

# Precision pressure regulators LRP/LRPS



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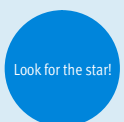
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Held in stock in 13 service centres worldwide  
More than 2200 product



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Up to  $6 \times 10^{12}$  variants per product series



# Precision pressure regulators LRP, size 40

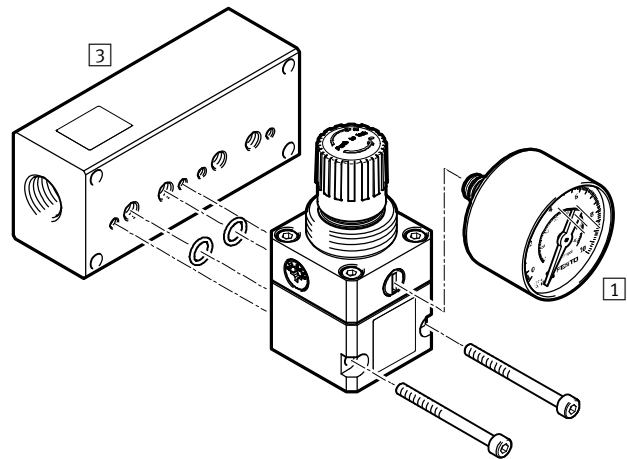
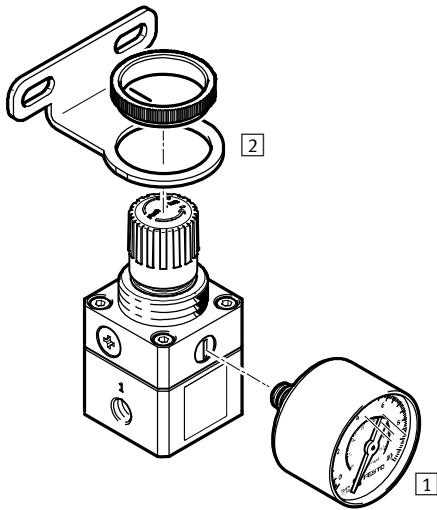
Peripherals overview

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## Peripherals overview

Precision pressure regulator LRP-1/8-6

Precision pressure regulator LRP-7.0-6



Mounting components and accessories		→ Page/Internet
1	Precision pressure gauge PAGN	14
2	Mounting bracket MS4-WR	14
3	Manifold block for manifold assembly of 2 or 4 valves MRS	12

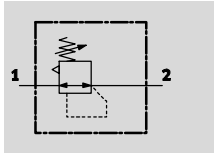
## Type codes

	LRP	-	1/8	-	6
<b>Service function</b>					
LRP	Precision pressure regulator				
<b>Pneumatic connection</b>					
1/8	Thread G1/8				
7.0	For sub-base Ø 7 mm				
<b>Pressure regulation range</b>					
6	0.1 ... 6 bar				

# Precision pressure regulators LRP, size 40

Technical data

Function



- - Flow rate  
300 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
1 ... 8 bar



**Note**  
A manifold block MRS is required to connect the precision pressure regulator LRP-7.0-6 to the compressed air supply. The mounting kit with screws and sealing rings is included with the device.

The precision pressure regulator is suitable for sensitive applications requiring a hysteresis of 0.02 bar. The outlet pressure p2 can be set within the pressure regulation range. In the

event of a failure of the compressed air supply, the outlet pressure p2 is vented via connection 3 (secondary venting).

- Precision pressure adjustment possible both in static and dynamic applications
- Operating pressure fluctuations are almost entirely compensated
- Good response characteristics during rapid changes to operating pressure and flow rate

General technical data		
Type	LRP-1/8-6	LRP-7.0-6
Pneumatic connection 1, 2	G $\frac{1}{8}$	For sub-base $\varnothing$ 7 mm
Pressure gauge connection	G $\frac{1}{8}$	
Design	Piloted precision diaphragm regulator	
Regulating function	Outlet pressure constant, with secondary venting	
Type of mounting	Via accessories	
	Front panel mounting	
	In-line installation	
Mounting position	Any	
Actuator lock	Rotary knob with detent	
Pressure regulation range [bar]	0.1 ... 6	
Max. pressure hysteresis [bar]	0.02	
Pressure indicator	G $\frac{1}{8}$ prepared	

Standard nominal flow rate qnN [l/min]		
Type	LRP-1/8-6	LRP-7.0-6
Standard nominal flow rate [l/min]	300 <sup>1)</sup>	240 <sup>2)</sup>

1) Measured at p1 = 8 bar and p2 = 6 bar,  $\Delta p_2 = 100$  mbar  
 2) Measured on manifold block MRS-4 at p1 = 8 bar and p2 = 6 bar,  $\Delta p_2 = 100$  mbar

Operating and environmental conditions		
Operating pressure [bar]	1 ... 8	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium	Lubricated operation not possible	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	-10 ... +60	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance class CRC <sup>1)</sup>	2	

1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

# Precision pressure regulators LRP, size 40

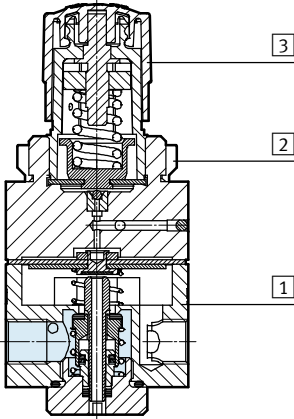
Technical data

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Weight [g]	
Precision pressure regulator	200

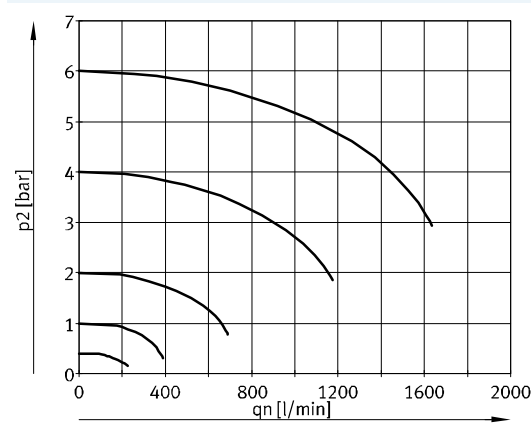
## Materials

Sectional view

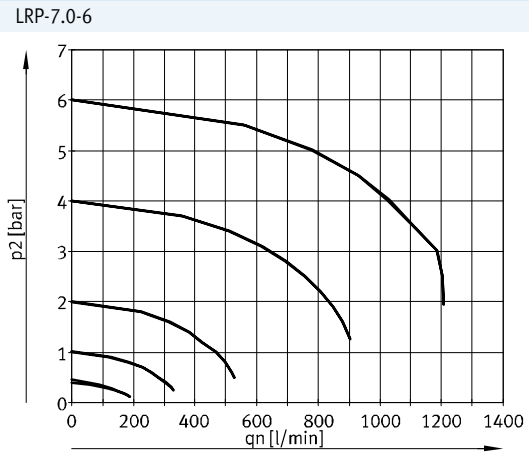


Precision pressure regulator		
1	Housing	Aluminium
2	Knurled nut	Aluminium
3	Rotary knob	PA
-	Diaphragm, seals	Nitrile rubber
Note on materials		RoHS compliant

## Standard flow rate $q_n$ as a function of outlet pressure $p_2$

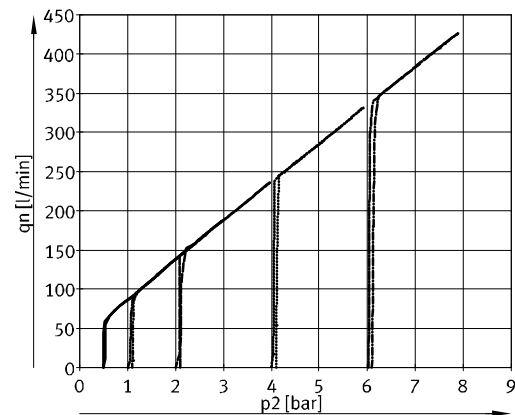


Operating pressure  $p_1 = 8$  bar



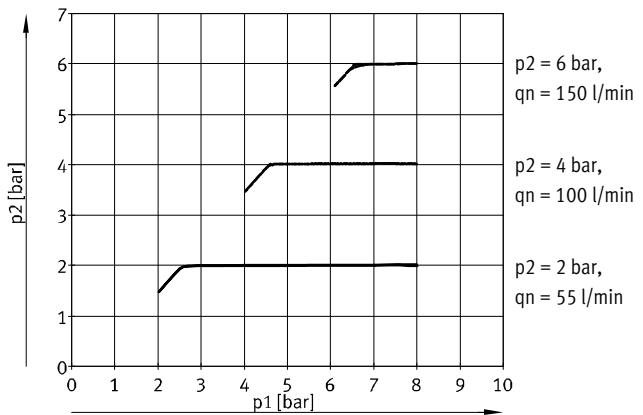
Operating pressure  $p_1 = 8$  bar

## Standard flow rate $q_{n2-3}$ through secondary venting as a function of the outlet pressure $p_2$



Operating pressure  $p_1 = 8$  bar

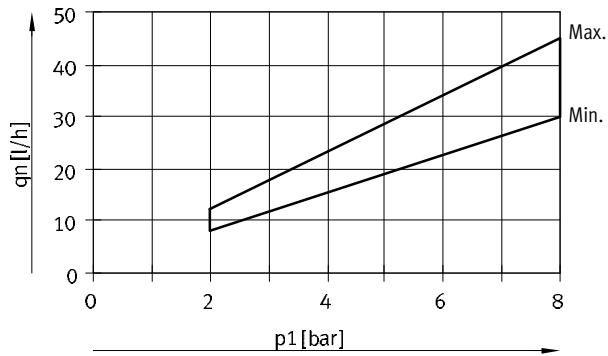
## Outlet pressure $p_2$ as a function of operating pressure $p_1$



# Precision pressure regulators LRP, size 40

Technical data

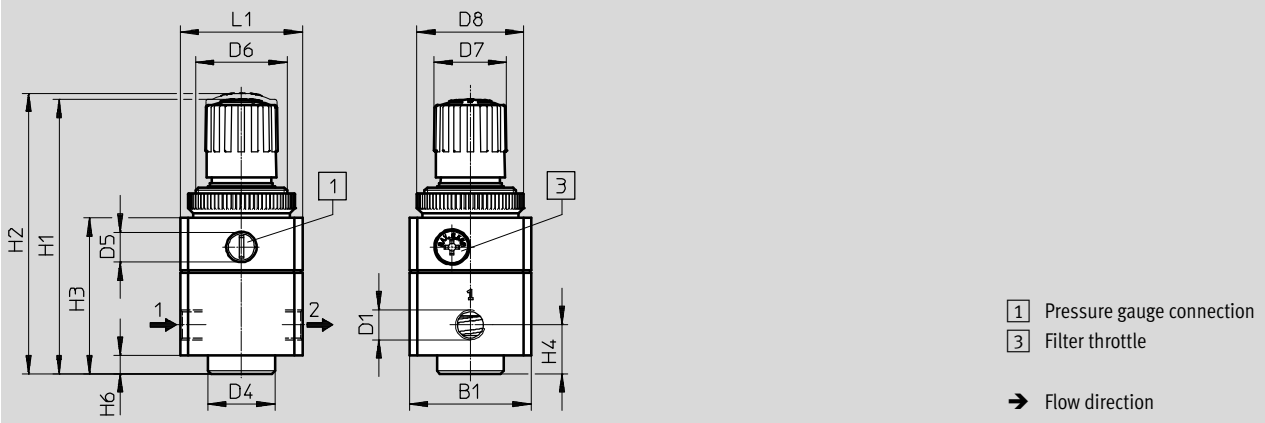
## Internal air consumption $q_n$ as a function of operating pressure $p_1$



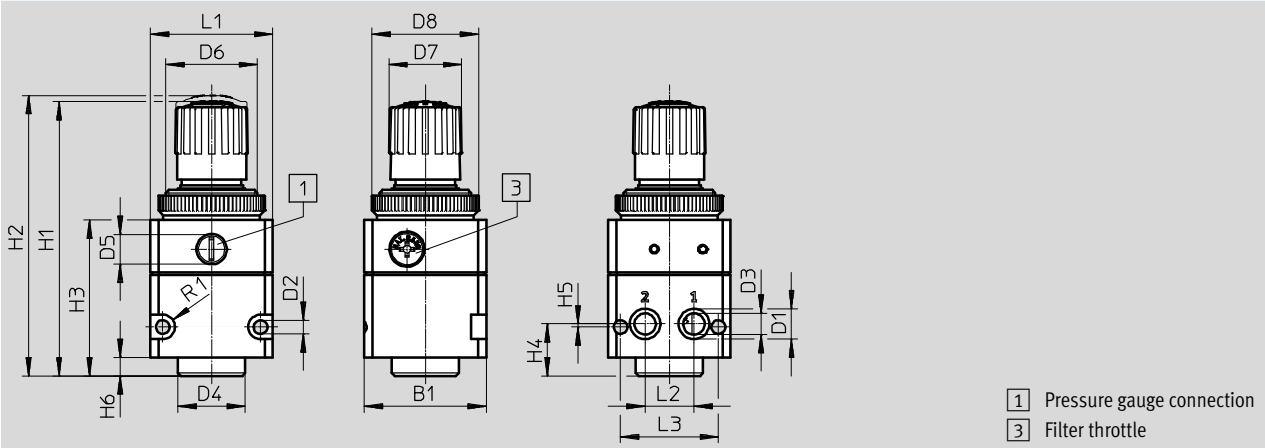
## Dimensions

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

### LRP-1/8-6



### LRP-7.0-6



Type	B1	D1	D2	D3	D4	D5	D6	D7	D8	H1	H2	H3	H4	H5	H6	L1	L2	L3	R1
LRP-1/8-6	40	G $\frac{1}{8}$	-	-	22	G $\frac{1}{8}$	M30x1.5	24	35	~90	~92	51	16	-	6	40	-	-	-
LRP-7.0-6		$\varnothing 10$	4.5	7									17	1			16	32	4

# Precision pressure regulators LRP, size 40

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Technical data

Ordering data			
Pressure regulation range [bar]	Pneumatic connection 1, 2	Part No.	Type
0.1 ... 6	G $\frac{1}{8}$	★ 2416371	LRP-1/8-6
	For sub-base $\varnothing$ 7 mm	2418761	LRP-7.0-6

Festo core product range

★ Generally ready for shipping ex works in 24 hours

☆ Generally ready for shipping ex works in 5 days

# Precision pressure regulators LRP/LRPS, size 50

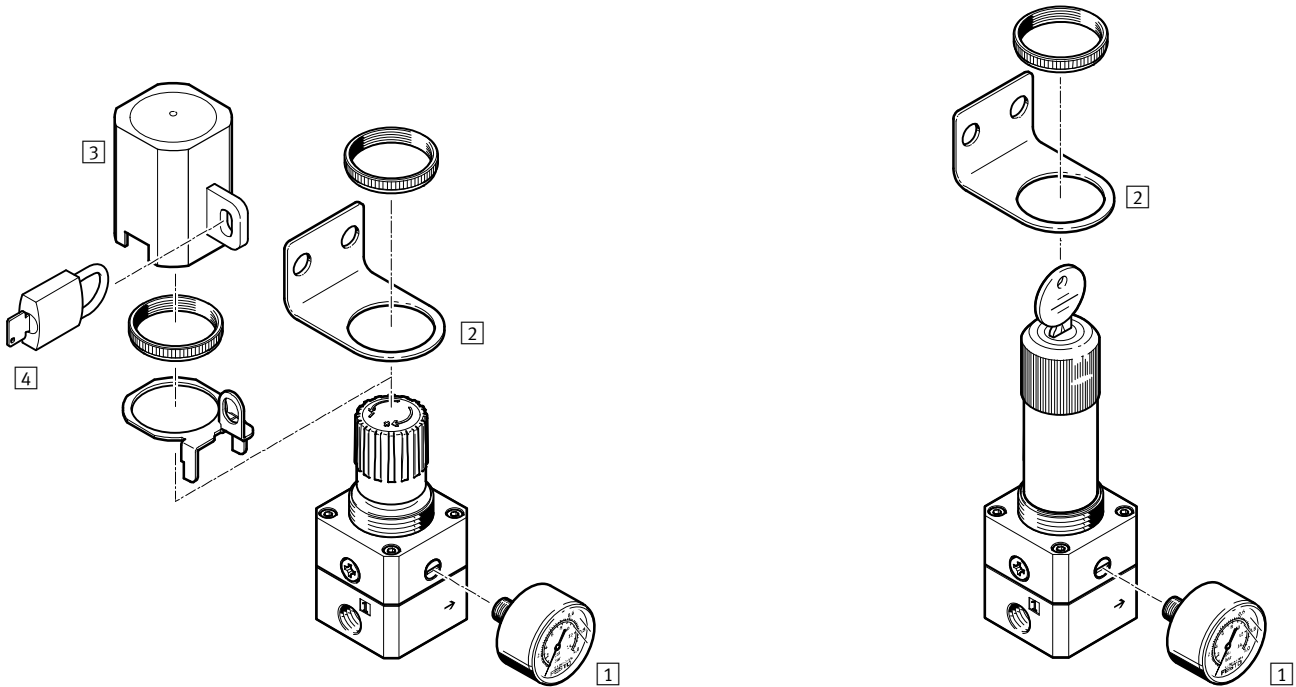
Peripherals overview and type codes

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## Peripherals overview

Precision pressure regulator LRP

Lockable precision pressure regulator LRPS



Mounting attachments and accessories		→ Page/Internet
1	Precision pressure gauge MAP	14
2	Mounting bracket HR-1/4-P	13
3	Regulator lock with lock plate LRVS-LRP-1/4	13
4	Padlock LRVS-D	13

## Type codes

LRP	-	1/4	-	0.7	-	EX4
-----	---	-----	---	-----	---	-----

### Service function

LRP	Precision pressure regulator
LRPS	Lockable precision pressure regulator

### Pneumatic connection

1/4	Thread G $\frac{1}{4}$
-----	------------------------

### Pressure regulation range

0.7	0.05 ... 0.7 bar
2.5	0.05 ... 2.5 bar
4	0.05 ... 4 bar
10	0.1 ... 10 bar

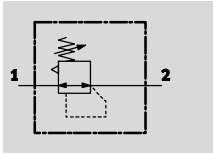
### Explosion protection (only for LRP)

	None
EX4	For use in explosive areas in zones 1, 2 as well as 21, 22

# Precision pressure regulators LRP/LRPS, size 50

Technical data

Function



- - Flow rate  
800 ... 2,300 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
1 ... 12 bar
- - [www.festo.com](http://www.festo.com)



The precision pressure regulator controls operating pressure (secondary side) with a diaphragm pilot control, which acts upon the main seat and thus achieves improved regulating characteristics.

- Precision pressure adjustment possible both in static and dynamic applications
- Pressure hysteresis of < 0.02 bar for flow rate characteristic curve
- Good response characteristics during rapid alteration of supply pressure and flow rate
- Supply pressure fluctuations are almost entirely compensated
- Product variants LRP-...-EX4 can be used in zones 1 and 2 of explosive gas atmospheres and in zones 21 and 22 of explosive dust atmospheres

General technical data				
LRP/LRPS-1/4-...	0.7	2.5	4	10
Pneumatic connection 1, 2	G $\frac{1}{4}$			
Constructional design	Pilot-actuated precision diaphragm regulating valve			
Regulating function	Output pressure constant, with secondary venting			
Type of mounting	Via accessories			
	Front panel mounting			
	In-line installation			
Mounting position	Any			
Actuator lock	Rotary knob with detent			
	Rotary knob with integrated lock			
Pressure regulation range [bar]	0.05 ... 0.7	0.05 ... 2.5	0.05 ... 4	0.1 ... 10
Max. hysteresis [bar]	0.02			
Pressure indicator	G $\frac{1}{8}$ prepared			

Standard nominal flow rate <sup>1)</sup> qnN [l/min]				
LRP/LRPS-1/4-...	0.7	2.5	4	10
Standard nominal flow rate [l/min]	800	1,800	2,000	2,300

1) Measured at p<sub>1</sub> = 12 bar, Δp<sub>2</sub> = 100 mbar

Operating and environmental conditions	
Operating pressure [bar]	1 ... 12
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Operation with lubricated medium not possible
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2

1) Corrosion resistance class 2 to Festo standard 940 070  
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents



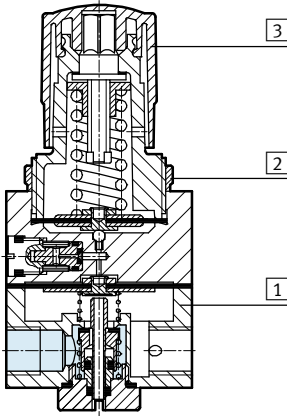
# Precision pressure regulators LRP/LRPS, size 50

Technical data

Weight [g]			
Type	LRP	LRP-...-EX4	LRPS
Precision pressure regulator	310	315	410

## Materials

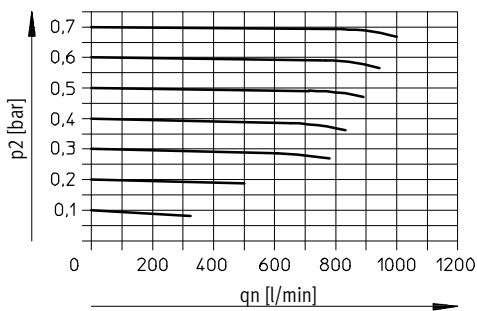
Sectional view



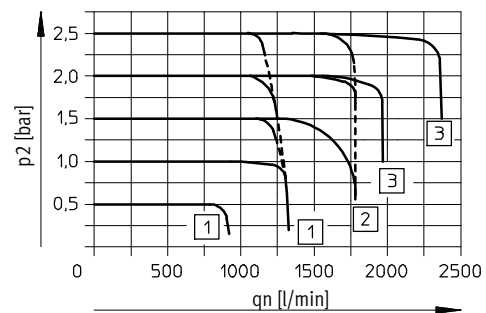
Precision pressure regulator		
1	Housing	Die-cast aluminium
2	Knurled nut	Aluminium
3	Rotary knob	PA
-	Seals	NBR
Note on materials		RoHS-compliant

## Standard flow rate $q_n$ as a function of output pressure $p_2$

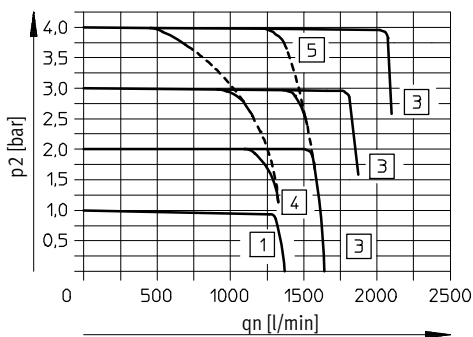
LRP/LRPS-1/4-0,7



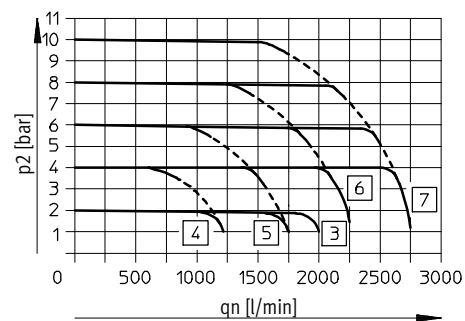
LRP/LRPS-1/4-2,5



LRP/LRPS-1/4-4



LRP/LRPS-1/4-10



- 1 Supply pressure  $p_1 = 5 \dots 12$  bar
- 2 Supply pressure  $p_1 = 7 \dots 12$  bar
- 3 Supply pressure  $p_1 = 10 \dots 12$  bar
- 4 Supply pressure  $p_1 = 5$  bar

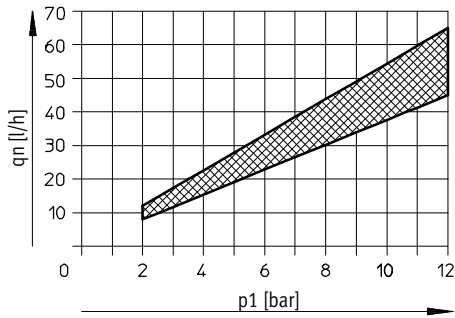
- 5 Supply pressure  $p_1 = 7$  bar
- 6 Supply pressure  $p_1 = 10$  bar
- 7 Supply pressure  $p_1 = 12$  bar

# Precision pressure regulators LRP/LRPS, size 50

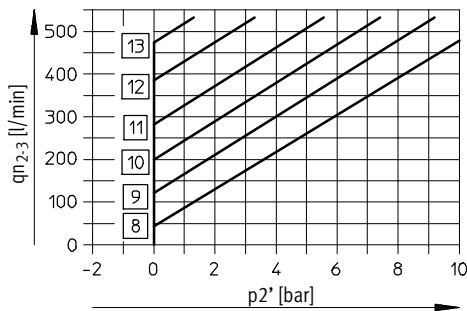
Technical data

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## Internal air consumption $q_n$ as a function of supply pressure $p_1$



## Standard flow rate $q_{n2-3}$ of the secondary exhaust as a factor of the excess output pressure $p_2'$

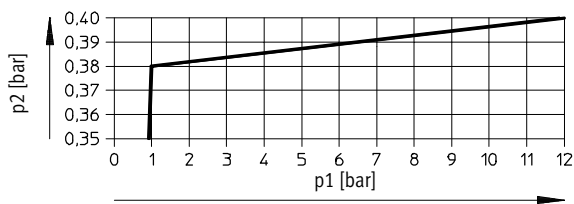


- 8 Output pressure  $p_2 = 0.7$  bar
- 9 Output pressure  $p_2 = 2$  bar
- 10 Output pressure  $p_2 = 4$  bar
- 11 Output pressure  $p_2 = 6$  bar
- 12 Output pressure  $p_2 = 8$  bar
- 13 Output pressure  $p_2 = 10$  bar

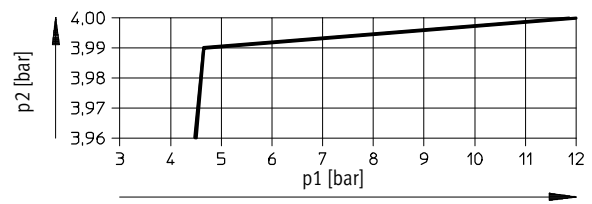
Supply pressure  $p_1 = 5 \dots 12$  bar

## Output pressure $p_2$ as a function of supply pressure $p_1$

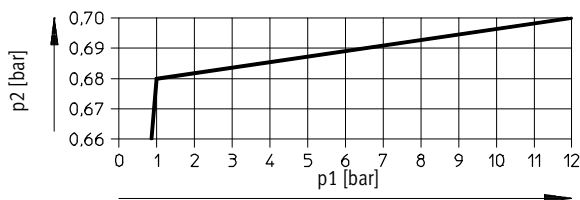
Primary pressure dependence  $q_n = 35$  l/min



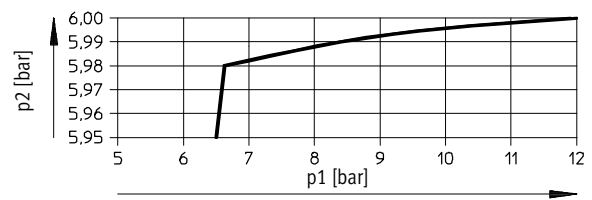
Primary pressure dependence  $q_n = 220$  l/min



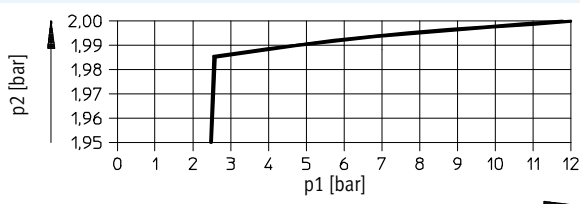
Primary pressure dependence  $q_n = 55$  l/min



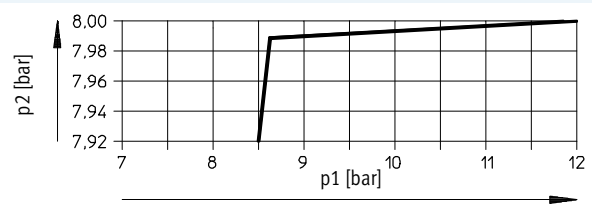
Primary pressure dependence  $q_n = 340$  l/min



Primary pressure dependence  $q_n = 120$  l/min



Primary pressure dependence  $q_n = 420$  l/min



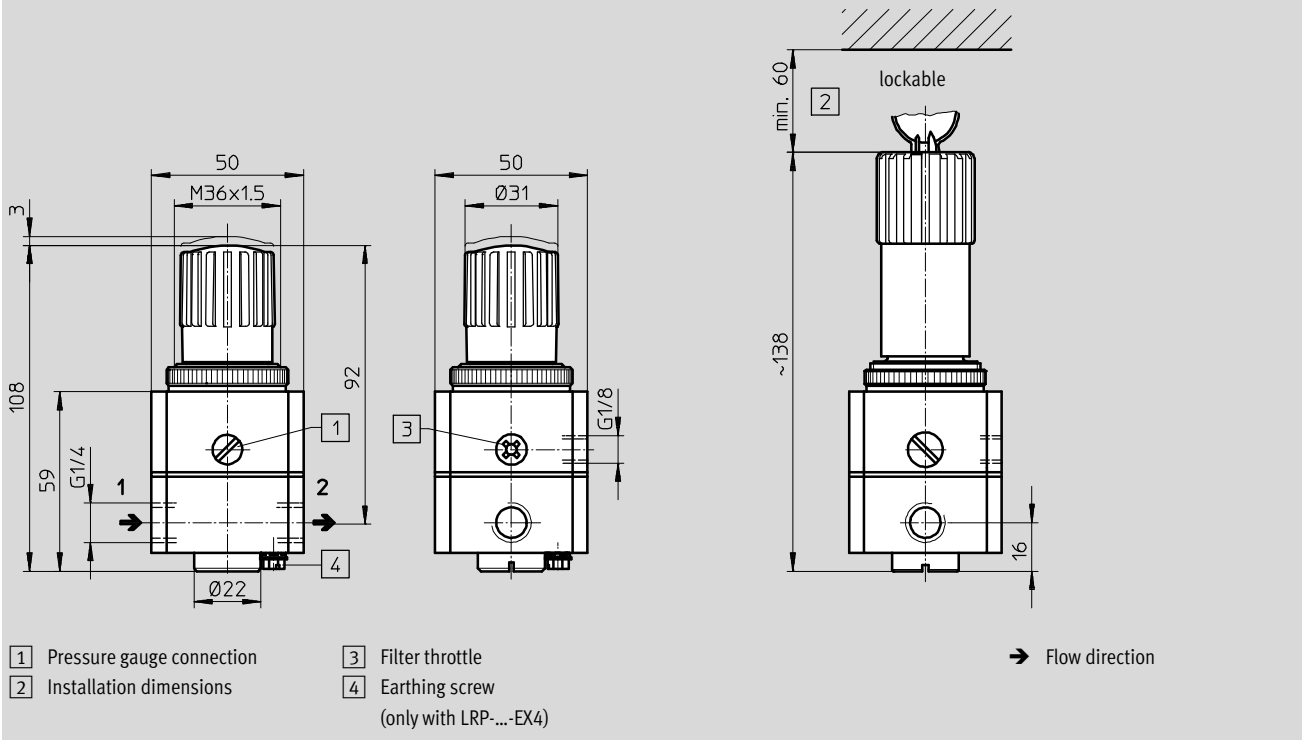
# Precision pressure regulators LRP/LRPS, size 50

Technical data

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## Dimensions

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



## Ordering data

Pressure regulation range [bar]	Precision pressure regulator LRP		Lockable precision pressure regulator LRPS	
	Part No.	Type	Part No.	Type
0.05 ... 0.7	★ 159500	LRP-1/4-0,7	194690	LRPS-1/4-0,7
0.05 ... 2.5	★ 162834	LRP-1/4-2,5	194691	LRPS-1/4-2,5
0.05 ... 4	★ 159501	LRP-1/4-4	194692	LRPS-1/4-4
0.1 ... 10	★ 159502	LRP-1/4-10	194693	LRPS-1/4-10
For use in explosive areas in zones 1, 2 as well as 21, 22				
0.05 ... 0.7	549918	LRP-1/4-0,7-EX4	-	-
0.05 ... 2.5	549919	LRP-1/4-2,5-EX4	-	-
0.05 ... 4	549920	LRP-1/4-4-EX4	-	-
0.1 ... 10	549921	LRP-1/4-10-EX4	-	-

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# Precision pressure regulators LRP/LRPS

Accessories

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## Manifold block MRS

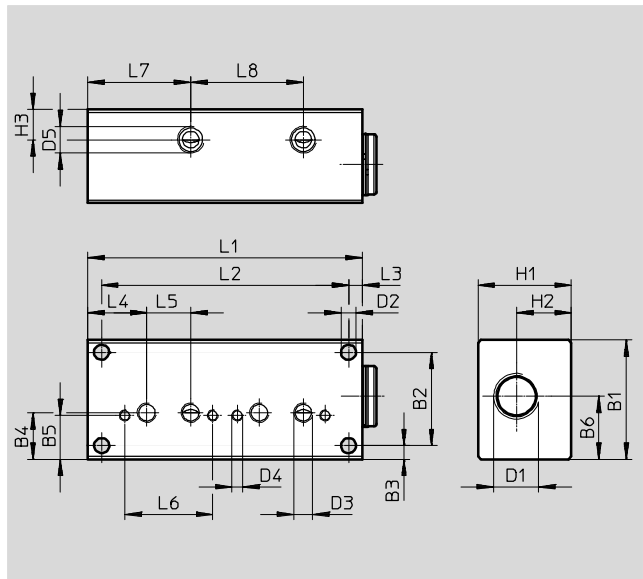
for precision pressure regulator  
LRP-7.0-6

- For manifold assembly of 2 or 4 valves
- Continuous compressed air supply in the manifold block
- Connection for compressed air supply  $G\frac{3}{8}$ , connections for working pressure  $G\frac{1}{8}$
- Vacant positions can be sealed with blanking plugs

Operating pressure:  $-0.9 \dots 10$  bar

Materials:

Wrought aluminium alloy  
RoHS compliant



Type	B1	B2	B3	B4	B5	B6	D1	D2 Ø	D3	D4	D5	H1	H2	H3
MRS-2	43.5	34	5	17	16	23	$G\frac{3}{8}$	5.5	M7	M4	$G\frac{1}{8}$	34	20	11
MRS-4														

Type	L1	L2	L3	L4	L5	L6	L7	L8	Max. tightening torque	
									Valve mounting [Nm]	Wall mounting [Nm]
MRS-2	100	90	5	21.5	16	32	37.5	41	2.5	4
MRS-4	182	172								

Ordering data					
Pneumatic connection 1	Max. no. of valve positions	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
$G\frac{3}{8}$	2	2	365	<b>2844247</b>	<b>MRS-2</b>
	4	2	650	<b>2844348</b>	<b>MRS-4</b>

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

# Precision pressure regulators LRP/LRPS

Accessories

## Mounting bracket HR

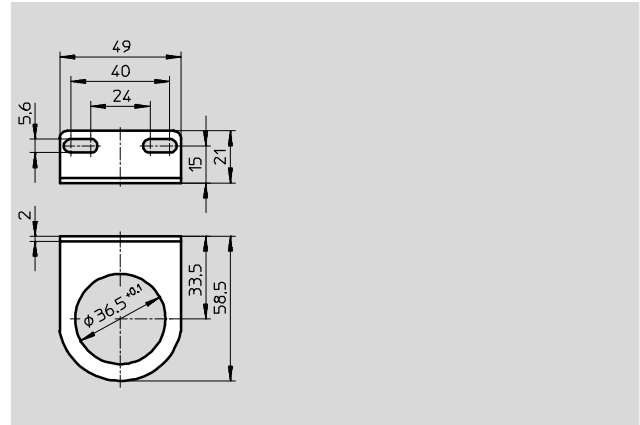
for precision pressure regulator LRP/LRPS, size 50

- For wall mounting

Materials:

Galvanised steel

Free of copper and PTFE



Ordering data		
CRC <sup>1)</sup>	Part No.	Type
2	159503	HR-1/4-P

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

## Regulator lock LRVS-LRP

for precision pressure regulator LRP, size 50

Materials:

Cap: polyacetal

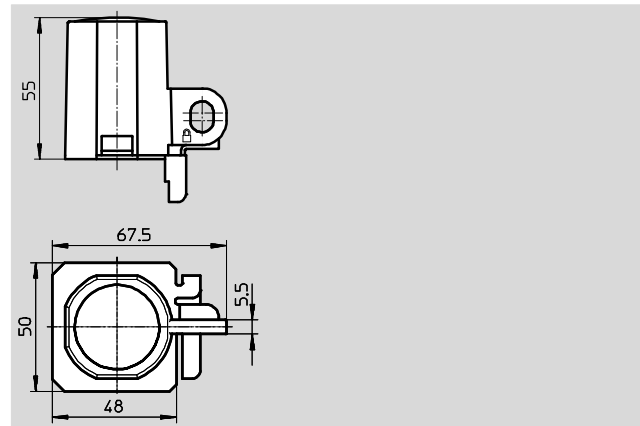
Lock plate: steel

Knurled nut: aluminium

Free of copper and PTFE

Ambient temperature:

-20 ... +60 °C



Ordering data		
Weight [g]	Part No.	Type
36	193785	LRVS-LRP-1/4

## Padlock LRVS-D

for precision pressure regulator LRP, size 50

Materials:

Housing: brass

Ambient temperature:

-20 ... +60 °C





Ordering data		
Weight [g]	Part No.	Type
120	193786	LRVS-D

# Precision pressure regulators LRP/LRPS

Accessories

**FESTO**

Ordering data – Mounting bracket MS4-WR			Technical data → Internet: ms4-wr	
	Description	Weight [g]	Part No.	Type
	For precision pressure regulator LRP, size 40, for wall mounting	49	<b>526064</b>	<b>MS4-WR</b>

Ordering data – Precision pressure gauge MAP/PAGN						
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type
			Outer scale	Inner scale		
	Precision pressure gauge MAP, EN 837-1				Technical data → Internet: map	
	40	R1/8	0 ... 1 bar	0 ... 15 psi	<b>161126</b>	<b>MAP-40-1-1/8-EN</b>
			0 ... 4 bar	0 ... 58 psi	<b>162842</b>	<b>MAP-40-4-1/8-EN</b>
			0 ... 6 bar	0 ... 87 psi	<b>161127</b>	<b>MAP-40-6-1/8-EN</b>
			0 ... 16 bar	0 ... 232 psi	<b>161128</b>	<b>MAP-40-16-1/8-EN</b>
	Precision pressure gauge PAGN, EN 837-1				Technical data → Internet: pagn	
40	R1/8	0 ... 10 bar	0 ... 145 psi	<b>2849914</b>	<b>PAGN-40-10-R18-1.6</b>	
		0 ... 1 MPa	0 ... 10 bar	<b>2849916</b>	<b>PAGN-40-1M-R18-1.6</b>	