

ECCO

EQUIPMENT CONTROLS COMPANY



Product Overview

WHO



EQUIPMENT CONTROLS COMPANY

ECCO
Equipment Controls Company

WHEN

Since 1965
.....

WHAT

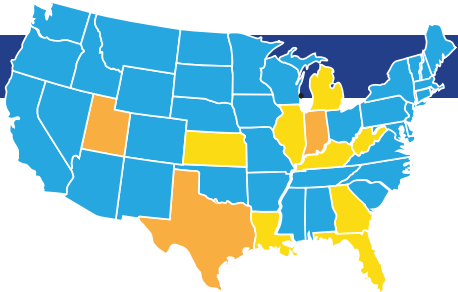
We are distributors of gas measurement, control, data acquisition products and services



WHERE

Headquartered in Norcross, Georgia ★

- | | |
|---|--|
| Office/Warehouse Locations | Sales Offices |
| <ul style="list-style-type: none"> • Norcross, GA • Houston, TX • Indianapolis, IN • Salt Lake City, UT | <ul style="list-style-type: none"> • FL • GA • IL • KS • LA • MI • TN • WV |



WHY



To provide innovative solutions for everyday challenges

HOW

ECCO Culture
.....

- Emboldened employees
- Connected to our communities
- Customer-centric
- Original and imaginative



WHO WE ARE

Since 1965, Equipment Controls Company (ECCO) has been focused on delivering innovative solutions driven by everyday challenges. ECCO's growth can be attributed to providing complete customer satisfaction with professionalism, ethical standards, and exceptional product knowledge.

Equipment Controls Company represents and distributes quality products from established manufacturers such as Pietro Fiorentini, Sensus, ROMET®, and EAGLE RESEARCH CORPORATION®.

Headquartered in Norcross, GA, ECCO is one of the largest North American distributors of natural gas measurement, control and data acquisition products and services. ECCO has you covered with office and warehouse locations in Houston, TX, Indianapolis, IN, and Salt Lake City, UT with additional sales offices in Georgia, Illinois, Michigan, West Virginia, Florida, Louisiana, Tennessee, and Kansas.

EXPERIENCED AND KNOWLEDGEABLE

ECCO is an authorized CEU Provider offering courses in Gas Regulator Training.

Register online at: <https://linepressureregulator.com/ceu-credits>

Our product specialists are available to assist you with sizing and selection for your specific application. You can also visit online sizing tools:

- **Sensus Regulators:** <http://www.regulatorsizingtool.com/Module/GasRegulatorTool/Start>
- **Pietro Fiorentini Regulators:** <http://www.fiorentiniminiereg.it/fiogovernorsUS/>

ECCO is an authorized CEU Provider offering courses in Gas Regulator Training.

Register online at: <https://linepressureregulator.com/ceu-credits>

Linepressureregulator.com has a resource center full of documents specific to the use and installation of gas regulators, including:

- Regulator Application Worksheet
- Gas Facts
- Definitions and Terms
- Product Literature
- Certification



Visit our website for detailed product information.



Product Overview

5	Regulators—Pietro Fiorentini
11	Regulators—USG
12	Regulators—Belgas
13	Meters—Sensus
15	Meters—ROMET®
17	Valves—ASCO, Pacific Seismic Products
18	Strainers—Keckley, Gas Boosters—ETTER Volume Corrector—EAGLE RESEARCH CORPORATION
19	Gas Regulator Information Required
20	Gas Regulator Application Worksheet
21	ASPE Training
22	ANSI Standards Playbook



PF400

Line Pressure Regulators

Pietro Fiorentini's PF400 line of gas regulators are designed to comply with the latest CSA and international standards for regulators suitable for indoor and outdoor installations with no modifications. The PF400 family of regulators are ideal for a wide range of residential through large industrial applications. The materials and soft parts used in the construction of the PF400 regulators make them suitable for use with natural gas, LPG, Propane air and other non-corrosive gases. All PF400 can achieve high outlet pressure accuracy regardless of Inlet pressure variation. The external vent limiter reduces piping costs and the need for costly vent piping for indoor installations and complies with CSA guidelines.*

PF GOVERNOR 2 PSIG

Standard Model Regulators

Pietro Fiorentini's GOVERNOR line of gas regulators are designed to comply with the latest CSA and international standards for regulators suitable for indoor and outdoor installations with no modifications. All GOVERNOR regulators are equipped with balanced valve design for improved high outlet pressure accuracy regardless of Inlet pressure variation. The double diaphragm with integral vent limiter provides added security. The external vent limiter reduces piping costs and the need for costly vent piping for indoor installations and complies with CSA guidelines.* The number of high capacities and regulator options sometimes eliminates the need for separate units and significantly reduces installation costs.



FEATURES

- ANSI Z21.80A-2019 / CSA 6.22A-2019 Class I for outlet pressures up to 14" W.C. Certified
- ANSI Z21.18B-2019 / CSA 6.3B-2019 for inlet pressure up to 5 PSIG certified
- Integral Vent Limiter
- External Vent Limiter – no vent line required**
- Positive 100% bubble tight lockup
- Inlet and Outlet test ports
- 500:1 Turndown

GOVERNOR 10 PSIG

Over Pressure Device

CSA design certified Z21.80/ CSA 6.22 Class I Line Gas Pressure Regulator with Over Pressure Protection (OPD) for 10 PSIG inlet pressure, outlet pressure range of 2" W.C. to 1/2 PSIG. The GOVERNOR allows for vent limited**, multi-position installation and positive dead-end lockup for 1/2" through 2". The GOVERNOR Gas Pressure Regulator also features double diaphragm, integral vent limiter with balanced valve design to provide increased capacity and accuracy. The GOVERNOR is suitable for indoor and outdoor installation.

FEATURES

- Worker and Monitor for added safety
- ANSI Z21.80A-2019/ CSA 6.22A-2019 Class I up to 14" W.C. and Class II for outlet pressures up to 1 PSIG and inlet pressures up to 10 PSIG Certified
- ANSI Z21.18B-2019 / CSA 6.3B-2019 for inlet pressure up to 5 PSIG certified
- Integral Vent Limiter
- External Vent Limiter – no vent line required**
- Positive 100% bubble tight lockup
- Inlet and outlet test ports
- 500:1 Turndown



*As Approved by Local Codes and Standards

** Brass Vent Limiters must be removed for outdoor installation **



GOVERNOR Dual Cut 10 PSIG

Line Gas Pressure Regulator with Over Pressure Protection (OPD)

CSA design certified Z21.80/ CSA 6.22 Class I Line Gas Pressure Regulator with Over Pressure Protection (OPD) for 5 PSIG inlet pressure, outlet pressure range of 2" W.C. to 1 PSIG. The GOVERNOR allows for vent limited**, multi-position installation and positive dead-end lockup for 1/2" through 2". The GOVERNOR Gas Pressure Regulator also features double diaphragm, integral vent limiter with balanced valve design to provide increased capacity and accuracy. The GOVERNOR is suitable for indoor and outdoor installation.**

FEATURES

- Two stage regulation for over pressure protection
- ANSI Z21.80A-2019/ CSA 6.22A-2019 Class I up to 14" W.C. and Class II for outlet pressures up to 1 PSIG and inlet pressures up to 10 PSIG Certified
- ANSI Z21.18B-2019 / CSA 6.3B-2019 for inlet pressure up to 10 PSIG certified
- Integral Vent Limiter
- External Vent Limiter – no vent line required**
- Positive 100% bubble tight lockup
- Inlet and outlet test ports
- 500:1 Turndown



PF Zero/Ratio

Low Pressure Gas Pressure Regulators

Double diaphragm safety governor, Zero Governor is designed to maintain a constant gas/air ratio even when the flow varies and to ensure that downstream of the regulator the pressure is zero. The entire F3Z regulator family is ideal for all burner installations, mixing nozzles and proportional premixers. It can be used with previously filtered non-corrosive gases and is widely used in the construction of low pressure natural gas distribution networks for industrial, commercial and residential users.

FEATURES

- Design pressure: 1 bar
- Design temperature: from -10° C to +60° C
- Max. inlet pressure: 0.35 bar
- Output pressure range: from -5 mbar to +5 mbar
- Minimum differential pressure: 20 mbar
- Air connections: 1/4" and 1/2" for DN>1" ISO 228 1/2" for DN>1"
- Connections: 1/2", 3/4", 1", 1" 1/4, 1" 1/2, 2", DN 25, 32, 50, 65, 80, 100



PF Cirval

Medium to Low Gas Pressure Regulators

The Cirval is available in two sizes: the Cirval 200 8" head and the Cirval 300 12" head. Pietro Fiorentini's Cirval design is controlled by a diaphragm setting spring, which controls a balanced valve cartridge. Typical applications for the Cirval are medium and low pressure natural gas distribution systems, as well as commercial and industrial applications.

FEATURES

- Design pressure*: up to 125 PSIG
- Ambient temperature*: from -20°F to +150°F
- Inlet gas temperature range*: from -4°F to +140°F
- Inlet pressure range bpu (MAOP): from 2 to 75 PSIG
- Range of downstream pressure Wd: from 7" W.C. to 10 PSIG
- Available accessories: LA slam shut, IMD (Independent Monitoring Device), IFM (Integral Full Monitor), built-in strainer

(*) NOTE: Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the minimum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.



PF Dival 500

Direct-Acting Gas Pressure Regulators

The DIVAL 500 series of spring loaded, diaphragm controlled balanced plug gas regulators are suitable for low, medium and high pressure. Divals and shut-off device series regulators are supplied with internal sensing lines. Both the regulator and the shut-off device are preset for optional connection to an external sensing line by the customer. They are widely used in both civil and industrial installations using Natural Gas, LPG and other non-corrosive gases.

FEATURES

- Accuracy class: Up to 10
- Available size DN: 1" – 1" 1/2
- Closing pressure class SG: Up to 10
- Design pressure: BP: 10 bar MP / TR: 20 bar
- Design temperature: -20°C to 60°C
- Outlet pressure range of Wd: BP 13- 100 mbar MP 100 – 300 mbar TR 300 – 2500 mbar
- Range of inlet pressure bpu: BP: 0.5÷10 bar MP / TR: 0.5÷20 bar

PF Dival 600

Direct-Acting Gas Pressure Regulators

Dival 600 series pressure regulators are direct acting devices for low and medium pressure applications controlled by a diaphragm and counter spring. These regulators are suitable for use with previously filtered, non corrosive gases. The modular design of the Dival 600 series allows for the addition of a slam shut or an in-line monitor device in the same body without changing the face-to-face dimensions. The truly "top entry design" allows easy periodic maintenance without removing body from the line. The features of Dival 600 series regulators make it a product suitable for any application.

FEATURES

- Design pressure 232 PSIG for all the components
- Accuracy (AC): 1% of the pressure set-point for pressure increase; 5% for pressure decreasing
- Internal bypass
- Intervention for over pressure and/or under pressure
- Manual push-button control
- Possibility of pneumatic or electromagnetic remote control



PF Goval

Line Pressure Regulator

Pietro Fiorentini's GOVAL line of gas regulators are designed to comply with the latest CSA and international standards for regulators suitable for indoor and outdoor installations with no modifications. The GOVAL family of regulators are ideal for a wide range of residential through large industrial applications. The materials and soft parts used in the construction of the GOVAL regulators make them suitable for use with natural gas, LPG, Propane air and other non-corrosive gases. All GOVAL regulators are equipped with balanced valve design for improved high outlet pressure accuracy regardless of Inlet pressure variation.

FEATURES

- Max. inlet 15 PSIG for Non-CSA applications
- CSA 6.22A-2005 ANSI Z21.80A 2019 Class I for outlet pressures up to 2 PSIG
- Integral Vent Limiter
- External Vent Limiter – no vent line required**
- Positive 100% bubble tight lock up
- Inlet and Outlet test ports
- 500:1 Turndown





PF Norval

Direct-Acting Gas Pressure Regulators

The NORVAL is a downstream pressure regulator, self actuated, spring loaded for medium and low pressure applications. It is suitable for gaseous, non-corrosive, previously filtered fluids. Its balanced valve design gives quick response to varying operating conditions, which make it particularly suitable for use when serving ON-OFF burners and in any industrial process where you have a quick change of the flow rate.

FEATURES

- Maximum inlet pressure up to:
 - 284 PSIG for regulators from 1" to 3"
 - 116 PSIG for regulators from 4" to 8"
 - 275 PSIG for steel body and 246 PSIG for ductile Iron
- Range of downstream pressure:
 - from 4" W.C. to 63.81 PSIG for regulators from 1" to 4"
 - from 4.8" W.C. to 26.10 PSIG for regulators 6" and 8"
- Minimum ambient temperature: execution up to -40°F (to specify in the request)
- Maximum ambient temperature: +140°F
- Flowing gas temperature: up to -4°F to +140°F

PF Reval 182

Pilot-Operated Gas Pressure Regulators

The Reval 182 is a pilot-controlled pressure regulator for medium and low pressure.

The Reval 182 is a 'fail close' regulator. It closes if:

- The main diaphragm fails;
- The pilot diaphragm/s fail; or
- There is no feed to the pilot loop.



FEATURES

- Accuracy class
- Available size DN
- Closing pressure class SG
- Design pressure
- Design temperature
- Flanging
- Maximum working differential pressure
- Minimum working differential pressure
- Outlet pressure range of Wd
- Range of inlet pressure bpu

PF Dilock Safety Device

Dilock is a safety device (SAV) which quickly shuts off the gas flow when the pressure it is monitoring reaches a pre-set limit due to any abnormality in the system, or when required by the operator to operate from a remote point.

FEATURES

- Max. inlet pressure Pe max: 274 PSIG
- Gas operating temperature: - 4 °F to +140 °F
- Ambient temperature: - 40 °F to +140 °F
- Range of outlet pressure Wh: .43 to 79.77 PSIG
- Accuracy: AG ± 5% on the value of the pressure setting
- Intervention on pressure increase and/or decrease
- Option for pneumatic or electromagnetic remote control
- Manual re-setting with internal by-pass activated by the maneuvering lever
- Possibility of application of devices for intervention remote signal (contact switches or proximity switches)





PF Mod. FE

Residential Gas Pressure Regulators

FE is a double-stage self-operated pressure regulator for civil and industrial applications and it is suitable for use with gaseous fluids such as natural gas, LPG and non-corrosive gases. These regulators are designed to be installed directly on utility meters or on riser mains for civil uses. They can be installed in any position and in environments or spaces protected against weather. The discharge of the internal relief valve can be conveyed outside in case of installation in closed rooms or underground installations.

FEATURES

- Inlet pressure range bpu: 4.3 – 125 PSIG
- Max allowable pressure: PS: 125 PSIG
- Outlet pressure range BP: 5 – 72.3" W.C.
- Accuracy class AC: up to 5%
- Lock up pressure class: up to 10%
- Temperature: Gas Temperature -4°F +140°F and Ambient Temperature -40 to +140 °F

PF Mod. FEX

Commercial Service Regulator

The FEX series of two-stage self-driven spring loaded regulators are widely used in both commercial and industrial installations using natural gas, LPG and other non-corrosive gases. They are designed for direct installation to a gas meter and for use in general pipeline work. They can be mounted in any position provided the vent is protected from weather. When the installation is in an enclosed area, the internal relief vent can be piped outside. A balanced, two-stage regulator results in accurate regulation and high operational reliability.

FEATURES

- Inlet pressure range: bpu: 4.35 -125 PSIG
- Max allowable pressure: PS: 125 PSIG
- Accuracy class: AC 5/10%
- Lock up pressure class: SG 30% Max
- Temperature class: 2: -68°F+140°F

PF Aperval

Pilot-Operated Gas Pressure Regulators

Aperval is a pilot-controlled pressure regulator for medium and low pressure applications.

Aperval is normally a fail open regulator and will open specifically under the following conditions:

- Breakage of main diaphragm
- Lack of sensing line connection

This regulator is suitable for use with previously-filtered, non-corrosive gases.

FEATURES

- Accuracy class AC: Up to 2.5% gauge
- Design inlet pressure: 275 PSIG
- Range of inlet pressure: 7.25 to 275 PSIG
- Range of downstream pressure: 2" W.C. to 137.5 PSIG depending on installed pilot
- Minimum working differential pressure: 7.5 PSIG
- Minimum ambient temperature: Execution up -40°F
- Maximum ambient temperature: 140°F
- Flowing gas temperature: -4°F to 140°F
- Accuracy class AC: Up to 2.5% gauge
- Lock-up pressure class SG: Up to 5% gauge





PF Reflux

Pilot-Operated Gas Pressure Regulators

It is particularly suitable for high-pressure transmission systems and for medium pressure natural gas distribution networks, and it can be used with previously filtered non-corrosive gases.

According to the European Standard EN 334, it is classified as Fail Close (pilot series 200/A) or Fail Open (pilot series 210/A) according to the installed pilot (except for the PM819 monitor).

FEATURES

- Accuracy class AC: up to 1
- Nominal sizes DN: 1", 2", 3", 4", 6" 8", 10", 12"
- Lock-up pressure class SG: up to 2.5
- Design pressure: up to 102 bar
- Design temperature: from -20 °C to +60 °C (higher or lower temperatures on demand)
- Connections: class 150, 300, 600 RF or RTJ according to ASME B16.5 and PN 16 according to ISO 7005
- Minimum working differential pressure: 0.5 bar
- Range of downstream pressure Wd: from 0.3 to 74 bar
- Inlet pressure range bpu: from 0.8 to 100 bar



PF Aperflux

Pilot-Operated Gas Pressure Regulators

Particularly suitable for high-pressure transmission systems and for medium pressure natural gas distribution networks, it can be used with previously filtered non-corrosive gases.

FEATURES

- Accuracy class AC: up to 2.5
- Nominal sizes DN: 2", 3", 4"
- Lock-up pressure class SG: up to 10
- Design pressure: up to 85 bar
- Design temperature: from -20 °C to +60 °C (higher or lower temperatures on demand)
- Connections: class 300 and 600 RF or RTJ according to ASME B16.5
- Minimum differential pressure: 1 bar, recommended > 2 bar
- Range of downstream pressure Wd: from 0.8 to 74 bar
- Inlet pressure range bpu: from 1.8 to 85 bar



PF Norflux

Direct-Operated Gas Pressure Regulators

Norflux is a direct-operated regulator controlled by a diaphragm and setting spring which controls the valve. It is mainly used for highpressure transmission systems and for medium pressure natural gas distribution networks with previously filtered non-corrosive gases.

FEATURES

- Design pressure: up to 1450 psig | 10.0 MPa
- Inlet gas temperature: from -4 °F to +140 °F | from -20 °C to +60 °C
- Range of downstream pressure: from 10 to 65 psig | from 0.07 to 0.45 MPa
- Minimum operating differential pressure: 7 psig | 48 kPa
- Accuracy class: up to 10 (depending on working conditions)
- Lock-up pressure class: up to 10 (depending on working conditions)
- Nominal size: DN 50 | 2"
- Connections: Class 300/600 RF / RTJ according to ASME B 16.5



USG 496 Domestic Gas Regulator

Like others in our family of service regulators, our 496 Domestic service regulators offer rugged construction for a lifetime of reliable service. They feature precise pressure control and outstanding performance and dependability.

496 Domestic service regulators can be used for residential meter sets as well as small commercial and industrial applications, including burners, furnaces, ovens, heaters, gas engines and others. They offer a variety of body and orifice sizes and load springs settings. The 4" roll-out diaphragm offers exceptional performance, and it provides capacities that normally require 6" diaphragm regulators. This domestic gas regulator is available with an internal relief valve as a standard feature.

Designed for Broad Output Pressure Ranges

BENEFITS

- Installs in numerous mounting positions
- Delivers precise pressure control

FEATURES

- Five different outlet pressure ranges
- Angled or straight configuration

USG 143-80 Domestic Service Regulators



Like others in our family of service regulators, our Domestic 143-80 models are built to perform. They feature precise pressure control and outstanding performance and dependability. These residential gas regulators are also available with a low-pressure cut-off. The Domestic 143-80 design offers smart features, including an internal relief valve as well as union nut connection, which does not require bolts or screws to connect the body to the diaphragm assembly. This enables the regulators to be set in virtually any position for excellent field versatility.

BENEFITS

- Installs in numerous mounting positions
- Delivers precise pressure control

FEATURES

- Low-pressure cut-off available
- Internal relief valve available
- Seven outlet pressure ranges

USG 243 Commercial Natural Gas Regulators



243 commercial regulators can be found in factories, foundries, district regulator stations, commercial laundries and laundromats. These versatile natural gas regulators are ideal for commercial use such as apartments, restaurants, schools and hospitals. Their design works well for all types of gas-fueled equipment, too. This includes: boilers, burners, furnaces, ovens, heaters, kilns and engines.

BENEFITS

- Installs and adjusts easily
- Allows for pressure factor measurement, pressure compensated metering and fixed factor billing.

FEATURES

- Special material available for certain corrosive gases
- Available with low-pressure cut-off
- Available with internal relief valve
- Interchangeable bodies and diaphragm-case assemblies
- High-pressure model available
- Pilot-operated model available



USG 046 Industrial Combustion Regulators

Our 046 field and high-pressure gas regulators combine simple design and rugged construction for exceptional performance and operational safety. They feature dependable, flexible and economical answers for pounds-to-pounds pressure regulation applications. The 046 family of high-pressure gas regulators are easy to install, adjust, inspect and service in all piping arrangements. Typical applications include farm taps, field regulator applications, high-pressure industrial air or gases and gas blanketing systems.

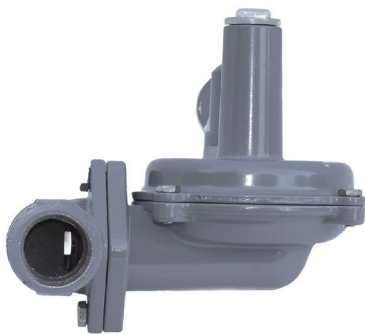
USG 121/122 Industrial Combustion Regulators

Achieve greater capacity, higher inlet pressure, more accurate performance and a faster response for higher volume commercial/industrial applications with our industrial combustion regulators. These regulators provide an unbeatable combination of capacity, performance and economy. Both the Model 121 and Model 122 are highly functional regulators that feature die-cast diaphragm cases and cast iron bodies. This makes them strong and corrosion resistant. Both models incorporate soft-seat valve material, plus a precision-machined “knife edge” orifice for a positive, tight shutoff.



BENEFITS

- Allows above-ground or vault installation
- Provides for pilot-operated, pressure-loaded and V-port options
- Serves high-capacity installations
- Allows high inlet pressures



Belgas Type P140 Pressure Regulator-Non Relieving

The Type P140 pressure regulator is ideal for natural gas, air, propane and general purpose gas pressure regulation. Uses include commercial, residential and light industrial for burners and unit heaters. Available with or without internal relief. Applicable to a wide range of gaseous fluids, including air, natural gas and propane. Can be used as a LP regulator.

FEATURES

- Versatile
- Control accuracy
- Compact design



Belgas Type P143 Natural Gas Service Regulator

The Type P143 gas pressure regulator from BelGAS is ideal for natural gas, air, propane and general purpose gas pressure regulation. Uses include commercial, residential and light industrial for burners and unit heaters. The Type P143 has an internal relief device and is available in the low pressure cut off – LPCO – version. The regulator is applicable to a wide range of gaseous fluids, including air, natural gas and propane. Can be used as a LP regulator.

FEATURES

- Versatile
- Control accuracy
- Compact design
- Low pressure cut-off

Sensus R-275

Residential Gas Meters

The R-275 and R-315 are Class 250 residential diaphragm gas meters that combine the latest design concepts and modern engineering materials. Lighter weight and easy to handle, they are more durable, require less maintenance and offer greater life expectancy than previous meters in this class.

The temperature compensation element has increased strength to minimize deflection from valve drag. A simplified crank bracket provides accurate positioning of the crank support, and its low-friction polymer material eliminates the need for lubrication. Close tolerances and molded phenolic construction of the valve seat provide smoother operation and minimize wear. The R-275 and R-315 meters also accommodate external valve guides, which are easily installed in these meters.

Our revolutionary, patented accuWAVE diaphragm is now standard on the R-275 and R-315 meters. This design has a longer life expectancy, improved long-term performance—even in extreme conditions—exceptional proof stability and a lower overall lifetime cost.

BENEFITS

- Lowers total cost of ownership
- Reduces repair time and cost
- Increases efficiency
- Extends life span

FEATURES

- accuWAVE diaphragm
- Operating temperature range: -30° F to 150° F
- Larger volume applications



Sensus 415

Diaphragm Meter

The 415 is a Class 400 residential, commercial and industrial diaphragm meter that combines the latest design concepts and modern engineering materials. Lighter weight and easy to handle, the 415 is more durable, requires less maintenance and offers greater life expectancy than previous meters in this class.

The temperature compensation element has increased strength to minimize deflection from valve drag. A simplified crank bracket provides accurate positioning of the crank support, and its low-friction polymer material eliminates the need for lubrication. Close tolerances and molded phenolic construction of the valve seat provide smoother operation and minimize wear. It accommodates external valve guides, which are easily installed in this meter. Our revolutionary, patented accuWAVE diaphragm meter is now standard on the 415 meter. This design has a longer life expectancy, improved long-term performance—even in extreme conditions—exceptional proof stability and a lower overall lifetime cost.

BENEFITS

- Lowers total cost of ownership
- Reduces repair time and cost
- Increases efficiency
- Extends life span

FEATURES

- accuWAVE diaphragm
- Operating temperature range: -30° F to 150° F
- Larger volume

SPECIFICATIONS

- Capacity (ft³/h):
- Natural gas: 415
 - Butane: 225
 - Propane: 260
 - Air: 320



Sensus Auto-Adjust® II Turbo Meters

The Most Advanced Gas Turbine Meter Technology Ever Produced

Deliver unparalleled high volume gas measurement with the Auto-Adjust II turbo meter (AAT). It features dual sensing rotors and patented algorithms that work in partnership to detect and adjust for changes in gas flow conditions, such as jetting, pulsation and swirl. They can also adjust for drag caused by component wear or contamination. In fact, Auto-Adjust II meter accuracy is +/- 1.0% over the entire operating range of the gas turbine meter.

Using the same top-entry design of our Mark II turbo meters, the measuring module of the AAT can be changed, recalibrated or upgraded without removing the meter body from the line. This helps prevent costly downtime and lost revenue. The AAT meter has unique self-checking features. So you can provide constant accuracy monitoring and in-line field diagnostics—a good way to save significant maintenance dollars.



BENEFITS

- Alerts users to unstable upstream conditions and unacceptable installations
- Allows for remote monitoring of measurement system accuracy
- Allows for remote totalization of adjusted and corrected volumes
- Reduces the number of maintenance and testing site visits

FEATURES

- Dual turbine technology
- Removable measuring module
- Accuracy savings
- Maintenance savings
- Auto-adjusting design
- Self-checking and self-adjusting algorithm
- Easy upgrades and customization

Sonix IQ

Unprecedented performance from a sleek, ultrasonic standout

Sonix IQ provides the pinpoint accuracy of ultrasonic measurement for residential gas metering. Designed to meet rigorous standards required for outdoor installations in North America, this solid state meter has no moving parts to replace or wear out over time. It boasts dual-class metrology; the same size meter can cover either 250 CFH or 425 CFH needs. And with an available FlexNet® radio integrated inside the meter housing – the Sonix IQ packs in value within a compact size. No other gas turbine meter technology offers the self-checking accuracy, convenient maintenance and continuous measurement certainty as the Auto-Adjust II.



BENEFITS

- Compact footprint to fit anywhere
- Two-way communications when used with a Sensus FlexNet® communication network
- Supports third party radios
- Continuous health checks through safety alerts and alarms
- Streamlined asset management planning and reduced costs due to solid-state construction, integrated communication module and extended 20-year battery life

FEATURES

- Dual-class metrology: 250 CFH or 425 CFH
- 90-day hourly data logs
- Built-in theft and tamper detection
- Available pulse output
- Optional FlexNet capability

SEE ALSO

- Sonix 600/880 Ultrasonic Meter
- Sonix 2000/3000



ROMET® RMT

Rotary Gas Meters

The RMT meter is ROMET's most advanced meter body. The extruded aluminum body along with our proprietary impeller profile provides improved rangeability while maintaining the highest levels of accuracy and precision through our patented pinned timing gear design. An integral mechanical backup counter comes standard on the entire RMT size range providing our customers with the peace of mind that accurate and reliable measurement will be maintained throughout the life of the meter.

RUGGED

All meters are pressure tested up to 4x MAOP to ensure only the toughest meters leave our facility.

RESPONSIVE

Each meter is individually factory tested and certified for measurement accuracy meeting or exceeding ANSI B109.3 rotary gas meter requirements.

RELIABLE

RMT meters come standard with an integral mechanical backup counter to give our customers confidence that reliable measurement will always be achieved.



AdEM® -T Rotary Meter

The AdEM is compact, rugged, service-free, tamper-proof and weather resistant with a high level of accuracy and customization. With a nominal battery life of 15-20 years, the AdEM makes an ideal upgrade to any system requiring instrumentation.

An electronic counter module with the capability for live Temperature compensation. The AdEM-T is best suited for applications where live temperature compensation is required. For applications where pressure can be predetermined and compensation is required, a fixed pressure factor can be applied. The AdEM-T is a direct mount module for seamless integration with ROMET® and other popular rotary meters. Some features of the AdEM-T include a full audit trail, four available output pulses, serial communication and a 20 year nominal battery life.

One Size Fits All- upgrade your rotary meters with the latest electronics in a matter of a click.

ROMET has developed a single adapter plate that will allow our AdEM-T to be installed on ROMET RM 600-56000 rotary meters and RMT 600-23000 rotary meters. We also offer a single adapter plate for Dresser B3 meters ranging from 8C to 56000 and LMMA meters ranging from 1500-16000. The AdEM-T comes standard with ROMET's patented AdEM Click technology allowing for seamless installation between ROMET and Dresser rotary meters.

With the AdEM Click you can carry one electronic corrector to fit all sizes and brands of rotary meters in your system.

BENEFITS

- Simple
- Reduced inventory
- Reduced truck rolls

AdEM® -PTZ

Advanced Electronic Module (Pressure, Temperature and Supercompressibility Compensation)

An electronic counter module with the capability for live compensation for Pressure, Temperature and Supercompressibility (Z). The AdEM-PTZ is a direct mount module for seamless integration with ROMET® and other popular rotary meters. Some features of the AdEM-PTZ include a full audit trail, four available output pulses, serial communication and a 15 year nominal battery life. This state-of-the-art corrector is also available as a remote mount variation- AdEM-PTZ-r.

The AdEM-PTZ is an electronic counter module with the capability for live compensation for Pressure, Temperature and Supercompressibility (Z). The AdEM-PTZ is a direct mount module for seamless integration with ROMET and other popular rotary meters. Some features of the AdEM-PTZ include a full audit trail, four available output pulses, serial communication and a 15 year nominal battery life. This state-of-the-art corrector is also available as a remote mount variation- AdEM-PTZ-r.

One Size Fits All- upgrade your rotary meters with the latest electronics in a matter of a click.

ROMET has developed a single adapter plate that will allow our AdEM-PTZ to be installed on ROMET RM 600-56000 rotary meters and RMT 600-23000 rotary meters. We also offer a single adapter plate for Dresser B3 meters ranging from 8C to 56000 and LMMA meters ranging from 1500-16000. The AdEM-PTZ comes standard with ROMET's patented AdEM Click technology allowing for seamless installation between Romet and Dresser rotary meters.

With the AdEM Click you can carry one electronic corrector to fit all sizes and brands of rotary meters in your system.





ASCO Solenoid Valves

ASCO offers solenoid valves for virtually any application. Models include general purpose, explosion-proof, intrinsically safe, combustion, and air-operated. They are available in brass, stainless steel, plastic, and aluminum bodies. Enclosures are available to operate from -40°C to 200°C in normal and hostile or explosive environments.

General purpose valves are available to control air, water, light oil, and gases. Pipe sizes of 2 way solenoid valves are available from 1/8" to 3". Pipe sizes of 3-way solenoid valves range from 1/8" to 1". The pipe size range of 4-way valves is 1/4" to 1".

Pacific Seismic Shut-Off Valves

Pacific Seismic/California Valves are earthquake sensitive gas shut-off valves. They are intended to close in the event of an earthquake to prevent gas flow into a structure where earthquake damage may have occurred. The valve reduces the potential for fire or explosion due to the release of natural gas into a structure where gas lines, gas fixtures or gas appliances.

PSP valves do not use any source of internal or external electrical power. They are designed to remain closed until manually reset. The valves are intended to be mounted in the gas line upstream or downstream of the gas-line pressure regulator and gas meter outside the structure. These valves do not replace the manual upstream shut-off valves provided in the gas service line.



Keckley Pipeline Strainers

Keckley Y-strainers are furnished standard with drain connections and pipe plugs. Most commonly, Y-strainers are fitted in the field with nipples and drain valves to permit the strainer screen to be cleaned while the system is still in process. By opening the drain valve while the system is under pressure, the debris trapped in the screen is "blown" through this connection helping to reduce system shut-downs for maintenance and cleaning.

The Keckley Company offers many industrial & commercial pipeline strainer options to include epoxy coatings, galvanizing, oxygen cleaning, special tapings, specialty flange connections & NDE testing. These specialty strainer options are available for Y-strainers, simplex basket strainers, duplex basket strainers, and our fabricated product line.

ETTER Gas Boosters

GAS On Demand – The Plug and Play Option

ETTER Engineering's skid-mounted packaged booster systems arrive at your job site prepiped, wired, tested, and ready to work. On-site installation is quick and easy – simply mount the skid in place, connect electrical power to the control panel (and interlock to load equipment as necessary), bolt the system's supply and discharge piping to the field piping, then flip the switch!

This method of installing a gas booster system is more cost effective when compared to purchasing loose components for your contractor to install in the field. As a client commented, "ETTER's packaged boosters are as close to Plug & Play as it comes for a booster project! Using their complete system saved us both time and money."

XARTU/1™

Volume Corrector

The XARTU/1-LDVI™ Volume Corrector is the core product in the volume corrector line. This unit runs on the proven XARTU/1™ SBC61 circuit board, heart of all products in the Eagle XA/1 series. The VC-LDVI includes an internal pressure transducer, an internal RTD (resistance temperature detector), external display and 2400 bps modem in the standard product offering. An optional Low Drag Vertical Index (LDVI™) provides the user with a low cost mechanical backup to the electronic device.

BENEFITS

- Low Drag Vertical Index (LDVI)
- Single and bi-directional versions available
- AGA 7, AGA 8 (Detail & Gross Method I & II), and NX-19
- Wide choice of pressure ranges (absolute or gauge)
- 100 ohm Platinum RTD (resistance temperature detector)
- Digital outputs for corrected/uncorrected volumes
- Configurable for forward, reverse and net volumes
- Power requirement dependent on communications method and frequency
- Multi-Run configurations available using a transducer interface or XDI
- Warranty: four years on all EAGLE RESEARCH manufactured components

GAS REGULATOR INFORMATION REQUIRED

1.	TYPE OF GAS
2.	INLET PRESSURE
3.	OUTLET PRESSURE
4.	LINE SIZE
5.	CAPACITY (in MBH, CFH,BTU)
6.	INDOORS OR OUTDOORS <i>a. IF INDOORS, DO THEY WANT VENT LIMITED?</i>
7.	TYPE OF EQUIPMENT

TYPE OF GAS - Either Natural Gas (NG) or Liquid Propane (LP).

INLET PRESSURE - This is the pressure coming from the gas meter / gas company, or LP tank, not what the equipment requires.

OUTLET PRESSURE - This is the operating pressure of the appliance. Most contractors only give you the max operating pressure of 14", but that is simply the maximum pressure the equipment will continue to operate. All equipment has a MIN and MAX stamped on the plate or shown in the specs. You need to find out the actual operating pressure required by the appliance. For natural gas, it is usually 8" W.C. For LP, it is usually 11" W.C. If you don't know what it is, you will get a quote for a regulator with a 7-11" W.C. or 6-14" W.C. range. These will work on 99% of all applications anyway.

REGULATOR SIZE IS RECOMMENDED - To match the downstream pipe size and/or the gas connection size on the appliance.

CAPACITY - This will be stated as BTU, MBH, CFH or SCFH. They are all basically the same and I can quote regulators on however it is listed. BTU is listed as the complete number, whereas MBH, CFH and SCFH have the last three zeros dropped. For example, 250,000 BTU is the same as 250 MBH or CFH.

INDOORS OR OUTDOORS - This will determine whether a vent limiter (indoors only) or a vent protector/cap (outdoors only) is needed.

a. VENTED OR VENT LIMITED – If mounted indoors do they want to go vent limited.

TYPE OF EQUIPMENT - If the type of equipment is not specified, you will be quoted a regulator that will work on all types of equipment, including a generator and high efficiency boiler, which could result in a much more expensive regulator than needed.

GAS REGULATOR APPLICATION WORKSHEET

Sold To: Customer Name / Address	Ship To: Customer Name / Address
Contact Name	Contact Name
Contact Email	Contact Email
Street Address	Street Address
City/State/Zip	City/State/Zip
Contact Phone	Contact Phone

Item	Type Of Gas	Inlet Gas Pressure	Outlet Gas Pressure	Line Size	Capacity BTU/H or CF/H	Indoor or Outdoor	Vented or Vent Limited	Type of Equipment
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

RECOMMENDATION/S

Item	Model / Size	Quan.	Price Each	Delivery
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Submit form to sales@equipmentcontrols.com

USEFUL CONVERSIONS AND DEFINITIONS

1 PSIG = 27.68 Inches Water Column (WC)
 BTU = British Thermal Unit
 1 MSCFH Natural Gas = 1,000 SCFH

1 Cubic Foot of Propane Gas ≈ 2,500 BTU's
 1 Cubic Foot of Natural Gas ≈ 1,000 BTU's
 1 Therm ≈ 100,000 BTU's

1 Unit of Natural Gas ≈ 10 Therms ≈ 1,000,000 BTU's
 1 Boiler Horse Power ≈ 42,000 BTU Input
 (Assumes 80% Efficiency)



Gas Regulator Training

Engineer Lunch + Learn Series

Intro to Gas Regulators // 1 CEU

A 1-hour overview of gas regulator basics, including how a regulator works, where they are used, and proper installation.

TOPICS INCLUDE:

- Purpose of gas regulators
- Basics of gas pressures and flow
- Mechanical technologies at play
- Understanding key gas terms
- Introduction to standards and codes
- Application-based sizing and selection
- Installation best practices
- Venting and piping
- Troubleshooting



Gas Regulator Venting // 1 CEU

A 1-hour overview of venting standards and codes relating to vented and vent-limited regulators.

TOPICS INCLUDE:

- Understanding Gas Codes and Applications
- Understanding Line Pressure Regulators
- Standards, Certifications, Codes
- Regulator Venting
- Integral Vent Limiting (Vent Limited Regulators)



Gas Regulators and Over Pressure Protection // 1 CEU

This presentation provides an in-depth look at gas regulators and over pressure protection.

TOPICS INCLUDE:

- Over pressure protection for line pressure regulators
- Four major ways of providing over pressure protection
- Relief valve operation
- Automatic shutoff valves
- Compliant vs certified



Gas Regulator Sizing and Selection // 1 CEU

This course provides an overview of the gas regulator sizing and selection process.

TOPICS INCLUDE:

- Information required for sizing and selecting gas regulators
- The importance of sizing and selection
- Turndown ratio
- Why droop is important
- Gas Regulator sizing online tools

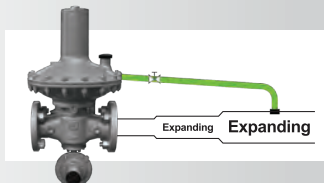


Gas Regulator Installation and Troubleshooting // 1 CEU

This presentation provides an in-depth look at regulator installation and troubleshooting.

TOPICS INCLUDE:

- Review of gas regulator basics
- Installation best practices
- Proper installation of downstream control lines
- Examples of installations
- FAQ troubleshooting scenarios



Intro to Gas Metering // 1 CEU

This presentation provides an overview of natural gas meters.

TOPICS INCLUDE:

- Basic understanding of rotary meters
- Basic understanding of diaphragm meters
- Basic understanding of turbine meters
- Basic understanding of ultra sonic meters
- Review of pressure and temperature gas laws pertaining to gas flow correction



For more information and registration visit <https://linepressureregulator.com/ceu-credits>

ANSI STANDARDS *PLAYBOOK*





WHAT IS ANSI?

ANSI is the American National Standards Institute. Established in 1918, ANSI serves as a vital hub for coordinating voluntary standards and conformity assessment processes in the United States. Their mission is centered on boosting the competitiveness of American businesses on a global scale, while also improving the quality of life within the U.S. This is achieved through the promotion and facilitation of voluntary consensus standards and conformity assessment systems, ensuring their integrity and effectiveness.

ANSI's role is not to create standards itself but to establish a framework for fair standards development and quality conformity assessment systems. By coordinating the process and ensuring transparency and inclusivity, ANSI helps various stakeholders collaborate effectively in developing standards that meet the needs of industries and society.

WHAT IS CSA AND ITS RELATIONSHIP TO ANSI?

CSA Group, formerly known as the Canadian Standards Association, collaborates closely with ANSI to develop and harmonize standards across various domains, promoting safety, efficiency, and international market compatibility. With expertise in 57 areas, CSA Group plays a crucial role in setting standards that align with ANSI's framework, facilitating smoother trade and manufacturing processes between the United States and Canada. This partnership not only reduces trade barriers but also enhances product safety and quality, benefiting industries and consumers on both sides of the border. Together, CSA Group and ANSI contribute to a more streamlined and effective standards ecosystem, fostering innovation and competitiveness in the global marketplace.

WHAT IS ANSI Z21.18/CSA 6.3?

Understanding the ANSI Z21.18/CSA 6.3 standard is crucial for ensuring the safety and efficiency of gas appliance pressure regulators. This standard meticulously outlines the requirements for regulators, ensuring they are constructed from new materials and are suitable for a variety of gases, including natural and manufactured gases, as well as liquid petroleum gas (LPG).

The classification of inlet pressures allows for precise selection based on the specific needs of an appliance, whether it's for a main burner or a pilot burner, or even domestic gas ranges. Adherence to this standard is just the first step; additional testing tailored to the appliance's design is necessary to guarantee optimal performance and safety.

It's a comprehensive approach that underscores the importance of precision and care in the manufacturing and application of gas appliance pressure regulators. Compliance with such standards ensure that the devices are not only effective, but also contribute to the overall safety of gas-operated appliances.

The historical practice of using appliance regulators as line pressure regulators has indeed changed with the implementation of the ANSI Z21.80/CSA 6.22 standard. According to this standard, appliance regulators should no longer serve as line pressure regulators.

WHAT IS ANSI Z21.80/CSA 6.22?

The ANSI Z21.80/CSA 6.22 standard is critical for ensuring the safety and efficiency of line pressure regulators used in various gas systems. It outlines the requirements for regulators to be constructed from new, unused parts and materials, ensuring reliability and performance.

These regulators are designed to fit into gas piping systems situated between the service regulator and the gas utilization equipment, which could include a wide range of appliances and machinery.

The standard covers regulators used with natural gas, manufactured gas, mixed gases, LPG, and LP gas-air mixtures, reflecting its comprehensive approach to safety and requires lock-up style regulators..

Additionally, it specifies that these regulators can function individually or be paired with overpressure protection devices to prevent potential hazards due to excess pressure. With detailed testing and examination criteria, the ANSI Z21.80/CSA 6.22 standard serves as a benchmark for quality and safety in the industry.

Line pressure regulators are used to reduce the high pressure of gas from the service regulator to a lower pressure that is suitable for the gas appliances. ANSI Z21.80 specifies the test and examination criteria for line pressure regulators, either individual or in combination with over pressure protection devices, intended for application in natural gas piping systems between the service regulator and the gas appliance(s).

The standard applies to regulators rated at 2, 5, or 10 psig with maximum outlet pressure of 1/2 or 2 psig (depending on the intended application). The standard also covers topics such as design, construction, performance, marking, and installation of line pressure regulators.

Maximum Outlet Pressure Inlet Pressure

Rate I	Class I	Class II
2 psi (1 3.8 kPa)	1/2 psi (3.5 kPa)	
5 psi (34.5 kPa)	1/2 psi (3.5 kPa)	2 psi (1 3.8 kPa)
10 psi (68.9 kPa)	1/2 psi (3.5 kPa)	2 psi (1 3.8 kPa)

As of May 1, 2002, CSA Group requires that all line pressure regulators above 2 psig must leave the factory pre-assembled and leak-tested.

LINE PRESSURE REGULATOR VS APPLIANCE REGULATOR STANDARDS

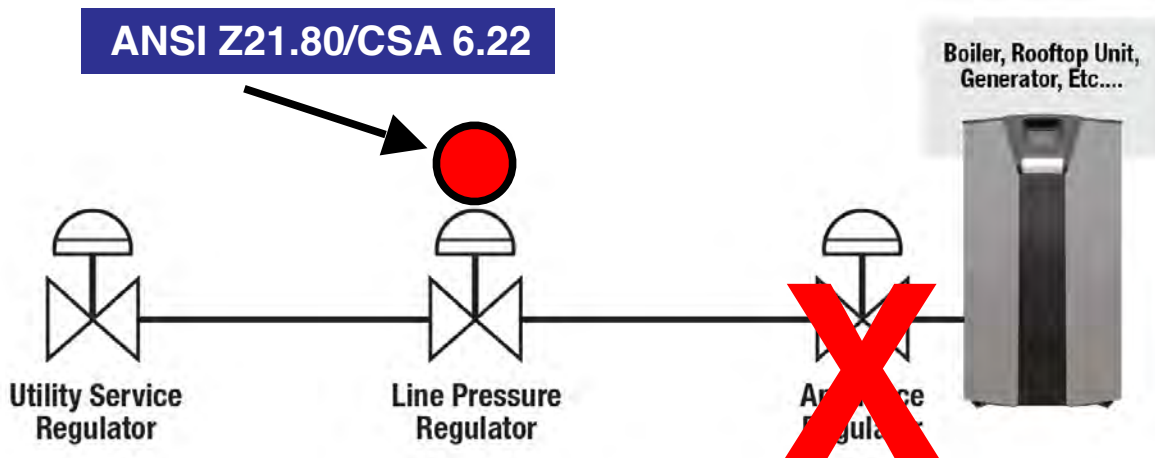
The current standards for appliance regulators are ANSI Z21.18/CSA 6.3, while line pressure regulator standards are ANSI Z21.80/CSA 6.22.

Historically, appliance regulators were used as line pressure regulators before ANSI Z21.80/CSA 6.22 was developed. With the implementation of the newer and revised standards, appliance regulators **should no longer be used as line pressure regulators**.

This rule has been confusing given that many longtime favorite appliance regulators were used as line pressure regulators.

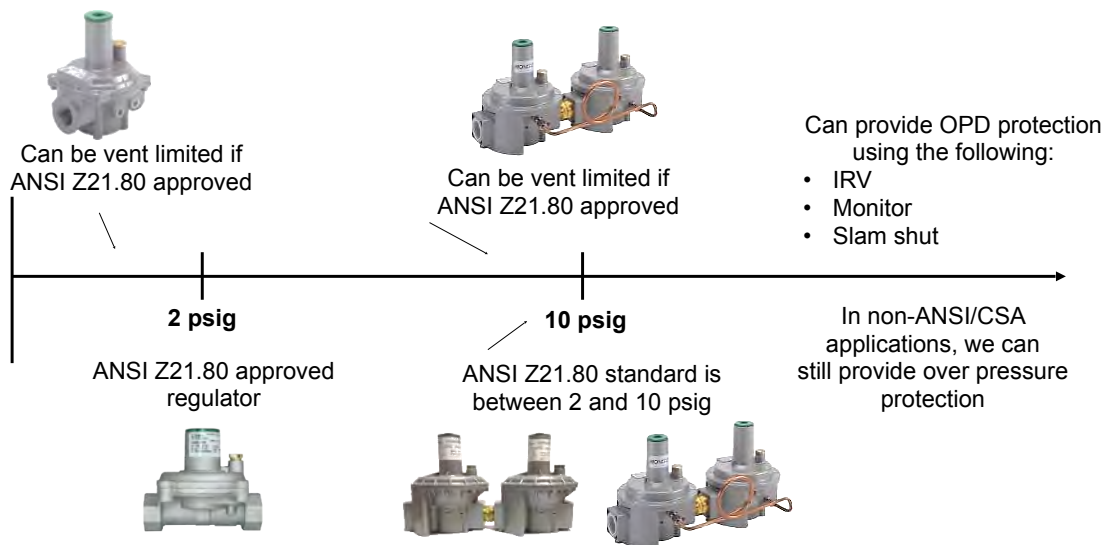


Overpressure protection devices shall be provided to prevent the pressure in the piping system from exceeding that value that would cause unsafe operation of any connected and properly adjusted appliances.



In non-ANSI/CSA applications we can still provide over pressure protection.

PRESSURES FROM 2 TO 10 PSIG REQUIRE AN OPD





equipmentcontrols.com | 800.554.1036

