

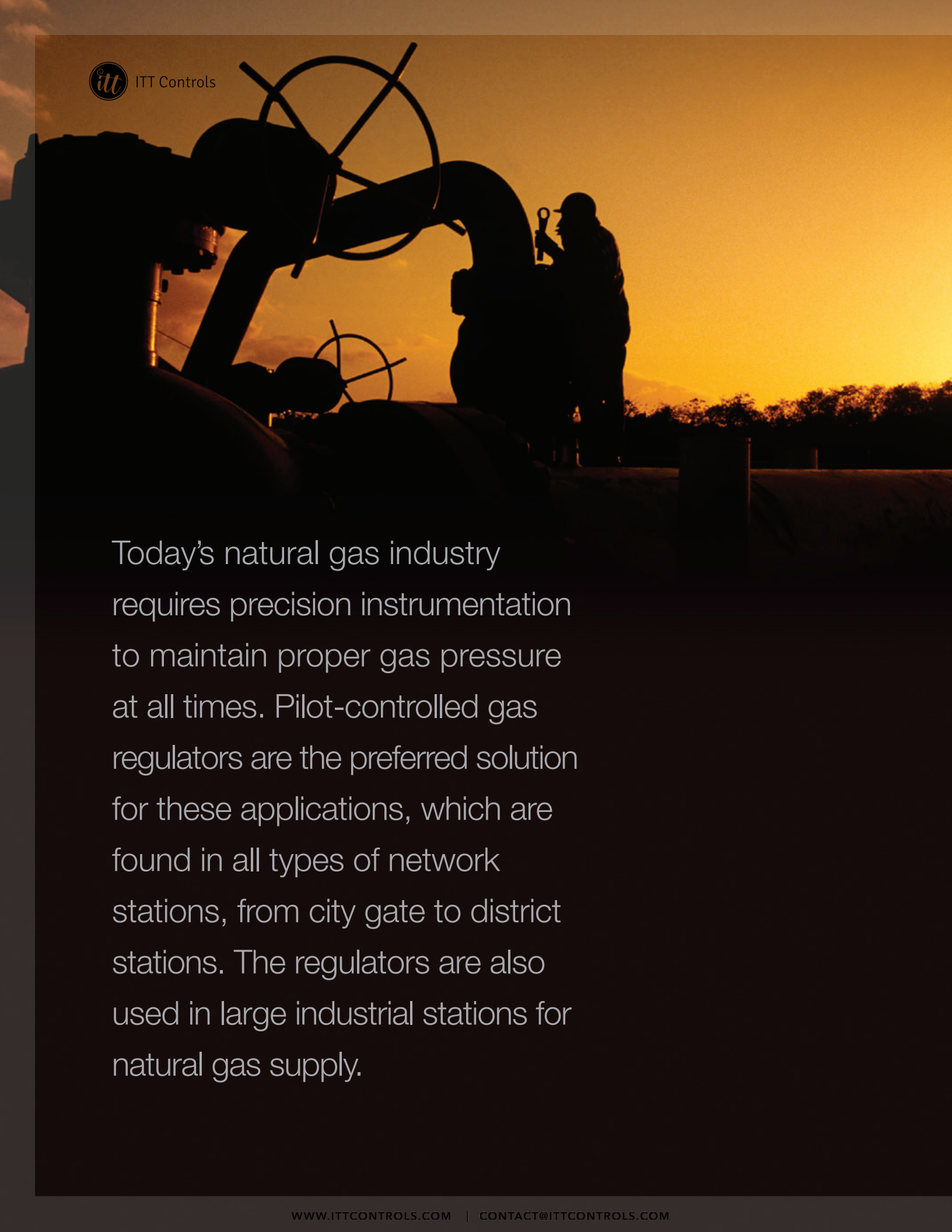


ITT Controls

R100

Series High Pressure Regulator
Ensuring Reliable Gas Operations

Proven Technology. Superior Performance.

A silhouette of a worker in a hard hat and safety vest is positioned on the right side of the image, working on a large piece of industrial machinery. The machinery features several large, circular components with radial spokes, resembling valves or pressure regulators. The scene is set against a bright, golden sunset sky, with the sun low on the horizon. The foreground is dark, showing the silhouettes of the worker and the equipment. The overall atmosphere is industrial and focused.

Today's natural gas industry requires precision instrumentation to maintain proper gas pressure at all times. Pilot-controlled gas regulators are the preferred solution for these applications, which are found in all types of network stations, from city gate to district stations. The regulators are also used in large industrial stations for natural gas supply.

R100 Series (former Gorter brand) of high-pressure gas regulators are a best-in-class solution for demanding environments. They offer unsurpassed operating reliability to ensure delivery of gas to customers with critical requirements. Gas systems utilize these advanced pressure-control regulators to satisfy downstream demand while maintaining pressure within acceptable limits.



Robust & Dependable



R100 Series high-pressure regulators provide precise pressure control throughout the gas infrastructure. These robust and dependable regulators are also designed for use with gas metering applications. The pilot-controlled R100 Series gas regulators have lower maintenance requirements, fewer parts, ease of assembly and disassembly, and a reduced total cost-of-ownership.

With the R100 Series, Users Benefit from:

- Optimal noise reduction
- Optimal control at pressure differences from 0.5 bar
- Special patented valve seat
- Excellent control characteristics, including high control accuracy and low lock-up pressure
- High specific flow rate
- Remote or flow control capabilities to maintain pressure control even if external power is lost

Proven Gas Solutions

In fuel gas and commercial/industrial service applications, R100 regulators are the key to maintaining a constant set outlet pressure even when inlet pressure fluctuations or variations in gas demand occur. This exceptionally versatile and innovative product line offers a cost-effective solution to the most challenging regulator applications.



The R100 Series Comprises Five Types of Regulators:

- R100S: Standard fail-close version with low-noise cage
- R100SO: Fail-open version
- R100(S)-M: Monitor version of the R100 with or without low-noise cage that is activated immediately after the main regulator fails open
- R100: Pilot-controlled standard model
- R101S: Includes hybrid low-noise cage.

Available Regulator Models

R100S

The R100S is the standard fail-closed, pilot-operated high pressure regulator with noise reduction up to 40 dB(A). Its low-noise cage reduces noise at the source instead of damping it.

R100(S)-M

The R100(S)-M can be used as a working or fully-open monitor. A monitor is an emergency regulator that is activated immediately after the main regulator fails open. In contrast to other safety devices, such as safety shut-off or safety cut-off devices, the gas supply is not interrupted if the main regulator fails to open. The construction and operation of the R100(S)-M are similar to the standard R100 regulator, while also offering fast action, low lock-up pressure, and high accuracy and stability. This makes the device superior to other fully-open and working monitor designs. The monitor can be supplied with (R100S-M) or without (R100-M) a low-noise cage and acceleration pilot.

Best-in-Class Features

- Low maintenance costs
- Long maintenance interval due to minimal friction and number of working parts
- Easy to assemble/disassemble
 - Regulator body remains in-line during maintenance
 - Seat ring is easy to inspect.
- Use of economical materials
- Enhanced noise reduction
 - With patented techniques and a noise-reducing cage, noise reduction up to 40 dB(A) is possible, depending on the user's environment.
- Optimal control at pressure differences
 - R100(S) has a unique ability to control gas pressure perfectly at pressure differences from 0.8 bar/11.6 psi. The regulator's optimally balanced valve construction makes it highly suitable for extreme applications.
- Special patented valve seat
 - Long maintenance interval due to the erosion-free enclosure of the seat ring
 - Bubble-tight even at low temperatures
 - Low lock-up pressure.
- Excellent control characteristics due to: voluminous actuator, large diaphragm area, minimal hysteresis, low set point deviation with two-stage pilot, and balanced design
 - High degree of control accuracy (+1%)
 - Low lock-up pressure (+2.5%)
 - Fast response.
- High specific flow rate
 - Hydro-dynamically favorable design of regulator body.
- Remote or flow control
 - By using a special pilot, the regulator can be remote controlled or used as a flow controller in combination with the proper instrumentation. Unlike normal control valves, this capability ensures pressure control is continued even if external power is lost.
- Clear and complete technical documentation
 - Available in different languages.

Make the Right Choice

R100 offers industry-leading gas control, measurement and analysis equipment to gas utilities and other users around the world. We have expertise along the entire gas supply chain, with products and systems that enable you to exercise full control over your regulating and measuring needs.

Recognized for long-term reliability and performance; lowest total cost-of-ownership and installation; and outstanding technical training, field support and customer service.

Today, no other regulator manufacturer offers more products and services for the gas industry than . With the most complete line of gas regulators and global service and support capabilities, we have the products you need, ready for immediate delivery.



Wherever you are, you can count on R100 commitment to product quality, reliability, safety and performance.

Technical Specifications

Type Indication	Connection	Inlet Pressure Range	Outlet Pressure Range	Min. Pressure Difference Needed for Correct Operation	Operating Temperature
R100S	Flanges in the Dimension ANSI 300 or ANSI 600*	3.0 up to 100 bar 43.5 up to 1450.4 psi	1.0 up to 60 bar 14.5 up to 870.2 psi	0.8 bar 11.6 psi	-20°C to +60°C/ -4°F to +140°F, Class 2

*Other pressure classes up to ANSI 2500 are available.

Classification acc. DIN 3380/EN334			
Accuracy Class	Lock-up Pressure Class	Lock-up Pressure Zone	DIN-DVGW Registered and CE Marked
1.0 to 3.0 bar/14.5 to 43.5 psi; AC5/SG10	3.0 to 60 bar/43.5 to 870.2 psi; AC1/SG2.5	SZ = 2.5	CE-0085BS0075

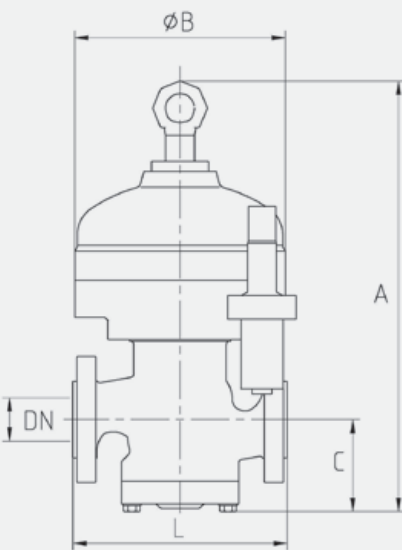
Note: All pressures listed are Gauge pressure

Classification acc. DIN 3380/EN334						
Size	A mm/Inch	B mm/Inch	C mm/Inch	L mm/Inch	Weight	
					Cl.300 kg/Lb	Cl.600 kg/Lb
1"	507/19.96	230/9.06	95/3.74	216/8.50	50/110.23	50/110.23
2"	647/25.47	290/11.42	120/4.72	292/11.50	93/205.03	95/209.44
3"	747/29.41	350/13.78	150/5.91	356/14.02	157/346.13	160/352.74
4"	832/32.76	430/16.93	175/6.89	432/17.01	270/595.25	280/617.29
6"	1087/42.80	625/24.61	250/9.84	559/22.01	661/1457.25	690/1521.19
8"	1317/51.85	655/25.79	310/12.20	660/25.98	910/2006.20	950/2094.39

Material Specifications (Standard)	
Part	Material
Valve Body (1"/DN25 S355N)	A352-LCC(QT)
Silencer	Metal Foam (CvNi)
Guide Bushing	S355N or Equal
Body Flange	A352-LCC(QT) (1"/DN25 S355)
Diaphragm	NBR with Nylon Reinforcement
Dynamic O-Rings	Viton
Static O-Rings	NBR
Pilot Body	S355N or Equal

Flow Coefficient		
Size	Cg without Silencer	Cg with Silencer
1"	400	370
2"	2,000	1,210
3"	4,000	2,800
4"	6,760	4,970
6"	14,400	10,100
8"	27,100	19,700
10"	37,000	30,000
12"	48,000	38,500

Special materials upon request



Dimensional Sketch R100

Capacity Calculation

The following formulas can be used to determine the capacity

$$Q_n = \frac{13.94}{\sqrt{d(te + 273)}} \cdot C_g \cdot \sqrt{(P_e - P_a) \cdot P_a}$$

for $\frac{P_a}{P_e} \geq 0.5$

$$Q_n = \frac{6.97}{\sqrt{d(te + 273)}} \cdot C_g \cdot P_e$$

for $\frac{P_a}{P_e} < 0.5$

Q_n = capacity in Mn³/h
 P_e = upstream pressure in bar (g)
 P_a = downstream pressure in bar (g)
 C_g = flow coefficient
 d = relative density (air = 1)
 T_e = temperature of the gas at the inlet of the regulator in °C
 m = density of the gas at normal conditions (at T = 273 Kelvin)

For natural gas with $n = 0.83 \text{ kg/m}^3$
 $d = 0.643$

For gasses other than natural gas
 $d = \frac{pn_{\text{gas}}}{1.29}$

In case of a combination regulator and monitor, use the following serial thesis:

$$\sqrt{\frac{1}{\left(\frac{1}{C_{g, \text{Regulator}}}\right)^2 + \left(\frac{1}{C_{g, \text{Monitor}}}\right)^2}}$$

This Cg-tot can be filled in as Cg in one of the above mentioned formulas.