

Gas Pressure Regulator Series 280 - 284



PRODUCT INFORMATION

**Serving the Gas Industry
Worldwide**

GAS PRESSURE REGULATOR SERIES 280 - 284

Technical Data

Introduction

- The Series 280-284 are spring loaded, externally implused, high capacity regulators. The design incorporates a totally balanced, single ported valve which in conjunction with a streamlined body assures high flow capabilities. A two-way vent valve ensures excellent speed of response combined with stable control of outlet pressure.
- Use with confidence on natural and manufactured gases of non-aggressive nature, including Nitrogen, Carbon Dioxide, Propane and Butane.

Application

- Designed for use on gas distribution systems and for services to industrial and commercial premises. Also for industrial feeds to burners, heater units, boilers and other items of equipment where an accurate, safe and dependable pressure controlled supply is required.

Features

- Cartridge type construction allows easy unit withdrawal of all working parts ensuring straightforward maintenance without removing the body from the pipe line.
- Excellent control throughout entire working range.
- Positive lock-up, under no flow conditions.
- Balanced Valve gives excellent control over full inlet pressure range.
- Valve travel indicator.
- External control line (ECL) connection fitted with fixed stabilising jet.

Service Temperature

-20°C to +60°C

| REGULATOR SELECTION GUIDE | | | | | |
|---------------------------|-------|----------------|------------------------------------|-----------------------------------|-------------------------------------|
| Regulator | | | Spring | | |
| Maximum Inlet Pressure | Model | Size | 12mbar (5"wg) to 225mbar (3.25psi) | 10mbar (4"wg) to 200mbar (2.9psi) | 140mbar (2psig) to 1.0bar (14.5psi) |
| 4.5 barg (65 psig) | 280 | DN 100 | | • | |
| | 280H | DN 50 DN 80 | • • | | |
| 10.3 barg (150 psig) | 282H* | DN 50 | • | | |
| 4.5 barg (65 psig) | 284 | DN 50 DN 80 | | | • • |

* Suitable for inlet pressure up to 8 bar (116 psi) - direct acting, and 10.3 bar (150psi) when fitted with an auxiliary control system.

Connections

Flanged: PN16: BS EN 1092-2: 1997

* Alternative drilling may be considered on request.

Installation

The regulator may be mounted in any orientation to suit site conditions. Moisture or debris must be prevented from entering the vent valve. For optimum performance the recommended operating position is with diaphragm casing horizontal and spring housing pointing vertically upwards. For a regulator installed in the inverted position, the spring ranges are reduced by 12 mbarg (5" wg) on the Series 280H/282H.

It is important when installing equipment that pipeline stresses are kept to a minimum and no undue external forces are placed on the connections.

Note: On some industrial and burner applications, where rapid changes in flow rates occur, it may be necessary to fit a variable jet into the regulator impulse line to tune the regulator to the downstream system.

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Spring Selection, Materials of Construction

| SPRING SELECTION | | | | | |
|---------------------------|-----------------------|-----------------|-------------|----------------|-----------------|
| Size | Outlet Pressure Range | | Spring | | Regulator Model |
| | mbarg | ins wg | Number | Colour | |
| DN 50 FL & DN 80 FL | 12 - 20 | 5 - 8 | 548 | Self | 280H/282H |
| | 18 - 35 | 7 - 14 | 824 | Light Green | 280H/282H |
| | 25 - 50 | 10 - 20 | 938 | Light Blue | 280H/282H |
| | 30 - 70 | 12 - 28 | 546 | Grey | 280H/282H |
| | 66 - 104 | 26.5 - 41.5 | 774 | Brown | 280H/282H |
| | 96 - 138 | 38.5 - 55 | 775 | Orange | 280H/282H |
| | 112 - 225 | 45 - 90 | 778** | Dark Blue | 280H/282H |
| DN100 FL | 10 - 20 | 4 - 8 | 378 | White/Maroon | 280 |
| | 18 - 30 | 7 - 12 | 402 | Black/Maroon | 280 |
| | 18 - 37 | 7 - 15 | 1007 | Blue/Maroon | 280 |
| | 28 - 40 | 11 - 16 | 403 | Green/Maroon | 280 |
| | 38 - 60 | 15 - 24 | 405 | Red/Maroon | 280 |
| | 55 - 80 | 22 - 32 | 406 | Brown/Maroon | 280 |
| | 75 - 140 | 30 - 56 | 407 | Grey/Maroon | 280 |
| | 112 - 200 | 45 - 80 | 857 | Stone/Maroon | 280 |
| DN 50 FL | 140 - 260 | 2.0 - 3.8 psig | 849 & 848 | Red - Black | 284 |
| | 230 - 500 | 3.3 - 7.2 psig | 851 & 850 | Green - White | 284 |
| | 460 - 1000 | 6.7 - 14.5 psig | 853 & 852 | Yellow - Blue | 284 |
| DN 80 FL | 200 - 400 | 2.8 - 5.8 psig | 1167 | Grey | 284 |
| | 400 - 725 | 5.7 - 10.4 psig | 1168 | Brown | 284 |
| | 675 - 1000 | 9.7 - 14.5 psig | 1169 & 1168 | Orange - Brown | 284 |

* These springs are nested, both being required for the pressure range stated, please contact BD-RMG for advice when changing springs.

** Spring No 778 requires special spring adjuster.

The pressure ranges given apply to regulators installed horizontally with the spring casing pointing vertically upwards.

MATERIALS OF CONSTRUCTION

| Component | Material |
|-----------------------------------|---|
| Valve Body | Ductile Iron to BS EN 1563 Grade EN-GJS-400-18 |
| Diaphragm Casing (Top and Bottom) | Aluminium Alloy to BS.1490: Grade LM4 |
| Valve Orifice | Stainless Steel to BS.970: Grade 416S21 |
| Diaphragms | Terylene reinforced Nitrile rubber, Pentane Resistant |
| Valve Seat | Nitrile Rubber |
| Valve Travel Indicator | Polycarbonate |

Ease of Maintenance

The illustration shows how quickly and easily the cartridge can be removed from the regulator body, leaving the valve body in the pipeline. By utilisation of a spare cartridge assembly, maintenance can be carried out with minimum interruption to the gas supply.



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Capacities for Series 280-284 Regulators

| CAPACITY CHART | | | | |
|-----------------------|---|-----------------------|-----------------|-----------------|
| Inlet Pressure | Capacities in s.c.m.h. of natural gas SG = 0.6 | | | |
| | Outlet Pressure | REGULATOR SIZE | | |
| | | mbar | DN 50 FL | DN 80 FL |
| 50 mbar | 15 | 220 | 485 | 1160 |
| | 26 | 230 | 398 | 1050 |
| 75 mbar | 15 | 300 | 550 | 1250 |
| | 26 | 330 | 465 | 1300 |
| | 50 | 225 | 310 | 1230 |
| 100 mbar | 15 | 462 | 605 | 1400 |
| | 26 | 428 | 595 | 1500 |
| | 50 | 330 | 595 | 1450 |
| | 85 | 220 | 497 | 1000 |
| 150 mbar | 15 | 550 | 805 | 2125 |
| | 26 | 520 | 720 | 2200 |
| | 50 | 478 | 795 | 1875 |
| | 85 | 330 | 875 | 1100 |
| | 117 | 250 | 566 | 700 |
| 200 mbar | 15 | 703 | 980 | 2875 |
| | 26 | 662 | 835 | 2700 |
| | 50 | 560 | 995 | 2450 |
| | 85 | 565 | 1220 | 2000 |
| | 117 | 470 | 865 | 1725 |
| 250 mbar | 15 | 831 | 1250 | 3000 |
| | 26 | 833 | 880 | 3050 |
| | 50 | 795 | 1120 | 2875 |
| | 85 | 598 | 1420 | 2650 |
| | 117 | 563 | 1150 | 2525 |
| 500 mbar | 15 | 1221 | 2450 | 4600 |
| | 26 | 1283 | 1800 | 4600 |
| | 50 | 1260 | 2025 | 4400 |
| | 85 | 1183 | 2410 | 4100 |
| | 117 | 1150 | 2050 | 3650 |
| 750 mbar | 15 | 1654 | 3100 | 5900 |
| | 26 | 1709 | 3180 | 5950 |
| | 50 | 1690 | 2980 | 5950 |
| | 85 | 1678 | 3420 | 5650 |
| | 117 | 1631 | 3300 | 4950 |
| 1.0 bar | 50 | 2026 | 4145 | 6850 |
| | 117 | 1970 | 4145 | 6600 |
| | 140 | 1050 | 4145 | 6600 |
| | 260 | 855 | - | - |
| | 500 | 380 | - | - |

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Capacities for Series 280-284 Regulators

| CAPACITY CHART | | | | |
|-----------------------|---|-----------------------|-----------------|-----------------|
| Inlet Pressure | Capacities in s.c.m.h. of natural gas SG = 0.6 | | | |
| | Outlet Pressure | REGULATOR SIZE | | |
| | | mbar | DN 50 FL | DN 80 FL |
| 1.5 bar | 50 | 2641 | 5325 | 8600 |
| | 117 | 2597 | 5295 | 8600 |
| | 140 | 1405 | 5290 | 8600 |
| | 260 | 1360 | - | - |
| | 500 | 815 | - | - |
| | 1000 | 1100 | - | - |
| 2.0 bar | 50 | 3116 | 6430 | 10200 |
| | 117 | 3137 | 6430 | 10200 |
| | 140 | 1810 | 6420 | 10200 |
| | 260 | 1650 | - | - |
| | 500 | 1265 | - | - |
| | 1000 | 1330 | - | - |
| 3.0 bar | 50 | 3913 | 8580 | 13360 |
| | 117 | 4149 | 8580 | 13360 |
| | 140 | 2250 | 8570 | 13360 |
| | 260 | 2250 | - | - |
| | 500 | 1800 | - | - |
| | 1000 | 1850 | - | - |
| 4.0 bar | 50 | 4528 | 10710 | 16690 |
| | 117 | 5027 | 10700 | 16690 |
| | 140 | 2715 | 10700 | 16690 |
| | 260 | 2815 | - | - |
| | 500 | 2420 | - | - |
| | 1000 | 2510 | - | - |
| 5.0 bar | 50 | 6102 | | |
| | 117 | 6102 | | |
| 6.0 bar | 50 | 7129 | | |
| | 117 | 7129 | | |
| 7.0 bar | 50 | 8153 | | |
| | 117 | 8153 | | |
| 8.0 bar | 50 | 9177 | | |
| | 117 | 9177 | | |
| 9.0 bar | 50 | 10094 | | |
| | 117 | 10094 | | |
| 10.0 bar | 50 | 11150 | | |
| | 117 | 11150 | | |

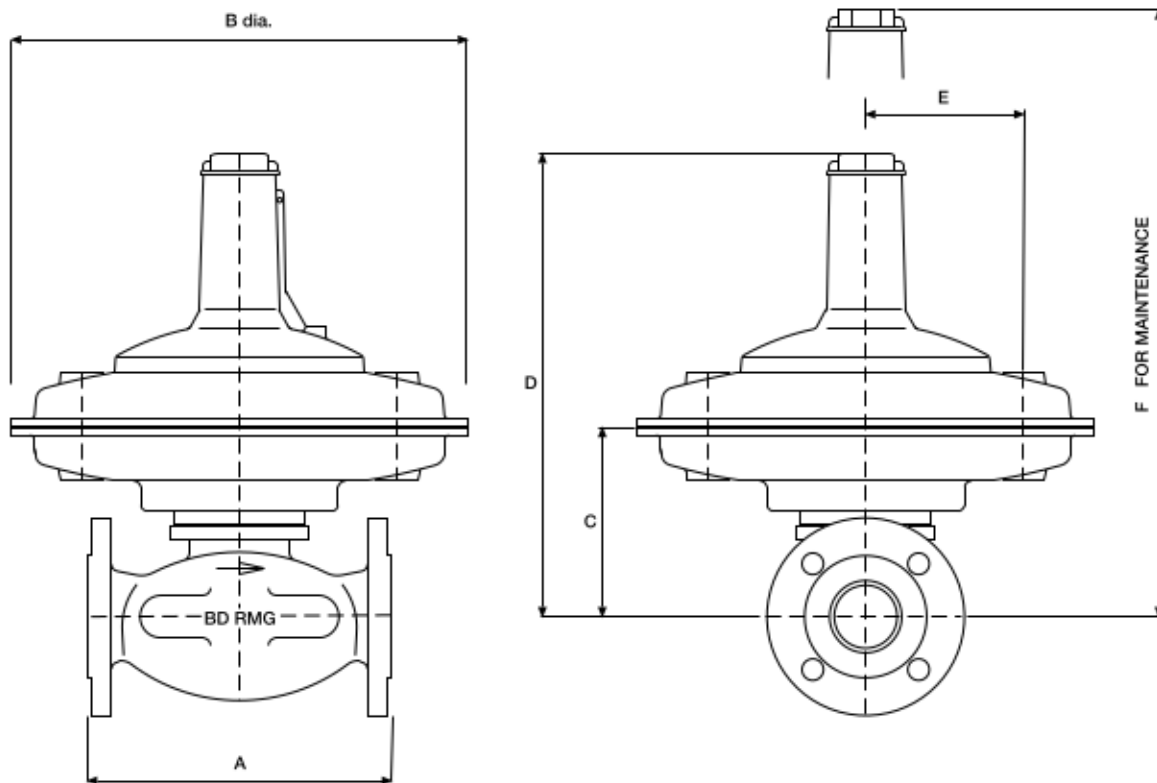
Types of Gases:
The capacities shown in the tables are given in terms of natural gas SG 0.6. For all other gases multiply by the following correction factor:

$$\sqrt{\frac{0.6}{\text{SG of gas handled}}}$$

The above figures are for appropriately sized expanded outlets, 10% droop.

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Dimensions & Weights



| DIMENSIONS AND WEIGHTS | | | | | | | | | | |
|------------------------|--------|----------------|-----|-----|-----|--|-----|------------|------|-------|
| Regulator | | Dimensions: mm | | | | | | Weight: Kg | | |
| Model | Size | A | B | C | D | E | F | Cartridge | Body | Total |
| 280 | DN 100 | 352 | 451 | 187 | 635 | 140 | 845 | 40.8 | 27.6 | 68.4 |
| 280H & 282H | DN 50 | 254 | 380 | 160 | 420 | 132 | 540 | 13.2 | 11.8 | 25.0 |
| 280H | DN 80 | 298 | 380 | 195 | 455 | 132 | 650 | 16.3 | 19.0 | 35.3 |
| 284 | DN 50 | 254 | 210 | 142 | 354 | Connection on the 284 is radial not parallel with axis | 474 | 11.9 | 11.8 | 23.7 |
| 284 | DN 80 | 298 | 290 | 176 | 450 | | 640 | 29.0 | 19.0 | 48.0 |

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Sectional Arrangement

