

## Pressure and differential pressure regulators

**FESTO**



# Pressure and differential pressure regulators

Features

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## 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, LRL



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.

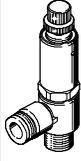
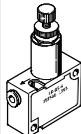
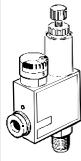
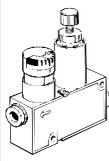
Note

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

# Pressure and differential pressure regulators

Product range overview

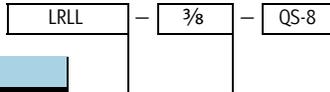
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Function	Design	Type	Pneumatic connection					→ Page/Internet	
			Thread	For tubing O.D. [mm]					
				4	6	8	10		12
Pressure regulating valve without pressure gauge	With QS push-in connector and screw-in thread								
		LR-...-QS-...	M5	■	■	-	-	-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

1) Tubing → [www.festo.com](http://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

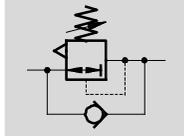
Screw-in thread	
M5	Metric thread M5
1/8	Pipe thread R1/8
1/4	Pipe thread R1/4
3/8	Pipe thread R3/8
1/2	Pipe thread R1/2

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 ... R1/4 or push-in connector Ø 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	Compressed air in accordance with ISO 8573-1:2010 [7:-:-]	
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

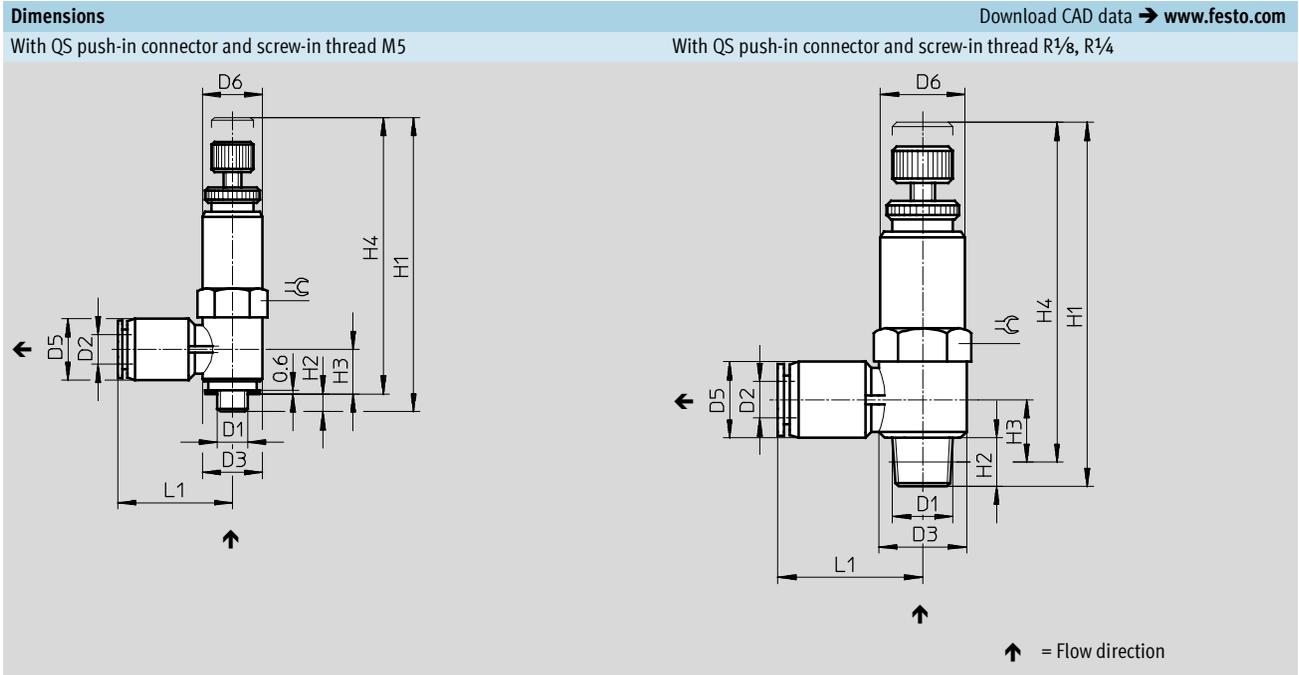
Weights [g]	
With QS push-in connector at both ends	
QS-4	33
QS-6	33
QS-8	56

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



Screw-in thread D1	D2 Ø	D3 Ø	D5 Ø	D6 Ø	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** Download CAD data → [www.festo.com](http://www.festo.com)

With QS push-in connector at both ends

← = Flow direction

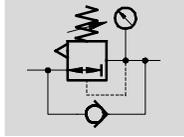
Push-in connector	B	B1	B2	D1 Ø	D2 Ø	D3 Ø	H		H1	H2	H3	H4	H5	L	L1	L2	L3
							min.	max.									
QS-4	15	9	1	4	3.2	15	59	63	17	19	25	4	9	44	22	20	30
QS-6				6										45	22.5		
QS-8	19	13	1	8	3.2	19	63.5	67.5	21	21	29	4	9	57	28.5	23	39

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	153532	LR-M5-QS-4
			6	153533	LR-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R1/8	4	153534	LR-1/8-QS-4
			6	153535	LR-1/8-QS-6
			8	153536	LR-1/8-QS-8
			R1/4	6	153537
8	153538	LR-1/4-QS-8			
	With QS push-in connector at both ends	-	4	153540	LR-QS-4
			6	153541	LR-QS-6
			8	153542	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 ... R1/4 or push-in connector Ø 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	Compressed air in accordance with ISO 8573-1:2010 [7:-:-]	
Input pressure	[bar]	0 ... 9
Pressure regulation range	[bar]	1 ... 8
Ambient temperature	[°C]	0 ... 60

Weights [g]			
Screw-in thread	M5	R1/8	R1/4
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

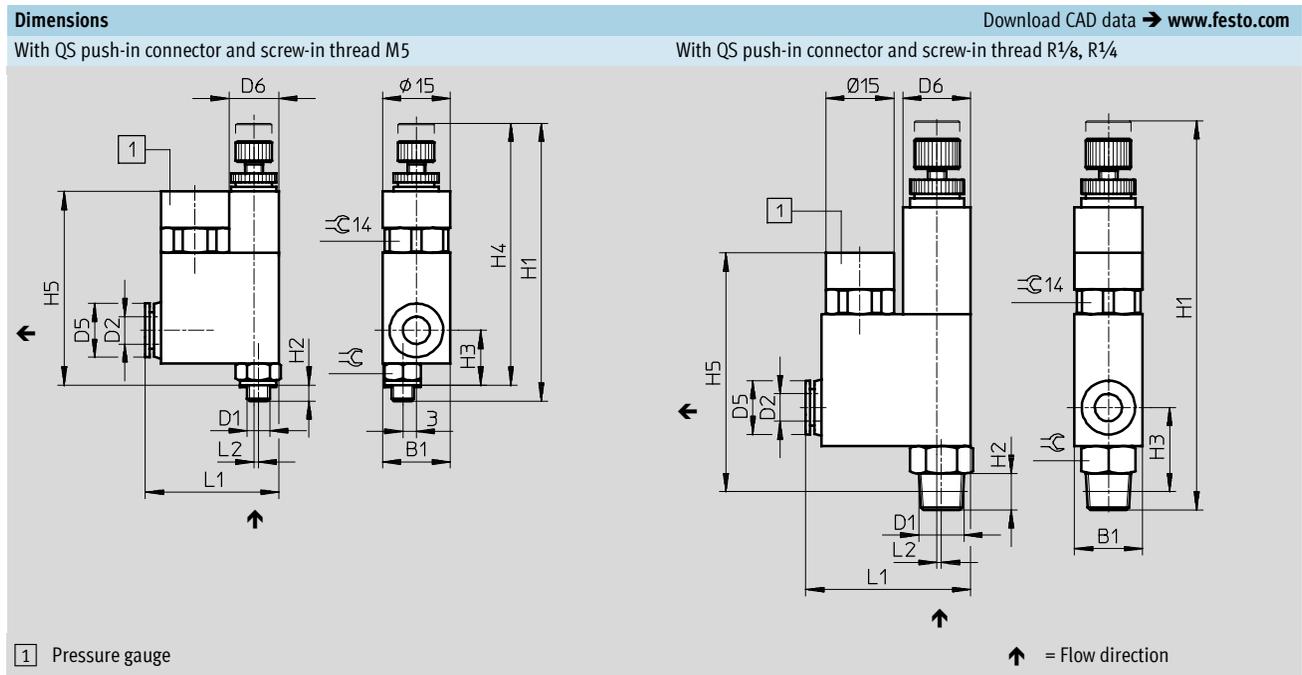
Weights [g]	
With QS push-in connector at both ends	
QS-4	45
QS-6	45
QS-8	68

# Pressure regulators LRMA, with pressure gauge

Technical data

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	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

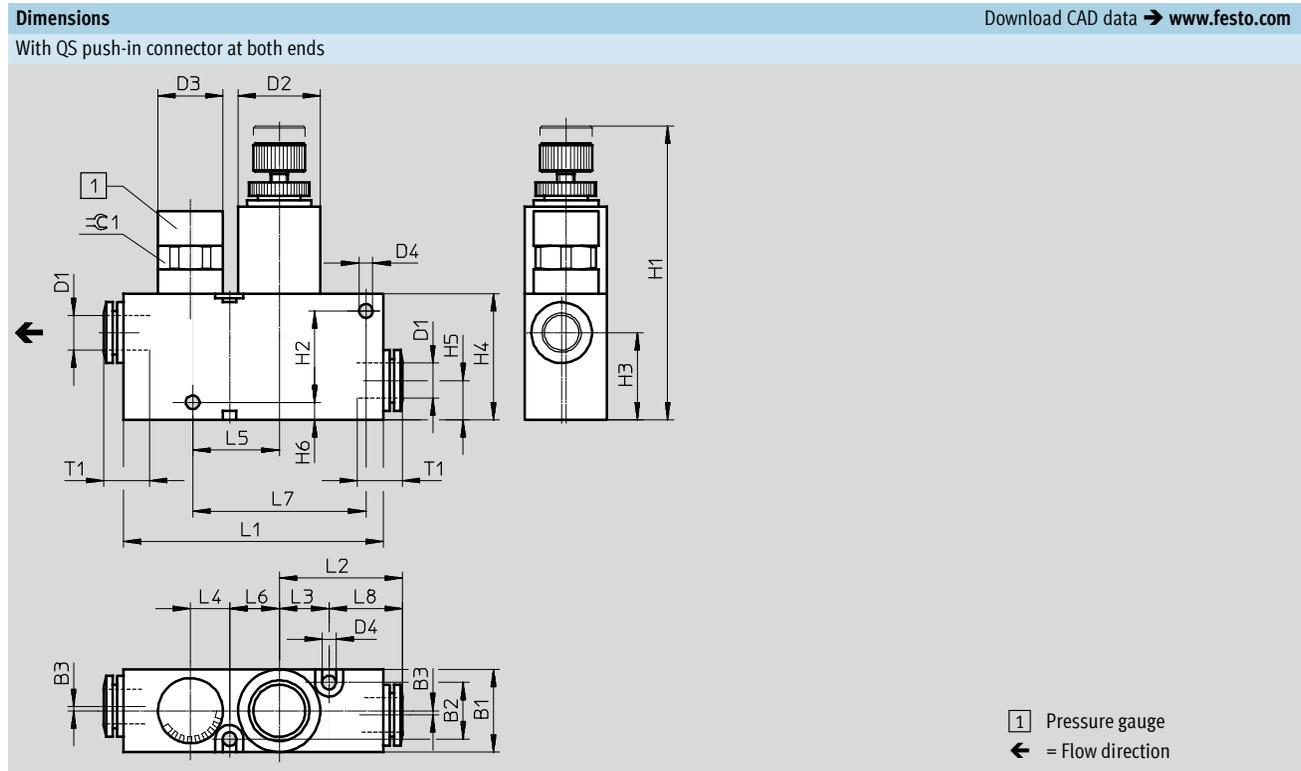


Screw-in thread D1	D2	B1	D5	D6	H1		H2	H3	H4		H5	L1	L2	≡
	∅		∅	∅	min.	max.			min.	max.				
M5	4	15.1	9.8	11	57.1	61.2	3.5	11.8	53.6	57.7	42.8	28	1.1	8
	6	15.1	11.8	11	57.1	61.2	3.5	11.8	53.6	57.7	42.8	28.1	1.1	8
R $\frac{1}{8}$	4	15.1	10	15	77.5	81.5	8	18.5	-	-	51.5	36	0.5	12
	6	15.1	12	15	77.5	81.5	8	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
R $\frac{1}{4}$	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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Push-in connector	Connection D1 ∅	B1	B2	B3	D2 ∅	D3 ∅	D4 ∅	H1		H2	H3	H4
								min.	max.			
QS-4	4	15	9	1	15	15	3.2	59	63	17	19	25
QS-6	6							63.5	67.5			
QS-8	8	19	13	1	19	15	3.2	63.5	67.5	21	21	29

Push-in connector	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	T1	∅1
QS-4	9	4	49.5	22.4	10	10	15	10	30	12	11.5	14
QS-6											12	
QS-8	9	4	59.7	28.5	11.5	9	19.6	11.5	39	17	18.5	14

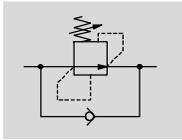
Ordering data					
	Description	Screw-in thread	For tubing O.D. [mm]	Part No.	Type
	With QS push-in connector and metric thread with sealing ring	M5	4	153488	LRMA-M5-QS-4
			6	153490	LRMA-M5-QS-6
	With QS push-in connector and PTFE-coated pipe thread	R1/8	4	153489	LRMA-1/8-QS-4
			6	153491	LRMA-1/8-QS-6
			8	153493	LRMA-1/8-QS-8
			R1/4	6	153492
			8	153494	LRMA-1/4-QS-8
	With QS push-in connector at both ends	-	4	153495	LRMA-QS-4
			6	153496	LRMA-QS-6
			8	153497	LRMA-QS-8

# Differential pressure regulators LRL/LRLL

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Technical data

Function



- Minimal dimensions
- Constant differential pressure between the input and output
- With screw-in thread M5 ... R1/2 or push-in connector Ø 4 ... 12 mm

Flow rate  
30 ... 760 l/min



General technical data						
Pneumatic connection 1	M5	R1/8	R1/4	R3/8	R1/2	
Pneumatic connection 2	QS-4, QS-6	QS-4, QS-6, QS-8	QS-6, QS-8, QS-10	QS-8, QS-10, QS-12	QS-12	
Design	Directly actuated piston regulator with through pressure supply					
Regulating function	With return flow, differential pressure constant					
Type of mounting	Can be screwed in					
Mounting position	Any					
Actuator lock	Knurled screw with lock nut					
Pressure regulation range [bar]	2 ... 6					

Operating and environmental conditions	
Input pressure [bar]	0 ... 9
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:-:-]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	0 ... +60

Standard nominal flow rate [l/min]											
Screw-in thread	M5		R1/8		R1/4		R3/8		R1/2		
	open	closed									
LRL, 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	-
LRLL, 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	-

Materials	
Housing	Reinforced PBT
Threaded plug	Nickel plated brass
Threaded seal	PTFE
Note on materials	RoHS-compliant

# Differential pressure regulators LRL/LRLL

Technical data

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**Dimensions – LRL, outlet on top** Download CAD data → [www.festo.com](http://www.festo.com)

With screw-in thread M5 With screw-in thread R1/8, R1/4, R3/8, R1/2

↑ = Flow direction with pressure reduction

Note  
Pressure applied at the QS push-in connector D2 can be exhausted with no change in pressure at the thread connection end D1 thanks to an integrated non-return valve.

Screw-in thread D1	D2 Ø	D3 Ø	D5 Ø	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
R1/8	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
R1/4	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
R3/8	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
R1/2	12	28	21.2	59.8	64.3	16	18.2	51.6	56.1	47	23.4	24

# Differential pressure regulators LRL/LRLL

Technical data

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**Dimensions – LRL, outlet on side** Download CAD data → [www.festo.com](http://www.festo.com)

With screw-in thread M5 With screw-in thread R1/8, R1/4, R3/8, R1/2

↑ = Flow direction with pressure reduction

Note  
 Pressure applied at the QS push-in connector D2 can be exhausted with no change in pressure at the thread connection end D1 thanks to an integrated non-return valve.

Screw-in thread D1	D2 Ø	D5 Ø	H1		H2	H3	H4		L1	⊕
			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
R1/8	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
R1/4	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
R3/8	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
R1/2	12	21	62	64.5	16	19.5	54	56.5	36.5	24

# Differential pressure regulators LRL/LRL

Technical data

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Ordering data					
	Pneumatic connection		Weight [g]	Part No.	Type
	1	2			
<b>Outlet on top</b>					
	M5	QS-4	9.5	153510	LRL-M5-QS-4
		QS-6	11	153512	LRL-M5-QS-6
	R1/8	QS-4	21	153511	LRL-1/8-QS-4
		QS-6	22	153513	LRL-1/8-QS-6
		QS-8	23	153515	LRL-1/8-QS-8
	R1/4	QS-6	38	153514	LRL-1/4-QS-6
		QS-8	39	153516	LRL-1/4-QS-8
		QS-10	43	153518	LRL-1/4-QS-10
	R3/8	QS-8	70	153517	LRL-3/8-QS-8
		QS-10	74	153519	LRL-3/8-QS-10
		QS-12	78	153520	LRL-3/8-QS-12
	R1/2	QS-12	110	153521	LRL-1/2-QS-12
<b>Outlet on the side</b>					
	M5	QS-4	9	153498	LRL-M5-QS-4
		QS-6	10	153500	LRL-M5-QS-6
	R1/8	QS-4	19	153499	LRL-1/8-QS-4
		QS-6	20	153501	LRL-1/8-QS-6
		QS-8	22	153503	LRL-1/8-QS-8
	R1/4	QS-6	37	153502	LRL-1/4-QS-6
		QS-8	38	153504	LRL-1/4-QS-8
		QS-10	42	153506	LRL-1/4-QS-10
	R3/8	QS-8	67	153505	LRL-3/8-QS-8
		QS-10	69	153507	LRL-3/8-QS-10
		QS-12	73	153508	LRL-3/8-QS-12
	R1/2	QS-12	105	153509	LRL-1/2-QS-12

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