

## Lubricators LOE, D series

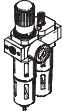
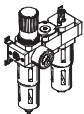
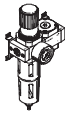
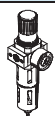
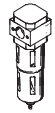
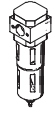
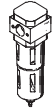
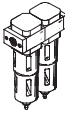
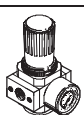
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# Lubricators LOE, D series, metal design

Product range overview D series service units, metal design

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Type		Size	Pneumatic connection										Pressure regulation range [bar]			Grade of filtration [µm]			
			M5	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	QS4	QS6	0.5 ...	0.5 ...	2.5 ...	0.01	1	5	40
Service units																			
FRC/FRCS		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	■	■
Service unit combinations																			
FRC-K		Micro	–																
		Mini	–	–	■	■	–	–	–	–	–	–	■	■	–	–	–	■	
		Midi	–	–	–	■	■	■	–	–	–	–	■	■	–	–	–	■	
		Maxi	–	–	–	–	–	■	■	–	–	–	■	■	–	–	–	■	
LFR-K LFRS-K		Micro	–																
		Mini	–	–	■	■	–	–	–	–	–	–	■	■	–	–	–	■	
		Midi	–	–	–	■	■	■	–	–	–	–	■	■	–	–	–	■	
		Maxi	–	–	–	–	–	■	■	–	–	–	■	■	–	–	–	■	
Individual devices																			
Filter regulators LFR/LFRS		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	■	■
Filters LF		Micro	■	■	■	–	–	–	–	–	■	■	–	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	■	■
Fine and micro filters LFMA/LFMB		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	■	■	–	–	
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	■	■	–	–	
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	■	■	–	–	
Active carbon filters LFX		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	–	–	–	
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	–	–	–	
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	–	
Filter combinations LFMBA		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	■	■	–	–	
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	■	■	–	–	
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	■	■	–	–	
Pressure regulators LR/LRS		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	–	
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	–	
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	–	
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	–	

# Lubricators LOE, D series, metal design

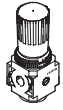
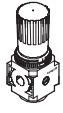
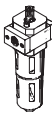
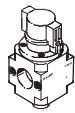
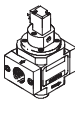
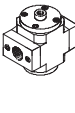
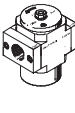

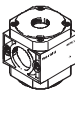

Product range overview D series service units, metal design

Type	Size	Bowl guard		Condensate drain			Pressure indication		Actuator lock		Supply voltage			Options			→ Page/ Internet
		Metal bowl guard	Plastic bowl	Manual rotary	Semi-automatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with integrated lock	24 V DC	110 V AC	230 V AC	Directly actuated pressure regulator with integrated return flow function	Pilot actuated pressure regulator with integrated return flow function	Differential pressure indicator	
Service units																	
FRC/FRCS	Micro	–	■	■	■	–	■	■	■	–	–	–	–	–	–	–	frc
	Mini	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	■	■	■	–	–	–	■	■	–	
Service unit combinations																	
FRC-K	Micro	–															frc
	Mini	■	–	■	–	■	■	–	■	–	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	–	■	–	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	–	■	–	–	–	–	■	■	–	
LFR-K LFRS-K	Micro	–															lfr
	Mini	■	–	■	–	■	■	–	■	■	■	–	–	–	–	–	
	Midi	■	–	■	–	■	■	–	■	■	■	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	–	■	■	■	–	–	■	■	–	
Individual devices																	
Filter regulators LFR/LFRS	Micro	–	■	■	■	–	■	■	■	–	–	–	–	–	–	–	lfr
	Mini	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	■	■	■	–	–	–	■	■	–	
Filters LF	Micro	–	■	■	■	–	–	–	–	–	–	–	–	–	–	–	lf
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
Fine and micro filters LFMA/LFMB	Micro	–															lfma, lfmb
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
Active carbon filters LFX	Micro	–															lfx
	Mini	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Midi	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Maxi	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Filter combinations LFMBA	Micro	–															lfmba
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
Pressure regulators LR/LRS	Micro	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	lr
	Mini	–	–	–	–	–	■	■	■	■	–	–	–	■	–	–	
	Midi	–	–	–	–	–	■	■	■	■	–	–	–	■	–	–	
	Maxi	–	–	–	–	–	■	■	■	■	–	–	–	■	■	–	

# Lubricators LOE, D series, metal design

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Product range overview D series service units, metal design

Type		Size	Pneumatic connection										Pressure regulation range [bar]	
			M5	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	QS4	QS6	0.5 ... 7	0.5 ... 12
Individual devices														
Pressure regulators LRB/LRBS		Micro	-											
		Mini	-	-	-	■	-	-	-	-	-	-	■	■
		Midi	-	-	-	-	■	-	-	-	-	-	■	■
		Maxi	-											
Pressure regulator combinations LRB-K		Micro	-											
		Mini	-	-	-	■	■	-	-	-	-	-	■	■
		Midi	-	-	-	-	■	■	-	-	-	-	■	■
		Maxi	-											
Lubricators LOE		Micro	■	■	■	-	-	-	-	-	■	■	-	-
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	-	■	-	-	-	-	-
		Maxi	-	-	-	-	-	-	■	■	■	-	-	-
On-off valves HE		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
On-off valves, electrical HEE		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
On-off valves, pneumatic HEP		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Soft-start valves HEL		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Membrane air dryers LDM1		Micro	-											
		Mini	-											
		Midi	-											
		Maxi	-	-	-	-	-	-	■	■	■	-	-	-
Branching modules FRM		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Distributor block FRZ		Micro	-	-	-	-	-	-	-	-	-	-	-	
		Mini	-	-	-	-	-	-	-	-	-	-	-	
		Midi	-	-	-	-	-	-	-	-	-	-	-	
		Maxi	-	-	-	-	-	-	-	-	-	-	-	

# Lubricators LOE, D series, metal design

Product range overview D series service units, metal design

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Type	Size	Bowl guard		Pressure indication		Actuator lock		Supply voltage			Options		→ Page/ Internet
		Metal bowl guard	Plastic bowl	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with integrated lock	24 V DC	110 V AC	230 V AC	Non-return function	Pressure switch	
Individual devices													
Pressure regulators <b>LRB/LRBS</b>	Micro	-											lrb
	Mini	-	-	-	■	■	■	-	-	-	-	-	
	Midi	-	-	-	■	■	■	-	-	-	-	-	
	Maxi	-											
Pressure regulator combinations <b>LRB-K</b>	Micro	-											lrb
	Mini	-	-	-	■	■	-	-	-	-	-	-	
	Midi	-	-	-	■	■	-	-	-	-	-	-	
	Maxi	-											
Lubricators <b>LOE</b>	Micro	-	■	-	■	-	-	-	-	-	-	-	6
	Mini	■	-	-	■	-	-	-	-	-	-	-	
	Midi	■	-	-	■	-	-	-	-	-	-	-	
	Maxi	■	-	-	■	-	-	-	-	-	-	-	
On-off valves <b>HE</b>	Micro	-											he
	Mini	-	-	-	■	■	-	-	-	-	-	-	
	Midi	-	-	-	■	■	-	-	-	-	-	-	
	Maxi	-	-	-	■	■	-	-	-	-	-	-	
On-off valves, electrical <b>HEE</b>	Micro	-											hee
	Mini	-	-	-	■	-	-	■	■	■	-	-	
	Midi	-	-	-	■	-	-	■	■	■	-	-	
	Maxi	-	-	-	■	-	-	■	■	■	-	-	
On-off valves, pneumatic <b>HEP</b>	Micro	-											hep
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	
Soft-start valves <b>HEL</b>	Micro	-											hel
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	
Membrane air dryers <b>LDM1</b>	Micro	-											ldm1
	Mini	-											
	Midi	-											
	Maxi	■	-	-	■	-	-	-	-	-	-	-	
Branching modules <b>FRM</b>	Micro	-											frm
	Mini	-	-	-	■	-	-	-	-	-	■	■	
	Midi	-	-	-	■	-	-	-	-	-	■	■	
	Maxi	-	-	-	■	-	-	-	-	-	■	■	
Distributor block <b>FRZ</b>	Micro	-	-	-	■	-	-	-	-	-	-	-	frz
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	

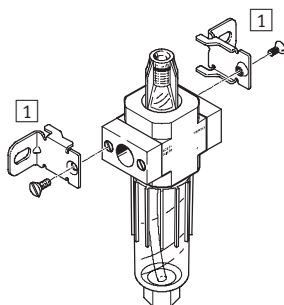
## 454.Lubricators LOE, D series, metal design

Peripherals overview

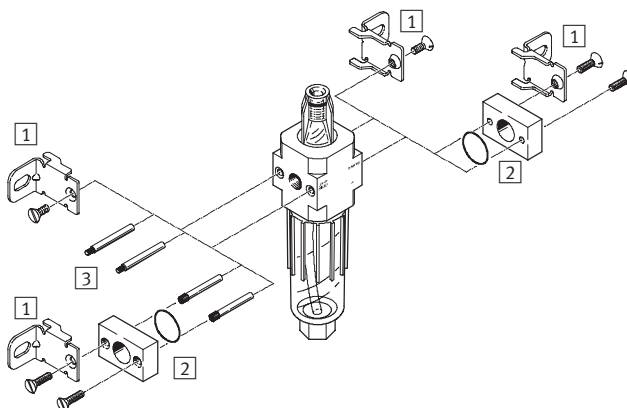
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### Micro

Individual unit with connection plates,  
connection size G $\frac{1}{8}$ , QS4 or QS6



Individual unit without connection plates, for service unit combination  
connection size M5 or M7 in housing

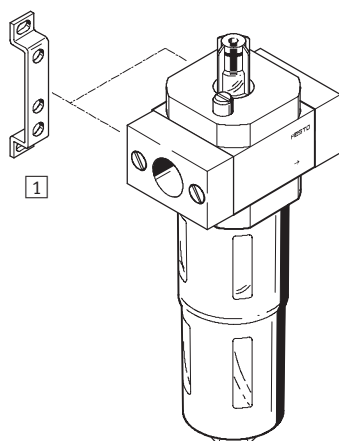


### Mounting attachments and accessories

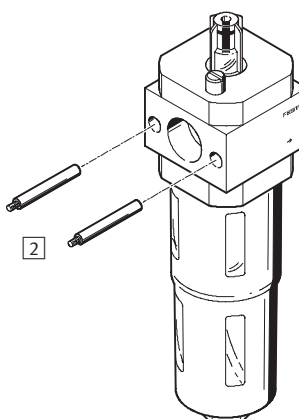
	Individual unit		Combination		→ Page/ Internet
	with connection plates	without connection plates	with connection plates	without connection plates	
1 Mounting bracket HFOE	■	■	■	■	hfoe-d
2 Connecting plate kit PBL	–	■	–	■	pbl
3 Threaded pin FRB	–	–	■	■	frb-d

### Mini/Midi/Maxi

Individual unit with connection plates



Individual unit without connection plates, for service unit combination



### Mounting attachments and accessories

	Individual unit		Combination		→ Page/ Internet
	with connection plates	without connection plates	with connection plates	without connection plates	
1 Mounting bracket HFOE	■	–	■	–	hfoe-d
2 Threaded pin (included in scope of delivery) FRB	–	–	■	■	frb-d

## 455.Lubricators LOE, D series, metal design

Type codes

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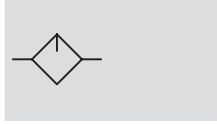
		LOE	–	1/8	–	D	–	MIDI
<b>Basic function</b>								
LOE	Lubricator							
<b>Pneumatic connection</b>								
M5	Thread M5							
M7	Thread M7							
QS4	Push-in fitting QS4							
QS6	Push-in fitting QS6							
1/8	Thread G1/8							
1/4	Thread G1/4							
3/8	Thread G3/8							
1/2	Thread G1/2							
3/4	Thread G3/4							
1	Thread G1							
<b>Series</b>								
D	Series							
<b>Size</b>								
MICRO	Grid dimension 25 mm (without connecting plates)							
MINI	Grid dimension 40 mm (without connecting plates)							
MIDI	Grid dimension 55 mm (without connecting plates)							
MAXI	Grid dimension 66 mm (without connecting plates)							

# Lubricators LOE, D series, metal design

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Technical data

Function



- Flow rate  
160 ... 9000 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



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
- Robust metal housing
- Transparent lubricator bowl with metallic bowl guard

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  
→ 15
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data																									
Size	Micro					Mini			Midi				Maxi												
Pneumatic connection	M5	M7	G1⁄8	QS4	QS6	G1⁄8	G1⁄4	G3⁄8	G1⁄4	G3⁄8	G1⁄2	G3⁄4	G1⁄2	G3⁄4	G1										
Operating medium	Filtered compressed air, unlubricated, grade of filtration 5 µm					Filtered compressed air, unlubricated, grade of filtration 40 µm																			
Design	Proportional standard mist lubricator																								
Type of mounting	Via accessories																								
	In-line installation																								
Assembly position	Vertical ±5°																								
Input pressure [bar]	0 ... 10					0 ... 16																			
Minimum flow for lubricator operation [l/min]	3					3			8				10												
Max. oil capacity [cm³]	6.5					45			110				190												

- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	Female thread		Connecting plate		
	M5	M7	G1/8	QS4	QS6
Micro					
LOE	200	430	410	160	330

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



# Lubricators LOE, D series, metal design

Technical data

**FESTO**

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G1/8	G1/4	G3/8	G1/2	G3/4	G1
Mini						
LOE	1300	2300	2700	–	–	–
Midi						
LOE	–	2800	5500	6100	6300	–
Maxi						
LOE	–	–	–	8300	8400	9000

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

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G1/8	QS4	QS6
Micro					
In housing	5	6	–	–	–
In connecting plates	–	–	8	–	–

Ambient conditions				
Size	Micro	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60			
Temperature of medium [°C]	–10 ... +60			
Corrosion resistance class CRC <sup>1)</sup>	2			

1) Corrosion resistance class 2 according to Festo standard 940 070  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]						
Size	Micro		Mini	Midi	Maxi	
	Female thread	Connecting plate			Connection G1/2, G3/4	Connection G1
LOE	39	59	270	630	1100	1200

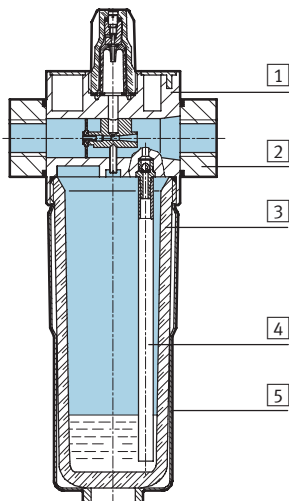
# Lubricators LOE, D series, metal design

Technical data

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## Materials

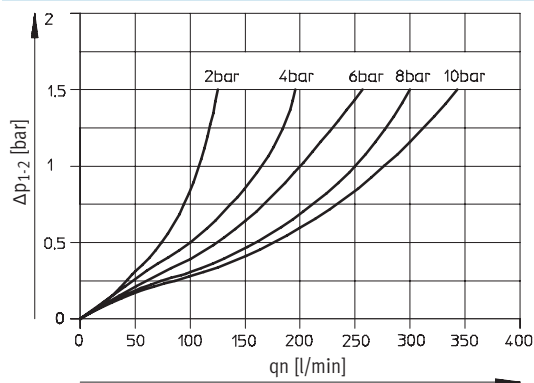
Sectional view



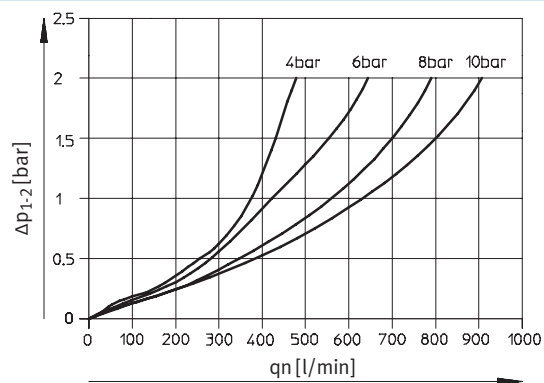
Lubricator	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminium alloy	Die-cast zinc/aluminium
2 Connecting plates	Wrought aluminium alloy	Die-cast zinc/aluminium
3 Bowl	Polycarbonate	Polycarbonate
4 Tubing	Polyethylene	Polyethylene
5 Metal bowl guard	–	Aluminium
– Seals	Nitrile rubber	Nitrile rubber

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

LOE-M5-D-MICRO



LOE-M7-D-MICRO B



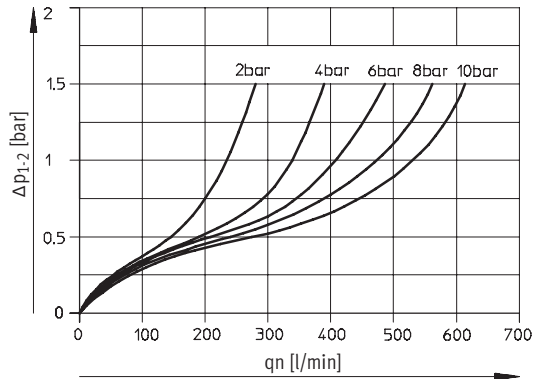
# Lubricators LOE, D series, metal design

Technical data

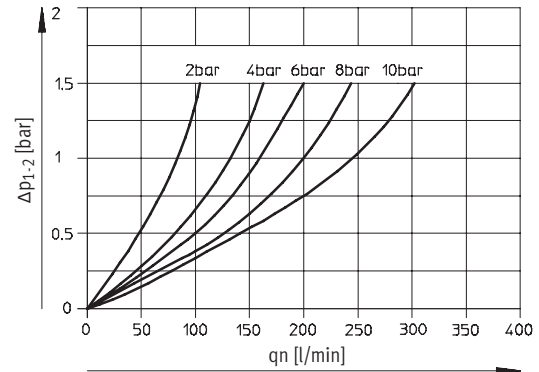
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## Standard flow rate $q_n$ as a function of the differential pressure $\Delta p_{1-2}$

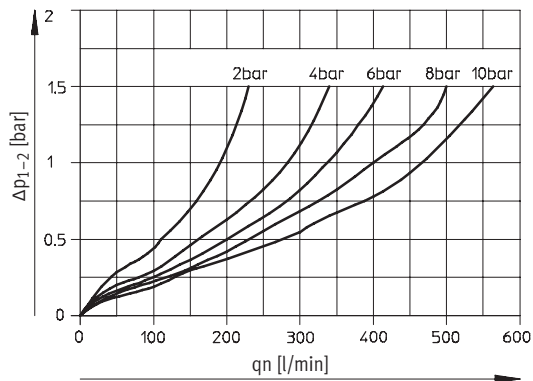
LOE-1/8-D-MICRO



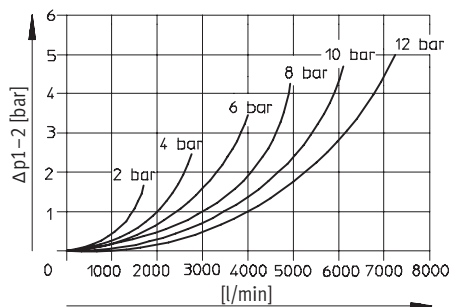
LOE-QS4-D-MICRO



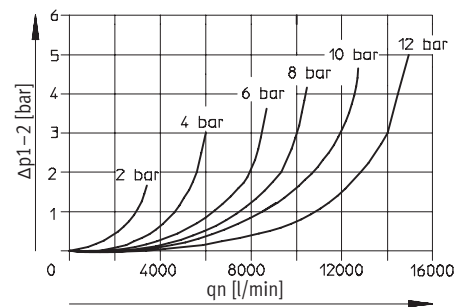
LOE-QS6-D-MICRO



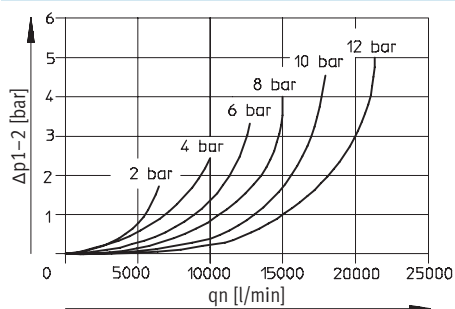
LOE-1/4-D-MINI



LOE-1/2-D-MIDI



LOE-1-D-MAXI



Primary pressure  $p_1 = 10$  bar

# Lubricators LOE, D series, metal design

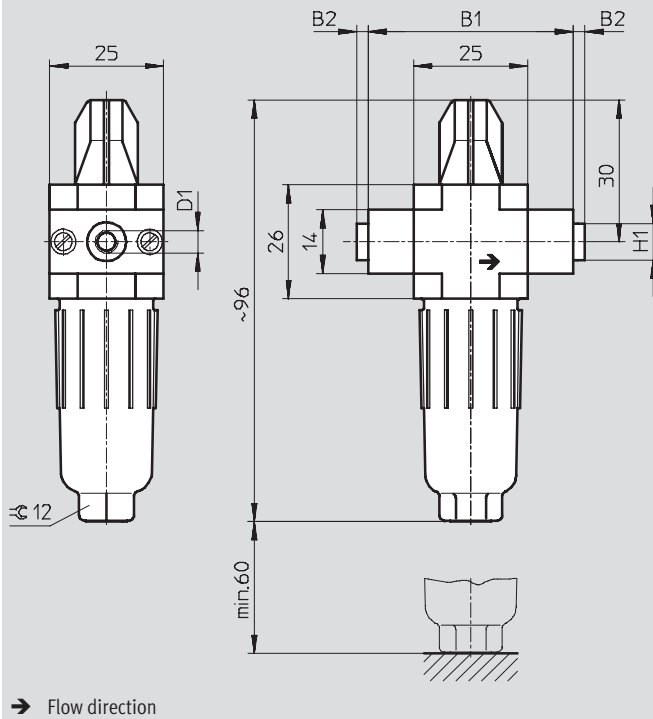
Technical data

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## Dimensions

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

### Micro



Type	B1	B2	D1	H1
MICRO				
LOE-M5-D-MICRO	25	-	M5	-
LOE-M7-D-MICRO B			M7	
LOE-1/8-D-MICRO			G1/8	
LOE-QS4-D-MICRO	45	~2.5	QS4	~8
LOE-QS6-D-MICRO			QS6	~10

· ▮ · Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

# Lubricators LOE, D series, metal design

Technical data

**FESTO**

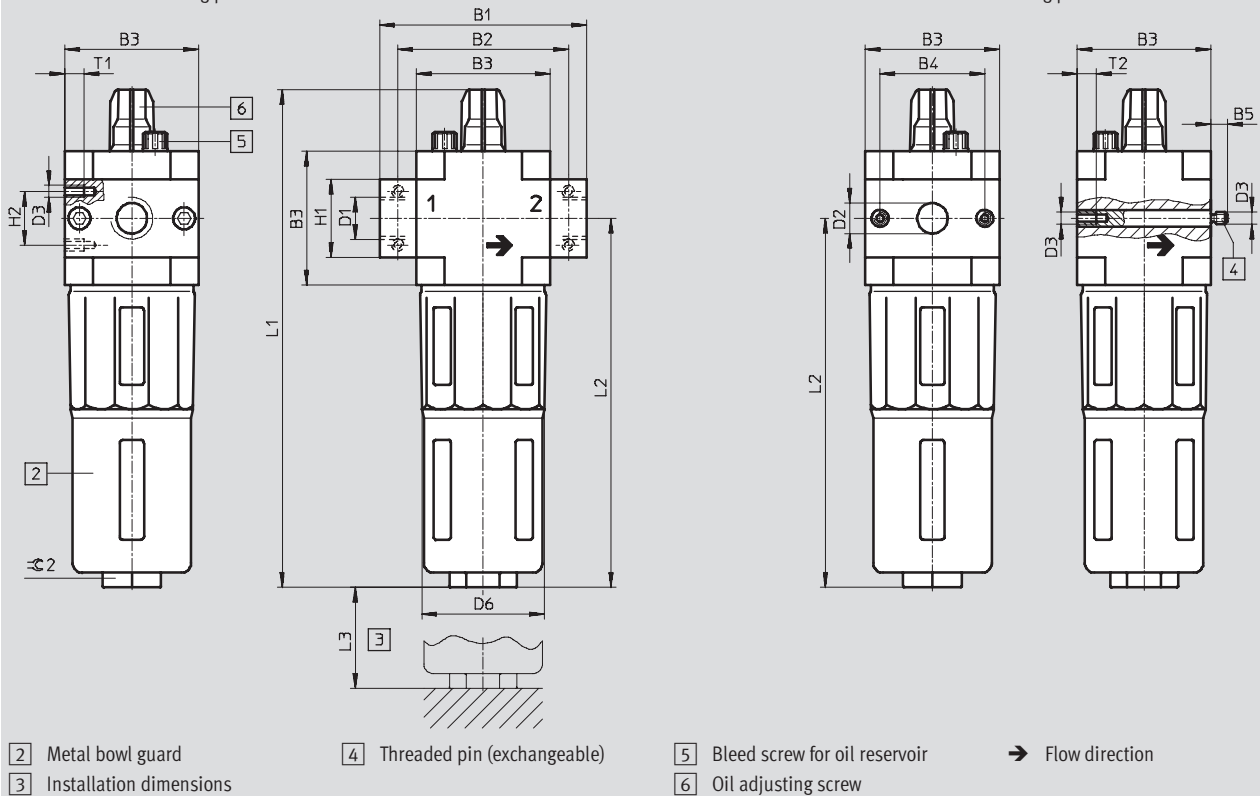
## Dimensions

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

Mini/Midi/Maxi

With threaded connecting plates

Without threaded connecting plates



Type	B1	B2	B3	B4	B5	D1	D2 Ø	D3	D6 Ø	H1	H2	L1	L2	L3	T1	T2	≈ 2
<b>Mini</b>																	
LOE-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	38	20	11	169	124	100	7	-	22
LOE-1/4-D-MINI						G1/4											
LOE-3/8-D-MINI						G3/8											
LOE-D-MINI	-	-			5.8	-	11			-	-				-	10	
<b>Midi</b>																	
LOE-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	52	32	22	204	151	120	8	-	24
LOE-3/8-D-MIDI						G3/8											
LOE-1/2-D-MIDI						G1/2											
LOE-3/4-D-MIDI						G3/4											
LOE-D-MIDI	-	-			6.8	-	24			-	-				-	11	
<b>Maxi</b>																	
LOE-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	65	32	22	228	170	150	8	-	24
LOE-3/4-D-MAXI						G3/4											
LOE-1-D-MAXI	116	91				G1				40							
LOE-D-MAXI	-	-			6.8	-	30			-	-				-	11	

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

## Lubricators LOE, D series, metal design

**FESTO**

Technical data

Ordering data			
Lubricator, input pressure 0 ... 10 bar			
Size	Connection	Part No.	Type
Micro	Without threaded connecting plates, connecting thread in housing		
	M5	526309	LOE-M5-D-MICRO
	M7	534188	LOE-M7-D-MICRO-B
	With threaded connecting plates		
	G1/8	526310	LOE-1/8-D-MICRO
	With connecting plate and push-in fitting		
	QS4	526313	LOE-QS4-D-MICRO
	QS6	526314	LOE-QS6-D-MICRO

Ordering data			
Lubricator, input pressure 0 ... 16 bar, metal bowl guard			
Size	Connection	Part No.	Type
Without threaded connecting plates			
Mini		192575	LOE-D-MINI
Midi		192576	LOE-D-MIDI
Maxi		192577	LOE-D-MAXI

Ordering data			
Lubricator, input pressure 0 ... 16 bar, metal bowl guard			
Size	Connection	Part No.	Type
With threaded connecting plates			
Mini	G1/8	159620	LOE-1/8-D-MINI
	G1/4	159621	LOE-1/4-D-MINI
	G3/8	162680	LOE-3/8-D-MINI
Midi	G1/4	186479	LOE-1/4-D-MIDI
	G3/8	159586	LOE-3/8-D-MIDI
	G1/2	159587	LOE-1/2-D-MIDI
	G3/4	162681	LOE-3/4-D-MIDI
Maxi	G1/2	186480	LOE-1/2-D-MAXI
	G3/4	159622	LOE-3/4-D-MAXI
	G1	159623	LOE-1-D-MAXI

# Lubricators LOE, D series

Accessories



Special oil



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

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### A Complete Suite of Automation Services

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



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