

# One-way flow control valves and functional combinations

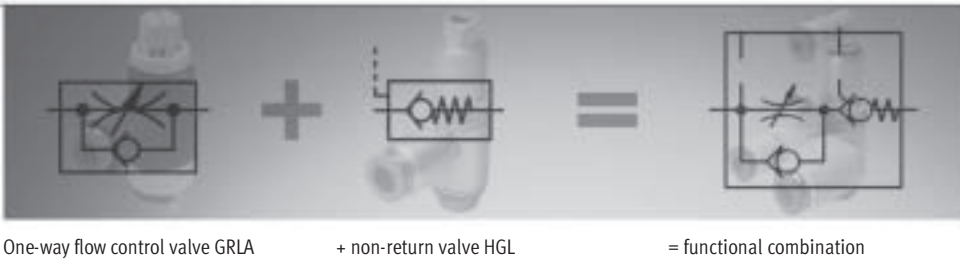


Precise flow adjustment,  
control or blocking

## Precise flow adjustment, control or blocking

### One-way flow control valves and functional combinations

With or without throttle function – piloted non-return valves block air flow consistently and completely in one direction. The blocked connection is opened by means of a pneumatic control signal. The additional throttle function creates a functional combination. This permits infinite adjustment of the piston speed.



### Functional combinations ...

... control the piston speed of a drive by throttling the exhaust air. In one direction, the exhaust air can be regulated, whilst in the opposite direction it can flow through unhindered. As long as the control signal is present, compressed air will flow freely through the valve from or to the cylinder. If the control signal is cancelled, the valve blocks the compressed air, thus allowing the cylinder to be briefly stopped.

### Non-return valves (piloted)

#### HGL/HGL-...-QS-...

The piloted non-return valve has a blocking function. Flow passes through the valve in one direction,

whilst in the opposite direction flow is blocked. This blocking can be cancelled via a pneumatic signal. These valves are used as a stop function to “block” any sagging occurring due to a load on a cylinder’s piston rod.

### Functional combination with GRXA-HG-...-QS-... (piloted one-way flow control valve)

Speed regulation with additional function for brief intermediate stop included: Functional combination with GRXA-HG-...-QS-...

When the pneumatic control signal drops, the valve blocks the exhaust air of the drive, thus preventing undesired movement of the piston rod.



**1 Non-return valves (piloted)**

**HGL/HGL-...-QS-... are characterised by:**

- Compact and sturdy design
- Minimal installation effort (QS fitting)
- Flexible tubing outlet
- Tubing connection rotatable 360° after installation
- Long service life


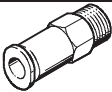
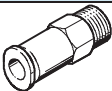
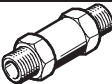
**2 Functional combination**

**GRXA-HG-...-QS-... (piloted one-way flow control valve) is characterised by:**

- Space savings: one product with two functions
- Time savings: complete solution
- Cost savings: fast installation and commissioning
- High flexibility: tubing connection rotatable 360° after installation

# Non-return valves

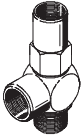
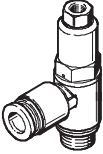
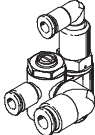

Product range overview

Function	Version	Type	Description	Port 1 Thread	Port 2 for tubing $\varnothing$ [mm]					Free of copper and PTFE	→ Page
					4	6	8	10	12		
Non-return valves	QS push-in connector <sup>1)</sup> at both ends										
		H	–	–	■	■	■	■	■	■	8
	With connecting thread and QS push-in connector <sup>1)</sup>										
	Flow direction: thread $\rightarrow$ push-in connector										
		HA	With thread and sealing ring and QS push-in connector	M5	■	–	–	–	–	–	8
	With PTFE-coated thread and QS push-in connector		R $\frac{1}{8}$	■	■	■	–	–	–		
			R $\frac{1}{4}$	–	■	■	–	–	–		
			R $\frac{3}{8}$	–	–	–	■	■	–		
				R $\frac{1}{2}$	–	–	–	–	■	–	
	Flow direction: push-in connector $\rightarrow$ thread										
	HB	With thread and sealing ring and QS push-in connector	M5	■	–	–	–	–	–	8	
With PTFE-coated thread and QS push-in connector		R $\frac{1}{8}$	■	■	■	–	–	–			
		R $\frac{1}{4}$	–	■	■	–	–	–			
		R $\frac{3}{8}$	–	–	–	■	■	–			
			R $\frac{1}{2}$	–	–	–	–	■	–		
Connecting thread at both ends											
	H	With thread and sealing rings	M5 <sup>2)</sup>	–					–	11	
			G $\frac{1}{8}$ <sup>3)</sup>	–					–		
			G $\frac{1}{4}$ <sup>4)</sup>	–					–		
			G $\frac{3}{8}$ <sup>4)</sup>	–					–		
			G $\frac{1}{2}$ <sup>4)</sup>	–					–		
			G $\frac{3}{4}$ <sup>4)</sup>	–					–		

- 1) For standard O.D. plastic tubing
- 2) 2 female thread
- 3) 1 male thread, 1 female thread
- 4) 2 male thread

## Non-return valves

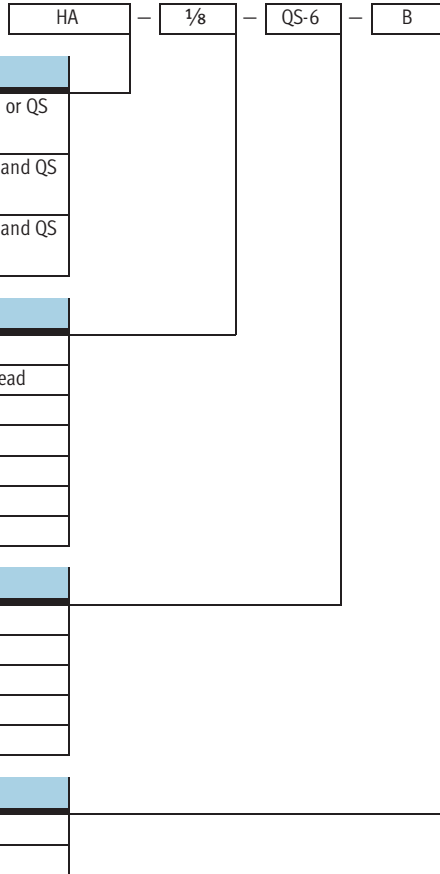
Product range overview

Function	Version	Type	Description	Port 1	Port 2					→ Page
				Thread	for tubing $\varnothing$ [mm]					
					4	6	8	10	12	
Non-return valves, piloted		HGL-B	With thread and sealing ring	M5	-					14
				G $\frac{1}{8}$						
				G $\frac{1}{4}$						
				G $\frac{3}{8}$						
				G $\frac{1}{2}$						
		HGL-QS	With thread, sealing ring and QS push-in connector	M5	■	-	-	-	-	17
				G $\frac{1}{8}$	■	■	-	-	-	
				G $\frac{1}{4}$	-	-	■	■	-	
				G $\frac{3}{8}$	-	-	■	■	-	
				G $\frac{1}{2}$	-	-	-	-	■	
Functional combination with one-way flow control function and piloted non-return valve.		GRXA-HG	With thread, sealing ring and QS push-in connector	G $\frac{1}{8}$	■	■	-	-	19	
				G $\frac{1}{4}$	-	■	■	-		-
Manual override for exhaust air		HAB	With thread	G $\frac{1}{8}$	-					23
				G $\frac{1}{4}$						
				G $\frac{3}{8}$						
				G $\frac{1}{2}$						

# Non-return valves

Type codes

## Type codes – Non-return valves



Type	
H	Non-return valve, with connecting thread or QS push-in connector at both ends
HA	Non-return valve with connecting thread and QS push-in connector
HB	Non-return valve with connecting thread and QS push-in connector

Screw-in and connecting thread	
M5	Thread M5
1/8-A/I	Thread G1/8, 1 male thread, 1 female thread
1/8	Thread G1/8 and/or R1/8
1/4	Thread G1/4 and/or R1/4
3/8	Thread G3/8 and/or R3/8
1/2	Thread G1/2 and/or R1/2
3/4	Thread G3/4 and/or R3/4

Push-in connector	
QS-4	4 mm
QS-6	6 mm
QS-8	8 mm
QS-10	10 mm
QS-12	12 mm

Generation	
	A series
B	B series

# Non-return valves

Type codes

## Type codes – Piloted non-return valves, threaded connection

		HGL	–	3/8	–	B
<b>Type</b>						
HGL	Non-return valve, piloted					
<b>Screw-in and connecting thread</b>						
M5	Metric thread M5					
1/8	G1/8 thread					
1/8÷1/8	G1/8 thread, pilot port G1/8					
1/4	G1/4 thread					
3/8	G3/8 thread					
1/2	G1/2 thread					
<b>Generation</b>						
B	B series					

## Type codes – Piloted non-return valves, QS connection

		HGL	–	3/8	–	QS-8
<b>Type</b>						
HGL	Non-return valve, piloted					
<b>Screw-in and connecting thread</b>						
M5	Metric thread M5					
1/8	G1/8 thread					
1/4	G1/4 thread					
3/8	G3/8 thread					
1/2	G1/2 thread					
<b>Push-in connector</b>						
QS-4	4 mm					
QS-6	6 mm					
QS-8	8 mm					
QS-10	10 mm					
QS-12	12 mm					

## Type code – Functional combination with one-way flow control valve and piloted non-return valve

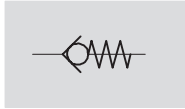
		GRXA-HG	–	1/4	–	QS-6
<b>Type</b>						
GRXA-HG	GRXA: One-way flow control valve HG: Non-return valve, piloted					
<b>Screw-in and connecting thread</b>						
1/8	G1/8 thread					
1/4	G1/4 thread					
<b>Push-in connector</b>						
QS-4	4 mm					
QS-6	6 mm					
QS-8	8 mm					

# Non-return valves H-QS/HA/HB

Technical data



Function



- Non-return valves without pneumatic pilot signal
- QS push-in connector at one or both ends

Flow rate  
140 ... 1720 l/min



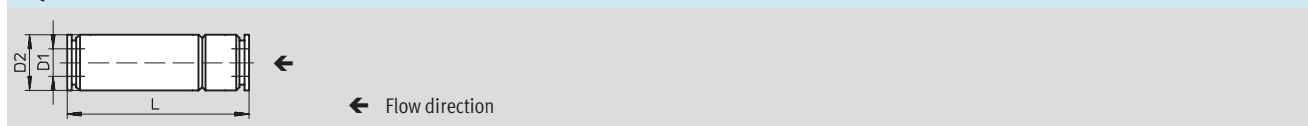
General technical data		
Valve function		Non-return function
Type of mounting	QS push-in connector, both ends	In-line installation
	QS push-in connector, one end	Can be screwed in

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated.
Ambient temperature	0 ... +60 °C
Temperature of medium	0 ... +60 °C

Materials		
Housing	QS push-in connector, both ends	Aluminium, black anodized; Brass, nickel-plated
	QS push-in connector, one end	Brass, nickel-plated
Seals		Nitrile rubber
Material note		Free of copper and PTFE → Ordering data

Technical data – QS push-in connector at both ends						
Tubing O.D.	[mm]	4	6	8	10	12
Nominal size	[mm]	3.2	5	7	8.5	11
Standard nominal flow rate	[l/min]	140	280	680	1,480	1,720
Weight	[g]	5	10	20	62	68
Operating pressure	[bar]	-1 ... +10				

Dimensions – QS push-in connector, both ends Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



Tubing O.D. D1	D2 ∅	L
4	9	34.8
6	12	38.8
8	15	54.9
10	25	73.4
12	25	78.6

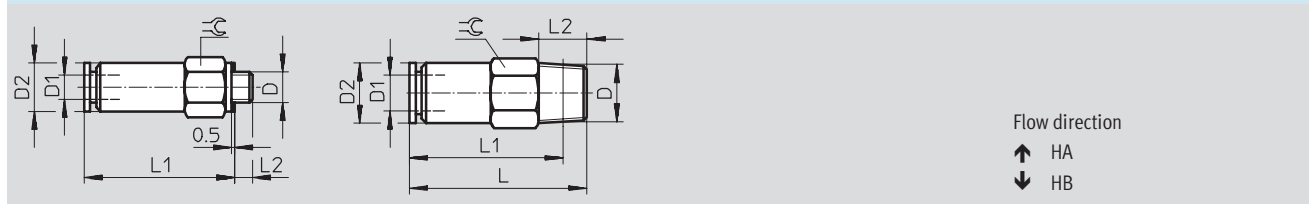


# Non-return valves H-QS/HA/HB

Technical data

Technical data – Connecting thread and QS push-in connector									
Connecting thread	M5	R1/8			R1/4		R3/8		R1/2
Tubing O.D. [mm]	4	4	6	8	6	8	10	12	12
Nominal size [mm]	2.4	3.2	5	5	5	7	8.5	11	11
Standard nominal flow rate [l/min]	150	140	310	330	300	670	1,740	1,880	2,230
Weight [g]	7.2	9.5	9.5	20	20	22	46	49	68.5
Operating pressure [bar]	-0.75 ... +10								

**Dimensions – Connecting thread and QS push-in connector** Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

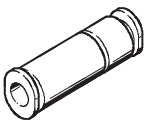
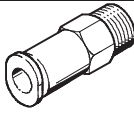
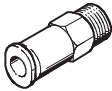


Connecting thread D	Tubing O.D. D1	D2 Ø	L	L1	L2	⊕
M5	4	8	–	25.4	3	8
R1/8	4	9	24.5	20.5	8	10
	6	10	29.5	25.3	8	10
	8	13.5	35.5	31.5	8	14
R1/4	6	12	29.3	23.3	11	14
	8	13.5	39.2	33.2	11	14
R3/8	10	25	61.7	55.4	12	24
	12	25	64.3	58	12	24
R1/2	12	28	70.8	62.6	15	27

# Non-return valves H-QS/HA/HB

Technical data

**FESTO**

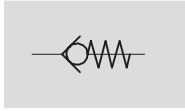
Ordering data							
	Description	Connecting thread	For tubing O.D. [mm]	Part No.	Type		
<b>Non-return valves with QS push-in connector for standard O.D. plastic tubing</b>							
	QS push-in connector, both ends	-	4	153 462	H-QS-4 <sup>1)</sup>		
			6	153 463	H-QS-6 <sup>1)</sup>		
			8	153 464	H-QS-8 <sup>1)</sup>		
			10	153 465	H-QS-10 <sup>1)</sup>		
			12	153 466	H-QS-12 <sup>1)</sup>		
Flow direction: thread → push-in connector							
	With metric thread and sealing ring and QS push-in connector	M5	4	153 444	HA-M5-QS-4		
			With PTFE-coated pipe thread and QS push-in connector	R1/8	4	153 446	HA-1/8-QS-4
					6	153 448	HA-1/8-QS-6
	8	153 452			HA-1/8-QS-8		
		R1/4	6	153 450	HA-1/4-QS-6		
			8	153 454	HA-1/4-QS-8		
			R3/8	10	153 456	HA-3/8-QS-10	
			12	153 458	HA-3/8-QS-12		
			R1/2	12	153 460	HA-1/2-QS-12	
Flow direction: push-in connector → thread							
	With metric thread and sealing ring and QS push-in connector	M5	4	153 445	HB-M5-QS-4		
			With PTFE-coated pipe thread and QS push-in connector	R1/8	4	153 447	HB-1/8-QS-4
					6	153 449	HB-1/8-QS-6
	8	153 453			HB-1/8-QS-8		
		R1/4	6	153 451	HB-1/4-QS-6		
			8	153 455	HB-1/4-QS-8		
			R3/8	10	153 457	HB-3/8-QS-10	
			12	153 459	HB-3/8-QS-12		
			R1/2	12	153 461	HB-1/2-QS-12	

1) Free of copper and PTFE

# Non-return valves H

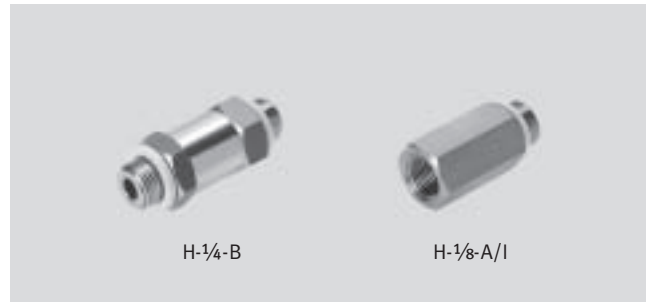
Technical data

Function



Flow rate  
140 ... 5,500 l/min

- Non-return valves without pneumatic pilot signal
- Connecting thread at both ends

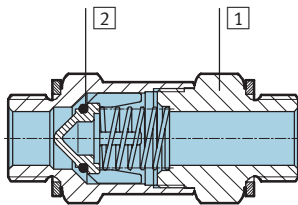


General technical data	
Valve function	Non-return function
Type of mounting	Can be screwed in

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated.
Ambient temperature	-10 ... +60 °C
Temperature of medium	-10 ... +60 °C

## Materials

Sectional view



Non-return valve		
1	Housing	Brass
2	Seals	Nitrile rubber

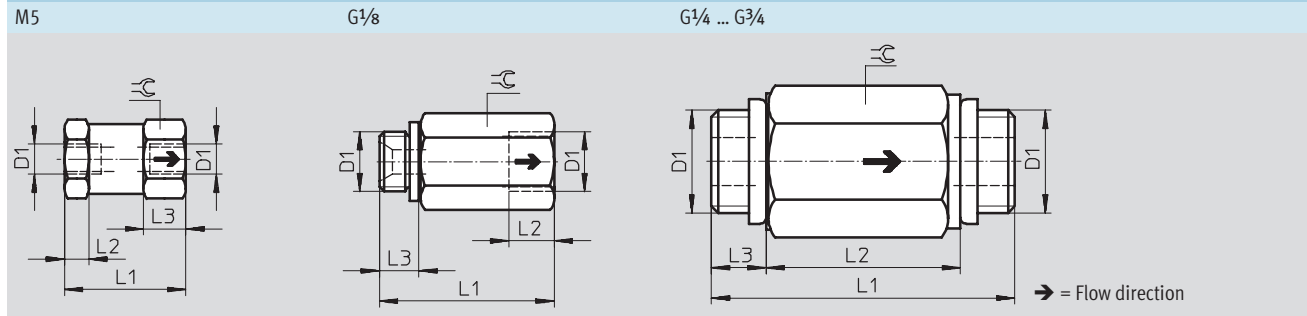
# Non-return valves H

Technical data



Technical data – Connecting thread at both ends						
Connecting thread	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$
Nominal size [mm]	2.2	4	6	8	13	16
Standard nominal flow rate [l/min]	140	280	850	1,650	4,600	5,500
Weight [g]	15	25	70	75	150	425
Operating pressure [bar]	0.4 ... 8		0.4 ... 12			

## Dimensions – Connecting thread at both ends Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)



Connecting thread D1	L1	L2	L3	≡
M5	20	4	7	11
G $\frac{1}{8}$	28.5	7.5	6.5	14
G $\frac{1}{4}$	48	32	8	19
G $\frac{3}{8}$	50	32	9	22
G $\frac{1}{2}$	65	44	10.5	27
G $\frac{3}{4}$	74	50	12	32

## Ordering data

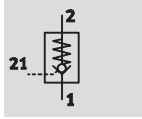
	Description	Connecting thread	For tubing O.D. [mm]	Part No.	Type
<b>Non-return valves, with connecting thread at both ends</b>					
	Metric thread at both ends and 2 sealing rings	M5 <sup>1)</sup>	–	<b>3 671</b>	<b>H-M5</b>
	With pipe thread at both ends and 2 sealing rings	G $\frac{1}{8}$ <sup>2)</sup>	–	<b>3 324</b>	<b>H-<math>\frac{1}{8}</math>-A/I</b>
		G $\frac{1}{4}$ <sup>3)</sup>	–	<b>11 689</b>	<b>H-<math>\frac{1}{4}</math>-B</b>
		G $\frac{3}{8}$ <sup>3)</sup>	–	<b>11 690</b>	<b>H-<math>\frac{3}{8}</math>-B</b>
		G $\frac{1}{2}$ <sup>3)</sup>	–	<b>11 691</b>	<b>H-<math>\frac{1}{2}</math>-B</b>
		G $\frac{3}{4}$ <sup>3)</sup>	–	<b>11 692</b>	<b>H-<math>\frac{3}{4}</math>-B</b>

- 1) 2 female threads
- 2) 1 male thread, 1 female thread
- 3) 2 male threads

## Non-return valves HGL-B, piloted

Technical data

Function



■ Pneumatic piloted non-return valve



Flow rate  
130 ... 1,600 l/min

General technical data							
Pneumatic connection	M5	G1/8	G1/8	G1/4	G3/8	G1/2	
Valve function	Piloted non-return function						
Type of mounting	Screw in via male thread						
Max. tightening torque [Nm]	1.5	5.5	5.5	11	20	40	
Actuation type	Pneumatic						
Pilot air connection 21	M5	M5	G1/8	G1/8	G1/4	G3/8	
Standard nominal flow rate 1 → 2 [l/min]	130	300	300	550	1,100	1,600	
Weight [g]	21	20.8	26.2	41.2	62.9	129.4	

Operating and environmental conditions							
Pneumatic connection	M5	G1/8	G1/8	G1/4	G3/8	G1/2	
Operating medium	Dried air, lubricated or unlubricated						
Operating pressure [bar]	0.5 ... 10						
Pilot pressure [bar]	2 ... 10					1 ... 10	
Storage temperature [°C]	-10 ... +60						
Ambient temperature [°C]	-10 ... +60						
Temperature of medium [°C]	-10 ... +60						
Corrosion resistance class CRC	2 <sup>1)</sup>						

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.

Note

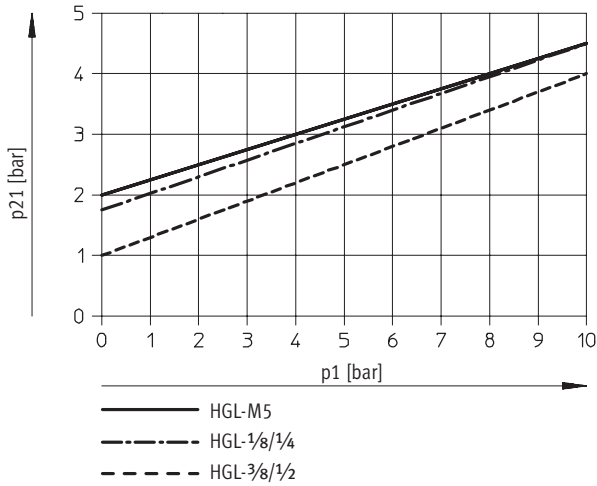
In safety-relevant applications the HGL product family and all of its design variants must ONLY be used in combination with additional measures according to EN 954-1.

A supplementary risk analysis by the user/designer is essential. The instructions and notices on the enclosed product leaflets must be observed.

## Non-return valves HGL-B, piloted

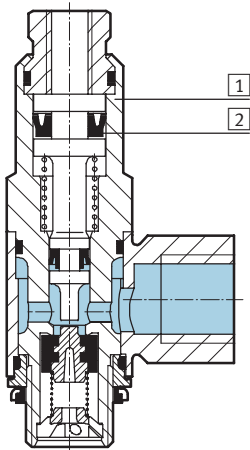
Technical data

### Minimum pilot pressure as a function of operating pressure



### Materials

Sectional view

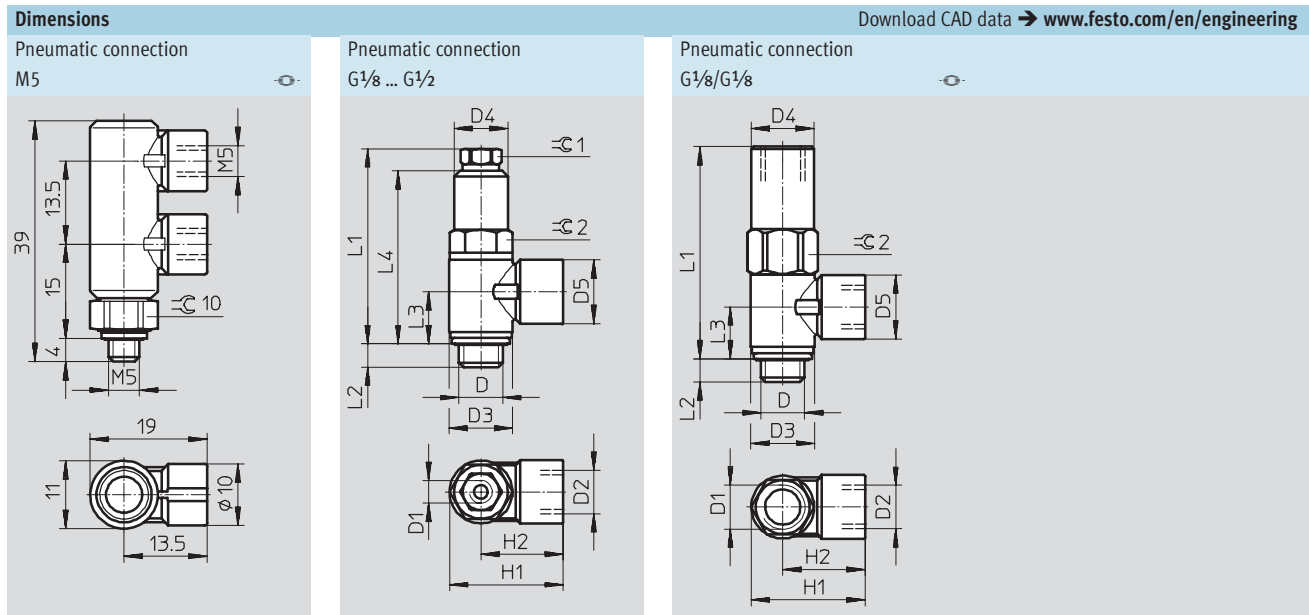


#### Non-return valve, piloted

1	Body	Die-cast zinc
2	Seals	Nitrile rubber
-		Free of copper and PTFE

## Non-return valves HGL-B, piloted

Technical data



Pneumatic connection D	D1	D2	D3 Ø	D4 Ø	D5 Ø	H1	H2	L1	L2	L3	L4	≈ 1	≈ 2
G1/8	M5	G1/8	14	11.8	14	25.1	18.1	42.6	5.4	11.2	37.8	8	12
G1/8	G1/8	G1/8	14	13.8	14	25.1	18.1	46.7	5.2	11.2	-	-	14
G1/4	G1/8	G1/4	18	16	17.5	34	25	50.8	6.5	13.5	44.6	12	16
G3/8	G1/4	G3/8	23.8	18.8	20	39.3	27.4	56.3	7	15.1	49.6	15	19
G1/2	G3/8	G1/2	30	23.5	25	47.8	32.8	75.8	8.8	17.7	66.2	22	24

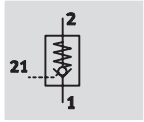
**Ordering data**

Non-return valve, piloted	Pneumatic connection	Pilot port	Part No.	Type
	M5	M5	530 029	HGL-M5-B
	G1/8	M5	530 030	HGL-1/8-B
	G1/8	G1/8	543 253	HGL-1/8-1/8-B
	G1/4	G1/8	530 031	HGL-1/4-B
	G3/8	G1/4	530 032	HGL-3/8-B
	G1/2	G3/8	530 033	HGL-1/2-B

## Non-return valves HGL-QS, piloted

Technical data

Function



■ Pneumatic piloted non-return valve

Flow rate  
130 ... 1,600l/min



General technical data						
Pneumatic connection 2	M5		G 1/8	G 1/4	G 3/8	G 1/2
Valve function	Piloted non-return function					
Type of mounting	Screw in via male thread					
Max. tightening torque [Nm]	1.5	5.5	11	20	40	
Actuation type	Pneumatic					
Pneumatic connection 1 for tubing O.D. [mm]	4	4, 6	8, 10	8, 10	12	
Pilot air connection 21	M5	M5	G 1/8	G 1/4	G 3/8	
Standard nominal flow rate 1 → 2 [l/min]	130	300	550	1,100	1,600	
Weight [g]	21	18.4/21.4	38.7/45	54.7/60.3	116.9	

Operating and environmental conditions						
Pneumatic connection	M5		G 1/8	G 1/4	G 3/8	G 1/2
Operating medium	Dried air, lubricated or unlubricated					
Operating pressure [bar]	0.5 ... 10					
Pilot pressure [bar]	2 ... 10				1 ... 10	
Storage temperature [°C]	-10 ... +60					
Ambient temperature [°C]	-10 ... +60					
Temperature of medium [°C]	-10 ... +60					
Corrosion resistance class	CRC	2 <sup>1)</sup>				

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.

- Note

In safety-relevant applications the HGL product family and all of its design variants must ONLY be used in combination with additional measures according to EN 954-1.

A supplementary risk analysis by the user/designer is essential. The instructions and notices on the enclosed product leaflets must be observed.

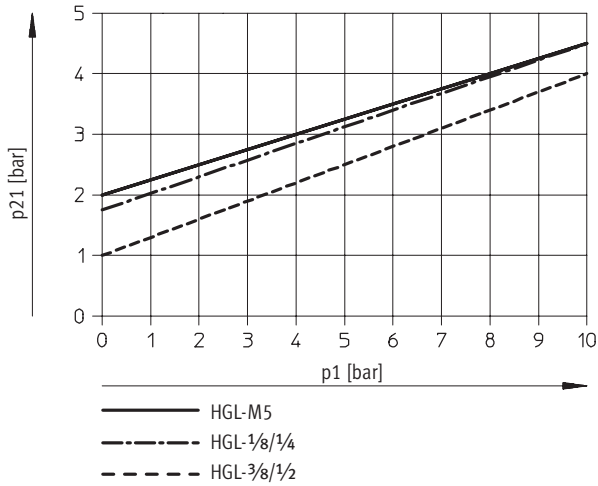


## Non-return valves HGL-QS, piloted

Technical data

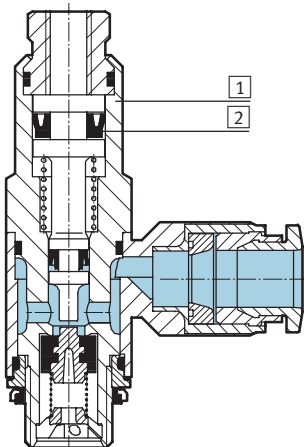
**FESTO**

### Minimum pilot pressure as a function of operating pressure



### Materials

Sectional view



#### Non-return valve, piloted

1	Body	Die-cast zinc
2	Seals	Nitrile rubber
-		Free of copper and PTFE

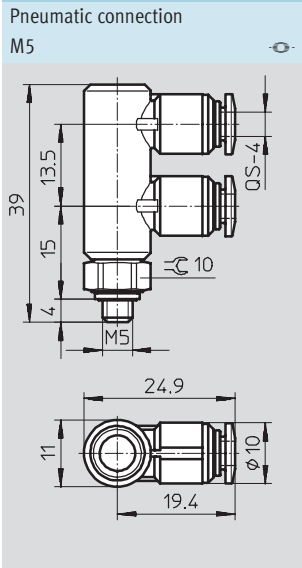
**New**  
**HGL-M5-QS4**

**Non-return valves HGL-QS, piloted**

Technical data

**FESTO**

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



Pneumatic connection D	D1	D2	D3 Ø	D4 Ø	D5 Ø	H1	H2	L1	L2	L3	L4	≈C 1	≈C 2
G $\frac{1}{8}$	M5	QS-4	13.8	11.8	10.2	29.4	22.5	42.6	5.4	13.9	37.8	8	12
		QS-6			12.5	32.6	25.7			13.2			
G $\frac{1}{4}$	G $\frac{1}{8}$	QS-8	17.8	16	14.5	39.6	30.7	50.8	6.5	16.6	44.6	12	16
		QS-10			17.5	42	33.1			15.5			
G $\frac{3}{8}$	G $\frac{1}{4}$	QS-8	22.4	18.8	14.5	44.1	32.9	56.3	7	18.2	49.6	15	19
		QS-10			17.5	46.7	35.5			18.2			
G $\frac{1}{2}$	G $\frac{3}{8}$	QS-12	27.8	23.5	20.5	55.3	41.4	75.8	8.8	22.4	66.2	22	24

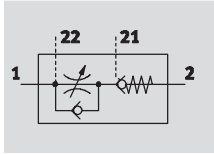
**Ordering data**

Non-return valve, piloted	Pneumatic connection	For tubing O.D.	Pilot port	Part No.	Type
		[mm]			
	M5	4	M5	530 038	HGL-M5-QS4
	G $\frac{1}{8}$	4	M5	530 039	HGL- $\frac{1}{8}$ -QS-4
	G $\frac{1}{8}$	6	M5	530 040	HGL- $\frac{1}{8}$ -QS-6
	G $\frac{1}{4}$	8	G $\frac{1}{8}$	530 041	HGL- $\frac{1}{4}$ -QS-8
	G $\frac{1}{4}$	10	G $\frac{1}{8}$	530 042	HGL- $\frac{1}{4}$ -QS-10
	G $\frac{3}{8}$	8	G $\frac{1}{4}$	530 043	HGL- $\frac{3}{8}$ -QS-8
	G $\frac{3}{8}$	10	G $\frac{1}{4}$	530 044	HGL- $\frac{3}{8}$ -QS-10
	G $\frac{1}{2}$	12	G $\frac{3}{8}$	530 045	HGL- $\frac{1}{2}$ -QS-12

# Functional combination GRXA-HG

Data sheet

Function



Functional combination with one-way flow control valve and piloted non-return valve


- Holding function and speed setting in one housing
- QS push-in fittings
- Adjustment via slotted head screw
- Additional pilot port 1 for interlinking with a second unit at port 21



General technical data		
Screw-in thread	G1/8	G1/4
Valve function	One-way flow control function for exhaust air and additional piloted non-return valve	
Setting component	Slotted head screw	
QS push-in fittings for tubing O.D. [mm]	4; 6	6; 8
Type of mounting	Screw in via male thread	
Assembly position	Any	
Max. tightening torque [Nm]	5.5	11

Operating and environmental conditions		
Screw-in thread	G1/8	G1/4
Operating medium / pilot medium	Dried air, lubricated or unlubricated, grade of filtration 40 µm	
Operating pressure [bar]	0.5 ... 10	
Pilot pressure [bar]	2 ... 10	
Storage temperature [°C]	-10 ... +40	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	-10 ... +60	

Weights		
Screw-in thread / push-in fitting	G1/8	G1/4
[g]	27	58

 Note

The GRXA-HG product family and all of its design variants must ONLY be used in safety-relevant applications in combination with additional measures detailed in EN 954-1.

A supplementary risk analysis by the user/designer is essential. The instructions and notices on the enclosed product leaflets must be observed.

# Functional combination

Data sheet



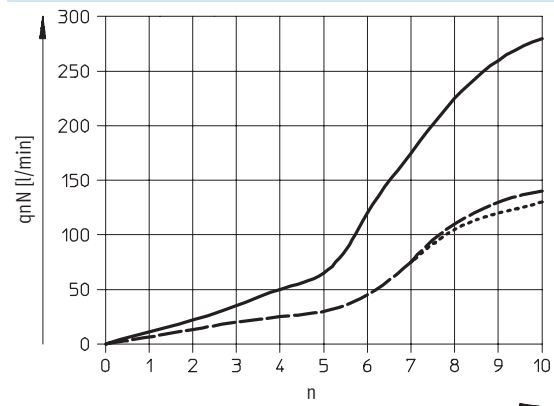
Standard nominal flow rate $q_{nN}$ [l/min] at 6 bar $\rightarrow$ 5 bar				
Screw-in thread		$G\frac{1}{8}$	$G\frac{1}{4}$	
One-way flow control function for exhaust air and piloted non-return valve				
GRXA	QS-4	D <sup>1)</sup>	130	–
		R <sup>2)</sup>	100 ... 140	–
		B <sup>3)</sup>	100 ... 140	–
	QS-6	D	140	280
		R	115 ... 165	200 ... 260
		B	120 ... 160	180 ... 140
	QS-8	D	–	280
		R	–	200 ... 280
		B	–	190 ... 260

- 1) D: Flow control direction
- 2) R: Non-return direction
- 2) E: Non-return direction actuated

Standard flow rate $q_n$ [l/min] at 6 bar $\rightarrow$ 0 bar				
Screw-in thread		$G\frac{1}{8}$	$G\frac{1}{4}$	
One-way flow control function for exhaust air and piloted non-return valve				
GRXA	QS-4	D <sup>1)</sup>	210	–
		R <sup>2)</sup>	230 ... 260	–
		B <sup>3)</sup>	220 ... 250	–
	QS-6	D	280	430
		R	270 ... 300	430 ... 490
		B	260 ... 300	410 ... 470
	QS-8	D	–	470
		R	–	460 ... 520
		B	–	440 ... 500

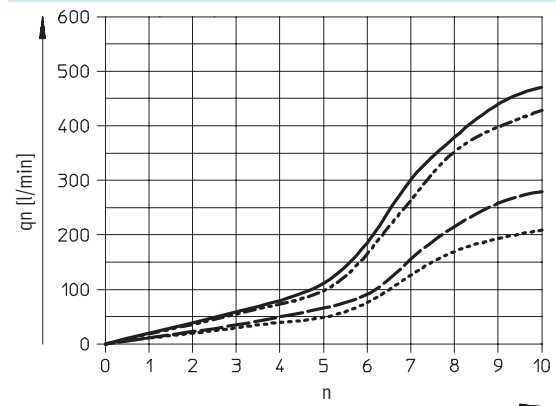
- 1) D: Flow control direction
- 2) R: Non-return direction
- 2) E: Non-return direction actuated

**Standard nominal flow rate  $q_{nN}$  at 6 bar  $\rightarrow$  5 bar as a function of turns of the adjusting screw  $n$**   
One-way flow control valve



- HGXA-HG-1/4-QS-8
- - - HGXA-HG-1/4-QS-6
- · - HGXA-HG-1/8-QS-6
- HGXA-HG-1/8-QS-4

**Standard flow rate  $q_n$  at 6 bar  $\rightarrow$  0 bar as a function of turns of the adjusting screw  $n$**   
One-way flow control valve



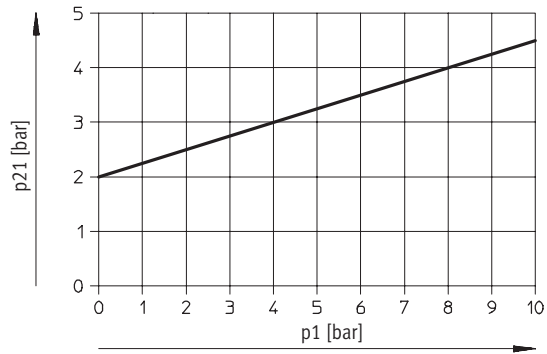
- HGXA-HG-1/4-QS-8
- - - HGXA-HG-1/4-QS-6
- · - HGXA-HG-1/8-QS-6
- HGXA-HG-1/8-QS-4

# Functional combination

Data sheet

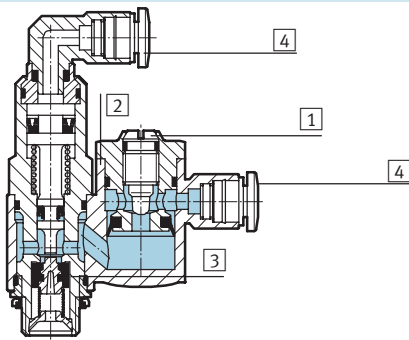
## Minimum pilot pressure as a function of operating pressure

Non-return valve, piloted



## Materials

Sectional view



### Functional combination

1	Adjusting screw	Stainless steel
2	Rotatable connection	Die-cast zinc
3	Seal	Nitrile rubber
4	Release ring	Polyacetate

# Functional combination

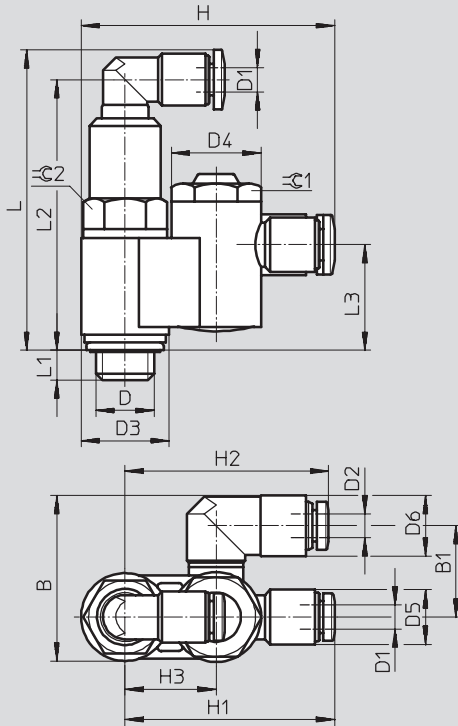
Data sheet



## Dimensions

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

Rotatable connection, elbow outlet, slotted head screw



Pneumatic connection D	B	B1	D1 ∅	D2 ∅	D3	D4 ∅	D5 ∅	D6	H	H1	H2	H3	L	L1	L2	L3	⊙1	⊙2
G $\frac{1}{8}$	27.3	15	4	4	14.5	14.8	9	10	41.8	34.5	33.5	15	49.5	4.9	44.6	17.4	13	12
	30.8	17.3	6				12.5	12.5			34.5							
G $\frac{1}{4}$	35.3	19.5	6	4	19	19	9	12.5	52.2	42.7	40.5	21	56.3	5.6	51.4	21.1	17	16
	39.5	21.5	8				17	58.2	48.7									

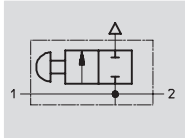
## Ordering data

Design	Screw-in thread	For tubing Outside	Part No.	Type
		[mm]		
	G $\frac{1}{8}$	4	525 667	GRXA-HG- $\frac{1}{8}$ -QS-4
		6	525 668	GRXA-HG- $\frac{1}{8}$ -QS-6
	G $\frac{1}{4}$	6	525 669	GRXA-HG- $\frac{1}{4}$ -QS-6
		8	525 670	GRXA-HG- $\frac{1}{4}$ -QS-8

# Non-return valves HGL, piloted

Technical data – Manual override HAB

Function



Flow rate  
165 l/min

■ The manual override module HAB can be used to manually exhaust air locked in the cylinder.

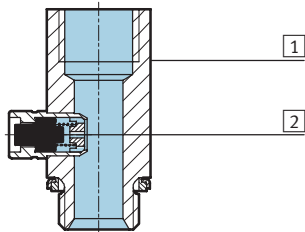


General technical data					
Pneumatic connection		G1/8	G1/4	G3/8	G1/2
Type of mounting		Can be screwed in			
Nominal size 1 > 2	[mm]	4.1	7	11	14
Exhaust flow rate	[l/min]	165			
Actuating force	[N]	16			
Tightening torque	[Nm]	4	11	40	50

Operating and environmental conditions					
Pneumatic connection		G1/8	G1/4	G3/8	G1/2
Operating medium		Filtered compressed air, lubricated or unlubricated			
Operating pressure range	[bar]	0 ... 10			
Temperature range	[°C]	-20 ... +80			

## Materials

Sectional view



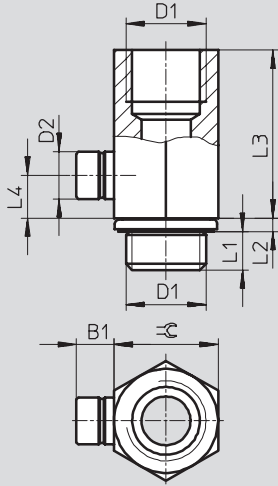
Manual override		
1	Housing	Aluminium
2	Seals	Nitrile rubber

# Non-return valves HGL, piloted

Technical data – Manual override HAB


## Dimensions

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



Pneumatic connection D1	B1	D2 Ø	L1	L2	L3	L4	≈C
G1/8	6.2	7.6	4.7	1.8	19.1	5	13
G1/4	6.2	7.6	6.3	2.2	27.5	7	17
G3/8	6.2	7.6	7.5	3	27.3	7	22
G1/2	6.2	7.6	10.9	2.6	32	7	24

## Ordering data

Manual override	Pneumatic connection	Part No.	Type
	G1/8	184 585	HAB-1/8
	G1/4	184 586	HAB-1/4
	G3/8	184 587	HAB-3/8
	G1/2	184 588	HAB-1/2



## What must be observed when using Festo components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.

When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.

When Festo components are used in safety-oriented applications, the user shall ensure that all applicable

national and local safety laws and regulations, for example the machine directive, together with the relevant references to standards are observed. Unauthorised conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible.

Festo does not accept any liability for resulting damages.

You should contact Festo's advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data applies at the time of going to print.

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- Servopneumatic positioning systems
- Electromechanical drives
- Positioning controllers and controllers



### Valves and valve terminals

- Standard valves
- Universal and application-optimised valves
- Manually and mechanically actuated valves
- Shut-off, pressure control and flow control valves
- Proportional valves
- Safety valves

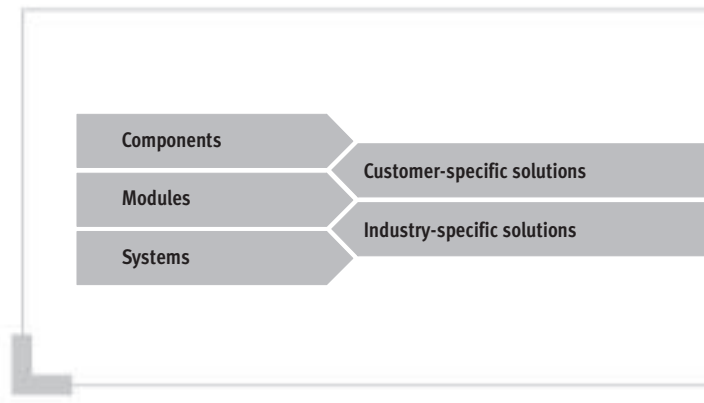
### Fieldbus systems/ electrical peripherals

- Fieldbus Direct
- Installation system CP/CPI
- Modular electrical terminal CPX



### Compressed air preparation

- Service unit combinations
- Filter regulators
- Filters
- Pressure regulators
- Lubricators
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- Accessories for compressed air preparation



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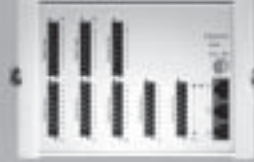
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- Vacuum grippers
- Vacuum security valves
- Vacuum accessories
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