

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

FESTO



Characteristics

At a glance

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

Diagrams

[Link](#) [online](#)



The diagrams shown in this document are also available online. There, it is possible to display precise values.

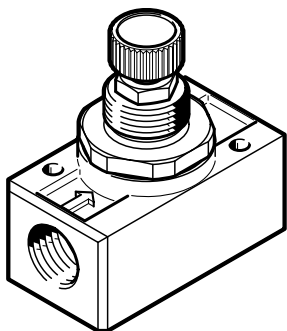
Pneumatic connection

Variants:

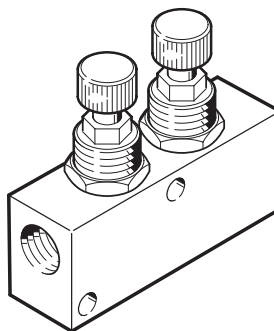
- External thread (metal housing)
- Plug-in connection (plastic housing)

Number of check 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	
GR	One-way valve	
GRA	One-way valve	

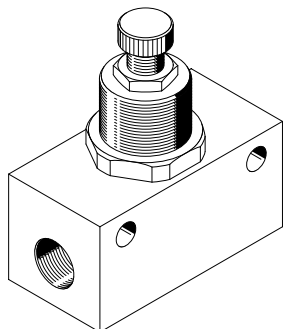
002	Pneumatic connection	
M3	External thread M3	
M5	External thread M5	
1/8	External thread G1/8	
1/4	External thread G1/4	
3/8	External thread G3/8	
1/2	external thread G1/2	
3/4	External thread G3/4	
QS-3	Plug connector, 3 mm	
QS-4	Plug connector, 4 mm	
QS-6	Plug connector, 6 mm	
QS-8	Plug connector, 8 mm	

003	Number of check valves	
	1 valve	
X2	2 valves	

004	Generation	
	Without	
B	Series B	

Datasheet

Technical data - external thread

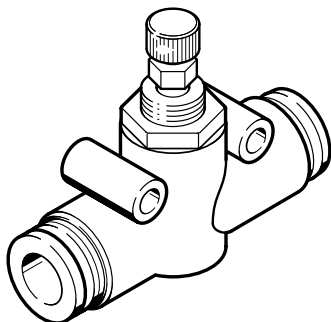


Pneumatic connection 2	M3	M5	G1/8	G1/4	G3/4	Internal thread G1/4	Internal thread G3/8	Internal thread G1/2
Pneumatic connection 1	M3	M5	G1/8	G1/4	G3/4	Internal thread G1/4	Internal thread G3/8	Internal thread G1/2
Nominal width	–	2 mm	3 mm	–				
Valve function	One-way flow control function							
Mounting position	Any							
Adjusting element	Knurled screw							
Type of mounting	Alternatively:, Front panel mounting, With through-hole			In-line installa- tion	Front panel mounting, With through-hole	Alternatively:, Front panel mounting, With through-hole		With through- hole
Standard nominal flow rate in flow control direction	29.5 l/min	95 ... 115 l/min	205 ... 210 l/min	370 l/min	3,300 l/min	420 l/min	1,010 l/min	1,620 l/min
Standard nominal flow rate in non-return direction	26 ... 27.5 l/min	75 ... 137 l/min	180 ... 275 l/min	150 l/min	4,800 l/min	780 l/min	1,150 l/min	2,760 l/min
Operating pressure	0.3 ... 8 bar	0.5 ... 10 bar			0.3 ... 15 bar	0.1 ... 10 bar		
Ambient temperature	-10 ... 60°C	-20 ... 60°C		-20 ... 75°C	-10 ... 60°C	-20 ... 75°C		
Temperature of medium	-10 ... 60°C	-20 ... 60°C		-20 ... 75°C	-10 ... 60°C	-20 ... 75°C		
Operating medium	Compressed air as per ISO 8573- 1:2010 [6:4:4]	Compressed air as per ISO 8573- 1:2010 [7:4:4]		Compressed air as per ISO 8573- 1:2010 [7:-:-]		Compressed air as per ISO 8573- 1:2010 [7:4:4]		Compressed air as per ISO 8573- 1:2010 [7:-:-]
Information on operating and pilot media	Operation with oil lubrication possible (required for further use)							
ATEX declaration ¹⁾	for zones 1, 2, 21 and 22, Please observe the information on the certificate.							
Housing material	Wrought aluminum alloy					Die-cast zinc		
Seals material	NBR				–	NBR	–	
Sleeve material	–	POM		–				
Material of adjusting screw	Brass	High-alloy steel		Steel, Galvanized	–	Brass		
Nut material	–	Wrought aluminum alloy		–				Steel, galvanized
Note on materials	RoHS compliant							
LABS (PWIS) conformity	VDMA24364-B1/B2-L							

1) More information www.festo.com/catalogue/gr → Support/Downloads.

Datasheet

Technical data – Push-in connector QS

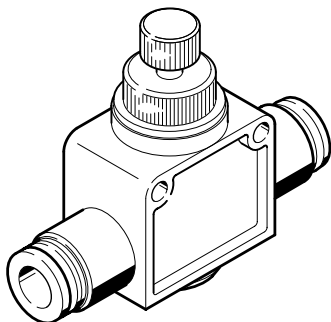


Pneumatic connection 2	QS-3	QS-4	QS-6	QS-8
Pneumatic connection 1	QS-3	QS-4	QS-6	QS-8
Valve function	One-way flow control function			
Mounting position	Any			
Adjusting element	Knurled screw			
Type of mounting	Alternatively:, Front panel mounting, With through-hole, With accessories			
Standard nominal flow rate in flow control direction	85 l/min	110 l/min	245 l/min	265 l/min
Standard nominal flow rate in non-return direction	120 l/min	165 l/min	430 l/min	500 l/min
Operating pressure	0.2 ... 10 bar			
Ambient temperature	-10 ... 60°C			
Temperature of medium	-10 ... 60°C			
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4]			
Information on operating and pilot media	Operation with oil lubrication possible (required for further use)			
ATEX declaration ¹⁾	for zones 1, 2, 21 and 22, Please observe the information on the certificate.			
Housing material	PA-reinforced			
Seals material	NBR			
Material of 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 → Support/Downloads.

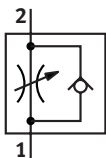
Datasheet

Technical data – Push-in connection QB (NPT – not available in all markets)

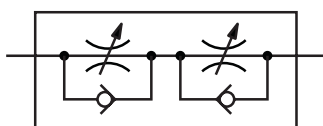


Pneumatic connection 2	QB-5/32	QB-1/4	QB-5/16	QB-3/8	QB-1/2
Pneumatic connection 1	QB-5/32	QB-1/4	QB-5/16	QB-3/8	QB-1/2
Valve function	One-way flow control function				
Actuation type	Manual				
Mounting position	Any				
Adjusting element	Slotted screw				
Type of mounting	Alternatively, In-line installation, With through-hole				
Standard nominal flow rate in flow control direction	7.63 cfm	21.1 cfm	35.91 cfm	51.18 cfm	62.85 cfm
Standard nominal flow rate in non-return direction	2.693 ... 7.632 cfm	22.446 ... 24.69 cfm	25.588 ... 36.362 cfm	36.362 ... 52.523 cfm	48.483 ... 57.012 cfm
Standard flow rate in flow control direction 6 -> 0 bar	13.5 cfm	35 cfm	60.6 cfm	85.3 cfm	104.2 cfm
Standard flow rate in non-return direction at 6 -> 0 bar	10.774 ... 14.365 cfm	47.585 ... 48.034 cfm	61.95 ... 62.399 cfm	92.028 ... 97.864 cfm	74.52 ... 90.681 cfm
Operating pressure	-13.793 ... 116.001 psi				
Ambient temperature	0 ... 60°C				
Temperature of medium	32 ... 140°F				
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4]				
Information on operating and pilot media	Operation with oil lubrication possible (required for further use)				
Housing material	PBT-reinforced				
Seals material	NBR				
Material of adjusting screw	Brass, Nickel-plated				
Note on materials	RoHS compliant				
LABS (PWIS) conformity	VDMA24364 Zone III				

Function one-way flow control valve GR/GRA

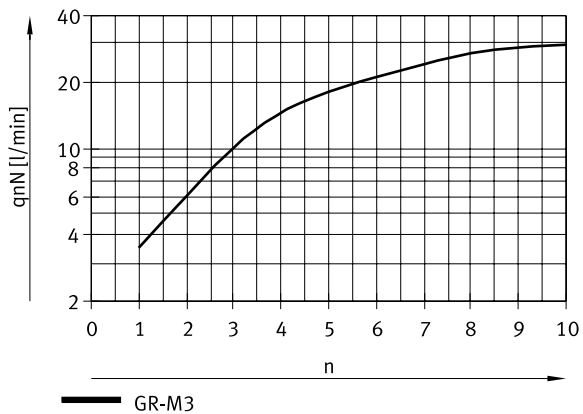
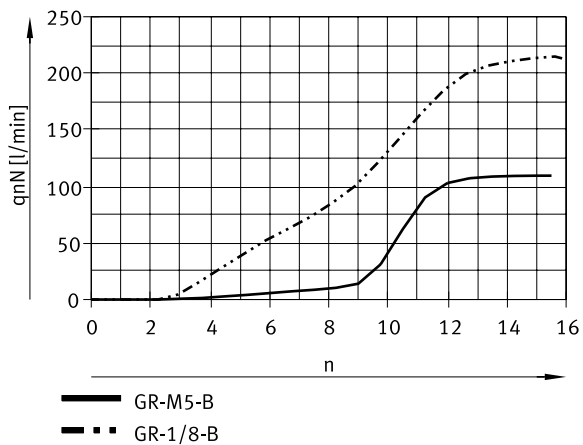
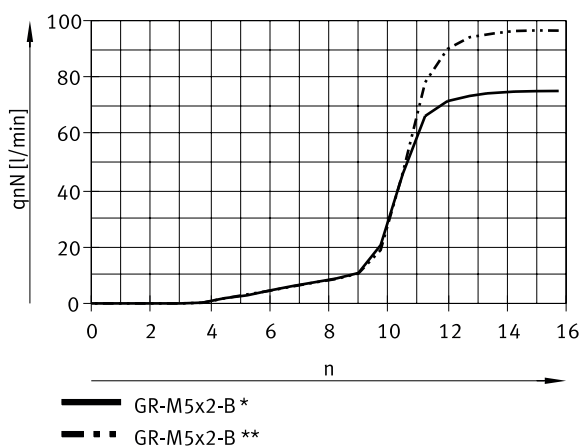


Function one-way flow control valve GR...X2



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

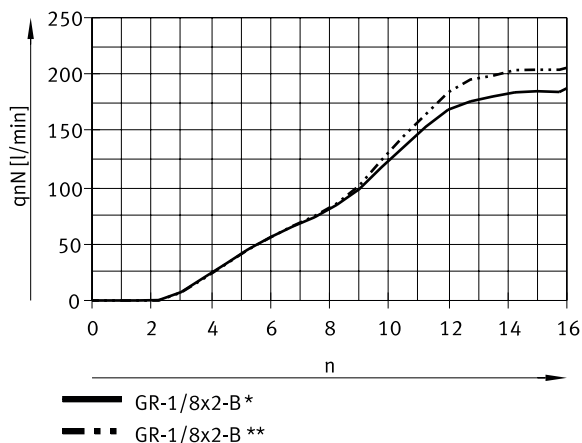
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-M3)Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-M5-B; GR-1/8-B)Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-M5X2-B)

* adjusting screw closed

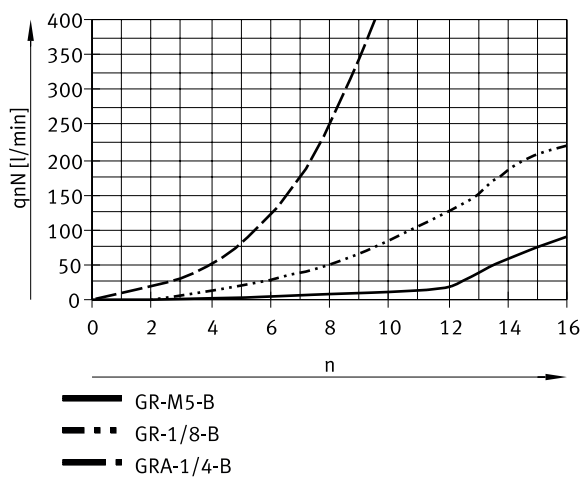
** Adjusting screw open

Datasheet

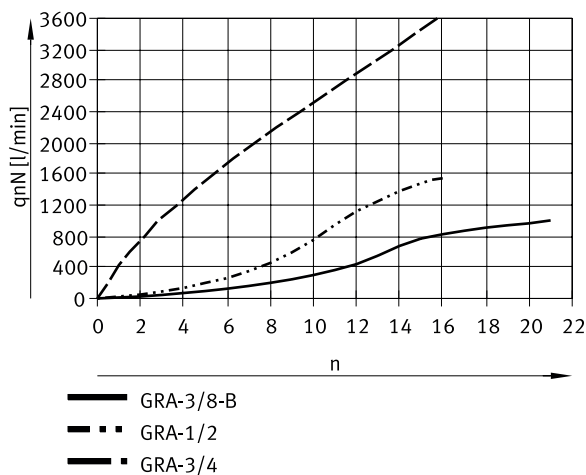
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-1/8X2-B)



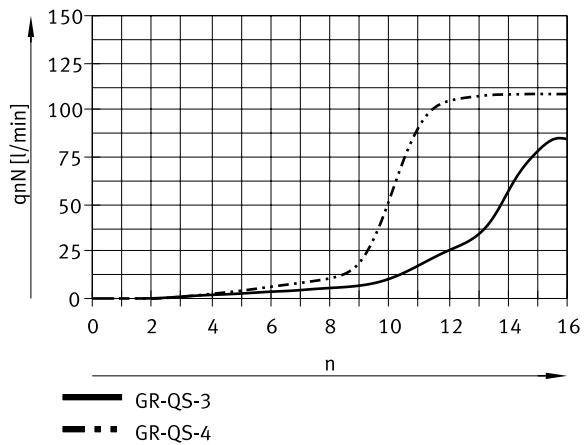
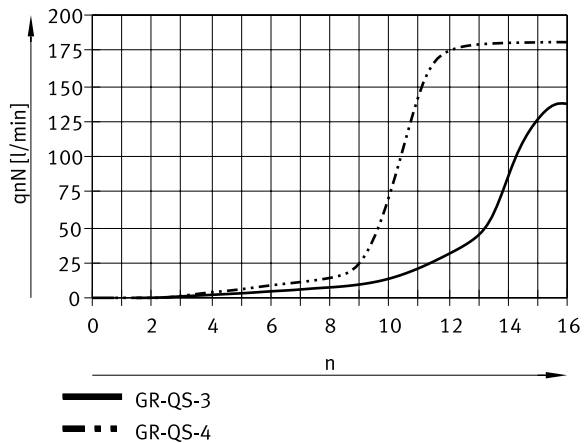
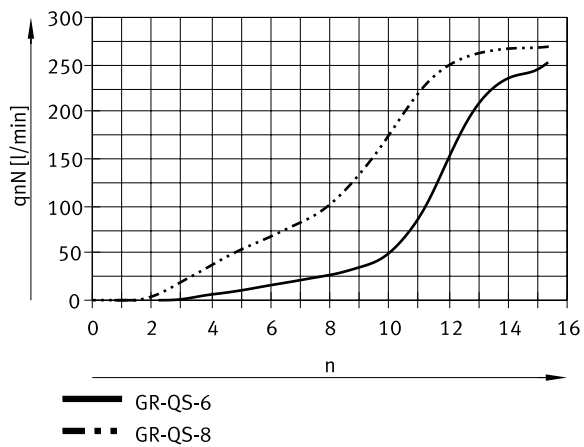
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GRA-1/4-B; GR-1/8-B; GR-M5-B)



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)

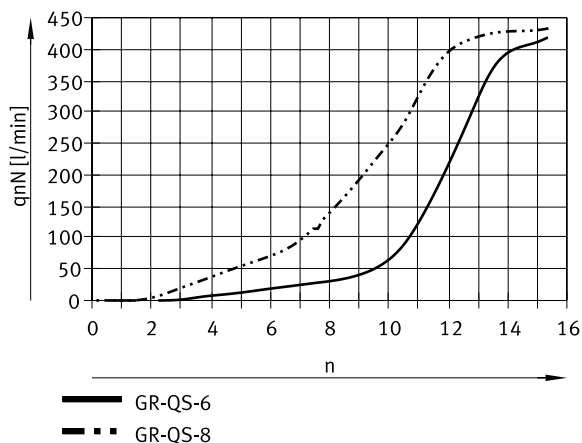


Datasheet

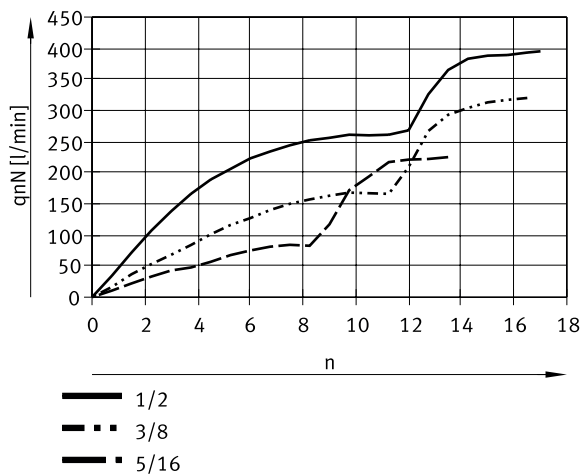
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-QS-3; GR-QS-4)Standard flow rate q_n at 6 → 0 bar as a function of spindle rotations n (GR-QS-3; GR-QS-4)Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle rotations n (GR-QS-6; GR-QS-8)

Datasheet

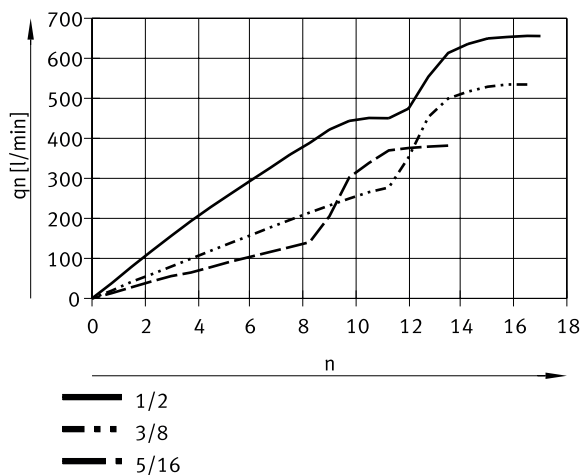
Standard flow rate q_N at 6 → 0 bar as a function of spindle rotations n (GR-QS-6; GR-QS-8)



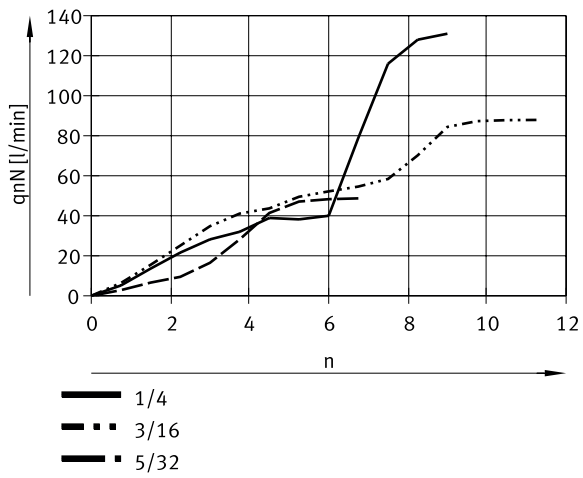
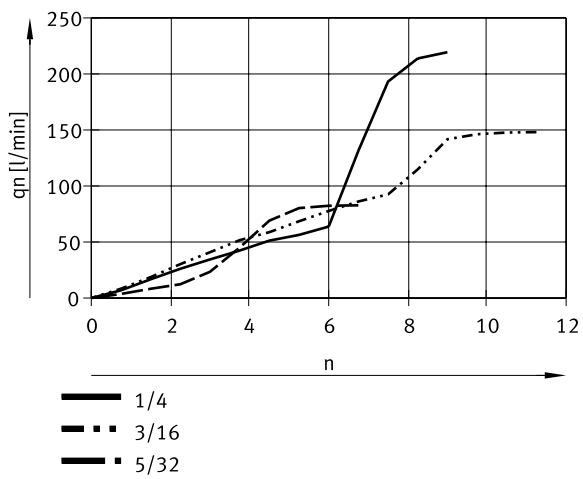
Standard nominal flow rate q_N at 6 → 5 bar as a function of spindle rotations n (GR-QB-1/2-U, GR-QB-3/8-U, GR-QB-5/16-U)



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)

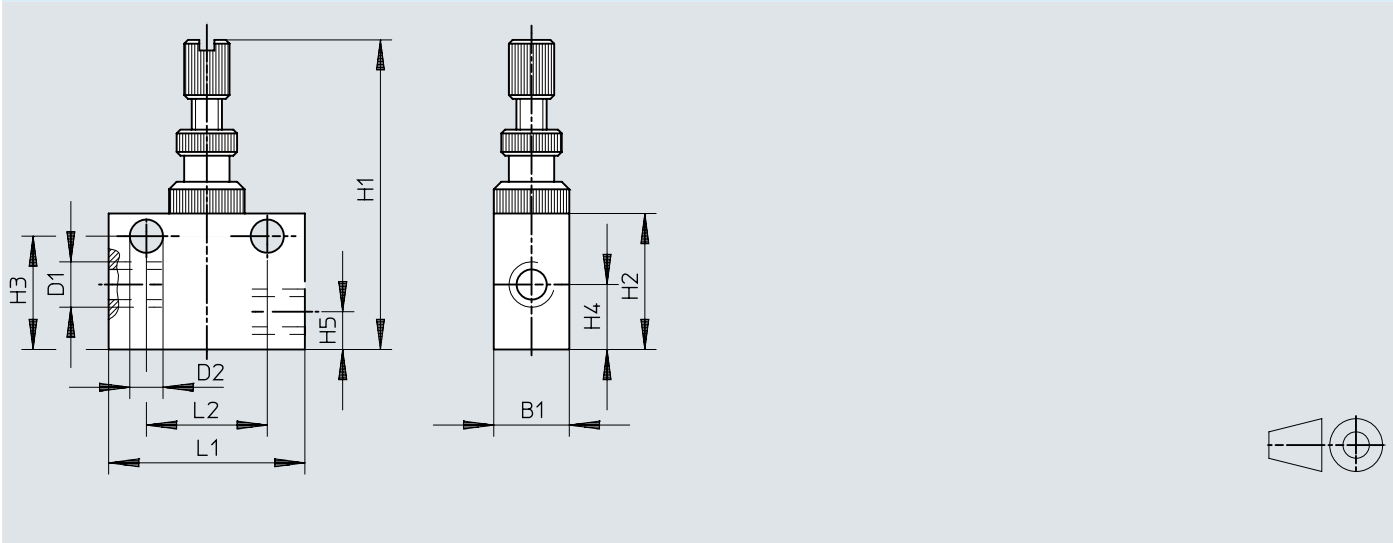


Datasheet

Standard nominal flow rate q_{nN} at $6 \rightarrow 5$ 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 $6 \rightarrow 0$ 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

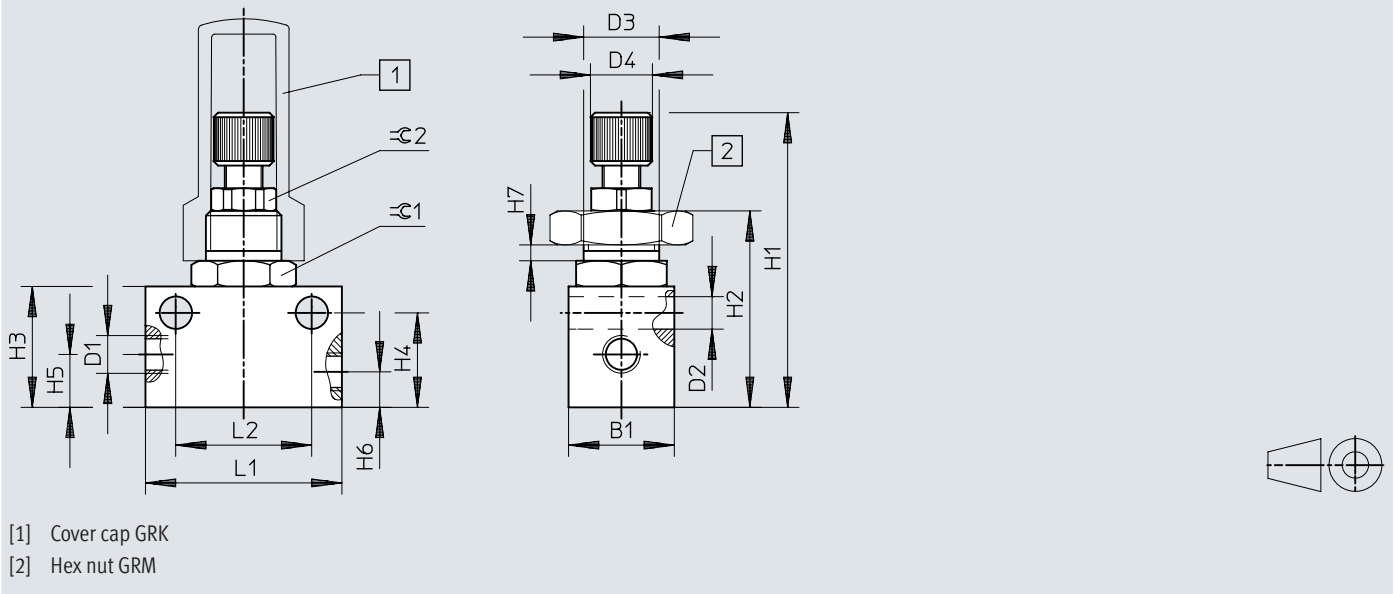


	B1	D1	D2 Ø	H1		H2	H3	H4	H5	L1	L2
				min.	max.						
GR-M3	6	M3	2,2	18	20	9	7,5	4,3	2,5	13	8,5

Dimensions

Dimensions – GR-M5-B, GR-1/8-B

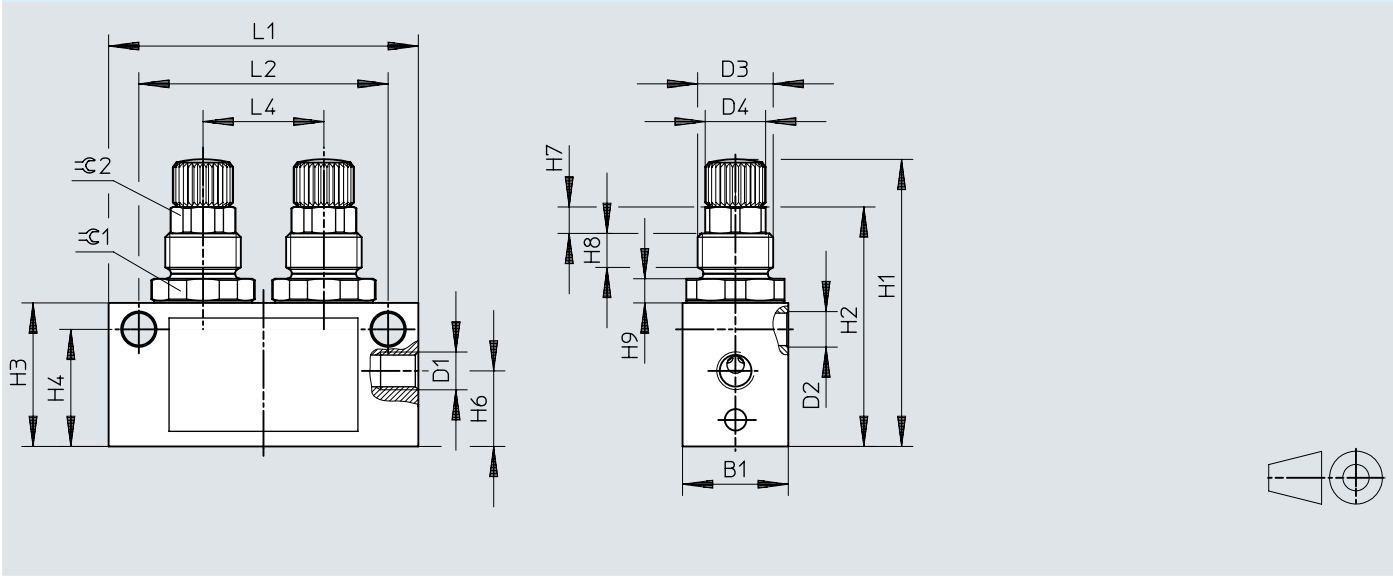
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	D1	B1	D2 ø	D3	D4	H1		H2	H3	H4	H5	H6	H7 max.	L1	L2 ±0,1	≙ 1	≙ 2
						min.	max.										
GR-M5-B	M5	14	4,3	M10x1	8	35	41	25,2	16	12,5	7	4,7	2,5	26	18	13	8
GR-1/8-B	G1/8	16	4,3	M12x1	8	40,6	46,5	30,8	22	17,5	9,2	9	3,5	32	24	14	8

Dimensions

Dimensions – GR-M5X2-B Download CAD data www.festo.com



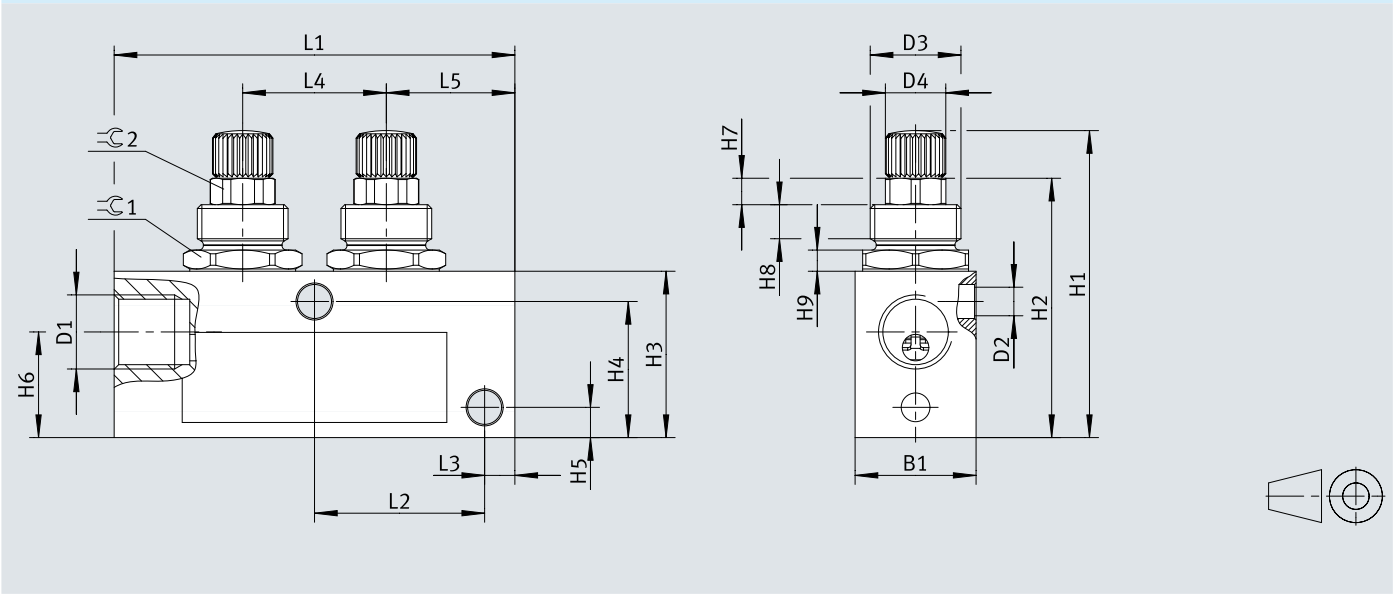
	D1	B1	D2 Ø	D3	D4	H1		H2	H3	H4
						min.	max.			
GR-M5X2-B	M5	14	4,7 _{+0,1}	M10x1	8	38	43,5	31,7	19	15,5

	H6	H7	H8	H9	L1	L2	L4	≈C 1	≈C 2
GR-M5X2-B	10	3,5	4,5	3,2	41 _{+0,5}	33 _{+0,2}	16 _{+0,2}	13	8

Dimensions

Dimensions – GR-1/8X2-B

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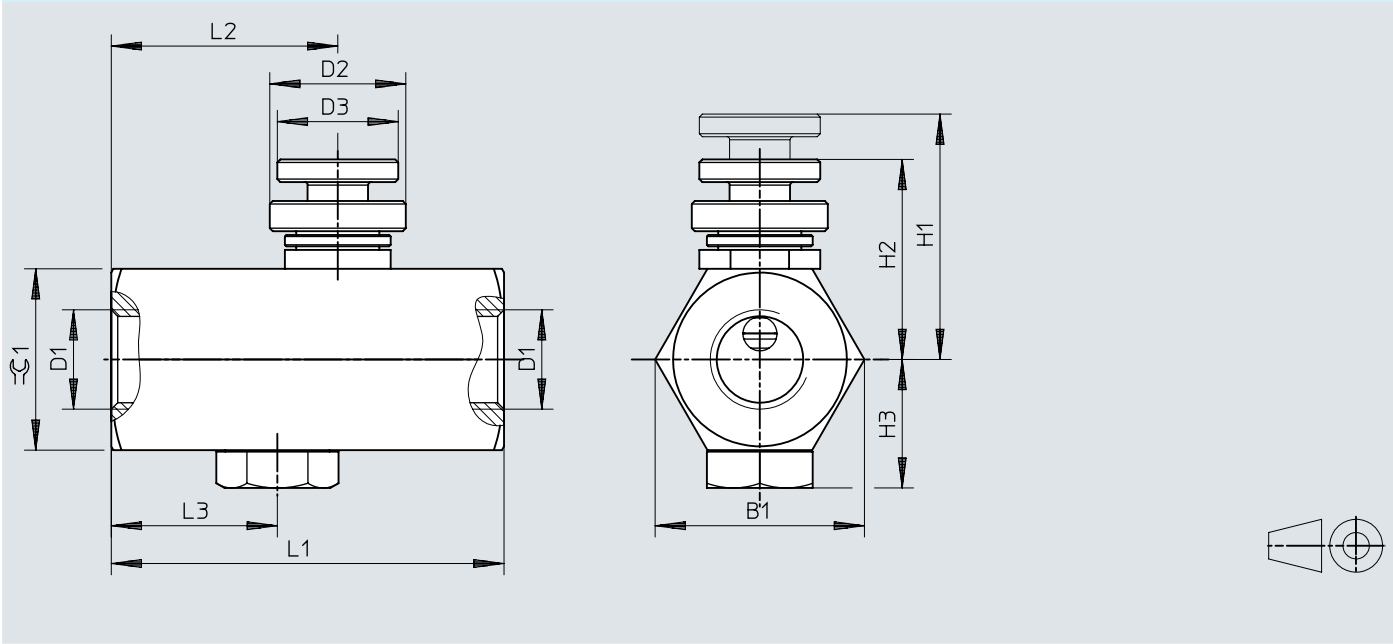


	B1	D1	D2 ø +0,1	D3	D4 ø	H1		H2	H3	H4	H5
						min.	max.				
GR-1/8X2-B	16	G1/8	4,5	M12x1	8	40,6	46,2	34,3	22	18	4

	H6	H7	H8	H9	L1 +0,5	L2 ±0,15	L3	L4 ±0,15	L5	≈G 1	≈G 2
GR-1/8X2-B	14	3,5	4,5	2,8	53	22,5	4	19	17	14	8

Dimensions

Dimensions – GR-1/4 Download CAD data www.festo.com

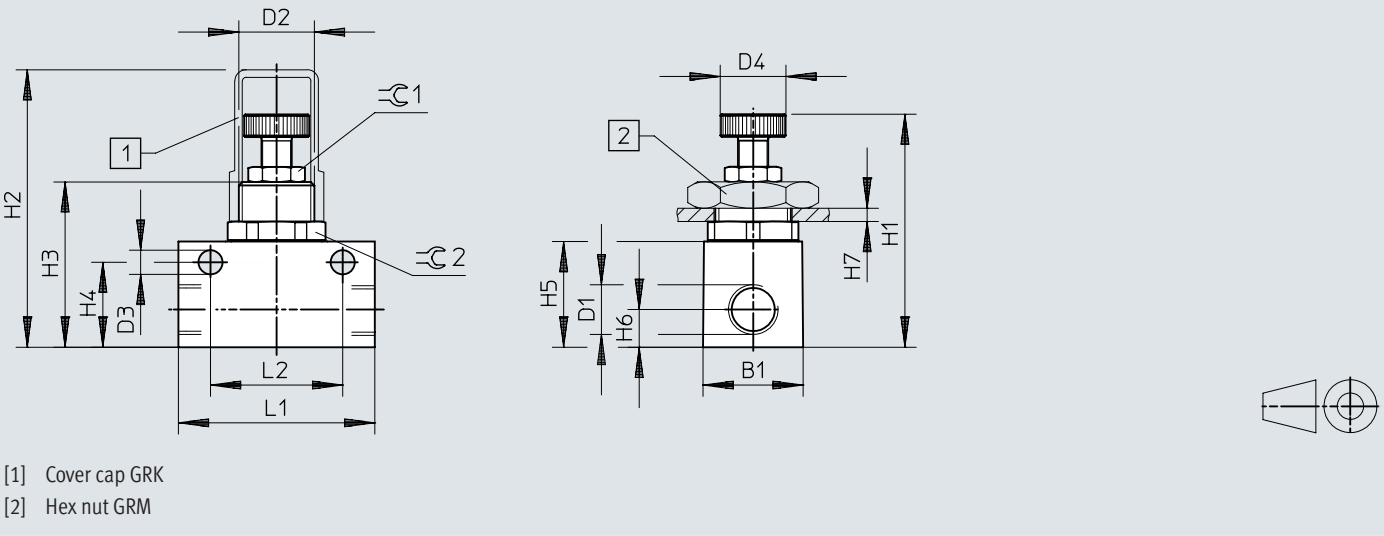


	D1	B1	D2 ø	D3 ø	H1	H2	H3	L1	L2	L3	± 1
GR-1/4	G1/4	28	18	16	32,5	26,5	17	52	30	22	24

Dimensions

Dimensions – GRA-1/4-B

Download CAD data www.festo.com

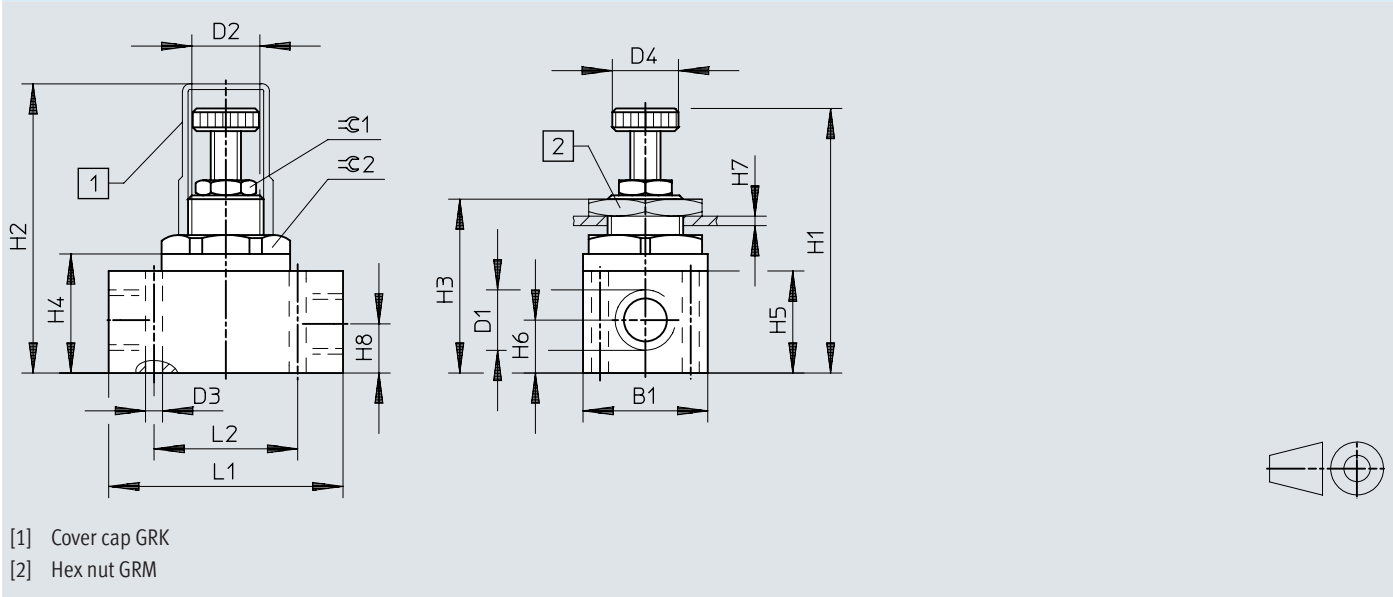


	D1	B1	D2	D3 Ø	D4 Ø	H1		H2
						min.	max.	
GRA-1/4-B	G1/4	26,5	M20x1,5	6,4	17,4	56	62	73,5

	H3	H4	H5	H6	H7 max.	L1	L2	≡ 1	≡ 2
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



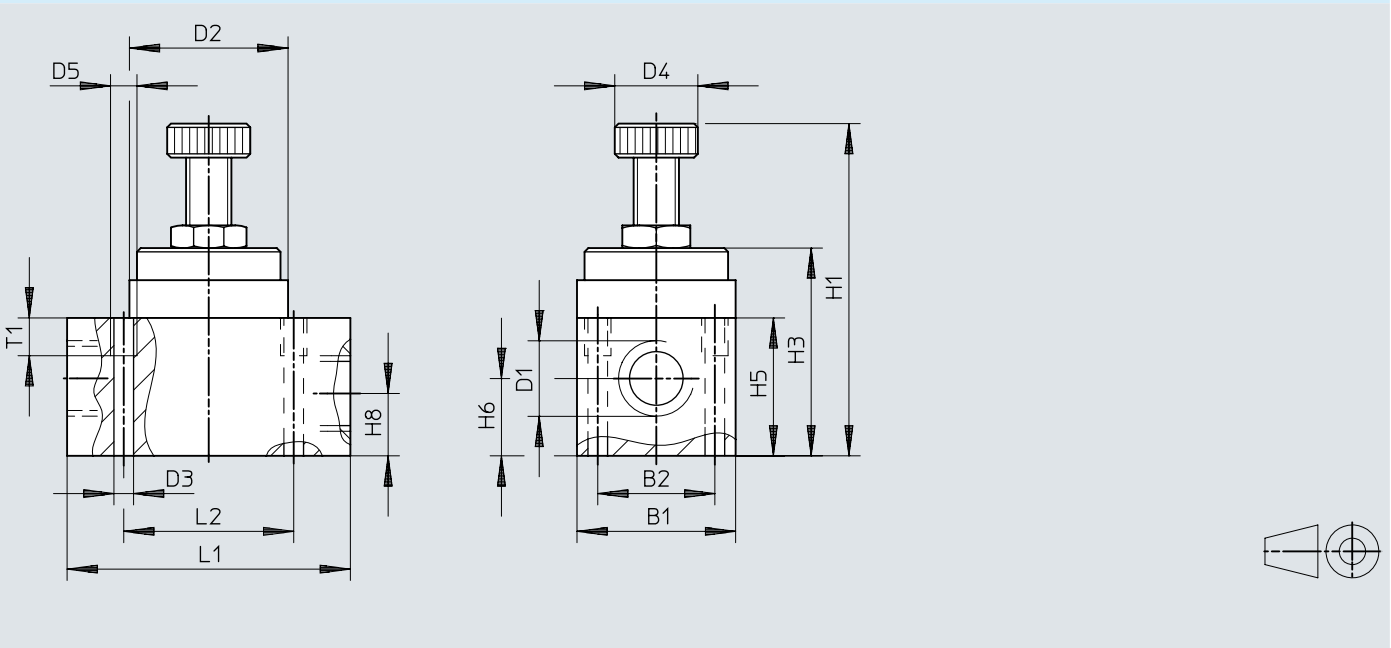
	D1	B1	D2	D3 Ø	D4 Ø	H1		H2
						min.	max.	
GR-3/8-B	G3/8	33	M20x1,5	4,5	17,5	62,5	74	76,5

	H3	H4	H5	H6	H7 max.	H8	L1	L2	≙ 1	≙ 2
GR-3/8-B	46	31,5	27	14	3,5	13	62	38	13	30

Dimensions

Dimensions – GR-1/2

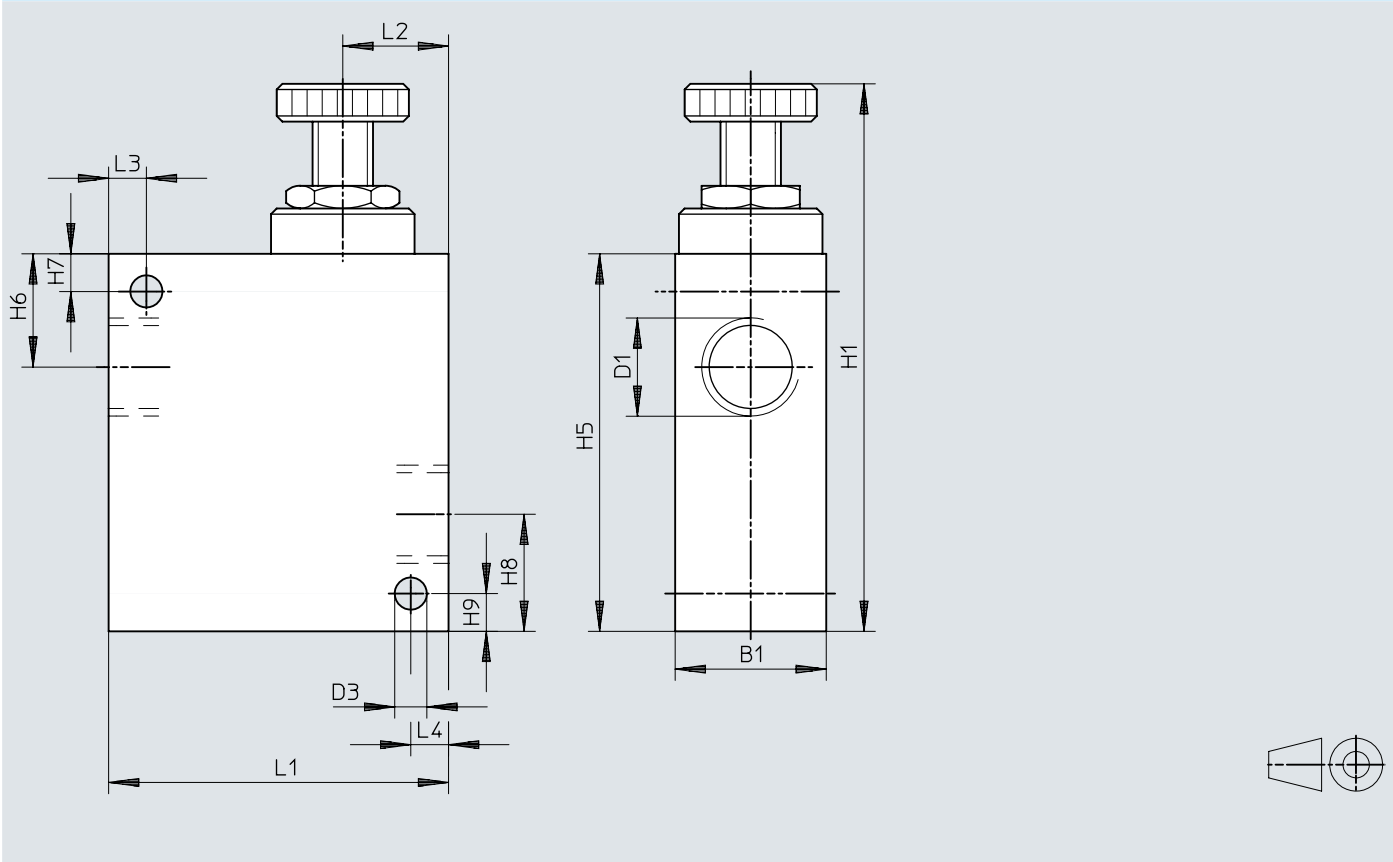
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	B1	B2	D1	D2 ø	D3 ø	D4 ø	D5	H1	H3	H5	H6	H8	L1	L2	T1
GR-1/2	42	31	G1/2	42	2	22	M6	88	55	36,5	20,5	16,5	75	45	10

Dimensions

Dimensions – GR-3/4 Download CAD data www.festo.com

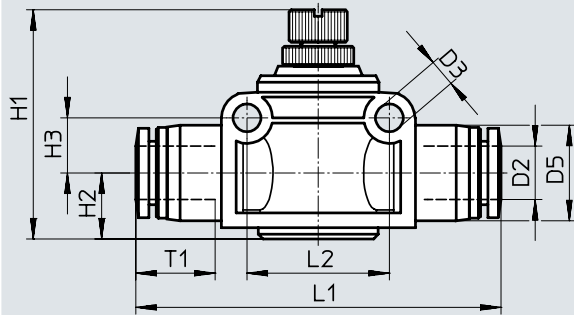


	B1	D1	D3 ø	H1	H5	H6	H7	H8	H9	L1	L2	L3	L4
GR-3/4	40	G3/4	8,5	145	100	30	10	30	10	90	28	10	10

Dimensions

Dimensions – GR-QB (NPT – not available in all markets)

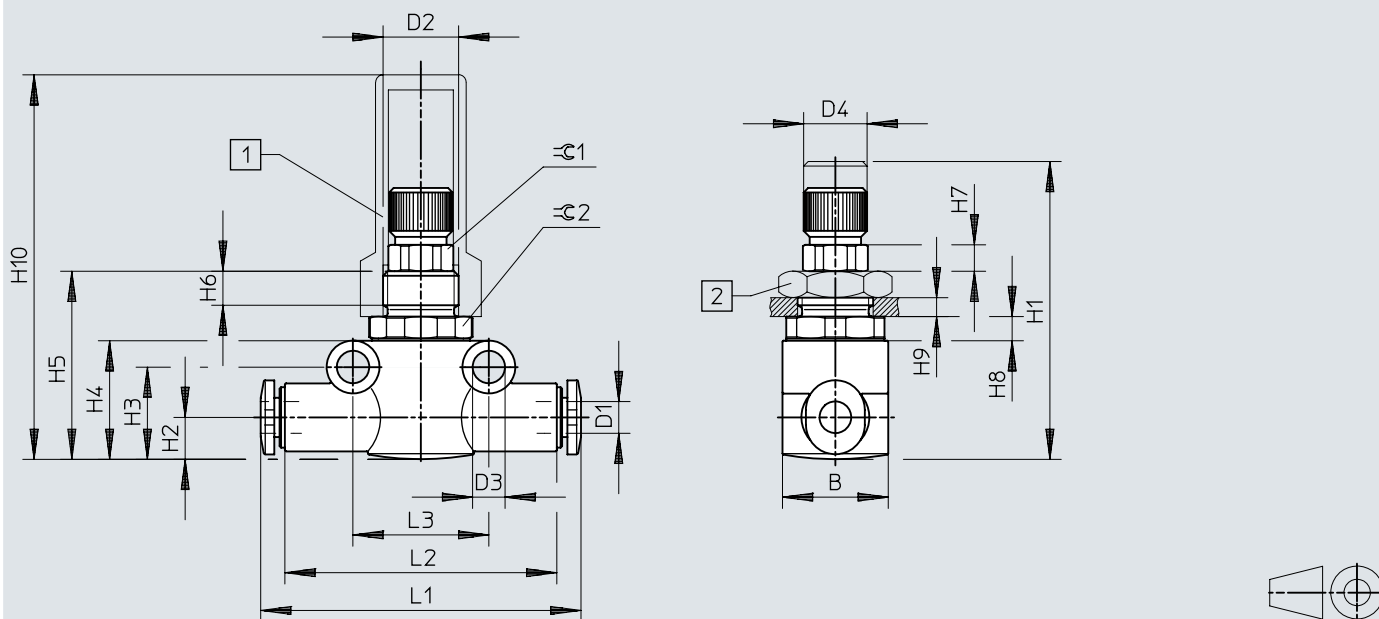
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	D2	D3 Ø	D5 Ø	H1		H2	H3	L1	L2	T1
				Min.	Max.					
GR-QB-5/32-U	5/32	3,2	10,5	26,4	28,9	7,6	5,6	44,8	15,4	14,9
GR-QB-1/4-U	1/4	4,3	13,1	33,5	38,9	9,4	8,0	50,1	20,4	16,8
GR-QB-5/16-U	5/16	4,4	14,8	35,5	41,5	10,2	8,5	56,4	22,0	18,7
GR-QB-3/8-U	3/8	4,3	17,5	40,7	48,6	11,4	10,3	61,4	28,1	20,1
GR-QB-1/2-U	1/2	4,4	20,5	45,5	53,4	14,0	12,1	70,7	32,0	22,9

Dimensions

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

Download CAD data www.festo.com


[1] Cover cap GRK

[2] Hex nut GRM

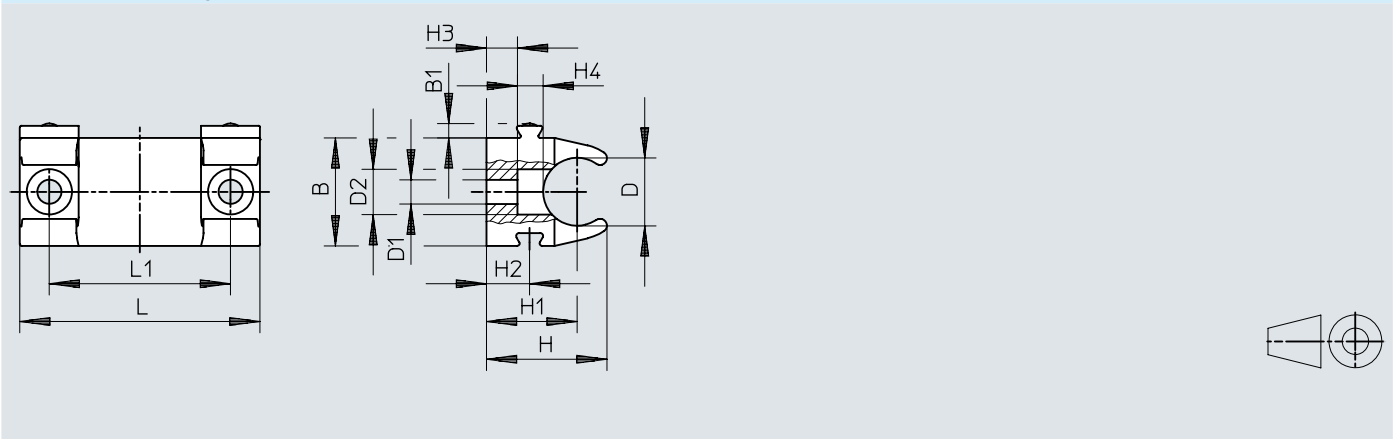
	D1	B	D2	D3 Ø	D4 Ø	H1		H2	H3	H4
						min.	max.			
GR-QS-3	3	14	M10x1	4,3 ±0,1	7,9 -0,3	35	41,5	5,55	12,2	15,7
GR-QS-4	4	14	M10x1	4,3 ±0,1	7,9 -0,3	35	41,5	5,55	12,2	15,7
GR-QS-6	6	16	M12x1	4,3 ±0,1	7,9 -0,3	40	46	8,4	17,3	21,3
GR-QS-8	8	16	M12x1	4,3 ±0,1	7,9 -0,3	40	46	8,4	17,3	21,3

	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

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	B	B1	D ø	D1 ø	D2 ø	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 – External thread

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

Ordering data – Push-in connector QS

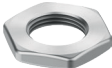
	Pneumatic connection 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in non-return direction	Product weight	Part no.	Type
	QS-3	85 l/min	120 l/min	12 g	193965	GR-QS-3
	QS-4	110 l/min	165 l/min		193967	GR-QS-4
	QS-6	245 l/min	430 l/min	22 g	193969	GR-QS-6
	QS-8	265 l/min	500 l/min	23 g	193970	GR-QS-8

Ordering data – Push-in connection QB (NPT – not available in all markets)

	Pneumatic connection 1	Standard nominal flow rate in flow control direction	Standard nominal flow rate in non-return direction	Product weight	Part no.	Type
	QB-5/32	7.63 cfm	2.693 ... 7.632 cfm	11.34 oz	534680	GR-QB-5/32-U
	QB-1/4	21.1 cfm	22.446 ... 24.690 cfm	28.35 oz	534682	GR-QB-1/4-U
	QB-5/16	35.91 cfm	25.588 ... 36.362 cfm	42.525 oz	534683	GR-QB-5/16-U
	QB-3/8	51.18 cfm	36.362 ... 52.523 cfm	76.545 oz	534684	GR-QB-3/8-U
	QB-1/2	62.85 cfm	48.483 ... 57.012 cfm	119.07 oz	534685	GR-QB-1/2-U

Accessories

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

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

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