

F627 High Flow Gas Regulator

The F627 pilot operated pressure reducing regulator provides superior performance when used in fixed-factor billing applications. The Type F627 includes a factory-installed PL81 pilot and has external registration that requires a downstream control line.

Features

- Accurate for Pressure-Factor Measurement Applications** — Pilot action controls pressure to within ± 1 percent of the absolute outlet pressure (PSIA) setting at full travel. This capability results in low-pressure variations over broad flow ranges and inlet pressure ranges.
- Wide Range of Flow Capabilities** — A variety of body and orifice sizes are available.
- Tight Shutoff Capability** — A flat disk of nitrile or fluorocarbon provides excellent shutoff capability.



Materials of Construction

| F627 Main Regulator | |
|--|--|
| Body | Ductile Iron (Standard), Steel, LCC Steel |
| Spring Case and Diaphragm Case | Die Cast Aluminum (standard), or Steel |
| Orifice | Aluminum (Standard) or Stainless Steel |
| Disk Assembly | Aluminum (Standard) or Stainless Steel Holder with Nitrile Disk or Fluorocarbon Disk |
| O-rings and Diaphragm | Nitrile or Fluorocarbon |
| Tension Spring | Plated Steel |
| F627 Pilot Regulator | |
| Body | Aluminum |
| Spring Case | Aluminum |
| Diaphragm | Nylon Fabric Coated with Nitrile or Fluorocarbon |
| Valve Plug | Brass / Nitrile or Fluorocarbon |
| Stem Guide | Brass |
| Control Spring | Zinc Plated Steel |
| Valve Spring Plug | Aluminum |
| Pusher Post and Valve Plug Spring Seat | Aluminum |
| Diaphragm Plate, Spring Guide, and Adjusting Screw | Plated Steel |

Minimum Pressure Differential

| Actuator Spring and (Color Code) | Pilot Control Spring and (Color Code) | |
|----------------------------------|--|---|
| | 5 to 35 PSIG (0.34 to 2.41 bar) (Silver) | 35 to 100 PSIG (0.34 to 2.41 bar) (Red) |
| High Differential (Red) | 20 PSI (1.38 BAR) | 20 PSI (1.38 BAR) |

Specifications

| Outlet Pressure Ranges | | |
|---|--|------------------|
| Outlet | 5 to 35 PSIG | 0.34 to 2.41 BAR |
| | 35 to 100 PSIG | 2.41 to 6.90 BAR |
| Maximum Outlet (Casing) Pressure | 250 PSIG | 17.24 BAR |
| Maximum Inlet Pressure | 250 PSIG (17.2 BAR) for all Type F627's EXCEPT 1/2" Orifice is 125 PSIG (8.62 BAR) | |
| Body Sizes | 3/4 NPT (DN 20) | |
| | 1 NPT (DN 25) | |
| | 2 NPT (DN 50) | |
| Temperature Range | -20° to 180° F | (-29° to 82° C) |
| Weight Approximate | | |
| NPT Body with Ductile Iron or Steel Casings | 13 lbs | 5.9 kg |
| NPT Body with Aluminum Casings | 9.3 lbs | 4.2 kg |
| Flanged Body with Ductile Iron Casings | 18 lbs | 8.16 kg |
| Flanged Body with Ductile Iron Casings | 14 lbs | 6.35 kg |

F627 Part Matrix

| F627 | | | | | | | |
|------------|---|---|---|---|---|---|-------------------------------------|
| ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| | | | | | | | Port Size |
| 06 | | | | | | | 3/4" |
| 08 | | | | | | | 1" |
| 16 | | | | | | | 2" |
| | | | | | | | Spring Range |
| | | | | | | | PSIG BAR |
| 035 | | | | | | | 5 - 35 .34 - 2.4 |
| 100 | | | | | | | 35 - 100 2.4 - 6.9 |
| | | | | | | | Special Construction |
| 0 | | | | | | | None |
| 1 | | | | | | | Filter and Tube** |
| A | | | | | | | 150 #RF* |
| B | | | | | | | 300 #RF* |
| C | | | | | | | 600 #RF* |
| D | | | | | | | Socket Weld* |
| J | | | | | | | 150 #RF* with Filter and Tube |
| K | | | | | | | 300 #RF* with Filter and Tube |
| L | | | | | | | 600 #RF* with Filter and Tube |
| M | | | | | | | Socket Weld* with Filter and Tube |
| | | | | | | | Restrictor Code |
| 1 | | | | | | | High Gain |
| 2 | | | | | | | Medium Gain |
| 3 | | | | | | | Low Gain |
| | | | | | | | Orifice Size |
| 2 | | | | | | | 3/8" X 1/8" |
| 4 | | | | | | | 3/8" X 1/4" |
| 6 | | | | | | | 3/8" |
| 8 | | | | | | | 1/2" |
| | | | | | | | Main Seat and Diaphragm Material |
| 0 | | | | | | | Nitrile (Buna-N) |
| 2 | | | | | | | Fluorocarbon |
| | | | | | | | Trim |
| 1 | | | | | | | Standard (Aluminum) |
| T | | | | | | | Stainless Steel |
| | | | | | | | Casing Material |
| 0 | | | | | | | Aluminum Casing / Iron Body |
| 1 | | | | | | | Steel Casing / Steel Body |
| 2 | | | | | | | Aluminum Casing / Steel Body |
| 6 | | | | | | | Aluminum Casing / LCC Steel Body |
| 7 | | | | | | | Steel Casing / LCC Steel Body |
| 8 | | | | | | | Steel Casing / Iron Body |

* Steel Casing/
Steel Body Only
** Tube connects inlet
to pilot supply

F627 Regulator Rebuild Kits

| | Kit Includes | Part Number |
|-------------------------------------|--|-------------|
| F627 Nitrile Standard Trim | Nitrile diaphragms (2), Nitrile valve disk, O-rings, back-up rings, and retaining pin | 971F62700 |
| F627 Nitrile Stainless Trim | Nitrile diaphragms (2), Nitrile valve disk, O-rings, back-up rings, and retaining pin | 971F62701 |
| F627 Fluorocarbon Standard Trim | Fluorocarbon diaphragms (2), Fluorocarbon valve disk, O-rings, back-up rings, and retaining pin | 971F62702 |
| F627 Fluorocarbon Stainless Trim | Fluorocarbon diaphragms (2), Fluorocarbon valve disk,, O-rings, back-up rings, and retaining pin | 971F62703 |

F627 Maximum Allowable Inlet Pressure and Pressure Differential

| ORIFICE SIZE INCHES (mm) | HIGH DIFFERENTIAL TENSION SPRING, RED COLOR CODE | |
|-----------------------------|--|--|
| | LP Pilot | HP Pilot |
| | Maximum Inlet and Differential Pressure, PSIG (BAR) | Maximum Inlet and Differential Pressure, PSIG (BAR) |
| 3/8 x 1/8 (9.53 x 3.18) | 250 (17.2) | 250 (17.2) |
| 3/8 x 1/4 (9.53 x 6.35) | 250 (17.2) | 250 (17.2) |
| 3/8 (9.53) | 250 (17.2) | 250 (17.2) |
| 1/2 (12.7) | 125 (8.62) | 125 (8.62) |

F627 Specifications

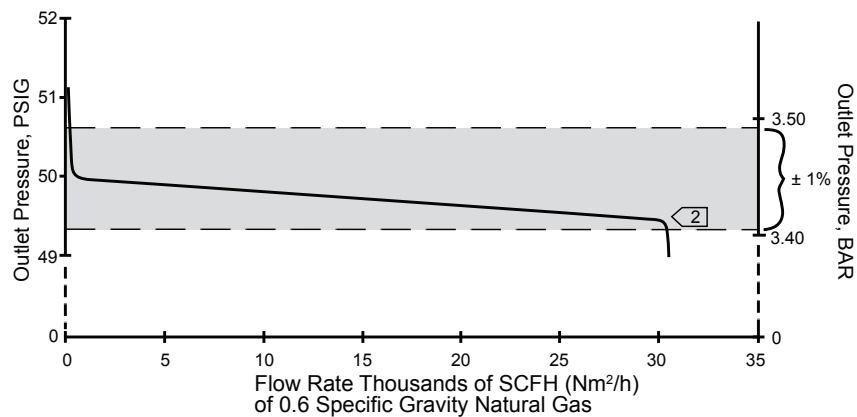
| ORIFICE SIZE | | ALLOWABLE INLET PRESSURE RANGE FOR MAINTAINING OUTLET PRESSURE WITHIN 1% OF THE ABSOLUTE OUTLET PRESSURE SETTING ⁽¹⁾ | | | | | | | | | |
|--------------|-----------|---|------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|---------------------|-------------|
| | | 5 PSIG (0.34 BAR) | | 30 PSIG (2.07 BAR) | | 40 PSIG (2.76 BAR) | | 60 PSIG (4.14 BAR) | | 100 PSIG (6.90 BAR) | |
| Inch | mm | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR | PSIG | BAR |
| 3/8 x 1/8 | 9.5 x 3.2 | 30 to 250 | 2.1 to 6.9 | 55 to 250 | 3.8 to 17.2 | 65 to 250 | 4.5 to 17.2 | 85 to 250 | 5.9 to 17.2 | 125 to 250 | 8.6 to 17.2 |
| 3/8 x 1/4 | 9.5 x 6.4 | 30 to 250 | 2.1 to 6.9 | 55 to 250 | 3.8 to 17.2 | 65 to 250 | 4.5 to 17.2 | 85 to 250 | 5.9 to 17.2 | 125 to 250 | 8.6 to 17.2 |
| 3/8 | 9.5 | 30 to 250 | 2.1 to 6.9 | 55 to 250 | 3.8 to 17.2 | 65 to 250 | 4.5 to 17.2 | 85 to 250 | 5.9 to 17.2 | 125 to 250 | 8.6 to 17.2 |
| 1/2 | 12.7 | 25 to 125 | 1.7 to 8.6 | 50 to 125 | 3.4 to 8.6 | 60 to 125 | 4.1 to 8.6 | 80 to 125 | 5.5 to 8.6 | 120 to 125 | 8.3 to 8.6 |

1. For best performance, outlet pressure settings should be made using an inlet pressure that is midway between the highest and lowest expected inlet pressure.

F627 Flow Coefficients

| Orifice Size | | 3/4-Inch Body | | | 1-Inch Body | | | 2-Inch Body | | |
|--------------|------|--|-------|-------|--|-------|-------|--|-------|-------|
| Inch | mm | Wide-Open C_g for External Relief Sizing | C_v | C_1 | Wide-Open C_g for External Relief Sizing | C_v | C_1 | Wide-Open C_g for External Relief Sizing | C_v | C_1 |
| 3/8 x 1/8 | 3.2 | 12.5 | 0.43 | 29.1 | 12.5 | 0.45 | 29.4 | 12.5 | 0.45 | 29.2 |
| 3/8 x 1/4 | 6.4 | 50 | 1.63 | 30.6 | 50 | 1.70 | 29.3 | 52 | 1.70 | 31.3 |
| 3/8 | 9.5 | 108 | 3.00 | 36.1 | 108 | 3.70 | 31.6 | 115 | 3.40 | 33.9 |
| 1/2 | 12.7 | 190 | 4.80 | 39.0 | 190 | 5.30 | 35.9 | 200 | 5.30 | 39.9 |

Typical Performance Curve for 3/4-inch (DN 20) Type F627 Regulator



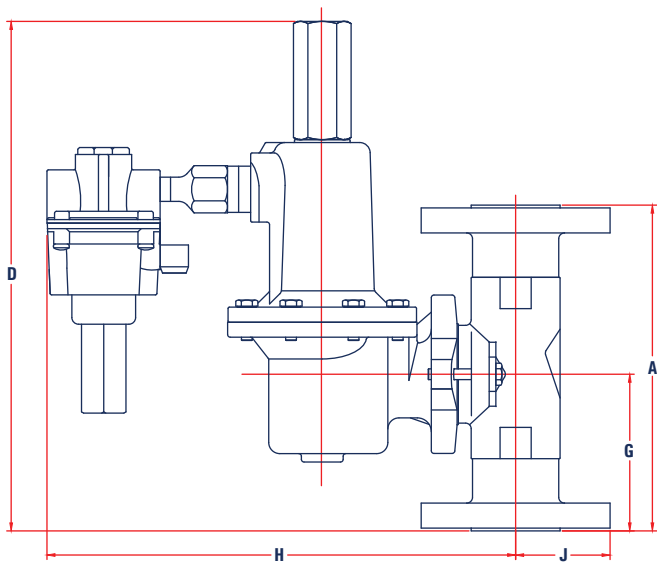
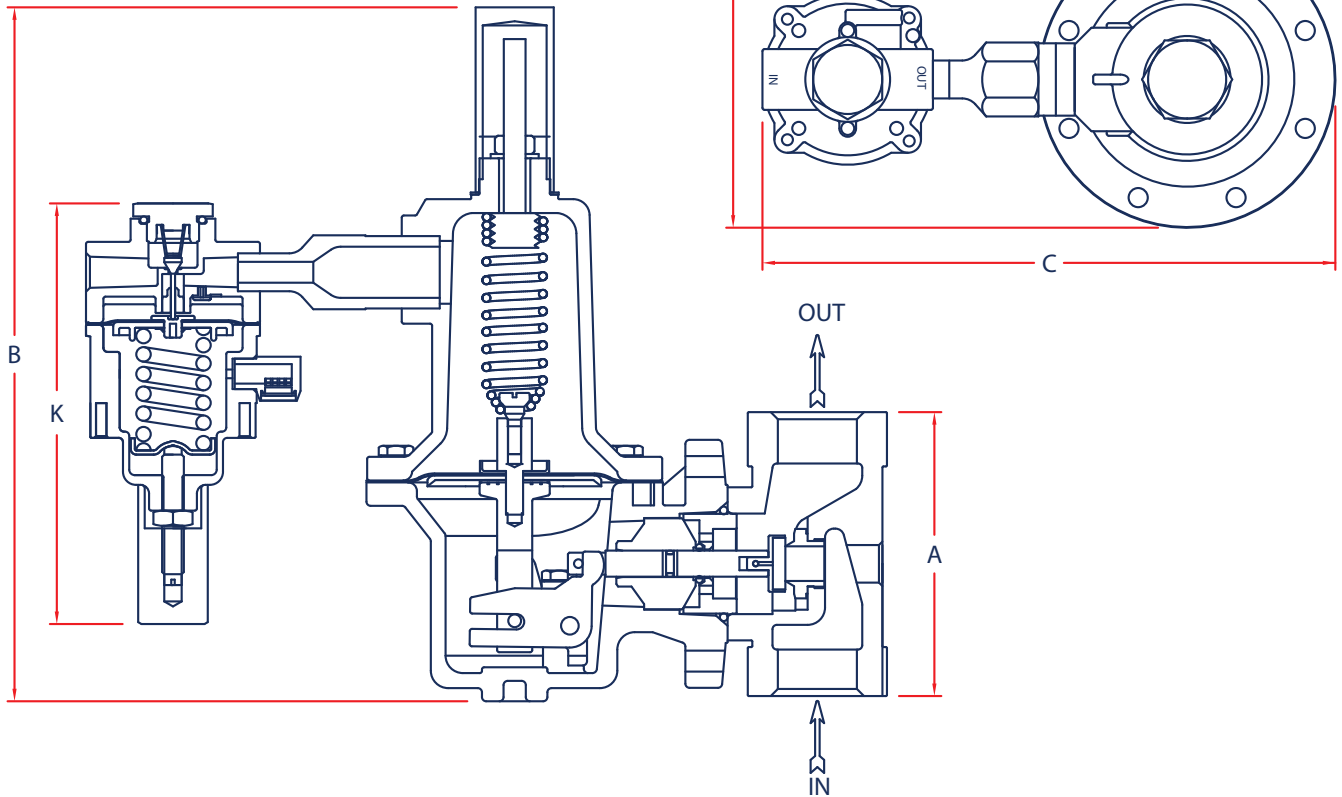
2 3/8-Inch (9.52 mm) Orifice.
 (Red Color Code) Actuator Spring 35 to 100 PSIG
 (2.41 to 6.90 BAR) Range (Red Color Code)
 Pilot Spring 200 PSIG Inlet Pressure (13.8 BAR) Inlet Pressure

F627 Dimensions

Aluminum/Cast Ductile Iron Units

| Type | Body Size | | A | B | C | D | E | F* | K |
|------|-----------|--------|------|------|------|------|------|-----|-----|
| F627 | 3/4" | mm | 104 | 254 | 247 | 26 | 3/4" | 190 | 152 |
| | | inches | 4.08 | 10.0 | 9.75 | 1.0 | | 7.5 | 6.0 |
| | 1" | mm | 104 | 254 | 247 | 26 | 1" | 190 | 152 |
| | | inches | 4.08 | 10.0 | 9.75 | 1.0 | | 7.5 | 6.0 |
| | 2" | mm | 127 | 267 | 247 | 43 | 2" | 216 | 152 |
| | | inches | 5.0 | 10.5 | 9.75 | 1.69 | | 8.5 | 6.0 |

*F Dimensions for steel P627 - 120mm/4.7 inches



F627 Dimensions

Flange Units

| Type | Body Size | A | | | D | | | G | | | H | J | | | |
|--------------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|-------|--------|--------|--------|
| | | 150 RF | 300 RF | 600 RF | 150 RF | 300 RF | 600 RF | 150 RF | 300 RF | 600 RF | | Steel | 150 RF | 300 RF | 600 RF |
| F627 Flanged Units | 1" | mm | 184 | 197 | 210 | 297 | 297 | 297 | 91.9 | 98.6 | 105 | 168 | 53.8 | 62.0 | 62.0 |
| | | in. | 7.25 | 7.75 | 8.25 | 11.7 | 11.7 | 11.7 | 3.62 | 3.88 | 4.12 | 6.62 | 2.12 | 2.44 | 2.44 |
| | 2" | mm | 254 | 267 | 286 | 297 | 297 | 297 | 127 | 133 | 143 | 168 | 76.2 | 82.5 | 82.5 |
| | | in. | 10 | 10.5 | 11.25 | 11.7 | 11.7 | 11.7 | 5 | 5.25 | 5.62 | 6.62 | 3 | 3.25 | 3.25 |

F627 Parts

| Item | Description | Part Number |
|------|--|-------------|
| 1 | Closing Cap, Aluminum | 610-068-000 |
| 32 | Closing Cap Gasket | 624-082-000 |
| 2 | Spring Seat Bolt | 648-541-000 |
| 33 | Spring Retainer Screw | 648-542-000 |
| 3 | Locknut | 634-000-112 |
| 4 | Bonnet, F627 - Aluminum | 604-210-000 |
| | Bonnet, F627 - Steel | 604-561-000 |
| 7 | Tension Spring | 655-745-000 |
| 8 | Diaphragm Piston | 637-306-000 |
| | Diaphragm Standoff | 637-020-000 |
| | Diaphragm Nylon Gasket | 624-083-000 |
| | Piston Retainer | 643-191-000 |
| | Post, Pusher F627 | 827-005-000 |
| | Diaphragms | |
| | Diaphragm F627 Aluminum (Nitrile) | 618-069-000 |
| | Diaphragm F627 Aluminum (Fluorocarbon) | 618-069-001 |
| 9 | Build Screw, Spring Case - Aluminum (8 required) | 648-466-000 |
| | Build Screw, Steel (8 required) | 648-467-003 |
| 10 | Diaphragm Cases | |
| | Diaphragm Case - Aluminum | 629-202-000 |
| | Diaphragm Case, Aluminum (for Steel body) | 629-215-000 |
| | Diaphragm Case, Steel | 629-203-000 |
| 11 | Lever | 703-004-000 |
| 12 | Lever Screw (2 required) | 648-466-002 |
| 13 | Pin, Lever | 635-053-000 |
| 14 | Lever Retainer | 643-192-000 |
| 15 | Stem O-ring, Nitrile | 649-000-003 |
| | Stem O-ring, Fluorocarbon | 649-000-343 |
| 16 | Stem Backup Ring, TFE (2 required) | 644-047-000 |
| 17 | Pin, Groove | 635-054-000 |
| 18 | Stem Guide | 626-083-000 |
| 19 | Pin Clip | 635-055-000 |
| 20 | Stem, 316SS | 689-005-000 |
| 30 | Diaphragm Case O-ring, Nitrile | 649-280-000 |
| | Diaphragm Case O-ring, Fluorocarbon | 649-280-001 |
| 21 | Boost Body F627 | 686-005-000 |
| 22 | O-ring - Nitrile | 649-000-213 |
| | O-ring - Fluorocarbon | 010-380-003 |
| 23 | Seat Assemblies | |
| | Seat assembly - aluminum holder/nitrile disk | 822-019-000 |
| | Seat assembly - aluminum/Fluorocarbon | 822-040-000 |
| | Seat assembly - 316SS holder/nitrile | 822-020-000 |
| | Seat assembly - 316SS/Fluorocarbon | 822-040-001 |
| 24 | Orifice - Aluminum | |
| | 3/8" x 1/8" | 688-059-001 |
| | 3/8" x 1/4" | 688-059-000 |
| | 3/8" | 688-013-001 |
| | 1/2" | 688-013-000 |
| | Orifice - 316SS | |
| | 3/8" x 1/8" | 688-060-001 |
| | 3/8" x 1/4" | 688-060-000 |
| | 3/8" | 688-014-001 |
| | 1/2" | 688-014-000 |

| Item | Description | Part Number |
|-------------------|---|-------------|
| 25 | Bodies | |
| | Iron - 3/4" NPT | 664-560-000 |
| | Iron - 1" NPT | 664-560-001 |
| | Iron - 2" NPT | 664-563-000 |
| | Steel - 3/4" NPT | 664-559-000 |
| | Steel - 1" NPT | 664-559-001 |
| | Steel - 2" NPT | 664-564-000 |
| | LCC - 3/4" NPT | 664-569-000 |
| | LCC - 1" NPT | 664-569-001 |
| | LCC - 2" NPT | 664-565-000 |
| | Steel - 3/4" Socket Weld | 664-566-000 |
| | Steel - 1" Socket Weld | 664-567-000 |
| | Steel - 2" Socket Weld | 664-568-000 |
| 27 (Not Shown) | Build Screw, 3/4" & 1" aluminum unit | 648-466-001 |
| | Build Screw, all steel bodies | 648-467-001 |
| | Build Screw 2" aluminum unit (2 required)* | 648-466-003 |
| 28 | Name Plate Drive Screw (2 required) (not shown) | 648-464-000 |
| 34 | Bonnet/Pilot Reducing Nipple | 633-023-000 |
| 29 | Locking Nut | 662-000-016 |
| 5 | Locking Washer | 662-000-152 |
| 6 | PL81 Pilot Regulators | |
| | LP Standard Gain - Nitrile | 832-032-000 |
| | LP Low Gain - Nitrile | 832-032-001 |
| | LP High Gain - Nitrile | 832-032-002 |
| | LP Standard Gain - Fluorocarbon | 832-032-003 |
| | LP Low Gain - Fluorocarbon | 832-032-004 |
| | LP High Gain - Fluorocarbon | 832-032-005 |
| | HP Standard Gain - Nitrile | 832-032-006 |
| | HP Low Gain - Nitrile | 832-032-007 |
| | HP High Gain - Nitrile | 832-032-008 |
| | HP Standard Gain - Fluorocarbon | 832-032-009 |
| | HP Low Gain - Fluorocarbon | 832-032-010 |
| | HP High Gain - Fluorocarbon | 832-032-011 |

F627 Parts

