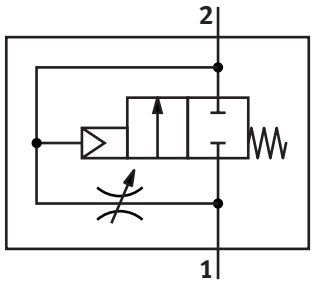
Soft-start valve HEL

Characteristics

At a glance



Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems (for use with on/off valves HE and HEE).
The duration of the pressure build-up is set using the flow restrictor attached to the valve cap.
The output pressure p2 rises slowly in accordance with the flow control position.The main seat opens when the switching pressure is reached.

- The drives move slowly and safely into the initial position
- Sudden and erratic movements are avoided
- Main seat opening at approx. 50% of the input pressure
- Adjustable switching time delay

Version

[D]	D series, metal

Sturdy in full metal design for the specific requirements of the process automation industry

Type code

001	Series	
HEL	Soft-start valve	

002	Pneumatic connection	
	None	
1/8	Female thread G1/8	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
3/4	Female thread G3/4	
1	Female thread G1	

003	Version	
D	D series, metal	

004	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)	

Datasheet

General technical data

Size	Grid dimension 40 mm (without connecting plates)	Grid dimension 55 mm (without connecting plates)	Grid dimension 66 mm (without connecting plates)
Pneumatic connection, port 1 [1]	G1/8, G1/4, G3/8, 1/4 NPT, 3/8 NPT	G1/4, G3/8, G1/2, G3/4, 3/8 NPT, 1/2 NPT, 3/4 NPT	G1/2, G3/4, G1, 3/4 NPT, 1 NPT
Pneumatic connection, port 2 [2]	G1/8, G1/4, G3/8, 1/4 NPT, 3/8 NPT	G1/4, G3/8, G1/2, G3/4, 3/8 NPT, 1/2 NPT, 3/4 NPT	G1/2, G3/4, G1, 3/4 NPT, 1 NPT
Design	Piston gate valve		
Type of actuation	Pneumatic		
Type of mounting	In-line installation With accessories		
Type of piloting	Direct		
Mounting position	optional		
Air purity class at output	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gases		
Valve function	2/2-way, closed, monostable		
Exhaust-air function	With flow control option		
Type of reset	Mechanical spring		
Manual override	None		
Sealing principle	Soft		
Flow direction	Non-reversible		

1) Via sub-base [AG...]: G1/8, G1/4 or G3/8; [AQ...]: 1/8 NPT, 1/4 NPT or 3/8 NPT
2) Via sub-base [AG...]: G1/8, G1/4 or G3/8; [AQ...]: 1/8 NPT, 1/4 NPT or 3/8 NPT

Characteristic flow rate

Size	Grid dimension 40 mm (without connecting plates)			Grid dimension 55 mm (without connecting plates)				Grid dimension 66 mm (without connecting plates)		
Pneumatic connection, port 1	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1
Standard nominal flow rate (standardised to DIN 1343)[1]	1,000 l/min	1,500 l/min	1,600 l/min	2,600 l/min	3,200 l/min	3,600 l/min	3,800 l/min	5,600 l/min	6,000 l/min	6,500 l/min
C value	4.5 l/sbar	7.1 l/sbar	7.6 l/sbar	9 l/sbar	16.5 l/sbar	19.8 l/sbar	20.5 l/sbar	26.9 l/sbar	33.9 l/sbar	28.3 l/sbar
b value	0.46	0.41	0.3	0.59	0.39	0.37	0.48	0.36	0.38	0.54

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar.

Characteristic flow rate – NPT thread (only for North America)

Size	Grid dimension 40 mm (without connecting plates)		Grid dimension 55 mm (without connecting plates)			Grid dimension 66 mm (without connecting plates)	
Pneumatic connection, port 1	1/4 NPT	3/8 NPT		1/2 NPT	3/4 NPT		1 NPT
Standard nominal flow rate (standardised to DIN 1343)[1]	1,500 l/min	1,600 l/min	3,200 l/min	3,600 l/min	3,800 l/min	6,000 l/min	6,500 l/min
C value	7.1 l/sbar	7.6 l/sbar	16.5 l/sbar	19.8 l/sbar	20.5 l/sbar	33.9 l/sbar	28.3 l/sbar
b value	0.41	0.3	0.39	0.37	0.48	0.38	0.54

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar.

Operating and environmental conditions

Operating pressure	0.3 ... 1.6 MPa
Operating pressure	3 ... 16 bar
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gases
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	-10 ... 60°C
Media temperature	-10 ... 60°C
Corrosion resistance class CRC [1]	2 - Moderate corrosion stress

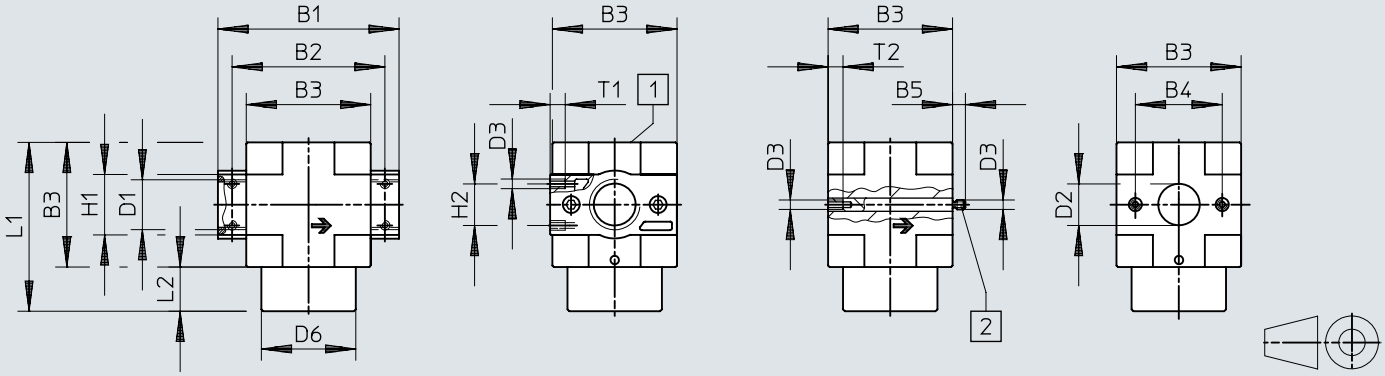
1) More information www.festo.com/x/topic/crc

Datasheet

Materials	
Material housing	Die-cast aluminium
Material seals	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Dimensions

Dimensions – With sub-bases with threaded connection, without sub-bases Download CAD data www.festo.com



[1] Adjusting screw in the housing
[2] Threaded bolt (exchangeable)

	B1	B2	B3	B4	B5	D1	D2 ø	D3	D6	H1	H2	L1	L2	T1	T2
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
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
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

1) Note: This product complies with ISO 1179-1 and ISO 228-1.

Ordering data

Ordering data – metric threads

Size	Pneumatic connection, port 1 [1]	Pneumatic connection, port 2 [2]	Product weight	Part no.	Type
Grid dimension 40 mm (without connecting plates)			126 g	**170690**	**HEL-D-MINI**
	G1/8	G1/8		**165076**	**HEL-1/8-D-MINI**
	G1/4	G1/4		**165077**	**HEL-1/4-D-MINI**
	G3/8	G3/8		**165078**	**HEL-3/8-D-MINI**
Grid dimension 55 mm (without connecting plates)			270 g	**170691**	**HEL-D-MIDI**
	G1/4	G1/4		**186521**	**HEL-1/4-D-MIDI**
	G3/8	G3/8		**165079**	**HEL-3/8-D-MIDI**
	G1/2	G1/2		**165080**	**HEL-1/2-D-MIDI**
	G3/4	G3/4		**165081**	**HEL-3/4-D-MIDI**
Grid dimension 66 mm (without connecting plates)			394 g	**170692**	**HEL-D-MAXI**
	G1/2	G1/2		**186522**	**HEL-1/2-D-MAXI**
	G3/4	G3/4		**165082**	**HEL-3/4-D-MAXI**
	G1	G1		**165083**	**HEL-1-D-MAXI**

1) Connecting plates

2) Connecting plates

Ordering data – NPT thread (only for North America)

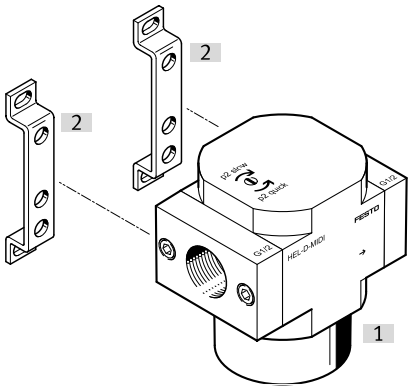
Size	Pneumatic connection, port 1 [1]	Pneumatic connection, port 2 [2]	Product weight	Part no.	Type
Grid dimension 40 mm (without connecting plates)	1/4 NPT	1/4 NPT	126 g	**173917**	**HEL-1/4-D-MINI-NPT**
	3/8 NPT	3/8 NPT		**173918**	**HEL-3/8-D-MINI-NPT**
Grid dimension 55 mm (without connecting plates)			270 g	**173919**	**HEL-3/8-D-MIDI-NPT**
	1/2 NPT	1/2 NPT		**173920**	**HEL-1/2-D-MIDI-NPT**
	3/4 NPT	3/4 NPT		**173921**	**HEL-3/4-D-MIDI-NPT**
Grid dimension 66 mm (without connecting plates)			394 g	**173922**	**HEL-3/4-D-MAXI-NPT**
	1 NPT	1 NPT		**173923**	**HEL-1-D-MAXI-NPT**

1) Connecting plates

2) Connecting plates

Peripherals

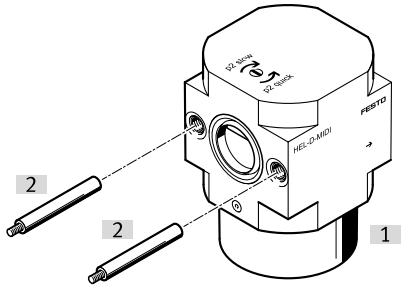
Individual unit with connecting plates



Accessories			→ Link
	Type/order code	Description	
[1]	Soft-start valve HEL		hel-d
[2]	Mounting bracket HFOE		10

Peripherals

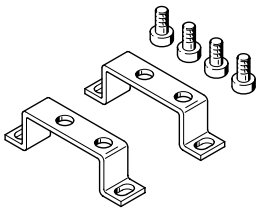
Individual unit without connecting plates, for service unit combination



Accessories			→ Link
	Type/order code	Description	
[1]	Soft-start valve HEL		hel-d
[2]	Threaded bolt FRB	Included in the scope of delivery	10

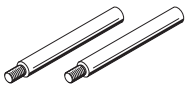
Accessories

Mounting bracket HFOE

	Corrosion resistance class CRC [1]	LABS (PWIS) conformity	Product weight	Part no.	Type
	2 - Moderate corrosion stress	VDMA24364-B2-L	66 g	**159593**	**HFOE-D-MIDI/MAXI**
		VDMA24364-B1/B2-L		**159638**	**HFOE-D-MINI**

1) More information www.festo.com/x/topic/crc

Threaded bolt FRB

	Size	Part no.	Type
	Grid dimension 40 mm (without sub-bases)	**159642**	**FRB-D-MINI**
	Grid dimension 55 mm (without sub-bases)	**159595**	**FRB-D-MIDI**
	Grid dimension 66 mm (without sub-bases)	**159643**	**FRB-D-MAXI**