

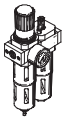
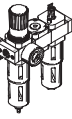
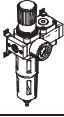
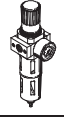
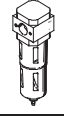
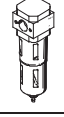
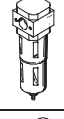
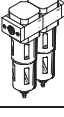
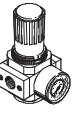
# On-off/soft-start valves HE/HEE/HEP/HEL, D series



# On-off/soft-start valves HE/HEE/HEP/HEL, D series, metal design



Product range overview D series service units, metal design

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
<b>Service units</b>																		
<b>FRC/FRCS</b> 	Micro	■	■	■	-	-	-	-	-	■	■	■	-	-	-	-	■	-
	Mini	-	-	■	■	■	-	-	-	-	-	■	■	-	-	-	■	■
	Midi	-	-	-	■	■	■	■	-	-	-	■	■	-	-	-	■	■
	Maxi	-	-	-	-	-	■	■	■	-	-	■	■	-	-	-	■	■
<b>Service unit combinations</b>																		
<b>FRC-K</b> 	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mini	-	-	■	■	-	-	-	-	-	-	■	■	-	-	-	-	■
	Midi	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-	-	■
	Maxi	-	-	-	-	-	■	■	-	-	-	■	■	-	-	-	-	■
<b>LFR-K LFRS-K</b> 	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mini	-	-	■	■	-	-	-	-	-	-	■	■	-	-	-	-	■
	Midi	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-	-	■
	Maxi	-	-	-	-	-	■	■	-	-	-	■	■	-	-	-	-	■
<b>Individual devices</b>																		
<b>Filter regulators LFR/LFRS</b> 	Micro	■	■	■	-	-	-	-	-	■	■	■	-	-	-	-	■	-
	Mini	-	-	■	■	■	-	-	-	-	-	■	■	-	-	-	■	■
	Midi	-	-	-	■	■	■	■	-	-	-	■	■	-	-	-	■	■
	Maxi	-	-	-	-	-	■	■	■	-	-	■	■	-	-	-	■	■
<b>Filters LF</b> 	Micro	■	■	■	-	-	-	-	-	■	■	-	-	-	-	-	■	-
	Mini	-	-	■	■	■	-	-	-	-	-	-	-	-	-	-	■	■
	Midi	-	-	-	■	■	■	■	-	-	-	-	-	-	-	-	■	■
	Maxi	-	-	-	-	-	■	■	■	-	-	-	-	-	-	-	■	■
<b>Fine and micro filters LFMA/LFMB</b> 	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mini	-	-	■	■	■	-	-	-	-	-	-	-	■	■	-	-	-
	Midi	-	-	-	■	■	■	■	-	-	-	-	-	■	■	-	-	-
	Maxi	-	-	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-
<b>Active carbon filters LFX</b> 	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mini	-	-	■	■	■	-	-	-	-	-	-	-	-	-	-	-	-
	Midi	-	-	-	■	■	■	■	-	-	-	-	-	-	-	-	-	-
	Maxi	-	-	-	-	-	■	■	■	-	-	-	-	-	-	-	-	-
<b>Filter combinations LFMBA</b> 	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Mini	-	-	■	■	■	-	-	-	-	-	-	-	■	■	-	-	-
	Midi	-	-	-	■	■	■	■	-	-	-	-	-	■	■	-	-	-
	Maxi	-	-	-	-	-	■	■	■	-	-	-	-	■	■	-	-	-
<b>Pressure regulators LRS/LRS</b> 	Micro	■	■	■	-	-	-	-	-	■	■	■	-	-	-	-	-	-
	Mini	-	-	■	■	■	-	-	-	-	-	■	■	-	-	-	-	-
	Midi	-	-	-	■	■	■	■	-	-	-	■	■	-	-	-	-	-
	Maxi	-	-	-	-	-	■	■	■	-	-	■	■	-	-	-	-	-

# On-off/soft-start valves HE/HEE/HEP/HEL, 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	
<b>Service units</b>																	
FRC/FRCS	Micro	-	■	■	■	-	■	■	■	-	-	-	-	-	-	-	frc
	Mini	■	-	■	-	■	■	■	■	■	-	-	-	-	-	-	-
	Midi	■	-	■	-	■	■	■	■	■	-	-	-	-	-	-	-
	Maxi	■	-	■	-	■	■	■	■	■	-	-	-	■	■	-	-
<b>Service unit combinations</b>																	
FRC-K	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	frc
	Mini	■	-	■	-	■	■	-	■	-	-	-	-	-	-	-	-
	Midi	■	-	■	-	■	■	-	■	-	-	-	-	-	-	-	-
	Maxi	■	-	■	-	■	■	-	■	-	-	-	-	■	■	-	-
LFR-K LFRS-K	Micro	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	lfr
	Mini	■	-	■	-	■	■	-	■	■	■	-	-	-	-	-	-
	Midi	■	-	■	-	■	■	-	■	■	■	-	-	-	-	-	-
	Maxi	■	-	■	-	■	■	-	■	■	■	-	-	■	■	-	-
<b>Individual devices</b>																	
Filter regulators LFR/LFRS	Micro	-	■	■	■	-	■	■	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	-	-	-	-	-	■	■	■	■	-	-	-	■	■	-	-

# On-off/soft-start valves HE/HEE/HEP/HEL, D series, metal design



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	
<b>Individual devices</b>														
Pressure regulators <b>LRB/LRBS</b>		Micro	-											
		Mini	-	-	-	■	-	-	-	-	-	-	■	■
		Midi	-	-	-	-	■	-	-	-	-	-	■	■
		Maxi	-											
Pressure regulator combinations <b>LRB-K</b>		Micro	-											
		Mini	-	-	-	■	■	-	-	-	-	-	■	■
		Midi	-	-	-	-	■	■	-	-	-	-	■	■
		Maxi	-											
Lubricators <b>LOE</b>		Micro	■	■	■	-	-	-	-	-	■	■	-	-
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
On-off valves <b>HE</b>		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
On-off valves, electrical <b>HEE</b>		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
On-off valves, pneumatic <b>HEP</b>		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Soft-start valves <b>HEL</b>		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Membrane air dryers <b>LDM1</b>		Micro	-											
		Mini	-											
		Midi	-											
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Branching modules <b>FRM</b>		Micro	-											
		Mini	-	-	■	■	■	-	-	-	-	-	-	-
		Midi	-	-	-	■	■	■	■	-	-	-	-	-
		Maxi	-	-	-	-	-	■	■	■	-	-	-	-
Distributor block <b>FRZ</b>		Micro	-											
		Mini	-	-	-	-	-	-	-	-	-	-	-	-
		Midi	-	-	-	-	-	-	-	-	-	-	-	-
		Maxi	-	-	-	-	-	-	-	-	-	-	-	-

# On-off/soft-start valves HE/HEE/HEP/HEL, D series, metal design

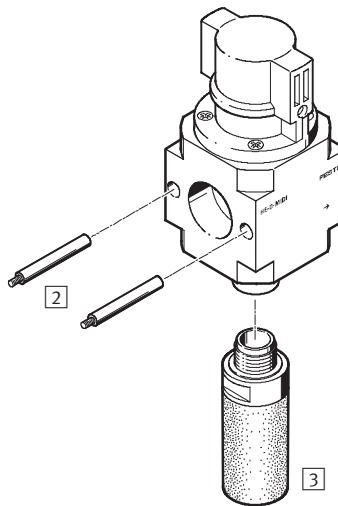
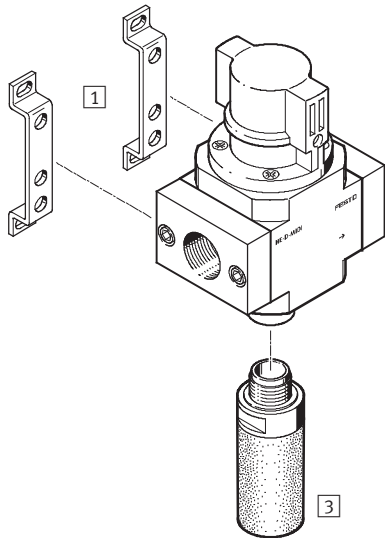
Product range overview D series service units, metal design

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	
<b>Individual devices</b>													
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	-	■	-	■	-	-	-	-	-	-	-	loe
	Mini	■	-	-	■	-	-	-	-	-	-	-	
	Midi	■	-	-	■	-	-	-	-	-	-	-	
	Maxi	■	-	-	■	-	-	-	-	-	-	-	
On-off valves <b>HE</b>	Micro	-	-	-	■	■	-	-	-	-	-	-	6
	Mini	-	-	-	■	■	-	-	-	-	-	-	
	Midi	-	-	-	■	■	-	-	-	-	-	-	
	Maxi	-	-	-	■	■	-	-	-	-	-	-	
On-off valves, electrical <b>HEE</b>	Micro	-	-	-	■	-	-	■	■	■	-	-	11
	Mini	-	-	-	■	-	-	■	■	■	-	-	
	Midi	-	-	-	■	-	-	■	■	■	-	-	
	Maxi	-	-	-	■	-	-	■	■	■	-	-	
On-off valves, pneumatic <b>HEP</b>	Micro	-	-	-	■	-	-	-	-	-	-	-	17
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	
Soft-start valves <b>HEL</b>	Micro	-	-	-	■	-	-	-	-	-	-	-	22
	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	-	-	-	■	-	-	-	-	-	-	-	

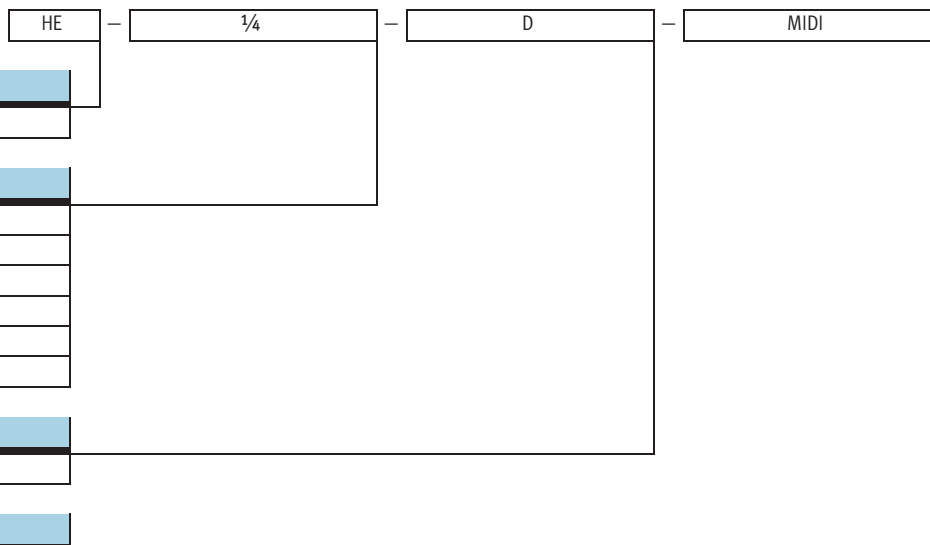
# On-off valves HE, D series, metal design

Peripherals overview and Type codes

**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
3 Silencer U	■	■	■	■	27



Basic function	
HE	On-off valve, manual

Pneumatic connection	
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

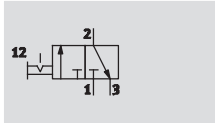
Series	
D	Series




Size	
MINI	Grid dimension 40 mm (without connecting plates)
MIDI	Grid dimension 55 mm (without connecting plates)
MAXI	Grid dimension 66 mm (without connecting plates)

# On-off valves HE, D series, metal design

Technical data

Function



-  Flow rate  
1000 ... 6500 l/min
-  Temperature range  
-10 ... +60 °C
-  Operating pressure  
0 ... 16 bar



- 3/2-way manual shut-off valve
- The unit is vented when switched off
- Ducted exhaust possible via a threaded connection
- The switching position is immediately recognisable
- Commercially available padlock can be used for security

General technical data										
Size	Mini			Midi				Maxi		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1
Pneumatic connection 3	G $\frac{1}{8}$			G $\frac{1}{4}$				G $\frac{3}{8}$		
Design	Piston spool valve									
Type of mounting	Via accessories									
	In-line installation									
Assembly position	Any									
Valve function	3/2-way valve, double solenoid									
Exhaust function	No flow control									
Direction of flow	Non-reversible									
Sealing principle	Soft									
C value [l/(s*bar)]	4.4	7.2	7.5	9.9	15.7	17.0	17.3	23.7	26.8	25.9
b value	0.44	0.28	0.27	0.45	0.30	0.30	0.42	0.32	0.35	0.37

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

Standard nominal flow rate $q_{mN}^{1)}$ [l/min]										
Connection	Mini			Midi				Maxi		
	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1
In main flow direction 1 $\rightarrow$ 2	1000	1500	1600	2600	3200	3600	3800	5600	6000	6500

1) Measured at  $p_1 = 6$  bar and  $\Delta p = 1$  bar.

# On-off valves HE, D series, metal design

Technical data

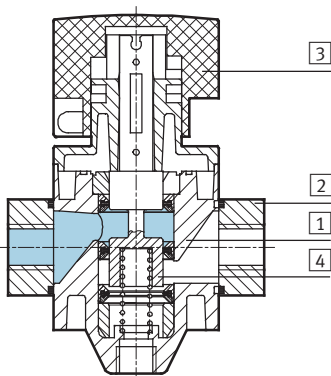
Operating and environmental conditions		Mini	Midi	Maxi
Size				
Operating pressure [bar]		0 ... 16		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm		
Ambient temperature [°C]		-10 ... +60		
Temperature of medium [°C]		-10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>		2		
Certification		Germanischer Lloyd		

1) Corrosion resistance class 2 according to Festo standard 940 070  
 Components subject to moderate corrosion stress. 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	Mini	Midi	Maxi
HE	192	511	796

## Materials

Sectional view



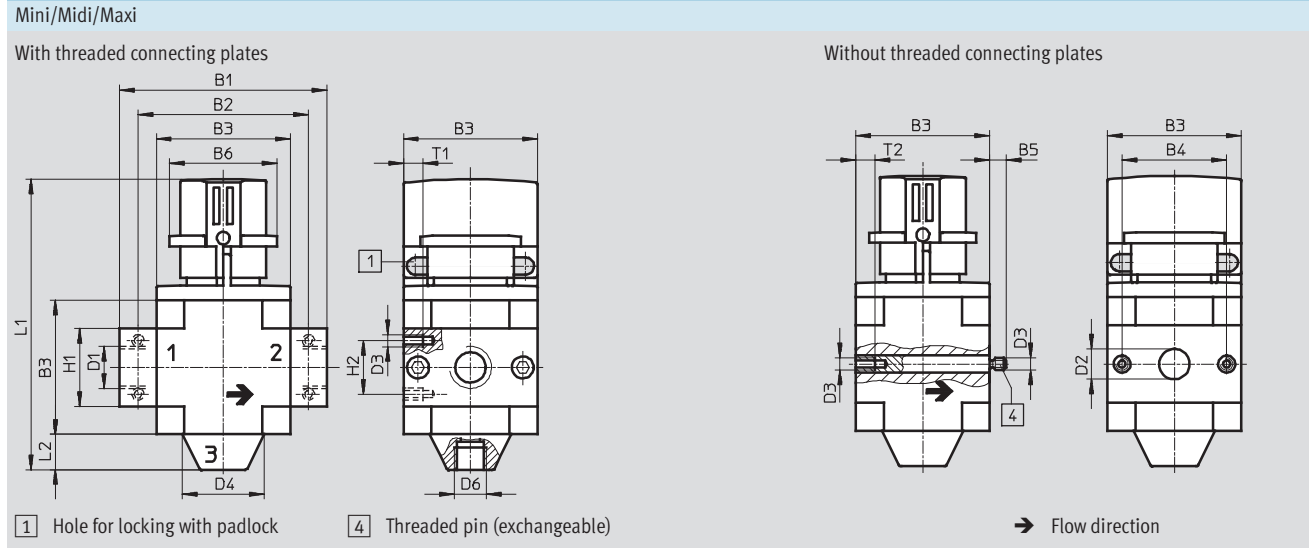
On-off valve	
1	Housing Die-cast aluminium
2	Connecting plates Wrought aluminium alloy
3	Rotary knob PA
4	Piston Stainless steel
-	Seals NBR
Note on materials Free of copper and PTFE	



# On-off valves HE, D series, metal design

Technical data

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



Type	B1	B2	B3	B4	B5	B6	D1	D2	D3	D4	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>																	
HE-1/8-D-MINI	64	52	40	30	-	32	G1/8	-	M4	24	G1/8	20	11	100	11	7	-
HE-1/4-D-MINI							G1/4										
HE-3/8-D-MINI	70						G3/8										
HE-D-MINI	-	-			5.8		-	11				-	-			-	10
<b>Midi</b>																	
HE-1/4-D-MIDI	85	70	55	43	-	44	G1/4	-	M5	34	G1/4	32	22	121	14	8	-
HE-3/8-D-MIDI							G3/8										
HE-1/2-D-MIDI							G1/2										
HE-3/4-D-MIDI							G3/4										
HE-D-MIDI	-	-			6.8		-	24				-	-			-	11
<b>Maxi</b>																	
HE-1/2-D-MAXI	96	80	66	46	-	44	G1/2	-	M5	38	G3/8	32	22	134	16	8	-
HE-3/4-D-MAXI							G3/4					40					
HE-1-D-MAXI	116	91					G1					-	-			-	
HE-D-MAXI	-	-			6.8		-	30				-	-			-	11

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

## On-off valves HE, D series, metal design

FESTO

Technical data

Ordering data		
3/2-way valve, operating pressure 0 ... 16 bar, normally closed		
Size	Part No.	Type
Without threaded connecting plates		
Mini	170681	HE-D-MINI
Midi	170682	HE-D-MIDI
Maxi	170683	HE-D-MAXI

Ordering data			
3/2-way valve, operating pressure 0 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
With threaded connecting plates			
Mini	G $\frac{1}{8}$	162806	HE- $\frac{1}{8}$ -D-MINI
	G $\frac{1}{4}$	162807	HE- $\frac{1}{4}$ -D-MINI
	G $\frac{3}{8}$	162808	HE- $\frac{3}{8}$ -D-MINI
Midi	G $\frac{1}{4}$	186513	HE- $\frac{1}{4}$ -D-MIDI
	G $\frac{3}{8}$	162809	HE- $\frac{3}{8}$ -D-MIDI
	G $\frac{1}{2}$	162810	HE- $\frac{1}{2}$ -D-MIDI
	G $\frac{3}{4}$	162811	HE- $\frac{3}{4}$ -D-MIDI
Maxi	G $\frac{1}{2}$	186514	HE- $\frac{1}{2}$ -D-MAXI
	G $\frac{3}{4}$	162812	HE- $\frac{3}{4}$ -D-MAXI
	G1	162813	HE-1-D-MAXI

# On-off valves HEE, D series, metal design

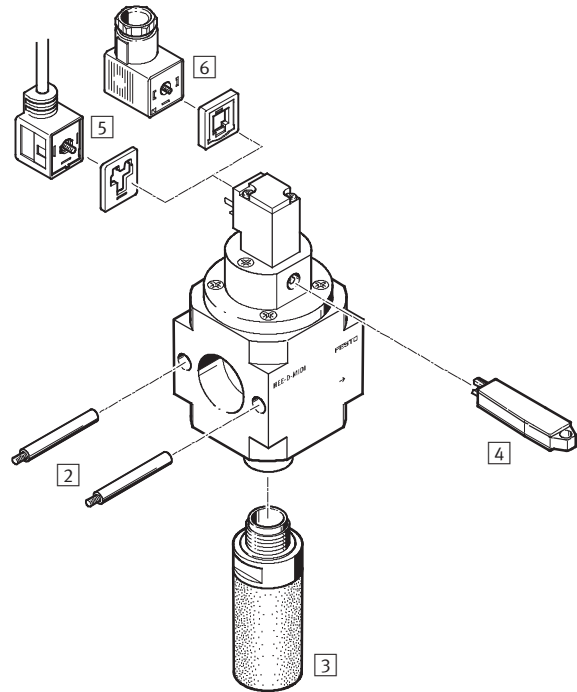
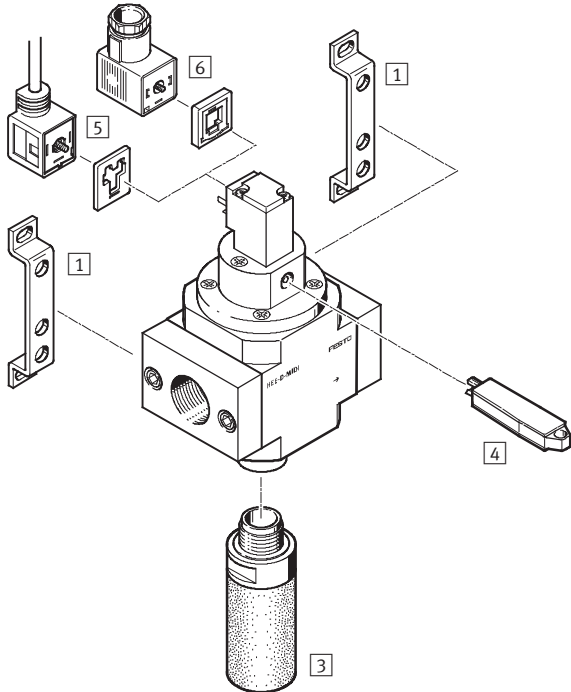
Peripherals overview

FESTO

## 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
3 Silencer U	■	■	■	■	27
4 Manual override tool, non-detenting AHB-MD/MF/MY	■	■	■	■	-
5 Plug socket with cable KMEB-1	■	■	■	■	27
6 Plug socket MSSD-EB	■	■	■	■	27

# On-off valves HEE, D series, metal design

Type codes

HEE – ¼ – D – MIDI – 110

**Basic function**

HEE	On-off valve, electrical
-----	--------------------------

**Pneumatic connection**

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

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without connecting plates)
MIDI	Grid dimension 55 mm (without connecting plates)
MAXI	Grid dimension 66 mm (without connecting plates)

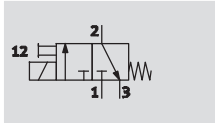
**Voltage**

24	Supply voltage 24 V DC
110	Supply voltage 110 V AC
230	Supply voltage 230 V AC

# On-off valves HEE, D series, metal design

Technical data

Function



- - Flow rate  
1000 ... 6500 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
2.5 ... 16 bar



- Electrical on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Manual override via pushing and detenting (using override tool AHB-MD/MF/MV)
- Solenoid head can be repositioned by 4 x 90°

General technical data											
Size	Mini			Midi				Maxi			
Pneumatic connection 1, 2	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1	
Pneumatic connection 3	G1/8			G1/4				G3/8			
Design	Piston spool valve										
Type of mounting	Via accessories										
	In-line installation										
Assembly position	Any										
Valve function	3/2-way valve, single solenoid										
Exhaust function	No flow control										
Type of reset	Mechanical spring										
Direction of flow	Non-reversible										
Sealing principle	Soft										
C value [l/(s*bar)]	4.4	7.0	7.3	9.7	15.7	17.0	17.3	24.2	28.0	27.6	
b value	0.44	0.31	0.28	0.47	0.33	0.30	0.41	0.30	0.32	0.32	

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

Electrical data		
Coil characteristics	24	24 V DC: 3.0 W; perm. voltage fluctuations ±10%
	110	110 V AC: 50/60 Hz; pick-up power 5.0 W; holding power 3.7 W; perm. voltage fluctuations ±10%
	230	230 V AC: 50/60 Hz; pick-up power 5.0 W; holding power 3.7 W; perm. voltage fluctuations -14%/+10%
Electrical connection	Plug to DIN EN 175301-803, type C	
Protection class for solenoid coil	IP65	
Duty cycle [%]	100	

# On-off valves HEE, D series, metal design

Technical data

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G1/8	G1/4	G3/8	G1/2	G3/4	G1
<b>Mini</b>						
HEE	1000	1500	1600	–	–	–
<b>Midi</b>						
HEE	–	2400	3200	3600	3800	–
<b>Maxi</b>						
HEE	–	–	–	5600	6000	6500

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

Operating and environmental conditions		Mini	Midi	Maxi
Size				
Operating pressure [bar]		2.5 ... 16		
Operating medium		Filtered compressed air, lubricated or unlubricated, grade of filtration 50 μm		
Ambient temperature [°C]		–10 ... +60		
Temperature of medium [°C]		–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>		2		
Certification		Germanischer Lloyd (only with supply voltage 24 V DC and 110 V AC)		
ATEX		Specified types → <a href="http://www.festo.com">www.festo.com</a>		

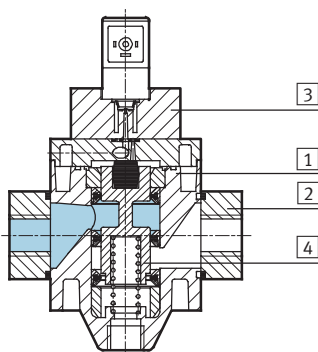
1) Corrosion resistance class 2 according to Festo standard 940 070

Components subject to moderate corrosion stress. 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	Mini	Midi	Maxi
HEE	223	500	800

## Materials

Sectional view

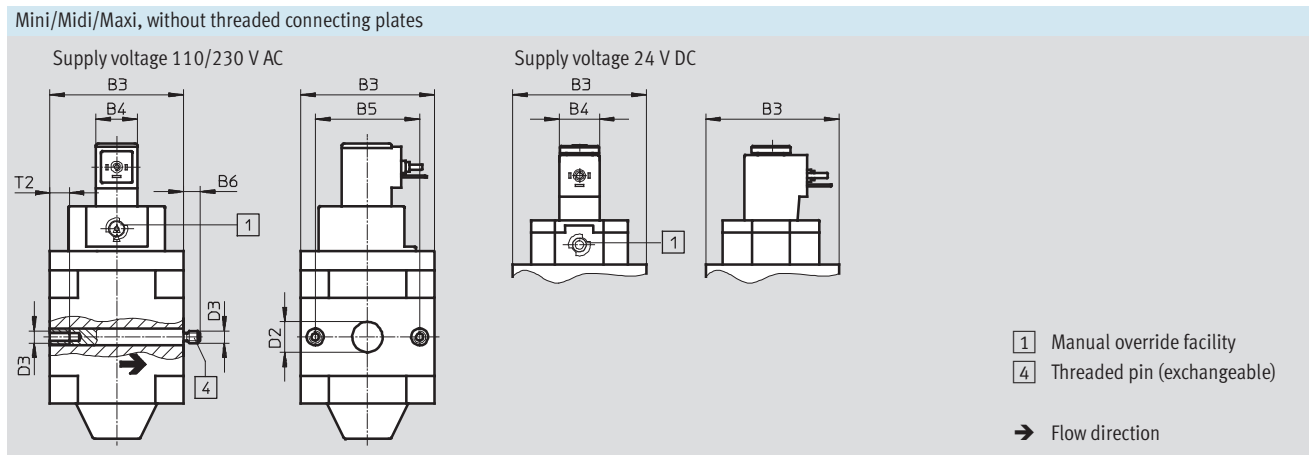
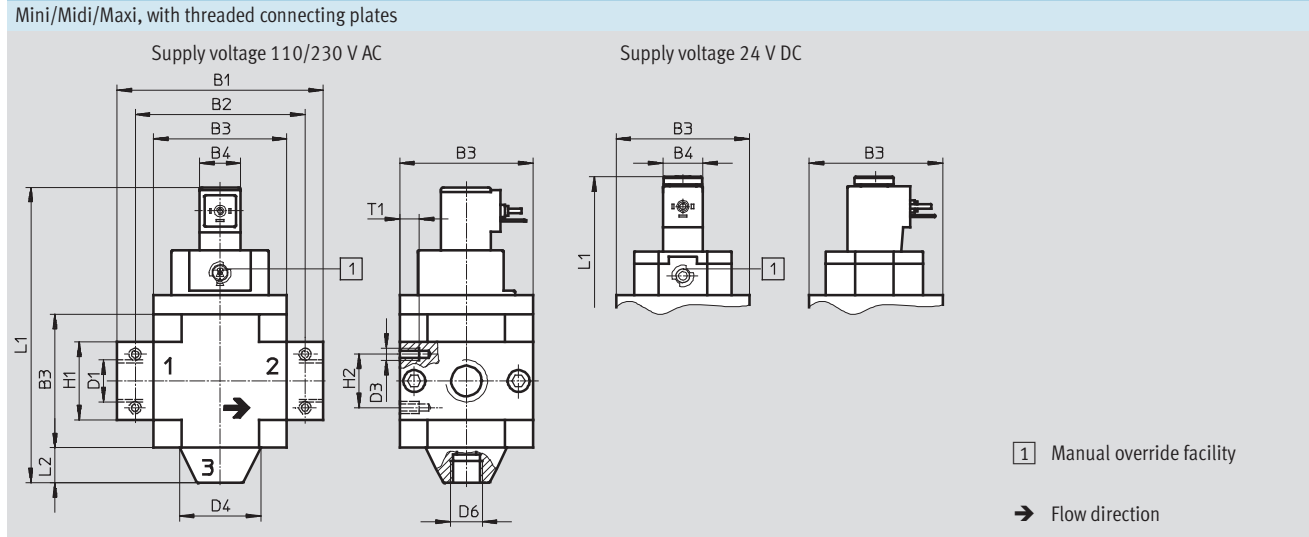


On-off valve	
1	Housing Die-cast aluminium
2	Connecting plates Wrought aluminium alloy
3	Solenoid and intermediate plate Polyamide
4	Piston Stainless steel
–	Seals Nitrile rubber
Note on materials Free of copper and PTFE	

# On-off valves HEE, D series, metal design

Technical data

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



Type	B1	B2	B3	B4	B5	B6	D1	D2 ∅	D3	D4 ∅	D6	H1	H2	L1		L2	T1	T2
														24 V DC	110 V AC 230 V AC			
<b>Mini</b>																		
HEE-1/8-D-MINI	64	52	40	17	30	-	G1/8	-	M4	24	G1/8	20	11	108	104	11	7	-
HEE-1/4-D-MINI							G3/8											
HEE-3/8-D-MINI	70						G3/8											
HEE-D-MINI	-	-				5.8	-	11				-	-				-	10
<b>Midi</b>																		
HEE-1/4-D-MIDI	85	70	55	17	43	-	G1/4	-	M5	34	G1/4	32	22	126	122	14	8	-
HEE-3/8-D-MIDI							G3/8											
HEE-1/2-D-MIDI							G1/2											
HEE-3/4-D-MIDI							G3/4											
HEE-D-MIDI	-	-				6.8	-	24				-	-				-	11
<b>Maxi</b>																		
HEE-1/2-D-MAXI	96	80	66	17	46	-	G1/2	-	M5	38	G3/8	32	22	139	135	16	8	-
HEE-3/4-D-MAXI							G3/4											
HEE-1-D-MAXI	116	91					G1					40						
HEE-D-MAXI	-	-				6.8	-	30				-	-				-	11

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

# On-off valves HEE, D series, metal design

FESTO

Technical data

Ordering data							
3/2-way valve, operating pressure 2.5 ... 16 bar, normally closed							
Size	Connection	24 V DC		110 V AC		230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
Without threaded connecting plates							
Mini		172956	HEE-D-MINI-24	172957	HEE-D-MINI-110	172958	HEE-D-MINI-230
Midi		172959	HEE-D-MIDI-24	172960	HEE-D-MIDI-110	172961	HEE-D-MIDI-230
Maxi		172962	HEE-D-MAXI-24	172963	HEE-D-MAXI-110	172964	HEE-D-MAXI-230

Ordering data							
3/2-way valve, operating pressure 2.5 ... 16 bar, normally closed							
Size	Connection	24 V DC		110 V AC		230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
With threaded connecting plates							
Mini	G $\frac{1}{8}$	165068	HEE- $\frac{1}{8}$ -D-MINI-24	165069	HEE- $\frac{1}{8}$ -D-MINI-110	165070	HEE- $\frac{1}{8}$ -D-MINI-230
	G $\frac{1}{4}$	165071	HEE- $\frac{1}{4}$ -D-MINI-24	165072	HEE- $\frac{1}{4}$ -D-MINI-110	165073	HEE- $\frac{1}{4}$ -D-MINI-230
	G $\frac{3}{8}$	165074	HEE- $\frac{3}{8}$ -D-MINI-24	165075	HEE- $\frac{3}{8}$ -D-MINI-110	172940	HEE- $\frac{3}{8}$ -D-MINI-230
Midi	G $\frac{1}{4}$	186515	HEE- $\frac{1}{4}$ -D-MIDI-24	186517	HEE- $\frac{1}{4}$ -D-MIDI-110	186516	HEE- $\frac{1}{4}$ -D-MIDI-230
	G $\frac{3}{8}$	172941	HEE- $\frac{3}{8}$ -D-MIDI-24	172942	HEE- $\frac{3}{8}$ -D-MIDI-110	172943	HEE- $\frac{3}{8}$ -D-MIDI-230
	G $\frac{1}{2}$	172944	HEE- $\frac{1}{2}$ -D-MIDI-24	172945	HEE- $\frac{1}{2}$ -D-MIDI-110	172946	HEE- $\frac{1}{2}$ -D-MIDI-230
	G $\frac{3}{4}$	172947	HEE- $\frac{3}{4}$ -D-MIDI-24	172948	HEE- $\frac{3}{4}$ -D-MIDI-110	172949	HEE- $\frac{3}{4}$ -D-MIDI-230
Maxi	G $\frac{1}{2}$	186518	HEE- $\frac{1}{2}$ -D-MAXI-24	186520	HEE- $\frac{1}{2}$ -D-MAXI-110	186519	HEE- $\frac{1}{2}$ -D-MAXI-230
	G $\frac{3}{4}$	172950	HEE- $\frac{3}{4}$ -D-MAXI-24	172951	HEE- $\frac{3}{4}$ -D-MAXI-110	172952	HEE- $\frac{3}{4}$ -D-MAXI-230
	G1	172953	HEE-1-D-MAXI-24	172954	HEE-1-D-MAXI-110	172955	HEE-1-D-MAXI-230



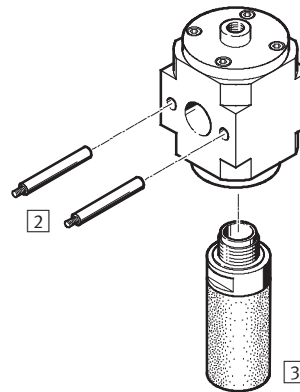
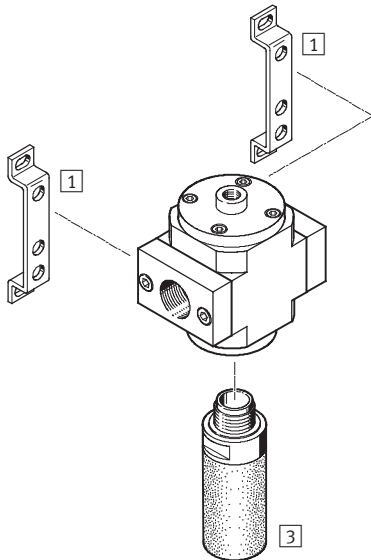
# On-off valves HEP, D series, metal design

Peripherals overview and Type codes

**Mini/Midi/Maxi**

Individual unit with connection plates

Individual unit without connection plates, for service unit combination



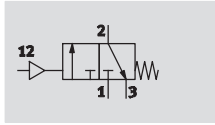
Mounting attachments and accessories					
	Individual unit		Combination		→ Page/ Internet
	with connection plates	without connection plates	with connection plates	without connection plates	
1 Mounting bracket HFOE	■	-	■	-	hfoe-d
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	frb-d
3 Silencer U	■	■	■	■	27

	HEP	-	1/4	-	D	-	MIDI
<b>Basic function</b>							
HEP	On-off valve, pneumatic						
<b>Pneumatic connection</b>							
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>							
MINI	Grid dimension 40 mm (without connecting plates)						
MIDI	Grid dimension 55 mm (without connecting plates)						
MAXI	Grid dimension 66 mm (without connecting plates)						

# On-off valves HEP, D series, metal design

Technical data

Function



- - Flow rate  
800 ... 6500 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
2 ... 16 bar



- Pneumatically actuated on-off valve for pressurising and venting pneumatic installations
- The valve can be used as a single unit or in combination with other D series modules
- These valves are particularly suitable for applications in explosion protection areas

General technical data										
Size	Mini			Midi				Maxi		
Pneumatic connection	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm									
Design	Piston spool valve									
Type of mounting	Via accessories In-line installation									
Assembly position	Any									
Operating pressure [bar]	2 ... 16									
Pilot pressure [bar]	3 ... 16									
Valve function	3/2-way valve									
Exhaust function	Without flow control									
Type of actuation	Mechanical spring									
C value [l/(s*bar)]	4.3	7.2	7.7	10.1	15.5	16.6	16.2	24.2	28.0	27.6
b value	0.48	0.34	0.30	0.46	0.33	0.40	0.47	0.30	0.32	0.32
Direction of flow	Non-reversible									

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

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G1/8	G1/4	G3/8	G1/2	G3/4	G1
<b>Mini</b>						
HEP	1000	1500	1600	-	-	-
Without threaded connecting plates	800			-	-	-
<b>Midi</b>						
HEP	-	2600	3500	3900	4100	-
Without threaded connecting plates	-	1900				-
<b>Maxi</b>						
HEP	-	-	-	5600	6000	6500
Without threaded connecting plates	-	-	-	2400		

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

# On-off valves HEP, D series, metal design

Technical data

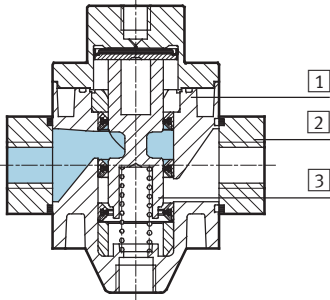
Ambient conditions				
Size		Mini	Midi	Maxi
Ambient temperature	[°C]	-10 ... +60 °C		
Temperature of medium	[°C]	-10 ... +60 °C		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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		Mini	Midi	Maxi
HEP		223	500	800

## Materials

Sectional view

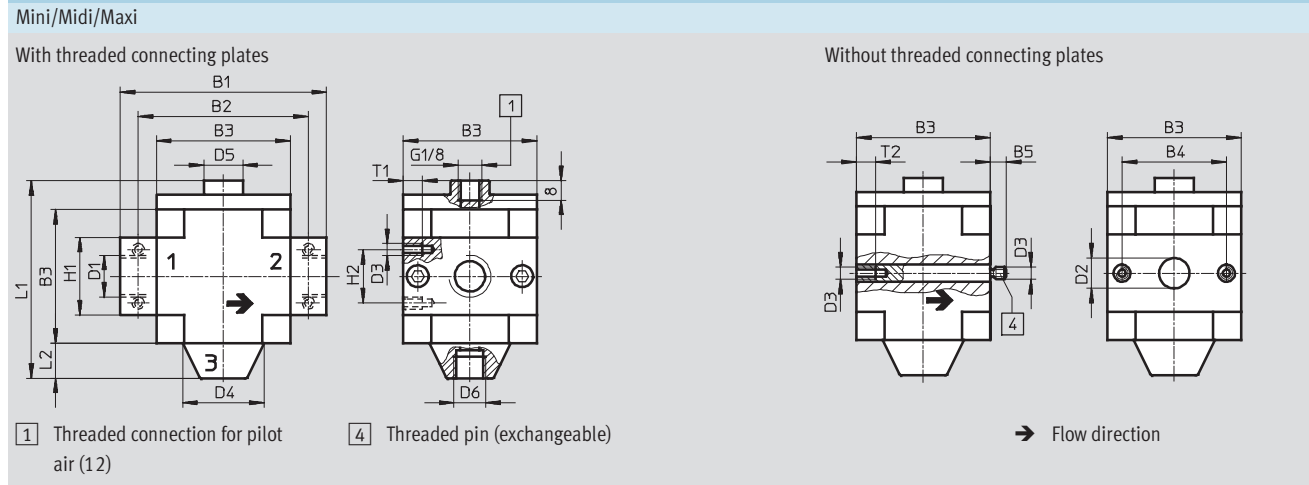


On-off valve		
1	Housing	Die-cast aluminium
2	Connecting plates	Wrought aluminium alloy
3	Piston	Stainless steel
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

# On-off valves HEP, D series, metal design

Technical data

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



Type	B1	B2	B3	B4	B5	D1	D2	D3	D4	D5	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>																	
HEP-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	24	16	G1/8	20	11	73.8	11	7	-
HEP-1/4-D-MINI					G1/4	-											
HEP-3/8-D-MINI					G3/8	-											
HEP-D-MINI	-	-	-	-	5.8	-	11	-	-	-	-	-	-	-	-	-	10
<b>Midi</b>																	
HEP-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	34	32	G1/4	32	22	94.6	14	8	-
HEP-3/8-D-MIDI					G3/8	-											
HEP-1/2-D-MIDI					G1/2	-											
HEP-3/4-D-MIDI					G3/4	-											
HEP-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	-	-	11
<b>Maxi</b>																	
HEP-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	38	16	G3/8	32	22	95.6	16	8	-
HEP-3/4-D-MAXI					G3/4	-											
HEP-1-D-MAXI	116	91	-	-	-	G1	-	-	-	-	-	40	-	-	-	-	-
HEP-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	-	-	11

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

## On-off valves HEP, D series, metal design

FESTO

Technical data

Ordering data			
Pneumatic actuation, 3/2-way valve, operating pressure 2 ... 16 bar, normally closed			
Size	Part No.	Type	
Without threaded connecting plates			
Mini	193242	HEP-D-MINI	
Midi	193249	HEP-D-MIDI	
Maxi	193257	HEP-D-MAXI	

Ordering data			
Pneumatic actuation, 3/2-way valve, operating pressure 2 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
With threaded connecting plates			
Mini	G1/8	193243	HEP-1/8-D-MINI
	G1/4	193244	HEP-1/4-D-MINI
	G3/8	193245	HEP-3/8-D-MINI
Midi	G1/4	193250	HEP-1/4-D-MIDI
	G3/8	193251	HEP-3/8-D-MIDI
	G1/2	193252	HEP-1/2-D-MIDI
	G3/4	193253	HEP-3/4-D-MIDI
Maxi	G1/2	193258	HEP-1/2-D-MAXI
	G3/4	193259	HEP-3/4-D-MAXI
	G1	193260	HEP-1-D-MAXI

# Soft-start valves HEL, D series, metal design

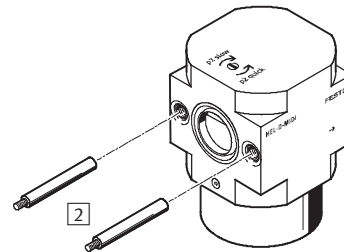
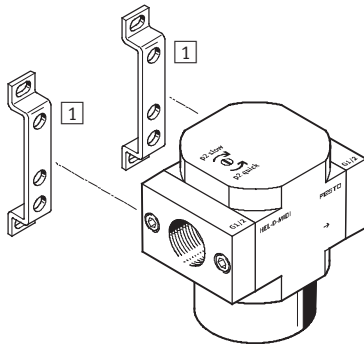
Peripherals overview and Type codes



## Mini/Midi/Maxi

Individual unit with connection plates

Individual unit without connection plates, for service unit combination



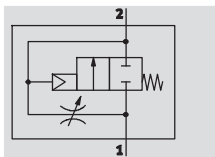
Mounting attachments and accessories	Individual unit		Combination		→ Page/ Internet
	with connection plates	without connection plates	with connection plates	without connection plates	
1 Mounting bracket HFOE	■	-	■	-	hfoe-d
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	frb-d

		HEL	1/4	D	MIDI
<b>Basic function</b>					
HEL	Soft-start valve, gradual pressure build-up				
<b>Pneumatic connection</b>					
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>					
MINI	Grid dimension 40 mm (without connecting plates)				
MIDI	Grid dimension 55 mm (without connecting plates)				
MAXI	Grid dimension 66 mm (without connecting plates)				

# Soft-start valves HEL, D series, metal design

Technical data

Function



- Flow rate  
1000 ... 6500 l/min
- Temperature range  
-10 ... +60 °C
- Operating pressure  
3 ... 16 bar



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Soft-start valve for gradual pressure build-up (for use with on-off valves HE and HEE)
- Drives are moved slowly and safely to their initial positions
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of input pressure
- Adjustable switching time delay

General technical data										
Size	Mini			Midi				Maxi		
Pneumatic connection 1, 2	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1
Design	Piston spool valve									
Type of mounting	Via accessories In-line installation									
Assembly position	Any									
Valve function	2/2-way valve, single solenoid, closed									
Exhaust function	Flow control									
Reset method	Mechanical spring									
Type of actuation	Direct									
Direction of flow	Non-reversible									
C value [l/(s*bar)]	4.4	7.9	9.1	10.0	18.4	21.0	22.5	26.9	31.0	29.0
b value	0.46	0.38	0.29	0.49	0.33	0.29	0.36	0.36	0.30	0.38

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

Standard nominal flow rate $q_{mN}^{1)}$ [l/min]										
Connection	Mini			Midi				Maxi		
	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1
In main flow direction 1 $\rightarrow$ 2	1000	1500	1600	2600	3200	3600	3800	5600	6000	6500

1) Measured at p1 = 6 bar and  $\Delta p = 1$  bar.

# Soft-start valves HEL, D series, metal design

Technical data

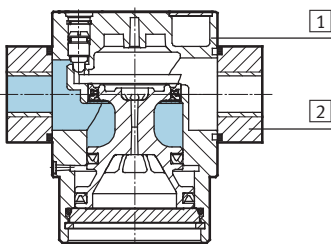
Operating and environmental conditions	
Operating pressure [bar]	3 ... 16
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2
Certification	Germanischer Lloyd

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	Mini	Midi	Maxi
Soft-start valve	184	586	850

## Materials

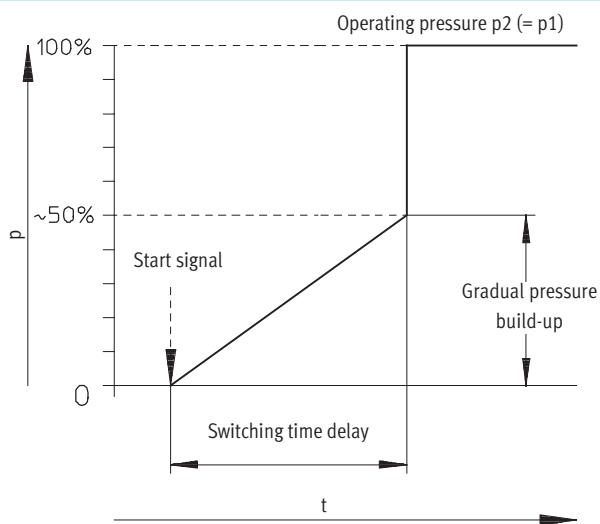
Sectional view



Soft-start valve	
1	Housing Die-cast aluminium
2	Connecting plates Wrought aluminium alloy
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE	

## Switching point

Pressure p as a function of time t





# Soft-start valves HEL, D series, metal design

Technical data

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

With threaded connecting plates

Without threaded connecting plates

1 Regulating screw in housing    
 4 Threaded pin (exchangeable)    
 → Flow direction

Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>															
HEL-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	30	20	11	56	16	7	-
HEL-1/4-D-MINI						G3/8									
HEL-3/8-D-MINI	70														
HEL-D-MINI	-	-			5.8	-	11			-	-			-	10
<b>Midi</b>															
HEL-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	50	32	22	77	22	8	-
HEL-3/8-D-MIDI						G3/8									
HEL-1/2-D-MIDI						G1/2									
HEL-3/4-D-MIDI						G3/4									
HEL-D-MIDI	-	-			6.8	-	24			-	-			-	11
<b>Maxi</b>															
HEL-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	50	32	22	89	23	8	-
HEL-3/4-D-MAXI						G3/4				40					
HEL-1-D-MAXI	116	91													
HEL-D-MAXI	-	-			6.8	-	30			-	-			-	11

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

## Soft-start valves HEL, D series, metal design

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
Technical data

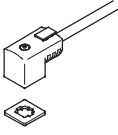
Ordering data			
Gradual pressure build-up, 2/2-way valve, operating pressure 3 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
Without threaded connecting plates			
Mini		170690	HEL-D-MINI
Midi		170691	HEL-D-MIDI
Maxi		170692	HEL-D-MAXI
With threaded connecting plates			
Mini	G1/8	165076	HEL-1/8-D-MINI
	G1/4	165077	HEL-1/4-D-MINI
	G3/8	165078	HEL-3/8-D-MINI
Midi	G1/4	186521	HEL-1/4-D-MIDI
	G3/8	165079	HEL-3/8-D-MIDI
	G1/2	165080	HEL-1/2-D-MIDI
	G3/4	165081	HEL-3/4-D-MIDI
Maxi	G1/2	186522	HEL-1/2-D-MAXI
	G3/4	165082	HEL-3/4-D-MAXI
	G1	165083	HEL-1-D-MAXI


## On-off/soft-start valves HE/HEE/HEP/HEL, D series


FESTO


Accessories

Ordering data – Plug socket MSSD				Technical data → Internet: mssd	
	Operating voltage range	Electrical connection	Type of mounting cable connection	Part No.	Type
	≤ 250 V AC/DC	3-pin	Clamping screws	151687	MSSD-EB
		4-pin	Insulation displacement technology	192745	MSSD-EB-S-M14

Ordering data – Plug socket with cable KMEB					Technical data → Internet: kmeb	
	Operating voltage range	Electrical connection	Switching status display	Cable length [m]	Part No.	Type
	24 V DC	3-pin	LED	2.5	151688	KMEB-1-24-2,5-LED
				5	151689	KMEB-1-24-5-LED
				10	193457	KMEB-1-24-10-LED
	230 V AC	3-pin	–	2.5	151690	KMEB-1-230AC-2,5
				5	151691	KMEB-1-230AC-5

Ordering data – Illuminating seal MEB-LD			Technical data → Internet: meb	
	Description	Operating voltage range	Part No.	Type
	for plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	151717	MEB-LD-12-24DC
		230 V DC/AC ±10%	151718	MEB-LD-230AC

Ordering data – Silencer U		Technical data → Internet: u	
	Pneumatic connection	Part No.	Type
	G1/8	6841	U-1/8-B
	G1/4	6842	U-1/4-B
	G3/8	6843	U-3/8-B
	G1/2	6844	U-1/2-B
	G3/4	6845	U-3/4-B
	G1	151990	U-1-B

Ordering data – Padlock LRVS-D		Part No.	Type
	Weight [g]		
	120	193786	LRVS-D