

Introduction

This installation guide provides instructions for installation, startup, and adjustment. To receive a copy of the instruction manual, contact your local Sales Office or view a copy at www.emersonprocess.com/regulators. For further information refer to: 630 Series Instruction Manual, form 1243, D100300X012.

Installation



WARNING

Only qualified personnel should install or service a regulator. Regulators should be installed, operated, and maintained in accordance with international and applicable codes and regulations, and Emerson Process Management Regulator Technologies, Inc. instructions.

If the regulator vents fluid or a leak develops in the system, it indicates that service is required. Failure to take the regulator out of service immediately may create a hazardous condition.

Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this regulator is overpressured or is installed where service conditions could exceed the limits given in the Specifications section, or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the regulator could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the regulator in a safe location.

Clean out all pipelines before installation of the regulator and check to be sure the regulator has not been damaged or has collected foreign material during shipping. For NPT bodies, apply pipe compound to the external pipe threads. Install the regulator in any position desired, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

Vents



WARNING

When the unit is installed in an enclosed area or indoors, escaping gas may accumulate and be an explosion hazard. Under these conditions the vent should be piped away from the unit to a freely ventilated outdoor location away from air intakes, windows, etc. Protect all vent openings against weather or the entrance of any foreign material that may plug the vent or affect operation of the regulator or relief valve. Inspect all vent openings periodically to be sure they are not plugged. If the vent is in an environment where freezing rain, ice, or snow could clog the vent, it is recommended that a weatherproof vent be used.

Spring-loaded constructions have a screened vent assembly (key 27) installed in the 1/4 NPT spring case vent opening. If a remote vent is required, remove the vent assembly and install a remote vent line.

Overpressure Protection

The recommended pressure limitations are stamped on the regulator nameplate. Some type of overpressure protection is needed if the actual inlet pressure exceeds the maximum operating outlet pressure rating. Overpressure protection should also be provided if the regulator inlet pressure is greater than the safe working pressure of the downstream equipment.



630 Series

Specifications

Available Configurations

Type 630: Spring-loaded reducing regulators

Type 630R: Spring-loaded relief valves

Body Size and End Connection Style

1 or 2 NPT

Maximum Allowable Inlet Pressures⁽¹⁾

Type 630 Regulators: See Table 1

Type 630R Relief Valves: See Table 3

Outlet Pressure Ranges⁽¹⁾

3 to 500 psig (0,21 to 34,5 bar) with intermediate values shown in Table 2

Maximum Allowable Outlet Pressures⁽¹⁾

See Table 2

Maximum Allowable Pressure Drops⁽¹⁾

See Table 1

Temperature Capabilities⁽¹⁾

Standard: -20° to 150°F (-29° to 66°C)

Optional: -20° to 300°F (-29° to 149°C)

Orifice Sizes

1/8-inch (3,2 mm), 3/16-inch (4,8 mm),

1/4-inch (6,4 mm), 3/8-inch (9,5 mm),

or 1/2-inch (13 mm)

1. The pressure/temperature limits in this installation guide or any applicable standard limitation should not be exceeded.

Table 1. Maximum Allowable Inlet Pressures and Pressure Drops. Maximum inlet pressure not to exceed 1500 psig (103 bar).

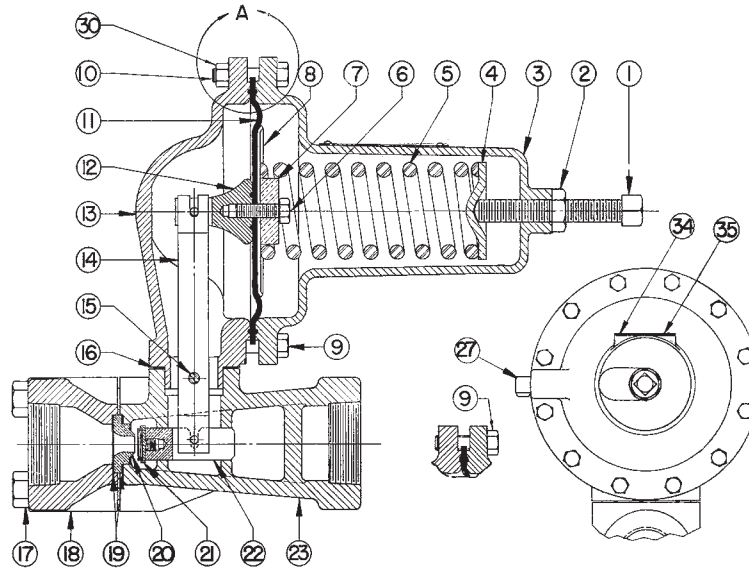
DISK MATERIAL	ORIFICE SIZE, INCHES (mm)			
	1/8 and 3/16 (3,2 and 4,8)	1/4 (6,4)	3/8 (9,5)	1/2 (13)
Nylon (PA) and Polytetrafluoroethylene (PTFE)	1500 (103)	1000 (69)	500 (34,5)	250 (17,2)
Nitrile ⁽²⁾ (NBR)	600 (41,4)	600 (41,4)	500 (34,5)	250 (17,2)
Fluorocarbon (FKM)	200 (13,8)	200 (13,8)	200 (13,8)	200 (13,8)
MAXIMUM ALLOWABLE INLET PRESSURE, Psig (bar)	1500 (103) ⁽¹⁾	1500 (103) ⁽¹⁾	1000 (68,9) ⁽¹⁾	750 (51,8) ⁽¹⁾

1. Inlet pressure must not exceed the sum of the actual outlet pressure setting and the maximum allowable pressure drop. For example, with an outlet pressure setting of 200 psig (13,8 bar) and a 3/8-inch (9,5 mm) orifice with a maximum allowable pressure drop of 500 psi (34,5 bar, differential), the maximum allowable inlet pressure is 700 psig (48,3 bar).
 2. Nitrile (NBR) valve disks are normally furnished for pressure drops to 200 psi (13,8 bar, differential). For better erosion resistance, Nylon (PA) valve disks are normally furnished for higher pressure drops. Some erosion of valve disks occurs at all pressure drops due to solid particles in the flow stream. The rate of erosion is higher with large amounts of impurities in the flow stream and with high-pressure drops. Valve disks and other regulator parts must be inspected periodically for erosion and damage and must be replaced as necessary.

Table 2. Maximum Outlet Pressures

REGULATOR CONSTRUCTION	OUTLET PRESSURE RANGE, PSIG (bar)	SPRING PART NUMBER	MAXIMUM OPERATING OUTLET PRESSURE, PSIG (bar)	MAXIMUM OUTLET PRESSURE OVER SETPOINT ⁽¹⁾ , PSIG (bar)	MAXIMUM EMERGENCY OUTLET (CASING) PRESSURE ⁽⁴⁾ , PSIG (bar)
Low-Pressure	3 to 10 (0,21 to 0,69)	0W019227022	10 (0,69)	20 (1,4)	45 (3,1)
	8 to 20 (0,55 to 1,4)	0W019127022	20 (1,4)		
	17 to 30 (1,2 to 2,1)	0W019027022	30 (2,1)	20 ⁽²⁾ (1,4)	
	27 to 40 (1,9 to 2,8)	0Y0664000A2	40 (2,8)	Limited by Maximum Emergency Outlet Pressure	
High-Pressure	27 to 50 (1,9 to 3,5)	0W019227022	50 (3,5)	200 (13,8)	550 (37,9)
	46 to 95 (3,2 to 6,6)	0W019127022	95 (6,6)		
	90 to 150 (6,2 to 10,3)	0W019027022	150 (10,3)		
	150 to 200 (10,3 to 13,8)	0Y0664000A2	200 (13,8)		
	200 to 275 (13,8 to 19,0)	1J146927142	275 (19,0)		
275 to 500 (19,0 to 34,5)	1K370927082	500 (34,5)	200 ⁽³⁾ (13,8)		

1. Damage to internal parts of the regulator may occur if outlet pressure exceeds the actual pressure setting by amounts greater than those shown in this column.
 2. For outlet pressure settings to 25 psig (1,7 bar) only. For pressure settings over 25 psig (1,7 bar), outlet pressure is limited by maximum emergency outlet pressure of 45 psig (3,1 bar).
 3. For outlet pressure settings to 350 psig (24,2 bar) only. For pressure settings over 350 psig (24,2 bar), outlet pressure is limited by maximum emergency outlet pressure of 550 psig (37,9 bar).
 4. Leakage or bursting of pressure containing parts may occur if outlet pressure exceeds these values.



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Figure 1. Spring-Loaded Type 630 Regulator - Low-Pressure Construction

Table 3. Outlet Pressure Ranges

REGULATOR CONSTRUCTION	RELIEF (INLET) PRESSURE SETTINGS, PSIG (bar)	PART NUMBER	MAXIMUM ALLOWABLE RELIEF (INLET) PRESSURE, PSIG (bar)	MAXIMUM EMERGENCY INLET (CASING) PRESSURE ⁽¹⁾ , PSIG (bar)
Low-Pressure	3 to 8 (0,21 to 0,55)	0W019227022	Relief Pressure Setting Plus Maximum Allowable Build-up of 25 psig (1,7 bar)	75 (5,2)
	6 to 17 (0,41 to 1,1)	0W019127022		
	15 to 22 (1,0 to 1,5)	0W019027022		
	20 to 35 (1,4 to 2,4)	0Y066427022		
	27 to 50 (1,9 to 3,5)	1J146927142		
High-Pressure	30 to 70 (2,0 to 4,8)	0W019127022	Relief Pressure Setting Plus Maximum Allowable Build-up of 250 psig (17 bar)	550 (38,0)
	50 to 95 (3,5 to 6,5)	0W019027022		
	75 to 175 (5,2 to 12,1)	0Y066427022		
	150 to 250 (10,4 to 17,3)	1J146927142		

1. Leakage or bursting of pressure-containing parts may occur if inlet pressure exceeds these values.

Regular operation below the maximum pressure limitations does not preclude the possibility of damage from external sources or debris in the line. The regulator should be inspected for damage after any overpressure condition.

Startup

The regulator is factory set at approximately the midpoint of the spring range or the pressure requested, so an initial adjustment may be required to give the desired results. With proper installation completed and relief valves properly adjusted, slowly open the upstream and downstream shutoff valves.

Adjustment

To change the outlet pressure, remove the closing cap or loosen the locknut and turn the adjusting screw clockwise to increase outlet pressure or counterclockwise to decrease pressure. Monitor the outlet pressure with a test gauge during the adjustment. Replace the closing cap or tighten the locknut to maintain the desired setting.

Taking Out of Service (Shutdown)



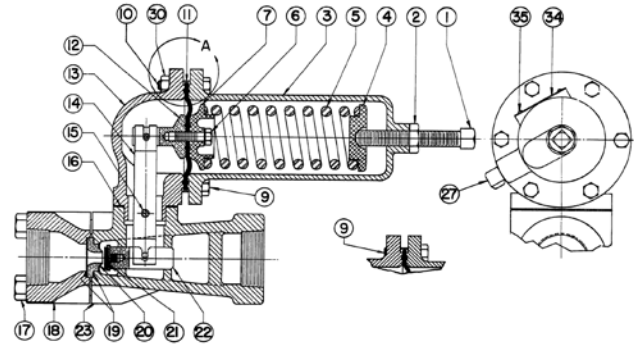
To avoid personal injury resulting from sudden release of pressure, isolate the regulator from all pressure before attempting disassembly.

630 Series

Parts List

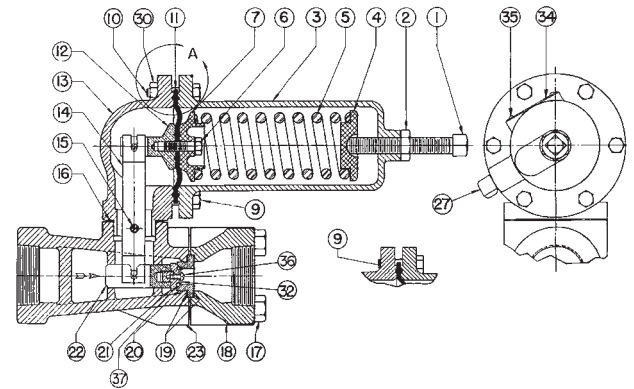
Key Description

1	Adjusting Screw
2	Hex Nut
3	Spring Case
4	Upper Spring Seat
5	Spring
6	Cap Screw
7	Lower Spring Seat
8	Diaphragm Plate
9	Cap Screw
10	Cap Screw
11	Diaphragm
12	Connector Head Assembly
13	Diaphragm Adaptor
14	Lever Assembly
15	Pin
16	Gasket
17	Cap Screw
18	Inlet Adaptor
19	Inlet Body Gasket (2 required)
20	Orifice
21	Valve Disk Assembly Type 630 only
21	O-Ring Holder (Type 630R only)
22	Valve Carrier
23	Body
27	Vent Assembly, Type Y602-12
31	Cap Screw (2 required) (not shown)
32	O-Ring Washer (Type 630R only)
33	Plug (not shown)
34	Nameplate
35	Drive Screw (4 required)
36	Machine Screw (Type 630R only)
37	O-Ring (Type 630R only)
52	NACE Tag (not shown)
53	Tag Wire (not shown)



CB2197-E

Figure 2. Spring Loaded Type 630 Regulator - High-Pressure Construction



CD3355-E

Figure 3. Spring-Loaded Type 630R Relief Valve High-Pressure Construction

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