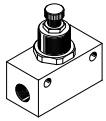
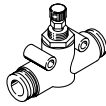


## One-way flow control valves GR/GRA, in-line installation

**FESTO**



Product range overview

Product range overview									
Design	Valve function	Design	Type	Outlet direction of connection	Pneumatic connection 1	Pneumatic connection 2	qnN <sup>1)</sup> [l/min]	Adjusting element	→ Page/ Internet
In-line installation	<b>Metal</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	4
In-line installation	<b>Polymer</b>								
	One-way flow control function		GR	Straight	QS-3, QS-4, QS-6, QS-8	QS-3, QS-4, QS-6, QS-8	85 ... 265	Knurled screw	11

1) Standard nominal flow rate in flow control direction.

## Type codes

001	Series
<b>GR</b>	One-way flow control valve
<b>GRA</b>	One-way flow control valve

002	Pneumatic connection
<b>M3</b>	Male thread M3
<b>M5</b>	Male thread M5
<b>1/8</b>	Male thread G1/8
<b>1/4</b>	Male thread G1/4
<b>3/8</b>	Male thread G3/8
<b>1/2</b>	Male thread G1/2
<b>3/4</b>	Male thread G3/4
<b>QS-3</b>	Push-in connector 3 mm
<b>QS-4</b>	Push-in connector 4 mm
<b>QS-6</b>	Push-in connector 6 mm
<b>QS-8</b>	Push-in connector 8 mm

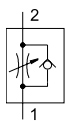
003	Number of one-way flow control valves
	1 valve
<b>X2</b>	2 valves

004	Generation
	None
<b>B</b>	Series B

# One-way flow control valves GR/GRA, in-line installation

## Datasheet – Female thread, metal

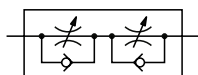
One-way flow control valve GR/GRA



- - Flow rate  
29.5 ... 3300 l/min
- - Temperature range  
-20 ... +75°C
- - Operating pressure  
0.1 ... 15 bar



One-way flow control valve GR-...X2



- - Flow rate  
95 ... 205 l/min
- - Temperature range  
-20 ... +60°C
- - Operating pressure  
0.5 ... 10 bar



Two one-way flow control valves are combined in a housing. This allows the flow and return speed to be set separately for single- or double-acting compact cylinders, for example.

### General technical data

Type	GR-M3	GR-M5-B, GR-M5X2-B	GR-1/8-B, GR-1/8X2-B	GR-1/4	GRA-1/4-B	GR-3/8-B	GR-1/2	GR-3/4
Pneumatic connection 1, 2	M3	M5	G1/8	G1/4	G1/4	G3/8	G1/2	G3/4
Valve function	One-way flow control function							
Adjusting element	Knurled screw							
Type of mounting	Through-hole			-	Through-hole			
	Front panel mounting			-	Front panel mounting			
	-			In-line installation	-			
Mounting position	Any							

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

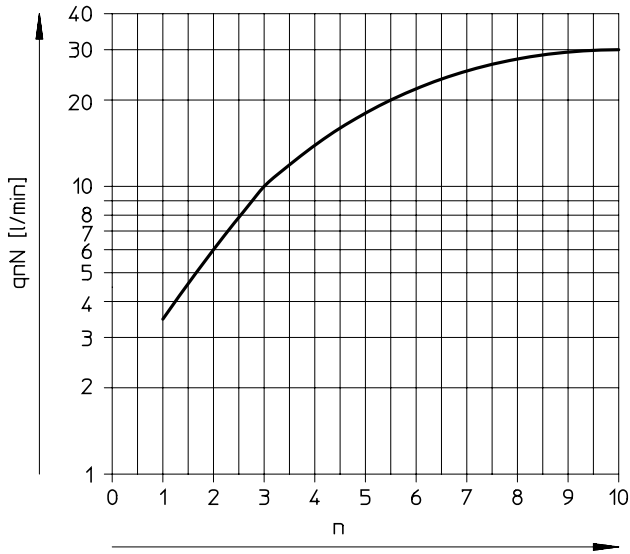
### Operating and environmental conditions

Type	GR-M3	GR-M5-B, GR-M5X2-B	GR-1/8-B, GR-1/8X2-B	GR-1/4	GRA-1/4-B	GR-3/8-B	GR-1/2	GR-3/4
Operating pressure [bar]	0.3 ... 8	0.5 ... 10			0.1 ... 10		0.3 ... 15	
Operating medium	Compressed air to ISO 8573-1:2010							
	[6:4:4]	[7:4:4]	[7:--]	[7:4:4]	[7:--]			
Note on the operating/ pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)							
Ambient temperature [°C]	-10 ... +60	-20 ... +60		-20 ... +75			-10 ... +60	
Temperature of medium [°C]	-10 ... +60	-20 ... +60		-20 ... +75			-10 ... +60	
Storage temperature [°C]	-10 ... +40	-20 ... +40		-20 ... +75			-10 ... +60	

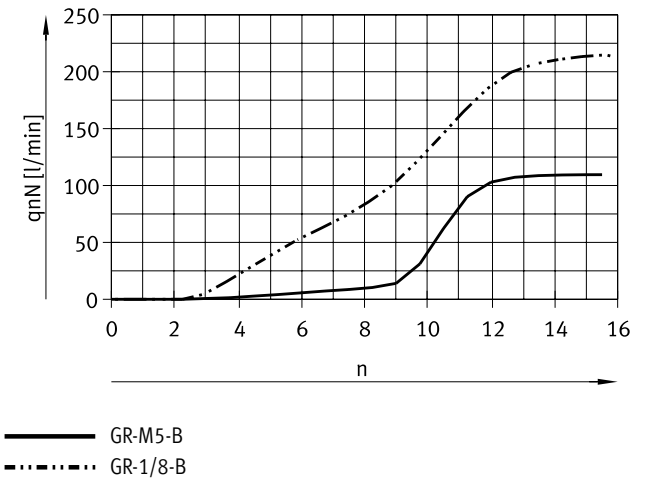
Datasheet – Female thread, metal

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

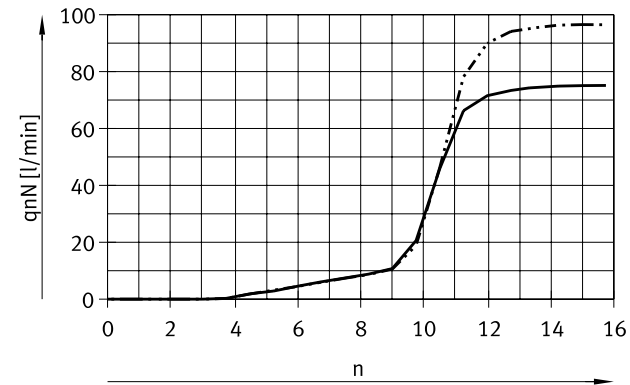
GR-M3



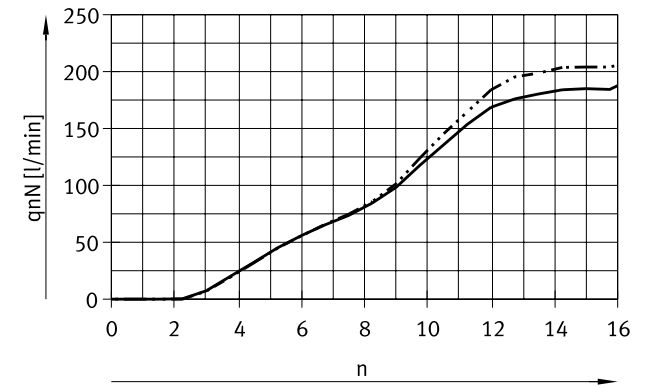
GR-M5-B, GR-1/8-B



GR-M5X2-B



GR-1/8X2-B



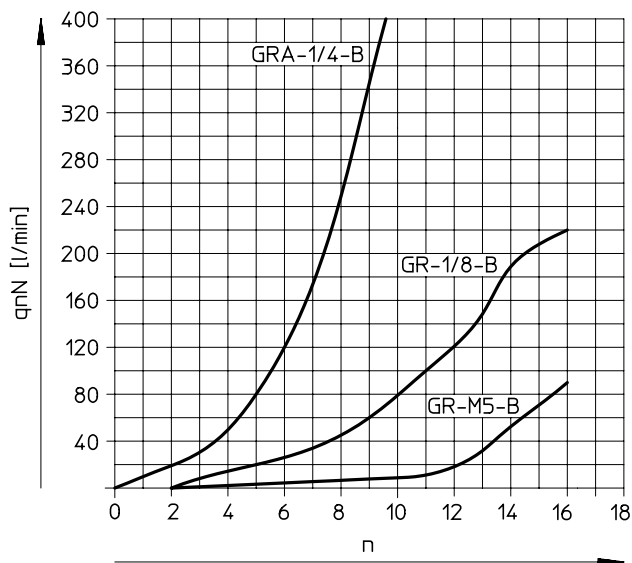
— GR-M5X2-B (adjusting screw closed)  
 - - - GR-M5X2-B (adjusting screw open)

— GR-1/8X2-B (adjusting screw closed)  
 - - - GR-1/8X2-B (adjusting screw open)

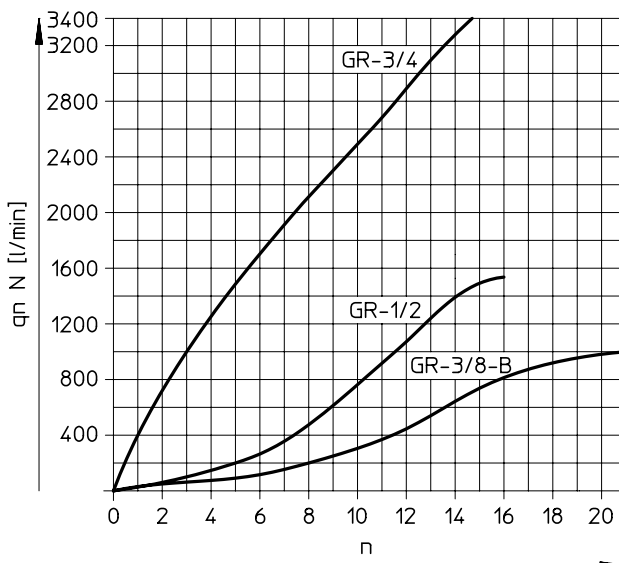
Datasheet – Female thread, metal

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

GRA-1/4-B, GR-1/8-B, GR-M5-B

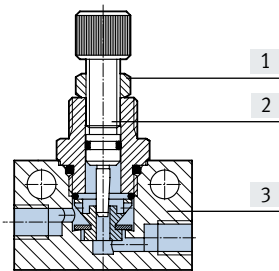


GR-3/8-B, GR-1/2, GR-3/4



Materials

Sectional view



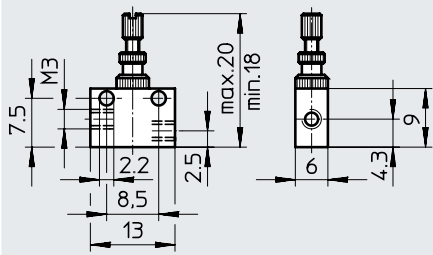
One-way flow control valve		
[1]	Nut	GR-M5-B, GR-M5X2-B, GR-1/8-B, GR-1/8X2-B: Wrought aluminium alloy GR-1/4, GRA-1/4-B, GR-3/8-B, GR-1/2, GR-3/4: Steel
[2]	Adjusting screw	GR-M3, GRA-1/4-B, GR-3/8-B, GR-1/2, GR-3/4: Brass GR-M5-B, GR-M5X2-B, GR-1/8-B, GR-1/8X2-B: High-alloy steel GR-1/4: Galvanised steel
[3]	Housing	GR-M3, GR-M5-B, GR-M5X2-B, GR-1/8-B, GR-1/8X2-B, GR-1/4, GR-3/4: Wrought aluminium alloy GRA-1/4-B, GR-3/8-B, GR-1/2: Die-cast zinc
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Datasheet – Female thread, metal

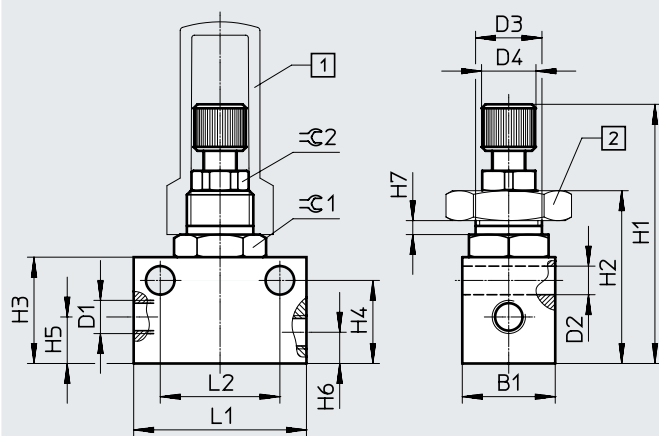
Dimensions

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

GR-M3



GR-M5-B, GR-1/8-B



- [1] Cover cap GRK → 15
- [2] Hex nut GRM → 15

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

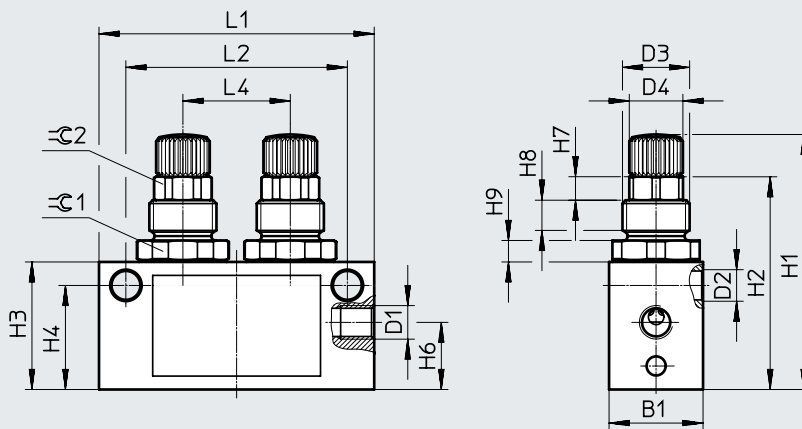
Type	Connection D1	B1	D2 ∅	D3	D4	H1		H2	H3	H4	H5	H6	H7 max.	L1	L2 ±0.1	≈C 1	≈C 2
						min.	max.										
GR-M5-B	M5	14	4.3	M10x1	8	35	41	25.2	16	12.5	7	4.7	2.5	26	18	13	8
GR-1/8-B	G1/8	16	4.3	M12x1	8	40.6	46.5	30.8	22	17.5	9.2	9	3.5	32	24	14	8

Datasheet – Female thread, metal

Dimensions

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

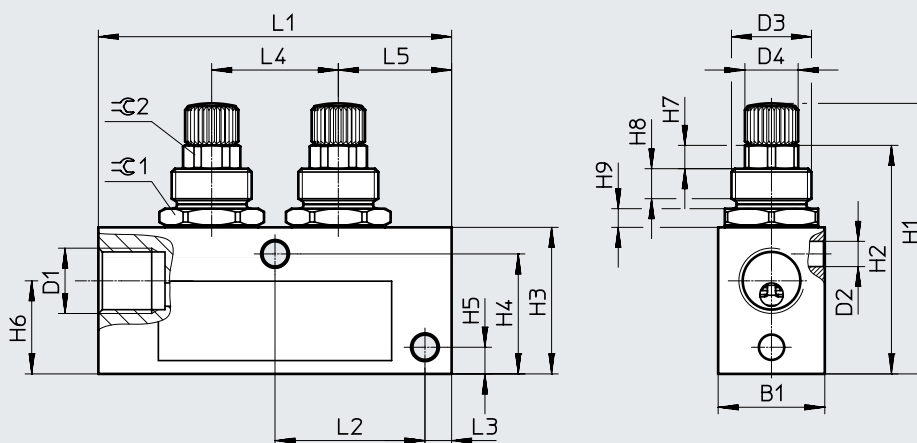
GR-M5X2-B



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

Cover cap GRK → 15  
Hex nut GRM → 15

GR-1/8X2-B



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

Cover cap GRK → 15  
Hex nut GRM → 15

Type	Connection D1	B1	D2 ∅	D3	D4 ∅	H1		H2	H3	H4	H5
						min.	max.				
GR-M5X2-B	M5	14	4.7 <sup>+0.1</sup>	M10x1	8	38	43.5	31.7	19	15.5	–
GR-1/8X2-B	G1/8	16	3.8 <sup>+0.1</sup>	M12x1	8	40.6	46.2	34.3	22	18	4

Type	H6	H7	H8	H9	L1	L2	L3	L4	L5	∅ 1	∅ 2
GR-M5X2-B	10	3.5	4.5	3.2	41 <sup>+0.5</sup>	33 <sup>+0.2</sup>	–	16 <sup>+0.2</sup>	–	13	8
GR-1/8X2-B	14	3.5	4.5	2.8	53 <sup>+0.5</sup>	22.5 <sup>±0.15</sup>	4	19 <sup>±0.15</sup>	17	14	8

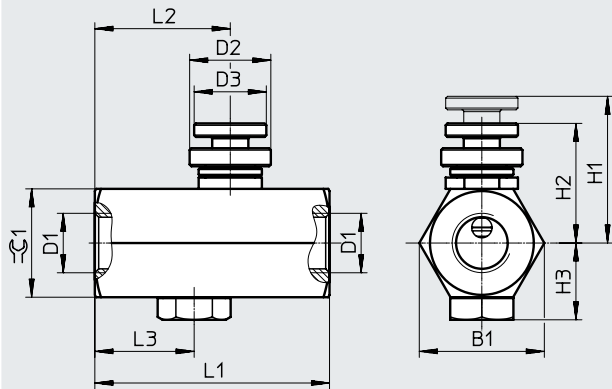


Datasheet – Female thread, metal

Dimensions

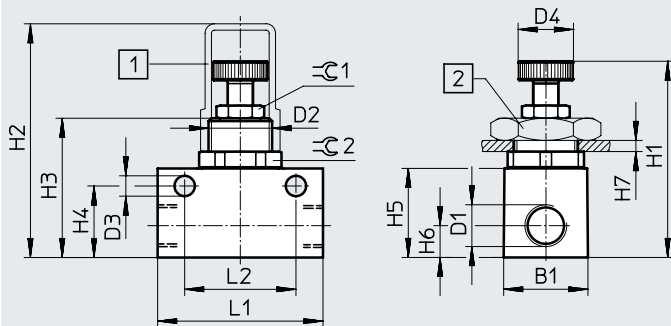
Download CAD data → [www.festo.com](http://www.festo.com)

GR-1/4



Type	Connection D1	B1	D2 ∅	D3 ∅	H1	H2	H3	L1	L2	L3	⊕ 1
GR-1/4	G1/4	28	18	16	32.5	26.5	17	52	30	22	24

GRA-1/4-B

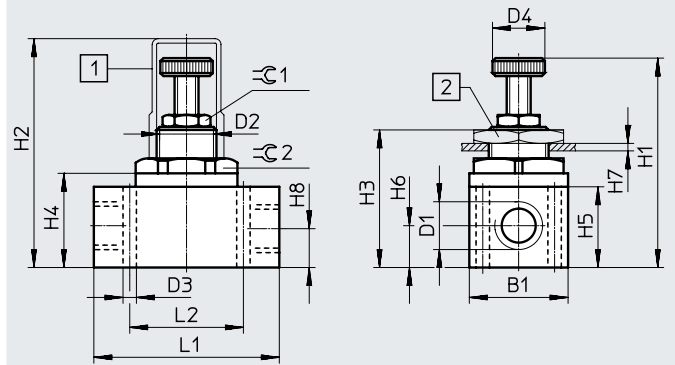


Note: This product conforms to ISO 1179-1 and ISO 228-1

[1] Cover cap GRK → 15

[2] Hex nut GRM → 15

GR-3/8-B



[1] Cover cap GRK → 15

[2] Hex nut GRM → 15

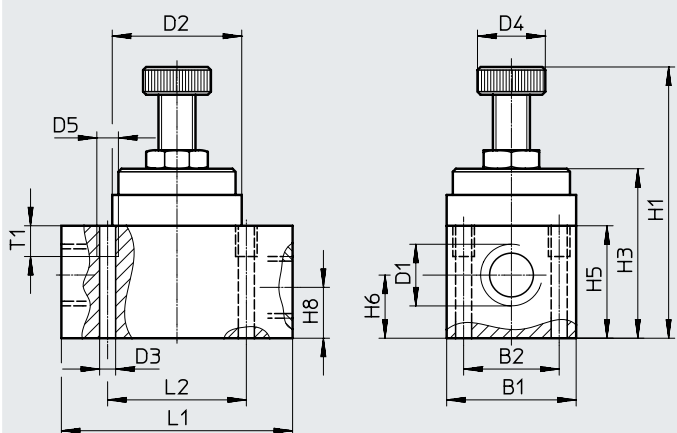
Type	Connection D1	B1	D2	D3 ∅	D4 ∅	H1		H2	H3	H4	H5	H6	H7 max.	H8	L1	L2	⊕ 1	⊕ 2
						min.	max.											
GRA-1/4-B	G1/4	26.5	M20x1.5	6.4	17.4	56	62	73.5	44	22.5	28	10	3.5	-	52	35 ±0.1	13	24
GR-3/8-B	G3/8	33	M20x1.5	4.5	17.5	62.5	74	76.5	46	31.5	27	14	3.5	13	62	38	13	30

Datasheet – Female thread, metal

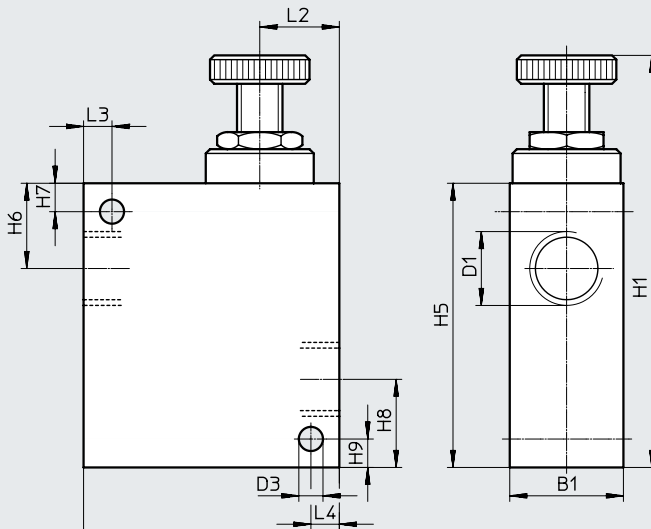
Dimensions

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

GR-1/2



GR-3/4



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

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

Type	B1	B2	D1	D2 ∅	D3 ∅	D4 ∅	D5	H1	H3	H5	H6	H7	H8	H9	L1	L2	L3	L4	T1
GR-1/2	42	31	G1/2	42	2	22	M6	88	55	36.5	20.5	–	16.5	–	75	45	–	–	10
GR-3/4	40	–	G3/4	–	8.5	–	–	145	–	100	30	10	30	10	90	28	10	10	–

Ordering data – One-way flow control function

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			
		[l/min]	[l/min]			
2	1	[l/min]	[l/min]	[g]		




Knurled screw

	M3	M3	29.5	26 ... 27.5	–	–	2.5	15899	GR-M3
	M5	M5	115	130 ... 137	–	–	19	151213	GR-M5-B
	G1/8	G1/8	210	180 ... 275	–	–	31	151215	GR-1/8-B
	G1/4	G1/4	420	780	–	–	180	6509	GRA-1/4-B
	G3/8	G3/8	1010	1150	–	–	225	6308	GR-3/8-B
	G1/2	G1/2	1620	2760	–	–	517	3720	GR-1/2
	G3/4	G3/4	3300	4800 <sup>1)</sup>	–	–	938	2103	GR-3/4
	G1/4	G1/4	370	150	570	340	80	2101	GR-1/4
	M5	M5	95	75	–	–	37	152611	GR-M5X2-B
	G1/8	G1/8	205	190	–	–	54	152612	GR-1/8X2-B

1) Measurement with adjusting screw open

## Datasheet – Push-in connector QS, polymer

One-way flow control valve GR

-  - Flow rate  
85 ... 265 l/min
-  - Temperature range  
-10 ... +60°C
-  - Operating pressure  
0.2 ... 10 bar



### General technical data

Pneumatic connection 2	QS-3	QS-4	QS-6	QS-8
Pneumatic connection 1	QS-3	QS-4	QS-6	QS-8
Valve function	One-way flow control function			
Adjusting element	Knurled screw			
Type of mounting	Through-hole			
	Front panel mounting			
	With accessories			
Mounting position	Any			

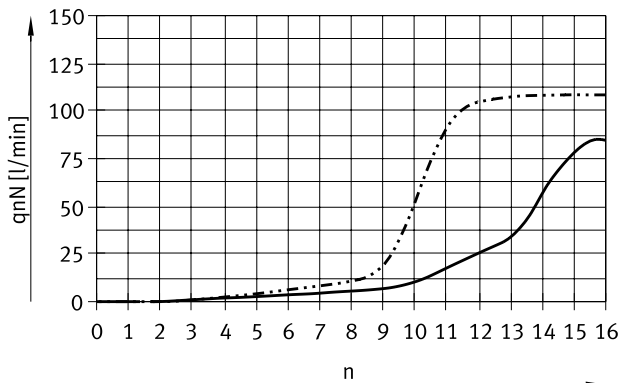
### Operating and environmental conditions

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

## Datasheet – Push-in connector QS, polymer

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

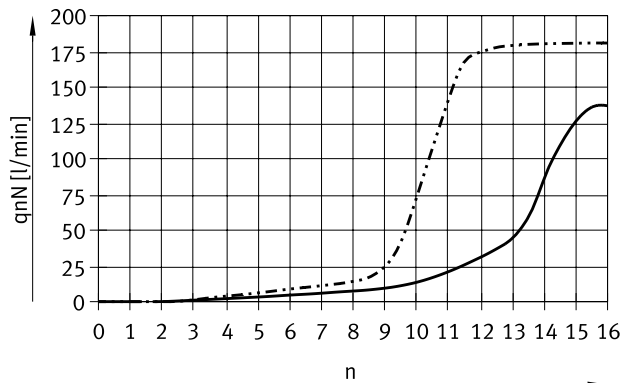
GR-QS-3, GR-QS-4



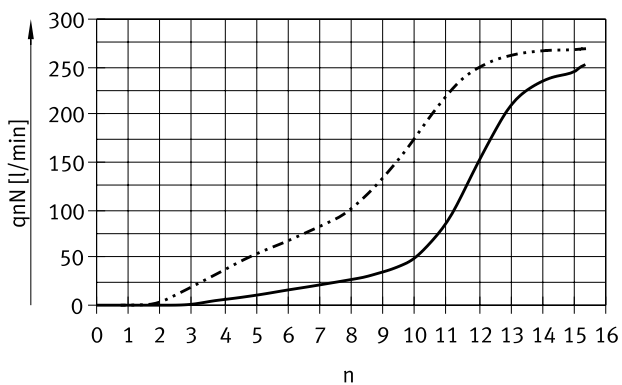
— GR-QS-3  
- - - GR-QS-4

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

GR-QS-3, GR-QS-4

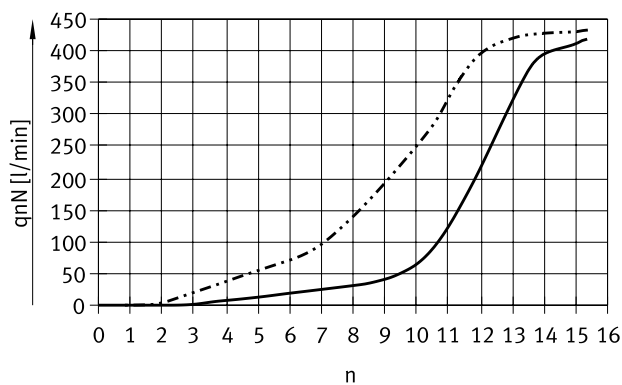


GR-QS-6, GR-QS-8



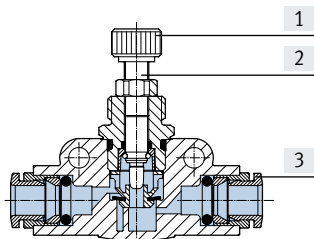
— GR-QS-6  
- - - GR-QS-8

GR-QS-6, GR-QS-8



### Materials

Sectional view



One-way flow control valve

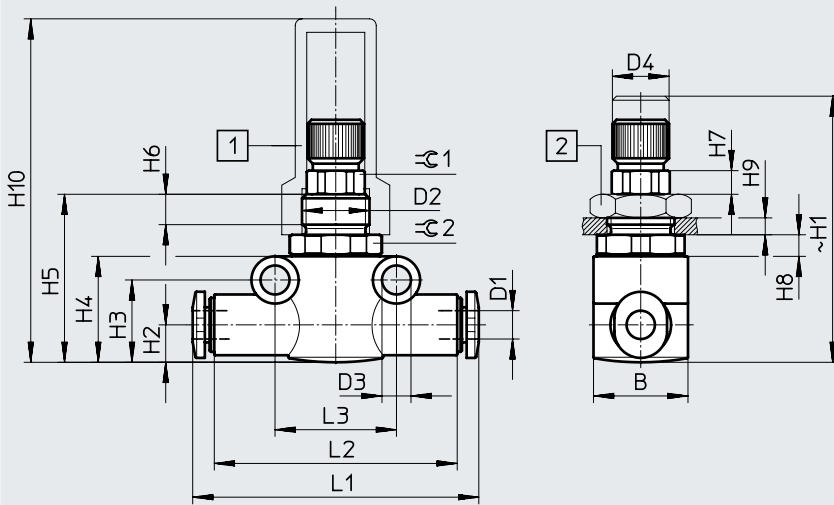
[1]	Knurled head	Reinforced PA
[2]	Adjusting screw	High-alloy steel
[3]	Releasing ring	POM
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Datasheet – Push-in connector QS, polymer

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

Dimensions

Knurled screw



- [1] Cover cap GRK → 15
- [2] Hex nut GRM → 15

Type	Tubing O.D. D1	B	D2	D3 ∅	D4 ∅	H1		H2	H3	H4
						min.	max.			
GR-QS-3	3	14	M10x1	4.3 ±0.1	7.9 -0.3	35	41.5	5.55	12.2	15.7
GR-QS-4	4	14	M10x1	4.3 ±0.1	7.9 -0.3	35	41.5	5.55	12.2	15.7
GR-QS-6	6	16	M12x1	4.3 ±0.1	7.9 -0.3	40	46	8.4	17.3	21.3
GR-QS-8	8	16	M12x1	4.3 ±0.1	7.9 -0.3	40	46	8.4	17.3	21.3

Type	H5	H6	H7	H8	H9 max.	H10	L1	L2	L3	∅ 1	∅ 2
GR-QS-3	24.9	4.5	3.5	3.2	2.5	50.9	41.8	36	18	8	13
GR-QS-4	24.9			3.2	2.5	50.9	42.4	36	18		13
GR-QS-6	30.1			2.8	3.5	46.1	51.6	43	24		14
GR-QS-8	30.1			2.8	3.5	46.1	53.4	43	24		14

Ordering data – One-way flow control function

Pneumatic Connection	Standard nominal flow rate qnN at 6 → 5 bar		Weight [g]	Part no.	Type
	In flow control direction				
	In flow control direction	In non-return direction			
2	1	[l/min]	[l/min]		

Knurled screw

Image	QS-3	QS-4	QS-6	QS-8	Weight [g]	Part no.	Type
	85	110	245	265	12	193965	GR-QS-3
					12	193967	GR-QS-4
					22	193969	GR-QS-6
					23	193970	GR-QS-8

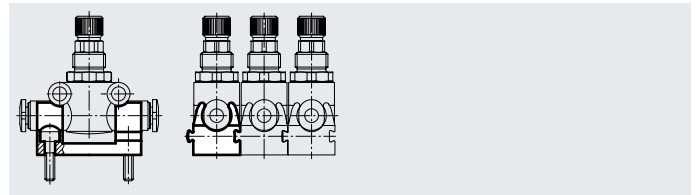
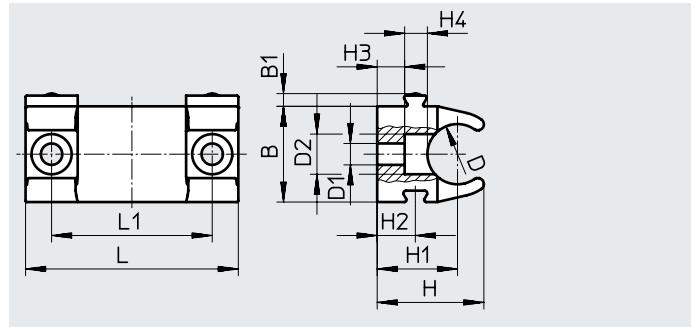
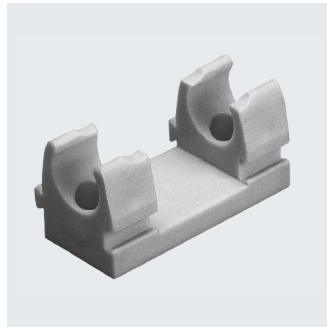
## Accessories

### Retaining bracket GR-H

For mounting one-way flow control valves GR with push-in connector QS with M3 screws on a level surface. The valve is snapped into the retaining bracket. It can be mounted in any position.

Material: POM  
Free of copper and PTFE

Linking multiple retaining brackets via dovetail slot



### Dimensions and ordering data

For type	B	B1	D ∅	D1 ∅	D2 ∅	H	H1	H2
GR-QS-3, GR-QS-4	14.3	1.9	9	3.2	6	16	12	5.7
GR-QS-6, GR-QS-8	19.8	1.9	14.5	3.2	6	19.2	13	5.7

For type	H3	H4	L	L1	Weight [g]	Part no.	Type
GR-QS-3, GR-QS-4	4.1	3.4	31.8	24	4	195495	GR-H-QS-3-4
GR-QS-6, GR-QS-8	2.3	3.4	31.8	24	5	195496	GR-H-QS-6-8

## Accessories

### Hex nut GRM

For front panel mounting

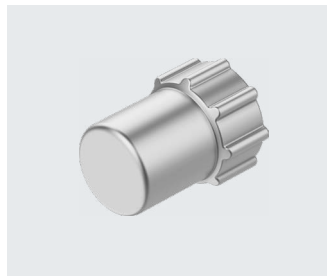
Material: Steel



Ordering data			
For type	Description	Part no.	Type
GR-M5-B, GR-M5X2-B, GR-QS-3, GR-QS-4	M10x1 thread	6444	GRM-M5
GR-1/8-B, GR-1/8X2-B, GR-QS-6, GR-QS-8	M12x1 thread	2107	GRM-1/8
GRA-1/4-B, GR-3/8-B	M20x1.5 thread	204596	GRM-3/8

### Cover cap GRK

Material: PP



Ordering data			
For type	Description	Part no.	Type
GR-M5-B, GR-M5X2-B, GR-QS-3, GR-QS-4	M10x1 thread	6436	GRK-M5
GR-1/8-B, GR-1/8X2-B, GR-QS-6, GR-QS-8	M12x1 thread	2105	GRK-1/8
GRA-1/4-B, GR-3/8-B	M20x1.5 thread	6309	GRK-3/8-B