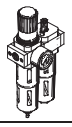
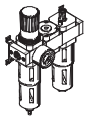
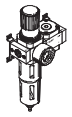
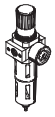
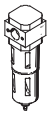
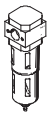
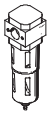
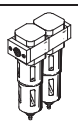
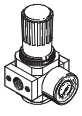
On-off/soft-start valves HE/HEE/HEP/HEL, D series

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 ... 7	0.5 ... 12	2.5 ... 12	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	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	–	–

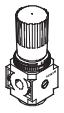
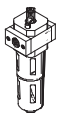
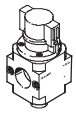
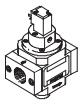
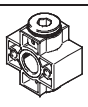
On-off/soft-start valves HE/HEE/HEP/HEL, D series, metal design

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	
Service units																	
FRC/FRCS	Micro	–	■	■	■	–	■	■	■	–	–	–	–	–	–	–	frc
	Mini	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	■	■	■	–	–	–	■	■	–	
Service unit combinations																	
FRC-K	Micro	–															frc
	Mini	■	–	■	–	■	■	–	■	–	■	–	–	–	–	–	
	Midi	■	–	■	–	■	■	–	■	–	■	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	–	■	–	■	–	–	■	■	–	
LFR-K	Micro	–															lfr
LFRS-K	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	–	–	–	–	–	■	■	■	■	–	–	–	■	■	–	

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	G⅛	G¼	G⅜	G½	G¾	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	–	–	–	–	–	–	–	–	–	–	–	–

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

Product range overview D series service units, metal design

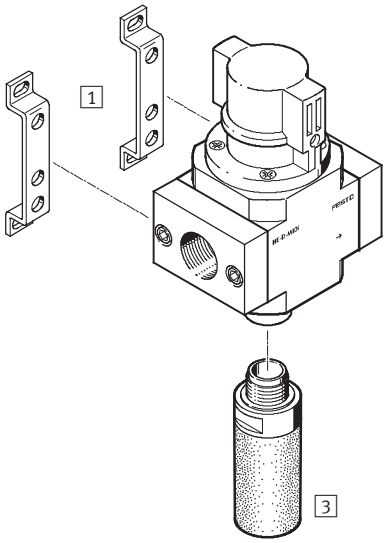
Type	Size	Bowl guard		Pressure indication		Actuator lock		Supply voltage			Options		→ Page/ Internet
		Metal bowl guard	Plastic bowl	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with integrated lock	24 V DC	110 V AC	230 V AC	Non-return function	Pressure switch	
Individual 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

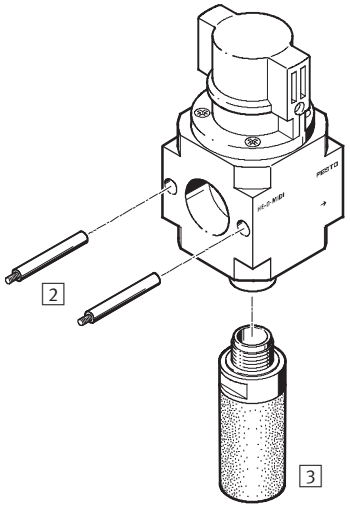
Peripherals overview and Type codes

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 – ¼ – D – MIDI

Basic function

HE	On-off valve, manual

Pneumatic connection

⅛	Thread G⅛
¼	Thread G¼
⅜	Thread G⅜
½	Thread G½
¾	Thread G¾
1	Thread G1

Series

D	Series

Size

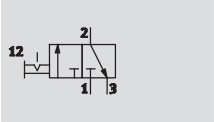
MINI	Grid dimension 40 mm (without connecting plates)
MIDI	Grid dimension 55 mm (without connecting plates)
MAXI	Grid dimension 66 mm (without connecting plates)

On-off valves HE, D series, metal design

Technical data

FESTO

Function



Flow rate

1,000 ... 6,500 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	–[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, 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	–

1) Without threaded connecting plates

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	1,000	1,500	1,600	2,600	3,200	3,600	3,800	5,600	6,000	6,500

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

On-off valves HE, D series, metal design

Technical data

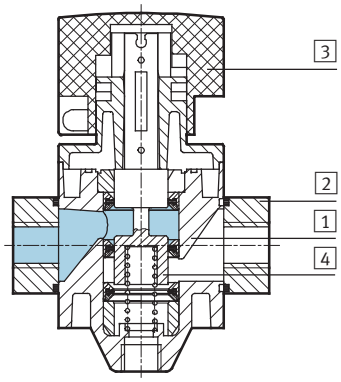
Operating and environmental conditions		
Operating pressure	[bar]	0 ... 16
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2
Certification		Germanischer Lloyd

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

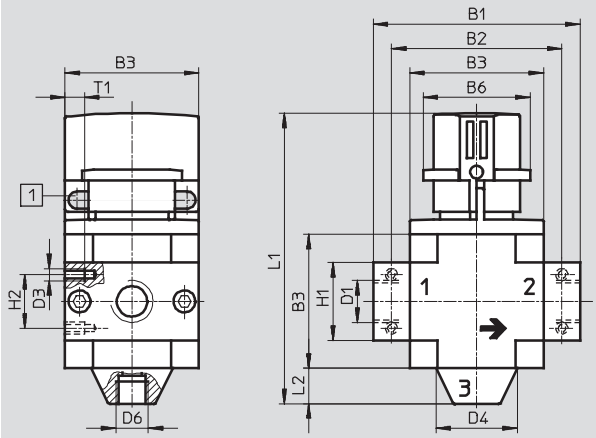
On-off valves HE, D series, metal design

Technical data

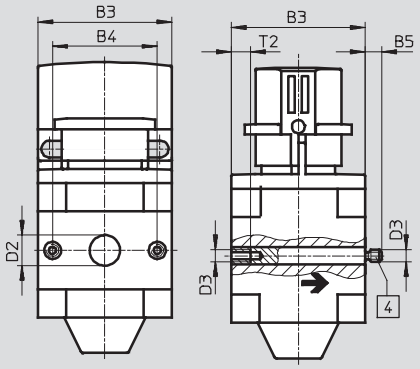
Dimensions Download CAD Data ➔ **www.festo.com/us/cad**

Mini/Midi/Maxi

With threaded connecting plates



Without threaded connecting plates



1 Hole for locking with padlock

4 Threaded pin (exchangeable)

➔ Flow direction

Type	B1	B2	B3	B4	B5	B6	D1	D2 ∅	D3	D4 ∅	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										
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

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**

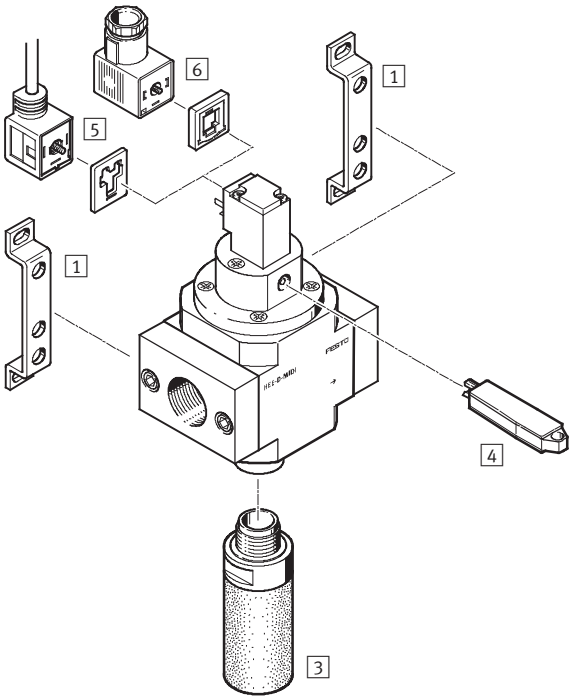
Ordering data			
3/2-way valve, operating pressure 0 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
With threaded connecting plates			
Mini	G1⁄8	**162806**	**HE-1⁄8-D-MINI**
	G1⁄4	**162807**	**HE-1⁄4-D-MINI**
	G3⁄8	**162808**	**HE-3⁄8-D-MINI**
Midi	G1⁄4	**186513**	**HE-1⁄4-D-MIDI**
	G3⁄8	**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

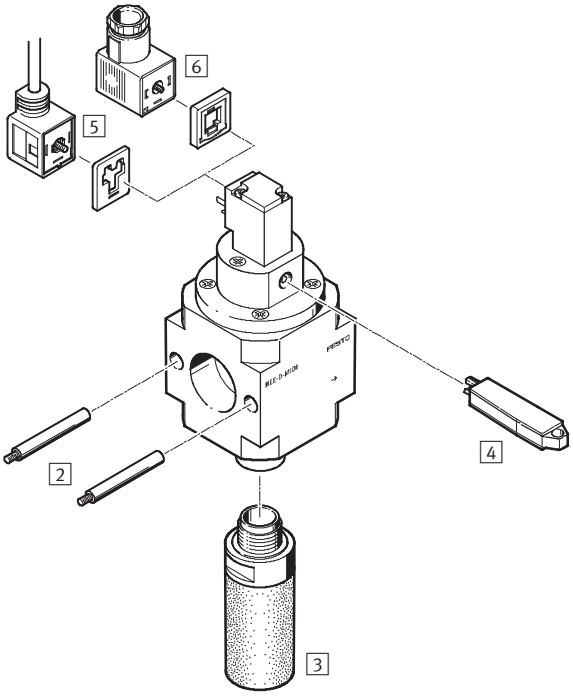
Peripherals overview

Mini/Midi/Maxi

Individual unit with connection plates



Individual unit without connection plates, for service unit combination

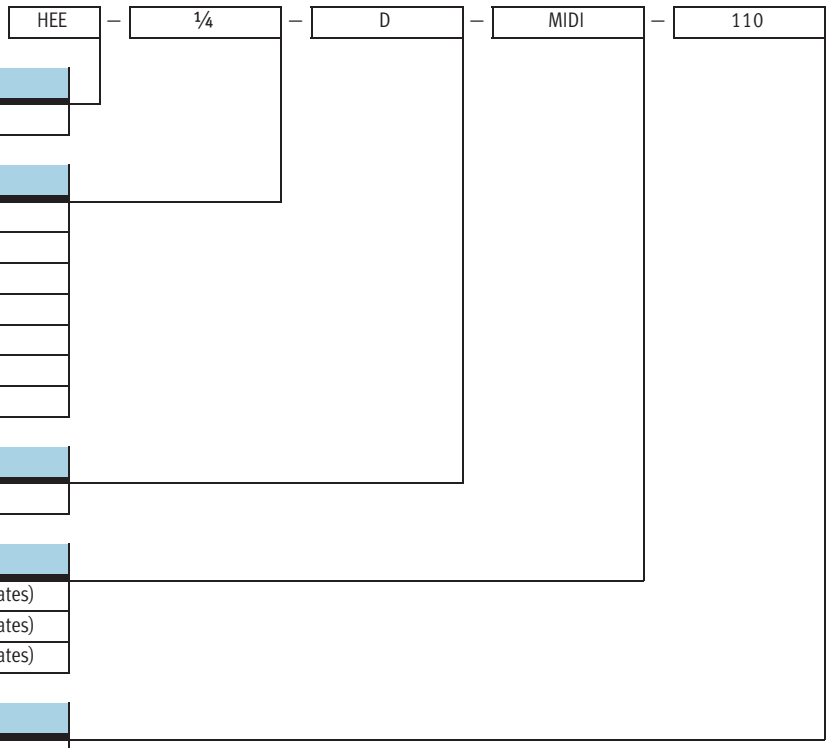


Mounting attachments and accessories

	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



Basic function	
HEE	On-off valve, electrical

Pneumatic connection	
	Without threaded connecting plates
⅛	Thread G⅛
¼	Thread G¼
⅜	Thread G⅜
½	Thread G½
¾	Thread G¾
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)

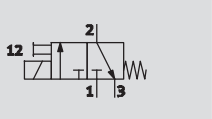
Voltage	
24	Supply voltage 24 V DC
110	Supply voltage 110 V AC
230	Supply voltage 230 V AC

On-off valves HEE, D series, metal design

Technical data

FESTO

Function



Flow rate
1,000 ... 6,500 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°

General technical data													
Size	Mini				Midi					Maxi			
Pneumatic connection 1, 2	G⅛	G¼	G⅜	–[1]	G¼	G⅜	G½	G¾	–[1]	G½	G¾	G1	–[1]
Pneumatic connection 3	G⅛				G¼					G⅜			
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%
	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

Technical data

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	1,000	1,500	1,600	2,600	3,200	3,600	3,800	5,600	6,000	6,500
In relief direction 2 → 3	1,000			2,000				3,000		

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

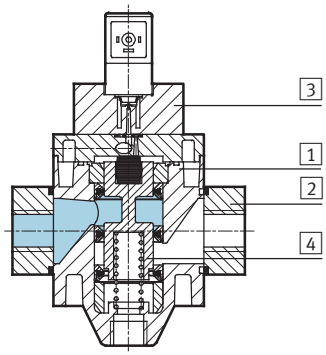
Operating and environmental conditions		
Operating pressure	[bar]	2.5 ... 16
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°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.

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

Materials

Sectional view



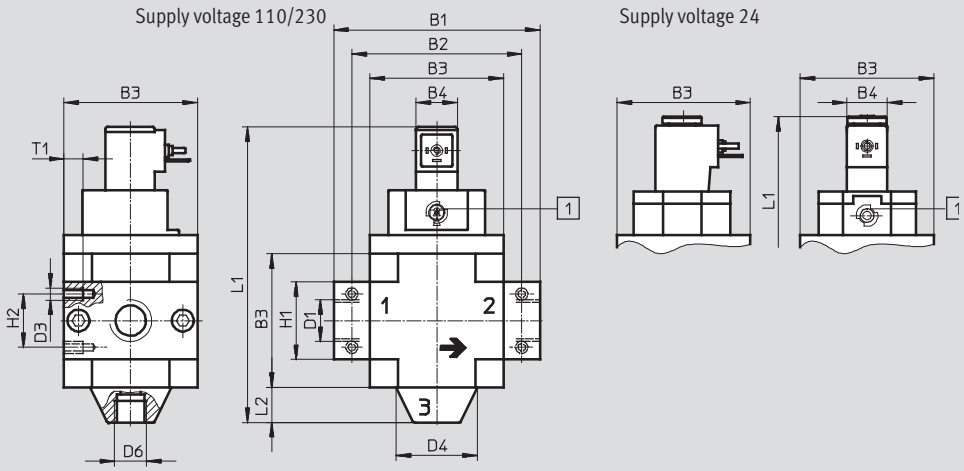
On-off valve		
1	Housing	Die-cast aluminium
2	Connecting plates	Wrought aluminium alloy
3	Solenoid and intermediate plate	Polyamide
4	Piston	Stainless steel
–	Seals	Nitrile rubber

On-off valves HEE, D series, metal design

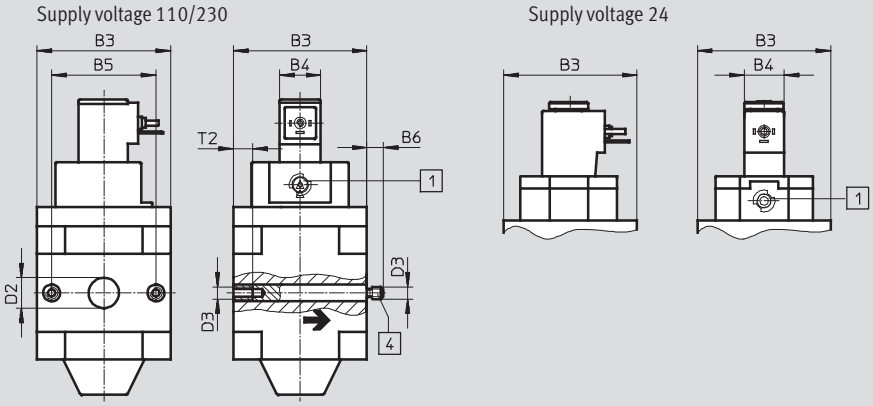
Technical data

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 ∅	D3	D4 ∅	D6	H1	H2	L1 24	L1 110/230	L2	T1	T2
Mini																		
HEE-⅛-D-MINI	64	52	40	17	30	–	G⅛	–	M4	24	G⅛	20	11	108	104	11	7	–
HEE-¼-D-MINI							G¼											
HEE-⅜-D-MINI	70						G⅜											
HEE-D-MINI	–	–				5.8	–	11				–	–				–	10
Midi																		
HEE-¼-D-MIDI	85	70	55	17	43	–	G¼	–	M5	34	G¼	32	22	126	122	14	8	–
HEE-⅜-D-MIDI							G⅜											
HEE-½-D-MIDI							G½											
HEE-¾-D-MIDI							G¾											
HEE-D-MIDI	–	–				6.8	–	24				–	–				–	11
Maxi																		
HEE-½-D-MAXI	96	80	66	17	46	–	G½	–	M5	38	G⅜	32	22	139	135	16	8	–
HEE-¾-D-MAXI							G¾											
HEE-1-D-MAXI	116	91					G1					40						
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

Technical data

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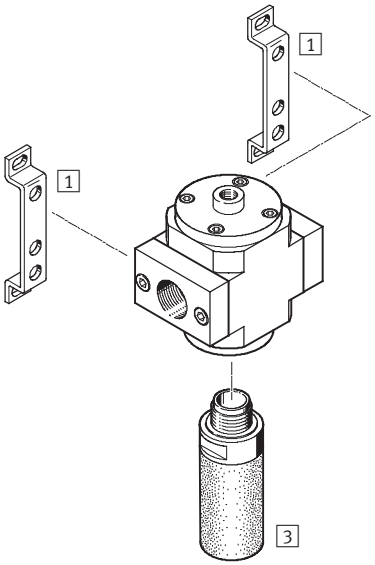
Ordering data								
3/2-way valve, operating pressure 2.5 ... 16 bar, normally closed								
Size	Connection	24 V DC			110 V AC		230 V AC	
		Part No.	Type		Part No.	Type	Part No.	Type
Without threaded connecting plates								
Mini		**172956**	**HEE-D-MINI-24**		**172957**	**HEE-D-MINI-110**	**172958**	**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**
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

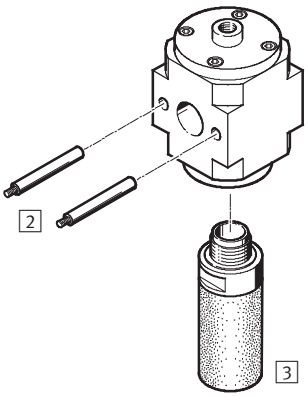
Peripherals overview and Type codes

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 – ¼ – D – MIDI

Basic function

HEP	On-off valve, pneumatic

Pneumatic connection

⅛	Thread G⅛
¼	Thread G¼
⅜	Thread G⅜
½	Thread G½
¾	Thread G¾
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

Technical data

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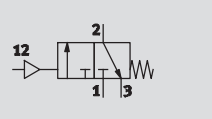
Function



Flow rate
800 ... 6,500 l/min

Temperature range
–10 ... +60 °C

Pressure
0 ... 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 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			
Pilot air connection 12	G1⁄8												
Design	Piston spool valve												
Type of mounting	Via accessories												
	In-line installation												
Assembly position	Any												
Valve function	3/2-way valve, single solenoid, closed												
Exhaust function	No flow control												
Type of actuation	Mechanical spring												
Direction of flow	Non-reversible												
Sealing principle	Soft												
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	–

1) Without threaded connecting plates

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	1,000	1,500	1,600	2,600	3,500	3,900	4,100	5,600	6,000	6,500
In relief direction 2 → 3	800			1,900				2,400		

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

On-off valves HEP, D series, metal design

Technical data

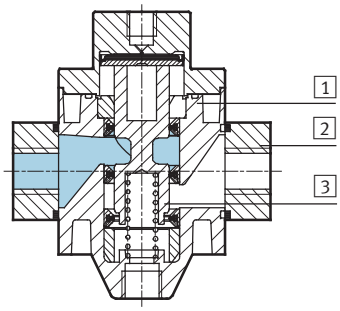
Operating and environmental conditions		
Operating pressure	[bar]	0 ... 16
Pilot pressure	[bar]	3 ... 16
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2
Certification		Germanischer Lloyd

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
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

On-off valves HEP, D series, metal design

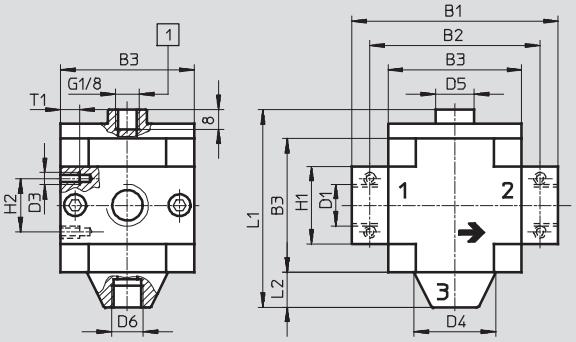
Technical data

FESTO

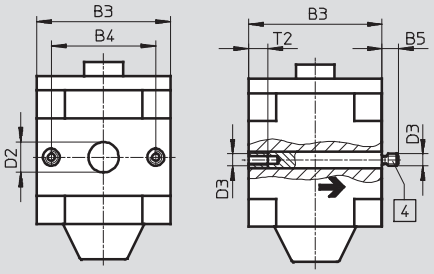
Dimensions Download CAD Data ➔ **www.festo.com/us/cad**

Mini/Midi/Maxi

With threaded connecting plates



Without threaded connecting plates



1 Threaded connection for pilot air (12)

4 Threaded pin (exchangeable)

➔ Flow direction

Type	B1	B2	B3	B4	B5	D1	D2 ∅	D3	D4 ∅	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	70					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

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**

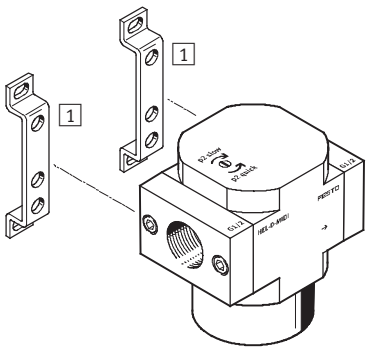
Ordering data			
Pneumatic actuation, 3/2-way valve, operating pressure 2 ... 16 bar, normally closed			
Size	Connection	Part No.	Type
With threaded connecting plates			
Mini	G1/8	**193243**	**HEP-1/8-D-MINI**
	G1/4	**193244**	**HEP-1/4-D-MINI**
	G3/8	**193245**	**HEP-3/8-D-MINI**
Midi	G1/4	**193250**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

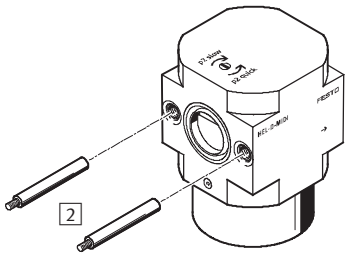
Peripherals overview and Type codes

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 – ¼ – D – MIDI

Basic function

HEL	Soft-start valve, gradual pressure build-up

Pneumatic connection

⅛	Thread G⅛
¼	Thread G¼
⅜	Thread G⅜
½	Thread G½
¾	Thread G¾
1	Thread G1

Series

D	Series

Size

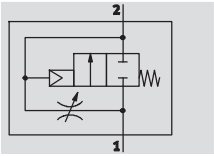
MINI	Grid dimension 40 mm (without connecting plates)
MIDI	Grid dimension 55 mm (without connecting plates)
MAXI	Grid dimension 66 mm (without connecting plates)

Soft-start valves HEL, D series, metal design

Technical data

FESTO

Function



Flow rate

1,000 ... 6,500 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	G⅛	G¼	G⅜	–[1]	G¼	G⅜	G½	G¾	–[1]	G½	G¾	G1	–[1]
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												
Sealing principle	Soft												
C value [l/(s*bar)]	4.5	7.1	7.6	–	9.0	16.5	19.8	20.5	–	26.9	33.9	28.3	–
b value	0.46	0.41	0.3	–	0.59	0.39	0.37	0.48	–	0.36	0.38	0.54	–

1) Without threaded connecting plates

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		
	G⅛	G¼	G⅜	G¼	G⅜	G½	G¾	G½	G¾	G1
In main flow direction 1 → 2	1,000	1,500	1,600	2,600	3,200	3,600	3,800	5,600	6,000	6,500

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

Soft-start valves HEL, D series, metal design

Technical data

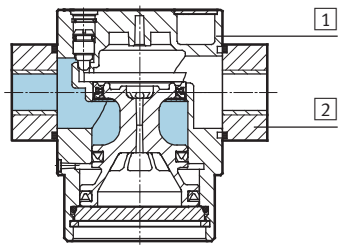
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	–10 ... +60
Temperature of medium	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2
Certification		Germanischer Lloyd

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	126	270	394

Materials

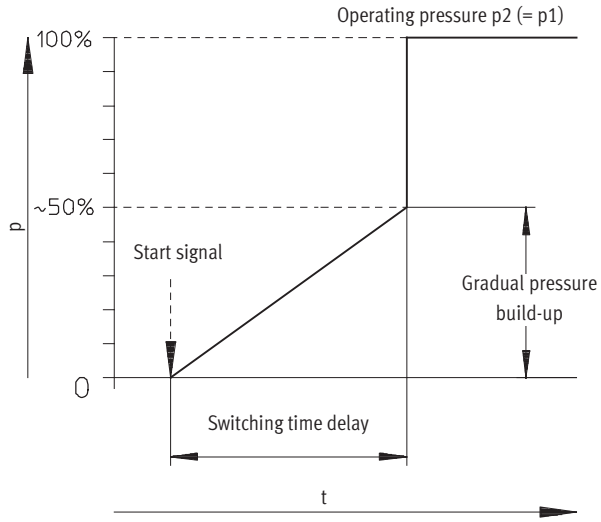
Sectional view



Soft-start valve		
1	Housing	Die-cast aluminium
2	Connecting plates	Wrought aluminium alloy
–	Seals	Nitrile rubber

Switching point

Pressure p as a function of time t



Soft-start valves HEL, D series, metal design

Technical data

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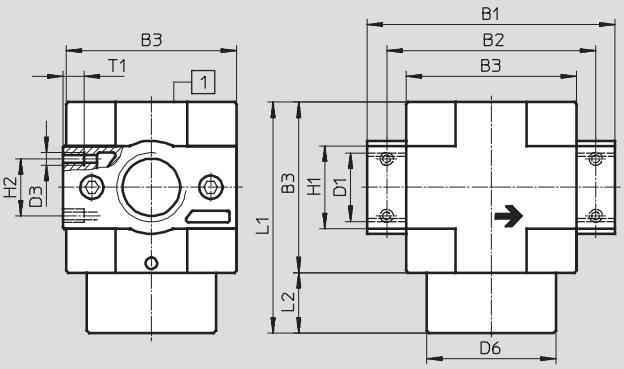
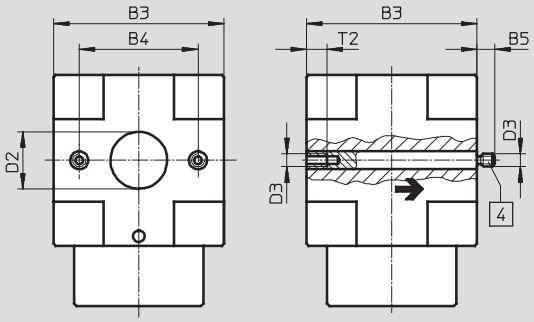
Dimensions Download CAD Data ➔ **www.festo.com/us/cad**

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
Mini															
HEL-1/8-D-MINI	64	52	40	30	–	G1/8	–	M4	30	20	11	56	16	7	–
HEL-1/4-D-MINI						G1/4									
HEL-3/8-D-MINI	70					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				40					
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

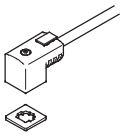
Technical data

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**

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**

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**

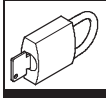
Ordering data – Illuminating seal MEB-LD — Technical data ➔ Internet: meb

	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 LRVS-D

	Weight [g]	Part No.	Type
	120	**193786**	**LRVS-D**

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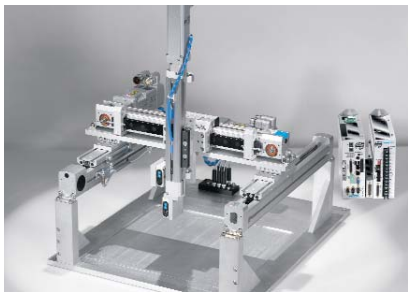

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