

GDR SERIES

Description

The GDR Series Regulator provides reliable and precise pressure control in the most demanding applications. Optimized spring design with unique venturi design assures high flow with extremely low droop characteristics. Solid, non-tied diaphragm and all brass construction will provide leak-free and long-lasting performance. Regulator is fully balanced to virtually eliminate outlet pressure fluctuations due to inlet pressure variations. All GDR Series regulators are 100% factory tested.

Features

- **FULLY BALANCED DESIGN:** Maintains a constant delivery pressure regardless of inlet pressure fluctuations.
- **OPTIMIZED FOR HIGH FLOW:** Unique Venturi Tube and Optimized Spring Design allows for high flow rates.
- **WIDE PRESSURE RANGE:** Inlet Pressures up to 580 PSI, Outlet Pressures up to 450 PSI.
- **SOLID, NON-TIED, DIAPHRAGM:** Solid diaphragm eliminates potential leak path and increases sensitivity.
- **CONFIGURABLE:** Order Regulators with Various Porting Options, Panel-Mounted, with Chamber Pipe-A-Way, or Pilot Operated.
- **OXYGEN SERVICE COMPATIBLE:** Designed for use in Oxygen Service and Cleaned for use in O2 Service standard.
- **PED COMPLIANT:** SEP Declaration available (2014/68/EU Art. 4, ¶ 3)

Technical Data

GDR-500

Max Inlet Pressure: 580 PSIG (40 bar)

Outlet Pressure Ranges:

| Spring | Outlet Pressure Range |
|--------|-----------------------------|
| A | 0-55 PSIG (0-3.8 bar) |
| B | 50-135 PSIG (3.5-9.3 bar) |
| C | 125-225 PSIG (8.6-15.5 bar) |
| D | 225-450* PSIG (15.5-31 bar) |

*rated at 450 PSIG @ 100°F

A, B, and C Range Springs are interchangeable. D Range Spring requires dedicated Chamber.

Fail Open Flow Coefficients:

| Port Configuration | Fail Open Cv |
|--------------------|--------------|
| 1/4" NPT and BSPT | 1.6 |
| 3/8" NPT | 2.4 |
| 1/2" NPT and BSPT | 2.9 |

GDR-500 Pilot Operated

Max. Pilot: 450 PSIG (31.0 bar) @ 100°F

Max. Usable Cv: 1.5

Pilot Pressure to Outlet Pressure: 1/.95
 (100 PSI Pilot = 95 PSI Outlet)

GDR-1000

Max Inlet Pressure: 580 PSIG (40 bar)

Outlet Pressure Ranges:

| Spring | Outlet Pressure Range |
|--------|-----------------------------|
| A | 0-55 PSIG (0-3.8 bar) |
| B | 50-135 PSIG (3.5-9.3 bar) |
| C | 125-225 PSIG (8.6-15.5 bar) |

A, B, and C Range Springs are interchangeable.

Fail Open Flow Coefficients:

| Port Configuration | Fail Open Cv |
|--------------------|--------------|
| 3/4" and 1" NPT | 5.8 |
| 3/4" and 1" BSPT | 5.8 |

GDR-1000 Pilot Operated

Max. Pilot: 250 PSIG (17.2 bar) @ 140°F

Max. Usable Cv: 2.7

Pilot Pressure to Outlet Pressure: 1/.90
 (100 PSI Pilot = 90 PSI Outlet)

Effect of Inlet Pressure Variation on Set (Regulator Balance): < 0.25 PSI per 100 PSI

Materials of Construction

| Component | Material |
|---|---|
| Body | CW617N Forged Brass, EN 12420 |
| Adjustment Screw, Valve, Valve Stem, Spring Button, Spring Retainer, Venturi Tube | CDA 360 Brass, ASTM B16 |
| Chamber Insert | 303 SS, ASTM A276 |
| Adjustment Springs | GDR-500: Music Wire, ASTM A228 GDR-1000: Chrome Silicon, ASTM A401 |
| Valve Spring | 302 SS, ASTM A313 |
| Diaphragm | FKM or EPDM |
| Soft Seals (Valve and O'Rings) | FKM or EPDM |
| Trim (Flange Screws and Locknut) | 18-8 Stainless Steel |

NOTES: Regulators are assembled with Dupont Krytox® lubricant.



STANDARD



PILOT OPERATED



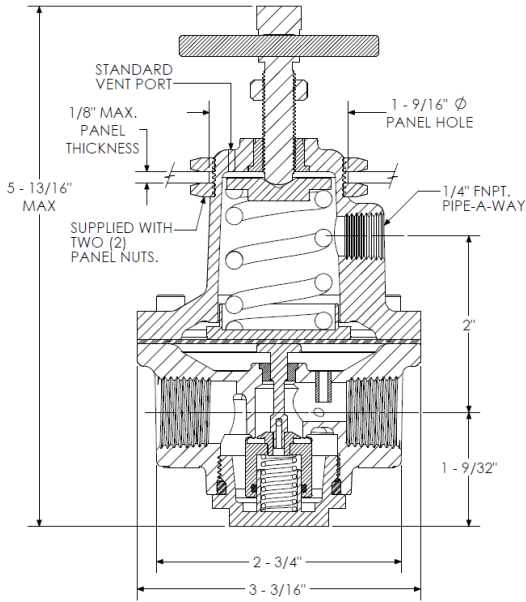
PANEL MOUNT



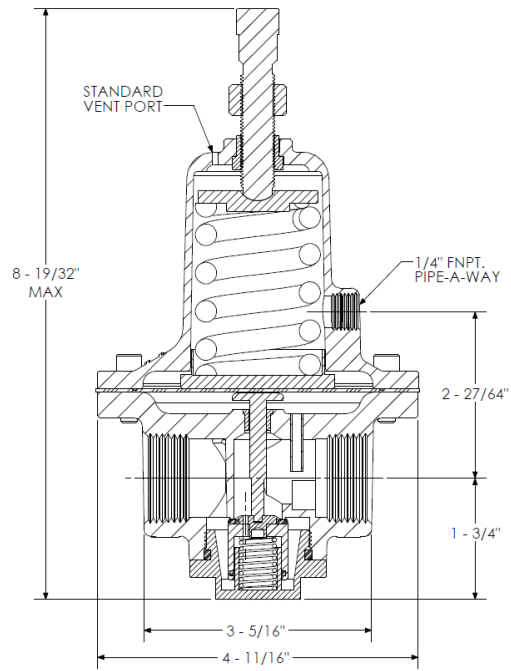
PIPE-A-WAY OPTION

GAS DELIVERY REGULATOR

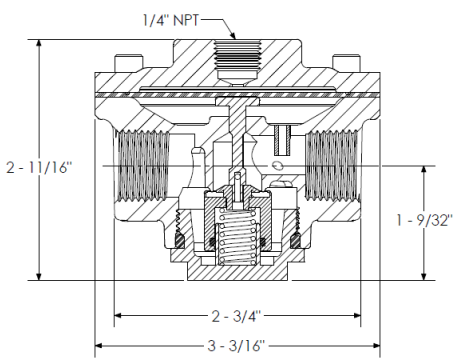
Dimensional Data



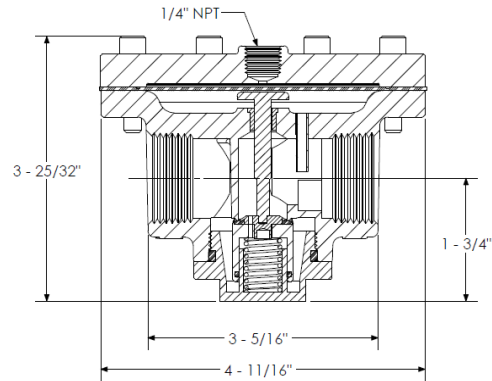
GDR-500
(shown with Panel Mount and Pipe-A-Way Options)



GDR-1000
(shown with Pipe-A-Way Option)



GDR-500 Pilot Operated

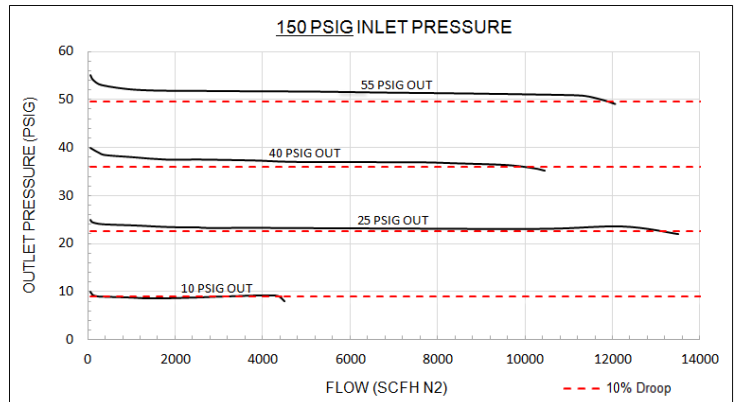
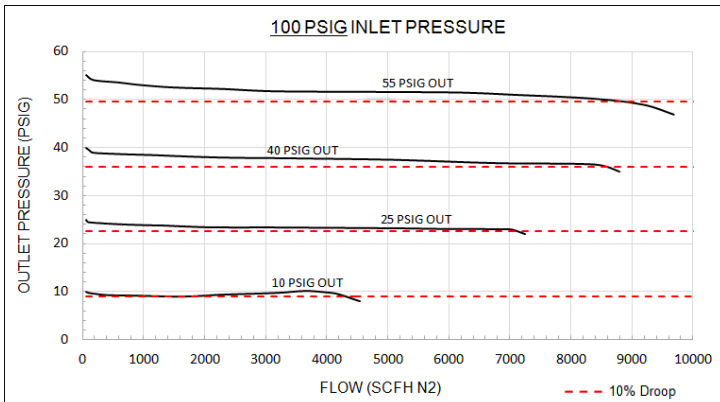


GDR-1000 Pilot Operated

Flow Performance

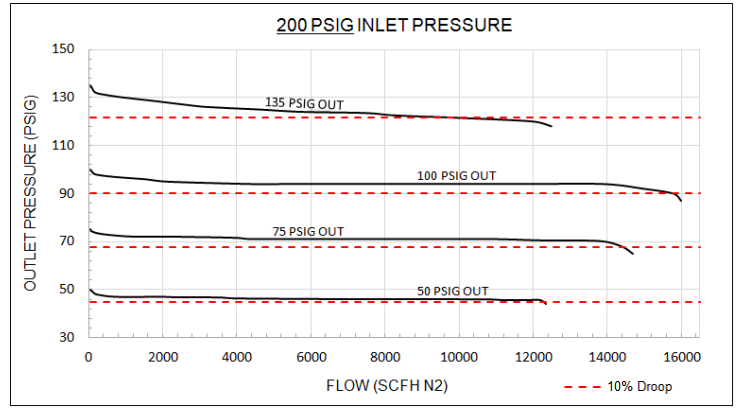
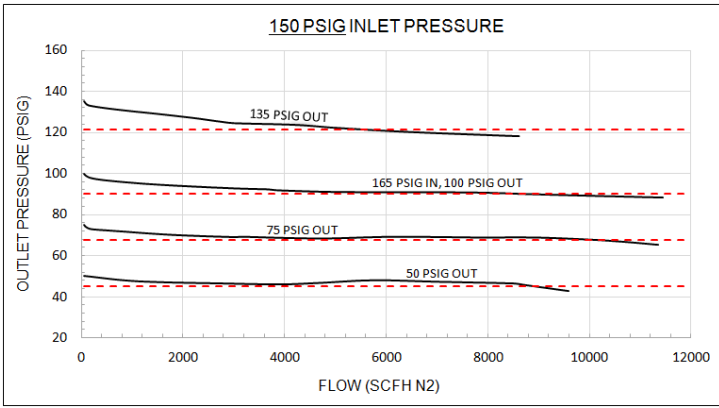
Each chart provides a variety of regulator setpoints and its respective flow performance with a constant inlet pressure condition. Flow Testing was performed using Nitrogen gas at ambient conditions. Use gas conversion factors listed on the next page to convert flow rates to a different gas service. Regulators were set in a dynamic condition at 60 SCFH N2 flow.

GDR-500: A Spring

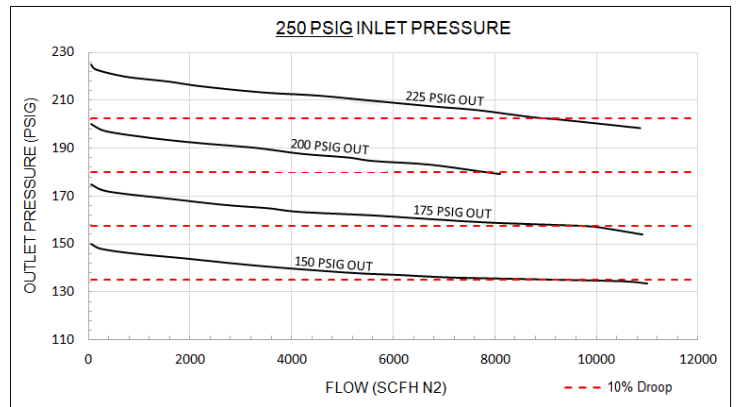
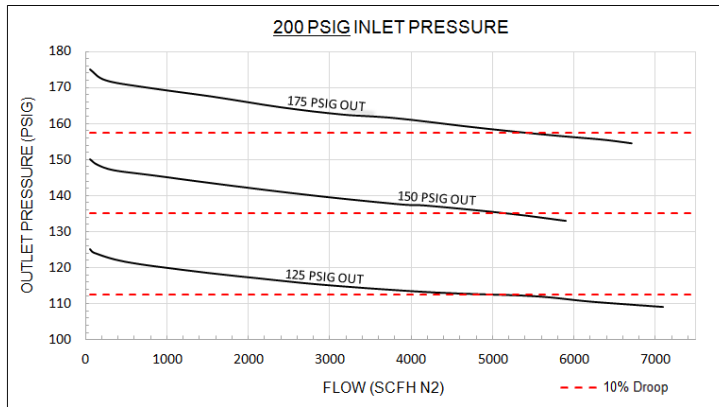


Flow Performance (continued)

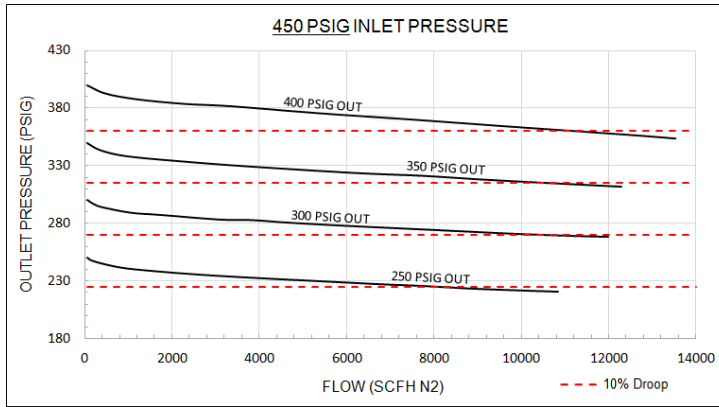
GDR-500: B Spring



GDR-500: C Spring



GDR-500: D Spring

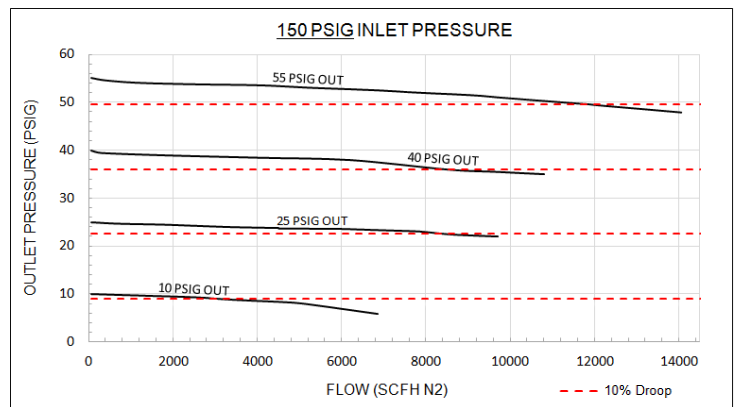
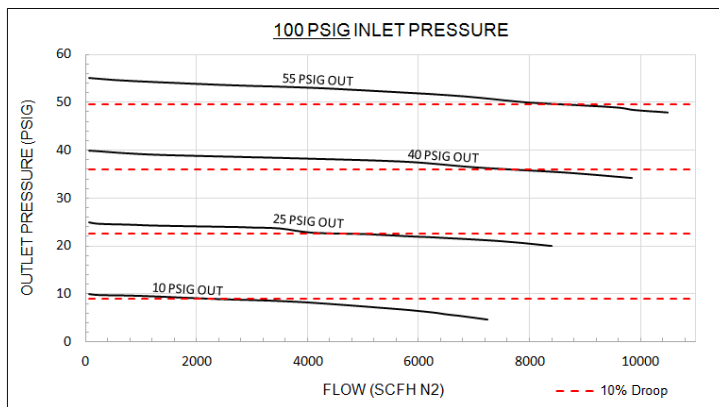


GAS CONVERSION FACTORS

Multiply Nitrogen Flow Rate by Conversion Factor to find equivalent gas flow rate.

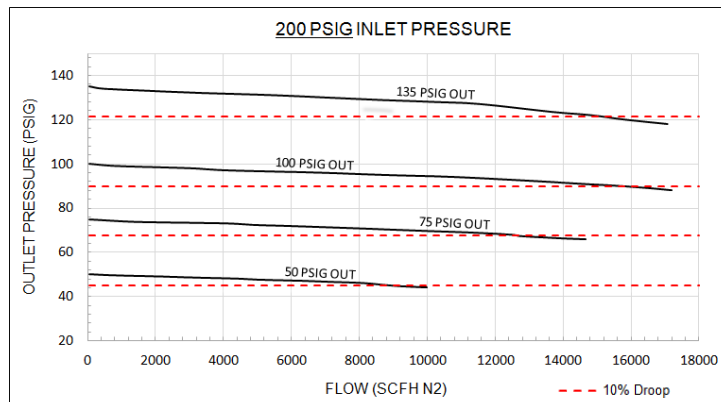
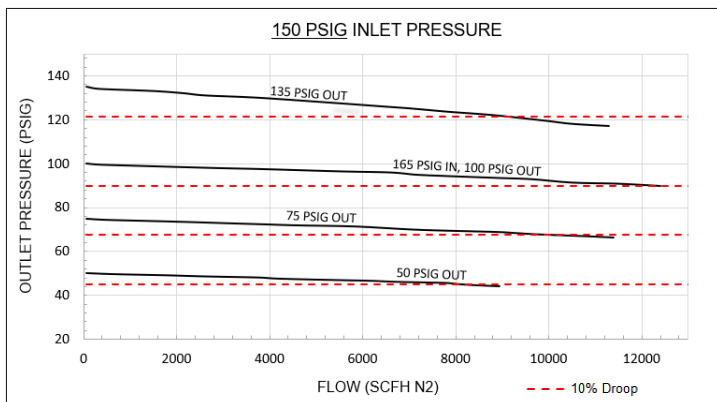
| Gas | Conversion Factor |
|----------------|-------------------|
| Air | 0.985 |
| Argon | 0.837 |
| Carbon Dioxide | 0.795 |
| Helium | 2.645 |
| Hydrogen | 3.603 |
| Nitrogen | 1.0 |
| Nitrous Oxide | 0.799 |
| Natural Gas | 1.285 |
| Oxygen | 0.935 |
| Methane | 1.320 |

GDR-1000: A Spring

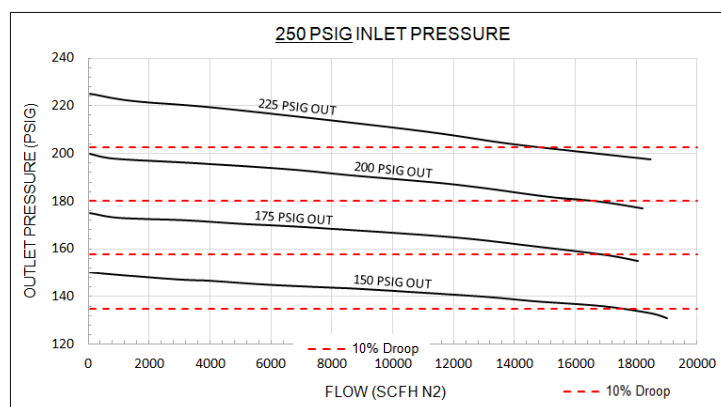
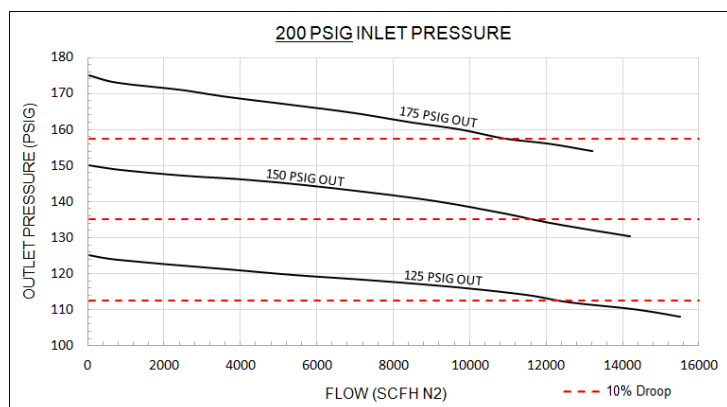


Flow Performance (continued)

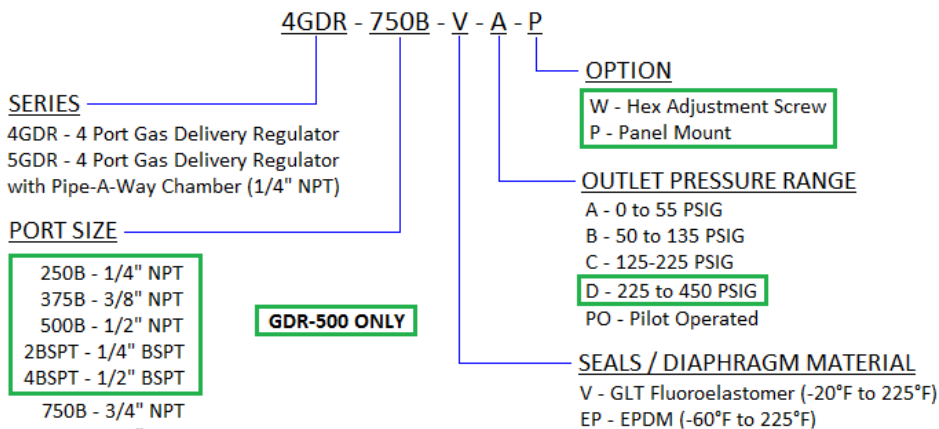
GDR-1000: B Spring



GDR-1000: C Spring



How To Order



Note: All Regulators are supplied with 2 (two) 1/4" NPT Pipe Plugs. Pipe plugs are supplied finger tight. Final installation is the responsibility of the end user.

Compatibility Note: EP Seals are Recommended for CO2 Service.

Repair Kits

Includes: Valve Stem, Diaphragm, Valve Assembly, Valve Spring and Bottom Plug O-Ring

| Model Size | Seal Material | Specify |
|-------------------|---------------|------------|
| 1/4", 3/8" & 1/2" | FKM | GDR-RK-1V |
| | EPDM | GDR-RK-1EP |
| 3/4" & 1" | FKM | GDR-RK-2V |
| | EPDM | GDR-RK-2EP |

NOTE: All Repair Kits are cleaned for Oxygen Service.

Replacement Spring Kits

Includes: Spring (3/4" & 1" kit includes corresponding spring retainer)

| Model Size | Specify |
|-------------------|------------|
| 1/4", 3/8" & 1/2" | GDR-SK-1-* |
| 3/4" & 1" | GDR-SK-2-* |

*Specify Spring Model Code: A, B, C, or D

PROPER COMPONENT SELECTION – When specifying a component, the total system design must be considered to ensure safe and trouble-free performance. Intended component function, materials compatibility, pressure ratings, installation, environment and maintenance are the responsibility of the system designer.



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