

Pressure and differential pressure regulators



Pressure and differential pressure regulators

Features

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LRMA-...-QS

LR-...-QS

LRL-...-QS

LRLQ-...-QS

Pressure regulators LR, LRMA


-  - Flow rate
22 ... 127 l/min

- With threaded and push-in connector
- Screw-in thread
M5, R $\frac{1}{8}$, R $\frac{1}{4}$
- Push-in connector
for tubing O.D. 4 ... 8 mm
- Push-in connector, can be rotated
360°

The pressure regulator maintains an essentially constant output pressure on the secondary side independent of pressure fluctuations on the primary side and air consumption.

The primary pressure at the screw-in thread is reduced when air is exhausted from the QS push-in connector.

Differential pressure regulators LRL, LRLQ

-  - Flow rate
30 ... 760 l/min

- With threaded and push-in connector
- Screw-in thread
M5, R $\frac{1}{8}$, R $\frac{1}{4}$, R $\frac{3}{8}$, R $\frac{1}{2}$
- Push-in connector
for tubing O.D. 4 ... 12 mm
- Push-in connector, can be rotated
360°

The differential pressure regulator maintains a manually adjusted differential pressure between the primary pressure at the screw-in thread and the output pressure at the QS push-in connector.

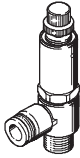
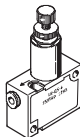

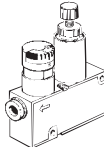


Pressure applied at the QS push-in connector can be exhausted with no change in pressure at the thread connection end thanks to an integrated non-return valve.

-  - Note

The differential pressure regulator has no exhaust, i.e. increasing secondary pressure cannot be reduced.

Pressure and differential pressure regulators

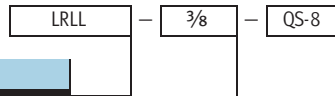
Product range overview

Function	Design	Type	Pneumatic connection					→ Page/Internet		
			Thread	For tubing O.D. [mm]						
				4	6	8	10		12	
Pressure regulating valve without pressure gauge	With QS push-in connector and screw-in thread							5		
		LR-...-QS-...	M5	■	■	-	-		-	
			R1/8	■	■	■	-		-	
			R1/4	-	■	■	-	-		
	With QS push-in connector at both ends							5		
		LR-QS-...	-	■	■	■	-		-	
	Pressure regulator with pressure gauge	With QS push-in connector and screw-in thread							9	
			LRMA-...-QS-...	M5	■	■	-	-		-
				R1/8	■	■	■	-		-
				R1/4	-	■	■	-	-	
With QS push-in connector at both ends							9			
		LRMA-QS-...	-	■	■	■		-	-	
Differential pressure regulator without pressure gauge	With QS push-in connector at top and screw-in thread							12		
		LRL-...-QS-...	M5	■	■	-	-		-	
			R1/8	■	■	■	-		-	
			R1/4	-	■	■	■		-	
			R3/8	-	-	■	■		■	
			R1/2	-	-	-	-	■		
	With QS push-in connector on side and screw-in thread							12		
		LRLL-...-QS-...	M5	■	■	-	-		-	
			R1/8	■	■	■	-		-	
			R1/4	-	■	■	■		-	
R3/8			-	-	■	■	■			
R1/2			-	-	-	-	■			

1) Tubing → www.festo.com

Pressure and differential pressure regulators

Type codes

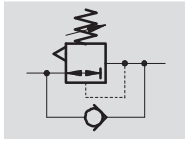


Type	
Pressure regulator	
LR	Without pressure gauge
LRMA	With pressure gauge
Differential pressure regulator	
LRL	Outlet on top
LRL	Outlet on the side
Screw-in thread	
M5	Metric thread M5
1/8	Pipe thread R1/8
1/4	Pipe thread R1/4
3/8	Pipe thread R3/8
1/2	Pipe thread R1/2
Tubing connection	
Type of connection	
QS	Push-in connector for standard O.D. tubing
For tubing O.D.	
4	4 mm
6	6 mm
8	8 mm
10	10 mm
12	12 mm


Pressure regulators LR

Technical data

Function



- Minimal dimensions
- Constant output pressure
- Version without pressure gauge
- Screw-in thread M5 ... R $\frac{1}{4}$ or push-in connector \varnothing 4 ... 8 mm

-  - Flow rate
22 ... 127 l/min



General technical data		
Design	Directly actuated piston regulator with through pressure supply	
Regulating function	With secondary venting, output pressure constant	
Actuator lock	Knurled screw with lock nut	
Mounting position	Any	
With QS push-in connector and metric thread with sealing ring		
Type of mounting	Can be screwed in	
Materials	Housing	Polybutylene terephthalate
	Threaded plug	Nickel plated brass
With QS push-in connector and PTFE-coated pipe thread		
Type of mounting	Can be screwed in	
Materials	Housing	Polybutylene terephthalate
	Threaded plug	Nickel plated brass
	Threaded seal	Polytetrafluoroethylene
With QS push-in connector at both ends		
Type of mounting	Via through-holes	
Materials	Housing	Polybutylene terephthalate

Operating and environmental conditions		
Operating medium	Filtered compressed air, lubricated or unlubricated	
Input pressure	[bar]	0 ... 9
Pressure regulation range	[bar]	1 ... 8
Ambient temperature	[°C]	0 ... 60

Pressure regulators LR

Technical data

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Weights [g]			
Screw-in thread	M5	R $\frac{1}{8}$	R $\frac{1}{4}$
With QS push-in connector and metric thread with sealing ring			
QS-4	16	–	–
QS-6	16	–	–
With QS push-in connector and PTFE-coated pipe thread			
QS-4	–	32.5	–
QS-6	–	33.5	54
QS-8	–	35	55

Weights [g]	
With QS push-in connector at both ends	
QS-4	33
QS-6	33
QS-8	56

Standard nominal flow rate [l/min]			
Screw-in thread	M5	R $\frac{1}{8}$	R $\frac{1}{4}$
With QS push-in connector and metric thread with sealing ring			
QS-4	22	–	–
QS-6	41	–	–
With QS push-in connector and PTFE-coated pipe thread			
QS-4	–	46	–
QS-6	–	63	98
QS-8	–	69	101

Standard nominal flow rate [l/min]	
With QS push-in connector at both ends	
QS-4	67
QS-6	70
QS-8	127

Pressure regulators LR

Technical data

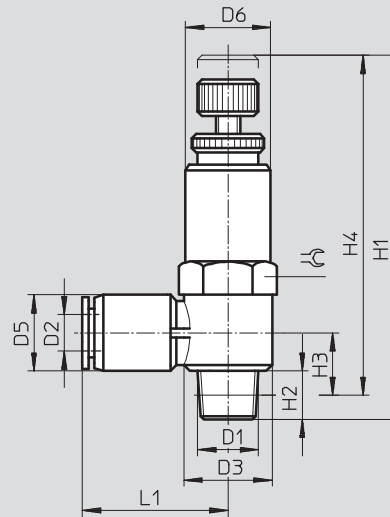
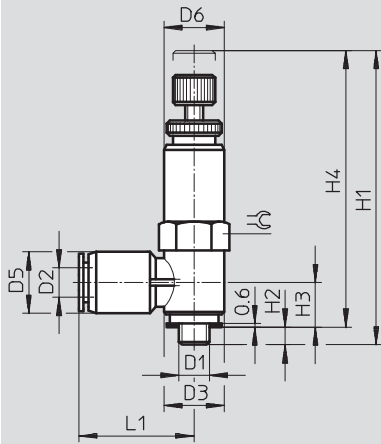
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Dimensions

Download CAD data → www.festo.com

With QS push-in connector and screw-in thread M5

With QS push-in connector and screw-in thread R $\frac{1}{8}$, R $\frac{1}{4}$



Screw-in thread D1	D2 ∅	D3 ∅	D5 ∅	D6 ∅	H1		H2	H3	H4		L1	☞
					min.	max.			min.	max.		
M5	4	9.8	8	10	44.6	48.75	2.9	7.6	41.7	45.8	16	10
	6	9.8	10.5	10	44.6	48.7	2.9	8.4	41.7	45.8	17.8	10
R $\frac{1}{8}$	4	14.4	10	14	56	60	7.8	10.5	52	56	21.4	14
	6	14.4	12.4	14	56	60	7.8	10.7	52	56	23.5	14
	8	14.4	14.4	14	56	60	7.8	11.7	52	56	26.9	14
R $\frac{1}{4}$	6	18.4	12.4	17	60.8	64.8	11.3	12.2	54.8	58.8	25.5	17
	8	18.4	14.4	17	60.8	64.8	11.3	13.2	54.8	58.8	28.4	17

Pressure regulators LR

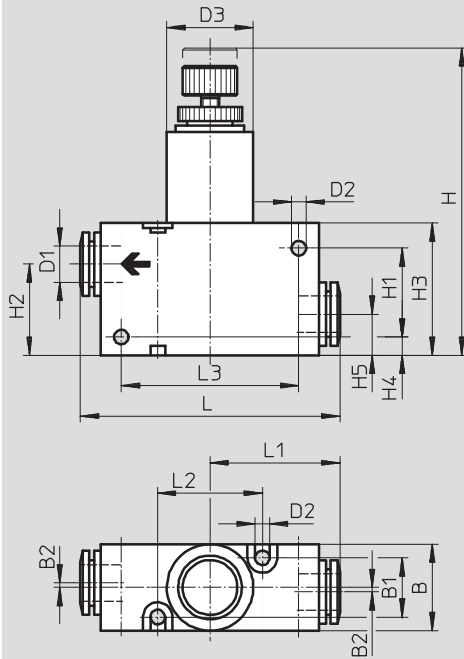
Technical data

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Dimensions

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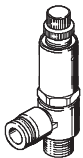
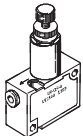
With QS push-in connector at both ends



← = Flow direction

Push-in connector	B	B1	B2	D1 Ø	D2 Ø	D3 Ø	H		H1	H2	H3	H4	H5	L	L1	L2	L3
							min.	max.									
QS-4	15	9	1	4	3.2	15	59	63	17	19	25	4	9	44	22	20	30
QS-6				6			45	22.5									
QS-8	19	13	1	8	3.2	19	63.5	67.5	21	21	29	4	9	57	28.5	23	39

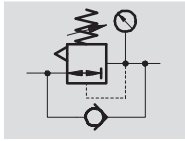
Ordering data

	Description	Screw-in thread	For tubing O.D. [mm]	Part No.	Type
	With QS push-in connector and metric thread with sealing ring	M5	4	153 532	LR-M5-QS-4
			6	153 533	LR-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R1/8	4	153 534	LR-1/8-QS-4
			6	153 535	LR-1/8-QS-6
			8	153 536	LR-1/8-QS-8
			R1/4	6	153 537
8	153 538	LR-1/4-QS-8			
	With QS push-in connector at both ends	-	4	153 540	LR-QS-4
			6	153 541	LR-QS-6
			8	153 542	LR-QS-8


Pressure regulators LRMA, with pressure gauge

Technical data

Function



- Minimal dimensions
- Constant output pressure
- Version with pressure gauge
- Screw-in thread M5 ... R $\frac{1}{4}$ or push-in connector \varnothing 4 ... 8 mm

-  Flow rate
36 ... 124 l/min



General technical data	
Design	Directly actuated piston regulator with through pressure supply
Regulating function	With secondary venting, output pressure constant
Actuator lock	Knurled screw with lock nut
Mounting position	Any
With QS push-in connector and metric thread with sealing ring	
Type of mounting	Can be screwed in
Materials	Housing: Polybutylene terephthalate Threaded plug: Nickel plated brass
With QS push-in connector and PTFE-coated pipe thread	
Type of mounting	Can be screwed in
Materials	Housing: Polybutylene terephthalate Threaded plug: Nickel plated brass Threaded seal: Polytetrafluoroethylene
With QS push-in connector at both ends	
Type of mounting	Via through-holes
Materials	Housing: Polybutylene terephthalate

Operating and environmental conditions	
Operating medium	Filtered compressed air, lubricated or unlubricated
Input pressure [bar]	0 ... 9
Pressure regulation range [bar]	1 ... 8
Ambient temperature [°C]	0 ... 60

Weights [g]			
Screw-in thread	M5	R $\frac{1}{8}$	R $\frac{1}{4}$
With QS push-in connector and metric thread with sealing ring			
QS-4	28	-	-
QS-6	28	-	-
With QS push-in connector and PTFE-coated pipe thread			
QS-4	-	54.5	-
QS-6	-	54.5	55
QS-8	-	83.5	83.5

Weights [g]	
With QS push-in connector at both ends	
QS-4	45
QS-6	45
QS-8	68

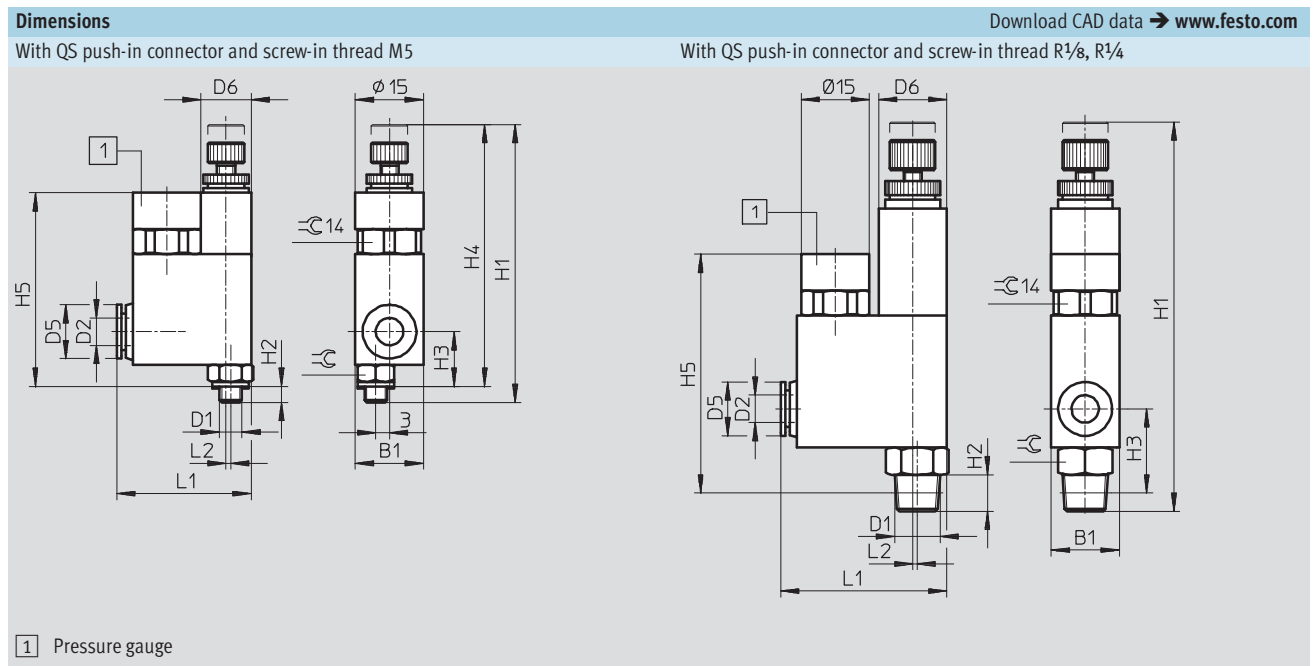
Pressure regulators LRMA, with pressure gauge

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Technical data

Standard nominal flow rate [l/min]			
Screw-in thread	M5	R1/8	R1/4
With QS push-in connector and metric thread with sealing ring			
QS-4	36	-	-
QS-6	42	-	-
With QS push-in connector and PTFE-coated pipe thread			
QS-4	-	60	-
QS-6	-	75	96
QS-8	-	87	97

Standard nominal flow rate [l/min]	
With QS push-in connector at both ends	
QS-4	50
QS-6	76
QS-8	124



Screw-in thread D1	D2 Ø	B1	D5 Ø	D6 Ø	H1		H2	H3	H4		H5	L1	L2	☉
					min.	max.			min.	max.				
M5	4	15.1	9.8	11	57.1	61.2	3.5	11.8	53.6	57.7	42.8	28	1.1	8
	6	15.1	11.8	11	57.1	61.2	3.5	11.8	53.6	57.7	42.8	28.1	1.1	8
R1/8	4	15.1	10	15	77.5	81.5	8	18.5	-	-	51.5	36	0.5	12
	6	15.1	12	15	77.5	81.5	8	18.5	-	-	51.5	36.5	0.5	12
	8	15	14	15	77.5	81.5	8	18.5	-	-	51.5	36.5	1	12
R1/4	6	19	12	19	85.5	89.5	11	22.5	-	-	57	39.5	0.5	16
	8	19	14	19	85.5	89.5	11	22.5	-	-	57	39.5	1	16

Pressure regulators LRMA, with pressure gauge

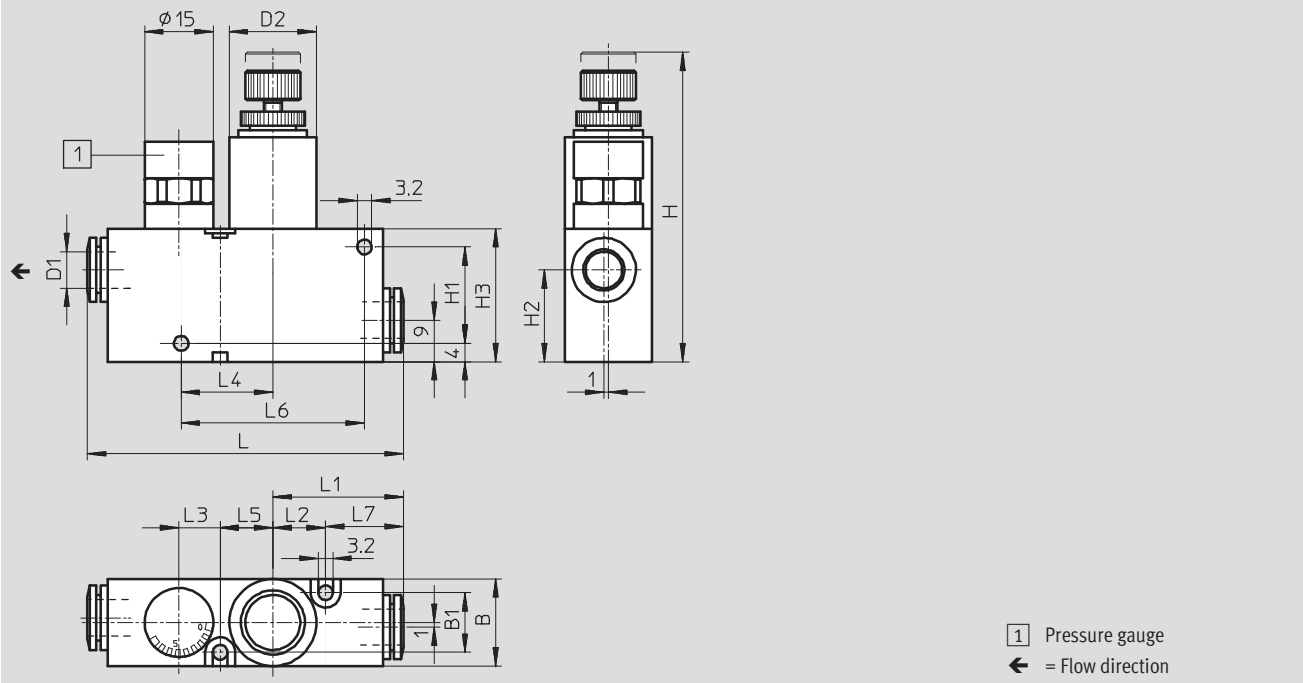
Technical data

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Dimensions

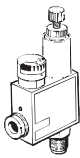
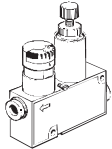
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With QS push-in connector at both ends



Push-in connector	B	B1	D1 Ø	D2 Ø	H		H1	H2	H3	L	L1	L2	L3	L4	L5	L6	L7
					min.	max.											
QS-4	15	9	4	15	59	63	17	19	25	49.5	22.5	10	10	15	10	30	12
QS-6			6														
QS-8	19	13	8	19	63.5	67.5	21	21	29	59.7	28.5	11.5	9	19.6	11.5	39	17

Ordering data

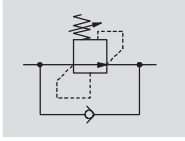
	Description	Screw-in thread	For tubing O.D. [mm]	Part No.	Type
	With QS push-in connector and metric thread with sealing ring	M5	4	153 488	LRMA-M5-QS-4
			6	153 490	LRMA-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R $\frac{1}{8}$	4	153 489	LRMA- $\frac{1}{8}$ -QS-4
			6	153 491	LRMA- $\frac{1}{8}$ -QS-6
			8	153 493	LRMA- $\frac{1}{8}$ -QS-8
			R $\frac{1}{4}$	6	153 492
			8	153 494	LRMA- $\frac{1}{4}$ -QS-8
	With QS push-in connector at both ends	-	4	153 495	LRMA-QS-4
			6	153 496	LRMA-QS-6
			8	153 497	LRMA-QS-8

Differential pressure regulators LRL/LRLL


Technical data

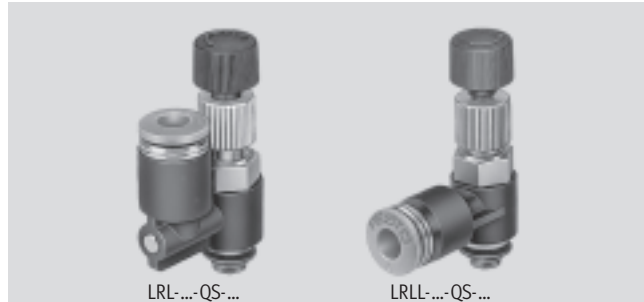
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Function



- Minimal dimensions
- Constant differential pressure between the input and output
- With screw-in thread M5 ... R $\frac{1}{2}$ or push-in connector \varnothing 4 ... 12 mm

-  - Flow rate
30 ... 760 l/min



General technical data		
Regulating function	With return flow, differential pressure constant	
Design	Directly actuated piston regulator with through pressure supply	
Actuator lock	Knurled screw with lock nut	
Type of mounting	Can be screwed in	
Mounting position	Any	
Materials	Housing	Polybutylene terephthalate
	Threaded plug	Nickel plated brass
	Threaded seal	Polytetrafluoroethylene

Operating and environmental conditions		
Operating medium	Filtered compressed air, lubricated or unlubricated	
Input pressure [bar]	0 ... 9	
Pressure regulation range [bar]	1 ... 8	
Ambient temperature [°C]	0 ... 60	

Standard nominal flow rate [l/min]										
Screw-in thread	M5		R $\frac{1}{8}$		R $\frac{1}{4}$		R $\frac{3}{8}$		R $\frac{1}{2}$	
	open	closed	open	closed	open	closed	open	closed	open	closed
Outlet on top										
QS-4	30	30	96	93	-	-	-	-	-	-
QS-6	30	30	115	115	241	240	-	-	-	-
QS-8	-	-	120	115	224	224	463	393	-	-
QS-10	-	-	-	-	231	231	476	423	-	-
QS-12	-	-	-	-	-	-	438	379	760	730
Outlet on the side										
QS-4	30	30	100	96	-	-	-	-	-	-
QS-6	32	31	155	140	267	266	-	-	-	-
QS-8	-	-	115	110	268	264	474	340	-	-
QS-10	-	-	-	-	269	262	456	411	-	-
QS-12	-	-	-	-	-	-	518	423	730	700

Differential pressure regulators LRL/LRLL

Technical data

Weights [g]					
Screw-in thread	M5	R $\frac{1}{8}$	R $\frac{1}{4}$	R $\frac{3}{8}$	R $\frac{1}{2}$
Outlet on top (LRL)					
QS-4	9.5	20	-	-	-
QS-6	11	21.5	37.5	-	-
QS-8	-	22.5	39	68.5	-
QS-10	-	-	42.5	72	-
QS-12	-	-	-	76	108
Outlet on side (LRLL)					
QS-4	8.8	19	-	-	-
QS-6	9.8	20	36.5	-	-
QS-8	-	21.5	37.5	66.5	-
QS-10	-	-	41.5	69	-
QS-12	-	-	-	73	105

Dimensions – Outlet on top Download CAD data → www.festo.com

With QS push-in connector and screw-in thread M5 With QS push-in connector and screw-in thread R $\frac{1}{8}$, R $\frac{1}{4}$, R $\frac{3}{8}$, R $\frac{1}{2}$

Screw-in thread D1	D2 ∅	D3 ∅	D5 ∅	H1		H2	H3	H4		H5	L1	⌀
				min.	max.			min.	max.			
M5	4	9.8	10.2	35.2	38.3	2.9	6.7	32.3	35.4	23.9	10.5	8
	6	9.8	12.6	35.2	38.3	2.9	6.7	32.3	35.4	26	12.2	8
R $\frac{1}{8}$	4	14.4	10.2	43.7	48.2	8	10.9	39.7	44.2	28.9	13	10
	6	14.4	12.6	43.7	48.2	8	10.9	39.7	44.2	31	14.2	10
	8	14.4	14.6	43.7	48.2	8	10.9	39.7	44.2	32.4	15.3	10
R $\frac{1}{4}$	6	18.4	12.6	47.8	52.3	11.1	12	41.8	46.2	32.1	17.2	14
	8	18.4	14.6	47.8	52.3	11.1	12	41.8	46.2	33.6	18.2	14
	10	18.4	17.8	47.8	52.3	11.1	12	41.8	46.2	35.9	19.8	14
R $\frac{3}{8}$	8	22	14.6	54.5	59	13.2	15.4	48.2	52.6	37.8	19.2	19
	10	22	17.8	54.5	59	13.2	15.4	48.2	52.6	40.1	20.2	19
	12	22	21.2	54.5	59	13.2	15.4	48.2	52.6	42.8	23.4	24
R $\frac{1}{2}$	12	28	21.2	59.8	64.3	16	18.2	51.6	56.1	47	23.4	24

Differential pressure regulators LRL

Technical data

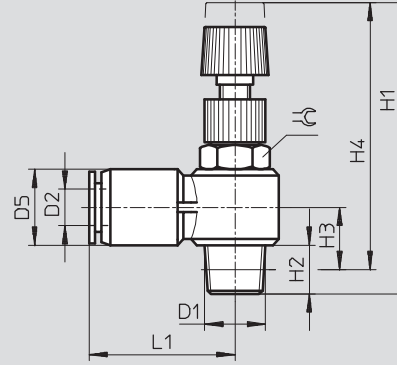
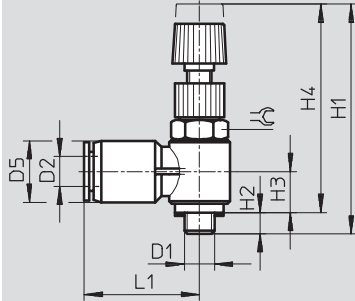
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Dimensions – Outlet on side

Download CAD data → www.festo.com

With QS push-in connector and screw-in thread M5

With QS push-in connector and screw-in thread R $\frac{1}{8}$, R $\frac{1}{4}$, R $\frac{3}{8}$, R $\frac{1}{2}$


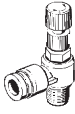


Screw-in thread D1	D2 Ø	D5 Ø	H1		H2	H3	H4		L1	=C
			min.	max.			min.	max.		
M5	4	9.9	35.7	38.8	3.4	7.1	32.3	35.4	19.9	8
	6	12.4	35.7	38.8	3.4	8.3	32.3	35.4	24	8
R $\frac{1}{8}$	4	10	44.5	48.5	8	9.5	40.5	44.5	21.5	10
	6	12.5	44.5	48.5	8	10.5	40.5	44.5	23.5	10
	8	14.5	44.5	48.5	8	11.5	40.5	44.5	27	10
R $\frac{1}{4}$	6	12.5	48.5	52	11.5	12	42.5	46	25.5	14
	8	14.5	48.5	52	11.5	13	42.5	46	28.5	14
	10	17.5	48.5	52	18.5	15	42.5	46	31	14
R $\frac{3}{8}$	8	14.5	56	59	13	15	49.5	52.5	29	19
	10	17.5	56	59	13	16.5	49.5	52.5	31	19
	12	21	56	59	13	18	49.5	52.5	37	24
R $\frac{1}{2}$	12	21	62	64.5	16	19.5	54	56.5	36.5	24

Differential pressure regulators LRL/LRLL

Technical data

FESTO

Ordering data					
Circuit symbol	Description	Threaded connection	For tubing O.D. [mm]	Part No.	Type
Outlet on top					
	With QS push-in connector and metric thread with sealing ring	M5	4	153 510	LRL-M5-QS-4
			6	153 512	LRL-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R $\frac{1}{8}$	4	153 511	LRL- $\frac{1}{8}$ -QS-4
			6	153 513	LRL- $\frac{1}{8}$ -QS-6
			8	153 515	LRL- $\frac{1}{8}$ -QS-8
		R $\frac{1}{4}$	6	153 514	LRL- $\frac{1}{4}$ -QS-6
			8	153 516	LRL- $\frac{1}{4}$ -QS-8
			10	153 518	LRL- $\frac{1}{4}$ -QS-10
	R $\frac{3}{8}$	8	153 517	LRL- $\frac{3}{8}$ -QS-8	
		10	153 519	LRL- $\frac{3}{8}$ -QS-10	
		12	153 520	LRL- $\frac{3}{8}$ -QS-12	
	R $\frac{1}{2}$	12	153 521	LRL- $\frac{1}{2}$ -QS-12	
Outlet on the side					
	With QS push-in connector and metric thread with sealing ring	M5	4	153 498	LRL-M5-QS-4
			6	153 500	LRL-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R $\frac{1}{8}$	4	153 499	LRL- $\frac{1}{8}$ -QS-4
			6	153 501	LRL- $\frac{1}{8}$ -QS-6
			8	153 503	LRL- $\frac{1}{8}$ -QS-8
		R $\frac{1}{4}$	6	153 502	LRL- $\frac{1}{4}$ -QS-6
			8	153 504	LRL- $\frac{1}{4}$ -QS-8
			10	153 506	LRL- $\frac{1}{4}$ -QS-10
	R $\frac{3}{8}$	8	153 505	LRL- $\frac{3}{8}$ -QS-8	
		10	153 507	LRL- $\frac{3}{8}$ -QS-10	
		12	153 508	LRL- $\frac{3}{8}$ -QS-12	
	R $\frac{1}{2}$	12	153 509	LRL- $\frac{1}{2}$ -QS-12	