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.fisher.com. For further information refer to: 627 Series Instruction Manual, D101328X012.

PED/PE(S)R Categories

This product may be used as a safety accessory with pressure equipment in the following categories. It may also be used outside of these Directives using Sound Engineering Practice (SEP) per table below. For information on the current PED/PE(S)R revision, see Bulletin: *D103053X012*.

PRODUCT SIZE	CATEGORY	FLUID TYPE
DN 20 to 25 / NPS 3/4 to 1	SEP	1
DN 50 / NPS 2	II	

Specifications

Available Constructions

Type 627: Direct-operated pressure reducing regulator equipped with a pitot tube for greater regulated capacities.

Type 627R: Type 627 with internal relief and with an open throat.

Type 627LR: Type 627R with light rate relief spring

Type 627M: Type 627 with a stem seal between the body outlet pressure and diaphragm case. Pressure is measured under the diaphragm through the 1/4 NPT downstream control line connection.

Type 627MR: Type 627M with internal relief.

Type 627H: Type 627 with a diaphragm limiter to deliver a higher outlet pressure.

Type 627HM: Type 627H with a stem seal between the body outlet pressure and diaphragm case. Pressure is measured under the diaphragm through the 1/4 NPT downstream control line connection.

Body Sizes and End Connection Styles(1)

BODY SIZE		END CONNECTION STYLE	CONSTRUCTION AVAILABLE
DN	NPS		
- - - -	3/4	NPT	All
25	1	NPT, CL150 RF, CL300 RF, CL600 RF and Long Body	
50	2	NPT, CL150 RF, CL300 RF, CL600 RF and Long Body	

Proof Test Pressure

All Pressure Retaining Components have been proof tested per Pressure Equipment Directive and Pressure Equipment (Safety) Regulation.

Maximum Inlet Pressure(1) (Body Rating)

NPT Stainless Steel: 138 bar / 2000 psig
Flanged Stainless Steel: 99.3 bar / 1440 psig
NPT Steel: 138 bar / 2000 psig
Flanged Steel: 103 bar / 1500 psig
Ductile Iron: 69.0 bar / 1000 psig

Maximum Valve Disk Inlet Pressure Rating(1)

Nylon (PA) Disk: 138 bar / 2000 psig
Nitrile (NBR) Disk: 69.0 bar / 1000 psig
Fluorocarbon (FKM) Disk: 20.7 bar / 300 psig

Maximum Operating Inlet Pressure, Pressure Differential and Outlet Pressure Ranges(1)

See Table 1 for pressures by orifice size and spring range

Maximum Spring and Diaphragm Casing Pressure(1)

See Table 2

Maximum Body Outlet Pressure(1)(2) (Types 627M, 627MR and 627HM Only)

NPT Steel: 138 bar / 2000 psig
Flanged Steel: 103 bar / 1500 psig
Ductile Iron: 69.0 bar / 1000 psig

Elastomer Temperature Capabilities(1)(3)

MATERIAL	DISK/ DIAPHRAGM	TEMPERATURE	
		°C	°F
Nitrile (NBR)	Disk	-40 to 82	-40 to 180
	Diaphragm		
Fluorocarbon (FKM)	Disk	-18 to 82	0 to 180
	Diaphragm		
Nylon (PA)	Disk	-40 to 82	-40 to 180
Neoprene (CR) for Types 627H and 627HM only	Diaphragm	-40 to 82	-40 to 180

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 and Tables 1 and 2 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.

1. The pressure/temperature limits in this Installation Guide and any applicable standard or code limitation should not be exceeded.
2. Types 627, 627H, 627R and 627LR are limited by maximum diaphragm casing pressure.
3. Stainless steel body is rated to -40°C / -40°F. Steel and Ductile Iron bodies are rated to -29°C / -20°F.

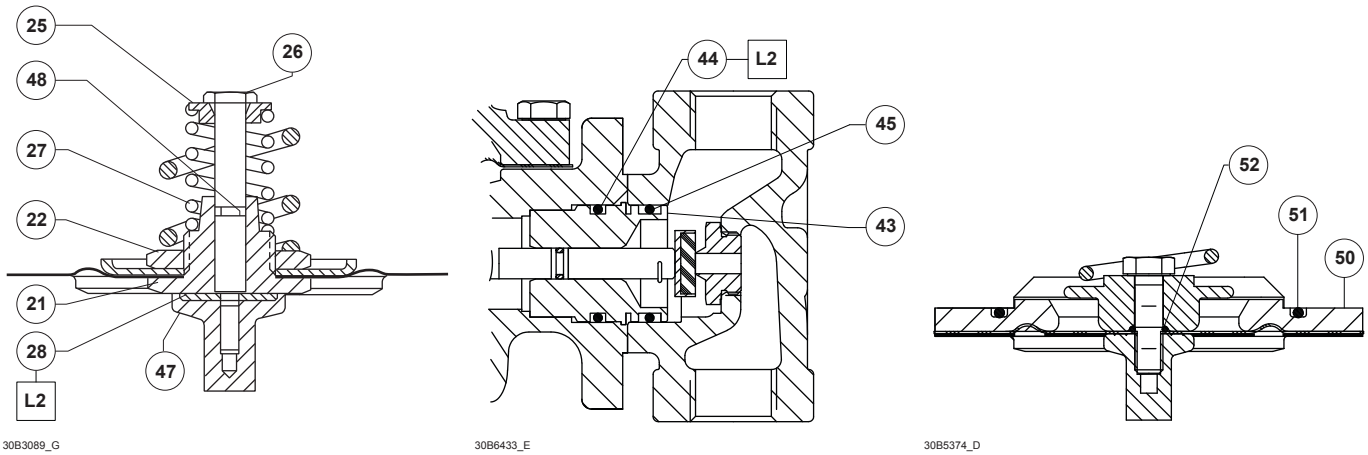
Table 1. *Maximum Inlet Pressures and Outlet Pressure Ranges*

TYPE	OUTLET PRESSURE RANGE, SPRING PART NUMBER AND COLOR CODE	ORIFICE SIZE		MAXIMUM INLET PRESSURE[1]					
				Nylon (PA) Disk		Nitrile (NBR) Disk		Fluorocarbon (FKM) Disk	
		mm	In.	bar	psig	bar	psig	bar	psig
627 and 627M[3]	0.34 to 1.4 bar / 5[2] to 20 psig 10B3076X012 Yellow	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 69.0 51.7 34.5 20.7 17.2	2000 1000 750 500 300 250	69.0 69.0 51.7 34.5 20.7 17.2	1000 1000 750 500 300 250	20.7 20.7 20.7 20.7 20.7 17.2	300 300 300 300 300 250
	1.0 to 2.8 bar / 15 to 40 psig 10B3077X012 Green	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 103 69.0 51.7 34.5 20.7	2000 1500 1000 750 500 300	69.0 69.0 69.0 51.7 34.5 20.7	1000 1000 1000 750 500 300	20.7 20.7 20.7 20.7 20.7 20.7	300 300 300 300 300 300
	2.4 to 5.5 bar / 35 to 80 psig 10B3078X012 Blue	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 138 121 103 69.0 51.7	2000 2000 1750 1500 1000 750	69.0 69.0 69.0 69.0 69.0 51.7	1000 1000 1000 1000 1000 750	20.7 20.7 20.7 20.7 20.7 20.7	300 300 300 300 300 300
	4.8 to 10.3 bar / 70 to 150 psig 10B3079X012 Red	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 138 138 121 86.2 51.7	2000 2000 2000 1750 1250 750	69.0 69.0 69.0 69.0 69.0 51.7	1000 1000 1000 1000 1000 750	20.7 20.7 20.7 20.7 20.7 20.7	300 300 300 300 300 300
627R and 627MR	0.34 to 1.4 bar / 5[2] to 20 psig 10B3076X012 Yellow	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 69.0 51.7 34.5 20.7 13.8	2000 1000 750 500 300 200	69.0 69.0 51.7 34.5 20.7 13.8	1000 1000 750 500 300 200	20.7 20.7 20.7 20.7 20.7 13.8	300 300 300 300 300 200
	1.0 to 2.8 bar / 15 to 40 psig 10B3077X012 Green	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 103 69.0 51.7 20.7 13.8	2000 1500 1000 750 300 200	69.0 69.0 69.0 51.7 20.7 13.8	1000 1000 1000 750 300 200	20.7 20.7 20.7 20.7 20.7 13.8	300 300 300 300 300 200
	2.4 to 5.5 bar / 35 to 80 psig 10B3078X012 Blue	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 121 69.0 51.7 20.7 13.8	2000 1750 1000 750 300 200	69.0 69.0 69.0 51.7 20.7 13.8	1000 1000 1000 750 300 200	20.7 20.7 20.7 20.7 20.7 13.8	300 300 300 300 300 200
	4.8 to 10.3 bar / 70 to 150 psig 10B3079X012 Red	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 69.0 34.5 20.7 13.8 13.8	2000 1000 500 300 200 200	69.0 69.0 34.5 20.7 13.8 13.8	1000 1000 500 300 200 200	20.7 20.7 20.7 20.7 13.8 13.8	300 300 300 300 200 200
627LR	1.0 to 2.8 bar / 15 to 40 psig 10B3077X012 Green	2.4 3.2 4.8 6.4	3/32 1/8 3/16 1/4			69.0 69.0 51.7 34.5	1000 1000 750 500	20.7 20.7 20.7 20.7	300 300 300 300
627H and 627HM[3]	9.7 to 17.2 bar / 140 to 250 psig 10B3078X012 Blue	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 138 121 103 69.0 51.7	2000 2000 1750 1500 1000 750	69.0 69.0 69.0 69.0 51.7 34.5	1000 1000 1000 1000 750 500		
	16.5 to 34.5 bar / 240 to 500 psig 10B3079X012 Red	2.4 3.2 4.8 6.4 9.5 13	3/32 1/8 3/16 1/4 3/8 1/2	138 138 121 103 69.0 51.7	2000 2000 1750 1500 1000 750	69.0 69.0 69.0 69.0 69.0 51.7	1000 1000 1000 1000 1000 750		

- Shaded areas indicate that Fluorocarbon (FKM) and Nylon (PA) disk material are not available.

1. For inlet pressure in excess of 69.0 bar / 1000 psig, refer to the maximum body and disk pressure ratings in the Specifications section.
2. For pressure settings under 0.69 bar / 10 psig, inlet pressure should be limited to approximately 6.9 bar / 100 psig so the setpoint adjustment can be obtained.
3. The unbalance forces change from the wide-open monitor mode to an active regulator mode such that the Type 627M or 627HM should have a 9.5 mm / 3/8 in. or larger orifice.

Clean out all pipelines before installation of the regulator and check to be sure the regulator has not been damaged or has not collected foreign material during shipping. For threaded NPT bodies, apply pipe compound to the external pipe threads. For flanged bodies, use suitable line gaskets and approved piping and bolting practices. 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.



☐ **APPLY LUBRICANT(1)**
L2 = EXTREME LOW-TEMPERATURE BEARING GREASE
1. Lubricant must be selected such that they meet the temperature requirements.

Figure 1. *627 Series Regulator Components*

Table 2. *Maximum Spring and Diaphragm Casing Pressure(1)*

MAXIMUM PRESSURE DESCRIPTION	DIAPHRAGM CASING MATERIAL	TYPE 627		TYPES 627R AND 627LR		TYPE 627M		TYPE 627MR		TYPES 627H AND 627HM	
		bar	psig	bar	psig	bar	psig	bar	psig	bar	psig
Maximum pressure to spring and diaphragm casings to prevent leak to atmosphere other than relief action (internal parts damage may occur)	Die cast aluminum	17.2	250	17.2	250	Not Available		Not Available		Not Available	
	Ductile iron					17.2	250				
	Steel or Stainless steel							17.2	250	55.2	800
Maximum pressure to spring and diaphragm casings to prevent burst of casings during abnormal operation (leak to atmosphere and internal parts damage may occur)	Die cast aluminum	25.9	375	25.9	375	Not Available		Not Available		Not Available	
	Ductile iron	32.1	465	32.1	465	32.1	465	32.1	465		
	Steel or Stainless steel	103	1500	103	1500	103	1500	103	1500	103	1500
Maximum diaphragm casing overpressure (above setpoint) to prevent damage to internal parts	All materials	4.1	60	8.3	120	4.1	60	8.3	120	8.3	120

1. If the spring case is pressurized, a metal adjusting screw cap is required. Contact your local Sales Office for details.

Note

It is important that the regulator be installed so that the vent hole in the spring case is unobstructed at all times. For outdoor installations, the regulator should be located away from vehicular traffic and positioned so that water, ice and other foreign materials cannot enter the spring case through the vent. Avoid placing the regulator beneath eaves or downspouts and be sure it is above the probable snow level.

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.

Regulator 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.

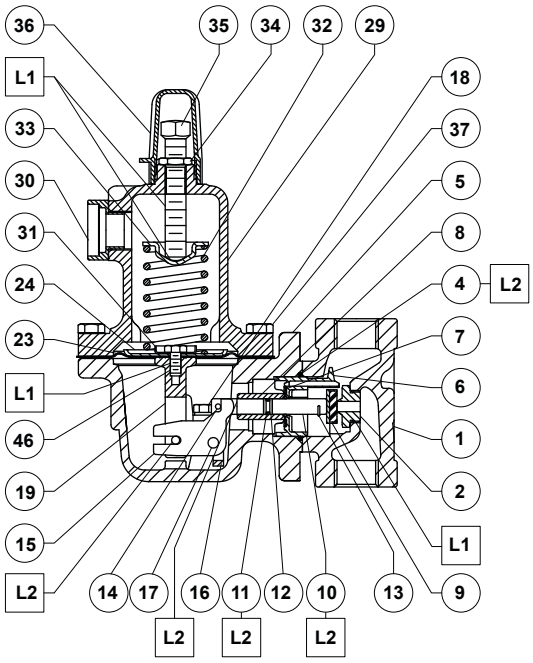
Taking Out of Service (Shutdown)

⚠ WARNING

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

Parts List

Key	Description
1	Body
2	Orifice
3	Cap Screw (not shown)
4	Diaphragm Case O-ring (for Types 627, 627H, 627R and 627LR only)
5	Diaphragm Case
6	Boost Body (not for Type 627M, 627HM or 627MR)
7	Stabilizer (for Types 627, 627H, 627R and 627LR only)
8	Stem Guide (for Types 627, 627H, 627R and 627LR only)
9	Disk Assembly
10	Stem
11	Stem O-ring
12	Stem Back-up Ring
13	Hair Pin Clip
14	Drive Pin
15	Lever
16	Lever Retainer
17	Lever Pin
18	Lever Cap Screw
19	Pusher Post
21	Diaphragm Connector (for Type 627R, 627LR or 627MR only)
22	Diaphragm Connector Nut (for Type 627R, 627LR or 627MR only)
23	Diaphragm
24	Diaphragm Head
25	Relief Spring Seat (for Type 627R or 627MR only)
26	Guide Retainer (for Type 627R, 627LR or 627MR only)
27	Relief Spring (for Type 627R or 627MR only)
28	Relief Seal O-ring (For Type 627R, 627LR or 627MR only)
29	Spring Case
30	Screened Vent Assembly
31	Lower Spring Seat
32	Control Spring
33	Upper Spring Seat
34	Locknut
35	Adjusting Screw
36	Adjusting Screw Cap
37	Spring Case Cap Screw
43	Blocked Throat (for Type 627M, 627HM or 627MR only)
44	Blocked Throat O-ring (For Type 627M, 627HM or 627MR only)
45	Blocked Throat Back-up Ring (for Type 627M, 627HM or 627MR only)
46	Diaphragm Head Cap Screw
47	Relief Seal Retainer (for Type 627R, 627LR or 627MR only)



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☐ **APPLY LUBRICANT(1)**
L1 = MULTI-PURPOSE LITHIUM POLYMER TYPE GREASE
L2 = EXTREME LOW-TEMPERATURE BEARING GREASE
PARTS NOT SHOWN: 3

1. Lubricants must be selected such that they meet the temperature requirements.

Figure 2. *Type 627 Regulator Assembly*

Key	Description
48	Guide Retainer O-ring (for Type 627R, 627LR or 627MR only)
49	Relief Indicator (for Type 627R, 627LR or 627MR only)
50	Diaphragm Limiter (for Types 627H and 627HM only)
51	Diaphragm Limiter O-ring (for Types 627H and 627HM only)
52	Pusher Post O-ring (for Types 627H and 627HM only)
58	Pipe Plug
67	Drive Screw
72	Pipe Plug

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For further information on the current PED/PE(S)R revision see Bulletin: *D103053X012*
or scan the QR code.

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