








## One-way flow control valves VFOC

**FESTO**





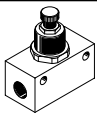
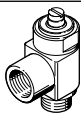
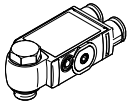


Product range overview – One-way flow control valves

Version	Valve function	Version	Type	Outlet direction of connection	Pneumatic connection 1	Pneumatic connection 2	qn <sup>1)</sup> [l/min]	Adjusting element	→ Page/ Internet
<b>Standard</b>									
<b>Polymer</b>									
Exhaust air one-way flow control function		VFOE-LE	Elbow outlet	QS-4, QS-6, QS-8, QS-10, QS-12	M5, G1/8, G1/4, G3/8, G1/2, R1/8, R1/4, R3/8, R1/2	90 ... 1200	Rotary knob with detent	vfoe	
		GRLA	Elbow outlet	QS-6, QS-8	G1/8, G1/4, G3/8	520 ... 650	Knurled screw	grla	
Supply air one-way flow control function		VFOE-LS	Elbow outlet	QS-4, QS-6, QS-8	M5, M7, G1/8, R1/8	90 ... 180	Rotary knob with detent	vfoe	
<b>Metal</b>									
Exhaust air one-way flow control function		GRLA	Elbow outlet	QS-3, QS-4, QS-6, QS-8, QS-10, QS-12	M5, G1/8, G1/4, G3/8, G1/2	100 ... 1580	Slotted head screw Knurled screw	grla	
				M5, G1/8, G1/4, G3/8, G1/2, G3/4	M5, G1/8, G1/4, G3/8, G1/2, G3/4	95 ... 4320	Slotted head screw	grla	
				M5, G1/8, G1/4	M5, G1/8, G1/4	95 ... 610	Knurled screw	grla	
		PK-3, PK-4, PK-6	M5, G1/8, G1/4	83 ... 540	Slotted head screw	grla			
Supply air one-way flow control function		GRLZ	Elbow outlet	QS-3, QS-4, QS-6, QS-8	M5, G1/8	100 ... 215	Slotted head screw	grlz	
				M5, G1/8, G1/4	M5, G1/8, G1/4	95 ... 610	Slotted head screw Knurled screw	grlz	
				PK-3, PK-4, PK-6	M5, G1/8, G1/4	83 ... 540	Slotted head screw	grlz	
		VFOC-S	Elbow outlet	QS-4, QS-6	Push-in sleeve <sup>2)</sup> QS-4, QS-6	0 ... 270	Slotted head screw	6	
<b>Nickel-plated metal</b>									
Exhaust air one-way flow control function		VFOH-LE	Elbow outlet	QS-4, QS-6, QS-8, QS-10	G1/8, G1/4	180 ... 530	External hex	vfoh	

1) Standard nominal flow rate in flow control direction.  
2) Only suitable for push-in connector QS.

## Product range overview – One-way flow control valves

Version	Valve function	Version	Type	Outlet direction of connection	Pneumatic connection 1	Pneumatic connection 2	qnN <sup>1)</sup> [l/min]	Adjusting element	→ Page/ Internet
<b>Mini</b>	<b>Metal</b> Exhaust air one-way flow control function		GRLA	Elbow outlet	QS-3, QS-4	M3, M5	40 ... 41	Slotted head screw	grla
					M3	M3	0 ... 18	Slotted head screw	grla
	Supply air one-way flow control function		GRLZ	Elbow outlet	QS-3, QS-4	M3, M5	41 ... 48	Slotted head screw	grlz
					M3	M3	0 ... 18	Slotted head screw	grlz
<b>In-line installation</b>	One-way flow control function		GR/GRA	Straight	M3, M5, G1/8, G1/4, G3/8, G1/2, G3/4	M3, M5, G1/8, G1/4, G3/8, G1/2, G3/4	29.5 ... 3300	Knurled screw	gr
			GR	Straight	QS-3, QS-4, QS-6, QS-8	QS-3, QS-4, QS-6, QS-8	85 ... 265	Knurled screw	gr
<b>Corrosion-resistant</b>	Exhaust air one-way flow control function		CRGRLA	Elbow outlet	M5, G1/8, G1/4, G3/8, G1/2	M5, G1/8, G1/4, G3/8, G1/2	95 ... 2100	Slotted head screw	crgrla
<b>Function combination</b>	Exhaust air one-way flow control function		VFOF	Elbow outlet	QS-6, QS-8	G1/8, G1/4	240 ... 590	Internal hex	vfof

1) Standard nominal flow rate in flow control direction.

## Key features

### Function

The piston speed of both advancing and retracting pneumatic cylinders, can be regulated using one-way flow control valves.

This is done through suitable restriction of the flow rate of compressed air in exhaust air or supply air direction. The non-return function works in the opposite direction.

The flow control function creates an adjustable annular gap inside the valve. This gap can be increased or decreased by turning the knurled screw or slotted head screw.

The required restriction can be set with the help of this adjustment element.

### General information

#### Standard nominal flow rate $q_{nN}$

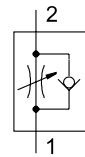
The standard nominal flow rate  $q_{nN}$  is the volumetric flow rate based on standard conditions at an operating pressure of  $p_1 = 6$  bar and an output pressure of  $p_2 = 5$  bar, measured at room temperature  $t = 20^\circ\text{C}$ .

#### Standard flow rate $q_n$

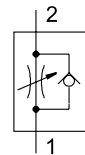
The standard flow rate  $q_n$  is measured at an operating pressure of  $p_1 = 6$  bar and an output pressure with respect to atmospheric pressure ( $p_2 = 0$  bar).

#### Symbols

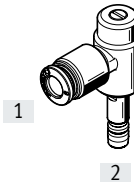
Exhaust air one-way flow control function



Supply air one-way flow control function



#### Connections



- [1] Pneumatic connection 1 (compressed air connection)
- [2] Pneumatic connection 2 (working port)

### Flow control functions and range of applications

Application	Description	Application	Description
<b>Double-acting cylinder with one-way flow control valve</b>			
<b>Exhaust air one-way flow control function</b>		<b>Supply air one-way flow control function</b>	
	<p>Speed adjustment through exhaust air flow control. Uncontrolled supply air and throttled exhaust air move the piston between air cushions (improves motion, even with load changes).</p>		<p>Adjustable speed during advance and return strokes. The flow rate is identical in both directions.</p>

## Type codes

001	Series	
VFOC	One-way flow control valve	

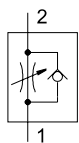
002	Function	
S	One-way flow control valve for supply air	




003	Pneumatic connection	
S4	Push-in sleeve 4 mm	
S6	Push-in sleeve 6 mm	

004	Pneumatic connection 1	
Q4	Push-in connector 4 mm	
Q6	Push-in connector 6 mm	

## Datasheet

One-way flow control function  
Supply air



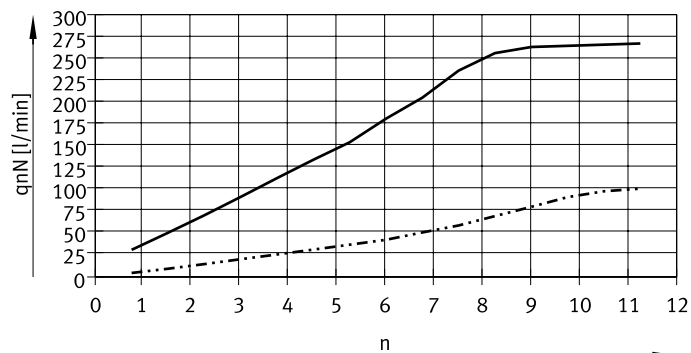
-  - Flow rate  
0 ... 270 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
0.2 ... 10 bar



General technical data		
Pneumatic connection 2	Push-in sleeve QS-4	Push-in sleeve QS-6
Pneumatic connection 1	QS-4	QS-6
Note on pneumatic connection 2	Only suitable for push-in connector QS from Festo	
Valve function	Supply air one-way flow control function	
Adjusting element	Slotted head screw	
Actuation type	Manual	
Type of mounting	Plug-in, with push-in sleeve	
Mounting position	Any	

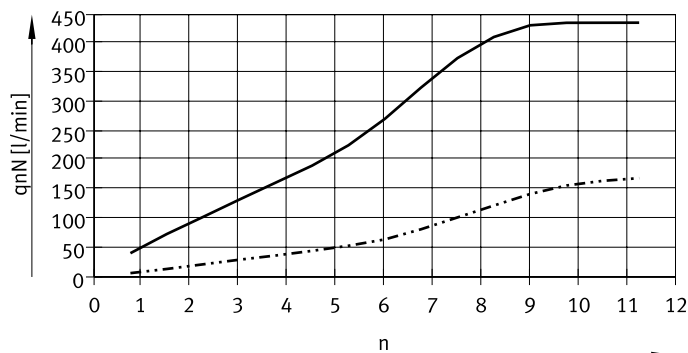
Operating and environmental conditions		
Operating pressure [bar]	0.2 ... 10	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	-10 ... +60	
Storage temperature [°C]	-10 ... +40	

Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$



— QS-6  
- - - QS-4

Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle rotations  $n$

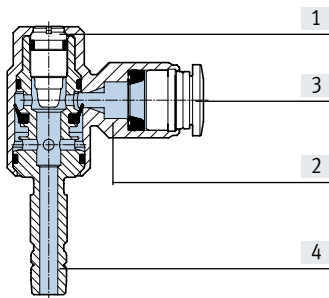


— QS-6  
- - - QS-4

## Datasheet

### Materials

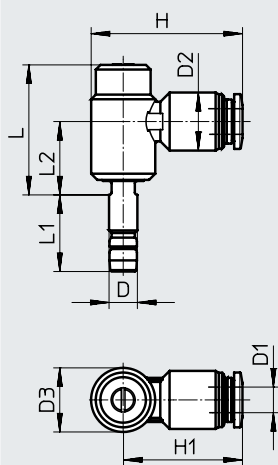
Sectional view



One-way flow control valve		
[1]	Adjusting screw	High-alloy stainless steel
[2]	Swivel connection	Die-cast zinc
[3]	Releasing ring	POM
[4]	Hollow bolt	Black anodised wrought aluminium alloy
-	Seals	NBR
Note on materials		RoHS-compliant

### Dimensions

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

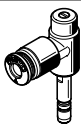


#### Note

The push-in sleeves of the one-way flow control valves VFOC are solely compatible with push-in fittings QS from Festo → [www.festo.com/catalogue](http://www.festo.com/catalogue). Only this combination ensures they are securely held in the push-in fitting.

Type	Push-in sleeve ø D	Tubing O.D. D1	D2 ø	D3 ø	~H	~H1	~L	L1	~L2
VFOC-S4-Q4	4	4	10 ±0.2	8.9 ±0.07	24.7	20.3	23.2	14.8	13.2
VFOC-S6-Q6	6	6	12.5 ±0.2	13.8 ±0.07	32.6	25.7	28	16.5	15.8

### Ordering data

	Pneumatic connection		Standard nominal flow rate qnN at 6 → 5 bar		Standard flow rate qn at 6 → 0 bar		Weight [g]	Part no.	Type
			In flow control direction	In non-return direction	In flow control direction	In non-return direction			
			[l/min]	[l/min]	[l/min]	[l/min]			
	2	1	0 ... 100	60 ... 100	0 ... 170	130 ... 160	9.2	559723	VFOC-S4-Q4
	2	1	0 ... 270	170 ... 260	0 ... 430	330 ... 400	21.6	559724	VFOC-S6-Q6