

Lubricators MS-LOE, MS series



# MS series service unit components

Key features



## MS series service unit components

Solutions for every application

With its large product range, highly functional components and a wide choice of services, 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, filter, 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 dismantling 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](http://www.festo.com/engineering/wartungseinheit)



## Integrated sensors

Pressure and flow sensors



- Maximum machine availability through controlled processes
- Reliable compressed air preparation and supply for systems
- Integrable 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
Port 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 <sup>1)</sup> [l/min]	350	1800	6500	20000	22000

1) Using pressure regulator MS-LR as an example

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**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 connection 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 service unit MSB is a reliable and convenient way of arranging individual service unit components. This ensures that the applicable rules are complied with. As a result, you get a completely assembled combination 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			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Combinations</b>								
<b>Service units MSB-FRC</b> <span style="float: right;">Technical data → Internet: msb</span>								
	Combinations of filter regulator and lubricator	4	-	-	1/8, 1/4	-	-	-
		6	-	-	1/4, 3/8, 1/2	-	-	-
<b>Service units MSB</b> <span style="float: right;">Technical data → Internet: msb</span>								
	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
<b>Service units MSE6</b> <span style="float: right;">Technical data → Internet: mse6</span>								
	Combinations with fieldbus connection for measuring pressure, flow rate and consumption	6	-	-	-	-	1/2	-

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Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Filter regulators MS-LFR</b>							Technical data → Internet: ms-lfr	
	Filter and pressure regulator in a single device, grade of filtration 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	–
<b>Filters MS-LF</b>								
							Technical data → 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	–
<b>Fine and micro filters MS-LFM</b>								
							Technical data → 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	–
<b>Activated carbon filters MS-LFX</b>								
							Technical data → 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	–
<b>Water separators MS-LWS</b>								
							Technical data → Internet: ms-lws	
	Remove condensed water 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	–

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Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Pressure regulators MS-LR</b> <span style="float: right;">Technical data → Internet: ms-lr</span>								
	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	–
<b>Pressure regulators MS-LRB</b> <span style="float: right;">Technical data → Internet: ms-lrb</span>								
	For creating 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	–
<b>Precision pressure regulators MS-LRP</b> <span style="float: right;">Technical data → Internet: ms-lrp</span>								
	For precise 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
<b>Precision pressure regulators MS-LRPB</b> <span style="float: right;">Technical data → Internet: ms-lrpb</span>								
	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	–
<b>Electrical pressure regulators MS-LRE</b> <span style="float: right;">Technical data → Internet: ms-lre</span>								
	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
<b>Lubricators MS-LOE</b> <span style="float: right;">Technical data → Internet: ms-loe</span>								
	Add a precisely adjustable amount of oil to the compressed air. The oil mist component 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	–

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Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>On/off valves MS-EM</b> <span style="float: right;">Technical data → Internet: ms-em</span>								
	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	–
<b>On/off valves MS-EE</b> <span style="float: right;">Technical data → Internet: ms-ee</span>								
	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	–
<b>Soft-start valves MS-DL</b> <span style="float: right;">Technical data → Internet: ms-dl</span>								
	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	–
<b>Soft-start valves MS-DE</b> <span style="float: right;">Technical data → Internet: ms-de</span>								
	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	–
<b>Soft-start/quick exhaust valves MS-SV</b> <span style="float: right;">Technical data → Internet: ms-sv</span>								
	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
		6	–	–	1/2	–	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	–
		6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–

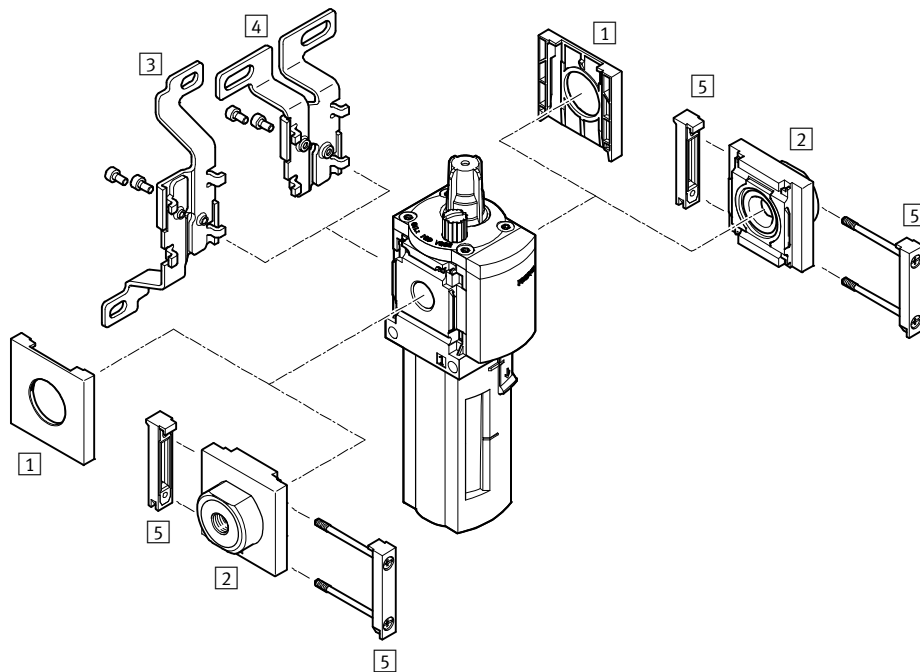
# MS series service unit components


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Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Membrane air dryers MS-LDM1</b>							Technical data → 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
<b>Branching modules MS-FRM</b>								
							Technical data → Internet: ms-frm	
	Compressed air distributor 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	-
<b>Distributor blocks MS-FRM-FRZ</b>								
							Technical data → Internet: ms-frm-frz	
	Compressed air distributor with 4 connections and half the grid dimension width	4	-	-	-	-	-	-
		6	-	-	-	-	-	-
<b>Flow sensors SFAM</b>								
							Technical data → 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

# Lubricators MS4/MS6-LOE, MS series

Peripherals overview



-  - Note

Additional accessories:

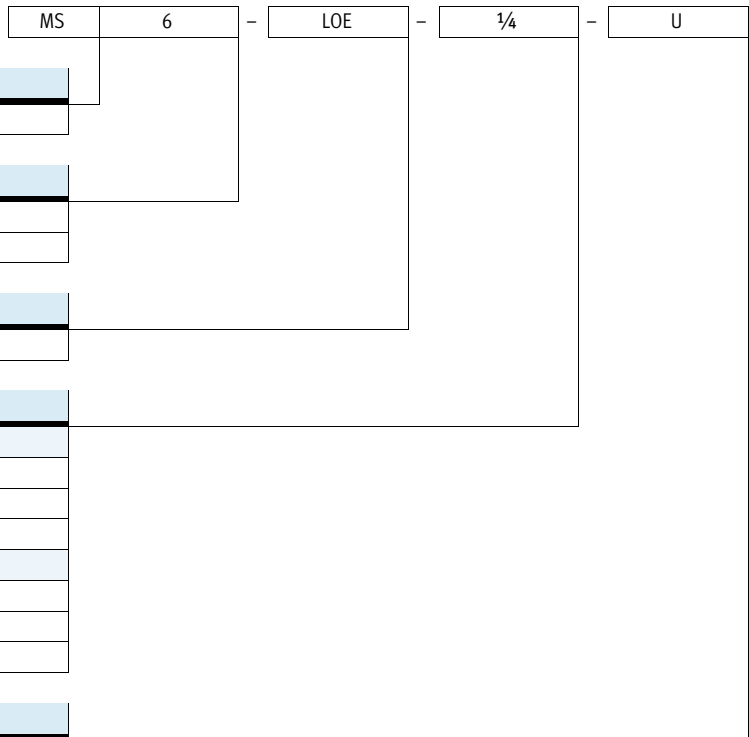
- Module connector for combination with sizes MS4/MS6 or size MS9 → Internet: amv, rmv, armv
- Adapter plate for mounting on profiles → Internet: ipm-80, ipm-40-80, ipm-80-80

Mounting attachments and accessories						
		Individual unit		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



# Lubricators MS4/MS6-LOE, MS series

Type codes



Further variants can be ordered using the modular system → 14

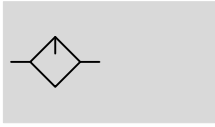
- Pneumatic connection
- Type of mounting
- EU certification
- UL certification
- Flow direction





# Lubricators MS4/MS6-LOE, MS series

Technical data

FESTO

Function



-  - Flow rate  
1,100 ... 7,200 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
1 ... 16 bar
-  - [www.festo.com](http://www.festo.com)



The proportional lubricator adds a precision adjustable quantity of oil to the compressed air stream. The pressure drop that occurs when air flows through a Venturi nozzle is used to convey 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 oil mist component is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loading
- 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<sup>2</sup>/s (= cSt) at 40°C

- Festo special oil OFSW-32 → 29
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data			
Size	MS4	MS6	
Pneumatic connection 1, 2 Female thread	G <sup>1</sup> / <sub>8</sub> or G <sup>1</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>4</sub> , G <sup>3</sup> / <sub>8</sub> or G <sup>1</sup> / <sub>2</sub>	
	Connecting plate AG...	G <sup>1</sup> / <sub>8</sub> , G <sup>1</sup> / <sub>4</sub> or G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub> , G <sup>3</sup> / <sub>8</sub> , G <sup>1</sup> / <sub>2</sub> or G <sup>3</sup> / <sub>4</sub>
	Connecting plate AQ...	NPT <sup>1</sup> / <sub>8</sub> , NPT <sup>1</sup> / <sub>4</sub> or NPT <sup>3</sup> / <sub>8</sub>	NPT <sup>1</sup> / <sub>4</sub> , NPT <sup>3</sup> / <sub>8</sub> , NPT <sup>1</sup> / <sub>2</sub> or NPT <sup>3</sup> / <sub>4</sub>
Design	Proportional standard mist lubricator		
Type of mounting	Via accessories		
	In-line installation		
Assembly position	Vertical ±5°		
Bowl guard	Plastic bowl guard		
	Integrated as metal bowl		
Minimum flow for lubricator operation [l/min]	40	50	
Max. oil capacity [cm <sup>3</sup> ]	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 to ISO 228-1

Standard nominal flow rate q <sub>N</sub> [l/min]					
Size	MS4		MS6		
Pneumatic connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>
In main flow direction 1 → 2	1,100	2,200	2,500	5,300	7,200

# Lubricators MS4/MS6-LOE, MS series

Technical data

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	1 ... 12 (1 ... 10) <sup>1)</sup>	1 ... 16 (1 ... 10) <sup>1)</sup>
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium	Operation with lubricated medium 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 <sup>2)</sup>	2	
Food-safe <sup>3)</sup>	See supplementary material information	
UL certification <sup>3)</sup>	cULus 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 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.

3) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

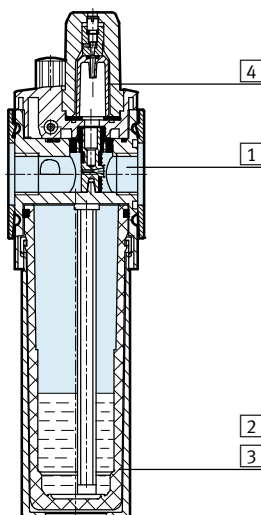
ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

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

## Materials

Sectional view



Lubricators		
1	Body	Die-cast aluminium
2	Plastic bowl guard	PC
3	Metal bowl Viewing window	Wrought aluminium alloy PA
4	Lubricator dome	PC
-	Seals	NBR
Note on materials		RoHS-compliant

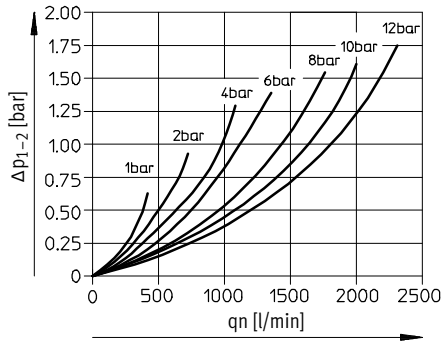
# Lubricators MS4/MS6-LOE, MS series

Technical data

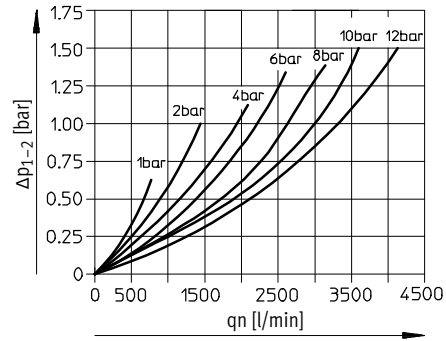


## Standard flow rate $q_n$ as a function of the differential pressure $\Delta p_{1-2}$

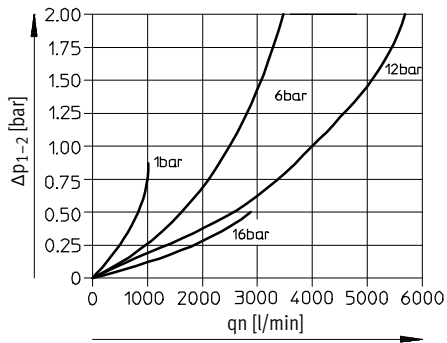
MS4-LOE-1/8



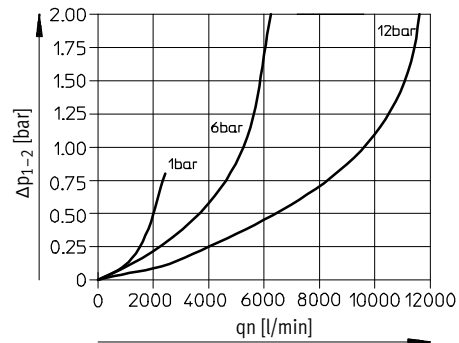
MS4-LOE-1/4



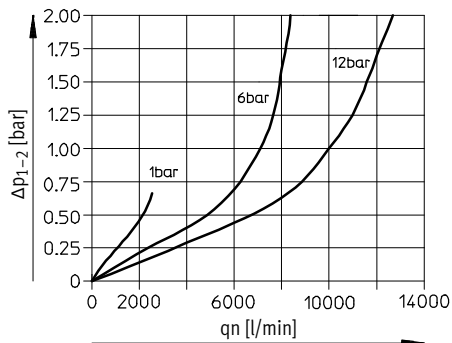
MS6-LOE-1/4



MS6-LOE-3/8



MS6-LOE-1/2



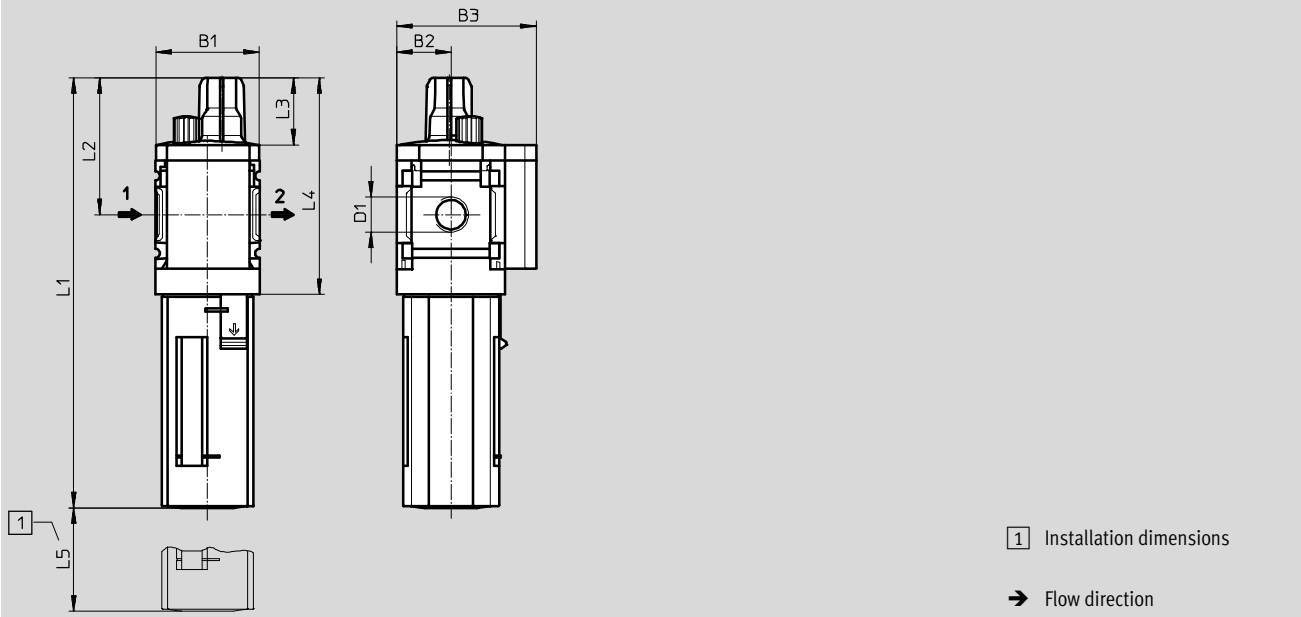
# Lubricators MS4/MS6-LOE, MS series

Technical data

**FESTO**

## Dimensions – Basic version

Download CAD data → [www.festo.com](http://www.festo.com)



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 to ISO 228-1

## Ordering data

Size	Connection	Plastic bowl guard		Integrated as metal bowl	
		Part No.	Type	Part No.	Type
MS4	G1/8	529413	MS4-LOE-1/8-R	-	-
	G1/4	529411	MS4-LOE-1/4-R	535790	MS4-LOE-1/4-U
MS6	G1/4	529779	MS6-LOE-1/4-R	529781	MS6-LOE-1/4-U
	G3/8	529783	MS6-LOE-3/8-R	529785	MS6-LOE-3/8-U
	G1/2	529775	MS6-LOE-1/2-R	529777	MS6-LOE-1/2-U

# Lubricators MS4/MS6-LOE, MS series

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
<b>M</b>	Module No.	<b>527701</b>	<b>527674</b>				
	Series	Standard			<b>MS</b>	MS	
	Size	4	6		...		
	Function	Lubricators			<b>-LOE</b>	-LOE	
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	- $\frac{1}{8}$		
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	- $\frac{1}{4}$		
		–	Female thread G $\frac{3}{8}$	1	- $\frac{3}{8}$		
		–	Female thread G $\frac{1}{2}$	1	- $\frac{1}{2}$		
		Connecting plate G $\frac{1}{8}$	–		<b>-AGA</b>		
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$		<b>-AGB</b>		
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$		<b>-AGC</b>		
		–	Connecting plate G $\frac{1}{2}$		<b>-AGD</b>		
		–	Connecting plate G $\frac{3}{4}$		<b>-AGE</b>		
		Connecting plate NPT $\frac{1}{8}$	–	1	<b>-AQK</b>		
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1	<b>-AQN</b>		
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1	<b>-AQP</b>		
		–	Connecting plate NPT $\frac{1}{2}$	1	<b>-AQR</b>		
		–	Connecting plate NPT $\frac{3}{4}$	1	<b>-AQS</b>		
	Bowl	Plastic bowl with plastic bowl guard			<b>-R</b>		
		Metal bowl			<b>-U</b>		
<b>O</b>	Type of mounting	Mounting bracket standard design		2	<b>-WP</b>		
		Mounting bracket for attaching the service units		1 2	<b>-WPM</b>		
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required			<b>-WB</b>		
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required	–		<b>-WBM</b>		
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)				<b>-EX4</b>	
	UL certification	cULus, ordinary location for Canada and USA				<b>-UL1</b>	
	Flow direction	Flow direction from right to left				<b>-Z</b>	

1  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , **AQK, AQN, AQP, AQR, AQS, WPM**  
Not with EU certification EX4

2 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS

**M** Mandatory data

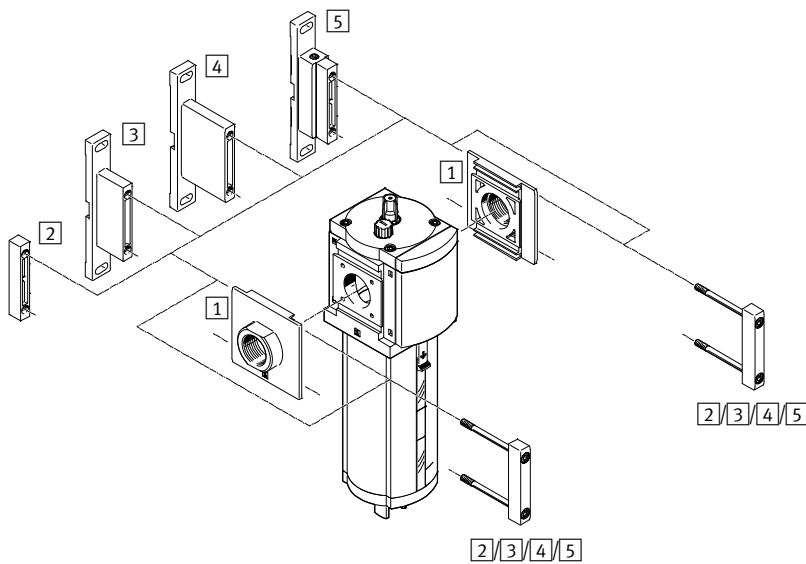
**O** Options


Transfer order code

**MS**  - **LOE** -  -  -  -  -  -  -

# Lubricators MS9-LOE, MS series

Peripherals overview



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

Mounting attachments and accessories					
		Individual unit		Combination	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ...	Module without connecting thread, without connecting plate G	
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

# Lubricators MS9-LOE, MS series

Type codes

		MS	9	-	LOE	-	G	-	U
<b>Series</b>									
MS	Standard service unit								
<b>Size</b>									
9	Grid dimension 90 mm								
<b>Service function</b>									
LOE	Lubricator								
<b>Pneumatic connection</b>									
G	Module without connecting thread, without connecting plate								
<b>Bowl guard</b>									
U	Integrated as metal bowl								

Additional variants can be ordered using the modular product system → 21

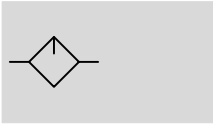
- Pneumatic connection
- Type of mounting
- UL certification
- Flow direction







# Lubricators MS9-LOE, MS series

Technical data

Function



-  - Flow rate  
8,500 ... 27,000 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
1 ... 16 bar
-  - [www.festo.com](http://www.festo.com)



The proportional lubricator adds a precisely adjustable quantity of oil to the compressed air. The pressure drop that occurs when air flows through a Venturi nozzle is used to convey 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 oil mist part 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 loading
- 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<sup>2</sup>/s (= cSt) at 40 °C

- Festo special oil OFSW-32 → 29
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data	
Pneumatic connection 1, 2	
Female thread	G3/4, G1, NPT3/4 or NPT1
Connecting plate AG...	G1/2, G3/4, G1, G1 1/4 or G1 1/2
Connecting plate AQ...	NPT1/2, NPT3/4, NPT1, NPT1 1/4 or NPT1 1/2
Module without connecting thread/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 operation [l/min]	100
Max. oil capacity [ml]	490

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

Standard nominal flow rate q <sub>N</sub> <sup>1)</sup> [l/min]					
Pneumatic connection	Connecting plate AGD/AQR	Female thread G3/4/NPT3/4 or connecting plate AGE/AQS	Female thread G1/NPT1 or connecting plate AGF/AQT	Connecting plate AGG/AQU	Connecting plate AGH/AQV
In main flow direction 1 → 2	8,500	15,000	23,000	26,000	27,000

1) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.

# Lubricators MS9-LOE, MS series

Technical data



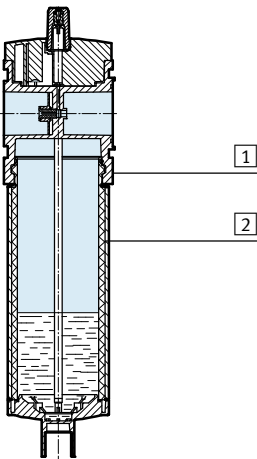
Operating and environmental conditions	
Operating pressure [bar]	1... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2
UL certification <sup>2)</sup>	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) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

Weight [g]	
Lubricator	2,000

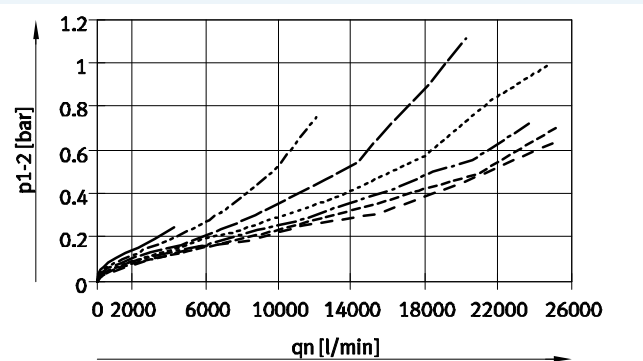
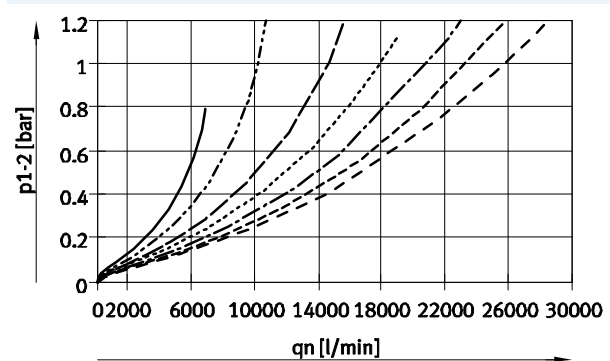
## Materials

Sectional view



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

## Standard flow rate $q_n$ as a function of differential pressure $p_{1-2}$



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

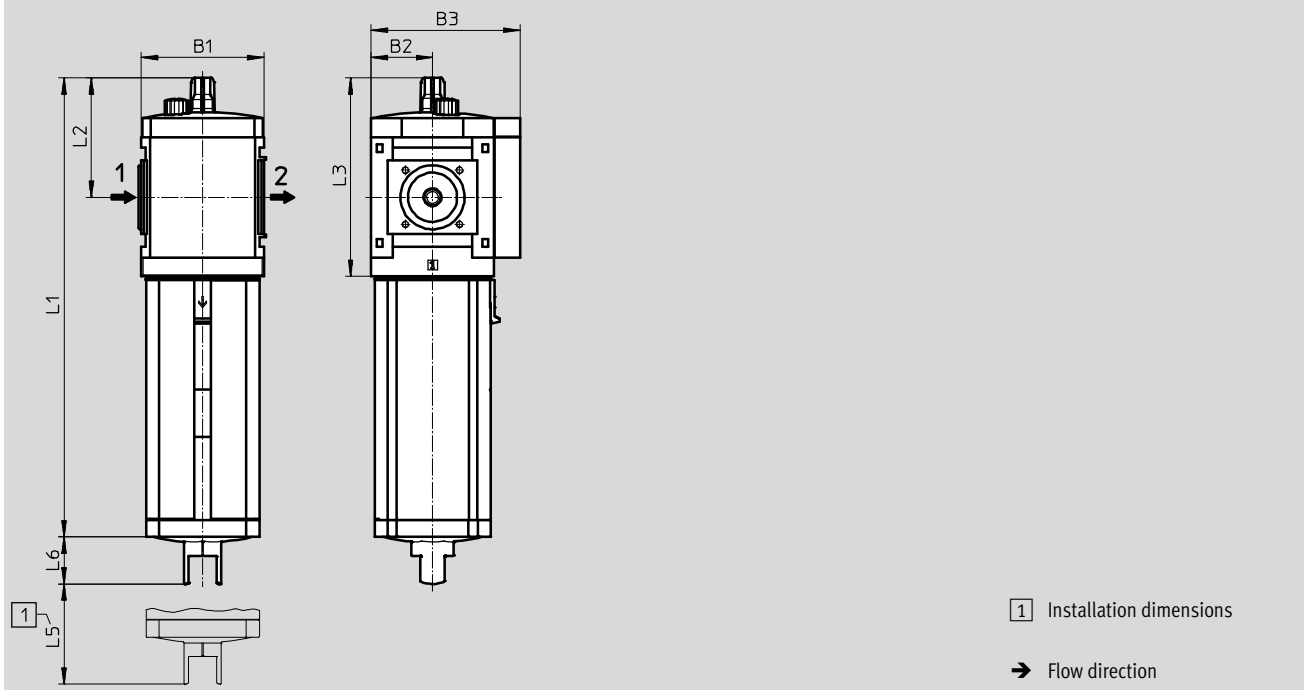
# Lubricators MS9-LOE, MS series

Technical data

## Dimensions – Basic version

Download CAD data → [www.festo.com](http://www.festo.com)

Module without connecting thread, without connecting plate G



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

# Lubricators MS9-LOE, MS series

Technical data

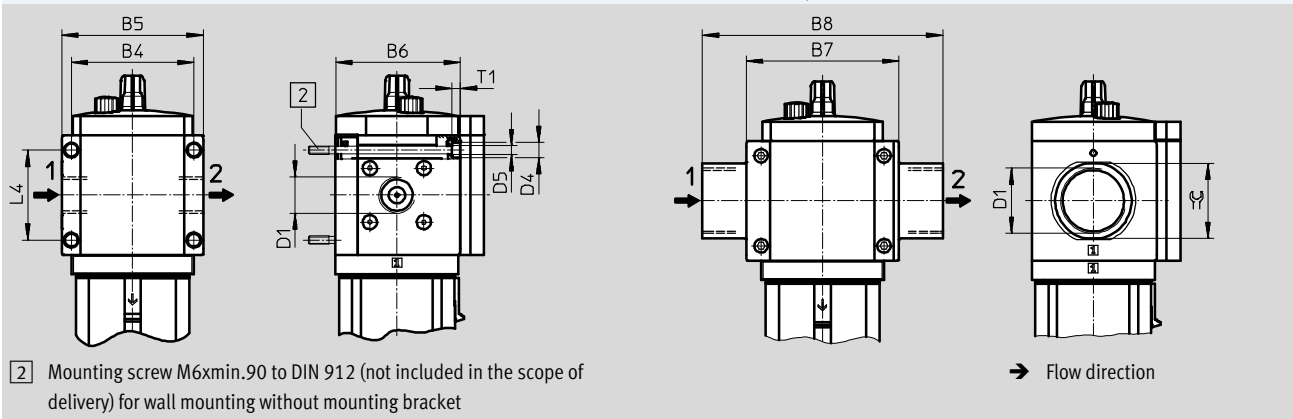
FESTO

## Dimensions – Female thread/connecting plate

Download CAD data → [www.festo.com](http://www.festo.com)

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



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	-	-	NPT3/4-14	11	6.5	66	6	-
MS9-LOE-N1						NPT1-11 1/2					
MS9-LOE-AQR	-	-	-	112	132	NPT1/2-14	-	-	-	-	30
MS9-LOE-AQS					132	NPT3/4-14					36
MS9-LOE-AQT					142	NPT1-11 1/2					41
MS9-LOE-AQU					162	NPT1 1/4-11 1/2					50
MS9-LOE-AQV					176	NPT1 1/2-11 1/2					55

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

## Ordering data

Size	Connection	Part No.	Type
MS9	-	564144	MS9-LOE-G-U

# Lubricators MS9-LOE, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
<b>M</b>	Module No.	<b>562533</b>			
	Series	Standard service unit		<b>MS</b>	MS
	Size	9		<b>9</b>	9
	Function	Lubricator		<b>-LOE</b>	-LOE
	Pneumatic connection	Female thread G $\frac{3}{4}$		<b>-<math>\frac{3}{4}</math></b>	
		Female thread G1		<b>-1</b>	
		Connecting plate G $\frac{1}{2}$		<b>-AGD</b>	
		Connecting plate G $\frac{3}{4}$		<b>-AGE</b>	
		Connecting plate G1		<b>-AGF</b>	
		Connecting plate G1 $\frac{1}{4}$		<b>-AGG</b>	
		Connecting plate G1 $\frac{1}{2}$		<b>-AGH</b>	
		Female thread NPT $\frac{3}{4}$		<b>-N<math>\frac{3}{4}</math></b>	
		Female thread NPT1		<b>-N1</b>	
		Connecting plate NPT $\frac{1}{2}$		<b>-AQR</b>	
		Connecting plate NPT $\frac{3}{4}$		<b>-AQS</b>	
		Connecting plate NPT1		<b>-AQT</b>	
		Connecting plate NPT1 $\frac{1}{4}$		<b>-AQU</b>	
		Connecting plate NPT1 $\frac{1}{2}$		<b>-AQV</b>	
		Module without connecting thread, without connecting plate		<b>-G</b>	
	Bowl	Metal bowl		<b>-U</b>	-U
<b>O</b>	Type of mounting	Mounting bracket standard design	<b>1</b>	<b>-WP</b>	
		Mounting bracket for attaching the service units	<b>1</b>	<b>-WPM</b>	
		Mounting bracket for large wall gap	<b>1</b>	<b>-WPB</b>	
	UL certification	cULus, ordinary location for Canada and USA		<b>-UL1</b>	
	Flow direction	Flow direction from right to left		<b>-Z</b>	

**1 WP, WPM, WPB** Not with pneumatic connection G

**M** Mandatory data

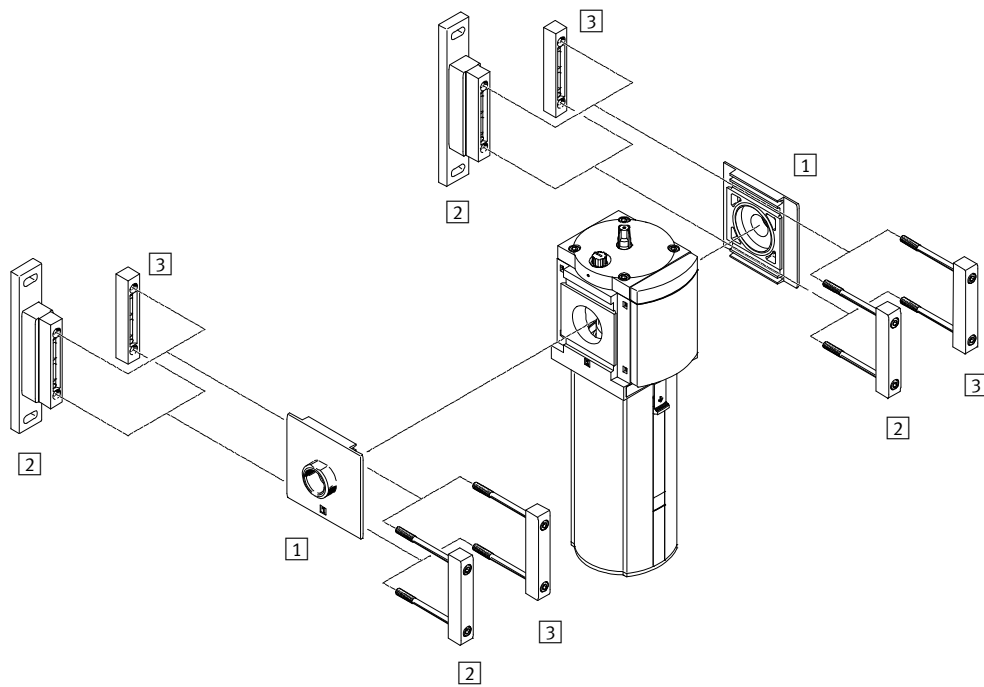
**O** Options


**Transfer order code**

**562533** **MS** **9** - **LOE** -  - **U**  -  -  -

# Lubricators MS12-LOE, MS series

Peripherals overview



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

Mounting attachments 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

# Lubricators MS12-LOE, MS series

Type codes

MS 12 - LOE - G - U

**Series**

MS	Standard service unit
----	-----------------------

**Size**

12	Grid dimension 124 mm
----	-----------------------

**Service function**

LOE	Lubricator
-----	------------

**Pneumatic connection**

G	Module without connecting thread, without connecting plate Connecting plates → Accessories
---	---

**Bowl guard**

U	Metal bowl
---	------------

Further variants can be ordered using the modular system → 28

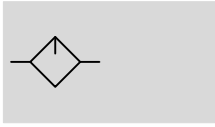
- Pneumatic connection
- Type of mounting
- Flow direction





# Lubricators MS12-LOE, MS series

Technical data



## Function



-  - Flow rate  
20,000 ... 22,000 l/min
-  - Temperature range  
0 ... 60 °C
-  - Operating pressure  
1 ... 16 bar
-  - [www.festo.com](http://www.festo.com)



The proportional lubricator adds a precision adjustable quantity of oil to the compressed air stream. The pressure drop that occurs when air flows through a Venturi nozzle is used to convey 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 oil mist component is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loading
- 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<sup>2</sup>/s (= cSt) at 40°C

- Festo special oil OFSW-32 → 29
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	–
Design	Proportional standard mist lubricator
Type of mounting	Via accessories In-line installation
Assembly position	Vertical ±5°
Bowl guard	Metal bowl
Minimum flow for lubricator operation [l/min]	400
Max. oil capacity [cm <sup>3</sup> ]	1,500

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

Standard nominal flow rate q <sub>N</sub> <sup>1)</sup> [l/min]				
Pneumatic connection	G1	G1¼	G1½	G2
In main flow direction 1 → 2	20,000	20,500	21,000	22,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag  
Measured at p<sub>1</sub> = 6 bar and Δp = 0.5 bar



# Lubricators MS12-LOE, MS series

Technical data

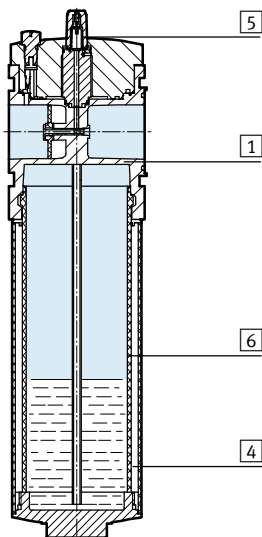
Operating and environmental conditions	
Operating pressure [bar]	1 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Ambient temperature [°C]	0 ... +60
Temperature of medium [°C]	0 ... +60
Storage temperature [°C]	-10 ... +60
Corrosion resistance CRC <sup>1)</sup>	2

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.

Weights [g]	
Lubricator with metal bowl U	6,500

## Materials

Sectional view



Lubricator		
1	Body	Die-cast aluminium
4	Metal bowl	Aluminium
5	Lubricator dome	PC
6	Metal bowl sight glass	PA
-	Seals	NBR

# Lubricators MS12-LOE, MS series

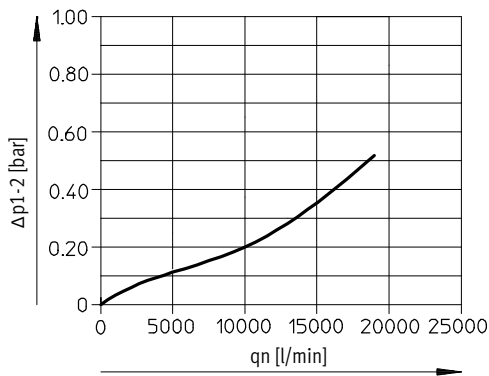
Technical data



## Standard flow rate $q_n$ as a function of the differential pressure $\Delta p_{1-2}$

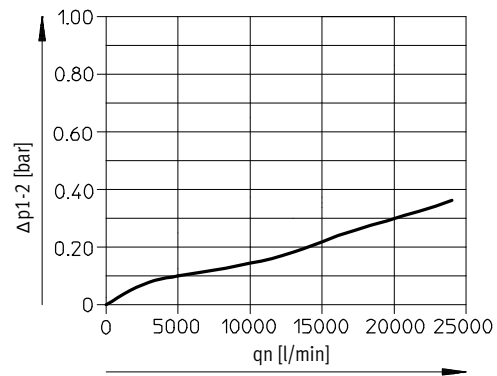
With connecting plate MS12-AGF

Pneumatic connection G1



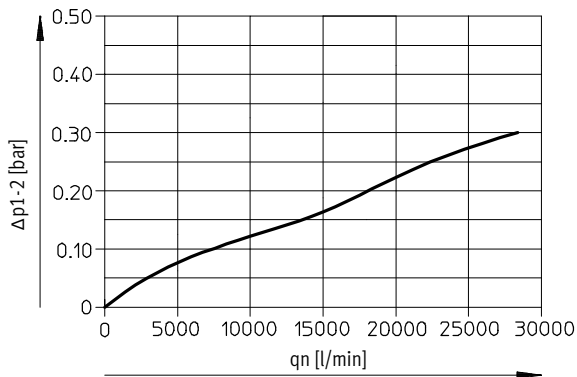
With connecting plate MS12-AGG

Pneumatic connection G1¼



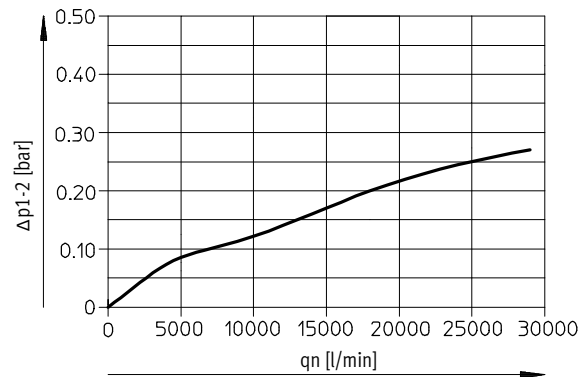
With connecting plate MS12-AGH

Pneumatic connection G1½



With connecting plate MS12-AGI

Pneumatic connection G2

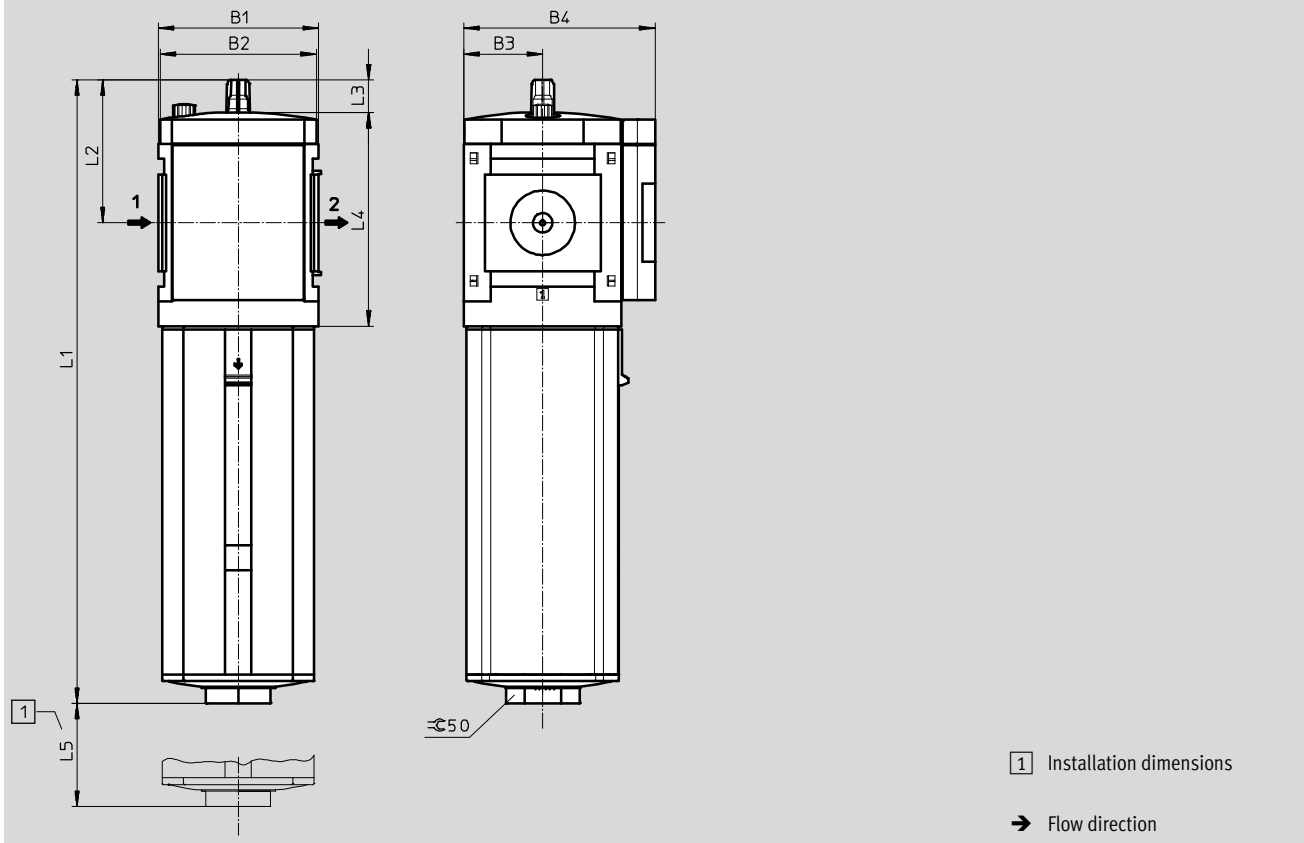


# Lubricators MS12-LOE, MS series

Technical data

## Dimensions – Basic version

Download CAD data → [www.festo.com](http://www.festo.com)



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

## Ordering data

Metal bowl

Size	Connection	Part No.	Type
MS12	G1 ... G2 <sup>1)</sup>	537156	MS12-LOE-G-U

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag

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

# Lubricators MS12-LOE, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
<b>M</b>	Module No.	<b>535041</b>			
	Series	Standard		<b>MS</b>	MS
	Size	12		<b>12</b>	12
	Function	Lubricator		<b>-LOE</b>	-LOE
	Pneumatic connection	Connecting plate G1		<b>-AGF</b>	
		Connecting plate G1¼		<b>-AGG</b>	
		Connecting plate G1½		<b>-AGH</b>	
		Connecting plate G2		<b>-AGI</b>	
		Module without connecting thread, without connecting plate		<b>-G</b>	
	Bowl	Metal bowl		<b>-U</b>	-U
<b>O</b>	Type of mounting	Mounting bracket standard design	<b>1</b>	<b>-WP</b>	
	Flow direction	Flow direction from right to left		<b>-Z</b>	

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

- M** Mandatory data
- O** Options

Transfer order code

535041 MS 12 - LOE - [ ] - U [ ] - [ ] - [ ]

## Lubricators MS-LOE, MS series

Accessories

FESTO

Special oil



Ordering data		
Scope of delivery	Part No.	Type
1 litre	152811	OFSW-32