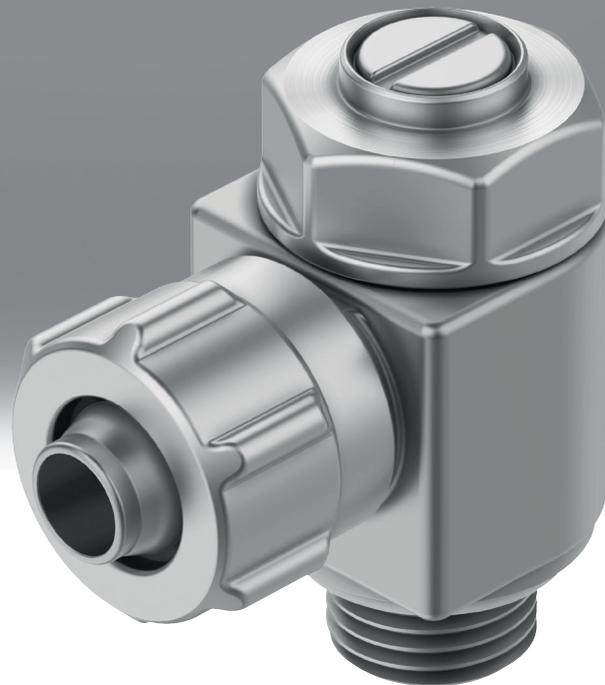


## One-way flow control valve GRxA, GRxZ

**FESTO**



## Characteristics

### At a glance

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

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

### Additional documents

[Link](#) [grla/grtz](#)



The additional document GRLA-GRLZ-ADD contains further information on the application options for the one-way flow control valves GRLA and GRLZ.

### Diagrams

[Link](#) [grla/grtz](#)

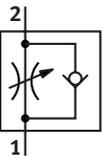


The diagrams shown in this document are also available online. These can be used to display precise values.

### Series

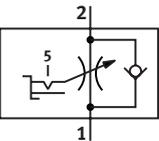
One-way flow control valves can be used to regulate the piston speed of pneumatic drives as they advance and retract.

[GRLA] One-way flow control valve



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

[GRLSA] One-way flow control valve



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

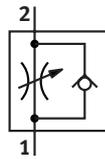
Gradual preselection of the flow rate range using a rotary switch and infinitely variable precision adjustment with hex key using a scale.

### Flow rate characteristic

[LF] Low flow

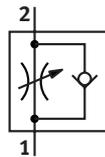
Precise setting for low piston speeds

[GRLZ] One-way flow control valve



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

[CRGRLA] One-way flow control valve, corrosion resistant



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

[MF] Medium flow

Precise setting for medium piston speeds

## Type code

001	Series
<b>GRLA</b>	One-way flow control valve
<b>GRLSA</b>	One-way flow control valve
<b>CRGRLA</b>	One-way flow control valve, corrosion resistant
<b>GRLZ</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

003	Pneumatic connection 1
	Connection size as for port 1 or 2
<b>PK-3</b>	CK connection 3 mm
<b>PK-4</b>	CK connection 4 mm
<b>PK-6</b>	CK connection 6 mm
<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
<b>QS-10</b>	Push-in connector 10 mm
<b>QS-12</b>	Push-in connector 12 mm

004	Adjusting component
	Standard
<b>RS</b>	Knurled screw

005	Flow rate characteristic
	None
<b>LF</b>	Low flow
<b>MF</b>	Medium flow

006	Generation
	None
<b>B</b>	Series B
<b>C</b>	Series C
<b>D</b>	D series

## Datasheet

### General technical data GRLA – push-in connector QS

Pneumatic connection, port 2	M5	G1/8	G1/4	G3/8	G1/2
Pneumatic connection, port 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 one-way flow control function	Exhaust air one-way flow control function, One-way flow control function			
Adjustment component	Knurled screw, Slotted head screw				
Type of mounting	Screw-in	Screw-in, Via male thread			
Mounting position	optional				
Nominal torque	0.8 Nm	3 Nm	5 Nm	10 Nm	15 Nm
Tolerance for nominal tightening torque	± 10%				

### General technical data GRLZ – push-in connector QS

Pneumatic connection, port 2	M3	M5	G1/8		
Pneumatic connection, port 1	QS-3	QS-3, QS-4, QS-6	QS-3, QS-4, QS-6, QS-8		
Valve function	Supply air one-way flow control function				
Adjustment component	Slotted head screw				
Type of mounting	Screw-in				
Mounting position	optional				
Nominal torque	–	0.8	3		
Tolerance for nominal tightening torque	–	± 10%			

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

Pneumatic connection, port 2	M5	G1/8	G1/4	G3/8	G1/2
Operating pressure	0.2 ... 10 bar				
Operating pressure complete temperature range	0.2 ... 10 bar				
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)				
Standard nominal flow rate in blocked direction	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 0.6->0 MPa (6->0 bar, 87->0 psi)	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 0.6->0 MPa (6->0 bar, 87->0 psi)	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				
Media temperature	-10 ... 60°C				
Storage temperature	–	-10 ... 40°C			
Maritime classification <sup>1)</sup>	See certificate				
Corrosion resistance class CRC <sup>2)</sup>	0 - No corrosion stress, 1 - Low corrosion stress				

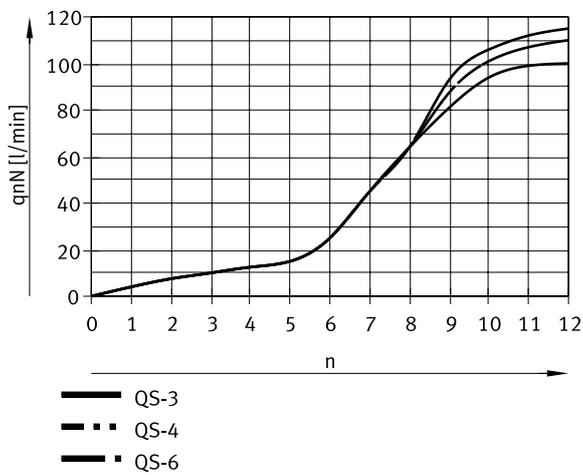
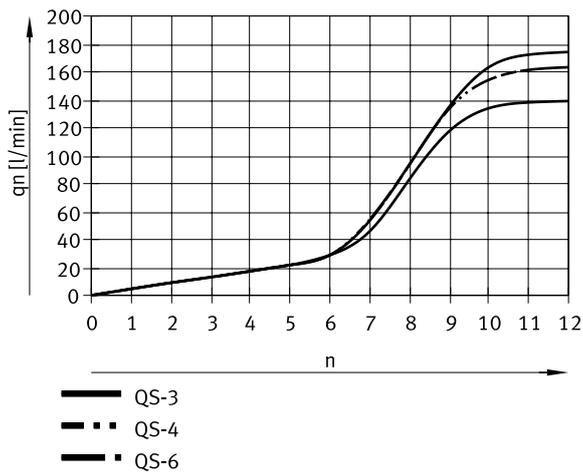
1) More information [www.festo.com/catalogue/grla](http://www.festo.com/catalogue/grla) → Support/Downloads.

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet

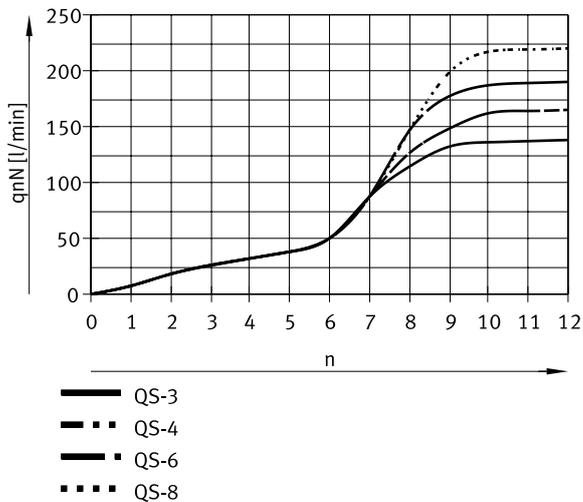
## Materials GRLA/GRLZ – push-in connector QS

Material knurled head	Wrought aluminium alloy, Anodised
Material adjusting screw	Brass, High-alloy stainless steel
Material hollow bolt	Wrought aluminium alloy, Anodised
Material release ring	POM
Material swivel fitting	Die-cast zinc, Chromated
Material screwed plug	Wrought aluminium alloy, Brass
Material seals	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

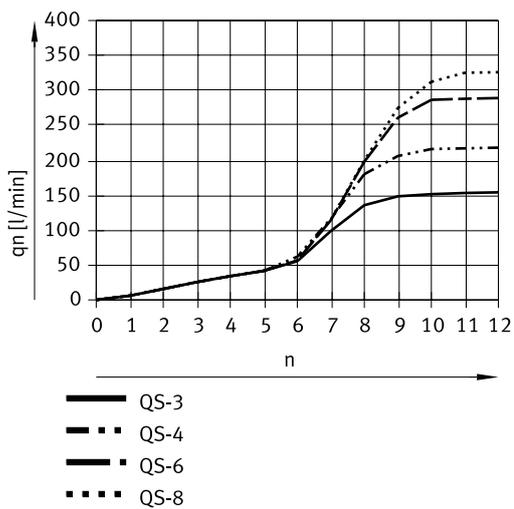
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M5 – push-in connector QS, metal)Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M5 – push-in connector QS, metal)

## Datasheet

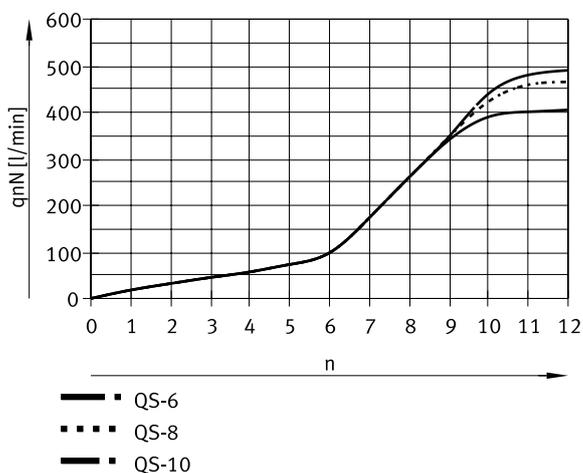
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-1/8 – push-in connector QS, metal)



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

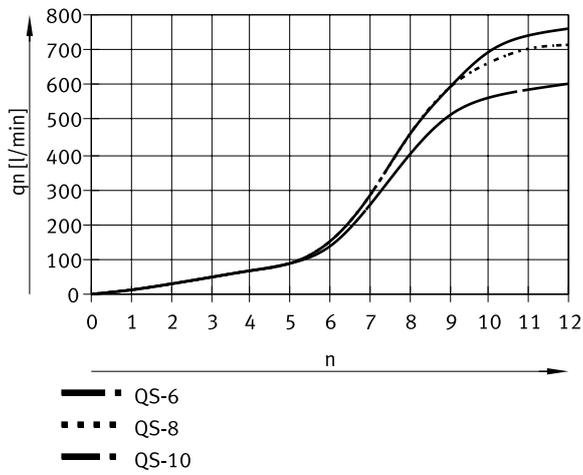


Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of the spindle revolutions  $n$  (GRLA-1/8-...-MF, GRLA-1/4 – push-in connector QS, metal)

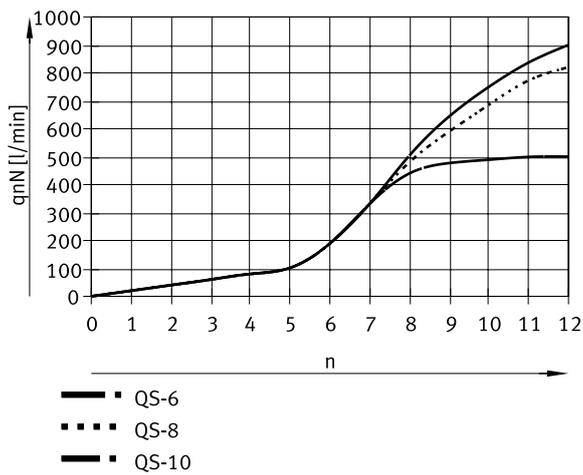


## Datasheet

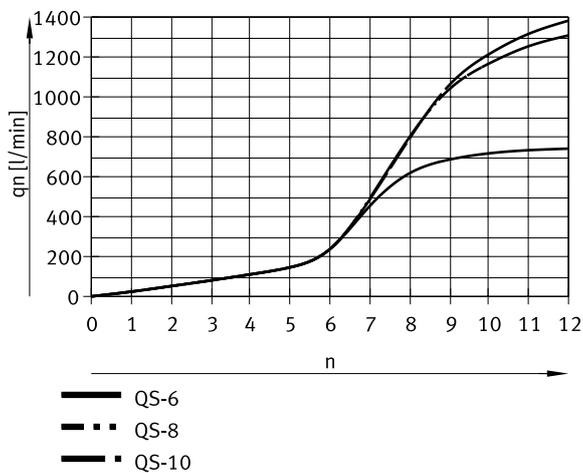
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA-1/8-...-MF, GRLA-1/4 – push-in connector QS, metal)



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)

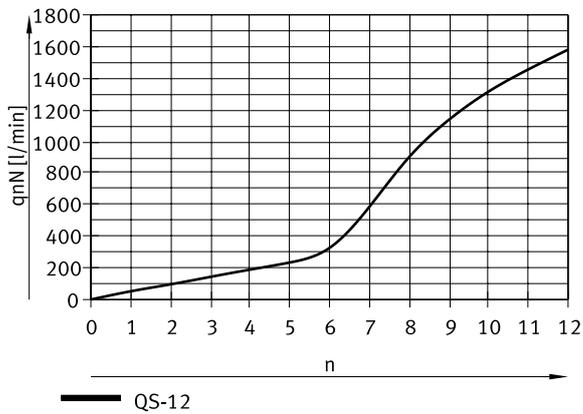


Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-3/8 – push-in connector QS, metal)

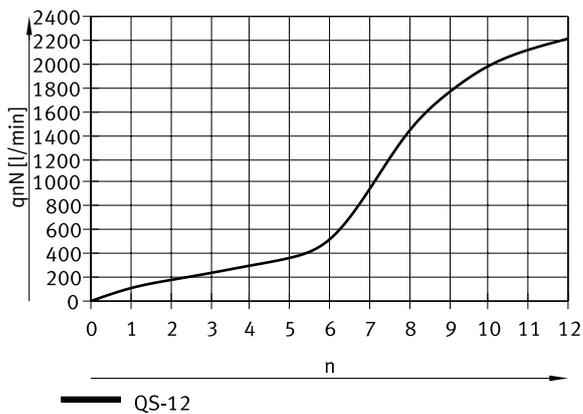


## Datasheet

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)



Standard 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 GRLA – female thread/barbed connector

Pneumatic connection, port 2	Male thread G1/4	M5	G1/8	G3/8	G1/2	G3/4
Pneumatic connection, port 1	Female thread G1/4, For barbed fitting I.D. 4 mm with union nut, For barbed fitting I.D. 6 mm with union nut	M5, PK-3, PK-4	G1/8, PK-3 with union nut, PK-4 with union nut, PK-6 with union nut	G3/8	G1/2	G3/4
Nominal size	6	2	–			
Valve function	Exhaust air one-way flow control function					
Adjustment component	Knurled screw, Slotted head screw			Slotted head screw		
Type of mounting	Screw-in					
Mounting position	optional					
Max. tightening torque	11	1.5	6	20	40	60

### General technical data GRLZ – female thread/barbed connector

Pneumatic connection, port 2	Male thread G1/4	M5	G1/8
Pneumatic connection, port 1	Female thread G1/4	M5	G1/8
Nominal size	6	2	–
Valve function	Supply air one-way flow control function		
Adjustment component	Knurled screw, Slotted head screw		
Type of mounting	Screw-in		
Mounting position	optional		
Max. tightening torque	11 Nm	1.5 Nm	6 Nm

## Datasheet

**Operating and ambient conditions GRLA/GRLZ – female thread/barbed connector**

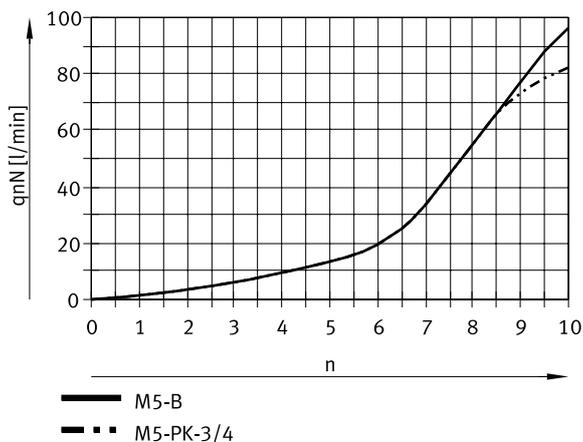
Pneumatic connection, port 2	Male thread G1/4	M5	G1/8	G3/8	G1/2	G3/4
Operating pressure	–	0.2 ... 10 bar	–	–	0.3 ... 10 bar	–
Operating pressure complete temperature range	0.3 ... 10 bar	–	0.3 ... 10 bar	–	–	0.3 ... 10 bar
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]					
Standard nominal flow rate in blocked direction	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 0.6->0 MPa (6->0 bar, 87->0 psi)	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 0.6->0 MPa (6->0 bar, 87->0 psi)	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
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)					
Ambient temperature	-10 ... 60°C					
Media temperature	-10 ... 60°C					
Maritime classification <sup>1)</sup>	See certificate					
Corrosion resistance class CRC <sup>2)</sup>	2 - Moderate corrosion stress	–				

1) GRLA only; more information [www.festo.com/catalogue/grla](http://www.festo.com/catalogue/grla) -> Support/Downloads.

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

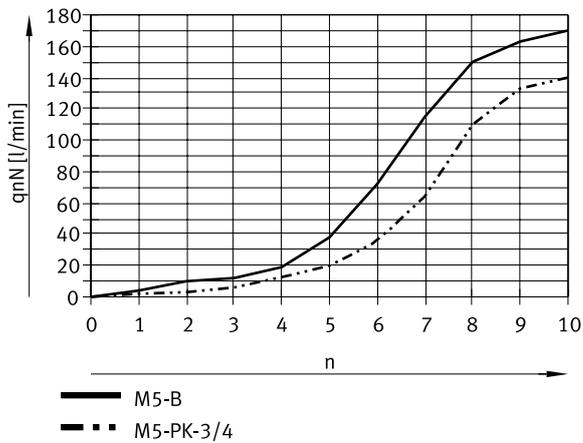
**Materials GRLA/GRLZ – female thread/barbed connector**

Material adjusting screw	Brass
Material swivel fitting	Die-cast zinc
Material screwed plug	Wrought aluminium alloy, Brass, Nickel-plated
Material seals	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

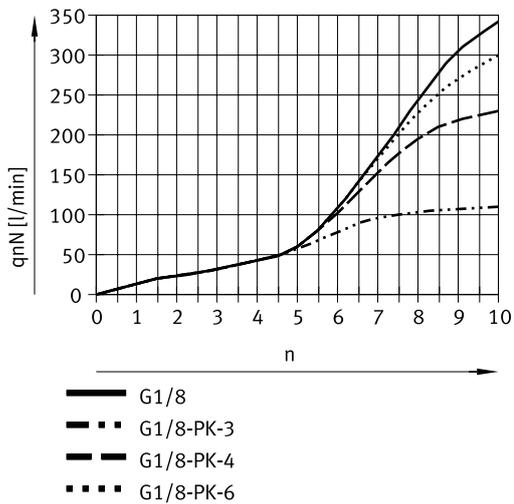
**Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M5 – female thread/barbed connector, metal)**


## Datasheet

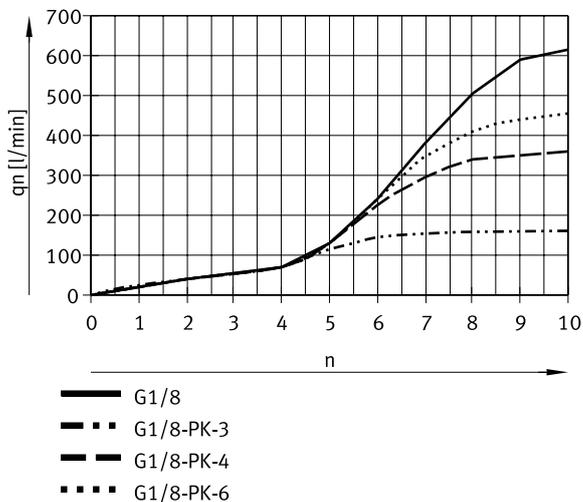
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M5 – female thread/barbed connector, metal)



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)

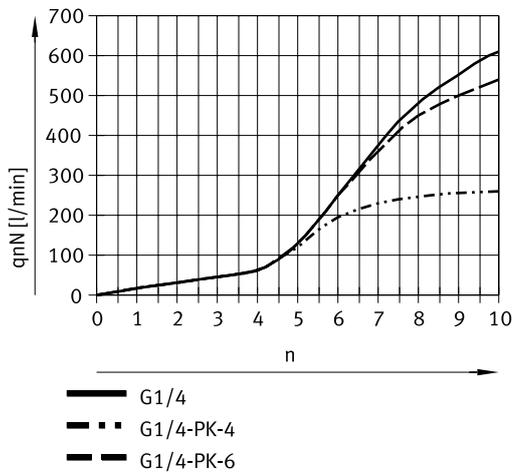


Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-1/8 – female thread/barbed connector, metal)

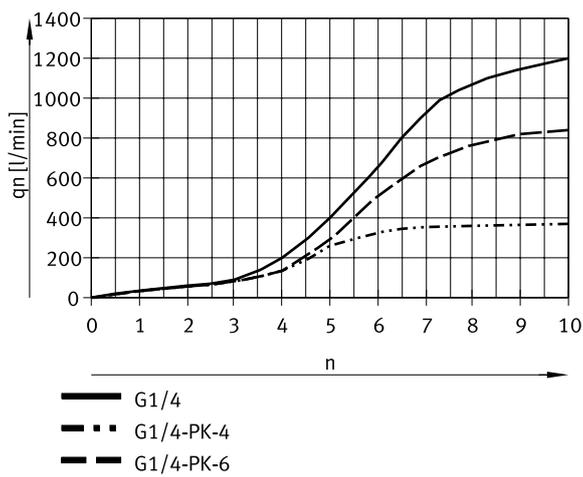


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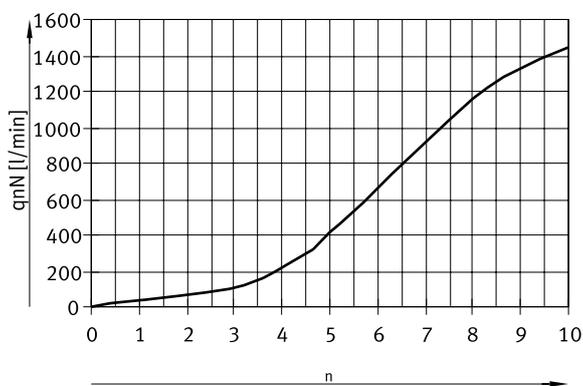
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-1/4 – female thread/barbed connector, metal)



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

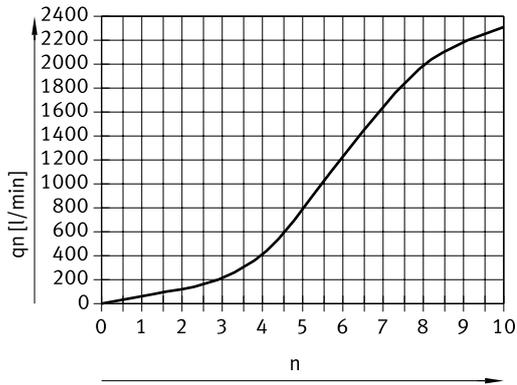


Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-3/8 – female thread/barbed connector, metal)

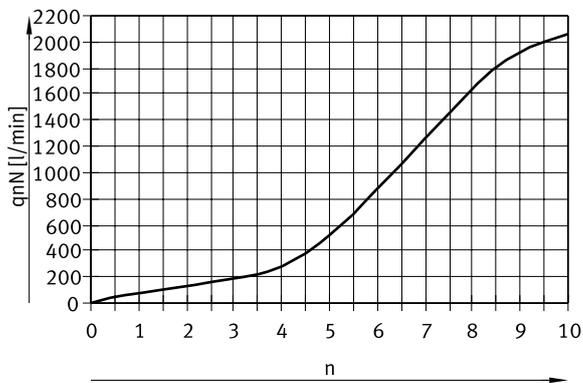


Datasheet

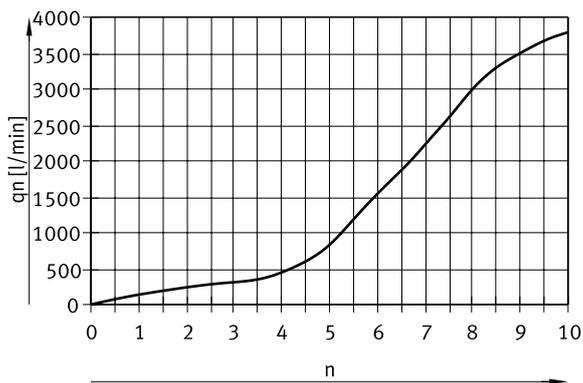
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-3/8 – female thread/barbed connector, metal)



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)

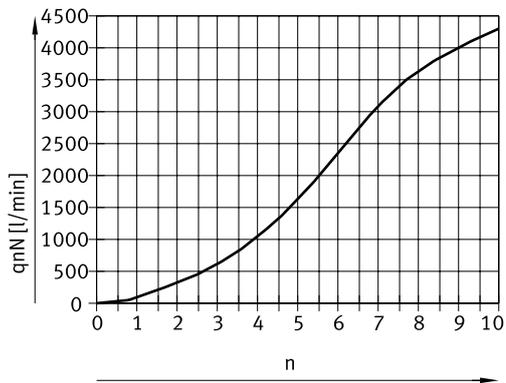


Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-1/2 – female thread/barbed connector, metal)

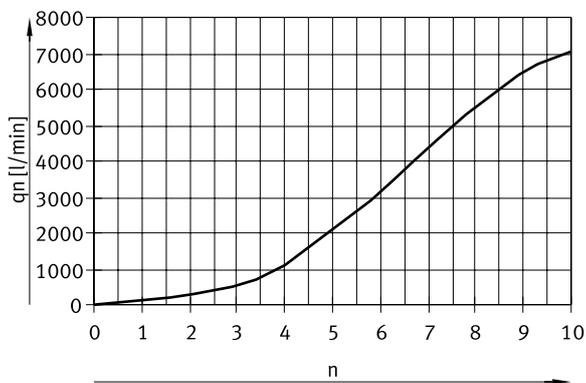


## Datasheet

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



Standard 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 GRLSA – push-in connector QS

Pneumatic connection, port 2	G1/8	G1/4
Pneumatic connection, port 1	QS-6	QS-8
Valve function	Exhaust air one-way flow control function	
Adjustment component	Internal hexagon	
Type of mounting	Screw-in	
Mounting position	optional	
Nominal torque	3.5	11
Tolerance for nominal tightening torque	± 20%	± 10%

## Datasheet

### Operating and ambient conditions GRLSA – push-in connector QS

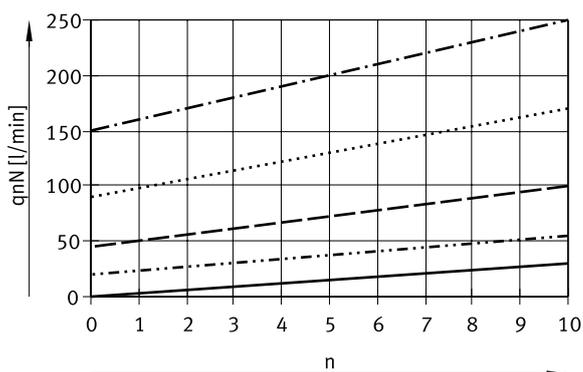
Pneumatic connection, port 2	G1/8	G1/4
Operating pressure complete temperature range	0.2 ... 10 bar	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
Standard nominal flow rate in flow control direction	0 ... 250 l/min	0 ... 450 l/min
Standard nominal flow rate in blocked direction	180 ... 310 l/min	390 ... 570 l/min
Standard flow rate in flow control direction 0.6->0 MPa (6->0 bar, 87->0 psi)	0 ... 410 l/min	0 ... 700 l/min
Standard flow rate in non-return direction 0.6->0 MPa (6->0 bar, 87->0 psi)	430 ... 540 l/min	820 ... 930 l/min
Note on operating and pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)	
Ambient temperature	-10 ... 60°C	
Media temperature	-10 ... 60°C	
Storage temperature	-10 ... 40°C	
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion stress	

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials GRLSA – push-in connector QS

Material adjusting screw	PA-reinforced
Material swivel fitting	Die-cast zinc
Material release ring	POM
Material hollow bolt	Wrought aluminium alloy, Anodised
Material seals	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)

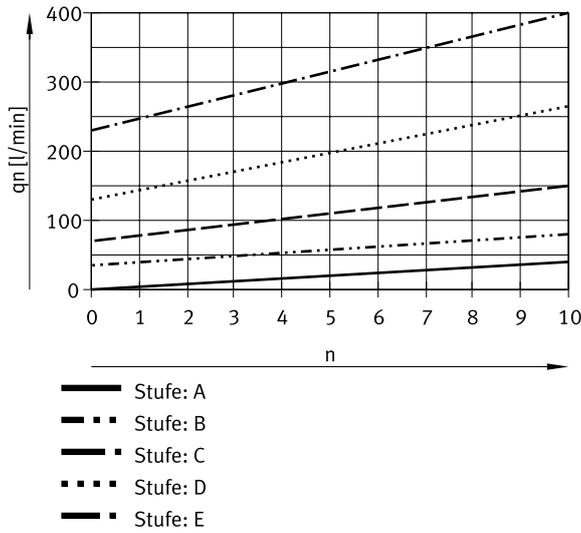


A = Step A  
 B = Step B  
 C = Step C  
 D = Step D  
 E = Step E

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

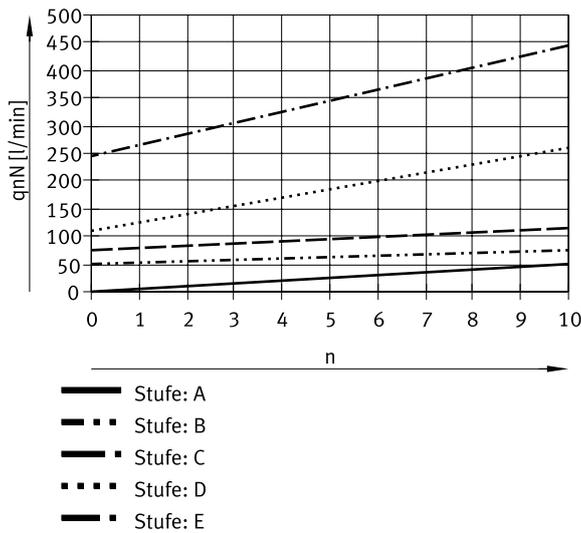
Datasheet

Standard 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)



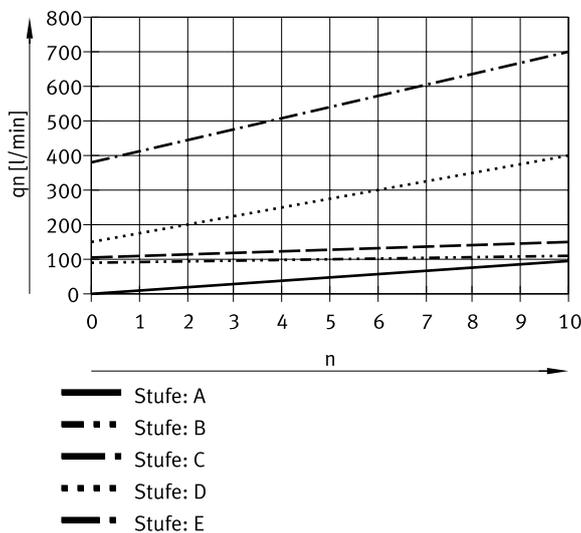
- A = Step A
- B = Step B
- C = Step C
- D = Step D
- E = Step E

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

Standard 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 GRLA – push-in connector QS (Mini)

Pneumatic connection, port 2	M3	M5
Pneumatic connection, port 1	QS-3	QS-3, QS-4
Valve function	Exhaust air one-way flow control function	
Adjustment component	Slotted head screw	
Type of mounting	Screw-in	
Mounting position	optional	
Max. tightening torque	0.3 Nm	1.5 Nm

### General technical data GRLZ – push-in connector QS (Mini)

Pneumatic connection, port 2	M3	M5
Pneumatic connection, port 1	QS-3	QS-3, QS-4
Valve function	Supply air one-way flow control function	
Adjustment component	Slotted head screw	
Type of mounting	Screw-in	
Mounting position	optional	
Max. tightening torque	0.3 Nm	1.5 Nm

### Operating and environmental conditions GRLA/GRLZ – push-in connector QS (Mini)

Pneumatic connection, port 2	M3	M5
Operating pressure	0.2 ... 10 bar	
Operating pressure	–	2.9 ... 145 psi
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)	
Standard nominal flow rate in flow control direction	41 l/min	40 ... 48 l/min
Standard nominal flow rate in blocked direction	27 ... 50 l/min	36 ... 75 l/min
Standard flow rate in non-return direction 0.6->0 MPa (6->0 bar, 87->0 psi)	75 ... 110 l/min	60 ... 150 l/min
Standard flow rate in flow control direction 0.6->0 MPa (6->0 bar, 87->0 psi)	95 l/min	80 l/min
Ambient temperature	-10 ... 60°C	
Media temperature	-10 ... 60°C	
Maritime classification <sup>1)</sup>	See certificate	
Corrosion resistance class CRC <sup>2)</sup>	1 - Low corrosion stress	

1) GRLA only: more information [www.festo.com/catalogue/grla](http://www.festo.com/catalogue/grla) -> Support/Downloads.

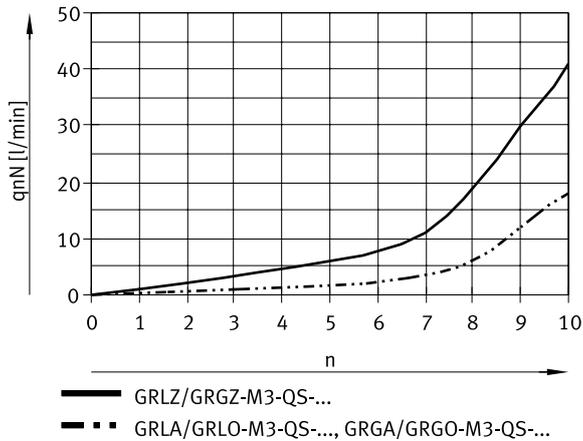
2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials GRLA/GRLZ – push-in connector QS (Mini)

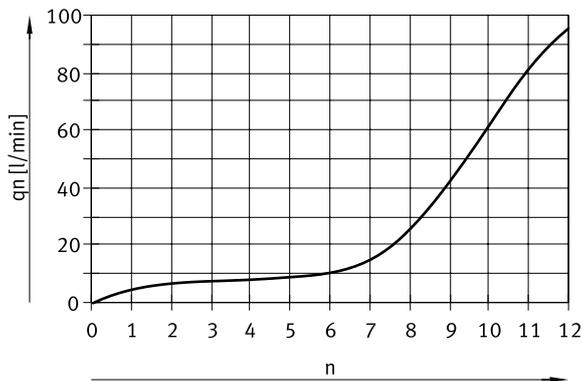
Material adjusting screw	Brass
Material swivel fitting	Die-cast zinc
Material release ring	POM
Material screwed plug	Brass, Nickel-plated
Material seals	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 according to ISO 14644-1

## Datasheet

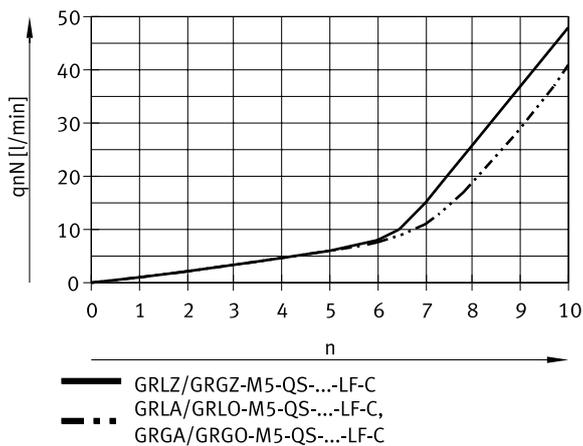
Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M3, mini – push-in connector QS, metal)



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

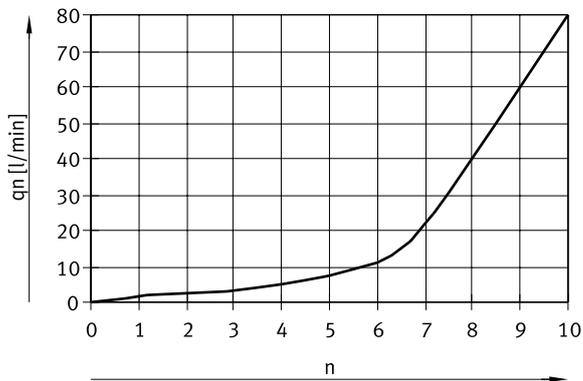


Standard nominal flow rate  $q_{nN}$  at 6 → 5 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ-M5, mini – push-in connector QS, metal)



## Datasheet

### Standard 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 GRLA – female thread (Mini)

Pneumatic connection, port 2	M3
Pneumatic connection, port 1	M3
Valve function	Exhaust air one-way flow control function
Adjustment component	Slotted head screw
Type of mounting	Screw-in
Mounting position	optional
Max. tightening torque	0.3 Nm

### General technical data GRLZ – female thread (Mini)

Pneumatic connection, port 2	M3
Pneumatic connection, port 1	M3
Valve function	Supply air one-way flow control function
Adjustment component	Slotted head screw
Type of mounting	Screw-in
Mounting position	optional
Max. tightening torque	0.3 Nm

### Operating and environmental conditions GRLA/GRLZ – female thread (Mini)

Operating pressure	0.2 ... 10 bar
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)
Standard nominal flow rate in flow control direction	18 l/min
Standard nominal flow rate in blocked direction	18 ... 20 l/min
Standard flow rate in flow control direction 0.6->0 MPa (6->0 bar, 87->0 psi)	33 l/min
Standard flow rate in non-return direction 0.6->0 MPa (6->0 bar, 87->0 psi)	33 ... 37 l/min
Ambient temperature	-10 ... 60°C
Media temperature	-10 ... 60°C
Maritime classification <sup>1)</sup>	See certificate
Corrosion resistance class CRC <sup>2)</sup>	1 - Low corrosion stress

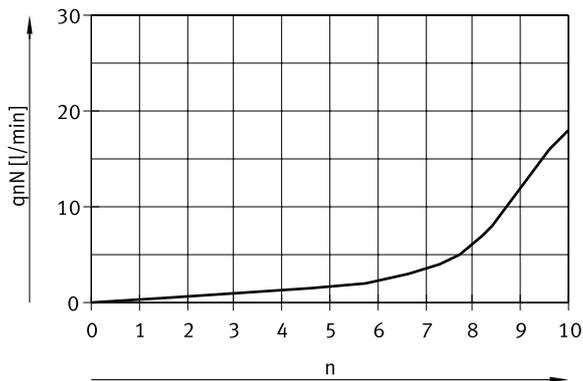
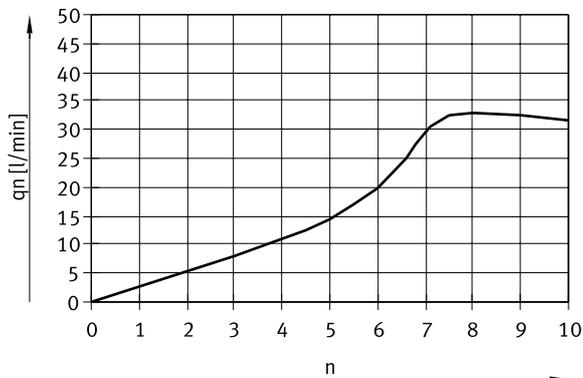
1) GRLA only: more information [www.festo.com/catalogue/grla](http://www.festo.com/catalogue/grla) → Support/Downloads.

2) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Datasheet

## Materials GRLA/GRLZ – female thread (Mini)

Material adjusting screw	Brass
Material swivel fitting	Die-cast zinc
Material screwed plug	Brass, Nickel-plated
Material seals	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)Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (GRLA/GRLZ, mini – female thread, metal)

## General technical data CRGRLA – female thread (stainless steel)

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

## Datasheet

### Operating and environmental conditions CRGRLA – female thread (stainless steel)

Pneumatic connection, port 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 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)				
Standard nominal flow rate in blocked direction	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 0.6->0 MPa (6->0 bar, 87->0 psi)	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 0.6->0 MPa (6->0 bar, 87->0 psi)	165 l/min	580 l/min	1,265 l/min	2,515 l/min	4,265 l/min
Ambient temperature	-20 ... 80°C				
Media temperature	-10 ... 60°C				
Storage temperature	-10 ... 40°C				
Corrosion resistance class CRC <sup>1)</sup>	3 - high corrosion stress				
Suitable for use with food	See supplementary material information				
Maritime classification <sup>2)</sup>	See certificate				

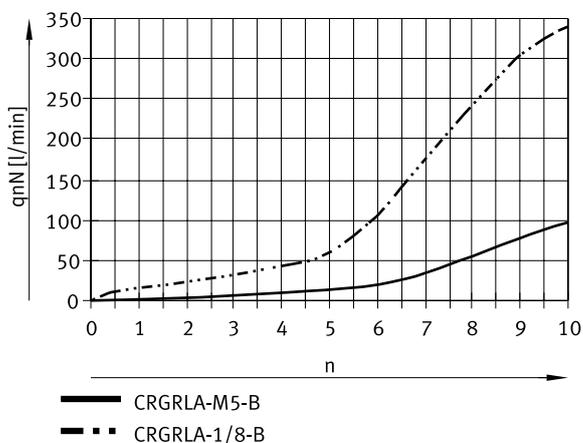
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

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

### Materials CRGRLA – female thread (stainless steel)

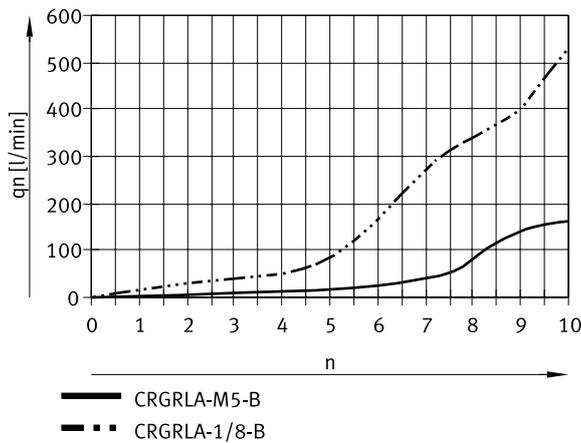
Material adjusting screw	High-alloy stainless steel
Material swivel fitting	High-alloy stainless steel
Material hollow bolt	High-alloy steel
Material seals	FPM, PVC
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L
Cleanroom suitability, measured according to ISO 14644-14	Class 4 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)

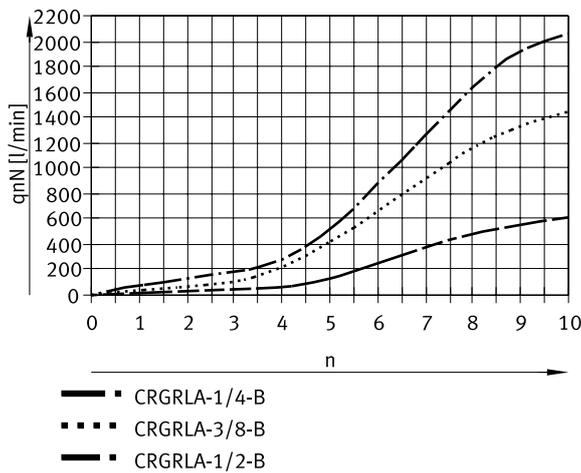


## Datasheet

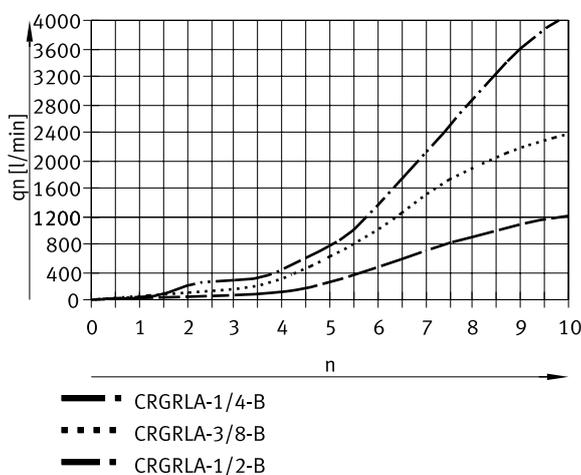
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (CRGRLA-M5, CRGRLA-1/8 – female thread, stainless steel)



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)



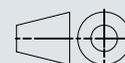
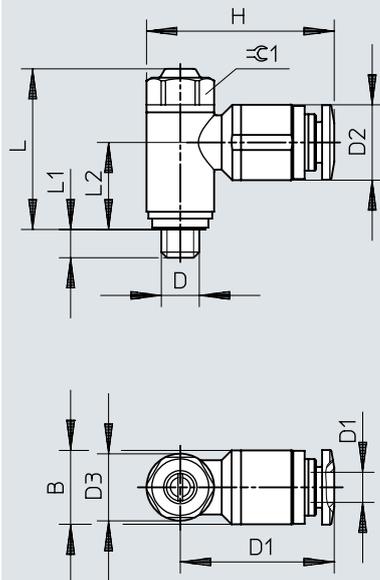
Standard flow rate  $q_n$  at 6 → 0 bar as a function of spindle revolutions  $n$  (CRGRLA-1/4, CRGRLA-3/8, CRGRLA-1/2 - female thread, stainless steel)



## Dimensions

### Dimensions – Slotted head screw

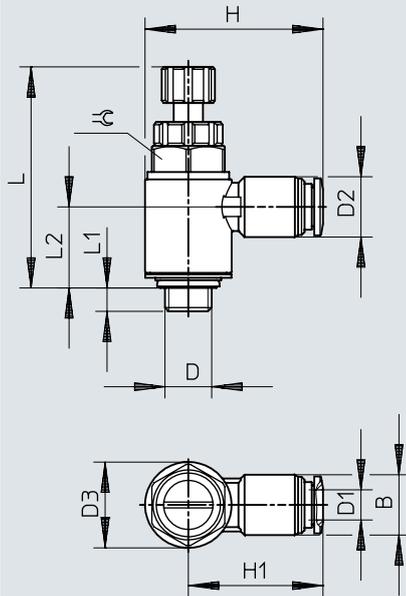
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	D	D1	B	D2 ø	D3 ø	~H	~H1	~L	L1	~L2	⊖	
GRL...-M5	M5	3	–	8,2 +0,15	8,9 ±0,07	22,4	18	20,8	±3,3%	3,9 +0,1/-0,45	10,7	8
		4	9,8 ±0,2	10,0 ±0,2		24,7	20,3				9,7	
		6	–	12,0 ±0,2		26,5	22					
GRL...-1/8	G1/8	3	–	10,2 ±0,2	13,8 ±0,07	31,9	25	26,5	±2,1%	5,05 +0,15/-0,3	14,2	12
		4		10,2 ±0,2		29,4	22,5				13,5	
		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	30,9	±1,9%	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	31,5	±1,9%	5,9 +0,17/-0,25	17,2	15
		8		14,5 ±0,2		39,6	30,7				16,1	
		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	35,3	±1,7%	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	42,6	±1,4%	8,35 +0,15/-0,3	22,75	24

## Dimensions

## Dimensions – Knurled screw

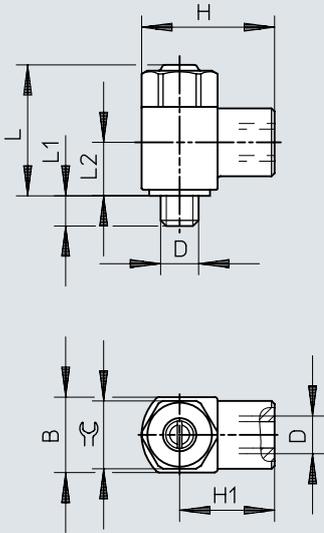
Download CAD data [www.festo.com](http://www.festo.com)

	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					
		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

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

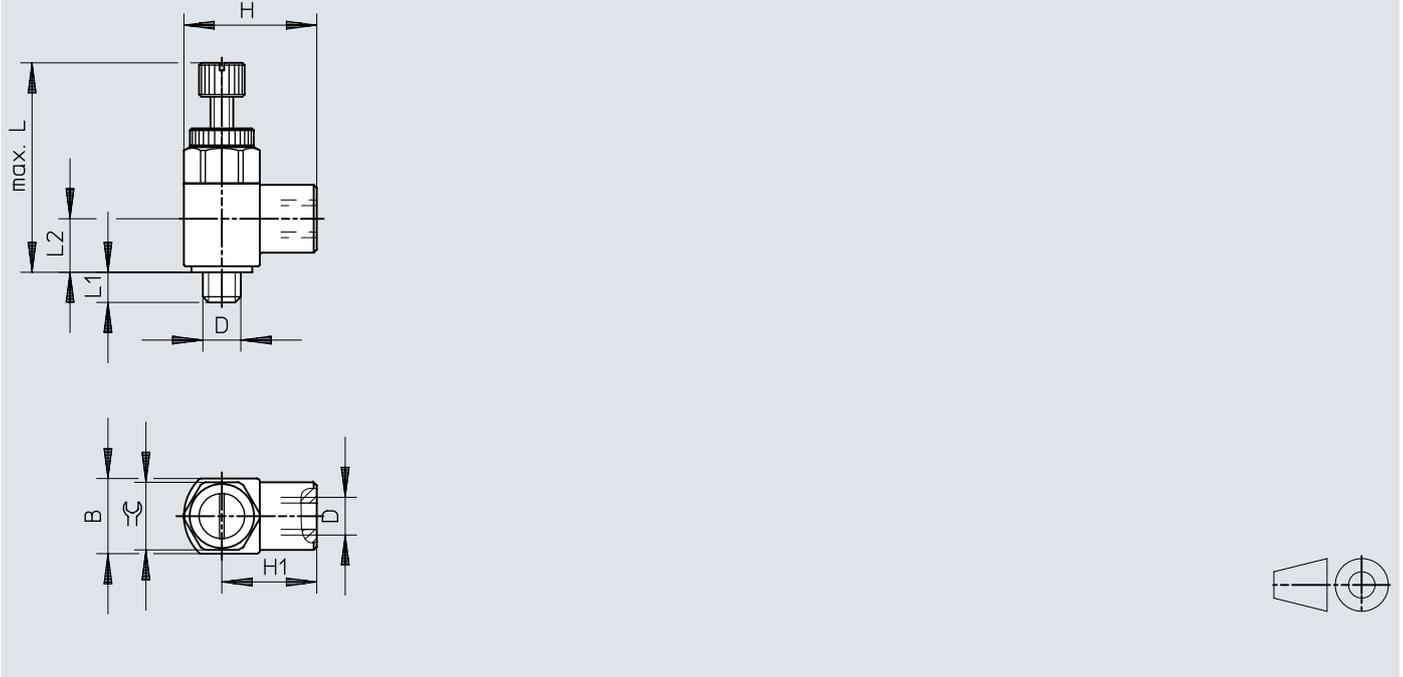


	D	B	~H	~H1	~L		L1	~L2	≈C
GRL...-M5	M5	10 <sup>-0,15</sup>	17,5	12,5	18	±6,2%	4,0 ±0,3	7,1	9
GRL...-1/8	G1/8	16 <sup>-0,15</sup>	28	20	26	±3,9%	5,3 <sup>+0,45/-0,35</sup>	10,3	14
GRL...-1/4	G1/4	20 <sup>-0,2</sup>	36	26	31,7	±3,2%	8,2 <sup>+0,45/-0,35</sup>	13,2	17
GRLA-3/8	G3/8	25 <sup>-0,2</sup>	41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

## Dimensions

Dimensions – Connection type female thread knurled screw

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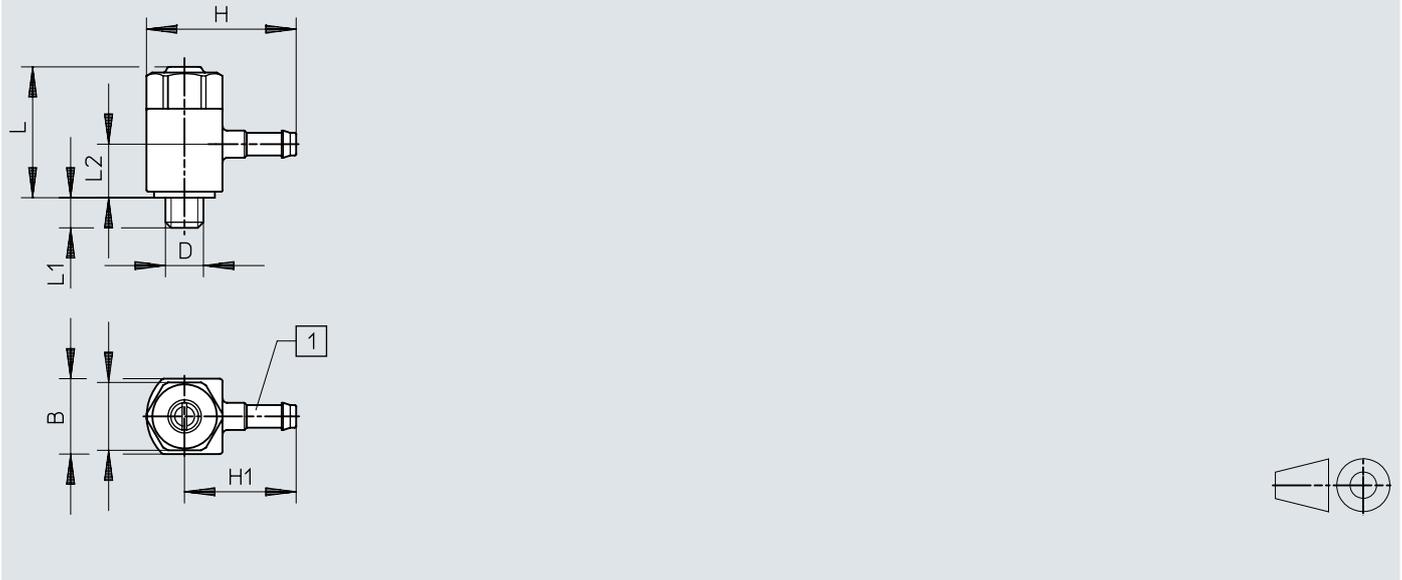


	D	B	~H	~H1	~L		L1	~L2	≅G
GRL...-M5	M5	10 <sup>-0,15</sup>	17,5	12,5	28	±3,4%	4,0 <sup>±0,3</sup>	7,1	9
GRL...-1/8	G1/8	16 <sup>-0,15</sup>	28	20	39,4	±2,1%	5,3 <sup>+0,45/-0,35</sup>	10,3	14
GRL...-1/4	G1/4	20 <sup>-0,2</sup>	36	26	47,4	±2,0%	8,2 <sup>+0,45/-0,35</sup>	13,2	17
GRLA-3/8	G3/8	25 <sup>-0,2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

## Dimensions

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

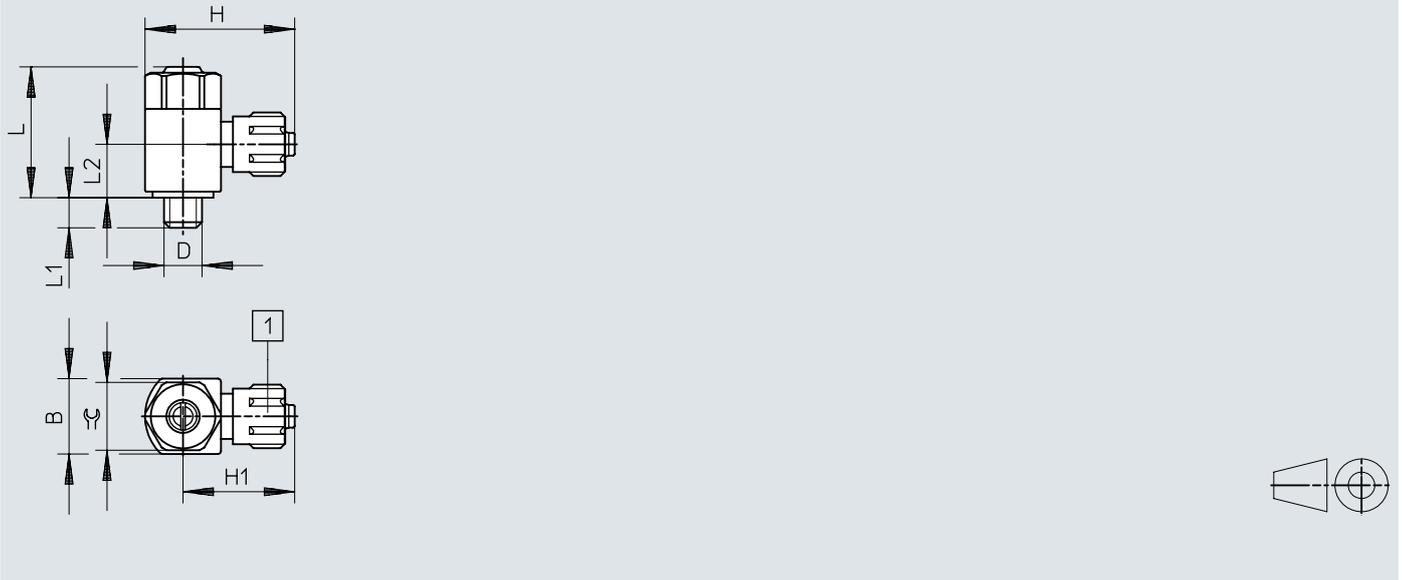
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	D	B	~H	~H1	~L	L1	~L2	≅	
GRL...-M5-PK-3	M5	10 -0,15	19,7	14,7	18	±5,7%	4,0 ±0,3	8,5	9
GRL...-M5-PK-4		10 -0,15	21,7	16,7	18	±5,7%	4,0 ±0,3	8,5	9

## Dimensions

Dimensions – Connection type barbed connector GRL...-1/8, GRL...-1/4

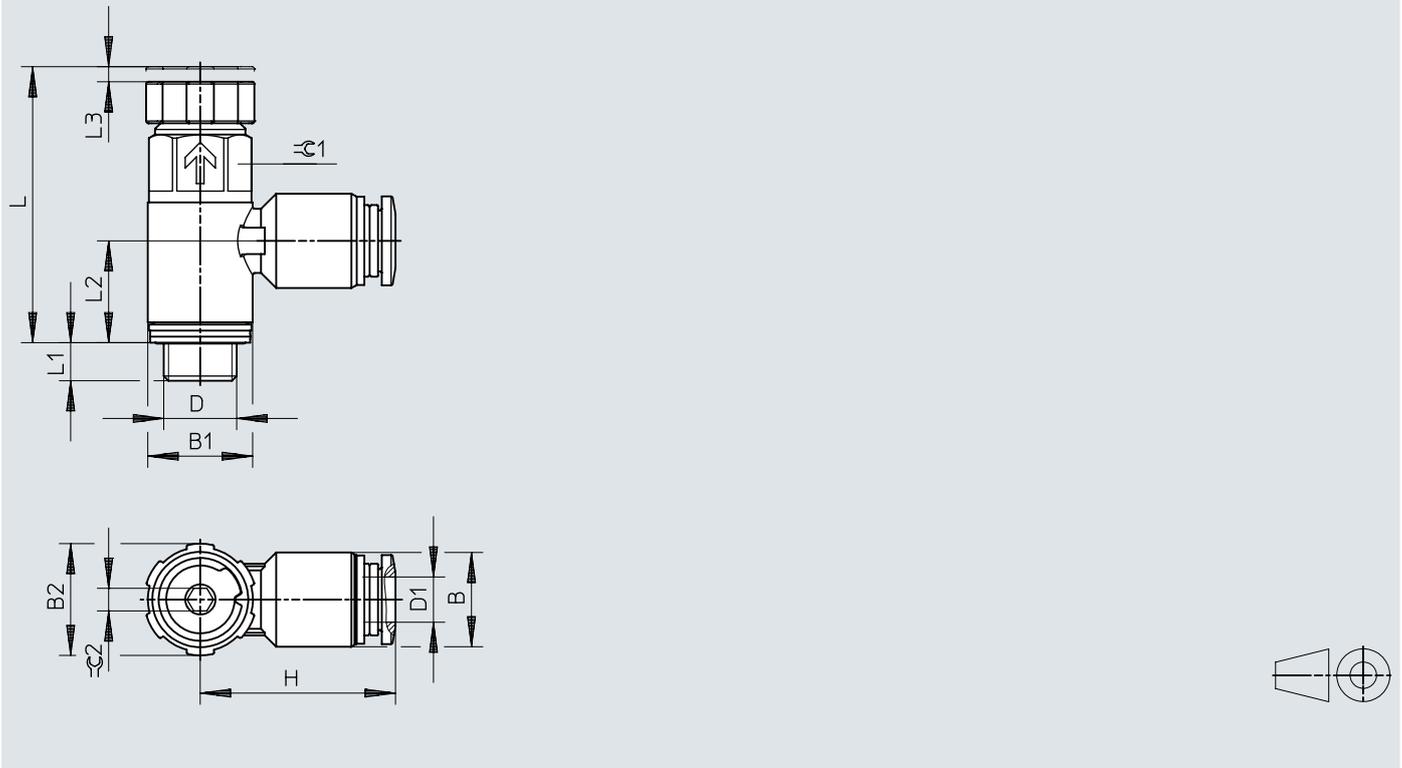
Download CAD data [www.festo.com](http://www.festo.com)

	D	B	~H	~H1	~L	L1	~L2	≡C
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

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

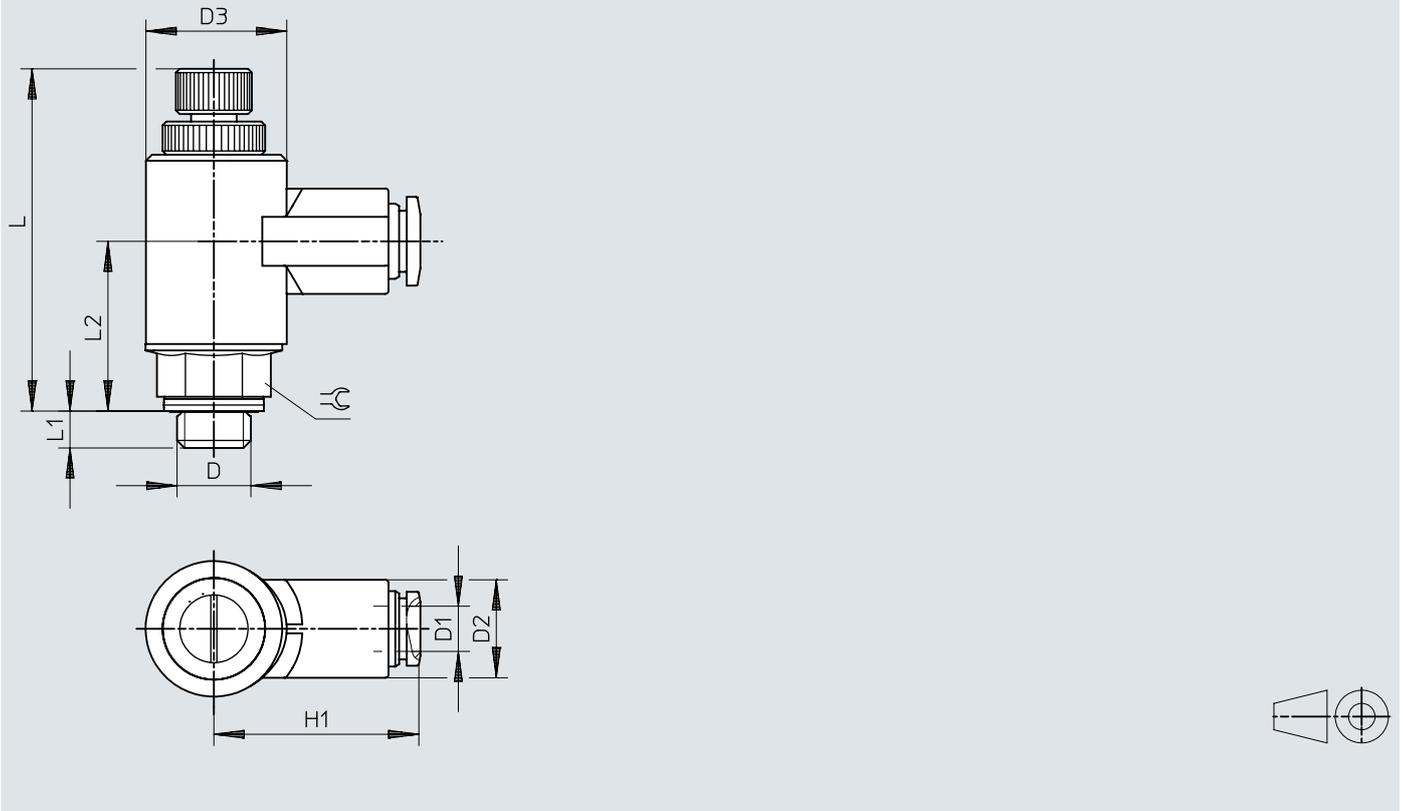


	D	B	B1	B2	H	L	L1	L2	L3	☉1	☉2
GRLSA-1/8	G1/8	12,5	13,8	15	25,7	36,6	5,1	13,5	2	12	3
GRLSA-1/4	G1/4	14,5	17,8	18,8	30,75	46,5	7	17,2	3	15	3

## Dimensions

Dimensions – One-way flow control valves GRLA, standard

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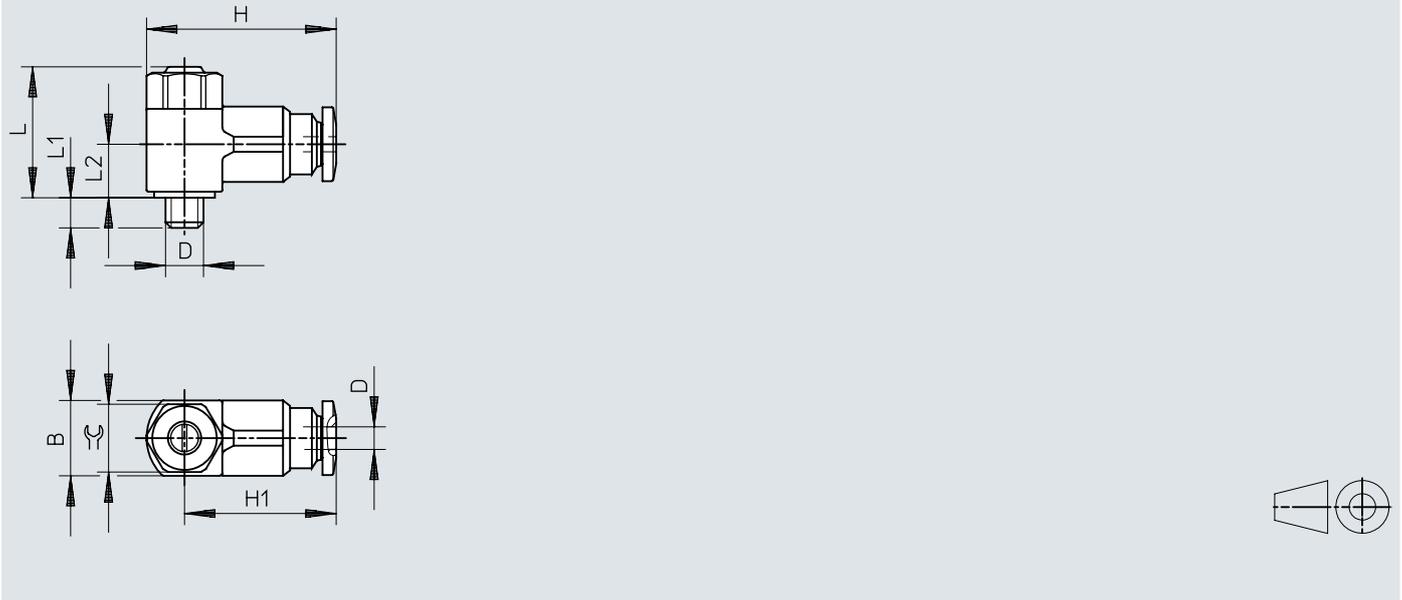


	D	D1 ø	D2 ø	D3 ø	~H1	~L	~L1	~L2	≈G
GRLA-1/8	G1/8	6	13,0 ±0,25	17,9 -0,1	27,2	48,1	4,9	22,6	13
		8	16,8 ±0,4		35,4	±2,2%			
GRLA-1/4	G1/4	6	13,0 ±0,25	17,9 -0,1	27,2	47,8	5,8	22,3	17
		8	16,8 ±0,4		35,4	±2,3%			
GRLA-3/8	G3/8	6	13,0 ±0,25	17,9 -0,1	27,2	47,8	6,8	22,3	19
		8	16,8 ±0,4		35,4	±2,3%			

## Dimensions

Dimensions – One-way flow control valves GRLA/GRLZ, mini

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

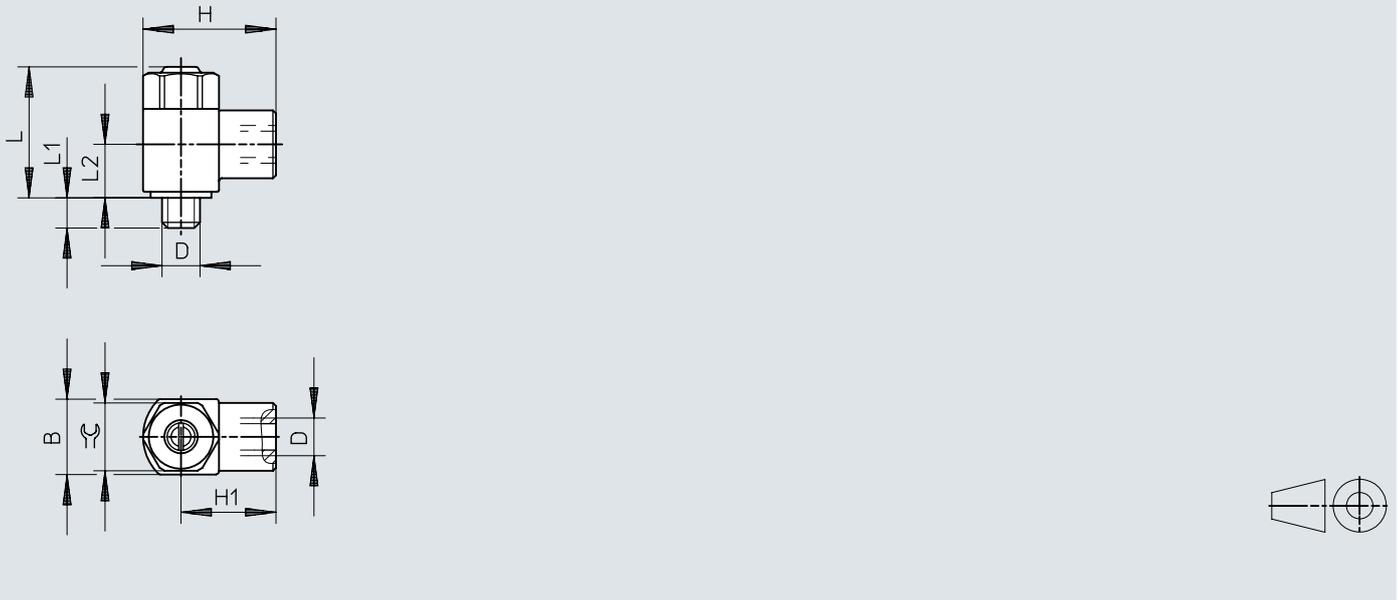


	D	D1 ∅	B	~H	~H1	~L	L1	~L2	≈C
GRLA/GRLZ	M3	3	8 <sup>-0,15</sup>	20	15,8	16,6	±3,3%	2,3 <sup>+0,15/-0,3</sup>	7
	M5	3	9,8 <sup>-0,15</sup>	22,4	18,4	17,2	±3,1%	3,1 <sup>+0,15/-0,35</sup>	7,3
		4	9,8 <sup>-0,15</sup>	22,2	18,2	17,2	±3,1%	3,1 <sup>+0,15/-0,35</sup>	7,3

## Dimensions

### Dimensions – Female thread, metal

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

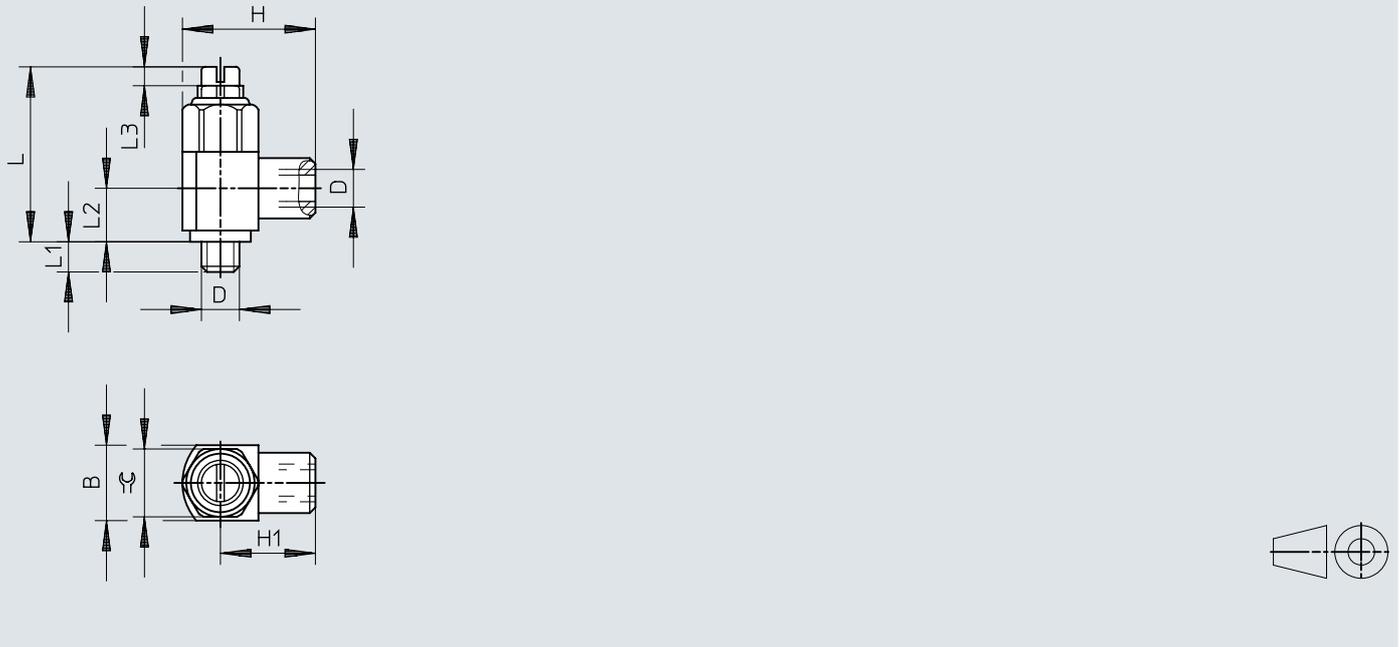


	D	B	~H	~H1	~L	L1	~L2	≡G	
GRLA/GRLZ	M3	5 <sup>-0,1</sup>	9	6,5	13,4	±3,9%	2,5 <sup>+0,15/-0,3</sup>	6,4	4,5

## Dimensions

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

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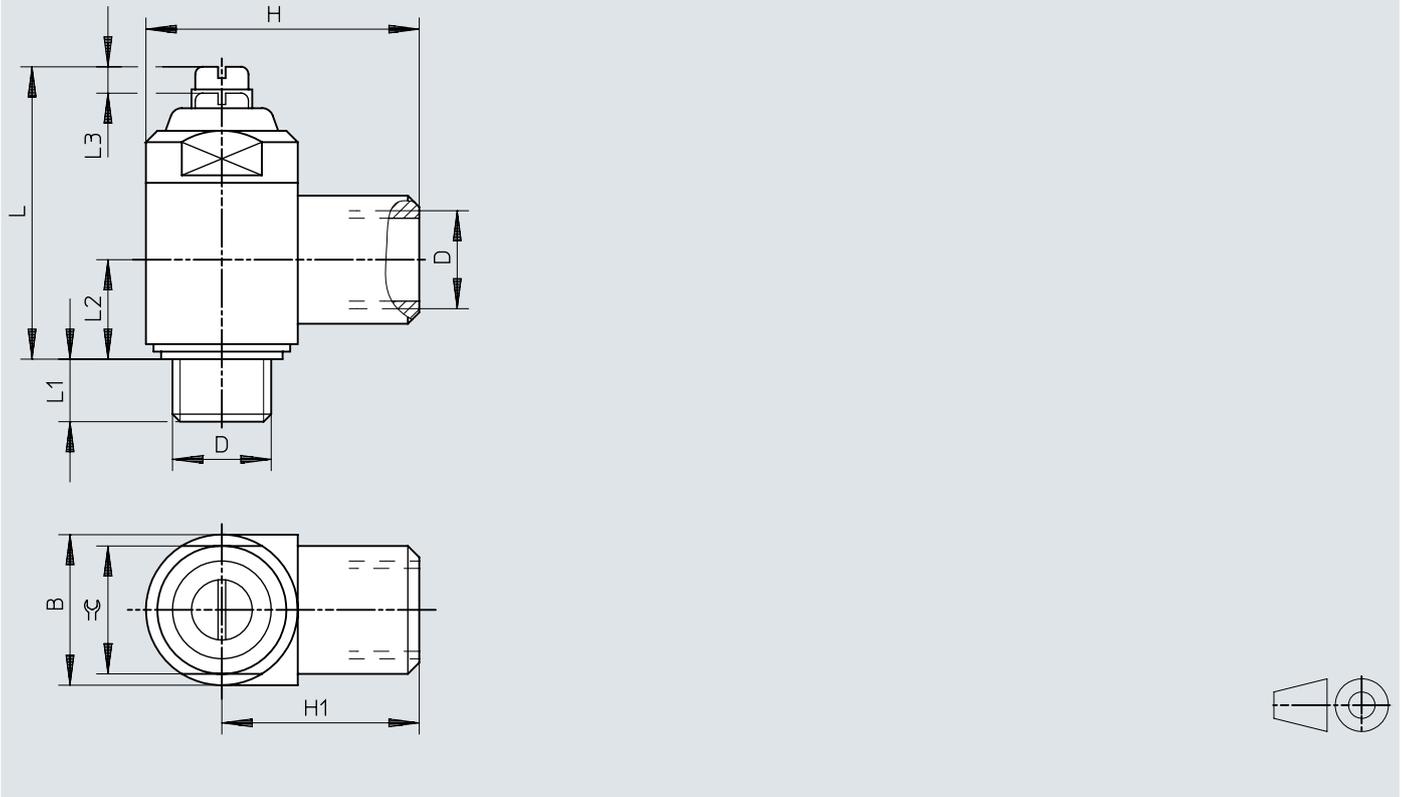


	D	B	H	H1	~L	~L1	~L2	~L3	≈G	
CRGRLA-M5	M5	10 <sup>-0,25</sup>	17,5 <sup>±0,3</sup>	12,5	22,9	±3,5%	4	7,1	2,5	9

## Dimensions

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

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	D	B	H	H1	~L		~L1	~L2	~L3	≈ε
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 GRLA – push-in connector QS

	Pneumatic connection, port 2	Pneumatic connection, port 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	
			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	
			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 GRLZ – push-in connector QS

	Pneumatic connection, port 2	Pneumatic connection, port 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 GRLA – female thread/barbed connector

	Pneumatic connection, port 2	Pneumatic connection, port 1	Corrosion resistance class CRC	Product weight	Part no.	Type
	Male thread G1/4	Female thread G1/4	2 - Moderate corrosion stress	59 g	151175	GRLA-1/4-RS-B
					151172	GRLA-1/4-B
		For barbed fitting I.D. 4 mm with union nut		44 g	151173	GRLA-1/4-PK-4-B
		For barbed fitting I.D. 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 GRLZ – female thread/barbed connector

	Pneumatic connection, port 2	Pneumatic connection, port 1	Corrosion resistance class CRC	Product weight	Part no.	Type
	Male thread G1/4	Female 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 GRLSA – push-in connector QS

	Pneumatic connection, port 2	Pneumatic connection, port 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

## Ordering data

### Ordering data GRLSA – push-in connector QS

	Pneumatic connection, port 2	Pneumatic connection, port 1	Corrosion resistance class CRC	Product weight	Part no.	Type
	G1/4	QS-8	1 - Low corrosion stress	34.8 g	<b>540662</b>	<b>GRLSA-1/4-QS-8</b>

### Ordering data GRLA/GRLZ – push-in connector QS (Mini)

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

### Ordering data GRLA/GRLZ – female thread (Mini)

	Pneumatic connection, port 2	Pneumatic connection, port 1	Corrosion resistance class CRC	Product weight	Part no.	Type
	M3	M3	1 - Low corrosion stress	2 g	<b>175038</b>	<b>GRLA-M3</b>
					<b>175040</b>	<b>GRLZ-M3</b>

### Ordering data CRGRLA – female thread (stainless steel)

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