

Precision pressure regulator LRP, LRPS

FESTO



Characteristics

At a glance

For sensitive applications that require a pressure hysteresis of 0.02 bar. The output pressure p2 is adjustable within the pressure regulation range.

- Good control characteristics with minimal pressure hysteresis and primary pressure compensation
- High secondary exhausting for fast reaction times
- Variants to EU Explosion Protection Directive (ATEX)

Pneumatic connection

Depending on the size, different connection types can be selected:

- Individual fittings that are fastened via a female thread
- Connecting plates with female thread

EU certification

Optional device variant EX4 for use in potentially explosive areas of zones 1, 2, 21 and 22

Special material properties

[F1A]	Recommended for production plants for manufacturing lithium-ion batteries, F1A
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Metals with more than 1% copper by mass are excluded from use. Exceptions are circuit boards, cables, electrical plug connectors and coils

Type code

001	Series
LRP	Precision pressure regulator
LRPS	Precision pressure regulator, lockable

002	Pneumatic connection
1/8	Female thread G1/8
1/4	Female thread G1/4
7.0	For sub-base diameter 7 mm

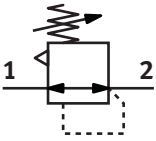
003	Pressure regulation range
0,7	Up to 0.7 bar
2,5	Up to 2.5 bar
4	Up to 4 bar
6	Up to 6 bar
10	Up to 10 bar

004	EU certification
	None
EX4	II 2GD

005	Special material properties
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A

Datasheet

General technical data



Pressure regulation range	0.1 ... 6 bar	0.05 ... 4 bar	0.05 ... 0.7 bar	0.1 ... 10 bar	0.05 ... 2.5 bar
Pneumatic connection, port 1	G1/8, For sub-base Ø 7 mm	G1/4			
Pneumatic connection, port 2	G1/8, For sub-base diameter 7 mm	G1/4			
Size	40	50			
Design	Piloted precision diaphragm control valve				
Controller function	Output pressure constant, With secondary venting				
Type of mounting	Front panel mounting In-line installation With accessories	Front panel mounting In-line installation With accessories Either:			
Mounting position	optional				
Actuator lock	Rotary knob with detent	Rotary knob with detent, Rotary knob with integrated lock			
Max. pressure hysteresis	0.02 bar				
Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Prepared for G1/8				

Standard nominal flow rate q_{nN}

Pressure regulation range	0.1 ... 6 bar	0.05 ... 4 bar	0.05 ... 0.7 bar	0.1 ... 10 bar	0.05 ... 2.5 bar
Pneumatic connection, port 1	G1/8	For sub-base Ø 7 mm	G1/4		
Standard nominal flow rate (standardised to DIN 1343)	300	240	2,000	800	2,300
					1,800

Operating and environmental conditions

Operating pressure	0.1 ... 1.2 MPa
Operating pressure	1 ... 12 bar
Operating pressure	13.8 ... 180 psi
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gases
Note on operating and pilot medium	Lubricated operation not possible
Ambient temperature	-10 ... 60°C
Media temperature	-10 ... 60°C
Storage temperature	-10 ... 60°C
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress

1) Corrosion resistance class CRC 2 to Festo standard FN 940070. Moderate corrosion stress. Indoor application where condensation can occur. External visible parts with primarily decorative surface requirements that are in direct contact with the surrounding industrial environment.

Materials

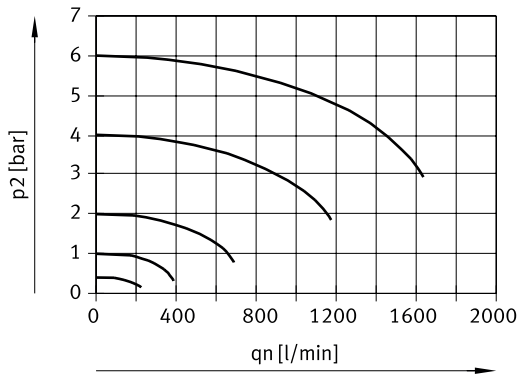
Material housing	Die-cast aluminium, Aluminium
Material seals	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Additional material specifications – products for battery production (LRP-...-F1A)

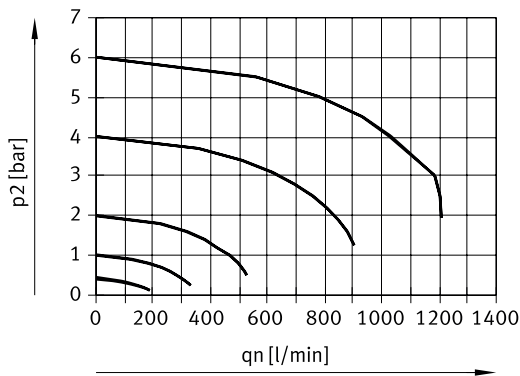
Suitability for the production of Li-ion batteries	Product corresponds to the internal product definition from Festo for use in battery production: Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. The exceptions are nickel in steel, chemically nickel-plated surfaces, printed circuit boards, cables, electrical plug connectors and coils
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Datasheet

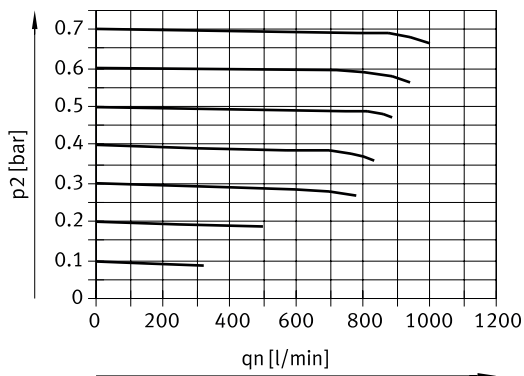
Standard flow rate q_n as a function of output pressure p_2 – LRP-1/8-6



Standard flow rate q_n as a function of output pressure p_2 – LRP-7/0-6

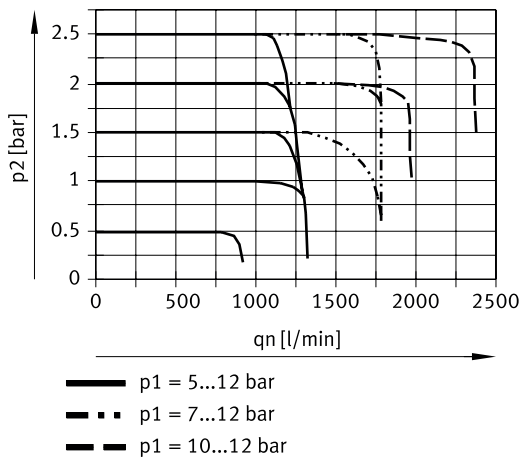


Standard flow rate q_n as a function of output pressure p_2 – LRP/LRPS-1/4-0.7

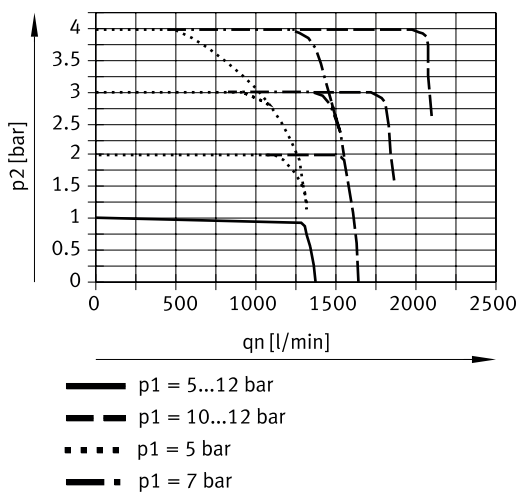


Datasheet

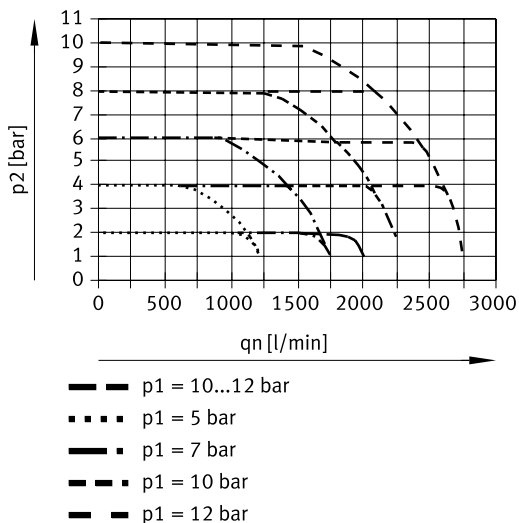
Standard flow rate q_n as a function of output pressure p_2 – LRP/LRPS-1/4-2.5



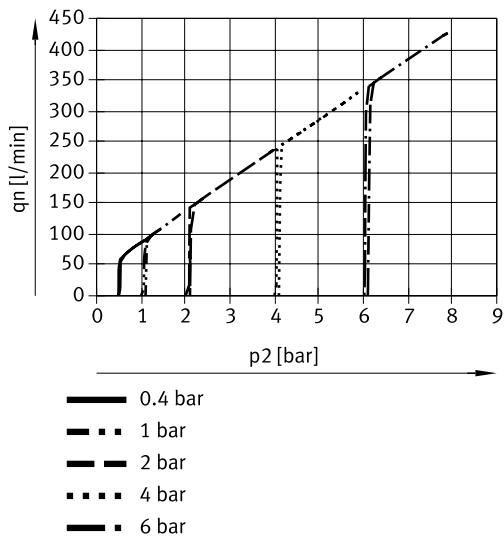
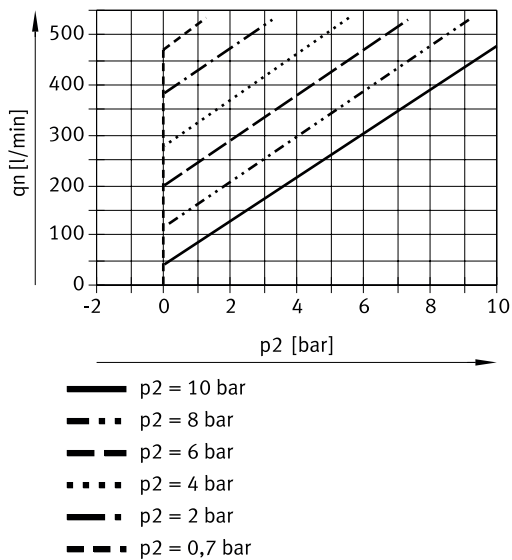
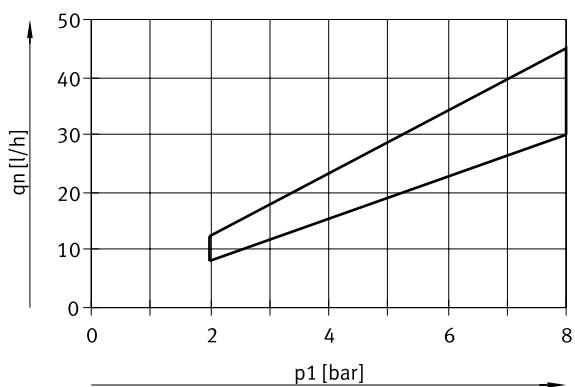
Standard flow rate q_n as a function of output pressure p_2 – LRP/LRPS-1/4-4



Standard flow rate q_n as a function of output pressure p_2 – LRP/LRPS-1/4-10

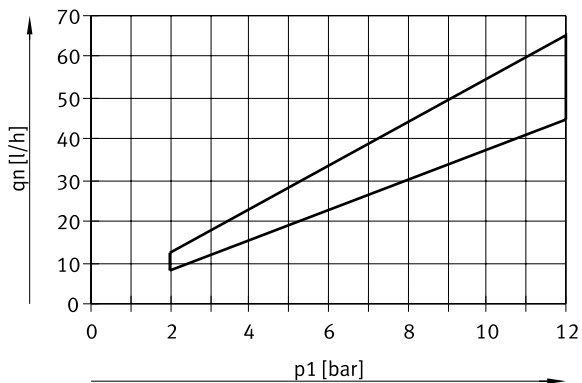


Datasheet

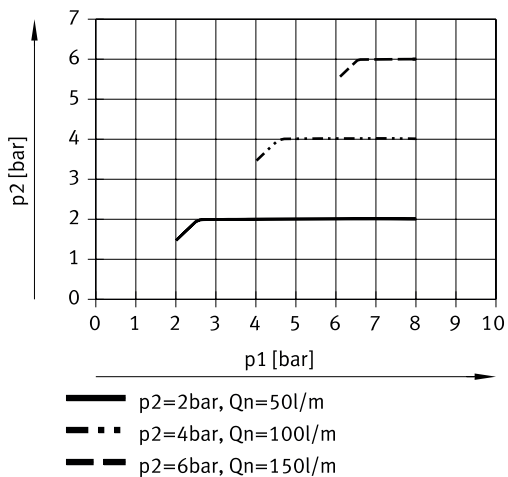
Standard flow rate q_{n2-3} through secondary exhausting as a function of output pressure p_2 (size 40, operating pressure $p_1 = 8$ bar)Standard flow rate q_{n2-3} through secondary exhausting as a function of output pressure p_2 (size 50, operating pressure $p_1 = 5 \dots 12$ bar)Internal air consumption q_n as a function of operating pressure p_1 (size 40)

Datasheet

Internal air consumption q_n as a function of operating pressure p_1 (size 50)

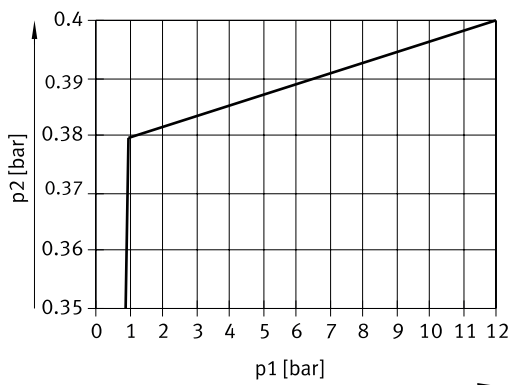


Output pressure p_2 as a function of operating pressure p_1 (size 40)

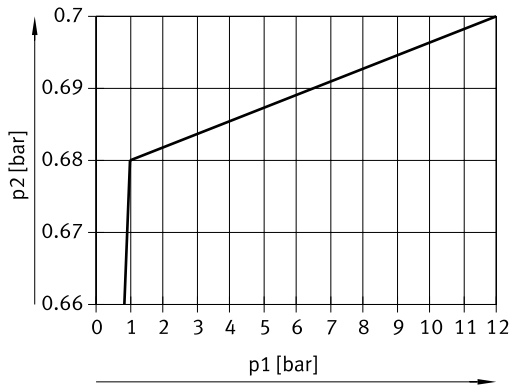
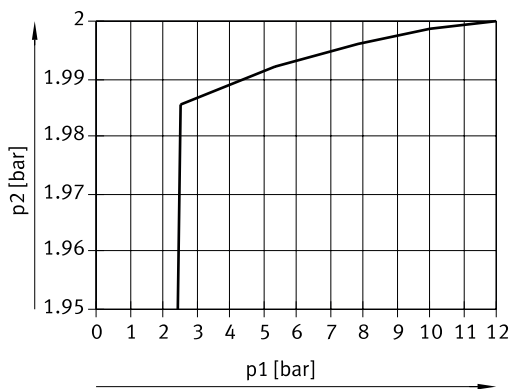
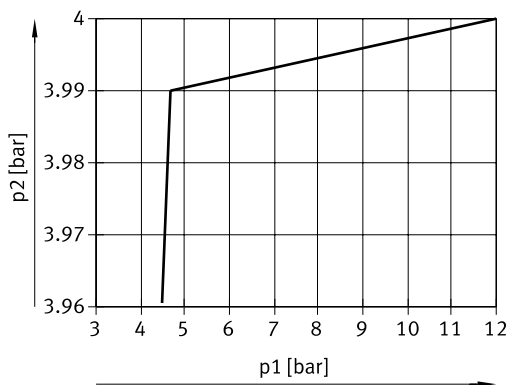


- $p_2=2\text{bar}$, $Q_n=50\text{l/m}$
- · - $p_2=4\text{bar}$, $Q_n=100\text{l/m}$
- - - $p_2=6\text{bar}$, $Q_n=150\text{l/m}$

Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 35$ l/min)

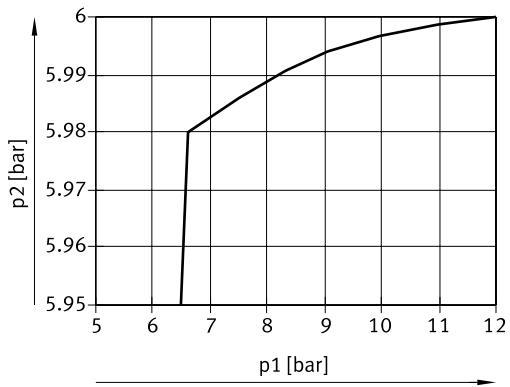


Datasheet

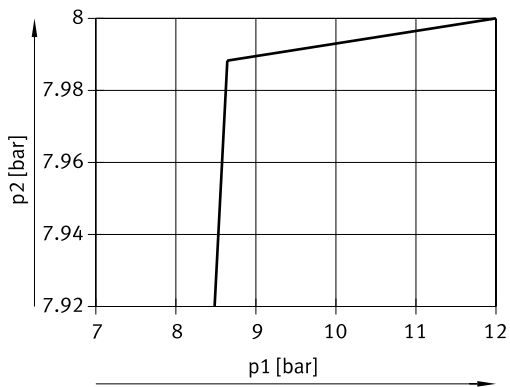
Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 55 \text{ l/min}$)Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 120 \text{ l/min}$)Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 220 \text{ l/min}$)

Datasheet

Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 340$ l/min)



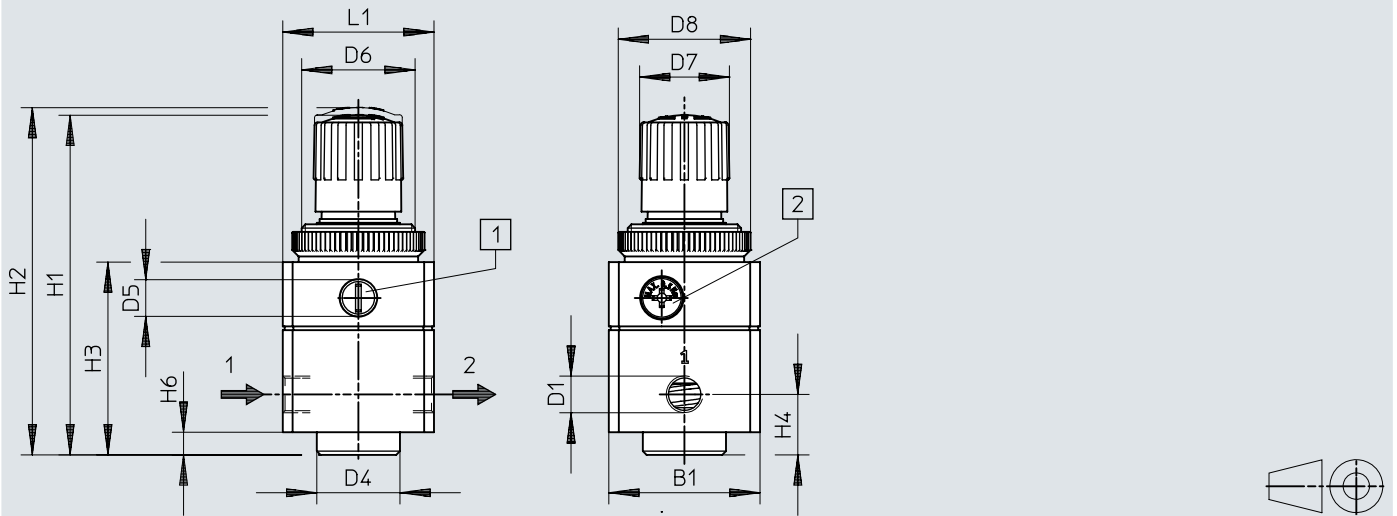
Output pressure p_2 as a function of operating pressure p_1 (size 50, primary pressure dependence $q_n = 420$ l/min)



Dimensions

Dimensions – LRP-1/8-6

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[1] Pressure gauge connection

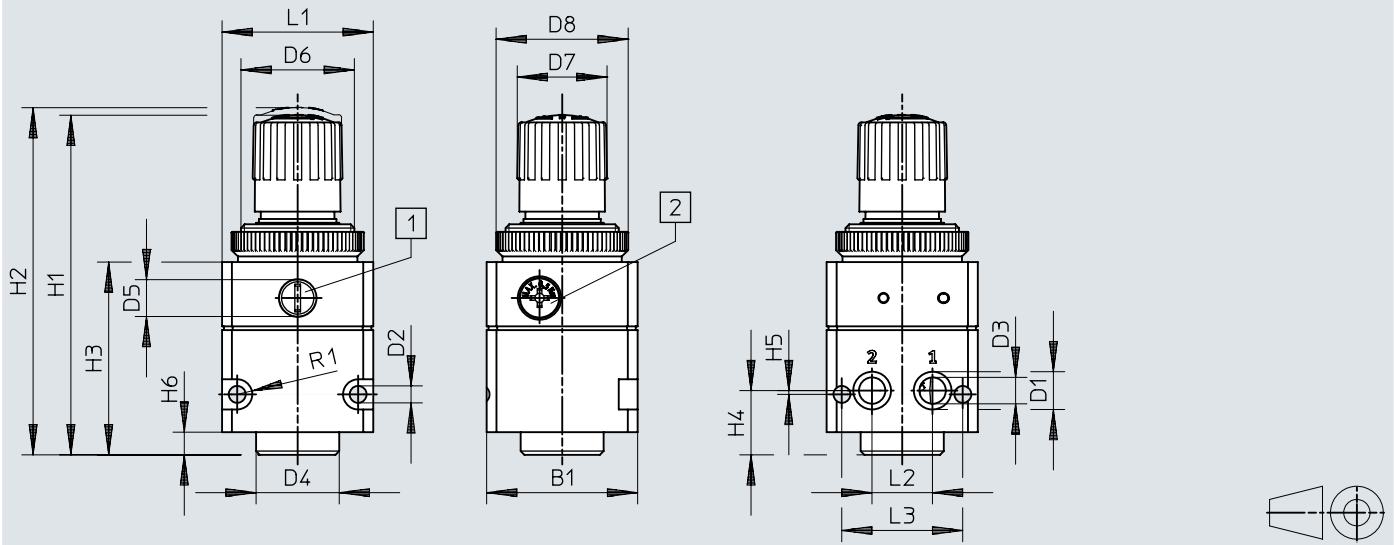
[2] Filter flow control

	B1	D1	D4 ∅	D5	D6	D7 ∅	D8 ∅	H1	H2	H3	H4	H6	L1
LRP-1/8-6	40	G1/8	22	G1/8	M30x1,5	24	35	~90	~92	51	16	6	40

Dimensions

Dimensions – LRP-7.0-6

Download CAD data www.festo.com



- [1] Pressure gauge connection
- [2] Filter flow control

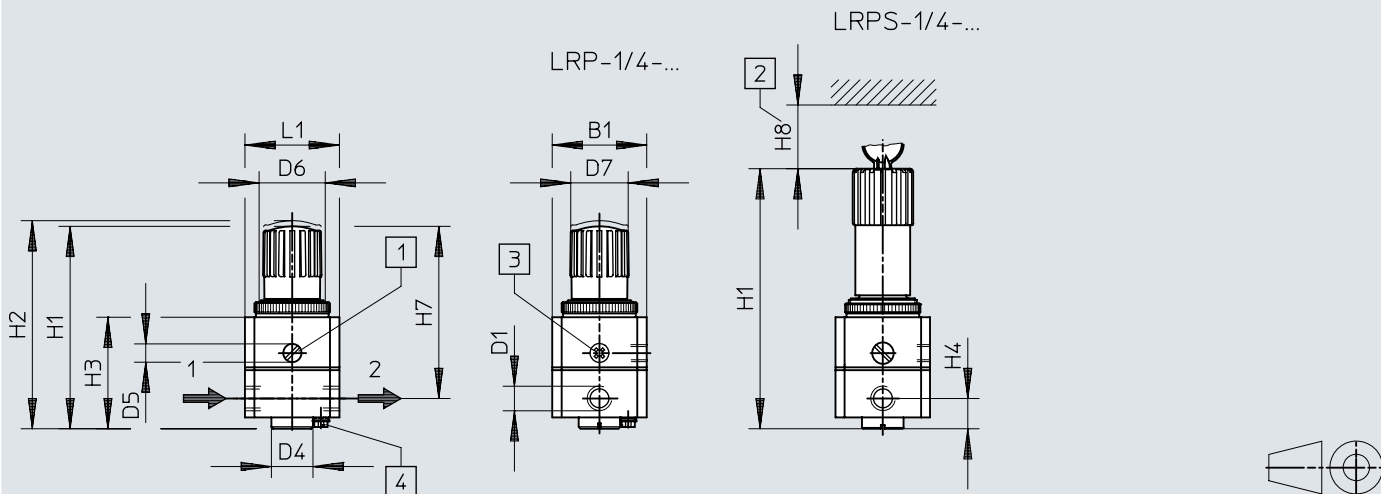
	B1	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5	D6	D7 ∅	D8 ∅
LRP-7.0-6	40	10	4,5	7	22	G1/8	M30x1.5	24	35

	H1	H2	H3	H4	H5	H6	L1	L2	L3	R1
LRP-7.0-6	~90	~92	51	17	1	6	40	16	32	4

Dimensions

Dimensions – Precision pressure regulators LRP/LRPS, size 50

Download CAD data www.festo.com



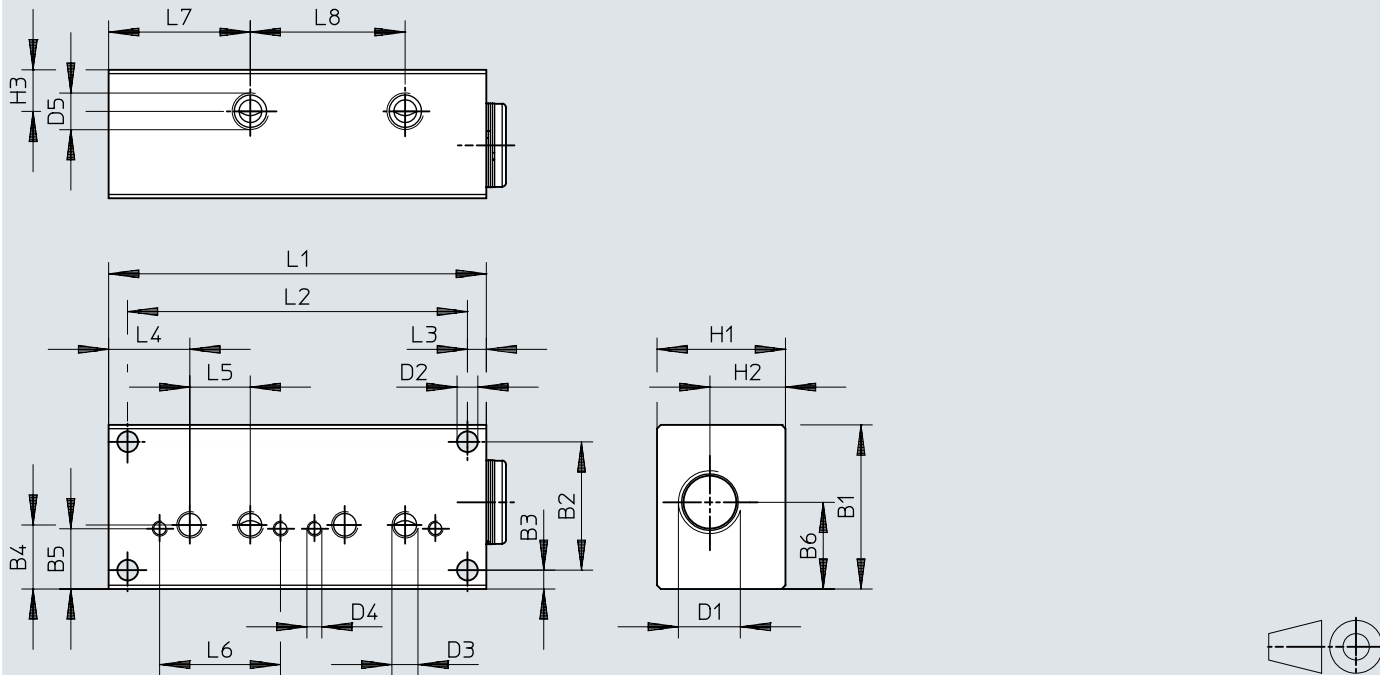
- [1] Pressure gauge connection
- [2] Installation dimension
- [3] Filter flow control
- [4] Earthing screw (only with LRP-...-EX4)

	B1	D1	D4 ∅	D5	D6	D7 ∅	H1	H2	H3	H4	H7	H8 min.	L1
LRP	50	G1/4	22	G1/8	M36x1,5	31	108	111	59	16	92	-	50
LRPS							138	-			-	60	

Dimensions

Dimensions – Manifold block MRS

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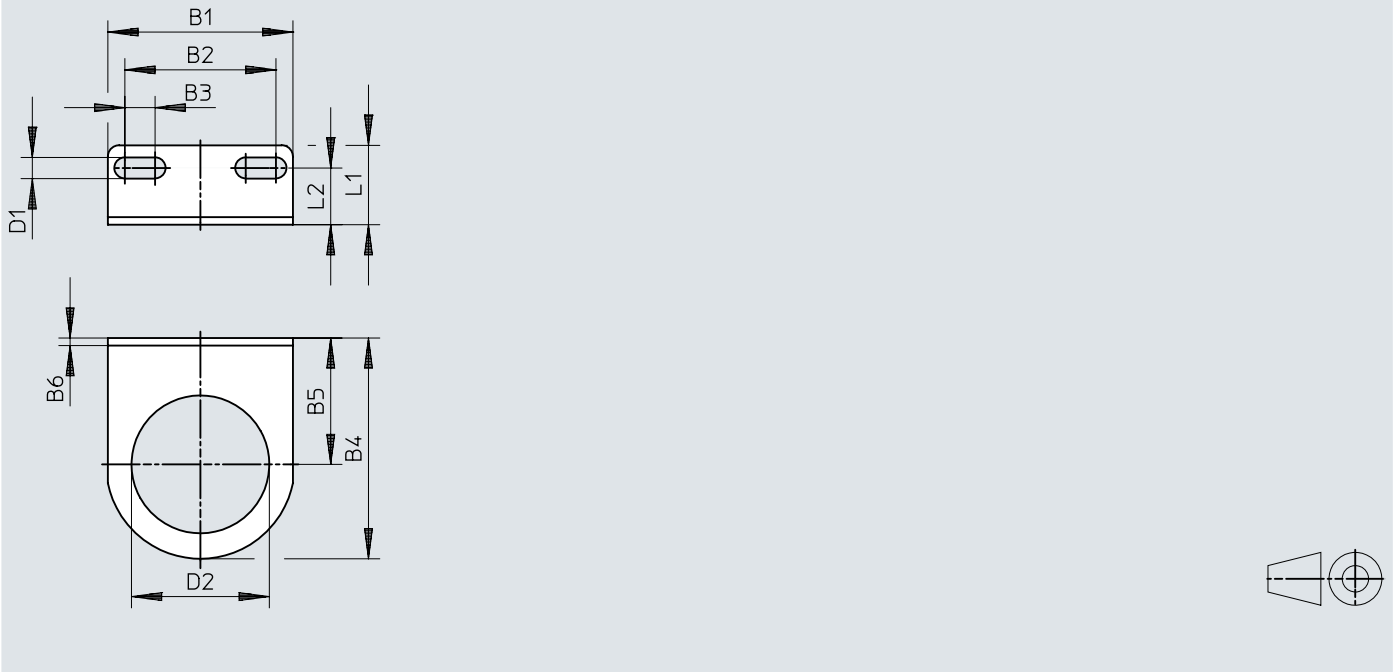
	B1	B2	B3	B4	B5	B6	D1	D2 ∅	D3	D4	D5
MRS-2	43,5	34	5	17	16	23	G3/8	5,5	M7	M4	G1/8
MRS-4											

	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8
MRS-2	34	20	11	100	90	5	21,5	16	32	37,5	41
MRS-4				182	172						

Dimensions

Dimensions – Mounting bracket HR

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	B1	B2	B3	B4	B5	B6	D1 ∅	D2 ∅ +0,1	L1	L2
HR-1/4-P	49	40	8	58,5	33,5	2	5,6	36,5	21	15

Dimensions


Dimensions – Regulator lock LRVS-LRP


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	B1	B2	B3	B4	L1
LRVS-LRP-1/4	67,5	50	48	5,5	55

Ordering data

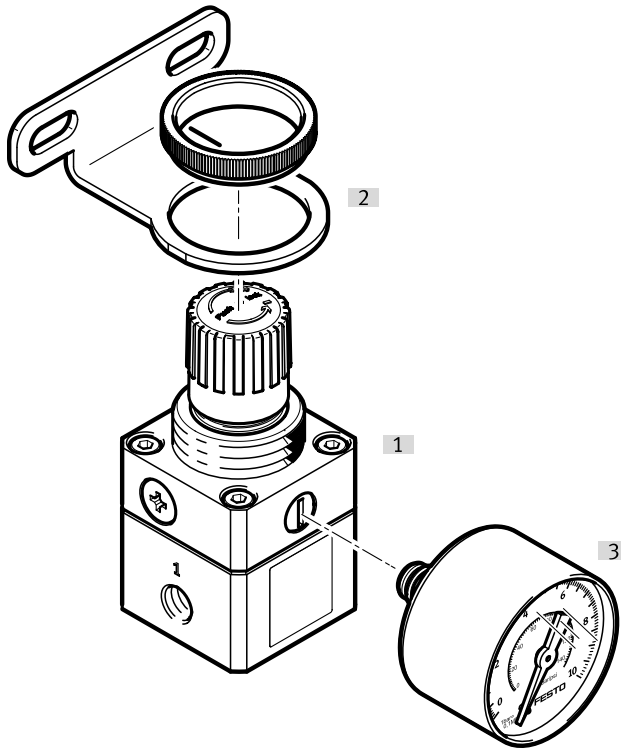
Ordering data – LRP (size 40)					
	Pneumatic connection, port 1	Pressure regulation range	Product weight	Part no.	Type
	G1/8	0.1 ... 6 bar	200 g	2416371	LRP-1/8-6
	For sub-base Ø 7 mm			2418761	LRP-7-0-6

Ordering data – LRP/LRPS (size 50)							
	Pneumatic connection, port 1	Pressure regulation range	Suitability for the production of Li-ion batteries ¹⁾	Product weight	Part no.	Type	
	G1/4	0.05 ... 0.7 bar		310 g	159500	LRP-1/4-0,7	
				315 g	549918	LRP-1/4-0,7-EX4	
				410 g	194690	LRPS-1/4-0,7	
			0.05 ... 2.5 bar	F1a	310 g	8196140	LRP-1/4-0.7-F1A
					315 g	549919	LRP-1/4-2,5-EX4
					410 g	194691	LRPS-1/4-2,5
			0.05 ... 4 bar	F1a	310 g	8196141	LRP-1/4-2.5-F1A
					315 g	549920	LRP-1/4-4-EX4
					410 g	194692	LRPS-1/4-4
			0.1 ... 10 bar		310 g	159502	LRP-1/4-10
					315 g	549921	LRP-1/4-10-EX4
					410 g	194693	LRPS-1/4-10
				F1a	310 g	8196142	LRP-1/4-10-F1A

¹⁾ Recommended for production systems for manufacturing Li-ion batteries. More information: www.festo.com/x/topic/bat.

Peripherals

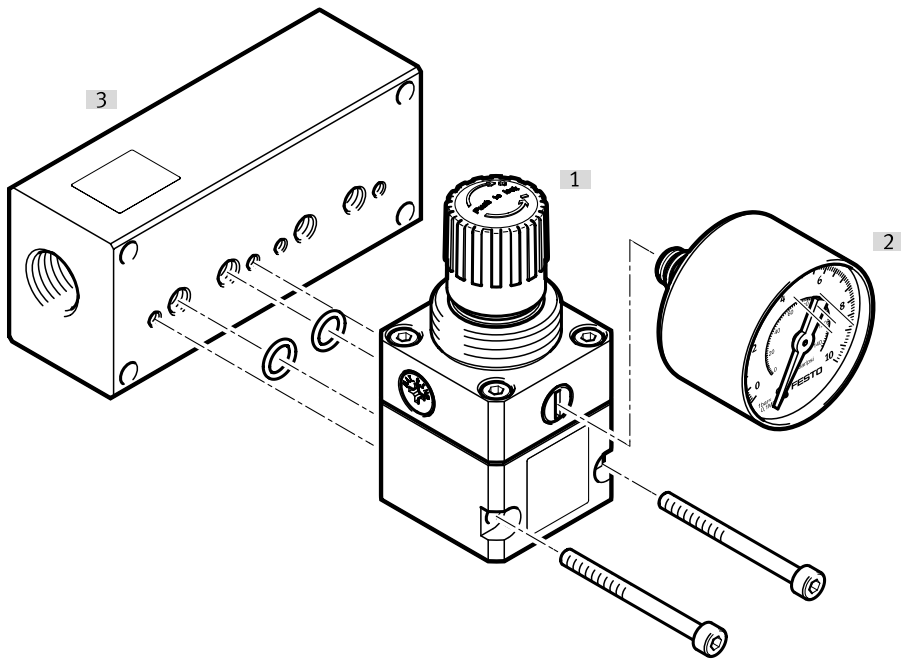
LRP-1/8-6 (size 40)



Accessories		→ Link
Type/order code	Description	
[1]	Precision pressure regulator LRP	
[2]	Mounting bracket MS4-WR	22
[3]	Precision pressure gauge PAGN	22

Peripherals

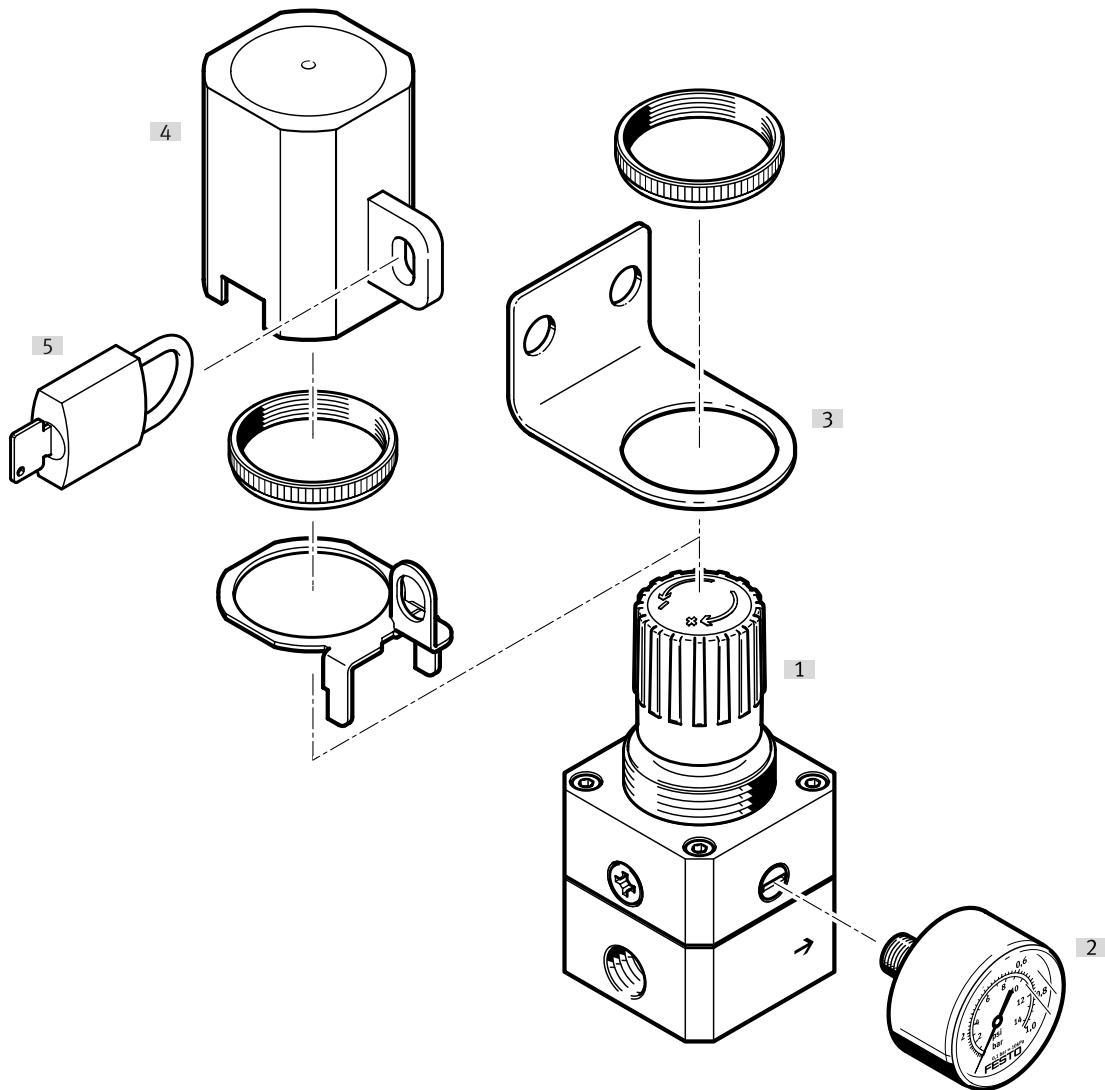
LRP-7.0-6 (size 40)



Accessories		→ Link
Type/order code	Description	
[1]	Precision pressure regulator LRP	
[2]	Precision pressure gauge PAGN	22
[3]	Manifold block MRS	22

Peripherals

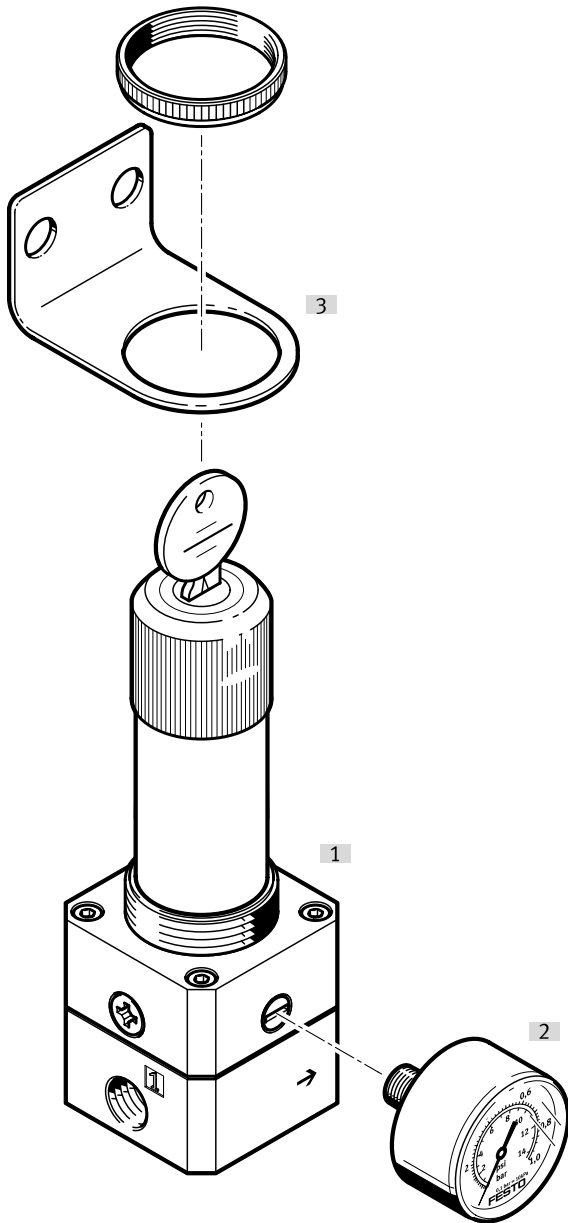
LRP (size 50)



Accessories			→ Link
Type/order code	Description		
[1]	Precision pressure regulator LRP		
[2]	Precision pressure gauge MAP	For manifold assembly of 2 or 4 valves	22
[3]	Mounting bracket HR	For manifold assembly of 2 or 4 valves	22
[4]	Regulator lock LRVS-LRP	With locking plate	22
[5]	Padlock LRVS-D		23

Peripherals

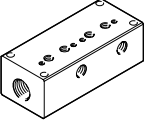
LRPS (size 50)



Accessories		→ Link
Type/order code	Description	
[1]	Precision pressure regulator LRPS	
[2]	Precision pressure gauge MAP	For manifold assembly of 2 or 4 valves 22
	Mounting bracket HR	For manifold assembly of 2 or 4 valves 22


Accessories

Manifold block MRS


	Pneumatic connection, port 1	Corrosion resistance class CRC ¹⁾	LABS (PWIS) conformity	Product weight	Part no.	Type
	G3/8	2 - Moderate corrosion stress	VDMA24364-B1/B2-L	365 g	2844247	MRS-2
				650 g	2844348	MRS-4

1) More information www.festo.com/x/topic/crc


Precision pressure gauge MAP (EN 837-1)

	Nominal size of pressure gauge	Pneumatic connection	Indicating range	Product weight	Part no.	Type
	40	R1/8	0 ... 1 bar	60 g	161126	MAP-40-1-1/8-EN
			0 ... 4 bar		162842	MAP-40-4-1/8-EN
			0 ... 6 bar		161127	MAP-40-6-1/8-EN
			0 ... 16 bar		161128	MAP-40-16-1/8-EN

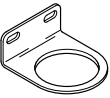
Precision pressure gauge PAGN (EN 837-1)

	Nominal size of pressure gauge	Pneumatic connection	Indicating range	Product weight	Part no.	Type
	40	R1/8	0 ... 10 bar	60 g	2849914	PAGN-40-10-R18-1.6
					2849916	PAGN-40-1M-R18-1.6

Mounting bracket MS4-WR

	Corrosion resistance class CRC	LABS (PWIS) conformity	Note on materials	Product weight	Part no.	Type
	2 - Moderate corrosion stress	VDMA24364-B1/B2-L	RoHS-compliant	49 g	★ 526064	MS4-WR


Mounting bracket HR

	Corrosion resistance class CRC ¹⁾	LABS (PWIS) conformity	Suitability for the production of Li-ion batteries ²⁾	Part no.	Type
	2 - Moderate corrosion stress	VDMA24364-B1/B2-L		159503	HR-1/4-P
	4 - Very high corrosion stress		F1a	8175928	HR-1/4-P-F1A

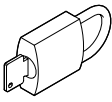
1) More information www.festo.com/x/topic/crc

2) Recommended for production plants for manufacturing lithium-ion batteries. More information www.festo.com/x/topic/bat

Regulator lock LRVS-LRP

	LABS (PWIS) conformity	Product weight	Part no.	Type
	VDMA24364-B1/B2-L	36 g	193785	LRVS-LRP-1/4

Accessories

Padlock LRVS-D						
	Corrosion resistance class CRC ¹⁾	LABS (PWIS) conformity	Note on materials	Product weight	Part no.	Type
	2 - Moderate corrosion stress	VDMA24364-B1/B2-L	RoHS-compliant	120 g	193786	LRVS-D

1) More information www.festo.com/x/topic/crc