

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

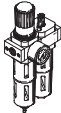
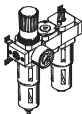
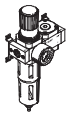
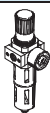



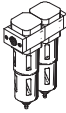
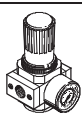
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On-off/soft-start valves HE/HEE/HEP/HEL, D series, metal design

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Product range overview D series service units, metal design

Type	Size	Pneumatic connection										Pressure regulation range [bar]			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	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	–	

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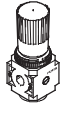
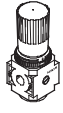
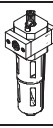
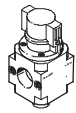
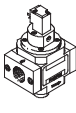
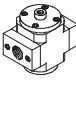
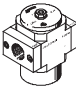

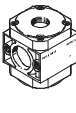
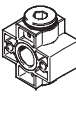
Product range overview D series service units, metal design

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	–	■	■	■	–	–	–	–	–	–	–	–	–	–	–	lfr
	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	–	–	–	–	–	■	■	■	■	–	–	–	■	■	–	

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Product range overview D series service units, metal design

Type		Size	Pneumatic connection										Pressure regulation range [bar]	
			M5	M7	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	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	–	–	–	–	–	–	–	–	–	–	–	–

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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	
Individual devices													
Pressure regulators LRB/LRBS	Micro	-											lrb
	Mini	-	-	-	■	■	■	-	-	-	-	-	
	Midi	-	-	-	■	■	■	-	-	-	-	-	
	Maxi	-											
Pressure regulator combinations LRB-K	Micro	-											lrb
	Mini	-	-	-	■	■	-	-	-	-	-	-	
	Midi	-	-	-	■	■	-	-	-	-	-	-	
	Maxi	-											
Lubricators LOE	Micro	-	■	-	■	-	-	-	-	-	-	-	loe
	Mini	■	-	-	■	-	-	-	-	-	-	-	
	Midi	■	-	-	■	-	-	-	-	-	-	-	
	Maxi	■	-	-	■	-	-	-	-	-	-	-	
On-off valves HE	Micro	-											6
	Mini	-	-	-	■	■	-	-	-	-	-	-	
	Midi	-	-	-	■	■	-	-	-	-	-	-	
	Maxi	-	-	-	■	■	-	-	-	-	-	-	
On-off valves, electrical HEE	Micro	-											11
	Mini	-	-	-	■	-	-	■	■	■	-	-	
	Midi	-	-	-	■	-	-	■	■	■	-	-	
	Maxi	-	-	-	■	-	-	■	■	■	-	-	
On-off valves, pneumatic HEP	Micro	-											17
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	
Soft-start valves HEL	Micro	-											22
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	
Membrane air dryers LDM1	Micro	-											ldm1
	Mini	-											
	Midi	-											
	Maxi	■	-	-	■	-	-	-	-	-	-	-	
Branching modules FRM	Micro	-											frm
	Mini	-	-	-	■	-	-	-	-	-	■	■	
	Midi	-	-	-	■	-	-	-	-	-	■	■	
	Maxi	-	-	-	■	-	-	-	-	-	■	■	
Distributor block FRZ	Micro	-	-	-	■	-	-	-	-	-	-	-	frz
	Mini	-	-	-	■	-	-	-	-	-	-	-	
	Midi	-	-	-	■	-	-	-	-	-	-	-	
	Maxi	-	-	-	■	-	-	-	-	-	-	-	

On-off valves HE, D series, metal design

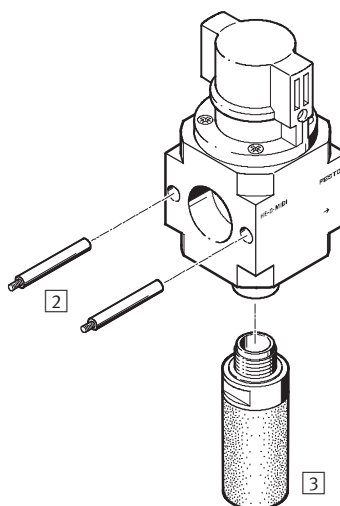
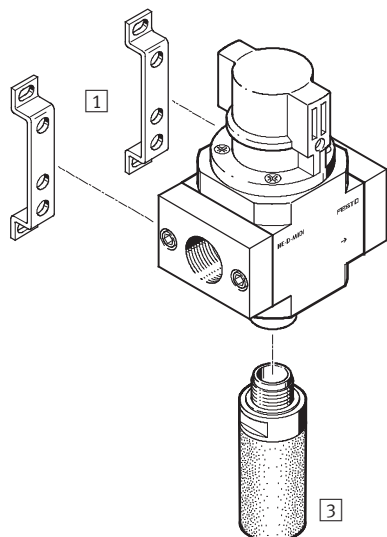
Peripherals overview and Type codes

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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

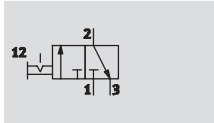
		HE	–	1/4	–	D	–	MIDI	
Basic function									
HE	On-off valve, manual								
Pneumatic connection									
1/8	Thread G1/8								
1/4	Thread G1/4								
3/8	Thread G3/8								
1/2	Thread G1/2								
3/4	Thread G3/4								
1	Thread G1								
Series									
D	Series								
Size									
MINI	Grid 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

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Technical data

Function



Flow rate

1000 ... 6500 l/min

Temperature range

-10 ... +60 °C

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	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, 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

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

Standard nominal flow rate $q_{nN}^{1)}$ [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 → 2	1000	1500	1600	2600	3200	3600	3800	5600	6000	6500

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

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Technical data

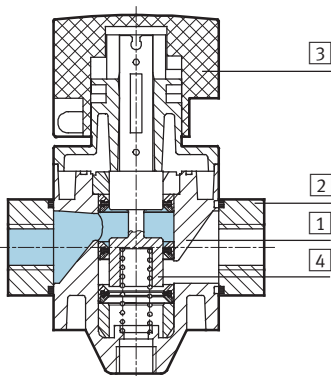
Operating and environmental conditions			
Size	Mini	Midi	Maxi
Operating pressure [bar]	0 ... 16		
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm		
Ambient temperature [°C]	-10 ... +60		
Temperature of medium [°C]	-10 ... +60		
Corrosion resistance class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

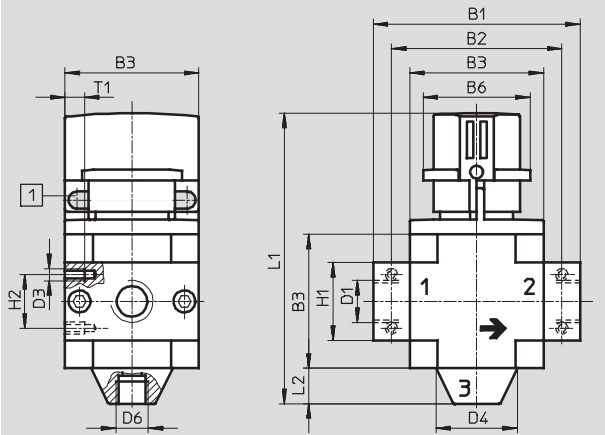
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Dimensions

Download CAD Data → www.festo.com/us/cad

Mini/Midi/Maxi

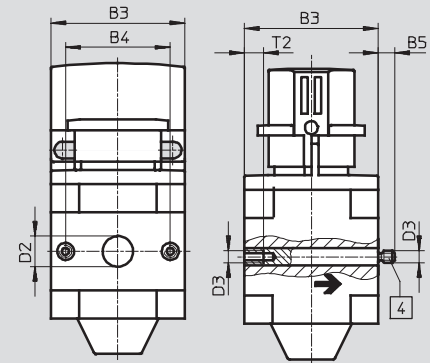
With threaded connecting plates



1 Hole for locking with padlock

4 Threaded pin (exchangeable)

Without threaded connecting plates



→ Flow direction

Type	B1	B2	B3	B4	B5	B6	D1	D2 Ø	D3	D4 Ø	D6	H1	H2	L1	L2	T1	T2
Mini																	
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
Midi																	
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
Maxi																	
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					40					
HE-D-MAXI	—	—			6.8		—	30				—	—			—	11

Note: This product conforms to ISO 1179-1 and 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	G1/8	162806	HE-1/8-D-MINI
	G1/4	162807	HE-1/4-D-MINI
	G3/8	162808	HE-3/8-D-MINI
Midi	G1/4	186513	HE-1/4-D-MIDI
	G3/8	162809	HE-3/8-D-MIDI
	G1/2	162810	HE-1/2-D-MIDI
	G3/4	162811	HE-3/4-D-MIDI
Maxi	G1/2	186514	HE-1/2-D-MAXI
	G3/4	162812	HE-3/4-D-MAXI
	G1	162813	HE-1-D-MAXI

On-off valves HEE, D series, metal design

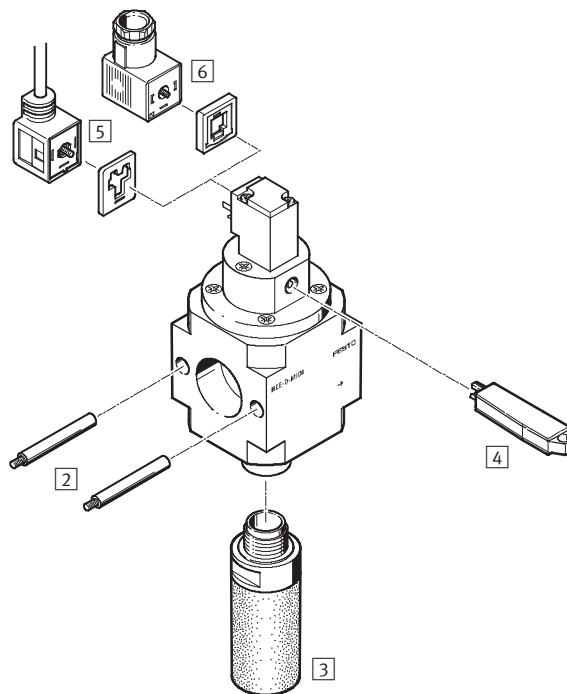
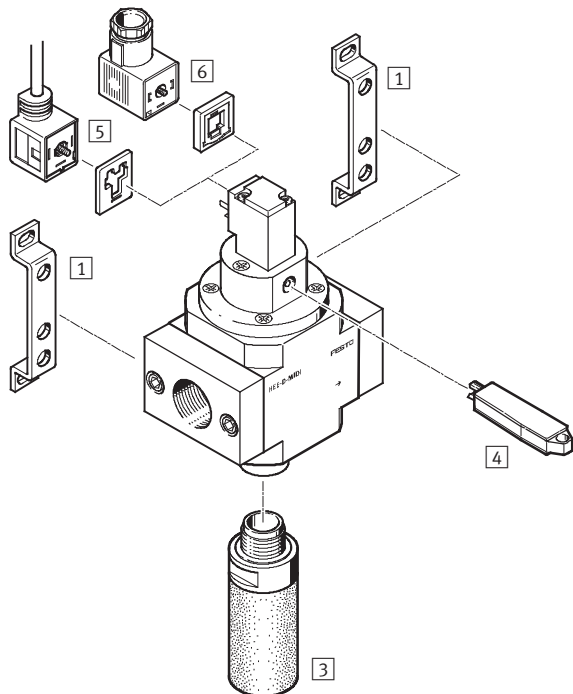
Peripherals overview

FESTO

Mini/Midi/Maxi

Individual unit with connection plates

Individual unit without connection plates, for service unit combination



Mounting attachments and accessories					
	Individual unit with connection plates	Individual unit without connection plates	Combination with connection plates	Combination without connection plates	→ Page/ Internet
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

FESTO

Type codes

HEE		–	1/4	–	D	–	MIDI	–	110	–	
-----	--	---	-----	---	---	---	------	---	-----	---	--

Basic function	
HEE	On-off valve, electrical

Pneumatic connection	
	Without threaded connecting plates
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

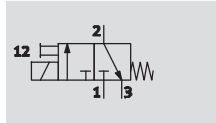
Explosion protection	
	None
EX	For use in explosive areas in zones 2 as well as 22

On-off valves HEE, D series, metal design

FESTO

Technical data

Function



Flow rate

1000 ... 6500 l/min

Temperature range

-10 ... +60 °C

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
- Ducted exhaust possible via a threaded connection with silencer
- Manual override via pushing and detenting (using override tool AHB-MD/MF/MV)
- Solenoid head can be repositioned by 4 x 90°
- Optional device variant EX for use in potentially explosive areas in zones 2 and 22

General technical data													
Size	Mini				Midi					Maxi			
Pneumatic connection 1, 2	G1/8	G1/4	G3/8	– ¹⁾	G1/4	G3/8	G1/2	G3/4	– ¹⁾	G1/2	G3/4	G1	– ¹⁾
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												
Type of control	Piloted												
Pilot air supply	Internal												
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	–

1) Without threaded connecting plates

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

Electrical data		
Coil characteristics	24	24 V DC: 3.0 W; perm. voltage fluctuations ±10%
	24-EX	24 V DC: 2.5 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 EN 175301-803, type C	
Protection class for solenoid coil	IP65	
Duty cycle [%]	100	

On-off valves HEE, D series, metal design

FESTO

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [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 → 2	1000	1500	1600	2600	3200	3600	3800	5600	6000	6500

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

Operating and environmental conditions	
Operating pressure [bar]	2.5 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2
Certification	Germanischer Lloyd (only with supply voltage 24 V DC and 110 V AC)

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

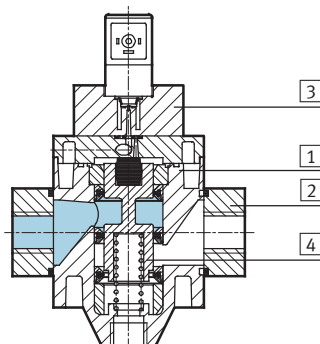
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

ATEX	
Variant	EX
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA II T4 X
ATEX category dust	II 3D
Ex-ignition protection type dust	Ex tD A22 IP65 T130°C X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
ATEX certification	For zones 2 and 22
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Weight [g]			
Size	Mini	Midi	Maxi
HEE	223	500	800

Materials

Sectional view



On-off valve	
1	Housing
2	Connecting plates
3	Solenoid and intermediate plate
4	Piston
-	Seals
	Die-cast aluminium
	Wrought aluminium alloy
	Polyamide
	Stainless steel
	Nitrile rubber

On-off valves HEE, D series, metal design

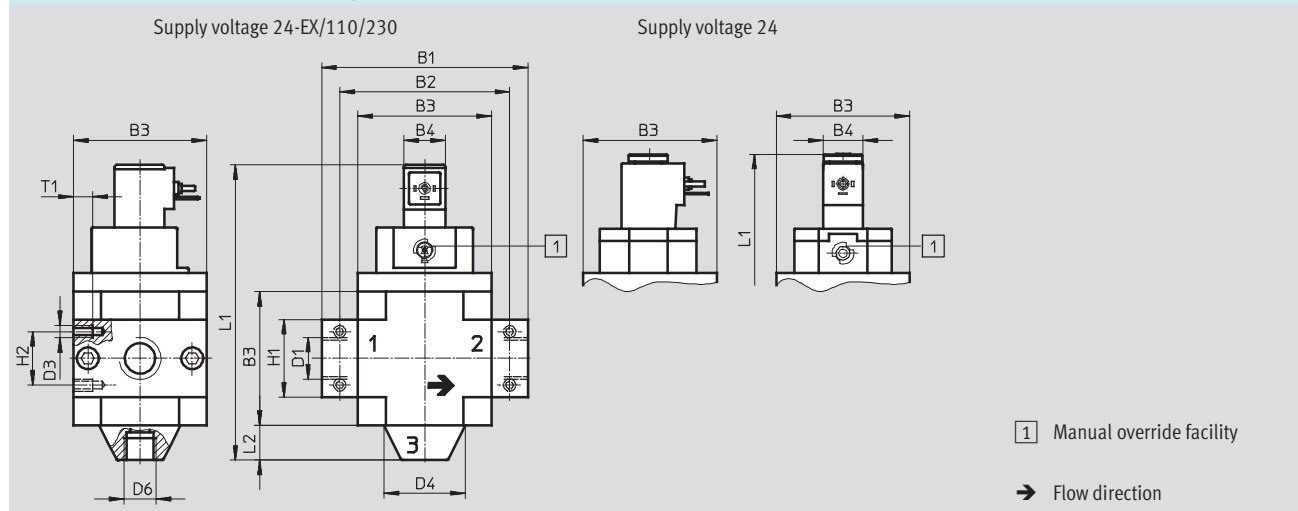
Technical data

FESTO

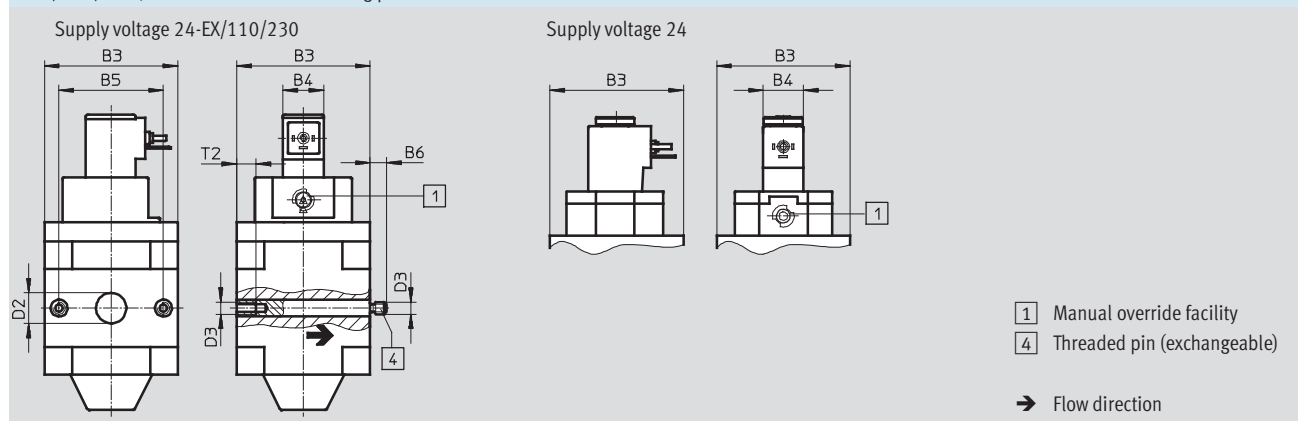
Dimensions

Download CAD Data → www.festo.com/us/cad

Mini/Midi/Maxi, with threaded connecting plates



Mini/Midi/Maxi, without threaded connecting plates



Type	B1	B2	B3	B4	B5	B6	D1	D2 Ø	D3	D4 Ø	D6	H1	H2	L1		L2	T1	T2
														24	24-EX/ 110/230			
Mini																		
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						G1⁄4												
HEE-3⁄8-D-MINI	70	G3⁄8				–	11	–				–						
HEE-D-MINI	–	–				5.8	–	11				–	–				–	10
Midi																		
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					–	24				–	–
HEE-3⁄4-D-MIDI							G3⁄4											
HEE-D-MIDI	–	–				6.8	–	24				–	–				–	11
Maxi																		
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					–	30				–	–
HEE-D-MAXI	–	–				6.8	–	30				–	–				–	11

Note: This product conforms to ISO 1179-1 and 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
		536680	HEE-D-MINI-24-EX	—		—	
Midi		172959	HEE-D-MIDI-24	172960	HEE-D-MIDI-110	172961	HEE-D-MIDI-230
		536683	HEE-D-MIDI-24-EX	—		—	
Maxi		172962	HEE-D-MAXI-24	172963	HEE-D-MAXI-110	172964	HEE-D-MAXI-230
		536686	HEE-D-MAXI-24-EX	—		—	
With threaded connecting plates							
Mini	G1/8	165068	HEE-1/8-D-MINI-24	165069	HEE-1/8-D-MINI-110	165070	HEE-1/8-D-MINI-230
	G1/4	165071	HEE-1/4-D-MINI-24	165072	HEE-1/4-D-MINI-110	165073	HEE-1/4-D-MINI-230
	G3/8	165074	HEE-3/8-D-MINI-24	165075	HEE-3/8-D-MINI-110	172940	HEE-3/8-D-MINI-230
Midi	G1/4	186515	HEE-1/4-D-MIDI-24	186517	HEE-1/4-D-MIDI-110	186516	HEE-1/4-D-MIDI-230
	G3/8	172941	HEE-3/8-D-MIDI-24	172942	HEE-3/8-D-MIDI-110	172943	HEE-3/8-D-MIDI-230
	G1/2	172944	HEE-1/2-D-MIDI-24	172945	HEE-1/2-D-MIDI-110	172946	HEE-1/2-D-MIDI-230
	G3/4	172947	HEE-3/4-D-MIDI-24	172948	HEE-3/4-D-MIDI-110	172949	HEE-3/4-D-MIDI-230
Maxi	G1/2	186518	HEE-1/2-D-MAXI-24	186520	HEE-1/2-D-MAXI-110	186519	HEE-1/2-D-MAXI-230
	G3/4	172950	HEE-3/4-D-MAXI-24	172951	HEE-3/4-D-MAXI-110	172952	HEE-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

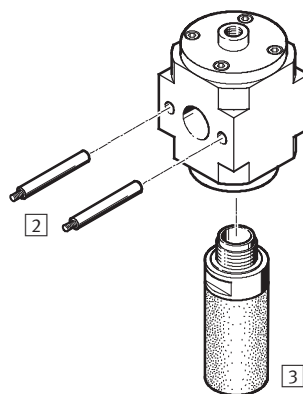
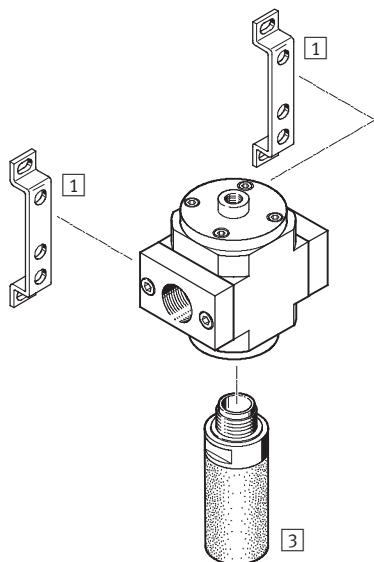
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Peripherals overview and Type codes

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

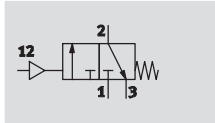
HEP		–	1/4	–	D	–	MIDI
Basic function							
HEP	On-off valve, pneumatic						
Pneumatic connection							
1/8	Thread G1/8						
1/4	Thread G1/4						
3/8	Thread G3/8						
1/2	Thread G1/2						
3/4	Thread G3/4						
1	Thread G1						
Series							
D	Series						
Size							
MINI	Grid dimension 40 mm (without connecting plates)						
MIDI	Grid dimension 55 mm (without connecting plates)						
MAXI	Grid dimension 66 mm (without connecting plates)						

On-off valves HEP, D series, metal design

FESTO

Technical data

Function



Flow rate

800 ... 6500 l/min

Temperature range

-10 ... +60 °C

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 ISO 228-1

Standard nominal flow rate ¹⁾ qnN [l/min]						
Connection	G1/8	G1/4	G3/8	G1/2	G3/4	G1
Mini						
HEP	1000	1500	1600	–	–	–
Without threaded connecting plates	800			–	–	–
Midi						
HEP	–	2600	3500	3900	4100	–
Without threaded connecting plates	–	1900				–
Maxi						
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

FESTO

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 ¹⁾	2		

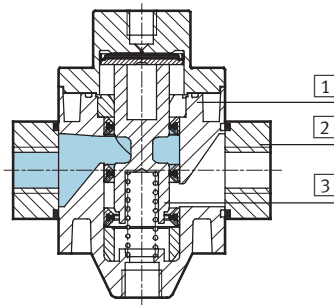
1) Corrosion resistance class 2 according to Festo standard 940 070

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

FESTO

Technical data

Dimensions

Mini/Midi/Maxi

With threaded connecting plates

1 Threaded connection for pilot air (12)

4 Threaded pin (exchangeable)

Without threaded connecting plates

→ Flow direction

Type	B1	B2	B3	B4	B5	D1	D2 Ø	D3	D4 Ø	D5	D6	H1	H2	L1	L2	T1	T2
Mini																	
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
Midi																	
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
Maxi																	
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 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

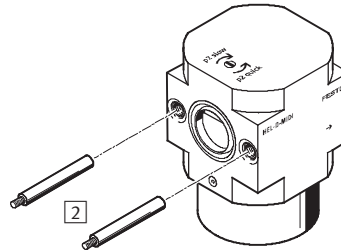
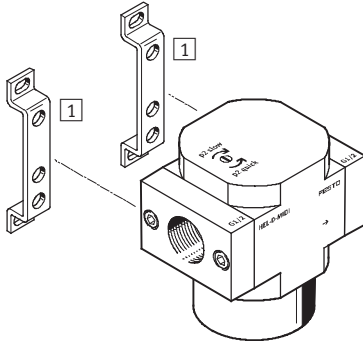
Peripherals overview and Type codes

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

HEL – 1/4 – D – MIDI

Basic function

HEL Soft-start valve, gradual pressure build-up

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

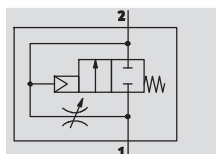
MINI	Grid dimension 40 mm (without connecting plates)
MIDI	Grid dimension 55 mm (without connecting plates)
MAXI	Grid dimension 66 mm (without connecting plates)

Soft-start valves HEL, D series, metal design

FESTO

Technical data

Function



Flow rate

1000 ... 6500 l/min

Temperature range

-10 ... +60 °C

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.

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic systems (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 ISO 228-1

Standard nominal flow rate q _N 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 → 2	1000	1500	1600	2600	3200	3600	3800	5600	6000	6500

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

Soft-start valves HEL, D series, metal design

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Technical data

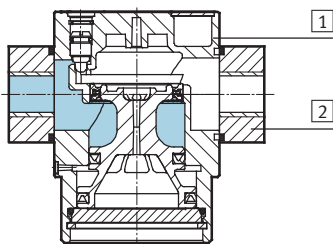
Operating and environmental conditions	
Operating pressure [bar]	3 ... 16
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2
Certification	Germanischer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

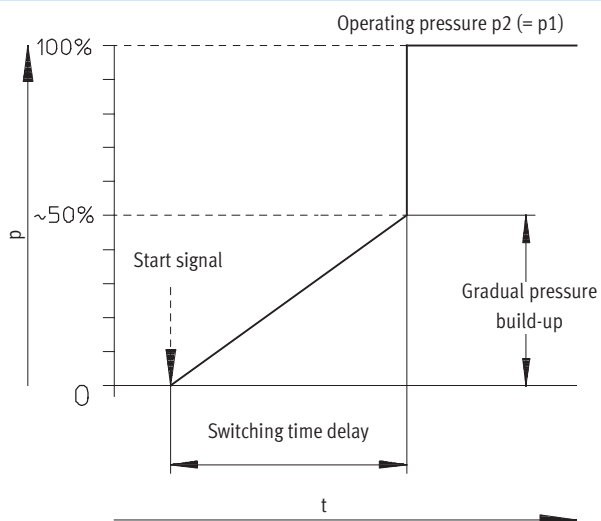
Weight [g]			
Size	Mini	Midi	Maxi
Soft-start valve	184	586	850

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

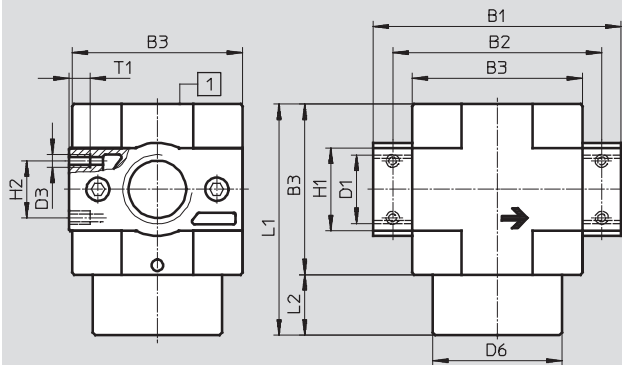
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Dimensions

Download CAD Data → www.festo.com/us/cad

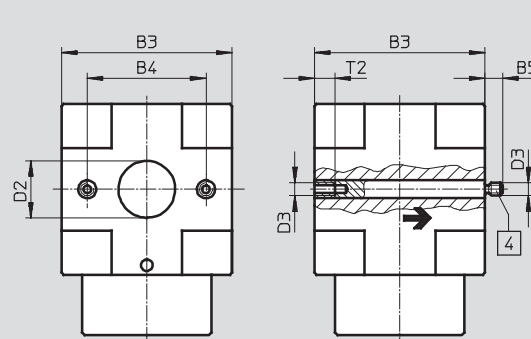
With threaded connecting plates



1 Regulating screw in housing

4 Threaded pin (exchangeable)

Without threaded connecting plates



→ Flow direction

Type	B1	B2	B3	B4	B5	D1	D2 Ø	D3	D6	H1	H2	L1	L2	T1	T2
Mini															
HEL-1/8-D-MINI	64	52	40	30	–	G1/8	–	M4	30	20	11	56	16	7	–
HEL-1/4-D-MINI	70	–	–	–	–	G1/4	–	–	–	–	–	–	–	–	–
HEL-3/8-D-MINI	–	–	–	–	–	G3/8	–	–	–	–	–	–	–	–	–
HEL-D-MINI	–	–	–	–	5.8	–	11	–	–	–	–	–	–	–	10
Midi															
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
Maxi															
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	–	–	–	–	–	–	–	–	–
HEL-1-D-MAXI	116	91	–	–	–	G1	–	–	–	–	–	–	–	–	–
HEL-D-MAXI	–	–	–	–	6.8	–	30	–	–	–	–	–	–	–	11

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

Soft-start valves HEL, D series, metal design

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Technical data

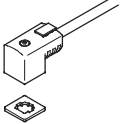
Ordering data			
Gradual pressure build-up, 2/2-way valve, operating pressure 3 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
Without threaded connecting plates			
Mini		170690	HEL-D-MINI
Midi		170691	HEL-D-MIDI
Maxi		170692	HEL-D-MAXI
With threaded connecting plates			
Mini	G1/8	165076	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


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
Accessories

Ordering data – Plug socket MSSD					Technical data → Internet: mssd	
	Description		Electrical connection	Type of mounting cable connection	Part No.	Type
	For HEE	–	3-pin	Clamping screws	151687	MSSD-EB
			4-pin	Insulation displacement technology	192745	MSSD-EB-S-M14
	For HEE....-24-EX	For use in the explosion protection area	3-pin	Clamping screws	539712	MSSD-EB-M12

Ordering data – Plug socket with cable KMEB						Technical data → Internet: kmeb	
	Description	Operating voltage range	Electrical connection	Switching status display	Cable length [m]	Part No.	Type
	For HEE	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 LRV-S-D		
	Weight [g]	Part No. Type
	120	193786 LRVS-D

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