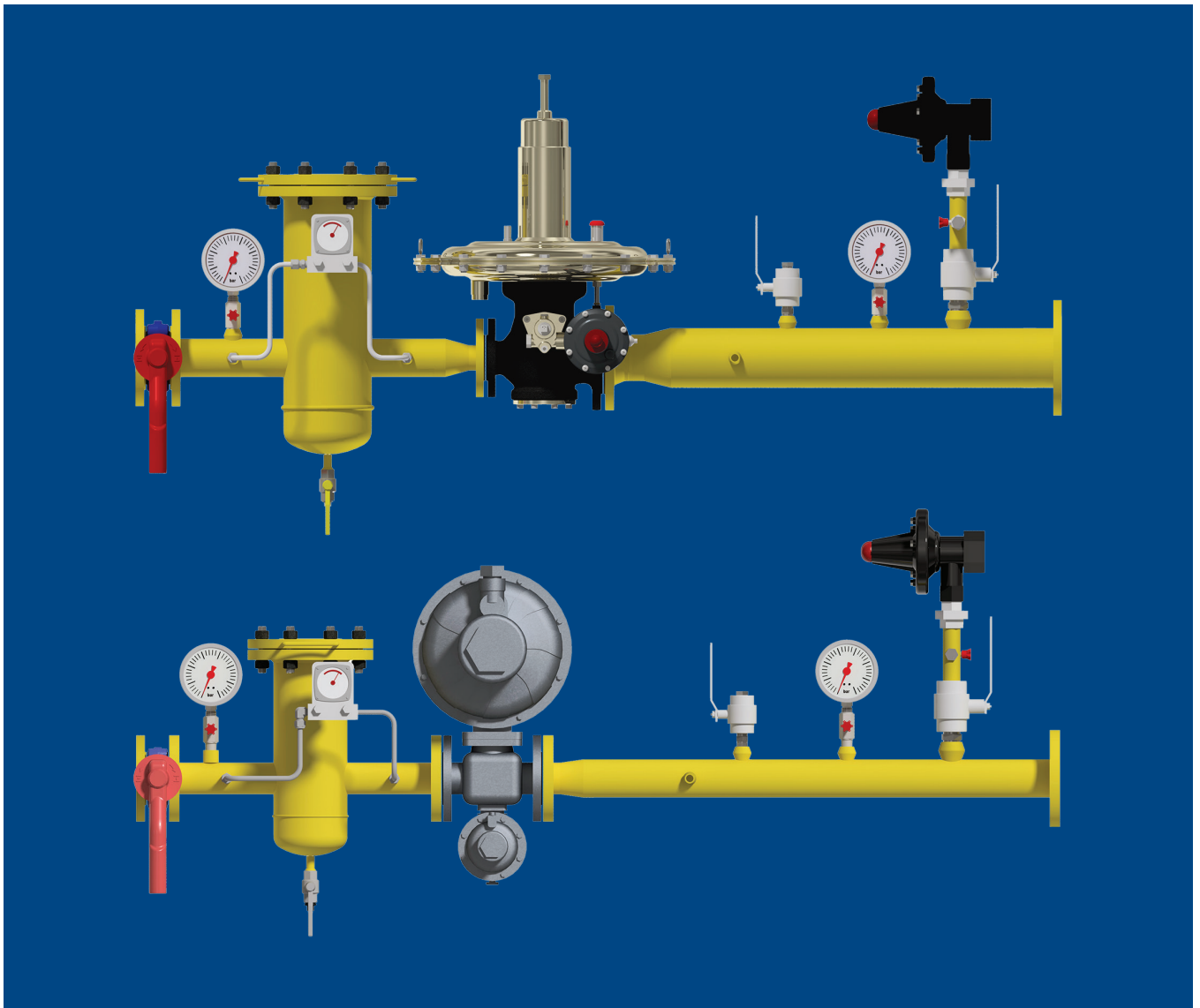


PRESSURE REGULATING LINES

LR Series



LR Series Regulating Lines

Description

LR pressure regulating lines are assembled systems designed to reduce the pressure of natural gas or nitrogen, keeping it at a constant value, and to supply the downstream user with the required flow rate.

The pressure reduction is carried out by spring loaded regulators with counterbalanced shutter and integrated slam shut.

The slam shut valves are safety devices which automatically cut the flow to prevent the pressure in the downstream system from exceeding the permissible values in the event of regulator failure.

When there is a shutoff due to the maximum pressure being reached, the valve remains in closed position and has to be reset manually.

This type of regulator is ideal for applications requiring sudden changes in capacity or where gas shutoff is solenoid controlled as with industrial burners or furnaces.

The lines are equipped with a spring loaded relief valve, installed downstream of the pressure regulator.

Benefits

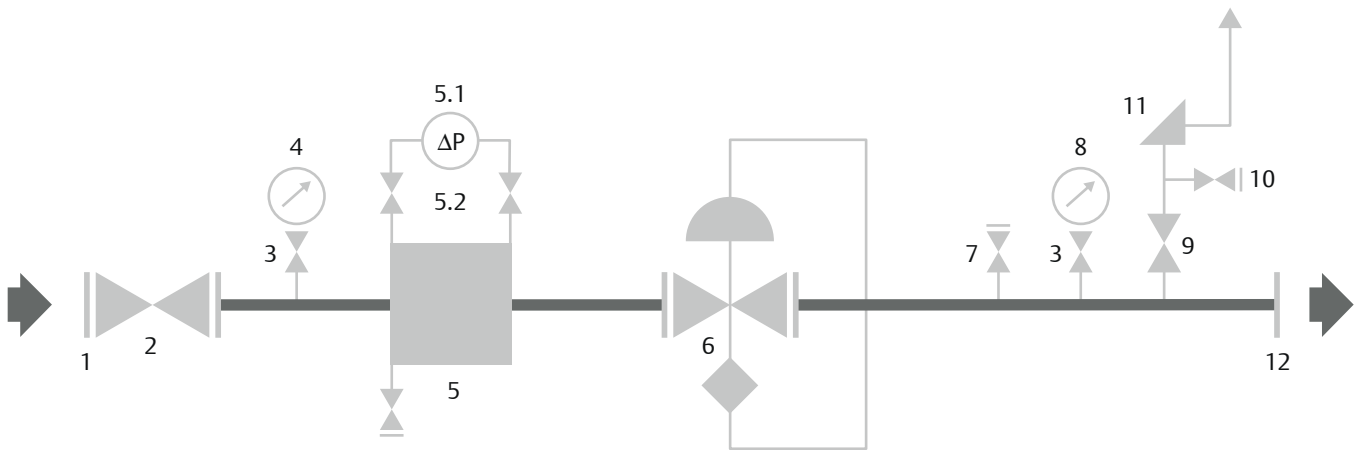
- ***Compact installation***
- ***Stable regulation***
- ***Standardized components and parts***
- ***Plug & play solution***



Pressure Regulator A/149-AP

LR Series Regulating Lines

Flow Diagram



Components

1		Inlet plate flange PN 16 EN 1092-1
2		<p>Steel wafer ball valve DN 25 - 40 PN 16 lever operated</p> <p>Cast-iron butterfly valve lever operated for diameters greater than or equal to DN 50</p>
3		Needle valve for pressure-gauge 1/2"

LR Series Regulating Lines

Components

4		<p>Pressure gauge Ø 100 mm Radial process connection 1/2" GAS-M Range (0-6) bar</p>
5		<p>Cartridge filter - FAG-A series Maximum working pressure: 6 barg Steel body Flanged axial connections PN 16 Complete with drain valve 1/2" GAS-FF Felt cartridge with 5 µm filtering capacity Operating temperature (TS): -10 +60°C</p>
5.1		<p>Clogging indicator type PG/150 Range 0-150 mbar Body: Aluminum Connections: 1/4" NPT with clogging indicator slave pointer</p>
5.2		<p>Three way manifold for clogging indicator</p>
6		<p>Spring loaded pressure regulator with integrated slam shut Type B/249-AP Actuator: Aluminum Body: Cast iron Diaphragm: Fabric NBR nitrile rubber Seals: NBR nitrile rubber Operating temperature (TS): -10 +60°C</p>
6		<p>Spring loaded pressure regulator with integrated slam shut Type CSB404/424 Body: Cast iron Body O-ring: Nitrile (NBR) Covers: Aluminum Diaphragm and Pad: Nitrile (NBR) Operating Temperature (TS): -20 +60°C</p>

LR Series Regulating Lines

6



Spring loaded pressure regulator with integrated slam shut
Type A/149-AP
Actuator: Aluminum
Valve body: Cast iron
Diaphragm: Fabric NBR nitrile rubber
Seals: NBR nitrile rubber
Operating Temperature (TS): -10 +60°C

6



Spring loaded pressure regulator with integrated slam shut
Type CSB624
Body: Cast iron
Body O-ring: Nitrile (NBR)
Covers: Aluminum
Diaphragm and Pad: Nitrile (NBR)
Operating temperature (TS): -20 +60°C

6



Spring loaded pressure regulator with integrated slam shut
Type CSB724
Body: Cast iron
Body O-ring: Nitrile (NBR)
Covers: Aluminum
Diaphragm and Pad: Nitrile (NBR)
Operating temperature (TS): -20 +60°C

6



Spring loaded pressure regulator with integrated slam shut
Type MBN
Flanges and covers: Steel
Diaphragm: Fabric NBR+PVC/nitrile rubber
Pads: NBR nitrile rubber
Operating temperature (TS): -10 +60°C

7



Brass ball valves 1/2" GAS-FF for pressure setting

8



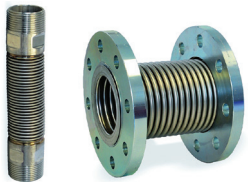
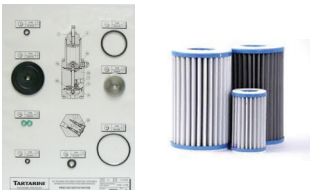
Pressure gauge Ø 100 mm
Radial process connection 1/2" GAS-M
Range depending on the line outlet pressure
0-1 bar; 0-250 mbar; 0-400 mbar; 0-600 mbar

LR Series Regulating Lines

Components

9		Brass ball valves 1" GAS-FF
10		Needle valve 1/2" for relief valve
11		Spring loaded relief valve Type V/51 - V/52 Body/Cover: Aluminum Diaphragm: Fabric NBR nitrile rubber Threaded connections 1" x 1-1/2" GAS-FF Operating temperature (TS): -10 +60°C
12		Outlet spool with plate flange PN 16 EN 1092-1

Options Available on Request

1		Anti-vibration joints with stainless steel bellows (supplied loose) Threaded version MM - 1" and 1 1/2" Version with flanges in carbon steel from DN 50 to DN 200
2		Set of spare parts for preventive maintenance consisting of: <ul style="list-style-type: none"> • Cartridge with 5 μm filtering capacity in felt • Spare parts kit in vacuum blister pack (pressure regulator; slam shut and relief valve)

Technical Features

Working Conditions

Maximum upstream pressure P1 max (barg)	Minimum upstream pressure P1 min (barg)	Downstream pressure P2 (mbarg)
5	0.5	100 150 300 400
	1	
	1.5	
	2	
	3	
	4	

The maximum flow rate of natural gas is given in the tables from page 10 to page 15.

For other gases having different densities, the flow rate indicated in the tables needs to be multiplied by the correction factor F.

Gas	Relative Density d	Factor F
Air	1	0.78
Butane	2.01	0.55
Propane	1.53	0.63
Nitrogen	0.97	0.79

Sizing Criteria (ref: UNI 10619-1 and UNI 10619-2)

- Maximum speed in the line upstream of the regulators: 30 m/sec
- Maximum speed in the line downstream of the regulators: 20 m/sec
- Maximum head loss of the filter: $\leq 5\%$ of P1min at Qmax
- Pressure regulator accuracy class (AC): 10

UNI 10619-1 - "Gas pressure control systems and/or gas measurement installations for inlet pressure up to 12 bar for industrial and domestic use. Part 1: Design, construction and testing - General".

UNI 10619-2 - "Gas pressure control systems and/or gas measurement installations for inlet pressure up to 12 bar for industrial and domestic use. Part 2 - Equipment for gas control".

LR Series Regulating Lines

Technical Features

Piping

- Seamless steel pipe according to ANSI B36.10, material API 5L Gr.B (Sch. Std)
- Cleaned of dirt, refuse, welds spatters by sandblasting SA 2.5

Impulse Lines and Fittings

- Stainless steel (copper only for MBN type regulators) / carbon steel fittings

Flanges

- Plate flange in steel PN 16 EN 1092-1 (where applicable)

Welding Fittings

- According to ANSI B16.9 standard, material ASTM A234 WPB or equivalent

Threaded Accessories

- According to API standard with NPT or GAS threads in ASTM A105 or equivalent

Welding Procedures

- According to EN 15609 or ASME Sect. IX

Welder Qualifications

- According to UNI EN ISO 9606-1 (2013) or ASME Sect. IX

Stud bolts and nuts

- According to UNI 5737/5739 / hot-dip galvanized to UNI 5587 standard

Gaskets / Threaded Connections Seal

- Centellen® (Aramid fiber and NBR) with Teflon tape



Pressure Regulator CSB624

Tests

- Hydrostatic and pneumatic testing in accordance with current regulations

Painting (only for filter and line downstream)

- Sandblasting grade SA 2.5
- First layer: epoxy primer, min. thickness 50 μm
- Second layer: polyurethane paint, min. thickness 30 μm - Yellow RAL 1016

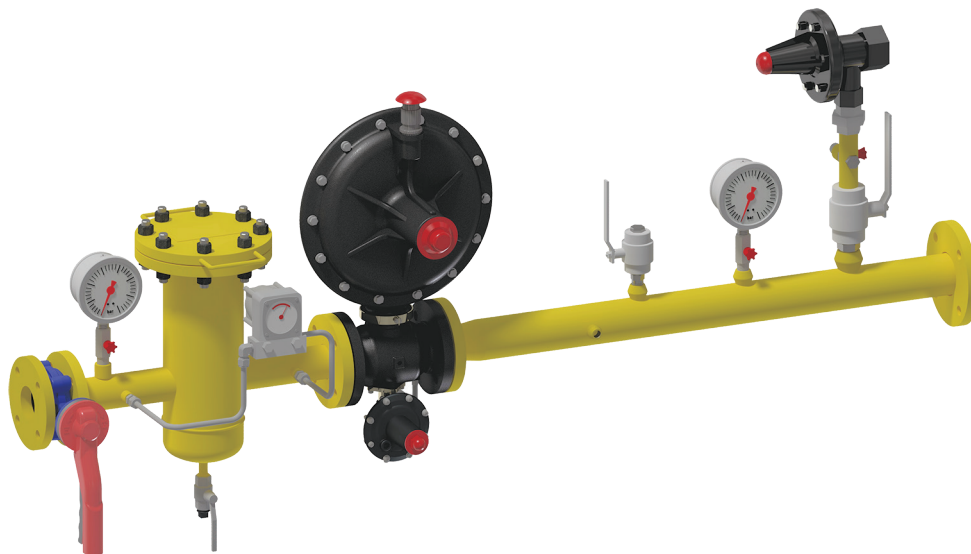
Other components painted according to the manufacturer's standard.

Documentation Included in the Supply (in Italian or English)

- PED declaration of conformity for the equipment (where applicable)
- Declaration of compliance with Italian Ministerial Decree D.M. April 16, 2008
- Drawing in pdf format
- Bill of materials and P&ID
- Equipment instruction manuals

Materials and Services on Request

- Support skid
- Relief valve vent pipe and its support
- Line grounding
- Cabinet
- Start up



LR Line with A/149-AP Pressure Regulator

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 0.5 barg

Table No. 1 - P2: 100 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-001-100	137	40	FAG-A/1	CSB404	DN 40 PN 16	Double	54 - 100	60 - 193	V/51	100 - 200	80
G-002-100	320	50	FAG-A/1.5	A/149-AP	DN 50 PN 16	Internal	90 - 150	80 - 200	V/51	100 - 200	80
G-011-100	401	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-028-100	640	80	FAG-A/2	MBN	DN 40x80 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200
G-014-100	820	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 2 - P2: 150 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-150	120	40	FAG-A/1	B/249-AP-FS	DN 40 PN 16	Internal	120 - 200	130 - 260	V/51	100 - 200	65
G-001-150	143	40	FAG-A/1	CSB424	DN 40 PN 16	Double	100 - 160	95 - 280	V/51	100 - 200	80
G-002-150	320	50	FAG-A/1.5	A/149-AP	DN 50 PN 16	Internal	140 - 240	130 - 260	V/51	100 - 200	80
G-011-150	404	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	105 - 220	95 - 280	V/51	100 - 200	150
G-014-150	760	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	200

Table No. 3 - P2: 300 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-001-300	114	40	FAG-A/1	CSB424	DN 40 PN 16	Double	138 - 300	138 - 500	V/51	180 - 400	80
G-025-300	340	50	FAG-A/1.5	CSB724	DN 40 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	80
G-015-300	400	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-020-300-QG	530	65	FAG-A/2	MBN QG	DN 40x80 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	100
G-014-300-QG	660	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 4 - P2: 400 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-003-400-QL	80	25	FAG-A/0.5	B/249-AP-QL-FS	DN 40 PN 16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-009-400	159	40	FAG-A/1	CSB624	DN 40 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	80
G-016-400-QG	400	65	FAG-A/1.5	MBN QG	DN 40x80 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	80
G-020-400-QG	500	65	FAG-A/2	MBN QG	DN 50x100 PN 16	External	400 - 500	400 - 900	V/51	350 - 800	100
G-026-400-QG	820	80	FAG-A/2	MBN QG	DN 65x100 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	200

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 1 barg

Table No. 5 - P2: 100 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-024-100	306	40	FAG-A/1	CSB624	DN 40 PN 16	External	61 - 110	61 - 110	V/51	100 - 200	80
G-011-100	682	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	61 - 110	61 - 110	V/51	100 - 200	150
G-014-100	1224	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 140	V/51	100 - 200	200

Table No. 6 - P2: 150 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-150	150	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	120 - 200	130 - 260	V/51	100 - 200	65
G-001-150	228	40	FAG-A/1	CSB424	DN 40 PN 16	Double	100 - 160	95 - 280	V/51	100 - 200	80
G-015-150	745	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	105 - 220	95 - 280	V/51	100 - 200	150
G-014-150	1150	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	200

Table No. 7 - P2: 300 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-300	140	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	230 - 320	250 - 600	V/51	180 - 400	65
G-001-300	224	40	FAG-A/1	CSB424	DN 40 PN 16	Double	138 - 300	138 - 500	V/51	180 - 400	80
G-011-300	623	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-021-300	765	65	FAG-A/2	CSB724	DN 50 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-014-300-QG	1150	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 8 - P2: 400 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-400-QL	130	40	FAG-A/0.5	B/249-AP-QL-FS	DN 40 PN 16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-010-400-QL	370	50	FAG-A/1	A/149-AP-QL	DN 50 PN 16	Internal	300 - 500	200 - 600	V/51	350 - 800	100
G-013-400	444	50	FAG-A/1.5	CSB724	DN 40 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	100
G-015-400	694	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	150
G-014-400-QG	880	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	200
G-023-400-QG	1100	80	FAG-A/2.5	MBN QG	DN 65x100 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	250

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 1.5 barg

Table No. 9 - P2: 100 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-024-100	383	40	FAG-A/1	CSB624	DN 40 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	80
G-011-100	898	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-015-100	1000	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-014-100	1450	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 10 - P2: 150 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-031-150	300	40	FAG-A/1	CSB424	DN 40 PN 16	Internal	100-160	95 - 280	V/51	100 - 200	65
G-032-150	600	65	FAG-A/1.5	A/149-AP	DN 50 PN 16	Internal	90-150	130 - 260	V/51	100 - 200	100
G-015-150	997	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	105 - 220	95 - 280	V/51	100 - 200	150
G-014-150	1450	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	200

Table No. 11 - P2: 300 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-300	200	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	230 - 320	250 - 600	V/51	180 - 400	65
G-007-300	525	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	250 - 320	250 - 600	V/51	180 - 400	150
G-011-300	866	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-015-300	1000	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-014-300-QG	1450	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 12 - P2: 400 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-400-QL	180	40	FAG-A/0.5	B/249-AP-QL-FS	DN40 PN16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-008-400	520	50	FAG-A/1	CSB624	DN40 PN16	External	320 - 570	221 - 760	V/51	350 - 800	100
G-013-400	598	50	FAG-A/1.5	CSB724	DN40 PN16	External	320 - 570	221 - 760	V/51	350 - 800	100
G-015-400	946	65	FAG-A/1.5	CSB724	DN50 PN16	External	320 - 570	221 - 760	V/51	350 - 800	150
G-014-400-QG	1450	80	FAG-A/2	MBN QG	DN50x100 PN16	Internal	400 - 500	400 - 900	V/51	350 - 800	200

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 2 barg

Table No. 13 - P2: 100 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-100	240	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	78 - 120	80 - 200	V/51	100 - 200	65
G-001-100	373	40	FAG-A/1	CSB404	DN 40 PN 16	Double	54 - 100	60 - 193	V/51	100 - 200	80
G-017-100	750	65	FAG-A/1.5	A/149-AP	DN 50 PN 16	Internal	90 - 150	80 - 200	V/51	100 - 200	100
G-012-100	1300	80	FAG-A/1.5	MBN	DN 40x80 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	150
G-014-100	1700	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 14 - P2: 150 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-150	240	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	120 - 200	130 - 260	V/51	100 - 200	65
G-001-150	354	40	FAG-A/1	CSB424	DN 40 PN 16	Internal	100 - 160	95 - 280	V/51	100 - 200	80
G-011-150	779	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	105 - 220	95 - 280	V/51	100 - 200	150
G-012-150	1300	80	FAG-A/1.5	MBN	DN 40x80 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	150
G-014-150	1700	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	200

Table No. 15 - P2: 300 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-300	220	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	230 - 320	250 - 600	V/51	180 - 400	65
G-024-300	372	40	FAG-A/1	CSB624	DN 40 PN 16	Internal	210 - 380	138 - 500	V/51	180 - 400	80
G-007-300	700	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	250 - 320	250 - 600	V/51	180 - 400	150
G-015-300	930	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-012-300-QG	1300	80	FAG-A/1.5	MBN QG	DN 40x80 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	150
G-014-300-QG	1700	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 16 - P2: 400 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-400-QL	200	40	FAG-A/0.5	B/249-AP-QL-FS	DN 40 PN 16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-010-400-QL	600	50	FAG-A/1	A/149-AP-QL	DN 50 PN 16	Internal	300 - 500	200 - 600	V/51	350 - 800	100
G-015-400	1192	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	150
G-018-400-QG	1300	80	FAG-A/1.5	MBN QG	DN 40x80 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	150
G-014-400-QG	1700	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	200

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 3 barg

Table No. 17 - P2: 100 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-100	290	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	78 - 120	80 - 200	V/51	100 - 200	65
G-024-100	478	40	FAG-A/1	CSB624	DN 40 PN 16	Internal	61 - 110	60 - 193	V/51	100 - 200	80
G-007-100	800	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	90 - 150	80 - 200	V/51	100 - 200	150
G-011-100	1467	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-014-100	2300	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 18 - P2: 150 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-100	290	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	120 - 200	130 - 260	V/51	100 - 200	65
G-007-150	800	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	140 - 240	130 - 260	V/51	100 - 200	150
G-011-150	1455	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	105 - 220	95 - 280	V/51	100 - 200	150
G-014-150	2300	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	140 - 200	130 - 260	V/51	100 - 200	200

Table No. 19 - P2: 300 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-300	290	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	230 - 320	250 - 600	V/51	180 - 400	65
G-024-300	552	40	FAG-A/1	CSB624	DN 40 PN 16	Internal	210 - 380	138 - 500	V/51	180 - 400	80
G-007-300	750	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	250 - 320	250 - 600	V/51	180 - 400	150
G-011-300	1461	65	FAG-A/1.5	CSB724	DN 40 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-029-300-QG	1800	80	FAG-A/2	MBN QG	DN 40x80 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200
G-014-300-QG	2300	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 20 - P2: 400 mbarg											
Type	Qmax (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-400-QL	260	40	FAG-A/0.5	B/249-AP-QL-FS	DN 40 PN 16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-010-400-QL	660	50	FAG-A/1	A/149-AP-QL	DN 50 PN 16	Internal	300 - 500	200 - 600	V/51	350 - 800	100
G-015-400	1600	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	150
G-029-400-QG	1800	80	FAG-A/2	MBN QG	DN 40x80 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	200
G-030-400-QG	2300	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	400 - 500	400 - 900	V/51	350 - 800	200

LR Series Regulating Lines

Flow Rate Tables - P1 max/min: 5 / 4 barg

Table No. 21 - P2: 100 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-100	300	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	78 - 120	80 - 200	V/51	100 - 200	65
G-007-100	900	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	90 - 150	80 - 200	V/51	100 - 200	150
G-027-100	1600	65	FAG-A/1.5	CSB624	DN 50 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-014-100	2800	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 22 - P2: 150 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-004-100	300	40	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	78 - 120	80 - 200	V/51	100 - 200	65
G-007-100	900	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	90 - 150	80 - 200	V/51	100 - 200	150
G-027-100	1600	65	FAG-A/1.5	CSB624	DN 50 PN 16	External	61 - 110	60 - 193	V/51	100 - 200	150
G-014-100	2800	80	FAG-A/2	MBN	DN 50x100 PN 16	Internal	80 - 140	80 - 200	V/51	100 - 200	200

Table No. 23 - P2: 300 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-003-300	300	25	FAG-A/0.5	B/249-AP-FS	DN 40 PN 16	Internal	230 - 320	250 - 600	V/51	180 - 400	65
G-007-300	850	50	FAG-A/1	A/149-AP	DN 50 PN 16	Internal	250 - 320	250 - 600	V/51	180 - 400	150
G-027-300	1600	65	FAG-A/1.5	CSB624	DN 50 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-019-300	1911	65	FAG-A/2	CSB724	DN 40 PN 16	External	210 - 380	138 - 500	V/51	180 - 400	150
G-014-300-QG	2800	80	FAG-A/2	MBN QG	DN 50x100 PN 16	Internal	200 - 320	200 - 600	V/51	180 - 400	200

Table No. 24 - P2: 400 mbarg											
Type	Q _{max} (Stm ³ /h)	DN Inlet (mm)	Filter	Regulator					Relief valve		DN Outlet (mm)
				Model	Connections	Impulse	Spring (mbarg)	OPSO Spring (mbarg)	Model	Spring (mbarg)	
G-003-400-QL	280	25	FAG-A/0.5	B/249-AP-QL-FS	DN 40 PN 16	Internal	390 - 520	200 - 600	V/51	350 - 800	65
G-010-400-QL	770	50	FAG-A/1	A/149-AP-QL	DN 50 PN 16	Internal	300 - 500	200 - 600	V/51	350 - 800	100
G-015-400	1900	65	FAG-A/1.5	CSB724	DN 50 PN 16	External	320 - 570	221 - 760	V/51	350 - 800	150
G-014-400-QG	2800	80	FAG-A/2	MBN QG	DN 65x100 PN 16	External	400 - 500	400 - 900	V/51	350 - 800	200

✉ Webadmin.Regulators@emerson.com

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🌐 LinkedIn.com/company/emerson-automation-solutions

🐦 Twitter.com/emr_automation

Emerson Automation Solutions Regulator Technologies

America

McKinney, Texas 75070 USA

T +1 800 558 5853

+1 972 548 3574

Europe

Bologna 40013, Italy

T +39 051 419 0611

Asia

Singapore 128461, Singapore

T +65 6770 8337

Middle East and Africa

Dubai, United Arab Emirates

T +971 4 811 8100

Emerson Process Management s.r.l.

Emerson Automation Solutions - Stabilimento di/Site of: Castel Maggiore - Bologna

Sede Legale/Legal Entity: Piazza Meda 5, 20121 Milano, Italy

Sede Amministrativa/Administrative Headquarters: OMT Tartarini, Via Clodoveo Bonazzi 43,

40013 Castel Maggiore (Bologna), Italy

Tax ID code - VAT No. and Companies Register of Milan No. 13186130152 -

Economic and Administrative Index of Milan/No.1622916

Mgt. and Coord. (art. 2497 bis of the Italian Civil Code):

EMERSON ELECTRIC CO. St. Louis (USA) Single Shareholder

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