Lubricators MS-LOE, MS series

FESTO

Characteristics

MS series service unit components

Solutions for every application

With its large product range, highly effective components and a wide choice of functions, the MS series from Festo offers a complete concept for compressed air preparation. Suitable for simple standard applications as well as application-specific solutions to the highest quality standards.
Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions. The five sizes in the MS series achieve maximum flow rates with minimum space requirements.

Freely combinable function modules

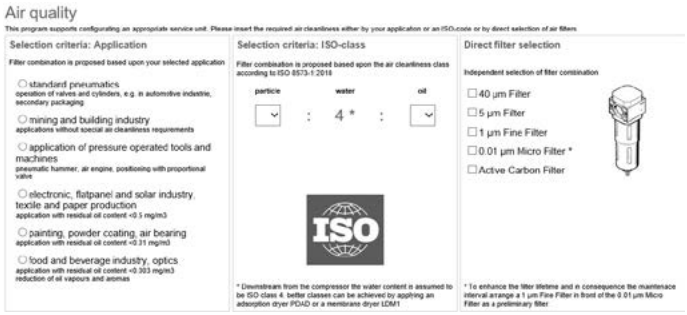
Pressure regulators, on/off and soft-start valves with safety function, filters, pressure and flow sensors, dryers, sensors and lubricators. All these allow a suitable solution to be assembled for every task. Their modular structure means that the components are freely combinable. A simple connection system saves time when replacing individual modules without needing to dismantle the entire combination.
What's more, many of the components are certified to UL and ATEX.

CAD models and configurator

Convenient aids for planning and selecting application-specific individual devices and combinations. The product configurator lets you configure customised solutions quickly and transfer the order data with no hassle.

Engineering tools

Selection tool for choosing the right service unit without oversizing, and with the right air quality class:
➔ **www.festo.com/engineering/wartungseinheit**



Integrated sensors

Pressure and flow sensors

- Maximum machine availability through controlled processes
- Reliable air preparation and supply for systems
- Integrated or stand-alone
- Easy to connect with M8/M12 plug

Safety functions

Soft-start/quick exhaust valves MS6-SV/MS9-SV

- Fast and reliable exhausting of systems up to Performance Level e, certified to EN ISO 13849-1
- Integrated soft-start function

Energy savings

Service units MSE6

- Fully automatic monitoring and regulation of compressed air supply
- Automatic shut-off of the compressed air in stand-by mode
- Detection and notification of leakages
- Condition monitoring of relevant process data

Intelligent mix of sizes

- Optimum flow rate with up to 18% smaller size
- Excellent energy efficiency
- Cost-optimised combinations – save up to 30%!

Size differences

Size		MS2	MS4	MS6	MS9	MS12
Grid dimension	[mm]	25	40	62	90	124
Connection sizes		M5, QS-6	G1/8, G1/4, G3/8	G1/4, G3/8, G1/2, G3/4	G1/2, G3/4, G1, G1 1/4, G1 1/2	G1, G1 1/4, G1 1/2, G2
Standard nominal flow rate qnN[1)]	[l/min]	350	1800	6500	20000	22000

1) Using pressure regulator MS-LR as an example

Characteristics

Note

Information

The next few pages provide a brief overview of the complete product range for the MS series service unit components.

You can find detailed information and all of the technical data in the documentation for the corresponding service unit component.

Accessories such as connecting plates or mounting brackets can be ordered either via the configurator or separately.

Structure of a service unit

The order of the individual components within a service unit is relevant for safety and functionality. It is not possible to assemble the service unit components in any order in the flow direction. There are restrictions and rules.

The configurator for the service unit MSB is a reliable and convenient way of arranging individual service unit components and this ensures that the applicable rules are complied with. As a result, you get a completely assembled unit with UL or ATEX certification if you need it.
When arranging a combination of individually configured and ordered service unit components, the points on the right must be adhered to under all circumstances.

- Regulators MS-LFR/LR/LRP/LRE are only permissible in the flow direction with the same or decreasing pressure regulation range
- Filters MS-LFR/LF/LFM/LFX are only permissible in the flow direction with an increasing grade of filtration
- Lubricators MS-LOE are not permitted in the flow direction upstream of a filter MS-LFR/LFM/LF/LFX, water separator MS-LWS or membrane air dryer MS-LDM1
- A micro filter MS-LFM must be installed upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1 in the flow direction
- A flow sensor SFAM cannot be installed directly downstream of a regulator MS-LFR/LR; a branching module MS-FRM must be positioned between them
- A soft-start/quick exhaust valve MS-SV must be the last service unit component in the flow direction

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Combinations								
Service units MSB-FRC								Data sheets → Internet: msb
	Combinations of filter regulator and lubricator	4	–	–	1/8, 1/4	–	–	–
		6	–	–	1/4, 3/8, 1/2	–	–	–
Service units MSB								Data sheets → Internet: msb
	7 combinations, predefined	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
	Combinations freely configurable	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
Service units MSE6								Data sheets → Internet: mse6
	Combinations with fieldbus connection for measuring pressure, flow rate and consumption	6	–	–	–	–	1/2	–

Characteristics

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Filter regulators MS-LFR								Data sheets → Internet: ms-lfr
	Filter and pressure regulator in a single device, filtration grade 5 or 40 µm	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Filter MS-LF								Data sheets → Internet: ms-lf
	Grade of filtration 5 or 40 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Fine and micro filters MS-LFM								Data sheets → Internet: ms-lfm
	Grade of filtration 0.01 or 1 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Activated carbon filters MS-LFX								Data sheets → Internet: ms-lfx
	For removing liquid and gaseous oil particles	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Water separators MS-LWS								Data sheets → Internet: ms-lws
	Remove condensate from compressed air, maintenance-free	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

Characteristics

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Pressure regulators MS-LR								Data sheets → Internet: ms-lr
	For setting the required operating pressure, 4 pressure regulation ranges	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Pressure regulators MS-LRB								Data sheets → Internet: ms-lrb
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	4	–	–	1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Precision pressure regulators MS-LRP								Data sheets → Internet: ms-lrp
	For precisely setting of the required operating pressure, 4 pressure regulation ranges, pressure hysteresis 0.02 bar	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Precision pressure regulators MS-LRPB								Data sheets → Internet: ms-lrpb
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Electrical pressure regulators MS-LRE								Data sheets → Internet: ms-lre
	Electrically adjustable pressure regulator, 4 pressure regulation ranges	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Lubricators MS-LOE								Data sheets → Internet: ms-loe
	Add a precisely adjustable amount of oil to the compressed air. The amount of oil mist is proportional to the compressed air flow rate.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

Characteristics

Total product range for MS series service unit components

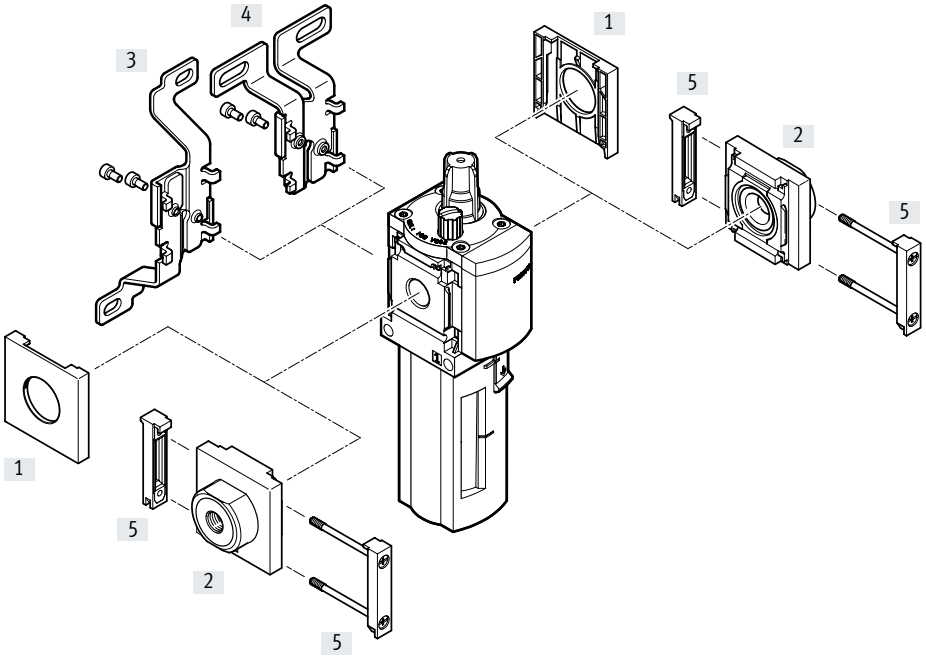
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
On/off valves MS-EM								Data sheets → Internet: ms-em
	Manually operated on/off valve for pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
On/off valves MS-EE								Data sheets → Internet: ms-ee
	Solenoid actuated on/off valve for pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start valves MS-DL								Data sheets → Internet: ms-dl
	Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start valves MS-DE								Data sheets → Internet: ms-de
	Solenoid actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start/quick exhaust valves MS-SV								Data sheets → Internet: ms-sv
	For building up pressure gradually and reducing pressure quickly and safely in pneumatic piping systems. Up to category 1, PL c.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
	Up to category 3, PL d. Up to category 4, PL e in the case of optional extension.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	Up to category 4, PL e.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–

Characteristics

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Membrane air dryer MS-LDM1							Data sheets → Internet: ms-ldm	
	Wear-free membrane dryer with internal air consumption	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Branching modules MS-FRM							Data sheets → Internet: ms-frm	
	Compressed air distributors with 4 connections	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	–
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Distributor blocks MS-FRM-FRZ							Data sheets → Internet: ms-frm-frz	
	Compressed air distributors with 4 connections and half the grid width	4	–	–	–	–	–	–
		6	–	–	–	–	–	–
Flow sensors SFAM							Data sheets → Internet: sfam	
	For absolute flow rate information and accumulated air consumption measurement	6	–	–	–	–	1/2	1/2
		9	–	–	–	–	1, 1 1/2	1, 1 1/2

Peripherals overview



Note

Additional accessories:

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

Mounting components and accessories

		Individual device		Combination		→ Page/ Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS4/6-END	■	–	■	–	ms4-end, ms6-end
[2]	Connecting plate-SET MS4/6-AG...	–	■	–	■	ms4-ag, ms6-ag
	Connecting plate-SET MS4/6-AQ...	–	■	–	■	ms4-aq, ms6-aq
[3]	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
[4]	Mounting bracket ms4-wbm	■	■	–	–	ms4-wbm
[5]	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
–	Mounting bracket MS4/6-WP/WPB/WPE/WPM	–	■	■	■	ms4-wp, ms6-wp

Type codes

MS4-LOE

001	Series	
MS	MS series	

002	Size	
4	Grid dimension 40 mm	

003	Function	
LOE	Compressed air lubricator	

004	Pneumatic connection	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AQK	Sub-base 1/8 NPT	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	

005	Bowl type	
R	Plastic tray with plastic basket	
U	Metal bowl	

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

007	EU certification	
	None	
EX4	II 2GD	

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

009	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

MS6-LOE

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Function	
LOE	Compressed air lubricator	

004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AQN	Sub-base 1/4 NPT	
AQP	Sub-base 3/8 NPT	
AQR	Sub-base 1/2 NPT	
AQS	Sub-base 3/4 NPT	

005	Bowl type	
R	Plastic tray with plastic basket	
U	Metal bowl	

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

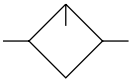
007	EU certification	
	None	
EX4	II 2GD	

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

009	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Data sheet

Function



- Flow rate
  1100 ... 7200 l/min
- Temperature range
  –10 ... +60°C
- Operating pressure
  1 ... 16 bar
- Spare parts service

The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.
The pressure drop that occurs when air flows through a Venturi nozzle is used to feed oil from the container to the drip cap.

From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The amount of oil mist is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loads
- High flow rate
- Quick and easy oil top-up even during operation (under pressure)
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

The following oils are recommended for Festo components:
Viscosity range to ISO 3448, ISO class VG 32
32 mm^2/s (= cSt) at 40°C

- Festo special oil OFSW-32 → 29
- Castrol HySpin ZZ 32
- BP Energol HLP 32
- Mobil Nuto H 32
- Mobil DTE 24
- Shell Tellus S2 MA 32

General technical data

Size			MS4	MS6
Pneumatic connection 1, 2				
	Female thread		G1/8 or G1/4	G1/4, G3/8 or G1/2
	Connecting plate	[AG...]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4
		[AQ...]	1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Design			Proportional standard mist lubricator	
Type of mounting			Via accessories	
			In-line installation	
Mounting position			Vertical ±5°	
Bowl guard			Plastic bowl guard	
			Integrated as metal bowl	
Minimum flow rate for lubricator function		[l/min]	40	50
Max. oil capacity		[cm^3]	30 (with plastic bowl guard) 36 (with metal bowl)	75 (with plastic bowl guard) 80 (with metal bowl)

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]

Size	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2
In main flow direction 1 › 2	1100	2200	2500	5300	7200

Data sheet

Operating and environmental conditions			
Size		MS4	MS6
Operating pressure	[bar]	1 ... 12 (1 ... 10)[1]	1 ... 16 (1 ... 10)[1]
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Note on the operating/pilot medium		Lubricated operation possible	
Ambient temperature	[°C]	–10 ... +60	0 ... +60
Temperature of medium	[°C]	–10 ... +60	0 ... +60
Storage temperature	[°C]	–10 ... +60	–10 ... +60
Corrosion resistance class CRC[2]		2	
Suitability for the food industry[3]		See supplementary material information	
UL certification[3]		c UL us - Recognized (OL)	

1) Value in brackets applies to MS4/MS6-LOE with UL certification.
2) 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.
3) Additional information is available at www.festo.com/sp ➔ Certificates.

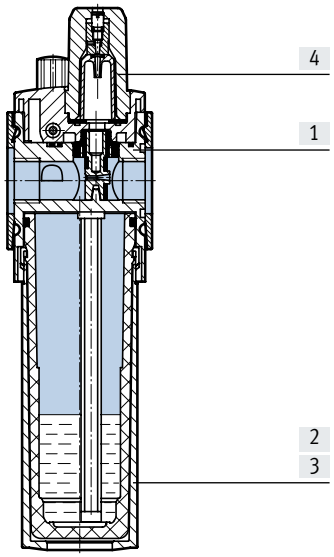
ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T60°C Db X
Explosion-proof ambient temperature	–10°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)

1) Additional information is available at www.festo.com/sp ➔ Certificates.

Weight [g]		
Size	MS4	MS6
Lubricator with plastic bowl guard	194	600
Lubricator with metal bowl	354	810

Materials

Sectional view

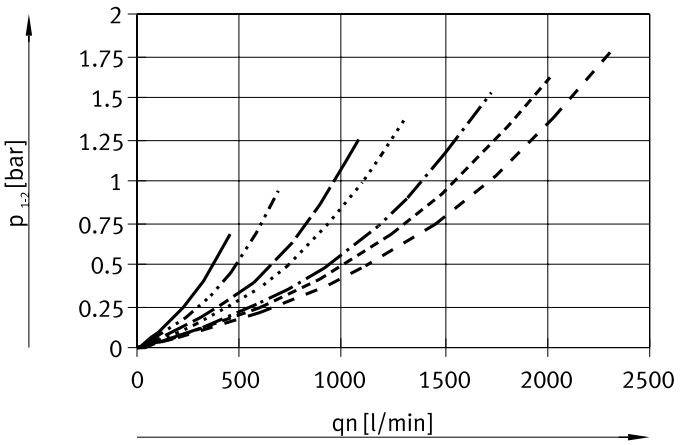


Lubricator		
[1]	Housing	Die-cast aluminium
[2]	Plastic bowl guard	PC
[3]	Metal bowl	Wrought aluminium alloy
	Inspection window	PA
[4]	Lubricator dome	PC
–	Seals	NBR
Note on materials		RoHS-compliant

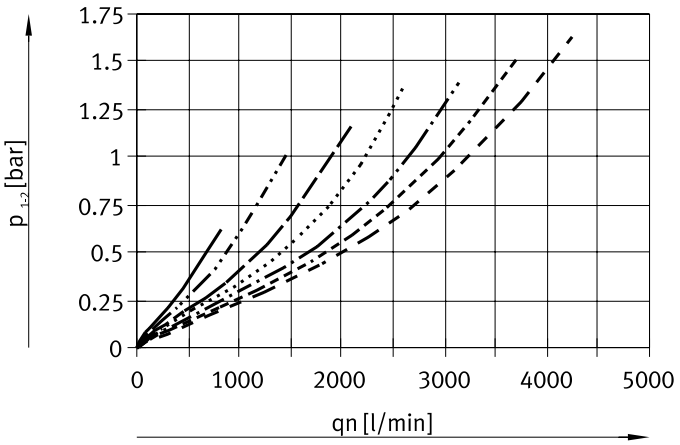
Data sheet

Standard flow rate qn as a function of differential pressure p_{1-2}

MS4-LOE-1/8

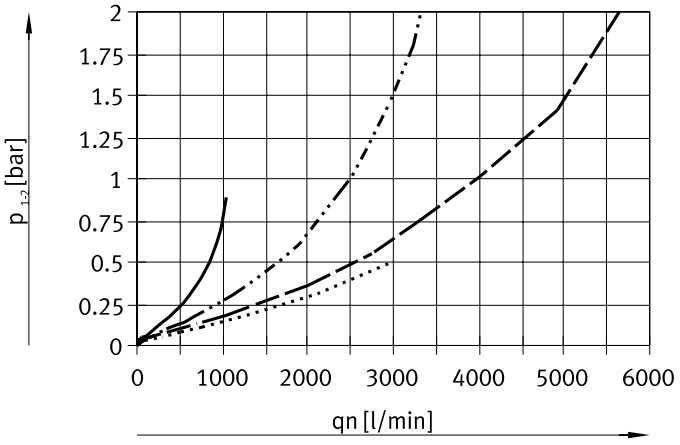


MS4-LOE-1/4

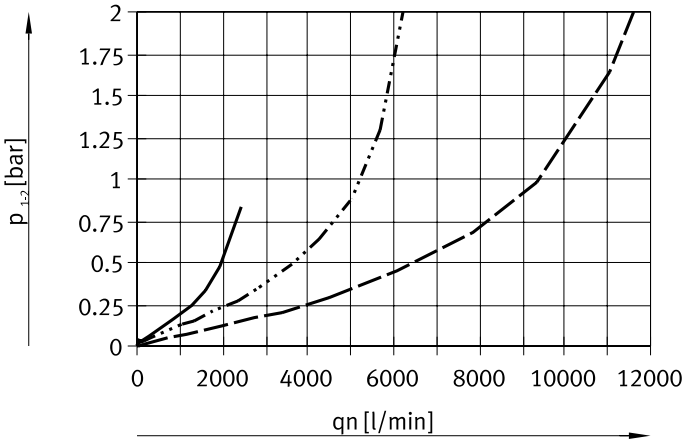


1 bar
2 bar
4 bar
6 bar
8 bar
10 bar
12 bar

MS6-LOE-1/4

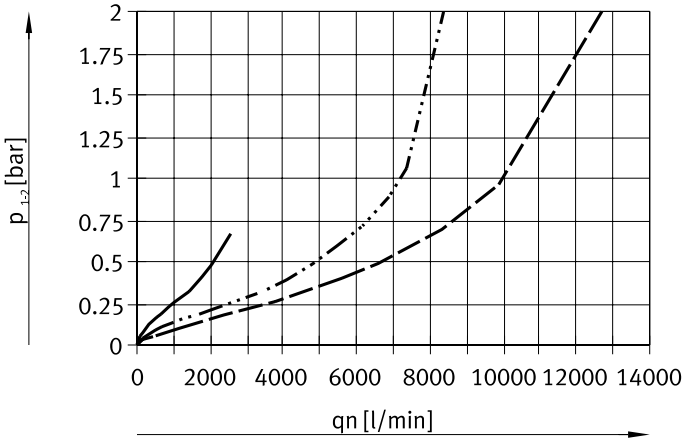


MS6-LOE-3/8



1 bar
6 bar
12 bar
16 bar

MS6-LOE-1/2

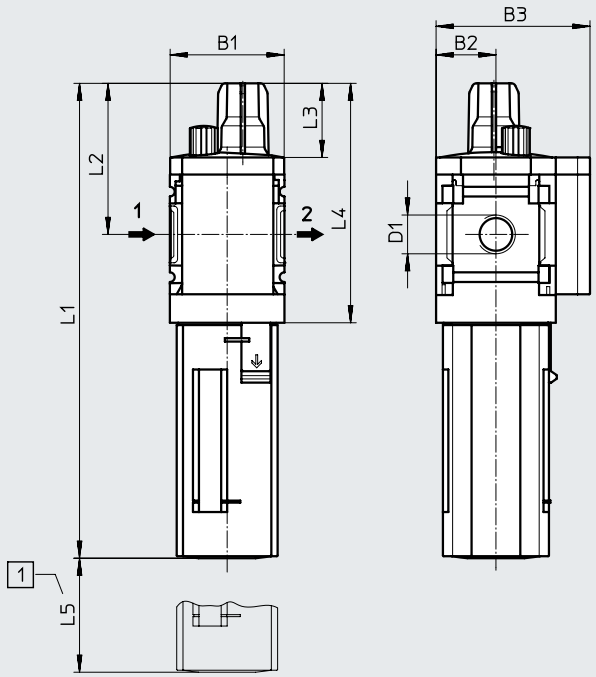


1 bar
6 bar
12 bar

Data sheet

Dimensions – Basic version

Download CAD data ➔ www.festo.com



[1] Installation dimensions

➔ Flow direction

Type	B1	B2	B3	D1	L1 Bowl guard		L2	L3	L4	L5
					Plastic	Metal				
MS4-LOE-1/8	42	21	54	G1/8	166.6	184.9	53	26	84.5	80
MS4-LOE-1/4				G1/4						
MS6-LOE-1/4	62	31	76	G1/4	218	223	66	27	112	130
MS6-LOE-3/8				G3/8						
MS6-LOE-1/2				G1/2						

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Ordering data

Size	Connection	Flow direction	Part no.	Type
Plastic bowl guard				
MS4	G1/8	From left to right	**529413**	**MS4-LOE-1/8-R**
	G1/4	From left to right	**529411**	**MS4-LOE-1/4-R**
MS6	G1/4	From left to right	**529779**	**MS6-LOE-1/4-R**
	G3/8	From left to right	**529783**	**MS6-LOE-3/8-R**
	G1/2	From left to right	**529775**	**MS6-LOE-1/2-R**
		From right to left	**529776**	**MS6-LOE-1/2-R-Z**
Metal bowl				
MS4	G1/4	From left to right	**535790**	**MS4-LOE-1/4-U**
MS6	G1/4	From left to right	**529781**	**MS6-LOE-1/4-U**
	G3/8	From left to right	**529785**	**MS6-LOE-3/8-U**
	G1/2	From left to right	**529777**	**MS6-LOE-1/2-U**

Ordering data – Modular product system

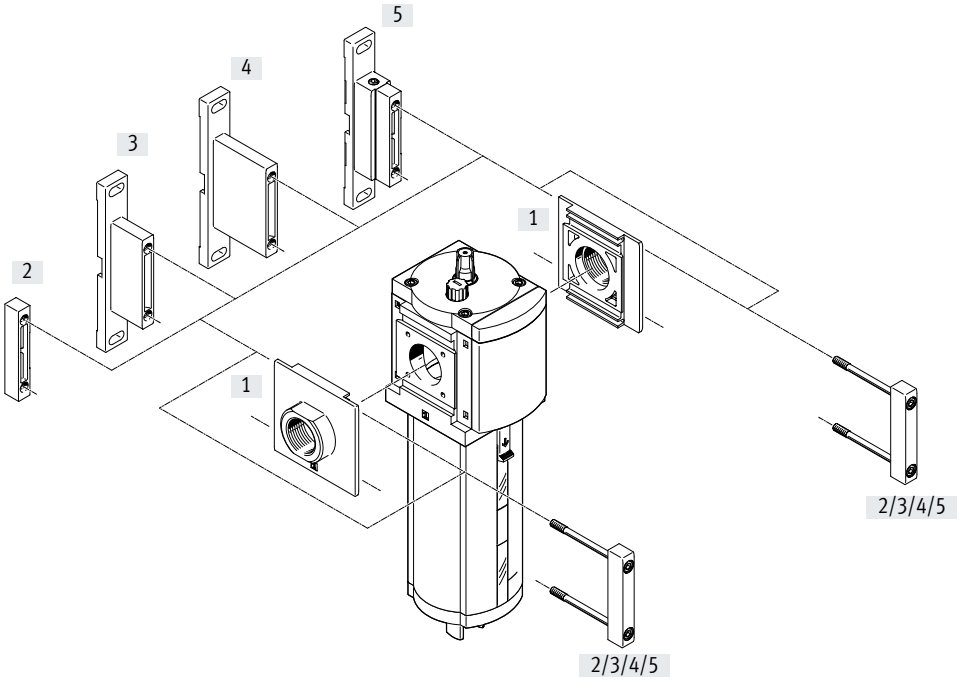
Ordering table

Grid dimension [mm]	40	62	Conditions	Code	Enter code
Module no.	**527701**	**527674**			
Series	Standard			**MS**	MS
Size	4	6		**...**	
Function	Lubricator			**-LOE**	-LOE
Pneumatic connection	Female thread G1/8	–	[1]	**-1/8**	
	Female thread G1/4	Female thread G1/4	[1]	**-1/4**	
	–	Female thread G3/8	[1]	**-3/8**	
	–	Female thread G1/2	[1]	**-1/2**	
	Connecting plate G1/8	–		**-AGA**	
	Connecting plate G1/4	Connecting plate G1/4		**-AGB**	
	Connecting plate G3/8	Connecting plate G3/8		**-AGC**	
	–	Connecting plate G1/2		**-AGD**	
	–	Connecting plate G3/4		**-AGE**	
	Connecting plate 1/8 NPT	–	[1]	**-AQK**	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	**-AQN**	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	**-AQP**	
	–	Connecting plate 1/2 NPT	[1]	**-AQR**	
	–	Connecting plate 3/4 NPT	[1]	**-AQS**	
Bowl	Plastic bowl with plastic bowl guard			**-R**	
	Metal bowl			**-U**	
Type of mounting	Without mounting bracket				
	Mounting bracket standard design		[2]	**-WP**	
	Mounting bracket for attaching service unit components		[1] [2]	**-WPM**	
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required			**-WB**	
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required	–		**-WBM**	
EU certification	None				
	II 2GD to EU Explosion Protection Directive (ATEX)			**-EX4**	
UL certification	None				
	cULus, ordinary location for Canada and USA			**-UL1**	
Flow direction	Flow direction from left to right				
	Flow direction from right to left			**-Z**	

[1] 1/8, 1/4, 3/8, 1/2, AQK, AQN, AQP, AQR, AQS, WPM — Not with EU EX4 certification.

[2] WP, WPM — Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

Peripherals overview



Note

Additional accessories:

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

Mounting components and accessories

		Individual device		Combination	→ Page/ Internet
		Via female thread	With connecting plate	Module without connecting thread, without connecting plate	
[1]	Connecting plate-SET MS9-AG...	–	■	■	ms9-ag
	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

Type codes

001	Series	
MS	MS series	

002	Size	
9	Grid dimension 90 mm	

003	Function	
LOE	Compressed air lubricator	

004	Pneumatic connection	
3/4	Female thread G3/4	
1	Female thread G1	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AGF	Sub-base G1	
AGG	Sub-base G1 1/4	
AGH	Sub-base G1 1/2	
N3/4	Female thread 3/4 NPT	
N1	Female thread 1 NPT	
AQR	Sub-base 1/2 NPT	
AQS	Sub-base 3/4 NPT	
AQT	Sub-base 1 NPT	
AQU	Sub-base 1 1/4 NPT	
AQV	Sub-base 1 1/2 NPT	
G	Module without connecting thread, without sub-base	

005	Bowl type	
U	Metal bowl	

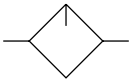
006	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPM	Mounting bracket for hooking in service unit components	
WPB	Mounting bracket for large wall gap	

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

008	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Data sheet

Function



Flow rate
8500 ... 27000 l/min

Temperature range
–10 ... +60°C

Operating pressure
1 ... 16 bar

Spare parts service

The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.
The pressure drop that occurs when air flows through a Venturi nozzle is used to feed oil from the container to the drip cap.

From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The amount of oil mist is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Integrated sintered filter for filtering the oil
- Reduces wear on drive units subject to high loads
- High flow rate
- Quick and easy oil top-up even during operation (under pressure)

The following oils are recommended for Festo components:
Viscosity range to ISO 3448, ISO class VG 32
32 mm^2/s (= cSt) at 40°C
- Festo special oil OFSW-32 ➔ 29
- Castrol HySpin ZZ 32
- BP Energol HLP 32
- Mobil Nuto H 32
- Mobil DTE 24
- Shell Tellus S2 MA 32

General technical data

Pneumatic connection 1, 2		
Female thread		G3/4, G1, 3/4 NPT or 1 NPT
Connecting plate	[AG...]	G1/2, G3/4, G1, G1 1/4 or G1 1/2
	[AQ...]	1/2 NPT, 3/4 NPT, 1 NPT, 1 1/4 NPT or 1 1/2 NPT
Module without connecting thread/connecting plate	[G]	–
Design		Proportional standard mist lubricator
Type of mounting		Via accessories
		In-line installation
Mounting position		Vertical ±5°
Bowl guard		Integrated as metal bowl
Minimum flow rate for lubricator function	[l/min]	100
Max. oil capacity	[ml]	490

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN[1] [l/min]

Pneumatic connection 1, 2	G1/2, 1/2 NPT	G3/4, 3/4 NPT	G1, 1 NPT	G1 1/4, 1 1/4 NPT	G1 1/2, 1 1/2 NPT
In main flow direction 1 › 2	8500	15000	23000	26000	27000

1) Measured at p1 = 6 bar and Δp = 1 bar.

Data sheet

Operating and environmental conditions		
Operating pressure	[bar]	1 ... 16
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Storage temperature	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2
UL certification[2)]		c UL us - Recognized (OL)

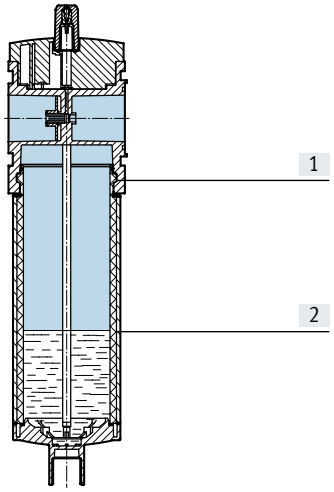
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

2) Additional information is available at www.festo.com/sp ➔ Certificates.

Weight [g]	
Lubricator	2000

Materials

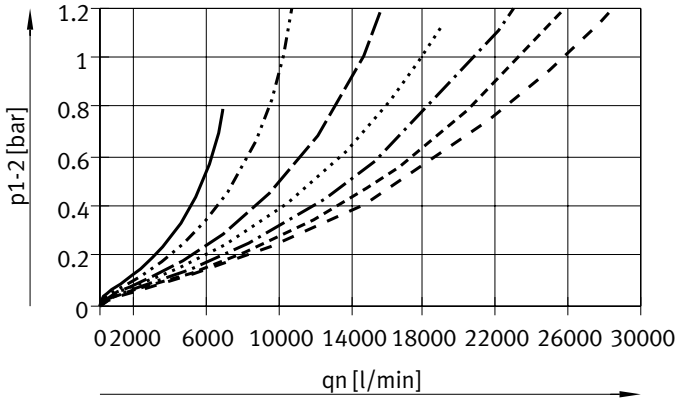
Sectional view



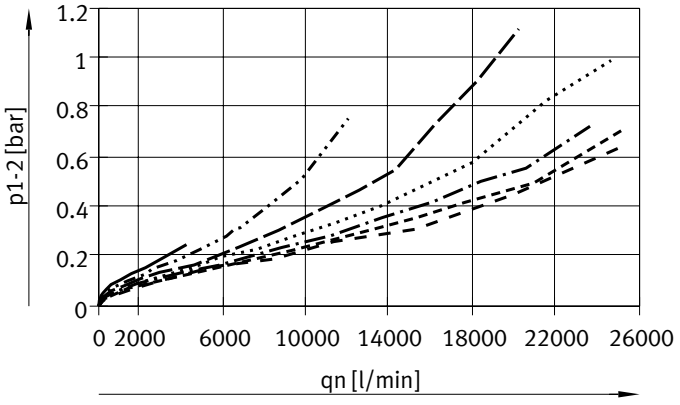
Lubricator		
[1]	Housing	Die-cast aluminium
[2]	Bowl	Wrought aluminium alloy
	Inspection window	PA
–	Covering	Reinforced PA
–	Connecting plate, module connector, mounting bracket	Die-cast aluminium
–	Seals	NBR
Note on materials		RoHS-compliant

Standard flow rate qn as a function of differential pressure p1-2

Pneumatic connection G3/4, 3/4 NPT



Pneumatic connection G1, 1 NPT

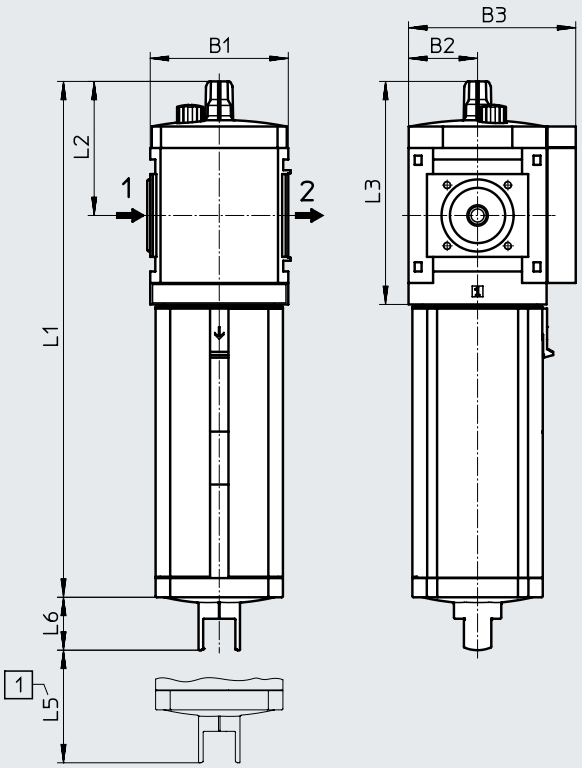


1 bar
2 bar
4 bar
6 bar
8 bar
10 bar
12 bar

Data sheet

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

[G] Module without connecting thread, without connecting plate



[1] Installation dimensions

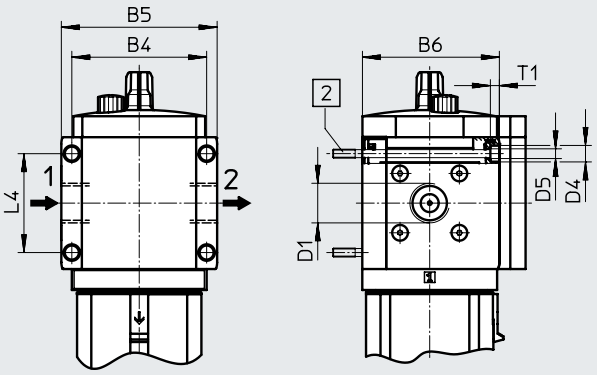
➔ Flow direction

Type	B1	B2	B3	L1	L2	L3	L5 min.	L6
MS9-LOE-G	90	45	109	336.3	87	145	225	34.5

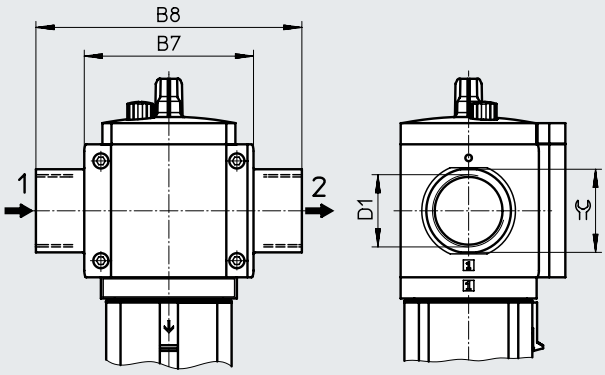
Data sheet

Dimensions – Female thread/connecting plate Download CAD data ➔ www.festo.com

[3/4]/[1]/[N3/4]/[N1] Female thread



[AG...]/[AQ...] Connecting plate



[2] Retaining screw M6xmin.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	D4 ø	D5 ø	L4	T1	⌀
MS9-LOE-3/4	90	104	91.5	–	–	G3/4	11	6.5	66	6	–
MS9-LOE-1						G1					
MS9-LOE-AGD	–	–	–	112	132	G1/2	–	–	–	–	30
MS9-LOE-AGE					132	G3/4					36
MS9-LOE-AGF					142	G1					41
MS9-LOE-AGG					162	G1 1/4					50
MS9-LOE-AGH					176	G1 1/2					55
MS9-LOE-N3/4	90	104	91.5	–	–	3/4 NPT	11	6.5	66	6	–
MS9-LOE-N1						1 NPT					
MS9-LOE-AQR	–	–	–	112	132	1/2 NPT	–	–	–	–	30
MS9-LOE-AQS					132	3/4 NPT					36
MS9-LOE-AQT					142	1 NPT					41
MS9-LOE-AQU					162	1 1/4 NPT					50
MS9-LOE-AQV					176	1 1/2 NPT					55

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Ordering data

Size	Connection	Flow direction	Part no.	Type
Metal bowl				
MS9	Without connecting thread	From left to right	**564144**	**MS9-LOE-G-U**

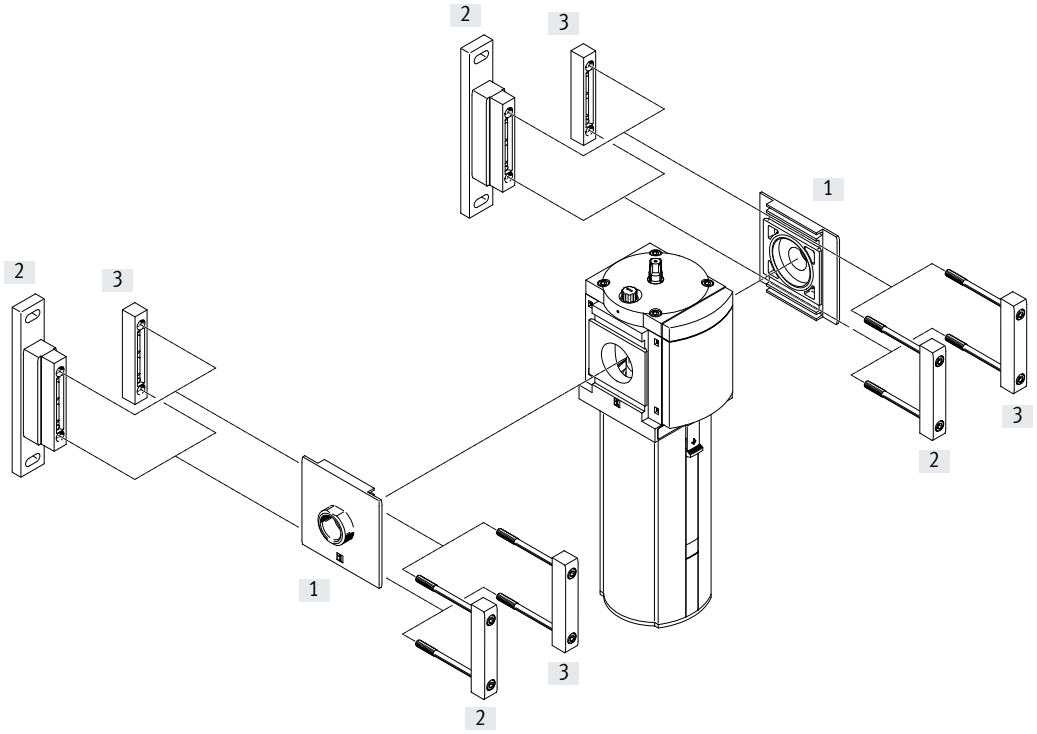
Ordering data – Modular product system

Ordering table

Grid dimension [mm]	90	Conditions	Code	Enter code
Module no.	**562533**			
Series	Standard service unit		**MS**	MS
Size	9		**9**	9
Function	Lubricator		**-LOE**	-LOE
Pneumatic connection	Female thread G3/4		**-3/4**	
	Female thread G1		**-1**	
	Connecting plate G1/2		**-AGD**	
	Connecting plate G3/4		**-AGE**	
	Connecting plate G1		**-AGF**	
	Connecting plate G1 1/4		**-AGG**	
	Connecting plate G1 1/2		**-AGH**	
	Female thread 3/4 NPT		**-N3/4**	
	Female thread 1 NPT		**-N1**	
	Connecting plate 1/2 NPT		**-AQR**	
	Connecting plate 3/4 NPT		**-AQS**	
	Connecting plate 1 NPT		**-AQT**	
	Connecting plate 1 1/4 NPT		**-AQU**	
	Connecting plate 1 1/2 NPT		**-AQV**	
	Module without connecting thread, without connecting plate		**-G**	
Bowl	Metal bowl		**-U**	-U
Type of mounting	Without mounting bracket			
	Mounting bracket standard design	[1]	**-WP**	
	Mounting bracket for attaching service unit components	[1]	**-WPM**	
	Mounting bracket for large wall gap	[1]	**-WPB**	
UL certification	None			
	cULus, ordinary location for Canada and USA		**-UL1**	
Flow direction	Flow direction from left to right			
	Flow direction from right to left		**-Z**	

[1] WP, WPM, WPB Not with pneumatic connection G.

Peripherals overview



Note

Additional accessories:

- Module connector for combination with size MS9
  → Internet: armv

Mounting components and accessories

		→ Page/ Internet
[1]	Connecting plate-SET MS12-AG...	ms12-ag
[2]	Mounting bracket MS12-WP	ms12-wp
[3]	Module connector MS12-MV	ms12-mv

Type codes

001	Series	
MS	MS series	

002	Size	
12	Grid dimension 124 mm	

003	Function	
LOE	Compressed air lubricator	

004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Sub-base G1 1/4	
AGH	Sub-base G1 1/2	
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	

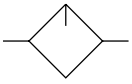
005	Bowl type	
U	Metal bowl	

006	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	

007	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Data sheet

Function



Flow rate
20000 ... 22000 l/min

Temperature range
0 ... 60°C

Operating pressure
1 ... 16 bar

Spare parts service

The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.
The pressure drop that occurs when air flows through a Venturi nozzle is used to feed oil from the container to the drip cap.

From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The amount of oil mist is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loads
- High flow rate
- Quick and easy oil top-up even during operation (under pressure)

The following oils are recommended for Festo components:
Viscosity range to ISO 3448, ISO class VG 32
32 mm^2/s (= cSt) at 40°C
- Festo special oil OFSW-32 ➔ 29
- Castrol HySpin ZZ 32
- BP Energol HLP 32
- Mobil Nuto H 32
- Mobil DTE 24
- Shell Tellus S2 MA 32

General technical data

Pneumatic connection 1, 2		
Connecting plate	[AG...]	G1, G1 1/4, G1 1/2 or G2
Module without connecting thread/connecting plate	[G]	–
Design		Proportional standard mist lubricator
Type of mounting		Via accessories
		In-line installation
Mounting position		Vertical ±5°
Bowl guard		Metal bowl
Minimum flow rate for lubricator function	[l/min]	400
Max. oil capacity	[cm^3]	1500

Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN[1] [l/min]

Pneumatic connection 1, 2	G1	G1 1/4	G1 1/2	G2
In main flow direction 1 › 2	20000	20500	21000	22000

1) Dependent on the connecting plate selected; must be ordered separately as an accessory ➔ Internet: ms12-ag
Measured at p1 = 6 bar and Δp = 0.5 bar

Data sheet

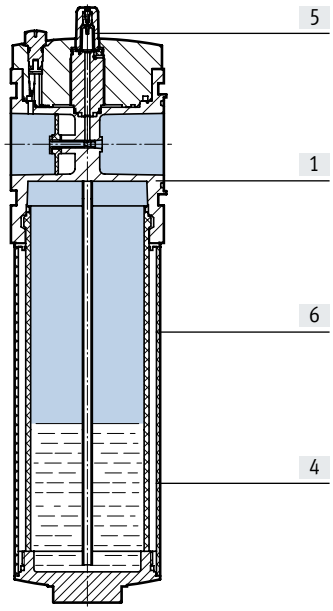
Operating and environmental conditions		
Operating pressure	[bar]	1 ... 16
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	0 ... +60
Storage temperature	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2

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.

Weight [g]	
Lubricator with metal bowl	6500

Materials

Sectional view

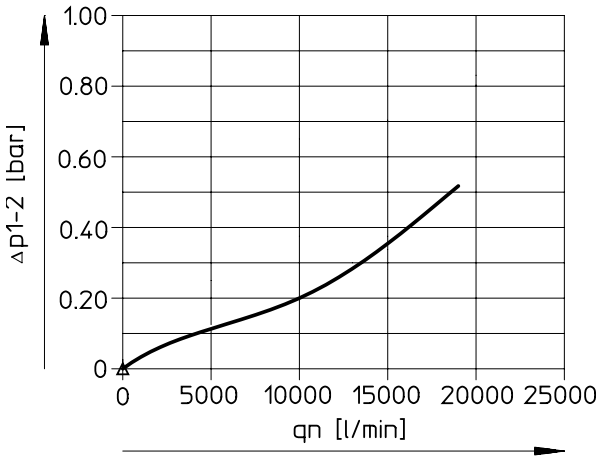


Lubricator		
[1]	Housing	Die-cast aluminium
[4]	Metal bowl	Aluminium
[5]	Lubricator dome	PC
[6]	Metal bowl sight glass	PA
–	Seals	NBR

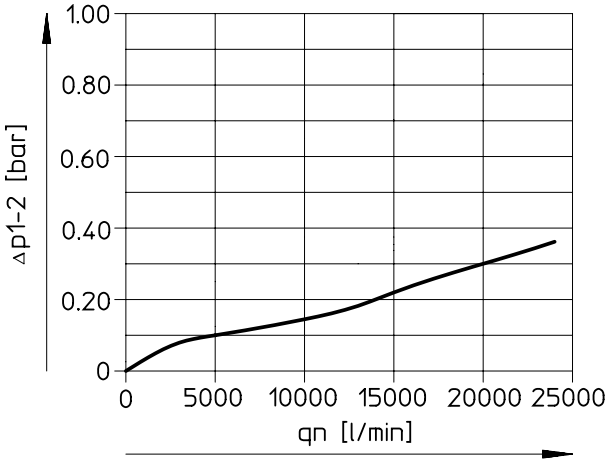
Data sheet

Standard flow rate qn as a function of differential pressure Δp1–2

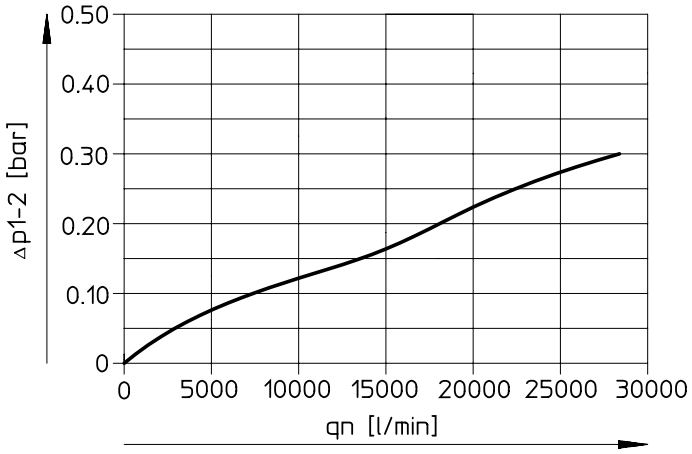
Pneumatic connection G1 with connecting plate MS12-AGF



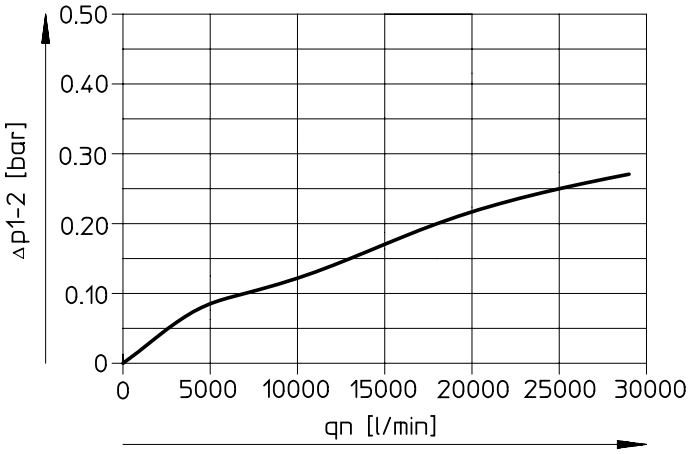
Pneumatic connection G1 1/4 with connecting plate MS12-AGG



Pneumatic connection G1 1/2 with connecting plate MS12-AGH



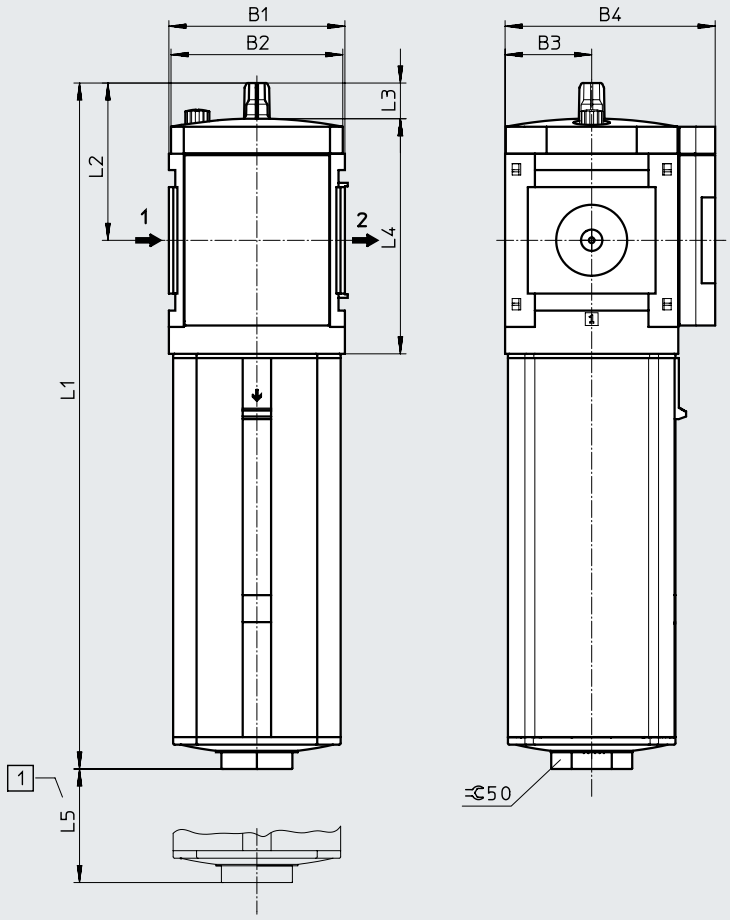
Pneumatic connection G2 with connecting plate MS12-AGI



Data sheet

Dimensions – Basic version

Download CAD data ➔ www.festo.com



[1] Installation dimensions

➔ Flow direction

Type	B1	B2	B3	B4	L1	L2	L3	L4	L5
MS12-LOE	124	122	61	148	483	111	25	166	300

Ordering data

Size	Connection	Flow direction	Part no.	Type
Metal bowl				
MS12	Without connecting thread	From left to right	**537156**	**MS12-LOE-G-U**

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	124	Conditions	Code		Enter code
Module no.	**535041**				
Series	Standard		**MS**		MS
Size	12		**12**		12
Function	Lubricator		**-LOE**		-LOE
Pneumatic connection	Connecting plate G1		**-AGF**		
	Connecting plate G1 1/4		**-AGG**		
	Connecting plate G1 1/2		**-AGH**		
	Connecting plate G2		**-AGI**		
	Module without connecting thread, without connecting plate		**-G**		
Bowl	Metal bowl		**-U**		-U
Type of mounting	Without mounting bracket				
	Mounting bracket standard design	[1]	**-WP**		
Flow direction	Flow direction from left to right				
	Flow direction from right to left		**-Z**		

[1] WP Only with connecting plate AGF, AGG, AGH or AGI.

Accessories

Special oil OFSW

Ordering data

Scope of delivery	Part no.	Type
1 litre	**152811**	**OFSW-32**