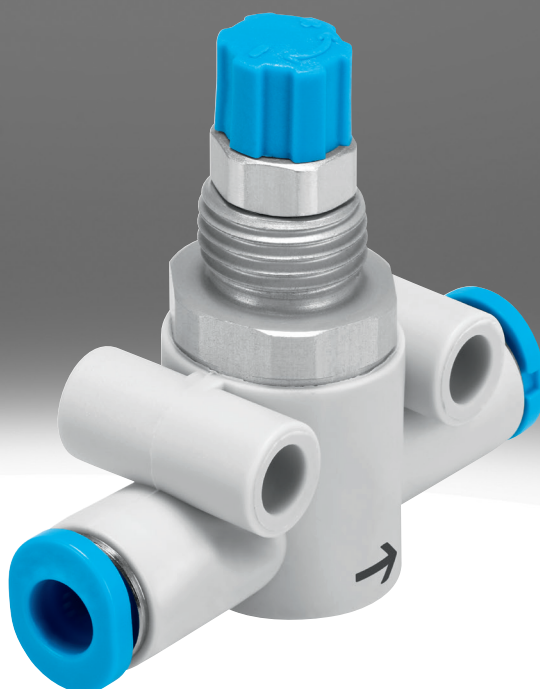


## One-way flow control valve, in-line installation GR

**FESTO**



## Characteristics

### At a glance

One-way flow control valve for in-line installation.

### Diagrams

Further information → online



The diagrams shown in this document are also available online. These can be used to display precise values.

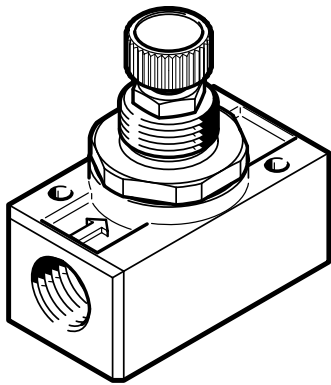
### Pneumatic connection

Variants:

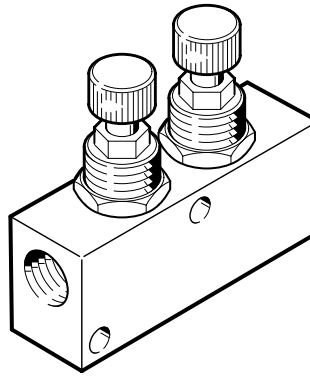
- Male thread (metal housing)
- Plug connection (plastic housing)

### Number of one-way flow control valves

[ ] 1 valve



[X2] 2 valves



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

Type code

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

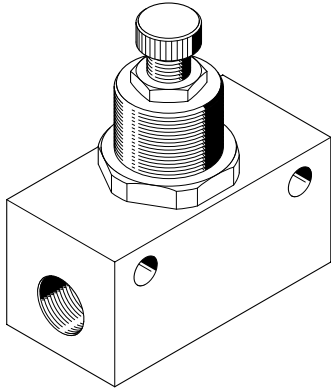
002	Pneumatic connection	
<b>M3</b>	Male thread M3	
<b>M5</b>	Male thread M5	
<b>1/8</b>	Male thread G1/8	
<b>1/4</b>	Male thread G1/4	
<b>3/8</b>	Male thread G3/8	
<b>1/2</b>	Male thread G1/2	
<b>3/4</b>	Male thread G3/4	
<b>QS-3</b>	Push-in connector 3 mm	
<b>QS-4</b>	Push-in connector 4 mm	
<b>QS-6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

## Datasheet

### Technical data – Male thread

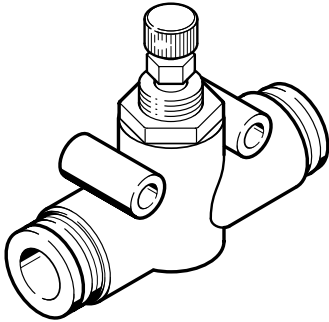


Pneumatic connection, port 2	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Pneumatic connection, port 1	M3	M5	G1/8	G1/4	G3/8	G1/2	G3/4
Nominal size	–	2 mm	3 mm	–			
Valve function	One-way flow control function						
Mounting position	optional						
Adjustment component	Knurled screw						
Type of mounting	Either., Front panel mounting, With through-hole			Either., Front panel mounting, In-line installation, With through-hole	Either., Front panel mounting, With through-hole	With through-hole	Front panel mounting, With through-hole
Standard nominal flow rate in flow control direction	29.5 l/min	95 ... 115 l/min	205 ... 210 l/min	370 ... 420 l/min	1,010 l/min	1,620 l/min	3,300 l/min
Standard nominal flow rate in blocked direction	26 ... 27.5 l/min	75 ... 137 l/min	180 ... 275 l/min	150 ... 780 l/min	1,150 l/min	2,760 l/min	4,800 l/min
Operating pressure	0.3 ... 8 bar	0.5 ... 10 bar		0.1 ... 10 bar			0.3 ... 15 bar
Ambient temperature	-10 ... 60°C		-20 ... 60°C		-20 ... 75°C		
Media temperature	-10 ... 60°C		-20 ... 60°C		-20 ... 75°C		
Operating medium	Compressed air to ISO 8573-1:2010 [6:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]		Compressed air to ISO 8573-1:2010 [7:-:-], Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [7:4:4]	Compressed air to ISO 8573-1:2010 [7:-:-]	
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)						
ATEX declaration <sup>1)</sup>	For zone 1, 2, 21, 22, The information in the certificate must be observed.						
Material housing	Wrought aluminium alloy			Wrought aluminium alloy, Die-cast zinc	Die-cast zinc		Wrought aluminium alloy
Material seals	NBR						
Material sleeve	–	POM		–			
Material adjusting screw	Brass	High-alloy steel		Brass, Steel, Galvanised	Brass		–
Material nut	–	Wrought aluminium alloy		–			
Note on materials	RoHS-compliant						
LABS (PWIS) conformity	VDMA24364-B1/B2-L						

1) More information [www.festo.com/catalogue/gr](http://www.festo.com/catalogue/gr) → Support/Downloads.

## Datasheet

## Technical data – Push-in connector QS

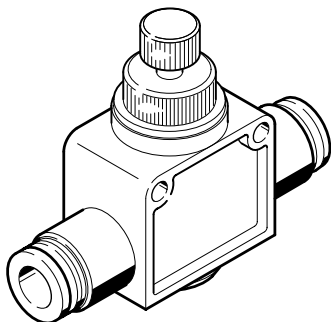


Pneumatic connection, port 2	QS-3	QS-4	QS-6	QS-8
Pneumatic connection, port 1	QS-3	QS-4	QS-6	QS-8
Valve function	One-way flow control function			
Mounting position	optional			
Adjustment component	Knurled screw			
Type of mounting	Either:, Front panel mounting, With through-hole, With accessories			
Standard nominal flow rate in flow control direction	85 l/min	110 l/min	245 l/min	265 l/min
Standard nominal flow rate in blocked direction	120 l/min	165 l/min	430 l/min	500 l/min
Operating pressure	0.2 ... 10 bar			
Ambient temperature	-10 ... 60°C			
Media temperature	-10 ... 60°C			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]			
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)			
ATEX declaration <sup>1)</sup>	For zone 1, 2, 21, 22, The information in the certificate must be observed.			
Material housing	PA-reinforced			
Material seals	NBR			
Material adjusting screw	High-alloy steel			
Note on materials	RoHS-compliant			
LABS (PWIS) conformity	VDMA24364-B1/B2-L			

1) More information [www.festo.com/catalogue/gr](http://www.festo.com/catalogue/gr) → Support/Downloads.

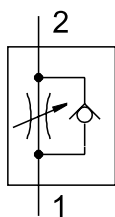
## Datasheet

### Technical data – Push-in connector QB

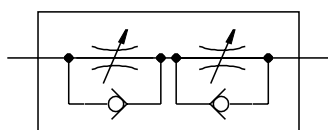


Pneumatic connection, port 2	QB-5/32	QB-3/16	QB-1/4	QB-5/16	QB-3/8	QB-1/2
Pneumatic connection, port 1	QB-5/32	QB-3/16	QB-1/4	QB-5/16	QB-3/8	QB-1/2
Valve function	One-way flow control function					
Type of actuation	Manual					
Mounting position	optional					
Adjustment component	Slotted head screw					
Type of mounting	Either, In-line installation, With through-hole					
Standard nominal flow rate in flow control direction	1.7 cfm	3.1 cfm	4.7 cfm	8 cfm	11.4 cfm	14 cfm
Standard nominal flow rate in blocked direction	0.6 ... 1.7 cfm	2.6 ... 3.1 cfm	5 ... 5.5 cfm	5.7 ... 8.1 cfm	8.1 ... 11.7 cfm	10.8 ... 12.7 cfm
Operating pressure	-13.793 ... 116.001 psi					
Ambient temperature	0 ... 60°C					
Media temperature	32 ... 140°F					
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)					
Material housing	PBT-reinforced					
Material seals	NBR					
Material adjusting screw	Brass, Nickel-plated					
Note on materials	RoHS-compliant					
LABS (PWIS) conformity	VDMA24364 zone III					

### Function one-way flow control valve GR/GRA



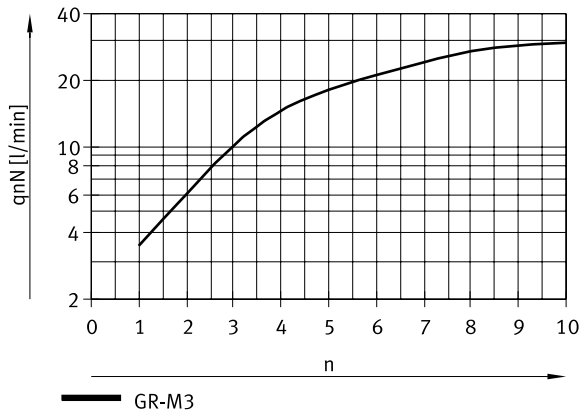
### Function one-way flow control valve GR...X2



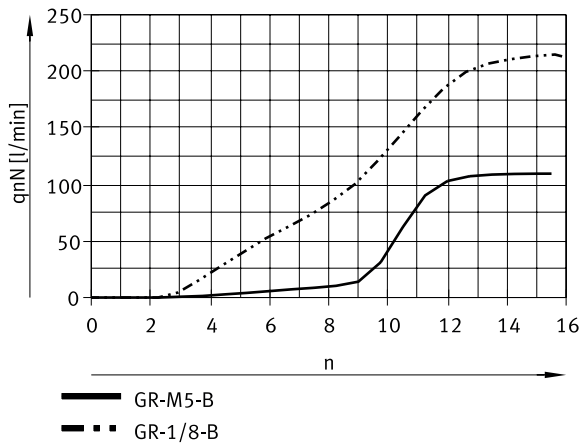
Two one-way flow control valves are combined in one housing. This allows the advance and return speeds to be set separately for single- or double-acting compact cylinders, for example.

Datasheet

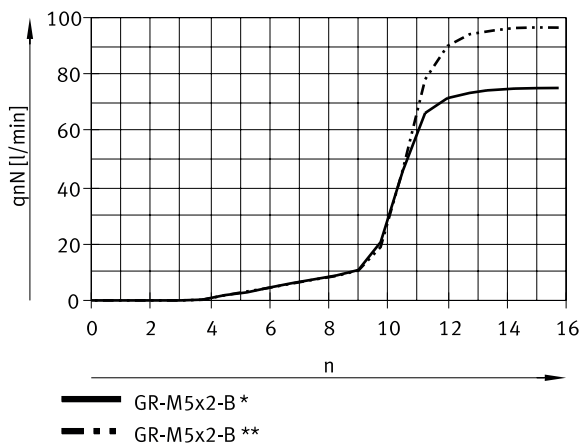
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-M3)



Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-M5-B; GR-1/8-B)



Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-M5X2-B)

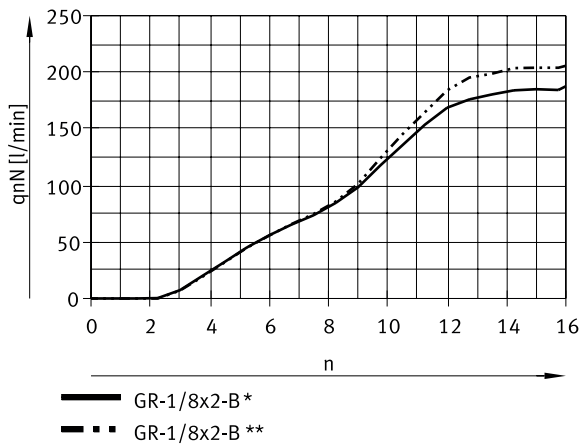


\* adjusting screw closed

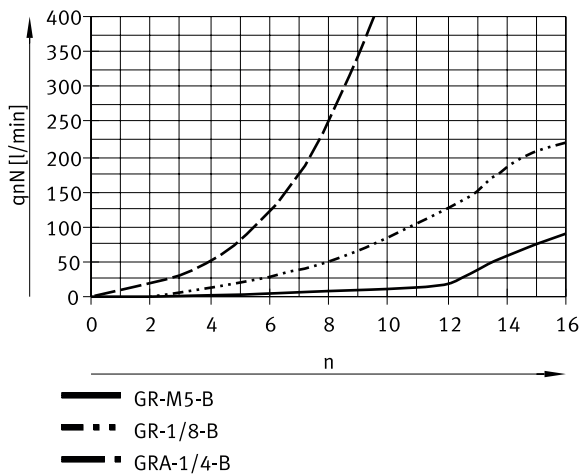
\*\* adjusting screw open

## Datasheet

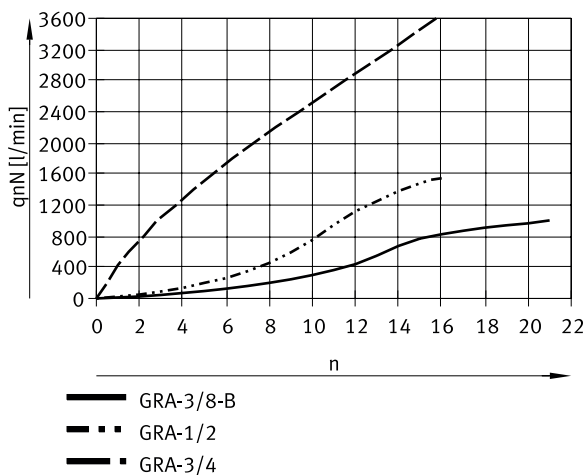
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-1/8X2-B)



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)



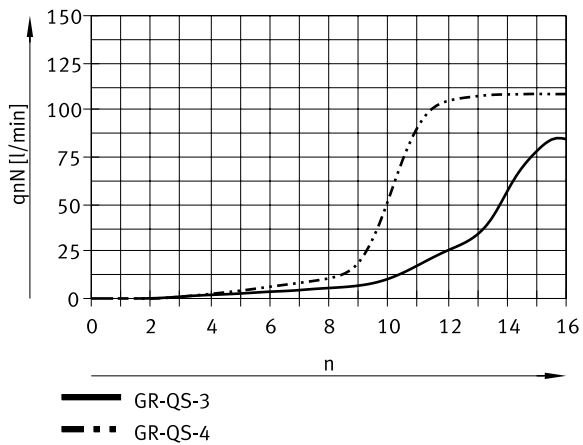
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-3/8-B; GR-1/2; GR-3/4)



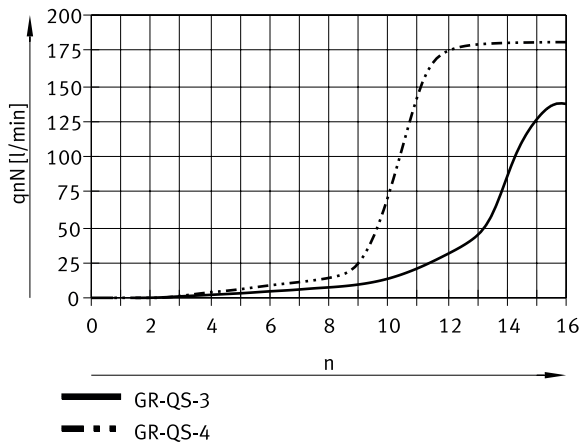


## Datasheet

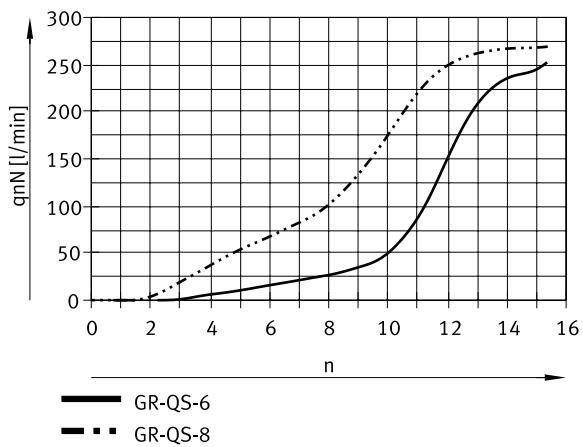
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-QS-3; GR-QS-4)



Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle rotations  $n$  (GR-QS-3; GR-QS-4)

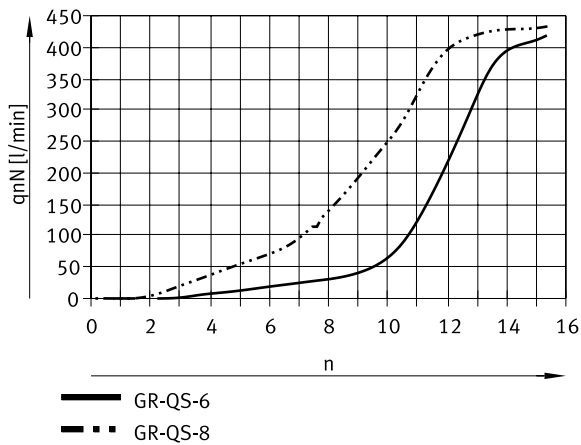


Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-QS-6; GR-QS-8)

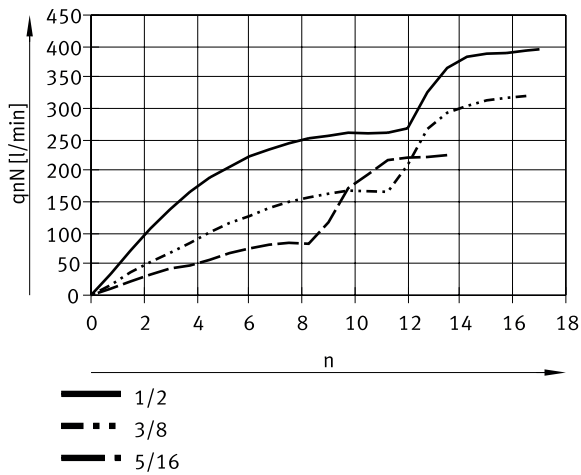


## Datasheet

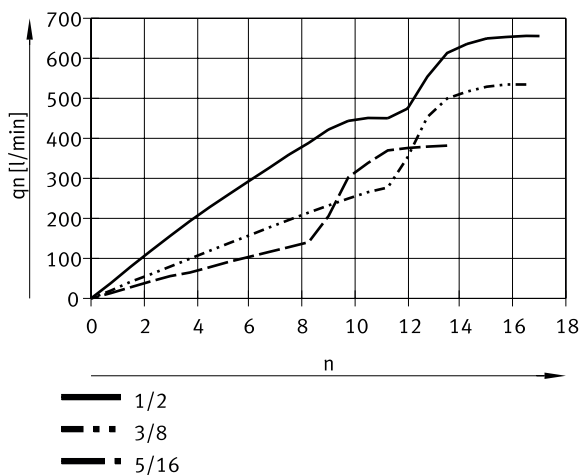
Standard flow rate  $q_N$  at 6 → 0 bar as a function of spindle rotations  $n$  (GR-QS-6; GR-QS-8)



Standard nominal flow rate  $q_N$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-QB-1/2-U, GR-QB-3/8-U, GR-QB-5/16-U)

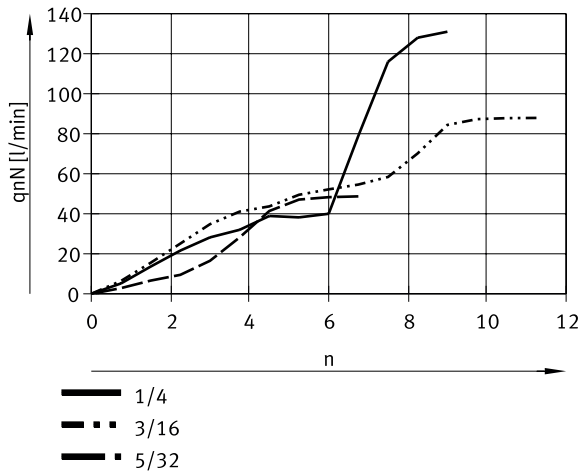


Standard flow rate  $q_N$  at 6 → 0 bar as a function of spindle rotations  $n$  (GR-QB-1/2-U, GR-QB-3/8-U, GR-QB-5/16-U)

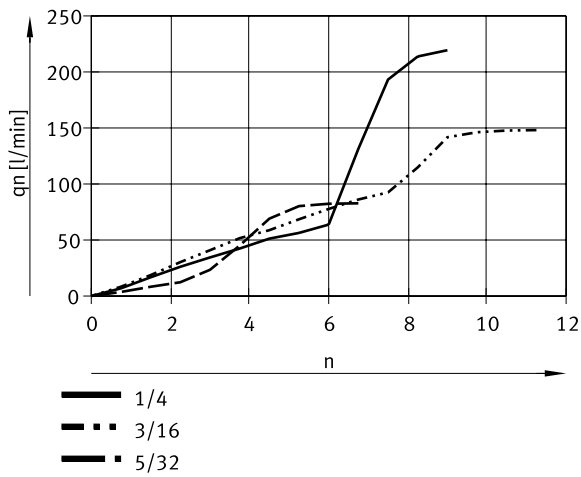


Datasheet

Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle rotations  $n$  (GR-QB-1/4-U, GR-QB-3/16-U, GR-QB-5/32-U)



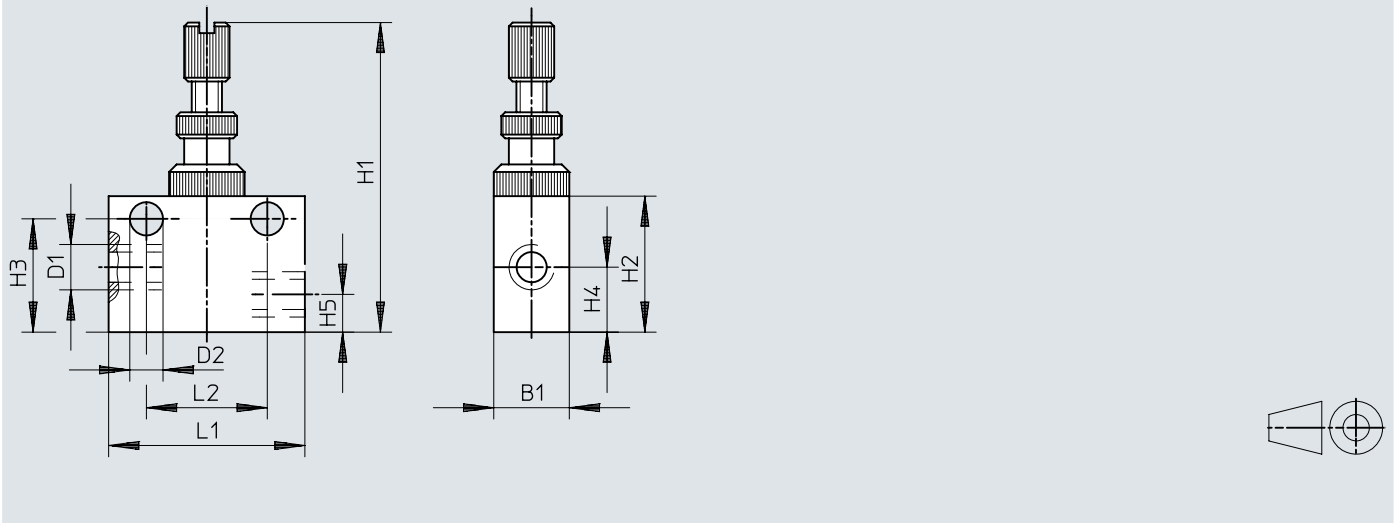
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle rotations  $n$  (GR-QB-1/4-U, GR-QB-3/16-U, GR-QB-5/32-U)



## Dimensions

Dimensions – GR-M3

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

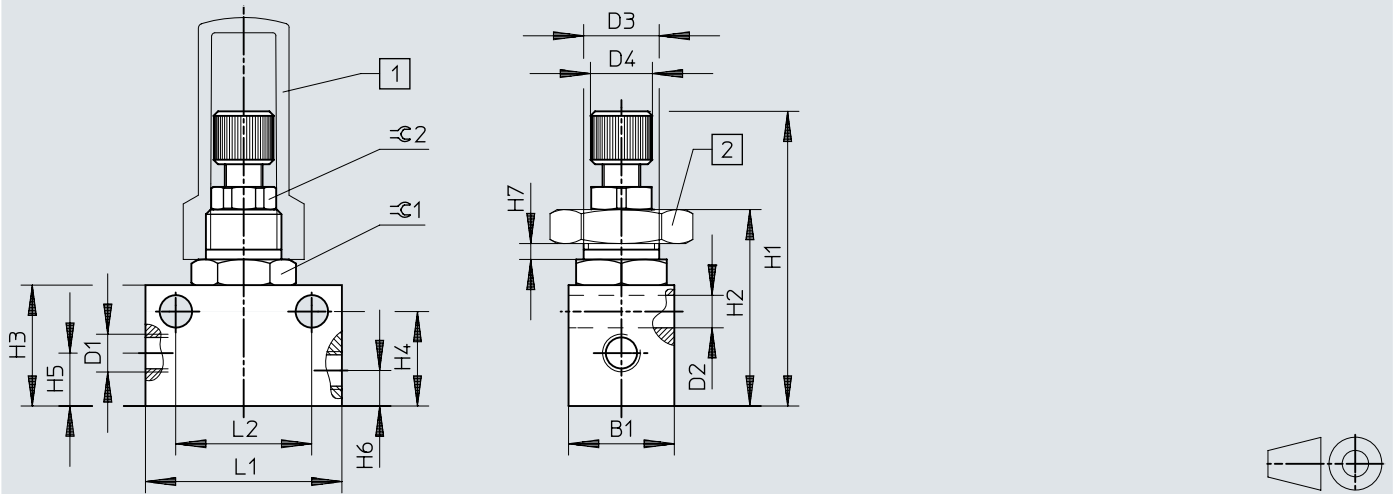


	B1	D1	D2 ∅	H1 min.   max.	H2	H3	H4	H5	L1	L2
GR-M3	6	M3	2,2	18   20	9	7,5	4,3	2,5	13	8,5

## Dimensions

Dimensions – GR-M5-B, GR-1/8-B

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



[1] Cover cap GRK

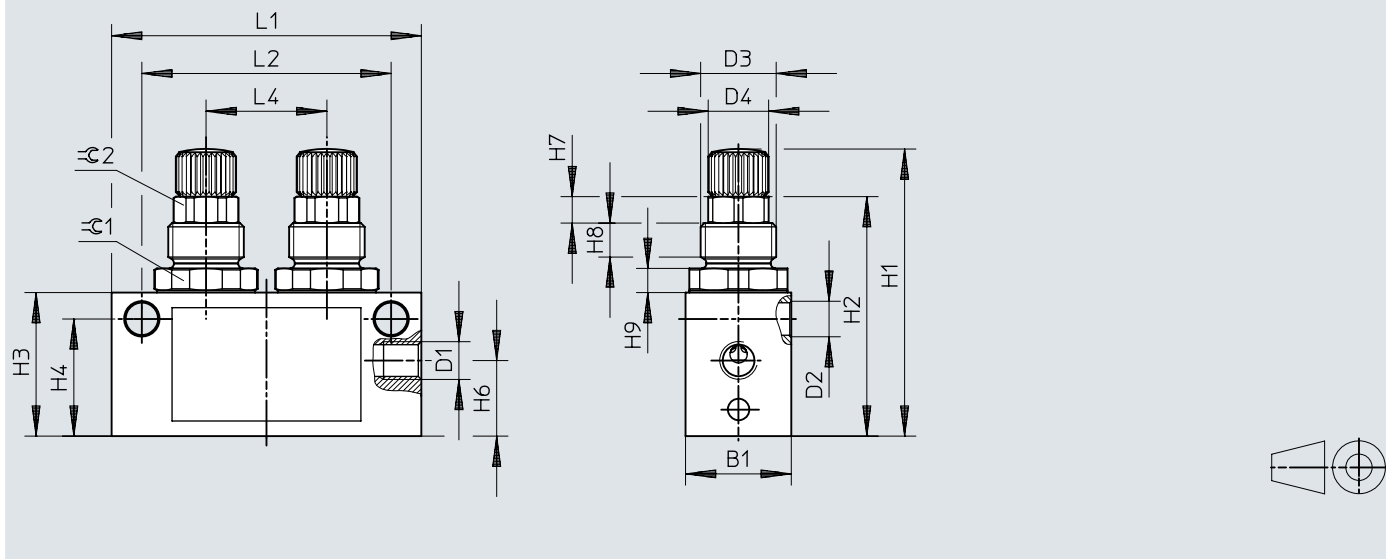
[2] Hex nut GRM

	D1	B1	D2 ∅	D3	D4	H1		H2	H3	H4	H5	H6	H7 max.	L1	L2 ±0,1	≙ 1	≙ 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

## Dimensions

Dimensions – GR-M5X2-B

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

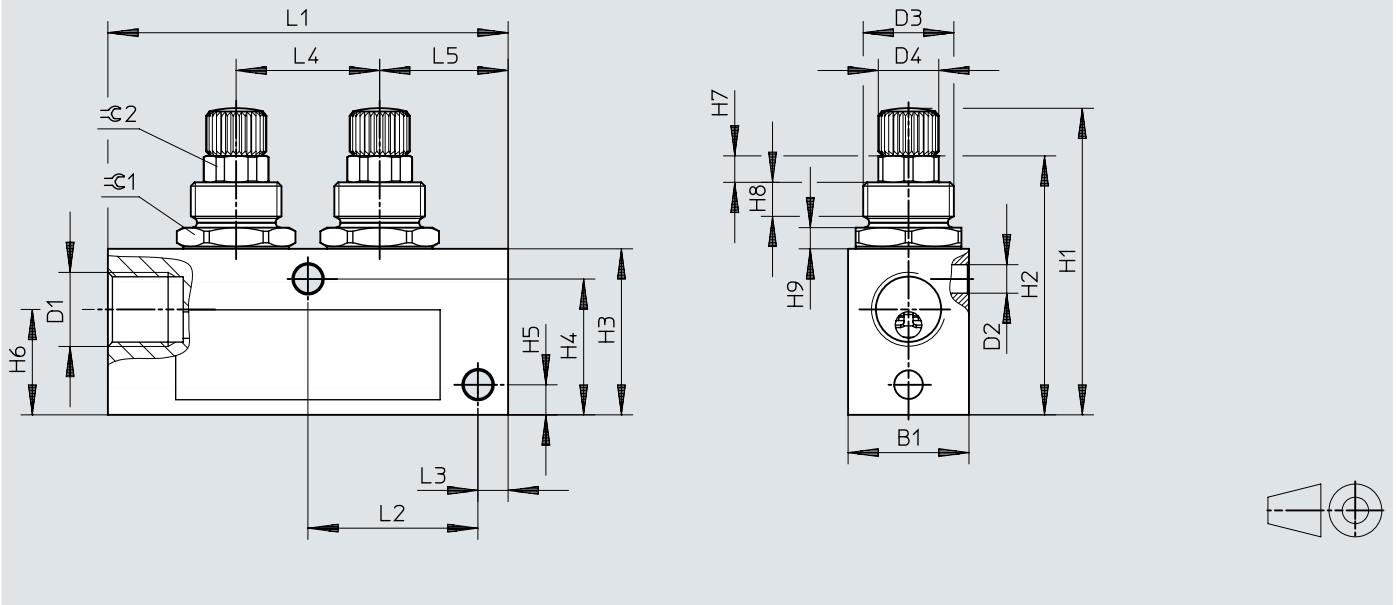


	D1	B1	D2 ∅	D3	D4	H1		H2	H3	H4
						min.	max.			
GR-M5X2-B	M5	14	4,7 <sub>+0,1</sub>	M10x1	8	38	43,5	31,7	19	15,5
	H6	H7	H8	H9	L1	L2	L4	∅ 1	∅ 2	
GR-M5X2-B	10	3,5	4,5	3,2	41 <sub>+0,5</sub>	33 <sub>+0,2</sub>	16 <sub>+0,2</sub>	13	8	

## Dimensions

Dimensions – GR-1/8X2-B

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

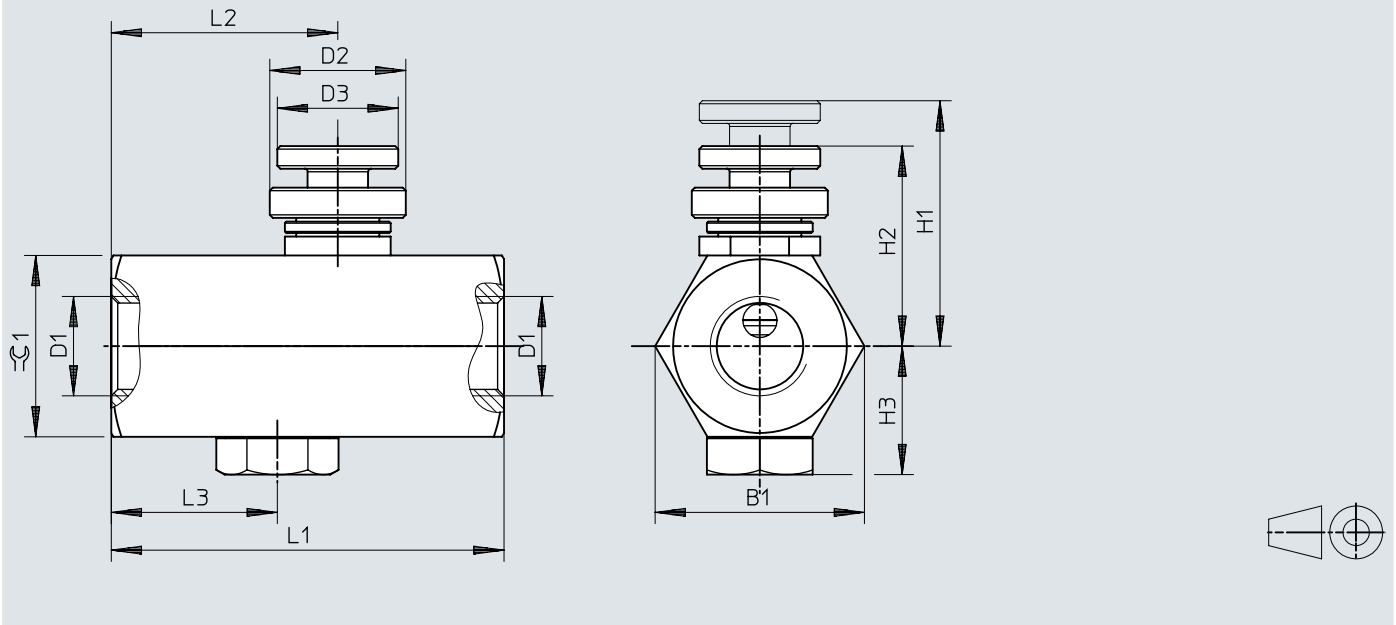


	D1	B1	D2 ∅	D3	D4	H1		H2	H3	H4	H5
						min.	max.				
GR-1/8X2-B	G1/8	16	3,8 <sub>+0,1</sub>	M12x1	8	40,6	46,2	34,3	22	18	4
	H6	H7	H8	H9	L1	L2	L3	L4	L5	≈C 1	≈C 2
GR-1/8X2-B	14	3,5	4,5	2,8	53 <sub>+0,5</sub>	22,5 <sub>±0,15</sub>	4	19 <sub>±0,15</sub>	17	14	8

## Dimensions

Dimensions – GR-1/4

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



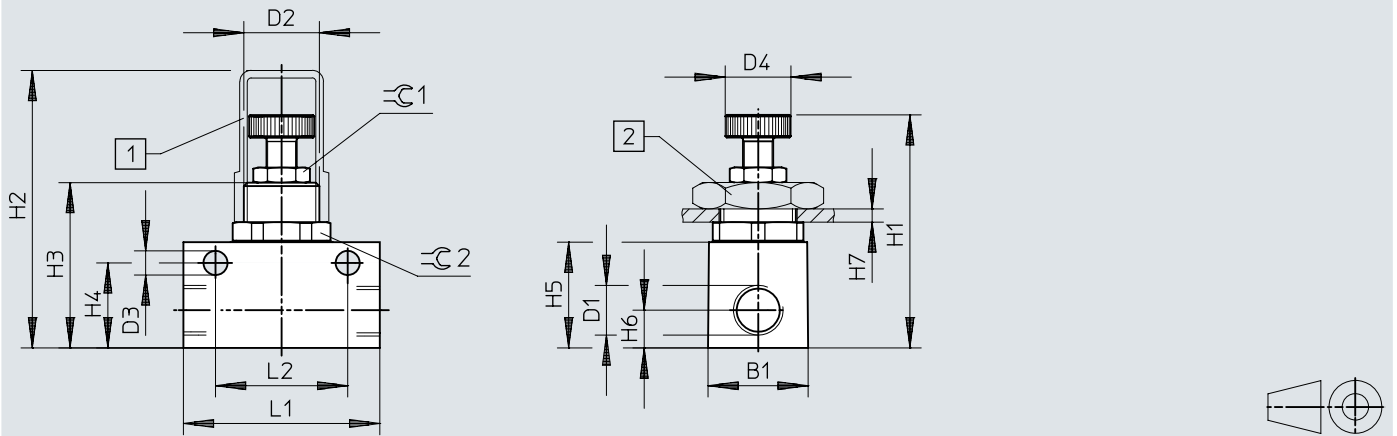
	D1	B1	D2 ∅	D3 ∅	H1	H2	H3	L1	L2	L3	$\varnothing 1$
GR-1/4	G1/4	28	18	16	32,5	26,5	17	52	30	22	24



## Dimensions

### Dimensions – GRA-1/4-B

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



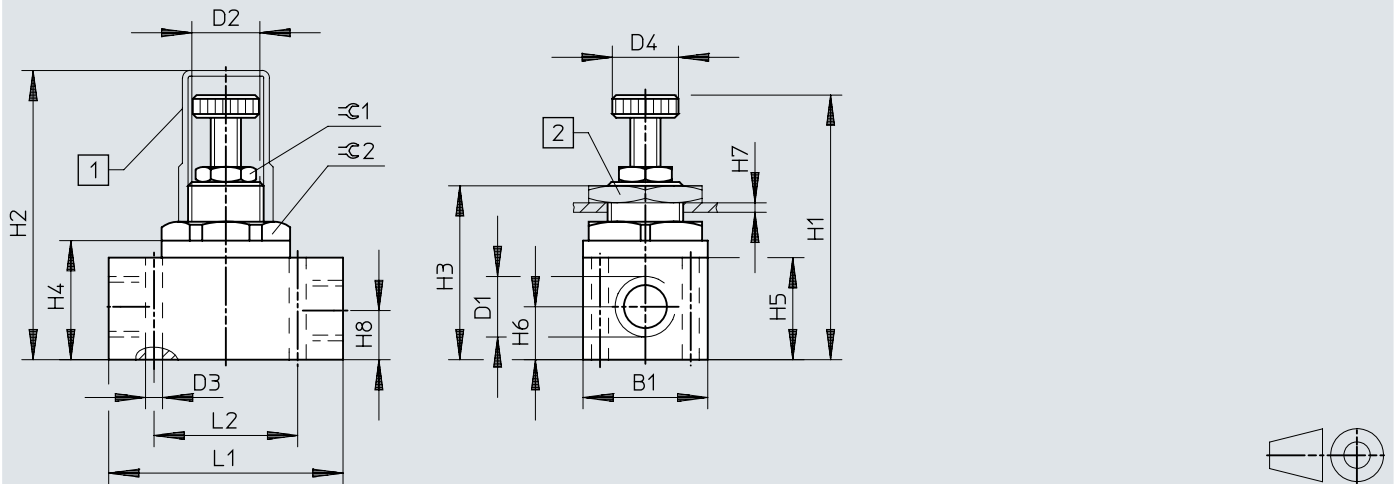
- [1] Cover cap GRK
- [2] Hex nut GRM

	D1	B1	D2	D3 ∅	D4 ∅	H1		L1	L2	≙ 1	≙ 2
						min.	max.				
GRA-1/4-B	G1/4	26,5	M20x1,5	6,4	17,4	56	62				
	H3	H4	H5	H6	H7 max.						
GRA-1/4-B	44	22,5	28	10	3,5	52	35 ±0,1	13	24		

## Dimensions

### Dimensions – GR-3/8-B

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



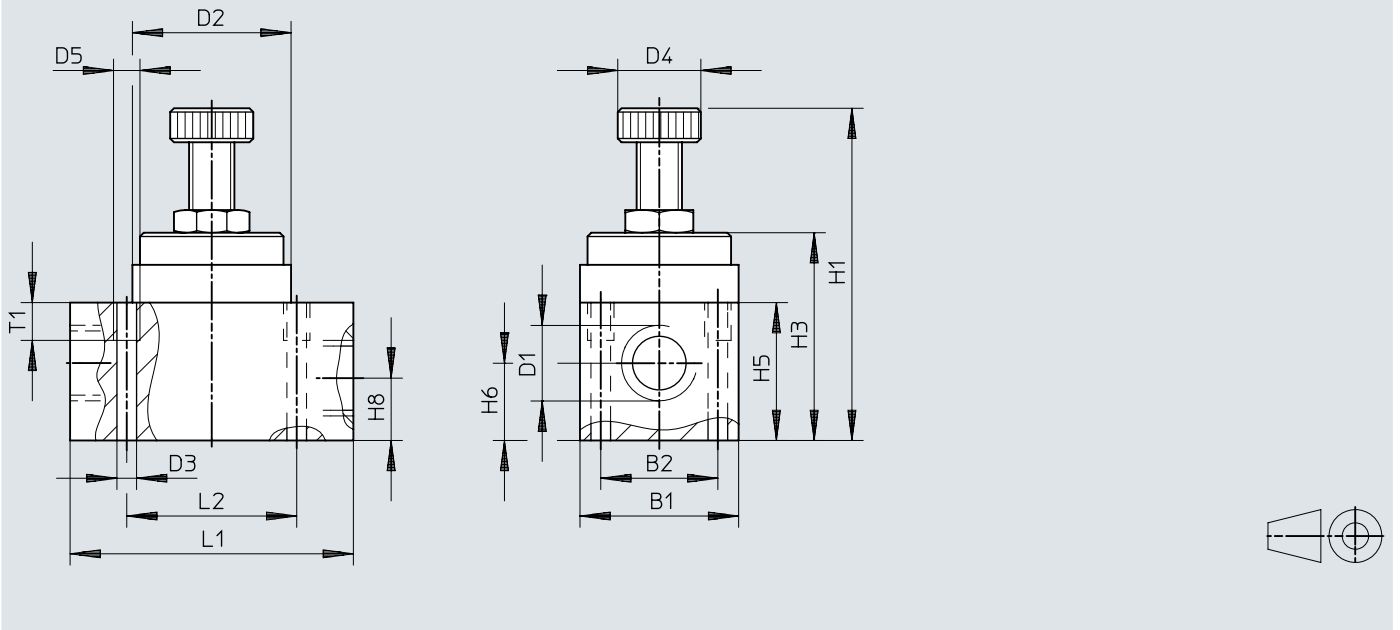
- [1] Cover cap GRK
- [2] Hex nut GRM

	D1	B1	D2	D3 ∅	D4 ∅	H1		L1	L2	≅ 1	≅ 2
						min.	max.				
GR-3/8-B	G3/8	33	M20x1,5	4,5	17,5	62,5	74	62	38	13	30
	H3	H4	H5	H6	H7 max.	H8					
GR-3/8-B	46	31,5	27	14	3,5	13					

## Dimensions

Dimensions – GR-1/2

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

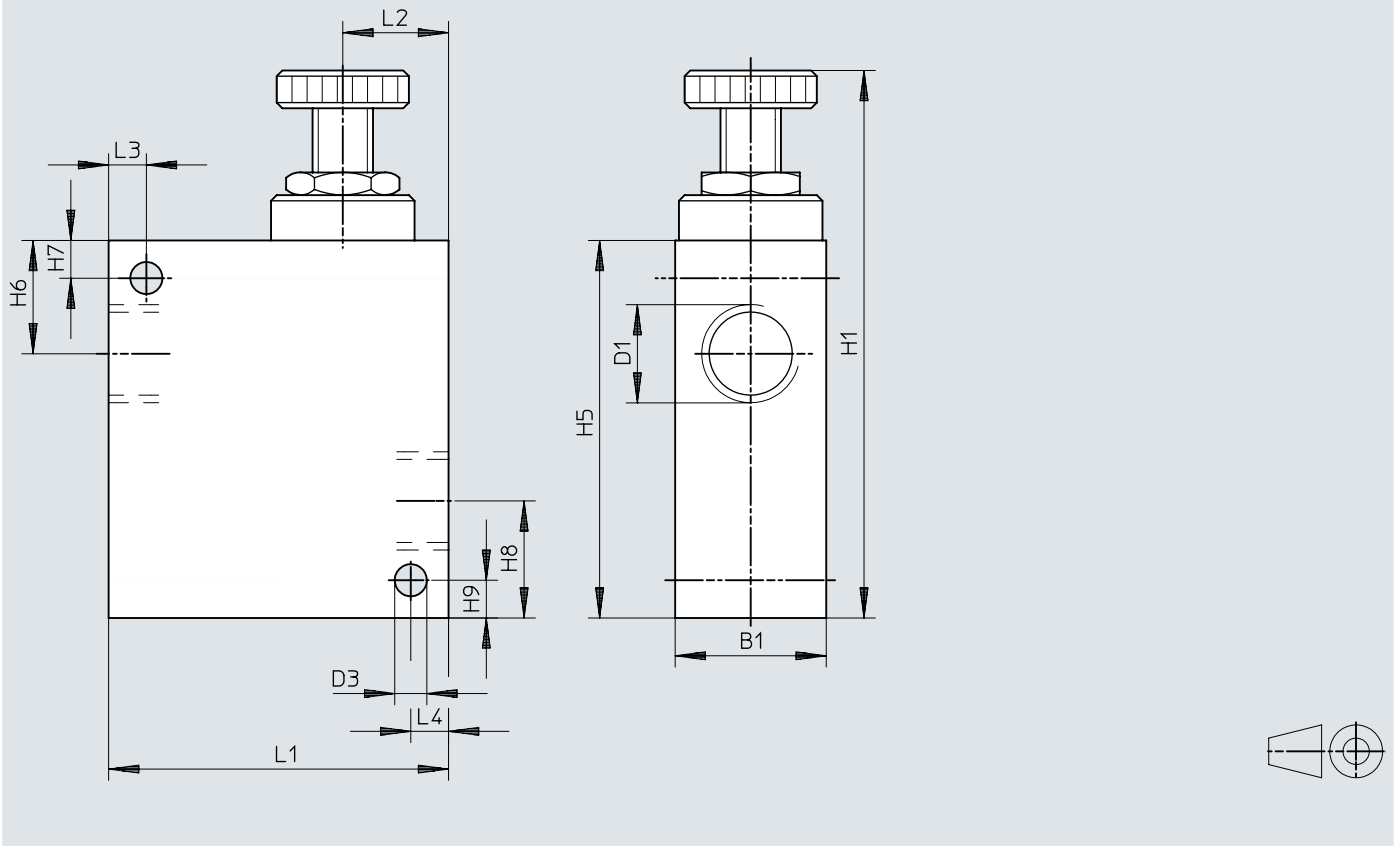


	B1	B2	D1	D2	D3	D4	D5	H1	H3	H5	H6	H8	L1	L2	T1
				∅	∅	∅									
GR-1/2	42	31	G1/2	42	2	22	M6	88	55	36,5	20,5	16,5	75	45	10

## Dimensions

Dimensions – GR-3/4

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

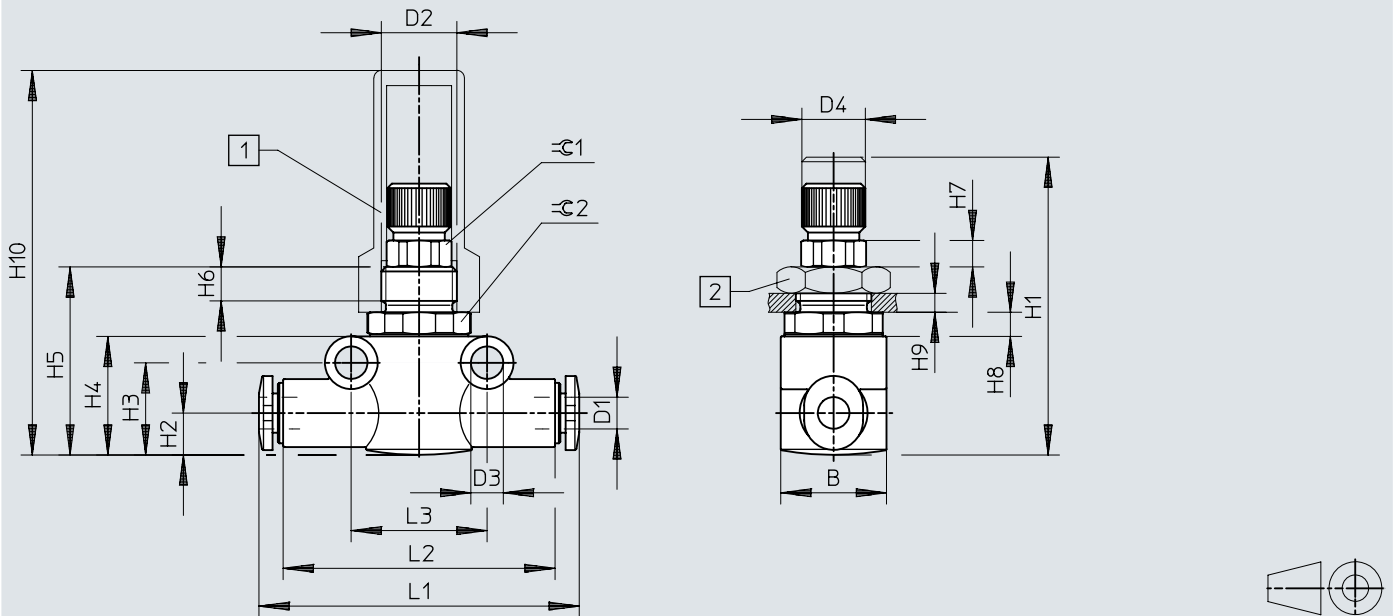


	B1	D1	D3 ∅	H1	H5	H6	H7	H8	H9	L1	L2	L3	L4
GR-3/4	40	G3/4	8,5	145	100	30	10	30	10	90	28	10	10

## Dimensions

Dimensions – Push-in connector QS, polymer, knurled screw

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



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

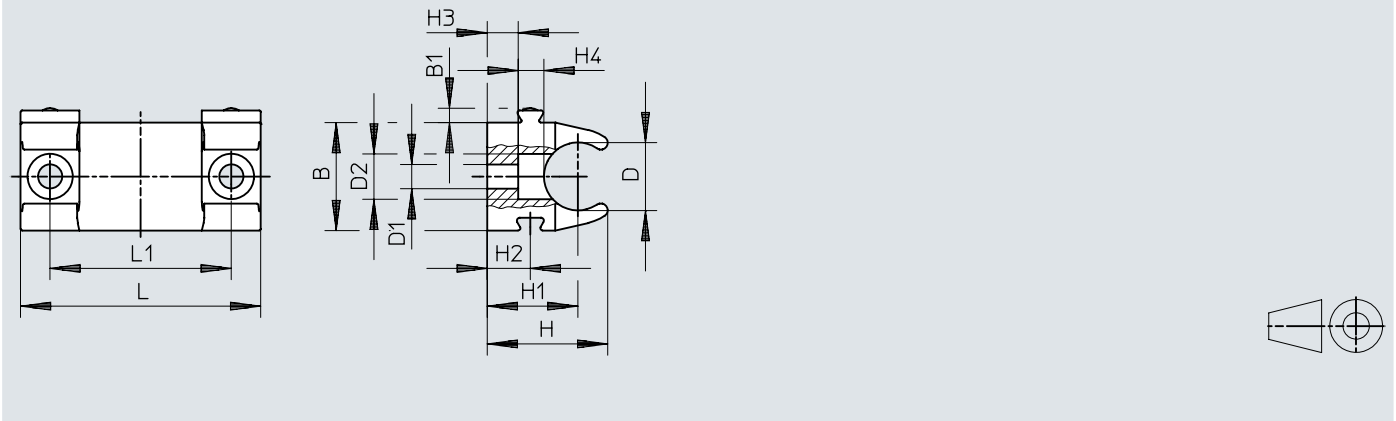
	D1	B	D2	D3 ∅	D4 ∅	H1		H2	H3	H4
						min.	max.			
GR-QS-3	3	14	M10x1	4,3 ±0,1	7,9 -0,3	35	41,5	5,55	12,2	15,7
GR-QS-4	4	14	M10x1	4,3 ±0,1	7,9 -0,3	35	41,5	5,55	12,2	15,7
GR-QS-6	6	16	M12x1	4,3 ±0,1	7,9 -0,3	40	46	8,4	17,3	21,3
GR-QS-8	8	16	M12x1	4,3 ±0,1	7,9 -0,3	40	46	8,4	17,3	21,3

	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

## Dimensions


### Dimensions – Retaining bracket GR H


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




	B	B1	D ∅	D1 ∅	D2 ∅	H	H1	H2	H3	H4	L	L1
GR-H-QS-3-4	14,3	1,9	9	3,2	6	16	12	5,7	4,1	3,4	31,8	24
GR-H-QS-6-8	19,8	1,9	14,5	3,2	6	19,2	13	5,7	2,3	3,4	31,8	24

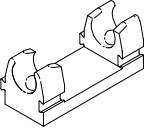
## Ordering data


Ordering data – Male thread						
	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Product weight	Part no.	Type
	M3	29.5 l/min	26 ... 27.5 l/min	2.5 g	<b>15899</b>	<b>GR-M3</b>
	M5	95 l/min	75 l/min	37 g	<b>152611</b>	<b>GR-M5X2-B</b>
		115 l/min	130 ... 137 l/min	19 g	<b>151213</b>	<b>GR-M5-B</b>
	G1/8	205 l/min	190 l/min	54 g	<b>152612</b>	<b>GR-1/8X2-B</b>
		210 l/min	180 ... 275 l/min	31 g	<b>151215</b>	<b>GR-1/8-B</b>
	G1/4	370 l/min	150 l/min	80 g	<b>2101</b>	<b>GR-1/4</b>
		420 l/min	780 l/min	180 g	<b>6509</b>	<b>GRA-1/4-B</b>
	G3/8	1,010 l/min	1,150 l/min	225 g	<b>6308</b>	<b>GR-3/8-B</b>
G1/2	1,620 l/min	2,760 l/min	517 g	<b>3720</b>	<b>GR-1/2</b>	
G3/4	3,300 l/min	4,800 l/min	938 g	<b>2103</b>	<b>GR-3/4</b>	

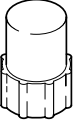
Ordering data – Push-in connector QS						
	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Product weight	Part no.	Type
	QS-3	85 l/min	120 l/min	12 g	<b>193965</b>	<b>GR-QS-3</b>
	QS-4	110 l/min	165 l/min		<b>193967</b>	<b>GR-QS-4</b>
	QS-6	245 l/min	430 l/min	22 g	<b>193969</b>	<b>GR-QS-6</b>
	QS-8	265 l/min	500 l/min	23 g	<b>193970</b>	<b>GR-QS-8</b>

Ordering data - Push-in connector QB						
	Pneumatic connection, port 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in blocked direction	Product weight	Part no.	Type
	QB-5/32	1.7 cfm	0.6 ... 1.700 cfm	11.34 oz	<b>534680</b>	<b>GR-QB-5/32-U</b>
	QB-3/16	3.1 cfm	2.6 ... 3.100 cfm	28.35 oz	<b>534681</b>	<b>GR-QB-3/16-U</b>
	QB-1/4	4.7 cfm	5 ... 5.500 cfm		<b>534682</b>	<b>GR-QB-1/4-U</b>
	QB-5/16	8 cfm	5.7 ... 8.100 cfm	42.525 oz	<b>534683</b>	<b>GR-QB-5/16-U</b>
	QB-3/8	11.4 cfm	8.1 ... 11.700 cfm	76.545 oz	<b>534684</b>	<b>GR-QB-3/8-U</b>
	QB-1/2	14 cfm	10.8 ... 12.700 cfm	119.07 oz	<b>534685</b>	<b>GR-QB-1/2-U</b>

## Accessories

Retaining bracket GR H			
	Short type code	Part no.	Type
	GR	195496	GR-H-QS-6-8
		195495	GR-H-QS-3-4

Hex nut GRM			
	Short type code	Part no.	Type
	GRM	6444	GRM-M5
		204596	GRM-3/8
		2107	GRM-1/8

Cover cap GRK			
	Short type code	Part no.	Type
	GRK	2105	GRK-1/8