# **Lubricators MS-LOE, MS series**

# **FESTO**



### 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 softstart 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

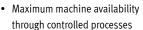
# Safety functions

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



### Intelligent mix of sizes





- Reliable air preparation and supply for systems
- Integrated or stand-alone
- Easy to connect with M8/M12 plug



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



- · 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



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

Size differences
Size

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, G1 1/4, G1 1/2, G2
					G1 1/2	
Standard nominal flow rate qnN <sup>1)</sup>	[l/min]	350	1800	6500	20000	22000

Using pressure regulator MS-LR as an example

### 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

Туре	Description	Size	Pneumatic o	connection					
			Push-in	Female thread			Connecting plate with thread		
			connector	M	G	NPT	G	NPT	
Combinations									
Service units N	ISB-FRC							Data sheets → Internet: msl	
	Combinations of filter	4	-	-	1/8, 1/4	-	-	-	
	regulator and lubricator	6	-	-	1/4, 3/8, 1/2	_	-	-	
D									
Service units N	ISB							Data sheets → Internet: msb	
7	7 combinations, predefined	4	-	-	1/4	-	_	-	
		6	-	-	1/2	-	_	-	
U				1	1.12.11	I	1.10.11.010	1.12.11.212	
- Autoli	Combinations freely	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8	
	configurable	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4	
图》首		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	
il v									
Service units N		,						Data sheets → Internet: mse6	
	Combinations with fieldbus connection for measuring	6	-	_		_	1/2	-	
(DILL	pressure, flow rate and consumption								

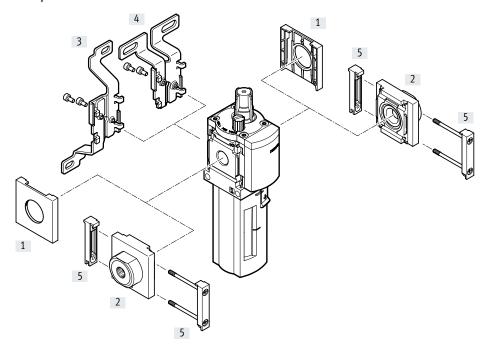
/pe	Description	Size	Pneumatic (	connection				
			Push-in	Female thr	ead		Connecting plate with thre	ad
			connector	M	G	NPT	G	NPT
ndividual de	vices				-			
lter regulat	ors MS-LFR							Data sheets → Internet: ms
1	Filter and pressure	2	QS-6	M5	-	-	_	-
- 6	regulator in a single device,	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
100	filtration grade 5 or 40 µm	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
Ш		12	-	-	-	-	1, 1 1/4, 1 1/2, 2	-
lter MS-LF			•					Data sheets → Internet: m
	Grade of filtration 5 or	4	1_	T-	1/8, 1/4	T-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
-	40 µm	6	1_	-	1/4, 3/8, 1/2	<u> </u>	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
-	· .	9	1_	-	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 1/4, 1 1/2, 2	_
ne and mic	ro filters MS-LFM Grade of filtration 0.01 or 1 µm	6	-  -	-	1/8, 1/4 1/4, 3/8, 1/2	-	1/8, 1/4, 3/8 1/4, 3/8, 1/2, 3/4	Data sheets → Internet: ms  1/8, 1/4, 3/8  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
1		12	_	_	-	_	1, 1 1/4, 1 1/2, 2	_
	h Sit MC LEV							B. I. I. I.
ctivated car	bon filters MS-LFX			1	14/0 4/4	1	1/0 1/1 0/0	Data sheets → Internet: ms
	For removing liquid and	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
-	gaseous oil particles	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
1		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	-
ater separa	itors MS-LWS							Data sheets → Internet: ms
	Remove condensate from	6	1-	1-	1/4, 3/8, 1/2	I -	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	compressed air,	9	1_	1-	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
100	maintenance-free	12	1_	1_		-	1, 1 1/4, 1 1/2, 2	-
- W			1			1	,	

Гуре	Description	Size	Pneumatic o	connection				
			Push-in	Female thr	ead		Connecting plate with thre	ad
			connector	M	G	NPT	G	NPT
ndividual devi	ces							
ressure regula								Data sheets → Internet: m
1	For setting the required	2	QS-6	M5	-	-	-	=
W	operating pressure,	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
-	4 pressure regulation	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
2	ranges	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	-
ressure regula	ators MS-LRB							Data sheets → Internet: ms
-	For configuring a regulator	4	-	-	1/4	-	1/8, 1/4, 3/8	-
(4)	manifold with independent	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	-
	pressure regulation ranges. Pressure output is to the front or rear.							
recision press	ure regulators MS-LRP							Data sheets → Internet: ms
60	For precisely setting of the	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	pressure, 4 pressure regulation ranges,							
vacicion proce	4 pressure regulation ranges, pressure hysteresis 0.02 bar							Data da la latarrata de latarrata de la latarrata de latarrata de latarrata de latarrata de la latarrata de latarrata de latarrata de latarrata de latarrata de latarrata de l
Precision press	4 pressure regulation ranges, pressure hysteresis 0.02 bar				4/2			Data sheets → Internet: ms-
recision press	4 pressure regulation ranges, pressure hysteresis 0.02 bar	6	-	<u> </u>	1/2	-	1/4, 3/8, 1/2, 3/4	Data sheets → Internet: ms- –
	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the	6	-	-	1/2	-		Data sheets → Internet: ms-l   -   Data sheets → Internet: ms-l
	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	6	-	-	1/2	-		-
	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.					-	1/4, 3/8, 1/2, 3/4	
lectrical press	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.  For regulators MS-LRE  Electrically adjustable pressure regulator, 4 pressure regulation ranges					-	1/4, 3/8, 1/2, 3/4	
ectrical press	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.  For regulators MS-LRE  Electrically adjustable pressure regulator, 4 pressure regulation ranges					-	1/4, 3/8, 1/2, 3/4	Data sheets → Internet: ms 1/4, 3/8, 1/2, 3/4
ectrical press	4 pressure regulation ranges, pressure hysteresis 0.02 bar   For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.  For regulators MS-LRE  Electrically adjustable pressure regulator, 4 pressure regulation ranges  LIVE PROBLEM TO SET T	6	-		1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	Data sheets $\rightarrow$ Internet: m: $1/4$ , $3/8$ , $1/2$ , $3/4$
ectrical press	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.  For eregulators MS-LRE  Electrically adjustable pressure regulation ranges  4 pressure regulation ranges  4 pressure regulator, 4 pressure regulation ranges  -LOE  Add a precisely adjustable amount of oil to the compressed air. The amount of	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	Data sheets → Internet: ms  1/4, 3/8, 1/2, 3/4  Data sheets → Internet: ms  1/8, 1/4, 3/8
	4 pressure regulation ranges, pressure hysteresis 0.02 bar  For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.  Fure regulators MS-LRE  Electrically adjustable pressure regulation ranges  Pressure regulator, 4 pressure regulation ranges  LUCE  Add a precisely adjustable amount of oil to the com-	6	-  -  -  -	-	1/4, 3/8, 1/2 1/8, 1/4 1/4, 3/8, 1/2		1/4, 3/8, 1/2, 3/4  1/4, 3/8, 1/2, 3/4  1/8, 1/4, 3/8  1/4, 3/8, 1/2, 3/4	Data sheets → Internet: ms  1/4, 3/8, 1/2, 3/4  Data sheets → Internet: ms  1/8, 1/4, 3/8  1/4, 3/8, 1/2, 3/4

Гуре	Description	Size	Pneumatic	connection				
			Push-in	Female th	read		Connecting plate with thre	ad
Individual devi			connector	M	G	NPT	G	NPT
ndividual devi	ces							
n/off valves N	NS-EM	,						Data sheets → Internet: ms-e
No.	Manually operated on/off	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	valve for pressurising and	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
-4	exhausting pneumatic	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
	installations.	12	-	-		-	1, 1 1/4, 1 1/2, 2	_
n/off valves N								Data sheets → Internet: ms
Ba.	Solenoid actuated on/off	4	-	-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
-	valve for pressurising and	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
•	exhausting pneumatic	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
	installations.	12	-	-	_	-	1, 1 1/4, 1 1/2, 2	-
oft-start valve		,			<u> </u>		1	Data sheets → Internet: ms
460	Pneumatically actuated	4		-	1/8, 1/4	-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
1000	soft-start valve for slowly	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	pressurising and exhaust-	12	-	-	_	-	1, 1 1/4, 1 1/2, 2	_
	ing pneumatic installations.							
Soft-start valve	s MS-DE							Data sheets → Internet: ms-
4	Solenoid actuated soft-start	4	-	T-	1/8, 1/4	T-	1/8, 1/4, 3/8	1/8, 1/4, 3/8
	valve for slowly pressuris-	6	-	1_	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	ing and exhausting	12	-	+-	-	-	1, 1 1/4, 1 1/2, 2	-
	pneumatic installations.				I	1	-,, -,, -	
oft-start/quic	k exhaust valves MS-SV							Data sheets → Internet: ms
	For building up pressure	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	gradually and reducing	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
21	pressure quickly and safely							
$\sim$	in pneumatic piping							
	systems.							
-	Up to category 1, PL c.			_	1.10		11/1 2/2 1/2 2/4	111, 212, 112, 211
- Ba	Up to category 3, PL d.	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
1	Up to category 4, PL e in the case of optional extension.							
	case of optional extension.							
✓用								
7. 8								
100	Up to category 4, PL e.	6	-	-	1/2	-	1/4, 3/8, 1/2, 3/4	-
31 =				'		•		
44.								
100		1						

Туре	Description	Size	Pneumatic o	connection				
			Push-in	Female th	read		Connecting plate with three	ead
			connector	М	G	NPT	G	NPT
Individual devi	ices							
Membrane air	dryer MS-LDM1							Data sheets → Internet: ms-lo
201	Wear-free membrane dryer	4	-		1/8, 1/4		1/8, 1/4, 3/8	1/8, 1/4, 3/8
Ĩ	with internal air consumption	6	_	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Branching mod	lules MS-FRM							Data sheets → Internet: ms-f
940	Compressed air distributors	4	_	-	1/8, 1/4	1-	1/8, 1/4, 3/8	-
-	with 4 connections	6	-	-	1/4, 3/8, 1/2	-	1/4, 3/8, 1/2, 3/4	-
3		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 blo	cks MS-FRM-FRZ						Da	ita sheets → Internet: ms-frm-
Cin.	Compressed air distributors	4	-	-	-	-	-	-
@1	with 4 connections and half the grid width	6	-	-	-	_	-	-
7	the grid width							
Flow sensors S	FAM							Data sheets → Internet: sf
Distance of the last	For absolute flow rate infor-	6	-		-	-	1/2	1/2
100	mation and accumulated	9	-	-	-	-	1, 1 1/2	1, 1 1/2
0	air consumption measurement			·				

# Peripherals overview





# 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

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

Bowl type

## 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	

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	None  cULus ordinary location for Canada and USA	
<b>UL1</b>	112112	
	cULus ordinary location for Canada and USA	





- N - Flow rate 1100 ... 7200 l/min
- N - Temperature range
-10 ... +60°C
- → Operating pressure
1 ... 16 bar

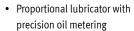


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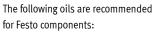
The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.

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.



- 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



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			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 lu	bricator	[l/min]	40	50		
function						
Max. oil capacity		[cm <sup>3</sup> ]	30 (with plastic bowl guard)	75 (with plastic bowl guard)		
			36 (with metal bowl)	80 (with metal bowl)		

 $<sup>\</sup>mbox{\ensuremath{\rlap/}{$|}}$  - Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN [l/min]						
Size	MS4		MS6			
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	
In main flow direction 1 > 2	1100	2200	2500	5300	7200	

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 <sup>2)</sup>		2		
Suitability for the food industry <sup>3)</sup>		See supplementary material information		
UL certification <sup>3)</sup>		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 www.festo.com/sp → Certificates.

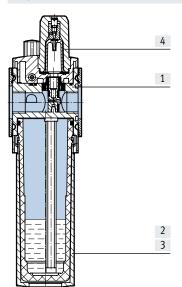
ATEX	
EU certification	EX4
ATEX category for gas	II 2G
Type of ignition protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of ignition protection for dust	Ex h IIIC T60°C Db X
Explosion-proof ambient temperature	-10°C ≤ Ta ≤ +60°C
CE marking (see declaration of conformity) <sup>1)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

 $1) \quad \text{Additional information www.festo.com/sp} \rightarrow \text{Certificates}.$ 

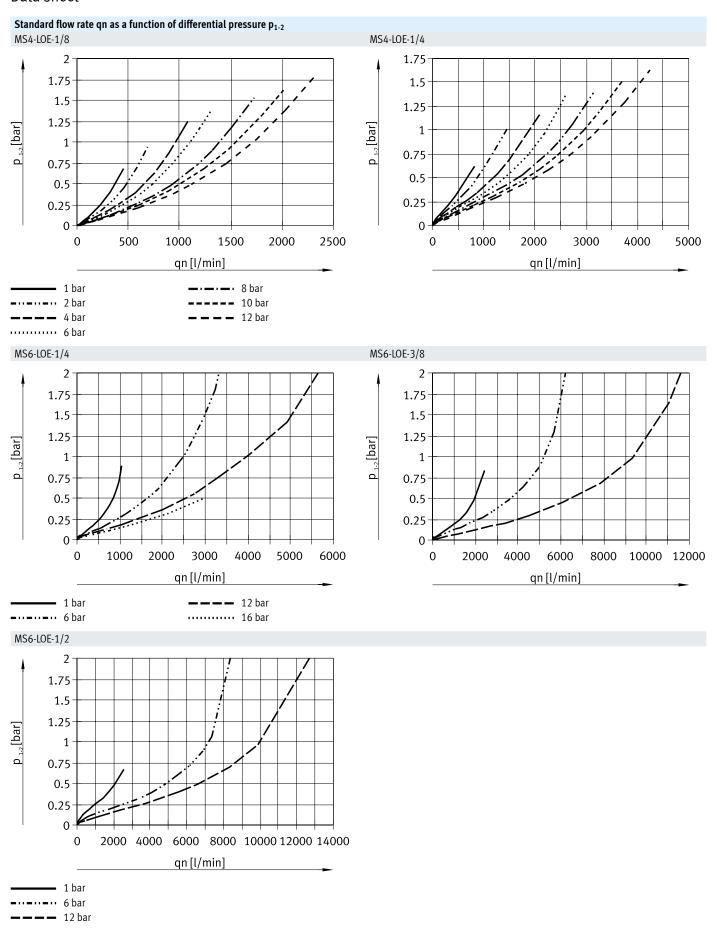
Weight [g]		
Size	MS4	MS6
Lubricator with plastic bowl guard R	194	600
Lubricator with metal bowl U	354	810

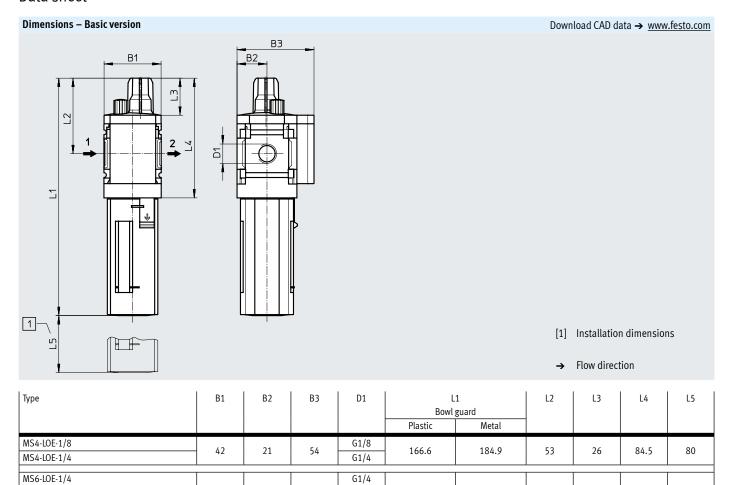
# Materials

Sectional view



Lubri	cator	
[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





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

62

31

76

MS6-LOE-3/8

MS6-LOE-1/2

Ordering data	1					
Size	Connection	Plastic bowl guard		1	Metal bowl	
		Part no.	Туре		Part no.	Туре
Flow direction	r from left to right					
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
Flow direction	r from right to left					
MS6	G1/2	529776	MS6-LOE-1/2-R-Z			

G3/8

G1/2

218

223

66

27

112

130

# Lubricators MS4/MS6-LOE, MS series

# Ordering data – Modular product system

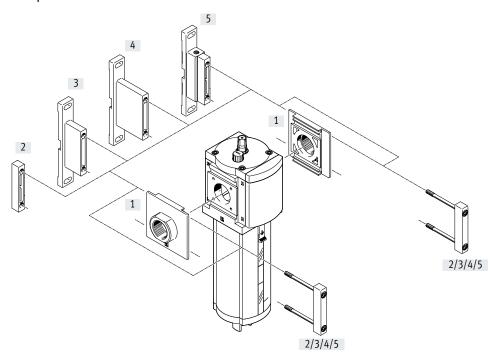
Ordering table Grid dimension	[mm]	40	62	Conditions	Code	Enter code
Module no.		527701	527674			
Series		Standard			MS	MS
Size		4	6			
Function		Lubricator	·		-LOE	-LOE
Pneumatic connection		Female thread G1/8	-	[1]	-1/8	
		Female thread G1/4	Female thread G1/4	[1]	-1/4	
		-	Female thread G3/8	[1]	-3/8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

<sup>[1] 1/8, 1/4, 3/8,</sup> 1/2, AQK, AQN, AQP, AQR, AQS, WPM [2] WP, WPM

Not with EU EX4 certification.

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

Mour	nting components and accessories				
		Individual device		Combination	→ Page/
		Via female thread	With connecting plate	Module without connecting thread, without connecting plate	Internet
[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

# Lubricator MS9-LOE, MS series

# 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	<b>UL</b> 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	





Flow rate
8500 ... 27000 l/min
Temperature range
-10 ... +60°C

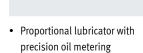
Operating pressure
1 ... 16 bar

- www.festo.com

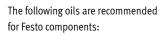
The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.

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.



- 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)



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, 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 [G] connecting thread/connecting plate	-
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 [l/m function	in] 100
Max. oil capacity [ml]	490

 $<sup>\</sup>mbox{\ensuremath{\psi}}$  · Note: This product conforms to ISO 1179-1 and ISO 228-1.

Standard nominal flow rate qnN <sup>1)</sup> [l/min]					
Pneumatic connection	AGD, AQR	G3/4, 3/4 NPT, AGE, AQS	G1, 1 NPT, AGF, AQT	AGG, AQU	AGH, AQV
In main flow direction 1 > 2	8500	15000	23000	26000	27000

<sup>1)</sup> Measured at p1 = 6 bar and  $\Delta p$  = 1 bar.

Operating and environmental cor	perating and environmental conditions					
Operating pressure	[bar]	116				
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 <sup>1)</sup>		2				
UL certification <sup>2)</sup>		c UL us - Recognized (OL)				

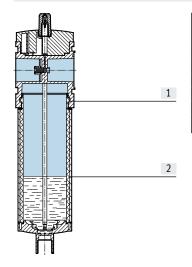
<sup>1)</sup> Corrosion resistance class CRC 2 to Festo standard FN 940070

Additional information www.festo.com/sp → Certificates.

Weight [g]	
Lubricator	2000

### Materials

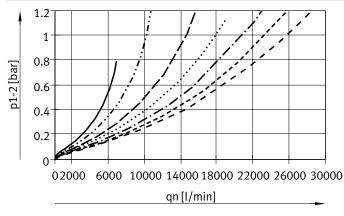
Sectional view

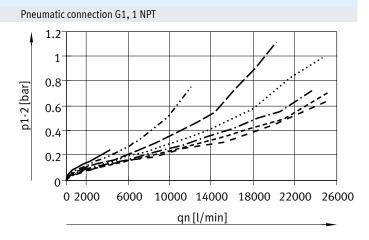


Lubrica	Lubricator					
[1]	Housing	Die-cast aluminium				
[2]	Bowl	Wrought aluminium alloy				
	Inspection window	PA				
-	Covering	Reinforced PA				
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium				
-	Seals	NBR				
Note o	n materials	RoHS-compliant				

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

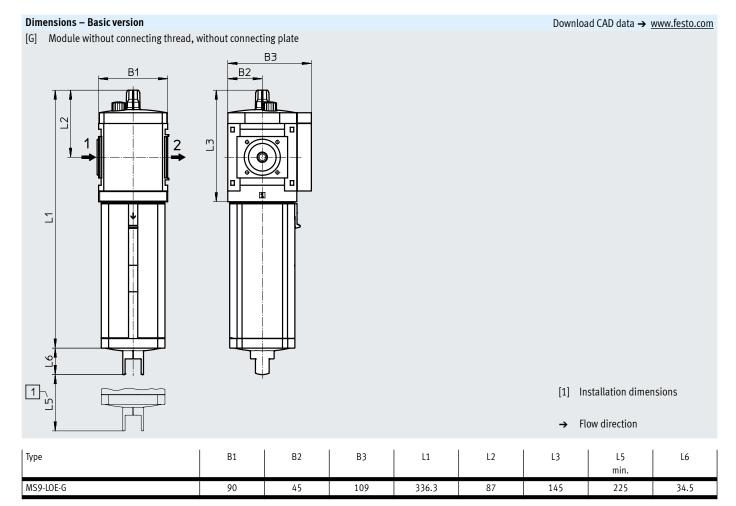
Pneumatic connection G3/4, 3/4 NPT





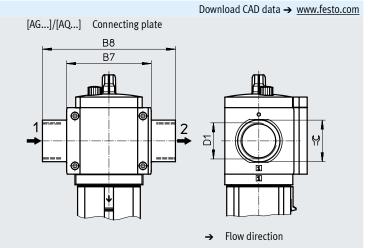
1 bar 2 bar 4 bar 6 bar 8 bar 10 bar 12 bar 14 bar 15 bar

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.



# Dimensions – Female thread/connecting plate [3/4]/[1]/[N3/4]/[N1] Female thread B5 B4 2 B6 T1

[2] Retaining screw M6xmin.90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket



Туре	B4	B5	B6	B7	B8	D1	D4 Ø	D5 Ø	L4	T1	=©												
							Ø	×															
MS9-LOE-3/4	90	104	91.5	_	_	G3/4	11	6.5	66	6													
MS9-LOE-1	)0	104	71.5			G1	11	0.5	00	0													
MS9-LOE-AGD					132	G1/2					30												
MS9-LOE-AGE					132	G3/4					36												
MS9-LOE-AGF	-	-	-	112	142	G1	-	-	-	-	41												
MS9-LOE-AGG					162	G1 1/4	1				50												
MS9-LOE-AGH																176	G1 1/2					55	
MS9-LOE-N3/4	90	90	90	90	90	90	90	90	90	90	00	00	00	104	91.5			3/4 NPT	11	6.5	66	6	
MS9-LOE-N1											104	91.5	_	_	1 NPT	11	0.5	00	0	-			
MS9-LOE-AQR					132	1/2 NPT					30												
MS9-LOE-AQS					132	3/4 NPT					36												
MS9-LOE-AQT	-	-	_	112	142	1 NPT	-	-	-	-	41												
MS9-LOE-AQU					162	1 1/4 NPT					50												
MS9-LOE-AQV					176	1 1/2 NPT					55												

<sup>♦</sup> Note: This product conforms to ISO 1179-1 and ISO 228-1.

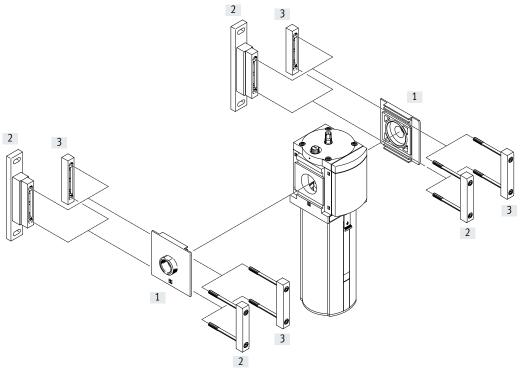
Ordering data			
Metal bowl			
Size	Connection	Part no.	Туре
MS9	-	564144	MS9-LOE-G-U

# 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	

<sup>[1]</sup> WP, WPM, WPB Not with pneumatic connection G.

# Peripherals overview





## Additional accessories:

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

Moun	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	

## Lubricators MS12-LOE, MS series

### Data sheet

Function



- N - Flow rate
20000 ... 22000 l/min
- N - Temperature range

0 ... 60°C

- 

- 

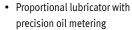
Operating pressure
1 ... 16 bar

- www.festo.com

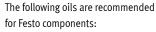
The proportional lubricator adds a precisely adjustable amount of oil to the compressed air.

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.



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



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, G1 1/4, G1 1/2 or G2
Module without [G]	-
connecting	
thread/connecting	
plate	
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 [l/min]	400
function	
Max. oil capacity [cm <sup>3</sup> ]	1500

Standard nominal flow rate qnN¹¹ [l/min]						
Pneumatic connection	G1	G1 1/4	G1 1/2	G2		
In main flow direction 1 > 2	20000	20500	21000	22000		

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

Operating and environmental conditions			
Operating pressure	[bar]	116	
Operating medium Compress		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 <sup>1)</sup>		2	

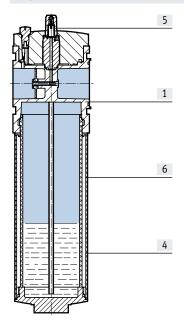
<sup>1)</sup> Corrosion resistance class CRC 2 to Festo standard FN 940070

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 U	6500

### Materials

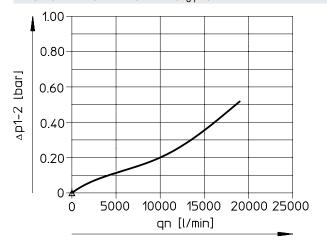
Sectional view



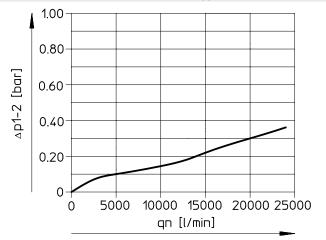
L	Lubricator				
ſ	[1]	Housing	Die-cast aluminium		
Γ	[4]	Metal bowl	Aluminium		
Γ	[5]	Lubricator dome	PC		
Γ	[6]	Metal bowl sight glass	PA		
Γ	-	Seals	NBR		

### Standard flow rate qn as a function of differential pressure $\Delta p1-2$

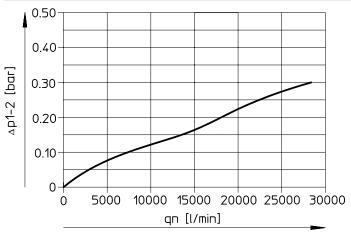
Pneumatic connection G1 with connecting plate MS12-AGF



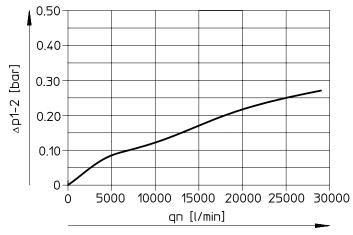
Pneumatic connection G1 1/4 with connecting plate MS12-AGG

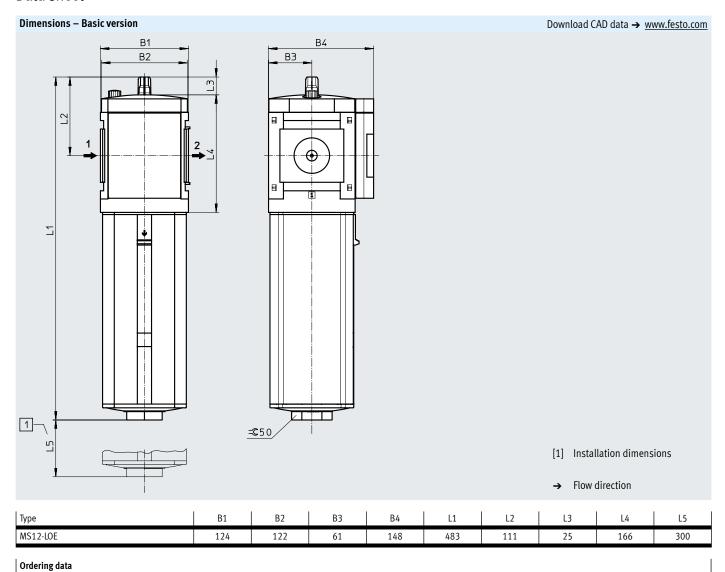


Pneumatic connection G1 1/2 with connecting plate MS12-AGH



Pneumatic connection G2 with connecting plate MS12-AGI





Metal bowl

MS12

Connection

Part no.

537156

Туре

MS12-LOE-G-U

# Lubricators MS12-LOE, MS series

# 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	1
Bowl		Metal bowl		-U	-U
Type of mounting		Without mounting bracket			
		Mounting bracket standard design	[1]	-WP	1
Flow direction		Flow direction from left to right			
		Flow direction from right to left		-Z	1

[1] WP

Only with connecting plate AGF, AGG, AGH or AGI.

# Accessories

## Special oil OFSW



Ordering data		
Scope of delivery	Part no.	Туре
1 litre	152811	OFSW-32