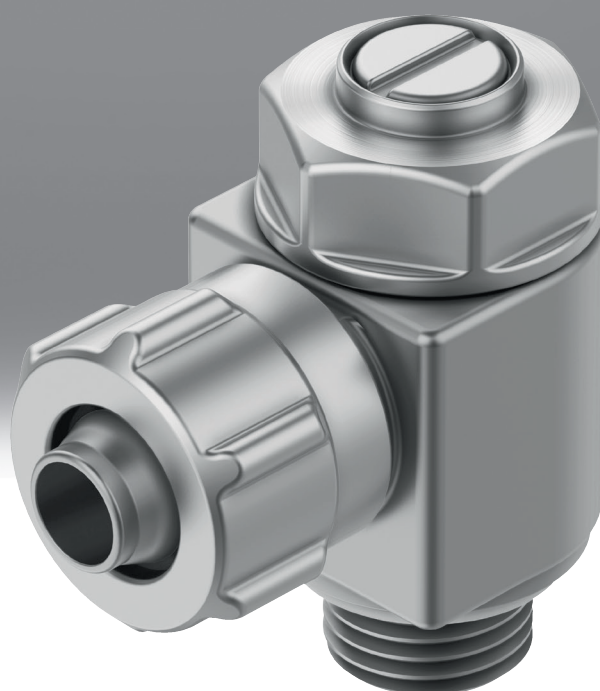


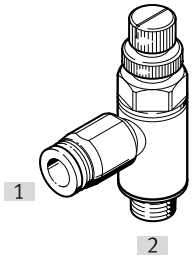
One-way flow control valve GRxA, GRxZ

FESTO



Characteristics

At a glance



[1] Pneumatic connection 1 (compressed air connection)

[2] Pneumatic connection 2 (working port)

One-way flow control valve for precise adjustment of the flow rate. Lightweight, compact and robust thanks to the polymer/metal combination.

- Functional combination of throttle check valve and piloted non-return valve
- Flow control valve, throttling at one end
- Polymer, metal, or stainless steel design
- Standard, mini, in-line variants with different flow rates
- Connections: thread at both ends, push-in connector at both ends, thread/push-in connector

Diagrams

Link [grla/grlz](#)



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

Series

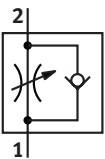
One-way flow control valves can be used to regulate the piston speed of pneumatic actuators in the supply and return.

This is achieved by appropriately restricting the flow of compressed air in the exhaust or supply air direction.

The one-way flow control function acts in the opposite direction. The flow control function is achieved by an adjustable annular gap inside the valve.

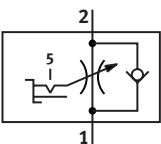
This gap can be increased or decreased by turning the knurled screw or slotted screw. This adjustment knob allows you to set the desired flow control.

[GRLA] One-way valve



The throttle function only works in the exhaust air direction, the non-return function works in the opposite direction.

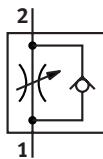
[GRLSA] One-way valve



The throttle function only works in the exhaust air direction, the non-return function works in the opposite direction.

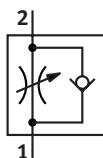
Gradual preselection of the flow rate range via a rotary switch and infinitely variable precision adjustment with hexagon socket via a scale.

[GRLZ] One-way valve



The throttle function only works in the supply air direction, the non-return function works in the opposite direction.

[CRGRLA] One-way valve, corrosion resistant



The throttle function only works in the exhaust air direction, the non-return function works in the opposite direction.

Characteristics

Flow rate characteristic

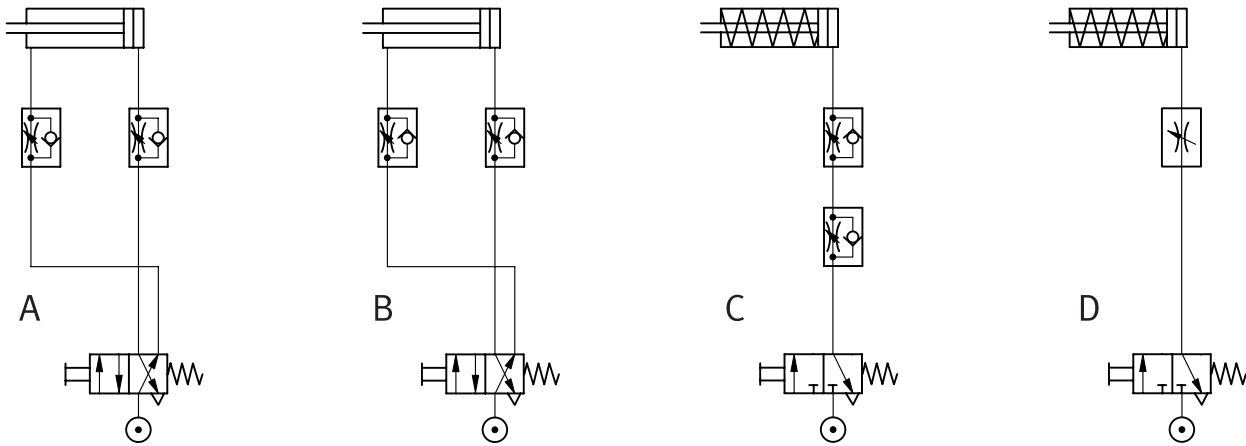
[LF] Low flow

Precise setting for low piston speeds

[MF] Medium flow

Precise setting for medium piston speeds

Application example



Flow control functions and applications:

- [A] - Exhaust air flow control check valve function: Adjustable speed via exhaust air flow control. The piston is moved between air cushions by free intake air and flow controlled exhaust air (improved air performance, even when the load changes).
- [B] - Supply air flow control check valve function: Adjustable speed in forward and reverse. The flow rate is the same in both directions.
- [C] - Exhaust and supply air flow control check valve function: Adjustable speed in forward and reverse. The flow rate can be set differently for each direction.
- [D] - Flow control function, double-acting: Speed control using double-acting flow control is often used with single-acting or small cylinders. The advantage lies in its ease of use.

Type code

001	Series	
GRLA	One-way valve	
GRLSA	One-way valve	
CRGRLA	One-way valve, corrosion resistant	
GRLZ	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	

003	Pneumatic connection 1	
	Connection size as for connection 1 or 2	
PK-3	CK connection 3 mm	
PK-4	CK connection 4 mm	
PK-6	CK connection 6 mm	
QS-3	Push-in connector, 3 mm	
QS-4	Push-in connector, 4 mm	
QS-6	Push-in connector, 6 mm	
QS-8	Push-in connector, 8 mm	
QS-10	Push-in connector, 10 mm	
QS-12	Push-in connector, 12 mm	

004	Adjusting element	
	Standard	
RS	Knurled screw	

005	Flow rate characteristic	
	Without	
LF	Low flow	
MF	Medium flow	

006	Generation	
	Without	
B	Series B	
C	Series C	
D	Series D	

Datasheet

General technical data push-in connector QS, metal GRLA

Pneumatic connection 2	M5	G1/8	G1/4	G3/8	G1/2
Pneumatic connection 1	QS-3, QS-4, QS-6	QS-3, QS-4, QS-6, QS-8	QS-6, QS-8, QS-10	QS-12	
Valve function	Exhaust air flow control non-return function				
Adjusting element	Knurled screw, Slotted screw				
Type of mounting	Screw-in, With external thread				
Mounting position	Any				
Nominal tightening torque	1.3 Nm	6 Nm	10 Nm	13 Nm	23 Nm
Tolerance for nominal tightening torque	±20%				

General technical data push-in connector QS, metal GRLZ

Pneumatic connection 2	M3	M5	G1/8
Pneumatic connection 1	QS-3	QS-3, QS-4, QS-6	QS-3, QS-4, QS-6, QS-8
Valve function	Supply air flow control non-return function		
Adjusting element	Slotted screw		
Type of mounting	Screw-in	Screw-in, With external thread	
Mounting position	Any		
Nominal tightening torque	–	1.3 Nm	6 Nm
Tolerance for nominal tightening torque	–	±20%	

Operating and environmental conditions GRLA/GRLZ – Push-in connector QS

Pneumatic connection 2	M5	G1/8	G1/4	G3/8	G1/2
Operating pressure	0.02 ... 1 MPa				
Operating pressure	0.2 ... 10 bar				
Operating pressure	2.9 ... 145 psi				
Operating pressure for entire temperature range	0.2 ... 10 bar				
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)				
Standard nominal flow rate in non-return direction ¹⁾	60 ... 110 l/min	100 ... 500 l/min	290 ... 500 l/min	320 ... 975 l/min	925 ... 1,605 l/min
Standard nominal flow rate in flow control direction	100 ... 115 l/min	130 ... 475 l/min	400 ... 480 l/min	495 ... 900 l/min	1,580 l/min
Standard flow rate in flow control direction 6 -> 0 bar ²⁾	135 ... 185 l/min	180 ... 720 l/min	600 ... 760 l/min	740 ... 1,400 l/min	2,220 l/min
Standard flow rate in non-return direction at 6 -> 0 bar	130 ... 200 l/min	180 ... 760 l/min	570 ... 790 l/min	840 ... 1,620 l/min	1,910 ... 2,500 l/min
Ambient temperature	-10 ... 60°C				
Temperature of medium	-10 ... 60°C				
Storage temperature	–	-10 ... 40°C			
Maritime classification ³⁾	See certificate				
Corrosion resistance class (CRC) ⁴⁾	0 - No corrosion stress, 1 - Low corrosion stress				

1) The standard nominal flow rate q_{nN} is the volumetric flow rate under standard conditions at an operating pressure $p_1 = 6$ bar and an outlet pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

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

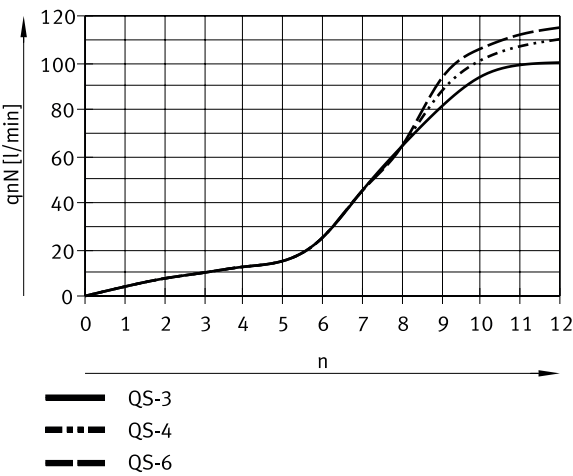
3) More information www.festo.com/catalogue/gerla -> Support/Downloads.

4) More information at www.festo.com/x/topic/kbk

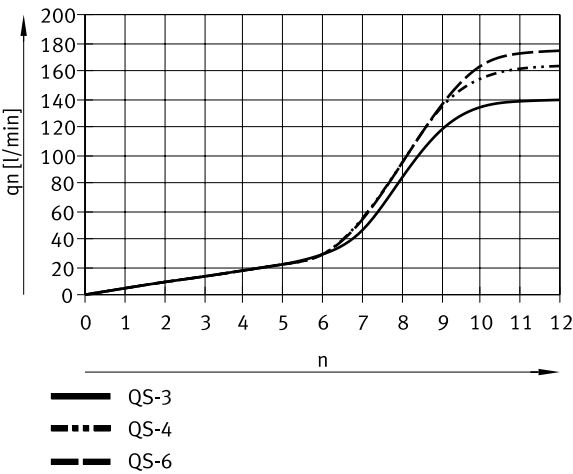
Datasheet

Materials push-in connector QS, metal	
Knurled head material	Wrought aluminum alloy, Anodized
Material of adjusting screw	Brass
Hollow bolt material	Wrought aluminum alloy, Brass, Anodized, Nickel-plated
Releasing ring material	POM
Swivel joint material	Die-cast zinc
Seals material	NBR
Nut material	Wrought aluminum alloy
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

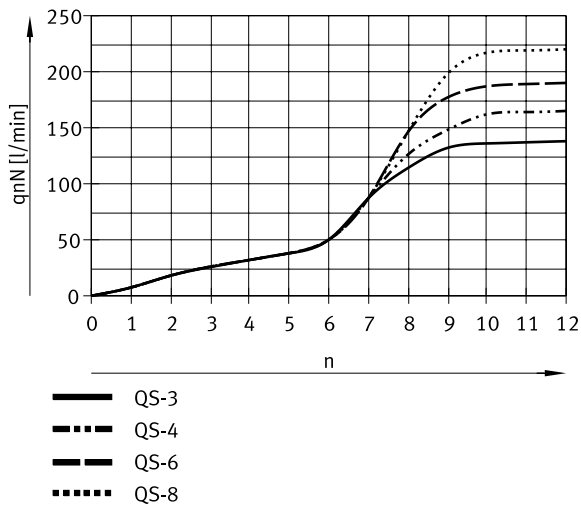
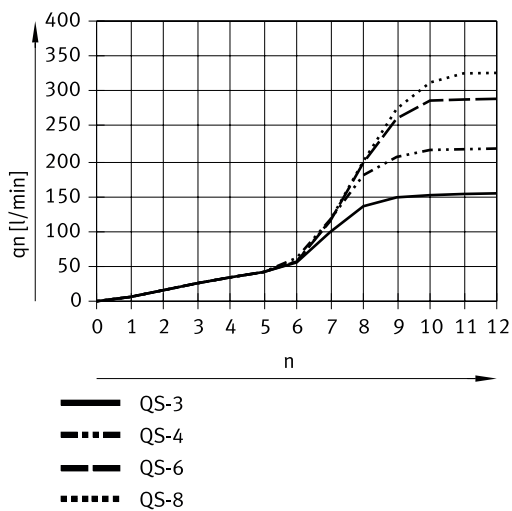
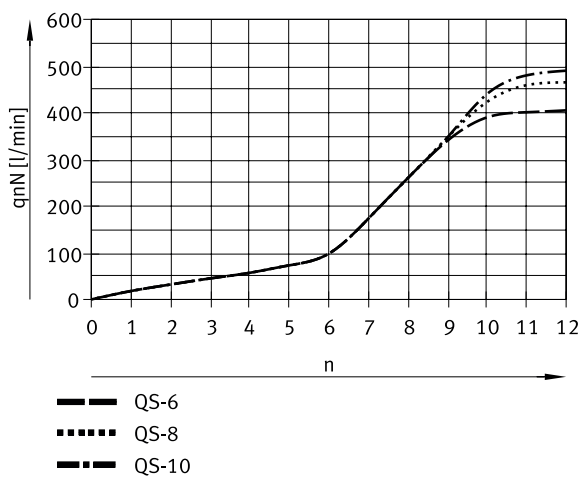
Standard nominal flow rate q_N at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-M5 – push-in connector QS, metal)



Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-M5 – push-in connector QS, metal)

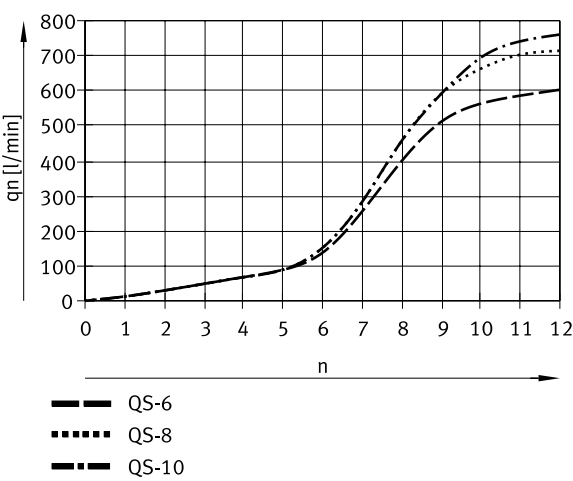


Datasheet

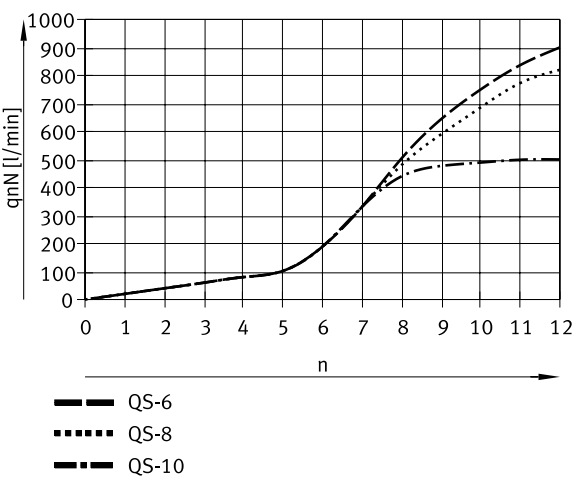
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-1/8 – push-in connector QS, metal)Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-1/8 – push-in connector QS, metal)Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA-1/8-...-MF, GRLA-1/4 – push-in connector QS, metal)

Datasheet

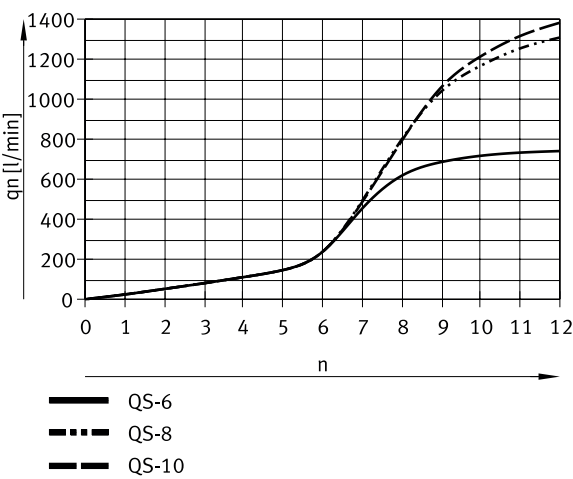
Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA-1/8-...-MF, GRLA-1/4 – push-in connector QS, metal)



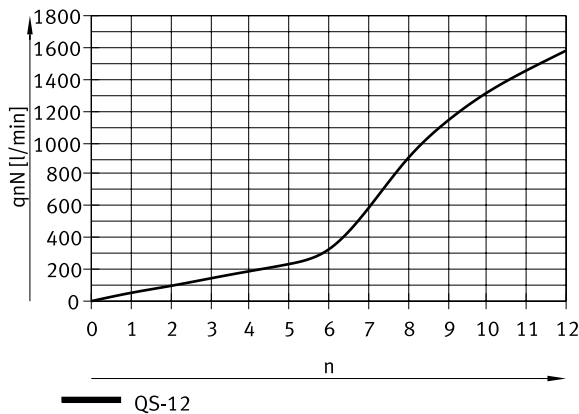
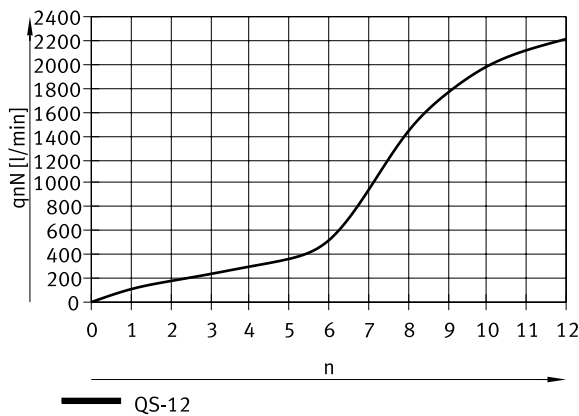
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-3/8 – push-in connector QS, metal)



Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-3/8 – push-in connector QS, metal)



Datasheet

Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-1/2 – push-in connector QS, metal)Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-1/2 – push-in connector QS, metal)

General technical data female thread/barbed connector, metal GRLA

General technical data for the 2000 series 200						
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General technical data female thread/barbed connector, metal GRLZ

Pneumatic connection 2	External thread G1/4	M5	G1/8
Pneumatic connection 1	Internal thread G1/4	M5	G1/8
Nominal width	6	2	–
Valve function	Supply air flow control non-return function		
Adjusting element	Knurled screw, Slotted screw		
Type of mounting	Screw-in		
Mounting position	Any		
Max. tightening torque	11 Nm	1.5 Nm	6 Nm

Datasheet

Operating and environmental conditions GRLA/GRLZ – Internal thread/barbed connector

Pneumatic connection 2	External thread G1/4	M5	G1/8	G3/8	G1/2	G3/4
Operating pressure	–	0.2 ... 10 bar	–	–	0.3 ... 10 bar	–
Operating pressure for entire temperature range	0.3 ... 10 bar	–	0.3 ... 10 bar	–	–	0.3 ... 10 bar
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4]					
Standard nominal flow rate in non-return direction ¹⁾	220 ... 820 l/min	72 ... 95 l/min	100 ... 420 l/min	970 ... 1,600 l/min	1,550 ... 2,200 l/min	3,220 ... 4,320 l/min
Standard nominal flow rate in flow control direction	260 ... 610 l/min	83 ... 95 l/min	110 ... 340 l/min	1,450 l/min	2,100 l/min	4,320 l/min
Standard flow rate in non-return direction at 6 → 0 bar ²⁾	315 ... 1,615 l/min	120 ... 170 l/min	145 ... 760 l/min	1,540 ... 2,540 l/min	2,950 ... 4,190 l/min	5,440 ... 7,300 l/min
Standard flow rate in flow control direction 6 → 0 bar	370 ... 1,200 l/min	140 ... 169 l/min	162 ... 615 l/min	2,300 l/min	4,000 l/min	7,300 l/min
Information on operating and pilot media	Operation with oil lubrication possible (required for further use)					
Ambient temperature	-10 ... 60°C					
Temperature of medium	-10 ... 60°C					
Maritime classification ³⁾	See certificate					
Corrosion resistance class (CRC) ⁴⁾	2 - Moderate corrosion stress	–	–	–	–	–

1) The standard nominal flow rate q_{nN} is the volumetric flow rate under standard conditions at an operating pressure $p_1 = 6$ bar and an outlet pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

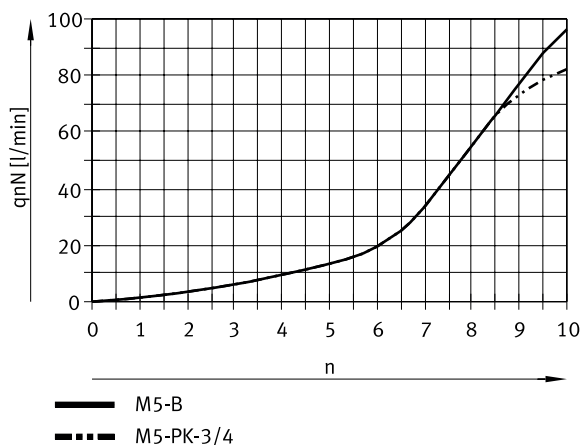
2) The standard flow rate q_n is measured at an operating pressure of $p_1 = 6$ bar and an outlet pressure relative to atmospheric pressure ($p_2 = 0$ bar).

3) GRLA only: More information www.festo.com/catalogue/grla → Support/Downloads.

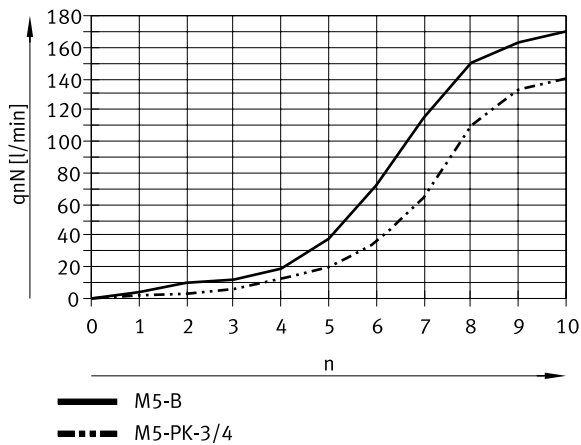
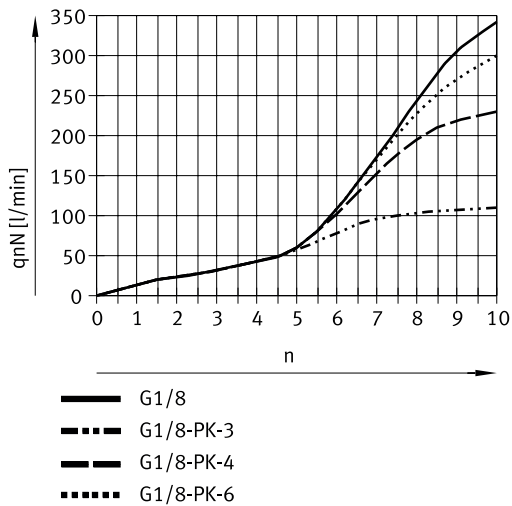
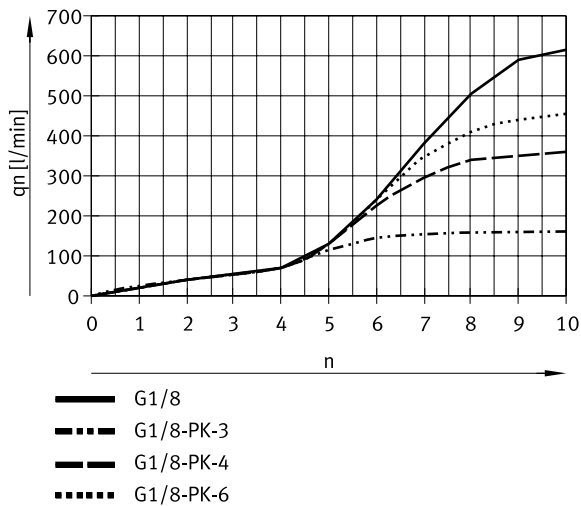
4) More information at www.festo.com/x/topic/kbk

Materials female thread/barbed connector, metal

Material of adjusting screw	Brass
Swivel joint material	Die-cast zinc
Material of screwed plug	Wrought aluminum alloy, Brass, Nickel-plated
Seals material	NBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

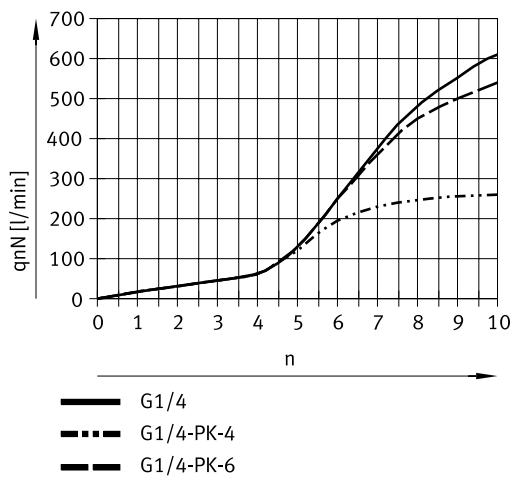
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-M5 – female thread/barbed connector, metal)

Datasheet

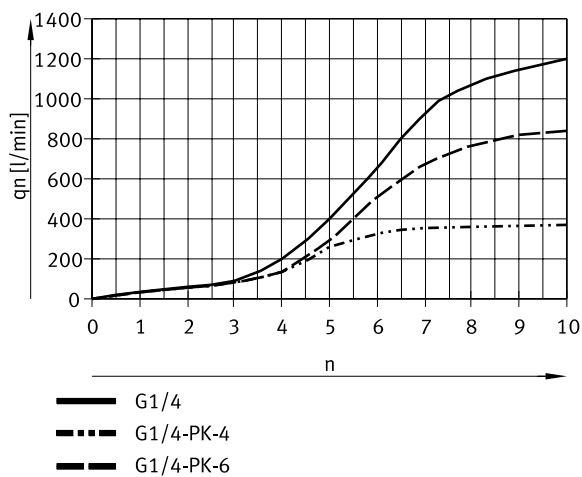
Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-M5 – female thread/barbed connector, metal)Standard nominal flow rate q_n at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-1/8 – female thread/barbed connector, metal)Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-1/8 – female thread/barbed connector, metal)

Datasheet

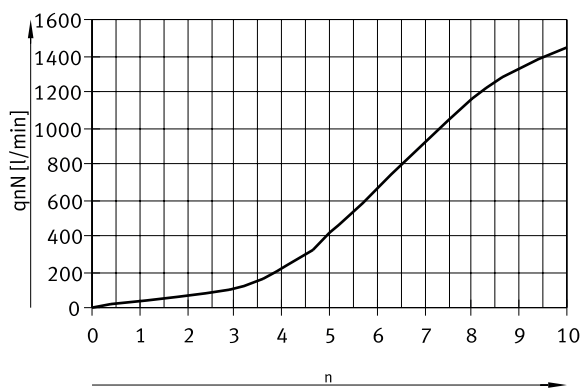
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-1/4 – female thread/barbed connector, metal)



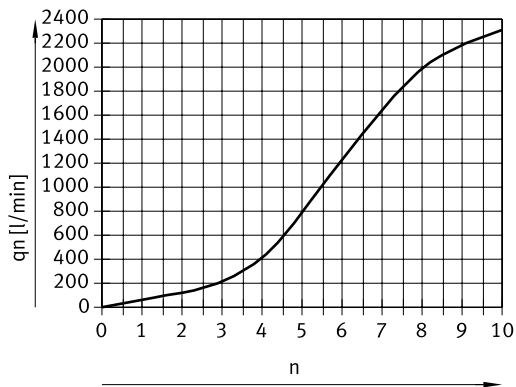
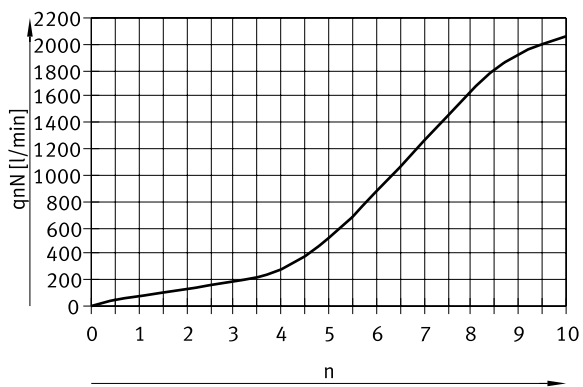
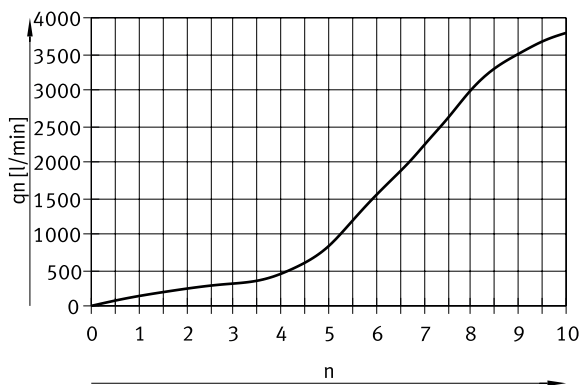
Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-1/4 – female thread/barbed connector, metal)



Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-3/8 – female thread/barbed connector, metal)

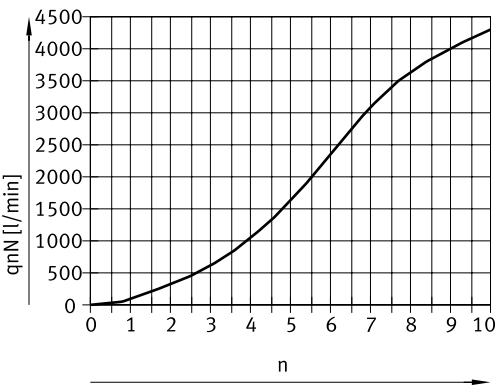


Datasheet

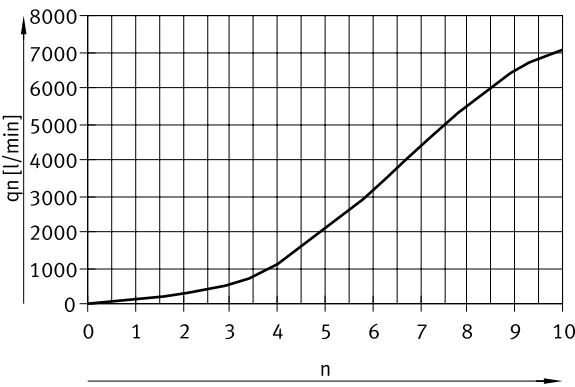
Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-3/8 – female thread/barbed connector, metal)Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-1/2 – female thread/barbed connector, metal)Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-1/2 – female thread/barbed connector, metal)

Datasheet

Standard nominal flow rate q_N at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-3/4 – female thread/barbed connector, metal)



Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-3/4 – female thread/barbed connector, metal)



General technical data push-in connector QS, metal GRLSA		
Pneumatic connection 2	G1/8	G1/4
Pneumatic connection 1	QS-6	QS-8
Valve function	Exhaust air flow control non-return function	
Adjusting element	Internal hex	
Type of mounting	Screw-in	
Mounting position	Any	
Nominal tightening torque	3.5	11
Tolerance for nominal tightening torque	±20%	±10%

Datasheet

Operating and environmental conditions GRLSA – Push-in connector QS

Pneumatic connection 2	G1/8	G1/4
Operating pressure for entire temperature range	0.2 ... 10 bar	
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4]	
Standard nominal flow rate in flow control direction ¹⁾	0 ... 250 l/min	0 ... 450 l/min
Standard nominal flow rate in non-return direction	180 ... 310 l/min	390 ... 570 l/min
Standard flow rate in flow control direction 6 → 0 bar ²⁾	0 ... 410 l/min	0 ... 700 l/min
Standard flow rate in non-return direction at 6 → 0 bar	430 ... 540 l/min	820 ... 930 l/min
Information on operating and pilot media	Operation with oil lubrication possible (required for further use)	
Ambient temperature	-10 ... 60°C	
Temperature of medium	-10 ... 60°C	
Storage temperature	-10 ... 40°C	
Corrosion resistance class (CRC) ³⁾	1 - Low corrosion stress	

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

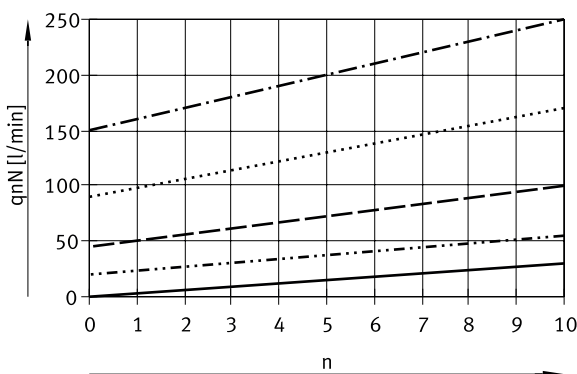
2) The standard flow rate q_n is measured at an operating pressure of $p_1 = 6$ bar and an outlet pressure relative to atmospheric pressure ($p_2 = 0$ bar).

3) More information at www.festo.com/x/topic/kbk

Materials push-in connector QS, metal GRLSA

Material of adjusting screw	PA-reinforced
Swivel joint material	Die-cast zinc
Releasing ring material	POM
Hollow bolt material	Wrought aluminum alloy, Anodized
Seals material	NBR
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of the flow control screw position (scale) n (GRLSA-1/8 – push-in connector QS, metal)



A = Step A

B = Step B

C = Step C

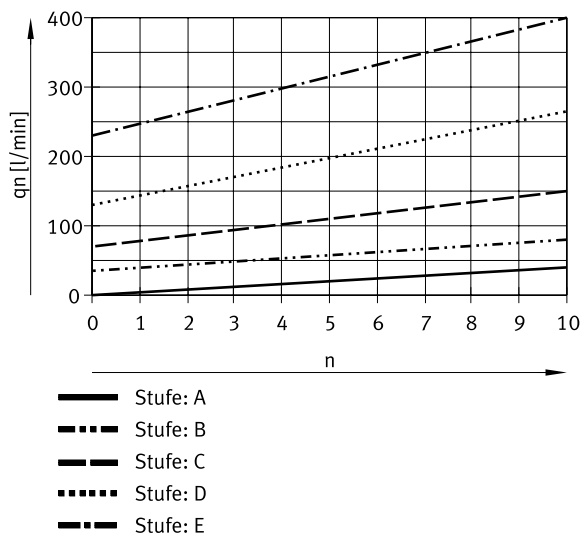
D = Step D

E = Step E

- Stufe: A
- - - Stufe: B
- Stufe: C
- Stufe: D
- · - · Stufe: E

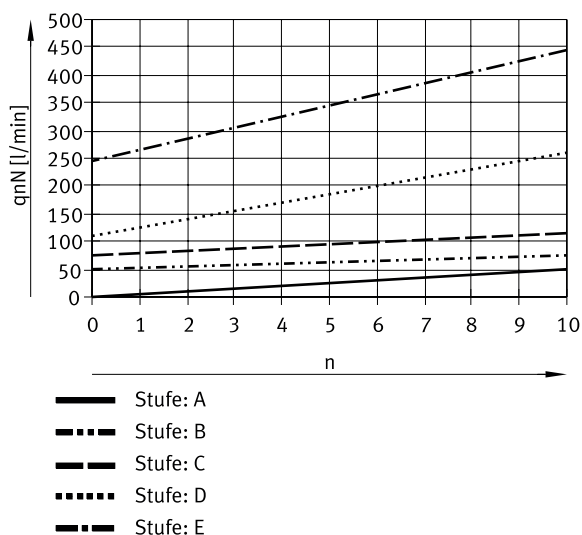
Datasheet

Normal flow rate q_n at 6 → 0 bar as a function of the flow control screw position (scale) n (GRLSA-1/8 – push-in connector QS, metal)



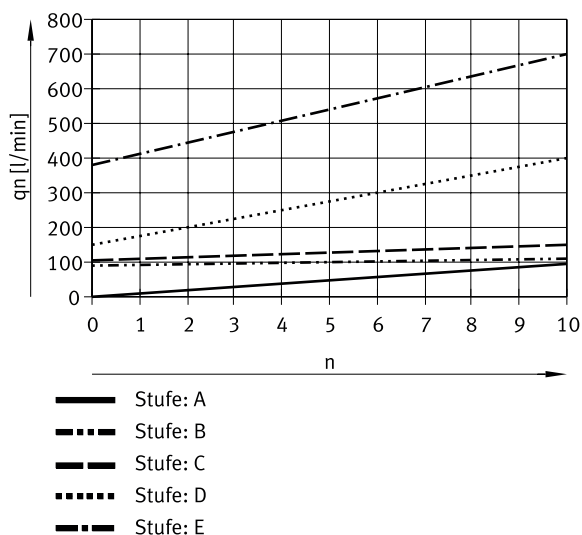
A = Step A
B = Step B
C = Step C
D = Step D
E = Step E

Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of the flow control screw position (scale) n (GRLSA-1/4 – push-in connector QS, metal)



A = Step A
B = Step B
C = Step C
D = Step D
E = Step E

Normal flow rate q_n at 6 → 0 bar as a function of the flow control screw position (scale) n (GRLSA-1/4 – push-in connector QS, metal)



A = Step A
B = Step B
C = Step C
D = Step D
E = Step E

Datasheet

General technical data push-in connector QS, metal GRLA

Pneumatic connection 2	M3	M5
Pneumatic connection 1	QS-3	QS-3, QS-4
Valve function	Exhaust air flow control non-return function	
Adjusting element	Slotted screw	
Type of mounting	Screw-in	Screw-in, With external thread
Mounting position	Any	
Max. tightening torque	0.3 Nm	–
Nominal tightening torque	–	1.3 Nm

General technical data push-in connector QS, metal GRLZ

Pneumatic connection 2	M3	M5
Pneumatic connection 1	QS-3	QS-3, QS-4
Valve function	Supply air flow control non-return function	
Adjusting element	Slotted screw	
Type of mounting	Screw-in	Screw-in, With external thread
Mounting position	Any	
Max. tightening torque	0.3 Nm	–
Nominal tightening torque	–	1.3 Nm

Operating and environmental conditions GRLA/GRLZ – Push-in connector QS (mini)

Pneumatic connection 2	M3	M5
Operating pressure	–	0.02 ... 1 MPa
Operating pressure	0.2 ... 10 bar	
Operating pressure	–	2.9 ... 145 psi
Operating pressure for entire temperature range	–	0.2 ... 10 bar
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)	
Standard nominal flow rate in flow control direction ¹⁾	41 l/min	40 ... 48 l/min
Standard nominal flow rate in non-return direction	27 ... 50 l/min	36 ... 75 l/min
Standard flow rate in non-return direction at 6 -> 0 bar ²⁾	75 ... 110 l/min	60 ... 150 l/min
Standard flow rate in flow control direction 6 -> 0 bar	95 l/min	80 l/min
Ambient temperature	-10 ... 60°C	
Temperature of medium	-10 ... 60°C	
Maritime classification ³⁾	See certificate	
Corrosion resistance class (CRC) ⁴⁾	1 - Low corrosion stress	

1) The standard nominal flow rate q_{nN} is the volumetric flow rate under standard conditions at an operating pressure $p_1 = 6$ bar and an outlet pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

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

3) GRLA only: More information www.festo.com/catalogue/grla → Support/Downloads.

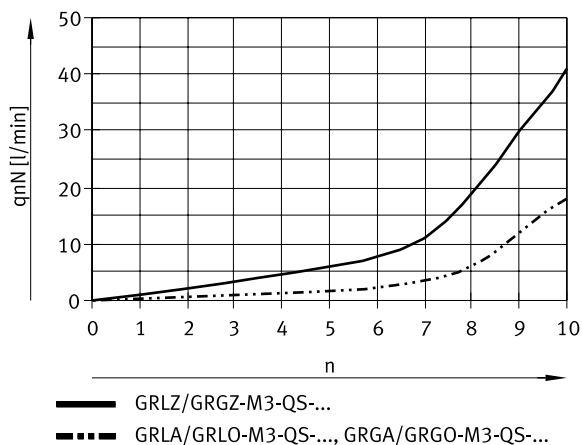
4) More information at www.festo.com/x/topic/kbk

Materials push-in connector QS, metal GRLA/GRLZ

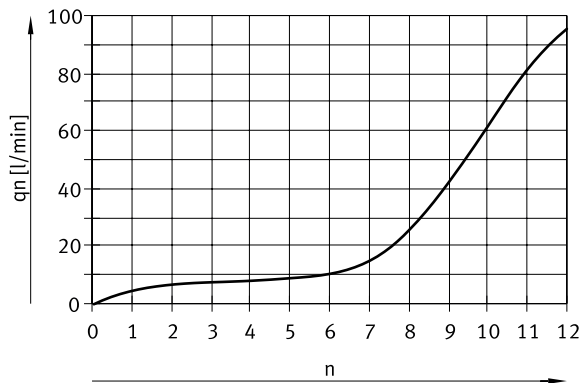
Pneumatic connection 2	M3	M5
Material of adjusting screw	Brass	
Swivel joint material	Die-cast zinc	
Releasing ring material	POM	
Material of screwed plug	Brass, Nickel-plated	–
Hollow bolt material	–	Brass, Nickel-plated
Seals material	NBR	
Note on materials	RoHS compliant	
LABS (PWIS) conformity	VDMA24364-B1/B2-L	
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1	

Datasheet

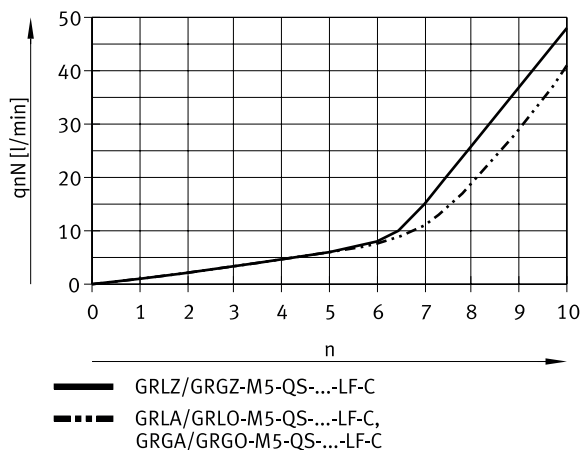
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-M3, mini – push-in connector QS, metal)



Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-M3, mini – push-in connector QS, metal)

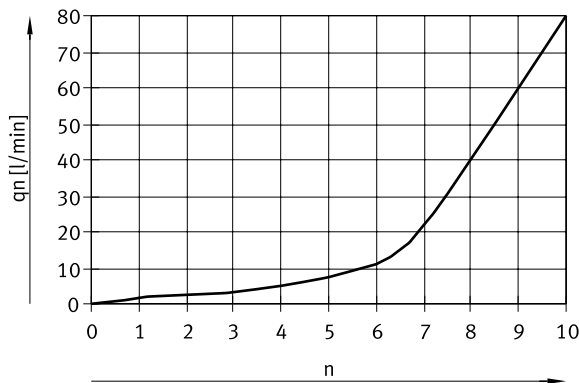


Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ-M5, mini – push-in connector QS, metal)



Datasheet

Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ-M5, mini – push-in connector QS, metal)



General technical data female thread, metal GRLA

Pneumatic connection 2	M3
Pneumatic connection 1	M3
Valve function	Exhaust air flow control non-return function
Adjusting element	Slotted screw
Type of mounting	Screw-in
Mounting position	Any
Max. tightening torque	0.3 Nm

General technical data female thread, metal GRLZ

Pneumatic connection 2	M3
Pneumatic connection 1	M3
Valve function	Supply air flow control non-return function
Adjusting element	Slotted screw
Type of mounting	Screw-in
Mounting position	Any
Max. tightening torque	0.3 Nm

Operating and environmental conditions GRLA/GRLZ – Internal thread (mini)

Operating pressure	0.2 ... 10 bar
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)
Standard nominal flow rate in flow control direction ¹⁾	18 l/min
Standard nominal flow rate in non-return direction	18 ... 20 l/min
Standard flow rate in flow control direction 6 → 0 bar ²⁾	33 l/min
Standard flow rate in non-return direction at 6 → 0 bar	33 ... 37 l/min
Ambient temperature	-10 ... 60°C
Temperature of medium	-10 ... 60°C
Maritime classification ³⁾	See certificate
Corrosion resistance class (CRC) ⁴⁾	1 - Low corrosion stress

1) The standard nominal flow rate q_{nN} is the volumetric flow rate under standard conditions at an operating pressure $p_1 = 6$ bar and an outlet pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

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

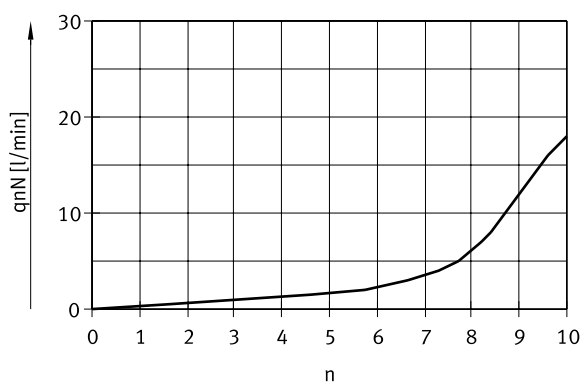
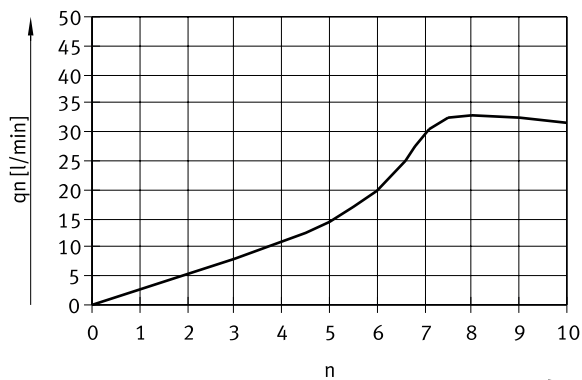
3) GRLA only: More information www.festo.com/catalogue/grla → Support/Downloads.

4) More information at www.festo.com/x/topic/kbk

Datasheet

Materials female thread, metal GRLA/GRLZ

Material of adjusting screw	Brass
Swivel joint material	Die-cast zinc
Material of screwed plug	Brass, Nickel-plated
Seals material	NBR
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (GRLA/GRLZ, mini – female thread, metal)Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (GRLA/GRLZ, mini – female thread, metal)

General technical data female thread, stainless steel CRGRLA

Pneumatic connection 2	M5	G1/8	G1/4	G3/8	G1/2
Pneumatic connection 1	M5	G1/8	G1/4	G3/8	G1/2
Valve function	One-way flow control function				
Adjusting element	Slotted screw				
Type of mounting	Screw-in				
Mounting position	Any				
Max. tightening torque	1.5 Nm	6 Nm	11 Nm	20 Nm	40 Nm
Permissible actuation moment, adjusting screw	0.2 Nm	0.5 Nm	1.5 Nm	2 Nm	3 Nm

Datasheet

Operating and environmental conditions CRGRLA – internal thread (stainless steel)

Pneumatic connection 2	M5	G1/8	G1/4	G3/8	G1/2
Operating pressure	0.02 ... 1 MPa	0.03 ... 1 MPa			
Operating pressure	0.2 ... 10 bar	0.3 ... 10 bar			
Operating pressure	2.9 ... 145 psi	4.35 ... 145 psi			
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)				
Standard nominal flow rate in non-return direction ¹⁾	77 ... 95 l/min	260 ... 420 l/min	450 ... 820 l/min	970 ... 1,600 l/min	1,550 ... 2,200 l/min
Standard nominal flow rate in flow control direction	95 l/min	340 l/min	610 l/min	1,450 l/min	2,100 l/min
Standard flow rate in non-return direction at 6 → 0 bar ²⁾	140 ... 150 l/min	530 ... 590 l/min	1,030 ... 1,345 l/min	2,095 ... 2,665 l/min	3,550 ... 4,325 l/min
Standard flow rate in flow control direction 6 → 0 bar	165 l/min	580 l/min	1,265 l/min	2,515 l/min	4,265 l/min
Ambient temperature	-20 ... 80°C				
Temperature of medium	-10 ... 60°C				
Storage temperature	-10 ... 40°C				
Corrosion resistance class (CRC) ³⁾	3 - High corrosion stress				
For use in the food industry	See supplementary material information				
Maritime classification ⁴⁾	See certificate				

1) The standard nominal flow rate q_{nN} is the volumetric flow rate under standard conditions at an operating pressure $p_1 = 6$ bar and an outlet pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

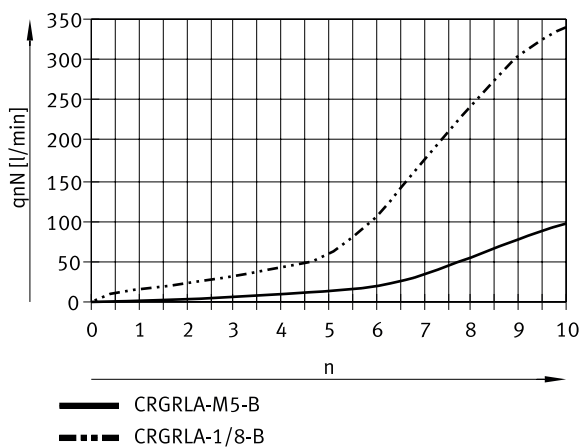
2) The standard flow rate q_n is measured at an operating pressure of $p_1 = 6$ bar and an outlet pressure relative to atmospheric pressure ($p_2 = 0$ bar).

3) More information at www.festo.com/x/topic/kbk

4) More information www.festo.com/catalogue/crgla → Support/Downloads.

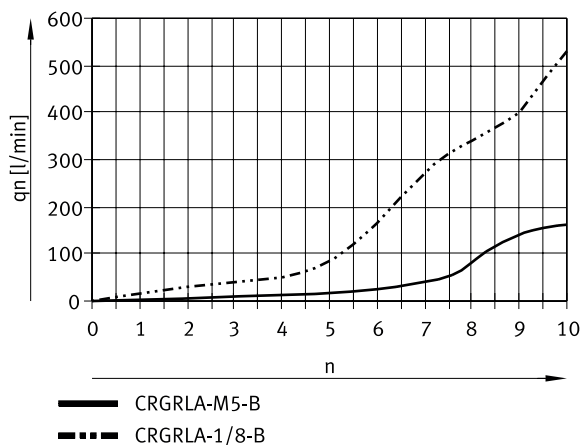
Materials female thread, stainless steel CRGRLA

Material of adjusting screw	high-alloy stainless steel
Swivel joint material	high-alloy stainless steel
Hollow bolt material	High-alloy steel
Seals material	FPM, PVC
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

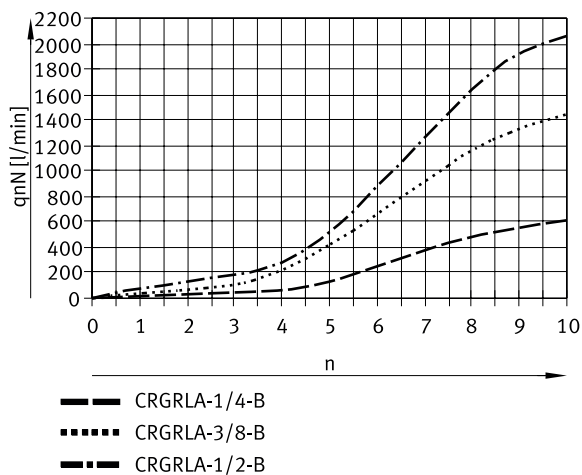
Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (CRGRLA-M5, CRGRLA-1/8 – female thread, stainless steel)

Datasheet

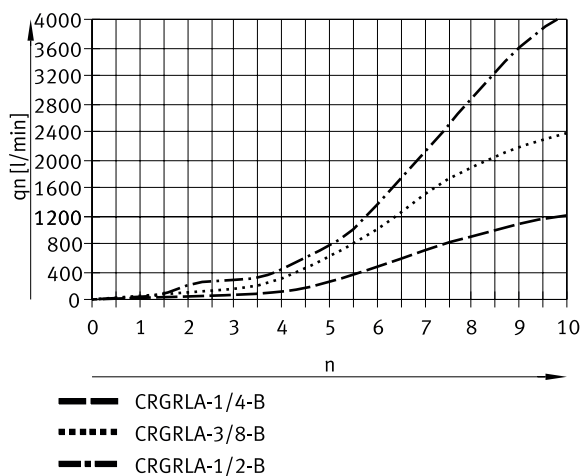
Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (CRGRLA-M5, CRGRLA-1/8 – female thread, stainless steel)



Standard nominal flow rate q_{nN} at 6 → 5 bar as a function of spindle revolutions n (CRGRLA-1/4, CRGRLA-3/8, CRGRLA-1/2 – female thread, stainless steel)

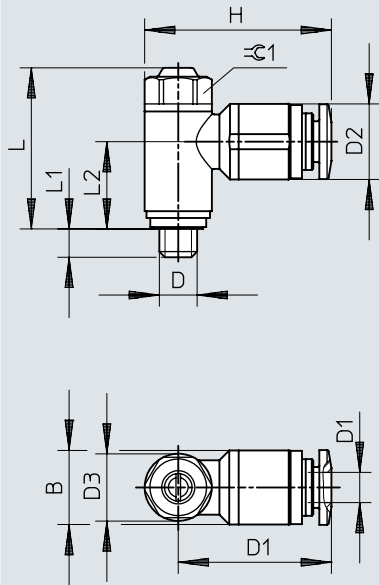


Normal flow rate q_n at 6 → 0 bar as a function of spindle revolutions n (CRGRLA-1/4, CRGRLA-3/8, CRGRLA-1/2 – female thread, stainless steel)



Dimensions

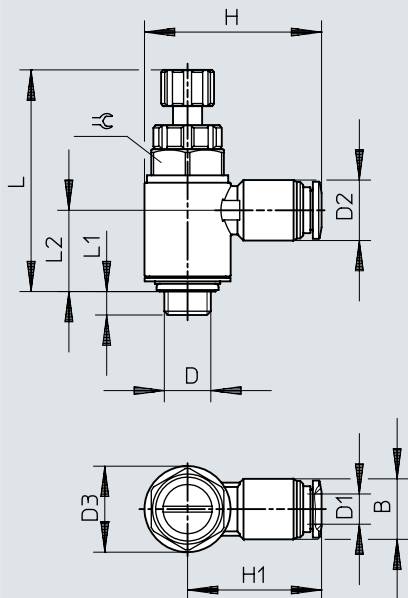
Dimensions – Slotted screw

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	D	D1	B	D2 ø	D3 ø	~H	~H1	~L		L1	~L2	≅
GRL...-M5	M5	3	–	8,2 +0,15	8,9 ±0,07	22,4	18	20,8	±3,3%	3,9 +0,1/-0,45	10,7	8
		4	9,8 ±0,2	10,0 ±0,2		24,7	20,3				9,7	
		6	–	12,0 ±0,2		26,5	22				–	
GRL...-1/8	G1/8	3	–	10,2 ±0,2	13,8 ±0,07	31,9	25	26,5	±2,1%	5,05 +0,15/-0,3	14,2	12
		4		10,2 ±0,2		29,4	22,5				–	
		6		12,5 ±0,2		32,6	25,7				13,5	
GRLA-1/8-...-MF	G1/8	8	–	14,5 ±0,2	17,8 ±0,15	35,6	28,7	30,9	±1,9%	5,05 +0,15/-0,3	–	15
		6		12,5 ±0,2		36,6	27,7				17	
GRLA-1/4	G1/4	8	–	14,5 ±0,2	17,8 ±0,15	39,6	30,7	31,5	±1,9%	5,9 +0,17/-0,25	17,2	15
		6		12,5 ±0,2		36,6	27,7				–	
		10		17,5 ±0,2		42,0	33,1				16,1	
GRLA-3/8	G3/8	6	–	12,5 ±0,2	22,4 ±0,15	39,8	28,6	35,3	±1,7%	6,9 +0,15/-0,3	–	19
		8		14,5 ±0,2		44,1	32,9				19,55	
		10		17,5 ±0,2		46,7	35,5				–	
GRLA-1/2	G1/2	12	–	20,5 ±0,15	27,8 ±0,15	55,3	41,4	42,6	±1,4%	8,35 +0,15/-0,3	22,75	24

Dimensions

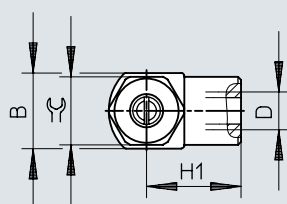
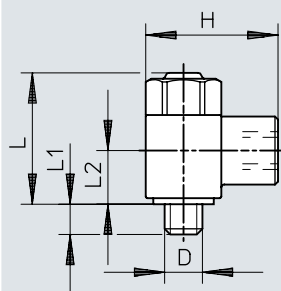
Dimensions – Knurled screw

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	D	D1	B	D2 ø	D3 ø	~H	~H1	~L		L1	~L2	≙
GRL...-M5	M5	3	–	8,2 +0,15	8,9 ±0,07	22,4	18	31,5	±2,4%	3,9 +0,1/-0,45	10,7	8
		4	9,8 ±0,2	10,0 ±0,2		24,7	20,3				9,7	
		6	–	12,0 ±0,2		26,5	22				–	
GRL...-1/8	G1/8	3	–	10,2 ±0,2	13,8 ±0,07	31,9	25	40,4	±1,6%	5,05 +0,15/-0,3	14,2	12
		4		10,2 ±0,2		29,4	22,5				–	
		6		12,5 ±0,2		32,6	25,7				–	
		8		14,5 ±0,2		35,6	28,7				–	
GRLA-1/8-...-MF	G1/8	6	–	12,5 ±0,2	17,8 ±0,15	36,6	27,7	–	–	5,05 +0,15/-0,3	17	15
		8		14,5 ±0,2		39,6	30,7				–	
GRLA-1/4	G1/4	6	–	12,5 ±0,2	17,8 ±0,15	36,6	27,7	48,5	±1,4%	5,9 +0,17/-0,25	17,2	15
		8		14,5 ±0,2		39,6	30,7				–	
		10		17,5 ±0,2		42,0	33,1				–	
GRLA-3/8	G3/8	6	–	12,5 ±0,2	22,4 ±0,15	39,8	28,6	55	±1,3%	6,9 +0,15/-0,3	19,55	19
		8		14,5 ±0,2		44,1	32,9				–	
		10		17,5 ±0,2		46,7	35,5				–	
GRLA-1/2	G1/2	12	–	20,5 ±0,15	27,8 ±0,15	55,3	41,4	65,9	±1,1%	8,35 +0,15/-0,3	22,75	24

Dimensions

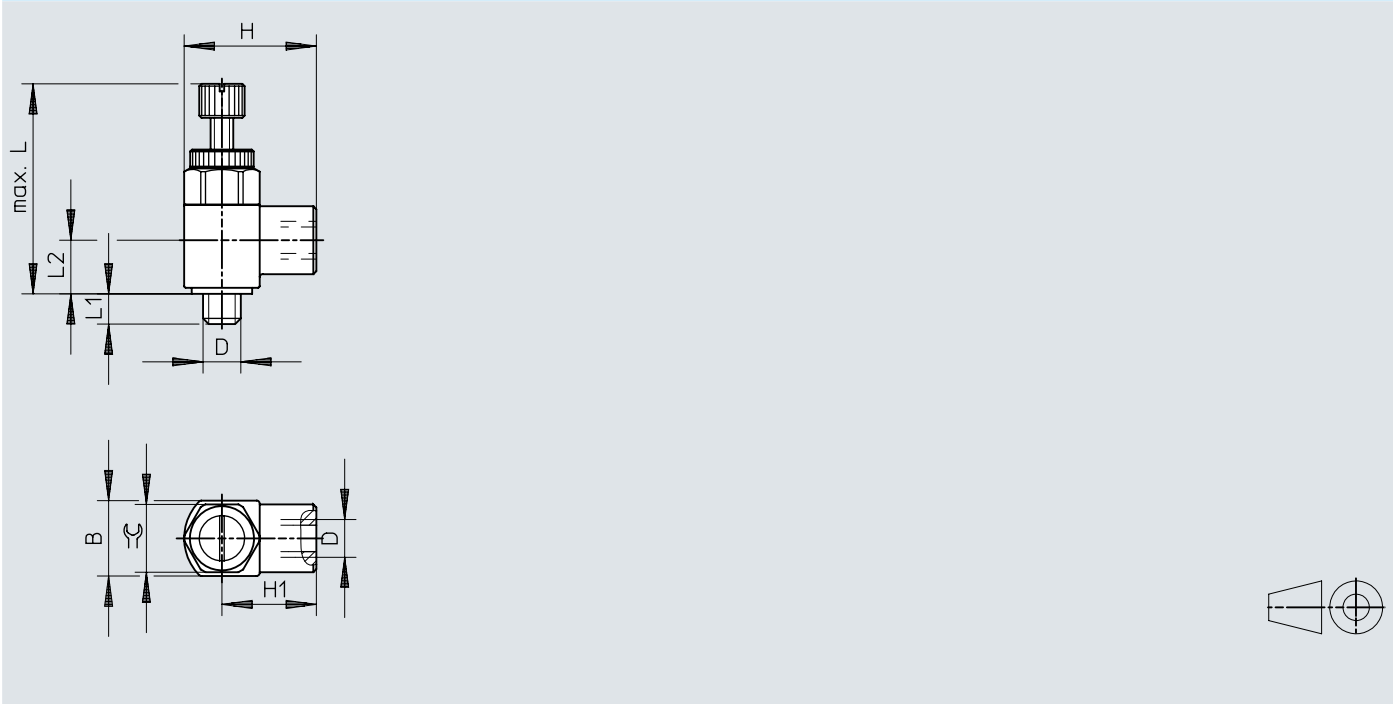
Dimensions – Connection type female thread slotted screw

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	D	B	~H	~H1	~L		L1	~L2	≈G
GRL...-M5	M5	10 -0,15	17,5	12,5	18	±6,2%	4,0 ±0,3	7,1	9
GRL...-1/8	G1/8	16 -0,15	28	20	26	±3,9%	5,3 +0,45/-0,35	10,3	14
GRL...-1/4	G1/4	20 -0,2	36	26	31,7	±3,2%	8,2 +0,45/-0,35	13,2	17
GRLA-3/8	G3/8	25 -0,2	41	28,5	38,5	±2,9%	8,8 +0,45/-0,35	15,5	22
GRLA-1/2	G1/2	32 -0,2	53	37	50	±2,4%	12,8 ±0,45	18,9	27
GRLA-3/4	G3/4	41 -0,3	64	43,5	61,8	±2,2%	13,5 ±0,5	24,5	36

Dimensions

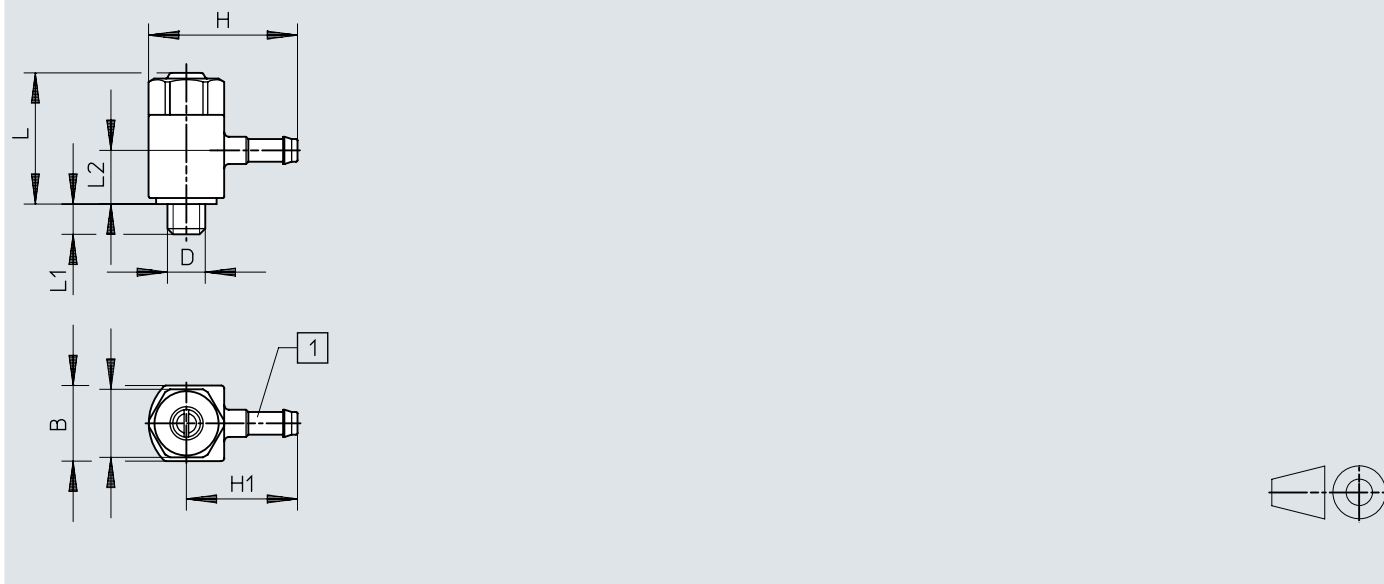
Dimensions – Connection type female thread knurled screw [Download CAD data](#) www.festo.com



	D	B	~H	~H1	~L		L1	~L2	≅G
GRL...-M5	M5	10 -0,15	17,5	12,5	28	±3,4%	4,0 ±0,3	7,1	9
GRL...-1/8	G1/8	16 -0,15	28	20	39,4	±2,1%	5,3 +0,45/-0,35	10,3	14
GRL...-1/4	G1/4	20 -0,2	36	26	47,4	±2,0%	8,2 +0,45/-0,35	13,2	17
GRLA-3/8	G3/8	25 -0,2	41	28,5	-		8,8 +0,45/-0,35	15,5	22
GRLA-1/2	G1/2	32 -0,2	53	37	-		12,8 ±0,45	18,9	27
GRLA-3/4	G3/4	41 -0,3	64	43,5	-		13,5 ±0,5	24,5	36

Dimensions

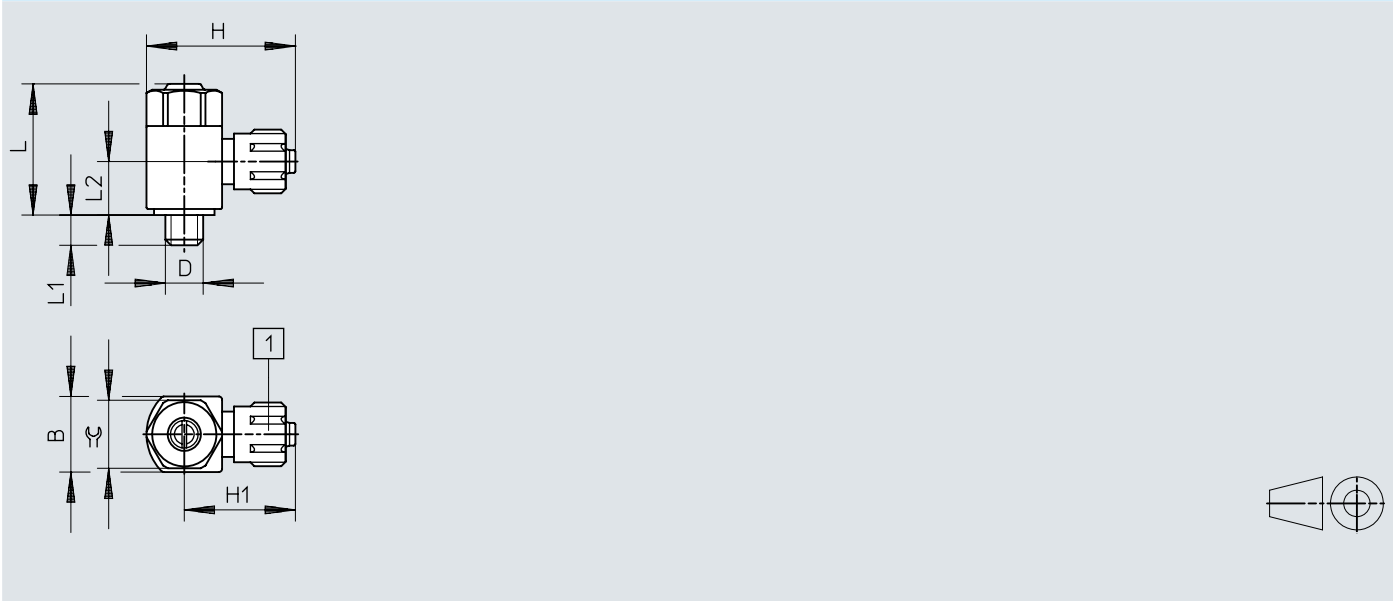
Dimensions – Connection type barbed connector GRL...-M5

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	D	B	~H	~H1	~L		L1	~L2	≙
GRL...-M5-PK-3	M5	10 -0,15	19,7	14,7	18	±5,7%	4,0 ±0,3	8,5	9
GRL...-M5-PK-4		10 -0,15	21,7	16,7	18	±5,7%	4,0 ±0,3	8,5	9

Dimensions

Dimensions – Connection type barbed connector GRL...-1/8, GRL...-1/4 Download CAD data www.festo.com

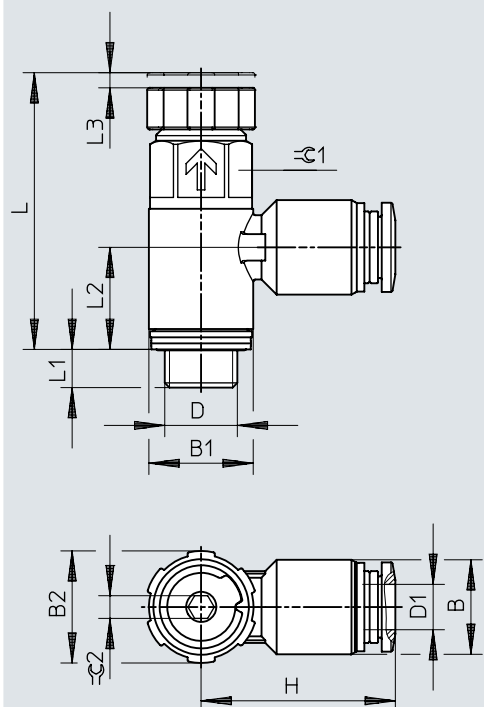


	D	B	~H	~H1	~L		L1	~L2	≈G
GRL...-1/8-PK-3	G1/8	16 -0,15	27,1	19,1	26	±3,9%	5,3 +0,45/-0,35	13,4	14
GRL...-1/8-PK-4		16 -0,15	30,2	22,2	26	±3,9%	5,3 +0,45/-0,35	13,4	14
GRL...-1/8-PK-6		16 -0,15	30,3	22,3	26	±3,9%	5,3 +0,45/-0,35	12,0	14
GRL...-1/4-PK-4	G1/4	20 -0,2	34,2	24,2	31,7	±3,3%	8,2 +0,45/-0,35	16,9	17
GRL...-1/4-PK-6		20 -0,2	34,3	24,3	31,7	±3,3%	8,2 +0,45/-0,35	17,2	17

Dimensions

Dimensions – One-way flow control valves GRLSA, standard

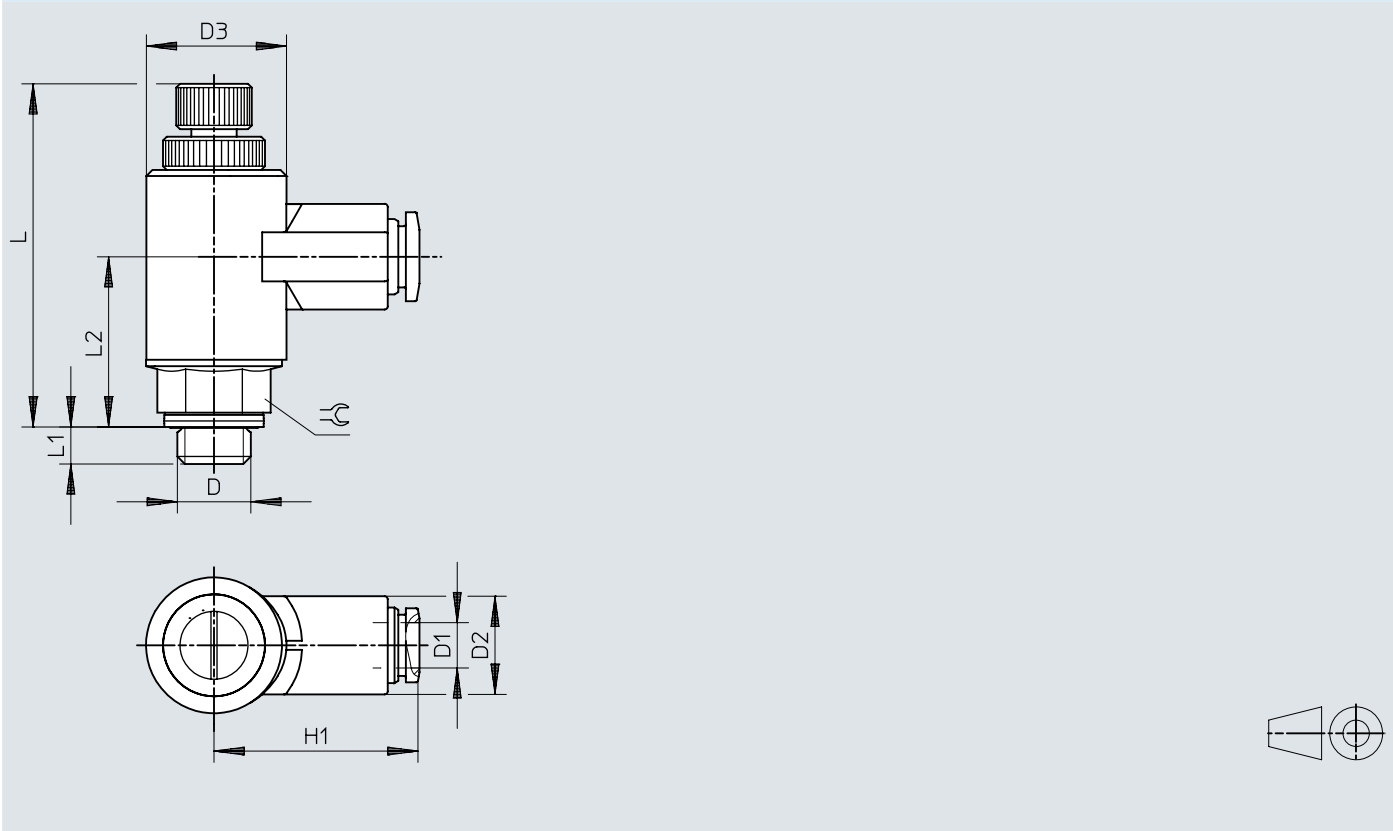
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	D	B	B1	B2	H	L	L1	L2	L3	⌀G1	⌀G2
GRLSA-1/8	G1/8	12,5	13,8	15	25,7	36,6	5,1	13,5	2	12	3
GRLSA-1/4	G1/4	14,5	17,8	18,8	30,75	46,5	7	17,2	3	15	3

Dimensions

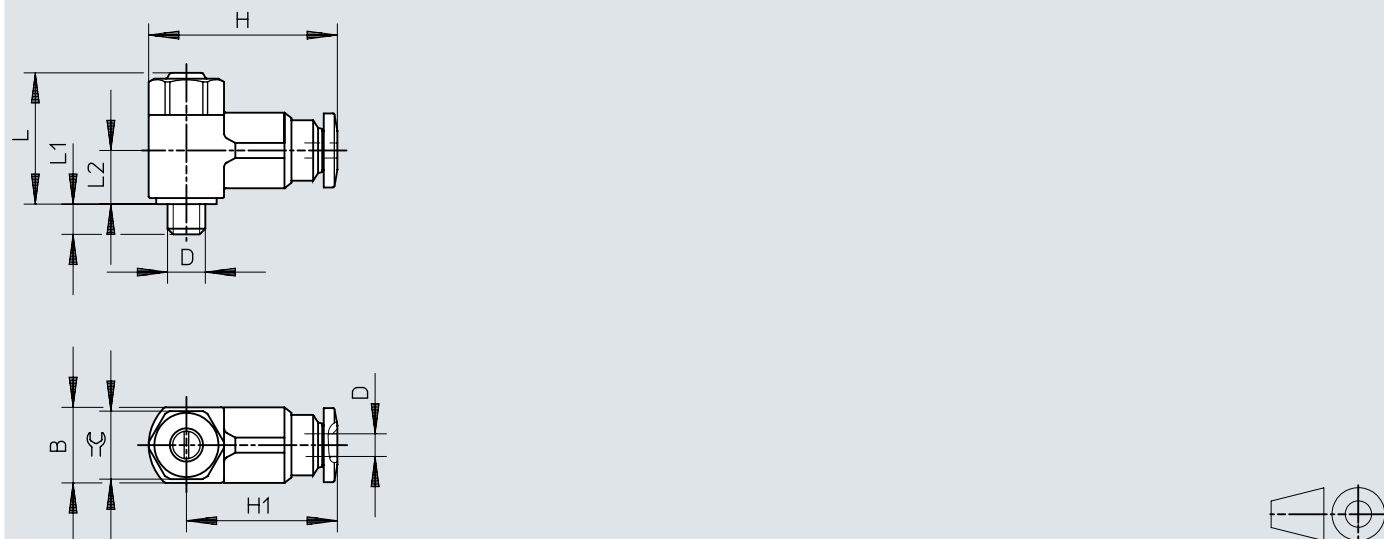
Dimensions – One-way flow control valves GRLA, standard Download CAD data www.festo.com



	D	D1 ø	D2 ø	D3 ø	~H1	~L		~L1	~L2	≈G
GRLA-1/8	G1/8	6	13,0 ±0,25	17,9 -0,1	27,2	48,1	±2,2%	4,9	22,6	13
		8	16,8 ±0,4		35,4	48	±2,3%			
GRLA-1/4	G1/4	6	13,0 ±0,25	17,9 -0,1	27,2	47,8	±2,3%	5,8	22,3	17
		8	16,8 ±0,4		35,4	47,8	±2,4%			
GRLA-3/8	G3/8	6	13,0 ±0,25	17,9 -0,1	27,2	47,8	±2,3%	6,8	22,3	19
		8	16,8 ±0,4		35,4	47,8	±2,4%			

Dimensions

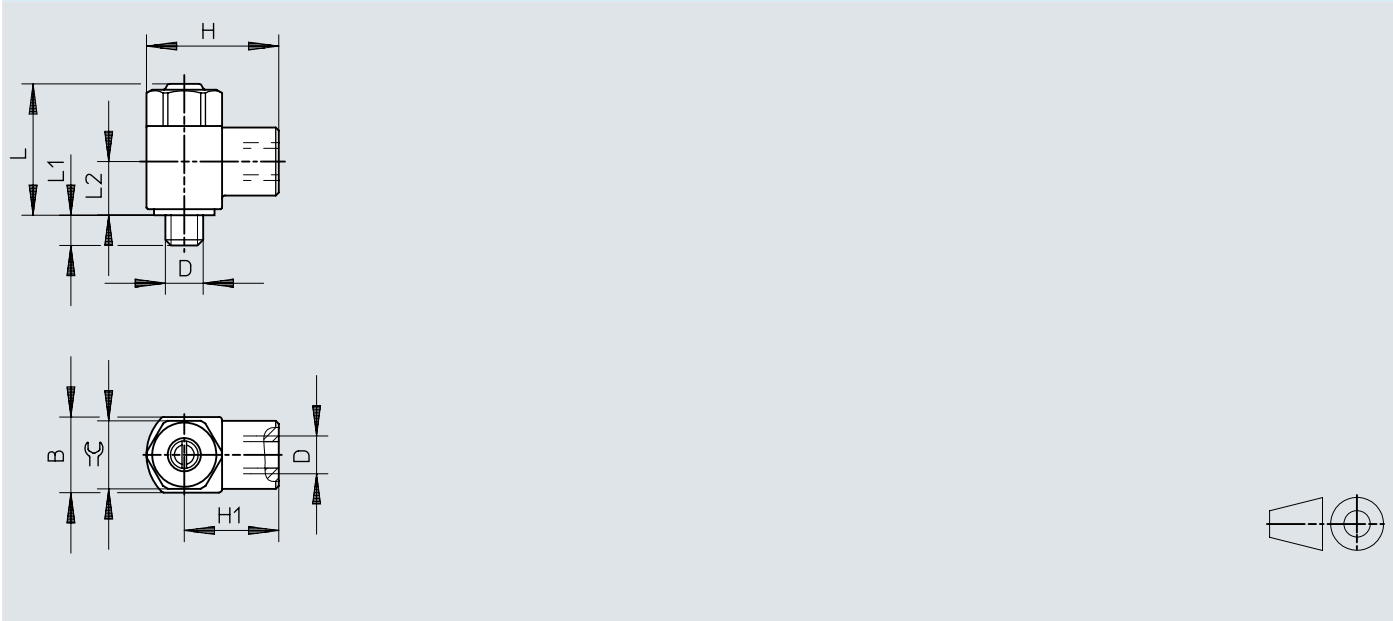
Dimensions – One-way flow control valves GRxA/GRxZ, Mini

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	D	D1 ø	B	~H	~H1	~L		L1	~L2	≅
GRxA/GRxZ	M3	3	8 -0,15	20	15,8	16,6	±3,3%	2,3 +0,15/-0,3	7	7
	M5	3	9,8 -0,15	22,4	18,4	17,2	±3,1%	3,1 +0,15/-0,35	7,3	
		4	9,8 -0,15	22,2	18,2	17,2	±3,1%	3,1 +0,15/-0,35	7,3	

Dimensions

Dimensions – Female thread, metal Download CAD data www.festo.com

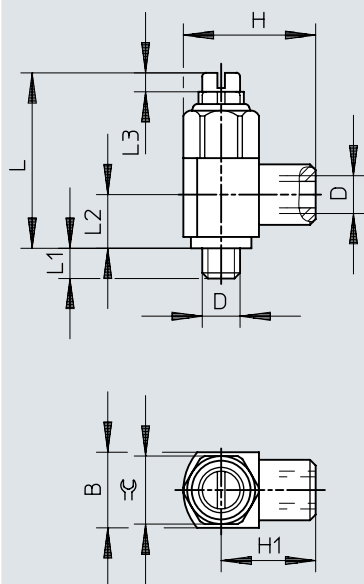


	D	B	~H	~H1	~L		L1	~L2	≡G
GRLA/GRLZ	M3	5 -0,1	9	6,5	13,4	±3,9%	2,5 +0,15/-0,3	6,4	4,5

Dimensions

Dimensions – One-way flow control valves CRGRLA-M5, corrosion-resistant

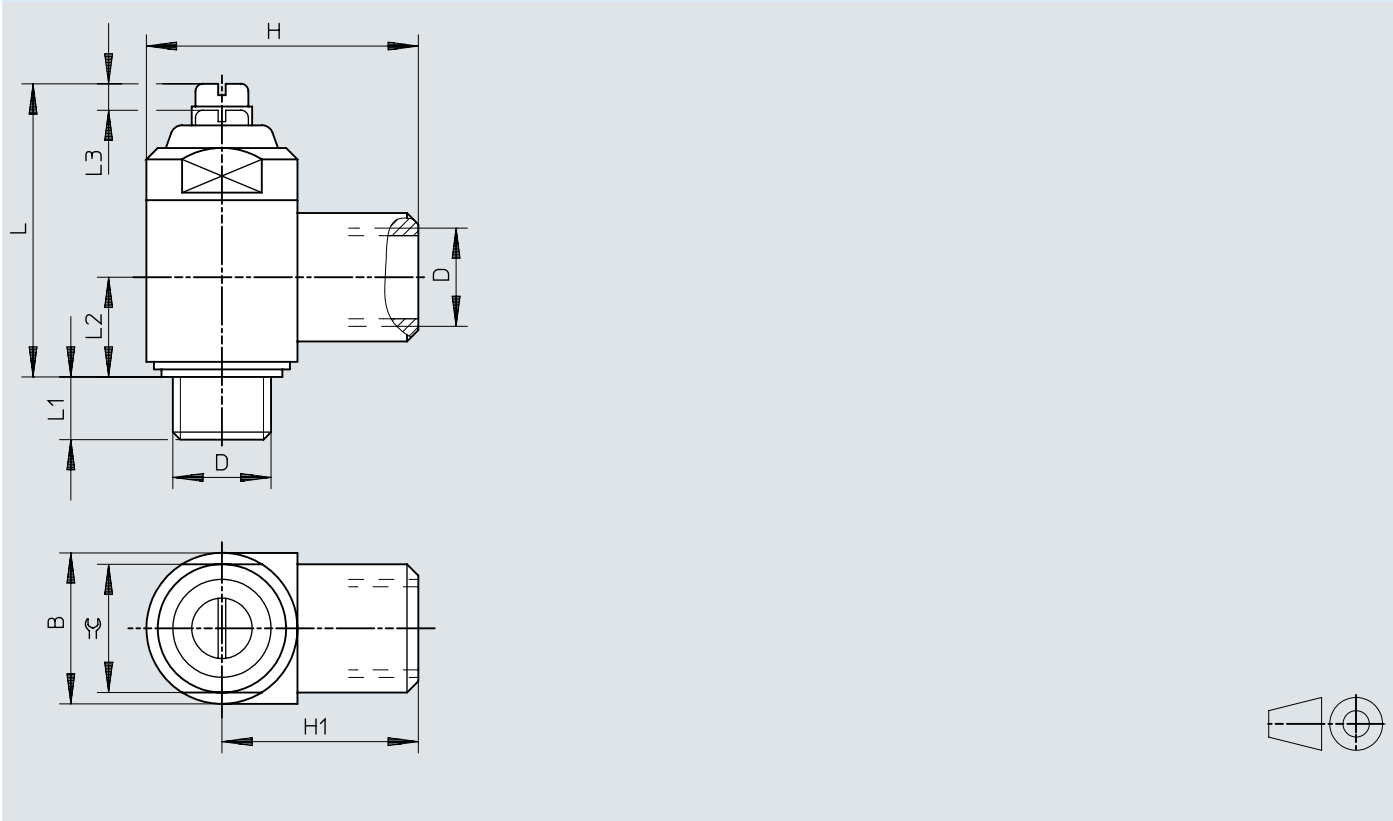
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	D	B	H	H1	~L		~L1	~L2	~L3	≅G
CRGRLA-M5	M5	10 -0,25	17,5 ±0,3	12,5	22,9	±3,5%	4	7,1	2,5	9

Dimensions

Dimensions – One-way flow control valves CRGRLA, corrosion-resistant Download CAD data www.festo.com



	D	B	H	H1	~L		~L1	~L2	~L3	≈G
CRGRLA-1/8	G1/8	16 -0,4	28 +0,4/-0,3	20	33,8	±2,7%	5,5	10,3	3,5	14
CRGRLA-1/4	G1/4	20 -0,3	36 +0,4/-0,2	26	38,8	±2,7%	6,5	13,2	3,5	17
CRGRLA-3/8	G3/8	25 -0,3	41 +0,4/-0,2	28,5	48,5	±2,2%	7,5	15,4	5	22
CRGRLA-1/2	G1/2	32 -0,4	53 ±0,5	37	62,2	±1,7%	9	18,9	7,5	27

Ordering data

Ordering data push-in connector QS, metal GRLA

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	M5	QS-3	0 - No corrosion stress	13 g	193137	GRLA-M5-QS-3-D
			1 - Low corrosion stress	14 g	197576	GRLA-M5-QS-3-RS-D
		QS-4	0 - No corrosion stress	13 g	193138	GRLA-M5-QS-4-D
			1 - Low corrosion stress	14 g	197577	GRLA-M5-QS-4-RS-D
		QS-6	0 - No corrosion stress	13 g	193139	GRLA-M5-QS-6-D
			1 - Low corrosion stress	14 g	197578	GRLA-M5-QS-6-RS-D
	G1/8	QS-3	0 - No corrosion stress	22 g	193142	GRLA-1/8-QS-3-D
			1 - Low corrosion stress	23 g	197579	GRLA-1/8-QS-3-RS-D
		QS-4	0 - No corrosion stress	22 g	193143	GRLA-1/8-QS-4-D
			1 - Low corrosion stress	23 g	197580	GRLA-1/8-QS-4-RS-D
		QS-6	0 - No corrosion stress	22 g	193144	GRLA-1/8-QS-6-D
				32 g	537075	GRLA-1/8-QS-6-MF-D
			1 - Low corrosion stress	23 g	197581	GRLA-1/8-QS-6-RS-D
		QS-8	0 - No corrosion stress	22 g	193145	GRLA-1/8-QS-8-D
				32 g	537076	GRLA-1/8-QS-8-MF-D
			1 - Low corrosion stress	24 g	534337	GRLA-1/8-QS-8-RS-D
	G1/4	QS-6	0 - No corrosion stress	42 g	193146	GRLA-1/4-QS-6-D
			1 - Low corrosion stress	50 g	534338	GRLA-1/4-QS-6-RS-D
		QS-8	0 - No corrosion stress	42 g	193147	GRLA-1/4-QS-8-D
			1 - Low corrosion stress	50 g	534339	GRLA-1/4-QS-8-RS-D
		QS-10	0 - No corrosion stress	42 g	193148	GRLA-1/4-QS-10-D
			1 - Low corrosion stress	50 g	534340	GRLA-1/4-QS-10-RS-D
	G3/8	QS-6	0 - No corrosion stress	60 g	193149	GRLA-3/8-QS-6-D
			1 - Low corrosion stress	72 g	534341	GRLA-3/8-QS-6-RS-D
		QS-8	0 - No corrosion stress	60 g	193150	GRLA-3/8-QS-8-D
			1 - Low corrosion stress	72 g	534342	GRLA-3/8-QS-8-RS-D
		QS-10	0 - No corrosion stress	60 g	193151	GRLA-3/8-QS-10-D
			1 - Low corrosion stress	72 g	534343	GRLA-3/8-QS-10-RS-D
	G1/2	QS-12	0 - No corrosion stress	106 g	193152	GRLA-1/2-QS-12-D
			1 - Low corrosion stress	124 g	534344	GRLA-1/2-QS-12-RS-D

Ordering data

Ordering data push-in connector QS, metal GRLZ

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	M5	QS-3	0 - No corrosion stress	13 g	193153	GRLZ-M5-QS-3-D
		QS-4			193154	GRLZ-M5-QS-4-D
		QS-6			193155	GRLZ-M5-QS-6-D
	G1/8	QS-3		22 g	193156	GRLZ-1/8-QS-3-D
		QS-4			193157	GRLZ-1/8-QS-4-D
		QS-6			193158	GRLZ-1/8-QS-6-D
		QS-8			193159	GRLZ-1/8-QS-8-D

Ordering data female thread/barbed connector, metal GRLA

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	External thread G1/4	Internal thread G1/4	2 - Moderate corrosion stress	59 g	151175	GRLA-1/4-RS-B
					151172	GRLA-1/4-B
		For barbed fitting, inside diameter 4 mm, with union nut		44 g	151173	GRLA-1/4-PK-4-B
		For barbed fitting, inside diameter 6 mm, with union nut		45 g	151174	GRLA-1/4-PK-6-B
	M5	M5		11 g	151160	GRLA-M5-B
				12 g	151163	GRLA-M5-RS-B
		PK-3		10 g	151161	GRLA-M5-PK-3-B
		PK-4			151162	GRLA-M5-PK-4-B
	G1/8	G1/8		28 g	151165	GRLA-1/8-B
				30 g	151169	GRLA-1/8-RS-B
		PK-3 with union nut		22 g	151166	GRLA-1/8-PK-3-B
		PK-4 with union nut		25 g	151167	GRLA-1/8-PK-4-B
		PK-6 with union nut			151168	GRLA-1/8-PK-6-B
	G3/8	G3/8		97 g	151178	GRLA-3/8-B
	G1/2	G1/2		204 g	151179	GRLA-1/2-B
	G3/4	G3/4		377 g	151180	GRLA-3/4-B

Ordering data female thread/barbed connector, metal GRLZ

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	External thread G1/4	Internal thread G1/4	2 - Moderate corrosion stress	59 g	151198	GRLZ-1/4-RS-B
					151195	GRLZ-1/4-B
	M5	M5		11 g	151183	GRLZ-M5-B
				12 g	151186	GRLZ-M5-RS-B
	G1/8	G1/8		28 g	151188	GRLZ-1/8-B
				30 g	151192	GRLZ-1/8-RS-B

Ordering data

Ordering data push-in connector QS, metal GRLSA

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	G1/8	QS-6	1 - Low corrosion stress	19.5 g	540661	GRLSA-1/8-QS-6
	G1/4	QS-8		34.8 g	540662	GRLSA-1/4-QS-8

Ordering data push-in connector QS, metal GRLA/GRLZ

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type	
	M3	QS-3	1 - Low corrosion stress	7 g	175043	GRLZ-M3-QS-3	
					175041	GRLA-M3-QS-3	
	M5	QS-4		9 g	175055	GRLZ-M5-QS-3-LF-C	
					175053	GRLA-M5-QS-3-LF-C	
					175056	GRLA-M5-QS-4-LF-C	
					175058	GRLZ-M5-QS-4-LF-C	

Ordering data female thread, metal GRLA/GRLZ

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	M3	M3	1 - Low corrosion stress	2 g	175038	GRLA-M3
					175040	GRLZ-M3

Ordering data female thread, stainless steel CRGRLA

	Pneumatic connection 2	Pneumatic connection 1	Corrosion resistance class (CRC)	Product weight	Part no.	Type
	M5	M5	3 - High corrosion stress	10.2 g	161403	CRGRLA-M5-B
	G1/8	G1/8		37.8 g	161404	CRGRLA-1/8-B
	G1/4	G1/4		71.6 g	161405	CRGRLA-1/4-B
	G3/8	G3/8		126.9 g	161406	CRGRLA-3/8-B
	G1/2	G1/2		262.3 g	161407	CRGRLA-1/2-B