			Single device		Combination		→ Page/ Internet
			Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	MEB-LD	Illuminating seal	■	■	■	■	26
[2]	KMEB	Plug socket with cable	■	■	■	■	26
[3]	MSSD-EB	Plug socket	■	■	■	■	26
[4]	NEBA-M12G5	Connecting cable	■	■	■	■	27
[5]	NEBA-M12W5	Connecting cable	■	■	■	■	27

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

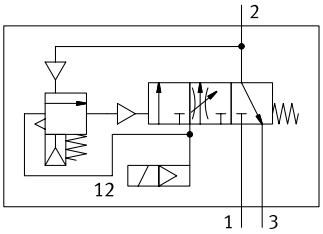
Datasheet MS6N-SV-C

MS6N-SV-...-10V24, -10V24F, -10V24P



- Flow rate
  5700 l/min
- Temperature range
  0 ... +60°C
- Operating pressure
  3 ... 10 bar
- www.festo.com

MS6N-SV-...-10V24C, -10V24D



Electropneumatic soft-start/quick exhaust valve for gradual pressurisation and quick exhausting of system components (single channel).
The main restrictor in the end cap permits a slower 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 available at the output.

- Suitable for applications with a high flow rate in restricted space with medium safety requirements up to controller category 1, Performance Level c
- High volumetric flow rate for pressurisation and exhausting
- The filling flow rate can be set for gradual pressure build-up with a restrictor
- Adjustable pressure switchover point
- Optional pressure sensor
- Optional covering for the control sections as tamper protection

Safety characteristics	
Conforms to standard	EN ISO 13849-1
Safety function	Exhaust
	Avoidance of unexpected start-up (pressurisation)
Performance Level (PL)	Exhausting: up to category 1, PL c
	Prevention of unexpected start-up (pressurisation): up to category 1, PL c
Note on forced checking procedure	Switching frequency min. once a month
CE mark (see declaration of conformity)[1)]	To EU Machinery Directive
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

1) Additional information: www.festo.com/catalogue/... ➔ Support/Downloads.

Note

The mechanical system is not tested in the controlled (i.e. pressurised) state.

Forced switch on/off: switching frequency should be at least once a month.

If the process-related switching frequency (safe exhausting) is less than once a month,

the machine's operator must carry out a forced switch off.

Datasheet MS6N-SV-C

General technical data		
Pneumatic connection 1, 2		
	Female thread	1/2 NPT
	Connecting plate AQ...	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Pneumatic connection 3		3/4 NPT
Actuation type		Electrical
Design		Piston spool
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Pressure indicator		Via pressure sensor for displaying the output pressure on LCD display and electrical output
		Via pressure sensor for displaying the output pressure by switching status indicator and electrical output
		Via pressure gauge for displaying the output pressure
		Via pressure gauge with red/green scale for displaying the output pressure
		Prepared for G1/4
Valve function		3/2-way valve, closed, monostable
		Soft-start function, adjustable
Non-overlapping		Yes
Exhaust function		Cannot be throttled
Manual override	10V2 4, 10V24F	At the pilot solenoid valve: non-detenting At the soft-start/quick exhaust valve: detenting, self-resetting
	10V24P	At the pilot solenoid valve: non-detenting/detenting At the soft-start/quick exhaust valve: detenting, self-resetting
	10V24C, 10V24D	None
Reset method		Mechanical spring
Type of control		Piloted
Pilot air supply		Internal
Sealing principle		Soft

Characteristic flow rate values	
Pneumatic connection	Female thread 1/2 NPT
Standard nominal flow rate qnN[1] [l/min]	
in main flow direction 1 › 2	5700
Standard flow rate qN [l/min], p2 = 6 bar	
in exhaust direction 2 › 3	7600[2]
C value [l/s*min]	
in main flow direction 1 › 2	23.2
b value	
in main flow direction 1 › 2	0.4

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar
2) Measured with reference to atmosphere with silencer S.

Electrical data			
Characteristic coil data	10V24, 10V24P		24 V DC: 1.8 W; permissible voltage fluctuations –10%/+10%
	10V24C, 10V24D, 10V24F		24 V DC: 1.8 W; permissible voltage fluctuations –15%/+10%
Electrical connection	10V24, 10V24C		Plug, 2-pin, to EN 175301-803, type C
	10V24D, 10V24F, 10V24P		M12x1 to ISO 20401 in line with EN 61076-2-101
Degree of protection			IP65 with plug socket
Duty cycle		[%]	100
Switching time off		[ms]	65
Switching time on		[ms]	370

Datasheet MS6N-SV-C

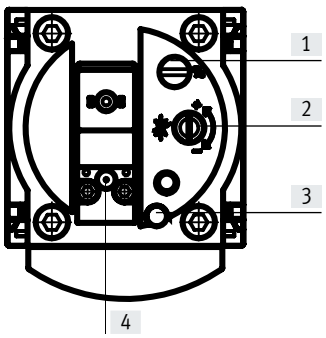
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 10
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	0 ... +60 (0 ... +50)[1]
Temperature of medium	[°C]	0 ... +60 (0 ... +50)[1]
Storage temperature	[°C]	–10 ... +60 (0 ... +50)[1]
Corrosion resistance class CRC[2]		2
CE marking (see declaration of conformity)[3]		To EU EMC Directive
		To EU Machinery Directive
		To EU Low Voltage Directive
		To EU RoHS Directive
UKCA marking (see declaration of conformity)[3]		To UK instructions for EMC
		To UK instructions for machines
		To UK RoHS instructions
Suitability for the food industry[3]		See supplementary material information (except for solenoid valve)

1) With pressure sensor AD...
2) Additional information: www.festo.com/x/topic/kbk
3) Additional information: www.festo.com/catalogue/ms-sv → Support/Downloads.

Weights [g]	
Soft-start/quick exhaust valve	886
Soft-start/quick exhaust valve with silencer S	1006

Materials	
Housing	Die-cast aluminium
Piston rod	High-alloy stainless steel
Seals	NBR
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B2-L

Adjusting elements



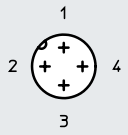
[1] Screw for adjusting the pressure switchover point
[2] Flow control screw for adjusting the filling time
[3] Manual override at the soft-start/ quick exhaust valve:
- detenting, self-resetting as soon as the solenoid coil or manual override on the pilot solenoid valve is actuated (with 10V24, 10V24E, 10V24F, 10V24P)
- none (with 10V24C, 10V24D)

[4] Manual override at the pilot solenoid valve:
- non-detenting, actuation from above (with 10V24/10V24F)
- non-detenting/detenting, actuation from above (with 10V24P)
- none (with 10V24C, 10V24D, 10V24E)

Datasheet MS6N-SV-C

Dimensions – Basic version Download CAD data ➔ www.festo.com

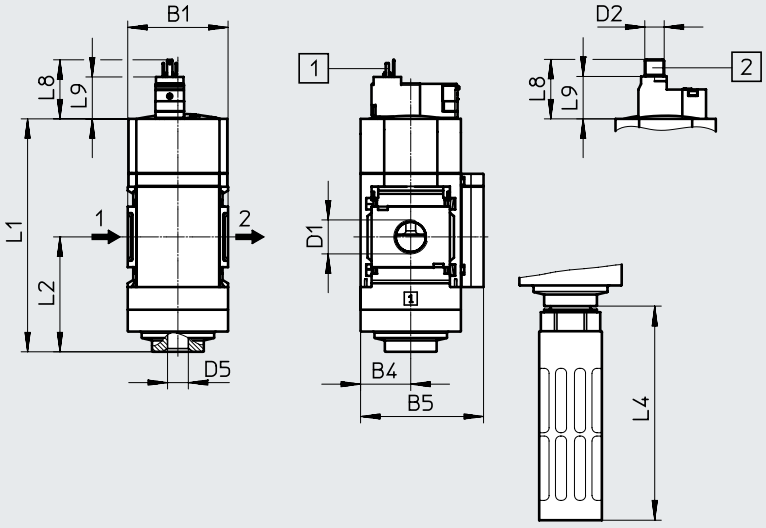
With female thread 1/2, with cover plate



1 = not assigned
2 = not assigned
3 = com (–)
4 = signal (+) solenoid 14

Supply voltage
10V24, 10V24C

Supply voltage
10V24D, 10V24F, 10V24P



With silencer S

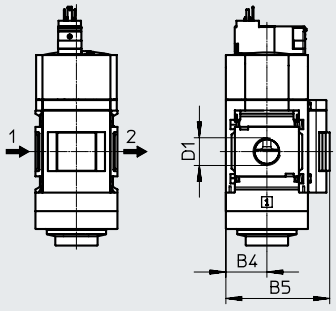
[1] Plug connection to EN 175301-803
[2] Electrical connection M12x1 to ISO 20401 in line with EN 61076-2-101, 4-pin version for connecting cable NEBA-M12
➔ Flow direction

Type	B1	B4	B5	D1	D2	D5	L1	L2	L4
MS6N-SV-C	62	31	76	1/2 NPT	M12x1	3/4 NPT	144	71	135

Type	L8		L9	
	10V24, 10V24C	10V24D, 10V24F, 10V24P	10V2 4, 10V24C	10V24D, 10V24F, 10V24P
MS6N-SV-C	33	37	24	26

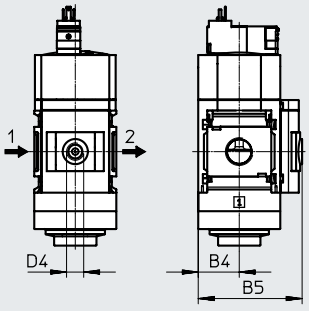
Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data ➔ www.festo.com

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



➔ Flow direction

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



➔ Flow direction

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

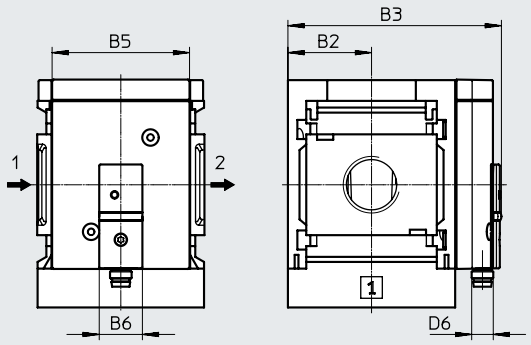
Datasheet MS6N-SV-C

Dimensions – Pressure sensor

Download CAD data ➔ www.festo.com

Pressure sensor with switching status indicator AD7 ... AD10

Datasheets ➔ Internet: sde5



➔ Flow direction

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

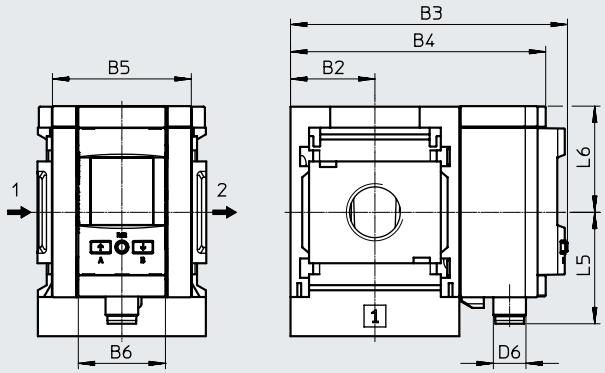
[AD8]:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

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

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

Pressure sensor with LCD display AD11 ... AD12

Datasheets ➔ Internet: spau



➔ Flow direction

[AD11]:
SPAU-P10R-MS...-L-PNLK-M12D with 4-pin plug M12x1 A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

[AD12]:
SPAU-P10R-MS...-L-PNLK-M8D with 4-pin plug M8x1 A-coded, switching output 2x PNP or 2x NPN switchable and 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA analogue

Type	B2	B3	B4	B5	B6	D6	L5	L6
MS6-SV-...-AD7, AD8, AD9, AD10	31	79.1	–	51	16	M8x1	–	–
MS6-SV-...-AD11	31	101.8	93.7	51	32	M12x1	41.2	39
MS6-SV-...-AD12						M8x1	37.9	

Ordering data – Modular product system MS6N-SV-C

Ordering table

Grid dimension [mm]	62	Conditions	Code		Enter code
Module no.	**548714**				
Series	Standard		**MS**		MS
Size	6		**6**		6
Thread type	NPT thread		**N**		N
Function	Soft-start/quick exhaust valve		**-SV**		-SV
Pneumatic connection	Female thread 1/2 NPT		**-1/2**		
	Connecting plate 1/4 NPT		**-AQN**		
	Connecting plate 3/8 NPT		**-AQP**		
	Connecting plate 1/2 NPT		**-AQR**		
	Connecting plate 3/4 NPT		**-AQS**		
Performance Level	Category 1, single-channel, to EN ISO 13849-1		**-C**		-C
Supply voltage	24 V DC (connection pattern to EN 175301), 3 ... 10 bar, Manual override • At the soft-start/quick exhaust valve: detenting, self-resetting • At the pilot solenoid valve: non-detenting		**-10V24**		
	24 V DC (connection pattern to EN 175301), 3 ... 10 bar, No manual override		**-10V24C**		
	24 V DC, M12x1 to ISO 20401 in line with EN 61076-2-101, 3 ... 10 bar, No manual override		**-10V24D**		
	24 V DC, M12x1 to ISO 20401 in line with EN 61076-2-101, 3 ... 10 bar, Manual override • At the soft-start/quick exhaust valve: detenting, self-resetting • At the pilot solenoid valve: non-detenting		**-10V24F**		
	24 V DC, M12x1 to ISO 20401 in line with EN 61076-2-101, 3 ... 10 bar, Manual override • At the soft-start/quick exhaust valve: detenting, self-resetting • At the pilot solenoid valve: non-detenting/detenting		**-10V24P**		

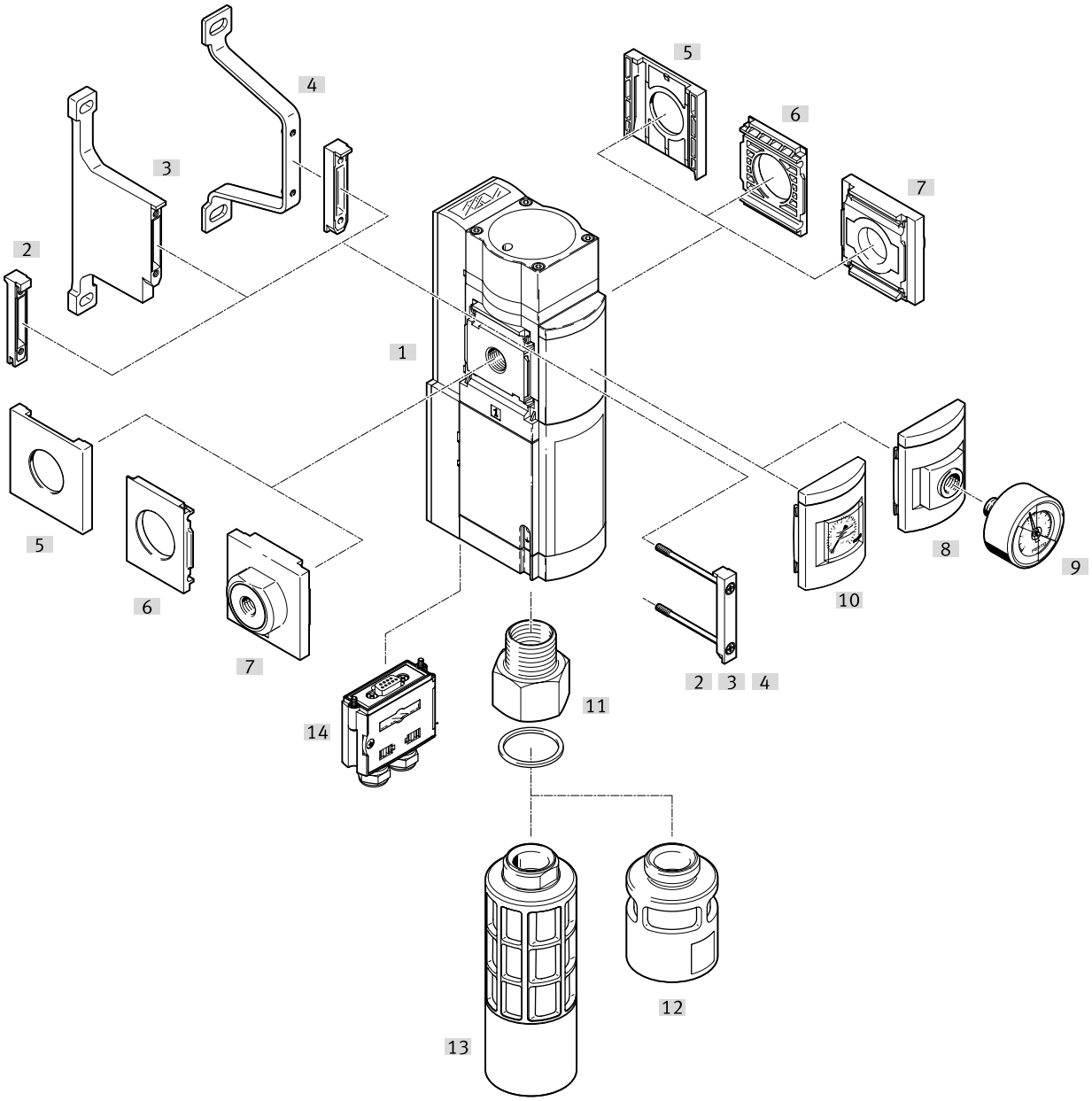
Ordering data – Modular product system MS6N-SV-C

Ordering table

Grid dimension [mm]	62	Conditions	Code		Enter code
Silencers	Silencers		**-S**		
Pressure gauge/pressure gauge alternatives	MS pressure gauge	[1]	**-AG**		
	Adapter for EN pressure gauge 1/4, without pressure gauge		**-A4**		
	Integrated pressure gauge, red/green scale	[1]	**-RG**		
	Pressure sensor SDE5 with switching status indicator, plug M8, threshold value comparator, PNP, N/O	[2]	**-AD7**		
	Pressure sensor SDE5 with switching status indicator, plug M8, threshold value comparator, PNP, N/C	[2]	**-AD8**		
	Pressure sensor SDE5 with switching status indicator, plug M8, window comparator, PNP, N/O	[2]	**-AD9**		
	Pressure sensor SDE5 with switching status indicator, plug M8, window comparator, PNP, N/C	[2]	**-AD10**		
	Pressure sensor SPAU with LCD display, M12 plug 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[2]	**-AD11**		
	Pressure sensor SPAU with LCD display, M8 plug 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[2]	**-AD12**		
Alternative pressure gauge scale	bar	[3]	**-BAR**		
	MPa	[3]	**-MPA**		
Type of mounting	Mounting bracket standard design		**-WP**		
	Mounting bracket for attaching service unit components	[4]	**-WPM**		
	Mounting bracket for large wall gap		**-WPB**		
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		**-WB**		
Tamper protection	Complete (manual override at soft-start/quick exhaust valve blocked, setting screws blocked, manual override at pilot solenoid valve blocked)		**-MK**		
Flow direction	Flow direction from right to left		**-Z**		

[1] **AG, RG** Pressure gauge scale in psi. With pressure gauge RG: PSI scale only as auxiliary scale (inner scale), outer scale in bar
[2] **AD7** ... **AD12** Measuring range max. 10 bar
[3] **BAR, MPA** Only in combination with pressure gauge AG or RG
[4] **WPM** Only with connecting plate AQN, AQP, AQR or AQS

Peripherals overview MS6N-SV-E



Note

Additional accessories:

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

Peripherals overview MS6N-SV-E

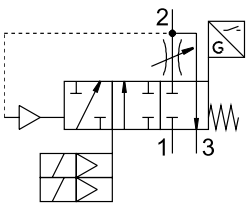
Mounting attachments and accessories

			Single device		Combination		→ Page/ Internet
			Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	MS6-SV-E	Soft-start/quick exhaust valve	■	■	■	■	14
[2]	MS6-MV	Module connector	–	–	■	■	ms6-mv
[3]	MS6-WPB	Mounting bracket	■	■	■	■	ms6-wpb
[4]	MS6-WPE	Mounting bracket	■	■	■	■	ms6-wpe
[5]	MS6-END	Cover cap	–	–	■	–	ms6-end
[6]	MS6-AEND	Mounting plate	■[1)]	–	■[1)]	–	ms6-aend
[7]	MS6-AG...	Connecting plate SET	–	■[1)]	–	■[1)]	ms6-ag
	MS6-AQ...	Connecting plate SET	–	■[1)]	–	■[1)]	ms6-aq
[8]	MA	Pressure gauge	■	■	■	■	27
[9]	A4	Adapter for EN pressure gauge 1/4	■	■	■	■	21
[10]	AG/RG	MS pressure gauge	■	■	■	■	21
[11]	AD	Adapter	■	■	■	■	26
[12]	UOS-1-LF	Silencer	■	■	■	■	24
[13]	UOS-1	Silencer	■	■	■	■	24
[14]	NECA	Multi-pin plug socket	■	■	■	■	22

1) Module connector MS6-MV [2] or mounting bracket MS6-WPB [3] or MS6-WPE [4] is required for assembly.

Datasheet MS6N-SV-E

Function



- Flow rate
  4300 l/min
- Temperature range
  –10 ... +50°C
- Operating pressure
  3.5 ... 10 bar
- www.festo.com

The electropneumatic soft-start/quick exhaust valve is used to reduce pressure quickly and safely and to build up pressure gradually in industrial pneumatic piping systems and terminal equipment.
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 exhausting is also guaranteed in the event of faults inside the valve (e.g. due to wear, contamination, electronic faults). The 2-channel design and its monitoring enables the device to meet controller category 3 and 4 requirements. This enables a Performance Level of max. "e".
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). These signals are generated 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.).

- Performance Level "e"/Category 4 to EN ISO 13849-1
- Conforms to standard IEC 61508
- Switching time delay adjustable via a restrictor for gradual pressure build-up
- Optional pressure sensor

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... ➔ 21) or as an accessory (NECA ➔ 22).

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 ➔ 21) or as an accessory (UOS-1 ➔ 24).

Note

Only devices that do not impair the pneumatic protective measure – safe exhausting – may be placed downstream of the MS6-SV-...-E.
The MS6-SV-...-D is not approved for use as a press safety valve.

Safety characteristics

Type	MS6N-SV-...-E-10V24
Conforms to standard	EN ISO 13849-1
Safety function	Exhaust
	Avoidance of unexpected start-up (pressurisation)
Performance Level (PL)	Exhaust: up to category 4, PL e
	Prevention of unexpected start-up (pressurisation): up to category 4, PL e
Safety integrity level (SIL)	Exhaust: SIL 3
	Avoidance of unexpected start-up (pressurisation): SIL 3
Note on forced checking procedure	Switching frequency min. once a month
Certificate issuing authority[1)]	IFA 1001180
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6

Note

The mechanical system is not tested in the controlled (i.e. pressurised) state.

Forced switch on/off: switching frequency should be at least once a month.

If the process-related switching frequency (safe exhausting) is less than once a month,

the machine's operator must carry out a forced switch off.

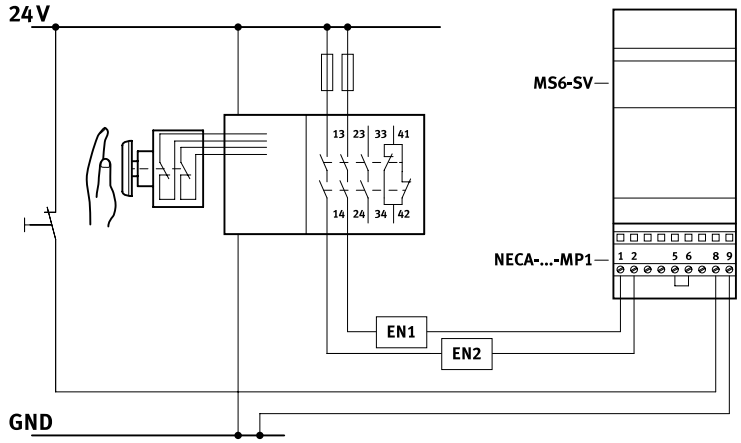
Datasheet MS6N-SV-E

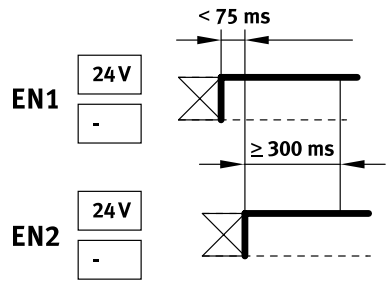
Operational principle of the multi-pin plug socket NECA

Enable signal status		Status MS6N-SV-...-E-10V24 with multi-pin plug socket		
EN1	EN2	NECA-...-MP1	NECA-...-MP3	NECA-...-MP5
0 V	0 V	Unpressurised	MS6N-SV-...-E-10V24 switches to fault mode.	MS6N-SV-...-E-10V24 does not switch to fault mode, but remains in the safe, unpressurised state. **Note:** Detection of cross-circuits and error detection/ evaluation necessary via external controller.
0 V	24 V	MS6N-SV-...-E-10V24 switches to fault mode.	Pressurised	Pressurised
24 V	24 V	Pressurised	MS6N-SV-...-E-10V24 switches to fault mode.	MS6N-SV-...-E-10V24 does not switch to fault mode, but remains in the safe, unpressurised state. **Note:** Detection of cross-circuits and error detection/ evaluation necessary via external controller.
24 V	0 V	MS6N-SV-...-E-10V24 switches to fault mode.	Unpressurised	Unpressurised

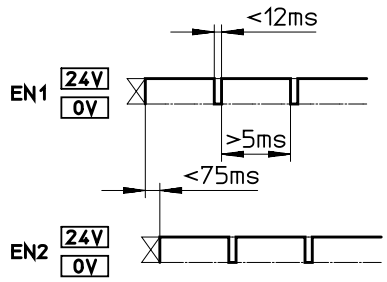
MS6-SV-E-10V24 with multi-pin plug socket NECA

NECA-...-MP1





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



- Cycle end enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) for detecting cross-circuits.
  Detection of cross-circuits by clock signals is always carried out by the safety relay unit/safety PLC.

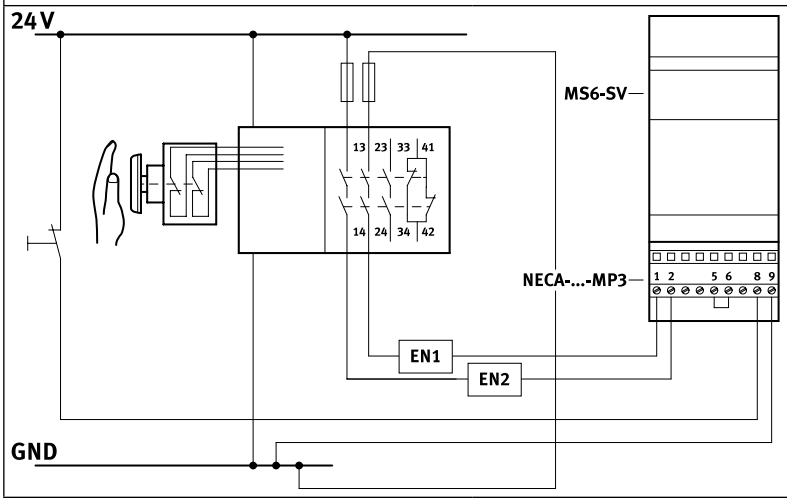
Note

Since the clock outputs from different controller manufacturers are not standardised, their usability must be checked in each case. If the clock pulse is outside the specified limits, the MS6N-SV-...-E-10V24 detects is as an error and a safe shutdown is initiated.

Datasheet MS6N-SV-E

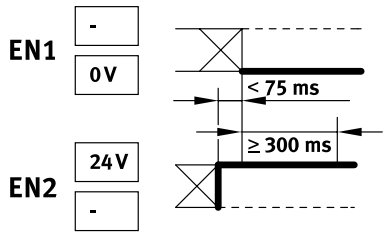
MS6-SV-E-10V24 with multi-pin plug socket NECA

NECA-...-MP3



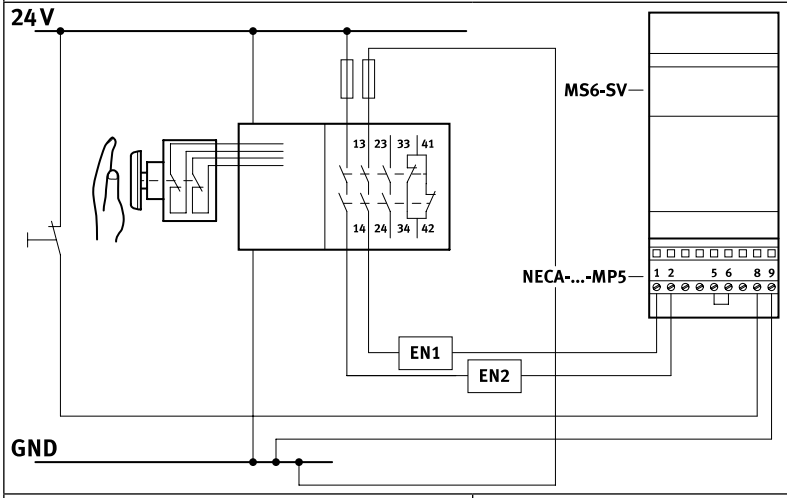
Note

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



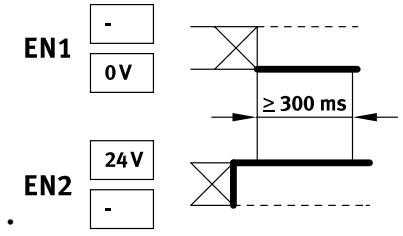
- Static enable signals with opposite potentials.
- Time delay of the level change of the enable signals is monitored.
- Behaviour on detection of a cross-circuit:
  - MS6N-SV-...-E-10V24 in exhausted state: remains in safe state and goes into error mode.
  - MS6N-SV-...-E-10V24 in pressurised state: goes into safe state and goes into error 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 is pressurised only if the enable signals are applied correctly.



- Static enable signals with opposite potentials.
- Time delay of the level change of the enable signals is not monitored.
- Behaviour on detection of a cross-circuit (by upstream safety relay unit/PLC):
  - MS6N-SV-...-E-10V24 in exhausted state: remains in safe state and does not go into error mode.
  - MS6N-SV-...-E-10V24 in pressurised state: goes into safe state and does not go into error mode.
- Enable signals 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.

Datasheet MS6N-SV-E

General technical data		
Pneumatic connection 1, 2		
	Female thread	1/2 NPT
	Connecting plate AQ...	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Pneumatic connection 3		1 NPT
Actuation type		Electrical
Design		Piston seat
Type of mounting		With accessories
		In-line installation
Mounting position		Any
Pressure indicator		Via pressure sensor for displaying the output pressure on LCD display and electrical output
		Via pressure gauge for displaying the output pressure
		Via pressure gauge with red/green scale for displaying the output pressure
		Prepared for G1/4
Position sensing principle		Magnetic piston principle
Valve function		3/2-way valve, closed, monostable
		Soft-start function, adjustable
Non-overlapping		No
Exhaust function		Cannot be throttled
Manual override		None
Reset method		Mechanical spring
Type of control		Piloted
Pilot air supply		Internal
Sealing principle		Soft

Characteristic flow rate values	
Pneumatic connection	Female thread 1/2 NPT
Standard nominal flow rate qnN[1] [l/min]	
in main flow direction 1 → 2	4300
Standard flow rate qN [l/min], p2 = 6 bar	
in exhaust direction 2 → 3	9000[2]
C value [l/s*min]	
in main flow direction 1 → 2	19.3
b value	
in main flow direction 1 → 2	0.21

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar
2) Measured with reference to atmosphere with silencer UOS-1.

Electrical data		
Electrical connection		Sub-D 9-pin
Nominal operating voltage	[V DC]	24
Permissible voltage fluctuations	[%]	±10
Operating voltage range for AS-interface	[V DC]	–
Duty cycle	[%]	100
Max. switching frequency	[Hz]	0.5
Switching time off	[ms]	40
Switching time on	[ms]	130
Signal status indication		LED and floating contact
Degree of protection		IP65 with plug socket

Datasheet MS6N-SV-E

Operating and environmental conditions		
Operating pressure	[bar]	3.5 ... 10
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/ pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +50 (0 ... +50)[1]
Temperature of medium	[°C]	–10 ... +50 (0 ... +50)[1]
Storage temperature	[°C]	–10 ... +50 (0 ... +50)[1]
Corrosion resistance class CRC[2]		2
Noise level	[dB(A)]	75 (with silencer UOS-1)
CE mark (see declaration of conformity)[4]		To EU EMC Directive[3]
		To EU Machinery Directive
		To EU Low Voltage Directive
		To EU RoHS Directive
UKCA marking (see declaration of conformity)[4]		To UK instructions for EMC
		To UK instructions for machines
		To UK RoHS instructions
Certificate issuing authority[4]		IFA 1001180
		Intertek UK-MCR-0086
		TÜV 44 799 12 556236 000
UL certification[4]		c UL us - Recognized (OL)
Certification		RCM
KC mark		KC EMC

1) With pressure sensor AD...
2) Additional information: www.festo.com/x/topic/kbk
3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.
4) Additional information: www.festo.com/catalogue/ms-sv → Support/Downloads.

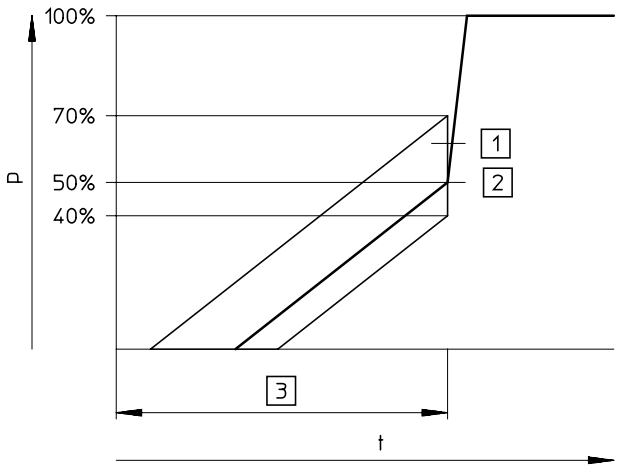
Weights [g]	
Soft-start/quick exhaust valve	2000
Soft-start/quick exhaust valve with silencer UOS-1	2200

Materials	
Housing	Die-cast aluminium
Piston rod	High-alloy stainless steel
Seals	NBR
Note on materials	RoHS-compliant
PWIS conformity	VDMA24364-B2-L

Datasheet MS6N-SV-E

Switch-through point

Pressure p as a function of time t



[1] Tolerance range
[2] Switch-through point
[3] Filling time is adjustable by a restrictor

Note

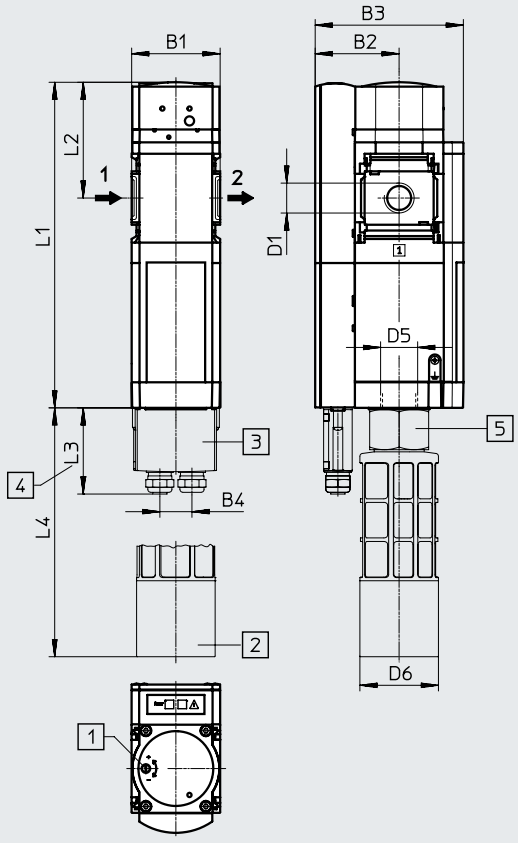
The +20%/–10% switching point tolerance refers to the operating pressure p1.

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

Dimensions – Basic version

Download CAD data ➔ www.festo.com

with supply voltage 10V24,
with female thread 1/2 NPT, with cover plate



[1] Regulating screw for throttle valve
[2] Silencer UOS-1
[3] Multi-pin plug socket NECA
[4] Dimension without cable
[5] Adapter AD
[6] M12 socket, 5-pin
[7] M12 pin, 5-pin

➔ Flow direction

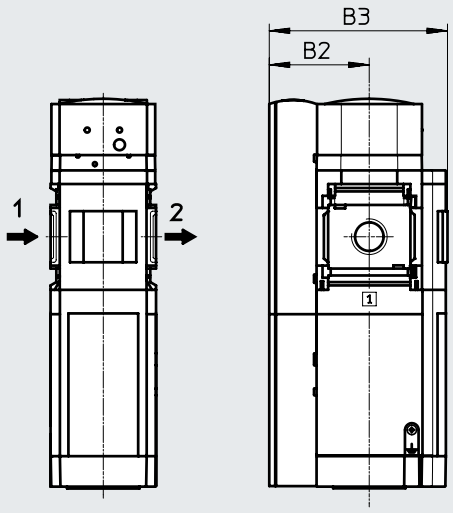
Type	B1	B2	B3	B4	D1	D5	D6	L1	L2	L3	L4
MS6N-SV-1/2-E-10V24	62	59	104	23	1/2 NPT	1 NPT	55	228	81	61	174

Datasheet MS6N-SV-E

Dimensions – Pressure gauge/pressure gauge alternatives

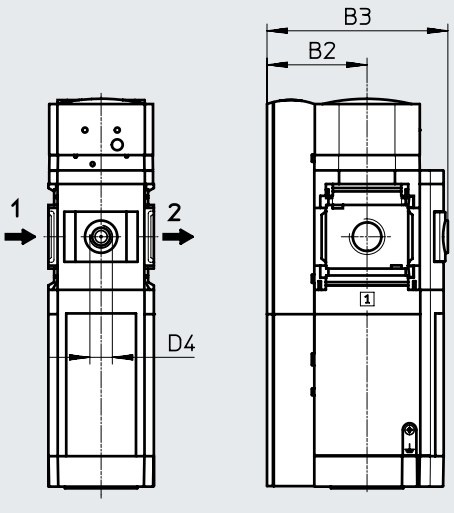
Download CAD data ➔ www.festo.com

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



➔ Flow direction

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



➔ Flow direction

Type	B2	B3	D4
MS6N-SV-...-E-...-AG	59	105	–
MS6N-SV-...-E-...-RG	59	106.5	–
MS6N-SV-...-E-...-A4	59	106.5	G1/4

Ordering data – Modular product system MS6N-SV-E

Ordering table

Grid dimension [mm]	62	Conditions	Code	Enter code
Module no.	**548714**			
Series	Standard		**MS**	MS
Size	6		**6**	6
Thread type	NPT thread		**N**	N
Function	Soft-start/quick exhaust valve		**-SV**	-SV
Pneumatic connection	Female thread 1/2 NPT		**-1/2**	
	Connecting plate 1/4 NPT		**-AQN**	
	Connecting plate 3/8 NPT		**-AQP**	
	Connecting plate 1/2 NPT		**-AQR**	
	Connecting plate 3/4 NPT		**-AQS**	
Performance Level	Category 4, 2-channel with self-monitoring to ISO 13849-1		**-E**	-E
Supply voltage	24 V DC		**-10V24**	
Silencers	Open silencer		**-SO**	
Pressure gauge/pressure gauge alternatives	MS pressure gauge	[1]	**-AG**	
	Adapter for EN pressure gauge 1/4, without pressure gauge		**-A4**	
	Integrated pressure gauge, red/green scale	[1]	**-RG**	
Alternative pressure gauge scale	bar	[2]	**-BAR**	
	MPa	[2]	**-MPA**	
Multi-pin plug socket	Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 24 V, EN2 = 24 V)		**-MP1**	
	Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), Detection of cross-circuit contacts possible		**-MP3**	
	Sub-D, 9-pin, screw terminal, without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), galvanic isolation of enable signal from the supply voltage		**-MP5**	
Type of mounting	Mounting bracket for large mounting spacing		**-WPB**	
UL certification	cULus, ordinary location for Canada and USA		**-UL1**	
Flow direction	Flow direction from right to left		**-Z**	

[1] **AG, RG** Pressure gauge scale in psi. With pressure gauge RG: PSI scale only as auxiliary scale (inner scale), outer scale in bar.

[2] **BAR, MPA** Only in combination with pressure gauge AG or RG

Accessories

Multi-pin plug socket NECA
(order code in the modular product system: MP1/MP3/MP5)
- for soft-start/quick exhaust valve MS6N-SV-E-10V24

Technical data

Type of mounting		Via through-hole
Electrical connection 1		Socket, 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 at 40°C	[A]	1.0
Connection cross section	[mm²]	0.34 ... 1.0 without wire end sleeves
	[mm²]	0.34 ... 0.5 with wire end sleeves
Permissible cable diameter	[mm]	5.0 ... 10.0
Degree of protection to IEC 60529		IP65

Operating and environmental conditions

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

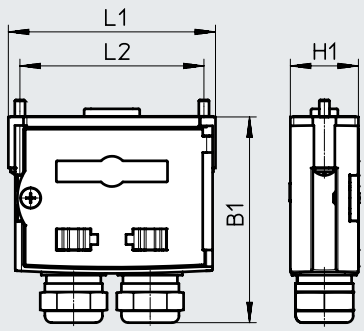
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Materials

Housing	PA-reinforced
Screws	Steel
Union nut	Brass
Seals	NBR

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), detection of cross-circuits possible	60	**552703**	**NECA-S1G9-P9-MP3**
	Without cable, static enable signals (EN1 = 0 V, EN2 = 24 V), galvanic isolation of enable signals from the supply voltage	60	**573695**	**NECA-S1G9-P9-MP5**

Accessories

Silencer UOS-1
(order code in the modular product system: SO)
- for soft-start/quick exhaust valve MS6N-SV-D/E

Silencer UOS-1-LF
- for soft-start/quick exhaust valve MS6N-SV-D/E

Note

The space-saving silencer UOS-1-LF may only be used for applications with low exhaust rates. Pneumatic connection 2 at the soft-start/quick exhaust valve MS6N-SV-D/E must be reduced to 1/4 NPT by a connecting plate MS6-AQN.

UOS-1

UOS-1-LF

Technical data	
Pneumatic connection	G1
Design	Open silencer
Type of mounting	With male thread
Mounting position	Any
Type of seal on screwed trunnion	No seal
Noise level	75 dB(A)

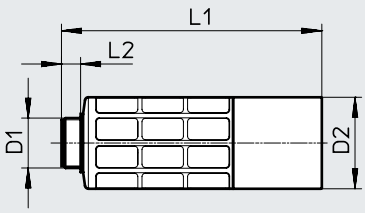
Operating and environmental conditions		
Operating pressure	[MPa]	0 ... 1
	[bar]	0 ... 10
Operating medium		Compressed air to ISO 8573-1:2010 [–:–:–]
Ambient temperature	[°C]	–10 ... +50
Corrosion resistance class CRC[1)]		2

1) Additional information: www.festo.com/x/topic/kbk

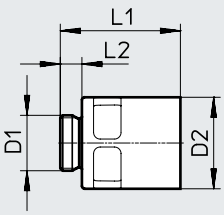
Materials		
Type	UOS-1	UOS-1-LF
Housing	POM	Wrought aluminium alloy
Sleeve	Wrought aluminium alloy	–
Cushioning insert	PE	
Note on materials	RoHS-compliant	
PWIS conformity	VDMA24364-B1/B2-L	

Dimensions Download CAD data ➔ www.festo.com

UOS-1



UOS-1-LF



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

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

Accessories

Covering MS-SV-MK
(Order code in the modular product system: MK)
- for soft-start/quick exhaust valve MS6N-SV-C

Note on materials: RoHS-compliant

MS6-SV-C-MK

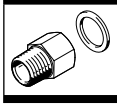
Ordering data

Description		CRC[1]	Part no.	Type
for MS6N-SV-C	Tamper protection for manual override at the soft-start/quick exhaust valve, flow control screw, adjusting screw for pressure switchover point and manual override at the pilot solenoid valve	2	**8001479**	**MS6-SV-C-MK**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

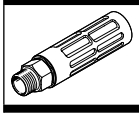
Accessories

Ordering data – Adapter AD

	Description	Pneumatic connection		Part no.	Type
		1	2		
	for MS6N-SV-E	1 NPT	G1	**546547**	**AD-1NPT-G1-I**

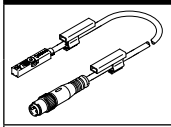
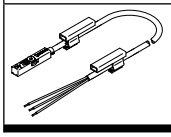
Ordering data – Silencer U-...-B

Datasheets → Internet: u

	Description	Pneumatic connection	Order code in the modular product system	Part no.	Type
	for MS6N-SV-C	3/4 NPT	S	**566823**	**U-3/4-B-NPT**

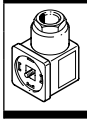
Ordering data – Proximity switch SMT

Datasheets → Internet: smt

	Description	Switching output	Switching element function	Electrical connection	Cable length [m]	Order code in the modular product system	Part no.	Type
	for MS6N-SV-D	PNP	N/O	Cable with plug M8x1, 3-pin	0.3	2M8/S3	**574334**	**SMT-8M-A-PS-24V-E-0.3-M8**
				Cable with plug M12x1, 3-pin	0.3	2M12/S3	**574337**	**SMT-8M-A-PS-24V-E-0.3-M12**
	for MS6N-SV-D	PNP	N/O	Cable, 3-wire	5	2OE/S3	**574336**	**SMT-8M-A-PS-24V-E-5.0-OE**

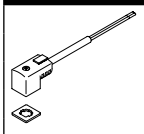
Ordering data – Plug socket MSSD

Datasheets → Internet: mssd

	Description	Electrical connection	Type of mounting for cable connection	Part no.	Type
	for MS6N-SV-C/D	3-pin	Clamping screws	**151687**	**MSSD-EB**
		4-pin	Insulation displacement technology	**192745**	**MSSD-EB-S-M14**
		3-pin	Clamping screws	**539712**	**MSSD-EB-M12**

Ordering data – Plug socket with cable KMEB

Datasheets → Internet: kmeb

	Description	Operating voltage	Electrical connection	Switching status indication	Cable length [m]	Part no.	Type
	for MS6N-SV-C/D	24 V DC	2-pin	LED	2.5	**547268**	**KMEB-3-24-2.5-LED**
					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**

Ordering data – Illuminating seal MEB-LD

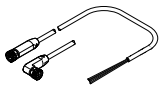
Datasheets → Internet: meb

	Description	Operating voltage range	Part no.	Type
	For plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	**151717**	**MEB-LD-12-24DC**
		230 V DC/AC ±10%	**151718**	**MEB-LD-230AC**

Accessories

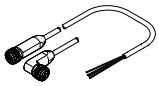
Ordering data – Connecting cable NEBA-M8

Datasheets → Internet: neba

	Electrical connection	Number of cores	Cable length [m]	Part no.	Type
	M8x1, straight socket	3	2,5	★ 8078223	NEBA-M8G3-U-2.5-N-LE3
			5	★ 8078224	NEBA-M8G3-U-5-N-LE3
	M8x1, angled socket	3	2,5	★ 8078230	NEBA-M8W3-U-2.5-N-LE3
			5	★ 8078231	NEBA-M8W3-U-5-N-LE3

Ordering data – Connecting cable NEBA-M12

Datasheets → Internet: neba

	Electrical connection	Number of cores	Cable length [m]	Part no.	Type
	M12x1, straight socket	4	2,5	★ 8078239	NEBA-M12G5-U-2.5-N-LE4
			5	★ 8078240	NEBA-M12G5-U-5-N-LE4
	M12x1, angled socket	4	2,5	8078248	NEBA-M12W5-U-2.5-N-LE4
			5	8078249	NEBA-M12W5-U-5-N-LE4

Ordering data – Pressure gauge MA

	Nominal size	Pneumatic connection	Display range [bar]	Display range [psi]	Part no.	Type
	**Pressure gauge MA, EN 837-1**					Datasheets → Internet: ma
	40	R1/4	0 ... 16	0 ... 232	187080	MA-40-16-R1/4-EN
		G1/4	0 ... 16	0 ... 232	183901	MA-40-16-G1/4-EN
	Pressure gauge MA, EN 837-1, with red/green range					Datasheets → Internet: ma
	50	R1/4	0 ... 16	–	525729	MA-50-16-R1/4-E-RG