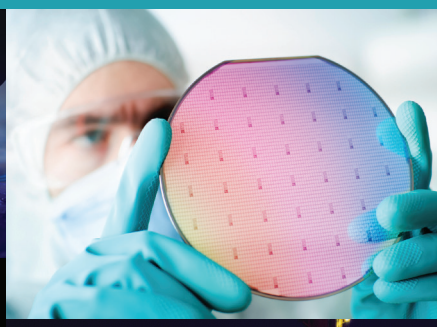
DBR AUTOMATION

TESCOM

Product Catalog - Edition IV

NOVEMBER 2018






Precision pressure control solutions for your industry.

TESCOM™

EMERSON™

DBR AUTOMATION SL, Malaga Spain, Telf: +34 951709474 E-mail: comercial@dbrautomation.com

INTRODUCTION

Welcome

This global catalog is designed to help you quickly and easily find technical information about TESCOM products. The technical section offers general technical information, basic regulator details, materials usage, certifications offered, world area differences in porting and connections and much more.

Finding what you want

To help you navigate through this catalog, we have provided a table of contents with color coded sections. Each section divider contains further information to help aid in narrowing down your search. Use the Product Selection Guides available for the pressure reducing, backpressure and valves sections to help narrow down your search by pressure and flow. And don't forget the index in the back of the catalog. If you still can't find what you need, please contact your local sales representative or EMERSON directly.

Information that's easy and portable

This eCatalog allows you to easily navigate through the catalog, do text searches, insert notes and bookmarks, share and download or print the catalog.

Take the eCatalog with you!

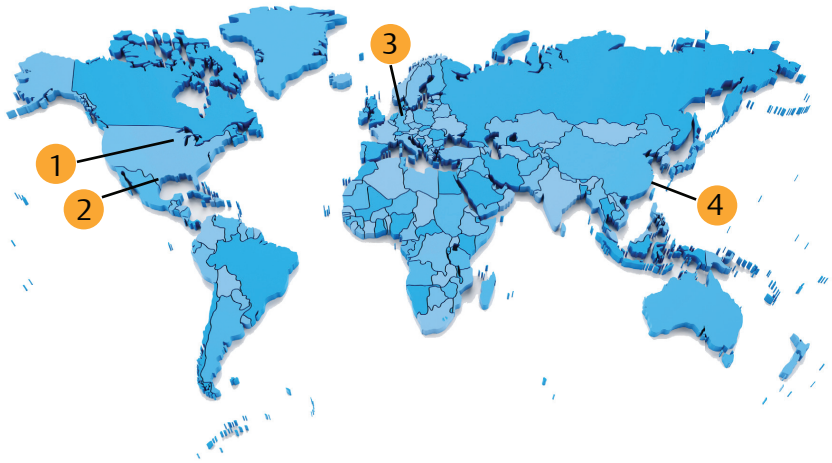
Have THE TESCOM eCatalog at your fingertips on your tablet or smart phone. Once the eCatalog is open in your mobile device browser, simply select the download option. This downloads a PDF to your mobile device and provides scaled-down features of this online version.

Your worldwide pressure control partners

EMERSON designs and manufactures a wide range of standard and custom engineered pressure control solutions for a diverse world market. Whether your needs are components like regulators and valves or pressure systems and assemblies, EMERSON provides expert application and customer support from simple industrial applications to high tech complex projects. Market application know-how includes Aerospace & Defense, Alternative Energy, Diving & Life Support, Laboratory & Research, Life Sciences, Medical, Oil & Gas and Microelectronics to name just a few.

TESCOM distributor support centers are located in most major cities worldwide. More than 100 locations provide application assistance and quality TESCOM regulators, valves and systems.

To find your nearest local TESCOM representative, visit our website **www.tescom.com**.



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4 **Asia-Pacific**
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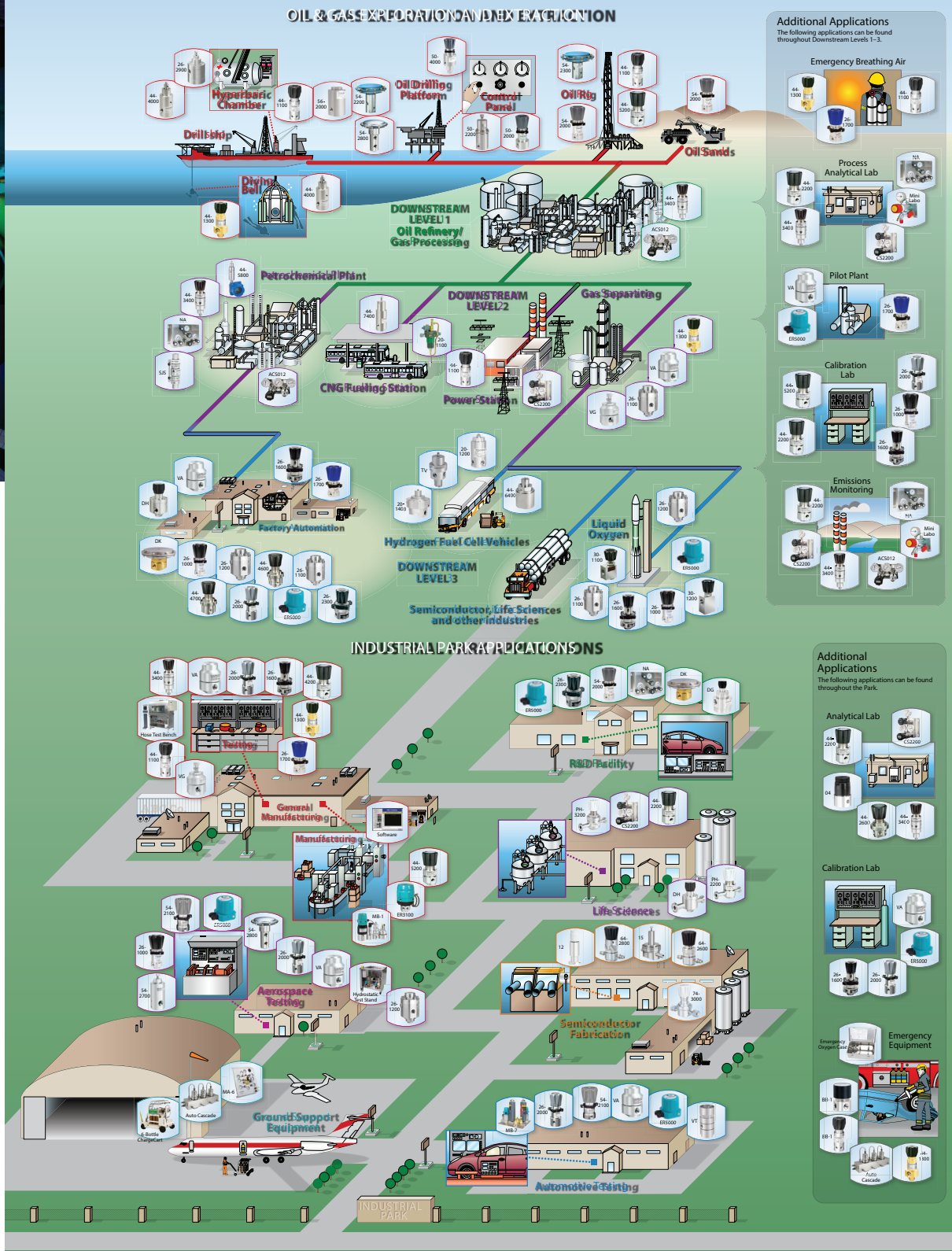
T +65 6777 8211 (Singapore)

PERFORMANCE TO TAKE YOU FURTHER

Application expertise

EMERSON's innovation and breadth of expertise is illustrated by how many industries we serve. From extraction to processing/manufacturing to testing, selecting the right pressure control solution contributes directly to getting the best performance from your investment. EMERSON's expertise delivers on that performance.



Products indicated are just a starting point to demonstrate product capabilities in many industries.
EMERSON offers a large variety of standard products and custom solutions.

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ADDITIONAL INFORMATION

What to consider when choosing a regulator

Major considerations in the selection of a regulator are listed here. Within the requirements of your specific application, use this catalog to find the regulator that matches your parameters. Our standard products are only a starting point. We can modify or create a control that will solve your toughest application problem. Detailed information is available through your local TESCOM representative.

HANDKNOB
Large handknob provides easy, low torque pressure setting. Wrench or screwdriver adjust options on some models.

VENTING
Venting feature enables relieving of the outlet pressure when the handknob is turned in the "decrease" direction.

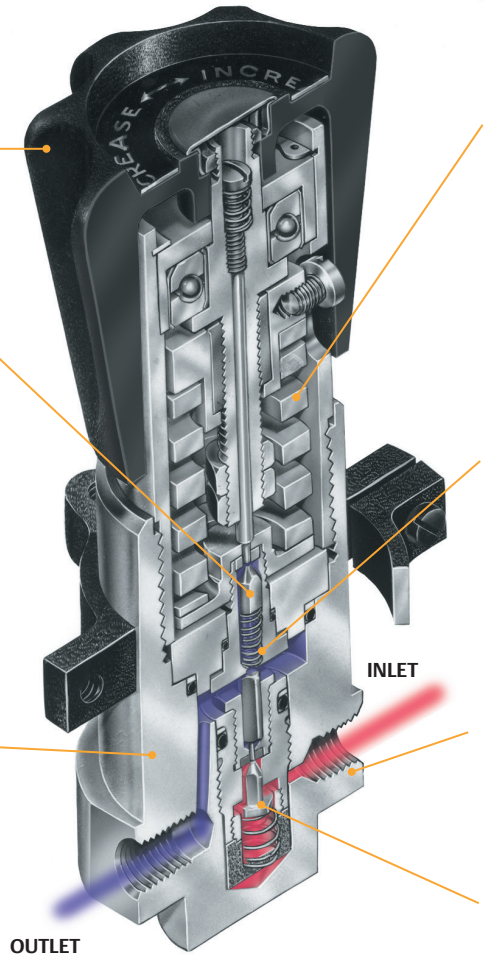
Captured venting configuration includes extra port to pipe away expelled fluids from a regulator's vent valve.

Non-venting feature available for hydraulic or other applications where venting is not desirable.

FLOW CAPACITY – C_V
C_V is a measure of regulator flow capacity. The flow coefficient refers to the flow of one GPM of water at one psi drop across the main valve. The coefficient for gaseous service must be determined from the ratio of inlet to outlet pressure.

BODY MATERIALS
Brass, aluminum or stainless steel (Type 300, 316) and others.

OUTLET PRESSURE RANGES AVAILABLE
Starting at 50 mm Hg absolute to 15 psig / 1 bar, ranging up to 300-20,000 psig / 21-1379 bar.



LOADING – Spring, Dome, Air Actuated, Electronic
Loading refers to the method used to balance the outlet pressure. *Spring loading* is used with direct acting regulators with handknob adjustment. *Dome loading* is most often used in high flow, quick response type applications.
Air Actuator provides outlet pressures up to 15,000 psig /1035 bar with a signal of only 100 psig / 6.9 bar. A TESCOM *electronic* controller is another loading option.

PANEL MOUNTING
Standard on some models. Extra option on others.

SENSING – Diaphragm or Piston
Diaphragms provide sensitive and accurate regulation for outlet pressure ranges up to 500 psig / 35 bar.
Piston sensors provide high strength integrity for high outlet pressures up to 20,000 psig / 1379 bar.

INLET PRESSURE RANGES
Sub-atmospheric to 20,000 psig / 1379 bar.

PORTS
Sizes: 1/8" to 1"
Types: NPTF (all models), SAE, Aminco, MS33649, Slimline, BSP, welded fittings.

MAIN VALVES – Balanced and Unbalanced
Balanced design is used to reduce the effect of decaying inlet pressure and in certain models provides increased flow capacity.
Unbalanced valve offers simplicity and economy.

ADDITIONAL CONSIDERATIONS
- Gauge ports, 1/8" or 1/4" NPTF
- Temperature range
- Corrosion resistance
- Welded connections
- Soft goods-Buna-N, PCTFE, Teflon®, Viton-A®, Vespel® and EPR.

WARNING! Do not attempt to select, install, use or maintain TESCOM products until you have read and fully understood the *TESCOM Safety, Installation and Operation Precautions.*

Table of Contents

Company Information

About the company, products by industry, support and training, contact information

DBR AUTOMATION SL, Malaga Spain, Telf: +34 951709474 E-mail: comercial@dbrautomation.com

Corporate Overview

Company Information

DFLYR1836X012

Minneapolis Location Circa 1924

HISTORY

Tescom was founded in 1916 by Elmer Smith and originally called Smith Inventions. It was primarily a design and manufacturing operation building a line of oxy-acetylene welding and cutting equipment. Over the years, Mr. Smith added other products and businesses, but for the most part, the oxy-fuel gas apparatus was the primary product that stood the test of time.

In the late 1950's, a corporate decision was made to expand the business into markets outside of the welding industry and a high pressure regulator business was formed. At that time the name of the company was changed to TESCOM Corporation, which is an acronym for The Elmer Smith Company Of Minnesota. The high pressure regulator business ultimately grew to be Tescom's principle business endeavor, i.e., the design and manufacture of specialty fluid control devices for "high tech" industries.

While the ownership of the corporation was in the hands of Mr. Smith and his heirs for almost 70 years, that changed in December 1986 with a LBO sale of the company to three corporate officers.

For the next few years, Tescom consisted of two divisions, the Smith Equipment Division producing oxy-fuel gas welding and cutting equipment and the Pressure Controls Division producing fluid control components. During this period, the Pressure Controls Division established a direct sales office in the United Kingdom.

In 1991, the pressure controls business expanded when a joint venture with Drägerwerk AG was formed to supply the fluid control needs of the European marketplace. This venture was named Dräger Tescom GmbH. Initially, the joint venture was an assembly and test operation producing select Dräger and Tescom Products in Lübeck, Germany.

A STRATEGIC FOCUS

In 1993, the Tescom Board of Directors made a strategic decision to focus Tescom's efforts on the fluid controls industry. On September 30, 1995, divestiture of the Smith Equipment Division occurred, thereby closing out the product on which the company had been founded, i.e., the oxy-fuel gas apparatus line. Along with a clear vision with respect to corporate direction, this action retired the LBO debt and facilitated considerable capital expansion in 1995 and 1996.

During this period, the Pressure Controls Division was reorganized to provide a more specific focus on the marketplace. Three divisions were formed: High Purity Controls Division (HPCD), Industrial Controls Division (ICD) and Electronic Controls Division (ECD).

CONTINUED EXPANSION

To accommodate Dräger Tescom's growth, a new manufacturing facility was constructed in Selmsdorf, Germany in 1997. As the operation continued to expand, it became clear the product line being produced had little relationship to Dräger's core business. On February 10, 2000, Tescom acquired Dräger's ownership of Dräger Tescom and the name of the company was changed to Tescom Europe GmbH & Co. KG. At the same time Tescom's UK sales office became a direct sales office for Tescom Europe (TE).

In 2005, Tescom was acquired by Emerson Electric Company and became a business unit of the Emerson Process Management - Regulator Technologies Division. The addition of Tescom allows Regulator Technologies to offer its customers one of the broadest lines of regulators in the industry, and increases participation in growing industries.

ISO Class One Cleanroom

Pressure Controls from Vacuum to 30,000 psig / 2068 bar

Since joining Emerson, sales have continued to grow at a high rate, and we have made significant investments to drive and support the continued growth. We opened a new manufacturing facility in the fastest growing world area - Asia Pacific. In 2006, we started Tescom operations in Shanghai, China, based in a facility that was first opened by Regulator Technologies in 2002. We serve our Asia Pacific customers with Sales, Customer Service, Application Engineering and Design Engineering support. We continue to add to the capabilities of this location to develop a fully functioning Tescom presence for the Asia Pacific market. Also in 2006, we started our sales office in Dubai, UAE to support the major growth opportunities in Middle East and Africa (MEA). Today, we serve the MEA market with Sales, Application Engineering and a Customer Service support team. We have added a regional sales office in Saudi Arabia and serve the MEA market locally through the sales channels in all the major emerging countries.

ORGANIZATIONAL STRUCTURE

Tescom is a product brand part of the Fluid & Motion Control business unit. Fluid & Motion Control in total is a $1+ billion business unit of Emerson Electric Company. Emerson Electric is a $20+ Billion global manufacturing company with facilities and employees throughout the world.

Until 2008, Tescom was organized into three business units, Industrial Controls, High Purity Controls, and Tescom Europe. In 2008, the business was reorganized to create one Tescom, with global management over all product lines and activities. Sales and Marketing, Engineering, Manufacturing and Supply Chain, Quality and Finance functions are organized to support all product lines of the business globally.

PRODUCT LINES

General Industry

Product Lines: Specialty regulators and valves providing reliable control of fluids (gases and liquids) that involve high pressure, corrosive, flammable, and/or unique performance characteristics.

Industries Served: Industrial manufacturing and testing, laboratory and R&D, aerospace and defense, oil & gas exploration and extraction, life sciences, petrochemical refining and processing, diving and life support, alternative fuels, and energy and environmental controls, as well as pharmaceutical and biotech, alternative fuels, and low purity semiconductor, other industries requiring regulators and valves.

Microelectronics

Product Lines: Ultra High Purity (UHP) regulator and valve products. Specialty regulators and valves for precise control of low to medium pressure of fluids (primarily gases) that may be inert, corrosive, toxic, and/or pyrophoric. Intended applications require products to meet high cleanliness levels, low leakage rates and special performance characteristics.

Industries Served: Microelectronics, including Semiconductor bulk and specialty gas delivery systems including OEM fabricators, semiconductor tool manufacturers, wafer fab construction, MRO business, as well as Polysilicon materials production, Photovoltaic applications (solar cells), and optical fiber manufacturing.

Systems

Product Lines: Systems are pressure control solutions built around measurement and control instrumentation for the industrial automation, product testing, and process control industries; integrated high accuracy digital systems for liquid or gas control from subatmospheric pressures to 20,000 psig / 1379 bar; communication software for data acquisition and distributed process control. Electronic hardware, software and mechanical design are conducted internal to the company.

Industries Served: Systems markets include industrial manufacturing and testing, laboratory and R&D, aerospace and defense and the other industries served by the Industrial Controls product line. Advanced control techniques, superior performance, and digital communications are brought to a variety of control applications in each of the above industries.

Tescom Europe Specific Product Lines

In Europe we sell some region specific product lines, in addition to the Industrial, Systems, and High Purity product lines that we sell globally.

Custom Integrated Solutions

Medical

Product Lines: mainly OEM products for medical equipment, including accessories.

Industries Served: Anesthesia machines, breathing support equipment.

Laboratory

Product Lines: A range of regulators and valves for specific laboratory applications, often integrated with OEM laboratory furniture.

Industries Served: Laboratories

EMERSON'S VISION, MISSION, AND QUALITY POLICY STATEMENTS

VISION

Global leader in delivering innovative pressure control solutions that drive unrivaled customer value and loyalty.

MISSION

Partner with our customers to solve their most challenging problems.

QUALITY POLICY

Every employee is committed to meeting or exceeding our customers' expectations by providing quality products and services.

Quality means:

- Fully understanding customer requirements
- Solving customers' most demanding pressure control problems
- Providing defect free products in the eyes of the customer
- Meeting customer delivery requirements
- Continuously improving products and processes

TOTAL QUALITY MANAGEMENT

Emerson is a successful company. We believe one of the contributing factors to that success is the implementation of a Total Quality Management (TQM) system.

We use the ISO 9001 Quality System Model and the Japanese High Pressure Gas Safety Laws as the components of the foundation for the Quality Management System.

The building blocks that complete the system are such things as: Leadership, Employee Recognition, Customer Focus, and Environmental Management. Within each specific block there are events, processes and actions that occur. For example, the Employee Recognition block includes such things as employee luncheons, length of service awards, recognition letters, employee presentations, etc.

ISO 9000 Quality System

Within the Total Quality Management concept, a basic quality assurance system such as ISO 9001 is absolutely essential. The ISO 9000 system is recognized by most countries throughout the world. To be certified as an ISO 9000 company, all aspects of business operations must be documented and very stringent quality requirements must be followed. The company was among the first 55 U.S. corporations certified to ISO 9001. Since the initial certification, audits are conducted to assure the company continues to conform to ISO requirements.

Our Elk River, Selmsdorf and Shanghai manufacturing facilities are ISO 9001 certified to the most current ISO standard.

METI/KHK Certification

In addition to ISO 9001 Quality System certification, on December 16, 1997, The Tescom business became the first foreign corporation in the world to achieve product certification to the Fifth Edition Procedural Manual of The Japanese High Pressure Gas Safety Laws. Since that time, the business has been certified successfully to the Sixth Edition Procedural Manual.

The quality system and product certifications allow Tescom to provide high quality certified regulators to the world's markets.

MANUFACTURING APPROACH

The manufacturing process at each production facility is based on flow technology using people who are empowered and have the authority and responsibility to meet objectives. TQC tools are used to evaluate processes and on-line SPC methods replace inspection.

Lean Manufacturing: A lean operation requires the identification of all process steps and then systematically eliminates non-value added operations. In most companies, 50% to 75% of process steps are non-value added! At Tescom we use value stream mapping to identify and eliminate non-value added process steps, and improve our process.

Cellular Manufacturing: Machines and people are grouped to provide a continuous flow of material for related operations. This lean system has drastically reduced lot sizes, material travel time/distance, work in process, lead time, scrap and rework.

Set-Up Time Reduction: Since set up time is a major factor in the machine cell, significant reduction in this non-value added activity is a primary objective. Minimal set up time facilitates one-for-one, lean processes to reduce lead times and inventory through increased flexibility.

Kanban: A parts pull replenishment system has been implemented, both internally and externally to its manufacturing operations. The intent is to significantly improve the response time of the supply chain, improving probabilities that parts will be available. Internal kanban

efforts focus on fully ported bodies and long lead time sub-assembly processes as well as replenishment of standard finished goods inventory. External kanbans target repetitive manufactured parts and those requiring longer lead times.

Stage Gate New Product Development (NPD) and Product Design Tools (FEA/CFD): Our stage gate NPD process is a very systematic approach to assuring a new product is designed and manufactured to meet the actual needs and expectations of the customer, not as they may be perceived by Tescom, and meet cost targets and incorporate improved quality. Finite element analysis (FEA) and computational fluid dynamics (CFD) are state of the art design tools to provide more robust, higher quality products with a significant improvement in first time yield through production.

MANUFACTURING AND SUPPLY CHAIN PROCESSES

For General Industry products, the predominant manufacturing activity is product assembly and test, with machining limited to low or medium volume parts utilizing CNC and conventional lathes and mills, arranged in cellular, pull through work centers. The majority of product components are purchased from outside suppliers. All stainless steel and brass parts are subjected to special in-house metal finishing processes prior to assembly into final product.

For Microelectronics products, there are additional specialized processes. All stainless steel parts produced internally or by a supplier are subjected to special in-house electropolishing and cleaning processes. Additional special manufacturing processes include class 100 cleanrooms for TIG and orbital welding and UHP class 10 cleanrooms with automated test panels for assembly and test.

Systems are produced in a low volume assembly environment, with calibration and test of electromechanical measurement and control products using automated data acquisition cells. The majority of product components are manufactured outside of the company (enclosures, circuit boards, sensors). Proprietary high value-added manufacturing processes and software are designed and implemented within the company.

PRODUCT DISTRIBUTION

For many years, Emerson has sold Tescom products through authorized distributors around the world, as well as selling directly in some countries. Currently there is a worldwide network of more than 80 independent distributors along with direct sales offices within the USA, Germany, China, UK and Dubai.

QUALITY SUPPLIERS

Emerson depends on outside sources for materials and components. Our approach to assuring delivery of quality materials is to deal only with “approved suppliers.” The process for approving suppliers and the level of approval is based upon: 1) inspection of the supplier’s facility, 2) a review of the supplier’s quality system and 3) the supplier’s performance history. We are striving to find and develop key suppliers to a level that represents a history of no material non-conformances and consequently, no receiving inspection is required.

THE MOST VALUED RESOURCE - THE EMPLOYEES

While we are extremely proud of our facilities, products, marketplace reputation, and business philosophies, the employees are what we take the most pride in! Emerson has a work force second to none! Quality orientation, high integrity, and a desire to satisfy the customer are just some of the characteristics describing a our employee’s work ethic.

Our employment philosophy is to provide competitive compensation and benefits in order to “attract and retain” capable/competent personnel. After extensive interviewing and reference checking, a new employee receives significant training and numerous performance reviews during his/her initial employment. Once the initial training process is complete, regular performance reviews, training, coaching and counseling processes are used to assure the employee continues to meet the needs of the company and the company continues to meet the needs of the employee.

THE FUTURE

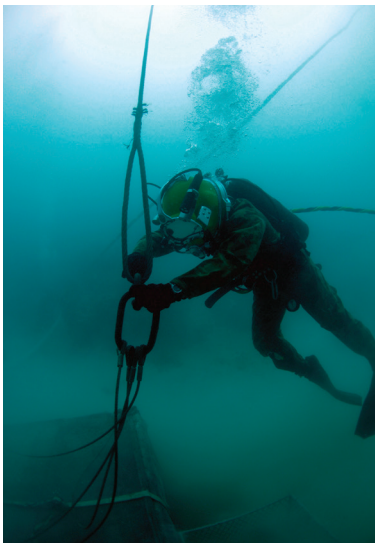
We trust the foregoing has provided you an informative overview of Emerson's Tescom business. Emerson has always endeavored to be a quality organization, where meeting the needs of the customer, the employee and the shareholder are paramount considerations. While return on investment is the reason for being in business, this can only be accomplished by continuous improvement to our processes and constant striving to achieve our Vision. With these beliefs in mind, we are confident our progress and success will continue and we will maintain and grow our position as the leading manufacturer of specialty fluid control instrumentation.

Don't know where to start? We have narrowed down your search by listing the top selling products in the major industries we serve. Remember, this is only a start. If you still can't find what you need, please contact your local TESCOM sales office or call us directly and we'll be happy to assist you.

AEROSPACE & DEFENSE

ALTERNATIVE ENERGY

Products by Industry



DIVING & LIFE SUPPORT

	PAGE
26-2900 Series Dome load negative bias backpressure regulator with a balanced main valve. Ideal for use in constant bias applications like offshore diving, dumping exhaled breath from pressure chamber (BIBS) or diving bell.	471
44-1100 Series High pressure, low flow venting regulator offers a piston sensed design, with a large low torque handknob. Typically used in tank filling and hard helmet diving.	135
44-1300 Series High pressure, high flow regulator offers balanced valve design and venting. Ideal for use in commercial diving, special gas mix regulation, hard suit diving and high pressure tube trailer gas reduction.	143
BB-1 Series High pressure, low flow miniature pressure reducing regulator is non-venting and compact, weighing approximately 4 oz / 113 g. Ideal for use in portable and OEM equipment.	247
Systems Capabilities Provides integrated pressure control solutions in a wide variety of applications. These systems consist of manifolds, panels and custom assemblies that streamline your process.	629

ENERGY & ENVIRONMENTAL

26-1500 Series Highly sensitive diaphragm sensed pressure reducing regulator for transformer and circuit breaker blanketing applications.	123
44-2200 Series Compact, lightweight high purity single-stage regulator for specialty, flammable and industrial gas flows of < 5 SCFM / 141 SLPM. Ideal for analyzer applications, water sampling systems and actuator pressure control.	159
44-2600 Series Compact, highly sensitive high purity single-stage regulator for specialty, flammable and industrial gas flows of < 10 SCFM / 283 SLPM. Ideal for low pressure sampling systems or other low differential pressure applications such as transformer or generator blanketing.	167
44-3400 Series Compact, lightweight high purity two-stage cylinder regulator for specialty, corrosive and pyrophoric gas flows of < 5 SCFM / 141 SLPM. Typically used for analyzer carrier gases.	183
NA4 Changeover System Designed to ensure a continuous gas supply of carrier gases with no interruption due to supply depletion or change out.	591

INDUSTRIAL MANUFACTURING & TESTING

Products by Industry

LABORATORY AND R&D

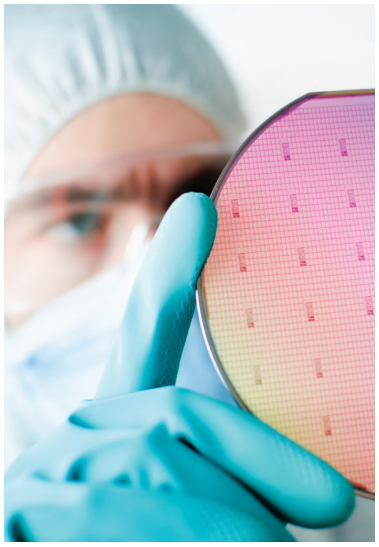
LIFE SCIENCES

MEDICAL (AVAILABLE ONLY IN EUROPE)

PAGE

PRODUCTS LISTED HERE ARE NOT IN THIS CATALOG AND AVAILABLE FOR THE EUROPEAN MARKET ONLY. All products are CE-Marked according to medical device directive 93/42/EEC. **For more information about our European Medical products, please visit our website.**

PRODUCTS NOT IN CATALOG



MICROELECTRONICS

Products by Industry

OIL & GAS EXPLORATION AND EXTRACTION

	PAGE
50-2X Series Consisting of 50-2000 and 50-2200 models, these pressure reducing regulators are specifically designed for extended life operation in high pressure hydraulic applications of up to 20,000 psig / 1380 bar. Ideal for use in wellhead control panels, subsea valve actuation, Hydraulic Power Units (HPUs), IWOCS and umbilical reel controls.	219 - 233
50-4X Series Consisting of 50-4000 and 50-4100 models, these pressure reducing regulators offer an integrated bypass valve that reduces time to production and maintenance cost. Controls large variations in flow rates at pressures up to 15,000 psig / 1034 bar. Ideal for use in Hydraulic Power Units (HPU) and wellhead control panels.	225
54-2X Series - Pressure Reducing Consisting of 54-2000 and 54-2200 models, these pressure reducing regulators offer hardened Stainless Steel seat and stem for excellent wear resistance in harsh applications like wellhead control panels, subsea valve actuations and Hydraulic Power Units (HPUs). Includes high pressure, high flow capabilities that are ideal for hydraulic component testing and Blowout Preventers (BOP).	229 - 233
54-2X Series - Back Pressure Consisting of 54-2100 and 54-2300 models, these back pressure regulators are suitable for 15,000 psig / 1035 bar liquid applications and flows from 5-50 gpm / 19-190 lpm. Ideal for use in pump discharge pressure control, component testing, burst testing and chemical injection systems. Dome and air load versions can be paired with the TESCOM ER5000 Electropneumatic Controller for use in hydraulic test stands and pump discharge pressure control.	499 - 503
56-2000 Series Accurate pressure control that allows customers to have consistent injection rates over the life of the well. Ideal for Offshore Chemical Injection applications.	245

PETROCHEMICAL REFINING & PROCESSING

	PAGE
SG Series Consisting of SG1, SG2 and SG3 models, these compact, lightweight high purity single-stage and two-stage regulators are designed for specialty and industrial gas flows from 5-200 SCFM / 141-5663 SLPM. Easily select from optional gauges, relief and shut-off valves and cylinder connections. Ideal for process analyzer gases and specialty and industrial gas cylinders.	319 - 333
44-2200 Series Compact, lightweight high purity single-stage regulator for specialty, flammable, and industrial gas flows of less than 5 SCFM / 141 SLPM. Ideal for use in laboratory and point-of-use gas systems, sampling systems, zero, span and calibration analyzer gases.	159
44-3400 Series Compact, lightweight high purity two-stage cylinder regulator for specialty, corrosive, and pyrophoric gases of 3 SCFM / 85 SLPM. Ideal for use in high pressure gas cylinders for specialty and industrial gases.	183
44-5800 Series Vaporizing pressure reducing regulator offers a high tolerance to voltage spikes and high ambient temperatures. Ideal for use in liquid petroleum analyzers, petrochemical/refinery analyzers and sampling systems. Available in steam, electric and electric with LCD display.	211
56-2000 Series Accurate pressure control that allows customers to have consistent injection rates over the life of the well.	245
ACS012 Series (Changeover Regulator Systems) Compact, lightweight high purity changeover system for specialty, corrosive, and pyrophoric gases. Provides continuous low flow of gas from two pressure sources. Ideal for use in analyzer carrier and calibration gases and laser resonator gas applications.	567
NA4 Changeover System Complete system designed to ensure a continuous supply of carrier and calibration gases with no interruption due to supply depletion or change out. Options include remote mount annunciator, check valves and various CGA options.	591

Contact TESCOM

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Technical Information

What you should know about this book, engineering guidelines for different world areas, how to's, definitions, certifications, and general technical information

Topics covered are:

- Common Terms and Definitions
- About Laboratory
- Materials
- Common Soft Goods
- Resonance in Regulators
- Regulator Freezing (Joule-Thompson Effect)

COMMON TERMS AND DEFINITIONS

Accumulation Pressure
A term used to describe the increase of control pressure above the set point as flow increases in a backpressure regulator.

Accuracy
The variation in control pressure which occurs under steady state conditions within the control range of a regulator.

Air Load
Also known as Air Actuated. The use of low pressure air supply to control higher pressures. This is a form of a ratio loading device. Commonly used with controllers such as TESCOM's ER5000 Series.

Balanced Valve
A main valve which has been designed to be pressure balanced so the main valve spring provides most of the shut-off force. The three major benefits of the balanced valve design are: (1) a reduced seat load, (2) larger seat orifice capability (larger flows), and (3) reduced decaying inlet characteristics.

Bellows
One of three styles of sensing elements. It is the most accurate of the three sensing elements. The sensitivity is due to its large sensing area and many flexing points.

Bias
The pressure increment which is adjusted or preset into a regulator and is usually held constant during normal functioning. Commonly used for tracking, sub-atmospheric capability or differential pressure control.

Burst Pressure
A design test pressure which determines the ultimate structural strength of a regulator or valve. Permanent deformation and leakage are permitted, but parts must remain assembled (no sudden ruptures). Accepted industry standard per ANSI/ASTM B31.3 or PED AD 2000.

Captured Venting
A feature incorporated in a venting regulator which provides an additional port to permit the piping away of the expelled fluids from the regulator's vent valve. A plug or shut off should never be used in the vent line.

Control Element
One of the three basic elements of a pressure regulator. It acts to reduce a high inlet pressure to a lower working or outlet pressure. The control element is sometimes called a main valve, valve stem, or poppet. Common styles are unbalanced valve, balanced valve, tied valve and untied valve.

Cracking Pressure
A term used in backpressure control only and is the inlet pressure to the regulator at which flow starts.

Creep
Any increase in the outlet pressure subsequent to lock-up. Usually a long-term slow pressure increase. This indicates a regulator leak and calls for the immediate removal of the regulator for service. This is usually an indication that there is a leak across the seat. The leak can be caused by nicks, burrs or debris on the seat or valve that prevents the valve/seat from achieving an adequate seal.

C_V (Flow Coefficient)
A flow coefficient that is numerically equal to the number of U.S. Gallons of water at 60°F / 16°C that will flow through a valve, regulator or restriction in one minute when the pressure differential between the inlet and outlet is one pound per square inch. When gas is used instead of liquid, the equation is modified to account for the use of a compressible fluid. For a regulator, C_V is determined when the regulator is wide open and not regulating. When determining flow performance use actual flow curves.

Dual-Stage (Two-Stage)
A regulator that is typically used in applications where the inlet pressure is known to fluctuate and a high level of stability of the outlet pressure is required.

Dual-stage pressure regulator should be used if operating pressure has to be absolutely stable even if the inlet pressure drops (discharge of the cylinder) or if the pressure has to be reduced from a high pressure level (e.g. 2900 psig / 200 bar) to a very low pressure (e.g. 14.5 psig / < 1 bar).

Decaying Inlet Characteristic
Also known as Supply Pressure Effect. The effect on the set pressure of a regulator as a result of an inlet pressure change; an increase in outlet pressure due to a decrease in inlet pressure.

Diaphragm
One of several types of sensing elements. A diaphragm is sensitive in reacting to outlet pressure changes. Used with low pressures and toxic fluids. Common diaphragm materials are elastomeric or metallic.

Differential Pressure Regulator (Tracking)
A pressure control regulator which is designed to provide a controlled pressure which is the sum of a signal (reference) pressure and a bias pressure. The bias may be either positive or negative.

Dome Load
One type of loading element. Gas or liquid is put into the dome of a dome regulator at a pressure equal to the outlet pressure desired. This dome pressure is normally provided by a second regulator called the pilot regulator.

Droop
A term used to describe the decreasing of outlet pressure below set point as flow increases. The amount of deviation from set point at a given flow.

Flow Capacity
See "C_V (Flow Coefficient)"

Flow Rate (Q)
The quantity of fluid being passed through a regulator or valve during a specified time period. Units of measure include: scfm, scfh, Nm^3/hr, l/min, gpm, gph, kg/hr and g/sec.

HPIC
High Purity Internal Connection (internal female VCR®)

Hysteresis
Hysteresis is the dependence variable of a regulator not just on its current environment but also on direction of set point. This results in outlet pressure variance depending on increasing or decreasing flow, due to various types of friction and material memory.

Inlet Pressure (P_1)
The pressure of the fluid media, gas or liquid to the supply connection of a regulator or valve. Typical units of measure are: psig, bar, or kPa.

Leakage - External
The loss of fluid from the external surfaces or joints of a regulator or valve. Example: From the body-bonnet-diaphragm joint. Leakage to atmosphere.

Leakage - Internal
The loss of fluid through a regulator or valve, between pressure zones normally expected to be sealed. Example: Between the inlet pressure (P_1) and the outlet pressure (P_2) zones.

Leakage - Inboard
Leakage through an external joint or seal where the direction of flow is from the outside into the regulator or valve. The leakage rate is measured in atm cc/sec He(lium).

Leakage - Outboard
Leakage through an external joint or seal where the direction of flow is from the inside of the regulator or valve to the outside. The leakage rate is measured in atm cc/sec He(lium) and the pressure inside the regulator should be stated.

Load Element
One of the three basic elements of a pressure reducing regulator. It provides the means by which the operator can set the force that determines the control pressure of a regulator (spring, dome, air/ratio, dome with spring bias).

Lock-Up
The outlet pressure increase which occurs above the "set pressure" as the flow is decreased to zero.

Minimum Controllable Flow
The lowest volume of fluid gas or liquid a regulator can pass and still maintain steady state conditions depending on inlet pressure, set pressure and other factors.

Minimum Controllable Pressure
The lowest pressure which a regulator can control and still maintain satisfactory performance depending on inlet pressure, set pressure, and other factors.

Outlet Pressure (P_2)
The pressure of the fluid media, gas or liquid from the discharge connection of a regulator or valve.

P_1
See "Inlet Pressure"

P_2
See "Outlet Pressure"

Pilot Regulator
A pressure reducing regulator which feeds gas or hydraulic pressure into the dome of a dome loaded regulator. The pilot regulator should be a venting type regulator in order to permit pressure in the dome to be adjusted to a lower pressure. Pilot pressure controllers are also needed for Air Actuated regulators.

Piston
One type of sensing element. Used in high pressure regulators. Normally with o-ring seals.

Proof Pressure
A test pressure which is applied to all pressure zones of a pressure regulator or valve to verify structural integrity. No deformation or excessive leakage is permitted at this pressure. The regulator or valve must function normally after this test. The accepted industry standard is 1.5 times (150%) the rated working pressure.

psia (Absolute Pressure)
A measure of pressure in psi that is referenced to absolute pressure.

psig (Gauge Pressure)
A measure of pressure in psi that is referenced to ambient pressure.

Purging
A process used for toxic, corrosive and explosive gases. A purging regulator is used when pressurization cycles or continuous system purging is necessary. For calibration gases with contents of corrosive ingredients or for gas qualities of 6.0 or better it is also recommended.

R_a Finish
Surface roughness average.

Repeatability
The ability of a regulator to return to the same set pressure subsequent to being subjected to various flow demands.

Reseat Pressure
The inlet pressure of a backpressure regulator at which flow stops.

Sensing Element
One of the three basic elements of a pressure reducing regulator. It senses the changes in the outlet pressure permitting the regulator to react and attempt to return to the original "set pressure" by increasing or decreasing pressure (bellows, piston, diaphragm).

Sensitivity
The ability of a pressure regulator to respond to change in discharge conditions: pressure, flow, temperature, etc.

Set Pressure
The desired operational outlet pressure for a regulator, normally stated at FIRST FLOW conditions.

Set-Ability
The minimum pressure increment or fraction thereof, which can be achieved by an experienced operator, when setting a pressure regulator.

Single-Stage
A pressure regulator with one valve and one orifice.

Specific Gravity (S_g)
Specific gravity of gases is the ratio of molecular weight of any gas to that of air.

Specific Gravity (S_L)
Specific gravity of liquids is the ratio of specific weight of any liquid to that of water.

Spring Load
The loading element where a spring controls the pressure in the regulator. Typically adjusted by a hand knob.

Unbalanced Main Valve
Inlet pressure provides the majority of the shut-off force. The function of the main valve is to reduce the high inlet pressure to a lower outlet pressure.

Venting
A feature incorporated in certain pressure reducing regulators which enables the unit to vent the outlet (downstream) pressure when the outlet pressure. is **manually** reduced.

ABOUT LABORATORY

Contamination of inert gas
Contamination by air (humidity) during commissioning of the system or after changing cylinder will be removed by multiple purging with changing pressures (up to 10 bar increase/relief) using dry Nitrogen or other inert gases:

- Use of diaphragm or bellows sealing in pressure regulators and valves
- Use of gases with higher purity
- Suitable piping (eventually electropolished)
- Reduction of the internal volume of the system
- Use of orbital welding with Argon atmosphere
- Continuous purging and sealing of the piping system
- Helium leak test of the system
- Use of VCR connections

Automatic or manual changeover
The automatic changeover system is useful if the system consumes higher amounts of gases requiring a change of cylinders very often or if the system requires a continuous supply of gas e.g. operation during the weekend or operation without supervisor or operator.

Single-stage or dual-stage
Dual-stage pressure regulator should be used if the operating pressure has to be absolutely stable even if

the inlet pressure drops (discharge of the cylinder) or if the pressure has to be reduced from a high pressure level (e.g. 2900 psig / 200 bar) to a very low pressure (e.g. < 14.5 psig / 1 bar). When using liquefied gases, it is sufficient in nearly all applications (e.g. SF_6, NH_3, HCL, CO_2 and others) to use the single-stage pressure regulator because the gas pressure remains constant until the cylinder is nearly empty (higher temperature alternations are excluded).

Control in mbar range
High purity pressure regulator will reach their limits because of the metallic elements (flexibility of the metal diaphragm) inside. For operating pressure below 100 mbar in most of the cases a compromise has to be made between the quality of the gas and the control capabilities of the pressure regulator (e.g. TESCOM Regulus Series). For analytical processes, metal diaphragm or metal bellows components have to be used.

Purging
For toxic, corrosive and explosive gases, a purging device or pressure growing purging by pressurization cycles or by continuous system purging is necessary. This is also recommended for calibration gases containing corrosive ingredients or for gas qualities of 6.0 or better.

Centralized or decentralized gas supply
A decentralized gas supply from single gas cylinders is useful if gas is needed temporarily or for a few hours. If a continuous gas supply is needed, it is recommended to use a centralized gas supply system. A centralized gas supply system offers economical advantages if the same gas will be used at different points of use.

Choice of material
Stainless Steel is used in processes with toxic, corrosive and explosive gases. Furthermore it is recommended to use stainless steel materials for process operating with high purity gases and for calibration gases with contents in the range of ppm or ppb (eventually electropolished). For gas qualities up to 5.0, it is sufficient to use copper pipelines or brass materials. For the gas supply with an ECD (Electron Capture Detector) Stainless Steel is recommended.

Set into operation with corrosive gases
If using corrosive gases which are connected to point of use systems the contamination with humidity and/or Oxygen (air) has to be avoided. In order to avoid traces of moisture (H_2O < 5 ppm) the choice of material and the use of purging gas (Argon or Nitrogen) with a content of H_2O of less than 2 ppm is very important. Furthermore, the purging method (multiple pressure range alternations) plays an important role. Direct heating of e.g. regulators or the usage of self-regulating heating cables for the tubing may significantly reduce the remaining moisture. The gas cylinders will be stored in special safety cabinets with a defined airation/venting system.

Relief valve for regulators
Pressure regulators used on cylinders or at central supply panels are fitted with an integrated or external relief valve. The set point is above the maximum outlet pressure. The primary purpose of the relief valve is the protection of the pressure regulator. In order to protect the process we recommend to install an additional safety valve downstream the pressure regulator.

MATERIALS (EXPLANATION OF MATERIALS)

TESCOM reserves the right to substitute trade names such as Hastelloy®, Monel and Inconel® with the equivalent UNS material.

Brass (UNS C36000)
For inert liquids and gases and otherwise non-corrosive materials, brass is the default metal of choice. Brass is corrosion resistant to a wide variety of materials, and has general applicability for a wide range of gases and liquids.

303 Stainless Steel (UNS S30300)
303 is a sulfur added free-machining austenitic stainless steel with 17-19% chromium and 8-10% nickel content. It has good corrosion resistance but not as good as 316 SST due to the added sulfur.

Nitronic 60 (UNS S21800)
Nitronic 60 is an austenitic stainless steel that has comparable corrosion resistance to 316 SST, but has nearly twice the strength. It is also known for its galling and wear resistance.

17-4 SST (UNS S17400)
17-4 is a precipitation hardened martensitic stainless steel with 17% chromium, 4% nickel, 4% copper, with the balance being iron. It has a higher strength than both Nitronic 60 and 316 SST.

316 Stainless Steel (UNS S31600)
316 SST is an austenitic chromium nickel stainless steel with 16-18% chromium and 10-14% nickel content. It has superior corrosion resistance properties to brass. 316 SST is a preferred material for many corrosive and oxidizing fluids.

Aluminum 6061 (UNS A96061)
Aluminum 6061 contains 95-98% Al. Aluminum is lighter weight than brass and is used particularly in mobile and portable applications when weight is a consideration. It is lower in strength and in general has poorer corrosion resistance than brass. Since brass is the standard general purpose material used by TESCOM, aluminum is generally more expensive than brass regulators.

Hastelloy® (per ASTM B576)
Hastelloy® has similar chromium content to 316 SST but much higher nickel content (Chromium 14-16%, Nickel 57%). For chlorinated compounds, particularly at elevated temperatures, 316 SST can be subject to stress corrosion cracking. For these applications, Hastelloy® is a recommended alternative. Hastelloy® has excellent resistance to strong oxidizers like ferric and cupric chlorides, hot contaminated media (organic and inorganic), chlorine, formic and acetic acides, acetic anhydrided, seawater, brine solutions, sulfur compounds, wet chlorine gas, hypochlorite, and chlorine dioxide.

Monel (per ASTM B127/164)
Monel is a nickel-copper alloy (about 67% Ni – 23% Cu) that is resistant to seawater and steam at high temperatures as well as to salt and caustic solutions. Monel is the material of choice for high pressure oxygen applications due to its excellent non-flammable properties in oxygen rich environments. This nickel alloy exhibits characteristics like good corrosion resistance, good weldability and high strength. A low corrosion rate with excellent resistance to stress-corrosion cracking in most fresh waters, and its resistance to a variety of corrosive conditions led to its wide use in marine applications and other non-oxidizing chloride solutions. This nickel alloy is particularly resistant to hydrochloric and hydrofluoric acids when they are de-aerated. As would be expected from its high copper content, alloy 400 is rapidly attacked by nitric acid and ammonia systems.

COMMON SOFT GOODS

Elastomers
(Commonly 70-90 shore A type durometer scale):

Buna-Nitrile (Buna-N, NBR)
Buna-N is a good general purpose rubber material. It has excellent resistance to oil and other petroleum products, is low cost and has excellent mechanical properties. In general, it is chemically attacked by ketones, esters, aldehydes, chlorinated and nitro hydrocarbons, and acids and bases.

Ethylene Propylene (EP)
EP in general is the preferred elastomer for acids and bases and oxidizing/reducing environments. EP generally has poor resistance to petroleum based oils, mineral oils and solvents, and aromatic hydrocarbons.

FKM, Fluorocarbon (Viton®)
FKM has excellent oil and air resistance, and in general has the widest chemical compatibility of any elastomer; it also has superior mechanical properties at high temperatures compared to other elastomers. It is attacked by ketones, low molecular weight esters and nitro containing compounds.

Urethane
In general, Urethane has the best mechanical properties of any elastomer. Urethane exhibits excellent life characteristics under repeated high stress cycling conditions. It has good solvent resistance, and is compatible with most mild materials, oil and greases. It is chemically attacked by most aggressive solvents including concentrated acids, ketones, esters, chlorinated and nitro hydrocarbons. Same as Polyurethane.

FFKM, Perfluoroelastomer (Kalrez®)
FFKM is chemically an elastomeric PTFE derived from tetrafluoroethylene (TFE), the same base monomer as PTFE. It provides a unique combination of chemical resistance and inertness like PTFE, but with a higher temperature service limit.

Polymers

Polyimide (Vespel®)
Polyimide combines heat resistance, lubricity, dimensional stability, chemical resistance and creep resistance, to be used in hostile and extreme environmental conditions, and in general exhibits superior overall mechanical properties to any polymer.

PEEK (Polyetheretherketone)
PEEK is a semicrystalline thermoplastic with excellent mechanical and chemical resistance properties that are retained to high temperatures. It has excellent resistance properties to a wide range of aggressive acids, bases and solvents, and has good mechanical strength. It is attacked by halogens as well as some halogenated compounds and aromatic hydrocarbons at high temperatures. PEEK has slightly higher mechanical friction than the other polymers.

Fluoropolymers

Common types of fluoropolymers used by TESCOM, each with specific strengths and weaknesses:

Virgin PTFE (Polytetrafluoroethylene)
(Teflon® and Gylon® are forms of PTFE)
PTFE exhibits the best chemical resistance of any polymer or elastomer. It is also the most difficult to machine because it is the softest of the polymeric materials and has a tendency to cold flow. So while it has extremely good chemical properties, the mechanical properties of PTFE limit it to specific applications.

CTFE (Chlorotrifluoroethylene Homopolymer)
CTFE has excellent chemical resistance, is slightly less resistant to aggressive chemicals than PTFE, but still offers chemical resistance to a broad range of chemicals. It offers significantly better mechanical properties than PTFE, including high compression strength; will not deform under load at room temperature; and very low gas permeability. Same as PCTFE.

FEP (Fluorinated Ethylene Propylene)
Known for their excellent chemical resistance, low-temperature toughness and unique flame resistance.

PFA (Perfluoroalkoxy Copolymer)
Combines the processing ease of conventional thermoplastics with the excellent properties of polytetrafluoroethylene (PTFE).

RESONANCE IN REGULATORS

Harmonic Resonance

Sometimes occurs in metal diaphragm sensed pressure reducing regulators when the combination of a high inlet pressure, low outlet pressure, and a lighter gas exists. This can also occur with traditional atmospheric gases. The regulator's thin metal diaphragm is torqued into place between the body and bonnet, acting much like the cone of a speaker. The bonnet cavity acts like a speaker case, together they amplify the sound of the gas travelling through the orifice past the main valve. The sound of **Harmonic Resonance** is often characterized as a hissing sound, often mistaken for gas leaking through the bonnet port of the regulator. A quick verification of Harmonic Resonance is to cover the bonnet port of the subject regulator with a finger. The sound should go away. Bubble checking the bonnet port will verify the existence of Harmonic Resonance or a leaking diaphragm; a constant stream of bubbles indicates diaphragm leakage. Lack of bubbles verifies the **Harmonic Resonance** condition. Harmonic Resonance is not a destructive condition.

Resonance

Occurs primarily in hydraulic regulators, especially with aqueous-based liquids that don't provide much lubrication to the internal regulator parts. Resonance occurs when the regulator internals are rubbing against one another, and the main valve is unable to stabilize. The sound of Resonance is characterized as a loud chatter combined with vibration. The outlet pressure fluctuates, sometimes wildly. You can feel Resonance when you touch the regulator. **This is a destructive condition that must be remedied or the regulator will fail!**

REGULATOR FREEZING (JOULE-THOMPSON EFFECT)

Have you ever seen a regulator that was encased in a ball of ice on a hot summer day?

It is strange to think that a regulator would be buried under a frozen mass of water when the ambient temperature is high and the rest of the piping is not frozen! Chances are that you're seeing the results of the Joule-Thompson Effect in action.

Just what is the Joule-Thompson (J-T Effect) and why should it be important to you?

First described by the noted scientists James Joule and William Thompson in 1852, the J-T Effect, or J-T for short, is simply described as the cooling effect of a high pressure gas as it expands into a lower pressure area. We've all come to heavily depend on the practical benefits of the J-T Effect; think air conditioning, Yes, the J-T Effect is what gives us that splendid cool air in our home, car or office on a hot summer day. Refrigerant is compressed to high pressure which then flows through an orifice where it expands into the heat exchanger tubes of the air conditioner. A fan moves fresh air over the heat exchanger tubes which cool the air as it moves into the ducts and flows through your home, car or office. The gas warms as it absorbs the heat from the air and is re-circulated, compressed and expanded over and over again to maintain the cool temperatures we crave on those hot summer days. If you use a spray can of air freshener, deodorant or other product you will feel the can cool in your hands as you spray the product. You are feeling the effect of the gas expanding as you spray it, cooling the can.

The J-T Effect is responsible for that large ball of ice around the regulator we observed earlier. High pressure gas is fed to the regulator and expands as it flows past the main valve and through the seat into the P_2 chamber then on to the process. The gas is flowing at supersonic speed as it expands out of the seat, cooling the body of the regulator as it flows. If the gas has a high enthalpy (stored energy) it will cool off a lot. If the gas has a low enthalpy then its cooling is minimal. The ice builds up on the regulator because the body of the regulator is cooler than the surrounding air; the cooling effect of the expanding gas is greater than the ability of the regulator to absorb heat from the surrounding air to offset the cooling. This allows the moisture in the air to condense on the body of the regulator in much the same way we see condensation form on the glass of a cold drink on a hot, humid summer day. If the regulator body is colder than 32°F / 0°C, the condensation freezes on the regulator body. Over time, the frozen condensate can grow into a substantial ball of ice, making the problem worse, as the ice prevents the regulator body from absorbing heat from the surrounding air. Certain specialty gases, such as Carbon Dioxide (CO_2) and Hydrogen Chloride (HCl) have a high enthalpy and are very susceptible to J-T. Ammonia is another gas with a high enthalpy and is often used in large, commercial and industrial refrigeration systems. The air conditioning system on the International Space Station employs ammonia as the refrigerant. Though the sight of an ice-covered regulator may be surprising, there is no real harm occurring to the regulator itself. Instead, there may be a problem with the controllability of the downstream pressure. Controllability may be affected if the cooling of the gas is so great that the gas actually liquefies briefly in the regulator after it passes through the main valve. This liquid then vaporizes back to a gas as it moves through the warmer piping beyond the regulator. Vaporizing the liquid produces pressure surges that are uncontrollable resulting in unstable downstream pressures = not good.

There are several ways to deal with J-T and minimize or prevent the gas from liquefying. Often, we use a two-stage pressure reduction scheme to minimize the J-T Effect. By taking the pressure drop in two stages, the total cooling effect is split between the two regulators, each of which may be able to absorb enough heat from the atmosphere to prevent the gas from liquefying. For some gases, such as HCl, the enthalpy is so high that two stage-reduction alone will not prevent the liquefaction of the gas as its pressure drops. In this case, heat is applied to the piping before the first and second stage regulators, raising the gas temperature enough to prevent the gas from liquefying as it passes through the main valves of the regulators. For high flow HCl systems, heaters rated for several hundred watts may be required. Consider how hot a 100 watt light bulb gets, and you can better imagine the amount of heat required to prevent HCl from liquefying at high flows. For lower flow applications, simply separating the two regulators with a long length of tubing will usually allow the gas to recover enough temperature between stages to prevent liquefaction after the second stage reduction. Another approach is to use a vaporizing regulator such as the 44-5800 Series, which employs heat exchanger tubes to warm the gas with integral electrical heaters

or stream. The 44-5800 Series is an excellent choice for minimizing the J-T Effect in low flow applications. Sometimes, using regulators with larger bodies, such as the 44-3200 and 64-3200 Series will help offset some of the J-T Effect as the larger mass of the body can absorb more heat from the surrounding atmosphere and requires more cooling from the gas to reach liquefaction temperatures.

Most gases exhibit a cooling effect when they expand; two notable exceptions are Hydrogen and Helium. These noble gases actually generate heat when they expand, though the heat generated is negligible. While it may seem the J-T Effect is undesirable, we have already seen a positive use for it in air conditioning. Another very important benefit of the J-T Effect is cryosurgery. Cryosurgery is used in removing warts and other unwanted skin conditions by flowing two gases at low flow, but under high pressure, through a surgical instrument that allows the gases to expand at the tip of the device. The expanding gases cool the skin and freeze it locally; the pressure of the gas then cuts through the skin to remove the offending condition. Cryosurgery is also used in a prostate cancer surgery procedure known as cryoablation. In this procedure, cryoprobes are inserted into the prostate gland. Argon and helium are circulated through the probes; the gases expand in the probes, producing the desired cooling effect. The cryoablation process freezes the tumor, and kills the diseased tissue. TESCOM makes a changeover panel, the NA-48, for cryosurgical gas applications.

J-T is one of those practical applications of physics that we see every day, but don't fully appreciate. Yet, without the beneficial effects J-T, our lives would be much less comfortable!

Listed are the Industry Certifications and Standards associated with many of TESCOM's products.

API (American Petroleum Institute)
A trade association for the oil and natural gas industry.

ASME (founded as American Society of Mechanical Engineering)
An engineering society that establishes codes and standards.

ASME B31.3
This is a process piping code that is a section of the ASME code for pressure piping. The intent of this code is to convey the requirements for safe design and construction of piping installations.

ASTM
ASTM International was first known as "The American Society of Testing and Materials."

ATEX
The ATEX directive consists of two European Union directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere. ATEX derives its name from the French title of the 94/9/EC directive: Appareils destines à être utilizes en Atmosphères Explosives.

CE MARK STATEMENT
The CE marking on a product by the manufacturer ensures that the product conforms to the essential requirements of the applicable EC directives. The letters "CE" stand for "Conformité Européenne" ("European Conformity").

CGA (Compressed Gas Association)

CRN (Canadian Registration Number)
Registration of fittings and pressure vessels in Canada. Pressure regulators and valves are considered "C" type fittings.

CSA (Canadian Standards Association)

DIN
The German Institute for Standardization (Deutsches Institut für Normung) is the German national organization for standardization and is that country's ISO member body. DIN is a Registered German Association (e.V.) headquartered in Berlin. The letters "DIN" are used for German standards with primarily domestic significance or designed as a first step toward international status and can incorporate with ISO or EN standards.

GOST (Russian ГОСТ)
GOST refers to a set of technical standards maintained by the Euro-Asian Council for Standardization, Metrology and Certification (EASC), a regional standards organization operating under the auspices of the Commonwealth of Independent states (CIS).

IEC (International Electric Code)

ISO
The International Organization for Standardization widely known as ISO, is an international standard-setting body composed of representatives from various national standards organizations.

METI (Ministry of Economy, Trade and Industry)
METI is a certification agency of pressurized equipment in Japan.

NACE
NACE International was first known as "The National Association of Corrosion Engineers."

NEC (National Electric Code)

PED (Pressure Equipment Directive)
The Pressure Equipment Directive 2014/68/EU PED of the European Union sets out the standards for the design and fabrication of pressure equipment ("Pressure Equipment" means steam boilers, pressure vessels, piping, safety valves and other components, and assemblies subject to pressure loading) generally over one liter in volume and having a maximum pressure more than 0.5 bar gauge. It also sets the administrative procedures requirements for the "conformity assessment" of pressure equipment, for the free placing on the European market without local legislative barriers.

REACH (for chemicals)
Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) is a European Union Regulation. REACH addresses the production and use of chemical substances, and their potential impacts on both human health and the environment.

RoHS
The Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2002/95/EC commonly referred to as the Restriction of Hazardous Substances Directive or RoHS.

TÜV
TÜV (short for Technischer Überwachungs-Verein, Technical Inspection Association in English) are German organizations that work to validate the safety of products of all kinds to protect humans and environment against hazards.

This document is to give more information about the following:

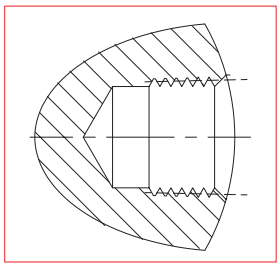
- Porting & Threads
- Cleaning Procedures
- Conversion Tables

PORTING & THREADS

NPT (National Pipe Thread) and NPTF (National Pipe Thread Dry-seal)

General: The NPT port is the most common pressure connection in the U.S. It is a threaded connection sealed by the squeezing action of the tapered threads on a sealant such as Teflon® tape applied to one of the threads.

Pressure Capability: TESCOM allows these ports to be used in regulators intended for pressures up to the piping ratings. The standard ports in TESCOM regulators and valves are machined to NPTF. This is a higher quality sealing thread than a standard NPT port because of the tight fit of the crest and root diameters of the thread.

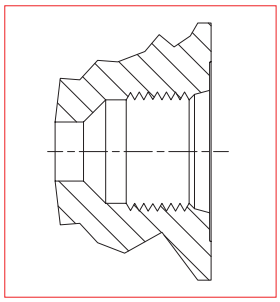


Advantages*:* Mating parts are readily available in the widest variety of materials and configurations. The port itself may be machined in any metal suitable for regulator bodies. No elastomeric is required to affect the seal so the connection can be made entirely from Teflon® and the regulator body material.

Limitations: The quality of seal formed is somewhat dependent on the skill of the operator in applying sealant and torque. The sealant can contaminate a system, especially if the joint is disconnected and then reconnected. The assembled dimension of the joint may vary because of the variability in machining and the variability of assembly torque.

SAE (Straight Thread O-ring Boss Seal)

General: The SAE port utilizes a threaded connector sealed with an elastomeric o-ring. The o-rings used are from the ARP-900 Series and may be specified in an available elastomeric material to match the characteristics of the media.



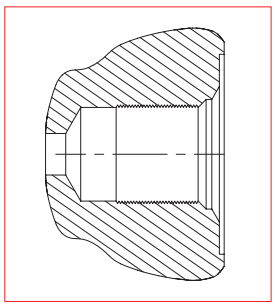
Pressure Capability: TESCOM allows these ports to be used in regulators intended for pressures up to the piping ratings.

Advantages: Excellent seal for both liquids and gases that does not require any additional sealant which could contaminate a system. Very easy to make and break; very good reusability. Assembled dimensions are constant and predictable.

Limitations: Cost and pressure capability is not as good as NPT. Rotational alignment to mated fittings and components cannot be controlled without the use of special fittings.

MS33649

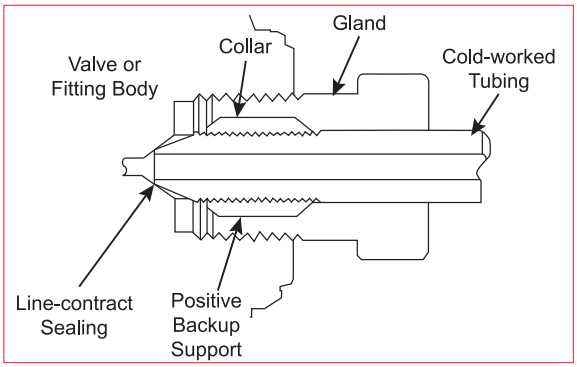
General: The MS33649 port is an aerospace connection. It utilizes a threaded connector sealed with an elastomeric o-ring. The o-rings used are from the ARP-900 Series and may be specified in any available elastomeric material to match the characteristics of the media. This port in not recommended for new application use - SAE ports are recommended.



Pressure Capability: TESCOM allows these ports to be used in regulators intended for pressures up to the piping ratings.

Advantages: Excellent seal for both liquids and gases that does not require any additional sealant which could contaminate a system. Very easy to make and break; very good reusability. Assembled dimensions are constant and predictable. TESCOM recommends the use of SAE ports.

High Pressure (AMINCO®)



Differences in angles exaggerated for clarity.

Limitations: High cost and very difficult to find fittings.

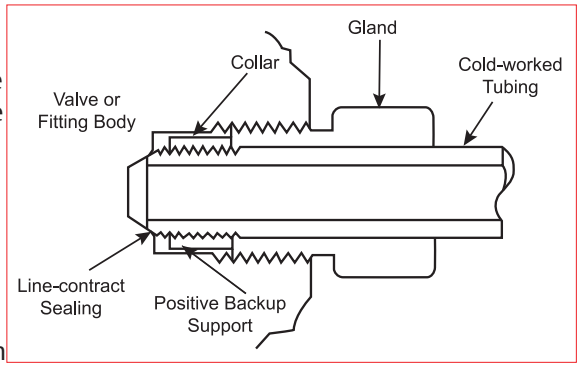
General: The High Pressure port is a coned connection designed for very high pressure service. The seal is formed by the coned end of the thick walled tubing being forced into a metal-to-metal seal with the regulator body. Available in tube outside diameter sizes of 1/4 inch (6.35 mm), 3/8 inch (9.53 mm) and 9/16 inch (14.27 mm) and bore sizes of 0.083 inch (2.11 mm), 0.125 inch (3.18 mm), 0.188 inch (4.78 mm) and 0.250 inch (6.35 mm).

Pressure Capability: High Pressure ports connected to the correctly mated fitting and tubing will work at pressure up to 60,000 psig / 4137 bar with the correct pressure rated piping.

Advantages: The High Pressure port is very reliable at extreme pressures under rigorous thermal and pressure cycling. It provides ease of assembly, disassembly and sealing without the use of additional sealants, which could contaminate a system. Uncompromised reliability under rigorous thermal and pressure cycling. Well suited to installations which require repeated assembly and disassembly with consistent reliability.

Limitations: The flow area of the high pressure tubing used with High Pressure ports is very small and the tubing is difficult to bend. The tubing must be specially machined to mate with the port. The range of the internal bore of pipes is from 0.083 inch (2.11 mm) up to 0.25 inch (6.35 mm).

Medium Pressure (Autoclave®, Slim-Line®)



Differences in angles exaggerated for clarity.

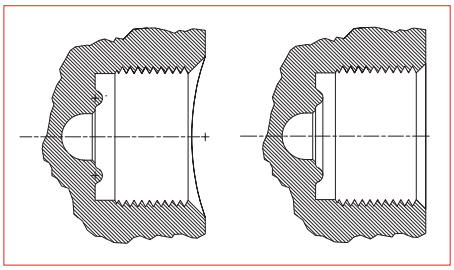
General: Medium Pressure ports are intended to mate with the medium pressure fittings. This medium-high pressure fitting seals in the same way as the high pressure fitting. Design is a more compact version of the original Autoclave Engineers High Pressure connections. Available in tube outside diameter sizes of 1/4 inch (6.35 mm) through 1-1/2 inch (38.10 mm) and bore sizes from 0.109 inch (2.77 mm) to 0.938 inch (23.83 mm).

Pressure Capability: Medium Pressure ports connected to the correctly mated fitting and tubing will work at pressures up to 20,000 psig / 1379 bar with the correct pressure rated piping.

Advantages: The Medium Pressure port is very reliable at medium pressures under rigorous thermal and pressure cycling. It provides ease of assembly, disassembly and sealing without the use of additional sealants, which could contaminate a system.

Limitations: The flow area of the medium pressure tubing used with Medium Pressure ports is greater than in the High Pressure design. The tubing is difficult to bend and has to be specially machined to mate with the port. The range of the internal bore of pipes is from 0.109 inch (2.77 mm) up to 0.938 inch (23.83 mm).

HPIC (High Purity Internal Connection)



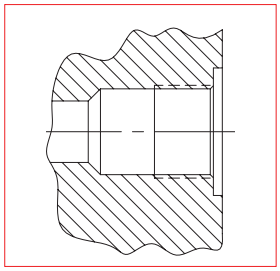
General: A special internal high purity metal-to-metal gasket connection. The tightness results by pressing the gasket between two sealing lips. This design is compatible to VCR® fittings.

Pressure Capability: Pressure rating depends on port size and material. For Stainless Steel (standard material), the maximum pressure for 1/8" is 8500 psig / 585 bar and for 1/2" is 3500 psig / 241 bar.

Advantages: This connection has a high grade of cleanliness and is free of particles due to no gas wetted threads. The tightness rate is up to $1x10^{-9}$ mbar l/s Helium.

Limitations: Functionality depends on the surface roughness of the sealing lip. Costs are high due to opposite to flat sealing designs and requirements for high purity applications. Maximum HPIC port size is 1/2". Tooling for porting is needed.

BSP (British Straight Pipe)



General: The British Standard Pipe thread (BSP thread) is a family of standard screw thread types that has been adopted internationally for interconnecting and sealing pipe ends by mating an external (male) with an internal (female) thread.

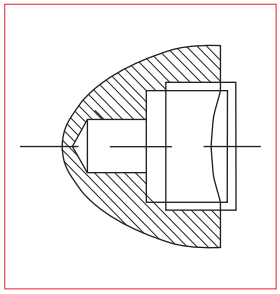
Commonly used are BSPP (British Standard Pipe Parallel) threads, which are straight (parallel) threads. They are used where the seal is obtained with a sealing ring. The new/official name of the BSP parallel thread is ISO 228/1 (G-Thread). Application for gases of standard purity. Metal gaskets, metal gaskets with elastomeric lip and fittings with o-rings can be used.

Pressure Capability: TESCOM allows these ports to be used in device intended for pressures up to the fitting and piping ratings.

Advantages: The BSP port is reliable and provides ease of assembly and disassembly with metal gaskets, metal gaskets having an elastomeric lip or fittings with o-ring.

Limitations: Contamination of gas is possible when using gaskets with elastomeric components (diffusion). Particles originating from threads during assembly could contaminate the gas wetted area.

Pipe Thread according to ISO228-1 (G-Thread)



General: The Pipe thread according to ISO228 (G-Thread) is one of the most commonly used straight threads worldwide. This thread is in metric dimension equivalent to the BSP thread. It is used in applications for gases of specific purity in the laboratory market. Sealing line is the flat bottom of the core bore and a metal gasket has to be used.

With flat sinking at the top like BSP port, a metal-to-metal sealing is possible with fittings having a sealing lip contour. With flat sinking BSP fittings used in combination with metal gaskets, metal gaskets with elastomeric lip and o-rings could be used.

Pressure Capability: TESCOM allows these ports to be used in devices intended for pressures up to the fitting and piping ratings.

Advantages: Metal-to-metal sealing avoids contamination of the system, also called no diffusion. The tightness rate is up to $1x10^{-6}$ mbar l/s Helium. Sealing on the bottom face avoids particles in the gas wetted area.

Limitations: Functionality depends on quality of sealing surface and gasket. Disassembly of the deformed metal gasket (like copper) is difficult and bottom sealing surface could be damaged. If there is a leakage, retightening with higher torque will not be successful in all cases. Stainless Steel versions need silver plated stainless steel washers to avoid burrs during assembly.

Metric ISO Thread according DIN 13

General: A commonly used straight metric thread used for connection between a regulator body and cylinder bolt to connect to a gas cylinder. Application is for gases of standard and specific purity of gases up to 6.0.

Pressure Capability: Pressure ratings depend on material and design of sealing components.

Advantages: Metal-to-metal sealing is up to 300 bar by tightness rate up to $1x10^{-6}$ mbar l/s Helium. Sealing on the bottom face avoids particles in the gas area.

Limitations: Functionality depends on quality of sealing surface. If there is a leakage, retightening with higher torque will not be successful and rework of the bolt or housing will be needed.

CLEANING PROCEDURES

Ultra High Purity Cleaning

316L VAR per SEMI F20 Electropolished and Cleaned per SEMI F19 for precise control of Surface Roughness, Defects, Contamination, Chemistry, and Corrosion Resistance.

Oxygen Cleaning (Removal of particles and oils)

According to DIN EN ISO 15001 for medical products and products for oxygen applications in the European market.

According to CGA E4.1 and ASTM G93.

Note: Oxygen cleaning does not mean the product is compatible for oxygen service. Products designed for oxygen service should use oxygen compatible materials in addition to being cleaned for oxygen.

Certificate of Conformance is available upon request at time of ordering.

CONVERSION TABLES

Flow Volume

	l /s	l /min	gal /min	1 feet³ /s	feet³ /min
1 l /s	1	60	15.8	0.035314	2.1188
1 l /min	0.016666	1	0.264	0.00058	0.0353
1 gal /min	0.063090	3.7854	1	0.00223	0.1337
1 feet³ /s	28.317	1699.2	448.8	1	60
1 feet³ /min	0.47	28.314	7.481	0.01667	1

Mass Flow Rate

	g/s	g/min	g/hr	kg/s	kg/min	kg/hr	lb/s	lb/min	lb/hr
1 g/s	1	60	3600	0.001	0.06	3.6	0.0022	0.132	7.94
1 g/min	0.0167	1	60	0.00002	0.001	0.06	0.00004	0.0022	0.132
1 g/hr	0.0003	0.0167	1	2.78×10^{-7}	0.00002	0.001	6.12×10^{-7}	0.00004	0.0022
1 kg/s	1000	60,000	3,600,000	1	60	3600	2.204	132.28	7936.6
1 kg/min	16.67	1000	60000	0.0167	1	60	0.0367	2.204	132.28
1 kg/hr	0.278	16.67	1000	0.0003	0.0167	1	0.0006	0.0367	2.204
1 lb/s	453.59	27,215	1,632,933	0.454	27.22	1632.93	1	60	3600
1 lb/min	7.56	453.59	27,215	0.0076	0.454	27.22	0.0167	1	60
1 lb/hr	0.126	7.56	453.59	0.0001	0.0076	0.454	0.0003	0.0167	1

Volume

	mm³	cm³	liter	m³	inch³	feet³	gal
1 mm³	1	0.001	0.000 001	1×10^{-9}	0.0000621	3.53×10^{-8}	2.64×10^{-7}
1 cm³	1000	1	0.001	1×10^{-6}	0.06102	3.53×10^{-5}	2.64×10^{-4}
1 liter	1×10^{6}	1000	1	0.001	61.02	0.03532	0.2642
1 m³	1×10^{9}	1×10^{6}	1000	1	6.10×10^{4}	35.31	264.2
1 inch³	16387.064	16.39	0.01639	1.64×10^{-5}	1	5.79×10^{-4}	0.00433
1 feet³	2.83×10^{7}	2.83×10^{4}	28.32	0.02832	1728	1	7.481
1 gal	3.79×10^{6}	3785	3.785	0.00379	231.0	0.1337	1

Length

	mm	cm	m	km	inch	feet	mile
1 mm	1	0.1	0.001	0.000001	0.03937	0.003281	6.21×10^{-7}
1 cm	10	1	0.01	1×10^{-5}	0.3937	0.03281	6.21×10^{-6}
1 m	1000	100	1	0.001	39.37	3.281	6.21×10^{-4}
1 km	1×10^{6}	1×10^{5}	1000	1	3.94×10^{4}	3281	0.6214
1 inch	25.4	2.540	0.02540	2.54×10^{-5}	1	0.08333	1.58×10^{-5}
1 feet	304.8	30.48	0.3048	3.05×10^{-4}	12	1	1.89×10^{-4}
1 mile	1.61×10^{6}	1.61×10^{5}	1609	1.609	6.34×10^{4}	5280	1

CONVERSION TABLES (continued)

Temperature

°C = [°F - 32] x 5 / 9	°F = [°C x 9 / 5] + 32

Surface Finishes R_a

	µm	µinch
1 µm	1	39.37
1 µinch	0.02540	1

Common Surface Finishes

0.26 µm = 10 µinch
0.38 µm = 15 µinch
0.80 µm = 32 µinch
1.6 µm = 63 µinch
2.5 µm = 100 µinch

Pressure

	hPa (mbar)	inch Hg	inch H_2O	feet H_2O	bar	psi (lb/in²)	kg/cm²	MPa
1 hPa (mbar)	1	0.02983	0.4015	0.03346	0.001	0.01450	0.001	0.0001
1 inch Hg	33.86	1	13.60	1.133	0.03386	0.4912	0.034	0.003
1 inch H_2O	2.49	0.07355	1	0.08333	0.00249	0.03613	0.002	0.0002
1 feet H_2O	29.89	0.8826	12	1	0.02989	0.4335	0.03	0.003
1 bar	1000	29.53	401.5	33.46	1	14.50	1.02	0.1
1 psi (lb/in²)	68.95	2.036	27.68	2.307	0.06895	1	0.07	0.007
1 kg/cm²	980.67	29.04	394.1	32.81	0.98	14.22	1	0.098
1 MPa	10,000	296.13	4018.6	334.9	10	145.04	10.2	1

What is needed to Specify a Regulator?

These are the regulator specifications that you should define when searching for a regulator to fit your needs.

REGULATOR TYPE	Pressure Reducing/Backpressure
MEDIA	Gas/Liquid/Steam or Other
TEMPERATURE	Celsius or Fahrenheit Maximum Design Temperature (If Different)
FLOW RATE	Maximum/Normal/Minimum
INLET PRESSURE (psig, bar, or kg/cm^2)	Maximum/Normal/Minimum Maximum Design Pressure (If Different)
OUTLET PRESSURE (psig, bar, or kg/cm^2)	Maximum/Normal/Minimum
LOADING/ACTUATION TYPE	Spring/Handknob Adjust Spring/Wrench Adjust Dome Load 1:1 Ratio Dome Load/Spring Bias Air Actuated X:1 Ratio Other
MATERIALS OF CONSTRUCTION	Body Wetted/Trim Bonnet O-rings Seat(s) Other (Load Spring, Adjusting Screw, Etc.)
VENTING TYPE	Non-Venting Venting (To Atmosphere) Captured Venting Segregated and Captured Venting
CONNECTIONS AND PORTING CONFIGURATIONS	Type Size End-to-end Dimension (If Welded) Pipe Schedule (If Welded) Porting Configuration
ACCESSORIES	Gauges (Quantity, Diameter and Maximum Pressure of Each) 9050 Metal Tag Other
CERTIFICATIONS AND TEST REPORTS	Certificate of Conformance Certificate of Conformance (Serialized) Actual Material Certificate (Body Only) Function Test Report Hydrostatic Test Report Pneumastatic Test Report (GN2) Dye Penetrant Test Report (Welded Only) Other

The Tescom Regulator Specification Form can be found on www.TESCOM.com under the Technical Reference section.

Services
Technical Information

Modifications, Accessories, and Repair Kits
This catalog contains standard product information and model numbers. Many of our products have modifications already available or can be modified to fit your specific application needs. TESCOM offers a range of accessories completing the hardware needs of a process/specialty gas installation. Repair kits are also available for most of our products allowing for ease of in-field servicing with minimal downtime. Call your local representative or TESCOM for further information about these services.

Repair and Return of Product
TESCOM will accept equipment for repair provided that either the local distributor or TESCOM customer service has been contacted and a Return Authorization (RA) has been issued. This number must appear on all accompanying documentation regardless of the reason for return.

Information needed for an RA to be issued:

1. Part number
2. Serial number
3. Reason for return
4. Inlet and outlet pressure
5. Service media (an RA number will not be issued without this information)
6. Contact information

To obtain an RA number:
Contact your local TESCOM representative. If you do not know your local TESCOM representative, refer to our website and click on the Locate a Sales Office quick link.

Notes:
- All products being returned for repair must be in a decontaminated state.
- Packing slip and shipping label must display the RA number.
- Please note on the packing slip what media the product was used with. Equipment that has been used in hazardous media service must be properly purged, capped and bagged.
- Please indicate the reason for return on the packing slip.
- A purchase order (PO) must be issued at the same time a Return Authorization (RA) number is issued for all repairs not under warranty.
- If a regulator is returned under warranty, but is determined to have been mistreated, we will consider the repair a standard repair and a PO will be required before any work is done.
- An RA number will not be issued without a PO, except for regulators under warranty.
- TESCOM will refuse delivery on any regulator shipped without an RA number on the outside of the box.
- Any regulator shipped to TESCOM with accessories attached will be returned to the sender.
- TESCOM is not responsible for any accessories or damage to ports from accessories installed in regulators returned for repair.
- After official notification of completed evaluation and/or repair price quote, the product will only be held for 30 days. After 30 days, product will be returned to sender.

Procedures may be slightly different by world area, please contact TESCOM for more information.

Training
TESCOM offers onsite/offsite product training depending on world area and availability. Please contact the TESCOM main office nearest you for more information.

TESCOM Main Locations – Technical Support:

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T +1 800 447 1250
na.tescom@emerson.com

Europe
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eu.tescom@emerson.com

Asia-Pacific
T +86 21 2892 9000 (China)
T +65 6777 8211 (Singapore)
ap.tescom@emerson.com

Flow Curves

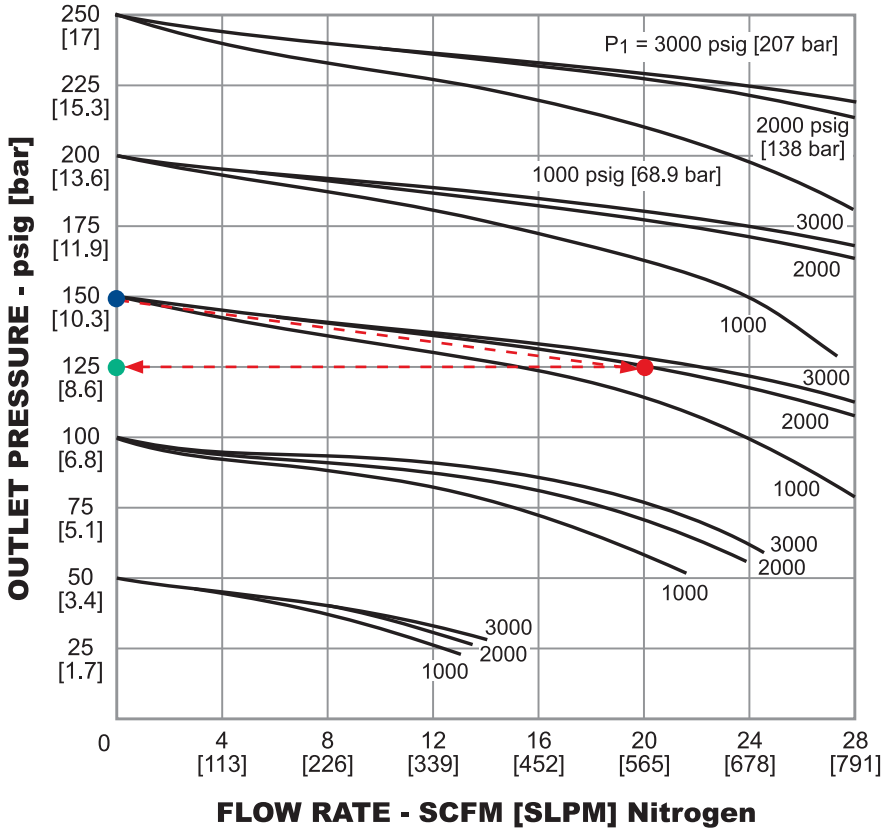
TESCOM flow charts are the graphic representation of test results which show the change in outlet pressure (P_2) with a varying flow rate. All curves are based on using nitrogen at ambient conditions as a media unless otherwise noted. Inlet pressure (P_1) is shown on the right end of each curve.

To use these charts, select the curve to fit the following:

- Regulator model
- Verify C_V of that model
- Comparable inlet pressure (P_1) to your application
- Comparable outlet pressure (P_2) to your application

Determine the maximum dead-ended (zero flow) P_2 pressure permitted by your system. Locate this pressure on the P_2 (vertical) axis. If no curve is plotted for that exact pressure, extrapolate a new curve between the two closest existing curves and follow from the zero flow point to the intersection of the new curve and the vertical coordinate of the desired flow. Read horizontally to locate the corresponding P_2 pressure.

REGULATOR DISCHARGE CHARACTERISTICS CURVES



Example:

Using the flow chart above, determine the droop (P_2 at the 20 SCFM / 565 SLPM condition).

1. Locate maximum outlet pressure (150 psig / 10.3 bar) on P_2 axis with zero (0) flow.
2. Follow the discharge curve until it crosses the vertical line corresponding to 20 SCFM / 565 SLPM.
3. Follow the intersecting point horizontally to the vertical P_2 axis and read the corresponding pressure of 125 psig / 8.6 bar. Hence droop is 25 psig / 1.7 bar (150-125).

Note: You are given that P_1 = 2000 psig / 138 bar, P_2 = 150 psig / 10.3 bar maximum, Q = 20 SCFM.

Flow Curves

In addition to reading the curve, there are components to a flow curve associated with what is happening. Here are some common terms used (see Flow Chart 2):

Lock-up

The outlet pressure increase which occurs above the "set pressure" as the flow is decreased to zero.

Hysteresis

The outlet pressure differential which occurs between flow increase (droop) and flow decrease (lock-up).

Initial Droop

The outlet change (offset) from the "set pressure" which occurs as the flow rate initially increases.

Optimal Flow Range

The flow range that is most suitable for a given regulator at a given pressure scenario.

Choke Flow Range

The point at which the regulator is too small to handle the flow rate being demanded. The regulator will be wide open and no longer regulating pressure.

What is Droop?

This is the outlet pressure (P_2) change (offset) from the set (static) pressure which occurs as the flow rate increases. We've all heard the term droop used when referring to regulator performance, but most of us never fully understand the meaning of this term. In a pressure reducing regulator, the outlet pressure drops (or droops) as the flow increases. As the flow decreases, the P_2 pressure goes up, or recovers to just above the original setpoint (lock-up). Droop is the result of loading force changes in the regulator, and is caused primarily by the load spring.

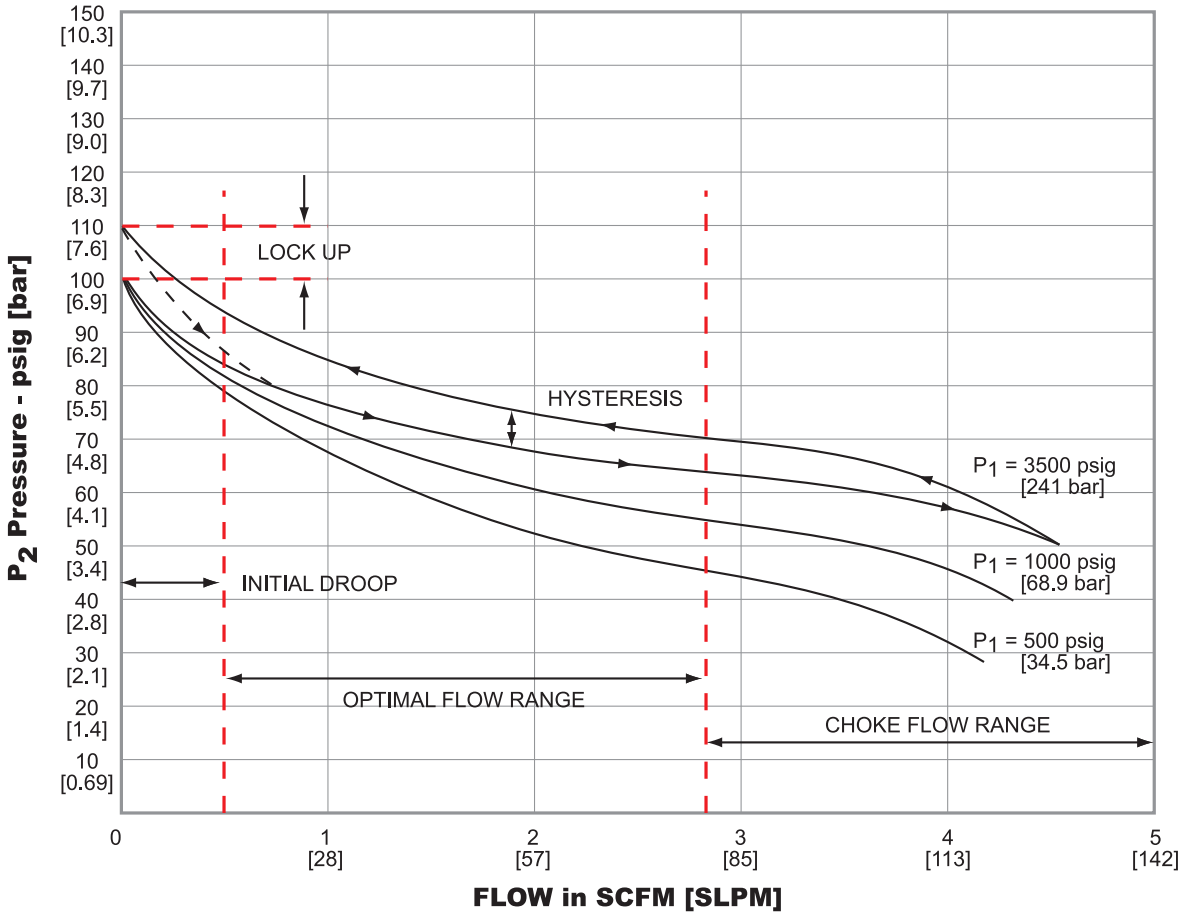
How does it work?

To better understand droop, let's evaluate the performance of a regulator for a typical application (see Flow Chart 2). A regulator is needed for nitrogen service, set at 100 psig / 6.9 bar. The gas source is a cylinder, pressurized to 2600 psig / 179 bar (P_1 pressure). Most nitrogen cylinders are packaged at 2200-2600 psig / 152-179 bar when full. If the cylinder sits outside on a gas pad in the heat of the sun, you can assume that the initial cylinder pressure will be on the high side of this range. Small lecture bottles are packaged at lower pressures, but will still exhibit pressure decay as the process consumes the gas. The subject regulator needs to deliver 2 SCFM / 57 SLPM. If you refer to the flow (or droop) curve for the subject regulator you will note that at zero flow, the regulator set point (P_2) is established as 100 psig / 6.9 bar.

We will use the flow curve labeled for P_1=3500 psig / 241 bar to evaluate our subject regulator's performance, since our inlet pressure is 2600 psig / 179 bar. To determine the droop at 2 SCFM / 57 SLPM, follow the 3500 psig / 241 bar flow curve until it intersects the vertical line marked 2 SCFM / 57 SLPM. At this point, draw a horizontal line to the left until it intersects the vertical line marked with P_2 pressures, and read the pressure value on the vertical (P_2) scale. In our example, we find that the outlet pressure has drooped to approximately 68 psig / 4.7 bar. The outlet pressure of this regulator would drop from 100 to 68 psig / 6.9 to 4.7 bar; the droop is 32 psig / 2.2 bar. Moving further along the droop curve to 3 SCFM / 85 SLPM, we see that the P_2 pressure is now 63 psig / 4.3 bar. At approximately 2.8 SCFM / 79 SLPM, the droop curve starts to drop off significantly. This is the point at which the main valve of the regulator is wide-open, and no longer regulating pressure. We call this area of the flow curve the choke flow range. We generally don't consider the choke flow range as part of the regulator's working flow range, so avoid specifying a regulator with a flow requirement that falls into the choke flow range. If we start to reduce the flow from 3 SCFM / 85 SLPM towards zero flow, we note that the P_2 pressure climbs toward the original 100 psig / 6.9 bar set point. Something interesting occurs, however. The P_2 pressure at 2 SCFM / 57 SLPM is approximately 75 psig / 5.2 bar, not the 68 psig / 4.7 bar we observed when the flow was increasing. This condition is known as hysteresis. Other than recognizing it for what it is, hysteresis is usually not an issue in evaluating the performance of a regulator.

To get a full picture of how the regulator will perform in our application, we should take into account the

Flow Chart 2



fact that the inlet pressure will decrease as we consume gas from the cylinder—sometimes allowing cylinder pressure to drop to 200 psig / 13.8 bar before changing out the cylinder. Therefore, we should perform a droop evaluation at P_1=500 psig / 34.5 bar to see if the regulator will still meet expectations. Using the flow curve labeled P_1=500 psig / 34.5 bar, we see that the droop at 2 SCFM / 57 SLPM is now approximately 52 psig / 3.6 bar, or nearly half of the original 100 psig / 6.9 bar set point. Clearly, the droop gets worse as the inlet pressure falls. If an outlet pressure of 100 psig / 6.9 bar, +/- 40 psig / 2.8 bar had been specified, we might have considered the subject regulator as suitable for the application if we had only considered its performance when the cylinder is full. But, by conducting an evaluation with a low inlet pressure, we see that the regulator would have not met the application requirements under this condition and therefore would not have specified this regulator.

You can use the flow curves to evaluate droop for gases other than air or nitrogen. Using compensation factors found under Flow Calculations, multiply the flow values by the appropriate multiplier to get a new flow scale for the gas involved. For example, to convert nitrogen flow to hydrogen flow, the multiplier is 3.79; 1 SCFM / 28 SLPM of nitrogen equals 3.79 SCFM / 107 SLPM of hydrogen, 2 SCFM / 57 SLPM of nitrogen equals 7.58 SCFM / 215 SLPM of hydrogen, and so on. The shape of the flow curves remains the same, only the flow scale changes.

What is Creep?

An increase in the outlet pressure subsequent to lock-up, usually a long-term slow pressure increase. This indicates a regulator leak and calls for the immediate removal of the regulator for service. This may be caused when contaminants from upstream of the regulator are deposited on the valve seat or actually damage the seat during flow—this will obstruct the valve stem from sealing on the seat due to surface damage. Should this happen, positive shut-off cannot occur and the downstream pressure will gradually try to reach the same as the inlet pressure (dependent on media flow).

What is the Decaying Inlet Characteristic?

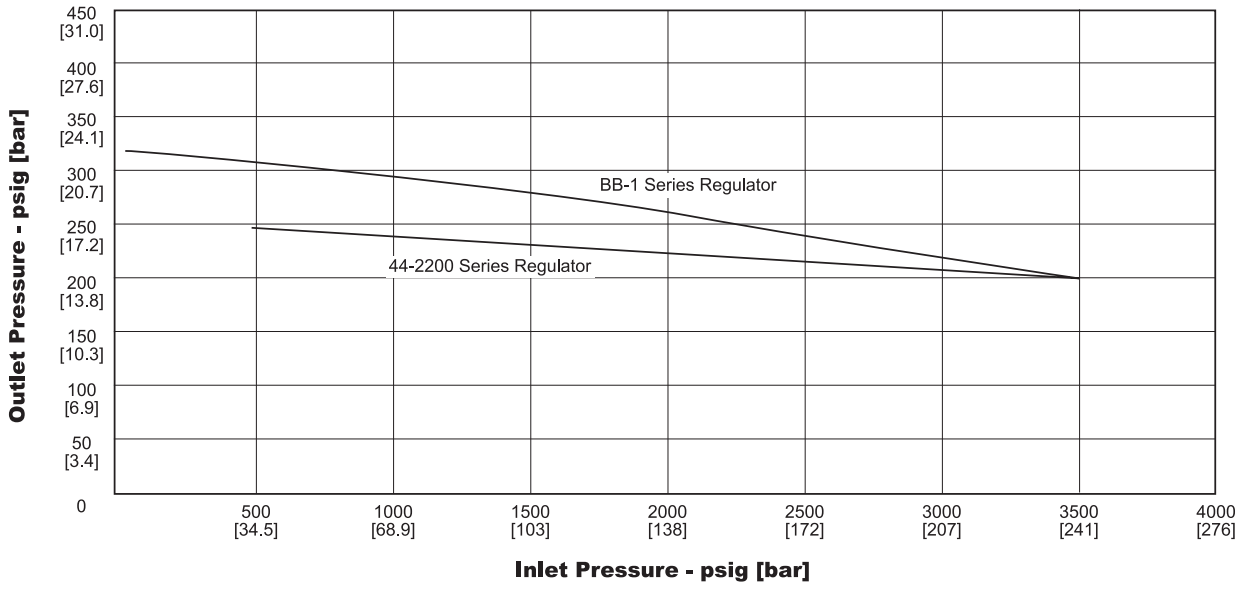
The effect on the set pressure of a regulator due to an inlet pressure change. This is usually an increase in outlet pressure due to a decrease in inlet pressure. Some people work with pressure regulators all of their lives and never know what is really going on inside. TESCOM spends a great deal of time teaching our distributors and customers about the key operating characteristics of pressure regulators. Understanding them and using the flow curves to properly evaluate a regulator's performance for an application is the secret to a trouble-free installation.

Definition

The decaying inlet characteristic is the amount of change in outlet pressure of a pressure reducing regulator as the inlet pressure varies. The decaying inlet characteristic has an inverse relationship between the inlet and outlet pressure of a single-stage regulator; as the inlet pressure goes down, the outlet pressure goes up (see chart below).

Considerations

DECAY INLET CHARACTERISTIC



We must consider decaying inlet when our pressure is a limited source, such as a cylinder or tube trailer. When our source gas comes from a compressor or liquid source such as a dewar, the inlet pressure is fairly stable and the effect of the decaying inlet characteristic on set point is negligible.

How It Works

To see how decaying inlet works, let's consider a few TESCOM regulators for the same application.

Parameters

Our application is a compressed gas that is packaged at 3500 psig / 241 bar. Our process requires a 200 psig / 13.8 bar set point.

Scenario A

We'll look at the BB-1 Series, which is rated for 3500 psig / 241 bar max inlet pressure, and has a 4 psig/100 psig (0.28 bar/6.9 bar) decaying inlet characteristic (4 psig / 0.28 bar rise in outlet pressure per 100 psig / 6.9 bar decrease in inlet pressure). Assuming that we start with full inlet pressure of 3500 psig / 241 bar, and that the source pressure will decay to 500 psig / 34.5 bar before it is either changed out or recharged, the net change on the inlet of the regulator is 3000 psig / 207 bar. If the regulator is initially set for an outlet pressure of 200 psig / 13.8 bar with 3500 psig / 241 bar on inlet, the outlet pressure will rise by 120 to 320 psig / 8.3 to 22.1 bar.

3000 psig change in inlet pressure ÷ 100 psig = Factor of 30 Factor of 30 x 4 psig decaying inlet characteristic = 120 psig increase

207 bar change in inlet pressure ÷ 6.9 bar = Factor of 30 Factor of 30 x 0.28 bar decaying inlet characteristic = 8.4 bar increase

Scenario B

The 44-2200 Series has much lower decaying inlet characteristic 0.75 psig/100 psig (0.05 bar/6.9 bar). Using the same operating conditions is the previous example, we find that these regulators will see a pressure rise of 22.5 psig / 1.6 bar on the outlet, from 200 to 222.5 psig / 13.8 to 15.3 bar. Clearly, we get better outlet pressure stability with these regulators.

Scenario C

To further reduce the decaying inlet effect, we should consider taking the pressure reduction in two steps, or stages. We typically use a two-stage regulator like the 44-3400 Series to do this. The 44-3400 Series is composed of two 44-2200 Series regulators built into the same body and internally connected in series with one another. The decaying inlet characteristic of the 44-2200 Series is 0.75 psig/100 psig (0.05 bar/6.9 bar). The first stage is preset at a nominal pressure of 250 psig / 17.2 bar. The second stage is adjusted to our original 200 psig / 13.8 bar set point. When the source pressure decays from 3500 to 500 psig / 241 to 34.5 bar, the first stage sees a net decrease of 3000 psig / 207 bar on its inlet. The outlet pressure of the first stage will increase by 22 to 522 psig / 1.5 to 36.0 bar. The second stage now sees a net increase of 22 psig / 1.5 bar on its inlet. The outlet of the second stage will go down by 0.17 psig / 0.01 bar (22 psig ÷ 100 psig = 0.22 psig x 0.75 psig = 0.17 psig) (1.5 bar ÷ 6.9 bar = 0.22 bar x 0.05 bar = 0.01 bar). To anyone reading a typical pressure gauge on the downstream side of the two-stage regulator, the decaying inlet characteristic is negligible.

Controlling Decaying Inlet Characteristic

Two-stage pressure regulators are frequently employed as cylinder regulators for packaged specialty gases. The flows are typically low and the two-stage reduction allows the operator to provide stable delivery pressures to the process. There are times when a single-stage regulator is used on the cylinder, which feeds a header in a lab or process facility. Point-of-use regulators are installed along the header, permitting individual users to adjust their pressures accordingly. The use of a single-stage source regulator, along with point-of-use regulators, provides the two-stage reduction necessary for controlling decaying inlet characteristic. For higher flow applications, TESCOM offers regulators with balanced main valves, like the 44-1300 Series. The 44-1300 Series is so highly balanced that its decaying inlet characteristic is a very low 0.1 psig/100 psig (0.007 bar/6.9 bar) with a 0-300 psig / 0-20.7 bar control pressure. For a 3000 psig / 207 bar reduction on its inlet, the 44-1300 Series would yield a 3 psig / 0.21 bar increase on its outlet, nearly transparent to anyone working with this regulator. The 44-1300 Series is often used as a tube-trailer regulator because of its high flow and extremely low decaying inlet characteristic. These qualities allow users to employ only one regulator to provide the required working pressure for their process.

Mistaken Identity

Many times, unknowing regulator users observe the decaying inlet characteristic and mistake it for a leaky regulator. In the non-flowing condition, the user observes that the set point has climbed above the original set point and believes the regulator is creeping. One quick method to confirm that the regulator is not creeping is to observe the gauge reading for a short period of time. If the pressure has stabilized at a few psig above the original set point, then this is probably decaying inlet. If the pressure is slowly climbing and not stabilizing, then the regulator seat is likely contaminated and the regulator must be removed for servicing. By confirming that the source pressure is a compressed source such as a cylinder, you can quickly correlate the drop in inlet pressure to the increase in set point.

Sizing a Regulator

There are several reasons to consider the decaying inlet characteristic when evaluating a regulator. First and foremost, can the system handle the increase in outlet pressure? What if the outlet pressure decays to a point where a relief valve triggers or a rupture disk bursts for example? Secondly, can the process itself tolerate the pressure swing involved? In our BB-1 Series example mentioned earlier, could the process tolerate a 120 psig / 8.3 bar increase on the set point? Are gauges and other instrumentation downstream of the regulator sized to handle this increase in pressure? Our responsibility as application specialists is to consider all possibilities when selecting a regulator for the customer's application. By taking into account the decaying inlet characteristic when you size a regulator, you can avoid any surprises that would otherwise result when the regulator is placed into service.

Flow Calculations

This section is for computing gas and liquid flow through regulators and valves.

C_V

Flow coefficient for regulators and valves that expresses flow capabilities of a unit at full open condition. For liquids, this coefficient is defined as the flow of water at 60°F / 16°C in gallons per minute at a pressure drop of one psig. For gases, this coefficient is defined as the flow of air at standard conditions in standard cubic feet per minute for each psig of inlet pressure.

S_L

Specific gravity of liquids relative to water, both at standard temperature of 60°F / 16°C. (Specific gravity of water = 1.0 at 60°F / 16°C.)

S_g

Specific gravity of a gas relative to air; equals the ratio of the molecular weight of the gas to that of air. (Specific gravity of air = 1.0 at 60°F / 16°C.)

P

Line pressure (psia).

P_1

Inlet pressure expressed in psia.

P_2

Outlet pressure expressed in psia.

ΔP

Differiential pressure (P_1 - P_2).

psia

Absolute pressure which is gauge pressure (psig) plus 14.7 (atmospheric pressure).

Q_L

Liquid flow in gallons per minute (GPM).

Flow Calculations

GASEOUS FLOW FORMULAS*

a. $C_V = \frac{Q_g \times 2\sqrt{S_g}}{P_1}$ Use when P_1 equals or is greater than 2 x P_2. (Referred to as critical flow)

Example: Determine C_V required for a regulator when inlet pressure (P_1) is equal or greater than two times outlet pressure (P_2) and the following items are known:

Given:

P_1 = 1000 psia

P_2 = 400 psia

Q_g = 400 SCFM

S_g = 1.0 (assume air in this example)

$$C_V = \frac{Q_g \times 2\sqrt{S_g}}{P_1} = \frac{400 \times 2}{1000} = .8\ C_V$$

*Caution: When sizing components for flow applications, attention must also be directed to the size of plumbing. When flow requirements are at low pressures, the plumbing may be the flow limiting item rather than the regulator or valve.

b. $C_V = \frac{Q_g \times \sqrt{S_g}}{\sqrt{\Delta P \times P_2}}$ Use when P_1 is less than 2 x P_2 or P_2 is greater than one-half of inlet pressure.

Note: This is referred to as sub-critical flow.

Example: Determine maximum flow capability through the same regulator (example in a.) using the C_V factor when the following conditions exist:

Given:

P_1 = 1000 psia

P_2 = 600 psia

C_V = 0.8

S_g = 1.0 (assume air in this example)

Solve formula for Q_g:

$$Q_g = \frac{C_V\sqrt{\Delta P \times P_2}}{\sqrt{S_g}}$$

$$= \frac{.8\sqrt{1000\text{-}600 \times 600}}{\sqrt{1}} = \frac{392}{1}$$

$$Q_g = \underline{\underline{392}}$$

Flow Calculations

LIQUID FLOW FORMULAS

$$C_V = \frac{Q_L\sqrt{S_L}}{\sqrt{\Delta P}} \quad \therefore \quad Q_L = \frac{C_V\sqrt{\Delta P}}{\sqrt{S_L}}$$

Example: Determine liquid flow (assume water) through a regulator in gallons per minute with the following conditions:

Given:

P_1 = 1000 psia

P_2 = 600 psia

S_L = 1.0

C_V = .08

$$Q_L = \frac{C_V\sqrt{\Delta P}}{\sqrt{SL}} = \frac{0.08\sqrt{1000\text{-}600}}{\sqrt{1}} = \frac{0.08 \times 20}{1}$$

$$= \underline{\underline{1.6 \text{ GPM (Water)}}}$$

CONVERT FLOW FROM CFM TO SCFM

$$Q_g = \frac{Q \times P}{14.7}$$

Example: Convert gas flow expressed in cubic feet per minute (CFM) to units of standard cubic feet per minute (SCFM).

Given:

Q = 20 CFM

P = 294 psia

$$Q_g = \frac{Q \times P}{14.7} = \frac{20 \text{ CFM} \times 294 \text{ psia}}{14.7 \text{ psia}}$$

$$= \underline{\underline{400 \text{ SCFM}}}$$

CONVERT MASS FLOW TO VOLUME FLOW (SCFM) OF AIR

$$Q_g \text{ (Air)} = \frac{M \text{ (any gas)} \times 13.36}{S_g \text{ (any gas)} \times \sqrt{\frac{1}{S_g \text{ (any gas)}}}}$$

Example: Convert mass flow (lb/min) of any gas to volume flow (SCFM) of air

Given: M (He) = 1 lb. min, S_g (H_e) = .138

$$Q_g = \frac{M \times 13.36}{S_g \times \sqrt{\frac{1}{S_g}}} = \frac{1 \times 13.36}{.138 \times \sqrt{\frac{1}{.138}}}$$

$$= \underline{\underline{35.96 \text{ SCFM (Air)}}}$$

Flow Calculations

Media Tables

A. Approximate multipliers to use when converting flow (GPM) of water to various liquids:

Crude Oil	1.015 to 1.11
Gasoline	1.15
Hydraulic Oil-Mineral Base	1.12
Hydraulic Oil-Phosphate Ester Base	.95
Hydraulic Oil-Standard Mil 5606	1.10
Hydraulic Oil-Water Glycol Base	.98
Kerosene	1.10
Water	1.00

Example: Determine maximum flow of kerosene through a regulator if maximum water flow capability is 5 GPM.

Kerosene flow = 5 GPM (water) x 1.10 (kerosene multiplier) = 5.5 GPM

B. Approximate multipliers to use when converting flow (SCFM) of air to various gases:

Air	1.000
Ammonia	1.295
Argon	.852
Arsine	.609
Carbon Dioxide	.810
Helium	2.690
Hydrogen	3.790
Hydrogen Chloride	.888
Nitrogen	1.015
Oxygen	.951
Silane	.915

Examples: Determine maximum flow of helium through a regulator if the maximum air flow capability is 300 SCFM.

Helium flow = 300 SCFM (air) x 2.69 (helium multiplier) = 807 SCFM

Air flow = $\frac{25 \text{ SCFM}}{2.69}$ = 9.3 SCFM of He

C. Approximate specific gravities (S_L) for various liquids:

Crude Oil	.81 to .97
Gasoline	.75
Hydraulic Oil-Mineral Base	.80
Hydraulic Oil-Phosphate Ester Base	1.10
Hydraulic Oil-Standard Mil 5606	.83
Hydraulic Oil-Water Glycol Base	1.05
Kerosene	.82
Water	1.00

To convert the flow from water (specific gravity of 1.0) to a liquid having a specific gravity other than 1.0 use the following formula:

$$Q_L \text{ (any liquid)} = Q_L \text{ (water)} \sqrt{\frac{1}{S_L \text{ (any liquid)}}}$$

D. Approximate specific gravities (S_g) for various gases:

Air	1.000
Ammonia	.596
Argon	1.379
Arsine	2.695
Carbon Dioxide	1.529
Helium	.138
Hydrogen	.070
Hydrogen Chloride	1.268
Nitrogen	.967
Oxygen	1.105
Silane	1.195

To convert the flow from air (specific gravity of 1.0) to a gas having a specific gravity other than 1.0 use the following formula:

$$Q_g \text{ (any gas)} = Q_g \text{ (air)} \sqrt{\frac{1}{S_g \text{ (any gas)}}}$$

What is a regulator?

A pressure reducing regulator is a device which reduces a high source pressure (e.g. an inlet pressure of 3000 psig / 207 bar) to a lower working pressure (e.g. an outlet pressure of 100 psig / 6.9 bar) that is suitable for a user's application. The regulator will attempt to maintain the outlet pressure within acceptable limits as other conditions vary. Source pressure and media (gas or liquid) flow are among these varying conditions. A regulator's accuracy and efficiency in performing its function is determined by the combination of the basic regulator elements designed into a specific regulator unit.

The basic elements of a regulator often will determine the regulator type and series selected for a specific application. In this manual, it will discuss the three basic elements common to all pressure reducing regulators whether manufactured by TESCOM or other manufacturers.

Pressure Reducing Regulator/Valve (PRV)

The function of a pressure reducing regulator is to precisely reduce a high upstream pressure of a gas or liquid (from a cylinder, compressor, pump, etc) to a lower, stable pressure for the user's application. Furthermore, the regulator will attempt to maintain and control the outlet pressure within limits as other conditions vary but the regulator will not control flow, only the delivery pressure. A regulator should not be used as a shut-off device as there is always a small amount of leakage across the seat. A shut-off valve must be used downstream of the regulator if isolation is required.

Backpressure Regulator/Valve (BPR)

The function of a backpressure regulator is to limit and precisely control the upstream pressure of a gas or liquid (from a tank, pump, etc) and is much more accurate than a relief valve. Most direct spring operated safety relief valves have a high reseating pressure which is inconsistent and unreliable. This is the primary difference between a safety relief valve and a backpressure regulator. A safety relief valve is designed to protect downstream personnel and equipment should over-pressurization take place. As such, when it's set pressure is overcome, it will blow wide open immediately and exhaust all of the pressure.

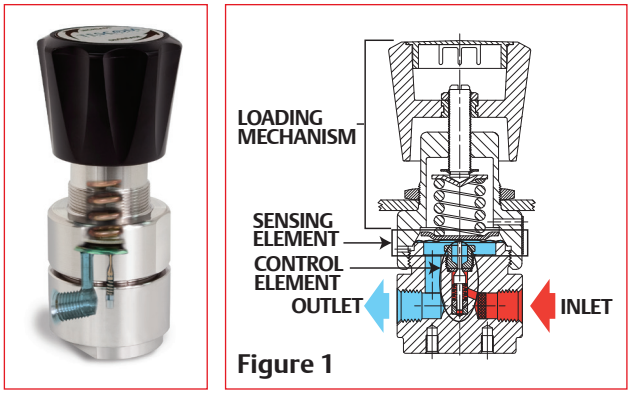


Figure 1

It needs to be able to handle the full flow of the system in order to rapidly exhaust to protect downstream apparatus. A backpressure regulator is not a safety device, it is designed for precision upstream pressure control. When the regulator set-point is overcome, it will "crack" open (not blow wide open) and try to exhaust just the excess pressure above the set-point. When it cracks open, it uses its sensing element (relief valve's do not have sensing elements) to reseat very close to its original set pressure. Most TESCOM backpressure regulators have "crack-to-reseat" pressures less than ± 2% of the set-point (relief valves are typically ± 10%).

Three Basic Elements

The Three Basic Elements are:

1. The LOADING MECHANISM provides the means by which the operator can set the force that determines the outlet (control) pressure of the regulator. P_2 is a term commonly used for outlet pressure.
2. The SENSING ELEMENT senses the changes in the outlet pressure (P_2) through a cavity located underneath it, allowing the regulator to react accordingly to these changes in P_2.

   The sensing element also provides a physical link between the loading element and the control element.
3. The CONTROL ELEMENT acts to reduce the inlet pressure, commonly called P_1, to a lower working pressure and maintain it by increasing or decreasing the orifice area as the control element moves away or towards the seat.

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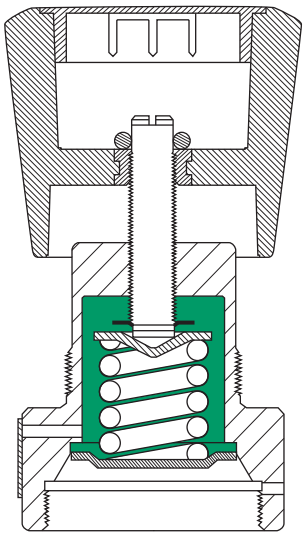
I. Loading Mechanisms

The first basic element is the LOADING mechanism of a regulator. This mechanism determines what the regulator outlet pressure (P_2) will be.

The load element provides the force which is in turn transmitted through the SENSING element and to the CONTROL element, to provide the desired outlet pressure. It provides a preload force which establishes the demand level of the regulated or outlet pressure.

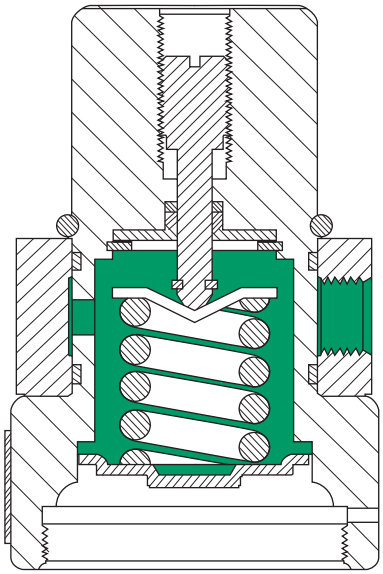
There are four types of loading:

- Spring Load
- Dome Load (also called gas or liquid loading)
- Air Load
- Combination of Spring and Dome Load



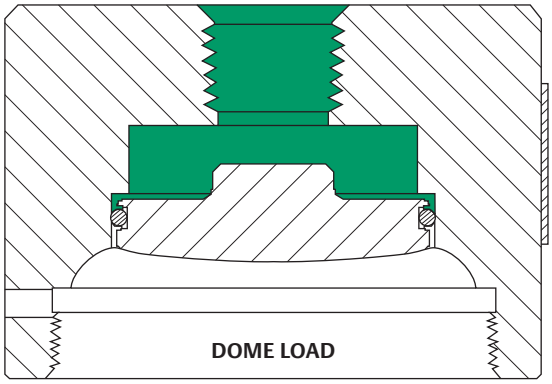
SPRING LOAD

Figure 2



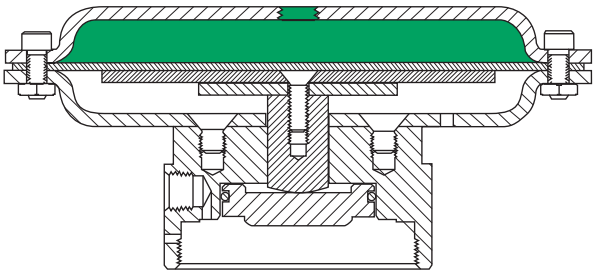
SPRING AND DOME LOAD

Figure 4



DOME LOAD

Figure 3



AIR LOAD

Figure 5

I. Loading Mechanisms

A. Spring Load

The spring (Figure 6) is the most common loading device in regulators because of its dependability and low cost.

The spring load is determined by the amount of compression placed on the spring by the operator. This is accomplished by turning the regulator knob or adjusting screw in a clockwise direction (Figure 7). The knob is turned, compressing the load spring, until the desired outlet or set pressure is reached on the regulator's outlet pressure gauge.

Caution must be used during adjustment to prevent thread stripping. This commonly occurs when an operator attempts to set an outlet pressure which exceeds the regulator's capacity or the available inlet pressure.

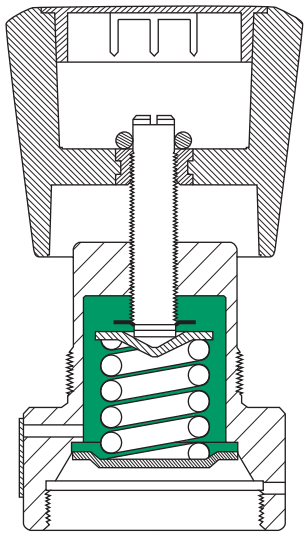
The mechanical advantage of a standard adjusting screw or handknob provides easy adjustment for outlet pressures up to 500 psig / 34.5 bar. For high pressures, up to 15,000 psig / 1034 bar, TESCOM uses a non-rising stem handknob with bearings that enables manual adjustment of pressures with only 30-40 in-lbs / 3.4-4.5 N•m of torque.

Advantages

- Simple design
- Relatively small size
- Springs of various rate can be adjusted to provide different outlet pressures
- There is a variety of spring sources which makes the prices competitive and economical

Disadvantages

- Spring forces vary with compression and thus the load is not uniform
- Susceptible to the effects of shock, vibration and temperature



SPRING LOAD

Figure 6

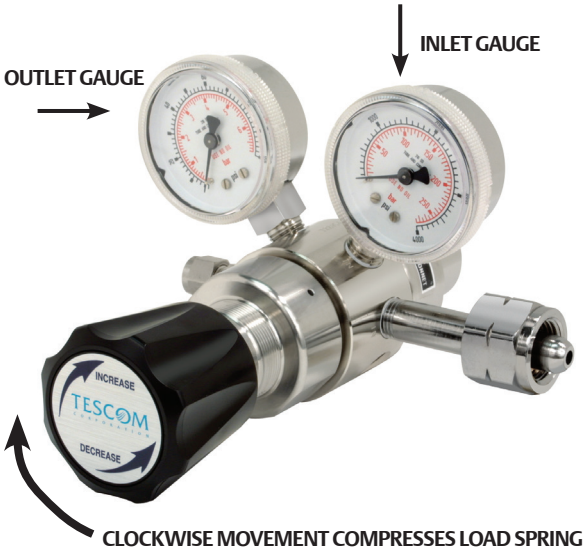


Figure 7

I. Loading Mechanisms

B. Dome Load

The second loading method is called dome load (Figure 8). Instead of a spring, pressure in the dome area is used to provide loading force to the regulator. This is accomplished by sealing the dome area to prevent leaks and then pressurizing it with gas or liquid coming from a pilot regulator.

The pressure in the dome determines the regulator's outlet pressure. The dome pressure is essentially equal to the regulator outlet pressure.

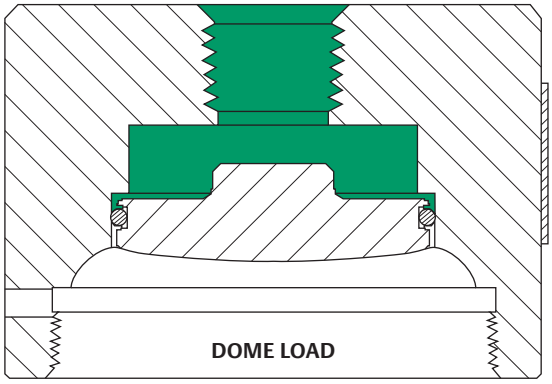


Figure 8

In the example in Figure 9, a 26-1200 Series dome loaded regulator is connected to a 26-1000 Series venting regulator. The 26-1000 regulator acts as a pilot regulator and provides the loading pressure to the dome of the 26-1200 regulator. To set the pressure in the dome, the pressure coming from the pilot regulator is adjusted until the outlet pressure gauge of the dome regulator reads the desired set pressure.

If the dome is loaded to 1000 psig / 69.0 bar, then the outlet pressure will be close to 1000 psig / 69.0 bar. The slight difference is primarily due to the control element (valve) spring force which counteracts the dome load pressure force.

When the regulator strokes downward in response to increased flow, the pilot regulator will add more gas to make up the pressure lost due to the increase in the dome area and keep the dome pressure constant. A pilot regulator with venting capability should be used to load dome loaded regulators. This venting capability is necessary to allow an operator to adjust the dome pressure in both increasing and decreasing directions.

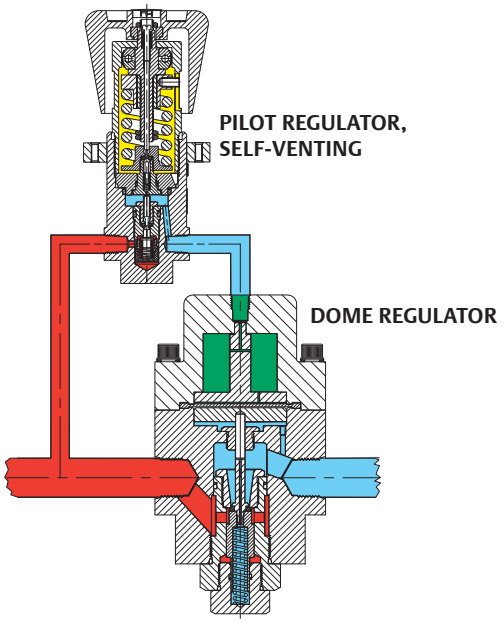


Figure 9

Almost all TESCOM regulator series are available with dome load.

Advantages

- Enables remote pressure control which allows the operator to adjust pressure at a safe distance, away from hazardous gases or conditions
- Offers convenience by providing a means of adjusting pressure when the dome regulator is located in an area difficult to reach
- Maintains outlet pressure more accurately under flowing conditions than a spring loaded regulator, minimizing droop
- Faster response to pressure changes

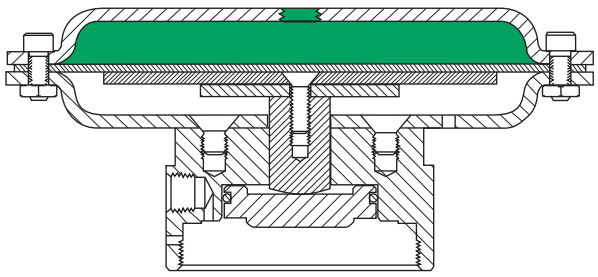
Disadvantage

- Requires two regulators: the dome regulator and the pilot regulator. This means increased cost and greater space requirement for installation

I. Loading Mechanisms

C. Air Load

A third loading method is Air Actuated or Air Loaded. This is similar to dome load, but has a ratio greater than 1:1 between the loading force (pilot pressure) and the control pressure. This is the primary difference between a dome loaded and air loaded regulator. Another difference is inert gas can only be used to pilot an air actuated regulator. Dome loaded regulators can be piloted with either gas or liquid. Air actuated loading is available on many TESCOM regulator series and with our wide range of pressure capability up to 30,000 psig / 2069 bar we offer ratios from 2.5:1 to 375:1. The ratios are approximate, so in order to set the regulator at the desired setpoint you need to monitor a pressure indicator from the control pressure side of the regulator the same way you do with a dome loaded regulator. The maximum control pressure of the air actuated regulator is typically achievable with ~80 psig / ~5.5 bar pilot pressure. The mechanical advantage of air actuated regulators allows use of low pressure inert gas (facility air) and low pressure plumbing/pressure regulation for the pilot pressure source. It also allows use of TESCOM's ER5000 Electropneumatic Pressure Controller to provide the pilot pressure control as well as closed loop electronic control. Like the dome loaded regulator, the pilot pressure regulator/controller should be a venting type to allow pressure adjustment in both increasing and decreasing directions.



AIR LOAD

Figure 10

Advantages

- Provides a ratio between actuator pressure and media pressure (e.g. 1:75)
- Enables remote pressure control in combination with pilot regulators
- Low pressure drop under dynamic conditions (minimized droop)
- Allows use of low pressure inert gas (facility air) and low pressure plumbing/pressure regulation for the pilot pressure source
- Can be combined with the ER5000 Electropneumatic Controller

Disadvantage

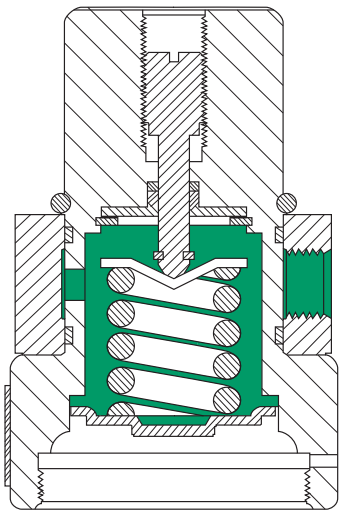
- Requires two regulators: the air loaded regulator and the pilot regulator. This means increased cost and greater space requirement for installation

I. Loading Mechanisms

D. Combination of Spring and Dome Load

This hybrid regulator uses a combination of spring and dome loading (Figure 11) and is identified by several names:

- Bias Regulator
- Tracking Regulator
- Algebraic Regulator
- Differential Pressure Regulator



SPRING AND DOME LOAD

Figure 11

It is called a “bias” regulator because the spring provides a “bias” or added force.

The term “tracking” is used because the regulator can follow the pressure of one system as the pressure goes up or down. The regulator supplies pressure equal to the bias setting plus the reference pressure and sends the total pressure of the two signals to a second system.

It is sometimes called an “algebraic” regulator because it can add or subtract pressure equal to its bias spring setting. The pressure is added when the bias spring is located above the sensing element, diaphragm or piston, and subtracted when the bias spring is located below the sensing element.

This is how the combination dome and spring regulator works:

First, the bias spring is manually adjusted to provide a specific bias pressure, for instance 50 psig / 3.4 bar (Figure 12). The bias pressure will remain constant and maintain that difference above the reference pressure.

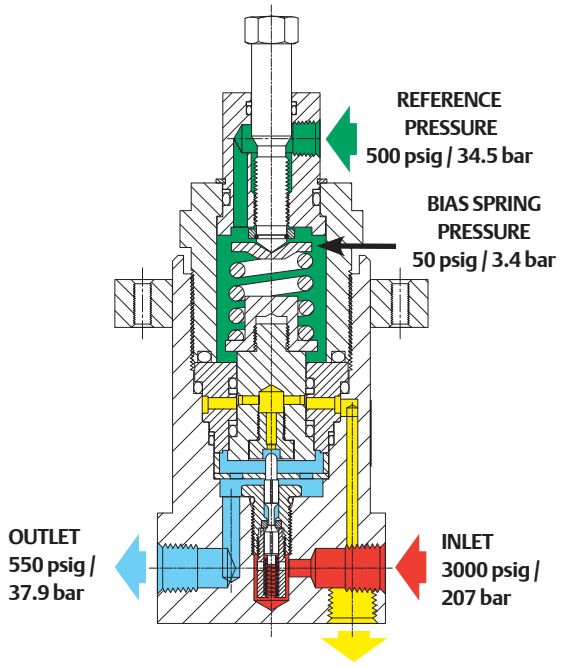


Figure 12

Then the dome is loaded with pressure from a “reference source”, another system, at a pressure of 500 psig / 34.5 bar. The dome is now loaded with a total of 550 psig / 37.9 bar, the sum of the bias pressure (50 psig / 3.4 bar) and pressure from the reference source (500 psig / 34.5 bar). The regulator will now deliver an outlet pressure of 550 psig / 37.9 bar.

If for any reason the reference should change either up or down and provided there is flow or the regulator has a venting feature, the outlet pressure will also change. An example: the reference pressure drops by 100 psig / 6.9 bar, from 500 psig / 34.5 bar down to 400 psig / 27.6 bar, the bias pressure set on the spring remains at 50 psig / 3.4 bar. Consequently the outlet pressure of the combination spring and dome regulator is now 450 psig / 31.0 bar.

Regulators with combination spring and dome load are used in a variety of applications and are especially useful in commercial diving, oil exploration, laboratory and autoclave applications.

Advantage

- Provides gas pressure accurately for tracking applications

Disadvantage

- More expensive than a spring or a dome loaded regulator

II. Sensing Elements

The function of the sensing element is to sense changes in the downstream or outlet pressure side of a regulator. The area sensed is immediately below the sensing element in the P_2 cavity of the regulator.

There are three common types of sensing elements:

- Diaphragm (Figure 13)
- Piston (Figure 14)
- Bellows (Figure 15)

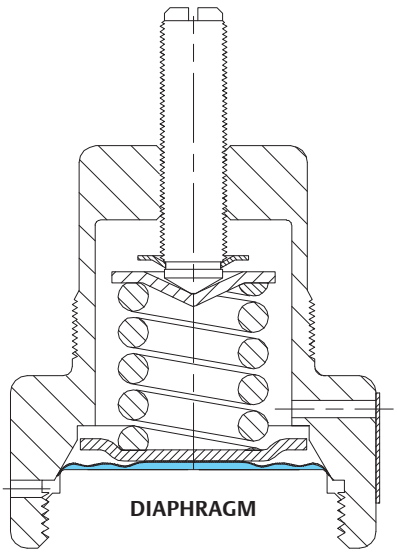


Figure 13

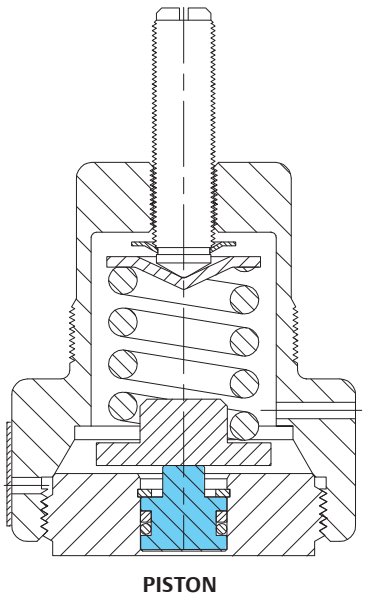


Figure 14

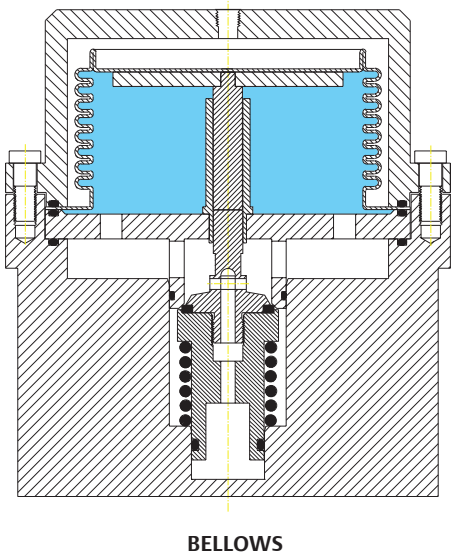


Figure 15

A. Diaphragm Sensing Element

The diaphragm (Figure 16) is relatively inexpensive and adequate for most applications. The diaphragm provides sensitivity to pressure changes, especially with elastomer materials. Early natural rubber diaphragms have been replaced by elastomers, man-made rubber substitutes, for many applications to provide increased compatibility with the wide variety of gases currently in use. Some of the elastomers in common use are Buna-N, Viton-A®, and Ethylene Propylene.

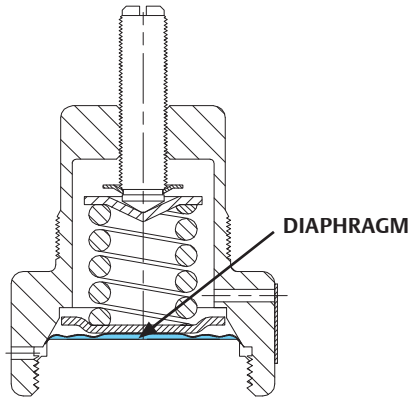


Figure 16

Where elastomers fail to provide media compatibility, metal diaphragms have found their way into use. 316 Stainless Steel diaphragms are in wide use, especially in the semiconductor, specialty gas and petroleum regulator markets. Elgiloy®, a cobalt-chrome-nickel alloy, is also an excellent diaphragm material for applications with wide temperature swings and high cycle life. It is also compatible with a wide range of gases.

However, outlet pressure ratings are limited due to possible diaphragm rupture. This is a consequence of high pressure loading on the underside of the diaphragm and only atmospheric pressure on the top side of the diaphragm (Figure 17). TESCOM limits the use of diaphragms to outlet pressures up to a maximum of 500 psig / 34.5 bar.

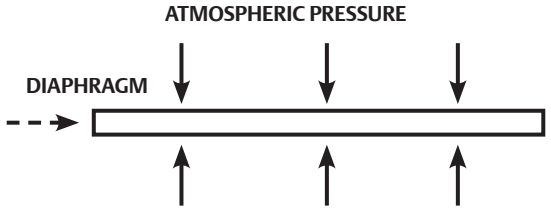


Figure 17

The valve stem motion must be restricted since diaphragm distortion can affect the actuating force characteristics. An additional consideration is the non-constant effective sensing area of the diaphragm as it flexes.

TESCOM's metal diaphragms have two concentric rings (Figure 18) or convolutions to provide natural flexing areas and eliminate the oil-can effect which can lead to early metal fatigue and possible failure.

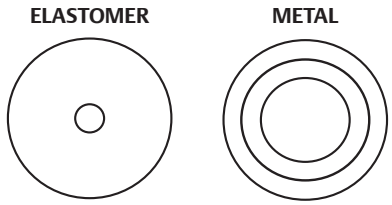


Figure 18

Diaphragms are made of the following materials: Buna-N, Elgiloy®, Ethylene Propylene, Teflon®, Viton-A®, 316 Stainless Steel, Hastelloy®, Gylon®, Chemraz®.

Advantages

- Sensitive
- Inexpensive
- Simple
- 316 Stainless Steel diaphragms are excellent for semiconductor, toxic and corrosive type applications
- Elgiloy® diaphragms are an excellent choice for high cycle metal diaphragm uses and for applications with wide temperature swings

Disadvantages

- Fabric reinforced diaphragms can "wick" water or other liquids leading to diaphragm failure or media contamination
- Diaphragms do not provide a constant effective sensing area
- Diaphragms can be difficult to seal
- Diaphragms can rupture due to a pressure differential
- Metal diaphragms are less sensitive than rubber or elastomer diaphragms
- Pressure limits

II. Sensing Elements

B. Piston Sensing Element

Piston sensing elements (Figure 19) are designed for higher outlet pressures than the diaphragm sensing elements. While the diaphragms are limited to an outlet pressure of 500 psig / 34.5 bar, the piston sensing elements can control outlet pressures up to 20,000 psig / 1379 bar. The piston sensor (Figure 20) is strong, heavy, and well-suited for high outlet pressures.

The piston sensor is made up of a sensor backup, sensor and dynamic seals or o-rings (Figure 21). The sensor backup is held stationary between the body on the bottom and the regulator bonnet on the top. The sensor is allowed to move freely on the o-ring seal in response to changes in the outlet or P_2 pressure cavity.

Piston and diaphragm have the same function, this is to sense changes in the outlet pressure or P_2 cavity and respond to them.

The materials used by TESCOM for sensor assemblies are: Brass, 303 Stainless Steel, 316 Stainless Steel, Hastelloy®, Monel, N60, 17-4 Stainless Steel.

The materials are chosen based on its compatibility with the media flowing through the regulator.

The piston sensor is the least sensitive of the three types of sensing elements, but it is the most durable and is the ideal choice when the outlet pressure exceeds 500 psig / 34.5 bar.

Advantages

- Able to handle high outlet pressures, up to 20,000 psig / 1379 bar
- Piston has constant effective sensing area

Disadvantages

- Less sensitive than diaphragm or bellows sensing elements
- Cannot be used for high purity applications due to o-ring seals
- Lubrication of o-rings is critical for accurate pressure control

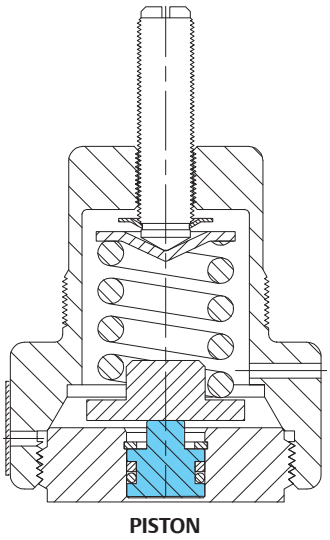


Figure 19

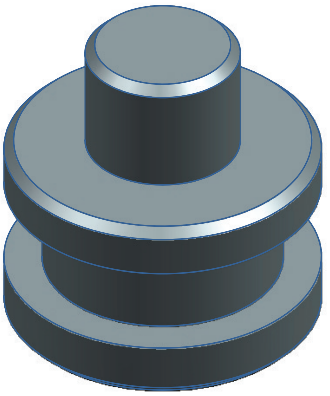


Figure 20

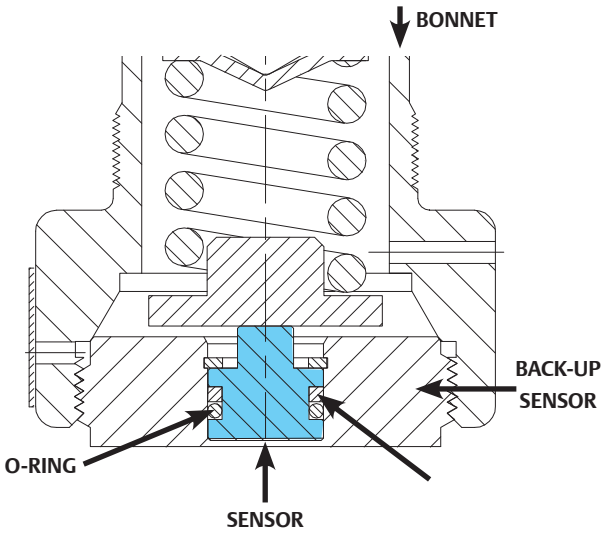


Figure 21

II. Sensing Elements

C. Bellows Sensing Element

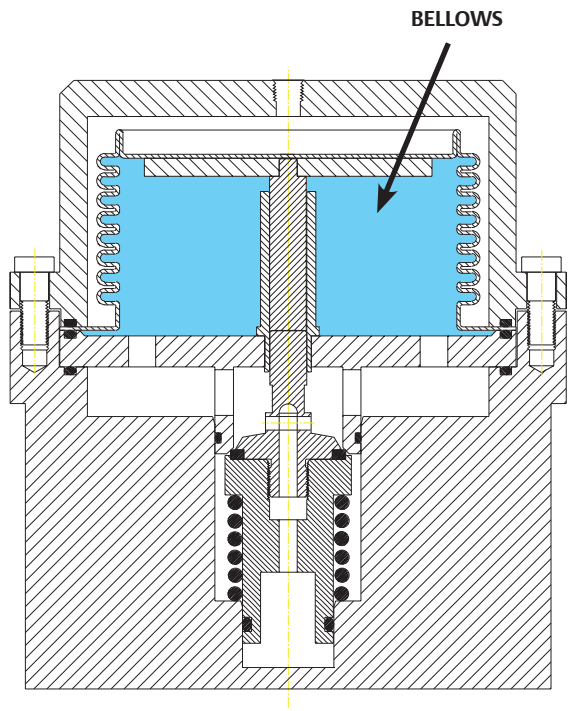


Figure 22

Figure 23

The bellows sensing element is the third type of sensing element and it is the most accurate or sensitive of the three sensing elements.

As illustrated from the bellows used in the 15 Series regulator (Figure 22), the sensor is larger than the first two sensing elements. Bellows of smaller sizes than the one used in the 15 Series regulator are also available.

Bellows have accordion style pleats or flexing points (Figure 23) which provide the capability for longer valve travel with minimum resistance, making its performance superior than the other two sensing devices.

While the sensitivity is high, the cost of a 316 Stainless Steel metal bellows is also very high. Because of its high cost, Stainless Steel bellows are rarely used as a sensing element in regulators unless the application requires high sensitivity to changes in P_2.

The bellows sensing element is used in the 15 Series regulator. This is the facilities regulator designed to provide high flow capacity at relatively low pressures. Pressures on the order of 300 psig / 20.7 bar inlet and 130 psig / 9.0 bar outlet. This regulator is designed for the semiconductor industry and features 316L Stainless Steel welded construction with internally threadless design. It offers a C_V of 20.

Advantages

- Highly sensitive
- Increased valve travel capability

Disadvantages

- Expensive
- Limited sources

III. The Control Elements

The third and last element is the CONTROL element of which there are two types:

- The UNBALANCED control element (Figure 24)
- The BALANCED control element (Figure 25)

The function of the control element is to do the actual reduction of the high inlet pressure (P_1) down to the lower outlet pressure (P_2). The control element is frequently called a valve stem or poppet.

Media pressure (gas or liquid) is reduced by taking the high pressure gas from a cylinder, compressor, or pump and passing it through a variable size orifice.

The valve moves towards or away from the regulator seat causing the orifice to become larger or smaller in order to provide the flow demanded and maintain the desired set pressure.

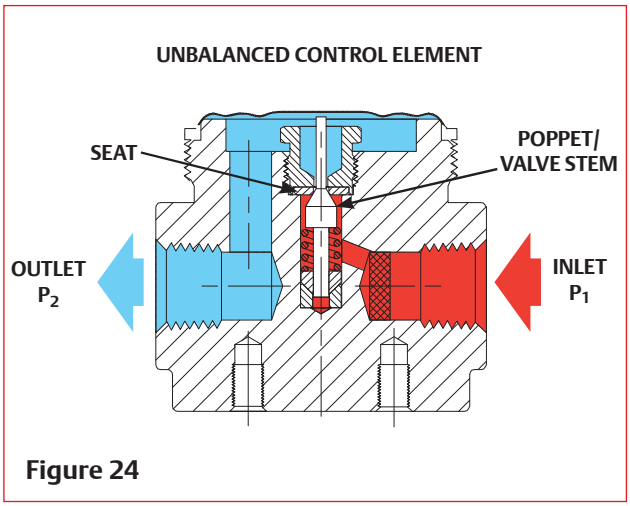


Figure 24

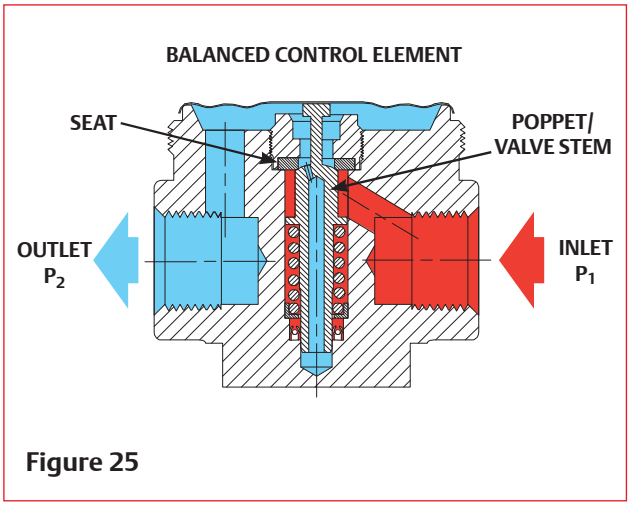


Figure 25

A. Unbalanced Control Element

The UNBALANCED control element has only one sealing point which is the coned shape area of the valve. With this design, the valve is assisted to the closed position by the valve spring and the supply pressure. While the force of the spring is relatively constant at all times, the force on the valve will increase as the supply pressure increases. Likewise, the force on the valve will decrease as the supply pressure decreases. By knowing the orifice size and the supply pressure, one can determine the closing force that is being applied to the valve. As shown in Figures 26 and 27, the P_1 zone, which is 3000 psig / 207 bar starts from the inlet connection and ends at the point of contact of the valve and seat. The P_2 zone which is 100 psig / 6.9 bar starts at that same valve point and continues to the outlet connection.

The UNBALANCED control element has a negative effect called the decaying inlet characteristic (supply pressure effect) which causes changes in outlet pressure as the inlet pressure changes. This occurs when gas cylinders are used as the pressure source for a customer's system.

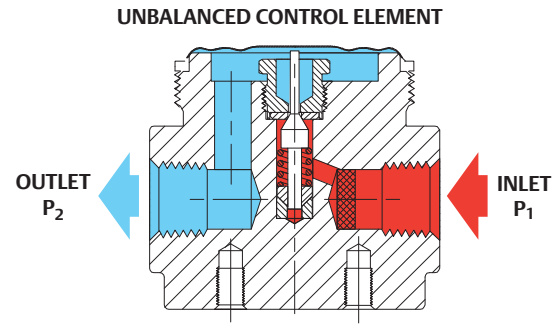


Figure 26

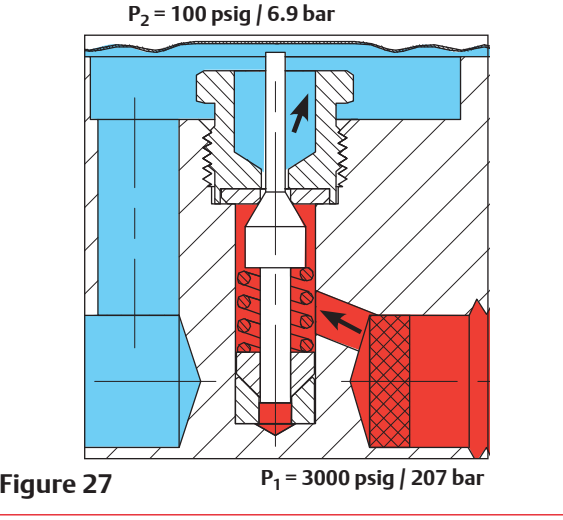


Figure 27

III. The Control Elements

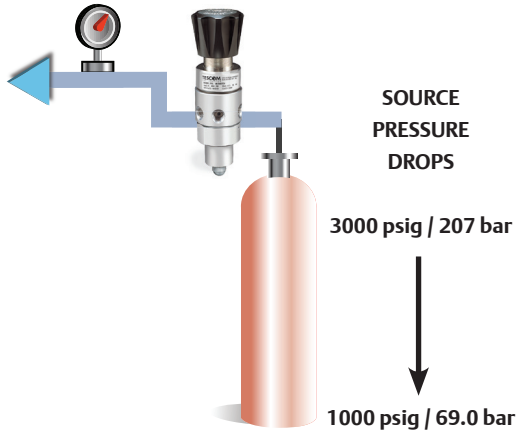


Figure 28

Figure 29

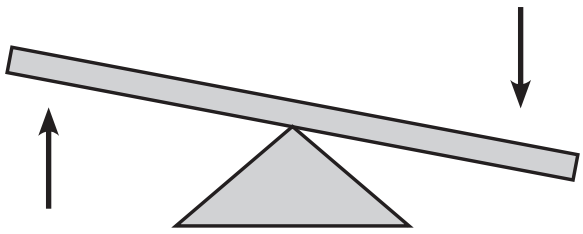


Figure 30

The gas cylinders come with a finite amount of gas and pressure. As the contents of the cylinder (Figure 28) drop, look at the outlet pressure gauge (Figure 29) on the cylinder regulator. Notice that the pressure on the outlet gauge goes up, while the pressure on the inlet gauge goes down. This is a result of the decaying inlet characteristic.

Like the teeter-totter in the kids' playground, when one side goes up, the other side goes down. Each side goes in the opposite (Figure 30) direction of the other.

For most applications, this is acceptable. However, for applications that require the outlet pressure does not alter when the inlet pressure changes, they have three options.

These options are:

a. Two-stage regulator

b. Balanced type valve stem

c. Two regulators in a series

Only the balanced type valve stem will be discussed here.

Advantages

- Inexpensive
- Simple
- Easy to manufacture
- Inlet pressure is used as the main shut-off force

Disadvantages

- Limited to small orifice sizes
- Decaying inlet characteristic
- High seat forces with high inlet pressures
- Requires harder seat material at high pressures

III. The Control Elements

B. Balanced Control Element

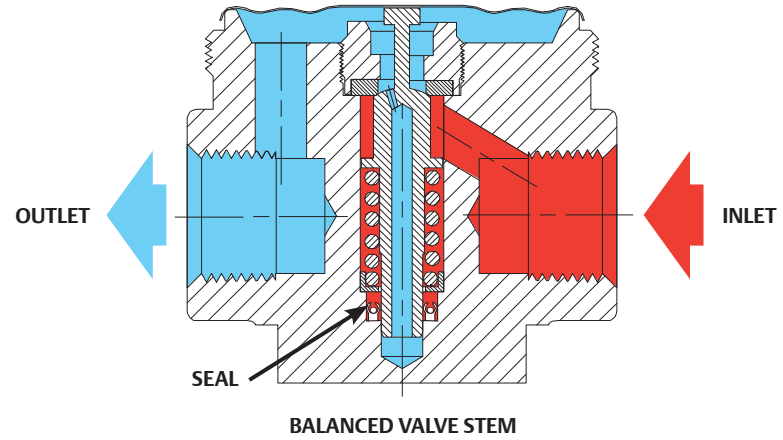


Figure 31

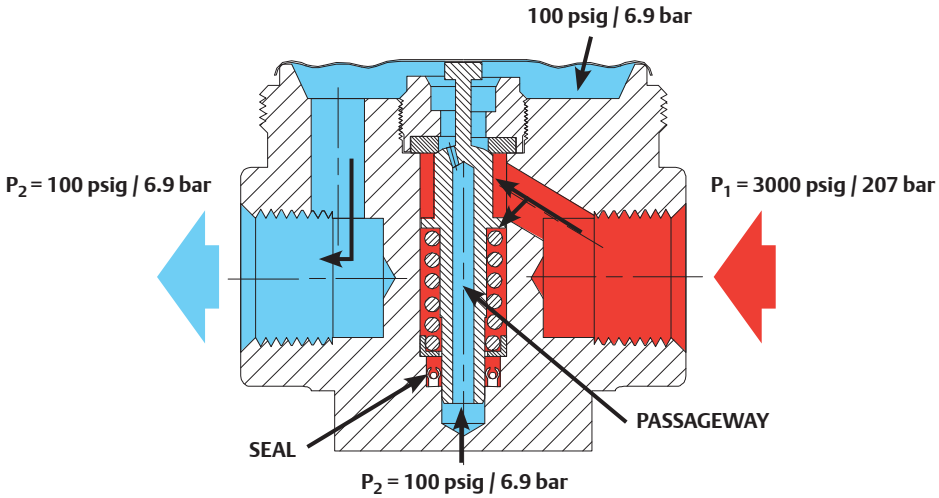


Figure 32

The BALANCED control element or valve stem has two sealing points. One is identical to the UNBALANCED valve stem. The other seal is located near the end of the valve stem in the P_1 zone (Figure 31). In effect, by sealing both ends of the valve stem the supply pressure cannot force the valve closed or open. Hence the name BALANCED valve stem (Figure 32). With this design, the supply pressure has little effect on the amount of force on the valve.

One other difference between the UNBALANCED and BALANCED valve stem is that a balanced valve stem will also have a passageway from the P_2 zone to the other side of the valve seal (Figure 32). This is required so that the P_2 pressure is equalized on both sides of the valve and the valve stem remain balanced.

In actual practice, the balanced valve is designed to have a slightly higher inlet pressure. If there should be a regulator failure, it is desirable to have the inlet pressure help close the valve tightly.

Advantages

- Reduced seat load
- Reduced decaying inlet characteristic
- Larger seat orifice at high pressures
- High flow capability

Disadvantages

- More expensive to manufacture
- Large seats make low flows difficult

Putting All the Elements Together

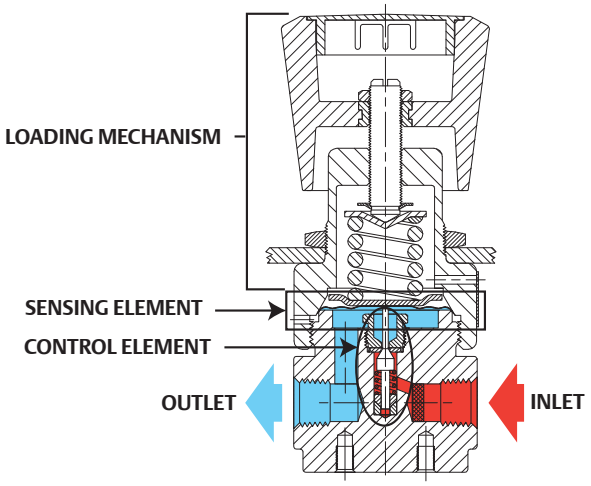


Figure 33

Figure 34

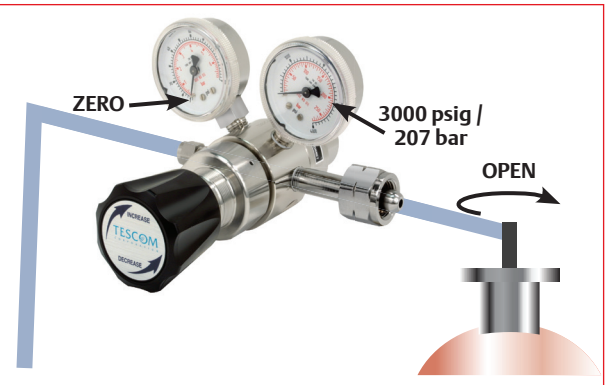


Figure 35

In this section, the three basic elements will be put together to demonstrate how they work. Figure 33 illustrates a regulator with all three basic elements: the loading mechanism, the sensing element, and the control element.

The regulator is connected to the gas cylinder and is linked to a system downstream of the pressure regulator (Figure 34). The handknob or adjusting screw of the regulator is turned counterclockwise and the regulator shuts off.

The cylinder valve is then opened, releasing the contents of the cylinder to the inlet side of the regulator. The pressure reading on the inlet gauge climbs and stops at the pressure reading indicating the pressure in the gas cylinder. The outlet pressure gauge indicates zero pressure (Figure 35).

To open the regulator's valve, turn the handknob in the clockwise direction. The pressure reading on the outlet pressure gauge climbs until it reaches the desired outlet pressure or set pressure (Figure 36). Set pressure is the outlet pressure at no flow.

By turning the handknob clockwise the load spring is compressed to provide the outlet pressure required by the downstream system. This is the pressure that is necessary for the operation of the system. The system downstream is not in operation, therefore the regulator shuts off. In other words, the valve stem or control element is closed tight against the seat causing no gas to pass.

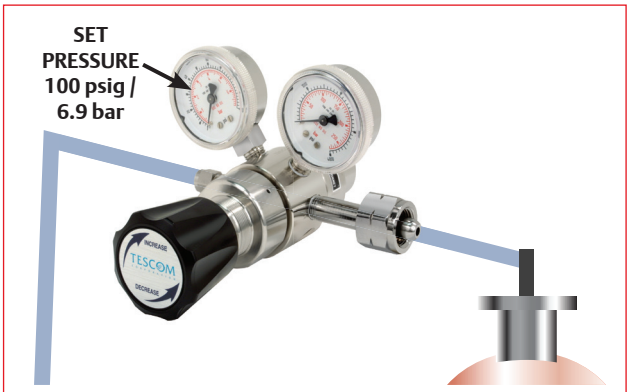


Figure 36

Putting All the Elements Together

When the downstream system opens or starts, it demands a flow, a quantity of gas, from the regulator. When this flow starts, there is an initial drop in P_2 in the outlet cavity of the regulator (Figure 37) as indicated by the outlet pressure gauge. The sensing element, the diaphragm in Figure 37, senses this pressure drop and it moves down because of the pressure imbalance between the force of the outlet pressure and the force of the load spring.

At this point, the force of the load spring is greater than the force of the outlet pressure. Since the load spring force is greater, it helps move the diaphragm down, causing the valve to move away from its seat (Figure 38) and allowing gas to flow through the seat opening and into the outlet or P_2 cavity of the regulator.

The valve stays open trying to build up the outlet pressure to its initial set pressure. As long as the system downstream is demanding flow, the spring loaded regulator will not be able to reach the initial set pressure. However, it will keep on trying to reach the initial set pressure as long as the system downstream is in operation and demanding flow. The difference between the initial set pressure and the flowing pressure is called DROOP.

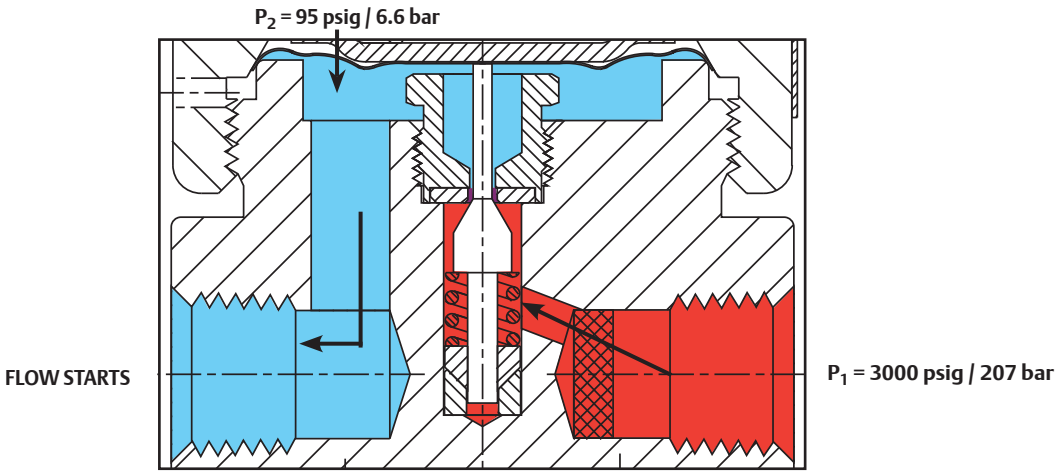


Figure 37

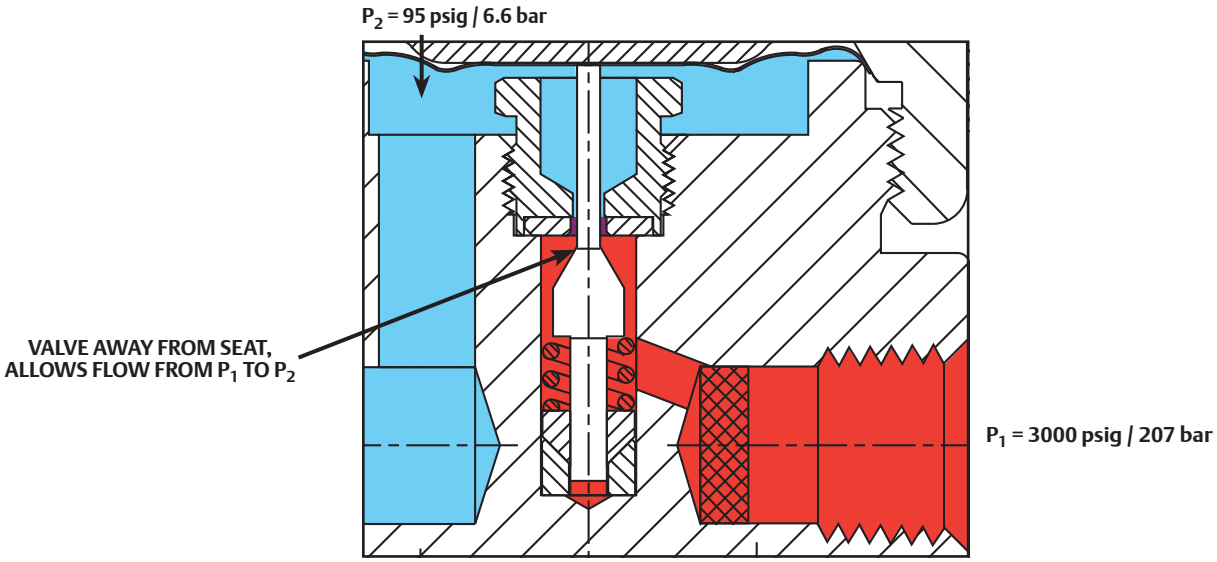


Figure 38

Three Basic Elements

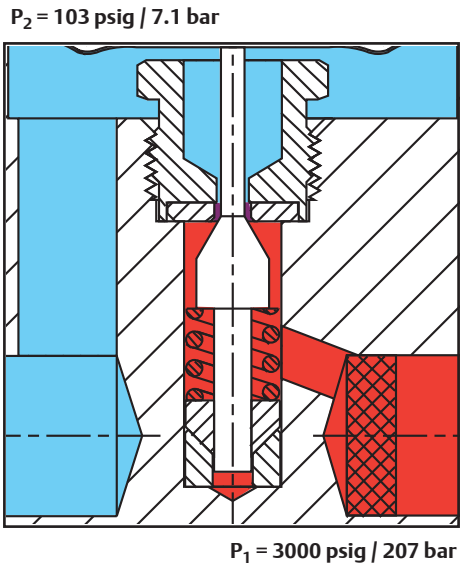


Figure 39

When the system downstream of the regulator is shut off, the demand for flow ends. The P_2 pressure now builds up in the P_2 cavity to the point of the original set pressure, plus an additional 1 to 3 psig / 0.07 to 0.21 bar needed to firmly force the valve against the seat for a positive gas tight shut-off (Figure 39). The additional 1 to 3 psig / 0.07 to 0.21 bar closing pressure is called LOCK UP, and is normal for pressure reducing regulators.

To completely shut down a regulator, the cylinder valve must be closed, the pressure is then drained from the regulator and the handknob or adjusting screw is turned counterclockwise until no pressure is felt from the load spring. The regulator should not be used or relied on as a shut-off device.

This completes the normal working cycle of a spring loaded, pressure reducing, single-stage regulator.

Venting Options

- Venting (Figure 40) feature enables complete relieving of the downstream pressure in dead-ended systems when the handknob is turned in the decrease direction (counterclockwise). The regulator incorporates a second valve to vent the downstream pressure through the bonnet in the standard venting model
- Captured-venting feature offers a separate vent port to pipe away the expelled downstream gas or fluid to a safe discharge point and is suitable for toxic or corrosive media
- Non-venting feature is available when venting is not desirable

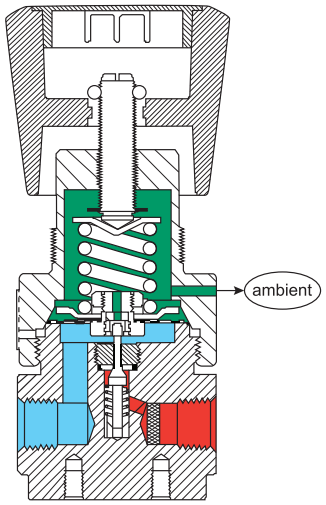


Figure 40

Corrosive Media Options

- Positionable Captured Bonnet (e.g. 44-2800 and 64-2800 Series)
  - Should the media reach the bonnet chamber, it will be piped away to a safe area via the bonnet port, which may be positioned 360 degrees around the regulator body
- Tied Diaphragm or Positive Seal Regulator (e.g. 44-2800 and 64-2800 Series)
  - This design ensures positive shut-off as the valve stem is mechanically connected to the diaphragm, controlling the valve position in both directions. The benefit of the tied diaphragm design is that if the regulator begins to creep, the increasing outlet pressure causes the diaphragm to flex upward away from the orifice pulling the valve stem tighter and tighter into the seat. The more outlet pressure drift or creep, the more sealing force is created. The sealing force will try to compress the contamination into the seat.
- NACE compliant designs are available

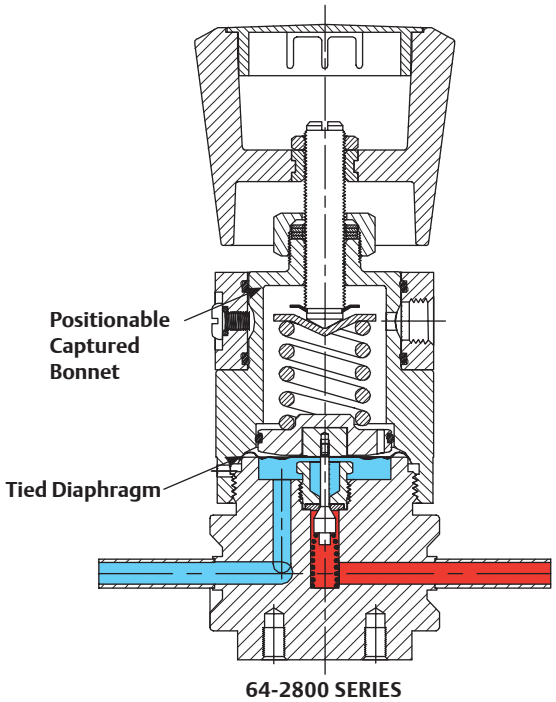


Figure 41

Heated Regulators

Certain speciality gases used in the semiconductor industry such as Hydrogen Chloride (HCl), Nitrous Oxide (N_2O) or Carbon Dioxide (CO_2) have a high Joule-Thomson coefficient. This results in a significant cooling effect when these gases expand in the gas distribution system on their way to the respective process. The use of HCl raises the risk that remaining residual moisture is condensating forming hydrochloric acid, causing corrosion to the whole gas supply system but especially to the pressure regulator where the cooling effect is the highest. Commonly used heat tracing cables have low heat transfer and only heat fraction reaches the inside of the regulator body.

To fight the Joule-Thomson effect, TESCOM has developed the 44-3200 and 64-3200 Series of ultra high purity gas regulators which come with an integrated heater element. This element transfers almost 100% of the heat into the regulator body, eliminating not only condensation and internal corrosion, it also prevents reliquefying of gas after pressure reduction (mainly observed with liquefied gases). Another approach is to use a vaporizing regulator such as the 44-5800 Series (Figure 42), which employs heat exchanger tubes to warm the gas with integral electrical heaters or steam, for low flow applications.

The electronically controlled 100W heating element guarantees a constant regulator temperature, even in high flow applications or with frequent flow variations. The water-tight connection to the electrical installation allows outdoor use. Other features of the positive seal pressure reducing regulators are a flow capacity of up to C_V=1.2, a tied diaphragm design and the Hastelloy® C-22 trim option including the seat retainer, valve stem and diaphragm.

Figure 42

Two-Stage Regulators

Advantages

- Combination of two pressure regulators in-line
- P_1 (red) is reduced to the preset inter-stage pressure (dark blue)
- Inter-stage pressure is reduced to the adjustable outlet pressure P_2 (light blue)
- Reduces decaying inlet characteristic
- Decaying inlet effect on the inter-stage is equal to an unbalanced single-stage regulator
- Final outlet pressure P_2 is stable

Disadvantages

- More expensive to manufacture
- Two-stage regulators require more space

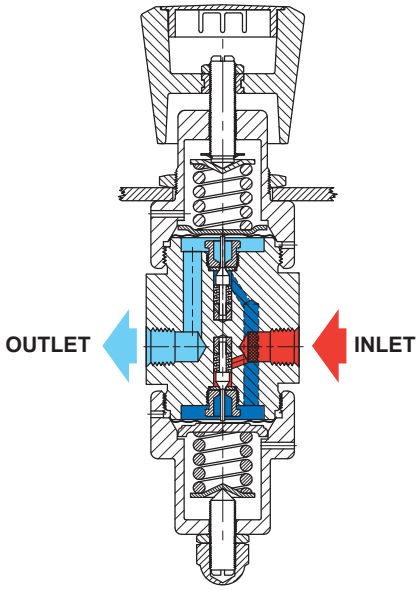


Figure 43

Regulator Recommendations for Semiconductor Gases

Point of Use and Gas Cabinet Applications

DEBUL1812X012

GAS	SPECIFIC GRAVITY (AIR = 1)	CYLINDER PRESSURE psig / bar at 70°F / 21°C	HAZARDS	CGA / DISS	STATE	POINT OF USE REGULATORS				GAS CABINET REGULATORS	
						SERIES 1/4" POINT OF USE OR SPECIALTY GASES	THREADLESS SERIES 1/4" POINT OF USE OR SPECIALTY GASES	SERIES 1/2" POINT OF USE OR BULK GAS	THREADLESS SERIES 1/2" POINT OF USE OR BULK GAS	SERIES GAS CABINET OR CYLINDER GAS	THREADLESS SERIES GAS CABINET OR CYLINDER GAS
Ammonia NH_3	0.593	114 / 7.9	Toxic Flammable Corrosive	660 / 720	Liquefied Gas	64-2600	74-2400 12-1	64-3200	74-3000 23-3	64-2800 64-3200	74-2400 74-3800
Argon Ar	1.38	2640 / 182	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1	64-3200 64-5400	74-3000 23-3	64-2600	74-2400
Arsine AsH_3	2.718	205 / 14.1	Toxic Flammable	350 / 632	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Boron Trichloride BCl_3	4.045	4.4 / 0.30	Toxic Corrosive	660 / 634	Liquefied Gas	64-5000	74-2400 12-1		74-300A	64-5000H	74-300AH
Boron Trifluoride BF_3	2.32	1000 / 69.0	Toxic	330 / 642	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Boron-11 Trifluoride Enriched $B_{11}F_3$	2.37	850 / 58.6	Toxic Corrosive	330 / 642	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Carbon Dioxide CO_2	1.527	830 / 57.2	Asphyxiant	320 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2600	74-2400
Carbon Monoxide CO	0.967	1650 / 114	Toxic Flammable	350 / 724	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Chlorine Cl_2	2.479	86 / 5.9	Toxic Corrosive	660 / 728	Liquefied Gas	64-2600	74-2400 12-1	64-3200	74-3000 23-3	64-2800	74-2400
Diborane B_2H_6	0.95	2200 / 152	Toxic Flammable	350 / 632	Compressed Gas	64-2600	74-2400 12-1			64-3400	
Dichlorosilane SiH_2CL_2	3.52	9.5 / 0.66	Toxic Flammable Corrosive	678 / 636	Liquefied Gas	64-5000	74-2400 12-1		74-300A	64-5000H	74-300AH
Disilane Si_2H_6	2.38	33 / 2.3	Flammable	510 / 632	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Fluorine F_2	1.312	400 / 27.6	Toxic Corrosive Oxidizer	679	Compressed Gas	NO RECOMMENDATION					
Germane GeH_4	2.7	52 / 3.6	Toxic Flammable	350 / 632	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Halocarbon-12 Dichlorodifluoromethane CCl_2F_2	4.262	70 / 4.8	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Halocarbon-13 Chlorotrifluoromethane $CClF_3$	3.61	460 / 31.7	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2600	74-2400
Halocarbon-14 Tetrafluoromethane CF_4	3.05	2000 / 138	Asphyxiant	320 / 716	Compressed Gas	64-2600	74-2400 12-1			64-2600	74-2400
Halocarbon-23 Fluoroform CHF_3	2.436	635 / 43.8	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2600	74-2400
Halocarbon-115 Chloropentafluoroethane C_2ClF_5	5.568	102 / 7.0	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2600	74-2400
Halocarbon-116 Hexafluoroethane C_2F_6	4.82	445 / 30.7	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2600	74-2400
Helium He	0.138	2640 / 182	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1	64-3200 64-5400	74-3000 23-3	64-2800	74-2400
Hydrogen H_2	0.07	2400 / 165	Flammable	350 / 724	Compressed Gas	64-2600	74-2400 12-1	64-3200 64-5400	74-3000 23-3	64-2800	74-2400

GAS	SPECIFIC GRAVITY (AIR = 1)	CYLINDER PRESSURE psig / bar at 70°F / 21°C	HAZARDS	CGA / DISS	STATE	POINT OF USE REGULATORS				GAS CABINET REGULATORS	
						SERIES 1/4" POINT OF USE OR SPECIALTY GASES	THREADLESS SERIES 1/4" POINT OF USE OR SPECIALTY GASES	SERIES 1/2" POINT OF USE OR BULK GAS	THREADLESS SERIES 1/2" POINT OF USE OR BULK GAS	SERIES GAS CABINET OR CYLINDER GAS	THREADLESS SERIES GAS CABINET OR CYLINDER GAS
Hydrogen Bromide HBr	2.71	320 / 22.1	Toxic Corrosive	330 / 634	Liquefied Gas	64-2600	74-2400 12-1			64-2800H	74-2400H
Hydrogen Chloride HCl	1.266	613 / 42.3	Toxic Corrosive	330 / 634	Liquefied Gas	64-2600H	74-2400H 12-1	449-254* 64-3200H*		64-2800H 449-254* 64-3200H*	74-2400H
Hydrogen Fluoride HF	0.69	0.9 / 0.06	Toxic Corrosive	660 / 638	Gas	NO RECOMMENDATION					
Hydrogen Selenide H_2Se	2.8	125 / 8.6	Toxic Flammable	350 / 632	Gas	64-2600	74-2400 12-1			64-2800	74-2400
Hydrogen Sulfide H_2S	1.192	253 / 17.4	Toxic Flammable Corrosive	330 / 722	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Krypton Kr	2.9	800 / 55.2	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Methane CH_4	0.555	2265 / 156	Flammable Asphyxiant	350	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Methyl Chloride CH_3Cl	1.771	59 / 4.1	Toxic Flammable	660	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Neon Ne	0.696	850 / 58.6	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Nitrogen N_2	0.967	2640 / 182	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1	64-3200 64-5400	74-3000 23-3	64-2800	74-2400
Nitrogen Trifluoride NF_3	2.46	1450 / 100	Toxic Oxidizer	330 / 640	Compressed Gas	64-2600	74-2400 12-1	64-3200		64-2800	74-2400
Nitrous Oxide N_2O	1.528	745 / 51.4	Oxidizer	326 / 712	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Oxygen O_2	1.105	2640 / 182	Oxidizer	540 / 714	Compressed Gas	64-2600	74-2400 12-1	64-3200 64-5400	74-3000, 74-3800 23-3		
Perfluoropropane C_3F_8	6.49	100 / 6.9	Asphyxiant	660 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Phosphine PH_3	1.19	592 / 40.8	Toxic Flammable	660 / 632	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Phosphorus Pentafluoride PH_5	4.31	400 / 27.6	Toxic Corrosive	330 / 642	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400
Silane SiH_4	1.1	1250 / 86.2	Flammable	350 / 632	Compressed Gas	64-2600	74-2400 12-1	64-3200	74-3800, 23-3	64-2800	74-2400
Silicon Tetrafluoride SiF_4	3.57	1000 / 69.0	Toxic Corrosive	330 / 642	Compressed Gas	64-2600	74-2400 12-1			64-2800H	74-2400H
Sulfur Dioxide SO_2	2.249	34 / 2.3	Toxic Corrosive	660	Liquefied Gas	64-2600	74-2400 12-1			64-2800H	74-2400H
Sulfur Hexafluoride SF_6	5.105	320 / 22.1	Asphyxiant	590 / 716	Liquefied Gas	64-2600	74-2400 12-1			64-2800	74-2400
Sulfur Tetrafluoride SF_4	3.71	140 / 9.7	Toxic Corrosive	330	Liquefied Gas	64-2600	74-2400 12-1			64-2800H	74-2400H
Tungsten Hexafluoride WF_6	10.674	2.4 / 0.17	Toxic Corrosive	670 / 638	Liquefied Gas	64-5000			74-300AH	64-5000H	74-300AH
Xenon Xe	4.558	645 / 44.5	Asphyxiant	580 / 718	Compressed Gas	64-2600	74-2400 12-1			64-2800	74-2400

H = Hastelloy Trim

*Use as a set, two- stage pressure reduction

Note: Tescom may make recommendations for a product to use with a specific media. These recommendations will be based on technical compatibility resources both through associations and manufacturers.

Tescom does not guarantee the product to be compatible with the specific media - this is the responsibility of the user. Users must test under their own operating conditions to determine the suitability.

Cylinder Valve Connections

Technical Information

DCATLABO1292XEN2

GAS OR GAS MIXTURE	FORMULA	SPECIFIC GRAVITY	CYLINDER PRESSURE/ VAPOR PRESSURE AT 20 °C	PROPERTIES	DIN 477		BS 341		CGA		NF	NEN
					Part 1: 1990 - Cylinder Connection up to 300 bar	Part 5: 2002 - Cylinder Connection up to 450 bar	Part-3: Cylinder Connection up to 250 bar	Part-3: Cylinder Connection from 250 up to 300 bar	V1: 2003: Cylinder Valve Connection THREADED	V1: 2003: Cylinder Valve Connection PIN INDEX (Yoke)	E 29-650: 1992 Cylinder Valve Outlet Connection	3268: 1984/C2 1986 Cylinder Valve Outlet Connection
Acetylene	C_2H_2	0.906	18	f	3		2, 4, 18**		510+		A, H	LI2*
Ammonia	NH_3	0.593	8.6	f, t, c	6		10		240	800	C	RU4
Argon	Ar	1.38	200/300	i	6	54	3	30	580		E	RU3
Air, compressed	AIR	1	200	o	13	56	3	31	346	950	B	RU6
Arsine	AsH_3	2.718	14.1	f, t	1	-	4	-	350	-	E	LU4
Boron Trichloride	BCL_3	4.045	0.37	t, c	8	-	6	-	660	-	K	RU4
Boron Trifluoride	BF_3	2.32	68.9	t, c	8	-	6	-	330	-	P	RU4
Bromotrifluoromethane	$CBrF_3$	2.37	14.4	o	6	-	6	-	660	-	C	RU1
Calibration Gas (non corrosive)++		-	150/200	o	14	-	3, 4*	-	500	973*		LU0, LU1 LU4*
Carbon Dioxide	CO_2	1.53	57.3	o	6	-	8	-	320	940		RU1
Carbon Monoxide	CO	0.967	150	f, t	5	-	4	-	350	-	E	LU4
Chlorine	CL_2	2.479	6.8	t, c	8	-	6, 14**	-	660	820	J	RU4
Chlorodifluoromethane (R22)	$CHClF_2$	3.65	31	o	6	-	6	-	165*	-	E	RU1
Chloropentafluoroethane (R115)	C_2ClF_5	5.49	8	o	5	-	6	-	165*	-	-	RU1
Cyclopropane	C_3H_6	1.49	6.3	f	1	-	4	-	510	540	E	LU1
Deuterium	D_2	0.139	100	f	1	-	4	-	350	-	E	LU1
Diborane	B_2H_6	0.95	150	f, t	1	-	4	-	350	-	E	LU4
Ethane	C_2H_6	1.05	37.7	f	1	-	4	-	350	-	E	LU1
Ethylene	C_2H_4	0.975	68.6	f	1	-	4	-	350	900	E	LU1
Fluorine	F_2	1.312	-	t, c	8	-	6, 14*	-	679	-	P	RU4
Helium	He	0.138	200/300	i	6	54	3	30	580	930	C	RU3
Hexafluoro Ethane	C_2F_6	4.83	-	i	6	-	3	-	660*	-	-	-
Hydrogen	H_2	0.0695	200/300	f	1	57	4	38	350	-	E	LU1
Hydrogen Bromide	HBR	2.71	20	t, c	8	-	6.14	-	330	-	K	RU4
Hydrogen Chloride	HCL	1.266	42.6	t, c	8	-	6, 14**	-	330	-	K	RU4
Hydrogen Fluoride	HF	1.858	1.03	t, c	8	-	6	-	670*	-	K	RU4
Hydrogen Iodide	HJ	4.48	7.33	t, c	8	-	6, 14*	-	330	-	K	RU4
Hydrogen Sulfide	H_2S	1.19	18.2	f, t, c	5	-	15	-	330	-	E	LU4
Isobutane	IC_4H_{10}	2.09	3.02	f	1	-	4	-	510	-	E	LU1
Isobutene	C_4H_8	2.01	2.59	f	1	-	4	-	510	-	E	LU1
Krypton	Kr	2.90	200	i	6	-	3	-	580	-	C	RU3
Methane	CH_4	0.555	200	f	1	-	4	-	350	-	E	LU1
Methylamine	CH_5N	1.11	3	f, t	1	-	11	-	705	-	E	LU4
Methyl Chloride	CH_3CL	1.771	4.1	f, t	1	-	7, 17**	-	510*	-	-	LU4
Methyl Mercaptan	CH_4S	1.7	1.7	f, t	1	-	7	-	330	-	E	LU4
Neon	Ne	0.696	200	i	6	-	3	-	580	-	C	RU3
Nitric Oxide	NO	1.04	50	t, c	8	-	14	-	660	-	-	RU4

Cylinder Valve Connections

Technical Information

GAS OR GAS MIXTURE	FORMULA	SPECIFIC GRAVITY	CYLINDER PRESSURE/ VAPOR PRESSURE AT 20 °C	PROPERTIES	DIN 477		BS 341		CGA		NF	NEN
					Part 1: 1990 - Cylinder Connection up to 300 bar	Part 5: 2002 - Cylinder Connection up to 450 bar	Part-3: Cylinder Connection up to 250 bar	Part-3: Cylinder Connection from 250 up to 300 bar	V1: 2003: Cylinder Valve Connection THREADED	V1: 2003: Cylinder Valve Connection PIN INDEX (Yoke)	E 29-650: 1992 Cylinder Valve Outlet Connection	3268: 1984/C2 1986 Cylinder Valve Outlet Connection
Nitrogen	N_2	0.967	200/300	i	10	54	3	30	580	960	C	RU3
Nitrogen Dioxide	NO_2	3	0.962	ox, t, c	8	-	14	-	660	-	P	RU4
Nitrogen Trifluoride	NF_3	2.46	100	t	8	-	14	-	670*	-	K	-
Nitrous Oxide	N_2O	1.528	50.6	ox	11, 12**		13	-	326	910	G	RU1
Oxygen	O_2	1.11	200/300	ox	9	59	3	32	540	870	F	RI2
Phosphine	PH_3	1.18	34.6	f, t	1	-	4	-	350*	-	E	LU4
Propane	C_3H_8	1.56	8.4	f	1	-	4	-	510*	-	E	LU1
Propylene (Propene)	C_3H_6	1.48	10.3	f	1	-	4	-	510*	-	E	LU1
Silane	SiH_4	1.11	86	f, t	1	-	4	-	510	-	E	LU4
Sulfur Dioxide	SO_2	2.27	3.3	t, c	7	-	10.16	-	660	-	-	RU4
Sulfur Hexafluoride	SF_6	5.13	22.1	i	6	-	6**	-	590	-	C	RU1
Synthetic Air	20% O_2 / 80% N_2	1	200/300	ox	9	59	3	31	346	950	B	RU6
Tetrafluoro Methane	CF_4	3.05	up to approx. 137	i	6	-	3	-	580*	-	C	-
Trifluoro Methane R 23 (Fluoroform)	CHF_3	2.44	41.8	o	6	-	6	-	660*	-	C	-
Xenon	Xe	4.56	up to approx. 33	i	6	-	3	-	580	-	C	RU3

Legend:
f = flammable
t = toxic
c = corrosive
i = inert
o = other
ox = oxidising
\+ = Connection # depends on content and size of cylinder; check standard for other connections!
++ = Connection # depends on exact content of calibration gas; check standard for other connections or ask gas supplier for cylinder valve in use.
* = Not binding - Please, ask gas supplier for cylinder valve in use.
** = For small capacity cylinders (lecture bottles).

Cylinder Valve Connections

Technical Information

NATIONAL STANDARDS	THREAD
AFNOR / NF E 29-650: 1992	
TYPE C	SI 21.7 x 1.814 m
TYPE D	W 24.0 x 2.0
TYPE E	SI 21.7 x 1.814 LH m
TYPE F	SI 22.91 x 1.814 f
TYPE G	SI 26 x 1.5 f
TYPE H	W 22.91 x 1.814 LH f
TYPE J	W 25.4 x 3.175 m
TYPE K	W 27.0 x 2.0
TYPE L	W 27.0 x 2.0
TYPE M	W 27.0 x 2.0
TYPE P	W 27.0 x 2.0
BSI / BS 341-3: 2002 (up to 3626 psig / 250 bar)	
No. 2	G 5/8 LH f
No. 3	G 5/8 f
No. 4	G 5/8 LH f
No. 6	G 5/8 m
No. 7	G 5/8 LH m
No. 8	W 0.860" 14 TPI m
No. 10	G 1/2 m
No. 11	G 1/2 LH m
No. 13	W 11/16-20 TPI m
No. 14	G 3/8 m
No. 15	G 3/8 LH m
No. 16	G 1/4 m
No. 17	G 1/4 LH m
BSI / BS 341-3: 2002 (3626-4351 psig / 250-300 bar)	
No. 30	W 30 x 2 f
No. 31	W 30 x 2 f
No. 32	W 30 x 2 f
No. 38	W 30 x 2 LH f
CGA-V1: 2003*	
No. 110	0.3125"-32 UNF f
No. 170	9/16-18 UNF f
No. 180	5/8-18 UNF f
No. 240	3/8-18 NPT m
No. 296	0.803"-14 UNS f
No. 300	0.825"-14 NGO m
No. 320	0.825"-14 NGO m
No. 326	0.825"-14 NGO m
No. 330	0.825"-14 NGO LH m
No. 346	0.825"-14 NGO m
No. 350	0.825"-14 NGO LH m
No. 510	0.825"-14 NGO LH f
No. 540	0.903"-14 NGO m
No. 580	0.965"-14 NGO f
No. 590	0.965"-14 NGO LM f
No. 660	1.030"-14 NGO m
No. 670	1.030"-14 NGO LH m
No. 678	1.030"-14 NGO LH m
No. 679	1.030"-14 NGO LH m
No. 705	1.235"-14 UNS LH m

Cylinder Valve Connections

Technical Information

NATIONAL STANDARDS	THREAD
DIN 477-1: 1990	
No.1	W 21.80 x 1/14 m LH
No.3	Connection with bracket
No.5	W 1 m LH
No.6	W 21.80 x 1/14 m
No.7	G 5/8 m
No.8	W 1 m LH
No.9	G 3/4 m
No.10	W 24.32 x 1/14 m
No.11	G 3/8 m
No.13	G 5/8 f
No.14	M 19 x 1.5 m LH
DIN 477-5: 2002	
No.54	W 30 x 2-Ø15.9/20.1
No.55	W 30 x 2-Ø15.2/20.8
No.56	W 30 x 2-Ø16.6/19.4
No.57	W 30 x 2LH-Ø15.2/20.8
No.58	W 30 x 2LH-Ø15.9/20.1
No.59	W 30 x 2-Ø17.3/18.7
No.60	W 30 x 2-Ø18.0/18.0
NEN 3268: 1984	
LU0	M 19 x 1.5 LH m
LU1	W 21.8 - 1/14 LH m
LU4	W 1" LH m
LI2	G 5/8 LH f
RI2	G 5/8 RH f
RU1	W 21.8 x 1/14 RH m
RU3	W 24.32 x 1/14 RH m
RU4	1" RH m
RU6	W 28.8 x 1/14 RH m
UNI 11144:2005 (up to 250 bar)	
1H, 1P (former UNI 4405)	W 20 x 1/14 m LH
2 (former UNI 4406, UNI 10751)	W 21, 7 x 1/14 m
3 (former UNI 4407)	W 30 x 1/14 m LH
4 (former UNI 4408)	W 1" x 1/8" m
5 (former UNI 4409)	W 21, 7 x 1/14 f
6 (former UNI 4410, UNI 10751	W 30 x 1/14 m
7F (former UNI 4411-2 Acetylene)	G 5/8" f LH
7S (former UNI 4411-1 Acetylene)	Pinindex
8 (former UNI 4412)	W 24, 51 x 1/14 f
9 (former UNI 9097; UNI 10751)	G 3/8" A m
10	W 27 x 2 ISO 5145 m

LEGEND:

AFNOR - Association Française de Normalisation
BS - British Standard (British Standards Institution)
CGA - Compressed Gas Association - US Standard
DIN - Deutsches Institut für Normung
NEN - Nederlands Normalisatie-instituut
NGO - National Gas Outlet (CGA only)
UNI - Ente Nazionale Italiano di Unificazione
LH - Left Hand
RH - Right Hand
f - Female
m - Male

**For a complete numerical list of cylinder valve outlet connections (threaded or pin indexed / yoke), please reference CGA-V-1.*

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
20,000 psig / 1379 bar 15,000 psig / 1034 bar	20,000 psig / 1379 bar 15,000 psig / 1034 bar	0.06, 0.12	Spring	Piston	Water-based media 20,000 psig / 1379 bar model available Oil and Gas hydraulics	50-2200 Page 227
15,000 psig / 1034 bar 10,000 psig / 690 bar	15,000 psig / 1034 bar 10,000 psig / 690 bar 6000 bar / 414 bar 4000 psig / 276 bar	0.12 (Control regulator) 1.9 (in-tegrated Bypass)	Spring	Piston	Water-based media Integrated bypass valve Hydraulic Power Units Wellhead Control Panels	50-4000 50-4100 Page ?
15,000 psig / 1034 bar	15,000 psig / 1034 bar 200 psig / 13.8 bar (non-adjustable spring bias)	See Datasheet	Spring	Piston	Chemical Injection	56 Series Page 247
15,000 psig / 1034 bar	15,000 psig / 1034 bar 200 psig / 13.8 bar (non-adjustable spring bias)	0.06, 0.12	Spring	Piston	Chemical Injection	56-2000 Page 251
10,000 psig / 690 bar 5000 psig / 345 bar (Aluminum)	450 psig/ 31.0 bar	0.50	Spring Only	Piston	H_2 onboard vehicle	20-1200 Page 103
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	10,000 psig / 690 bar	0.02, 0.06, 0.12, 0.30	Spring, Dome, Air, Dome / Spring Biased	Piston	Versatile 20,000 psig / 1379 bar model available	26-1000 Page 107

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	10,000 psig / 690 bar	0.46, 1.3	Dome Only	Diaphragm	High flow, high pressure	26-1100 Page 113
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	10,000 psig / 690 bar	0.02, 0.06, 0.12, 0.30	Spring, Dome, Air, Dome/ Spring Biased	Piston	Segregated and captured vent Commonly used with ER5000 20,000 psig / 1379 bar model available	26-2000 Page 131
10,000 psig / 690 bar 6000 psig / 414 bar, (Brass)	6000 psig / 414 bar	0.02, 0.06, 0.12	Spring, Air	Piston	Economical, versatile	44-1100 Page 135
10,000 psig / 690 bar	10,000 psig / 690 bar	0.02, 0.06, 0.12, 0.30	Spring, Dome, Air, Dome/ Spring Biased	Piston	Water-based media 20,000 psig / 1379 bar model available Oil and Gas hydraulics	50-2000 Page 223
10,000 psig / 690 bar	10,000 psig / 690 bar	0.06	Spring, Dome, Air, Dome / Spring Biased	Piston	Oil-based media Oil and Gas hydraulics	54-2000 Page 233
8000 psig / 552 bar	6000 psig / 414 bar	2.0	Spring, Dome, Air, Dome/ Spring Biased	Piston	High flow Hydraulic only	54-2200 Page 237

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
6000 psig / 414 bar	6000 psig / 414 bar	3.3, 6.0, 12.0	Dome Only	Diaphragm	High flow, high pressure	26-1200 Page 117
6000 psig / 414 bar	250 psig / 17.2 bar	0.08, 0.24	Spring, Dome, Air	Diaphragm	Sensitive Non-venting	26-1500 Page 123
6000 psig / 414 bar	500 psig / 34.5 bar	0.08, 0.24	Spring, Dome, Dome/ Spring Biased	Diaphragm	Sensitive Venting	26-1600 Page 127
6000 psig / 414 bar	400 psig / 27.6 bar (600 psig / 41.4 bar Dome and Air)	0.30	Spring, Dome, Air	Piston	Segregated and captured vent	44-1500 Page 153
6000 psig / 414 bar	2500 psig / 172 bar	0.02, 0.06, 0.24	Spring, Air, Dome/ Spring Biased	Piston	Economical	44-1800 Page 157
6000 psig / 414 bar	1500 psig / 103 bar	0.70, 2.0	Dome/ Spring Biased, Air	Piston	Differential pressure control Commonly used with ER5000	44-4000 Page 191

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
6000 psig / 414 bar	5000 psig / 345 bar	0.80, 2.0	Dome Only	Piston	High flow, high pressure	44-4200 Page 195
6000 psig / 414 bar	500 psig / 34.5 bar	0.02	Spring Only	Diaphragm	Vaporizing, Steam, Electric	44-5800 Page 215
6000 psig / 414 bar 4500 psig / 310 bar (Brass)	5000 psig / 345 bar	0.80, 2.0	Spring Only	Piston	High flow, high pressure	44-7400 Page 219
6000 psig / 414 bar	1800 psig / 124 bar	0.06, 0.15	Spring	Piston	Compact design	BB-1 Page 253
6000 psig / 414 bar	600 psig / 41.4 bar	0.02	Spring Only	-	In-line Miniature	BE Page 257
6000 psig / 414 bar	0-1500 psig / 0-103 bar 0-2500 psig / 0-172 bar	0.06	Spring	Piston	Laboratory Point-of-Use High outlet pressure Venting option	High Pressure Point-of-Use Page 295

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
5000 psig / 345 bar	5000 psig / 345 bar	8.0	Dome, Air	Piston	High flow Hydraulic only	54-2800 Page 243
4500 psig / 310 bar 3000 psig / 206 bar	250 psig / 17 bar	0.06 0.20	Spring Only	Diaphragm	Single-stage, low flow	SG1 Page 327
4500 psig / 310 bar	250 psig / 17 bar	0.06	Spring only	Diaphragm	Two-stage, low flow	SG2 Page 335
4500 psig / 310 bar	250 psig / 17 bar	1.0	Spring only	Diaphragm	Single-stage, high flow	SG3 Page 345
4500 psig / 310 bar 3750 psig / 259 bar (Brass)	1500 psig / 103 bar	0.80, 2.0	Spring, Air	Piston	High pressure, high flow	44-1300 Page 148
4500 psig / 310 bar	28 inch-Hg - 350 psig / 948 mbar - 24.1 bar	0.02, 0.06, 0.24	Spring, Dome	Diaphragm	Sub-atmospheric	DA Page 265

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
4350 psig / 300 bar DIN477-5; 2900 psig / 200 bar DIN477-1	4350 psig / 300 bar	0.06	Spring Only	Piston	Assembled with cylinder connection, gauges and relief valve	44-1100 Mod 834 Page 139
4350 psig / 300 bar, 2900 psig / 200 bar	290 psig / 20.0 bar	0.06	Spring Only	Diaphragm	Laboratory - general purpose Cylinder regulator 1-stage / 2-stage With or without flowmeters	WEGA 1 and 2 Page 351
3600 psig / 248 bar	150 psig / 10.3 bar	0.8	Spring Only	Piston	Constructed for onboard compressed natural gas (CNG) in trucks and buses	20-1100 Page 99
3500 psig / 241 bar	100 psig / 6.9 bar	0.02, 0.06, 0.15, 0.24	Spring Only	Diaphragm	Compact Lecture bottles	04 Page 91
3500 psig / 241 bar	320 psig / 22.1 bar	0.50	Spring Only	Piston	Onboard CNG vehicle	20-1000 Page 95
3500 psig / 241 bar	500 psig / 34.5 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome, Dome/ Spring Biased	Diaphragm	Versatile	44-2200 Page 161

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
3500 psig / 241 bar	150 psig / 10.3 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome, Dome/ Spring Biased	Diaphragm	Sensitive	44-2600 Page 169
3500 psig / 241 bar	250 psig / 17.2 bar	0.02, 0.06, 0.15, 0.24	Spring Only	Diaphragm	Two-stage	44-3400 Page 187
3500 psig / 241 bar	28 inch-Hg - 100 psig / 948 mbar - 6.9 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome	Diaphragm	Sub-atmospheric	44-5000 Page 203
3500 psig / 241 bar	600 psig / 41.4 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome, Air, Dome/ Spring Biased	Piston	Economical	44-5200 Page 207
3500 psig / 241 bar	250 psig / 17.2 bar	0.06, 0.15	Spring	Diaphragm	Low flow 1/4" Point-of-Use	64-2600 Page 387
3500 psig / 241 bar	150 psig / 10.3 bar	0.06, 0.15	Spring	Diaphragm	Low flow 1/4" Gas Cabinet	64-2800 Page 391

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
3500 psig / 241 bar	150 psig / 10.3 bar	0.06, 0.15	Spring	Diaphragm	Two-stage	64-3400 Page 399
3500 psig / 241 bar	150 psig / 10.3 bar	0.06, 0.15	Spring	Diaphragm	Low flow 1/4" Gas Cabinet	64-3600 Page 403
3500 psig / 241 bar	100 psig / 6.9 bar	0.06, 0.15, 0.24	Spring	Diaphragm	Sub-atmospheric	64-5000 Page 407
3500 psig / 241 bar	150 psig / 10.3 bar	0.06, 0.15	Spring	Diaphragm	Premium Low flow 1/4" Point-of-Use	74-2400 Page 415
3500 psig / 241 bar	150 psig / 10.3 bar	0.5	Spring	Diaphragm	Premium Medium flow 1/2" Point-of-Use	74-3000 Page 419
3500 psig / 241 bar	150 psig / 10.3 bar	0.5	Spring	Diaphragm	Premium Medium flow 1/2" Point-of-Use and Gas Cabinet	74-3800 Page 423

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
3450 psig / 238 bar, 400 psig / 27.6 bar, 3045 psig / 210 bar, 500 psig / 34.5 bar	500 psig / 34.5 bar, 200 psig / 13.8 bar	0.06, 0.15, 1.0	Spring Only	Diaphragm	Laboratory - line regulator High Flow Adjustable	Line Pressure Reducer 6.0 Page 301
3000 psig / 207 bar	500 psig / 34.5 bar	1.0	Dome	Piston	With integral pilot	CP32 Page 261
3000 psig / 207 bar	150 psig / 10.3 bar	0.16	Spring Only	Diaphragm	Tied diaphragm	44-2800 Page 173
3000 psig / 207 bar	200 psig / 13.8 bar	1.0, 1.8	Spring, Dome, Dome/ Spring Biased	Diaphragm	Medium flow	44-3200 Page 177
3000 psig / 207 bar	150 psig / 10.3 bar	0.05	Spring	Diaphragm	Two-stage Tied diaphragm	PS-3400 Page 313
2900 psig / 200 bar	0.725-22 psig / 0.05-1.5 bar, 22-290 psig / 1.5-20.0 bar	0.2	Spring Only	Diaphragm	Laboratory Very accurate outlet pressure control Very low pressures	Labo-F and Doppelregulus Page 299

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
2900 psig / 200 bar	100 psig / 6.9 bar	0.06	Spring Only	Diaphragm	Laboratory - Stainless Steel Corrosive gases Captured bonnet Inert gas purging	WEGA Corrosive Gases and Purging Page 355
2900 psig / 200 bar	145 psig / 10.0 bar	0.02	Spring Only	Diaphragm	Laboratory - Cylinder version Lightweight and compact	WEGA Mini Page 357
1500 psig / 103 bar	150 psig / 10.3 bar	1.2	Spring	Diaphragm	High flow 1/2" Gas Cabinet (BSGS)	64-3200 Page 395
1500 psig / 103 bar	400 psig / 27.6 bar	1.0	Spring	Diaphragm	High flow Gas Cabinet (BSGS)	449-254 Page 383
1000 psig / 69.0 bar	700 psig / 48.3 bar (Dome) 600 psig / 41.4 bar (Air)	0.35	Dome, Air	Diaphragm	Commonly used with ER5000	DK Page 287
600 psig / 41.4 bar	150 psig / 10.3 bar	1.0, 1.2	Spring	Diaphragm	High flow 1/2" Point-of-Use	64-5400 Page 411

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
600 psig / 41.4 bar	150 psig / 10.3 bar	1.0, 1.2	Spring	Diaphragm	BA Grade 1/2" Point-of-Use	22-5400 Page 375
600 psig / 41.4 bar	150 psig / 10.3 bar	0.24	Spring	Diaphragm	BA Grade 1/4" Point-of-Use	22-2200 Page 371
580 psig / 40.0 bar	145 psig / 10.0 bar	0.06	Spring Only	Diaphragm	Laboratory - Point-of-Use VCR® threads	Ultra High Purity MiniLabo 2 Page 309
580 psig / 40.0 bar	580 psig / 40.0 bar	0.8, 2.0	Spring Only	Piston	Flanges according to DIN EN 1092-1	44-1300F Page 149
580 psig / 40.0 bar	500 psig / 34.5 bar	0.06, 0.15	Spring Only	Diaphragm	Flanges according to DIN EN 1092-1	44-2200F Page 165
580 psig / 40.0 bar	28 inch-Hg-200 psig / 948 mbar-13.8 bar	1.0, 1.8	Spring Only	Diaphragm	Flanges according to DIN EN 1092-1	44-3200F Page 183

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
580 psig / 40.0 bar	500 psig / 34.5 bar	0.06, 0.15	Spring Only	Piston	Flanges according to DIN EN 1092-1	44-5200F Page 211
580 psig / 40.0 bar	250 psig / 17.2 bar	5.0	Spring (H/W), Dome	Diaphragm	Flanges according to DIN EN 1092-1	DHF Page 283
500 psig / 35 bar	500 psig / 35 bar	0.12	Dome / Spring biased	Diaphragm	Differential Pump seal tracking	SJS Page 347
500 psig / 34.5 bar	150 psig / 10.3 bar	1.0, 1.8	Spring, Dome	Diaphragm	Pharmpure™	PH-3200 Page 443
500 psig / 34.5 bar	250 psig / 17.2 bar	5.0	Spring, Dome, Air, Dome/ Spring Biased	Diaphragm	High flow	DH Page 273
500 psig / 34.5 bar	150 psig / 10.3 bar	1.8	Spring, Dome, Air	Diaphragm	Low pressure, medium flow	FR-2000 Page 291
400 psig / 27.6 bar	28 inch-Hg-100 psig / 948 mbar-6.9 bar	0.02, 0.06, 0.24	Spring, Dome, Air, Dome/ Spring Biased	Diaphragm	Sub-atmospheric	44-4600 Page 199

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
300 psig / 20.7 bar	150 psig / 10.3 bar	10.0	Spring, Dome, Air	Diaphragm	High flow	DG Page 269
300 psig / 20.7 bar	250 psig / 17.2 bar	5.0	Spring, Dome	Diaphragm	Welded connections	DH-16 Page 279
300 psig / 20.7 bar	130 psig / 9.0 bar	15.0	Spring	Diaphragm	High flow Facility	15 Page 367
300 psig / 20.7 bar	250 psig / 17.2 bar	5.0	Spring, Dome	Diaphragm	Pharmpure™	PH-1600 Page 427
300 psig / 20.7 bar	250 psig / 17.2 bar	10.0	Spring, Dome	Diaphragm	Pharmpure™	PH-1800 Page 431
290 psig / 20.0 bar (580 psig / 40.0 bar)	145 psig / 10.0 bar	0.03	Spring Only	Diaphragm	Laboratory, R&D Point-of-Use Suitable for ECD (Electronic Capture Detector) Very compact	MiniLabo 2 Page 305
250 psig / 17.2 bar	150 psig / 10.3 bar	1.8	Spring	Diaphragm	Premium High flow 1/2" Point-of-Use	23 Page 379

Pressure Reducing Selection Guide

INLET PRESSURE RATING	OUTLET PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
290 psig / 20.0 bar	22 psig / 1.5 bar	0.78	Spring Only	Diaphragm	Laboratory - inline Extremely sensitive outlet pressure control	Regulus 3 Page 317
290 psig / 20.0 bar	58 psig / 4.0 bar	2.1	Spring Only	Diaphragm	Laboratory - inline Accurate and sensitive outlet pressure control	Regulus 4 Page 321
150 psig / 10.3 bar	100 psig / 6.9 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome, Dome/ Spring Biased	Diaphragm	Pharmpure™	PH-2200 Page 435
150 psig / 10.3 bar	100 psig / 6.9 bar	0.02, 0.06, 0.15, 0.24	Spring, Dome, Dome/ Spring Biased	Diaphragm	Pharmpure™	PH-2600 Page 439
150 psig / 10.3 bar	100 psig / 6.9 bar	0.04	Spring	Diaphragm	Miniature 1/4" Point-of-Use (IGS)	12 Page 363
116 psig / 8.0 bar	12 psig / 0.83 bar	0.23	Spring Only	Diaphragm	Laboratory - inline Very accurate pressure control	Regulus Stainless Steel Page 325

Regulators - Pressure Reducing

Regulators that maintain desired outlet pressure providing the required flow to satisfy a variable downstream demand

Product Selection Guide

Don't know where to start? This guide lists TESCOM pressure reducing regulators by inlet/outlet pressures, flow rates and loading, and sensing type to help you find the right product in this catalog

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Quick Find List

Know the model number? Here are TESCOM pressure reducing regulators listed in numerical/alphabetical order

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3500 psig / 241 bar

Outlet Pressure Ranges
0-30, 0-60, 0-100 psig
0-2.1, 0-4.1, 0-6.9 bar

Design Proof Pressure
150% of maximum rated

Leakage
Internal: Bubble-tight
External: < 1 x 10^{-6} atm cc/sec He

Operating Temperature[1]
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.06

Maximum Operating Torque
30 in-lbs / 3.4 N • m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass or Aluminum

Diaphragm
Cobalt Chrome Nickel Alloy (Eligiloy®)

Seat
PCTFE[1], PTFE or Polyimide (Vespel®)

Friction Sleeve (inner)
PTFE

Remaining Parts
316 Stainless Steel or Brass (on Brass models)

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/8" or 1/4" NPTF

Internal Volume
3.03 cc

Weight (without gauges)
Stainless or Brass Models: 1 lb / 0.5 kg
Aluminum Models: 0.5 lb / 0.2 kg

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Elgiloy® is a registered trademark of Elgiloy Corp.

1. CTFE option: maximum temperature of 140°F / 60°C

TESCOM 04 Series space saving and lightweight miniature regulator offers minimal internal volume and is easy to purge resulting in less retention.

Applications

- Analyzers
- Lecture bottles
- Sampling systems

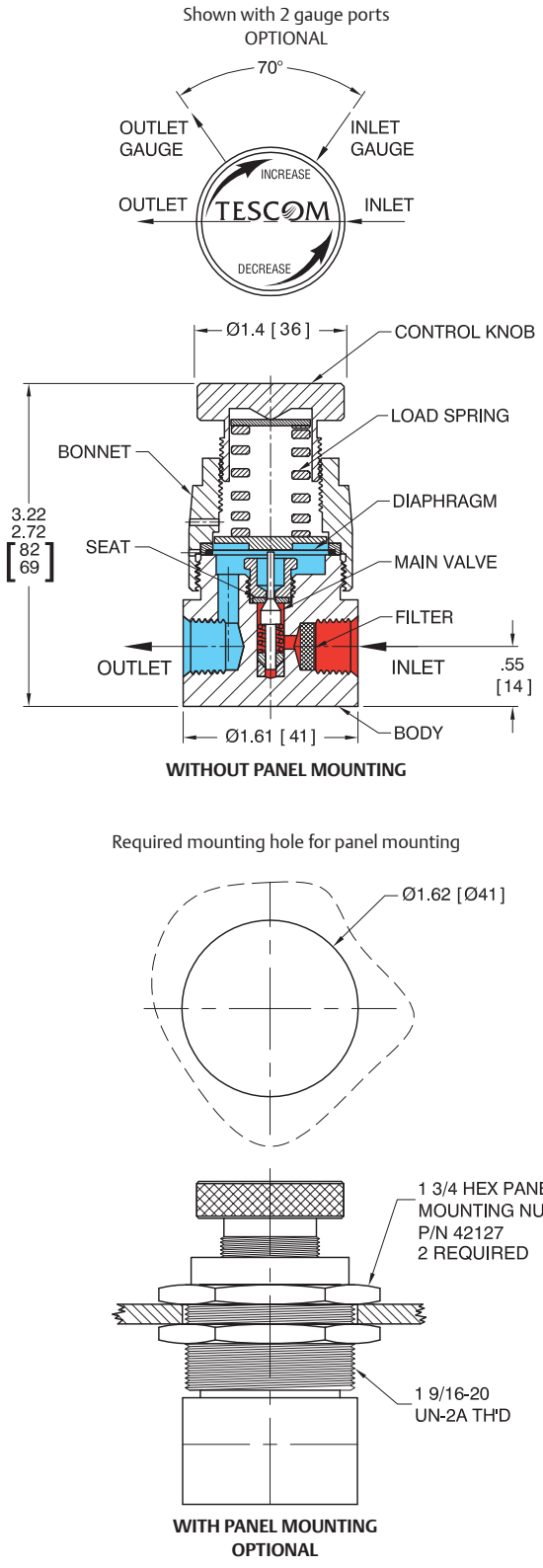
Features and Benefits

- Compact size (3" / 76 mm high) and constructed with lightweight materials
- Available in 316 Stainless Steel, Brass, or Aluminum body construction
- Elgiloy® diaphragm provides accurate and stable pressure control
- Minimal internal volume allows for rapid purging and carry-over
- Corrosion resistant
- Various porting configurations are available

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

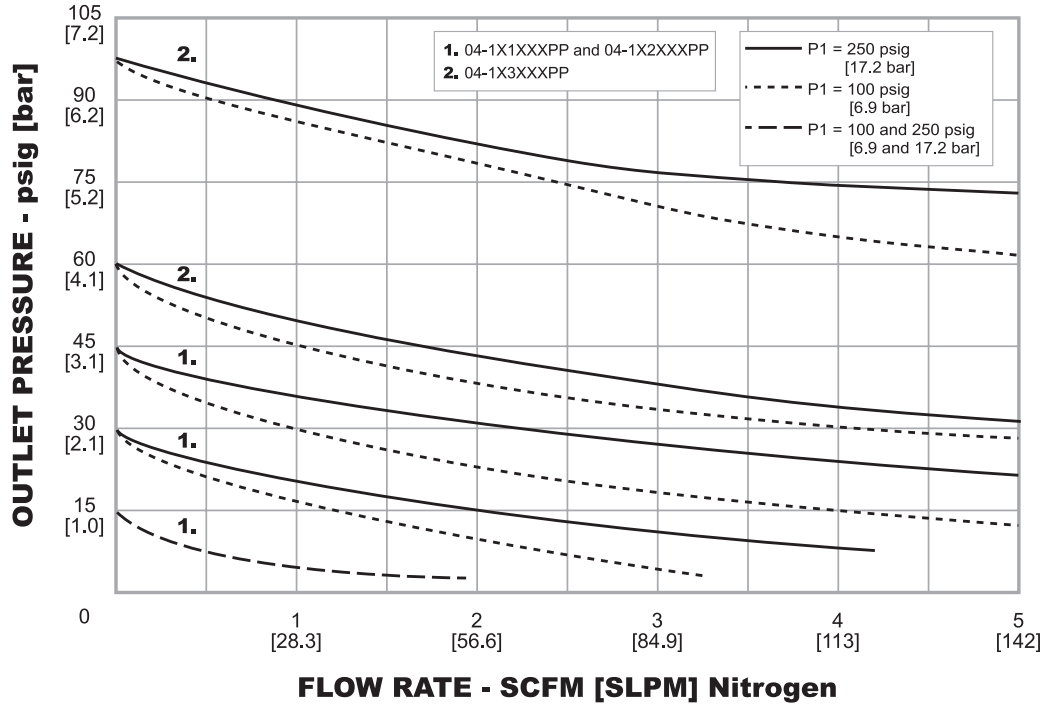
04 Series Regulator Drawing

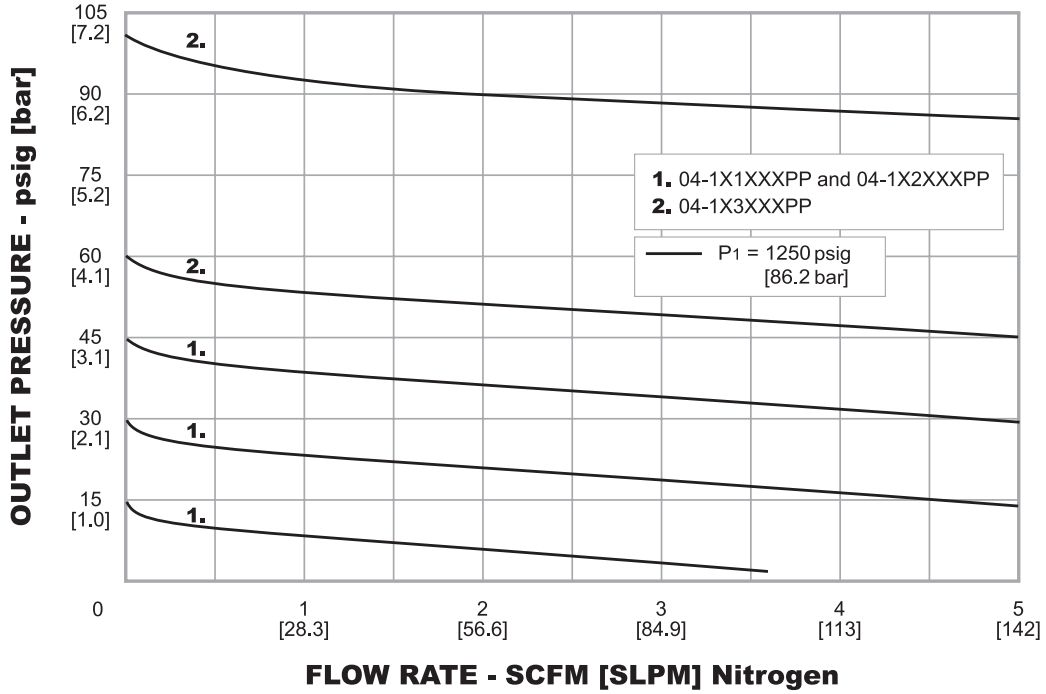


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

04 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

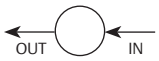
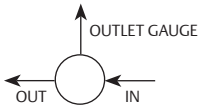
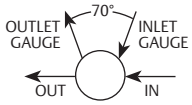
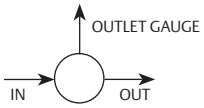
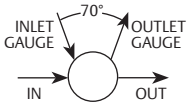
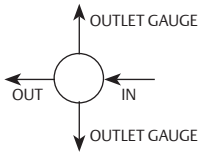
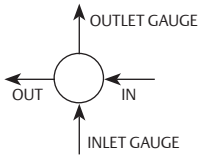
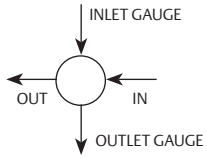




04 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

04-1	A		3	E	AA	PP	Z
BASIC SERIES	**INLET PRESSURE TRIM MATERIAL**	**BODY AND SEAT MATERIAL**	**OUTLET PRESSURE**	**ADJUSTMENT**	**GAUGE PORT OPTIONS SIZE, TYPE AND (NUMBER OF PORTS)**	**INLET AND OUTLET PORTS SIZE AND TYPE**	**OPTIONS**
04-1	**A –** 3500 psig 241 bar 316 Stainless Steel	316/316L Stainless Steel PTFE	**1 –** 0-30 psig 0-2.1 bar	**Without Panel Mounting** **A –** Black knob	 **AA –** No Gauge Ports (0)	**PP –** 1/8" NPTF	**Z –** None
	B – 3500 psig 241 bar 316 Stainless Steel/Brass	Brass PTFE	**2 –** 0-60 psig 0-4.1 bar	**With Panel Mounting** **E –** Black knob	 **AF –** 1/4" NPTF (1) **AG –** 1/8" NPTF (1)	**NN –** 1/4" NPTF	
	C – 3500 psig 241 bar 316 Stainless Steel/Brass	Aluminum PTFE	**3 –** 0-100 psig 0-6.9 bar		 **AT –** 1/8" NPTF (2)		
	D – 3500 psig 241 bar 316 Stainless Steel	316/316L Stainless Steel PCTFE			 **BF –** 1/4" NPTF (1) **BG –** 1/8" NPTF (1)		
	E – 3500 psig 241 bar 316 Stainless Steel/Brass	Brass PCTFE			 **BT –** 1/8" NPTF (2)		
	F – 3500 psig 241 bar 316 Stainless Steel/Brass	Aluminum PCTFE			 **CS –** 1/4" NPTF (2)		
	G – 3500 psig 241 bar 316 Stainless Steel	316/316L Stainless Steel Polyimide (Vespel®)			 **DS –** 1/4" NPTF (2)		
	H – 3500 psig 241 bar 316 Stainless Steel/Brass	Brass Polyimide (Vespel®)			 **GF –** 1/4" NPTF (2)		
	J – 3500 psig 241 bar 316 Stainless Steel/Brass	Aluminum Polyimide (Vespel®)					

Regulators - Pressure Reducing D20101932X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3600 psig / 248 bar

Outlet Pressure Ranges
50-89 psig / 3.4-6.1 bar
90-200 psig / 6.2-13.8 bar
201-320 psig / 13.9-22.1 bar

Leakage
Bubble-tight

Filtration
40 micron nominal

Operating Temperature
-40°F to 200°F / -40°C to 93°C

Flow Capacity (approximate)
C_V = 0.5

MEDIA CONTACT MATERIALS

Body
Aluminum 6061-T6 with Nickel Plating

Seat
Polyimide (Vespel®)

Main Valve
17-4 PH Stainless Steel

Sensor
Aluminum 6061-T6

Sensor Insert
17-4 PH Stainless Steel

Remaining Parts
300 Series Stainless Steel, PTFE, Nitrile, Buna-N, Ethylene Propylene

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4" Inlet, 3/8" Outlet, NPTF, and SAE

Weight
1.4 lbs / 0.6 kg

Vespel® and Teflon® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 20-1000 Series regulator is designed with lightweight aluminum construction for onboard compressed natural gas vehicles with 7 liter engines and larger. Piston sensed for long service life with a heat exchanger to prevent freezing.

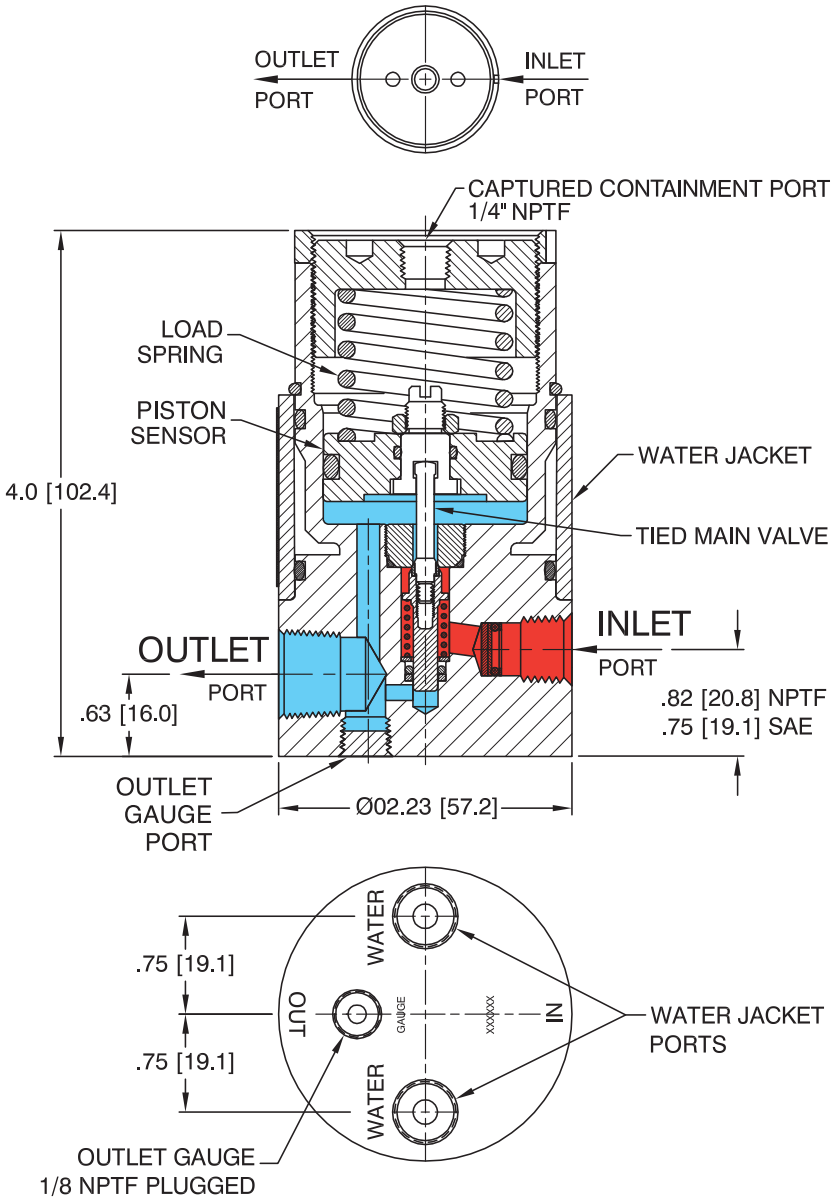
Application

- Compressed natural gas vehicles

Features and Benefits

- Piston-sensed design provides a long service life and enhanced safety
- High flow, low pressure drop
- Balanced valve design minimizes supply pressure effect
- Lightweight, precision machined aluminum construction
- Used in diverse applications for a broad range of temperatures, flows, and pressures
- Wide variety of preset outlet pressures are available
- Heat exchanger eliminates freeze-up
- NGV 3.1 approved

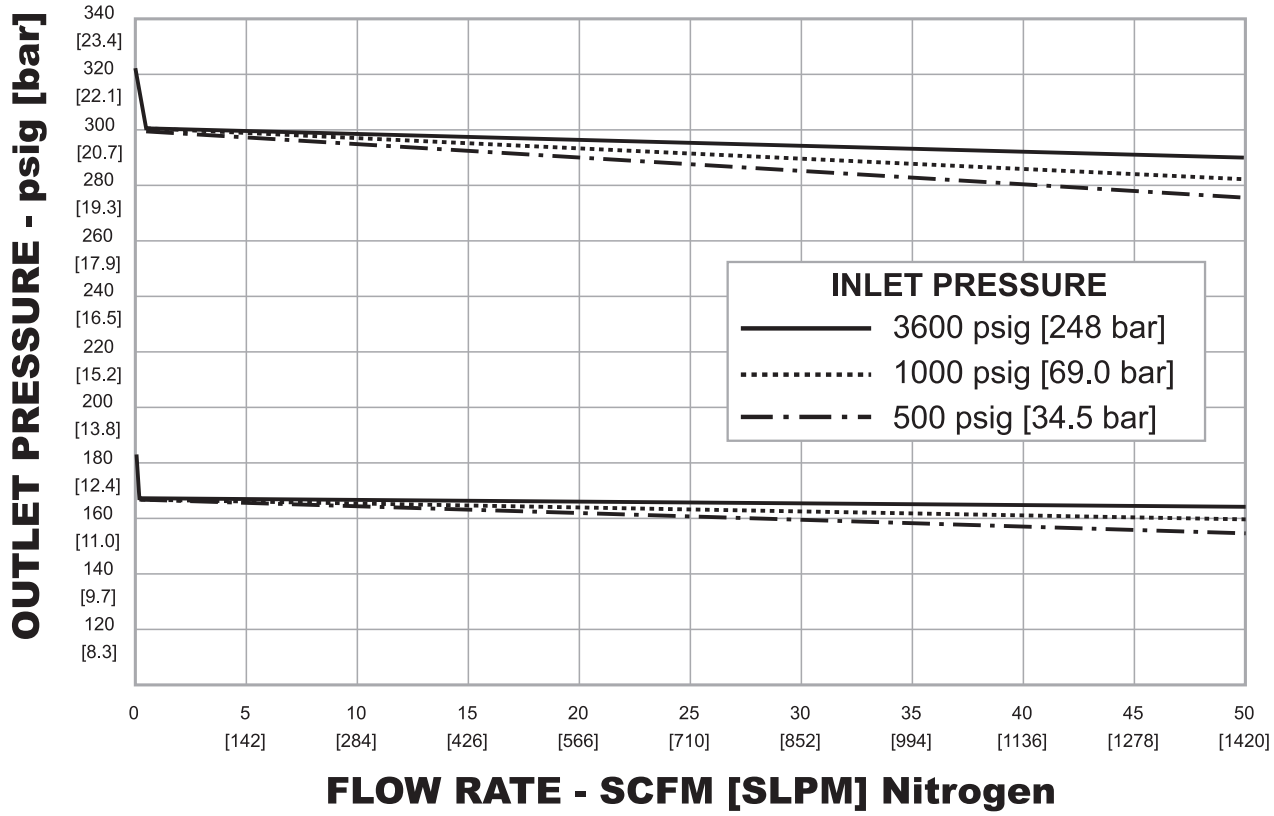
20-1000 Series Regulator Drawing

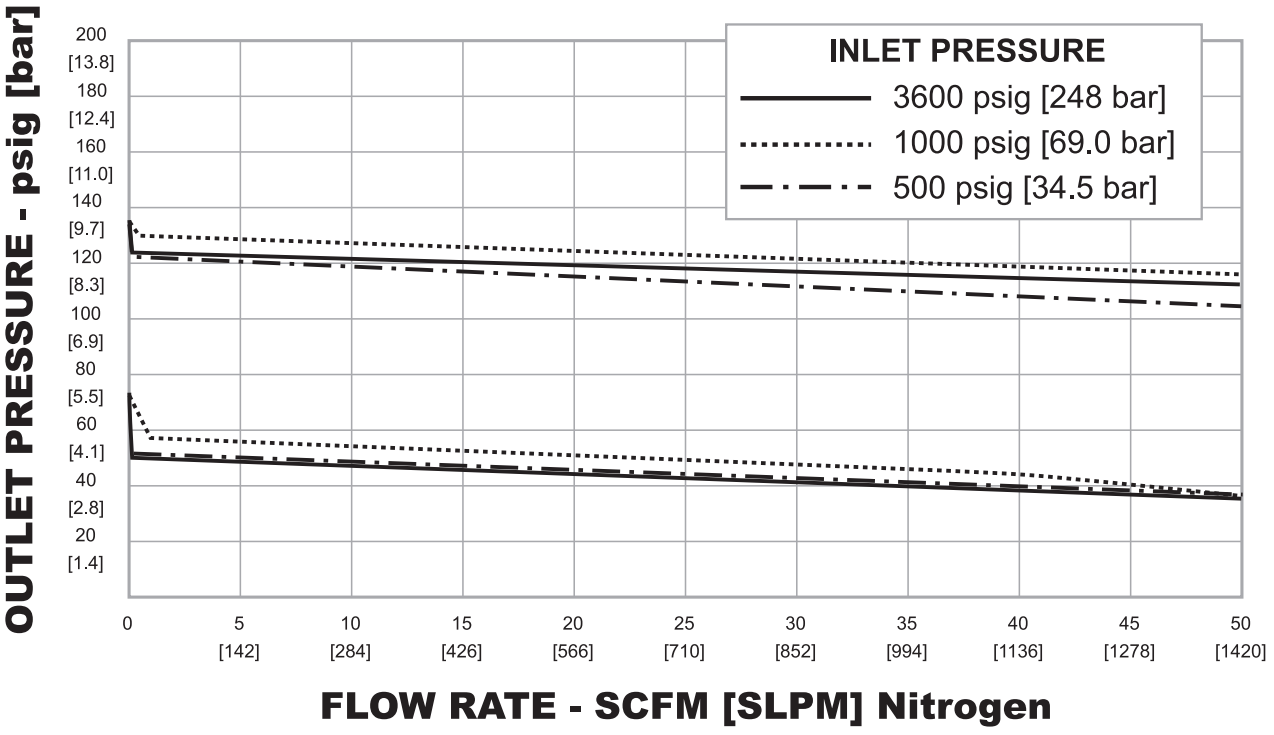


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

20-1000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





20-1000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

20-10	3	1		- 2	9	01		
BASIC SERIES	**BODY MATERIAL**	**MAXIMUM OUTLET PRESSURES**	**SET PRESSURE RANGES**	**PORT TYPE**	**INLET AND OUTLET SIZE**	**SET PRESSURE**		
20-10	**3 –** 6061-T6 Aluminum	**1 –** 125 psig 8.6 bar	50-89 psig 3.4-6.1 bar	**1 –** SAE	**9 –** 1/4" Inlet 3/8" Outlet	01 – 50 psig 3.4 bar	10 – 275 psig 19.0 bar	19 – 65 psig 4.5 bar
		2 – 235 psig 16.2 bar	90-200 psig 6.2-13.8 bar	**2 –** NPTF		02 – 75 psig 5.2 bar	11 – 300 psig 20.7 bar	20 – 70 psig 4.8 bar
		3 – 320 psig 22.1 bar	201-320 psig 13.9-22.1 bar			03 – 100 psig 6.9 bar	12 – 90 psig 6.2 bar	21 – 89 psig 6.1 bar
						04 – 125 psig 8.6 bar	13 – 185 psig 12.8 bar	22 – 140 psig 9.7 bar
						05 – 150 psig 10.3 bar	14 – 110 psig 7.6 bar	26 – 80 psig 5.5 bar
						06 – 175 psig 12.1 bar	15 – 120 psig 8.3 bar	27 – 105 psig 7.2 bar
						07 – 200 psig 13.8 bar	16 – 170 psig 11.7 bar	28 – 60 psig 4.1 bar
						08 – 225 psig 15.5 bar	17 – 320 psig 22.1 bar	29 – 115 psig 7.9 bar
						09 – 250 psig 17.2 bar	18 – 135 psig 9.3 bar	30 – 95 psig 6.6 bar

Regulators - Pressure Reducing

D2011XX10121XEN2

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Type of Gas
CNG (Compressed Natural Gas)
Maximum Inlet Pressure
3600 psig / 248 bar
Outlet Pressure Range
49-145 psig / 3.4-10.0 bar
Design Proof Pressure
150% of maximum rated
Leakage
Bubble-tight
Operating Temperature
-40°F to 221°F / -40°C to 105°C
Nominal Flow Rate
Up to 75 kg/h / 1.25 kg/min, 1543 l/min (density CNG 0.81g/dm^3)
Flow Capacity
C_V = 0.8
Integral filter
Filter rate 40 µm, one piece, 2 layer sintered mesh
Solenoid Shut-off Valve
Supply: 24 V DC ± 15% or 12 V DC ± 15%
Electrical Connection: AMP Connector
Pressure Relief Valve
125-275 psig / 8.6-19.0 bar
Pressure Sensor
Supply: 5 V DC ± 0.25 V DC
Output Signal: 0.5 V, 4.5 V proportional
Electrical Connection: Packard Connector
Metering Range: 0-102, 145, 290, or 3626 psig / 0-7.0, 10.0, 20.0, or 250 bar

MEDIA CONTACT MATERIALS

Body, Sensor
Aluminum EN AW-6082 T6 (hard-anode oxidized)
Seat
Polyimide (Vespel® SP21)
O-Rings
HNBR, FKM
Fittings
316 Stainless Steel
Remaining Parts
Stainless Steel, Aluminum, Brass, or PTFE
Filter
316 Stainless Steel
Heat Exchanger
Body: Aluminum EN AW-6082 T6 and 6061 T6
Fittings: Brass
O-Ring: EDPM
Solenoid Shut-off Valve
Body: Stainless Steel
Seat: PA 6.6
Pressure Relief Valve
Body: Brass
O-Ring: NBR
Pressure Sensor/Plug
Body: Brass/Steel with surface coating
O-Ring: Fluorosilicone/NBR

OTHER

Connections
Wide range of fittings
Weight
3.5 lbs / 1.6 kg

Teflon® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 20-1100 Series regulator is designed with lightweight aluminum construction for onboard compressed natural gas (CNG) vehicles 7 liter engines and larger. This regulator offers higher flow capacity than the 20-1000 Series and accessory options such as solenoid valve and pressure sensors.

Main Application

- Compressed natural gas vehicles

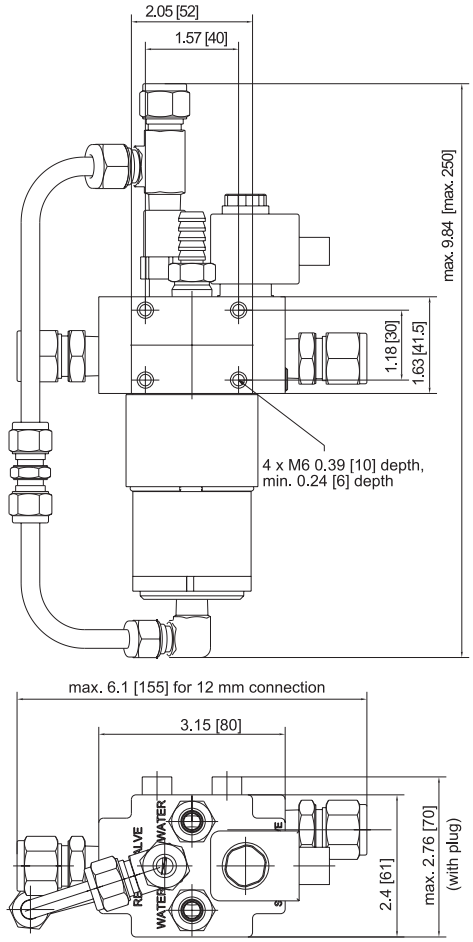
Application Details

The CNG pressure regulator system was specifically developed for the engine injection system of CNG vehicles. The main function is the reduction of the tank pressure to a preset outlet pressure. The system contains a pressure regulator with filter and heat exchanger, a solenoid shut-off valve (high pressure), a pressure relief valve and up to two optional pressure sensors (high pressure and/or low pressure). The pressure regulator is based on the TESCOM 20-1000 Series CNG regulator which has been used in this market for more than 10 years. The pressure regulator is a single-stage, spring loaded pressure regulator with a balanced main valve. The regulator is piston sensed providing enhanced safety and long service life. It's simple to install with screws included.

20-1100 Series Regulator Features and Benefits

- Compact aluminum body (hard-anode oxidized) for light weight and optimized thermal conductivity
- Provides a highly stable outlet pressure and low droop over a wide range of inlet pressures as well as high flow rates
- 40 μm filter, layer sintered mesh
- Very efficient heat exchanger
- Integrated high pressure solenoid shut-off valve
- Integrated pressure relief valve
- Optional high pressure and/or low pressure sensor
- Fail-safe system, relief connection for potential gas leakage
- Wide range of fittings for gas inlet, outlet and heat exchanger connections
- ECE-R 110 approval

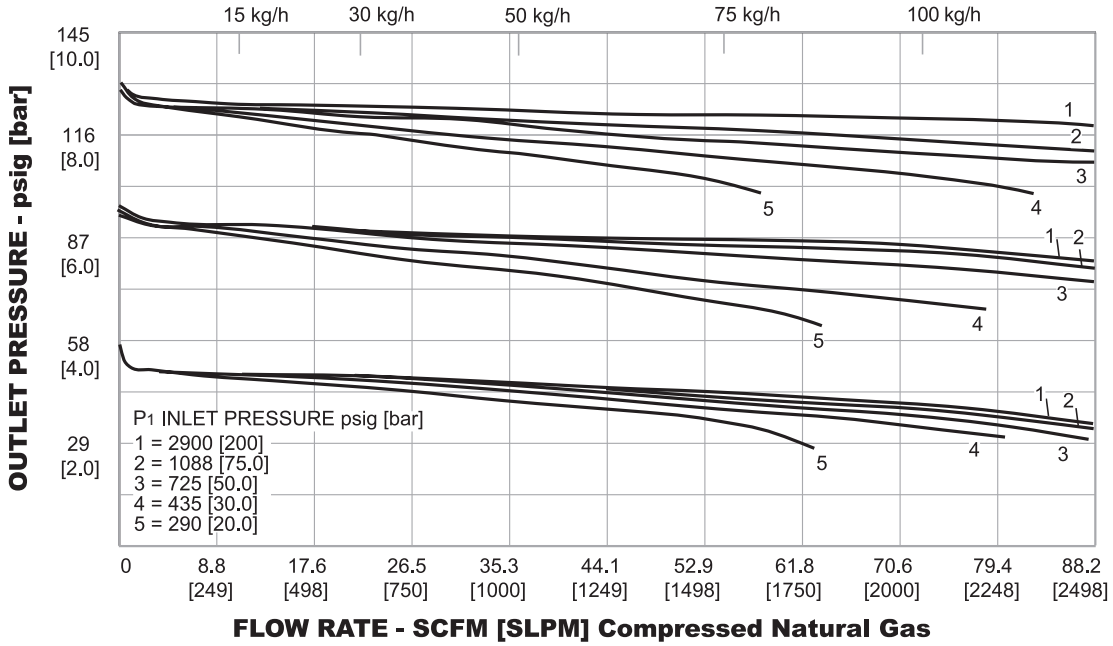
20-1100 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

20-1100 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



20-1100 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

20-11	9	085	0	0	3	3	-	2	M
BASIC SERIES	**MATERIAL FAIL-SAFE SYSTEM**	**OUTLET PRESSURE RANGE[1]**	**HIGH PRESSURE SENSOR**	**LOW PRESSURE SENSOR**	**INLET CONNECTION**	**OUTLET CONNECTION**	**HEAT EXCHANGER CONNECTION**	**WINDING POWER SUPPLY**	**PRESSURE RELIEF VALVE**
20-11	**0** – Without safe relief connection **6** – Safe relief Stainless Steel **9** – Safe Relief Brass / Copper	**085** – 49-145 psig 3.4-10.0 bar	**0** – Plug **1** – 3626 psig 250 bar	**0** – Plug **1** – 102 psig 7.0 bar **2** – 145 psig 10.0 bar **3** – 290 psig 20.0 bar	**0** – Without **1** – 8 mm **2** – 10 mm **3** – 12 mm **4** – 5/16" **5** – 3/8" **6** – 1/2"	**0** – Without **1** – 8 mm **2** – 10 mm **3** – 12 mm **4** – 5/16" **5** – 3/8" **6** – 1/2"	– 3/8" / 10 mm	**1** – 12 V DC **2** – 24 V DC	**L** – 145 psig 10.0 bar **M** – 150 psig 10.3 bar **N** – 160 psig 11.0 bar **0** – 175 psig 12.1 bar **P** – 200 psig 13.8 bar **R** – 230 psig 15.9 bar

1. - designation in MPa
e.g 085 for 0.85 MPa / 8.5 bar
- adjustment dynamically
(P1 = 1450 psig / 100 bar, Q = 40 l/min, ≈ 2 kg/h) > idling

Regulators - Pressure Reducing D20121935X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
5000 psig / 345 bar (Aluminum body)
10,000 psig / 690 bar (Stainless Steel body)

Maximum Outlet Pressure
450 psig / 31.0 bar

Leakage
Bubble-tight

Operating Temperature
-40°F to 185°F / -40°C to 85°C

Flow Capacity
C_V = 0.50

MEDIA CONTACT MATERIALS

Body
Aluminum 6061-T6 with Electroless Nickel Plating,
316 Stainless Steel

Seat
Polyimide (Vespel®)

O-Rings
Nitrile, Buna-N

Main Valve
316 Stainless Steel

Sensor
Aluminum 6061-T6

Spring
302 Stainless Steel

Filter
10 micron, 316 Stainless Steel

Remaining Parts
300 Series Stainless Steel, PTFE, 18-8 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4", 3/8", 1/2" NPTF, and SAE

Weight (approximate)
1.4 lbs / 0.6 kg

Vespel® and Teflon® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 20-1200 Series lightweight, aluminum constructed preset regulator offers an integrated 10 micron filter designed for hydrogen service. Excellent choice for other OEM applications.

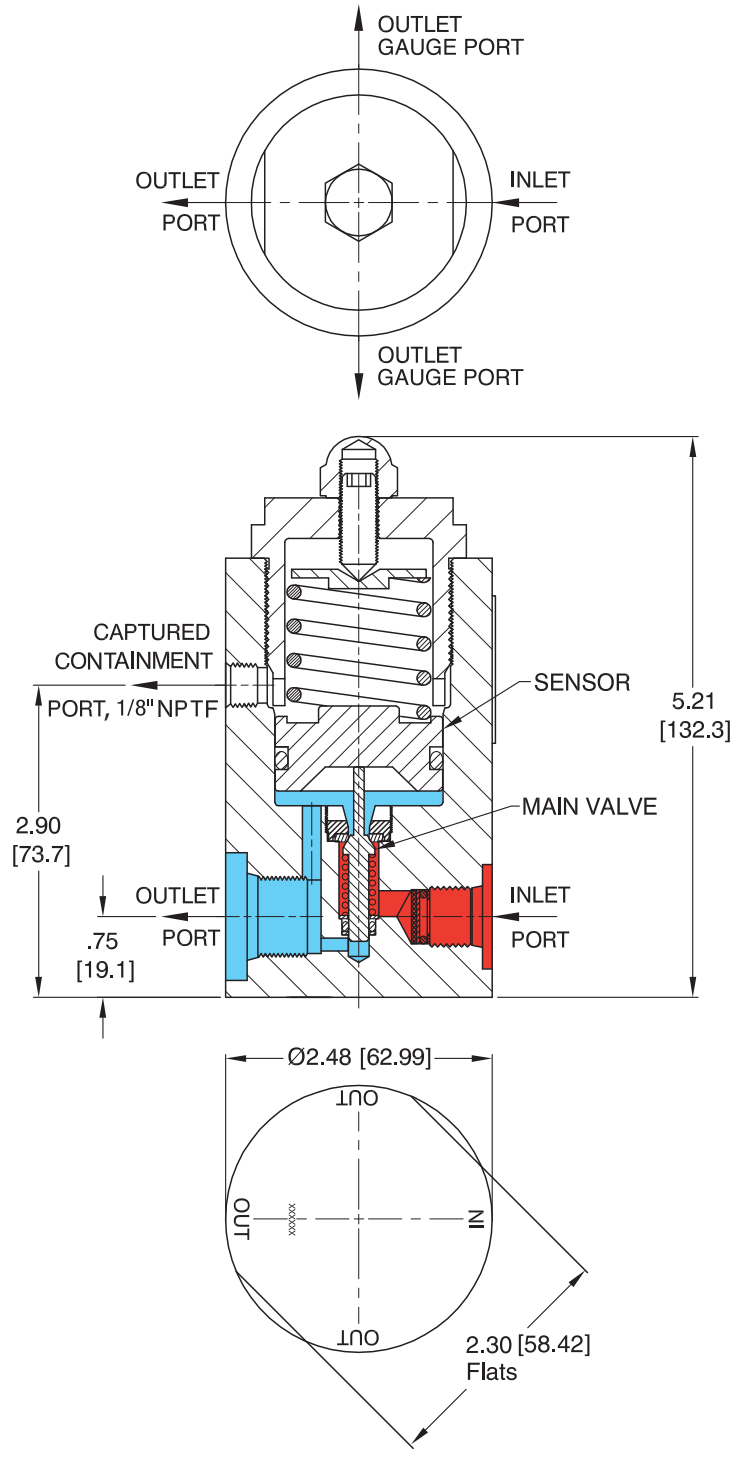
Application

- Hydrogen fuel cell vehicles

Features and Benefits

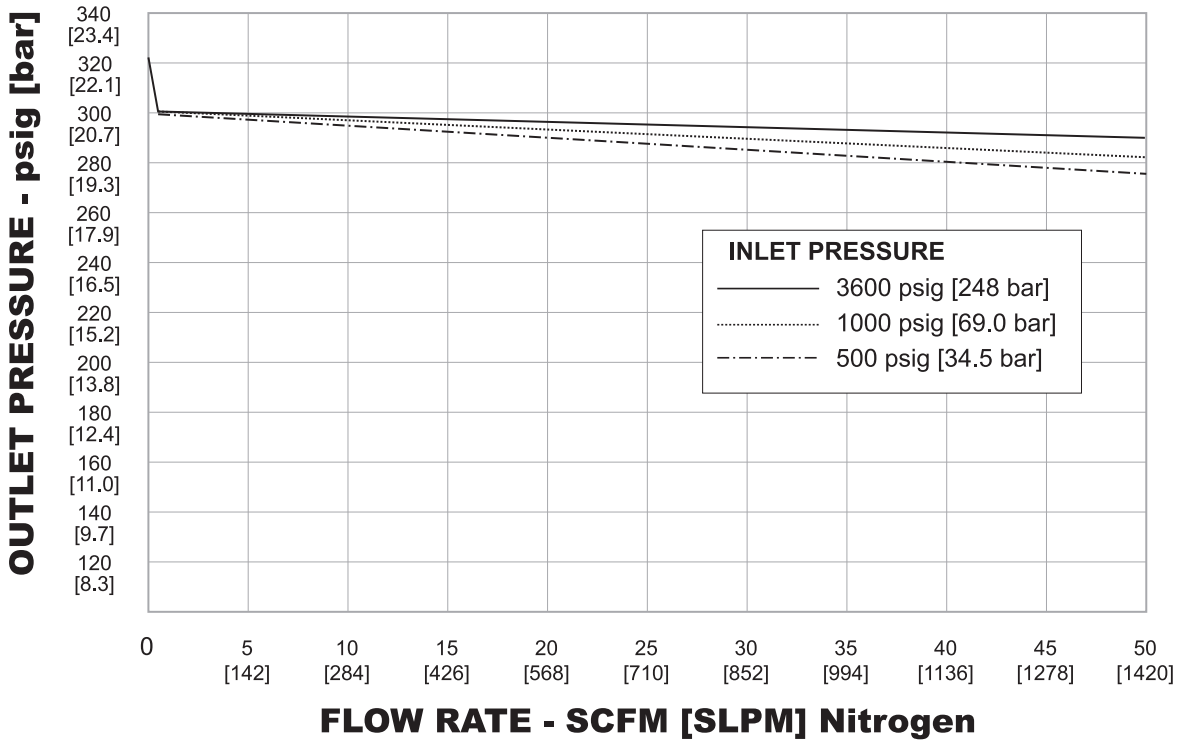
- Piston-sensed design provides a long service life and enhanced safety
- High flow and minimal flow droop
- Balanced valve design minimizes supply pressure effect
- Lightweight, precision machined aluminum construction
- Used in diverse applications for a broad range of temperatures, flows, and pressures
- Wide variety of preset outlet pressures are available
- 10 micron, 316 Stainless Steel filter

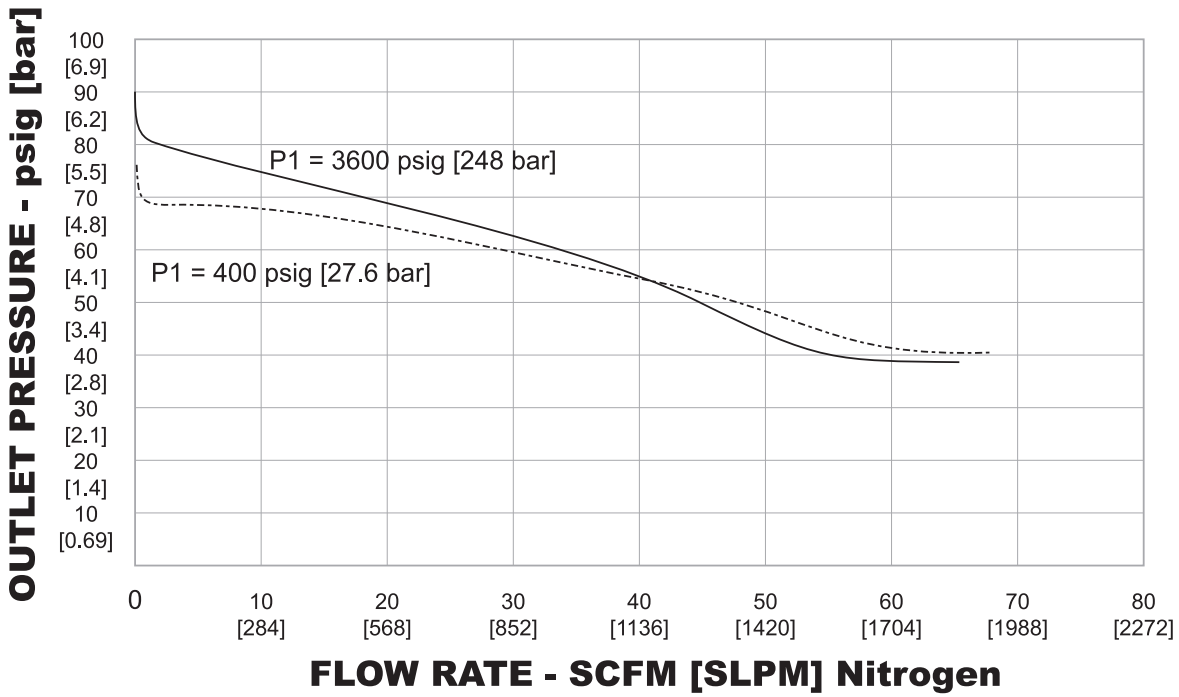
20-1200 Series Regulator Drawing



20-1200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





20-1200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

20-12 3 2 - 1 9 01

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	PORT TYPE	INLET AND OUTLET SIZE	SET PRESSURE	
20-12	**3 –** Electroless Nickel-Plated 6061-T6 Aluminum **6 –** 316 Stainless Steel	**1 –** 0-75 psig 0-5.2 bar **2 –** 90-190 psig 6.2-13.1 bar **3 –** 101-320 psig 7.0-22.1 bar **4 –** 200-450 psig 13.8-31.0 bar	**1 –** SAE **2 –** NPTF	**4 –** 1/4" inlet 1/4" outlet 1/4" gauge **7 –** 3/8" inlet 3/8" outlet 1/4" gauge **9 –** 3/8" inlet 1/2" outlet 3/8" gauge	**01 –** 150 psig 10.3 bar **02 –** 300 psig 20.7 bar **03 –** 400 psig 27.6 bar **04 –** 175 psig 12.1 bar **05 –** 50 psig 3.4 bar **06 –** 125 psig 8.6 bar **07 –** 170 psig 11.7 bar **08 –** 55 psig 3.8 bar **09 –** 100 psig 6.9 bar **10 –** 70 psig 4.8 bar **11 –** 435 psig 30.0 bar **12 –** 160 psig 11.0 bar	**13 –** 90 psig 6.2 bar **14 –** 141 psig 9.7 bar* **15 –** 40 psig 2.8 bar **16 –** 220 psig 15.2 bar **17 –** 60 psig 4.1 bar **18 –** 290 psig 20.0 bar **19 –** 218 psig 15.0 bar **20 –** 45 psig 3.1 bar **21 –** 200 psig 13.8 bar **22 –** 80 psig 5.5 bar **23 –** 320 psig 22.1 bar **Pressure at 2.5 SCFM*

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel: 10,000 psig / 690 bar
Brass: 6000 psig / 415 bar

Maximum Outlet Pressure
5-500, 5-800, 10-1500, 15-2500, 25-4000, 50-6000, 200-10,000 psig
0.3-35, 0.3-55, 0.7-105, 1-175, 1.7-275, 3.4-415, 14-690 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
Standard: C_V = 0.06
Optional: C_V = 0.02, 0.12, 0.30

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Bonnet
300 Series Stainless Steel

40 Micron Filter
300 Series Stainless Steel or Bronze

Seat
Main Valve: Polyimide (Vespel®)
Vent Valve: PCTFE

Seals
Nitrile, Buna-N

Back-Up Rings
PTFE

Trim
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Stainless Steel: 5.5 lbs / 2.5 kg
Brass: 5.7 lbs / 2.6 kg

Teflon®, Viton-A®, Kalrez®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 26-1000 Series controls pressures up to 10,000 psig / 690 bar. This pressure reducing regulator offers standard venting providing decreased outlet pressure. The 26-1000 Series has an interchangeable spring and sensor for product versatility. The low torque handknob is easy to adjust.

Applications

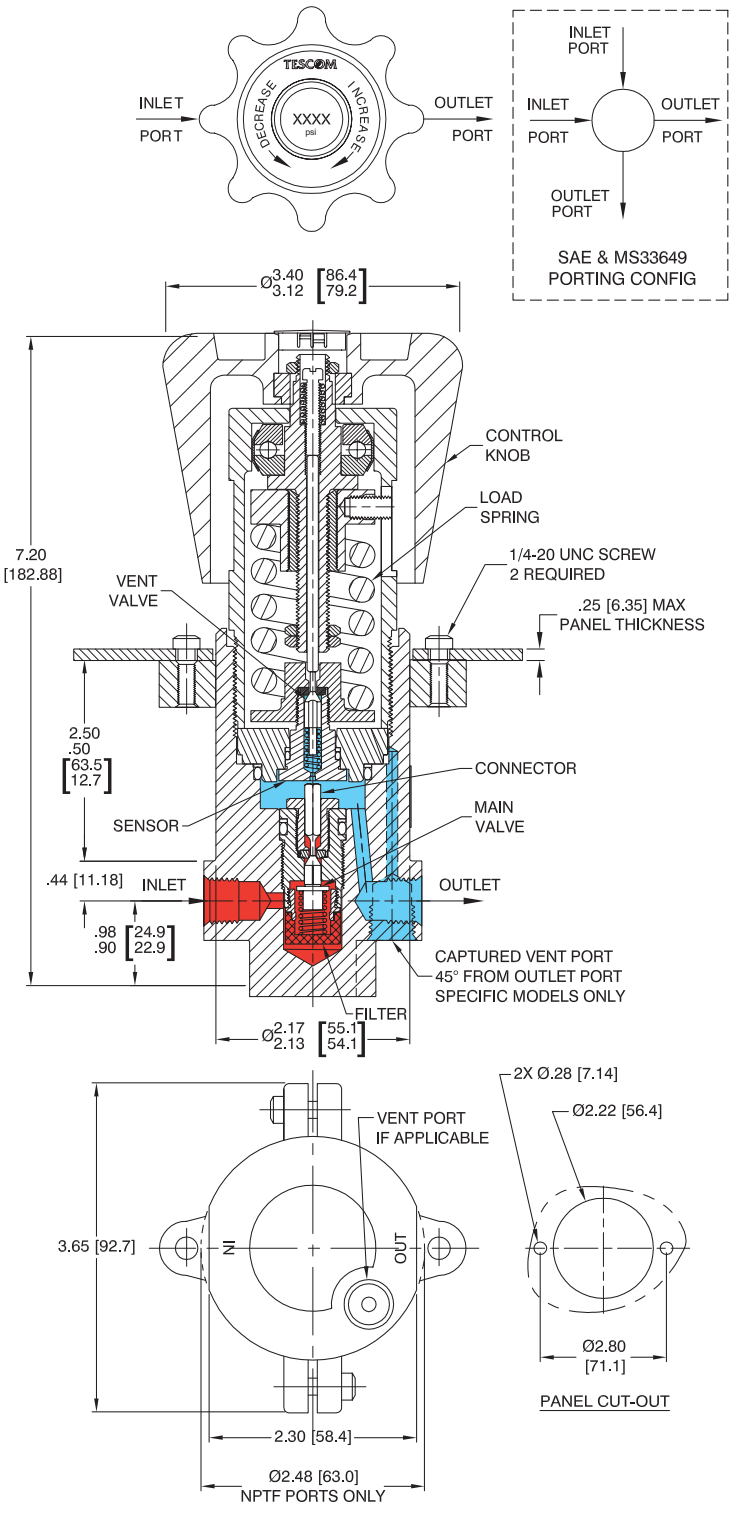
- Test equipment
- Calibration stands
- Production equipment

Features and Benefits

- Can be easily converted to seven different outlet pressure ranges
- Available with captured venting
- Numerous inlet and outlet porting options
- Available in Brass or Stainless Steel
- Unbalanced stem provides positive shut-off
- Safety and reliability of piston sensor
- Excellent sensitivity through a wide range of pressure settings
- Vents to zero psig / bar in all pressure ranges

26-1000 SERIES

26-1000 Series Regulator Drawing

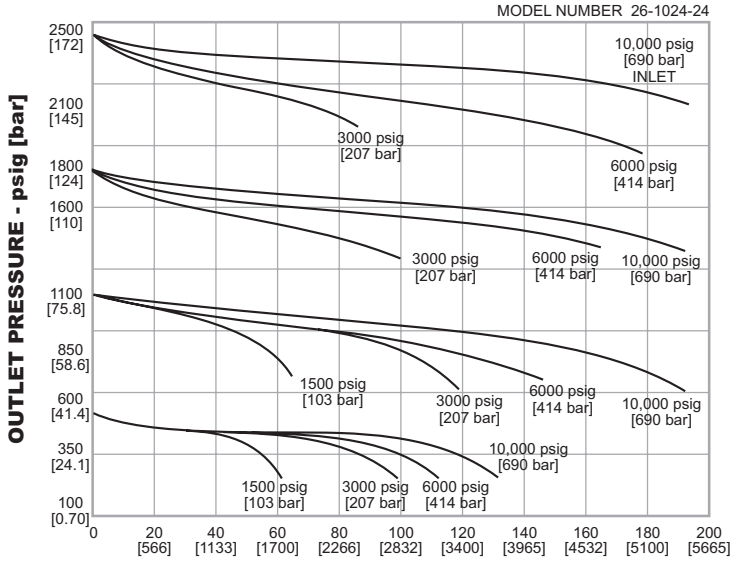


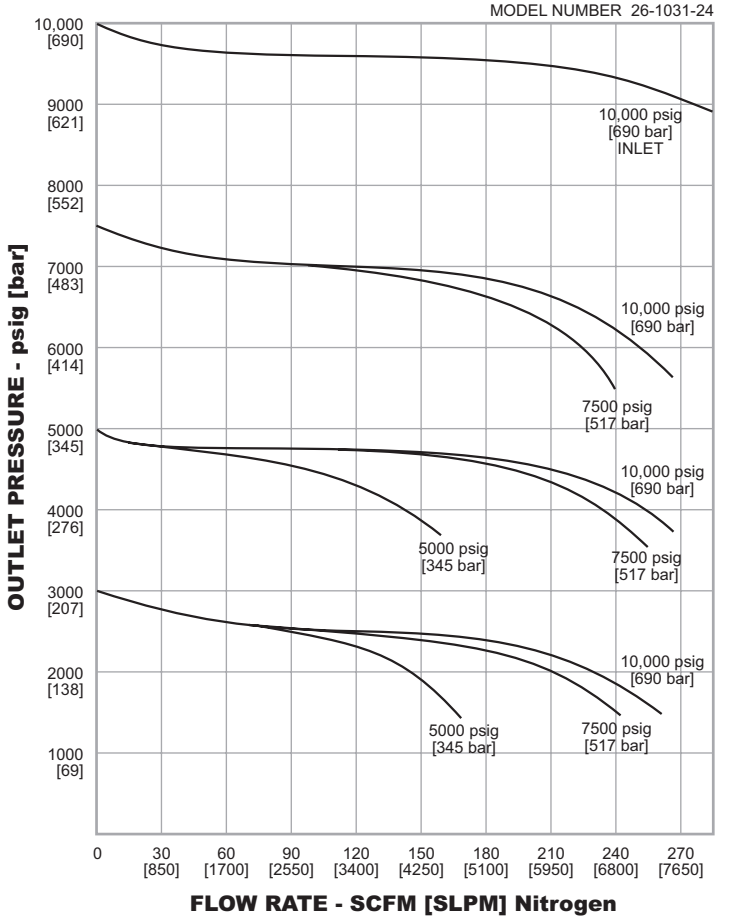
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

CAUTION:
Vent port at base of regulator must not be plugged or restricted.

26-1000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





26-1000 SERIES

26-1000 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

26-10	1	4	-	3	4	[BLANK]

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	OPTIONS
26-10	**1 –** Brass **6 –** 316 Stainless Steel	**1 –** 200-10,000 psig 14-690 bar (Stainless Steel Body Only) **2 –** 50-6000 psig 3.4-415 bar **3 –** 25-4000 psig 1.7-275 bar **4 –** 15-2500 psig 1-175 bar **5 –** 10-1500 psig 0.7-105 bar **6 –** 5-800 psig 0.3-55 bar **7 –** 5-500 psig 0.3-35 bar	**1 –** SAE[1] (SAR[1] for Europe) **2 –** NPTF **3 –** MS33649[1] **4 –** High Pressure **6 –** Medium Pressure *1. Two inlet and outlet ports standard at 90°*	**4 –** 1/4" **6 –** 3/8" (NPTF only)	**[BLANK] –** None **005 –** FKM (Viton®-A) O-rings **008 –** 1/4" NPTF inlet and outlet gauge ports **045 –** Non-venting **163 –** 1/2" inlet and outlet ports **249 –** 15,000 psig / 1034 bar inlet capability (Stainless Steel model only)
NOTE: All pressure ranges vent to zero psig.					

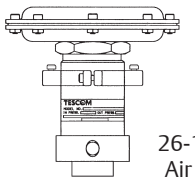
26-1000 Series Regulator Standard Modifications

MODIFICATION	FEATUREPART NUMBER SUFFIX
Captured Venting	002
The captured bonnet vent port allows the user to: 1) capture fluids, 2) re-use vented media, and 3) provide a secondary sealed barrier.	
Standard Unit with Viton-A® Soft Goods	005
Captured Venting with Viton-A® Soft Goods	007
1/4" NPTF Inlet and Outlet Gauge Ports at 60° Angle	008
15,000 psig / 1034 bar Inlet and Outlet Pressure Capabilities in Stainless Steel	039
For varied outlet capabilities, consult factory.	
Wrench Adjustment with Locking Device	098
For applications subject to vibration or accidental changes in pressure settings.	
1/2" Inlet and Outlet Ports	163
Non-Venting with Viton-A® O-Rings	280
Air Ratio Device, Non-Venting Only	045A

With pressure ranges of:

Model Number	Max. P2 / psig	Ratio*	Notes
26-10X1-XX-045A	10,000 / 690 bar	125-1	Stainless Steel Only
26-10X2-XX-045A	6000 / 414 bar	75-1	Brass or Stainless Steel
26-10X4-XX-045A	2500 / 172 bar	32-1	Brass or Stainless Steel
26-10X5-XX-045A	1500 / 103 bar	19-1	Brass or Stainless Steel

** Ratio is for reference only*



26-1000 with Air Actuator

Seat Material: Teflon®, CTFE, PEEK®, 17-4 PH Stainless Steel	*consult TESCOM*
O-Ring Material: Teflon®, Viton-A®, Ethylene Propylene, Urethane, Kalrez®	*consult TESCOM*
Vent Options: Captured Bonnet, Non-Venting	*consult TESCOM*
Loading Options:	
Air Ratio**, Dome-Load (1:1), Bias: captured bonnet (negative or positive bias), Wrench Adjust	*consult TESCOM*
*** The air ratio model can provide up to 15,000 psig / 1034 bar outlet pressure. For specific ratios, consult factory.*	
Pressures: 20,000 psig / 1379 bar inlet and outlet.	*consult TESCOM*
Flow Capacity: C_V = 0.12, C_V = 0.02 *(not available with metal seat)*	*consult TESCOM*
Cartridge Mounted	*consult TESCOM*
Electronic Controls	*consult TESCOM*
Available to automate your system. Can be used with air ratio or dome-loaded models.	

26-1000 Series Regulator Accessories *(optional at extra cost)*

ITEM	PART NUMBER
Gauges *Consult GAUGES section of catalog*	
Standard Repair Kit	P/N 38-1000-26
Standard Soft Goods Kits:	
Model: 26-10X1	P/N 389-1016
26-10X2 and 26-10X3	P/N 389-1005
26-10X4	P/N 389-1017
26-10X5, 26-10X6, and 26-10X7	P/N 389-1002
Consult Tescom about kits for modifications.	
Multiple Range Kit *(see back page)*	P/N 38-100X-XXX-XX
Main Valve Service Tool	P/N 6557-3
System Automation: To automate your system, an ER5000 Electropneumatic PID Controller can be used with this regulator.	
Consult Tescom for additional information and a specific part number.	

26-1000 SERIES

26-1000 Multiple Range Kits

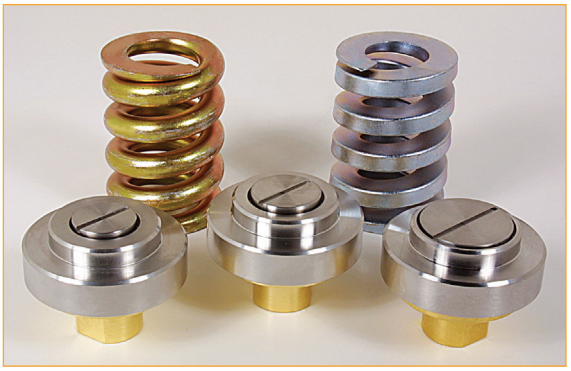
TESCOM's Multiple Range Kits permit the 26-1000 Series to be modified to any one of several different outlet pressure ranges. Modular design of these regulators permit the outlet pressure ranges to be changed while retaining the desirable characteristics of minimum lock-up, maximum sensitivity, precision and accuracy.

This can be done by interchanging a combination of sensors and load springs and can be accomplished while the regulator remains in line and connected to the system.

With the use of the Multiple Range Kits, the 26-1000 Series regulator has the ability to accomplish what would ordinarily require up to seven different regulators.

To change the pressure range, simply remove the control knob which is retained by a locknut, unscrew the bonnet (1 3/4" across the flats for the 26-1000) and remove the spring and sensor. Select the spring and sensor combination which will produce the pressure range required. Reassemble the regulator and resume regulator operation.

26-1000 Series Kit



- **Economy and convenience of a single regulator**
- **Modular components**
- **Minimum lock-up with maximum sensitivity**
- **Convert without removing from panel**
- **Color coded springs**
- **No special tools involved**

Desired Outlet Pressure Range	26-1000 SERIES			
	Sensor Assy. No.	Sensor P/N	Spring Color	Spring P/N
200-10,000 psig / 14-690 bar	1	1006-XX	Silver	1051
50-6000 psig / 3.4-414 bar	2	1007-XX	Silver	1051
25-4000 psig / 1.7-276 bar	2	1007-XX	Gold	1050
15-2500 psig / 1.0-172 bar	3	1008-XX	Silver	1051
10-1500 psig / 0.7-103 bar	4	1009-XX	Silver	1051
0-800 psig / 0-54 bar	4	1009-XX	Gold	1050
0-500 psig / 0-35 bar	4	1009-XX	Olive	1049

Since the 26-1000 regulator is provided with one spring and one sensor when shipped, the Multiple Range Kit will contain all other springs and sensors required to accomplish any of the above listed pressures ranges.

Part Number Selector for Multiple Range Kits

Example for selecting a part number:

26-1000 SERIES

38-100	X	-	XXX	X	X
BASIC SERIES	SPRING COMBINATION	SENSOR ASSEMBLY NUMBERS	METALLIC MATERIAL	O-RING MATERIAL	
38-100	**1** – 1049-1050 **2** – 1049-1051 **3** – 1050-1051	**1** **2** **3** **4**	**2** – 300 Series Stainless Steel **6** – 316 Stainless Steel	**0** – Buna-N **2** – Viton-A® **5** – Ethylene Propylene	

Regulators - Pressure Reducing D26110539X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel Body (0.25" Orifice): 10,000 psig / 690 bar
Stainless Steel Body (0.375" Orifice): 6000 psig / 414 bar
Aluminum Body: 6000 psig / 414 bar
Brass Body: 6000 psig / 414 bar

Outlet Pressure Ranges
To maximum inlet

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
0.25" Orifice: C_V = 0.46
0.375" Orifice: C_V = 1.30

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel, Aluminum, or Brass

Diaphragm
Nitrile, Buna-N

O-Rings
Nitrile, Buna-N

Back-up Rings
PTFE

Seat
PCTFE

Retaining Ring
15-7 Stainless steel

Valve Cap
17-4 PH Stainless Steel

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Stainless Steel: 10 lbs / 4.5 kg
Aluminum: 4 lbs / 1.8 kg

TESCOM 26-1100 Series is a dome load, high flow pressure reducing regulator.

Applications

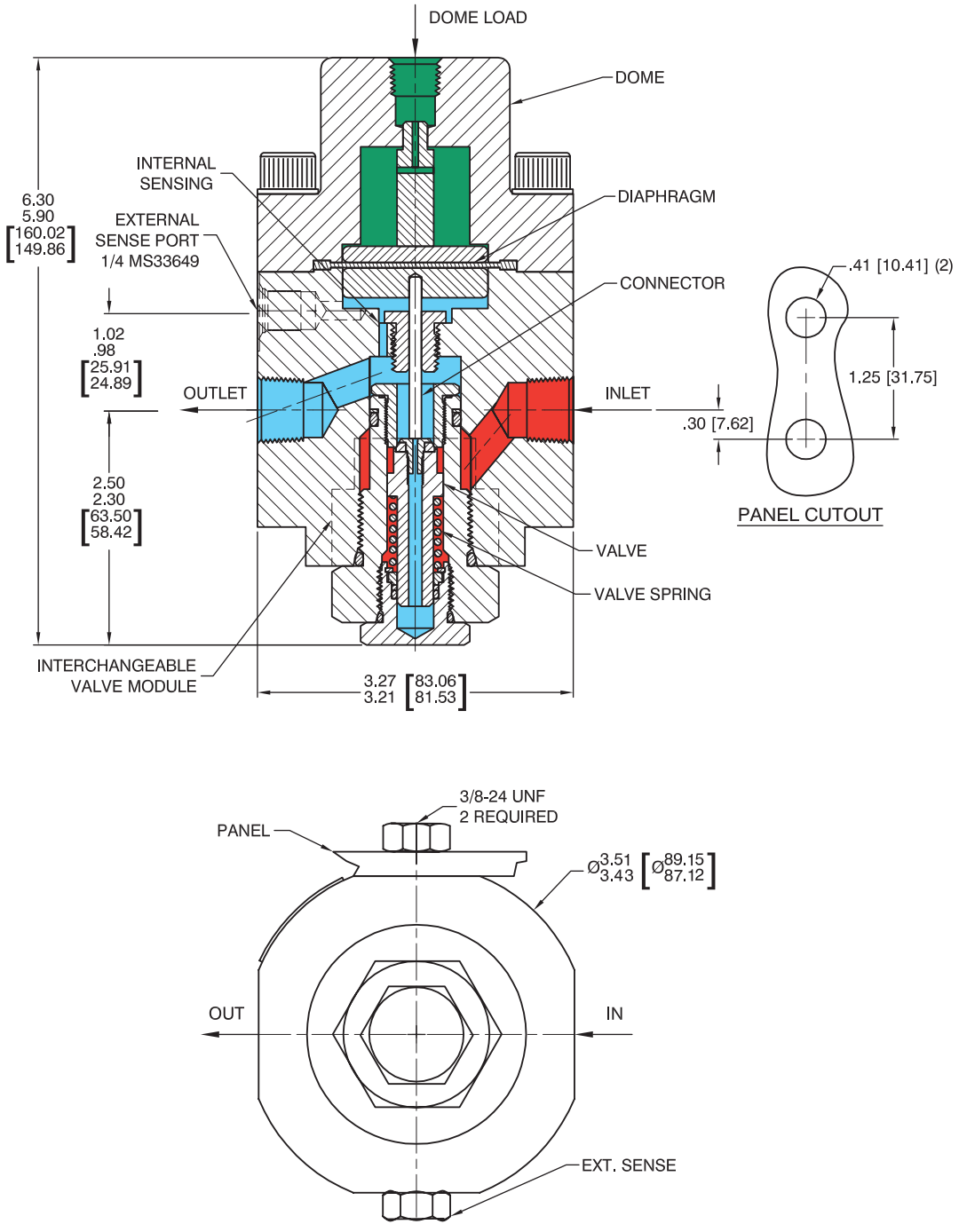
- Pneumatic test consoles
- R&D laboratories

Features and Benefits

- Constant outlet pressures with variable inlet pressures
- Balanced main valve to reduce seat load which insures longer seat life
- Wide flow range capability
- Low droop; low lock-up
- Rapid response time
- Mounts in any position
- Two orifice sizes are available: 0.25" and 0.375" diameter

26-1100 SERIES

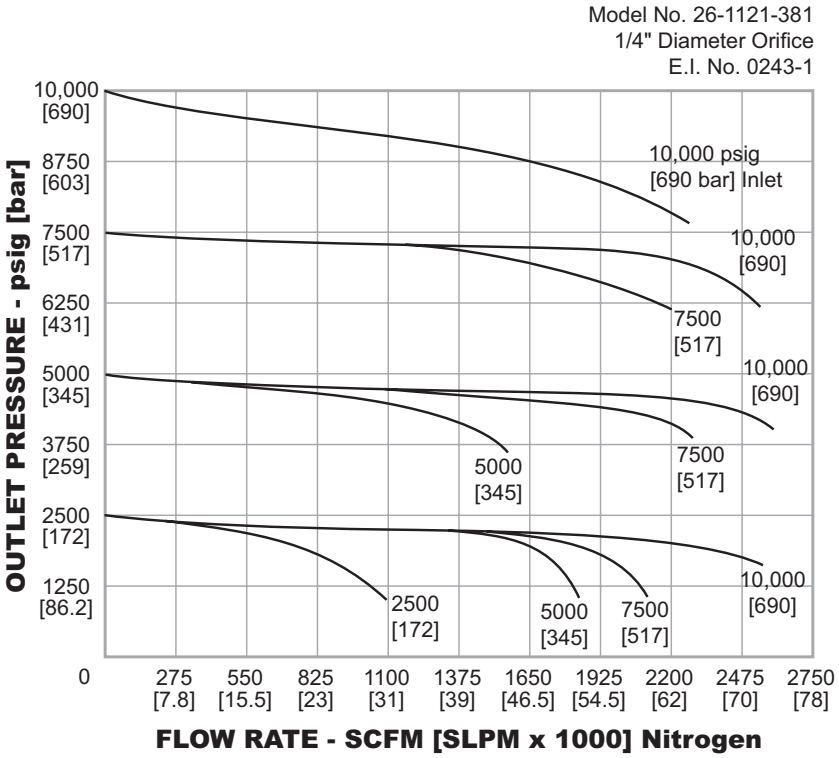
26-1100 Series Regulator Drawing

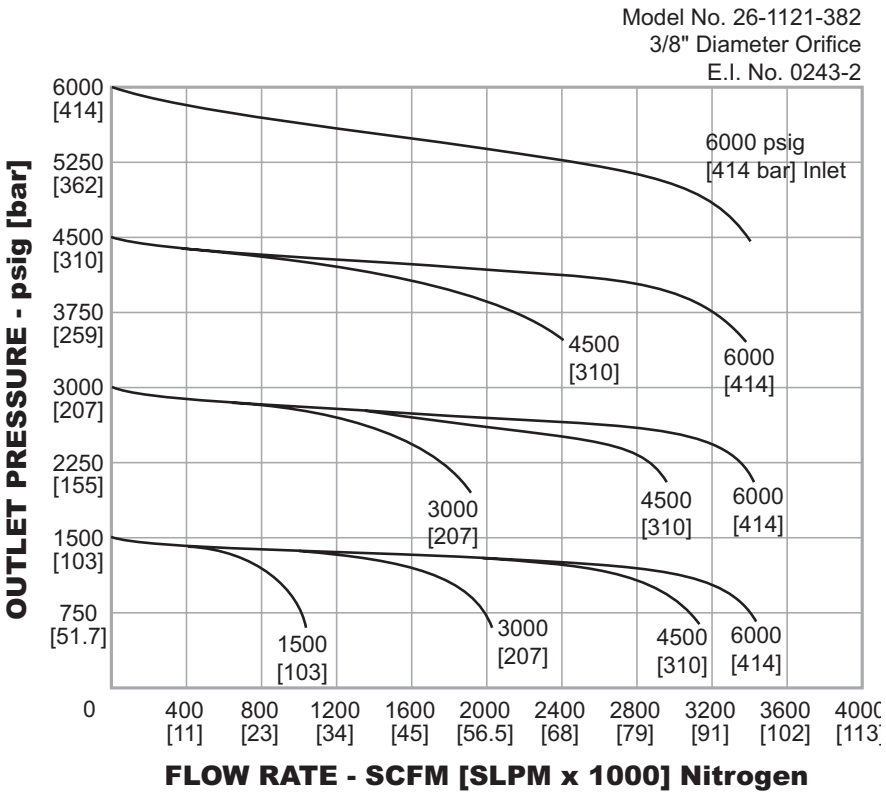


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1100 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





26-1100 SERIES

26-1100 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

26-11 2 1 - 3 8 1

BASIC SERIES	BODY MATERIAL	LOADING METHOD	INLET AND OUTLET PORT TYPE	DOME PORT	INLET AND OUTLET PORT SIZE	INNER VALVE SIZE
26-11	**1 –** Brass **2 –** 303 Stainless Steel **3 –** Aluminum 2024-T351 **6 –** 316 Stainless Steel	**1 –** Externally loaded	**1 –** SAE **2 –** NPTF **3 –** MS33649	1/4" MS33649 1/4" NPTF 1/4" MS33649	**6 –** 3/8" **8 –** 1/2"	**1 –** 0.25" Orifice **2 –** 0.375" Orifice

26-1200 Series

Regulators - Pressure Reducing

D26120540X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3600 and 6000 psig
248 and 414 bar

Outlet Pressure
To maximum inlet

Design Proof Pressure
150% maximum rated operating

Leakage
Bubble-tight

Flow Capacity
C_V = 3.3, 6.0, 12.0* or 20.0

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel

Seat
PCTFE or Polyimide (Vespel®)

Diaphragm
Nitrile, Buna-N or FKM (Viton®-A)

O-Rings
Nitrile, Buna-N or FKM (Viton®-A)

Back-up Rings
PTFE

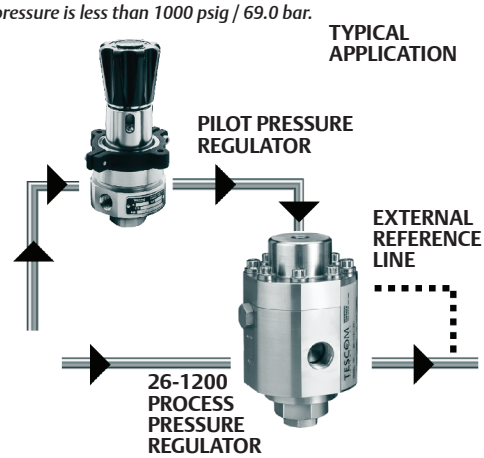
Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Teflon®, Tefzel®, Vespel®, and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

**A secondary pressure drop due to the outlet cross-hole can significantly affect the rated flow capacity. Contact TESCOM for flow curve data when outlet pressure is less than 1000 psig / 69.0 bar.*



TESCOM 26-1200 Series dome loaded, high flow pressure reducing regulator is externally loaded with 6000 psig / 414 bar maximum inlet and outlet pressures. The 26-1200 Series offers four C_V ratings, balanced main valve, and available external sensing.

Applications

- Rocket engine testing
- Fueling
- Facilities supply
- Natural gas pipeline

Features and Benefits

- Diaphragm or piston sensed
- Modular construction for easy service
- External sensing available for improved accuracy
- Balanced main valve increases seat life
- Mounts in any position
- Low droop and lockup

26-1200 SERIES

26-1200 Series Regulator Specifications

CV	OPERATING PARAMETERS *Pressure rating per criteria of ANSI/ASME B31.3*	MEDIA CONTACT MATERIALS	OTHER
C_V = 3.3	**Maximum Inlet Pressure** **Stainless Steel Body:** 6000 psig / 414 bar **Operating Temperature*** -40°F to 165°F / -40°C to 74°C **Flow Capacity** C_V = 3.3	**Body** 303 Stainless Steel or 316 Stainless Steel **Seat** PCTFE or Vespel® **Diaphragm** Nitrile, Buna-N **Back-up Rings** PTFE **Gasket** PCTFE **Retaining Ring** 15-7 Stainless Steel **Valve Cap** 17-4 Stainless Steel **Remaining Parts** 300 Series Stainless Steel	**Weight** **Stainless Steel:** 25 lbs / 11.3 kg
C_V = 6.0	**Maximum Inlet Pressure** **Vespel:** 6000 psig / 414 bar **PCTFE or ETFE (Tefzel®):** 3600 psig / 248 bar **Operating Temperature*** **Nitrile, Buna-N:** -40°F to 165°F / -40°C to 74°C **FKM (Viton®-A):** -15°F to 165°F / -26°C to 74°C **Flow Capacity** C_V = 6.0	**Body** 316 Stainless Steel **Seat** PCTFE or Polyimide (Vespel®) **Diaphragm** Buna-N or FKM (Viton®-A) **O-Rings** Nitrile, Buna-N or FKM (Viton®-A) **Back-up Rings** PTFE **Connecting Rod** 17-4 Stainless Steel **Valve** Nitronic 60 **Remaining Parts** 300 Series Stainless Steel	**Weight** **Stainless Steel:** 40 lbs / 18.1 kg

**For extended temperature applications, consult TESCOM.*

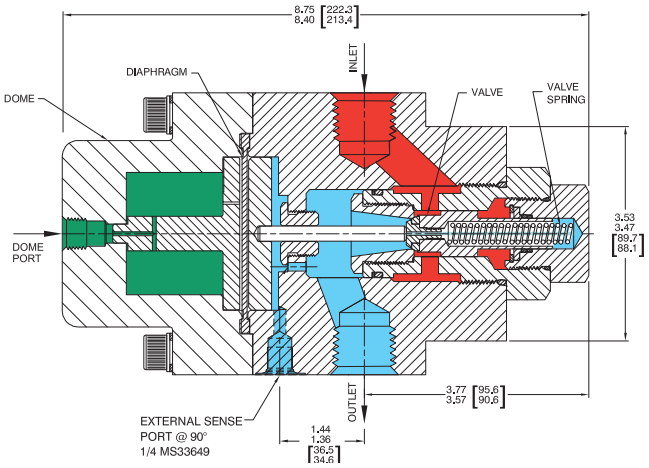
26-1200 Series Regulator Specifications

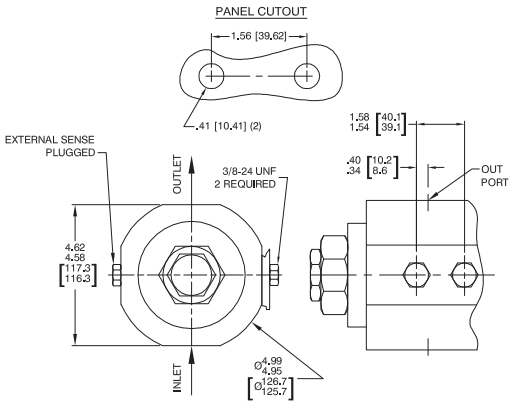
CV	OPERATING PARAMETERS *Pressure rating per criteria of ANSI/ASME B31.3*	MEDIA CONTACT MATERIALS	OTHER
C_V = 12.0	**Maximum Inlet Pressure** 6000 psig / 414 bar **Operating Temperature*** -15°F to 165°F / -26°C to 74°C **Flow Capacity** C_V = 12.0	**Body** 316 Stainless Steel **Seat** Polyimide (Vespel®) **Diaphragm** FKM (Viton®-A) **O-Rings** FKM (Viton®-A) **Back-up Rings** PTFE **Connecting Rod** 17-4 Stainless Steel **Valve** Nitronic 60 **Remaining Parts** 300 Series Stainless Steel	**Weight** **Stainless Steel:** 60 lbs / 27.2 kg
C_V = 20.0	**Maximum Inlet Pressure** 3600 psig / 248 bar **Operating Temperature*** -40°F to 200°F / -40°C to 93°C **Flow Capacity** C_V = 20.0	**Body** 316 Series Stainless Steel **Seat** PCTFE, Peek, Polyimide (Vespel® SP1) **O-Rings** Nitrile, Buna-N or FKM (Viton®-A) **Back-up Rings** PTFE **Valve** Nitronic 60 **Remaining Parts** 316 Series Stainless Steel	**Weight** **Stainless Steel:** 130 lbs / 58.9 kg

**For extended temperature applications, consult TESCOM.*

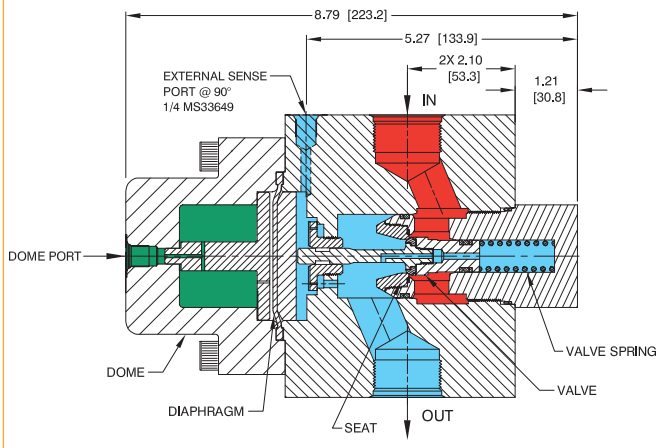
26-1200 Series Regulator Drawings

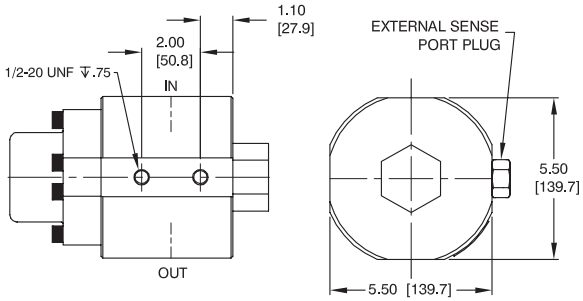
C_V = 3.3 - 1/2" [12.7] ORIFICE





C_V = 6.0 - 5/8" [15.9] ORIFICE

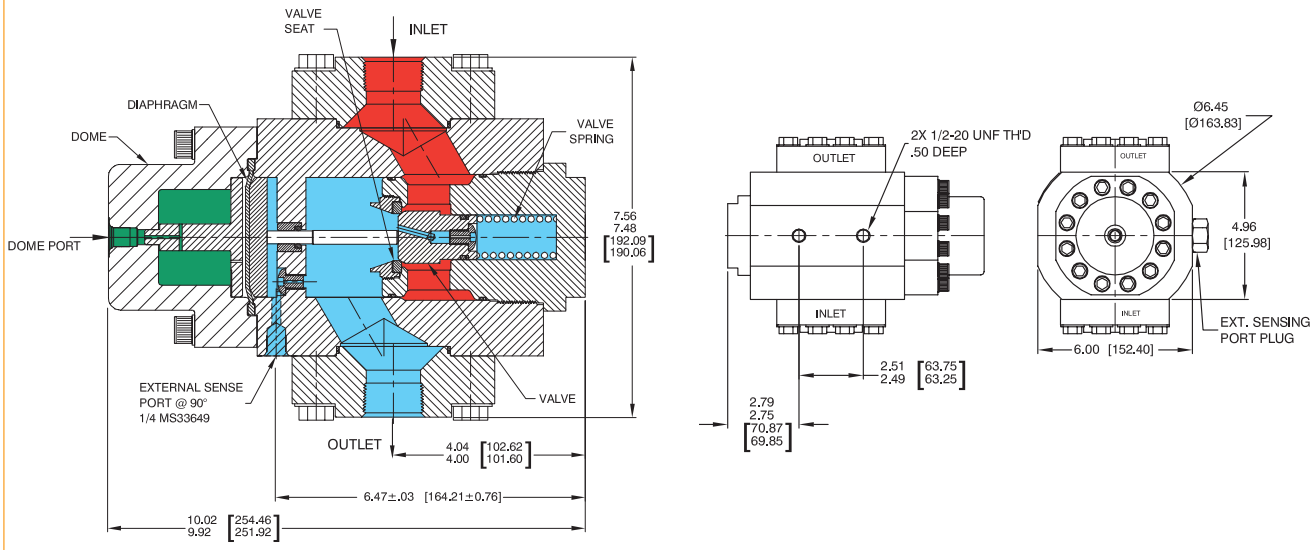




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

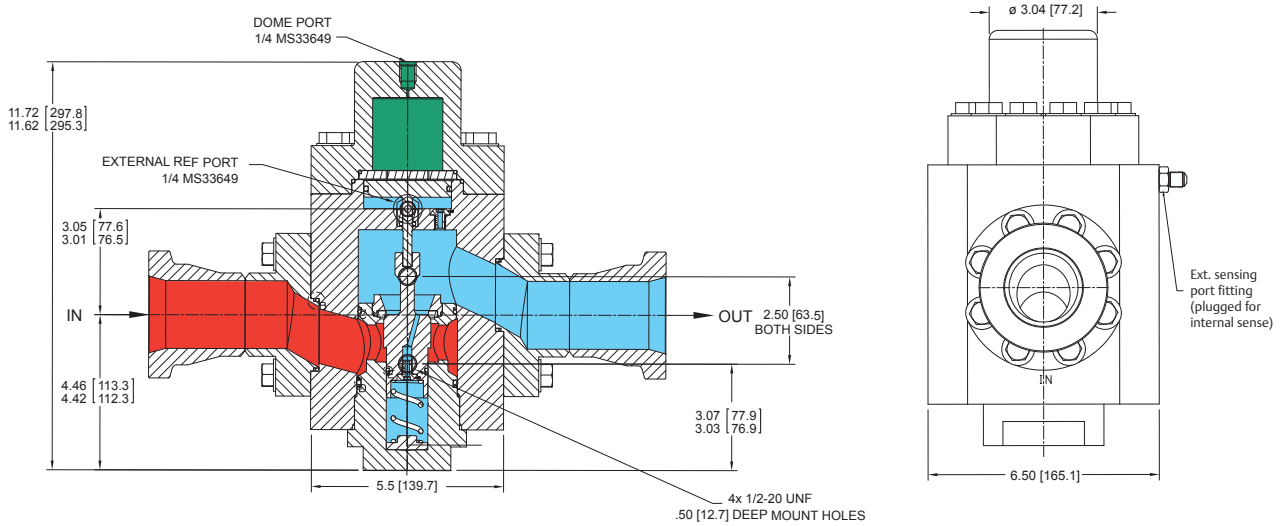
26-1200 Series Regulator Drawings

C_V = 12.0 - 1" [25.4] ORIFICE



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

C_V = 20.0 - 1.25" [31.75] ORIFICE



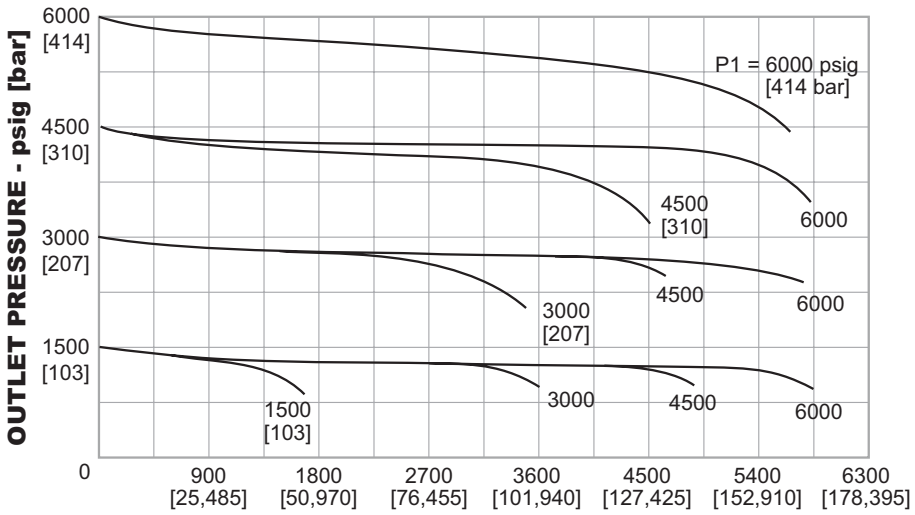
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1200 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

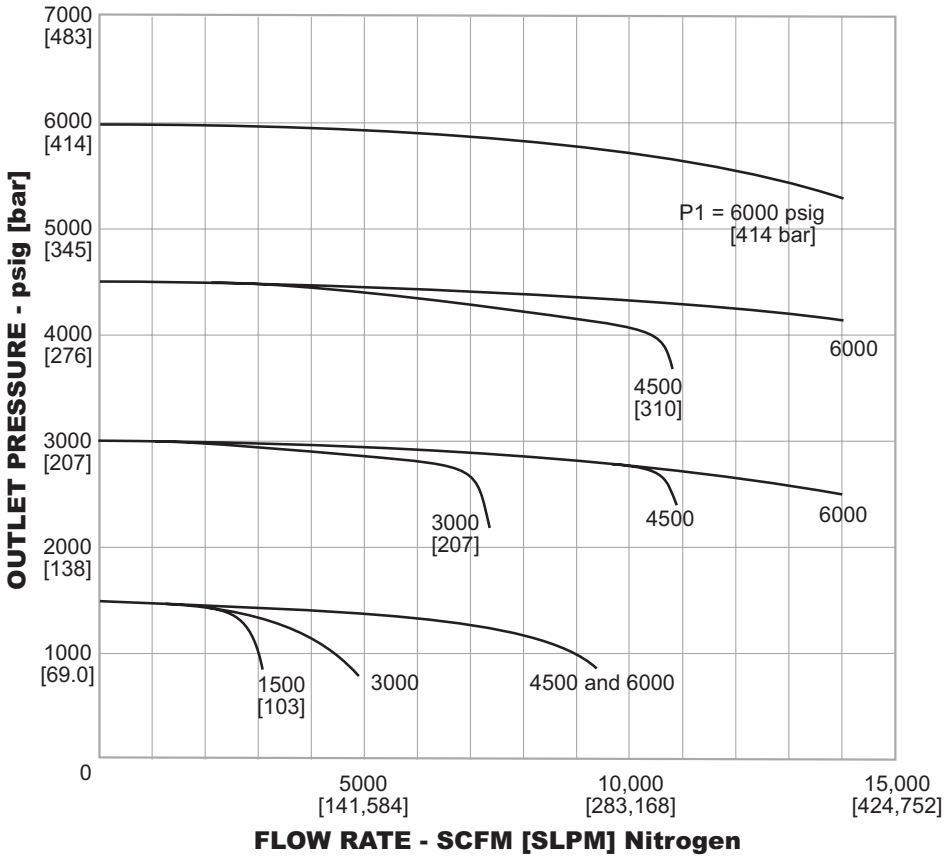
C_V = 3.3

Model No. 26-1261-3161



C_V = 6.0

Model No. 26-126T-3162-076

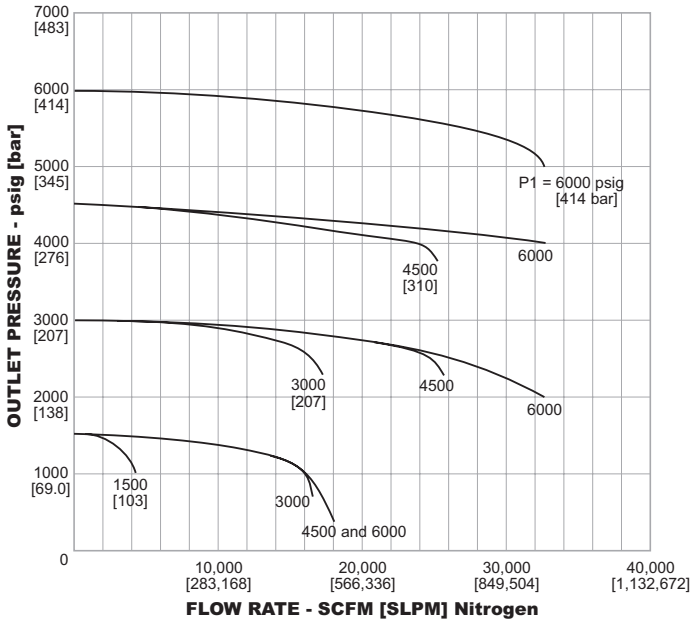


26-1200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

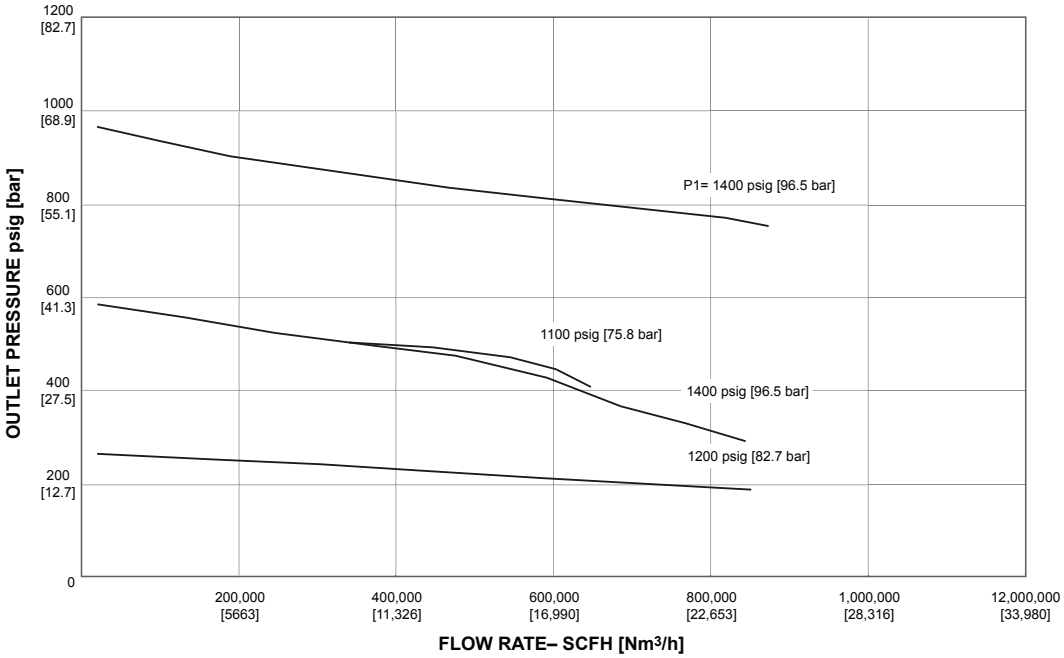
C_V = 12.0

Model No. 26-1261-2163-083



C_V = 20.0

Model No. 26-126V-CLE5-164



The curves above were generated using analytical methods - error is estimated at ±10%

26-1200 SERIES

26-1200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

C_V = 3.3

26-12 2 1 - 3 16 1

BASIC SERIES	BODY MATERIAL	LOADING METHOD	INLET AND OUTLET PORT TYPE	DOME PORT	PORT SIZE	ORIFICE SIZE
26-12	**2** – 303 Stainless Steel **6** – 316 Stainless Steel	**1** – External	**1** – SAE **2** – NPTF **3** – MS33649	1/4" MS33649 1/4" NPTF 1/4" MS33649	**12** – 3/4" **16** – 1"	**1** – 1/2" 12.7 mm

C_V = 6.0

MANDATORY FOR C_V = 6.0

26-12 6 T - 3 16 2 - 076

BASIC SERIES	BODY MATERIAL	DIAPHRAGM/ O-RING	SEAT	TEMPERATURE	INLET AND OUTLET PORT TYPE	DOME PORT	INLET AND OUTLET PORT SIZE	INNER VALVE SIZE	MOD. NUMBER
26-12	**6** – 316 Stainless Steel	**A** – Nitrile, Buna-N **B** – Nitrile, Buna-N **D** – Nitrile, Buna-N **E** – FKM (Viton®-A) **T** – FKM (Viton®-A) **V** – FKM (Viton®-A) **W** – FKM (Viton®-A)	Polyimide (Vespel® SP1) Polyimide (Vespel® SP1) PCTFE Polyimide (Vespel® SP1) PCTFE Polyimide (Vespel® SP1) ETFE (Tefzel®)	-40°F to 165°F -40°C to 74°C -40°F to 165°F -40°C to 74°C -40°F to 165°F -40°C to 74°C -15°F to 300°F -26°C to 149°C -15°F to 165°F -26°C to 74°C -15°F to 300°F -26°C to 149°C -15°F to 165°F -26°C to 74°C	**1** – SAE **2** – NPTF **3** – MS33649	1/4" MS33649 1/4" NPTF 1/4" MS33649	**12** – 3/4" * **16** – 1" **20** – 1-1/4" SAE or MS only	**2** – 5/8" 15.9 mm	**076**

***** *3/4" ports reduce overall C_V to 5.0*

C_V = 12.0

MANDATORY FOR C_V = 12.0 MODEL

26-12 6 1 - 2 16 3 - 083

BASIC SERIES	BODY MATERIAL	LOADING METHOD	INLET AND OUTLET PORT TYPE	DOME PORT	INLET AND OUTLET PORT SIZE	SENSE TYPE	MODEL NUMBER
26-12	**6** – 316 Stainless Steel	**1** – External	**1** – SAE **2** – NPTF **3** – MS33649	1/4" MS33649 1/4" NPTF 1/4" MS33649	**16** – 1" **20** – 1-1/4"	**3** – Internal **4** – External	**083**

C_V = 20.0

MANDATORY FOR C_V = 20.0

26-12 6 V-C LA 2 - 164

BASIC SERIES	BODY MATERIAL	O-RING	SEAT	TEMPERATURE	INLET & OUTLET PORT TYPE	PRESSURE RANGE	INLET & OUTLET MAX PRESSURE	END TO END DIMENSIONS INCH [MM]	SENSE TYPE	MOD. NUMBER
26-12	**6** – 316 Stainless Steel	**D-C** – Nitrile, Buna-N **D-P** – Nitrile, Buna-N **D-V** – Nitrile, Buna-N **V-C** – FKM (Viton®-A) **V-P** – FKM (Viton®-A) **V-V** – FKM (Viton®-A)	PCTFE PEEK® Polyimide (Vespel® SP1) PCTFE PEEK® Polyimide (Vespel® SP1)	-40°F to 165°F -40°C to 74°C -40°F to 200°F -40°C to 93°C -40°F to 200°F -40°C to 93°C -10°F to 165°F -23°C to 74°C -10°F to 200°F -23°C to 93°C -10°F to 200°F -23 °C to 93°C	**LA–** 2" Grayloc GR20 **LB–** 2" Grayloc GR14 **LC–** 2" 1500# RTJ **LD–** 2" 2500# RTJ **LE–** 2" 1500# RF **LF–** 2" 2500# RF	Low Low Low Low Low Low	3600 PSIG [248 bar] 3600 PSIG [248 bar] 3100 PSIG [214 bar] 3600 PSIG [248 bar] 3100 PSIG [214 bar] 3600 PSIG [248 bar]	14.75 [374.7] 14.75 [374.7] 17.88 [454.0] 19.88 [504.8] 17.75 [450.8] 19.75 [501.6]	**5** – Internal **6** – External	**164**

Note: Contact Engineering for pressures above 3600 PSI/248 bar

Regulators - Pressure Reducing D26150541X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless: 6000 psig / 414 bar
Brass, Aluminum: 5000 psig / 345 bar

Outlet Pressure Ranges
0-50, 0-150, 0-250 psig
0-3.4, 0-10.3, 0-17.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating and Fluid Media Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.08

Maximum Operating Torque
20 in-lbs / 2.3 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass, Aluminum

Bonnet
300 Series Stainless Steel

40 Micron Filter
316 Stainless Steel

Seat
PCTFE

O-Rings
Nitrile, Buna-N

Diaphragm
Nitrile, Buna-N

Remaining parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Stainless, Brass: 3 lbs / 1.4 kg

TESCOM 26-1500 Series non-venting regulator offers a sensitive, large elastomeric diaphragm design and precision outlet pressure control.

Applications

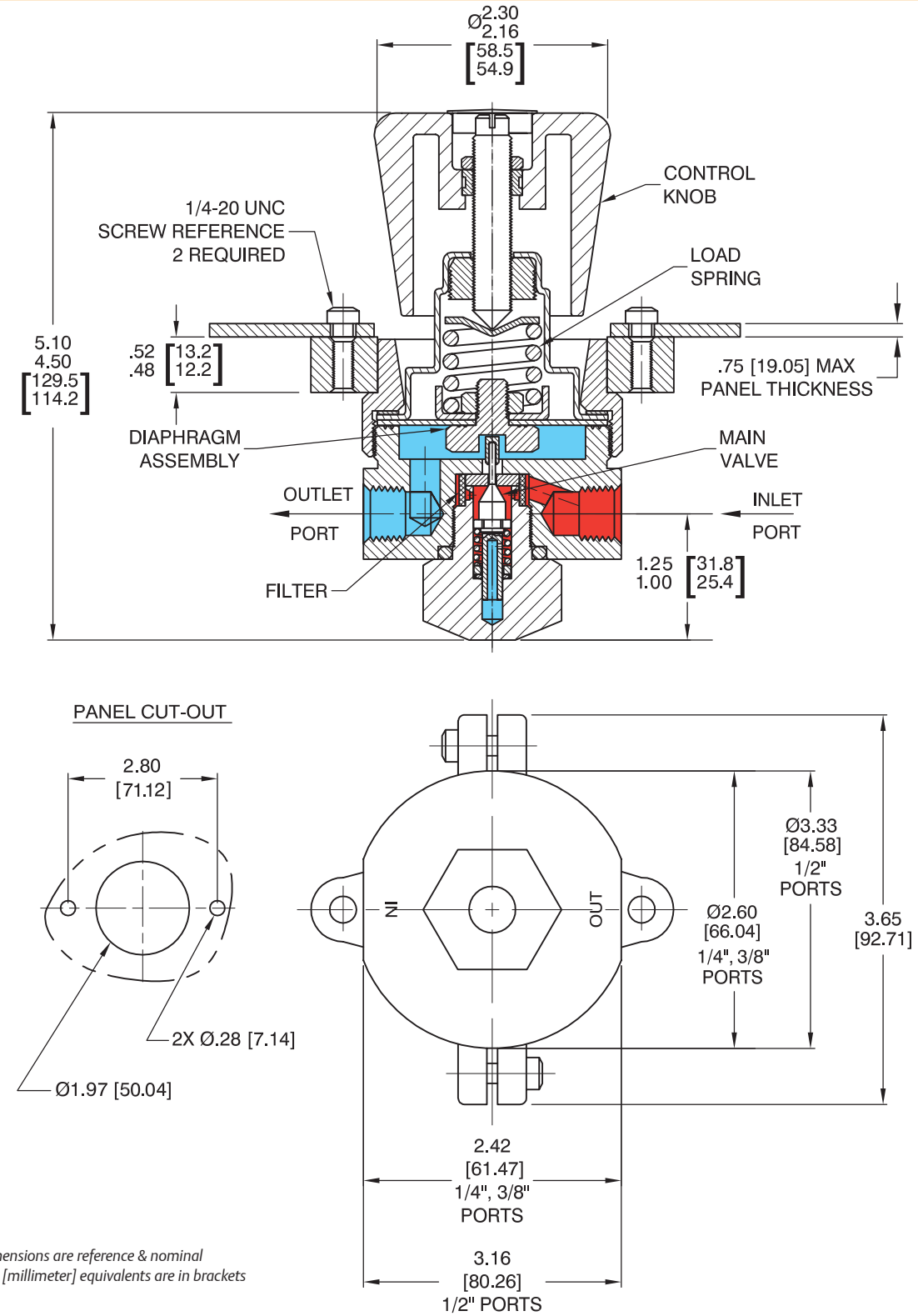
- Research labs
- Breathing air diving manifolds
- Low flow purge systems
- Gas and liquid sampling

Features and Benefits

- Diaphragm design for accurate pressure regulation
- Numerous porting and soft good options are available
- Excellent repeatability
- Non-venting (for venting design, see 26-1600 Series)
- Low operating handknob torque
- Panel mounting (bracket included)
- Available in Stainless Steel, Brass, or Aluminum construction
- Gauge ports are available
- High flow C_V = 0.24 version is available (maximum inlet pressure: 3000 psig / 207 bar)

26-1500 SERIES

26-1500 Series Regulator Drawings

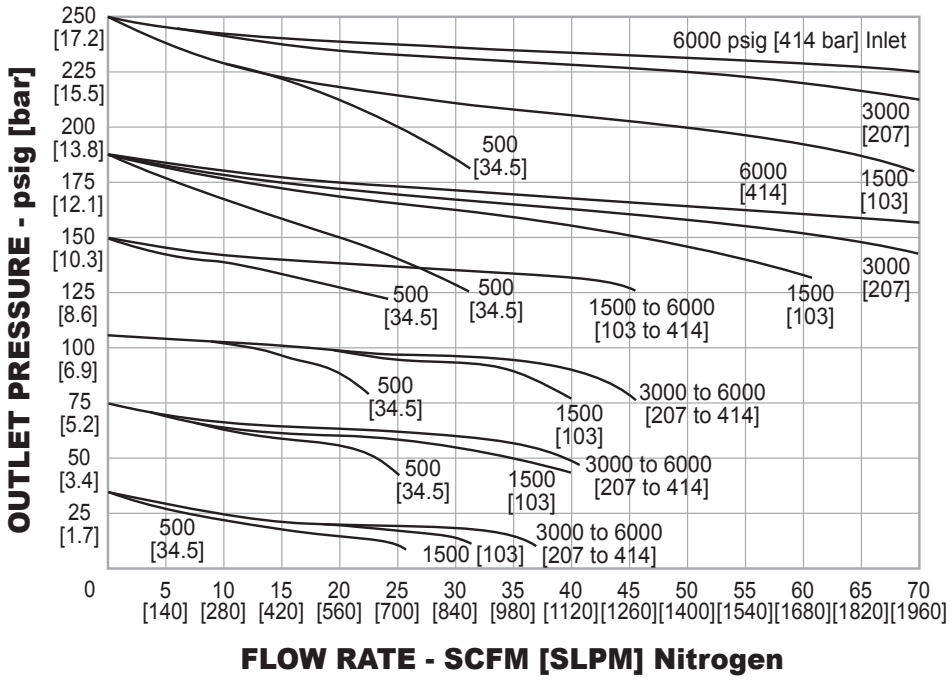


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1500 Series Regulator Flow Charts

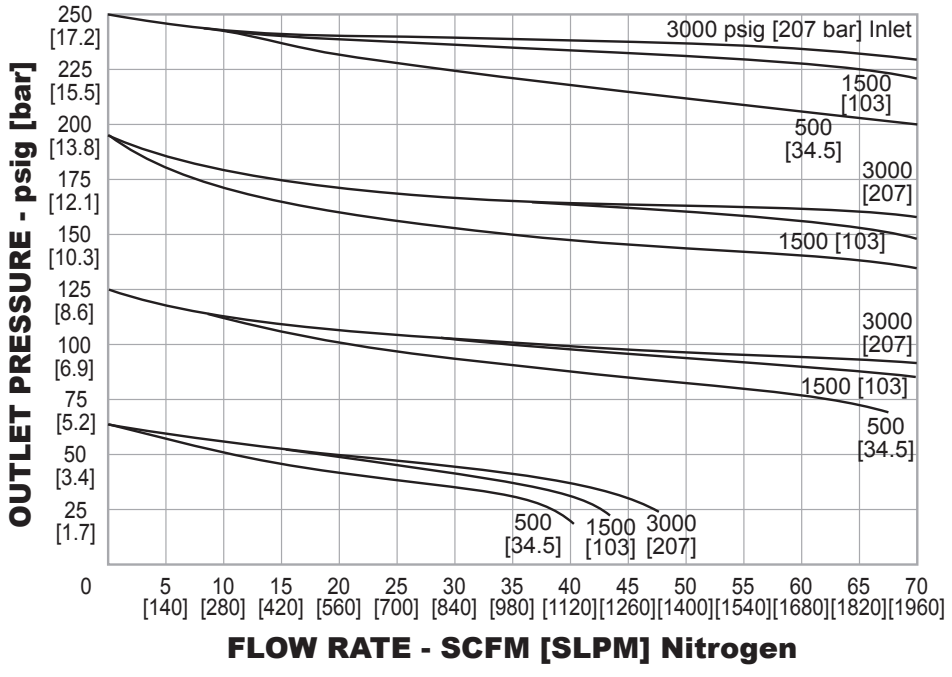
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

26-1500 Standard C_V Flow



26-1500 Optional C_V = 0.24 Flow

Model No. 26-1562-24-004



26-1500 SERIES

26-1500 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

26-15 6 1 - 2 4

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET, OUTLET, AND GAUGE PORT TYPE	INLET, OUTLET, AND GAUGE PORT SIZE
26-15	**1 –** Brass **3 –** 2024 Aluminum **6 –** 316 Stainless Steel	**0 –** 0-50 psig 0-3.4 bar **1 –** 0-150 psig 0-10.3 bar **2 –** 0-250 psig 0-17.2 bar	**1 –** SAE **2 –** NPTF **3 –** MS33649	**4 –** 1/4" **6 –** 3/8" **8 –** 1/2" (Stainless Steel only)

Regulators - Pressure Reducing D26160542X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless: 6000 psig / 414 bar
Aluminum, Brass: 5000 psig / 345 bar

Outlet Pressure Ranges
0-50, 0-150, 0-250, 0-500 psig
0-3.4, 0-10.3, 0-17.2, 0-34.5 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.08

Maximum Operating Torque
25 in-lbs / 2.8 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Aluminum (2024-T351), Brass

Bonnet
316 Stainless Steel, Aluminum (2024-T351), Brass

40 Micron Filter
300 Series Stainless Steel

Main Valve Seat
PCTFE

Vent Valve Seat
15% graphite-filled PTFE

O-Ring
Nitrile, Buna-N

Diaphragm
Nitrile, Buna-N

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Stainless, Brass: 3.3 lbs / 1.5 kg
Aluminum: 2.8 lbs / 1.3 kg

Teflon® is a registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 26-1600 Series highly accurate, diaphragm sensed pressure reducing regulator offers adjustable venting standard. Panel mounting, integrated 40 micron filter and low handknob torque ensure a robust and adaptable design with many modifications available.

Applications

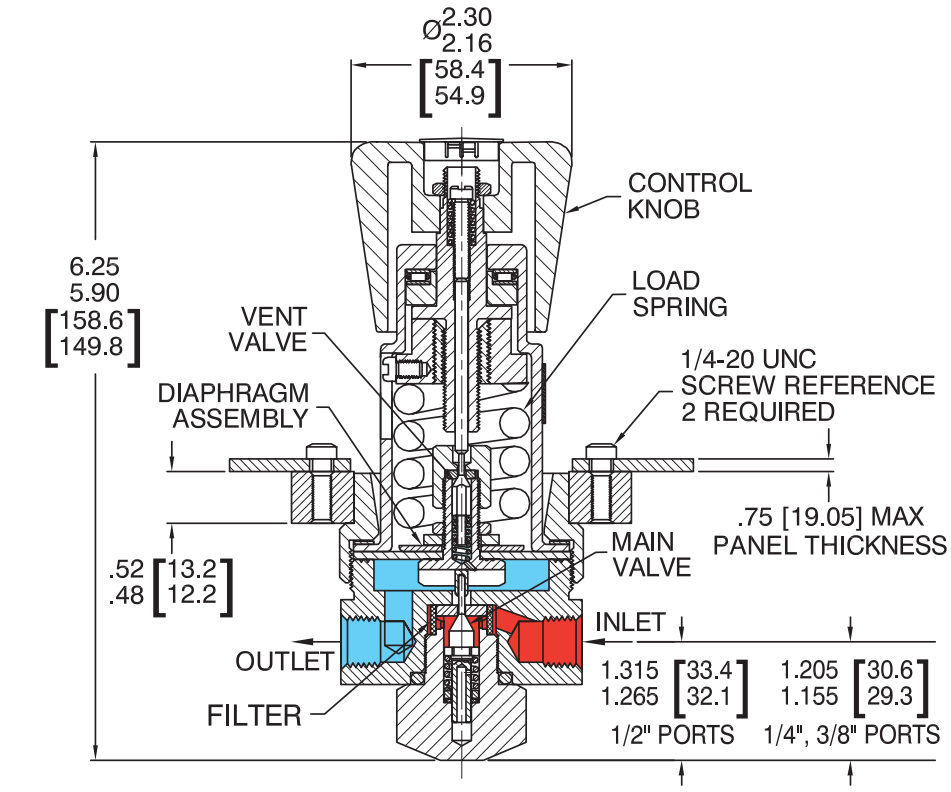
- Test equipment
- Calibration stands
- Production equipment

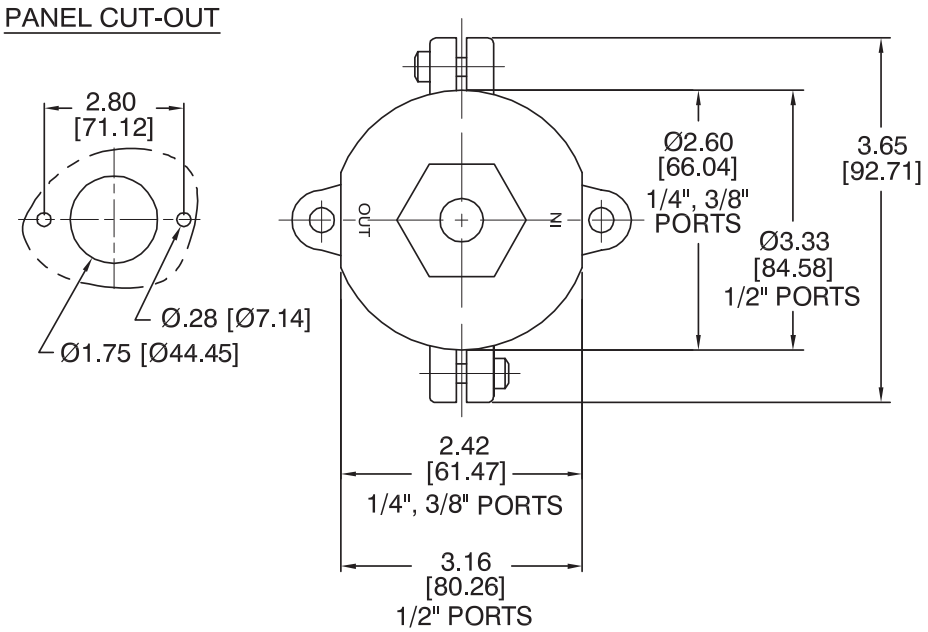
Features and Benefits

- Venting is standard (available with captured venting)
- Highly sensitive
- Features a non-rising stem and low operating torque
- Compact design
- Filter extends seat life
- Numerous porting options
- Panel mounting (bracket included)
- Easy maintenance with standard tools
- High flow C_V = 0.24 version is available (maximum inlet pressure: 3000 psig / 207 bar)

26-1600 SERIES

26-1600 Series Regulator Drawings

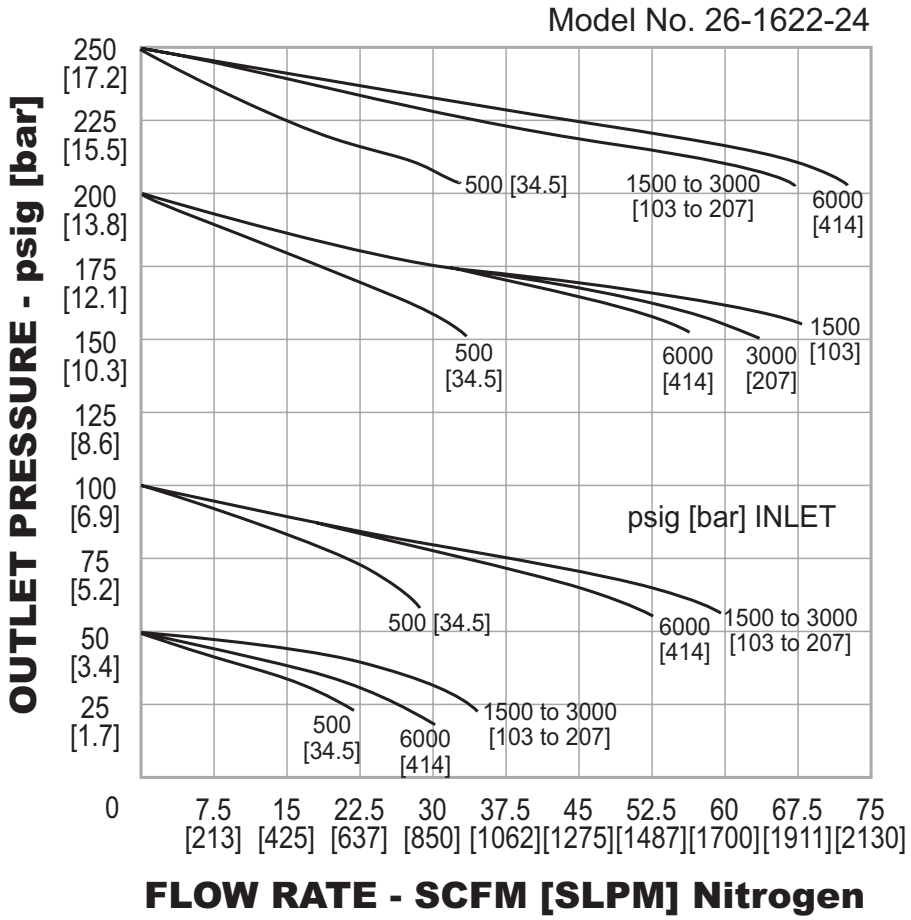




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1600 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



26-1600 SERIES

26-1600 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

26-16	6		2	2	4
BASIC SERIES	**BODY MATERIAL**	**MAXIMUM INLET PRESSURE**	**OUTLET PRESSURE RANGES**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**
26-16	**1 –** Brass **3 –** Aluminum (2024-T351) **6 –** 316 Stainless Steel	5000 psig / 345 bar 5000 psig / 345 bar 6000 psig / 414 bar	**0 –** 0-50 psig 0-3.4 bar **1 –** 0-150 psig 0-10.3 bar **2 –** 0-250 psig 0-17.2 bar **3 –** 0-500 psig 0-34.5 bar	**1 –** SAE **2 –** NPTF **3 –** MS33649	**4 –** 1/4" **6 –** 3/8" **8 –** 1/2" (Stainless Steel only)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Brass: 6000 psig / 413 bar
Stainless Steel: 10,000 psig / 690 bar
Stainless Steel (Spring and Air Load only): 15,000 psig / 1034 bar

Outlet Pressure Ranges
See Part Number Selector

Design Proof Pressure
150% of rated pressure

Leakage
Non-Metal Seat: Bubble-tight
Metal Seat: 2 drops/minute at 150 SUS at 2500 psig / 172 bar

Operating Temperature
-15°F to 165°F / -26°C to 73°C

Flow Capacity
C_V = 0.02, 0.06, 0.12, or 0.30

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Seat, Vent, and Main Valve
See Part Number Selector

O-Ring
See Part Number Selector

Back-up Ring
PTFE

Filter*
26-201XX-XX: Bronze
26-202XX-XX: 300 Series Stainless Steel

Remaining Parts
316 Stainless Steel and 17-4 PH Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
5.5 lbs / 2.5 kg

**no filter with metal seat*

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 26-2000 Series high pressure, low flow piston sensed regulator is available in dome, spring and air load versions. This regulator comes with segregated captured venting standard with inlet pressure ratings of 6000-15,000 psig / 413-1034 bar.

Applications

- R&D labs
- Pressure filling
- Calibration testing
- Burst testers
- Component testing
- High pressure hydraulic or pneumatic applications

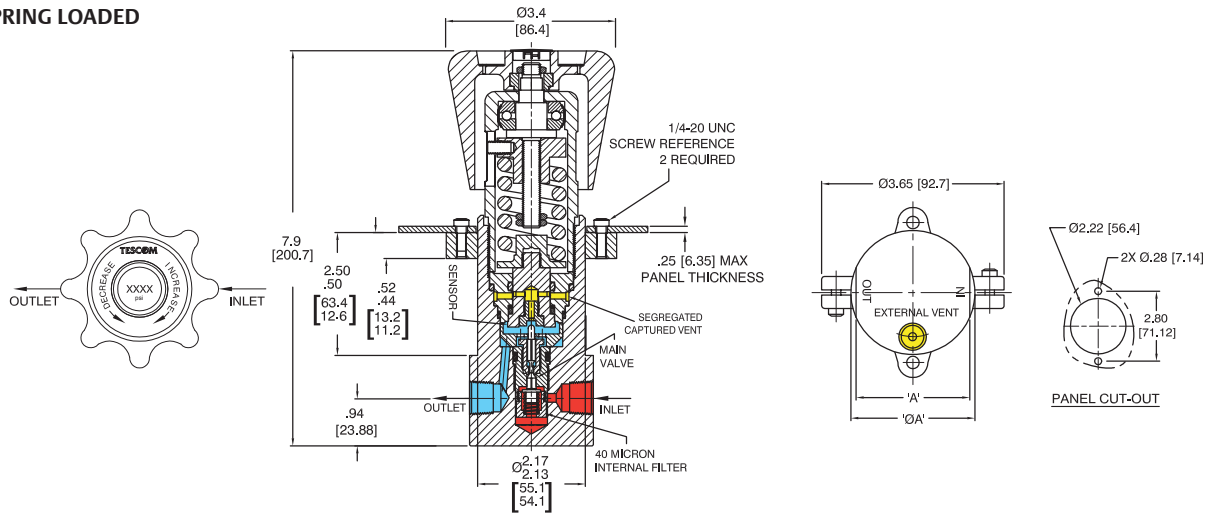
Features and Benefits

- Segregated captured vent is standard
- Three standard loading methods - spring, dome, and air actuated
- Available with soft and metal-to-metal seating
- Standard 40 micron internal filter (soft seated models) increases service life
- High flow version is available with C_V of 0.30
- An excellent choice to be used with the TESCOM ER5000 Electropneumatic Controller

26-2000 SERIES

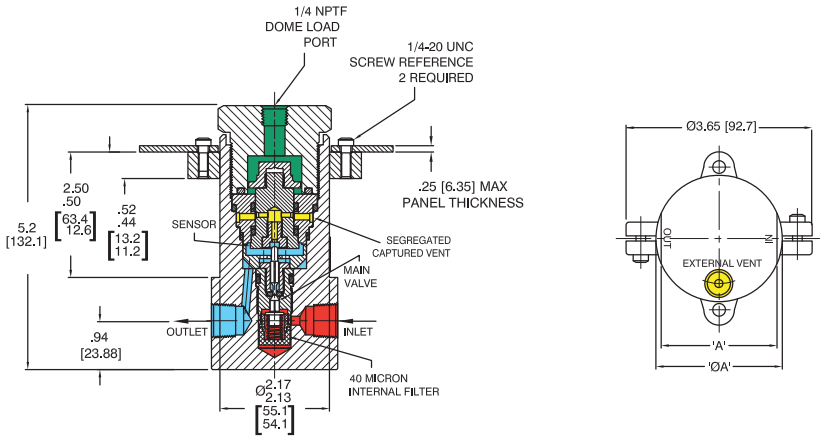
26-2000 Series Regulator Drawings

SPRING LOADED

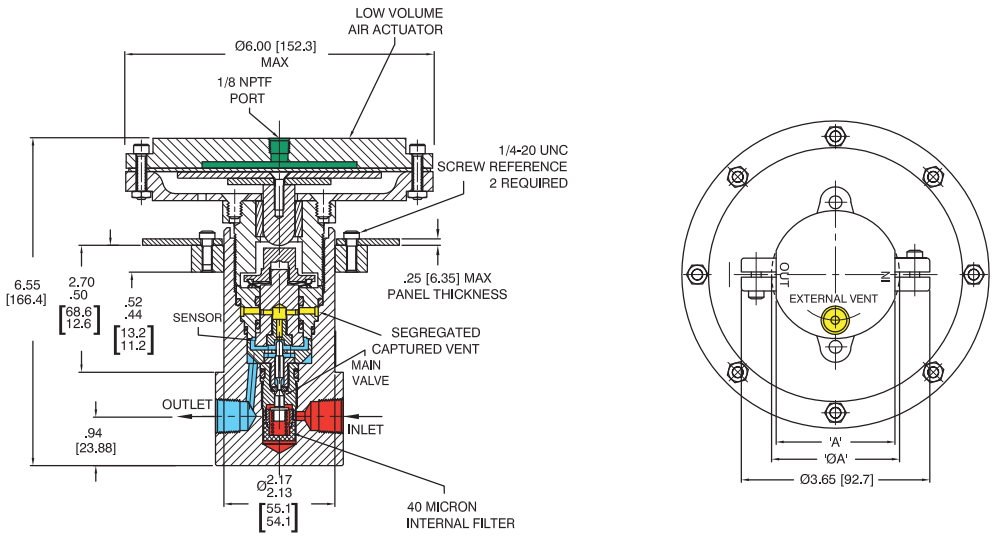


DOME LOADED

INLET & OUTLET PORT	'A'
ALL 1/4 EXCEPT NPTF	2.30
1/4 NPTF	Ø2.48
3/8 NPTF	Ø2.48
ALL 3/8 EXCEPT NPTF	2.90
1/2 MS33649	2.90
1/2 NPTF	Ø3.20



AIR LOADED

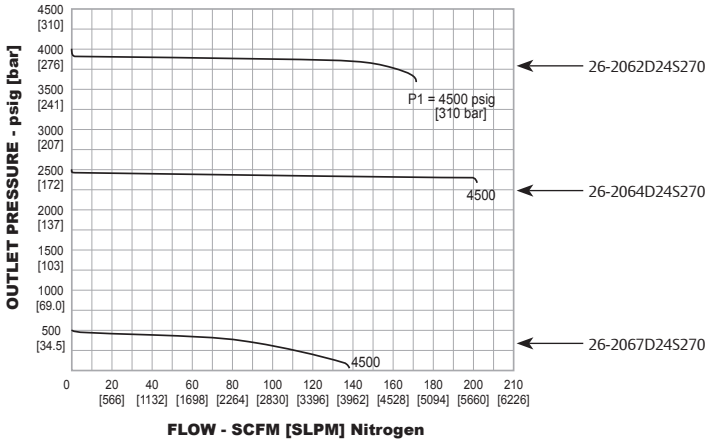


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

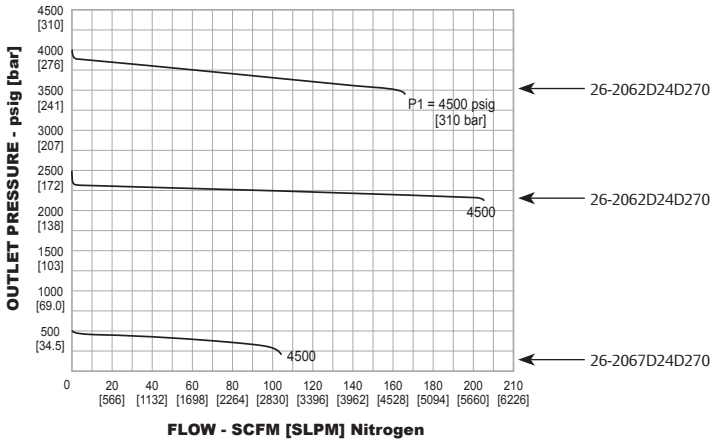
26-2000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

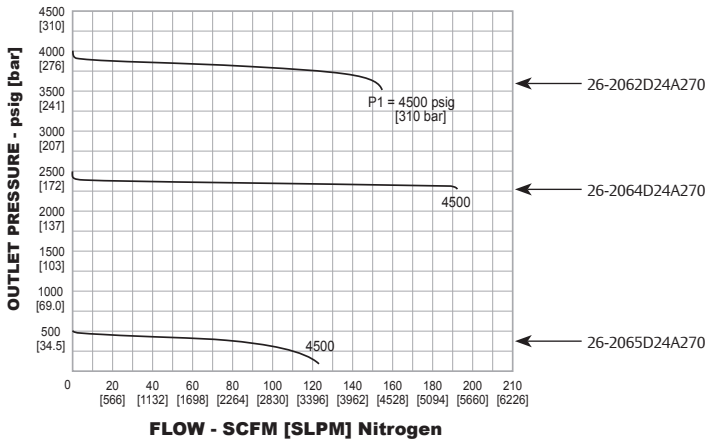
SPRING LOADED



DOME LOADED



AIR LOADED



26-2000 SERIES

26-2000 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

S – Spring load
D – Dome load
A – Air load

26-20 6 1 A 2 4 S 1 7 0

BASIC SERIES	BODY MATERIAL	MAXIMUM INLET PRESSURE	OUTLET PRESSURE	SOFT GOODS MATERIAL: O-RING	SOFT GOODS MATERIAL: BACKUP RING	INLET AND OUTLET PORT TYPE	VENT PORT	INLET AND OUTLET PORT SIZE	FLOW CAPACITY (C_v)	MAIN VALVE AND VENT SEAT MATERIAL	GAUGE PORT OPTIONS 1/4" NPTF
26-20	**1** – Brass	6000 psig 413 bar	***Spring Load***	**A** – PTFE	PTFE	**1** – SAE	1/4" SAE	**4** – 1/4"	**1** – .02 *(not available for metal seated models)*	**5** – 17-4 Stainless Steel	**0** – None
	6 – 316 Stainless Steel	10,000 psig 690 bar	**1** – 200-10,000 psig 14-690 bar *(Stainless steel body only)*	**B** – Nitrile, Buna-N (90 durometer)	PTFE	**2** – NPTF	1/4" NPTF	**6** – 3/8"	**2** – 0.06	**7** – Polyimide (Vespel®)	**1** – One Outlet Gauge at 90°
	9 – 316 Stainless Steel	15,000 psig[1] 1034 bar	**2** – 50-6000 psig 3.4-413 bar	**D** – Nitrile, Buna-N (70 durometer)	PTFE	**3** – MS33649	1/4" MS33649	**8** – 1/2"[2]	**3** – 0.12[3] *(metal and/or Polyimide (Vespel®) seat only)*	**8** – Peek	**2** – Two Gauge Ports at 60°
	(spring and air load only)		**3** – 25-4000 psig 1.7-275 bar	**T** – FKM (Viton®-A)	PTFE	**4** – High pressure/ Aminco	1/4" NPTF				**3** – Two Gauge Ports at 60° (left hand inlet)
			4 – 15-2500 psig 1-172 bar	**U** – Urethane	PTFE	**6** – Medium pressure/ Slimline	1/4" NPTF				**4** – Two Gauge Ports at 90°
			5 – 10-1500 psig 0.7-103 bar	**V** – FFKM, Perfluoroelastomer (Kalrez®)	PTFE						**5** – One Outlet Ports at 90° (left hand inlet)
			6 – 5-800 psig 0.35-55 bar	**Z** – E.P	PTFE						
			7 – 5-500 psig 0.35-35 bar								
			Dome Load								
			1 – 200-10,000 psig 14-690 bar *(Stainless Steel body only)*								
			2 – 50-6000 psig 3.4-413 bar								
			7 – 5-500 psig 0.35-35 bar								
			Air Load								
			1 – 200-10,000 psig 14-690 bar *(Stainless Steel body only)*								
			2 – 50-6000 psig 3.4-413 bar								
			4 – 15-2500 psig 1-172 bar								
			5 – 10-1500 psig 0.7-103 bar								

1. 15,000 psig / 1034 bar inlet requires a CTFE back-up ring on main valve.
2. 1/2" not available in High (Aminco) or Medium (Slimline) pressure ports.
3. Not available with 15,000 psig / 1034 bar inlet.

Regulators - Pressure Reducing D44110552X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel: 10,000 psig / 690 bar
Brass: 6000 psig / 414 bar

Outlet Pressure Ranges
0-500, 0-800, 10-1500, 15-2500, 25-4000, 50-6000 psig
0-34.5, 0-55.2, 0.69-103, 1.0-172, 1.7-276, 3.4-414 bar

Design Proof Pressure
150% maximum rated inlet

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 75°C

Flow Capacity
C_V = 0.06

Maximum Operating Torque
35 in-lbs / 3.95 N•m

MEDIA CONTACT MATERIALS

Body
Brass, 303 Stainless Steel, or 316 Stainless Steel

Filter
Brass Body: 40 micron (nominal) - Bronze
Stainless Steel Body: 15 micron (nominal) - 316 Stainless Steel

Main Valve Seat
Polyimide (Vespel®)

Vent Valve Seat
PCTFE

O-Rings
Nitrile, Buna-N

Back-up Rings
PTFE

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
4.8 lbs / 2.2 kg

Vespel® and Teflon® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 44-1100 Series high pressure, low flow venting regulator offers a piston sensed design, control pressures of 6000-10,000 psig / 414-690 bar, a low torque setting and large handknob. Multiple pressure range kits are available.

Applications

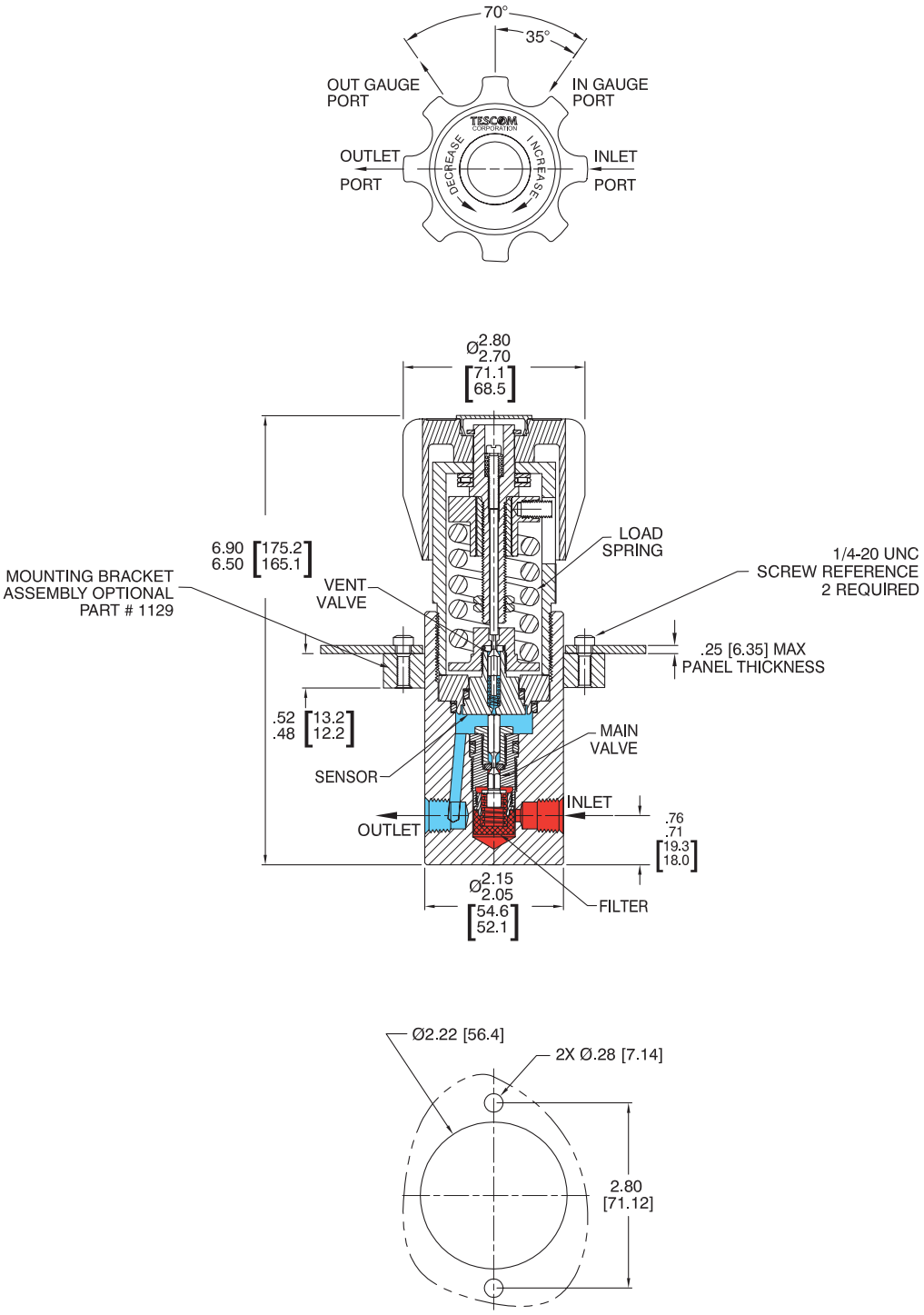
- Ground Support Equipment (GSE)
- Support pressure panels
- Aircraft charging carts
- R & D laboratories
- Calibration equipment

Features and Benefits

- Removable valve assembly module permits easy repair
- Excellent sensitivity through a wide range of pressure settings
- Piston style sensor offers extra safety and reliability
- Unbalanced stem assists positive shutoff
- Inlet and outlet gauge ports are standard
- Venting is standard
- Available in Brass or Stainless Steel
- Regulator vents to zero psig / bar in all pressure ranges
- Numerous modifications are available

44-1100 SERIES

44-1100 Series Regulator Drawing

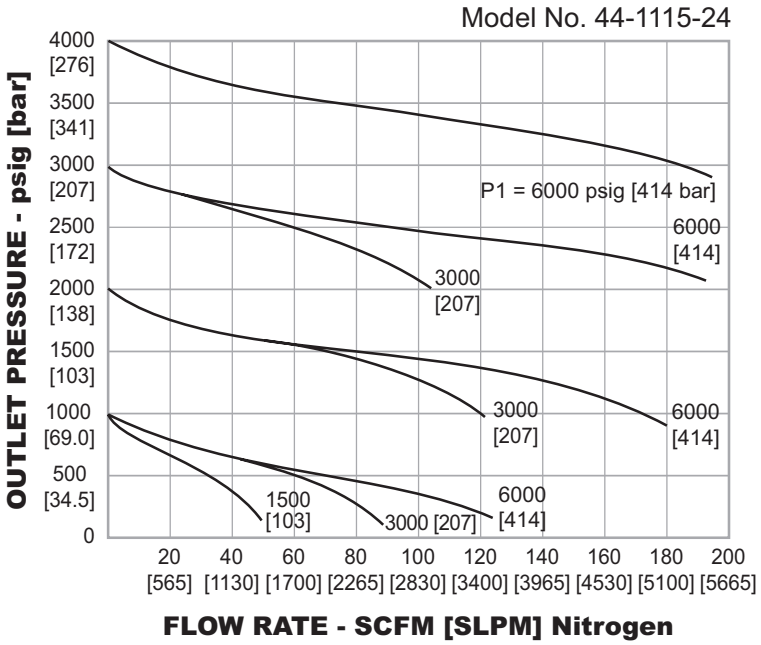


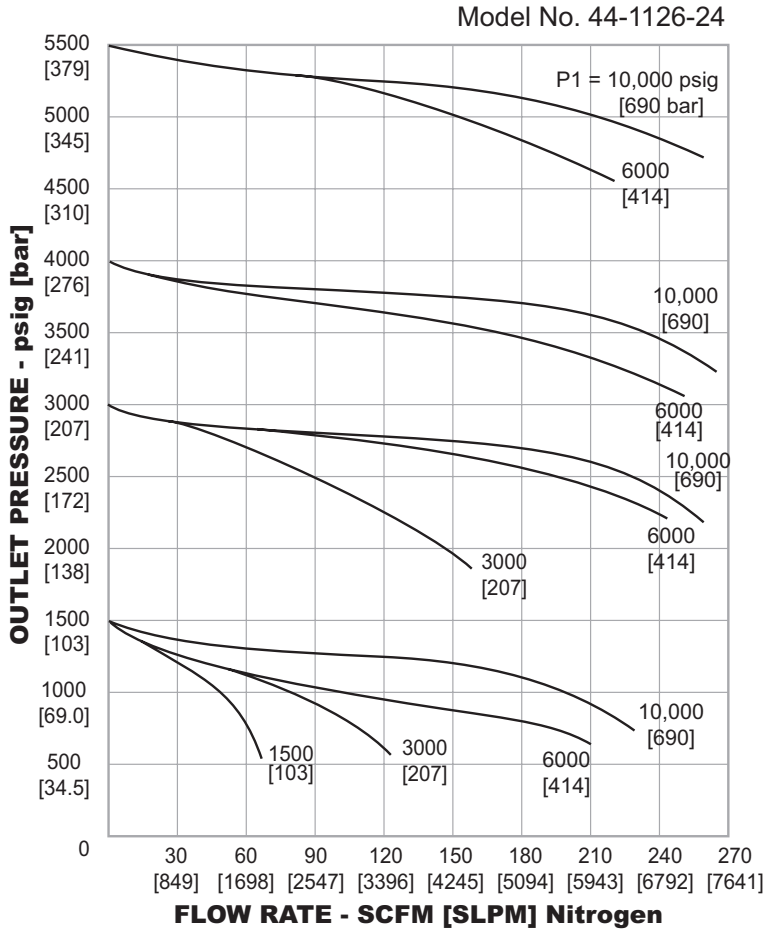
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PANEL CUT-OUT

44-1100 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-1100 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-11	1	1	-	2	4	[BLANK]

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGE	PORT TYPE	PORT SIZE	OPTIONS
44-11	**1** – Brass (6000 psig max. inlet) (414 bar max. inlet) **2** – 303 Stainless Steel (10,000 psig max. inlet) (690 bar max. inlet) **6** – 316 Stainless Steel (10,000 psig max. inlet) (690 bar max. inlet)	**1** – 0-500 psig 0-34.5 bar **2** – 0-800 psig 0-55.2 bar **3** – 10-1500 psig 0.69-103 bar **4** – 15-2500 psig 1.0-172 bar **5** – 25-4000 psig 1.7-276 bar **6** – 50-6000 psig 3.4-414 bar	**2** – NPTF	**4** – 1/4"	**[BLANK]** – None **- 001** – Non-Venting, Viton® O-Rings **- 002** – Non-Venting, Filter Removed **- 150** – Urethane O-Rings (CO_2 Service)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
2900 psig / 200 bar
4350 psig / 300 bar

Outlet Pressure Ranges
0-500, 0-800, 10-1500, 15-2500, 15-4350 psig
0-34.5, 0-55.2, 0.69-103, 1.0-172, 1.0-300 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
Brass, 316 Stainless Steel

Main Valve Seat
Polyimide (Vespel®)

Seat Vent
PCTFE

Filter
Bronze (Brass body)
300 Series Stainless Steel (Stainless Steel body)

Back-up Rings
PTFE

O-Rings
FKM (Viton®-A)

Outlet Compression Fitting
300 Series Stainless Steel

Remaining Parts
300 Series Stainless Steel

OTHER

Weight
4.75 lbs / 2.2 kg

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TESCOM 44-1100 Mod 834 cylinder regulator combines the proven regulator technology in a ready to use package.

Applications

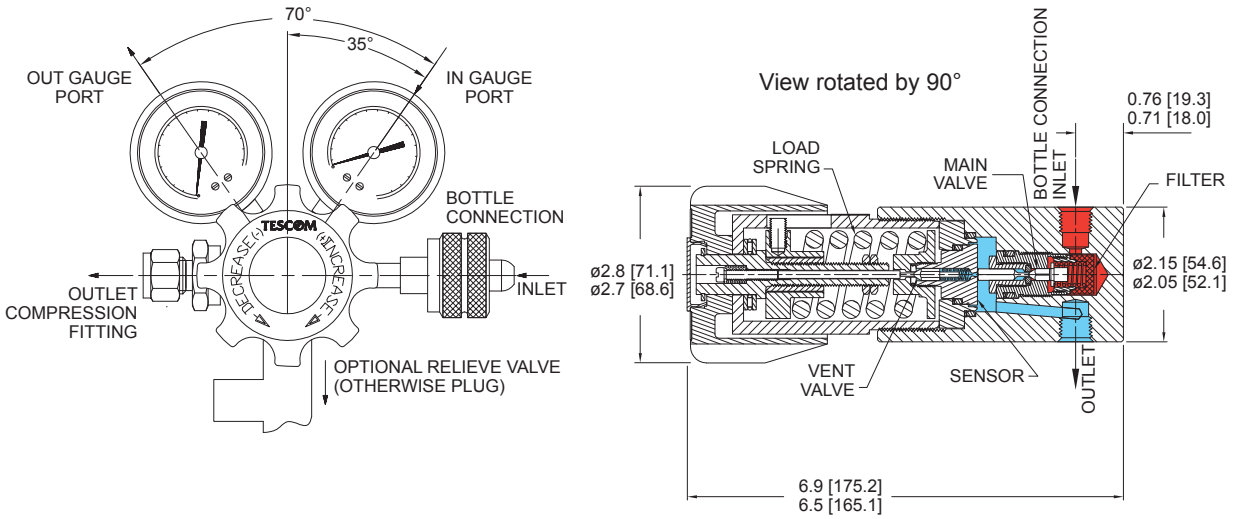
- High pressure test laboratory - Charging Carts
- Portable pressure testing

Features and Benefits

- Excellent sensitivity through a wide range of pressure settings
- Various inlet and outlet connections are available
- Captured relief valve is available for flammable or critical gases

44-1100 SERIES Mod 834
Europe and Middle East only

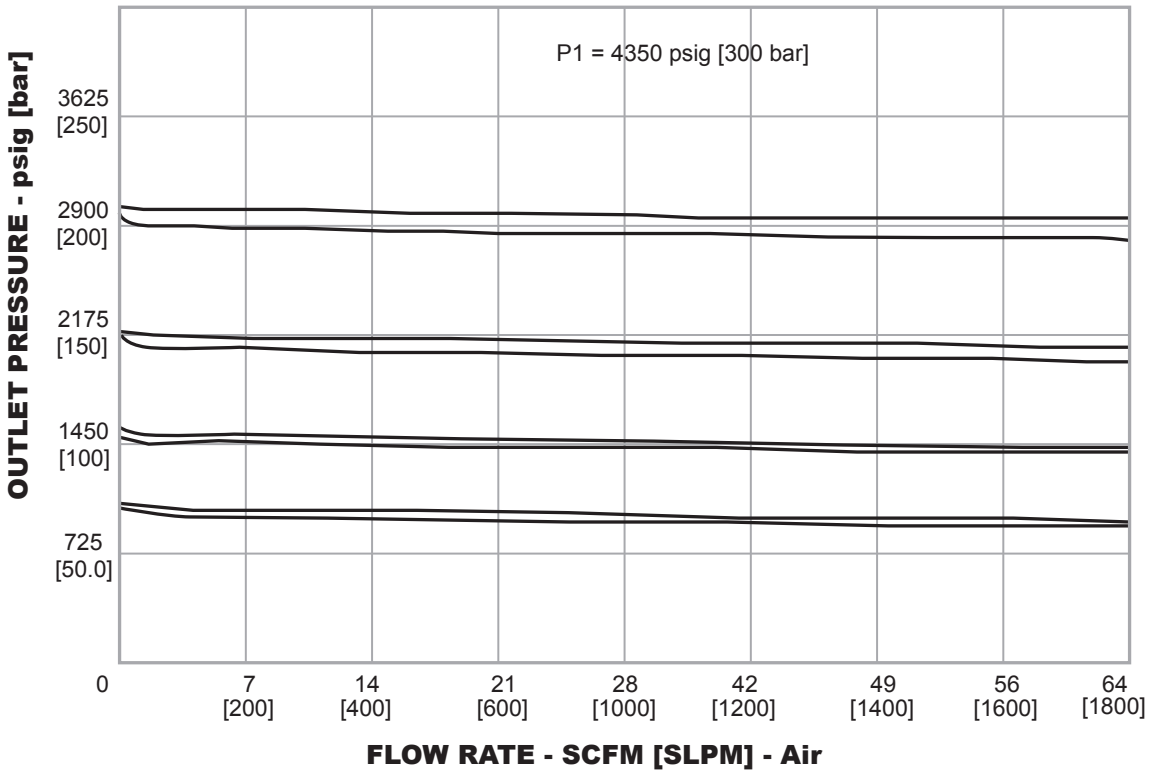
44-1100 Mod 834 Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1100 Mod 834 Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-1100 SERIES Mod 834
Europe and Middle East only

44-1100 Mod 834 Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-11	1	5	C	CA	V	3	3	834
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**NATIONAL STANDARD FOR BOTTLE CONNECTION**	**GAS TYPE**	**VENTING**	**INLET PRESSURES**	**OUTLET COMPRESSION FITTING**	**MODIFICATION NUMBER**
44-11	**1** – Brass **6** – 316 Stainless Steel	**1** – 0-500 psig 0-35 bar **2** – 0-800 psig 0-55 bar **3** – 10-1500 psig 0.69-103 bar **4** – 15-2500 psig 1.03-172 bar **5** – 15-1460 psig 1.03-280 bar **8** – 15-2900 psig 1.03-200 bar **9** – 15-4350 psig 1.03-300 bar	**1** – DIN 477-1 **5** – DIN 477-5 **C** – CGA V1	**N2** – Nitrogen (N_2) **FG** – Flammable gases (H, CH_4, $2NH_3$) **NG** – Non-flammable gases (Ar, He, Xe) **CA** – Compressed Industrial Air **CG** – Calibration gas	**R** – Relief valve **N** – Non-venting **V** – Venting (not available for flammable gases)	**2** – 2900 psig 200 bar **3** – 4350 psig 300 bar	**0** – 1/4" NPTF (without fitting) **1** – 1/16" **2** – 1/8" **3** – 3 mm **4** – 1/4" **6** – 6 mm **8** – 8 mm	834

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel Body
4500 psig / 310 bar
6000 psig / 414 bar available
Brass Body
3750 psig / 259 bar
5000 psig / 345 bar available

Outlet Pressure Ranges
0-300, 0-600, 0-1000 and 0-1500 psig
0-20.7, 0-41.4, 0-69.0 and 0-103 bar
0-2500 psig / 0-172 bar available

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature[1]
-15°F to 220°F / -26°C to 104°C

Flow Capacity[2]
1/4" Main Valve: C_V = 0.8
3/8" Main Valve: C_V = 2.0

MEDIA CONTACT MATERIALS

Body
Brass, 303 Stainless Steel or 316 Stainless Steel

Seat, Main Valve
PCTFE (Except: 44-13X2-XXX2, PTFE)

Seat, Vent Valve
PTFE: 300 and 600 psig / 20.7 and 41.4 bar outlet
P**CTFE:** 1000 and 1500 psig / 69.0 and 103 bar outlet

O-Rings
FKM (Viton®-A)

Back-up Rings
PTFE

Gaskets
PCTFE

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel, 17-7 Stainless Steel, PTFE and Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
6.25 lbs / 2.8 kg

1. *For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult TESCOM.*
2. *A secondary pressure drop due to the outlet cross-hole can significantly affect the rated flow capacity. Flow curves should be used for critical sizing applications.*

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DOME LOADED **AIR LOADED**

SPRING LOADED

TESCOM 44-1300 Series is a high pressure, high flow pressure reducing regulator that offers a venting and balanced valve design. The 44-1300 Series provides C_V = 0.8 and 2.0. Dome and air load options are available.

Applications

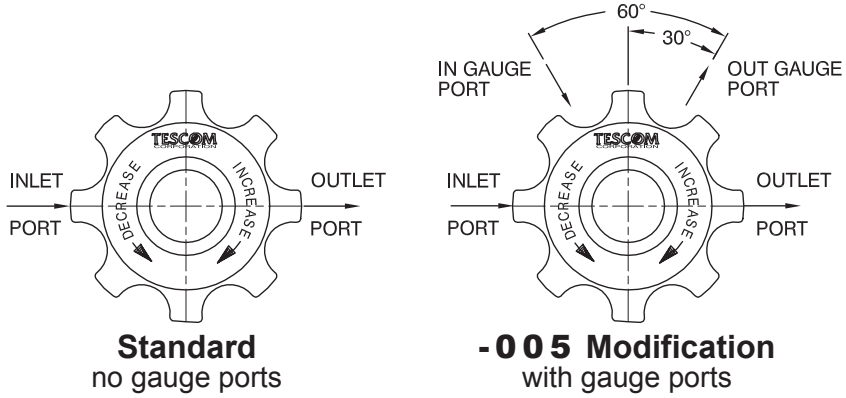
- Commercial diving - breathing air
- Special gas mix regulation hard suit diving
- High pressure tube trailer gas reduction

Features and Benefits

- Large piston sensor gives excellent sensitivity
- Balanced valve design ensures stable downstream pressure
- Large handknob provides fast low-torque pressure settings
- Venting is standard
- Available with gauge ports
- Dome and air loaded models are available (non-venting only)
- Flanged end connections available

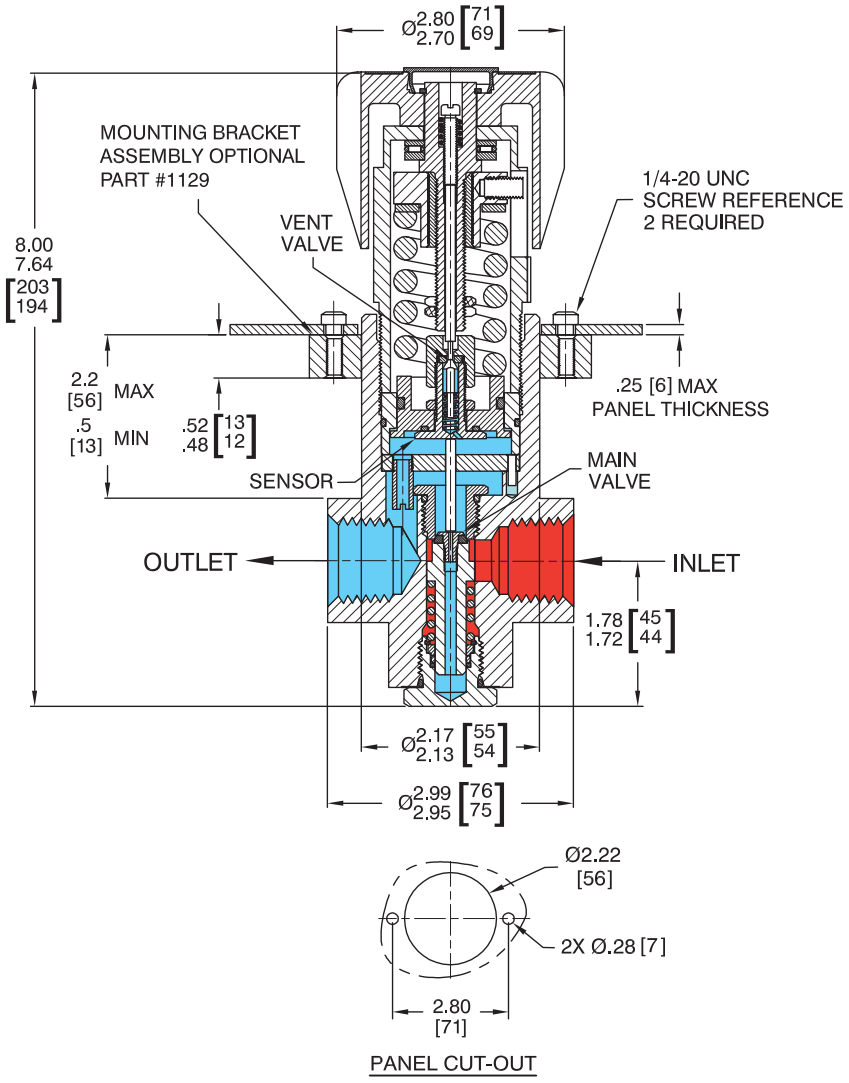
44-1300 SERIES

44-1300 Series Regulator Drawing



Standard
no gauge ports

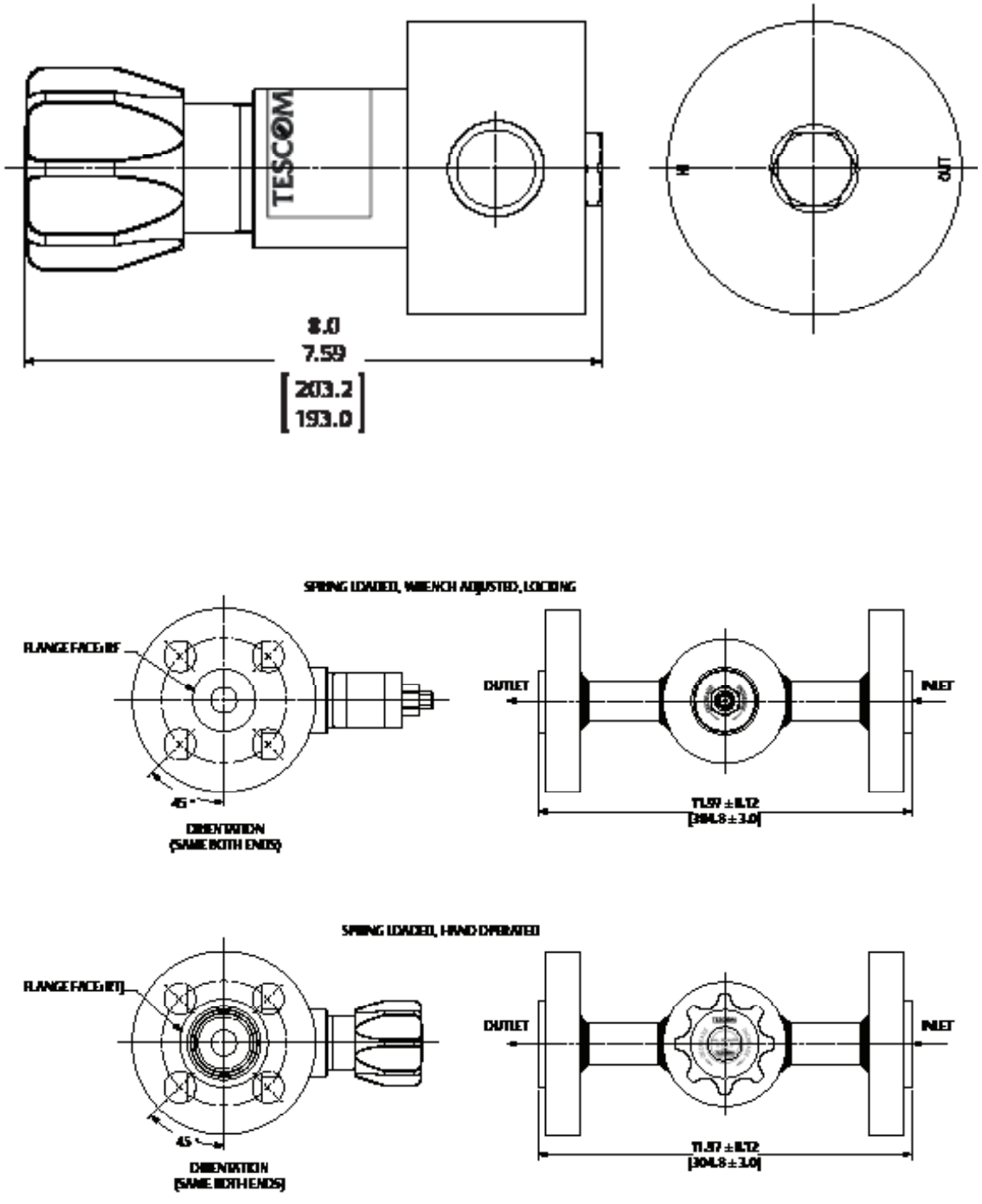
-005 Modification
with gauge ports



PANEL CUT-OUT

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1300 Series Regulator with Flanges Drawing

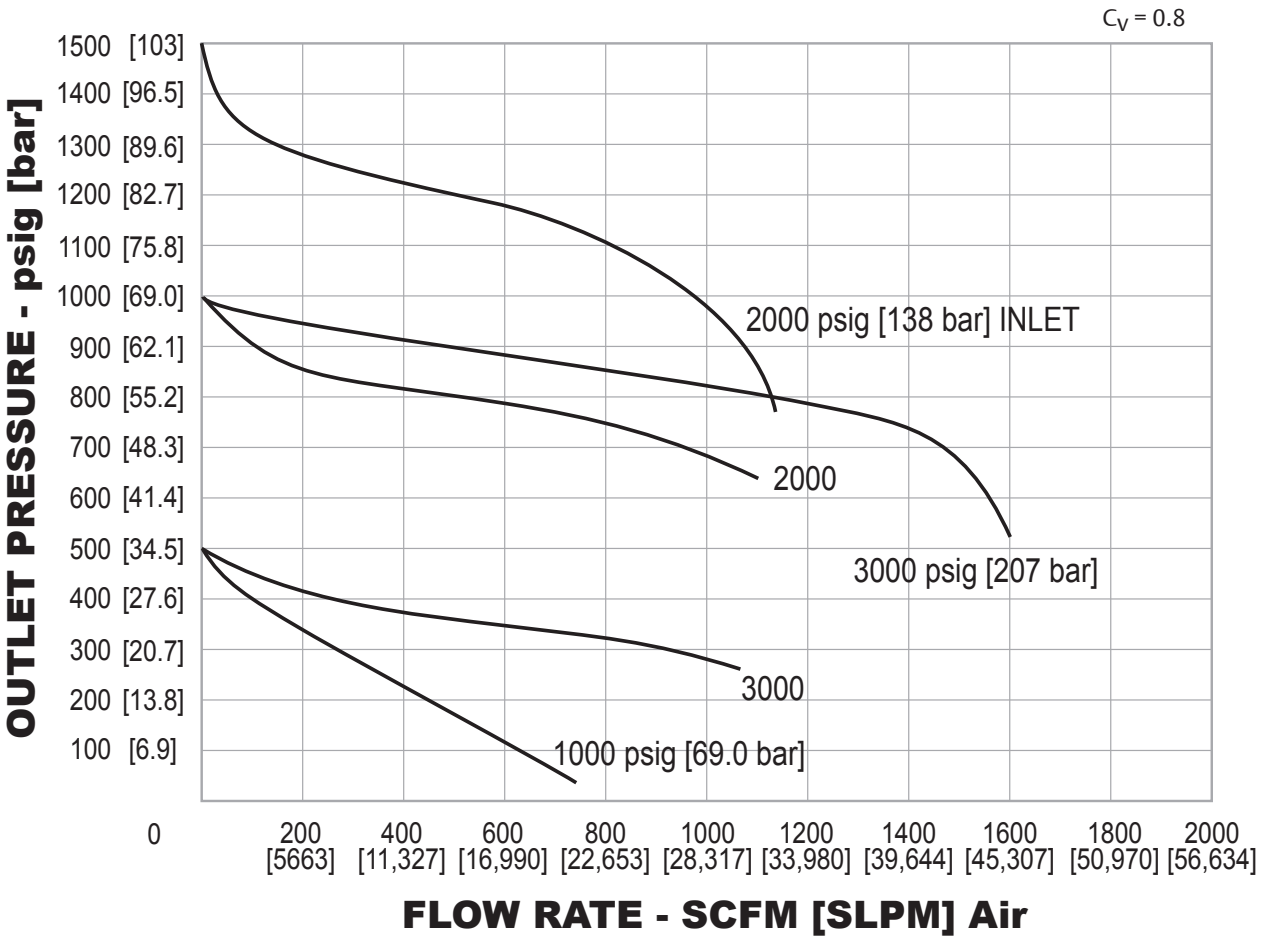


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1300 SERIES

44-1300 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-1300 Series Regulator Flow Charts

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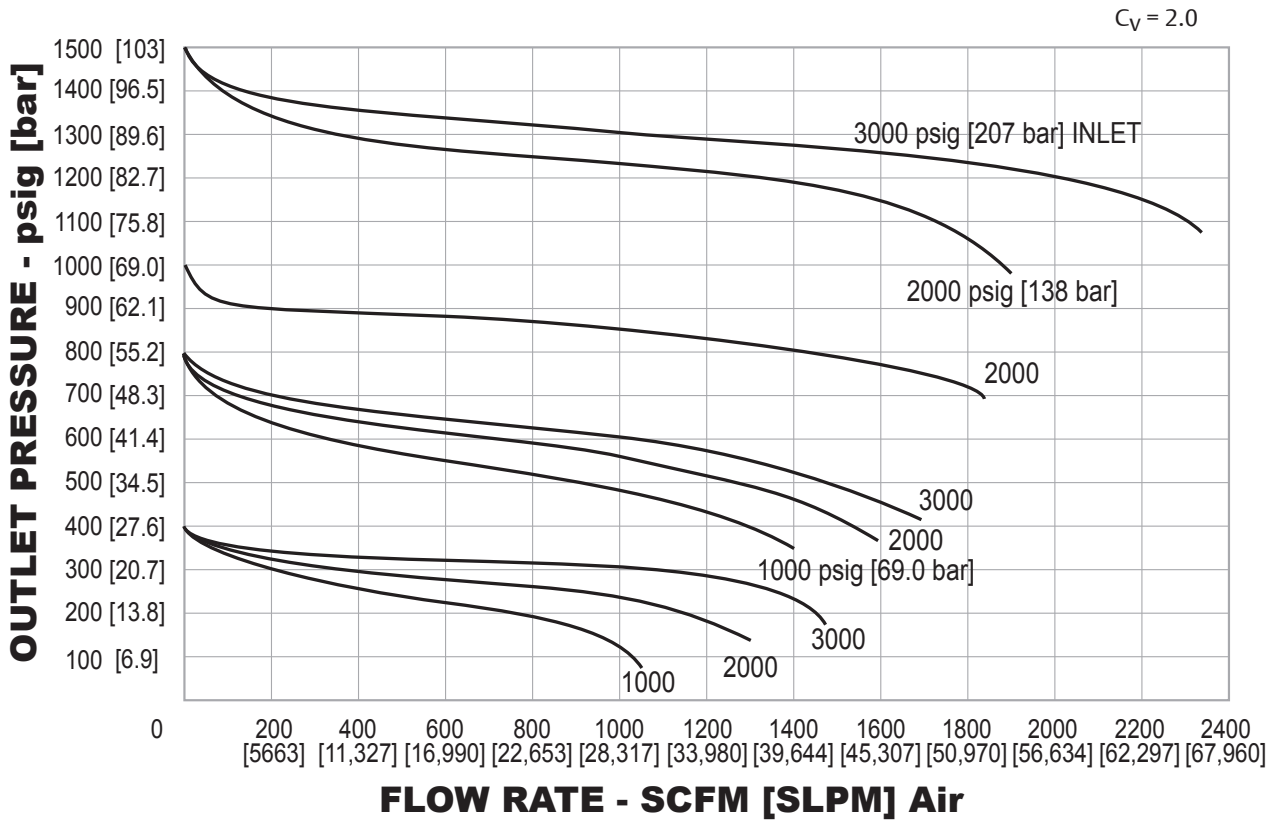

44-1300 SERIES

44-1300 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connector Part Number Selection:

44-13 1 3 - 2 08 1

BASIC SERIES	BODY MATERIAL	INLET PRESSURE	OUTLET PRESSURE RANGE	PORT TYPE	PORT SIZE	MAIN VALVE	OPTIONS
44-13	**1** – Brass	3750 psig 259 bar	**2** – 0-300 psig 0-20.7 bar	**1** – SAE	**08** – 1/2"	**1** – 1/4" C_V = 0.8	**-002** Modification – Non-venting, no gauge ports
	2 – 303 Stainless Steel	4500 psig 310 bar	**3** – 0-600 psig 0-41.4 bar	**2** – NPTF	**12** – 3/4"	**2** – 3/8" C_V = 2.0	**-005** Modification – Venting with gauge ports
	6 – 316 Stainless Steel	4500 psig 310 bar	**5** – 0-1000 psig 0-69.0 bar	**3** – MS33649			**-019** Modification – Non-venting with gauge ports
			6 – 0-1500 psig 0-103 bar	**9** – BSPP			**-056** Modification – 6000 or 5000 psig / 414 or 345 bar inlet pressure with 2500 psig / 172 bar outlet pressure
			7 – 0-2500 psig 0-172 bar (-056 Mod only)				**-183** Modification – Corrosion Resistant Top Works

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
0-300 psig / 0-20.7 bar
0-580 psig / 0-40.0 bar

Design Proof Pressure
150% maximum rated

Design Burst Pressure
400% maximum rated

Leakage
Bubble-tight

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.8, C_V = 2.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Main Valve Seat
PTFE

Vent Valve Seat
PTFE (venting only)

Back Cap
300 Series Stainless Steel

Back-up Rings
PTFE

O-Ring
FKM (Viton®-A)

Gaskets
PCTFE

Remaining Parts
Type 17-4, 17-7, 300 Series Stainless Steel, PTFE

OTHER

Weight (approximate)
DN 15: 9 lbs / 4.1 kg
DN 20/25: 12.1 lbs / 5.5 kg

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TESCOM 44-1300F Series high flow, pressure reducing regulators provide welded flanges according to EN 1092 and are suitable for gas or liquid service.

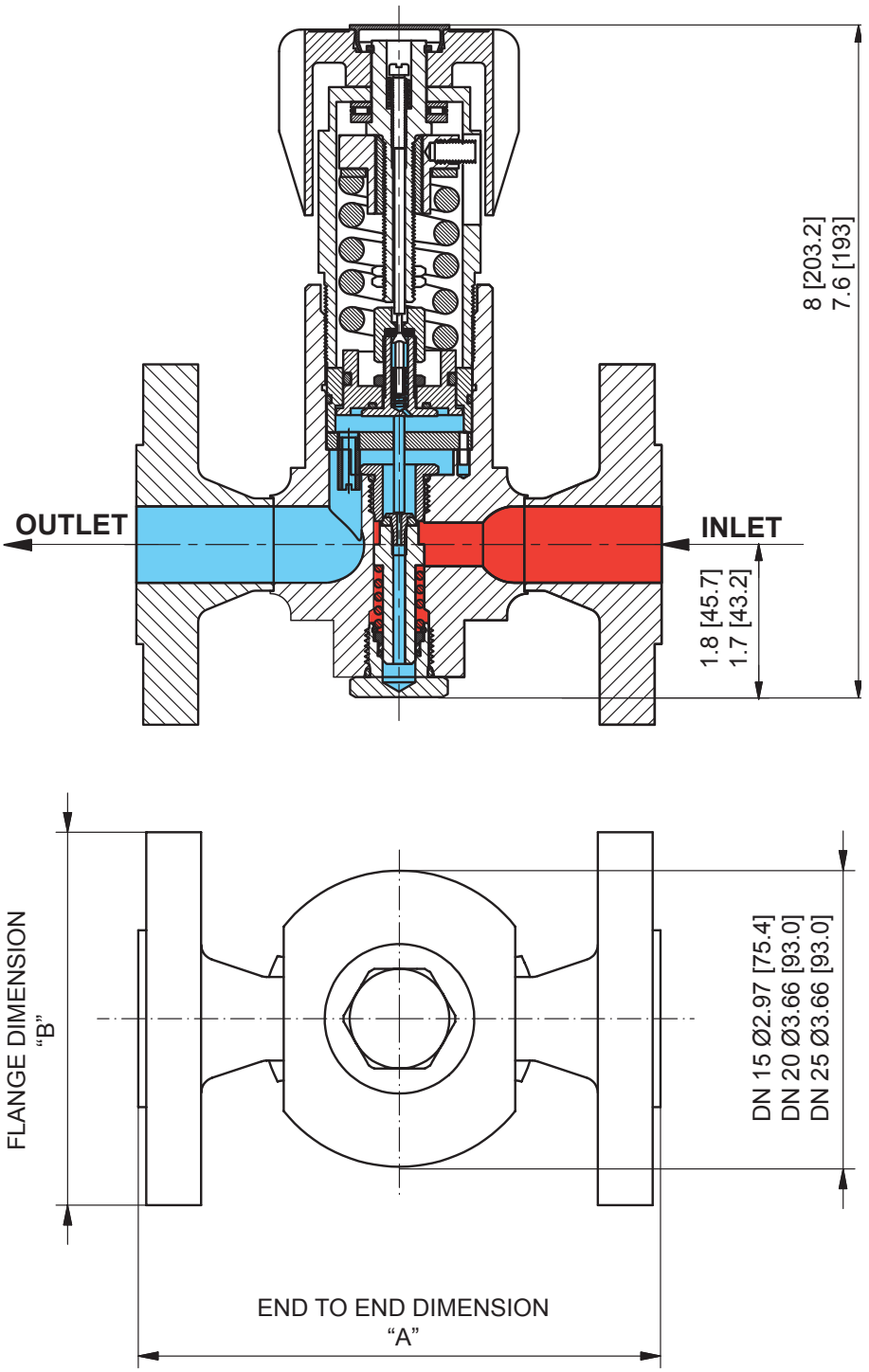
Applications

- Pressure control for diving and life support applications
- Pilot plants (i.e. in the chemical industry)

Features and Benefits

- Flange connections according to DIN EN 1092-1 Type 11 for easy line integration
- Face-to-face dimensions according to DIN EN 558, Row 1
- Connection up to DN 25
- Large piston sensor provides excellent sensitivity
- Balanced valve design ensures stable downstream pressure
- Large handknob offers fast low-torque pressure settings
- Venting is standard (select non-venting for liquids or critical gases)
- Available with gauge ports
- Other connection standards available upon request

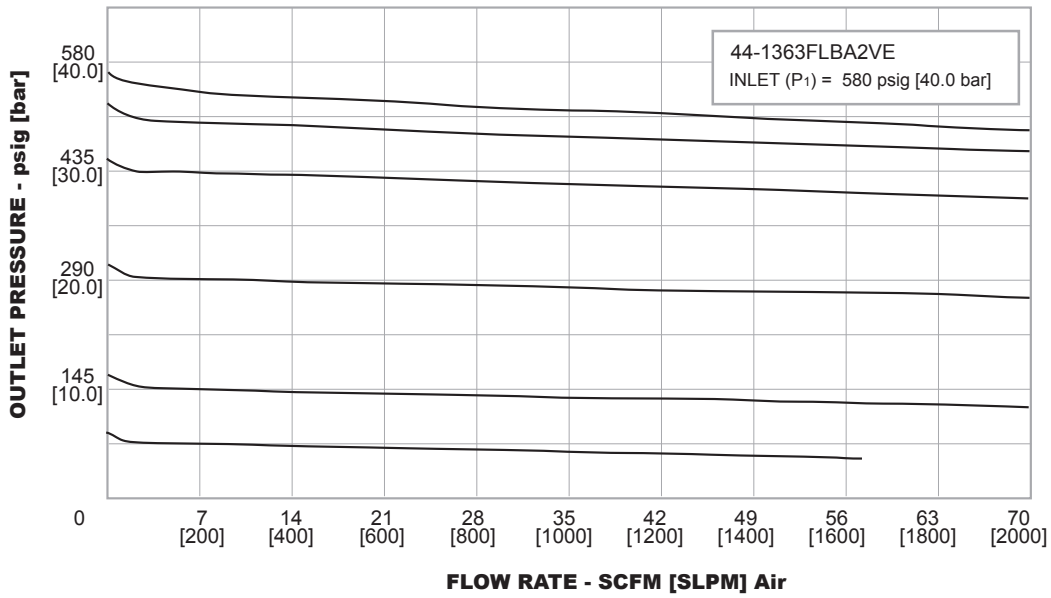
44-1300F SERIES
Europe and Middle East only
44-1300F Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1300F Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-1300F SERIES
Europe and Middle East only
44-1300F Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

FLANGE — EN 1092-1

44-13	6	2	F	K		B	F	2	V	E

BASIC SERIES	BODY AND FLANGE MATERIAL	OUTLET PRESSURE	INLET & OUTLET PORT TYPE	"A" ± 0.08" (± 2 mm)	"B" ± 0.08" (± 2 mm)	FLANGE TYPE	GAUGE PORT OPTIONS	FLOW CAPACITY	VENTING OPTION
44-13	**6 –** 316L Stainless Steel	**2 –** 0-300 psig 0-20.7 bar **3 –** 0-580 psig 0-40.0 bar	**K –** DN 15 **L –** DN 20 **M –** DN 25	5.12 130 5.90 150 6.30 160	3.74 95 4.13 105 4.53 115	**B –** Form B - raised face **D –** Form D - ring joint	**A –** None **D –** 1/4" NPTF 1 x out **E –** 1/4" NPTF 1 x out **F –** 1/4" NPTF 1 x in **L –** 1/4" NPTF 1 x in, 1 x out	**1 –** C_V = 0.8 Orifice: ø 0.250 / 6.4 **2 –** C_V = 2.0 Orifice: ø 0.375 / 9.5	**N –** Non-Venting (for liquid service) **V –** Venting

Kits

	BASIC SERIES	PART NUMBER
NON METALLIC	44-13XX FXX 1VE 44-13XX FXX 2VE 44-13X2 FXX 2VE 44-13XX FXX 1NE 44-13XX FXX 2NE	389-1873 389-1874 389-2726 389-1459 389-2784
REPAIR	44-13XX FXX 1VE 44-13XX FXX 2VE 44-13X2 FXX 2VE 44-13XX FXX 1NE 44-13XX FXX 2NE	389-1875 389-1876 389-2727 389-2343 389-2785

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Ranges
Spring Loaded: 0-200, 0-400 psig / 0-14, 0-28 bar
Air/Dome Loaded: 0-600 psig / 0-41 bar

Design Proof Pressure
150% maximum pressure

Leakage
Bubble-tight

Ambient Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.3

Maximum Operating Torque
25 in-lbs / 2.8 N • m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

40 Micron Filter
Bronze

Main Valve Seat
Polyimide (Vespel® SP21)

Vent Valve Seat
Polyimide (Vespel® SP21)

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), FFKM, Perfluoroelastomer (Kalrez®), E.P.

Back-up Rings
PTFE

Remaining Parts
300 Series Stainless Steel, Brass, Nickel Alloy (Monel®)

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
4.75 lbs / 2.2 kg

Teflon®, Viton®, Vespel®, and Kalrez® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 44-1500 Series high flow/low pressure regulator controls outlet pressures up to 600 psig / 41 bar. Large area piston provides accurate pressure control and cycle life superior to diaphragm sensed regulators when applied to heavy duty cycling. Features a segregated/captured vent for hydraulic or pneumatic media and is available in two outlet spring ranges. Optional dome or air loaded versions for remote operation or for use with the TESCOM ER5000 Electropneumatic Controller for automation.

Applications

- Hydraulic testing
- Pneumatic testing

Features and Benefits

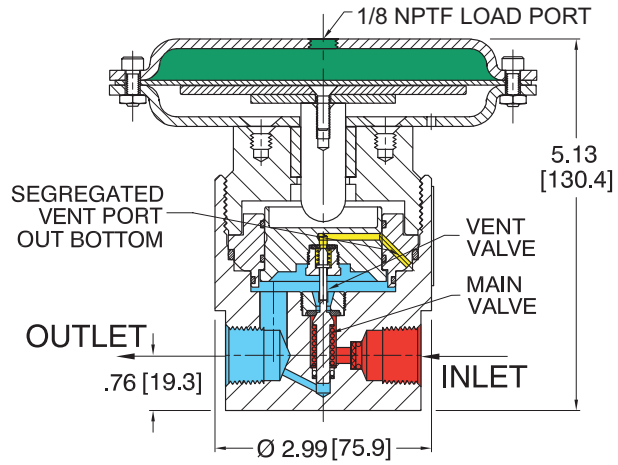
- For gaseous and liquid media
- “Segregated and Captured” vent design is standard
- Balanced valve design ensures stable downstream pressure
- 6000 psig / 414 bar maximum inlet
- Low droop
- Large sensor for accurate pressure control
- High flow, low outlet pressures
- Compatible with TESCOM ER5000 Electropneumatic Controller

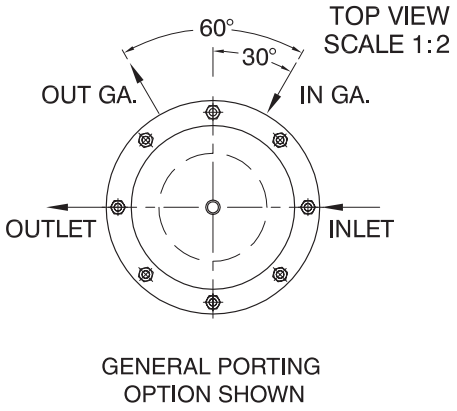
NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit’s outlet or that of the downstream system.

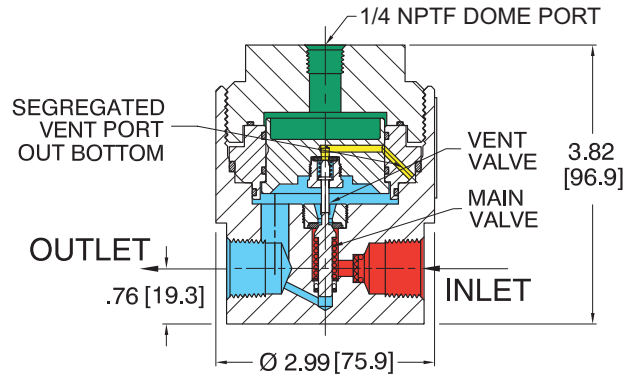
For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

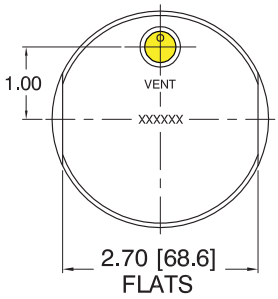
44-1500 SERIES

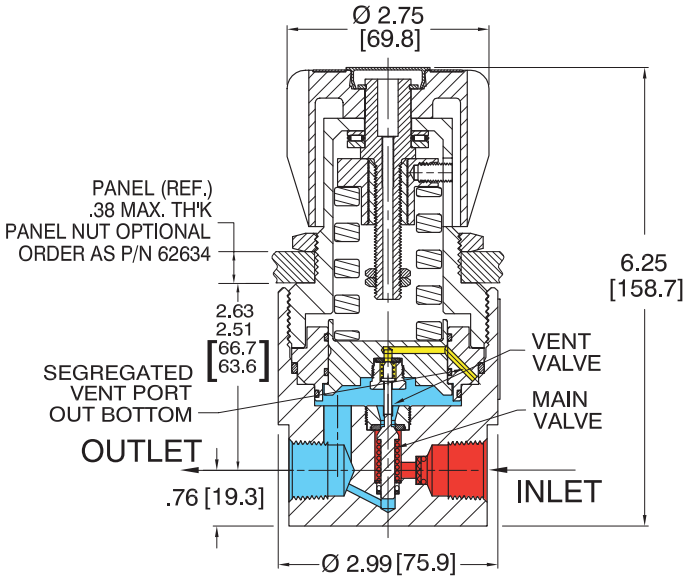
44-1500 Series Regulator Drawings

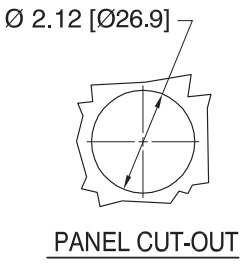








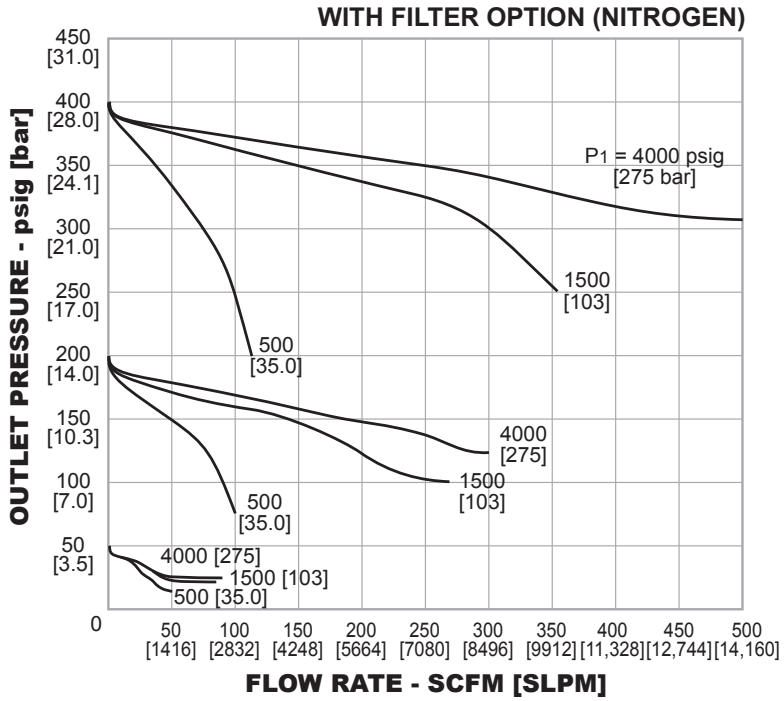


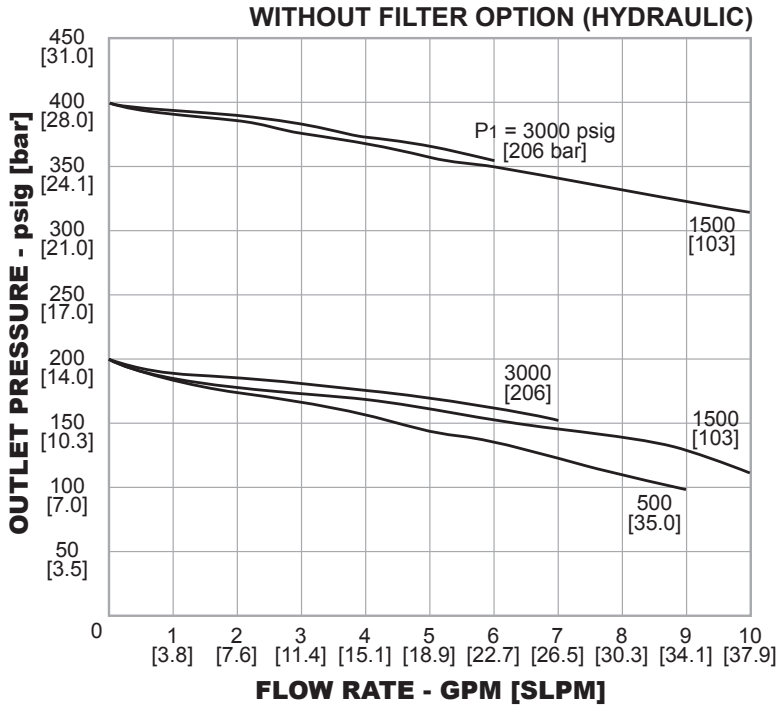


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1500 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-1500 SERIES

44-1500 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

A – Air loaded
D – Dome loaded
S – Spring loaded

44-15	1	4	D			2	S	8	2	7
BASIC SERIES	**BODY MATERIAL**	**MATERIALS CONTACTING LINE MEDIA**	**OUTLET PRESSURE**	**SOFT GOODS MATERIAL**				**INLET AND OUTLET PORT TYPE**	**VENT PORT**	**INLET AND OUTLET PORT SIZE**	**FILTER OPTION**	**MAIN VALVE AND VENT SEAT MATERIAL**
				O-RING		**BACK-UP RING**						
				DYNAMIC	**STATIC**							
44-15	**1** – Brass	Brass, Nickel Alloy (Monel®), 300 Series Stainless Steel	***Spring load only***	**D** – Nitrile, Buna-N	Nitrile, Buna-N	PTFE		**1** – SAE	1/4" SAE	**6** – 3/8"	**2** – WITH Filter*	**7** – Polyimide (Vespel® SP21)
	6 – 316 Stainless Steel	Nickel Alloy (Monel®), 300 Series Stainless Steel	**2** – 10-200 psig 0.7-14 bar	**T** – FKM (Viton®-A)	FKM (Viton®-A)	PTFE		**2** – NPTF	1/4" NPTF	**8** – 1/2"	**3** – NO Filter	**8** – PEEK
			4 – 10-400 psig 0.7-28 bar	**V** – FFKM, Perfluoroelastomer (Kalrez®)	FFKM, Perfluoroelastomer (Kalrez®)	PTFE		**3** – MS33649	1/4" MS33649			
			Air and Dome load only	**Z** – E.P.	E.P.	PTFE						
			6 – 10-600 psig 0.7-41 bar									

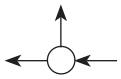
*Filter not recommended for liquid service.

2

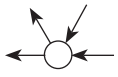
GUAGE PORT OPTIONS 1/4" NPTF

0 - None

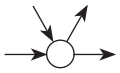
1 - One Gauge Port at 90°



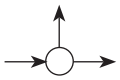
2 - Two Gauge Port at 90°



3 - Two Gauge Port at 60° (left hand inlet)



4 - Outlet Port at 90° (left hand inlet)



Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Range
0-2500 psig / 0-172 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating and Fluid Media Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
Non-venting: C_V = 0.06
Venting: C_V = 0.15

Maximum Operating Torque
25 in-lbs / 2.8 N • m

MEDIA CONTACT MATERIALS

Body
Brass or 316 Stainless Steel

Bonnet
Brass, 300 Series Stainless Steel

Seat
PCTFE

O-Ring
FKM (Viton®-A)

Back-up Ring
PCTFE

Remaining Parts
Brass Body: Brass and 300 Series Stainless Steel
Stainless Body: 316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4" NPTF inlet and outlet, inlet and outlet gauge ports

Weight (without gauges)
2 lbs / 0.9 kg

Teflon® and Viton® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 44-1800 Series piston sensed pressure reducing regulator is available in Brass or 316 Stainless Steel construction with outlet pressures up to 2500 psig / 172 bar.

Applications

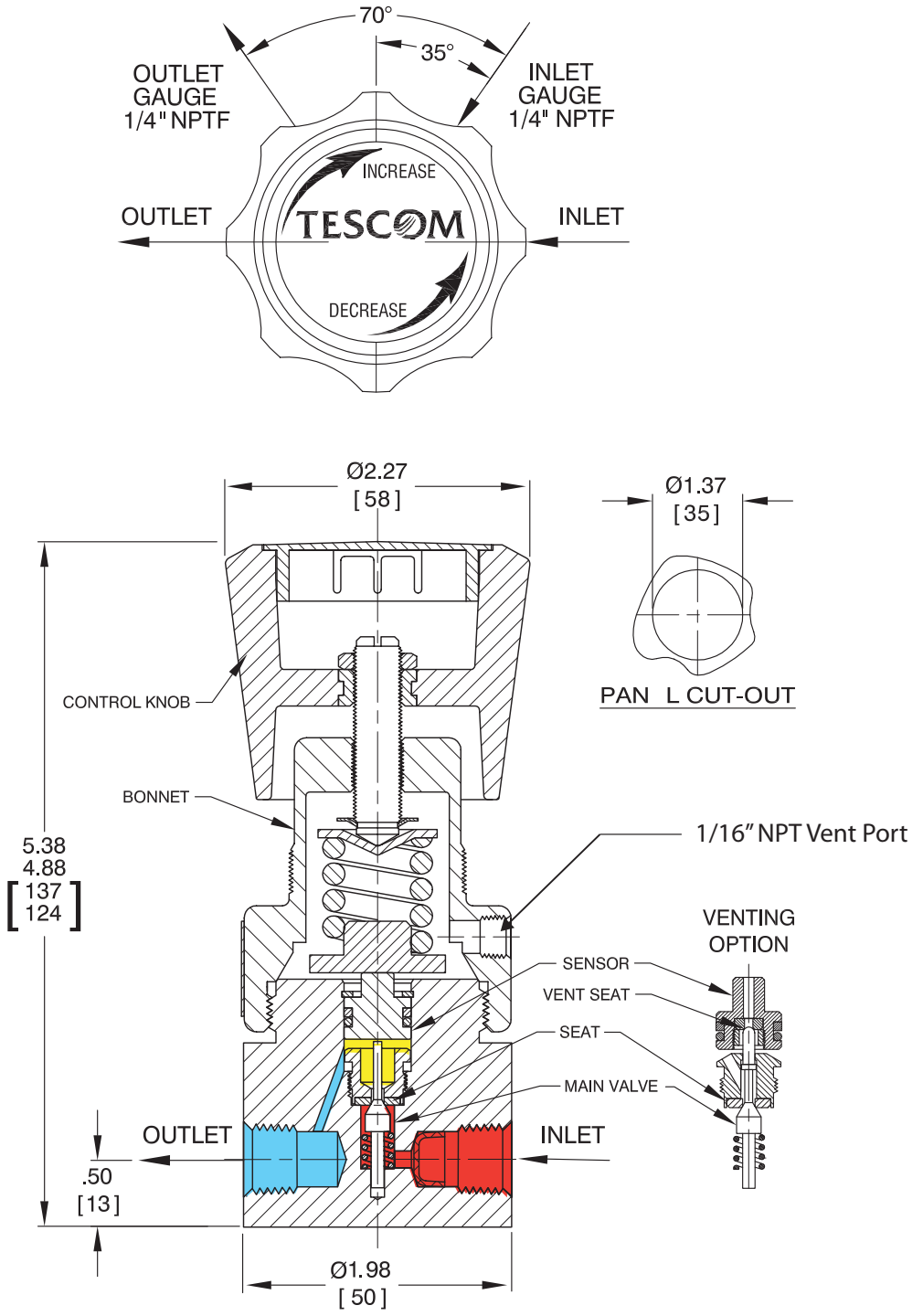
- General purpose test stands
- Industrial equipment

Features and Benefits

- Economical
- Compact design
- Piston sensed design is safe and reliable
- Adjustable stop limits maximum outlet pressure
- Choice of Stainless Steel or Brass construction
- Venting model is available
- Available with a variety of porting and material options

44-1800 SERIES

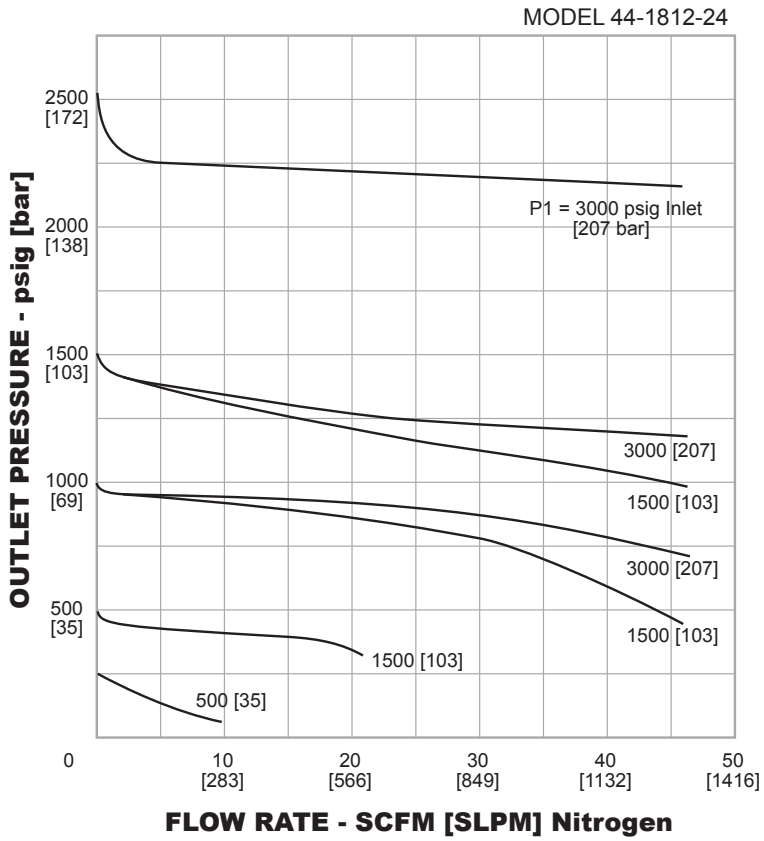
44-1800 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-1800 SERIES

44-1800 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-18	1	2	- 2	4	V
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**VENTING (OPTIONAL)**
44-18	**1 –** Brass **6 –** 316 Stainless Steel **9 –** Nickel Alloy (Monel®)	**1 –** 0-1500 psig / 0-103 bar **2 –** 0-2500 psig / 0-172 bar	**2 –** NPTF	**4 –** 1/4"	**V –** Venting

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
400, 3500 psig
27.6, 241 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-250, 0-500 psig
0-1.7, 0-3.4, 0-6.9, 0-17.2, 0-34.5 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
3500 psig / 241 bar Inlet: C_V = 0.06
400 psig / 27.6 bar Inlet: C_V = 0.15

Maximum Operating Torque
30 in-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel, Brass, Nickel Alloy (Hastelloy®)* or Nickel Alloy (Monel®)

Bonnet
300 Series Stainless Steel, Brass

Diaphragm
316 Stainless Steel, Cobalt Chrome Nickel Alloy (Eligiloy®)

Seat
PTFE

Remaining Parts
316 Stainless Steel, Brass, Nickel Alloy (Hastelloy®)* or Nickel Alloy (Monel®)

OTHER

Cleaning
CGA 4.1 and ASTM G93

Internal Volume
6 cc

Weight (without gauges)
2 lbs / 0.9 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
Elgiloy® is a registered trademark of Elgiloy Corp.

**Material to be Hastelloy® or equivalent per ASTM B 574*

TESCOM 44-2200 Series is a compact, lightweight high purity single-stage regulator for specialty, flammable, and industrial gas flows of less than 5 SCFM / 141 SLPM. Its diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

- Laboratory and point-of-use gas systems
- Sampling systems, zero, span and calibration analyzer gases
- Specialty and industrial gas cylinder regulator
- Chromatograph flame detector fuel supply

Features and Benefits

- Compact
- Designed to minimize contamination and provide accurate regulation of any corrosive, non-corrosive, or toxic gas
- Brass model provides added economy for control of non-corrosive media
- Metal-to-metal diaphragm to body seal ensures minimum inboard and outboard leakage
- Convoluted diaphragm delivers excellent accuracy and long service life
- Panel mounting is available
- 300 Series Stainless Steel or Brass bonnet
- NACE compliant designs are available

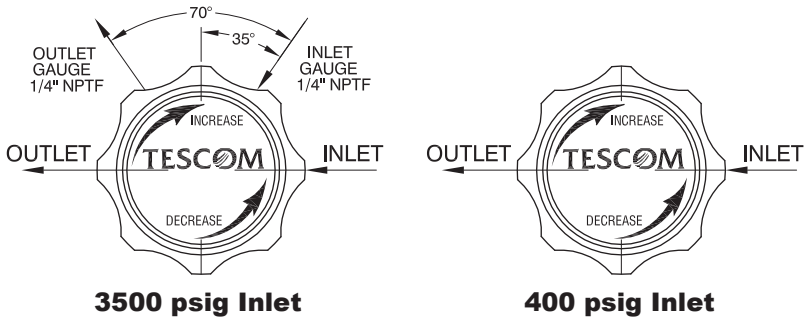
NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

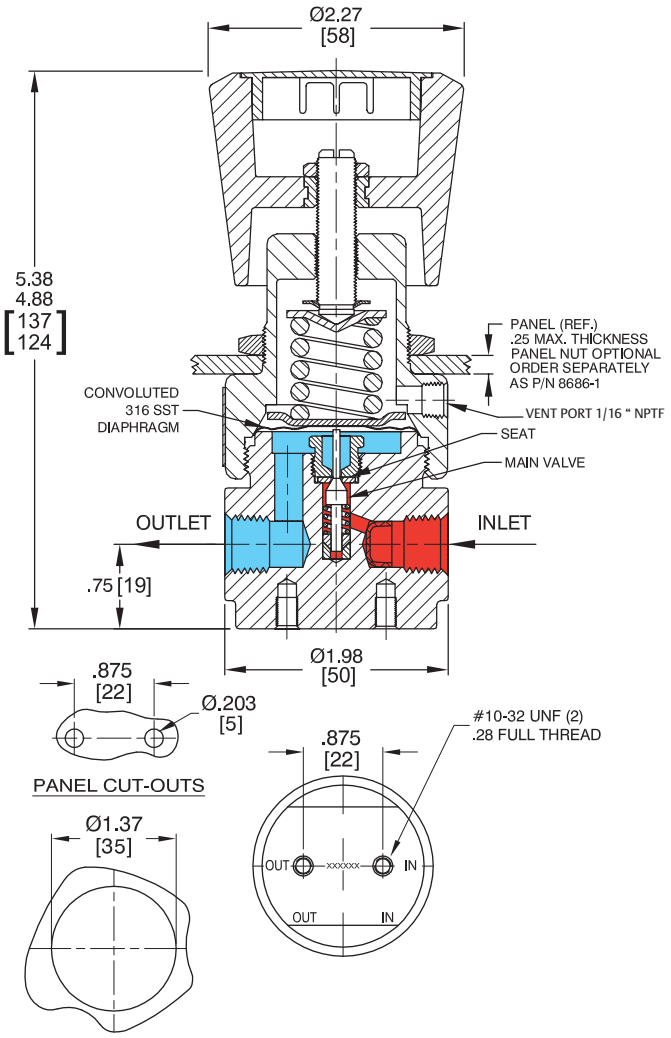
44-2200 SERIES

44-2200 Series Regulator Drawing

PORTING CONFIGURATION



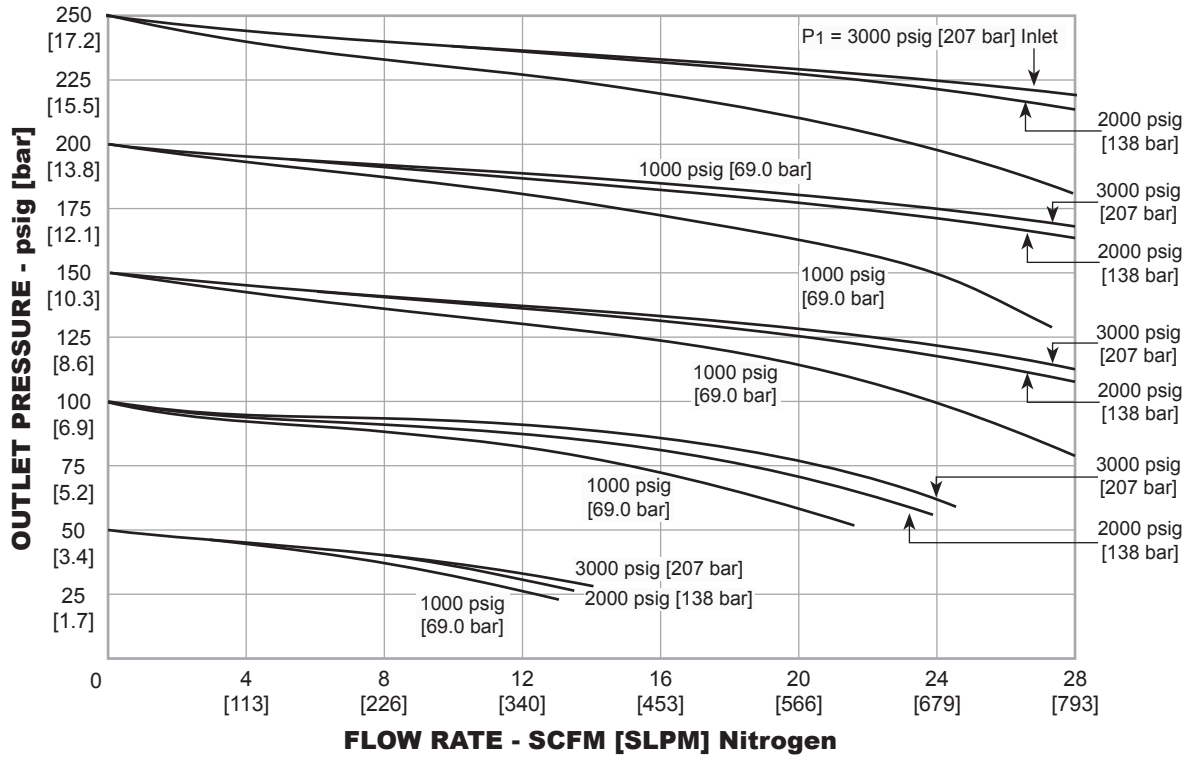
3500 psig Inlet **400 psig Inlet**

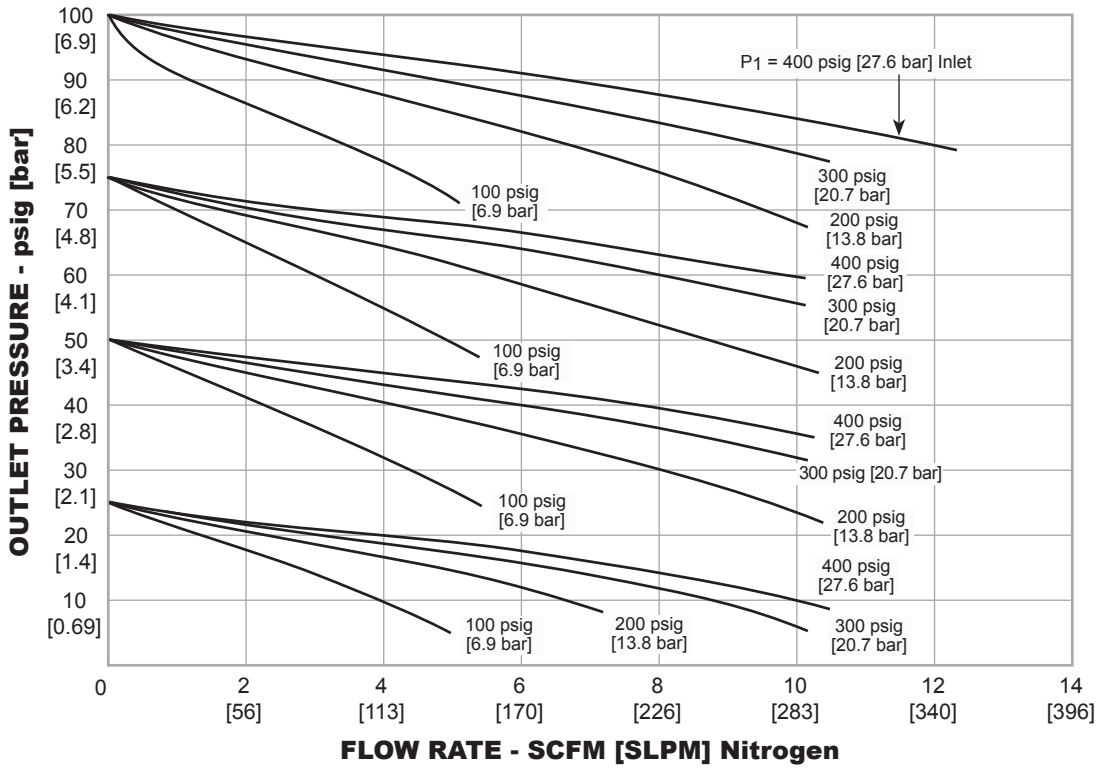


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-2200 SERIES

44-2200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-22 6 0 - 2 4 1

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	INLET PRESSURE	FLOW CAPACITY	MODIFICATIONS
44-22	**1 –** Brass **5 –** Nickel Alloy (Hastelloy®) **6 –** 316L Stainless Steel **9 –** Nickel Alloy (Monel®)	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-250 psig 0-17.2 bar **4 –** 0-500 psig 0-34.5 bar *(with 3500 psig / 241 bar inlet only)*	**2** – NPTF	**4** – 1/4"	**1 –** 3500 psig 241 bar **2 –** 400 psig 27.6 bar ***See porting configuration***	C_V = 0.06 C_V = 0.15	**-010 –** Outlet gauge port at 90° **-115 –** High temperature (400°F / 205°C) **-118 –** Hydraulic service outlet gauge ports at 70°

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Corrosive or non-corrosive gases requiring high purity regulation compatible with materials of construction. For other media, consult factory.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-250, 0-500 psig
0-1.7, 0-3.4, 0-6.9, 0-17.2, 0-34.5 bar

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Leakage
Internal: Bubble-tight
External: < 2 x 10^{-8} atm cc/sec. He [mbar l/s He]

Flow Capacity
C_V = 0.06
C_V = 0.15

Operating Temperature
-15°F to 165°F / -26°C to 74°C

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Seat
PTFE

Friction Sleeve (Inner)
PTFE

Friction Sleeve (Outer)
316 Stainless Steel

Diaphragm
316L Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Weight (approximate)
DN 15: 6.6 lbs / 3.0 kg
DN 20/25: 12 lbs / 5.4 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 44-2200F Series low flow, pressure reducing regulators provide welded flanges according to EN 1092 and are suitable for gas applications.

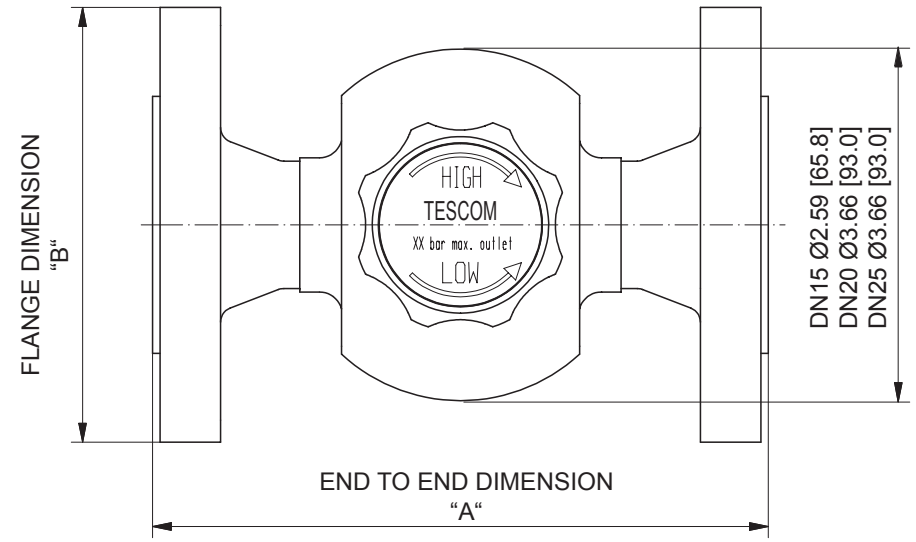
Applications

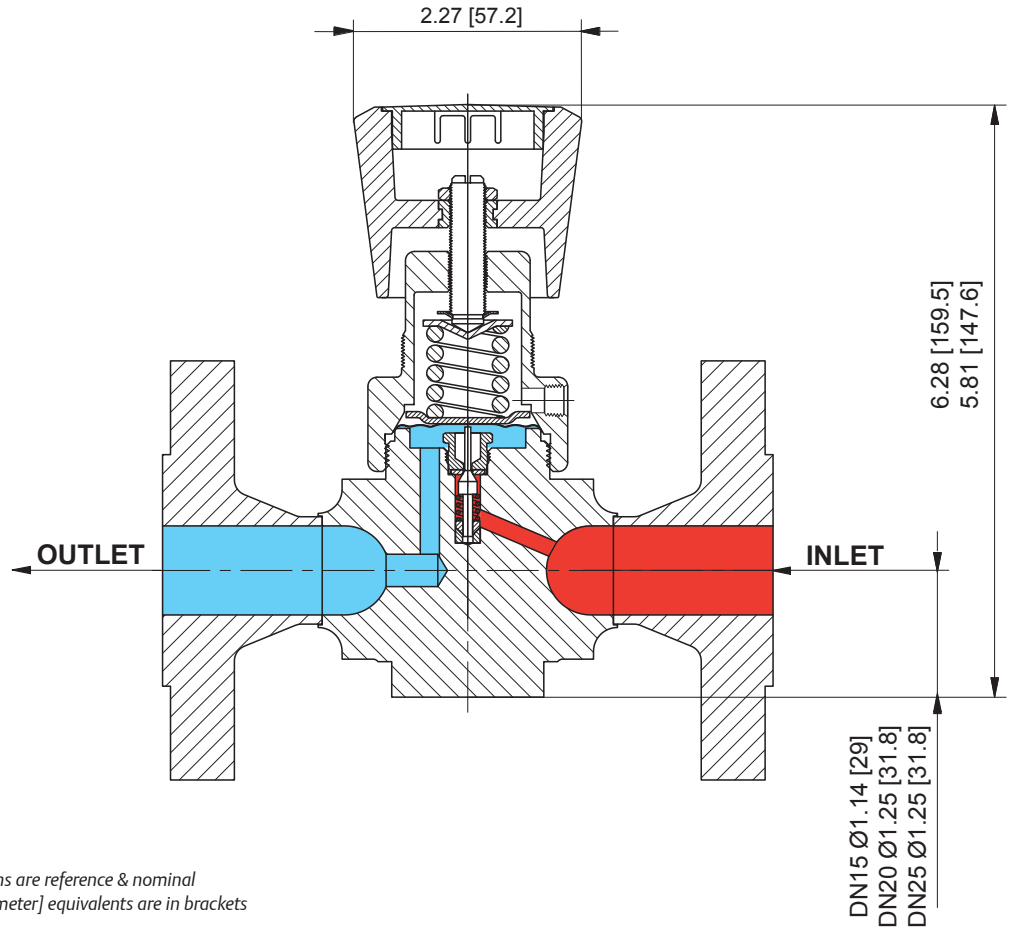
- Sampling for analytical applications
- Low flow media supply for various processes

Features and Benefits

- Flange connections according to DIN EN 1092-1 Type 11 for easy line integration
- Face-to-face dimensions according to DIN EN 558, Row 1
- Connection up to DN 25
- Compact in size
- Designed to reduce contamination and provide accurate regulation of any corrosive, non-corrosive, or toxic gas
- Metal-to-metal diaphragm to body seal ensures minimum inboard and outboard leakage
- Convoluted diaphragm provides excellent accuracy and long service life
- Other connection standards are available upon request

44-2200F SERIES
Europe and Middle East only
44-2200F Series Regulator Drawing

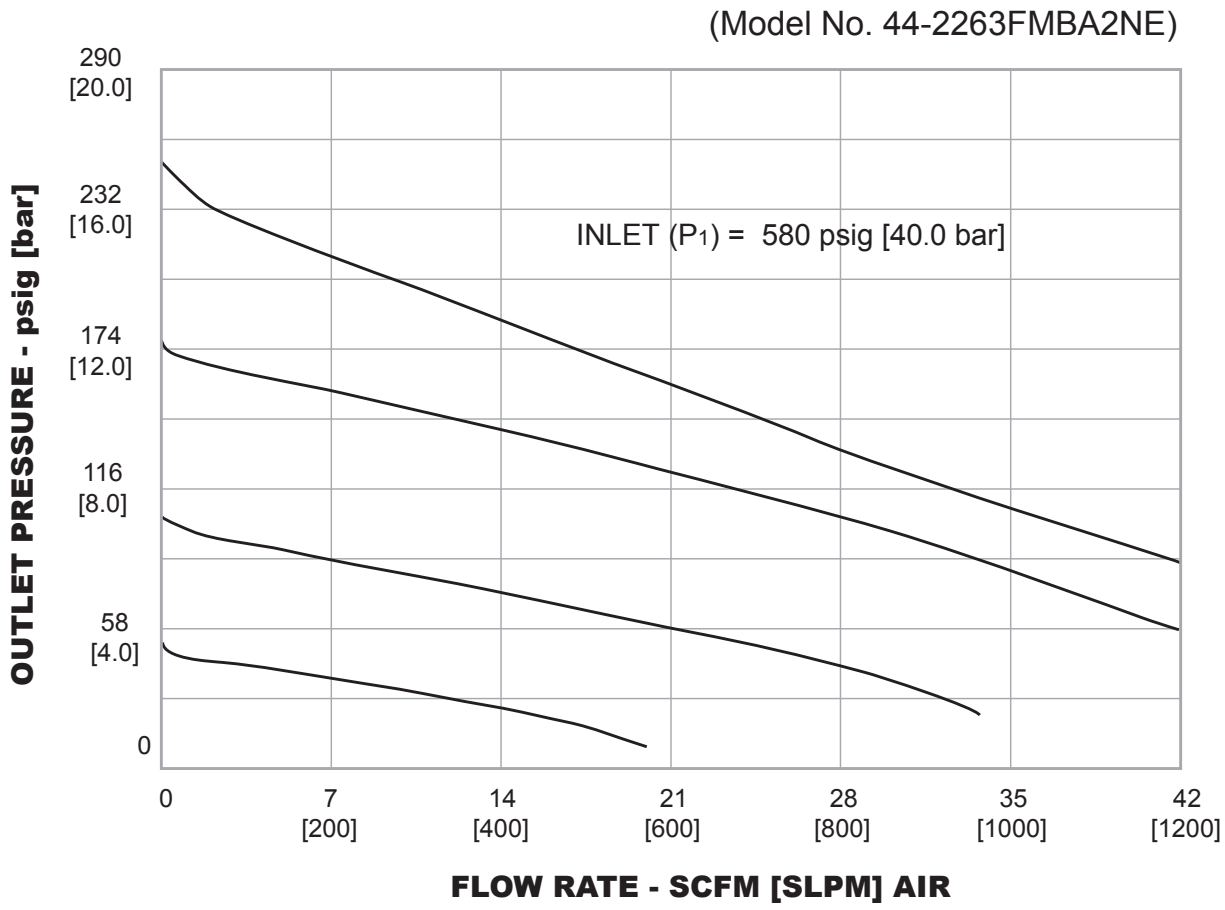




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2200F Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-2200F SERIES
Europe and Middle East only
44-2200F Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

FLANGE — EN 1092-1

44-22	6	1	F	K		B	F	2	N	E

BASIC SERIES	BODY AND FLANGE MATERIAL	OUTLET PRESSURE	INLET AND OUTLET PORT TYPE	"A" ±.08" ±2 mm	"B" ±.08" ±2 mm	FLANGE TYPE	GAUGE PORT OPTIONS	FLOW CAPACITY	VENTING OPTION
44-22	**6 –** 316L Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-250 psig 0-17.2 bar **4 –** 0-500 psig 0-34.5 bar	**K –** DN 15 **L –** DN 20 **M –** DN 25	5.12 130 5.90 150 6.30 160	3.74 95 4.13 105 4.53 115	**B –** Form B - raised face **D –** Form D - ring joint	**A –** None **D –** 1/4" NPTF 1 x out **E –** 1/4" NPTF 1 x out **F –** 1/4" NPTF 1 x in **L –** 1/4" NPTF 1 x in, 1 x out	**1 –** C_V = 0.06 **2 –** C_V = 0.15	**N –** Non-Venting

Kits

	BASIC SERIES	PART NUMBER
NON METALLIC	44-22XXFXXX1E 44-22XXFXXX2E	389-6341 389-6348
REPAIR	44-22XXFXXX1E 44-22XXFXXX2E	389-6342 389-6350

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
400 or 3500 psig / 27.6 or 241 bar

Outlet Pressure Ranges
0-12, 0-25, 0-50, 0-100, 0-150,
0-250 psig (400 psig inlet models only)
0-0.83 ,0-1.7, 0-3.4, 0-6.9, 0-10.3,
0-17.2 bar (27.6 bar inlet models only)

Design Proof Pressure
150% of maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
3500 psig / 241 bar Inlet: C_V = 0.06
400 psig / 27.6 bar Inlet: C_V = 0.15

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Bonnet
303 Stainless Steel

Diaphragm
316 Stainless Steel

Seat
PTFE

Friction Sleeve (inner)
PTFE

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 AND ASTM G93

Weight
3 lbs / 1.4 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 44-2600 Series is a compact, extremely sensitive, high purity single-stage regulator for specialty, flammable and industrial gases with flows of less than 10 SCFM / 283 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

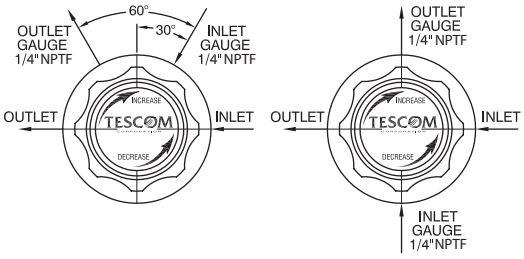
- Gas/Analyzer sampling systems
- Fuel cells
- Tissue and cell culture incubators
- Chromatograph flame detector fuel supply
- Excellent for low outlet and low differential pressure applications

Features and Benefits

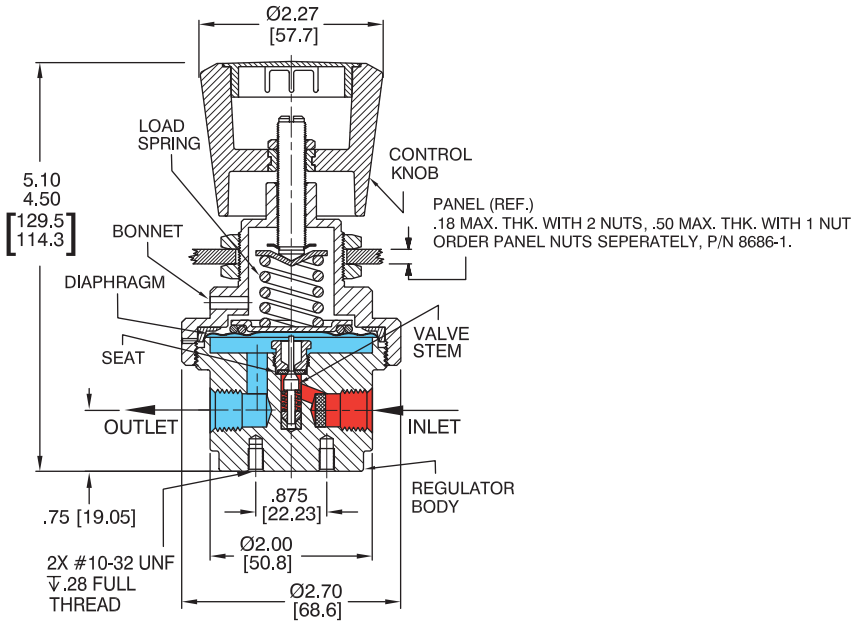
- Features a large convoluted diaphragm for extreme sensitivity with minimum droop
- Repeatability: ±0.5% of outlet pressure range
- Metal-to-metal diaphragm to body seal
- Accuracy: ±1% of outlet pressure range
- Gauge ports are standard
- Dome loaded version is available
- C_V = 0.02 and C_V = 0.24 models are available
- NACE compliant designs are available

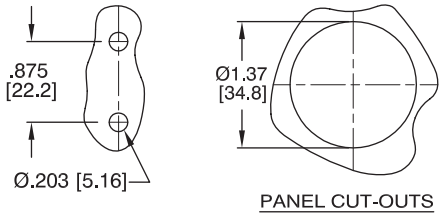
44-2600 SERIES

44-2600 Series Regulator Drawing



44-26XX-XX1 44-26XX-XX2



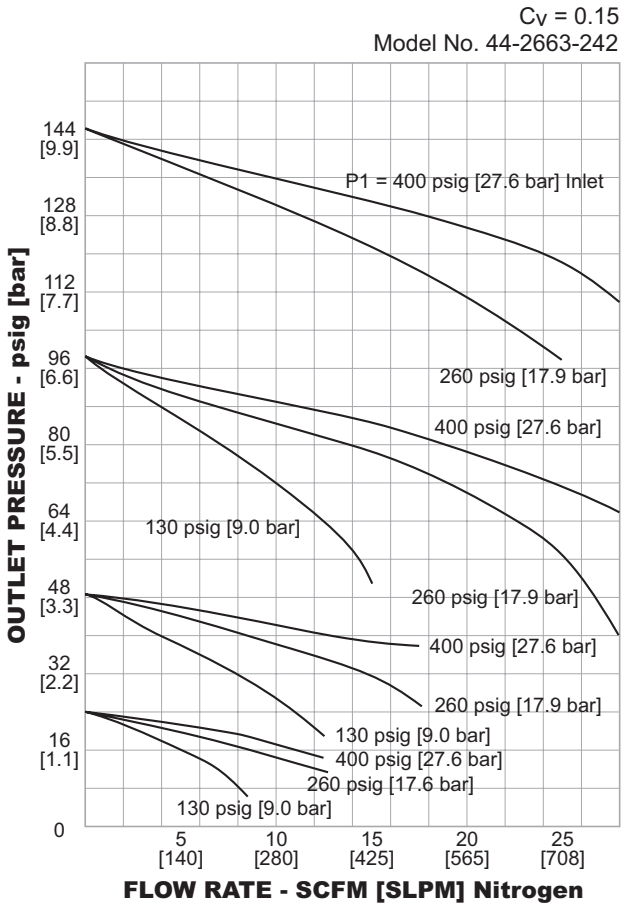


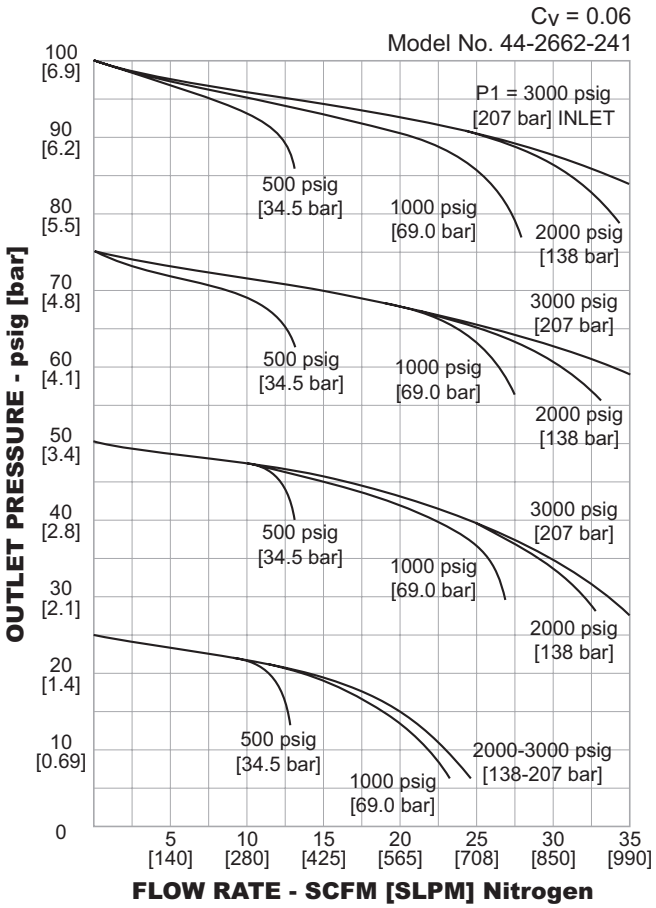
PANEL CUT-OUTS

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2600 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-2600 SERIES

44-2600 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-26 6 1 - 2 4 1

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MAXIMUM INLET PRESSURE
44-26	**6 –** 316 Stainless Steel	**L –** 0-12 psig / 0-0.82 bar **0 –** 0-25 psig / 0-1.7 bar **1 –** 0-50 psig / 0-3.4 bar **2 –** 0-100 psig / 0-6.9 bar **3 –** 0-150 psig / 0-10.3 bar **4 –** 0-250 psig / 0-17.2 bar*	**2 –** NPTF	**4 –** 1/4"	**1 –** 3500 psig / 241 bar **2 –** 400 psig / 27.6 bar

**Available for 400 psig / 27.6 bar maximum inlet pressure only.*

Regulators - Pressure Reducing D44281796X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3000 psig / 207 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-150 psig
0-1.7, 0-3.4, 0-6.9, 0-10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 0.16

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Diaphragm
316 Stainless Steel

Friction Sleeve (outer)
316 Stainless Steel

Friction Sleeve (inner)
PTFE

Spring
Cobalt Chrome Nickel Alloy (Eligiloy®)

Seat
PCTFE

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4" NPTF inlet and outlet
inlet and outlet ports at 60°

Weight (without gauges)
3 lbs / 1.4 kg

Elgiloy® is a registered trademark of Elgiloy Corp.
Hastelloy® is a registered trademark of Haynes International, Inc.
Teflon® is a registered trademark of E.I. du Pont de Nemours and Company

TESCOM 44-2800 Series **tied diaphragm** design provides additional shut-off assistance for toxic or corrosive gases. Positional captured bonnet provides secondary containment for added safety. Available in Hastelloy® or Monel materials.

Application

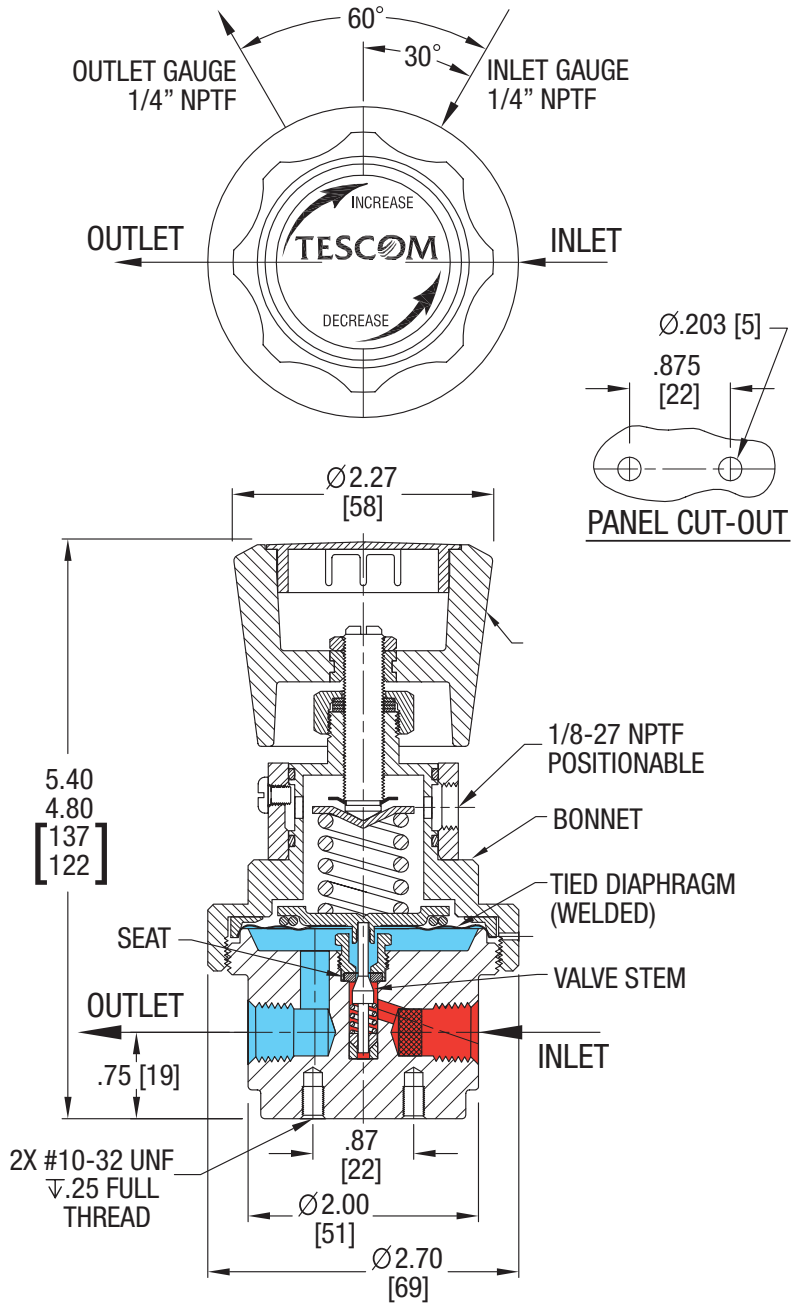
- Instrumentation/analyzer equipment

Features and Benefits

- Repeatability: ± 0.50% of maximum rated outlet pressure
- Convoluted diaphragm provides maximum sensitivity and minimum droop
- Metal-to-metal diaphragm to body seal
- Positionable captured vent bonnet and adjustable stop to limit outlet pressures
- Hastelloy® C or Monel trim options are available (-135 modification)

44-2800 SERIES

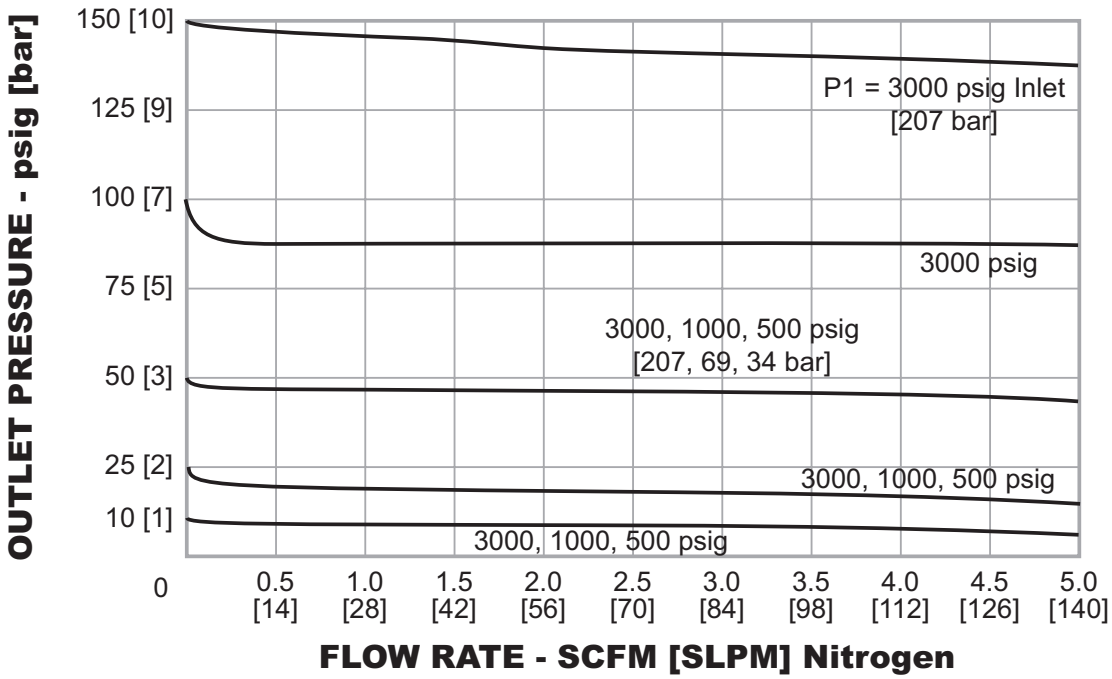
44-2800 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-2800 SERIES

44-2800 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-28	6	1	-	2	4	1
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**		**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**MAXIMUM INLET PRESSURE**
44-28	**6 -** 316 Stainless Steel	**0 –** 0-25 psig 1.7 bar **1 –** 0-50 psig 3.4 bar **2 –** 0-100 psig 6.9 bar **3 –** 0-150 psig 10.3 bar		**2 –** NPTF	**4 –** 1/4"	**0 –** 3000 psig 207 bar

Regulators - Pressure Reducing

D44321775X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
500, 3000 psig / 34.5, 207 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-150, 0-200 psig
0-1.7, 0-3.4, 0-6.9, 0-10.3, 0-13.8 bar

Design Proof Pressure
150% of rated pressure

Leakage
Internal: Bubble-tight
External: < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 1.0
C_V = 1.8 (Optional)

MEDIA CONTACT MATERIALS

Body
Brass, 316 Stainless Steel

Bonnet
300 Series Stainless Steel

Diaphragm
316 Stainless Steel

Seat
3000 psig / 207 bar Inlet: PCTFE
500 psig / 34.5 bar Inlet: PTFE

Seat Retainer
Nitronic 60

Seal
PTFE

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
3.5 lbs / 1.6 kg

Teflon® is a registered trademark of E.I du Pont de Nemours and Company.

TESCOM 44-3200 Series is a compact, high flow, high purity single-stage regulator for specialty, flammable and industrial gas flows of 5-50 SCFM / 141-1415 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

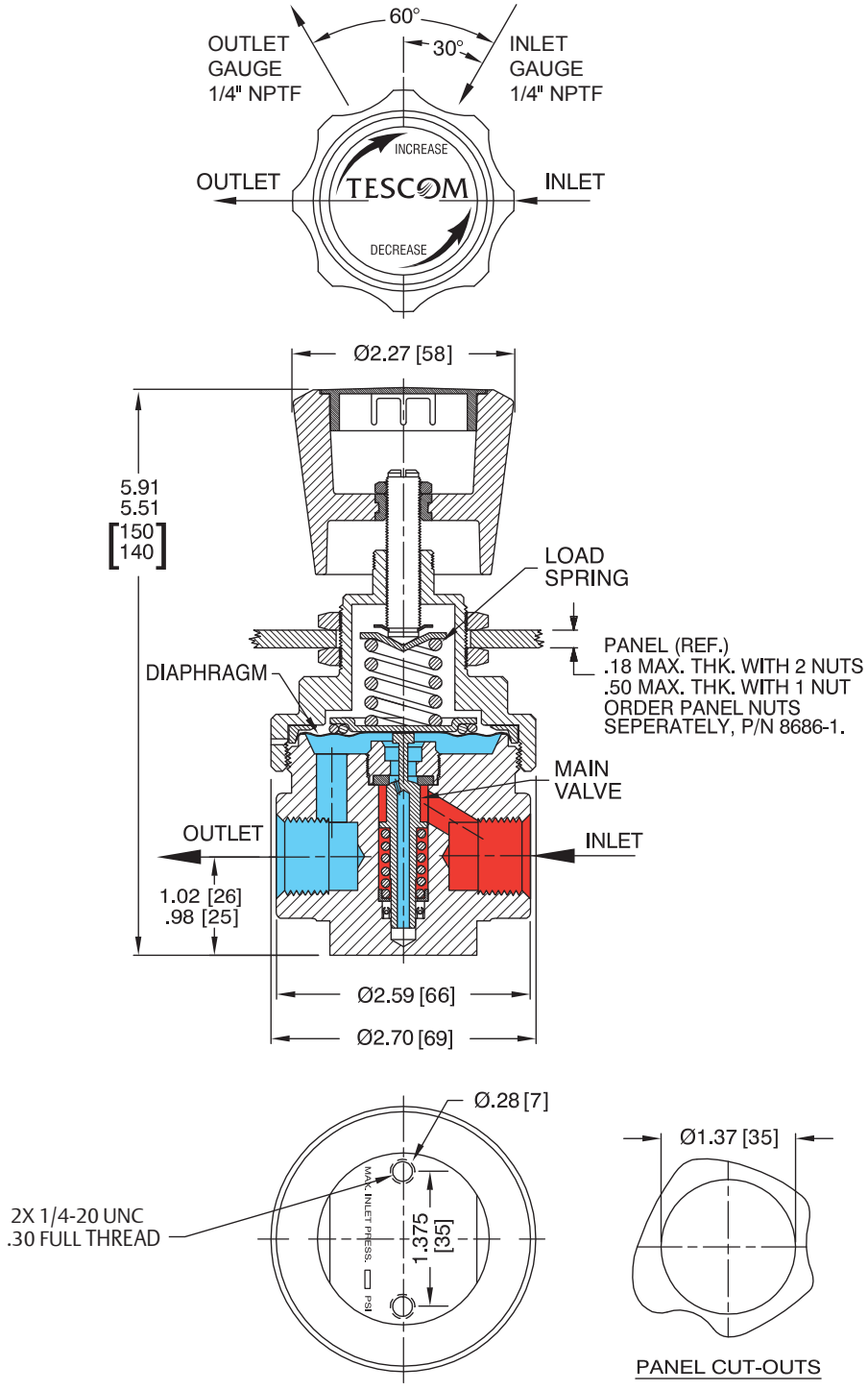
- Laboratory and point-of-use gas systems
- Laser assist and resonator gases
- Glove box and isolators

Features and Benefits

- Available in 316 Stainless Steel or Brass
- Choice of inlet pressure ratings: 500 or 3000 psig / 34.5 or 207 bar maximum
- True metal-to-metal diaphragm seal to minimize diffusion
- Five outlet pressure ranges are available
- Gauge ports are standard
- Optional high flow model (C_V = 1.8) is available
- Panel mounting is optional
- Non-venting is standard
- Flanged end connections available

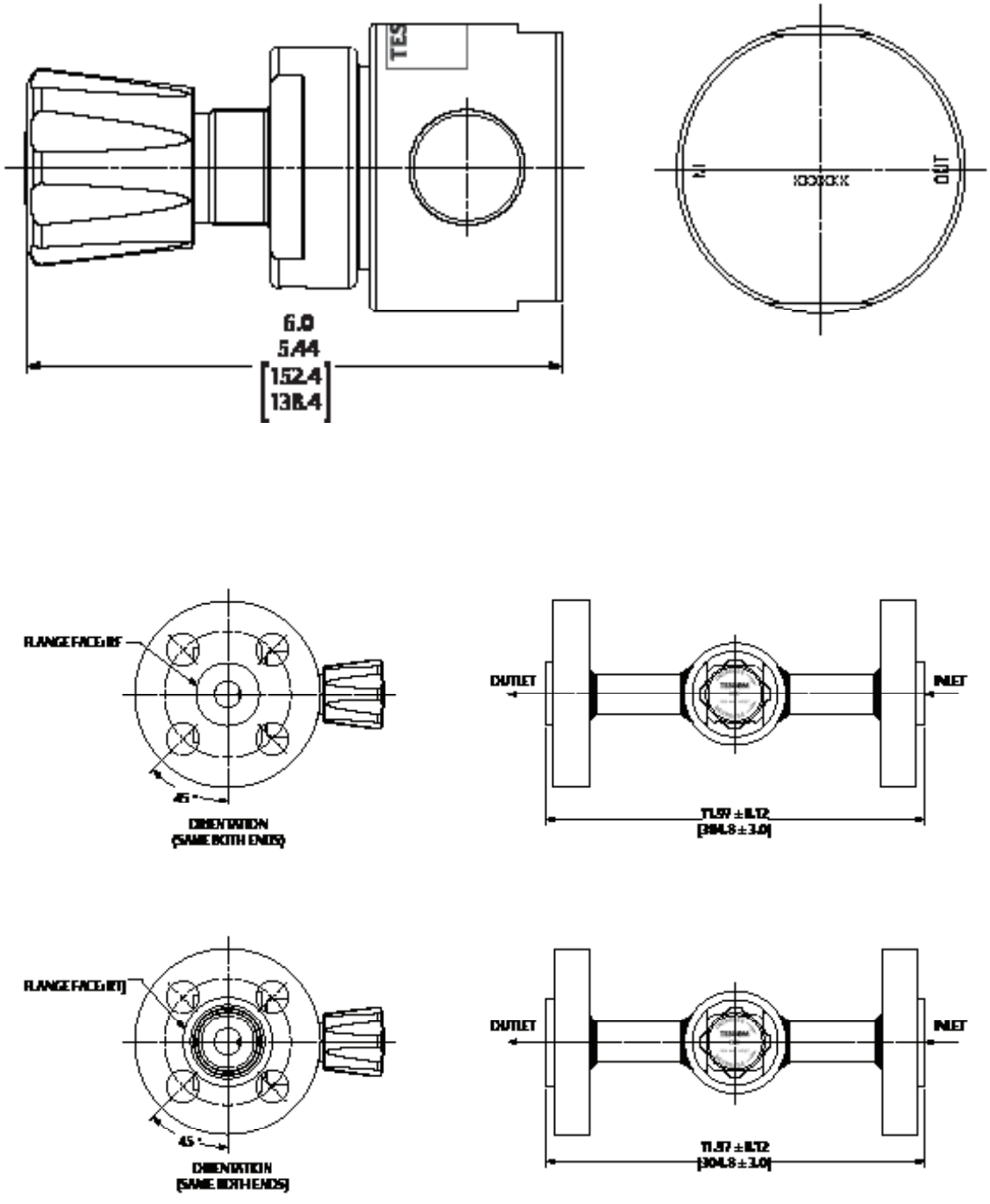
44-3200 SERIES

44-3200 Series Regulator Drawing



All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

44-3200 Series Regulator with Flanges Drawing

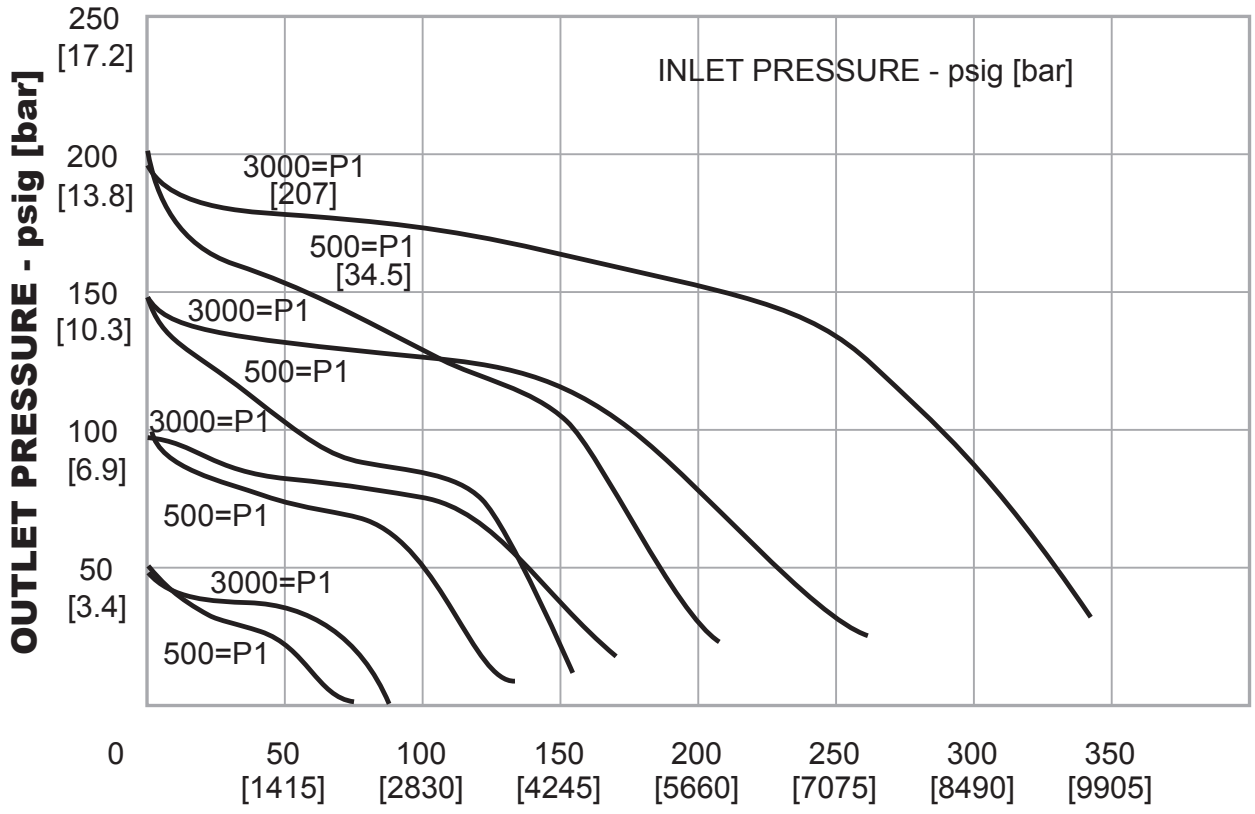


All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

44-3200 SERIES

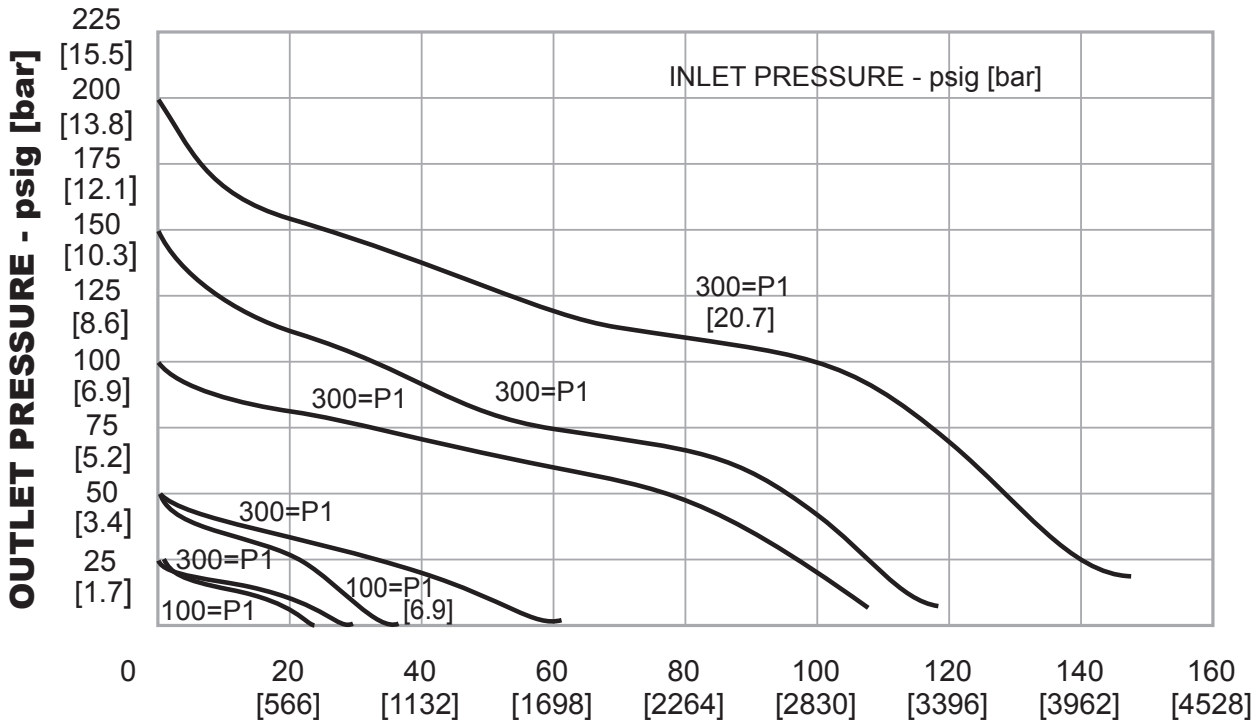
44-3200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-3200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-3200 SERIES

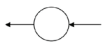
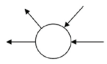
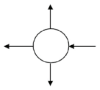
44-3200 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connection Part Number Selection

44-32	6	1	J		2	8	1	
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**SOFT GOODS**		**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**MAXIMUM INLET PRESSURE**	**OPTIONS**
			SEAT	**SEAL**				
44-32	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **4 –** 0-200 psig 0-13.8 bar	**H –** PTFE **J –** PCTFE	PTFE, O-ring PTFE, Spring Energized Lip Seal	**2 –** NPTF	**6 –** 3/8" **8 –** 1/2"	**1 –** 3000 psig 207 bar **3 –** 500 psig 34.5 bar	**-001 –** One 1/4" gauge port at 90°, C_V = 1.0 **-003 –** No gauge ports **-296 –** One 1/4" gauge port at 90°, C_V = 1.8

Flanged End Connector Part Number Selection:

44-32W	6	2	1					B	1	52	1
BASIC SERIES	**BODY, PIPE & FLANGE MATERIAL**	**OUTLET PRESSURE RANGES**	**DASH NO**	**FLOW CAPACITY**	**SEAT**	**SEAL**	**OPERATING TEMPERATURE**	**GAUGE PORT OPTIONS**	**FLANGE SIZE**	**FLANGE CLASS**	**FLANGE FACE**
44-32W	**6 –** 316 SST	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **4 –** 0-200 psig 0-13.8 bar	**1**	1.0	PCTFE	PTFE	-20 to 140°F -29 to 60°C	**A –** R.H. Inlet, no gauge port  **B –** R.H. Inlet, in & out gauge port at 60°  **J –** R.H. Inlet, 2 outlet gauge port at 90° 	**1 –** 1/2" **3 –** 1"	**11 –** 150# **21 –** 300# **41 –** 600# **52 –** 900# / 1500# **63 –** 2500#	**1 –** RF **2 –** RTJ
			2	1.0	PTFE	PTFE	-20 to 165°F -29 to 74°C				

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Corrosive or non-corrosive gases requiring high purity regulation compatible with materials of construction. For other media, consult factory.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
28" Hg VAC-15 psig / 65 mbar abs-1.0 bar
28" Hg VAC-30 psig / 65 mbar abs-2.1 bar
28" Hg VAC-60 psig / 65 mbar abs-4.1 bar
28" Hg VAC-100 psig / 65 mbar abs-6.9 bar
0-25 psig / 0-1.7 bar
0-50 psig / 0-3.4 bar
0-100 psig / 0-6.9 bar
0-150 psig / 0-10.3 bar
0-200 psig / 0-13.8 bar

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Leakage
Internal: Bubble-tight
External: < 2 x 10^{-8} atm cc/sec He (mbar l/s He)

Flow Capacity
C_V = 1.0
C_V = 1.8

Operating Temperature
-15°F to 165°F / -26°C to 74°C

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Seal
PTFE

Seat
PTFE

Diaphragm
316L Stainless Steel or Nickel Alloy (Hastelloy®)

Remaining Parts
316 Stainless Steel, Nitronic 60

OTHER

Weight (approximate)
DN 10/15: 6.6 lbs / 3.0 kg
DN 20/25: 12 lbs / 5.4 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM 44-3200F Series medium flow, pressure reducing regulators provide welded flanges according to EN 1092 and are suitable for gas applications.

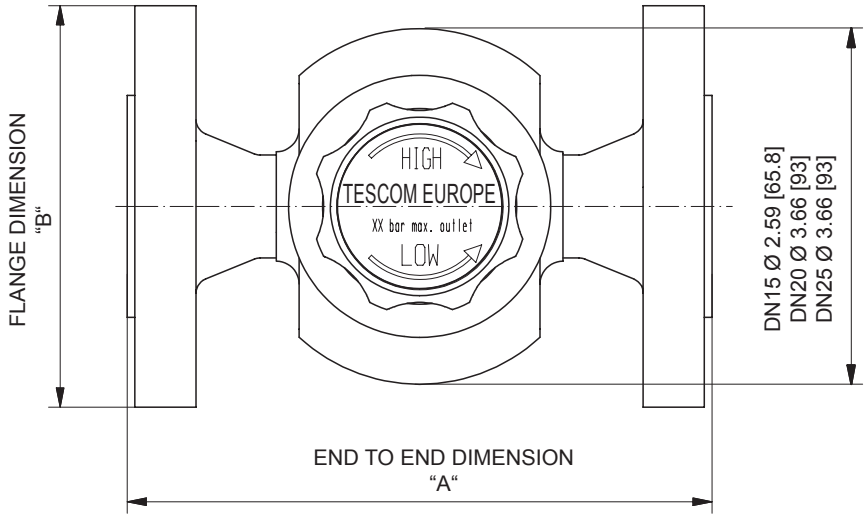
Applications

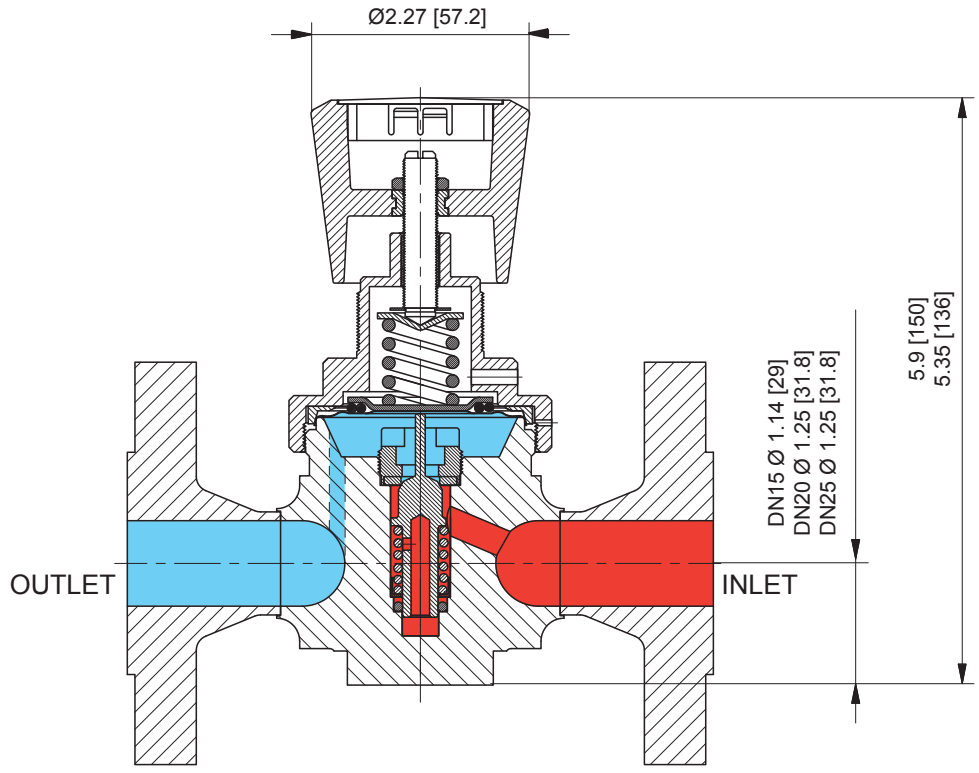
- Purge processes (e.g. nitrogen)
- First-stage regulator for nitrogen blanketing applications

Features and Benefits

- Flange connections according to DIN EN 1092-1 Type 11 for easy line integration
- Face-to-face dimensions according to DIN EN 558, Row 1
- Connection up to DN 25
- High purity materials and design
- Other connection standards are available upon request
- Standard version includes 1/4" NPTF gauge ports

44-3200F SERIES
Europe and Middle East only
44-3200F Series Regulator Drawing

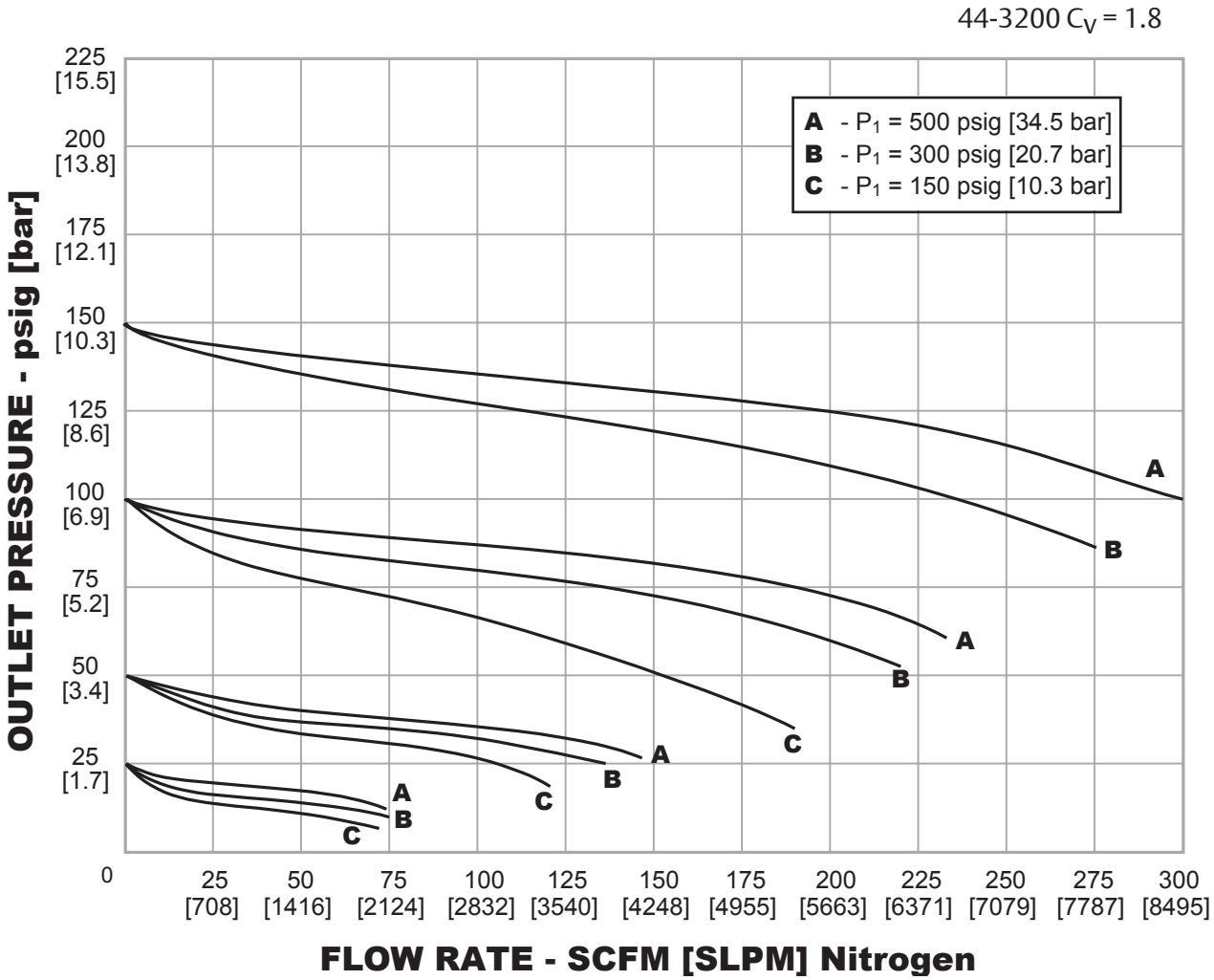




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-3200F Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-3200F SERIES
Europe and Middle East only
44-3200F Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

			FLANGE					EN 1092-1	
44-32	6	1	F	K		B	F	2	N	E

BASIC SERIES	BODY AND FLANGE MATERIAL	OUTLET PRESSURE	INLET AND OUTLET PORT TYPE	"A" ±.08" [±2]	"B" ±.08" [±2]	FLANGE TYPE	GAUGE PORT OPTIONS	FLOW CAPACITY	VENTING OPTION
44-32	**6 –** 316L diaphragm: Stainless Steel[1] **7 –** 316L diaphragm: Nickel Alloy (Hastelloy®)	**A –** 28" Hg VAC-15 psig 65 mbar abs-1.0 bar[1] **B –** 28" Hg VAC-30 psig 65 mbar abs-2.1 bar[1] **C –** 28" Hg VAC-60 psig 65 mbar abs-4.1 bar[1] **D –** 28" Hg VAC-100 psig 65 mbar abs-6.9 bar[1] **0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **4 –** 0-200 psig 0-13.8 bar	**G –** DN 10 **K –** DN 15 **L –** DN 20 **M –** DN 25	5.12 [130] 5.12 [130] 5.9 [150] 6.3 [160]	3.54 [90] 3.74 [95] 4.13 [105] 4.53 [115]	**B –** Form B - raised face **D –** Form D - ring joint	**A –** None **D –** 1/4" NPTF 1 x out **E –** 1/4" NPTF 1 x out **F –** 1/4" NPTF 1 x in **L –** 1/4" NPTF 1 x in, 1 x out	**2 –** C_V = 1.8 **3 –** C_V = 1.0[1]	**N –** Non-Venting

1. C_V = 1.0 and diaphragm material 316L Stainless Steel are not available for 44-326A, B, C, D

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3500 psig / 241 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-150, 0-250 psig
0-1.7, 0-3.4, 0-6.9, 0-10.3, 0-17.2 bar

Design Outlet Proof Pressure
150% of maximum rated pressure

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.05

Leakage
Internal: Bubble-tight
External: Design to meet ≤ 2 x 10^{-8} atm cc/sec He

Maximum Operating Torque
10 in-lbs / 1.0 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass or Nickel Alloy (Monel®)

Bonnets
300 Series Stainless Steel or Brass

Diaphragms
316 Stainless Steel or Cobalt Chrome Nickel Alloy (Eligiloy®)

Seats
PTFE

Friction Sleeve (inner)
PTFE

Remaining Parts
316 Stainless Steel and Brass (for Brass models)

OTHER

Connections
1/4" NPTF inlet, outlet and gauge port

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
3 lbs / 1.4 kg

Elgiloy® is a registered trademark of Elgiloy Corp.
Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 44-3400 Series is a compact, lightweight high purity two-stage cylinder regulator for specialty, corrosive and pyrophoric gases less than 5 SCFM / 141 SLPM. Diffusion-resistant metal-to-metal diaphragm seal ensures gas purity and integrity.

Application

- High pressure gas cylinders for specialty and industrial gases used with analyzers, lasers, and laboratory applications

Features and Benefits

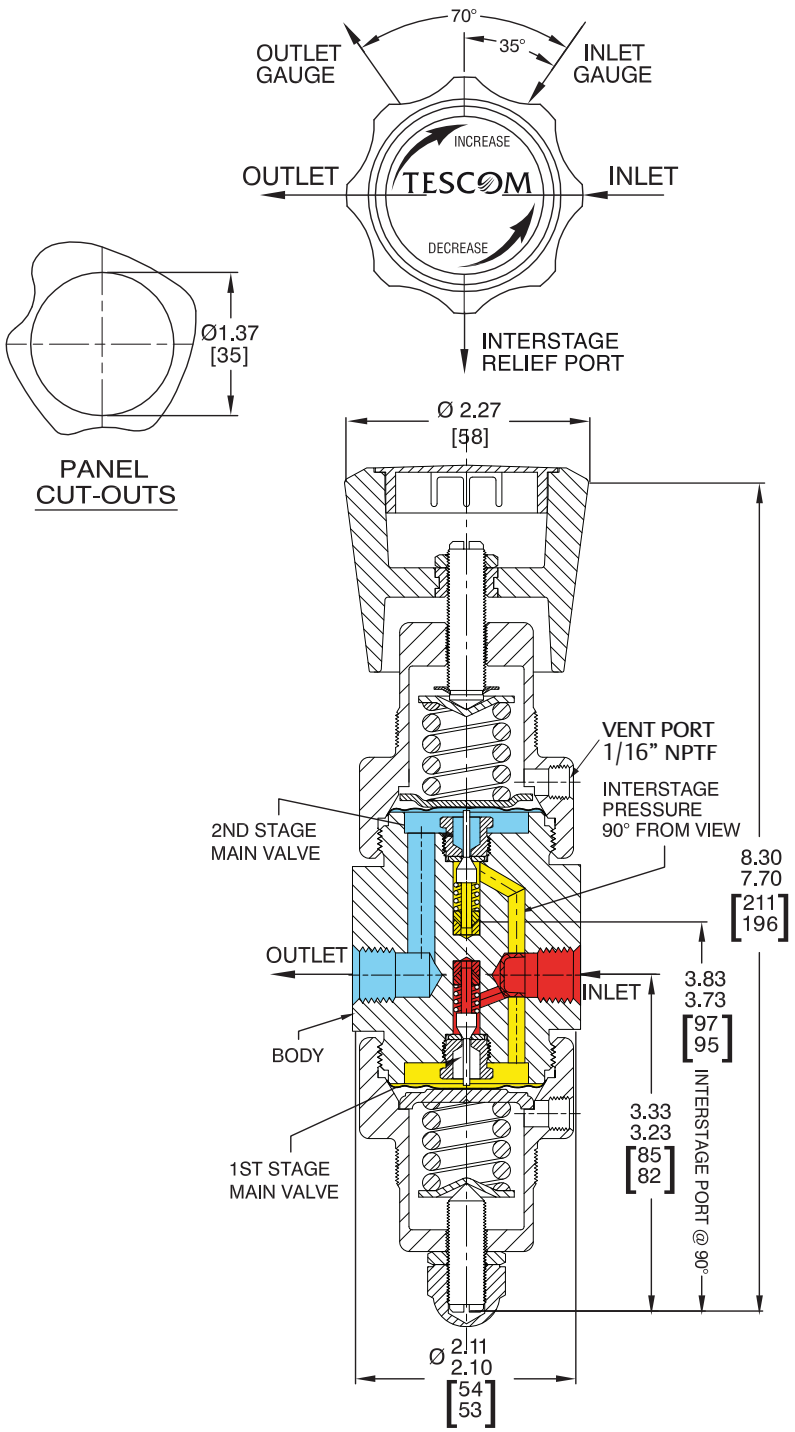
- Provides a continuous, accurate outlet pressure regardless of inlet pressure fluctuations
- Offers a decaying inlet characteristic of 0.04 psig / 3 mbar per 100 psig / 6.9 bar change in inlet pressure
- Features a unique metal-to-metal diaphragm to body seal
- Diaphragms are convoluted for greater accuracy and sensitivity
- Available in 316 Stainless Steel, Brass or Monel
- NACE compliant designs are available

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

44-3400 SERIES

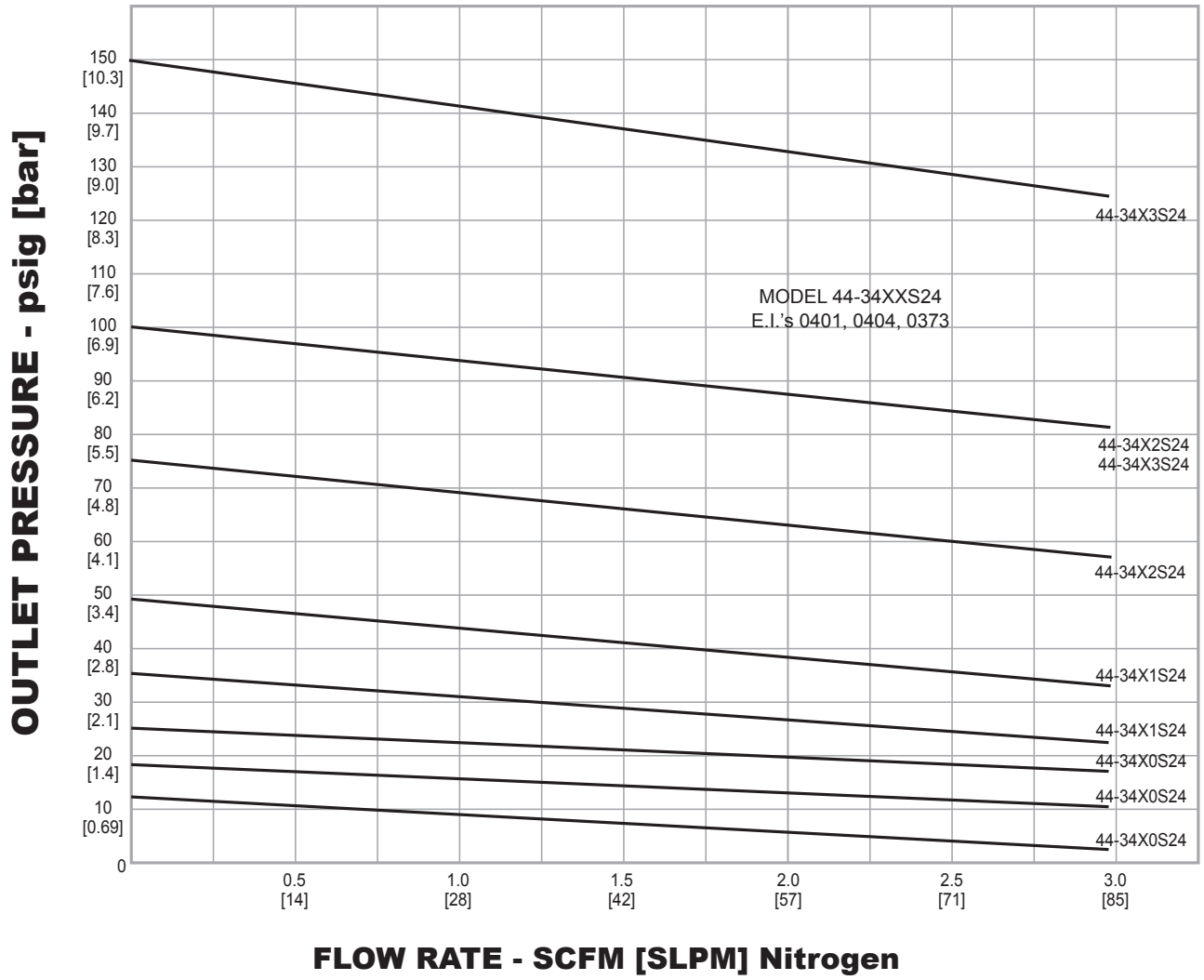
44-3400 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-3400 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-3400 SERIES

44-3400 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-34	6					2	S	2	4
BASIC SERIES	**MATERIALS**					**OUTLET PRESSURE RANGES**	**SEAT**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**
	BODY	**DIAPHRAGM**	**SPRING**	**FRICTION SLEEVE (OUTER)**	**REMAINING PARTS**				
44-34	**1 –** Brass	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel/Brass	**0 –** 0 to 25 psig 0 to 1.7 bar **1 –** 0 to 50 psig 0 to 3.4 bar **2 –** 0 to 100 psig 0 to 6.9 bar **3 –** 0 to 150 psig 0 to 10.3 bar **4 –** 0 to 250 psig 0 to 17.2 bar	**S –** PTFE	**2 –** NPTF	**4 –** 1/4"
	6 – 316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel				
	9 – Nickel Alloy (Monel®)	Cobalt Chrome Nickel Alloy (Eligiloy®)	Cobalt Chrome Nickel Alloy (Eligiloy®)	PTFE	Nickel Alloy (Monel®)				

Regulators - Pressure Reducing D44401631X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Ranges
50-1500 psig / 3.4-103 bar

Design Proof Pressure
150% maximum operating

Leakage
Bubble-tight

Operating Temperature
See Part Number Selector

Flow Capacity
Main Valve: C_V = 0.7 (C_V = 2.0 optional)
Vent Valve: C_V = 0.35

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel, Brass, Chrome-plated Brass

Main Valve Seat
PCTFE, Polyimide (Vespel®)

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene, ETFE (Tefzel®)

Gasket
PCTFE, Polyimide (Vespel®)

Back-up Ring
PTFE

Trim
300 Series Stainless Steel, 17-4 PH Stainless Steel, Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
8 lbs / 3.6 kg

Teflon®, Viton®, Kalrez®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-4000 dome loaded, spring biased regulator is designed for pressure tracking applications to maintain a constant differential pressure. Venting allows for pressure tracking increases and decreases.

Application

- Diving applications for emergency breathing air

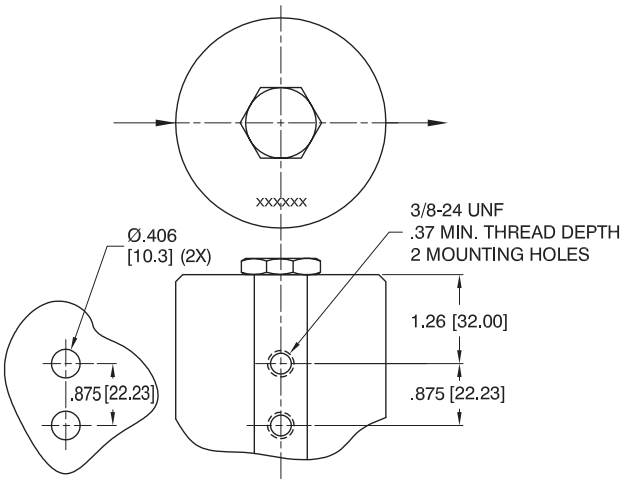
Features and Benefits

- High flow: C_V = 0.7 or 2.0 (optional)
- Piston sensed
- Adjustable bias pressure ranges are available
- Venting (captured)
- Compatible with Tescom's Air Actuators and ER5000 Electropneumatic Controllers

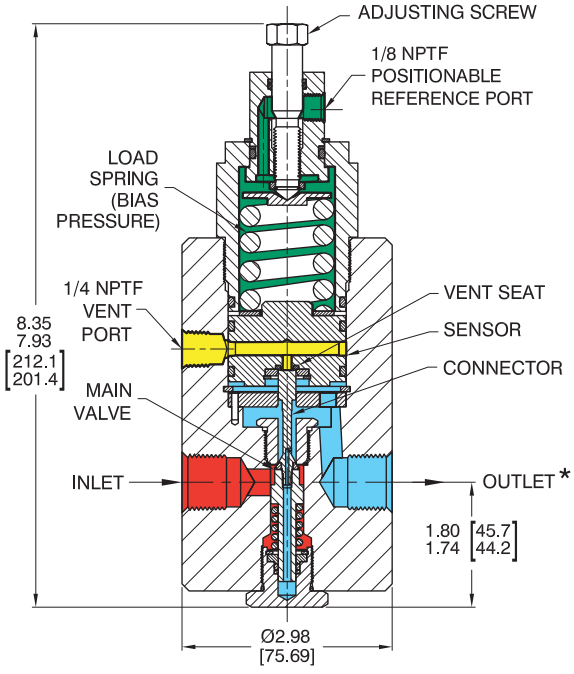
44-2.00 SERIES

44-4000 Series Regulator Drawings

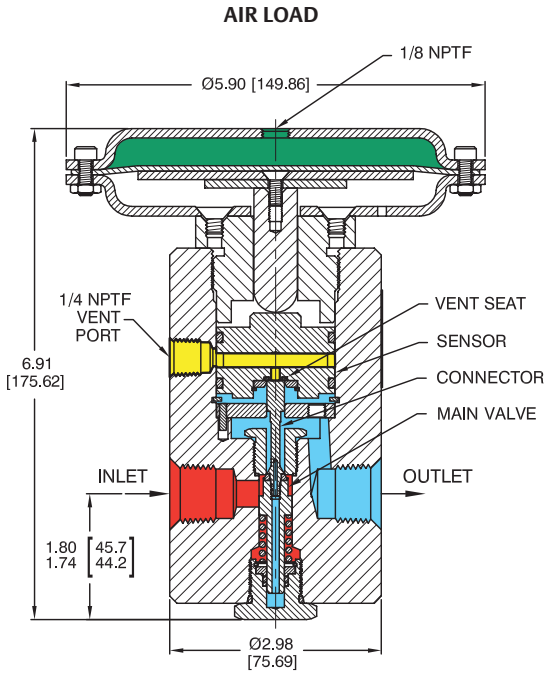
PANEL MOUNT DIMENSIONS



DOME LOAD/SPRING BIAS



AIR LOAD

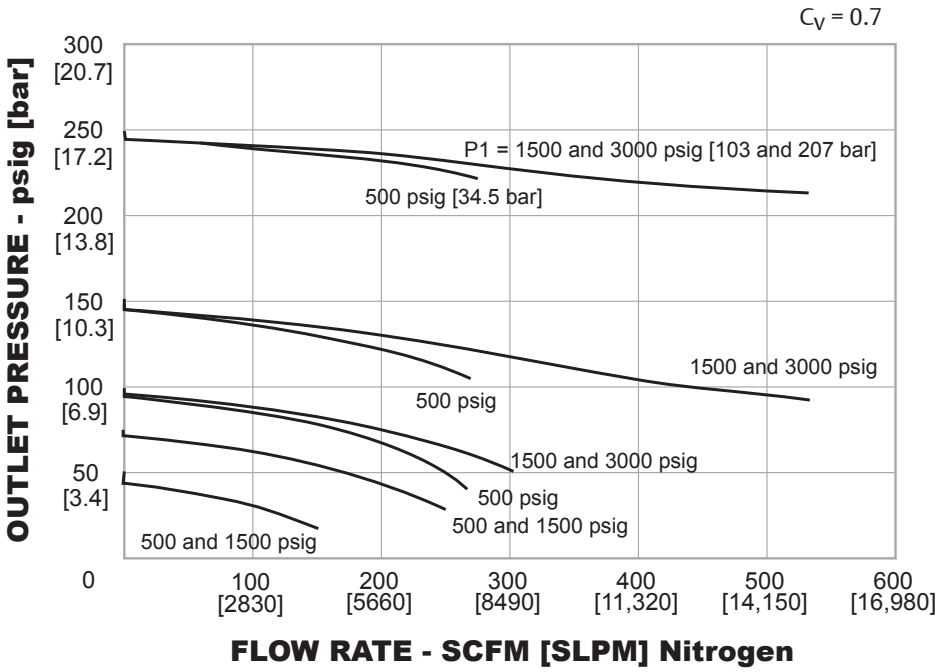


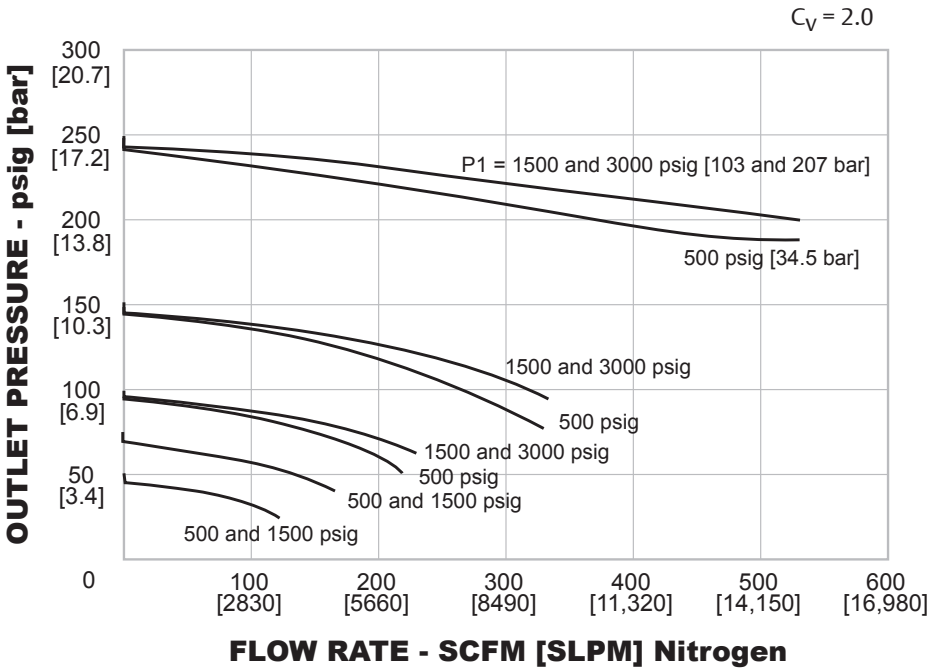
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

**NOTE: Outlet pressure equals bias spring setting plus reference pressure.*

44-4000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-2.00 SERIES

44-4000 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

DOME LOAD/SPRING BIAS

44-40	1	9	E				2	12		
BASIC SERIES	BODY MATERIAL	MAXIMUM BIAS PRESSURE	SOFT GOODS				INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	DIA. 'A'	MODIFICATION OPTION
			O-RING	SEAT	GASKET	TEMPERATURE*				
44-40	**1** – Brass **2** – 303 Stainless Steel **6** – 316 Stainless Steel **9** – Chrome-plated Brass	**1** – 100 psig 6.9 bar **2** – 200 psig 13.8 bar **3** – 350 psig 24.1 bar **4** – 120-150 psig 8.3-10.3 bar (maximum) **9** – 0-15 psig 0-1.0 bar	**E** – FKM (Viton®-A)	PCTFE	PCTFE	-15°F to 165°F -26°C to 74°C	**0** – BSP **1** – SAE **2** – NPTF **3** – MS33649	**8** – 1/2" **12** – 3/4" NPTF 3/4" SAE	2.98" 2.98" 3.48"	**-002** – C_V = 2.0
			M – Ethylene Propylene	PCTFE	PCTFE	-40°F to 165°F -40°C to 74°C				
				PCTFE	PCTFE	0°F to 165°F -17°C to 74°C				
			P – FFKM, Perfluoroelastomer (Kalrez®)	Polyimide (Vespel®)	Polyimide (Vespel®)	-15°F to 400°F -26°C to 204°C				
			V – FKM (Viton®-A)							

AIR LOAD

44-40	1	9	E				2	12	
BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE	SOFT GOODS				INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MODIFICATION OPTIONS
			O-RING	SEAT	GASKET	TEMPERATURE*			
44-40	**1** – Brass **2** – 303 Stainless Steel **6** – 316 Stainless Steel	**8** – 600 psig 41.4 bar **9** – 1500 psig 103 bar	**A** – Nitrile, Buna-N	PCTFE	PCTFE	-40°F to 165°F -40°C to 74°C	**0** – BSP **1** – SAE **2** – NPTF **3** – MS33649	**8** – 1/2" **12** – 3/4"	**-014** – Air ratio, Venting C_V = 0.7 **-015** – Air ratio, Venting C_V = 2.0
			E – FKM (Viton®-A)	PCTFE	PCTFE	-15°F to 165°F -26°C to 74°C			
				PCTFE	PCTFE	-40°F to 165°F -40°C to 74°C			
			M – Ethylene Propylene	PCTFE	PCTFE	0°F to 165°F -17°C to 74°C			
			P – FFKM, Perfluoroelastomer (Kalrez®)	Polyimide (Vespel®)	Polyimide (Vespel®)	-15°F to 400°F -26°C to 204°C			
			V – FKM (Viton®-A)						

** Brass body is limited to +200 °F (93 °C) maximum.*

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Range
0-5000 psig / 0-345 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating and Fluid Temperature
See Part Number Selector

Flow Capacity
1/4" Main Valve: C_V = 0.80
3/8" Main Valve: C_V = 2.0

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel, or Brass

Main Valve Seat
PCTFE, PTFE, or Polyimide (Vespel®)

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), or Ethylene Propylene

Back-up Ring
PTFE

Gasket
PCTFE or Polyimide (Vespel®)

Remaining Parts
300 Series Stainless, 17-4 PH Stainless Steel

OTHER

Connections
Inlet and Outlet: 1/4", 1/2", and 3/4" NPTF
Dome Port: 1/4" NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
8.0 lbs / 3.6 kg

Teflon®, Viton®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-4200 Series is a high pressure, dome loaded, pressure reducing regulator with a C_V = 0.80 or 2.0 available. This regulator is rated up to 6000 psig / 414 bar inlet and 5000 psig / 345 bar outlet.

Applications

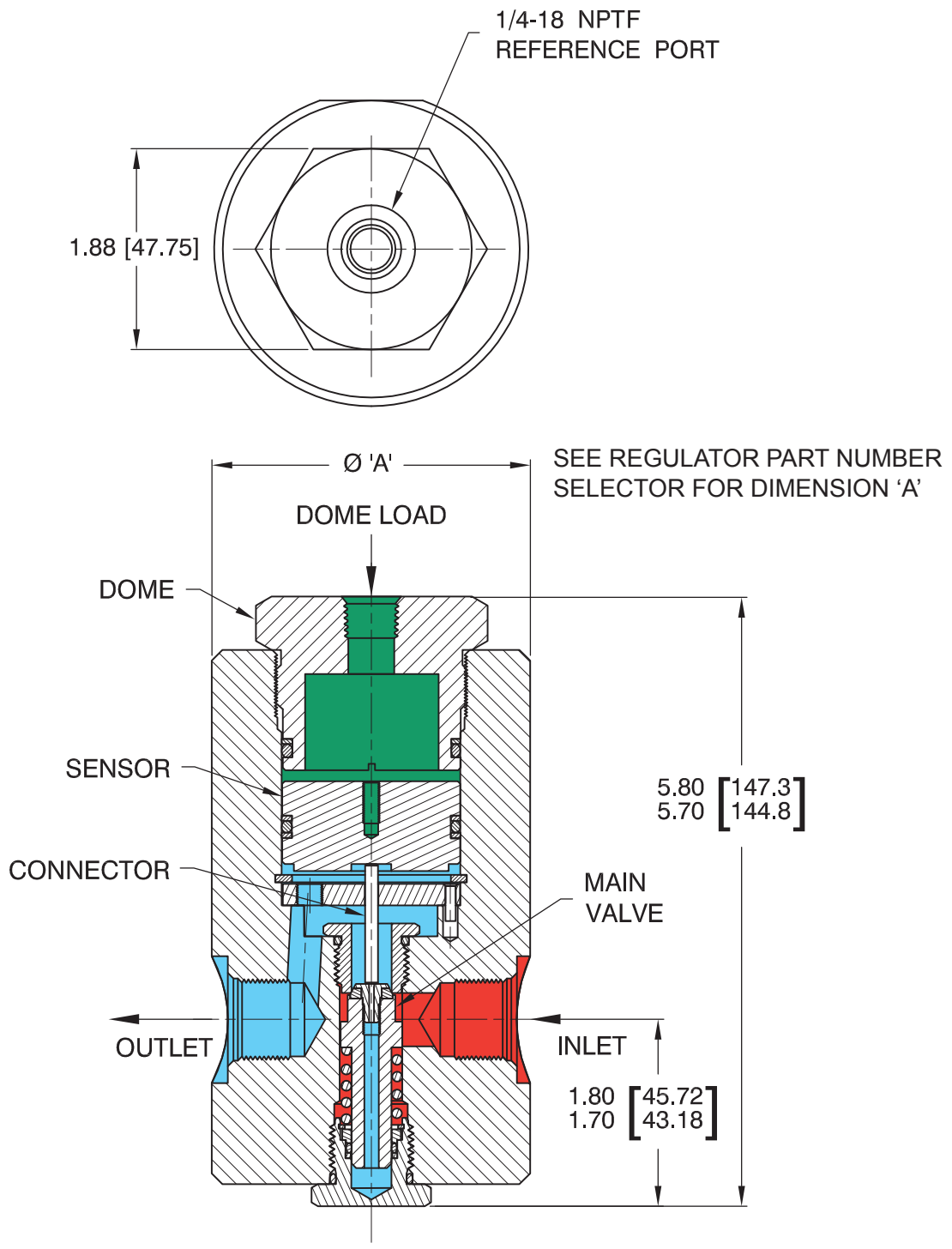
- Fire suppression equipment
- CNG filling

Features and Benefits

- Available in Brass or Stainless Steel
- Features piston-style sensor and balanced main valve
- Non-venting
- Body and soft goods material options
- High flow, high pressure

44-4200 SERIES

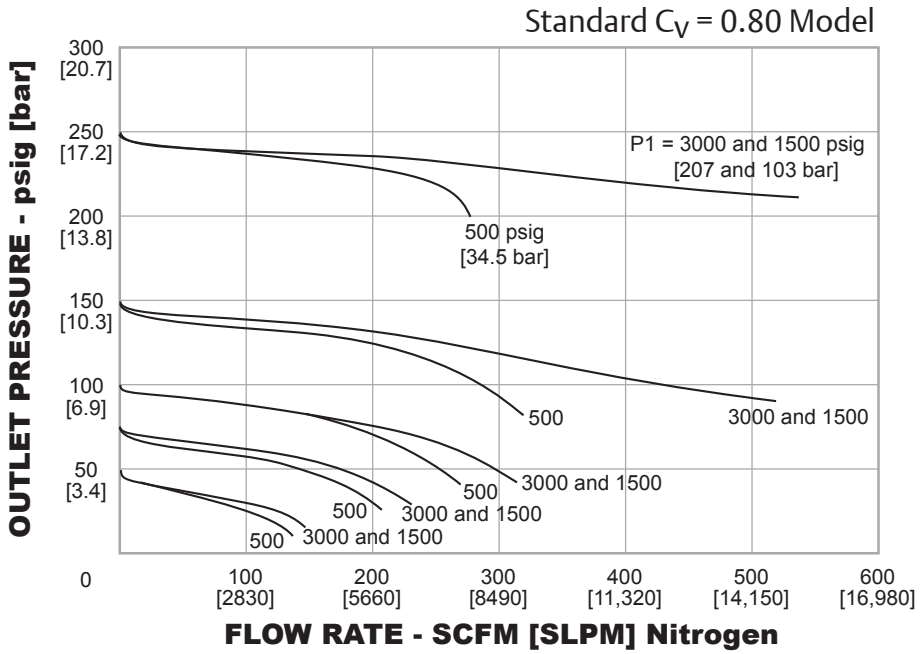
44-4200 Series Regulator Drawing

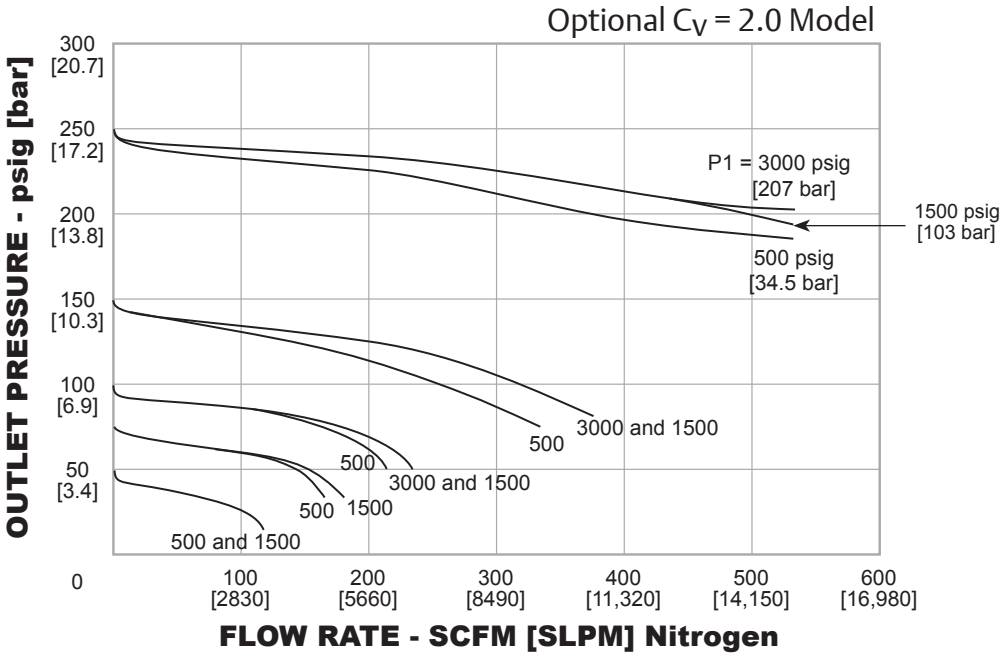


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-4200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-4200 SERIES

44-4200 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-42	1	5	A				2	4		- 005
BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGE	SOFT GOODS				INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	DIAMETER 'A'	MOD. NUMBER
			O-RING	SEAT	GASKET	TEMPERATURE*				
44-42	**1 –** Brass **2 –** 303 Stainless Steel **6 –** 316 Stainless Steel	**5 –** 0-5000 psig 0-345 bar	**A –** Nitrile, Buna-N	PCTFE	PCTFE	-40°F to 165°F -40°C to 74°C	**1 –** SAE **2 –** NPTF **3 –** MS33649	**4 –** 1/4" **8 –** 1/2" **12 –** 3/4" (NPTF and SAE only)	2.47" 2.47" (2.98" SAE) 2.98" (3.48" SAE)	**-005 –** C_V = 2.0
				PTFE	PCTFE	-40°F to 165°F -40°C to 74°C				
			B – Nitrile, Buna-N	PCTFE	PCTFE	-15°F to 165°F -26°C to 74°C				
			E – FKM (Viton®-A)	PTFE	PCTFE	-15°F to 165°F -26°C to 74°C				
			F – FKM (Viton®-A)	Polyimide (Vespel®)	Polyimide (Vespel®)	-15°F to 250°F -26°C to 121°C -40°F to 250°F				
			G – FKM (Viton®-A)	Polyimide (Vespel®)	Polyimide (Vespel®)	-40°C to 121°C -40°F to 165°F -40°C to 74°C				
			H – E.P.	PCTFE	PCTFE					
			L – E.P.							

** Brass body is limited to +200 °F (93 °C) maximum.*

Regulators - Pressure Reducing D44461776X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Inlet Pressure Range
Atmospheric to 400 psig / 27.6 bar

Outlet Pressure Range
50 mm Hg absolute - 15 psig / 1.0 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet: < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.24

Maximum Operating Torque (handknob)
30 in-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Diaphragm
316 Stainless Steel

Seat
PTFE

Spring (main valve)
Cobalt Chrome Nickel Alloy (Eligiloy®)

Spring (bias)
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2.75 lbs / 1.2 kg

Teflon® is a registered trademark of E.I. du Pont Nemours and Company.
Elgiloy® is a registered trademark of Elgiloy Corp.

SPRING LOADED

DOME LOADED

AIR LOADED

TESCOM 44-4600 Series is an extremely sensitive, high purity, single-stage regulator for specialty, flammable and industrial gases for low pressure and sub-atmospheric pressure control. Diffusion-resistant metal diaphragm seal ensures gas purity and leak integrity.

Applications

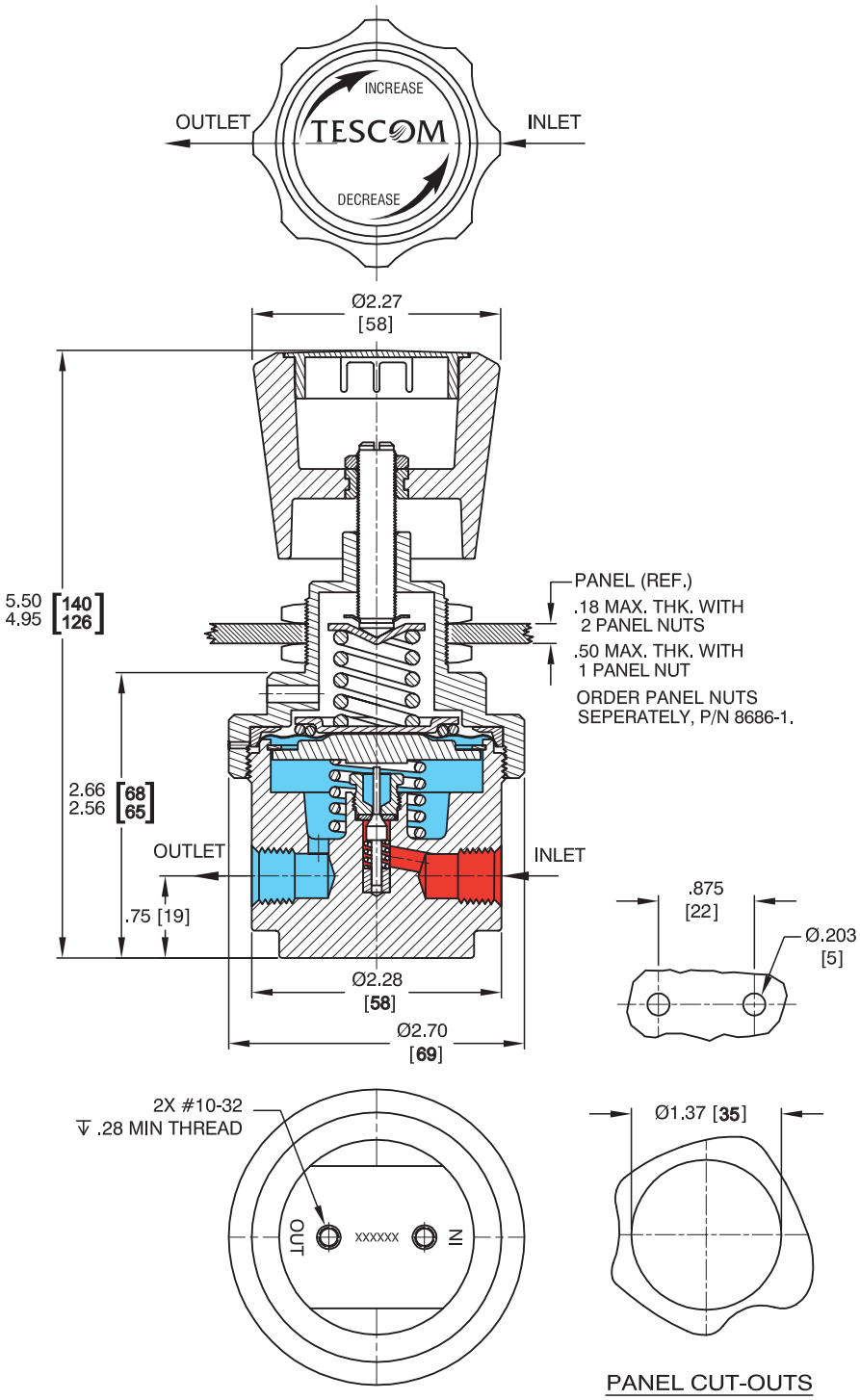
- Analytical systems
- Sample systems
- Process systems
- Pilot plants
- Calibration

Features and Benefits

- Optional 3500 psig / 241 bar maximum inlet
- Metal-to-metal sealed diaphragm
- Adjustable stop limits maximum outlet pressure
- 316 Stainless Steel construction
- Available in dome or air load

44-4600 SERIES

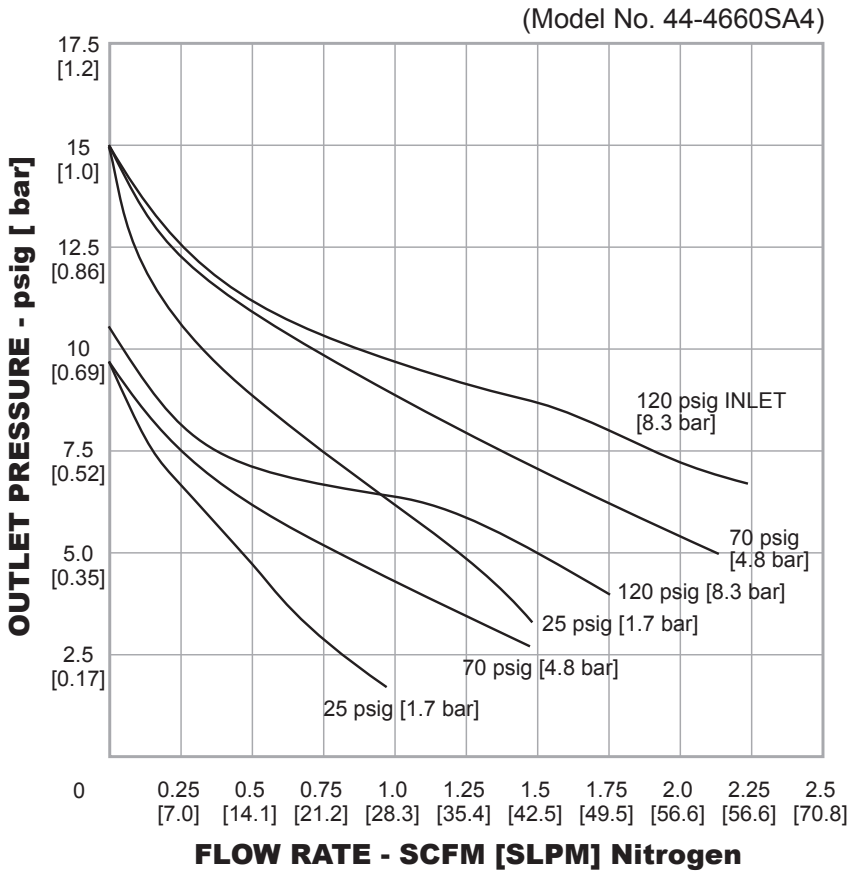
44-4600 Series Regulator Drawing



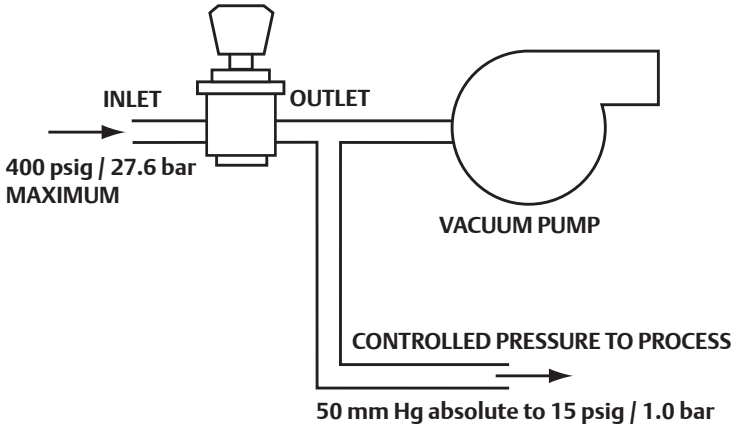
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-4600 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-4600 Series Typical Application



44-4600 SERIES

44-4600 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-46 6 0 S 2 4 - See Number Below

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGE[1]	SOFT GOODS	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MODIFICATIONS
44-46	**6 –** 316 Stainless Steel	**0 –** 50 mm Hg absolute - 15 psig / 1.0 bar	**S -** PTFE	**2 –** NPTF	**4 –** 1/4"	**-001 –** One 1/4" gauge port at 90° **-002 –** Two 1/4" gauge ports at 60° (Spring) **-019 –** 3500 psig / 241 bar maximum inlet pressure C_V = 0.06

1. 28" Hg = 50 mm Hg absolute

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
120, 400, 3500 psig / 8.3, 27.6, 241 bar

Outlet Pressure Ranges
50 mm Hg absolute - 15 psig / 1.0 bar
50 mm Hg absolute - 25 psig / 1.7 bar
50 mm Hg absolute - 50 psig / 3.4 bar
50 mm Hg absolute - 100 psig / 6.9 bar

Design Proof Pressure
150% maximum pressure

Leakage
Internal: Bubble-tight
External: Design to meet: ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
120 psig / 8.3 bar Inlet: C_V = 0.24
400 psig / 27.6 bar Inlet: C_V = 0.15
3500 psig / 241 bar Inlet: C_V = 0.06

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Diaphragm
316 Stainless Steel

Seat
PTFE

Spring
316 Stainless Steel

Friction Sleeves (400 and 3500 psig / 27.6 and 241 bar inlet only)
Inner: PTFE
Outer: 316 Stainless Steel

Remaining Parts
316 Stainless Steel (Brass for Brass Bodies)

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2 lbs / 0.9 kg

Teflon® is a registered trademark of E.I du Pont de Nemours and Company.

TESCOM 44-5000 Series is a compact, lightweight, high purity absolute single-stage regulator for specialty, corrosive, and pyrophoric gases. Diffusion-resistant metal-to-metal diaphragm seal ensures gas purity and integrity. Excellent for sub-atmospheric outlet pressures.

Applications

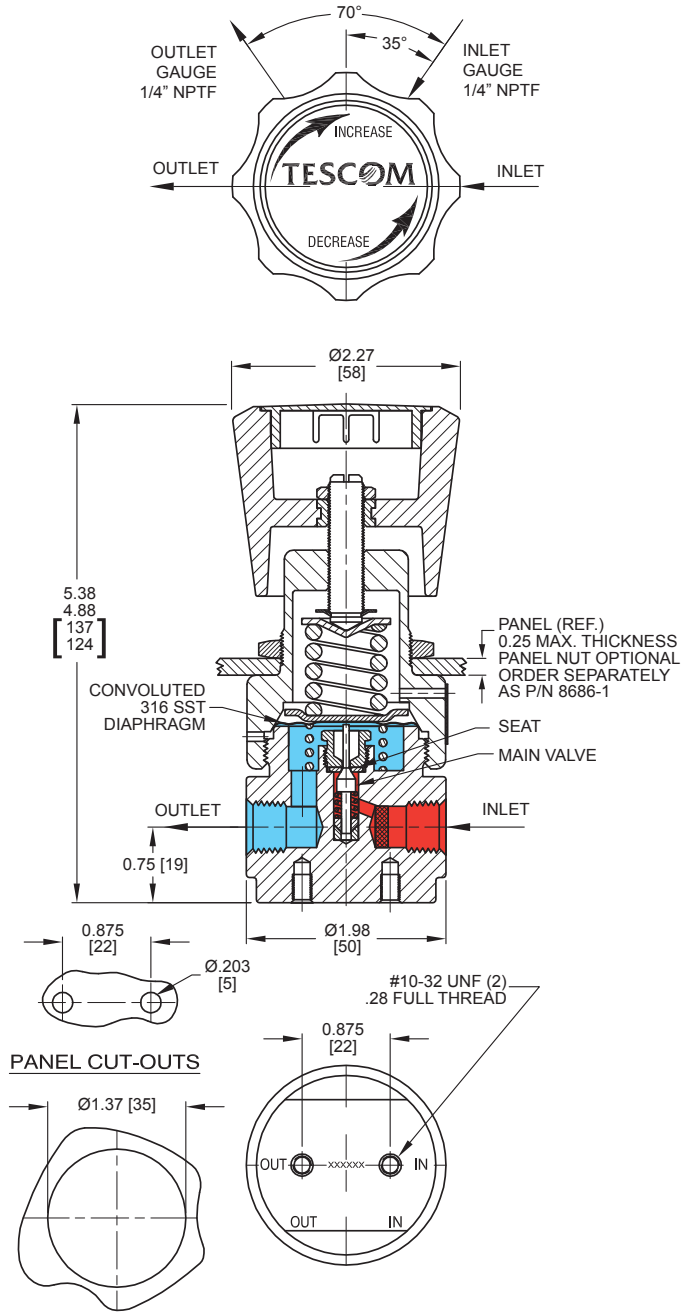
- Gas chromatograph sampling systems
- Delivery system cylinder regulator
- Low vapor pressure hydrocarbon gases

Features and Benefits

- Economical sub-atmospheric pressure control
- Compact size
- Three inlet pressure ratings allow adaptation to specific use
- Four outlet pressure ranges are available
- Panel mounting is available (requires panel nut 8686-1)
- Variety of porting options are available
- NACE compliant designs are available

44-5000 SERIES

44-5000 Series Regulator Drawing

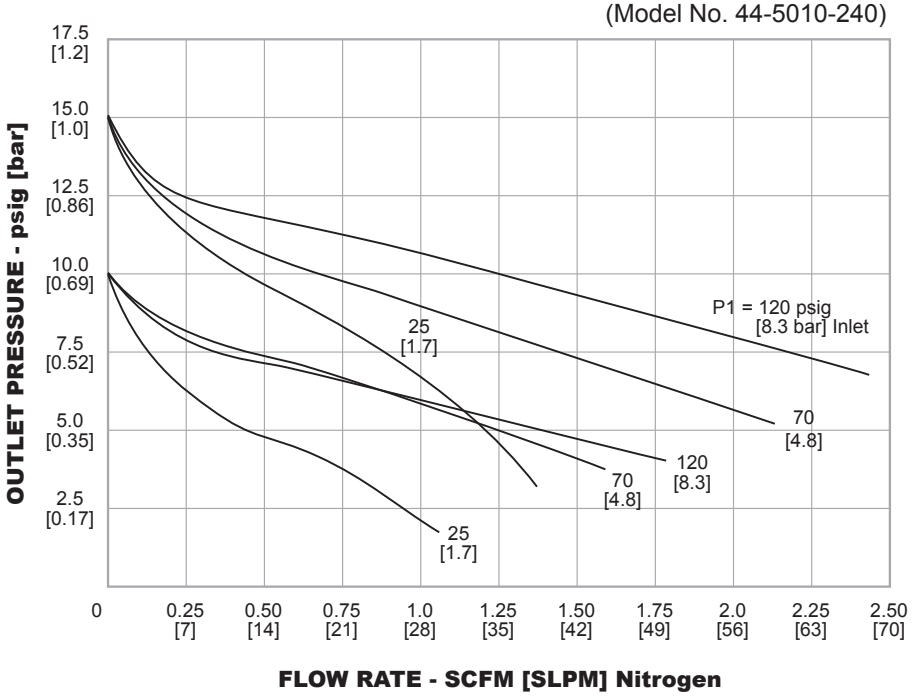


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

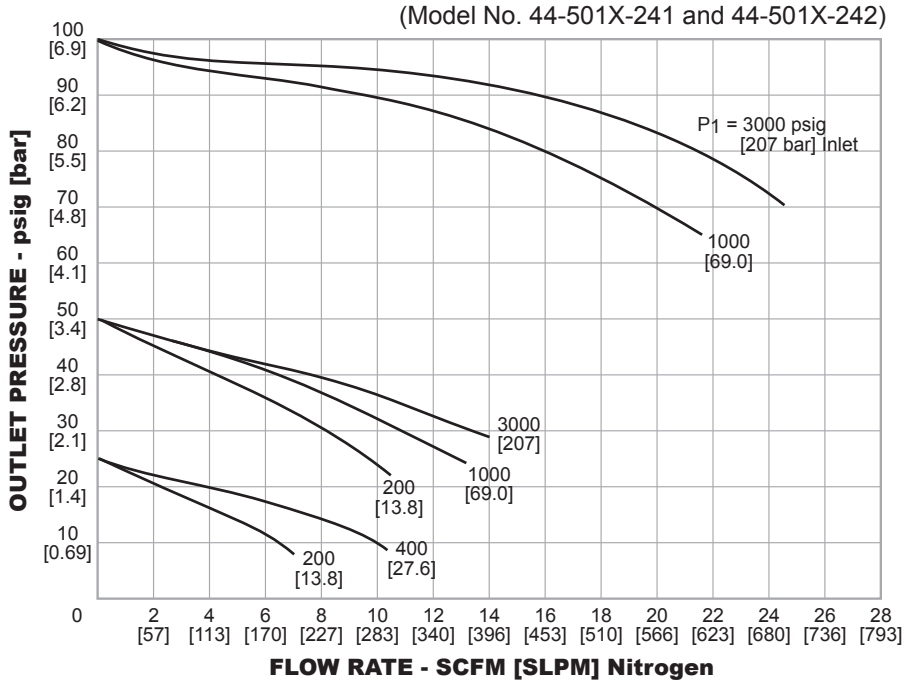
44-5000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

(Model No. 44-5010-240)



(Model No. 44-501X-241 and 44-501X-242)



44-5000 SERIES

44-5000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-50 6 1 - 2 4 1

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES[1]	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MAXIMUM INLET PRESSURE	FLOW CAPACITY
44-50	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** 50 mm Hg absolute - 15 psig / 1.0 bar **1 –** 50 mm Hg absolute - 25 psig / 1.7 bar **2 –** 50 mm Hg absolute - 50 psig / 3.4 bar **3 –** 50 mm Hg absolute - 100 psig / 6.9 bar *1. 28" Hg = 50 mm Hg absolute*	**2 –** NPTF **3 –** MS33649	**4 –** 1/4"	**0 –** 120 psig 8.3 bar **1 –** 3500 psig 241 bar **2 –** 400 psig 27.6 bar	C_V = 0.24 C_V = 0.06 C_V = 0.15

Regulators - Pressure Reducing

D44521866X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
400 and 3500 psig / 27.6 and 241 bar

Outlet Pressure Range
1-25, 1-50, 2-100, 2-250, 5-500, 5-600 psig
0.07-1.7, 0.07-3.4, 0.14-6.9, 0.14-17.2, 0.35-34.5, 0.35-41.4 bar

Design Proof Pressure
150% maximum rated

Operating Temperature[1]
-15°F to 200°F / -26°C to 93°C

Flow Capacity
C_V = 0.06
C_V = 0.15

Maximum Operating Torque
30 in-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Bonnet
300 Series Stainless Steel or Brass

Piston
316 Stainless Steel or Brass

Seats
Polyimide (Vespel®)

O-Ring
FKM (Viton®-A)

Filter (40 micron)
316 Stainless Steel

Remaining Parts
300 Series Stainless Steel and Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4" NPTF Inlet, Outlet and Gauge Ports

Weight (without gauges)
2 lbs / 0.9 kg

[1] *For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult TESCOM.*

Vespel® and Viton® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 44-5200 Series is a compact piston sensed pressure reducing regulator designed for heavy cycle duty applications. Venting or air load is optional for use with the TESCOM ER5000 Electropneumatic Controller.

Applications

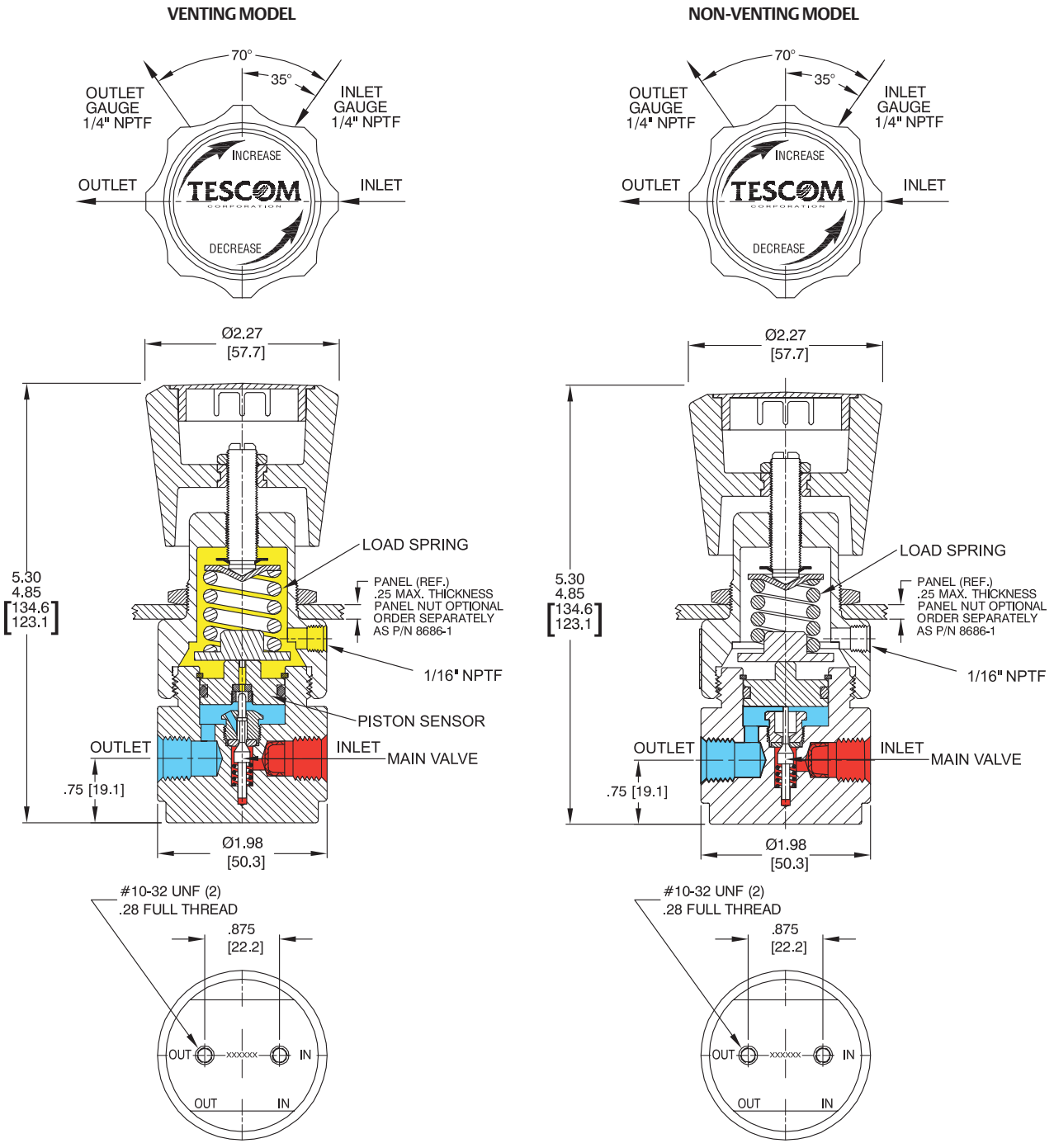
- Test equipment
- Calibration stands
- Production equipment

Features and Benefits

- Compact and economical design
- For gas or liquid service
- Piston sensed for high reliability and long service life
- Standard version includes 1/4" NPTF gauge ports
- Brass or Stainless Steel construction
- Adjustable stop limits maximum outlet pressure
- Modification with 6000 psig / 414 bar inlet pressure is available
- Venting and captured venting is available
- NACE compliant designs are available

44-5200 SERIES

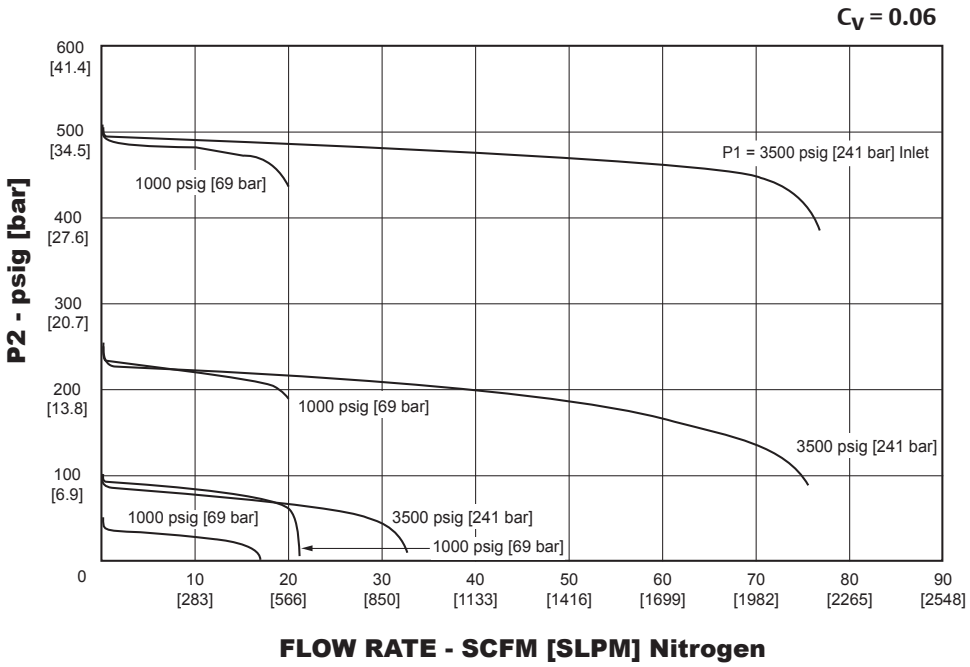
44-5200 Series Regulator Drawing

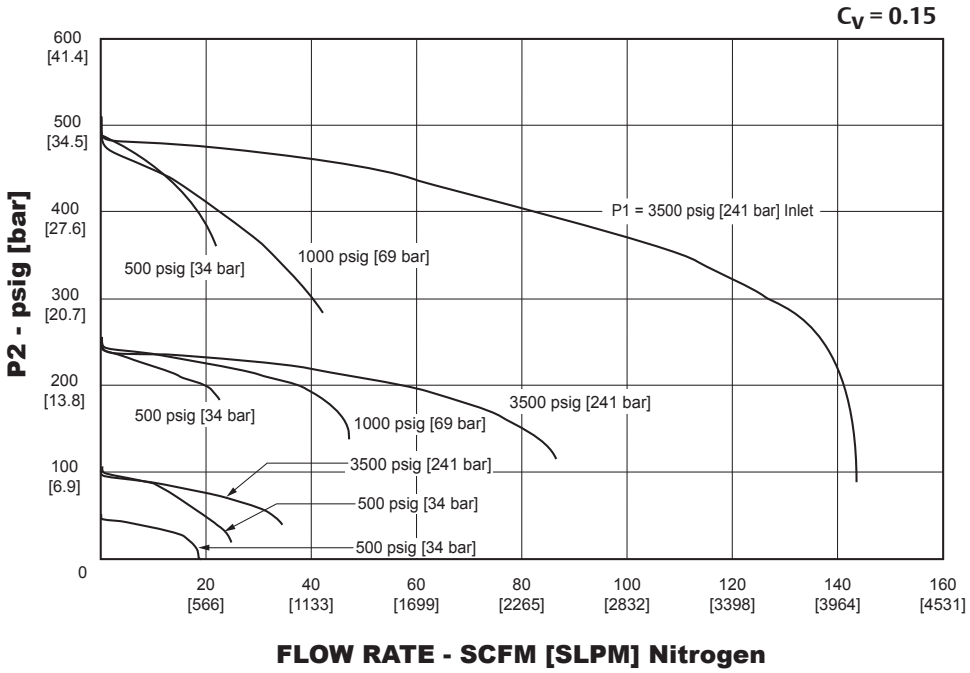


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-5200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





44-5200 SERIES

44-5200 Series Regulator Part Number Selector

Example for selecting a part number:

44-52	1	5	- 2	4	3		V	- See Number Below
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE**	**INLET AND OUTLET PORT TYPE**	**PORT SIZE**	**INLET PRESSURE**	**FLOW CAPACITY**	**OPTIONAL VENTING**	**MODS**
44-52	**1** – Brass **6** – 316 Stainless Steel	**0** – 1-25 psig 0.07-1.7 bar **1** – 1-50 psig 0.07-3.4 bar **2** – 2-100 psig 0.14-6.9 bar **3** – 2-250 psig 0.14-17.2 bar **5** – 5-500 psig 0.35-34.5 bar **6** – 5-600 psig 0.35-41.4 bar	**2** – NPTF	**4** – 1/4"	**1** – 3500 psig 241 bar **2** – 400 psig 27.6 bar **3** – 3500 psig 241 bar	C_V = 0.06 C_V = 0.15 C_V = 0.15	**V** – Venting	**-038** – Dome loaded **-VA027** – Air loaded, Venting* * Mod VA027 is only available for outlet pressure 5 -500 psig / 0.35 - 34.5 bar

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Corrosive or non-corrosive gases requiring high purity regulation compatible with materials of construction. For other media, consult factory.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
1-25, 1-50, 2-100, 2-250, 5-500 psig
0.07-1.7, 0.07-3.4, 0.14-6.9, 0.14-17.2, 0.34-34.5 bar

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Leakage
Internal: Bubble-tight

Flow Capacity
C_V = 0.06
C_V = 0.15

Operating Temperature
-15°F to 165°F / -26°C to 74°C

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat
PTFE

O-Ring
FKM (Viton®-A)

Remaining Parts
300 Series Stainless Steel

OTHER

Weight (approximate)
DN 15: 8.6 lbs / 3.9 kg
DN 20 / 25: 11.7 lbs / 5.3 kg

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours Company.

TESCOM 44-5200F Series low flow pressure reducing regulators provide welded flanges according to EN 1092 and are suitable for gas or liquid applications.

Applications

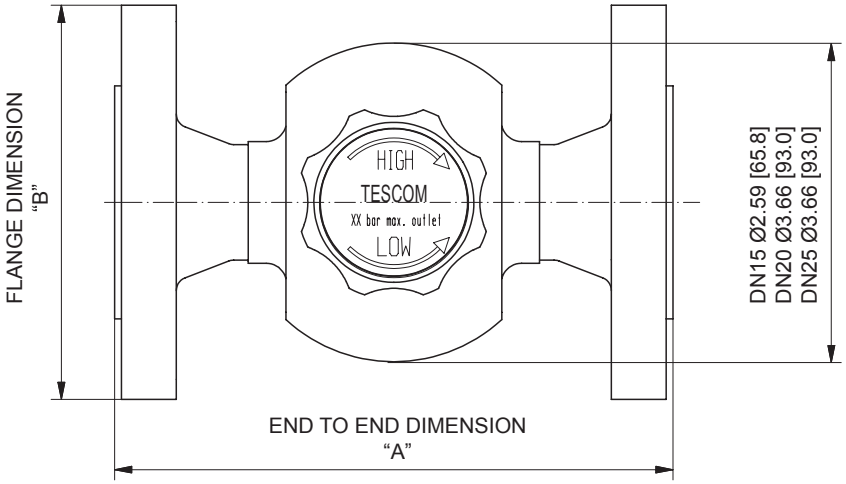
- Pilot plants (i.e. in the chemical industry)
- Sampling for analytical applications
- Low flow media supply for various processes

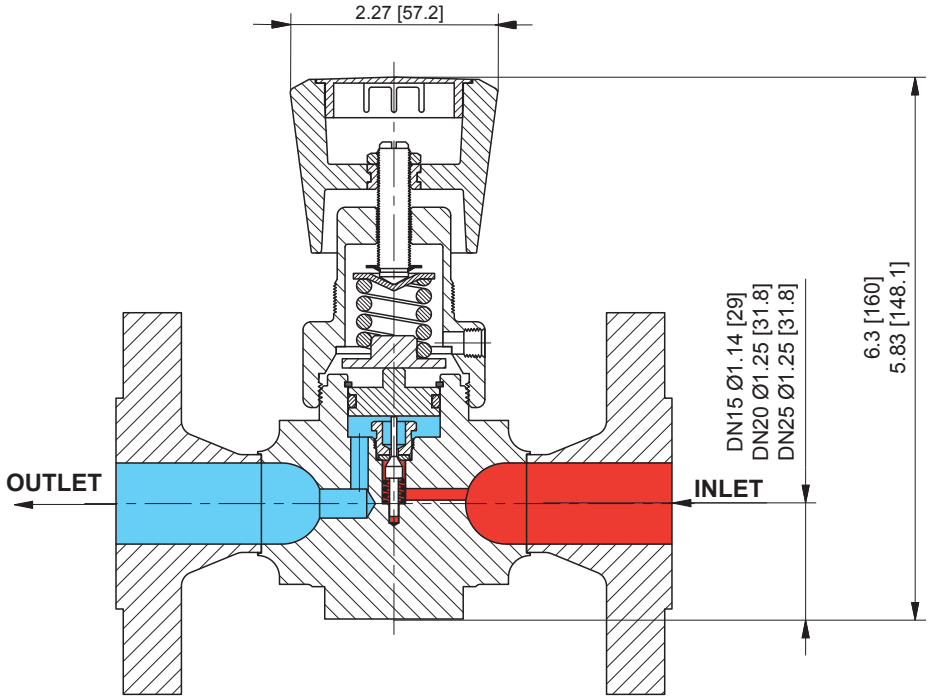
Features and Benefits

- Flange connections according to DIN EN 1092-1 Type 11 for easy line integration
- Face-to-face dimensions according to DIN EN 558, Row 1
- Connection up to DN 25
- Compact and economical design
- For gas or liquid services
- Piston sensed for high reliability and long service life
- 1/4" NPTF gauge ports are available
- Adjustable stop limits maximum outlet pressure
- Other connection standards upon request

44-5200F SERIES
Europe and Middle East only

44-5200F Series Regulator Drawing

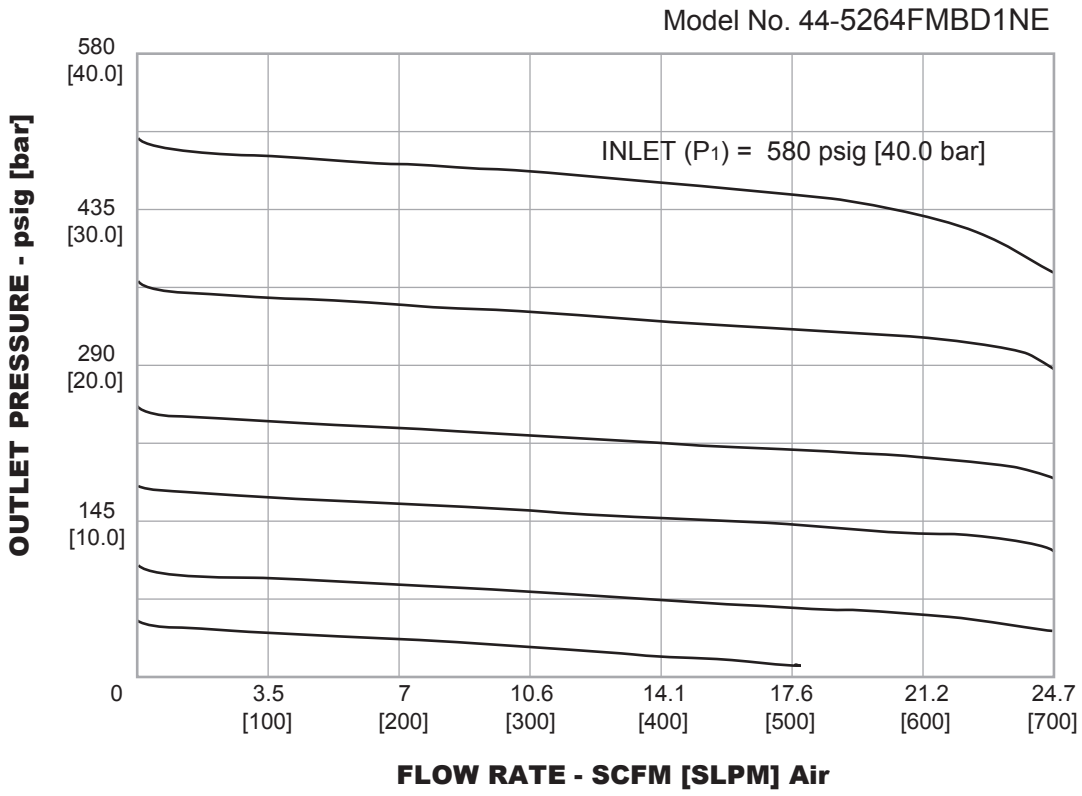




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-5200F Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-5200F SERIES
Europe and Middle East only

44-5200F Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

FLANGE — EN1092-1

44-52	6	1	F	K		B	F	2	N	E

BASIC SERIES	BODY AND FLANGE MATERIAL	OUTLET PRESSURE	INLET AND OUTLET PORT TYPE	"A" ±.08" ±2 mm	"B" ±.08" ±2 mm	FLANGE TYPE	GAUGE PORT OPTIONS	FLOW CAPACITY	VENTING OPTION
44-52	**6 –** 316L Stainless Steel	**0 –** 1-25 psig 0.07-1.7 bar **1 –** 1-50 psig 0.07-3.4 bar **2 –** 2-100 psig 0.14-6.9 bar **3 –** 2-250 psig 0.14-17.2 bar **5 –** 5-500 psig 0.34-34.5 bar	**K –** DN 15 **L –** DN 20 **M –** DN 25	5.12 130 5.90 150 6.30 160	3.74 95 4.13 105 4.53 115	**B –** Form B - raised face **D –** Form D - ring joint	**A –** None **D –** 1/4" NPTF 1 x out **E –** 1/4" NPTF 1 x out **F –** 1/4" NPTF 1 x in **L –** 1/4" NPTF 1 x in, 1 x out	**1 –** C_V = 0.06 **2 –** C_V = 0.15	**N –** Non-venting

Kits

	BASIC SERIES	PART NUMBER
NON METALLIC	44-52XXFXXX1E 44-52XXFXXX2E	389-7015 389-7017
REPAIR	44-52XXFXXX1E 44-52XXFXXX2E	389-7016 389-7018

44-5800 Series

Regulators - Pressure Reducing

D44582012X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar / 41,370 kPa

Maximum Outlet Pressure
0-25, 0-50, 0-100, 0-250, 0-500 psig
0-1.7, 0-3.4, 0-6.9, 0-17.2, 0-34.5 bar
0-172, 0-345, 0-690, 0-1724, 0-3448 kPa

Design Proof Pressure
150% maximum rated

Operating Steam Pressure
650 psig / 44.8 bar

Inlet Proof Pressure
9000 psig / 620 bar

Leakage
Bubble-tight
Diaphragm $2x10^{-8}$ atm cc/sec He

Ambient Temperatures for Section A and B

Supply Voltage (VAC)	Heater Watts (W)	Max Ambient Temperature
115	12.5	149 °F / 65 °C
	25	
	50	
	100	
	200	122 °F / 50 °C
230	50	149 °F / 65 °C
	100	
	200	
	400	122 °F / 50 °C

Important!
Product approvals and maximum ambient temperature ratings are based on both the electrical housing and the regulator body being in the same ambient environment not exceeding the maximum temperatures in the table above. For additional information, please reference the manual.

Heater Temperature Analog Output
4-20 mA signal for monitoring heater coil temperature

Flow Capacity
C_V = 0.02

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Monel, or Nickel Alloy (Hastelloy®)

Seat
Polyimide (Vespel®) SP1®

Diaphragm and Spring
Cobalt Chrome Nickel Alloy (Eligiloy®), Nickel Alloy (Hastelloy®)

Remaining Parts
316 Stainless Steel, Monel, or Nickel Alloy (Hastelloy®)

OTHER

Connections
NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
Electric: 6.3 lbs / 2.9 kg
Steam: 3.1 lbs / 1.4 kg

TESCOM 44-5800 Series offers superior heat transfer technology. With a high tolerance to voltage spikes and high ambient temperatures, this regulator is designed for worldwide applications.

Applications

- Liquid petroleum analyzer
- Petrochemical / refinery analyzer
- Sampling systems

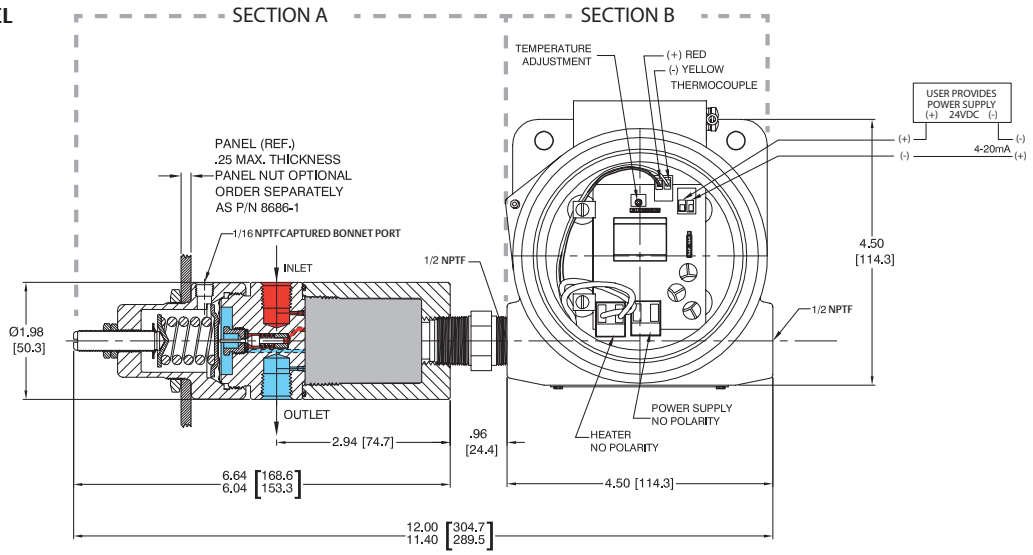
Features and Benefits

- For worldwide use: Designed for 115/230V VAC, 50/60 Hz
- 4-20 mA analog output for remote temperature monitoring and data acquisition
- Optional LCD temperature display
- Optional panel mounting
- Advanced heat transfer technology
- Single turn heater temperature control dial
- CSA, ATEX and IECEX Certification to T3 (200°C) Rating (Ratings are not applicable to steam version)
- NACE MR0175/ISO 15156

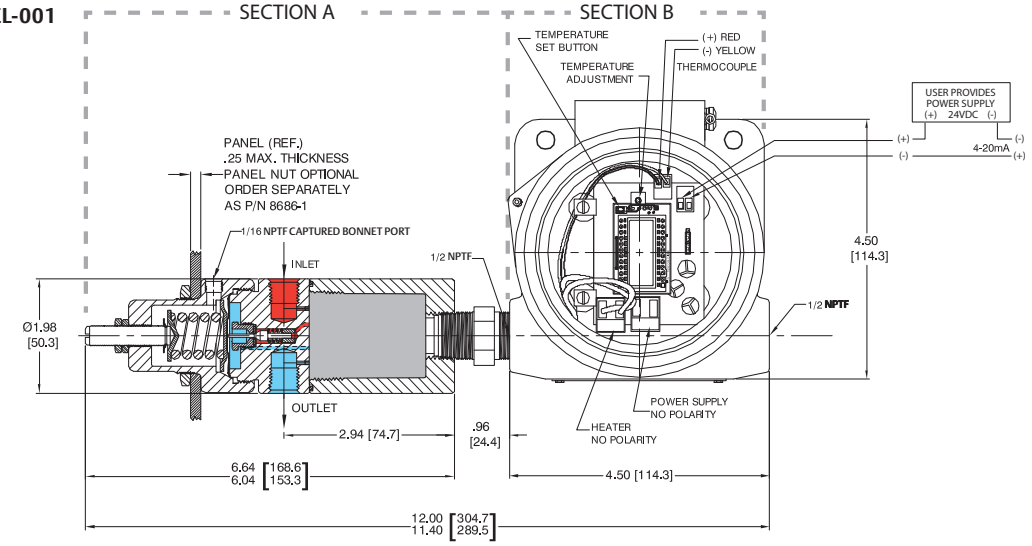
44-5800 SERIES

44-5800 Series Regulator Drawing

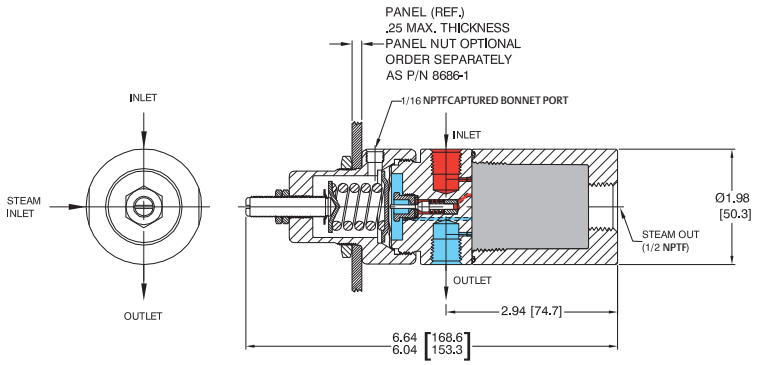
ELECTRIC MODEL



ELECTRIC MODEL-001
LCD DISPLAY



STEAM MODEL

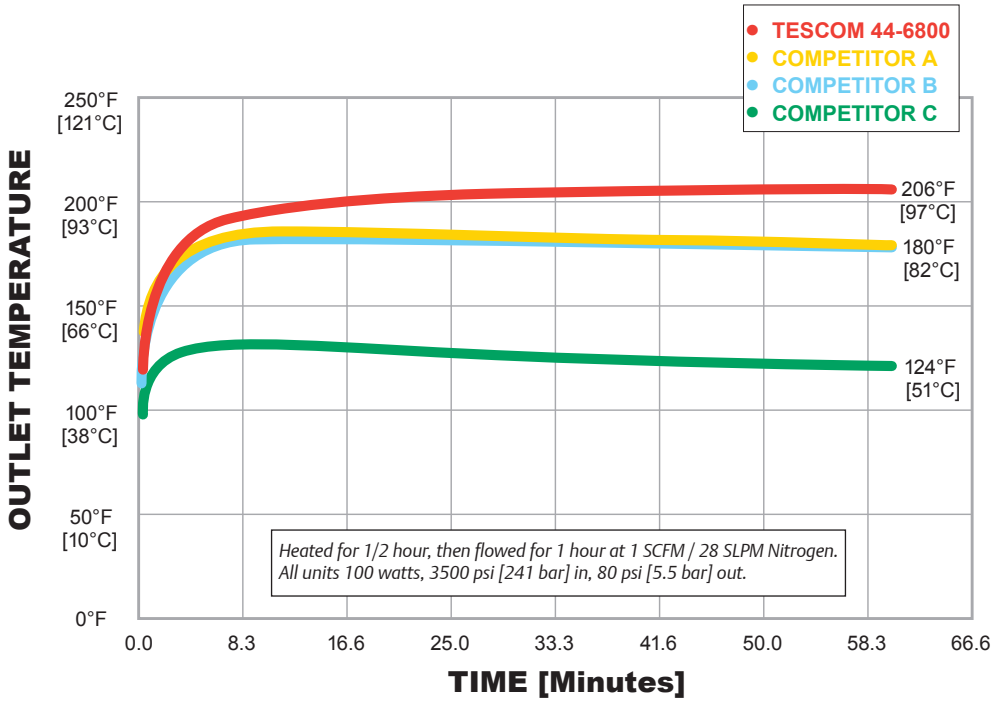


Note: Steam in at 90° to process connections (same ***plane).***

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-5800 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-5800 SERIES

44-5800 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

- 001 LCD DISPLAY

ELECTRIC MODEL

44-58	6				1	D		2	4	1	E
BASIC SERIES	MATERIAL				OUTLET PRESSURE RANGE	HEATER[1]		INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	INLET PRESSURE	VOLTAGE
	BODY	DIAPHRAGM	SPRING	REMAINING PARTS		115 VAC	230 VAC				
44-58	**5** – Nickel Alloy (Hastelloy®) **6** – 316 Stainless Steel **9** – Nickel Alloy (Monel®)	Nickel Alloy (Hastelloy®) Cobalt Chrome Nickel Alloy (Eligiloy®) Cobalt Chrome Nickel Alloy (Eligiloy®)	Cobalt Chrome Nickel Alloy (Eligiloy®) Cobalt Chrome Nickel Alloy (Eligiloy®) Cobalt Chrome Nickel Alloy (Eligiloy®)	Nickel Alloy (Hastelloy®) 316 Stainless Steel Nickel Alloy (Monel®)	**0** – 0-25 psig 0-1.7 bar 0-172 kPa **1** – 0-50 psig 0-3.4 bar 0-345 kPa **2** – 0-100 psig 0-6.9 bar 0-690 kPa **3** – 0-250 psig 0-17.2 bar 0-1724 kPa **4** – 0-500 psig 0-34.5 bar 0-3448 kPa	**A** – 12.5 WATTS 0.10 amps **B** – 25 WATTS 0.21 amps **C** – 50 WATTS 0.42 amps **D** – 100 WATTS 0.83 amps **E** – 200 WATTS 1.67 amps	50 WATTS 0.21 amps 100 WATTS 0.42 amps 200 WATTS 0.83 amps 400 WATTS 1.67 amps	**2** – NPTF	**4** – 1/4"	**1** – 6000 psig 414 bar 41,370 kPa	**E** – 115 VAC **E1** – 230 VAC

STEAM

STEAM MODEL

44-58	6				1	-	2	4	1	S
BASIC SERIES	MATERIAL				OUTLET PRESSURE RANGE			INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	INLET PRESSURE
	BODY	DIAPHRAGM	SPRING	REMAINING PARTS						
44-58	**5** – Nickel Alloy (Hastelloy®) **6** – 316 Stainless Steel **9** – Nickel Alloy (Monel®)	Nickel Alloy (Hastelloy®) Elgiloy® Cobalt Chrome Nickel Alloy (Eligiloy®)	Cobalt Chrome Nickel Alloy (Eligiloy®) Cobalt Chrome Nickel Alloy (Eligiloy®) Cobalt Chrome Nickel Alloy (Eligiloy)	Nickel Alloy (Hastelloy®) 316 Stainless Steel Nickel Alloy (Monel®)	**0** – 0-25 psig 0-1.7 bar 0-172 kPa **1** – 0-50 psig 0-3.4 bar 0-345 kPa **2** – 0-100 psig 0-6.9 bar 0-690 kPa **3** – 0-250 psig 0-17.2 bar 0-1724 kPa **4** – 0-500 psig 0-34.5 bar 0-3448 kPa			**2** – NPTF	**4** – 1/4"	**1** – 6000 psig 414 bar 41,370 kPa

⚠ WARNING

Although the 44-5800 Series product design meets the design standards required by the approval agencies, a circuit board failure could occur during the life of the product potentially causing the regulator's surface temperature to exceed the ATEX T1 temperature class limit of 450°C. As a result, 44-5800 Series regulators should not be used in an enclosed environment without an external temperature control device to interrupt power to the regulator. Redundant safety and monitoring devices are recommended for safe system use in any application environment to protect against the risk of fire or explosion in the event of overheating of the regulator due to circuit board failure.

Regulators - Pressure Reducing D44741992X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel: 6000 psig / 414 bar
Brass: 4500 psig / 310 bar

Maximum Outlet Pressure Ranges
Stainless Steel: 5000 psig / 345 bar
Brass: 4000 psig / 276 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating Temperature
0°F to 165°F / -17°C to 74°C

Flow Capacity
C_V = 0.8
C_V = 2.0

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel, Brass

Main Valve Seat
PCTFE, Polyimide (Vespel®)

Back Cap
300 Series Stainless Steel

O-Rings
Nitrile, Buna-N 90 Durometer; Nitrile, Buna-N; FKM (Viton®-A), Urethane, FFKM, Perfluoroelastomer (Kalrez®), Ethylene Propylene

Back-up Rings
PTFE

Gaskets
PCTFE

Remaining Parts
Type 17-4, 300 Series Stainless Steel, 17-7, PTFE and Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
14 lbs / 6.2 kg

Teflon®, Viton®, Kalrez®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-7400 Series high flow, high pressure, spring loaded pressure reducing regulator offers outlet pressures up to 5000 psig / 345 bar with flow rates from 25-2000 SCFM / 708-56,633 SLPM. Available in Brass or Stainless Steel and two standard C_Vs.

Applications

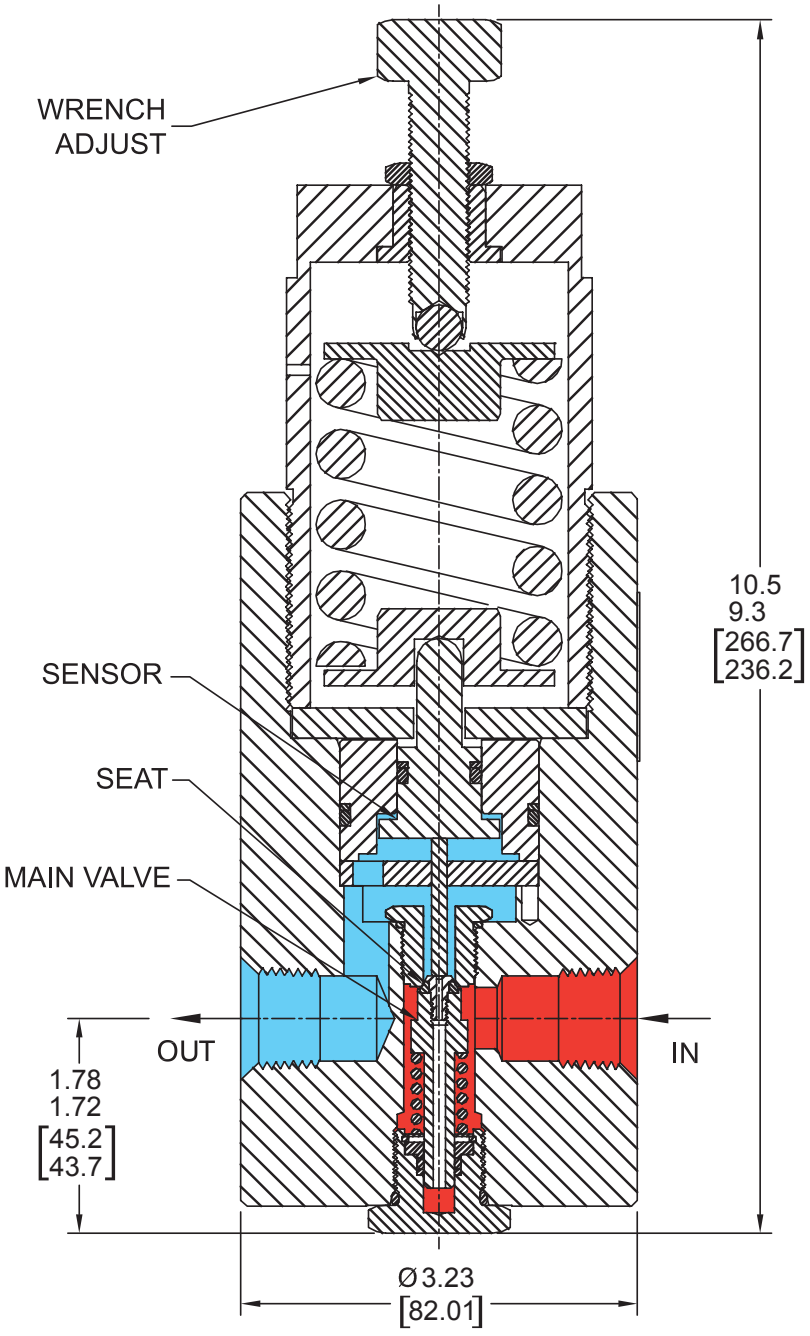
- CNG dispensing
- Hydraulic or pneumatic test stands

Features and Benefits

- Several porting configurations are available
- Spring adjust, high outlet and high flow
- Special design for dispensing compressed natural gas
- Balanced main valve minimizes supply pressure effect
- Modular design
- High safety and reliability

44-7400 SERIES

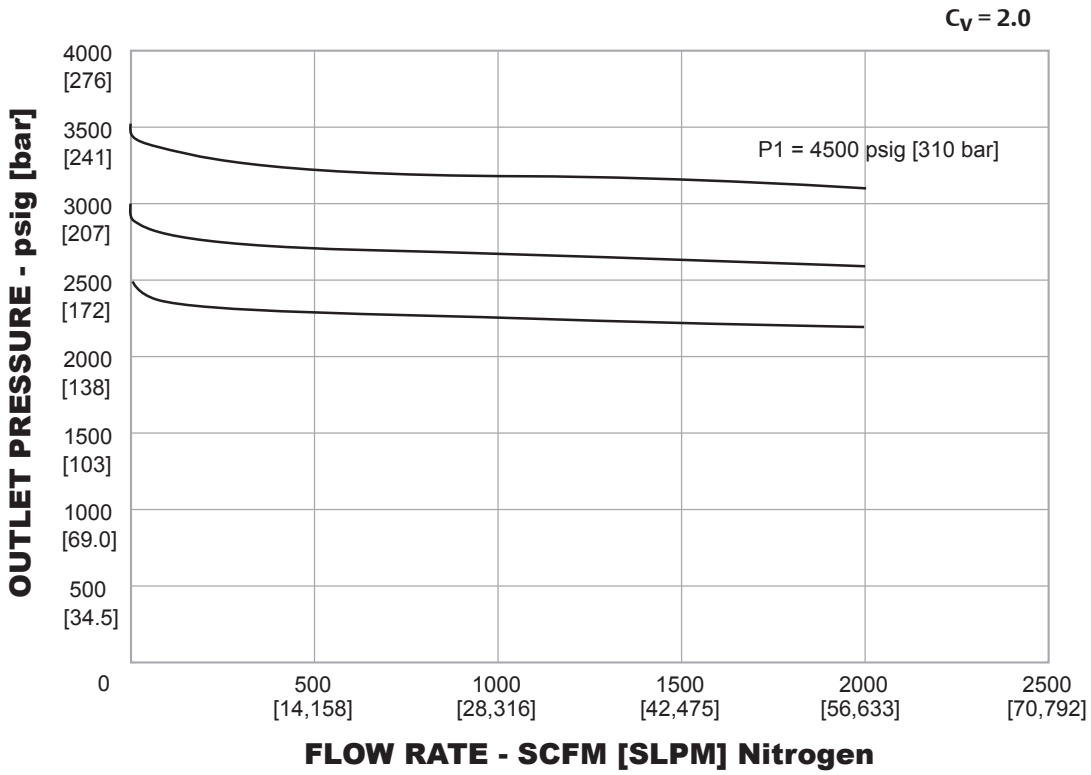
44-7400 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-7400 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-7400 SERIES

44-7400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

W – Wrench adjust

44-74	1		5	T	2	8 W	2	3	0
BASIC SERIES	**BODY MATERIAL**	**MAXIMUM INLET PRESSURE**	**OUTLET PRESSURE**	**SOFT GOODS O-RINGS BACK-UP RINGS**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**FLOW CAPACITY**	**MAIN VALVE SEAT**	**GAUGE PORT OPTIONS**
44-74	**1** – Brass **2** – 303 Stainless Steel **6** – 316 Stainless Steel	4500 psig 310 bar 6000 psig 414 bar 6000 psig 414 bar	**5** – 4000 psig 276 bar (Brass body only) **6** – 5000 psig 345 bar (Stainless Steel body only)	**B** – Nitrile, Buna-N 90 PTFE **D** – Nitrile, Buna-N PTFE **T** – FKM (Viton®-A) PTFE **U** – Urethane PTFE **V** – FFKM, Perfluoroelastomer (Kalrez®) PTFE **Z** – Ethylene Propylene PTFE	**1** – SAE **2** – NPTF **3** – MS33649	**8** – 1/2" **7** – 3/4"	**1** – C_V = 0.8 **2** – C_V = 2.0	**3** – PCTFE **7** – Polyimide (Vespel®)	**0** – No gauge ports  **1** – One gauge port at 90°  **2** – Two gauge ports at 60°  **3** – Two gauge ports at 60° (left hand inlet)  **4** – Two gauge port at 90°  **5** – One gauge port at 90° (left hand inlet) 

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10,000 psig / 690 bar
15,000 psig / 1034 bar

Maximum Outlet Pressure
Up to 10,000 psig / 690 bar standard

Design Proof Pressure
150% maximum rated

Leakage
Non Metal Seat: Bubble-tight
Metal Seat: 2 drops/minute at 150 SUS at 2500 psig / 172 bar

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.02, 0.06, 0.12

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat, Vent and Main Valve
17-4 PH Stainless Steel, Polyimide (Vespel®)

Back-up O-Rings
See Part Number Selector

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel, and Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
5.5 lbs / 2.5 kg

Teflon®, Vespel®, and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 50-2000 Series pressure reducing regulator is specifically designed for extended life operation in high pressure hydraulic applications.

Applications

- Wellhead control panels
- Subsea valve actuation
- Chemical injection
- Hydraulic Power Units (HPU)

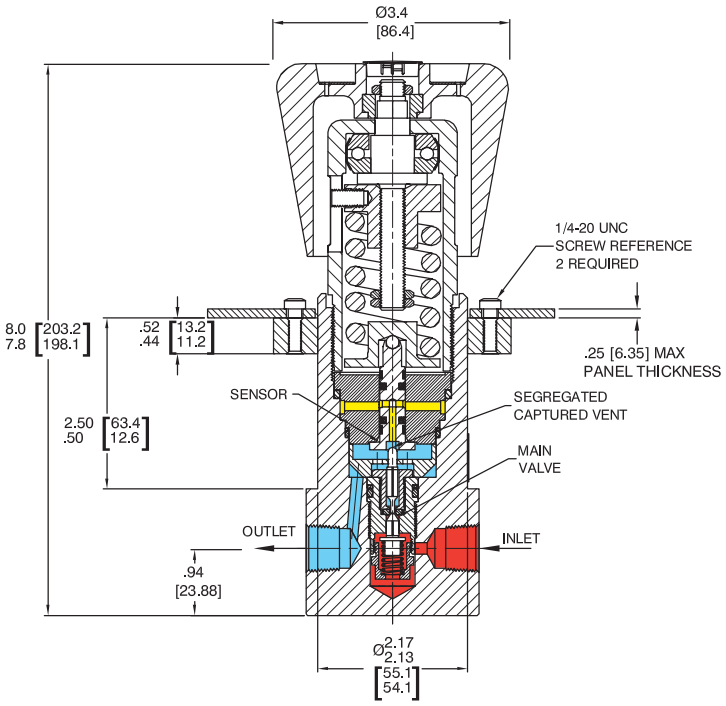
Features and Benefits

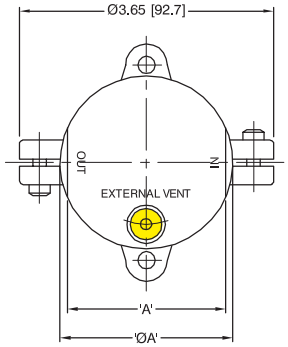
- New stem and seal design extends service life in crucial high pressure water-based hydraulic applications
- Specially designed seat and valve for excellent operation in hydraulic applications
- Segregated captured venting
- Tapered poppet design for better pressure control
- Higher pressure models are available

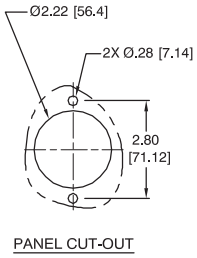
50-2000 SERIES

50-2000 Series Regulator Drawings

SPRING LOAD



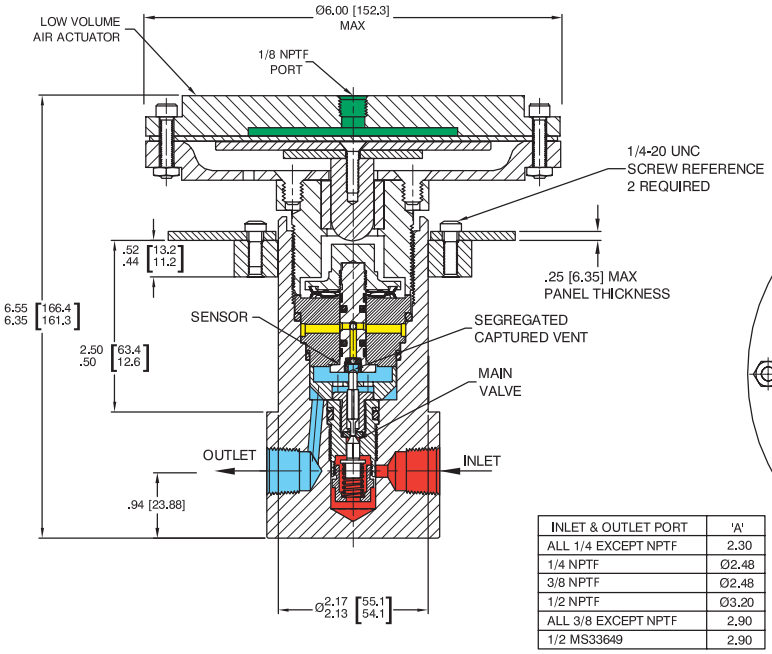


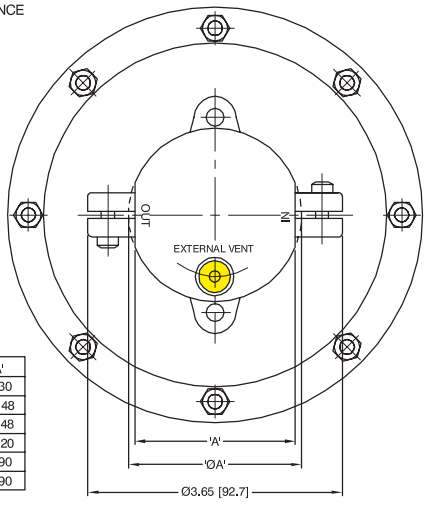


PANEL CUT-OUT

INLET & OUTLET PORT	'A'
ALL 1/4 EXCEPT NPTF	2.30
1/4 NPTF	Ø2.48
3/8 NPTF	Ø2.48
1/2 NPTF	Ø3.20
ALL 3/8 EXCEPT NPTF	2.90
1/2 MS33649	2.90

AIR LOAD



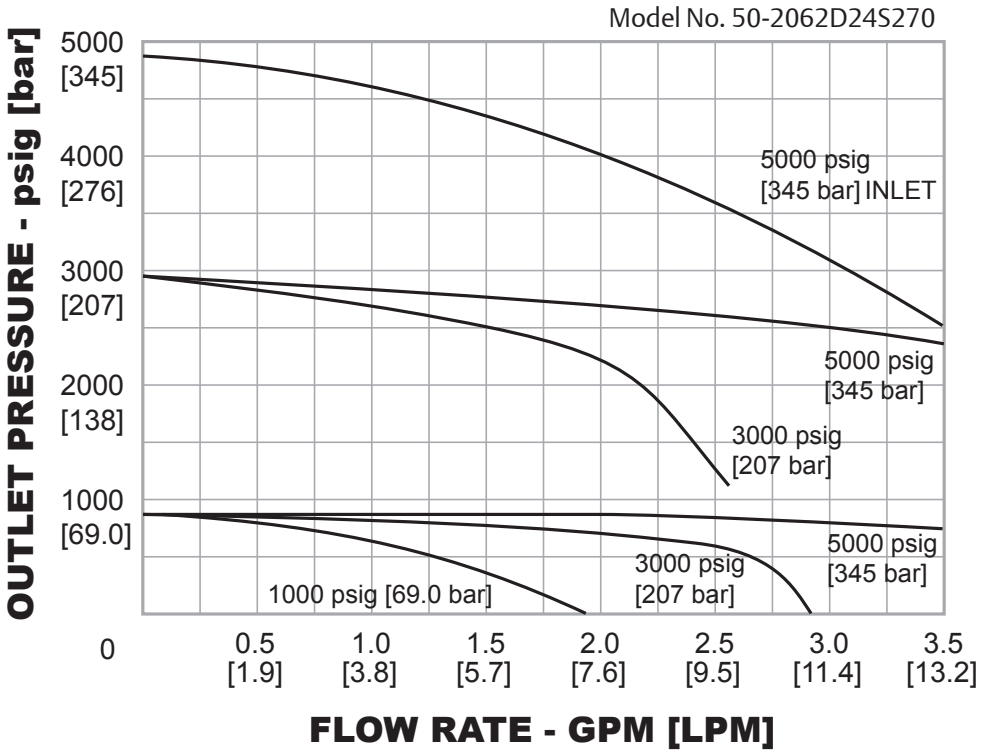


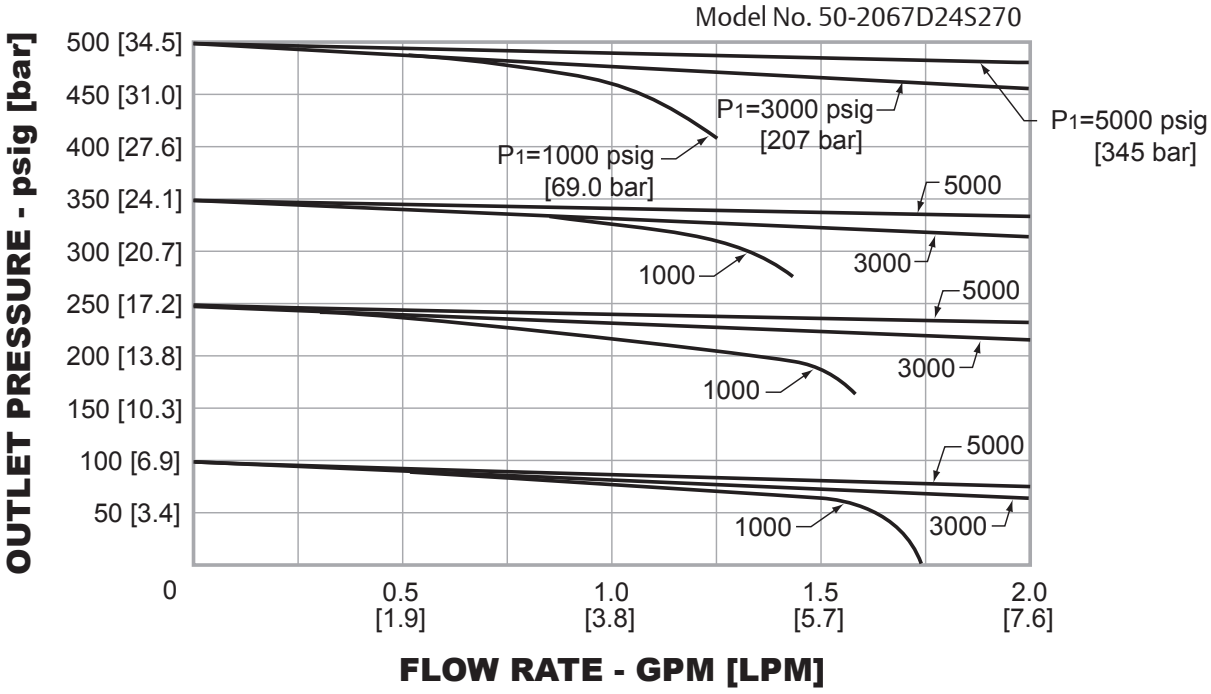
INLET & OUTLET PORT	'A'
ALL 1/4 EXCEPT NPTF	2.30
1/4 NPTF	Ø2.48
3/8 NPTF	Ø2.48
1/2 NPTF	Ø3.20
ALL 3/8 EXCEPT NPTF	2.90
1/2 MS33649	2.90

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

50-2000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





50-2000 SERIES

50-2000 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

S – Spring Load
A – Air Load

50-20	6	1	-	D			2	4	S	1	7	0

BASIC SERIES	MAXIMUM INLET PRESSURE	OUTLET PRESSURE	SOFT GOODS MATERIAL			INLET AND OUTLET PORT TYPE (VENT PORT)	INLET AND OUTLET PORT SIZE	FLOW CAPACITY	MAIN VALVE SEAT AND VENT SEAT MATERIAL	GAUGE PORT OPTIONS
			O-RING		BACK-UP RING					
			DYNAMIC	STATIC						
50-20	**6 –** 10,000 psig 690 bar **9 –** 15,000 psig[1] 1034 bar	**Spring Load** **1 –** 200-10,000 psig 13.8-690 bar **2 –** 50-6000 psig 3.4-414 bar **3 –** 25-4000 psig 1.7-276 bar **4 –** 15-2500 psig 1.0-172 bar **5 –** 10-1500 psig 0.69-103 bar **6 –** 5-800 psig 0.35-55.2 bar **7 –** 5-500 psig 0.35-34.5 bar **Air Load** **1 –** 200-10,000 psig 13.8-690 bar **2 –** 50-6000 psig 3.4-414 bar **4 –** 15-2500 psig 1.0-172 bar **5 –** 10-1500 psig 0.69-103 bar	**D –** Nitrile, Buna-N **T –** FKM (Viton®-A) **Z –** Ethylene Propylene	Nitrile, Buna-N FKM (Viton®-A) Ethylene Propylene	PTFE PTFE PTFE	**1 –** SAE (1/4" SAE) **2 –** NPTF (1/4" NPTF) **3 –** MS33649 (1/4" MS33649) **4 –** High Pressure (1/4" NPTF) **6 –** Medium Pressure (1/4" NPTF)	**4 –** 1/4" **6 –** 3/8" **8 –** 1/2"[2] **9 –** 9/16"[5]	**1 –** C_V = 0.02[3] **2 –** C_V = 0.06 **3 –** C_V = 0.12[4]	**5 –** 17-4 Stainless Steel **7 –** Polyimide (Vespel®)	**0 –** None **1 –** 1 outlet gauge at 90° **2 –** 2 gauge ports at 60° **3 –** 2 gauge ports at 60° (left hand inlet) **4 –** 2 gauge ports at 90° **5 –** 1 gauge port at 90° (left hand inlet)

1. 15,000 psig / 1034 bar inlet requires a CTFE back-up ring on main valve.
2. Not available in high or medium pressure.
3. Not available for metal seated models.
4. Not available with 15,000 psig / 1034 bar inlet with Vespel® seat.
5. High pressure and medium pressure only.

Regulators - Pressure Reducing D50222050X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
15,000, 20,000 psig / 1034, 1379 bar

Maximum Outlet Pressure
300-15,000 psig / 20.7-1034 bar
300-20,000 psig / 20.7-1379 bar

Design Proof Pressure
150% maximum rated

Leakage
2 drops/min. at 150 S.U.S and 2500 psig / 172 bar

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.06, 0.12

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Nitronic 60

Seat, Main Valve, Vent
17-4 PH Stainless Steel

O-Ring
Nitrile, Buna-N, FKM (Viton®-A)

Back-up Ring
PCTFE

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel and Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
20 lbs / 9.1 kg

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 50-2200 Series pressure reducing regulator is specifically designed for extended life operation in high pressure hydraulic applications.

Applications

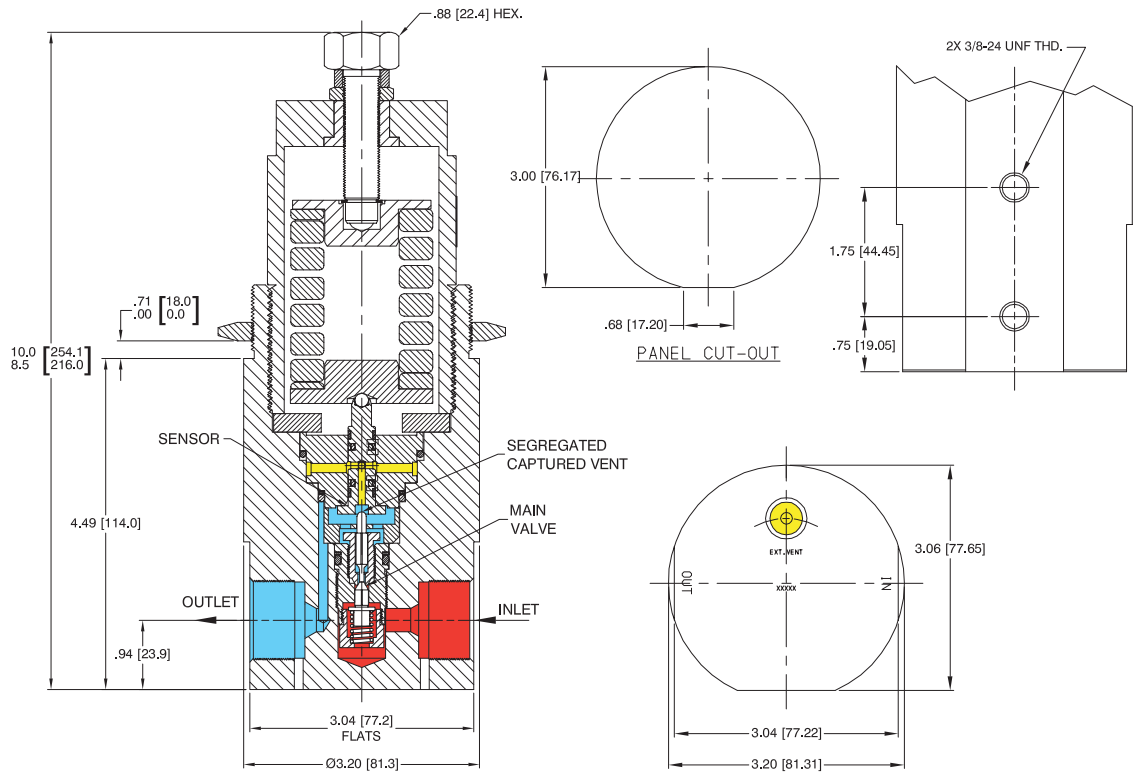
- Wellhead control panels
- Subsea valve actuation
- Chemical injection
- Hydraulic Power Units (HPU)

Features and Benefits

- New stem and seal design extends service life in crucial high pressure water-based hydraulic applications
- Specially designed seat and valve for excellent operation in hydraulic applications
- Segregated captured venting
- Tapered poppet design for better pressure control

50-2200 SERIES

50-2200 Series Regulator Drawing



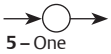
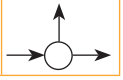
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

50-2200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

Spring Load

50-22	N	0	T			6	9	S	3	5	0
BASIC SERIES	MAXIMUM INLET PRESSURE[1] (BODY MATERIAL)	MAXIMUM OUTLET PRESSURE	SOFT GOODS MATERIAL			INLET AND OUTLET PORT TYPE (VENT PORT)	INLET AND OUTLET PORT SIZE		FLOW CAPACITY	MAIN VALVE AND VENT SEAT	GAUGE PORT OPTIONS
			DYNAMIC ROTO-SEALS	STATIC O-RINGS	BACK-UP RINGS						
50-22	**9** – 15,000 psig 1034 bar (316 SST) **N** – 20,000 psig 1379 bar (Nitronic 60)	**0** – 300-15,000 psig 20.7-1034 bar **9** – 300-20,000 psig 20.7-1379 bar	**D** – Nitrile, Buna-N **T** – FKM (Viton®-A)	Nitrile, Buna-N FKM (Viton®-A)	PCTFE PCTFE	**4** – High Pressure (1/4" NPTF) **6** – Medium Pressure (1/4" NPTF)	**4** – 1/4" **6** – 3/8" **9** – 9/16"		**2** – C_V = 0.06 **3** – C_V = 0.12	**5** – 17-4 Stainless Steel	**0** – No gauge ports  **5** – One outlet gauge at 90° 

1. Pressure at which regulator is used must be compatible with the pressure rating of the regulator and port size/type provided.

Regulators - Pressure Reducing D50402088X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10,000, 15,000, 20,000 psig / 690, 1034, 1379 bar

Outlet Pressure
9000 to 20,000 psig / 621 to 1379 bar
8000 to15,000 psig / 552 to 1034 bar
6000 to 15,000 psig / 414 to 1034 bar
4000 to 10,000 psig / 276 to 690 bar
2000 to 6000 psig / 138 to 414 bar
2000 to 4000 psig / 138 to 276 bar
1700 to 2500 psig / 117 to 172 bar

Design Proof Pressure
150% maximum rated

Leakage
2 drops/min. at 150 S.U.S and 2500 psig / 172 bar

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.12 (Control Regulator), C_V = 1.9 (Integrated Bypass)

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Nitronic 60 (20,000 psig / 1379 bar Inlet)

Seat, Main Valve, Vent
17-4 PH Stainless Steel, Polyimide (Vespel®)

O-ring
Nitrile, Buna-N, FKM (Viton®-A), EP

Back-up Ring
PCTFE

Remaining Parts
316 Series Stainless Steel, 17-4 PH Stainless Steel, Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)[1]
50-4000: 15 lbs / 6.8 kg
50-4100: 20 lbs / 9.1 kg
50-4200: 20 lbs / 9.1 kg

1. Air loaded versions will have an additional approx. 5 lbs / 2.3 kg to account for the actuator.

Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.
Nitronic® is a mark owned by MatWeb, LLC.

AIR LOADED

SPRING LOADED

TESCOM 50-4000, 50-4100 and 50-4200 Series pressure reducing regulators, with their integrated bypass valve, control high pressure water glycol. These unique regulators decrease pressurization time and lower maintenance costs.

Applications

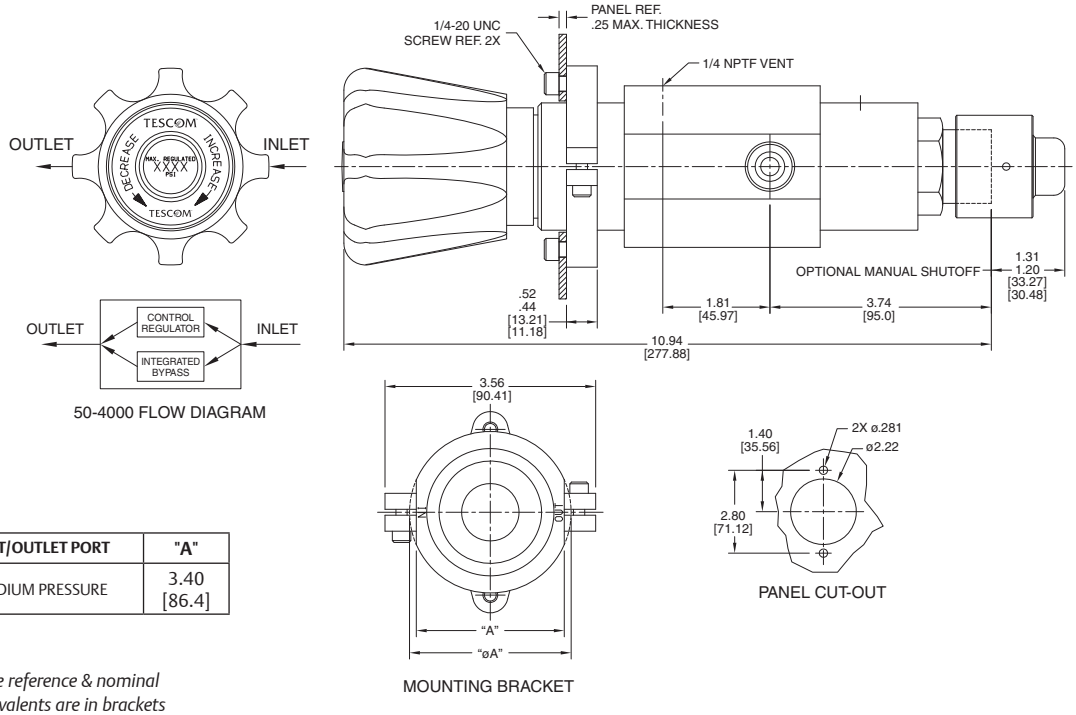
- Hydraulic Power Units (HPU)
- Wellhead control panels

Features and Benefits

- Unique integrated bypass valve simplifies the high pressure system design which results in fewer components and leak paths for added safety
- The addition of the 50-4000 Series to HPU units simplifies complex start up procedures while decreasing down time associated with filling long umbilicals
- Controls large variations in flow rates at pressures up to 20,000 psig / 1379 bar
- New stem and seal design extends regulator service life in crucial high pressure water-based hydraulic applications

50-4000 SERIES

50-4000 Series Regulator Drawing



INLET/OUTLET PORT	"A"
9/16 MEDIUM PRESSURE	3.40 [86.4]

All dimensions are reference & nominal
Metric [mm] equivalents are in brackets

50-4000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

50-40	9	1	D			6	9	S	3	5	0	A
BASIC SERIES	BODY MATERIAL --- MAXIMUM INLET PRESSURE[1]	OUTLET PRESSURE CONTROL REGULATOR --- INTEGRATED BYPASS	SOFT GOODS MATERIAL DYNAMIC O-RINGS	STATIC O-RINGS	BACK-UP RINGS	INLET AND OUTLET PORT TYPE (VENT PORT)	INLET AND OUTLET PORT SIZE	LOAD OPTION	FLOW CAPACITY	MAIN VALVE AND VENT SEAT	1/4" GAUGE PORT OPTIONS	INTEGRATED BYPASS MANUAL OVERRIDE SHUTOFF
50-40	**9** – 316 SST --- 15,000 psig 1034 bar (Medium/ High Pressure) 10,000 psig 690 bar (NPTF & BSPP)	**1** – 4000 to 10,000 psig 276 to 690 bar --- 0 to 3000 psig 0 to 207 bar **4** – 2000 to 6000 psig 138 to 414 bar[5] **5** – 2000 to 4000 psig 138 to 276 bar[5] **6** – 1700 to 2500 psig 117 to 172 bar[5]	**D** – Nitrile, Buna-N **T** – FKM (Viton®-A) **Z** – EP	Nitrile, Buna-N FKM (Viton®-A) EP	PCTFE PCTFE PCTFE	**0** – BSPP (1/4") **2** – NPTF (1/4") **4** – High Pressure (1/4" NPTF) **6** – Medium Pressure (1/4" NPTF)	**6** – 3/8"[2] **8** – 1/2"[3] **9** – 9/16"[4]	**S** – Spring Load **A** – Air Load	**3** – C_V = 0.12 (Control Regulator) C_V = 1.9 (Integrated Bypass)	**5** – 17-4 Stainless Steel **7** – Polyimide (Vespel®)	**0** – no gauge ports **1** – one outlet gauge port at 90°	**A** – Included **Blank** – Not Included

1. Pressure at which regulator is used must be compatible with the pressure rating of the regulator and port size/type provided
2. Integrated Bypass C_V is limited to 1.0
3. Not available in Medium Pressure and High Pressure
4. Not available in NPTF and BSPP
5. Integrated bypass pressure range:
0 to 1000 psig at 10,000 psig inlet /
0 to 69 bar at 689 bar or
0 to1600 psig at 15,000 psig inlet /
0 to 110 bar at 1034 bar inlet.

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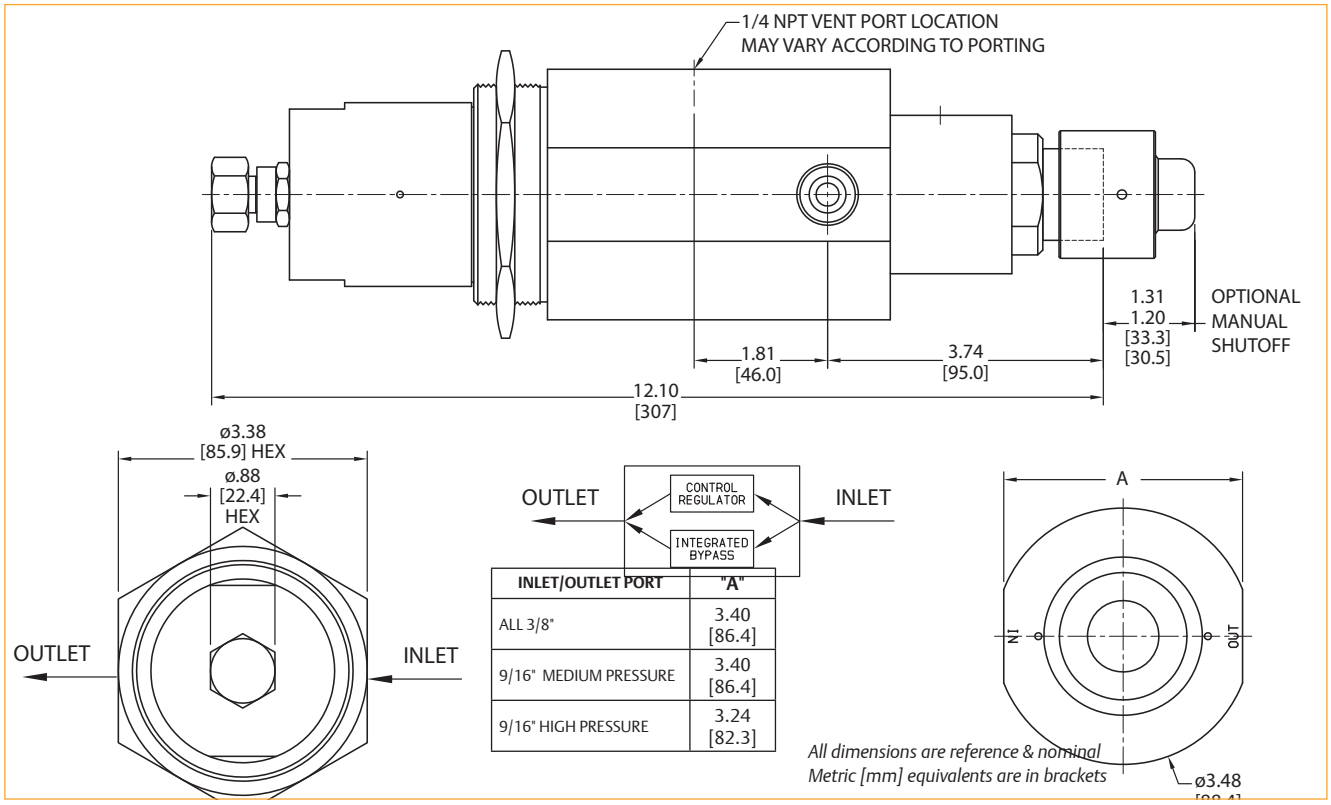
50-4100 Series Regulator Drawing



INLET/OUTLET PORT	"A"
ALL 3/8"	3.40 [86.4]
9/16" MEDIUM PRESSURE	3.40 [86.4]
9/16" HIGH PRESSURE	3.24 [82.3]

All dimensions are reference & nominal
Metric [mm] equivalents are in brackets

50-4100 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

50-41	9	0	D			6	9	S	3	5	0	A
BASIC SERIES	BODY MATERIAL --- MAXIMUM INLET PRESSURE[1]	OUTLET PRESSURE: CONTROL REGULATOR --- INTEGRATED BYPASS	SOFT GOODS MATERIAL: DYNAMIC O-RINGS	STATIC O-RINGS	BACK-UP RINGS	INLET AND OUTLET PORT TYPE (VENT PORT)	INLET AND OUTLET PORT SIZE	LOAD OPTION	FLOW CAPACITY	MAIN VALVE AND VENT SEAT	1/4" GAUGE PORT OPTIONS	INTEGRATED BYPASS MANUAL OVERRIDE SHUTOFF
50-41	**9** – 316 SST --- 15,000 psig 1034 bar	**0** – 6000 to 15,000 psig 414 to 1034 bar --- 0 to 5200 psig 0 to 359 bar	**D** – Nitrile, Buna-N	Nitrile, Buna-N	PCTFE	**4** – High Pressure (1/4" NPTF)	**6** – 3/8"[2]	**S** – Spring Load	**3** – C_V = 0.12 (Control Regulator)	**5** – 17-4 Stainless Steel	**0** – no gauge ports	**A** – Included
			T – FKM (Viton®-A)	FKM (Viton®-A)	PCTFE	**6** – Medium Pressure (1/4" NPTF)	**9** – 9/16"	**A** – Air Load	C_V = 1.9 (Integrated Bypass)	**7** – Polyimide (Vespel®)	**1** – one outlet gauge port at 90°	**Blank** – Not Included
			Z – EP	EP								

1. Pressure at which regulator is used must be compatible with the pressure rating of the regulator and port size/type provided
2. Integrated Bypass C_V is limited to 1.0

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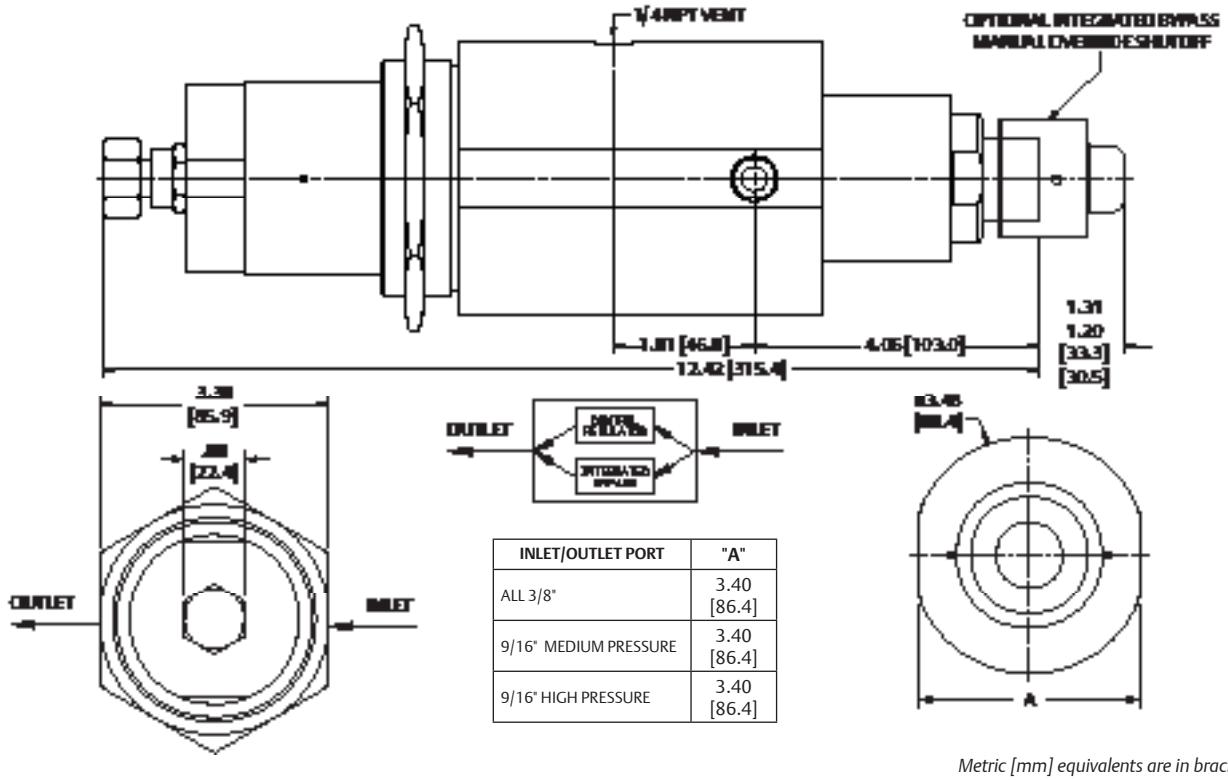
50-4200 SERIES

50-4200 Series Regulator Drawing



INLET/OUTLET PORT	"A"
ALL 3/8"	3.40 [86.4]
9/16" MEDIUM PRESSURE	3.40 [86.4]
9/16" HIGH PRESSURE	3.40 [86.4]

Metric [mm] equivalents are in brackets

50-4200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

50-42	N	0	D			6	9	S	3	5	0	A
BASIC SERIES	BODY MATERIAL - - - MAXIMUM INLET PRESSURE[1]	OUTLET PRESSURE CONTROL REGULATOR - - - INTEGRATED BYPASS	SOFT GOODS MATERIAL DYNAMIC O-RINGS	STATIC O-RINGS	BACK-UP RINGS	INLET AND OUTLET PORT TYPE (VENT PORT)	INLET AND OUTLET PORT SIZE	LOAD OPTION	FLOW CAPACITY	MAIN VALVE AND VENT SEAT	1/4" GAUGE PORT OPTIONS	INTEGRATED BYPASS MANUAL OVERRIDE SHUTOFF
50-42	**N** – Nitronic® 60 - - - 20,000 psig 1379 bar	**0** – 8000 to 15,000 psig 552 to 1034 bar - - - 0 to 7000 psig 0 to 483 bar **1** – 9000 to 20,000 psig[3] 621 to 1379 bar[3] - - - 0 to 8000 psig 0 to 552 bar	**D** – Nitrile, Buna-N **T** – FKM (Viton®-A)	Nitrile, Buna-N FKM (Viton®-A)	PCTFE PCTFE	**4** – High Pressure (1/4" NPTF) **6** – Medium Pressure (1/4" NPTF)	**6** – 3/8"[2] **9** – 9/16"	**S** – Spring Load **A** – Air Load	**3** – C_V = 0.12 (Control Regulator) C_V = 1.9 (Integrated Bypass)	**5** – 17-4 SST	**0** – no gauge ports  **1** – one outlet gauge port at 90° 	**A** – Included **Blank** – Not Included

1. *Pressure at which regulator is used must be compatible with the pressure rating of the regulator and port size/ type provided*
2. *Integrated Bypass C_V is limited to 1.0*
3. *Outlet pressure only available with air loader option*

Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.
Nitronic® is a mark owned by MatWeb, LLC.

Regulators - Pressure Reducing D54201597X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10,000 psig / 690 bar

Outlet Pressure Ranges
5-500, 5-800, 10-1500, 15-2500, 25-4000, 50-6000, 200-10,000 psig[1]
0.35-34.5, 0.35-55.2, 0.69-103, 1.0-172, 1.7-276, 3.4-414, 13.8-690 bar[1]

Design Proof Pressure
150% maximum rated

Leakage
2 drops per minute at 150 S.U.S. at 2500 psig / 172 bar

Ambient Operating Temperature[2]
-15°F to 165°F / -26°C to 74°C

Flow Capacity
Main Valve: C_V = 0.06
Vent Valve: C_V = 0.08

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Main Valve, Vent Seat
17-4 PH Stainless Steel

O-Rings
FKM (Viton®-A), Nitrile, Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Kalrez®)

Poppets
17-4 PH Stainless Steel

Back-up Ring
PTFE

Remaining Parts
300 Series and 17-4 PH Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
5.3 lbs / 2.4 kg

Viton® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

1. Regulator vents to zero psig in all pressure ranges.
2. For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult TESCOM.

TESCOM 54-2000 Series pressure reducing regulator is suitable for 10,000 psig / 690 bar inlet and outlet hydraulic applications. Segregated and captured vent allows for convenient downstream pressure reduction adjustments. Hardened Stainless Steel seat and stem provide excellent wear resistance in harsh applications.

Applications

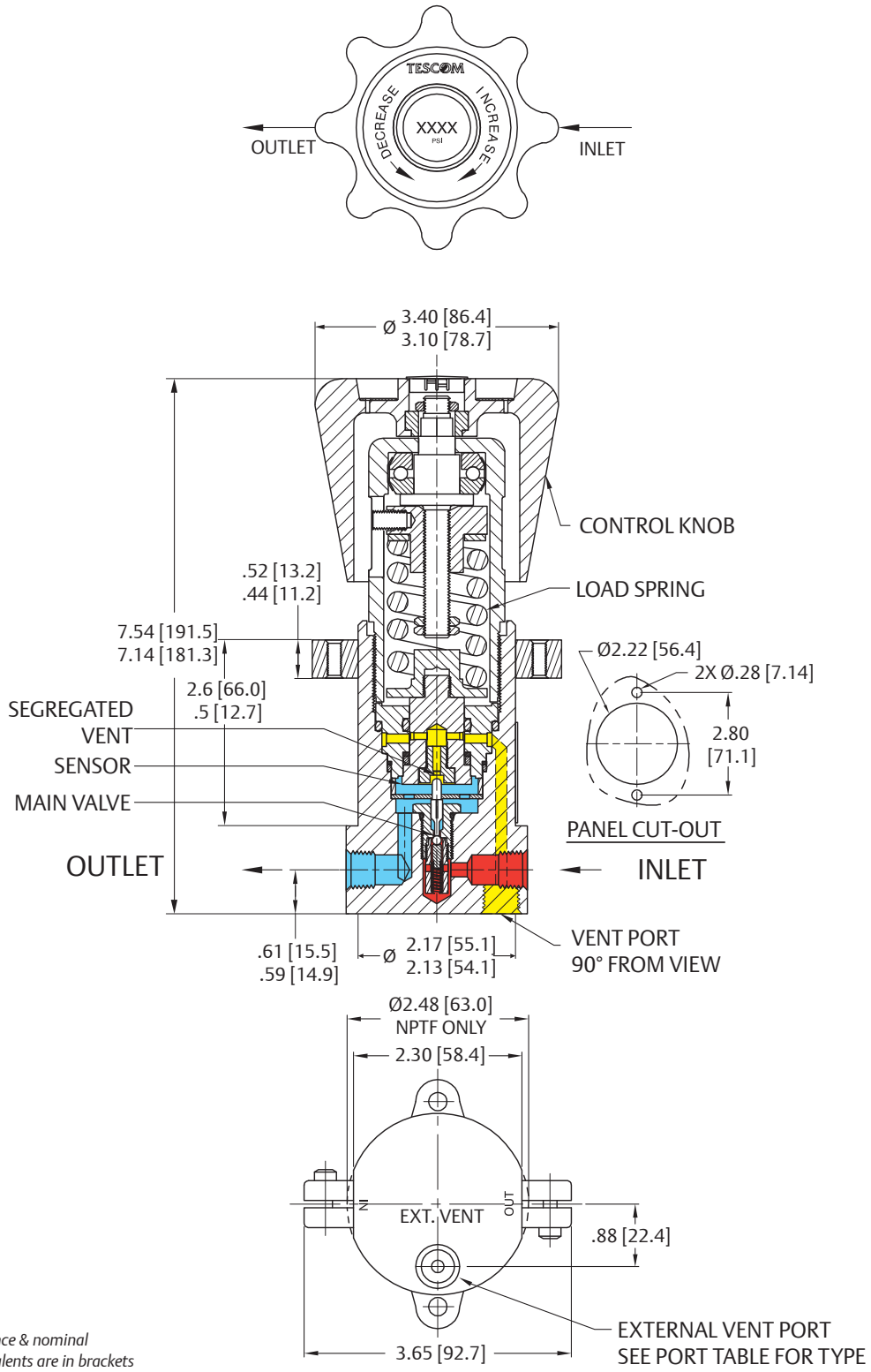
- Wellhead control panels
- Subsea valve actuations
- Hydraulic Power Units (HPU)
- Component testing

Features and Benefits

- Special models available for 15,000 and 20,000 psig / 1034 and 1379 bar
- Segregated vent for easy pressure adjustments in either direction
- Main valve cartridge
- High-impact handknob
- Cartridge style models are available
- NACE compatible designs are available
- Compatible with TESCOM air actuators and ER5000 Electropneumatic Controller
- Piston-sensed design ensures safety and reliability

54-2000 SERIES

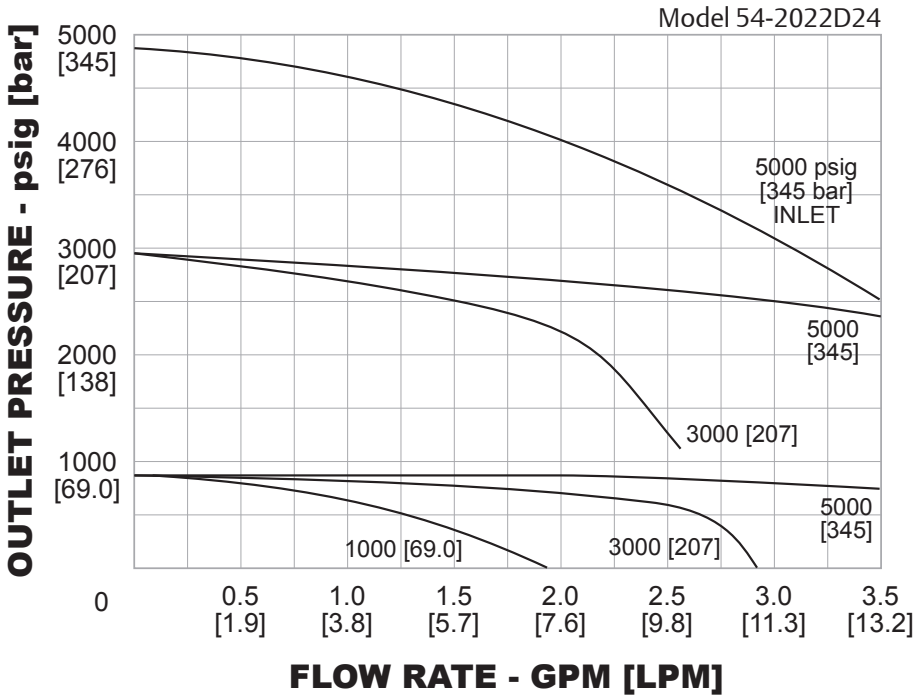
54-2000 Series Regulator Drawing

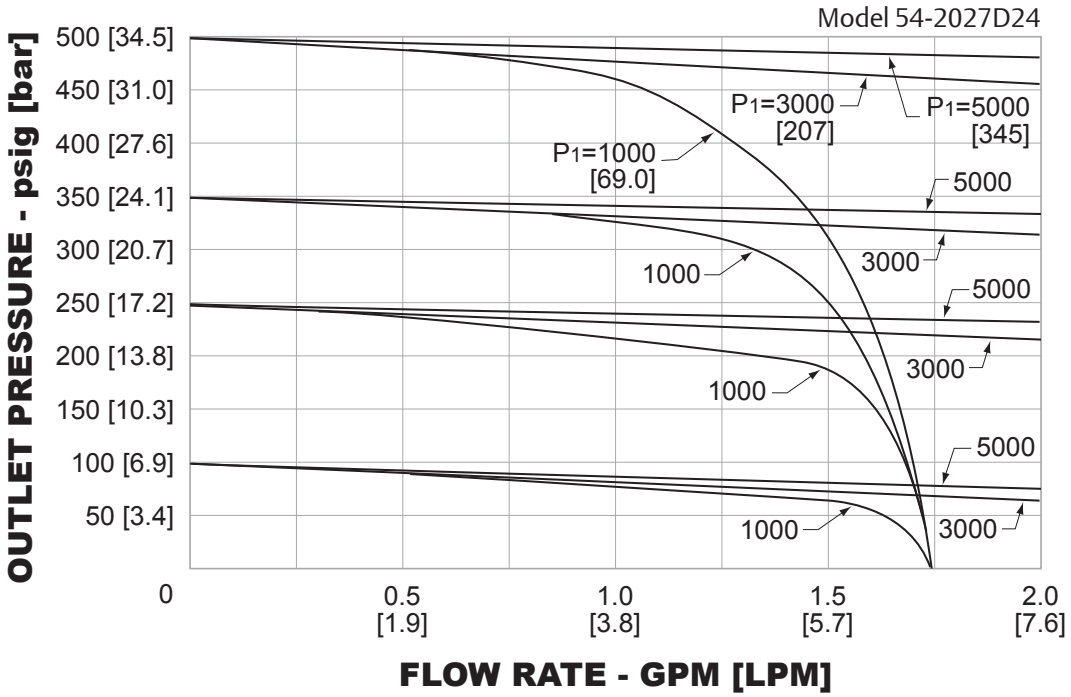


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2000 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





54-2000 SERIES

54-2000 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

54-20	6	4	D			2		4
BASIC SERIES	BODY AND BONNET MATERIAL	OUTLET PRESSURE RANGES	SOFT GOODS MATERIAL			INLET AND OUTLET PORT TYPE	EXTERNAL VENT PORT (1/4")	INLET AND OUTLET PORT SIZE
			O-RING		BACK-UP RING			
			DYNAMIC	STATIC				
54-20	**6 –** 316 Stainless Steel	**1 –** 200-10,000 psig 13.8-690 bar **2 –** 50-6000 psig 3.4-414 bar **3 –** 25-4000 psig 1.7-276 bar **4 –** 15-2500 psig 1.0-172 bar **5 –** 10-1500 psig 0.69-103 bar **6 –** 5-800 psig 0.35-55.2 bar **7 –** 5-500 psig 0.35-34.5 bar	**D –** Nitrile, Buna-N **T –** FKM (Viton®-A) **Z –** Ethylene Propylene	Nitrile, Buna-N FKM (Viton®-A) Ethylene Propylene	PTFE PTFE PTFE	**1 –** SAE **2 –** NPTF **3 –** MS33649 **4 –** High Pressure **6 –** Medium Pressure	SAE NPTF MS33649 NPTF NPTF	**4 –** 1/4" **6 –** 3/8" **8 –** 1/2"

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
8000 psig / 552 bar

Outlet Pressure Ranges[1]
1500, 3000, 5000, 6000, 8000 psig
103, 207, 345, 414, 552 bar

Design Proof Pressure
150% maximum rated

Leakage (maximum)
2 drops/min at 150 S.U.S at 2500 psig / 172 bar

Ambient Operating Fluid Media Temperature[2]
-40°F to 200°F / -40°C to 93°C

Flow Capacity
Main Valve: C_V = 2.0
Vent Valve: C_V = 1.6

MEDIA CONTACT MATERIALS

Body
303 or 316 Stainless Steel

Seat, Main Valve and Sensor
17-4 PH Stainless Steel

O-Rings
Nitrile, Buna-N, FKM (Viton®-A), FFKM, Perfluoroelastomer (Kalrez®) , Ethylene Propylene

Back-up Rings
PTFE

Bonnet
303 Stainless Steel

Remaining Parts
303 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximately)
15 lbs / 6.8 kg

Teflon®, Viton® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

1. Regulator VENTS to 0 psig in all pressure ranges.
2. Varies with sealing material selected, please consult Tescom.

TESCOM 54-2200 Series pressure reducing regulator is designed for high flow and high pressure hydraulic applications. Inlet and outlet pressure is rated up to 8000 psig / 552 bar with C_V = 2.0 for flows up to 60 GPM / 127 LPM. Spring, air and dome loaded versions are available. Hardened Stainless Steel seat and poppet delivers excellent wear resistance.

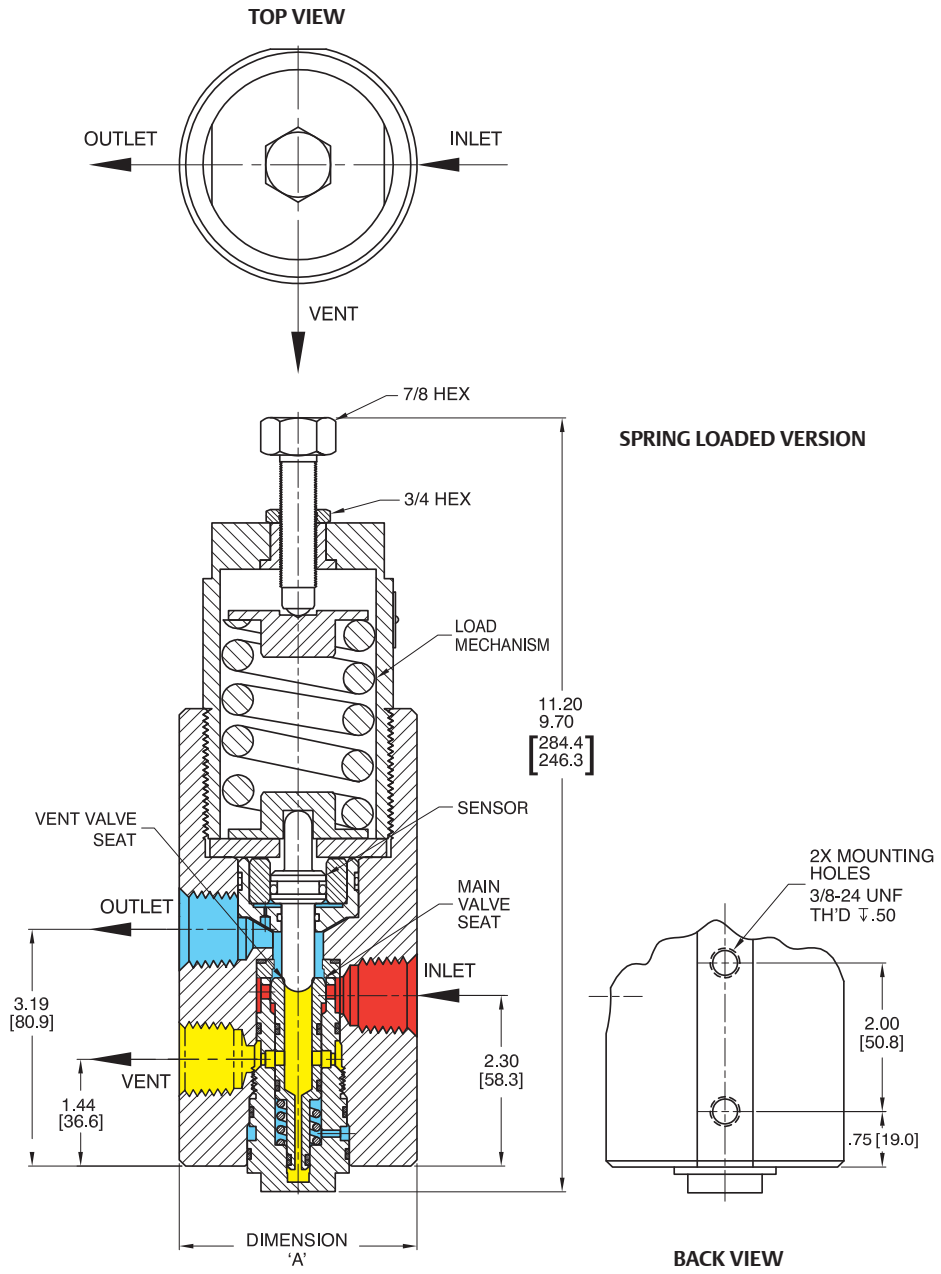
Applications

- Hydraulically operated blowout preventers (BOP)
- Hydraulic power units (HPUs)
- Hydraulic component testing

Features and Benefits

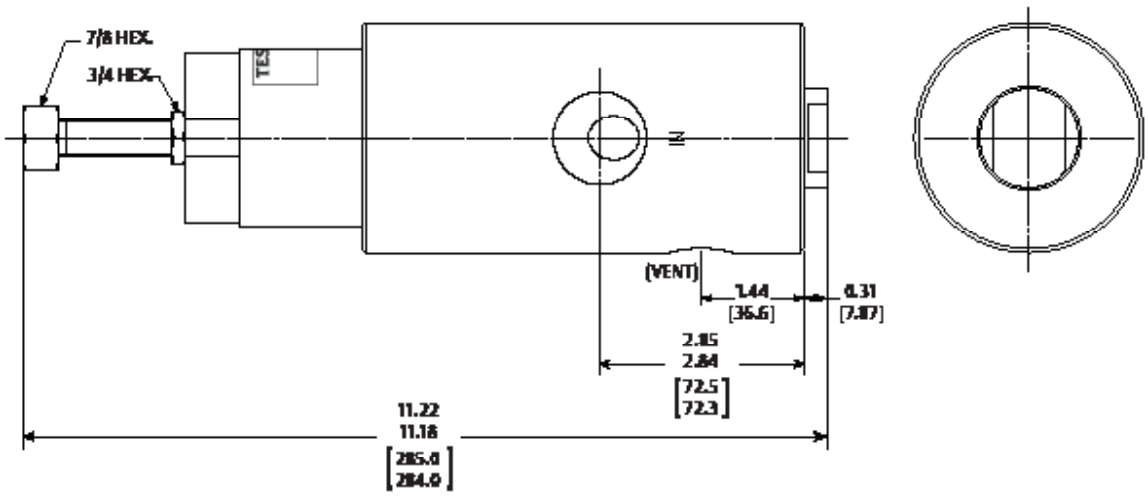
- Rugged design for tough conditions
- Pressure dampening orifice improves stability
- Features piston-style sensor, balanced main valve poppet and a non-adjustable manual vent system
- Hardened 17-4 Stainless Steel seats help provide long service in abrasive hydraulic applications
- Side mounting is standard
- Available in spring, hydraulic/dome and air loaded versions
- Compatible with TESCOM ER5000 Electropneumatic Controllers
- Flanged end connections available

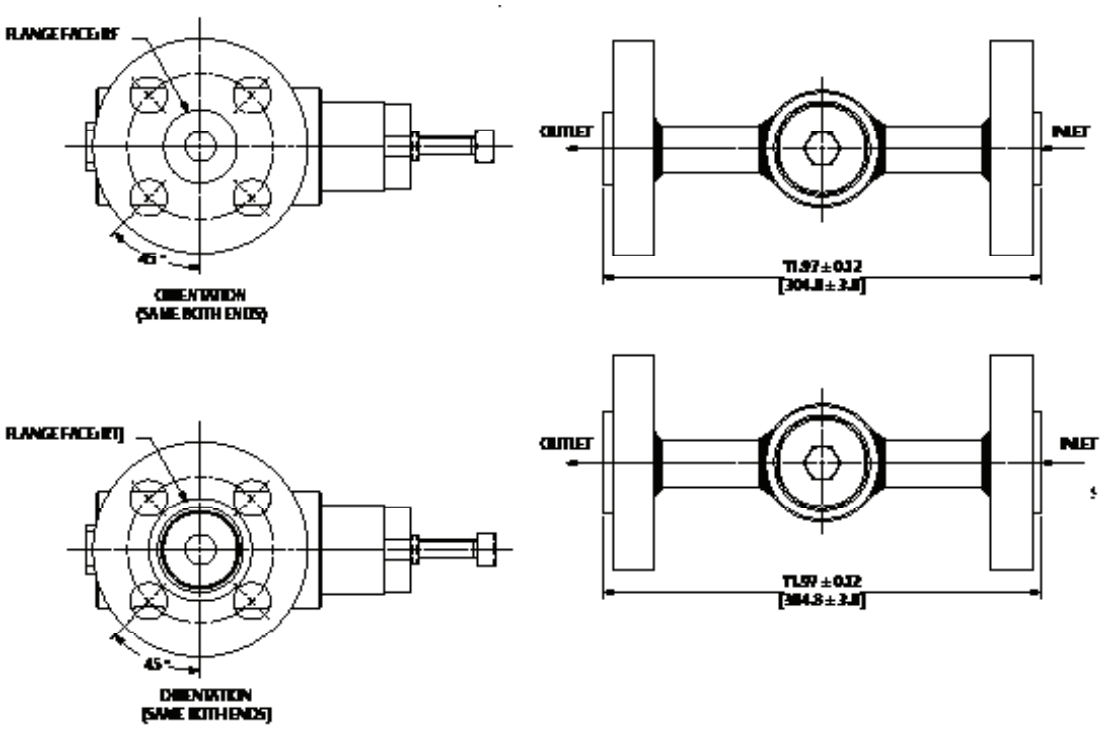
54-2200 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2200 Series Regulator with Flanges Drawing



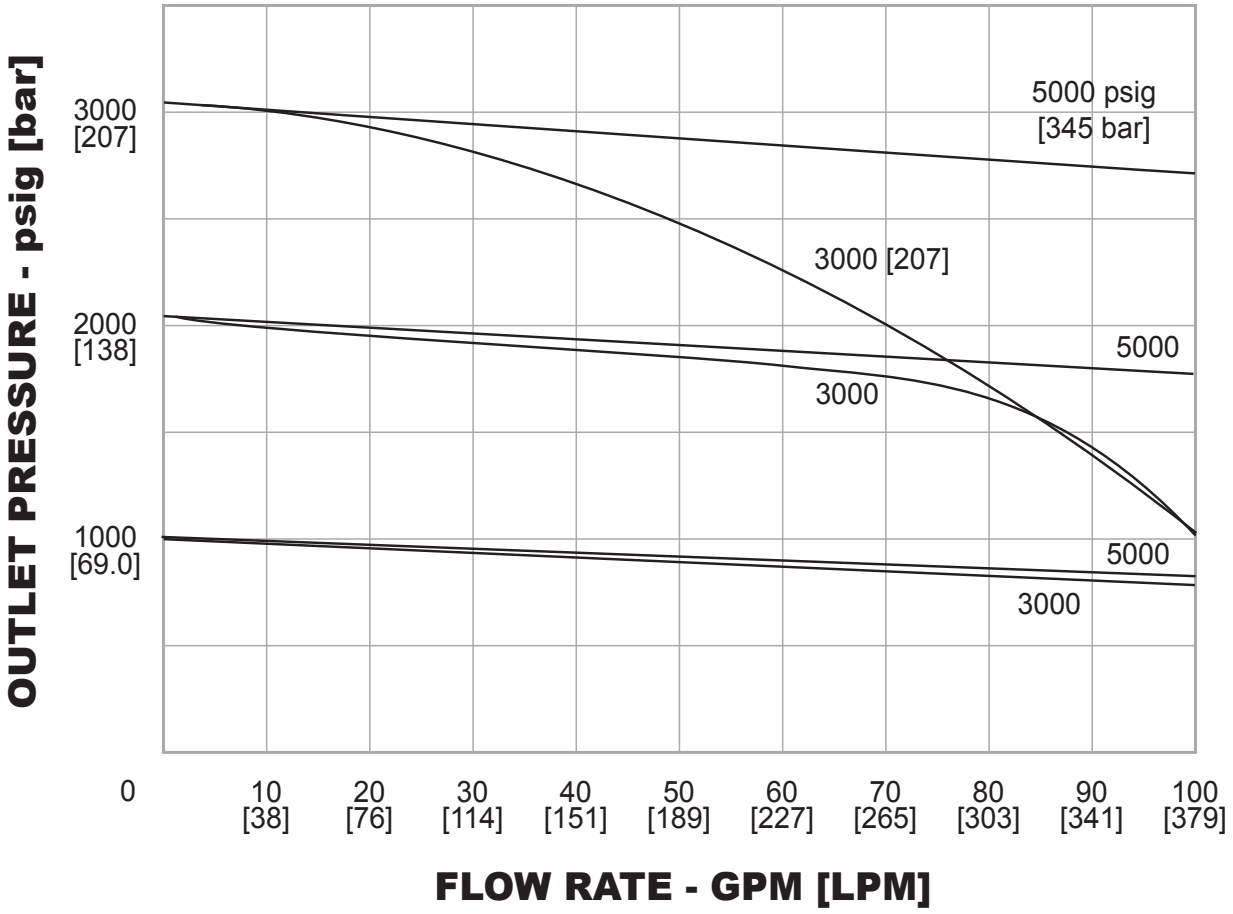


All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

54-2200 Series Regulator Flow Charts

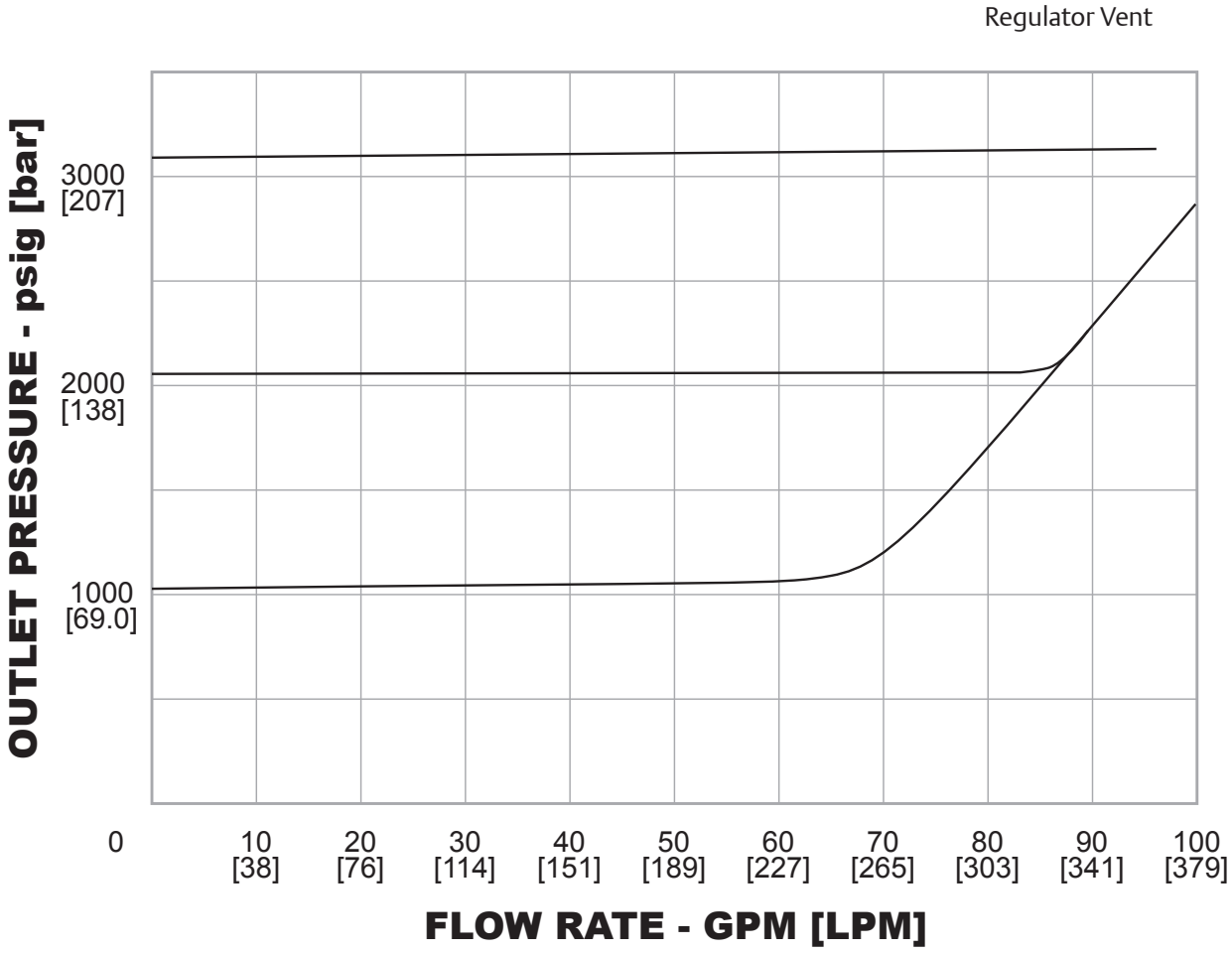
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

Regulator Discharge
Model: 54-2223D212H
(Hydraulic Loading Option)



54-2200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



54-2200 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connection Part Number Selection

54-22	2	3	D			2		12	S
BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	SOFT GOODS MATERIAL			PORT TYPE	DI-MEN-SION "A"	PORT SIZE	LOADING OPTIONS
			O-RING						
			DYNAMIC	STATIC	SEAT				
54-22	**2 –** 303 Stainless Steel **6 –** 316 Stainless Steel	**1 –** 1500 psig 103 bar *(spring only)* **3 –** 3000 psig 207 bar *(35:1 air only)* **3 –** 3500 psig 241 bar *(spring only)* **5 –** 5000 psig 345 bar *(spring and 65:1 air)* **6 –** 6000 psig 414 bar *(spring only)* **8 –** 8000 psig 552 bar *(hydraulic/ dome and 105:1 air)*	**D –** Nitrile, Buna-N	Nitrile, Buna-N	17-4 Stainless Steel 17-4 Stainless Steel	**1 –** SAE **2 –** NPTF **3 –** MS33649	3.95" 3.20" 3.95"	**12 –** 3/4"	**S –** Spring **H –** Hydraulic/ Dome **A –** Air
			T – FKM (Viton®-A)	FKM (Viton®-A)	17-4 Stainless Steel 17-4 Stainless Steel				
			V – FFKM, Perfluoroelastomer (Kalrez®)	FFKM, Perfluoroelastomer (Kalrez®)					
			Z – Ethylene Propylene	Ethylene Propylene					

Flanged End Connector Part Number Selection:

54-22W	6	1	0					A		1	52	1
BASIC SERIES	BODY, PIPE & FLANGE MATERIAL	OUTLET PRESSURE psig / bar	VENT PORT	SOFT GOOD MATERIAL						FLANGE SIZE	FLANGE CLASS	FLANGE FACE
				Dash No.	O-Rings		Seat	Operating Temperature				
					Dynamic	Static						
54-22W	**6 –** 316 SST	**0 –** 0-1120 0-77 **1 –** 0-1500 0-103 **3 –** 0-3500 0-241 **5 –** 0-5000 0-345	**0 –** Non venting **1 –** 1/2 NPT **2 –** 3/4 NPT	A	PTFE	FKM	17-4 SST	0 to 165°F / -17 to 74°C		**1 –** 1/2" **3 –** 1"	**41 –** 1 - 600# **52 –** 1 - 900# / 1500# **63 –** 1 - 2500#	**1 –** RF **2 –** RTJ
				B	Nitrile, Buna-N	Nitrile, Buna-N	17-4 SST	-20 to 165°F / -29 to 74°C				
				C	FKM	FKM	17-4 SST	0 to 200°F / -17 to 93°C				
				D	EP	EP	17-4 SST	-20 to 200°F / -29 to 93°C				
				E	PTFE	EP	17-4 SST	-20 to 200°F / -29 to 93°C				

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
5000 psig / 345 bar

Outlet Pressure Ranges
50-1500, 200-5000 psig / 3.4-103, 13.8-345 bar

Design Proof Pressure
150% maximum rated

Leakage (maximum)
2 drops/min at 150 S.U.S. at 2500 psig / 172 bar

Operating Temperature[1]
0°F to 165°F / -17°C to 74°C

Flow Capacity
Main Valve: C_V = 8.0
Vent Valve: C_V = 6.5

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel

Seat, Poppet, Sensor
17-4 PH Stainless Steel

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene, FFKM, Perfluoroelastomer (Kalrez®)

Back-up Rings
PTFE

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
35 lbs / 15.9 kg

1. For extended temperatures up to 350°F / 177°C, consult TESCOM.
Teflon®, Viton® and Kalrez® are registered trademarks of E.I du Pont de Nemours and Company.

AIR LOADED

HYDRAULIC (DOME) LOADED

TESCOM 54-2800 Series high pressure, high flow, pressure reducing regulator is designed for hydraulic applications. Inlet and outlet rated up to 5000 psig / 345 bar; C_V = 8.0 for high flows. Air operated and dome loaded versions are available. Hardened Stainless Steel seat and poppet for excellent wear resistance.

Applications

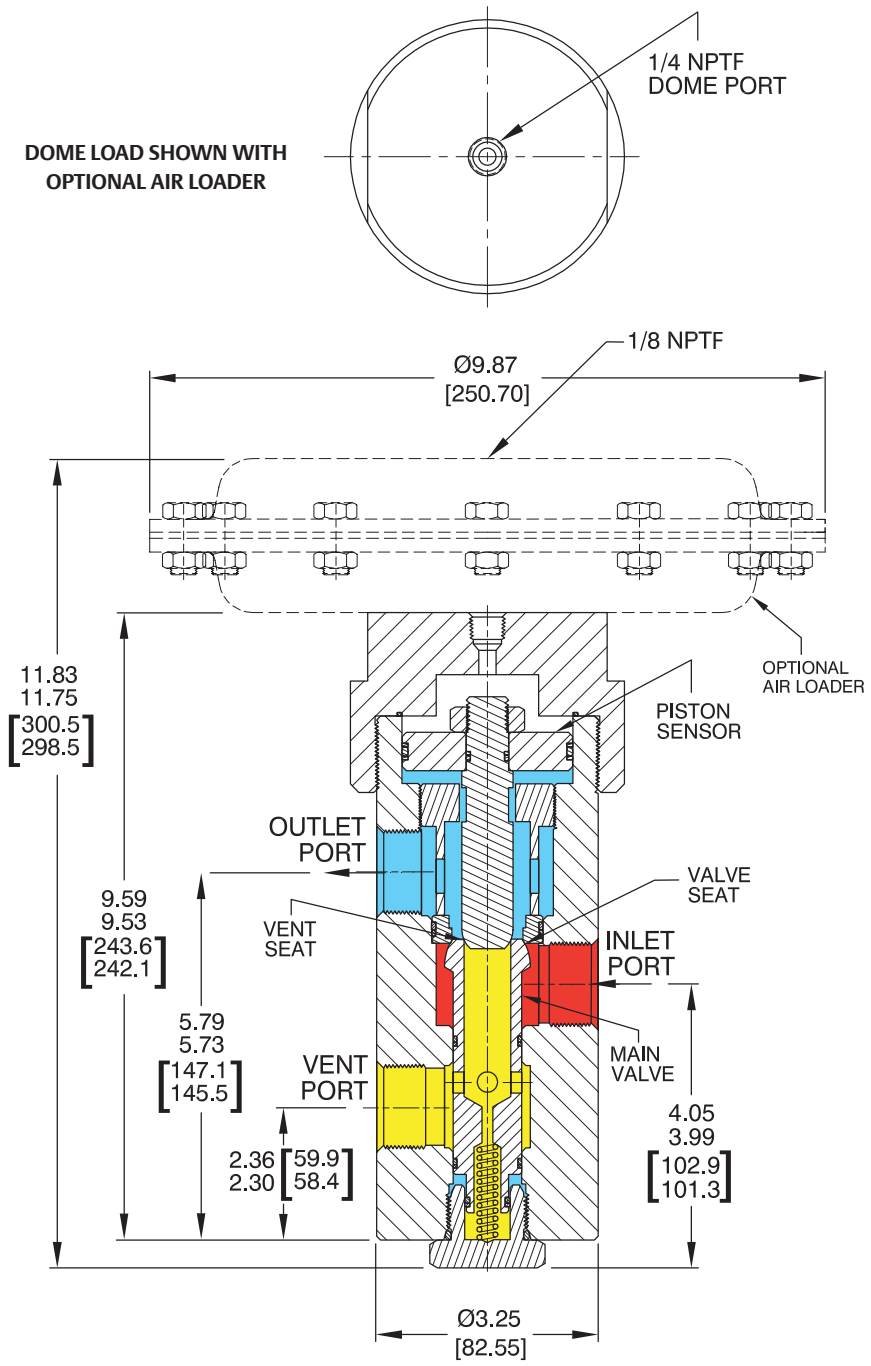
- Hydraulically operated blowout preventers (BOP)
- Hydraulic component testing

Features and Benefits

- High flow and compact design
- Hardened 17-4 PH Stainless Steel seat and poppet provides excellent protection against shock and erosion
- Utilizes a piston style sensor, balanced main valve poppet and a non-adjustable vent

54-2800 SERIES

54-2800 Series Regulator Drawing

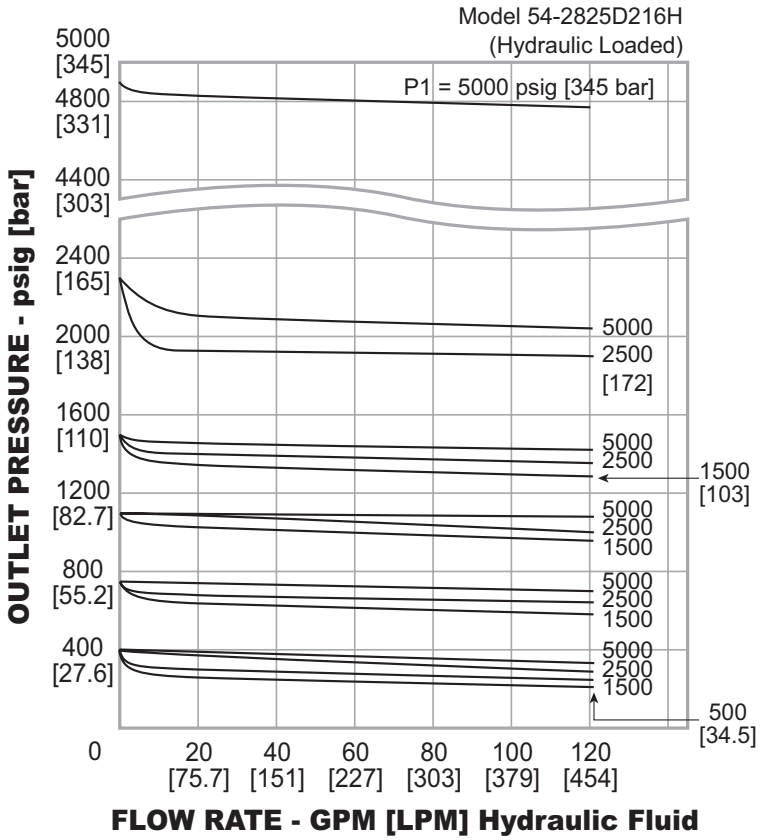


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

PRESSURE REDUCING



54-2800 SERIES

54-2800 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

54-28	2	5	D		2	16		H
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**O-RING MATERIAL**		**PORT TYPE**	**PORT SIZE**	**NUM-BER OF PORTS**	**LOADING**
			DYNAMIC	**STATIC**				
54-28	**2 –** 303 Stainless Steel	**1 –** 50-1500 psig 3.4-103 bar (air load - 18:1)[2] **5 –** 200-5000 psig 13.8-345 bar (air load - 52:1)[2]	**D –** Nitrile, Buna-N **T –** FKM (Viton®-A)[3] **V –** FFKM, Perfluoroelastomer (Kalrez®)[3] **Z –** Ethylene Propylene	Nitrile, Buna-N FKM (Viton®-A)[3] FFKM, Perfluoroelastomer (Kalrez®)[3] Ethylene Propylene	**1 –** SAE **2 –** NPTF	**16 –** 1"	3	**H –** Hydraulic 1:1 **A –** Air

2. Ratio is for reference only.
3. Air load only.

Regulators - Pressure Reducing D56XX2099X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
15,000 psig / 1034 bar

Maximum Outlet Pressure
200-15,000 psig / 13.8-1034 bar
(non-adjustable spring bias pressure: 175-200 psig / 12-13.8 bar)

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
See table

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Nitronic 60

Seat, Main Valve
Polyimide (Vespel® SP21), 17-4 Stainless Steel

O-Ring
FFKM, Perfluoroelastomer (Kalrez®)

Back-up Ring
PCTFE, PTFE

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel and Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
56-21XX: 18.26 lbs / 8.28 kg
56-22XX: 9.09 lbs / 4.12 kg
56-30XX: 34.8 lbs / 15.8 kg
56-32XX: 43.0 lbs / 19.5 kg

Teflon®, Vespel® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

Features and Benefits

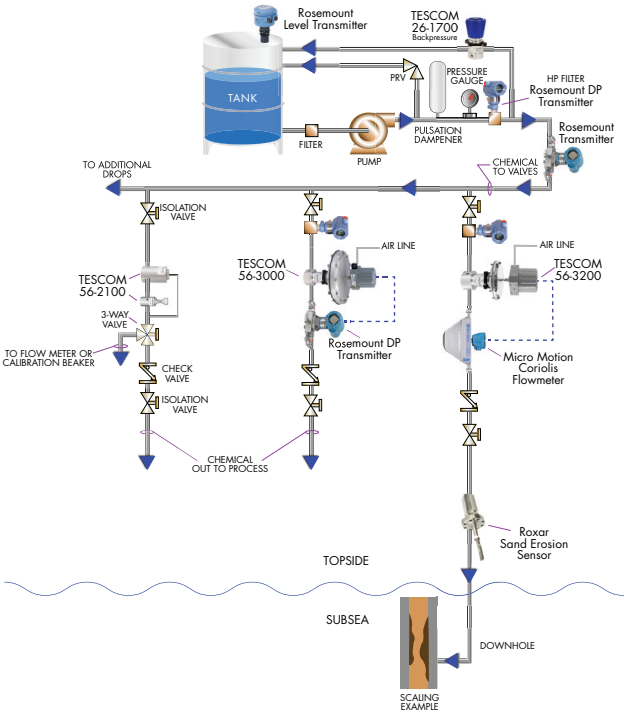
- Accurate and consistent flow control reduces the risk of flow assurance issues from over and under injection
- High-quality piston-sensed components for longevity in offshore applications reduce maintenance costs and unplanned downtime
- Alternative options for full automation of injection rate control with the addition of the ER5000

TESCOM 56 Series provides accurate flow control that allows customers to have consistent injection rates over the life of the well. Manually-controlled and electronically-controlled versions are available.

Applications

- Offshore Chemical Injection
- Process Flow Control

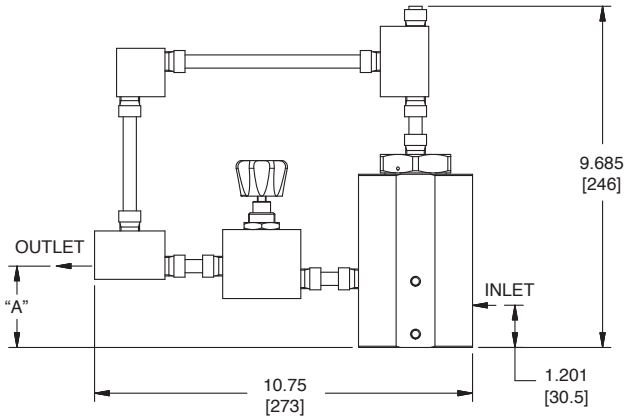
Typical Application

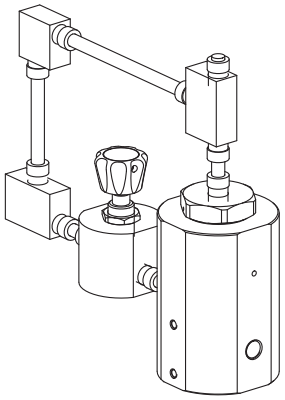


56 SERIES

56 Series Regulator Drawing

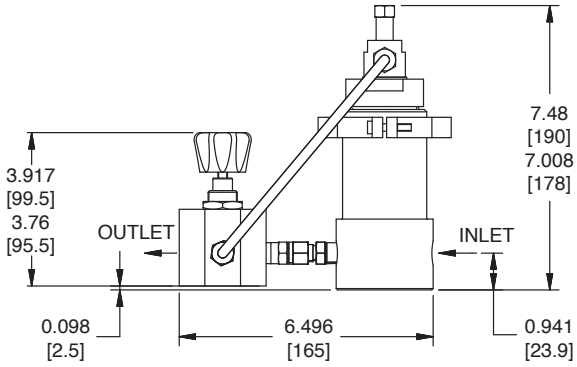
56-21XX

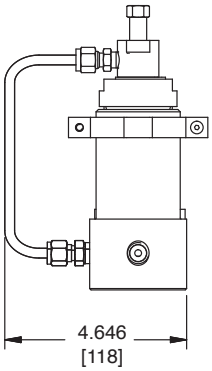


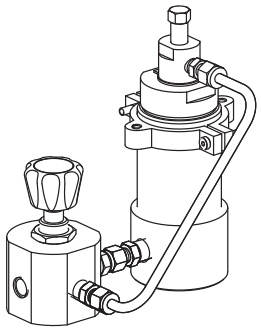


VALVE	"A" DIMENSION
56-2100	2.311 [58.7]
56-2101	1.949 [49.5]

56-22XX



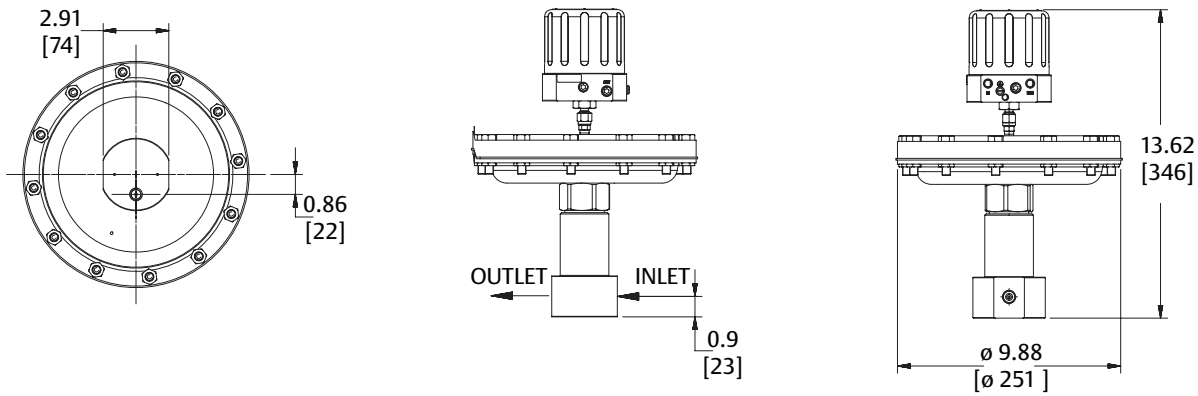




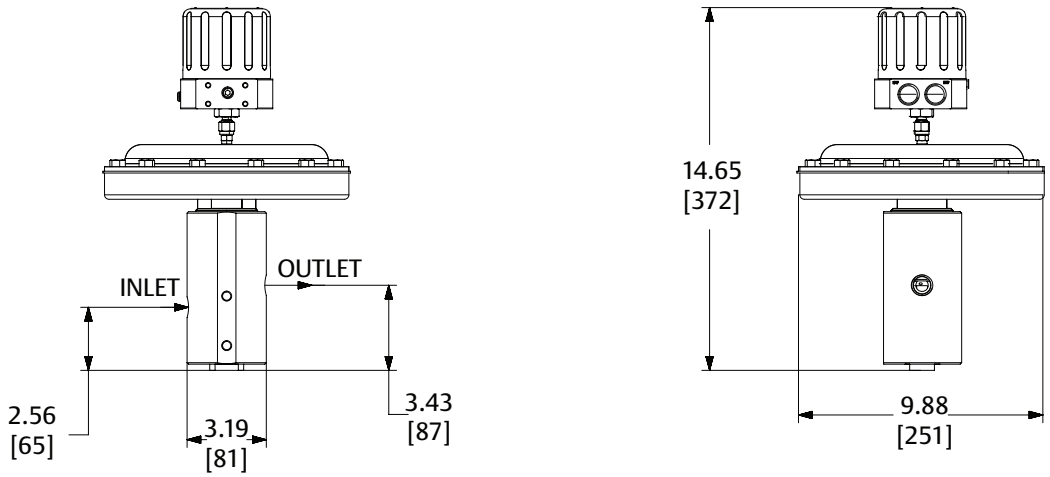
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

56 Series Regulator Drawing

56-30XX



56-32XX



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

56 SERIES

56 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

PART NUMBER	MAXIMUM INLET PRESSURE	MAXIMUM OUTLET PRESSURE	MINIMUM DIFFERENTIAL	MAXIMUM DIFFERENTIAL	INLET AND OUTLET PORT SIZE	MINIMUM FLOW RATE	MAXIMUM FLOW RATE
56-2100	15,000 psig 1034 bar	15,000 psig 1034 bar	175 psig 12 bar	12,500 psig 862 bar	3/8"	0.04 gpm 0.1514 l/min	1.20 gpm 4.542 l/min
56-2101	15,000 psig 1034 bar	15,000 psig 1034 bar	175 psig 12 bar	12,000 psig 827 bar	3/8"	0.0004 gpm 0.001514 l/min	0.20 gpm 0.7571 l/min
56-2200	10,000 psig 689 bar	4,000 psig 275 bar	175 psig 12 bar	9,000 psig 620 bar	1/4"	0.005 gpm 0.01893 l/min	0.16 gpm 0.6057 l/min
56-2201	10,000 psig 689 bar	4,000 psig 275 bar	175 psig 12 bar	9,000 psig 620 bar	1/4"	0.1 gpm 0.3785 l/min	2.28 gpm 8.631 l/min
56-3000	15,000 psig 1034 bar	15,000 psig 1034 bar	175 psig 12 bar	12,500 psig 862 bar	3/8" M.P.	0.04 gpm 0.1514 l/min	0.25 gpm 0.95 l/min
56-3200	8,000 psig 551 bar	8,000 psig 551 bar	175 psig 12 bar	7,600 psig 524 bar	1/2" NPT	3.00 gpm 11.36 l/min	30.00 gpm 113.56 l/min

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
15,000 psig / 1034 bar

Maximum Outlet Pressure
200-15,000 psig / 13.8-1034 bar
(non-adjustable spring bias pressure: 175-200 psig / 12-13.8 bar)

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.06
C_V = 0.12

MEDIA CONTACT MATERIALS

Body
17-4 PH Stainless Steel

Seat, Main Valve
Polyimide (Vespel® SP21)

O-Ring
Nitrile, Buna-N

Back-up Ring
PCTFE

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel and Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
13 lbs / 5.9 kg

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.

Features and Benefits

- Accurate and consistent setpoint control reduces the risk of flow assurance issues from over and under injection
- High-quality piston-sensed regulators for longevity in offshore applications reduce maintenance costs and unplanned downtime
- Alternative options for full automation of injection rate control with the addition of the ER5000

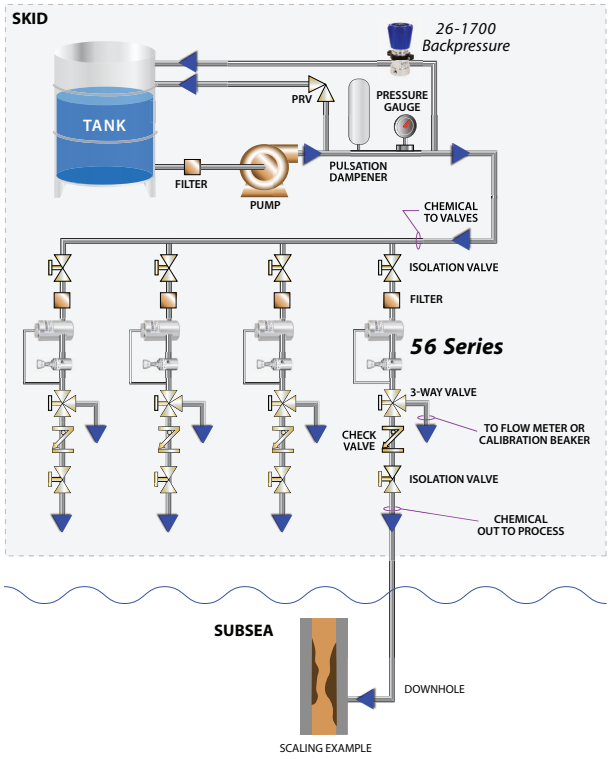
* *The 56-2000 requires a metering valve installed downstream to adjust the chemical injection rate (see diagram).*

TESCOM 56-2000 Series provides accurate pressure control that allows customers to have consistent injection rates over the life of the well.

Applications

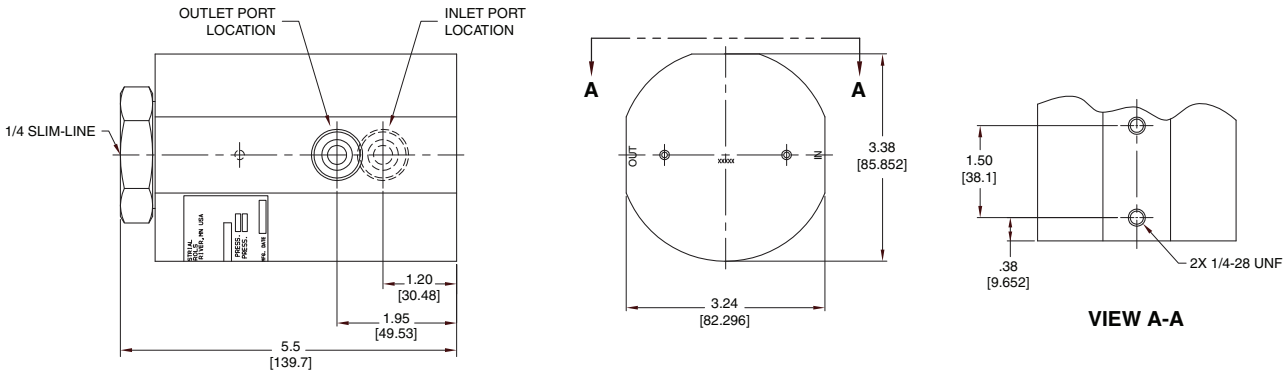
- Offshore Chemical Injection

Typical Scaling Application



56-2000 SERIES

56-2000 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

56-2000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

Dome Load

56-20	8	0	D			6	9	D	2	7	0
BASIC SERIES	MAXIMUM INLET PRESSURE [1] (BODY MATERIAL)	MAXIMUM OUTLET PRESSURE / SPRING BIAS PRESSURE	SOFT GOODS MATERIAL: DYNAMIC ROTO-SEALS	SOFT GOODS MATERIAL: STATIC O-RINGS	SOFT GOODS MATERIAL: BACK-UP RINGS	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	FLOW CAPACITY		MAIN VALVE AND VENT SEAT	GAUGE PORT OPTIONS
56-20	**8 –** 15,000 psig 1034 bar (17-4 SST) **N –** 15,000 psig 1034 bar (Nitronic 60)	**0 –** 200-15,000 psig 13.8-1034 bar 175-200 psig 12-13.8 bar	**D –** Nitrile, Buna-N	Nitrile, Buna-N	PCTFE	**6 –** Medium Pressure	**9 –** 9/16"	**2 –** C_V = 0.06 **3 –** C_V = 0.12		**7 –** Vespel® SP1	**0 –** No gauge ports

1. Pressure at which regulator is used must be compatible with the pressure rating of the regulator and port size/type provided.

Regulators - Pressure Reducing DBB011761X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Ranges
Low Pressure: 0-220 psig / 0-15.2 bar
High Pressure: 0-1800 psig / 0-124 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
Operating temperature depends on soft goods materials. See table below.

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
Aluminum 6061 (Nickel-plated)

Seat
PCTFE, PEEK, or Polyimide (Vespel®)

O-Rings
See Part Number Selector

Remaining Parts
300 Series Stainless Steel or Aluminum

OTHER

Connections
1/4" NPTF or SAE

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
0.5 lbs / 0.2 kg

Vespel®, Viton®, and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

O-RING SEAL	OPERATING TEMPERATURE
90 DURO BUNA	-30 °F TO +165 °F / -34 °C TO +74 °C
ETHYLENE PROPYLENE	-30 °F TO +300 °F / -34 °C TO +149 °C
BUNA-N	-30 °F TO +165 °F / -34 °C TO +74 °C
POLYURETHANE	-30 °F TO +250 °F / -34 °C TO +121 °C
FKM	-15 °F TO +400 °F / -26 °C TO +204 °C
KALREZ	+20 °F TO +400 °F / -7 °C TO +204 °C

SEAT	OPERATING TEMPERATURE
PCTFE	-30 °F TO +140 °F / -34 °C TO +60 °C
VESPEL	-30 °F TO +400 °F / -34 °C TO +204 °C
PEEK	-30 °F TO +350 °F / -34 °C TO +177 °C

TESCOM BB-1 Series high pressure, low flow, miniature pressure reducing regulator provides six outlet pressure ranges available up to 1800 psig / 124 bar outlet. This non-venting regulator is small and compact, weighing approximately 0.5 lbs / 0.2 kg in the standard aluminum construction.

Applications

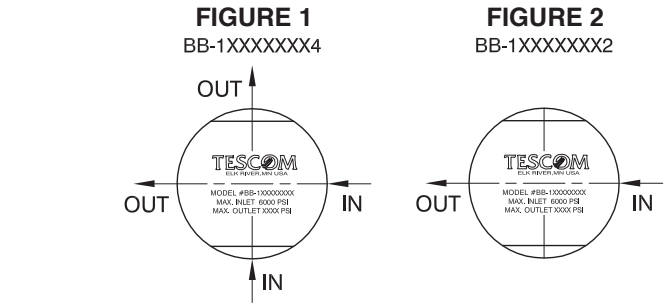
- Portable equipment
- OEM equipment

Features and Benefits

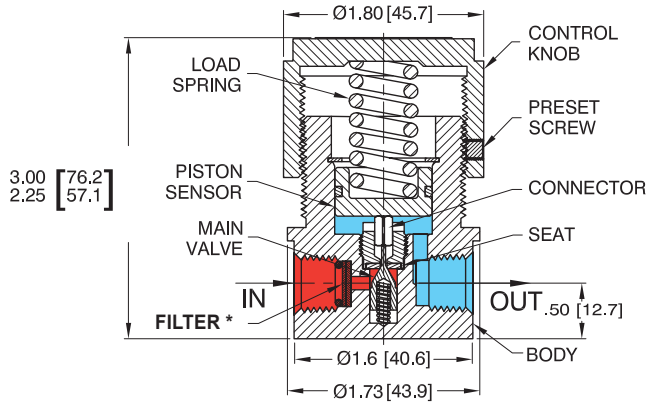
- Durable piston-sensed design
- Outlet pressure ranges are field adjustable
- Two and four 1/4" NPTF or SAE ports are standard
- Minimal soft goods
- Non-venting
- Two-stage and cartridge versions are available
- 316 Stainless Steel construction is available

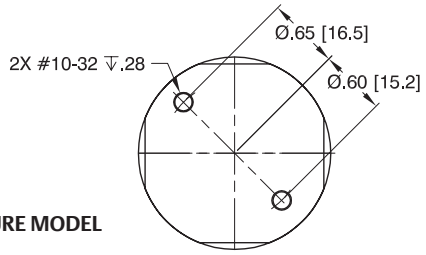
BB-1 SERIES

BB-1 Series Regulator Drawings

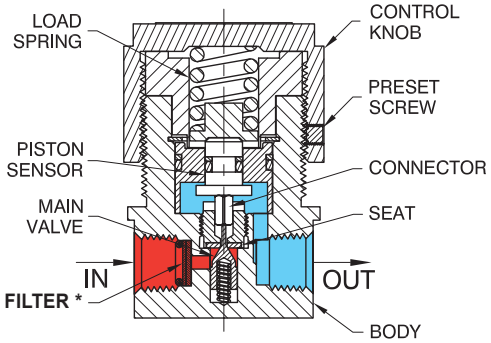


LOW PRESSURE MODEL





HIGH PRESSURE MODEL



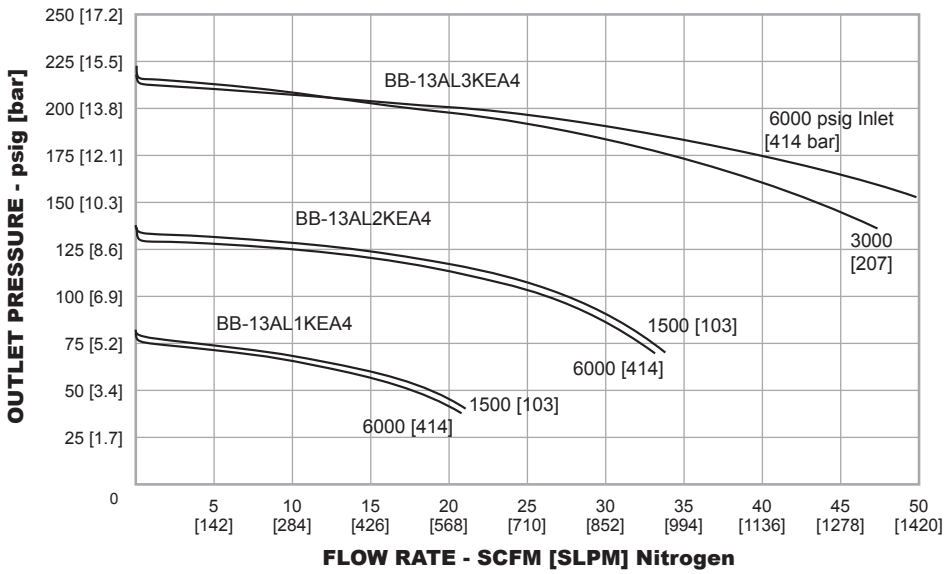
** Filter is only available for 1/4" NPTF*

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

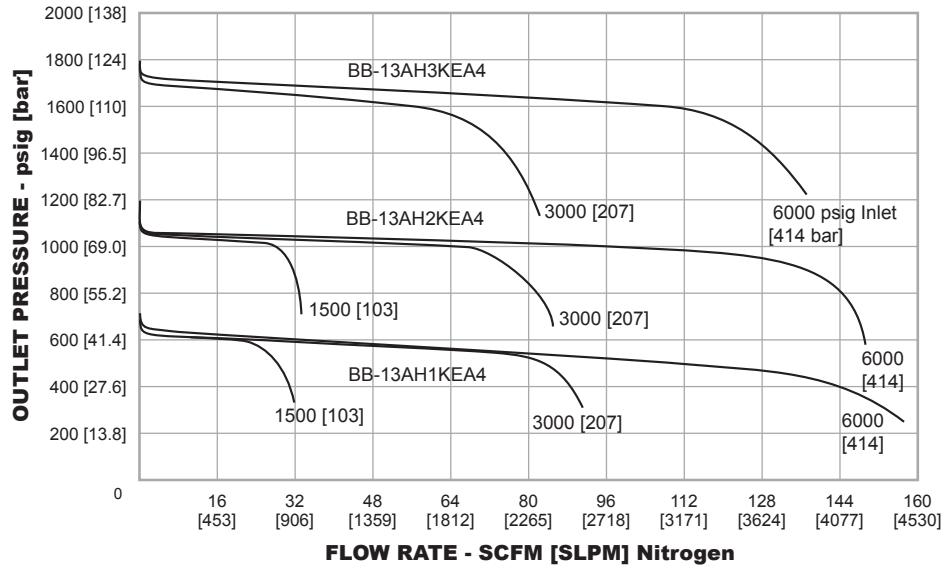
BB-1 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

Low Pressure Model



High Pressure Model



BB-1 SERIES

BB-1 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

BB -	1	3	A	L3	K	E	A4

BASIC SERIES	FUNCTION	BODY MATERIAL	LOAD TYPE	OUTLET PRESSURE		SEAT	O-RING SEAL	PORTING CONFIGURATION NUMBER OF PORTS
				ADJUSTABLE	PRESET			
BB	**1 -** Pressure Reducing	**3 -** Aluminum 6061	**A –** Adjustable **P –** Preset	**L1 –** 0-80 psig 0-5.5 bar **L2 –** 0-140 psig 0-9.7 bar **L3 –** 0-220 psig 0-15.2 bar **H1 –** 0-700 psig 0-48.3 bar **H2 –** 0-1200 psig 0-82.7 bar **H3 –** 0-1800 psig 0-124 bar	0-80 psig 0-5.5 bar 80-140 psig 5.5-9.7 bar 140-220 psig 9.7-15.2 bar 220-700 psig 15.2-48.3 bar 700-1200 psig 48.3-82.7 bar 1200-1800 psig 82.7-124 bar	**K –** PCTFE **P –** PEEK **V –** Polyimide (Vespel®)	**B –** Nitrile, Buna-N 90 Durometer **E –** Ethylene Propylene **K –** FFKM, Perfluoroelastomer (Kalrez®) **N –** Nitrile, Buna-N **U –** Polyurethane **V –** FKM (Viton®-A)	**A4 –** 1/4" NPTF 4 (Figure 1) **B4 –** 1/4" SAE 4 (Figure 1) **A2 –** 1/4" NPTF 2 (Figure 2) **B2 –** 1/4" SAE 2 (Figure 2)

Regulators - Pressure Reducing DBEXX2025X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Maximum Outlet Pressure
See Part Number Selector

Design Proof Pressure
150% maximum rated pressure

Leakage
Bubble-tight

Operating Temperature
See Part Number Selector

Flow Capacity
C_V = 0.02

MEDIA CONTACT MATERIALS

Body
Brass, Nickel-plated Aluminum, 316 Stainless Steel

Piston
Brass (Brass and Aluminum bodies only)
316 Stainless Steel (316 Stainless Steel bodies only)

Seat
PTFE, PCTFE, Polyimide

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene (E.P.), Urethane

Filter
Bronze, Stainless Steel

OTHER

Weight
0.5 lbs / 0.2 kg

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM BE Series regulator functions alone, as a pilot source or can be used to convert most TESCOM low pressure regulators into a two-stage pressure reducer.

Applications

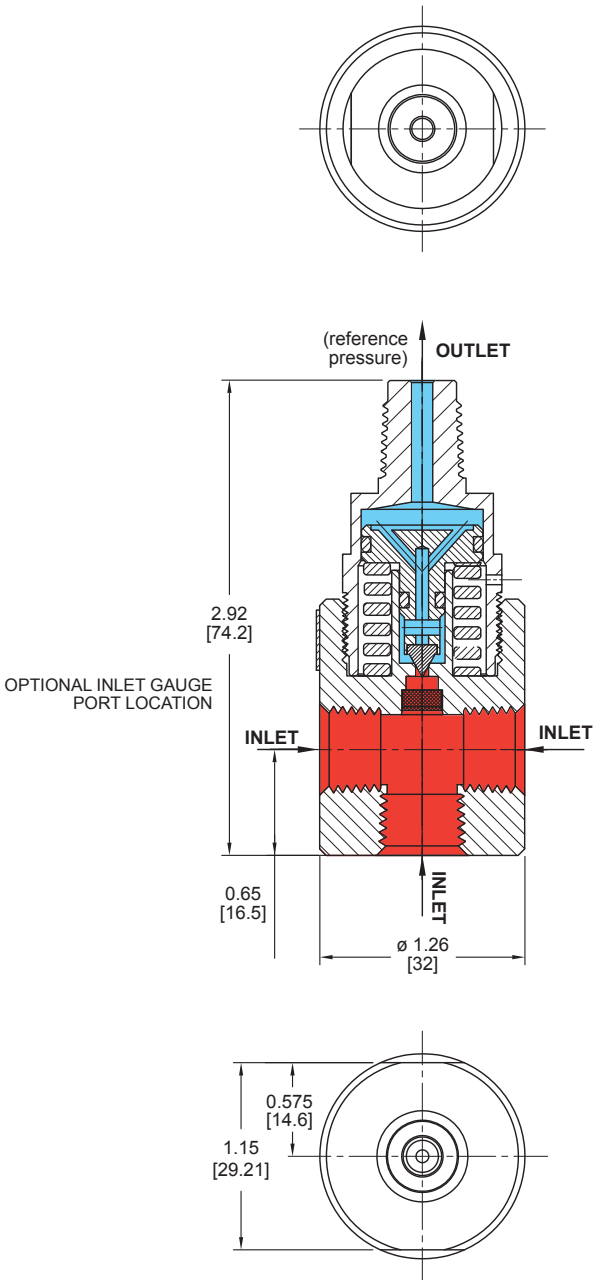
- Rough cut regulator
- Can be combined with a one-stage regulator to create a two-stage regulator
- Tee-ed in for a pilot source
- Non-venting

Features and Benefits

- Material: Nickel-plated Aluminum, Brass, and 316 Stainless Steel
- Positive shut-off for leak integrity
- Reverse decaying inlet characteristic for sensitive equipment applications
- Preset at factory for a set of standard operating conditions
- Low flow applications: C_V = 0.02
- 6000 psig / 414 bar inlet, 0-450 psig / 0-31 bar outlet
- Various porting configurations for gauges and relief valves

BE SERIES

BE Series Regulator Drawing

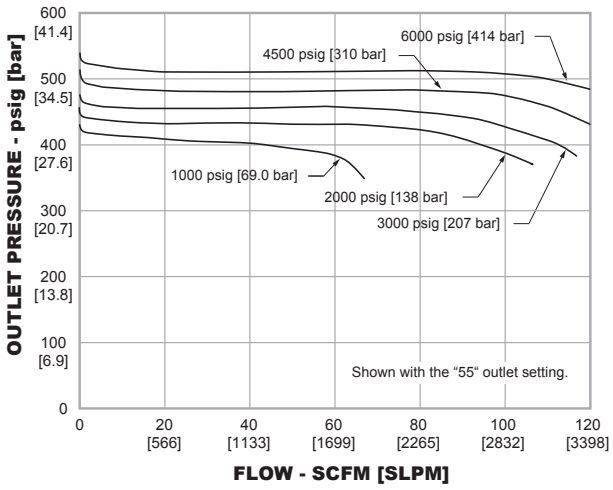


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

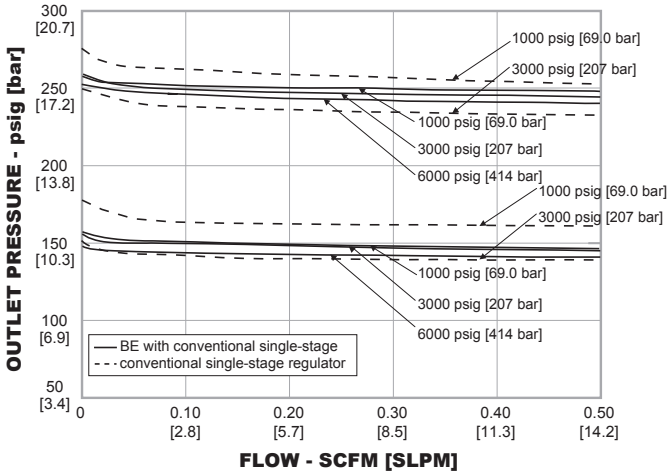
BE Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

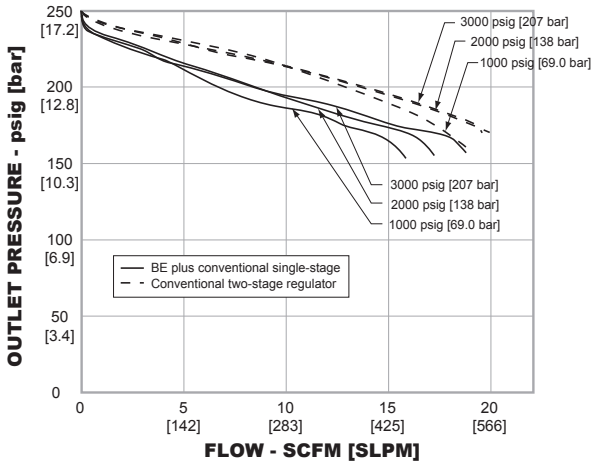
BE In-line Regulator



Conventional Single-Stage Regulator vs. BE In-line Regulator Plus Conventional Single-Stage Regulator



Conventional Two-Stage Regulator vs. BE In-line Regulator Plus Conventional Single-Stage Regulator



BE SERIES

BE Series Regulator Part Number Selector

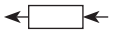
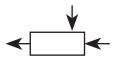
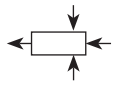
Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

OPTIONAL ITEMS	
-	No inlet filter
F	Inlet filter 40 micron Bronze
S	Inlet filter 40 micron Stainless Steel

INLET OUTLET GAUGE

BE 6 25 VC - H - 4 C 4

BASIC SERIES	BODY AND BONNET MATERIAL	NOMINAL OUTLET SETTING P1 psig / bar			O-RING MATERIAL	SEAT MATERIAL	OPERATING TEMPERATURE*	PORTING CONFIGURATION (Side View)	INLET, OUTLET AND GAUGE PORTS
		1000 / 69.0	3000 / 207	6000 / 414					
BE	**1** – Brass	**05** – 25 / 1.7	60 / 4.1	120 / 8.3	**BT** – Nitrile, Buna-N	PTFE	-40°F to 165°F -40°C to 74°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C	**A** – no gauge ports	**2** – 1/8" Female NPTF
	3 – Nickel-plated Aluminum	**10** – 50 / 3.4	95 / 6.6	160 / 11.0	**VT** – FKM (Viton®-A)				**4** – 1/4" Female NPTF
	6 – 316 Stainless Steel	**20** – 160 / 11.0	200 / 13.8	260 / 17.9	**ET** – E.P.			**F** – one gauge port	**B** – 1/8" Male NPTF
		25 – 220 / 15.2	250 / 17.2	330 / 22.8	**UT** – Urethane				**C** – 1/4" Male NPTF
		55 – 510 / 35.2	550 / 37.9	600 / 41.4	**BC** – Nitrile, Buna-N	PCTFE	-40°F to 140°F -40°C to 60°C -15°F to 140°F -26°C to 60°C -40°F to 140°F -40°C to 60°C -40°F to 140°F -40°C to 60°C	**H** – two gauge ports	**E** – 1/8" Female SAE
					VC – FKM (Viton®-A)				**F** – 1/4" Female SAE
					EC – E.P.			**Note:** Porting configuration could restrict gauge port orientation.	**H** – 1/8" Male SAE
					UC – Urethane				**I** – 1/4" Male SAE
					BY – Nitrile, Buna-N	Polyimide	-40°F to 165°F -40°C to 74°C -15°F to 400°F -26°C to 204°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C		**9** – None
					VY – FKM (Viton®-A)				
					EY – E.P.				
					UY – Urethane				

**Brass body is limited to +200 °F (93 °C) maximum.*
Aluminum body is limited to +200 °F (93 °C) maximum.

Regulators - Pressure Reducing

DCP321949X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3000 psig / 207 bar

Maximum Outlet Pressure Range
0-500 psig / 0-34.5 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature*
-15°F to 140°F / -26°C to 60°C

Flow Capacity
C_V = 1.0

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass

Seat and Seal
PCTFE, PTFE

O-Rings
Nitrile, Buna-N, FKM (Viton®-A)

Retainer, Seat
Nitronic 60 or Brass

Spring
316 Stainless Steel

Diaphragm
316 Stainless Steel

Remaining Parts
316 Stainless Steel, Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
3.5 lbs / 1.6 kg

**For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult Tescom.*

Viton® and Teflon® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM CP3200 Series self-contained pilot-operated high flow, high pressure, dome loaded regulator is designed for gas flows up to 1200 SCFM / 34,000 SLPM.

Applications

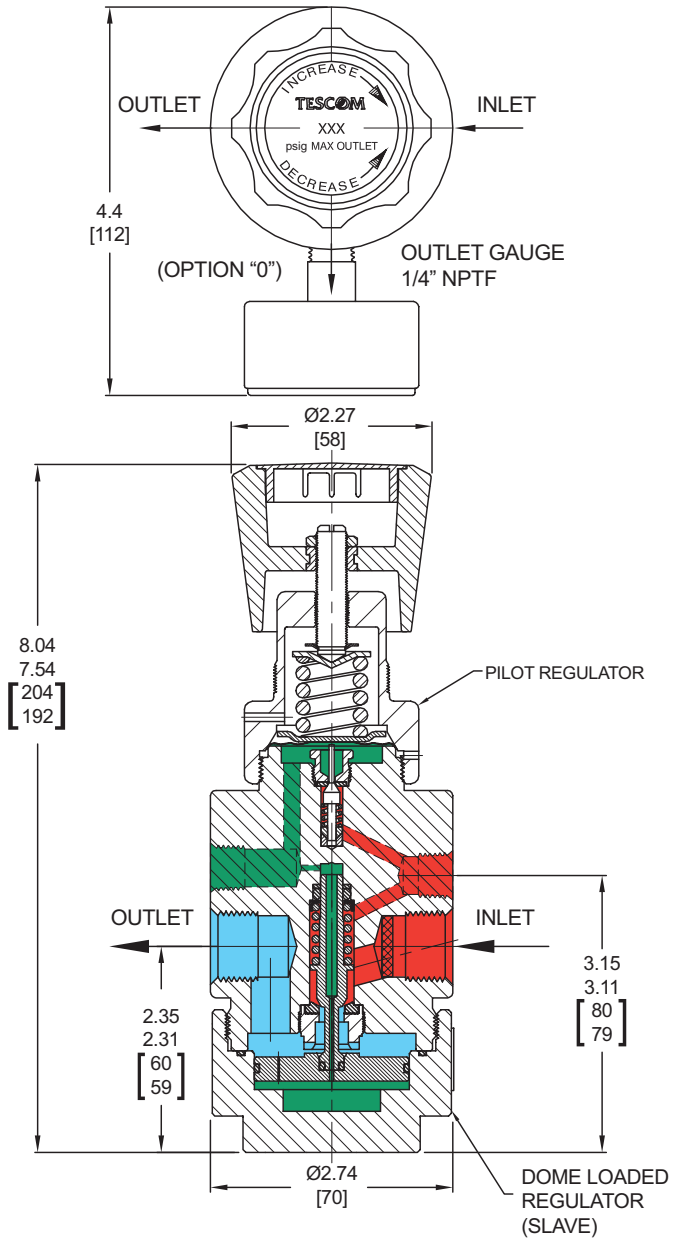
- Laser assist and resonator gases
- Tank purging

Features and Benefits

- High flow or low outlet pressures
- Balanced main valve design minimizes supply pressure effect
- Pilot operation provides fast low-torque pressure settings
- Large piston sensor provides excellent sensitivity
- Can be mounted in any position
- Low pressure droop

CP32 SERIES

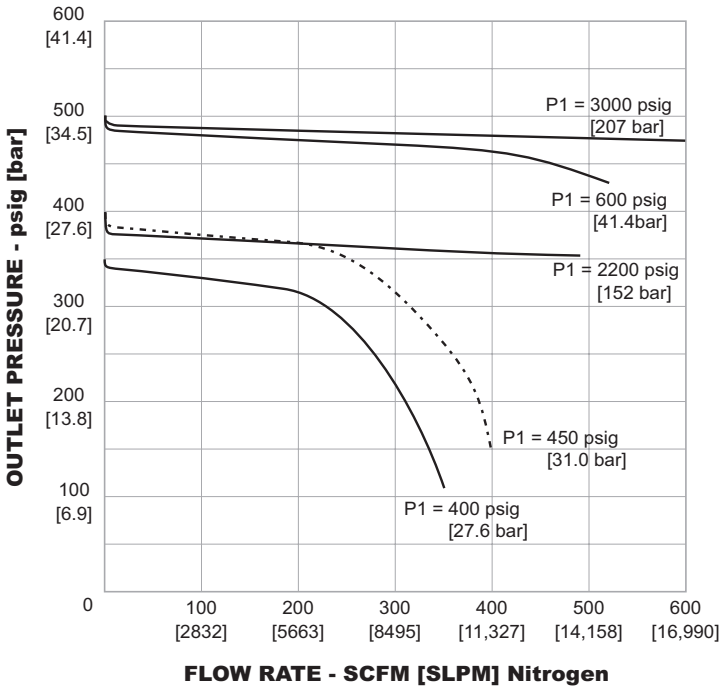
CP32 Series Regulator Drawing



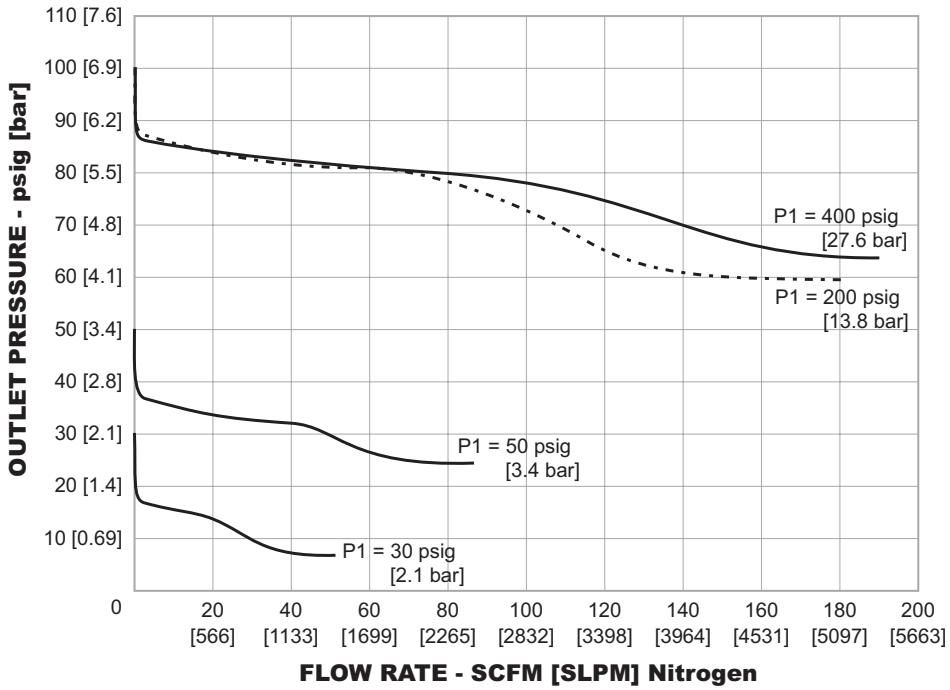
All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

CP32 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



CP3200 - Lower P1 pressures
(CP3214022080-001)

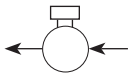
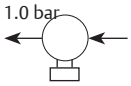
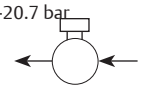


CP32 SERIES

CP32 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

CP32	1	4	0	2	2	08	0
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE**	**SEAT AND SEAL MATERIAL**	**O-RING MATERIAL**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**GAUGE OPTIONS (bottom view)**
CP32	**1 –** Brass **6 –** 316 Stainless Steel	**2 -** 0-100 psig 0-6.9 bar **3 -** 0-250 psig 0-17.2 bar **4 –** 0-500 psig 0-34.5 bar	**0 –** PCTFE, PTFE	**0 –** Nitrile, Buna-N **2 –** FKM (Viton®-A)	**2 –** NPTF	**08 –** 1/2"	**0 –** Outlet Gauge at 90° 0-1000 psig 0-69.0 bar **1 –** Outlet Gauge at 90° 0-500 psig 0-34.5 bar  **2 –** Outlet Gauge at 270° 0-160 psig 0-11.0 bar  **3 –** Outlet Gauge at 90° 0-300 psig 0-20.7 bar 

Regulators - Pressure Reducing

DDAXX1798X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
4500 psig / 310 bar

Outlet Pressure Ranges
50 mm Hg absolute - 15 psig / 1.0 bar
50 mm Hg absolute - 50 psig / 3.4 bar
50 mm Hg absolute - 100 psig / 6.9 bar
50 mm Hg absolute - 350 psig / 24.1 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal, Bubble-tight

Operating Temperature[1]
-15°F to 140°F / -25°C to 60°C

Flow Capacity
C_V = 0.06

Maximum Operating Torque
30 in-lbs / 3.4 N • m

MEDIA CONTACT MATERIALS

Body
Brass or Nickel Plated Aluminum

Diaphragm
Nitrile, Buna-N, Ethylene Propylene, or FKM (Viton®-A)

Seat
PTFE (Inlet 500 psig / 34.5 bar maximum), CTFE, or Polyimide (Vespel®)

Friction Sleeve (inner)
PTFE

Friction Sleeve (outer)
316 Stainless Steel

Filter (40 micron)
316 Stainless Steel

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Brass: 2.4 lbs / 1.1 kg
Aluminum: 1 lb / 0.5 kg

1. For extended temperatures from -40°F to 400°F /-40°C to 204°C, consult Tescom. Viton®, Teflon®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM DA Series absolute pressure reducing regulator is designed with an elastomeric diaphragm and provides accuracy to +/- 0.1 psig / 0.007 bar. This regulator may be used to reduce pressure from a supply source up to 4500 psig / 310 bar into a vacuum environment.

Applications

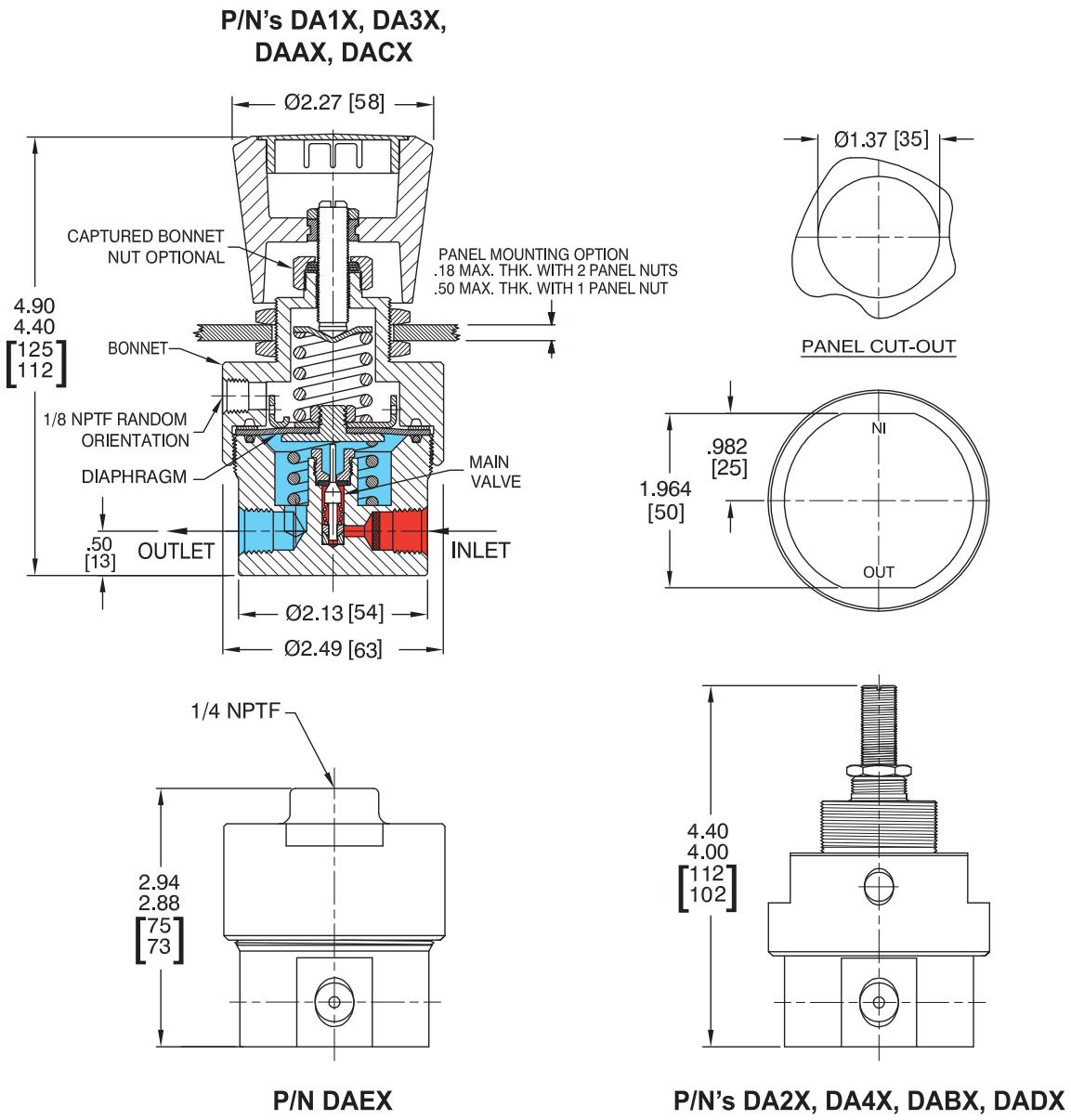
- Instrumentation testing
- Calibration equipment

Features and Benefits

- Compact in size and highly sensitive
- Economical
- Quick response and accurate diaphragm-type regulation
- Excellent repeatability
- Non-venting
- Low operating handknob torque
- Captured bonnet is available
- Panel mounting option is available
- Variety of porting options, body materials and soft goods

DA SERIES

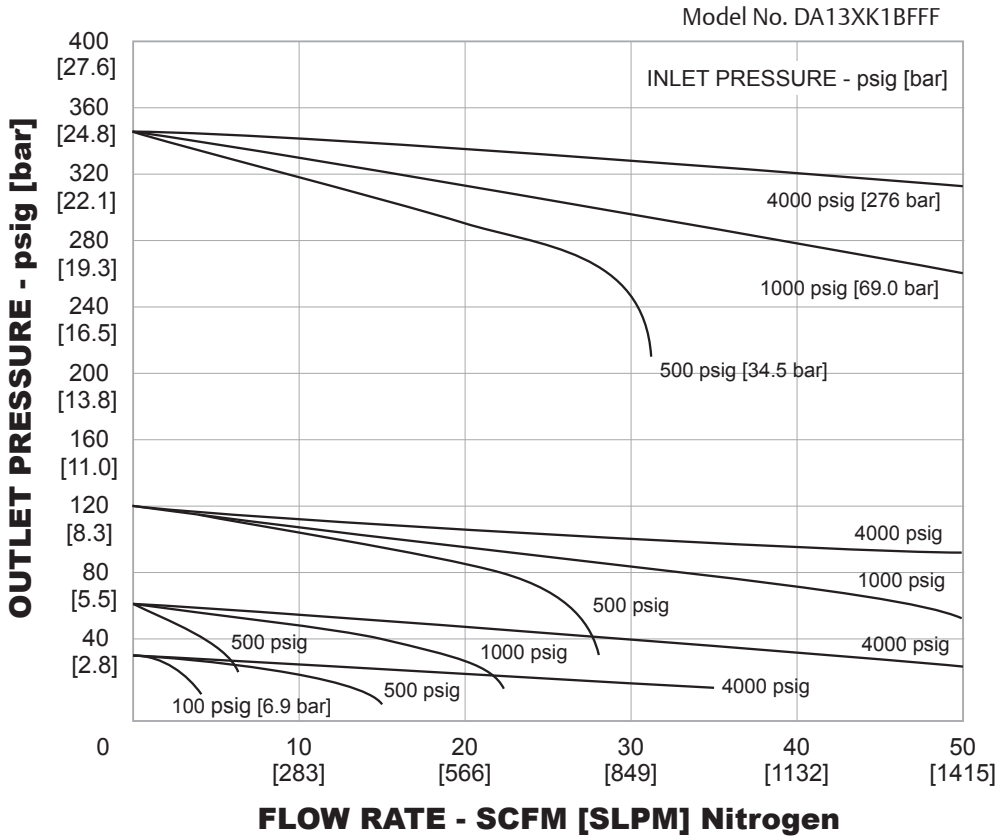
DA Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DA Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

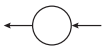
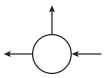
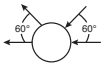
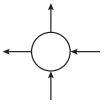


DA SERIES

DA Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

DA	1	3	0		K	1	B	9	A	F F 9
BASIC SERIES	**LOAD TYPE**	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**		**SEAT MATERIAL**	**FLOW C_V**	**DIAPHRAGM MATERIAL**	**MOUNTING**	**STANDARD PORTING CONFIGURATION**	**INLET, OUTLET AND GAUGE PORT TYPE AND SIZE**
			STANDARD	**ABSOLUTE[1]**						
DA	**Standard Pressure Reducing** **1** – Handknob adjust **2** – Screwdiver adjust **3** – Captured bonnet Hand adjust **4** – Captured bonnet Screw adjust **Absolute Pressure Reducing** **A** – Handknob adjust **B** – Screwdriver adjust **C** – Captured bonnet Hand adjust **D** – Captured bonnet Screw adjust **E** – Dome loaded (maximum dome pressure 125 psig / 8.6 bar)	**1** – Brass **3** – Aluminum	**0** – N/A	50 mm Hg absolute - 100 psig / 6.9 bar (Dome loaded only)	**K** – PCTFE Inlet 4500 psig / 310 bar maximum **V** – Polyimide (Vespel®) Inlet 4500 psig / 310 bar maximum **T** – PTFE Inlet 500 psig / 34.5 bar maximum	**1** – C_V = 0.06	**B** – Nitrile, Buna-N **E** – Ethylene Propylene **V** – FKM (Viton®-A)	**9** – None **P** – Panel Mounting	**A** – No gauge ports  **D** – Out gauge port at 90°  **B** – In and Out gauge port at 60°  **L** – In and out gauge port at 90° 	**B** – 1/4" SAE **F** – 1/4" NPTF **J** – 1/4" MS33649 **9** – None
			1 – 0-15 psig 0-1.0 bar	50 mm Hg absolute - 15 psig / 1.0 bar						
			2 – 0-50 psig 0-3.4 bar	50 mm Hg absolute - 50 psig / 3.4 bar						
			3 – 0-100 psig 0-6.9 bar	50 mm Hg absolute - 100 psig / 6.9 bar						
			4 – 0-350 psig 0-24.1 bar	50 mm Hg absolute - 350 psig / 24.1 bar						

1. 28" Hg = 50 mm Hg absolute

Regulators - Pressure Reducing

DDGXX1969X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150 and 0-250 psig
0-1.4, 0-3.4, 0-6.9, 0-10.3 and 0-17.2 bar
(0-300 psig / 0-20.7 bar dome load only)

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-10°F to 165°F / -23°C to 74°C

Flow Capacity
C_V = 10

MEDIA CONTACT MATERIALS

Body, Bonnet, Back-cap
316 Stainless Steel

Main Valve Seat
Nitrile, Buna-N 90 Durometer, Ethylene Propylene 80, Perfluoroelastomer (Chemraz 75) or FKM (Viton®-A)

O-Rings
Nitrile, Buna-N, Ethylene Propylene 80, Perfluoroelastomer (Chemraz 75) or FKM (Viton®-A)

Diaphragm
PTFE

Remaining Parts
300 Series Stainless Steel, Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
35 lbs / 15.9 kg

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.
Gylon® is a registered trademark of Garlock, Inc.
Chemraz® is a registered trademark of Greentweed.

TESCOM DG Series single-stage regulator provides a compact size with high flow capability greater than 1000 SCFM / 28,300 SLPM. The large diaphragm and balanced main valve design provide lower droop (larger usable flow range) than competitive designs. Available in spring or dome loaded configurations.

Applications

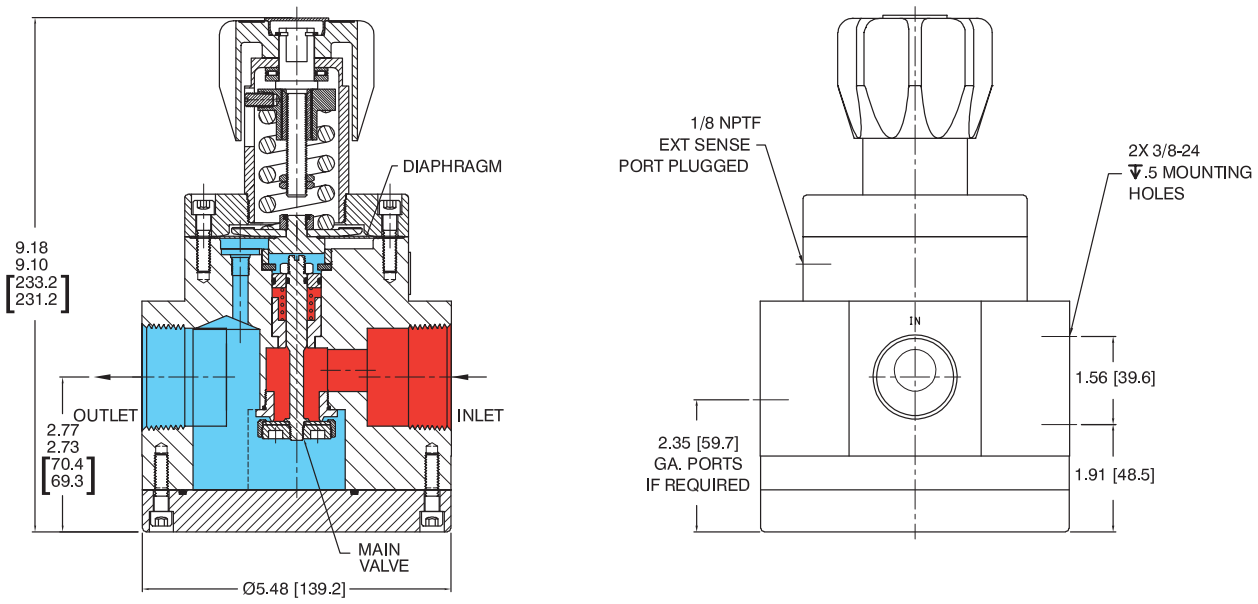
- Purging, blanketing, high flow inerting, heat-treating and shielding gases
- Performs well at very low pressure differentials such as Dewar-supplied processes
- Multi-drop breathing air stations

Features and Benefits

- C_V = 10 in a compact design
- Diaphragm sensing provides greater accuracy and sensitivity
- Dome/air actuated compatible with TESCOM ER5000 Electropneumatic Controllers

DG SERIES

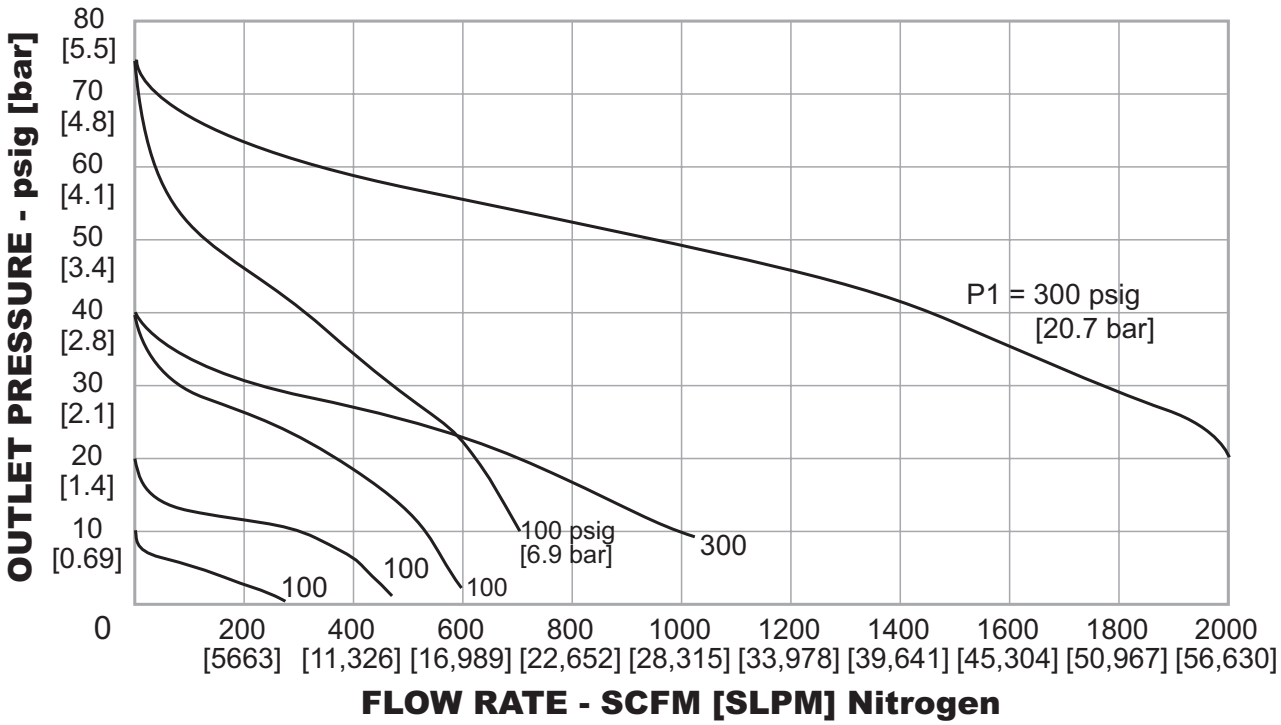
DG Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DG Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



DG SERIES

DG Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

DG	H	6	2	E		G	N	9	2
BASIC SERIES	**LOAD TYPE**	**BODY, BONNET, BACK-CAP MATERIAL**	**OUTLET PRESSURE RANGES**	**SOFT GOODS**		**DIAPHRAGM**	**VENT SEAT**	**OPTIONAL**	**PORT TYPE**
				O-RING	**VALVE SEAT**				
DG	**D –** Dome Load **H –** Spring Load	**6 –** 316 Stainless Steel	**0 –** 0-20 psig 0-1.4 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **5 –** 0-250 psig 0-17.2 bar **D –** 0-300 psig 0-20.7 bar *(Dome load only)*	**B –** Nitrile, Buna-N **E –** Ethylene Propylene **M –** FFKM, Perfluoroelastomer (Kalrez®) **V –** FKM (Viton®-A)	Nitrile, Buna-N 90 Durometer Ethylene Propylene 80 FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A)	**G –** PTFE	**N –** Non-venting	**C –** CCL **9 –** None	**2 –** NPTF

24	A
PORT SIZE	**PORTING**
16 – 1" **24 –** 1-1/2"	**A –** No gauge ports  **C –** Two gauge ports at 70°  **D –** One gauge port at 90° 

Regulators - Pressure Reducing

DDHXX1910X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
500 psig / 34.5 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150, 0-250 psig
0-1.4, 0-3.4, 0-6.9, 0-10.3, 0-17.2 bar

Design Proof Pressure
150% of rated inlet

Leakage
Bubble-tight

Ambient Operating Temperature
-4°F to 165°F / -20°C to 74°C

Flow Capacity
C_V = 5.0

MEDIA CONTACT MATERIALS

Body, Back-cap
316 Stainless Steel or Brass

Bonnet
303 Stainless Steel or Brass

Diaphragm
Ethylene Propylene or Nylon Reinforced, PTFE

Seat
Main Valve: Nitrile, Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Chemraz®), FKM (Viton®-A)
Vent: PCTFE, Polyimide (Vespel®)

O-Rings
Nitrile, Buna-N, E.P., FFKM, Perfluoroelastomer (Chemraz®), FKM (Viton®-A)

Remaining Parts
300 Series Stainless Steel, Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
Stainless Steel: 15 lbs / 6.8 kg
Brass: 16 lbs / 7.3 kg

Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.
Gylon® is a registered trademark of Garlock, Inc.
Chemraz® is a registered trademark of Greentweed.

DOME LOADED

SPRING LOADED

TESCOM DH-Series single-stage regulator provides a compact size with high flow capability from 5-200 SCFM / 142-5663 SLPM. The large diaphragm and balanced main valve design provide low droop (larger usable flow range) than competitive designs. Available in spring or dome loaded configurations.

Applications

- Purging, blanketing, high flow inerting, heat treating, and shielding gases
- Performs well at very low pressure differentials such as dewar-supplied processes
- Multi-drop breathing air stations

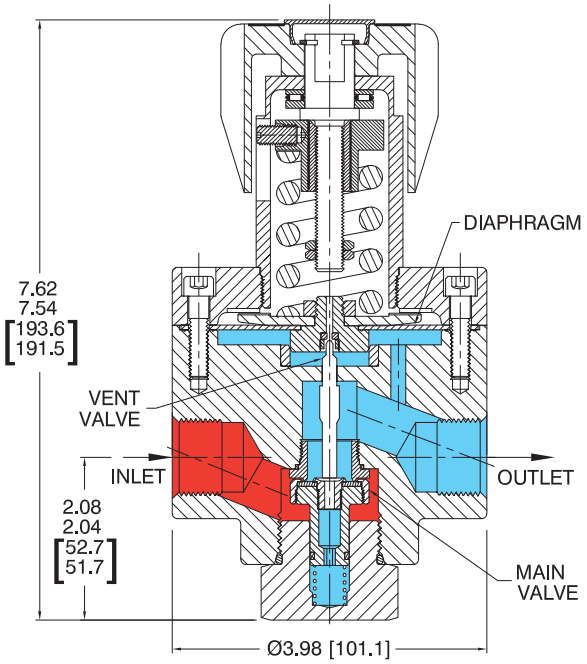
Features and Benefits

- Available in 316 Stainless Steel or Brass
- Accurately regulates pressure up to 250 psig / 17.2 bar for spring load, 300 psig / 20.7 bar for dome load and 500 psig / 34.5 bar for air load (optional)
- Five outlet pressure ranges
- Choice of spring load or dome load (air load is optional)
- Low droop
- Panel mounting is available
- Flanged end connections available

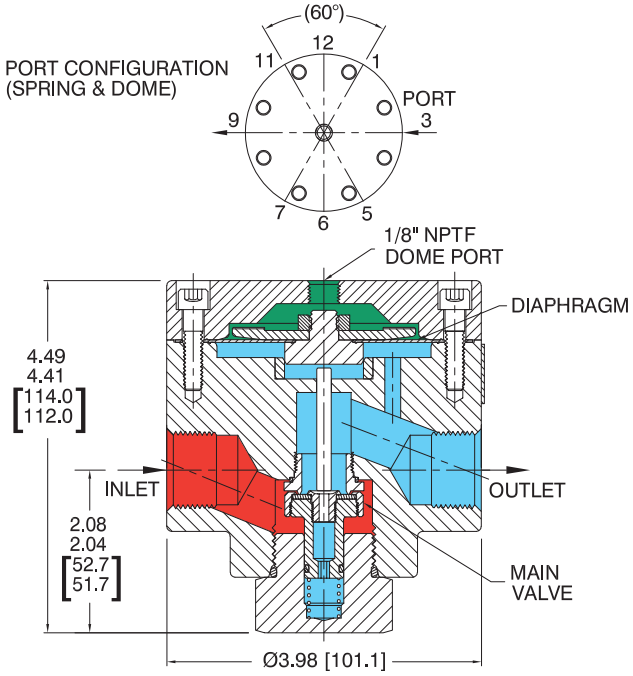
DH SERIES

DH Series Regulator Drawings

SPRING LOAD (VENTING)

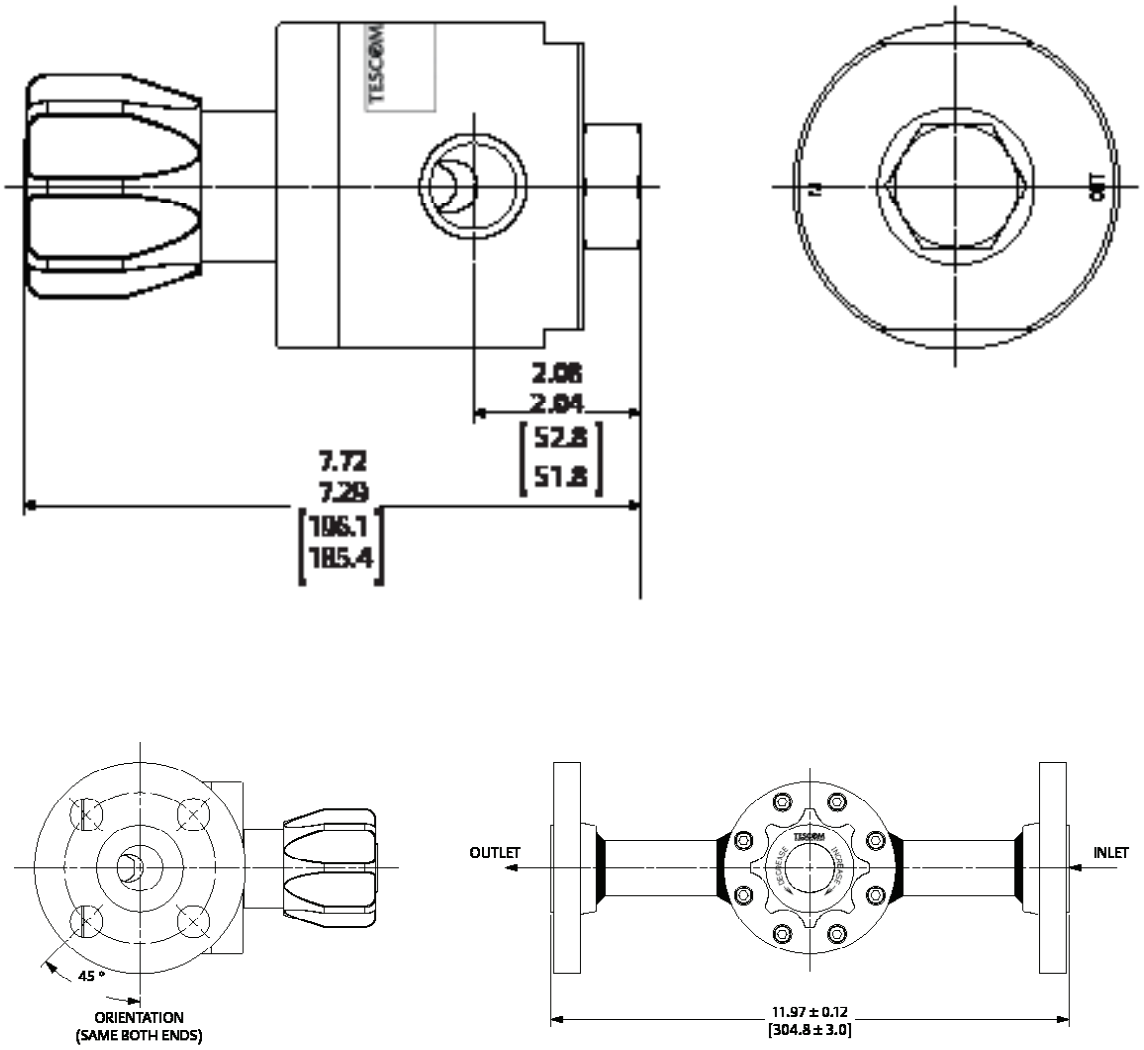


DOME LOAD (NON-VENTING SHOWN, VENTING AVAILABLE)



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DH Series Regulator with Flanges Drawing

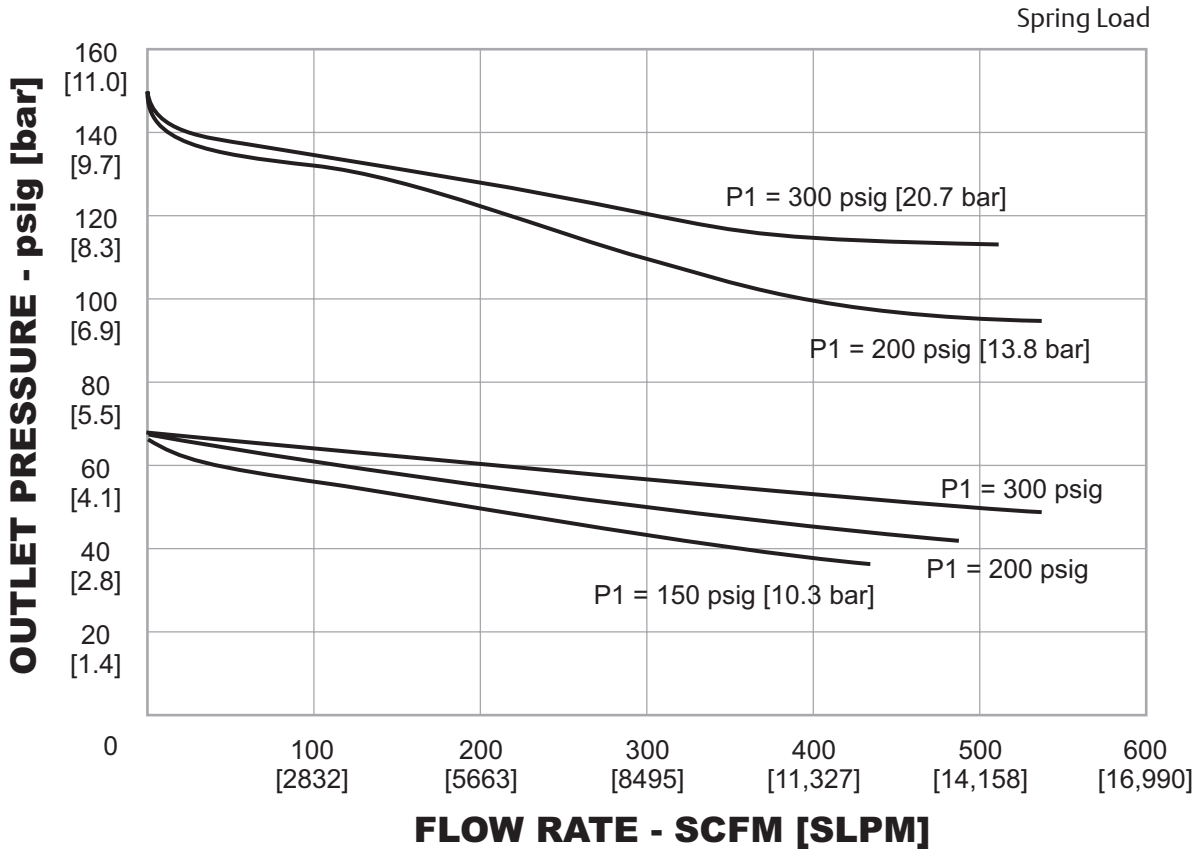


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DH SERIES

DH Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



DH Series Regulator Flow Charts

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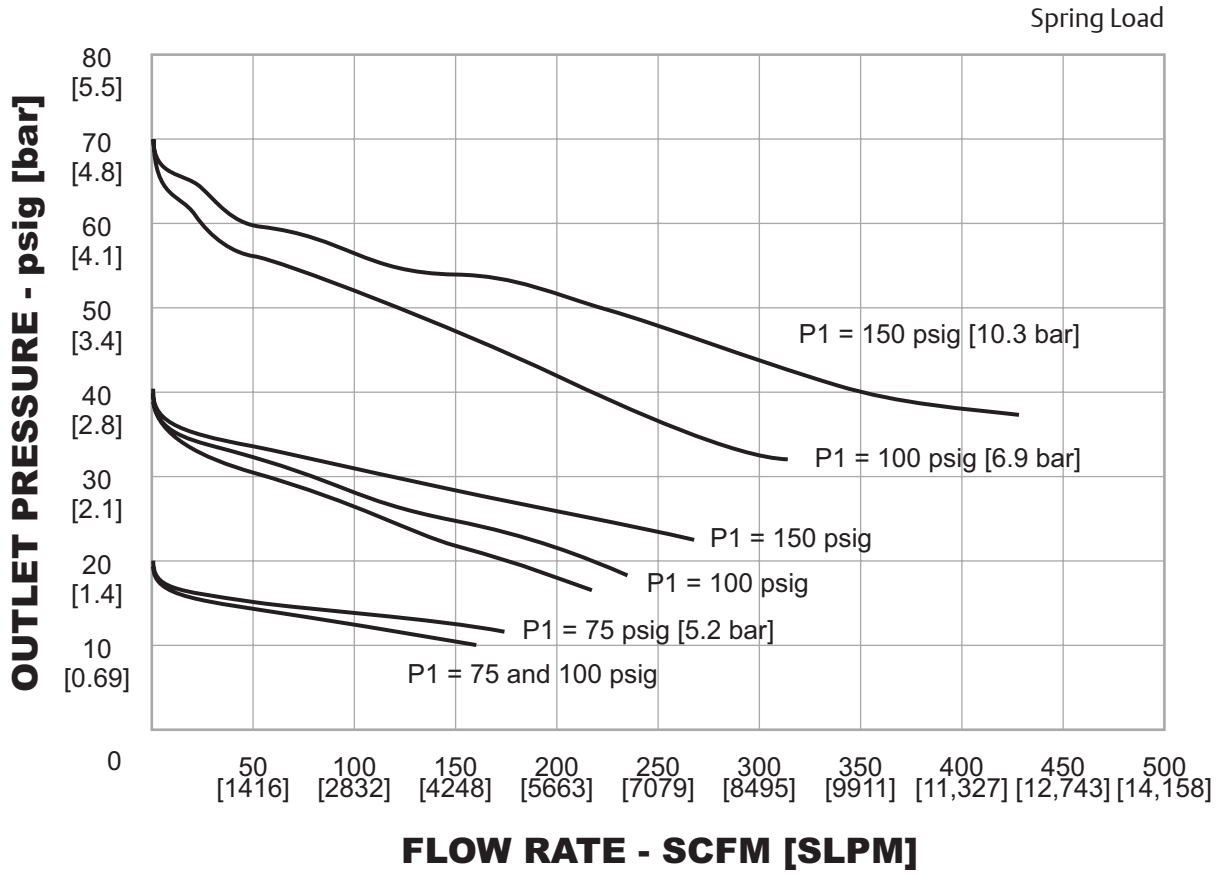


DH SERIES

DH Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connector Part Number Selection:

									INLET	OUTLET	GAUGE
DH	H	1	0	B	E	V	9	A	4	4	9

BASIC SERIES	LOAD TYPE	BODY, BONNET, BACK-CAP MATERIAL	OUTLET PRESSURE	O-RING AND VALVE SEAT MATERIAL	DIAPHRAGM MATERIAL	VENT SEAT MATERIAL	OPTIONAL ITEMS	PORTING CONFIGURATION	INLET, OUTLET, GAUGE PORTS
DH	**H** – Spring Loaded, Handknob **W** – Spring Loaded, Wrench **D** – Dome Loaded *(available with Gylon® diaphragm only)*	**1** – Brass **6** – 316 Stainless Steel	**0** – 0-20 psig 0-1.4 bar **1** – 0-50 psig 0-3.4 bar **2** – 0-100 psig 0-6.9 bar **3** – 0-150 psig 0-10.3 bar **5** – 0-250 psig 0-17.2 bar **D** – 0-300 psig 0-20.7 bar *(Dome Load only)*	**B** – Nitrile, Buna-N O-Ring Nitrile, Buna-N 90 Durometer Seat **E** – E.P. O-Ring E.P. 80 Seat **M** – Chemraz®** O-Ring, Chemraz®** 75 Seat **V** – FKM (Viton®-A)	**E** – E.P. Nylon Reinforced **G** – PTFE	**C** – PCTFE **V** – Polyimide (Vespel®) **P** – Peek **N** – Non-Venting	**C** – CCL **9** – None	**A** – No gauge ports **B** – 2 gauge ports at 60° **D** – 1 outlet gauge at 90° **L** – 2 gauge ports at 90° ** Crossholes for 1/2" ports limits C_V to 3.5*	**H** – 1/2" NPTF* C_V = 3.5 **3** – 3/4" NPTF **4** – 1" NPTF **9** – None **F** – 1/4" NPTF (for gauge only) **Y** – 1/4" HPIC (for gauge only)

** FFKM, Perfluoroelastomer (Chemraz®)

Flanged End Connector Part Number Selection:

DHW	6	0	B			E	V	A	3	21	1

BASIC SERIES	BODY, PIPE, FLANGE, BONNET BACK-CAP MATERIAL	OUTLET PRESSURE	O-RING AND VALVE SEAT MATERIAL		OPERATING TEMPE-RATURE	DIAPHRAGM MATERIAL	VENT SEAT MATERIAL	GAUGE PORT OPTIONS 1/4" NPT	FLANGE SIZE	FLANGE CLASS	FLANGE FACE
			O-RING	VALVE SEAT							
DHW	**6** – 316 SST	**0** – 0-20 psig 0-1.4 bar **1** – 0-50 psig 0-3.4 bar **2** – 0-100 psig 0-6.9 bar **3** – 0-150 psig 0-10.3 bar **5** – 0-250 psig 0-17.2 bar	**B** – Nitrile, Buna-N	Nitrile, Buna-N 90 Durometer	-20 to 165°F -29 to 74°C	**E** – E.P. Nylon Reinforced **G** – PTFE	**C** – PCTFE* **V** – Polyimide (Vespel®) **P** – Peek **N** – Non-Venting	**A** – R.H. Inlet No gauge ports **B** – R.H. inlet, In & Out gauge ports at 60° **J** – R.H. inlet 2 out gauge ports at 90°	**3** – 1"	**11** – 150# **21** – 300# **41** – 600#	**1** – RF
			E – E.P.	E.P. 80	-20 to 200°F -29 to 93°C						
			M – Chemraz®**	Chemraz®**	-20 to 200°F -29 to 93°C						
			V – FKM	FKM	-15 to 200°F -26 to 93°C						

** The maximum operating temperature for PCTFE vent seat material is 140°F / 60 °C*

** FFKM, Perfluoroelastomer (Chemraz®)

Regulators - Pressure Reducing

DDH161952X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150, 0-250, or 0-300 (dome loaded only) psig
0-1.4, 0-3.4, 0-6.9, 0-10.3, 0-17.2, or 0-20.7 bar

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature
-20°F to 165°F / -29°C to 74°C

Flow Capacity
C_V = 5.0

MEDIA CONTACT MATERIALS

Body, Bonnet, Back-cap
316 Stainless Steel

Diaphragm
Ethylene Propylene, PTFE

Seat, Vent
PCTFE, Polyimide (Vespel®)

Seat, Main Valve
Nitrile, Buna-N 90 Durometer, E.P. 80, Perfluoroelastomer (Chemraz 75), FKM (Viton®-A)

O-Rings
Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Chemraz®), FKM (Viton®-A)

Remaining Parts
300 Series Stainless Steel, Nitronic 60

OTHER

Internal Surface Finish
20 R_a microinch / 0.63 micrometer

Connections - Inlet and Outlets
Welded female or male VCR®, tube stubs, sanitary

Connections - Gauges
NPTF
High Purity Internal Connections (H.P.I.C.)
(internal style of VCR®, compatible with male swivel VCR®)

Cleaning
CGA 4.1 and ASTM G93

Weight
15 lbs / 6.8 kg

VCR® is a registered trademark of Cajon Co.
Gylon® is a registered trademark of Garlock, Inc.
Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.
Chemraz® is a registered trademark of Greentweed.

SHOWN WITH SANITARY CONNECTIONS

TESCOM DH-16 low pressure, high flow regulator is designed for applications with flows from 5-200 SCFM / 141-5663 SLPM. Its Gylon® diaphragm ensures gas purity and integrity. Welded sanitary, tubing, or VCR® connections are standard.

Applications

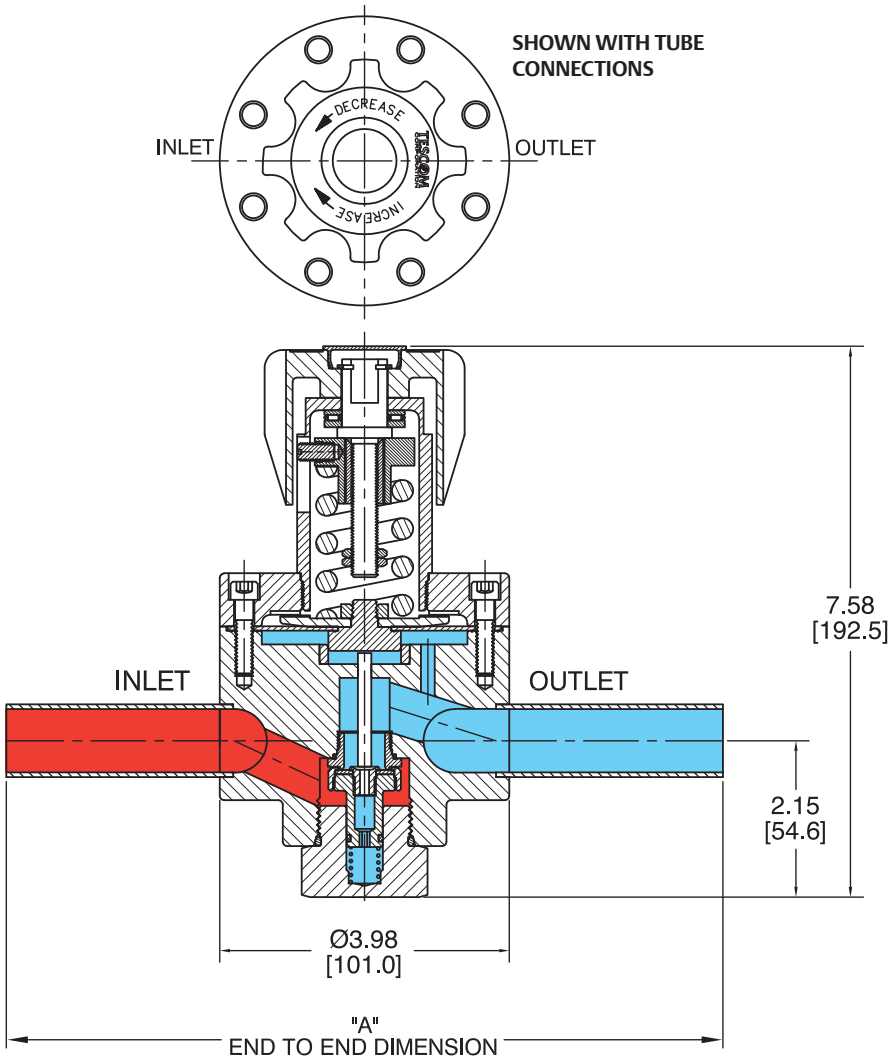
- Nitrogen purging
- Facility tool and equipment for air or nitrogen

Features and Benefits

- C_V = 5.0 flow capacity
- Gylon® diaphragm
- Low droop, high flow
- Five outlet pressure ranges
- Accurately regulates pressures up to 250 psig / 17.2 bar (300 psig / 20.7 bar for dome loaded)

DH-16 SERIES

DH-16 Series Regulator Drawing

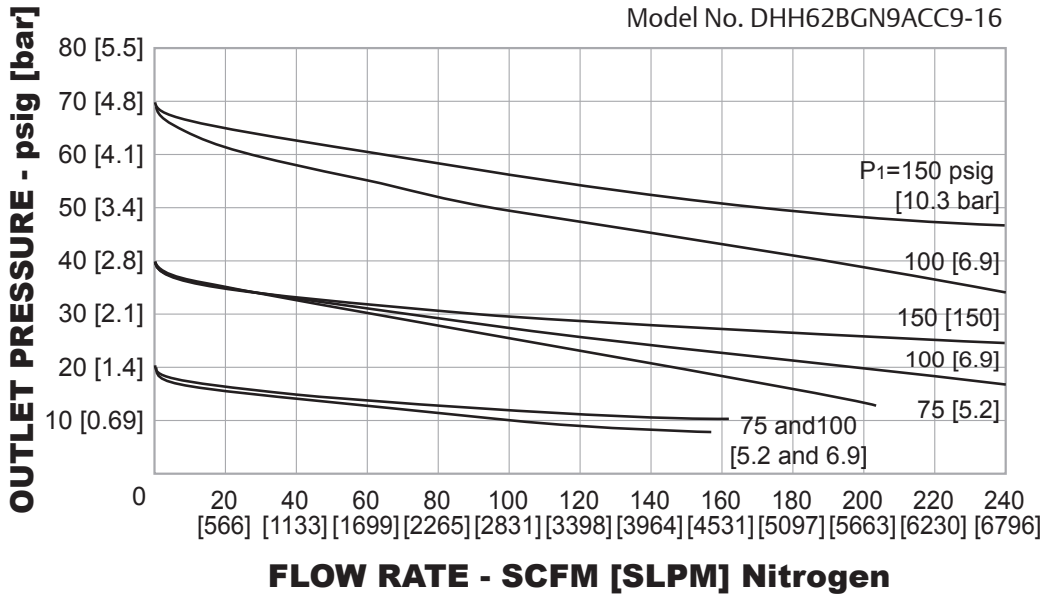


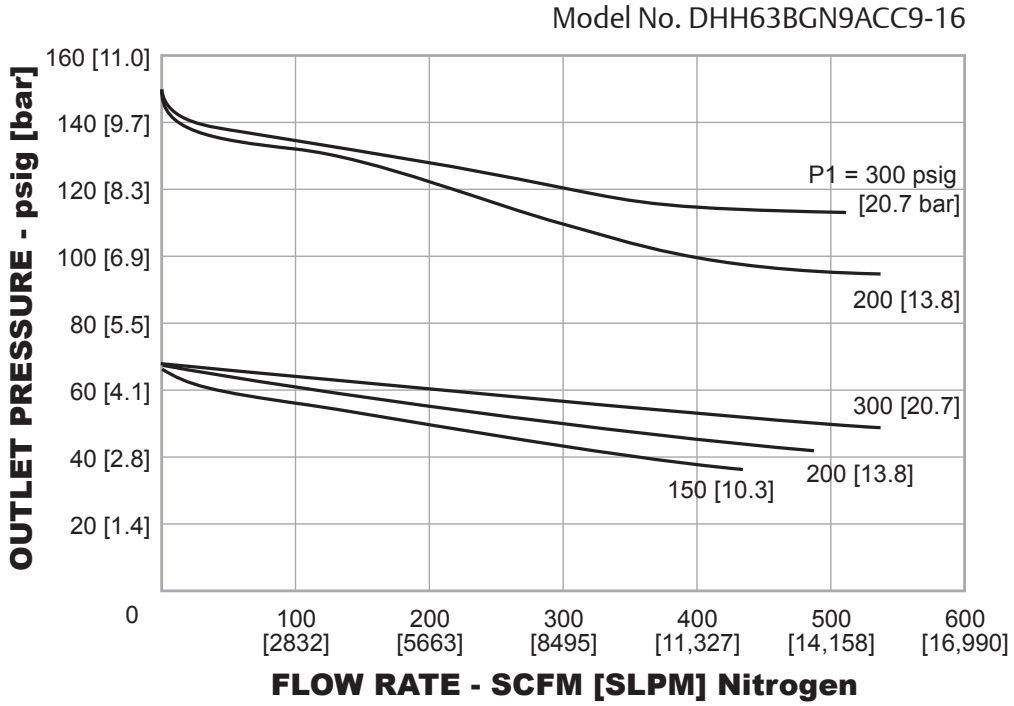
PART NO.	DIMENSION "A"	PART NO.	DIMENSION "A"
DHX6XXXXXXAAX-16	7.25/7.13	DHX6XXXXXX66X-16	9.91/9.79
DHX6XXXXXXBBX-16	7.25/7.13	DHX6XXXXXX77X-16	9.91/9.79
DHX6XXXXXXCCX-16	7.25/7.13	DHX6XXXXXX88X-16	9.91/9.79

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DH-16 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





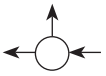
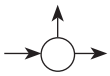
DH-16 SERIES

DH-16 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

									INLET	OUTLET	GAUGE	
DH	H	6	2	B	G	N	9	A	C	C	9	-16

BASIC SERIES	LOAD TYPE	BODY, BONNET, AND BACK-CAP MATERIAL	OUTLET PRESSURE	O-RING AND VALVE SEAT MATERIAL	DIAPHRAGM MATERIAL	VENT SEAT MATERIAL	OPTIONAL ITEMS	GAUGE PORT CONFIGURATION	INLET, OUTLET, AND GAUGE PORTS	MOD
DH	**D –** Dome Load **H –** Spring Load, (Handknob) **W –** Spring Load, (Wrench)	**6 –** 316 Stainless Steel	**0 –** 0-20 psig 0-1.4 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **5 –** 0-250 psig 0-17.2 bar **D –** 0-300 psig 0-20.7 bar (Dome load only)	**B –** Nitrile, Buna-N (O-Ring) Nitrile, Buna-N 90 Durometer (valve seat) **E –** E.P. (O-Ring) E.P. 80 (valve seat) **M –** Chemraz®** (O-Ring) Chemraz 75®** (valve seat) **V –** FKM (Viton®-A) (O-Ring) FKM (Viton®-A) (valve seat)	**E –** E.P./ Nylon Reinforced **G –** PTFE	**C –** PCTFE **V –** Polyimide (Vespel®) **P –** Peek **N –** Non-venting	**C –** CCL **P –** Panel Mount **9 –** None	**A –** No gauge ports  **B –** Two gauge ports at 60°  **D –** One outlet gauge at 90°  **E –** Left hand inlet one outlet gauge at 90° 	**A –** 1/2" Sanitary[1] **B –** 3/4" Sanitary[2] **C –** 1" Sanitary **D –** 1 1/2" Sanitary **F –** 1/4" NPTF (gauge only) **M –** 1/2" FVCR[1] **N –** 3/4" FVCR[2] **P –** 1" FVCR **R –** 1/2" MVCR[1] **S –** 3/4" MVCR[2] **T –** 1" MVCR **Y –** 1/4" HPIC (gauge only) **6 –** 1/2" Tube[1] **7 –** 3/4" Tube[2] **8 –** 1" Tube **W –** 1 1/2" Tube **9 –** None	**16**

1. 1/2" port limits regulator C_V to 2.0
2. 3/4" port limits regulator C_V to 3.0

** FFKM, Perfluoroelastomer (Chemraz®)

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Corrosive or non-corrosive gases requiring high purity regulation compatible with materials of construction.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150, 0-250, 0-300 psig (dome load only)
0-1.4, 0-3.4, 0-6.9, 0-10.3, 0-17.2, 0-20.7 bar (dome load only)

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Leakage
Internal: Bubble-tight

Flow Capacity
C_V = 5.0

Operating Temperature
-20°F to 165°F / -29°C to 74°C

MEDIA CONTACT MATERIALS

Body, Bonnet, Back-cap
316 Stainless Steel

Main Valve Seat, O-Ring, Vent Valve Seat, Diaphragm
See Part Number Selector

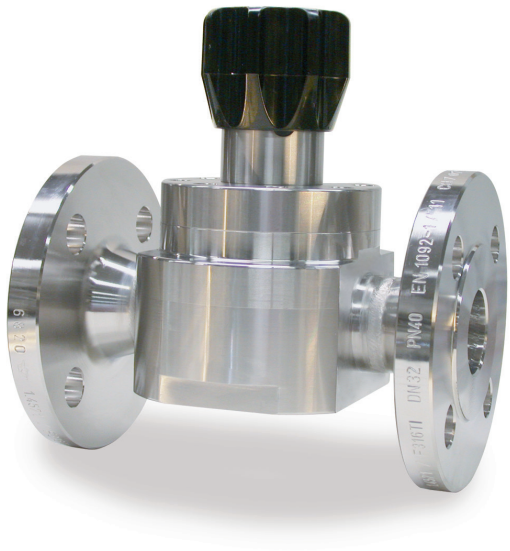
Seal
PCTFE

Remaining Parts
300 Series Stainless Steel/Nitronic 60

OTHER

Weight (approximate)
19 lbs / 8.6 kg

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.
Chemraz® is a registered trademark of Greentweed.
Gylon® is a registered trademark of Garlock, Inc.



TESCOM DHF Series high flow pressure reducing regulators come with flanges according to EN 1092 and are suitable for gas service.

Application

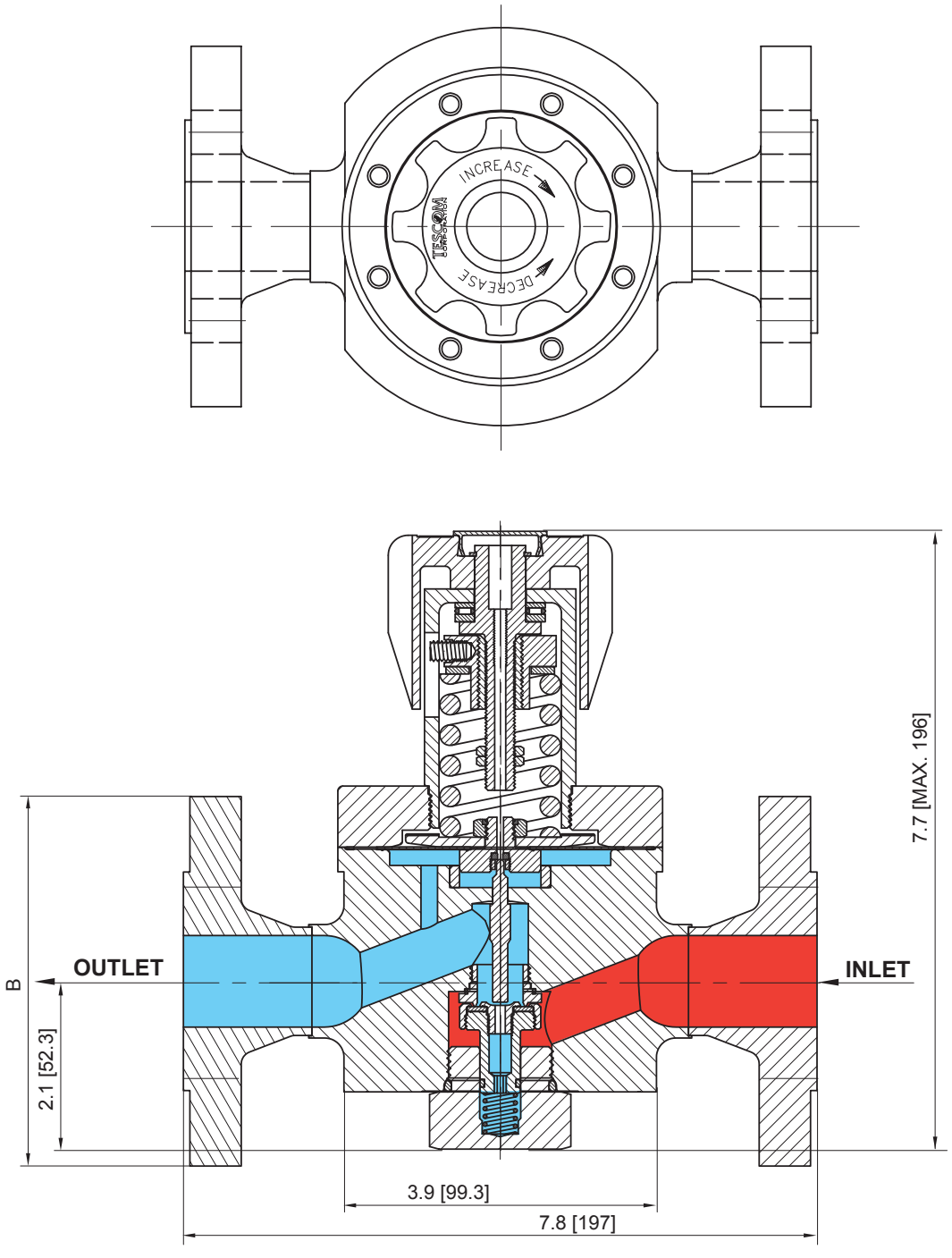
- High flow facility gas supply

Features and Benefits

- Flange connections according to DIN EN 1092-1 Type 11 for easy line installation
- Face-to-face dimensions according to DIN EN 558, Row 38
- Precise pressure control up to 250 psig / 17.2 bar at high flow rates
- Choice of spring or dome load (e.g. remote control with ER5000 for lower droop)
- Gauge ports are available

DHF SERIES
Europe and Middle East only

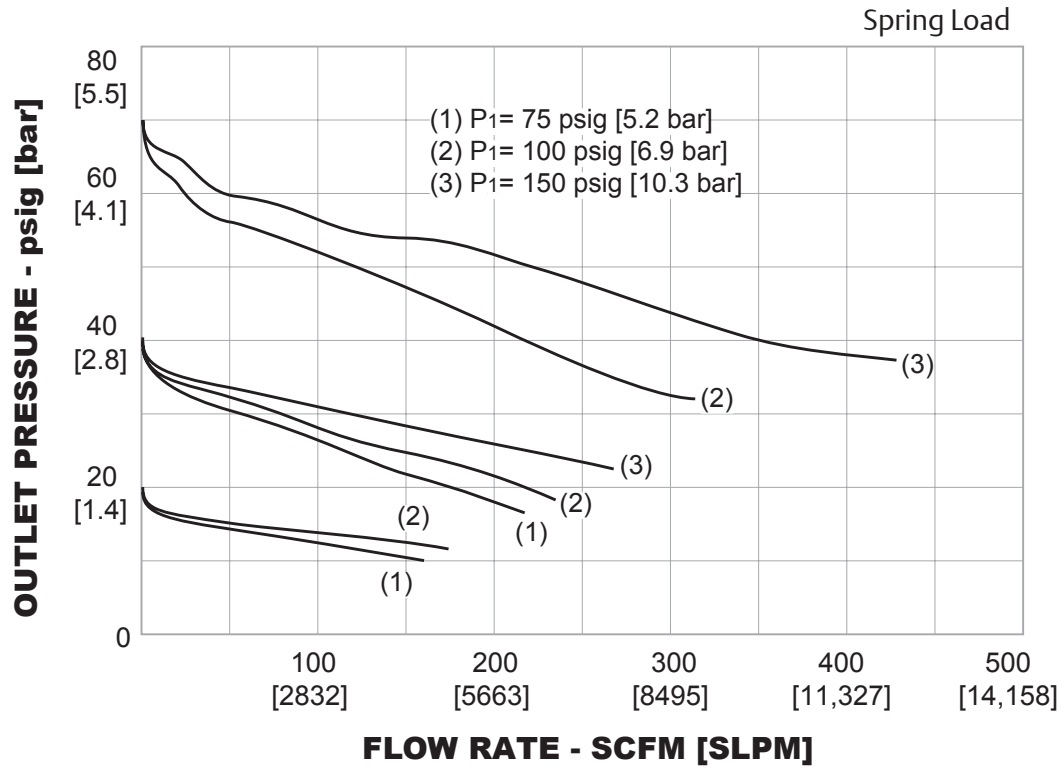
DHF Series Regulator Drawing

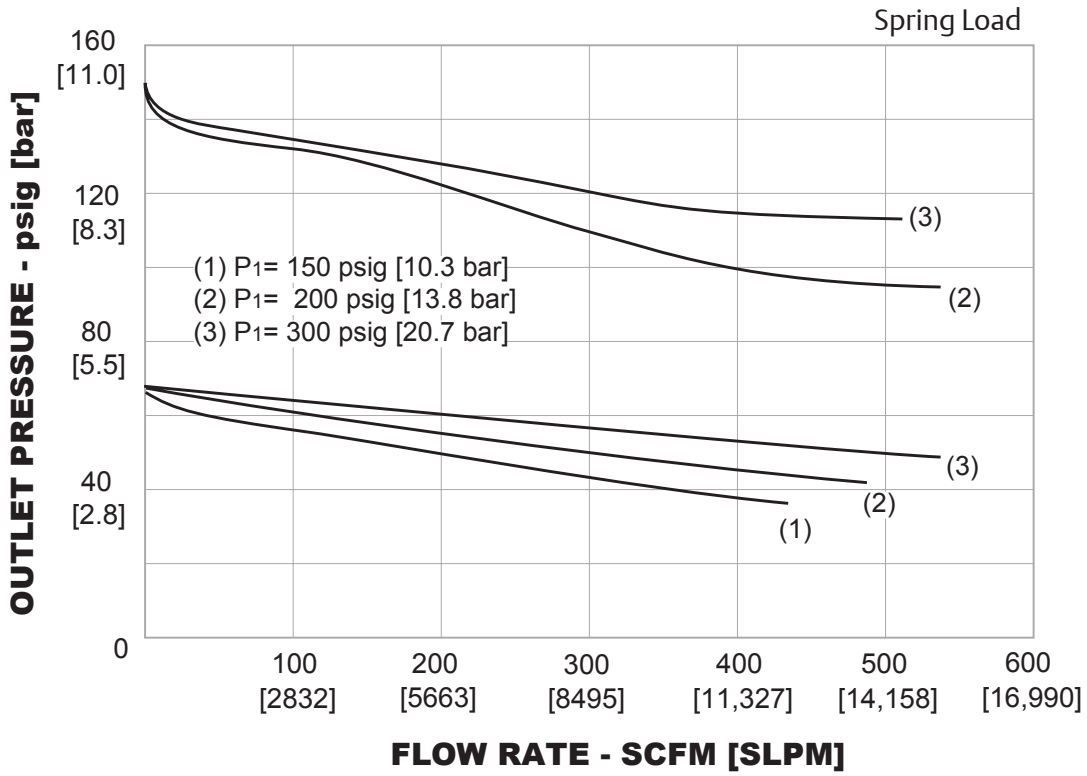


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DHF Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





DHF SERIES
Europe and Middle East only

DHF Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

MATERIAL	
O-RING	**VALVE SEAT**
B - Nitrile, Buna-N	Nitrile, Buna-N 90 Durometer
E - Ethylene Propylene	Ethylene Propylene 80
M - FFKM, Perfluoroelastomer (Chemraz®)	FFKM, Perfluoroelastomer (Chemraz®) 75
V - FKM (Viton®-A)	FKM (Viton®-A)

FLANGE — EN 1092-1

DHF	D	6	1	V	G	C	9	M	B	A	E

BASIC SERIES	LOAD TYPE	BODY, BONNET AND BACK-CAP MATERIAL	OUTLET PRESSURE	DIAPHRAGM MATERIAL	VENT SEAT MATERIAL	OPTIONAL ITEMS	INLET AND OUTLET PORT TYPE	"B" [±2]	FLANGE TYPE	GAUGE PORT OPTIONS
DHF	**D** – Dome loaded (available with Gylon® diaphragm only) **H** – Spring loaded (hand-knob) **W** – Spring loaded (wrench)	**6** – 316 Stainless Steel	**0** – 0-20 psig 0-1.4 bar **1** – 0-50 psig 0-3.4 bar **2** – 0-100 psig 0-6.9 bar **3** – 0-150 psig 0-10.3 bar **5** – 0-250 psig 0-17.2 bar **D** – 0-300 psig 0-20.7 bar	**E** – Ethylene Propylene/ Nylon reinforced **G** – PTFE	**C** – PCTFE **V** – Polyimide (Vespel®) **P** – PEEK **N** – Non-venting	**Y** – FDA* compliant soft goods **9** – None	**L** – DN 20 **M** – DN 25	4.13 [105] 4.52 [115]	**B** – Form B - raised face **D** – Form D - ring joint	**A** – None **B** – 1/4" NPTF at 60° 1 x out 1 x in **D** – 1/4" NPTF 1 x out

* ***FDA only for:***
Diaphragm (Gylon)
O-ring / valve seat (Ethylene Propylene)
Vent seat (PEEK) or non-venting

Regulators - Pressure Reducing

DDKXX2022X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
1000 psig / 69.0 bar

Maximum Outlet Pressure
Air Load: 0-600 psig / 0-41.4 bar
Dome Load: 0-700 psig / 0-48.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.35

MEDIA CONTACT MATERIALS

Body, Bonnet, Back-cap Ring
Brass, 316 Stainless Steel

Diaphragm and O-Rings
Nitrile, Buna-N, Ethylene Propylene, FKM (Viton®-A)

Seat, Main Valve
PCTFE, PTFE, Polyimide (Vespel®)

Filter
40 micron Sintered Brass, 316 Stainless Steel

Remaining Parts
300 Series Stainless Steel, Brass

OTHER

Connections
NPTF, SAE

Cleaning
CGA 4.1 and ASTM G93

Weight
Dome Load: 3.5 lbs / 1.6 kg
Air Load: 5.5 lbs / 2.5 kg

Teflon®, Viton® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

DK AIR LOAD SHOWN WITH THE ER5000

DK DOME LOAD

TESCOM DK Series regulator improves control and resolution at medium flow and pressures. The DK can be paired up with the TESCOM 26-1600 regulator for remote control capability or combined with the TESCOM ER5000 for remote automated and precise pressure control to ±0.1%.

Applications

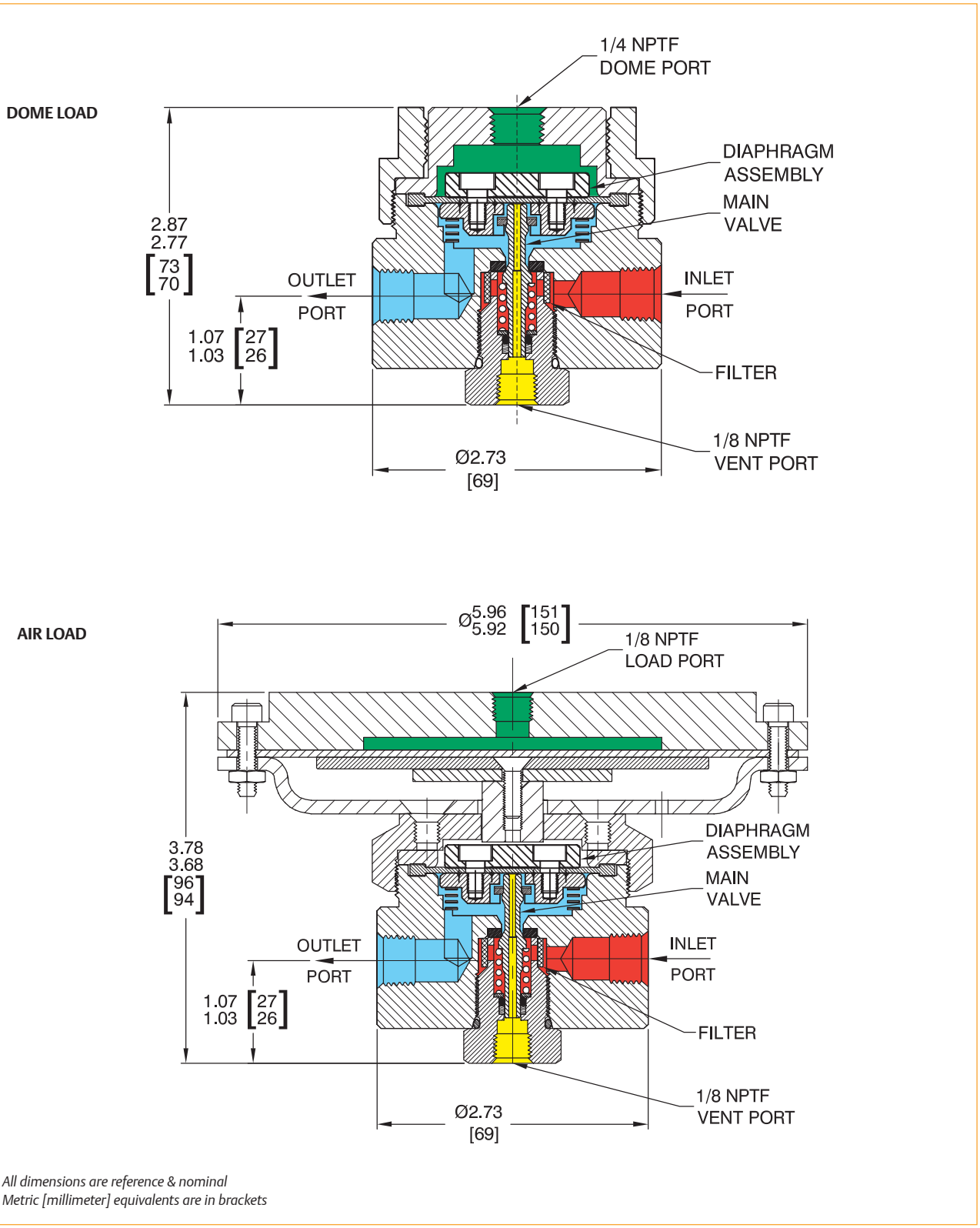
- Component testing and development
- Flow meter calibration
- Burst and proof testing
- Superplastic metal forming
- Vacuum forming
- Catheter testing or rupture disk testing
- Sensor and gauge calibration and test
- Coating applications

Features and Benefits

- Segregated and captured venting
- High flow capacity

DK SERIES

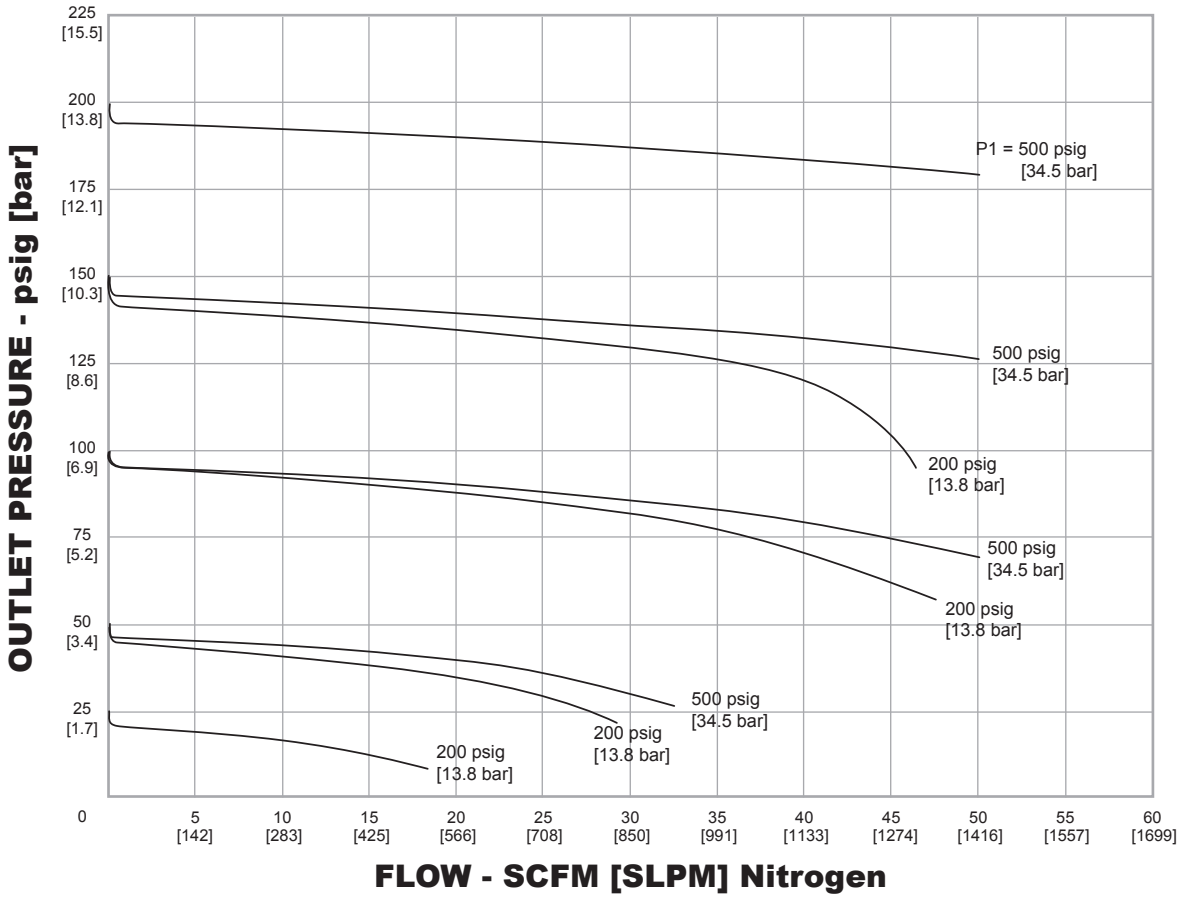
DK Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DK Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



DK SERIES

DK Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

									INLET	OUTLET	GAUGE 1/4"
DK	**D**	**1**	**6**	**C**	**V**	**V**	**9**	**A**	**G**	**G**	**9**

BASIC SERIES	LOAD TYPE	BODY, BONNET, BACK-CAP MATERIAL	OUTLET PRESSURE RANGE	VALVE SEAT MATERIAL	DIAPHRAGM OR O-RING MATERIAL	VENTING	OPTIONAL	PORTING	PORT SIZE AND TYPE
DK	**D –** Dome load **A –** Air load	**1 –** Brass **6 –** 316 Stainless Steel	**Air load only** **6 –** 0-600 psig 0-41.4 bar **Dome load only** **7 –** 0-700 psig 0-48.3 bar	**C –** PCTFE **T –** PTFE **V –** Polyimide (Vespel®)	**B –** Nitrile, Buna-N **E –** E.P. **V –** FKM (Viton®-A)	**V -** Segregated *(captured port 1/8")*	**9 –** None	**A –** No gauge ports  **B –** Two gauge ports at 60°  **D –** One outlet gauge at 90° 	**A –** 1/4" SAE **B –** 3/8" SAE **C –** 1/2" SAE **F –** 1/4" NPTF **G –** 3/8" NPTF **H –** 1/2" NPTF **9 –** None

Regulators - Pressure Reducing DFR201759X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
500 psig / 34.5 bar

Outlet Pressure Ranges
0-15, 0-30, 0-75, 0-150 psig / 0-1.0, 0-2.1, 0-5.2, 0-10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 1.8

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat
FEP, PTFE

Retainer Seat
Nitronic 60

O-Ring
PTFE

Diaphragm
316 Stainless Steel

Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
6.0 lbs / 2.7 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM FR-2000 Series regulator is extremely accurate and designed for high flow at low outlet pressure. Diffusion-resistant metal diaphragm seal ensures gas purity and leak integrity.

Application

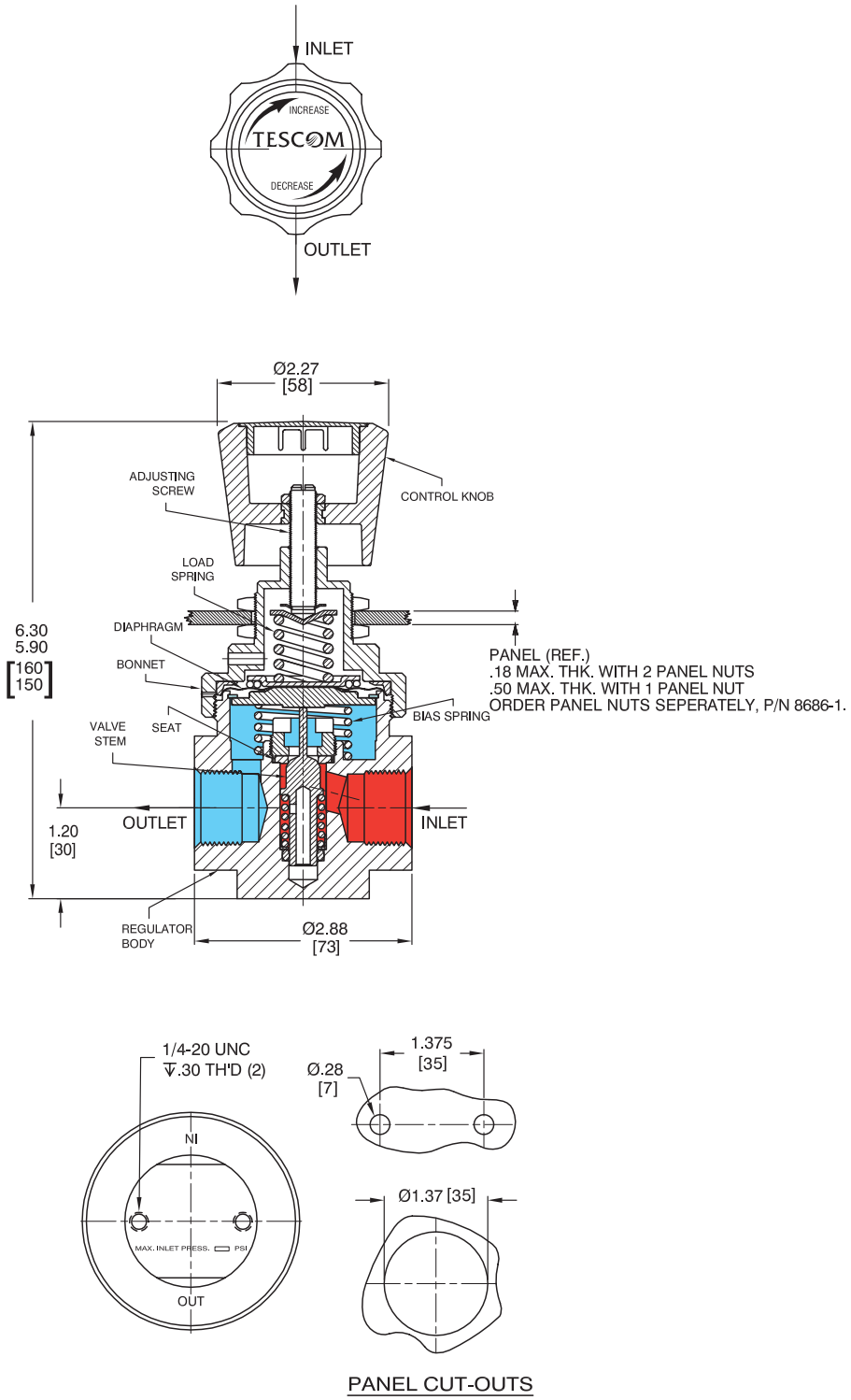
- Low pressure purge

Features and Benefits

- Accurate and designed to provide high flow at low control pressure
- High-flow, C_V = 1.8
- Metal-to-metal sealed diaphragm
- Dome loaded version is available
- Gauge ports are available

FR-2000 SERIES

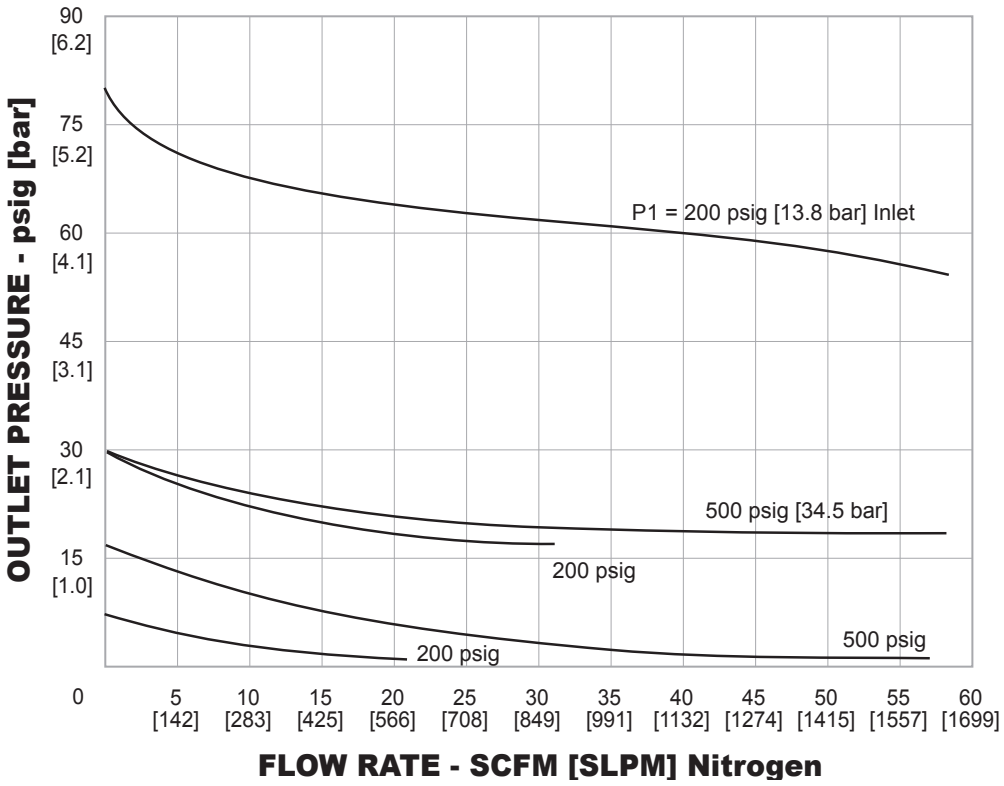
FR-2000 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

FR-2000 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



FR-2000 SERIES

FR-2000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

FR-20 6 0 - 2 08 2 -

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MAXIMUM INLET PRESSURE	OPTIONS
FR-20	**6** – 316 Stainless Steel	**0** – 0-15 psig / 0-1.0 bar **1** – 0-30 psig / 0-2.1 bar **2** – 0-75 psig / 0-5.2 bar **3** – 0-150 psig / 0-10.3 bar	**2** – NPTF	**08** – 1/2" **12** – 3/4"	**2** – 500 psig / 34.5 bar	**-017** – Piston style dome load **-019** – 1/4" gauge port at 90°

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000 psig / 414 bar

Outlet Pressure Ranges
0-1500 psig / 0-103 bar
0-2500 psig / 0-172 bar

Design Proof Pressure
150% of rated pressure

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.06

Leakage
Bubble-tight

Leak Rate
$<10^{-9}$ mbar l/s

MEDIA CONTACT MATERIALS

Body
Brass or 316 Stainless Steel

Seat
PTFE

O-Ring
FKM (Viton®-A) (AMS 7287 Fluorocarbon)

Back-up Ring
PTFE

Remaining Parts
Brass and 300 Stainless Steel

OTHER

Weight (approximate)
2 lbs / 0.9 kg

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM High Pressure Point-of-Use regulator is a 44-1800 Series pressure reducing regulator that is spring loaded, hand operated and piston sensed.

Application

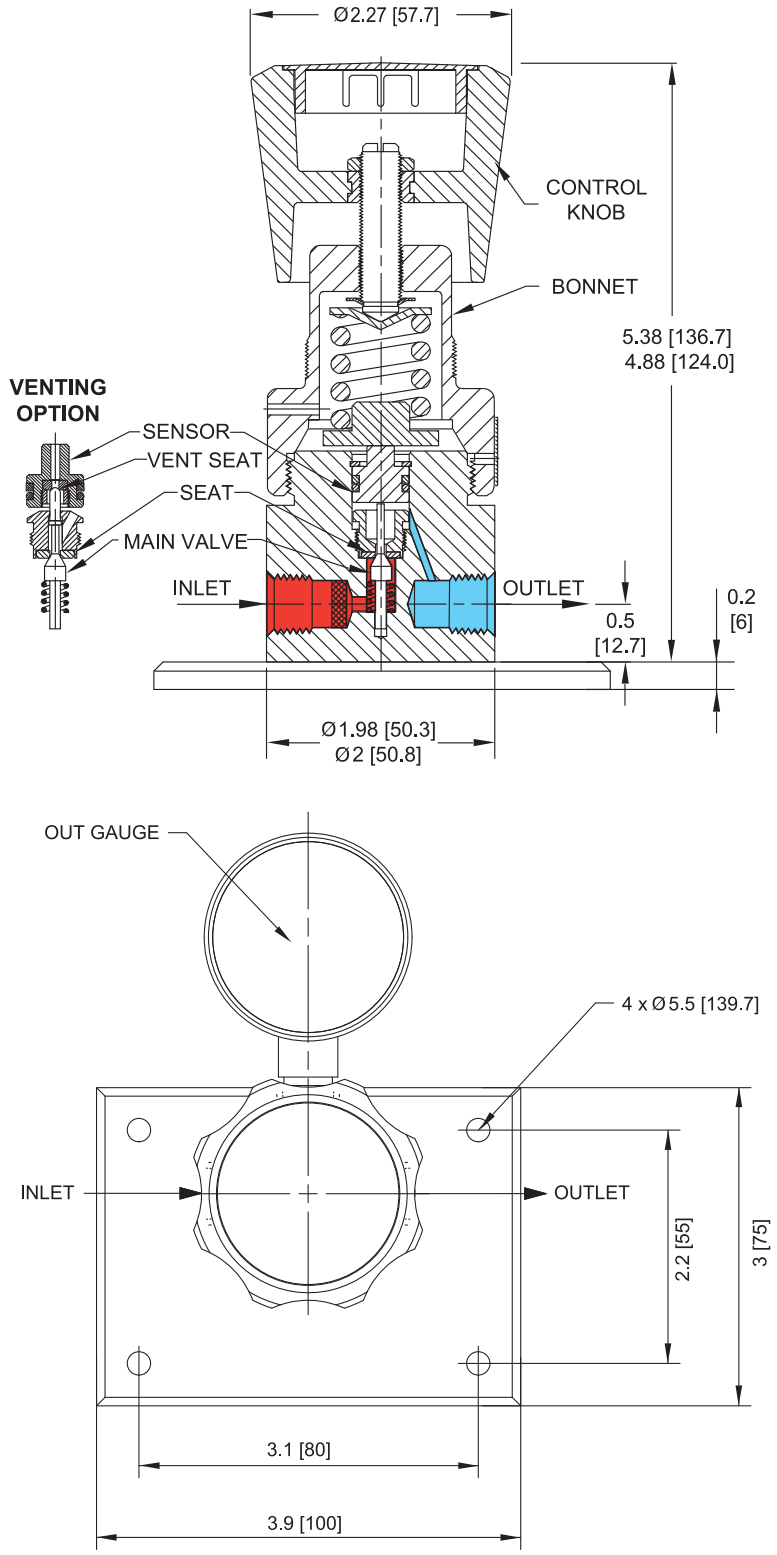
- Analyzers with high outlet pressures in Laboratory and R&D

Features and Benefits

- Compact and ergonomic design
- Easy installation with wall mounting plate
- Venting is optional

HIGH PRESSURE POINT-OF-USE

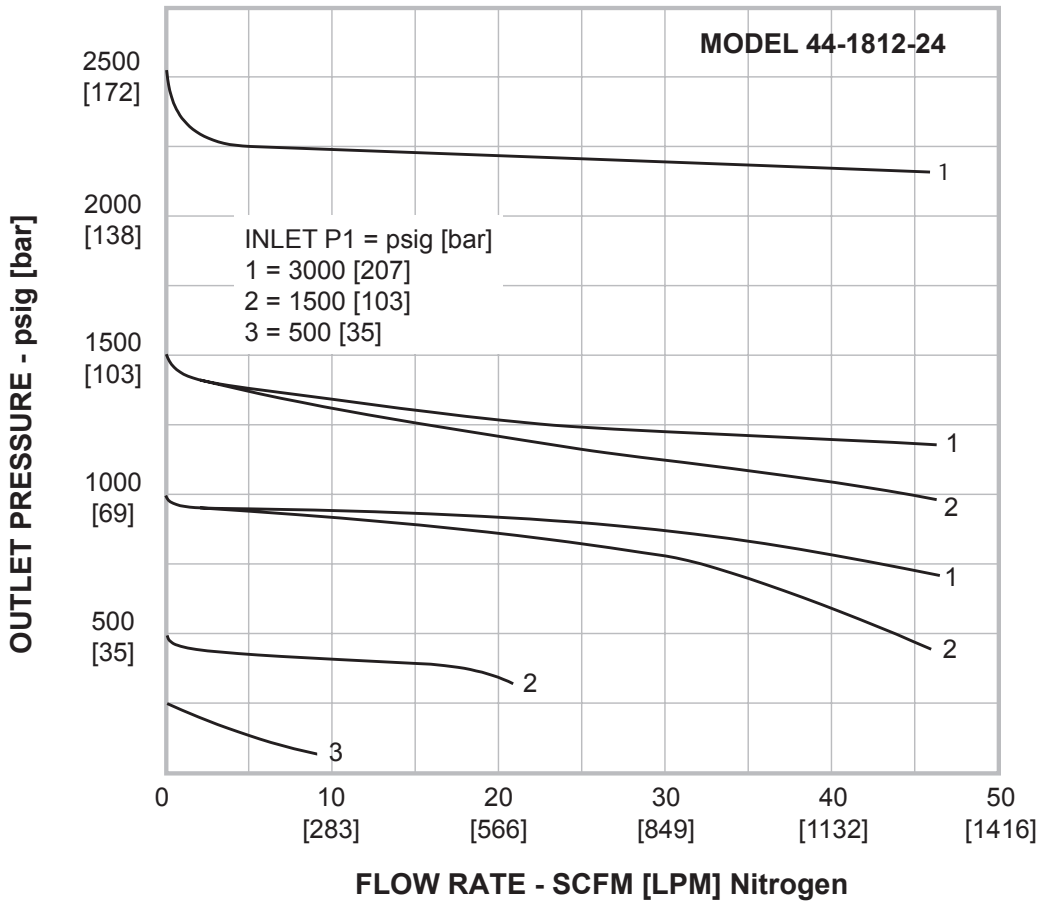
High Pressure Point-of-Use Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

High Pressure Point-of-Use Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



HIGH PRESSURE POINT-OF-USE

High Pressure Point-of-Use Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-18 1 2 - 2 4 V - 139

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	VENT OPTION	MODIFICATION
44-18	**1 –** Brass **6 –** Stainless Steel	**1 –** 0-1500 psig 0-103 bar **2 –** 0-2500 psig 0-172 bar	**2 –** NPTF	**4 –** 1/4"	**N –** Non-venting **V –** Venting	**139**

Kits

	VENTING	NON-VENTING
NON METALLIC	389-3117	389-3521
REPAIR	389-3116	389-3520

Regulators - Pressure Reducing

DCATLABO1208XEN2

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive gases up to purity 5.0 (99.999 Vol %)

OPERATING PARAMETERS

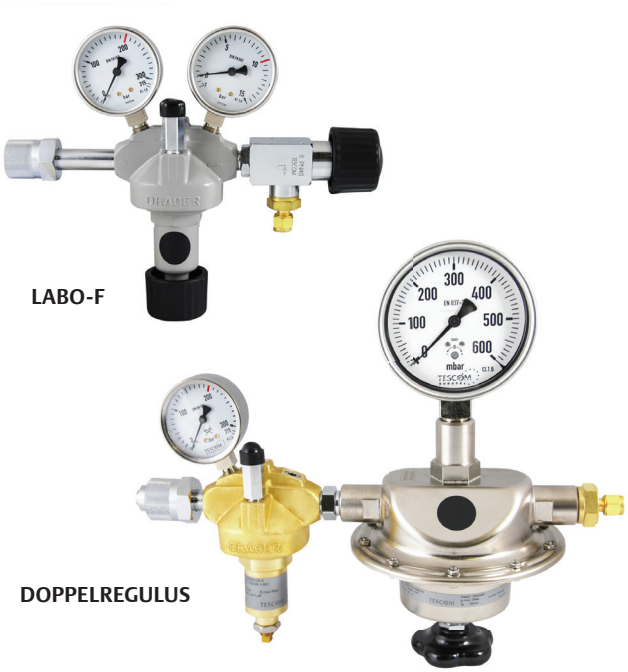
Maximum Inlet Pressure
Labo-F and Doppelregulus: 2900 psig / 200 bar

Control Pressure Ranges
Labo-F:
22 psig / 1.5 bar
58 psig / 4.0 bar
145 psig / 10.0 bar
290 psig / 20.0 bar
Doppelregulus:
14.5 psig / 1.00 bar
22 psig / 1.5 bar
0.73 psig / 50 mbar
1.45 psig / 100 mbar
7.25 psig / 500 mbar

OTHER

Connection
Inlet: According to DIN 477-1
Outlet: Compression fitting ø 6 mm with hose nozzle 6 mm

Weight
Labo-F: 5.7 lbs / 2.6 kg
Doppelregulus: 8.6 lbs / 3.9 kg



TESCOM Labo-F and Doppelregulus cylinder pressure regulators are for applications with medium flow requirements (Labo-F) or low outlet pressures (Doppelregulus).

Applications

- Universal use - for all technical gases (gas purity up to 5.0)
- Precise control of low outlet pressures
- Control of low outlet pressures

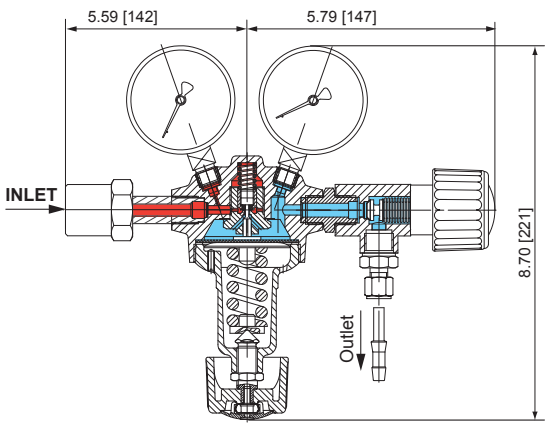
Features and Benefits

- Single-stage Labo-F includes shut-off valve for high flow capacity (up to 50 m^3/h)
- Dual-stage Doppelregulus provides millibar pressure control
- Five different setpoints for outlet pressure

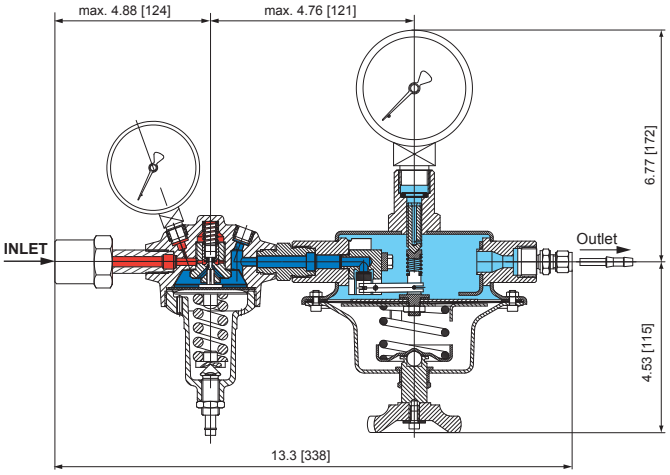
LABO-F and DOPPELREGULUS

Labo-F and Doppelregulus Regulator Drawing

LABO-F



DOPPELREGULUS



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Labo-F and Doppelregulus Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43150 - 12 - 05 2

BASIC SERIES	GAS	OUTLET PORT CONNECTION	CONTROLLED PRESSURE RANGE
D43150 Labo-F	**02** – Nitrogen **08** – Air **09** – Synthetic air **12** – Oxygen **13** – Nitrous oxide **15** – CO_2 and inert gases **16** – Flammable gases **17** – Calibration gases	**00** – Without connection G 3/8" female **05** – Compression fitting ø 6 mm with hose nozzle ø 6 mm separately *Note: Other outlet connections are available*	**1** – 22 psig / 1.5 bar **2** – 58 psig / 4.0 bar **3** – 145 psig / 10.0 bar **4** – 290 psig / 20.0 bar

D50711 - 12 - 0050 05

BASIC SERIES	GAS	CONTROLLED PRESSURE RANGE	OUTLET PORT CONNECTION
D50711 Doppelregulus	**02** – Nitrogen **08** – Air **09** – Synthetic air **12** – Oxygen **13** – Nitrous oxide **15** – CO_2 and inert gases **16** – Flammable gases (except Propane and Acetylene) **17** – Calibration gases **42** – Compressed air - 4350 psig / 300 bar	**0050** – 0.73 psig / 50 mbar **0100** – 1.45 psig / 100 mbar **0500** – 7.25 psig / 500 mbar **1000** – 14.5 psig / 1.00 bar **1500** – 22 psig / 1.5 bar	**05** – Compression fitting ø 6 mm with hose nozzle ø 6 mm separately *Note: Other outlet connections are available*

Accessories

PART NUMBER	DESCRIPTION
D50810	Sealing ring for O_2 and Synthetic air
D50809	Sealing ring for non-corrosive gases
D41414	Sealing ring for calibration mixture, Nitrous oxide
D41681	Nozzle 6 mm

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive gases and mixtures up to purity 6.0 (99.9999 Vol%) Brass and Stainless Steel

For corrosive gases in Stainless Steel

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
D45001: 3500 psig / 241 bar and 400 psig / 27.6 bar
D45002: 3000 psig / 207 bar and 500 psig / 34.5 bar

Outlet Pressure Ranges
D45001: 0-100 psig / 0-6.9 bar
0-247 psig / 0-17.0 bar
0-25 psig / 0-1.7 bar
0-50 psig / 0-3.4 bar
0-500 psig / 0-34.5 bar
D45002: 0-25 psig / 0-1.7 bar
0-50 psig / 0-3.4 bar
0-100 psig / 0-6.9 bar
0-150 psig / 0-10.3 bar
0-200 psig / 0-13.8 bar

Leakage Rate Against Atmosphere
10^{-8} mbar l/sec He

Flow Capacity
D45001 C_V = 0.06 (HP), 0.15 (LP)
D45002 C_V = 1.0

Operating Temperature
-40°F to 158°F / -40°C to 70°C

MEDIA CONTACT MATERIALS

Body
Brass or 316L Stainless Steel

Bonnet
Nickel-plated Brass, Stainless Steel (optional)

Seat
PTFE

OTHERS

Body Connections
D45001: 2 x NPTF 1/4"
D45002: 2 x NPTF 1/2"
Gauge(s): NPTF 1/4"

Connection
Fittings see ordering information

Weight (approximate)
D45001: 2.4 lbs / 1.1 kg
D45002: 4.0 lbs / 1.8 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM Line Pressure Reducers (Purity 6.0) are based on the reliable and precise 44-2200 and 44-3200 Series. These units are supplied with compression fittings and a pressure gauge for the outlet pressure.

Applications

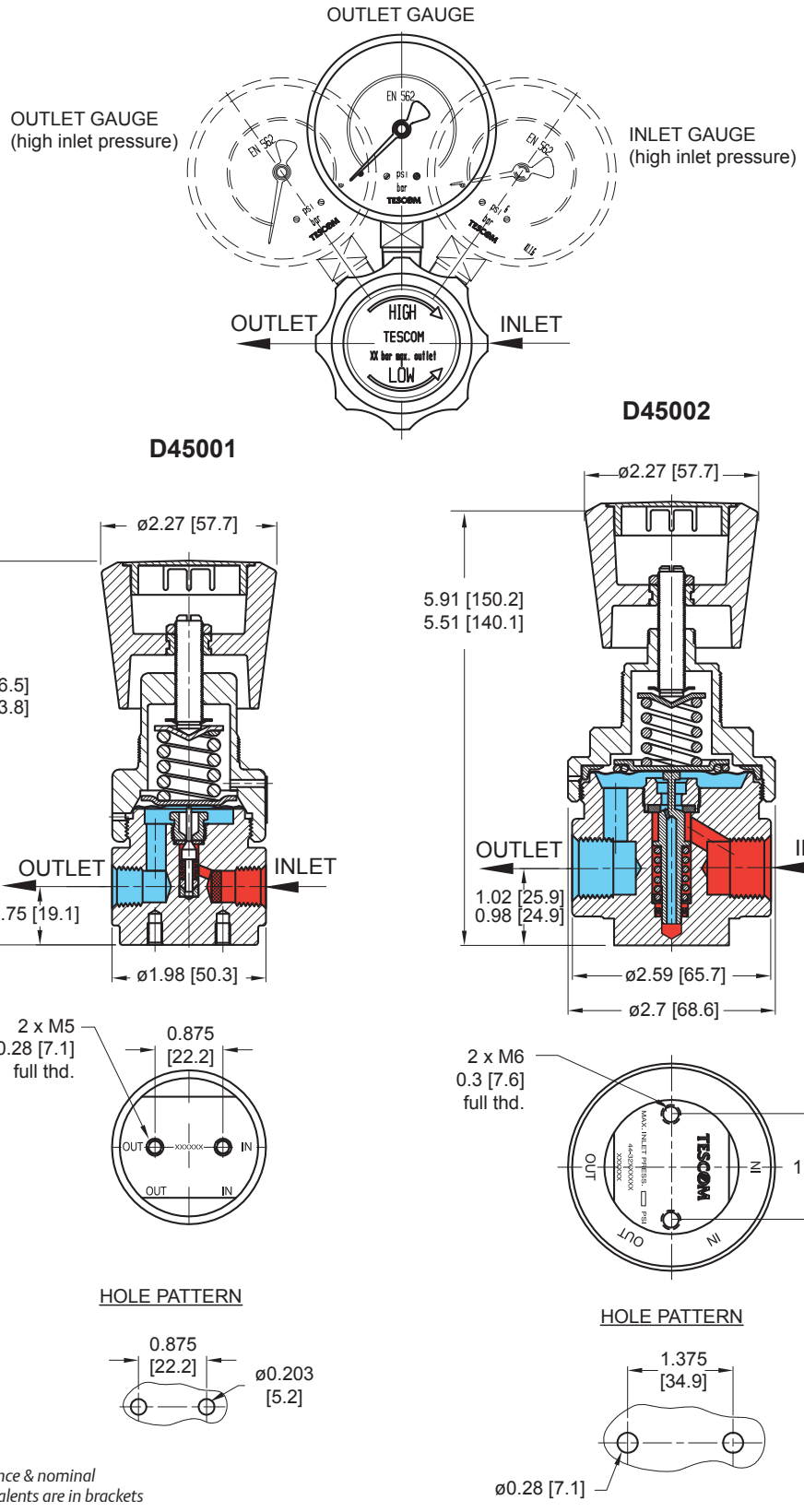
- Line pressure control
- Second stage regulator in gas supply lines

Features and Benefits

- Pre-assembled with gauge, compression fittings included
- Increased safety and reliability due to metal-to-metal seal with Stainless Steel diaphragm
- High flow capacity with excellent control capabilities at D45002
- Optional presetting of outlet pressure
- Suitable for panel installation

LINE PRESSURE REDUCER 6.0

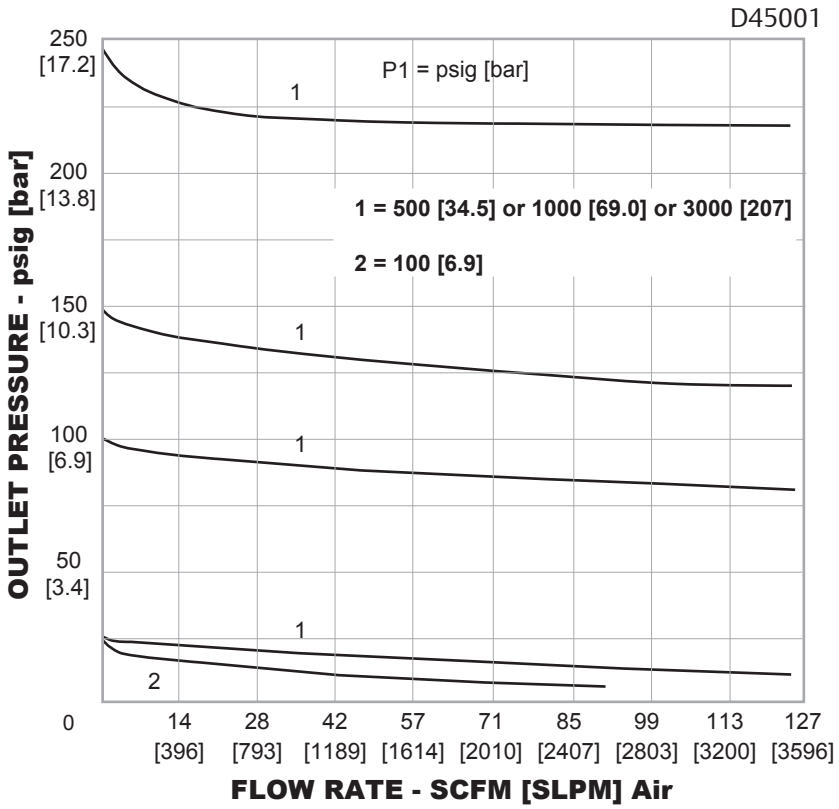
Line Pressure Reducer 6.0 Regulator Drawing

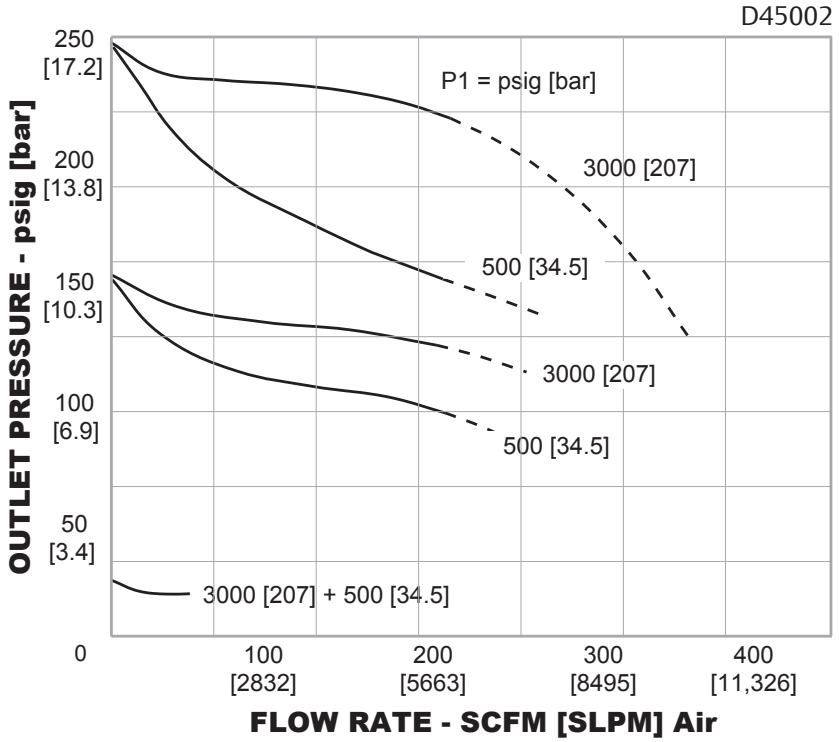


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Line Pressure Reducer 6.0 Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





LINE PRESSURE REDUCER 6.0

Line Pressure Reducer 6.0 Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D45001 - 1 - 2 - 1

BASIC SERIES	MATERIAL	INLET PRESSURE	OUTLET PRESSURE
D45001	**1** – Brass **6** – Stainless Steel	**1** – 3500 psig / 241 bar[1] **2** – 400 psig / 27.6 bar[2]	**1** – 0-100 psig / 0-6.9 bar **2** – 0-247 psig / 0-17.0 bar **3** – 0-25 psig / 0-1.7 bar **4** – 0-50 psig / 0-3.4 bar **5** – 0-500 psig / 0-34.5 bar
D45002	**1** – Brass **6** – Stainless Steel	**1** – 3000 psig / 207 bar[1] **2** – 500 psig / 34.5 bar[2]	**0** – 0-25 psig / 0-1.7 bar **1** – 0-50 psig / 0-3.4 bar **2** – 0-100 psig / 0-6.9 bar **3** – 0-150 psig / 0-10.3 bar **4** – 0-200 psig / 0-13.8 bar

1. With inlet and outlet pressure gauge
2. With outlet pressure gauge

Accessories

SCREW FITTING	D45001		D45002	
	Brass	Stainless Steel	Brass	Stainless Steel
For tube 6 mm	D42048	D43777	----	----
For tube 8 mm	D42183	D44987-8-1-4-6	----	----
For tube 10 mm	D42047	D44987-10-1-4-6	D44987-10-1-8-1	D44987-10-1-8-6
For tube 12 mm	D44987-12-1-4-1	D44987–12-1-4-6	D44987-12-1-8-1	D44987-12-1-8-6

Regulators - Pressure Reducing

DCATLABO1209XEN2

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive / corrosive gases and mixtures up to 6.0 (99.9999 Vol%) purity

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Outlet Pressure Ranges
22, 58, 145 psig / 1.5, 4.0, 10.0 bar

Leak Rate
10^{-8} mbar l/s He

Operating Temperature
-4°F to 158°F / -20°C to 70°C

Nominal Flow Rate
100 LPM based on Nitrogen

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel or Chrome-plated Brass

Diaphragm
Cobalt Chrome Nickel Alloy (Eligiloy®) or Nickel Alloy (Hastelloy®)

OTHERS

Porting Inlet or Outlet
G 1/4" Female
Valve Outlet G 1/8" Female
Optional with Adapter 1/4" NPT

Inlet or Outlet Connections
See Part Number Selector

Mounting
Wall Mounting Plate 75x100 mm Aluminum Grey/White

Cleaning
Cleaned for Oxygen Service

Weight (approximate)
Brass: 1.5 lbs / 0.7 kg
Stainless Steel: 2.6 lbs / 1.2 kg

Hastelloy® is a registered trademark of Haynes International, Inc.
Elgiloy® is a registered trademark of Elgiloy Corp.

TESCOM MiniLabo 2 Point-of-Use regulator for non-corrosive/corrosive gases and mixtures up to 6.0 (99.9999 Vol %) purity with a compact, modular and ergonomic design.

Applications

- Reduction of line pressure to working pressure
- Laboratory, R&D and analyzer applications
- Suitable for ECD (Electronic Capture Detector) applications

Features and Benefits

- Clear indication of open/closed position (90°) of shut-off valve
- Minimal space for installation required because pressure regulator and shut-off valve are integrated in one body
- Reduced internal volume, short purging times
- Modular design featuring a pressure regulator, gauge, 1/4 turn shut-off valve and metering valve
- Easy installation due to wall mounting plate

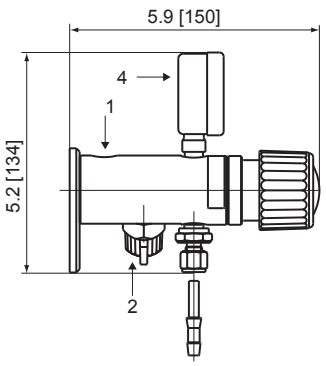
MINILABO 2

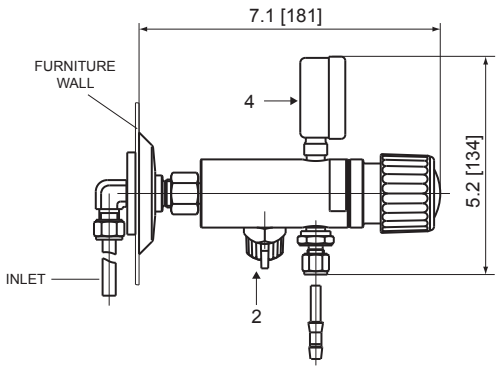
MiniLabo 2 Regulator Horizontal Drawings

Wall Mounted Version
(with wall plate)

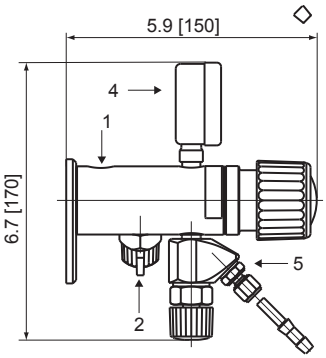
Furniture Installation Version

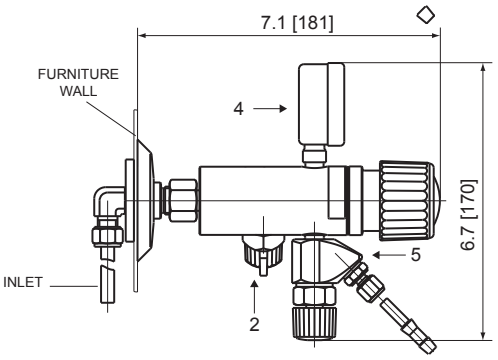
MiniLabo 2 horizontal
with shut-off valve



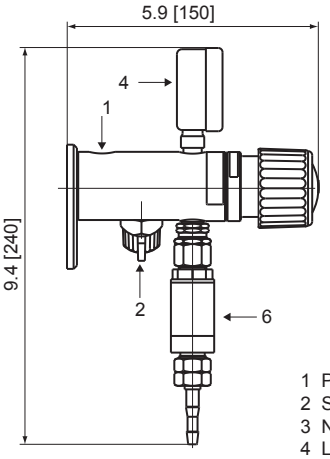


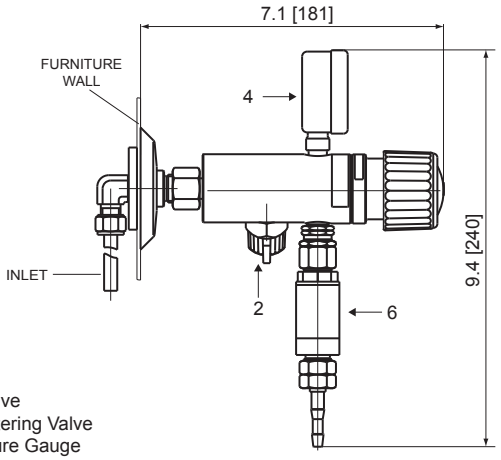
MiniLabo 2 horizontal
with shut-off valve
and diaphragm metering valve





MiniLabo 2 horizontal
with shut-off valve
and flame arrestor





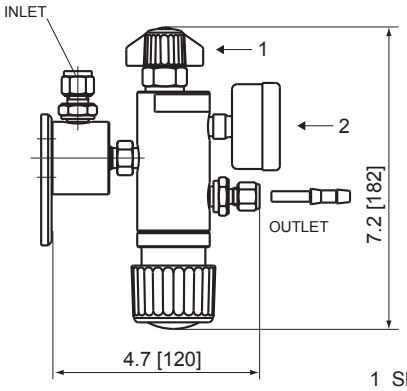
1 Plug G 1/4“
2 Shut-off Valve
3 Needle Metering Valve
4 Low Pressure Gauge
5 Metal Diaphragm Metering Valve
6 Flame Arrestor

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

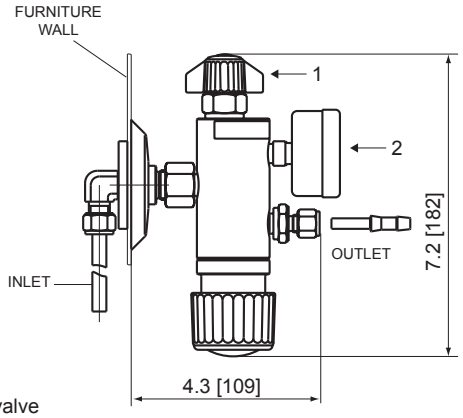
MiniLabo 2 Regulator Vertical Drawings

MiniLabo 2 vertical with shut-off valve (also available with diaphragm metering valve, needle metering valve or flame arrestor)

Wall Mounted Version (with wall plate)



Furniture Installation Version



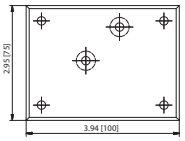
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

1 Shut-off valve
2 Low pressure gauge

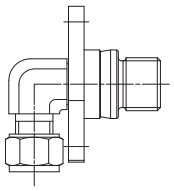
Accessories for Wall Mounting

PART NUMBER	DESCRIPTION
D43342	Wall mounting plate, grey white, thickness 6 mm
D43371	Kit countersunk screws + dowels for wall plate
D42663-00-X	Wall plate, Brass, including elbow compression fitting 6, 8, or 10 mm
D42663-22-X	Wall plate, Stainless Steel, including elbow compression fitting 6, 8, or 10 mm
V09166	Wall plate cover
D42572	Gas label (please, state gas type)

D43342

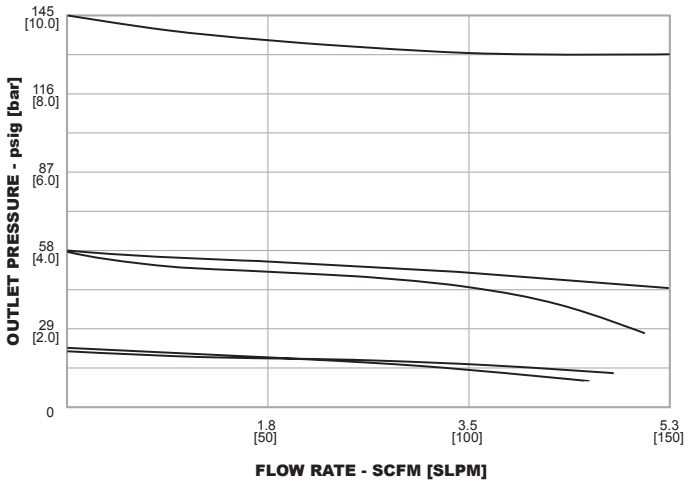


D42663



MiniLabo 2 Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



MiniLabo 2 Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43483 - AR - 03 - D 1

BASIC SERIES	TYPE OF GAS						OUTLET CONNECTION					INLET CONNECTION										PRESSURE RANGE				
	AO - Oxygen	AR - Other gases	AK - Corrosive gases	20 - Ammonia*	22 - Acetylene*	23 - Carbon monoxide	00 - None (G 1/4" internal)	02 - Compression Fitting ø 1/8"	03 - Compression Fitting ø 6 mm	04 - Compression Fitting ø 1/4"	05 - Compression Fitting ø 6 mm with hose connection ø 6 mm	A - G 1/4" female top	B - G 3/8" ball cone rear	C - G 3/8" metal cone fitting top	D - G 3/8" ball cone bottom	E - G 1/4" female top with wall mounting plate	F - Compression fitting 8 mm with wall mounting plate	G - Compression fitting 10 mm with wall mounting plate	H - G 1/4" female rear	J - Compression fitting 6 mm with wall mounting plate	K - Compression fitting 12 mm with wall mounting plate	1 - 21.8 psig / 1.5 bar	2 - 58 psig / 4 bar not for Acetylene	3 - 145 psig / 10 bar not for Acetylene	4 - 43.5 psig / 3 bar not for Acetylene	5 - 72.5 psig / 5 bar not for Acetylene and Hydrogene
MiniLabo 2 Horizontal Brass																										
D43372 Brass	X	X		X	X		X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X		
D43374 Brass, metal diaphragm metering valve	X	X		X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
D43375 Brass flame arrestor	X	X		X	X						X	X	X	X	X	X	X	X	X	X	X	X	X**		X	X**
MiniLabo 2 Horizontal Brass with Shut-Off Valve																										
D43376 Brass, shut-off valve	X	X		X	X		X	X			X	X	X	X	X	X	X	X		X	X	X	X	X		
D43378 Brass, shut-off valve, metal diaphragm metering valve	X	X		X	X		X	X			X	X	X	X	X	X	X	X		X	X	X	X	X		
D43379 Brass, shut-off valve, flame arrestor	X	X		X	X						X	X	X	X	X	X	X	X		X	X	X	X**		X	X**
MiniLabo 2 Horizontal Stainless Steel																										
D43482 Stainless Steel	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X		X	X	X	X	X		
D43483 Stainless Steel, metal diaphragm metering valve	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		
MiniLabo 2 Horizontal Stainless Steel with Shut-Off Valve																										
D43484 Stainless Steel, shut-off valve	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		
D43485 Stainless Steel, shut-off valve, metal diaphragm metering valve	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		
MiniLabo 2 Vertical Brass																										
D43380 Brass, shut-off valve	X	X	X	X	X	X	X	X			X	X	X									X	X	X		
D43381 Brass, shut-off valve with needle valve	X	X	X	X	X	X	X	X			X	X	X									X	X	X		
D43382 Brass, shut-off valve with metal diaphragm metering valve	X	X	X	X	X	X	X	X			X	X	X									X	X	X		
D43383 Brass, shut-off valve with flame arrestor	X	X	X	X	X	X	X	X			X	X	X									X	X	X		

X available

** Only for outlet pressure 22 psig / 1.5 bar*

*** Not for Acetylene and Hydrogen*

Gas specific label available on request. Please mention gas type when ordering.

Regulators - Pressure Reducing

DCATLABO12133XEN2

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For corrosive and non-corrosive gases and mixtures

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
580 psig / 40.0 bar

Maximum Outlet Pressure
22, 58, 145 psig / 1.5, 4.0, 10.0 bar

Leakage Rate Against Atmosphere
10^{-8} mbar l/sec He each connection

Nominal Flow Rate
1-200 LPM based on Nitrogen

Operating Temperature
-4°F to 158°F / -20°C to 70°C

MEDIA CONTACT MATERIALS

Material
Body: 316L Stainless Steel
Diaphragm: Cobalt Chrome Nickel Alloy (Eligiloy®) / Nickel Alloy (Hastelloy®)

Seat
Valve: PCTFE
Pressure Reducer: PTFE

OTHER

Cleaning
Cleaned for Oxygen Service

Connections
Inlet and Outlet: 1/4" HPIC
High Purity Internal Connection (HPIC) designed for use with 1/4" swivel VCR® (or compatible fittings)
Gauge: 1/4" Internal VCR®

Weight (approximate)
2.7 lbs / 1.2 kg

Elgiloy® is a registered trademark of Elgiloy Corp.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Swagelok.

TESCOM Ultra High Purity MiniLabo 2 is a point-of-use regulator for high purity applications with a compact, modular ergonomic design. All connections are 1/4" Internal VCR® for reduced leak rates.

Applications

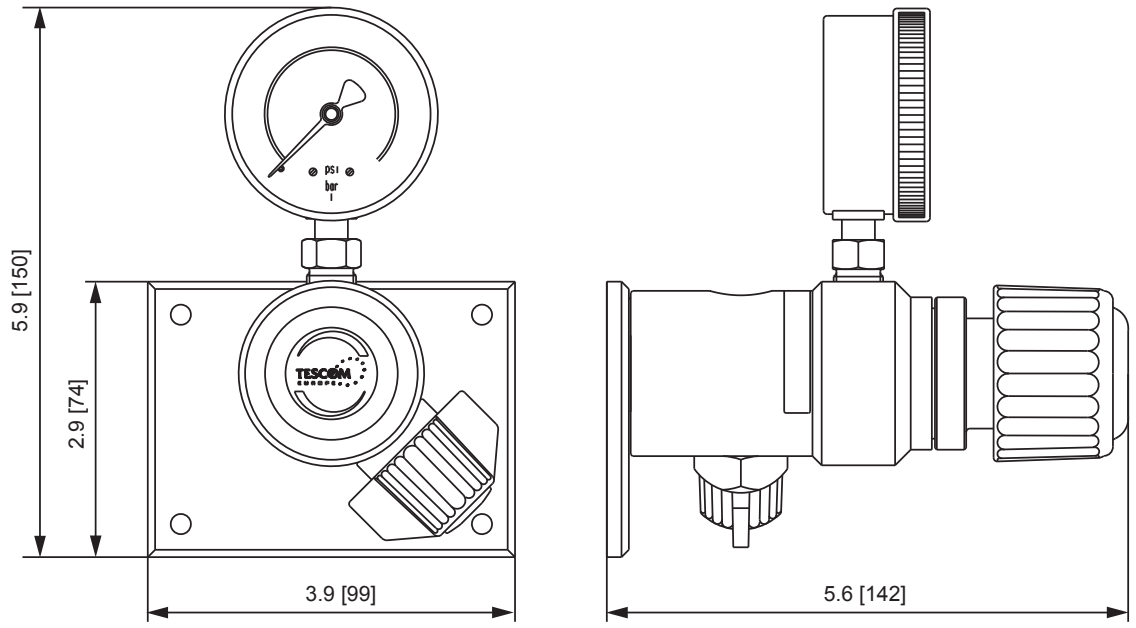
- High purity applications
- Reduces line pressure to working pressure
- Laboratory, research & development and analyzer applications

Features and Benefits

- Minimized internal volume
- All connections are 1/4" Internal VCR® for reduced leak rates
- Compact and economical design
- Ease of use by ergonomic handwheels
- Pressure regulator and 1/4 turn shut-off valve integrated in one body
- Includes low pressure gauge and a wall mounting plate
- Suitable for gases up to purity 6.0

ULTRA HIGH PURITY MINILABO 2

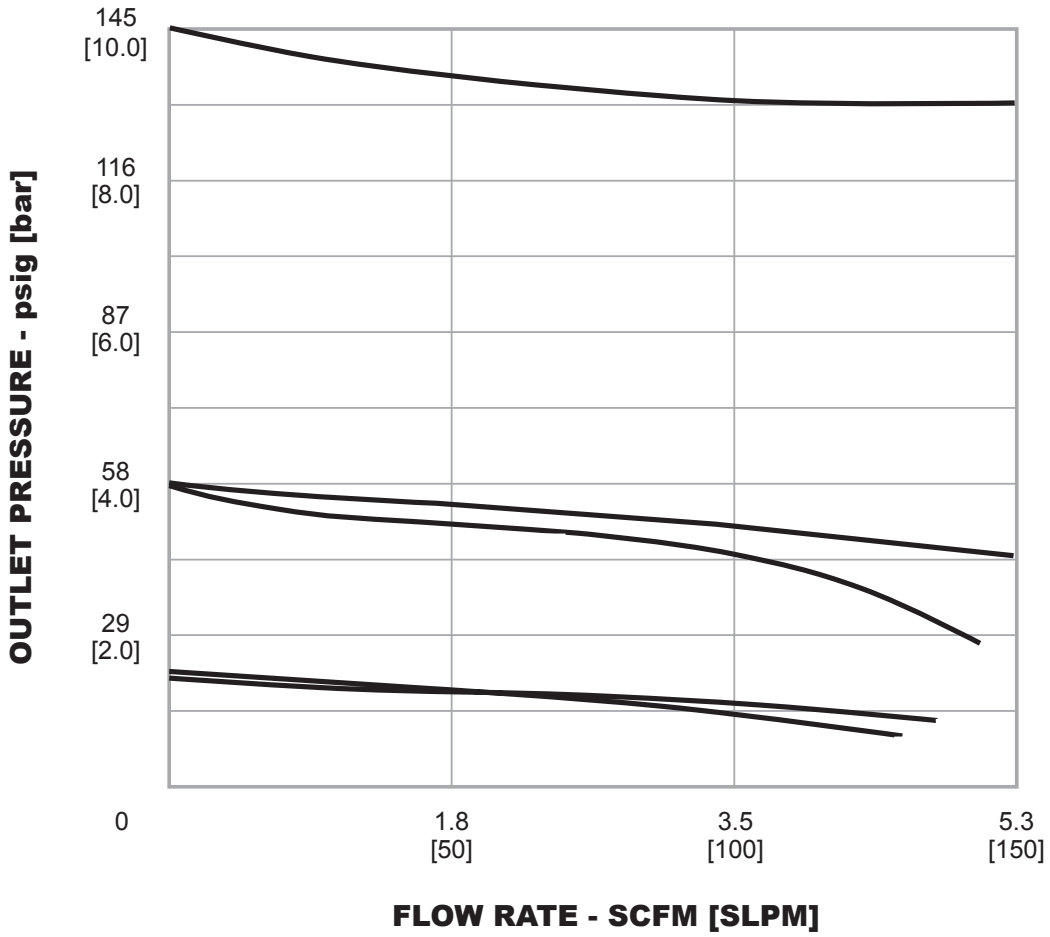
Ultra High Purity MiniLabo 2 Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Ultra High Purity MiniLabo 2 Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



ULTRA HIGH PURITY MINILABO 2

Ultra High Purity MiniLabo 2 Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D45372 -	2
BASIC SERIES	**PRESSURE RANGE**
D45372 MiniLabo 2 Ultra High Purity Point-of-use regulator with wall mounting plate and metal diaphragm	**1** 22 psig / 1.5 bar **2** 58 psig / 4.0 bar **3** 145 psig / 10.0 bar

Accessories for Wall Mounting

D43371 Supplied with D45372-x	Kit countersunk screws + dowels for wall plate

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3000 psig / 207 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100 and 0-150 psig
0-1.7, 0-3.4, 0-6.9 and 0-10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 0.05

Maximum Operating Torque
30 inch-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Bonnet
316 Stainless Steel

Diaphragm
316 Stainless Steel

Seat
PCTFE (1st stage), PFA (2nd stage)

Friction Sleeves
Outer: 316 Stainless Steel
Inner: PTFE

Remaining Parts
316 Stainless Steel

OTHER

Connections
1/4" NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
3 lbs / 1.4 kg

TESCOM PS-3400 Series is a compact high purity two-stage cylinder regulator with tied diaphragms for low flows of toxic, flammable and pyrophoric gases. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Application

- For toxic, corrosive and pyrophoric cylinder gases

Features and Benefits

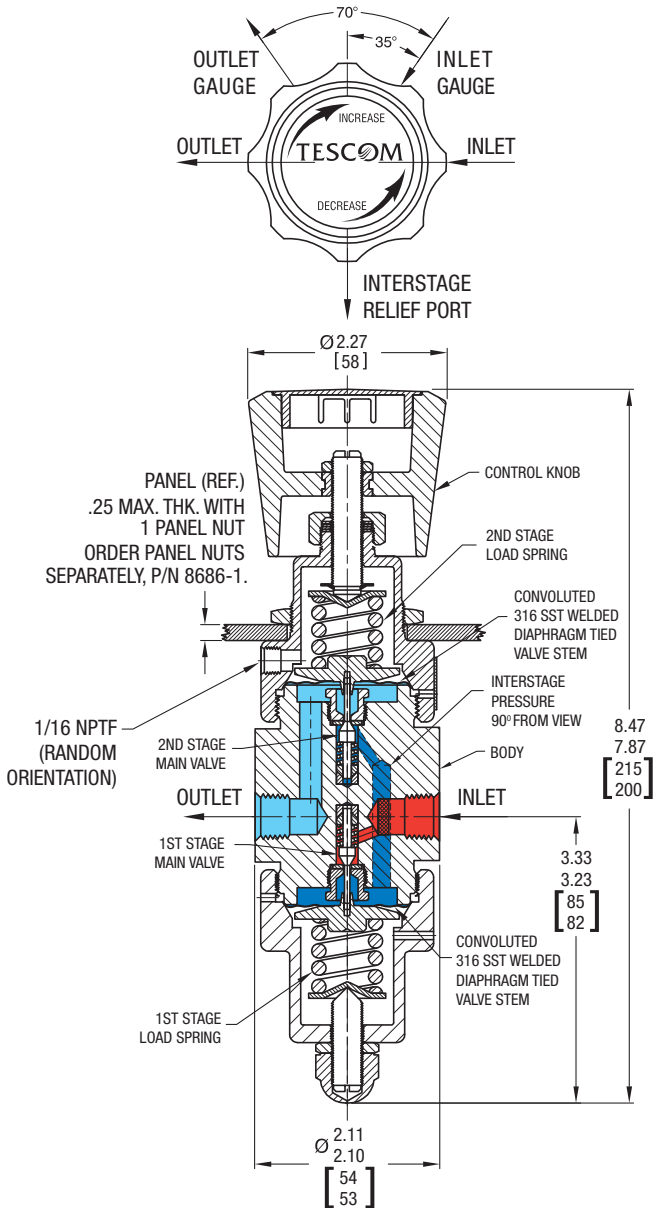
- Excellent decaying inlet characteristic: 0.06/100 psig or 0.004/6.9 bar inlet change
- Positive seal design
- Captured bonnet ports
- Both diaphragms are convoluted for greater accuracy and sensitivity
- Metal-to-metal diaphragm to body seal to minimize diffusion
- Diaphragm-to-valve link enhances seat sealing integrity

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

PS-3400 SERIES

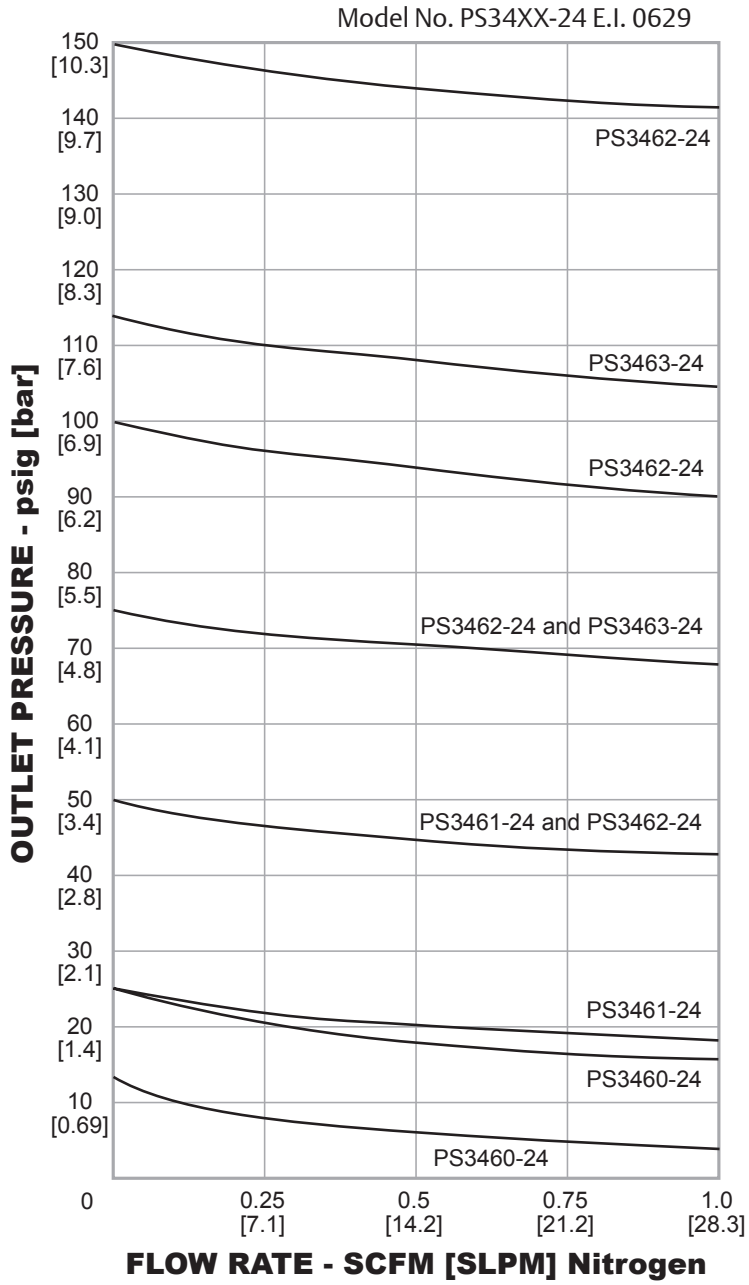
PS-3400 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PS-3400 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



PS-3400 SERIES

PS-3400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

PS34	6	0	2	4
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**
PS34	**6 –** 316 Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar	**2 –** NPTF	**4 –** 1/4"

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive gases, oxygen and liquid gases, recommended for gas purity up to 5.0, not suitable for acetylene

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
290 psig / 20.0 bar

Outlet Pressure Ranges
0.15-1.5 inch-Hg / 5-50 mbar*
0.3-3 inch-Hg / 10-100 mbar
1.5-15 inch-Hg / 50-500 mbar
1.5-14.5 psig / 0.10-1.00 bar
2.2-21.8 psig / 0.15-1.5 bar

Flow Capacity
See flow curves

Operating Temperature
-4°F to 158°F / -20°C to 70°C
for CO maximum 104°F / 40°C

MEDIA CONTACT MATERIALS

Body
Nickel-plated Brass

Diaphragm
EPDM, wetted side PFEP covered

Seat
NBR

OTHER

Connections
Inlet: G 1/2" Female thread
Outlet: G 1/2" Female thread
Gauge: G 1/2" Female thread

Weight
2.9 lbs / 1.3 kg

**Minimum inlet pressure of 3.0 bar required*

Warning: Don't use for acetylene

TESCOM Regulus 3 in-line pressure reducer is extremely sensitive (mbar range) for gas purity up to 5.0 (99.999 Vol %) with positive shut-off seal.

Applications

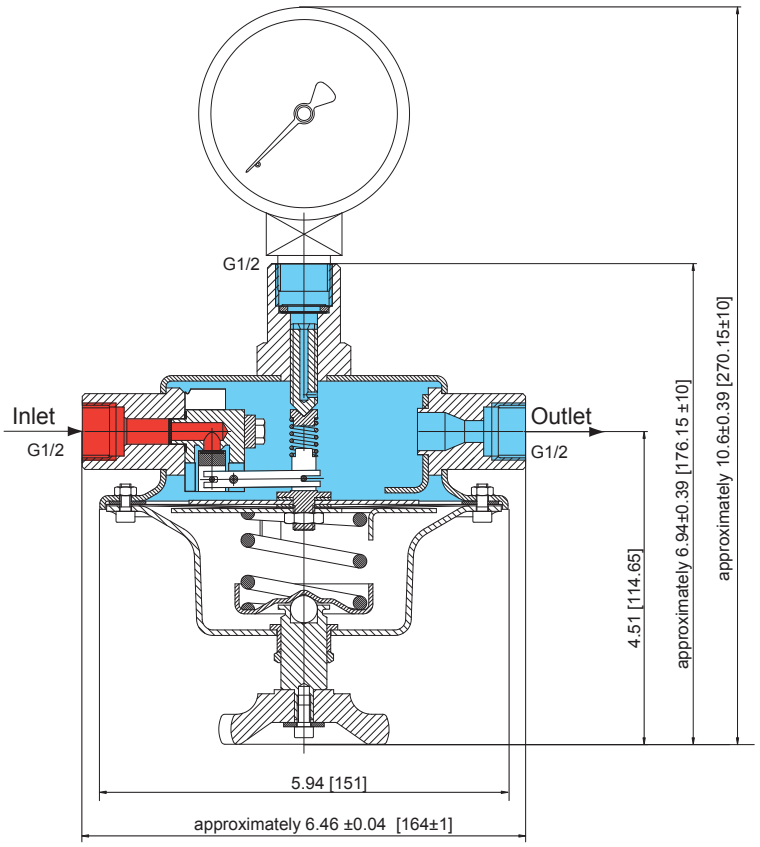
- Where very low outlet pressure is requested in combination with low flows
- Point-of-use regulator in central gas supply systems
- In machines or in combination with a first-stage reducer as a cylinder pressure reducer
- Laboratory and production testing

Features and Benefits

- Precise pressure control in the mbar range
- Accurate and reliable pressure control
- Positive shut-off seal

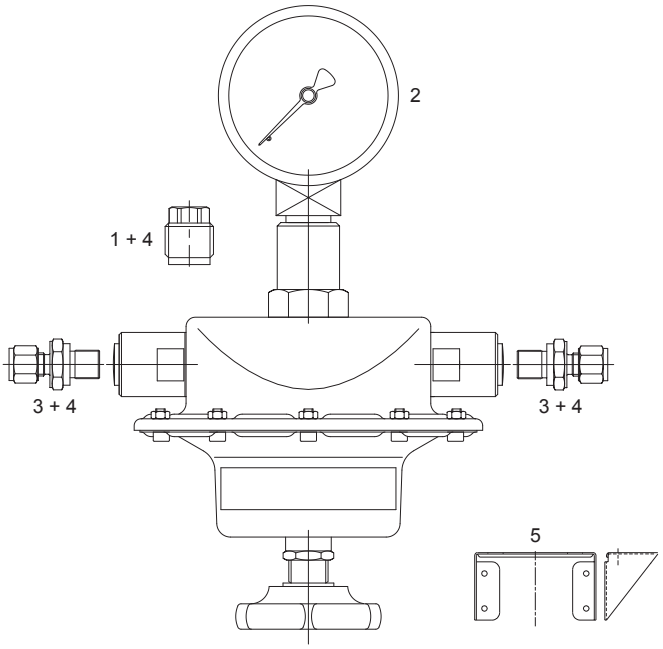
REGULUS 3

Regulus 3 Regulator Drawing



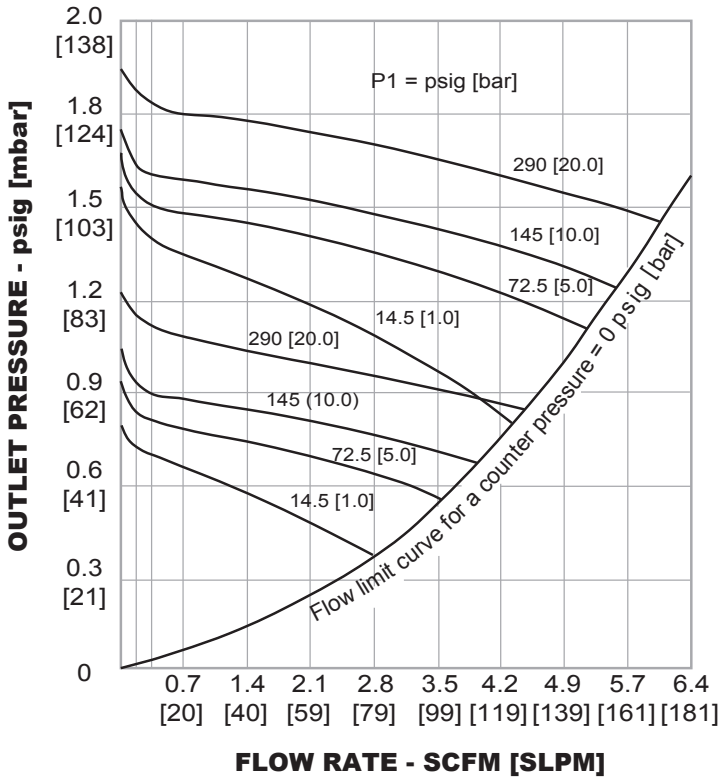
Accessories

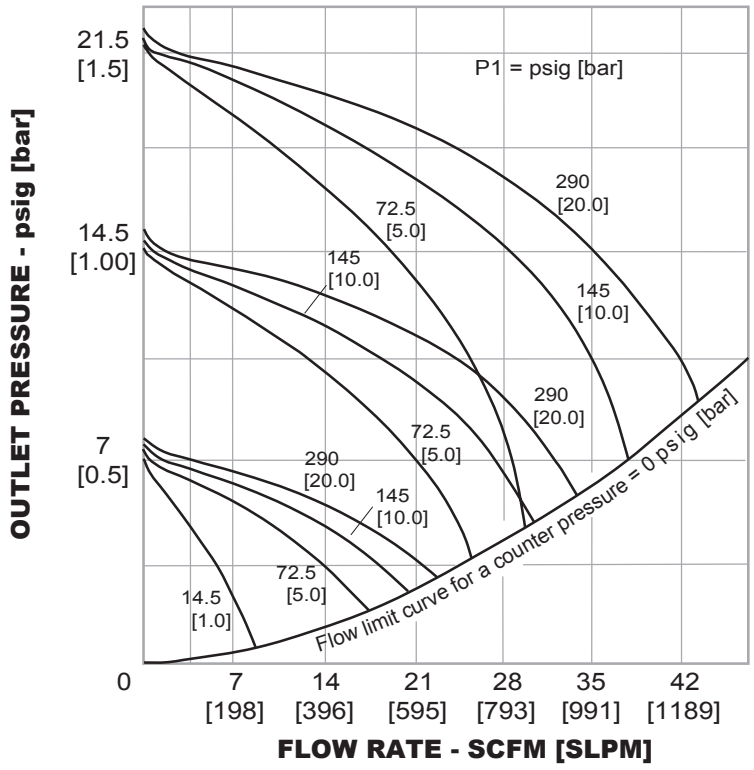
Pos.	Part Number	Description
1	D50367	Screw fitting G 1/2"
2	7232784	Gauge Brass 100-60/50 mbar
2	7232795	Gauge Brass 100-60/50 mbar O_2
2	7232785	Gauge Brass 100-160/100 mbar
2	7232796	Gauge Brass 100-160/100 mbar O_2
2	7232786	Gauge Brass 100-600/500 mbar
2	7232797	Gauge Brass 100-600/500 mbar O_2
2	7232787	Gauge Brass 100-1.6/1 bar
2	7232798	Gauge Brass 100-1.6/1 bar O_2
2	7232788	Gauge Brass 100-2.5/1.5 bar
2	7232799	Gauge Brass 100-2.5/1.5 bar O_2
3	D41604	Fitting Brass G 1/2" - 8 mm
3	D40080	Fitting Brass G 1/2" -10 mm
3	D40081	Fitting Brass G 1/2" -12 mm
4	D01722	Seal ring G 1/2"
5	D13134	Wall bracket
5	D13133	Panel mounting



Regulus 3 Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





REGULUS 3

Regulus 3 Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D50708 - 0050 - 12 - M

BASIC SERIES	OUTLET PRESSURE RANGES	INLET AND OUTLET CONNECTIONS	ACCESSORIES
D50708	**0050 -** 0.15-1.5 inch-Hg / 5-50 mbar **0100 -** 0.3-3 inch-Hg / 10-100 mbar **0500 -** 1.5-15 inch-Hg / 50-500 mbar **1000 -** 1.5-14.5 psig / 0.10-1.00 bar **1500 -** 2.2-21.8 psig / 0.15-1.5 bar	**00 –** None **08 –** Screw fitting G 1/2", 8 mm, Brass **10 –** Screw fitting G 1/2", 10 mm, Brass **12 –** Screw fitting G 1/2", 12 mm, Brass	**None –** without gauge with screw plug **M** – with gauge **W** – with wall bracket D13134 **MW** – with gauge and wall bracket D13134

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive gases up to gas purity 5.0 (99.999 Vol %)

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
290 psig / 20.0 bar

Outlet Pressure Ranges
0.07-0.73 psig / 5-50 mbar
0.73-7.25 psig / 50-500 mbar
2.9-22 psig / 0.20-1.5 bar
14.5-58 psig / 1.00-4.0 bar

Nominal Flow
Max. 72 (m^3/h air)

Operating Temperature
-4°F to 158°F / -20°C to 70°C

MEDIA CONTACT MATERIALS

Body
Aluminum

Diaphragm
Butyl Rubber with PTFE coating

Seat
NBR

OTHER

Port Types and Sizes
Inlet:
Adapter: M16 x 1.5
Body: G 3/4"
Outlet: G 1 1/4"
Gauge: G 1/2"
Relief Valve: L12, DIN 3853 (M18 x 1.5 + cone)

Connections
See Part Number Selector

Weight
9.3 lbs / 4.2 kg

TESCOM Regulus 4 dual-stage pressure reducer, with an integrated relief valve, is extremely sensitive (mbar range) for gas purity up to 5.0.

Applications

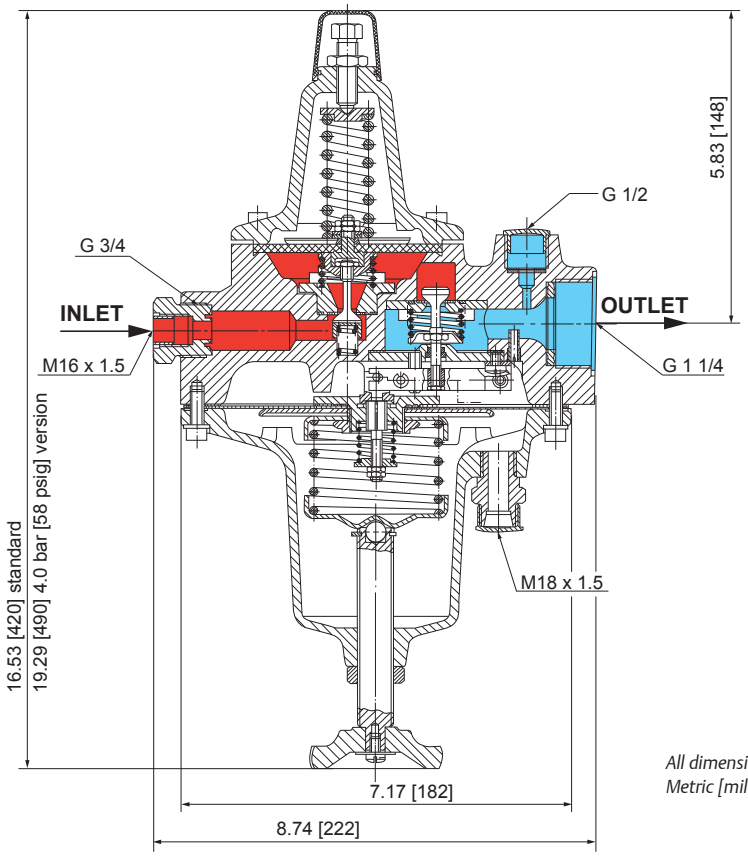
- Can be used as an in-line pressure reducer
- Suitable for non-corrosive gases
- Suitable for Oxygen service
- Commonly used in production testing

Features and Benefits

- Regulation in mbar range
- Dual-stage for constant outlet pressure
- Accurate pressure regulation
- High flow up to 1200 SLPM (air)
- Integrated relief valve

REGULUS 4

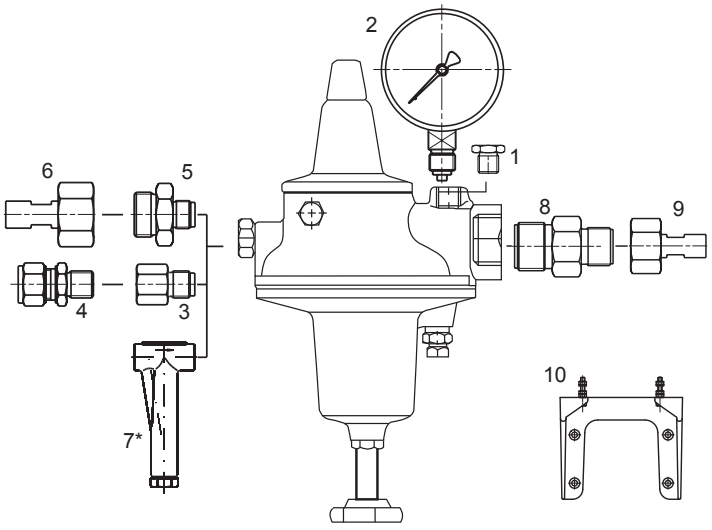
Regulus 4 Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Accessories

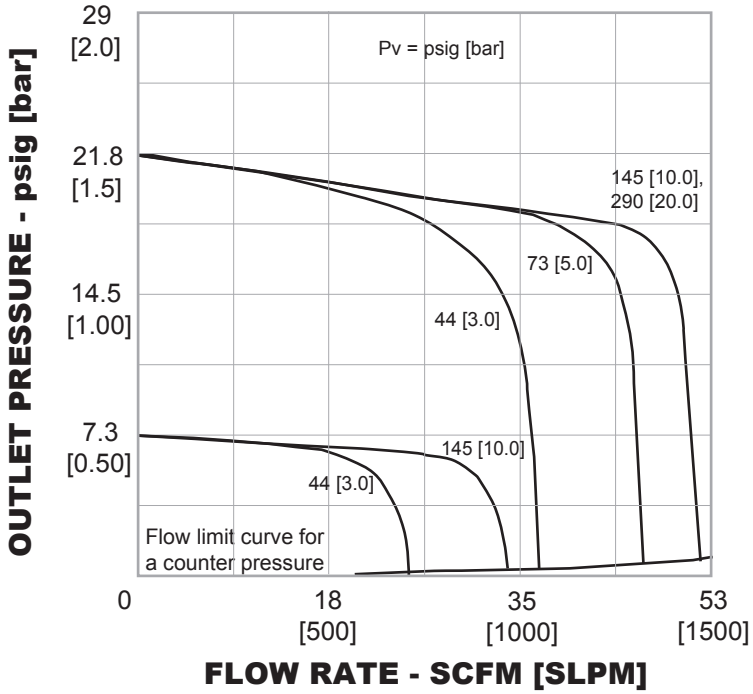
Pos.	Part Number	Description
1	E08791	Plug G 1/2"
2	7232784	Gauge Brass 100-60/50 mbar
2	7232795	Gauge Brass 100-60/50 mbar O_2
2	7232786	Gauge Brass 100-600/500 mbar
2	7232797	Gauge Brass 100-600/500 mbar O_2
2	7232788	Gauge Brass 100-2.5/1.5 bar
2	7232799	Gauge Brass 100-2.5/1.5 bar O_2
2	7233081	Gauge Brass 100-6/4 bar O_2
3	D10069	Inlet connection M16 x 1.5-G 3/8" without filter
4	D40161	Fitting Brass G 3/8"-8 mm
4	D40078	Fitting Brass G 3/8"-10 mm
4	D40865	Fitting Brass G 3/8"-12 mm
4	V01699	Profile seal G 3/8"
5	D13462	Inlet connection M16 x 1.5-G 1/2"
6	V03807	Soldering connection G 3/4"-8mm
6	V04207	Soldering connection G 3/4"-16mm
6	V04107	Soldering connection G 3/4"-22mm
6	D07384	Cu-profile seal G 3/4"
7*	D51721-NFG	Filter
7*	D51721-FG	Filter
7*	D51721-O2	Filter
8	D17292	Adapter G 1 1/4"-G 1 1/4"
9	V09130	Soldering connection G 1 1/4"-28 mm
10	D17873	Wall mounting bracket

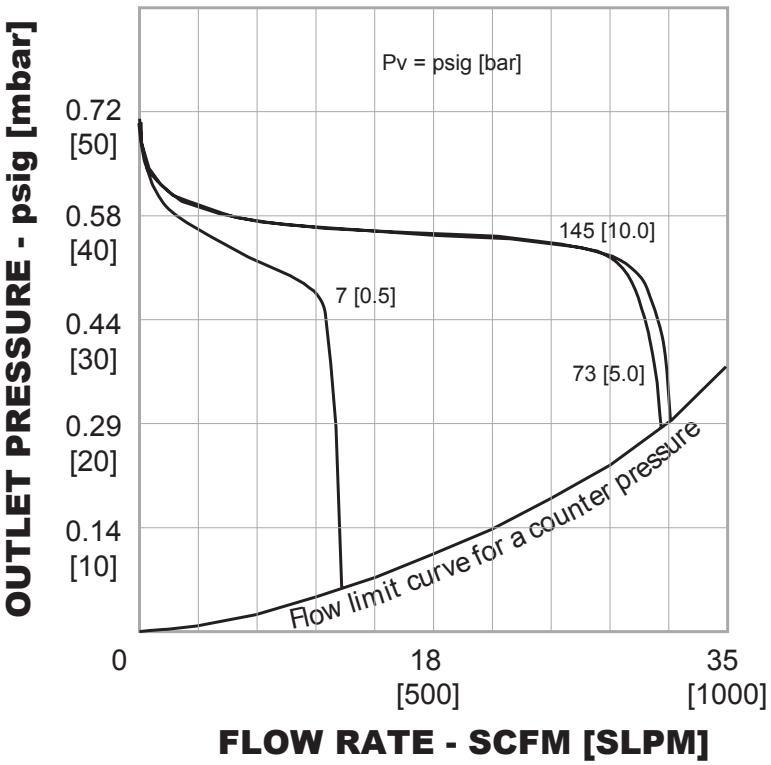


**Remove inlet adapter if use of external filter D51721-XXX is required*

Regulus 4 Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





REGULUS 4

Regulus 4 Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D42320	-	12	-	24	-	M

BASIC SERIES	OUTLET PRESSURE RANGES	GAS	OUTLET CONNECTIONS	GAUGE
D42300 **D42320** **D42840** **D17880**	0.07-0.73 psig / 5-50 mbar 0.73-7.25 psig / 50-500 mbar 2.9-22 psig / 0.20-1.5 bar 14.5-58 psig / 1.00-4.0 bar	**12 –** Oxygen **15 –** Non-flammable gases **16 –** Flammable gases	**00 –** Without **24 –** Adapter G 1 1/4" and soldering connection for tube Ø 28 mm	**M –** Gauge **--- –** No gauge, with plug G 1/2"

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive and corrosive gases up to gas purity 5.0 (99.999 Vol %) which are compatible with the material of construction

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
116 psig / 8.0 bar

Outlet Pressure Ranges
0.4-1.7 psig / 28-117 mbar
1.2-4.6 psig / 83-317 mbar
2.9-11.6 psig / 200-800 mbar

Nominal Flow
50 SLPM / 3 m^3/h
100 SLPM / 6 m^3/h
150 SLPM / 9 m^3/h

Operating Temperature
-4°F to 176°F / -20°C to 80°C

MEDIA CONTACT MATERIALS

Body
Stainless Steel

Diaphragm
EPDM

Seat
EPDM

OTHER

Port Types and Sizes
Inlet: G 1/2
Outlet: G 1/2
Gauge: G 1/2

Weight
3.3 lbs / 1.5 kg

TESCOM Regulus Stainless Steel in-line pressure reducing regulator provides accurate regulation in mbar range without external energy.

Application

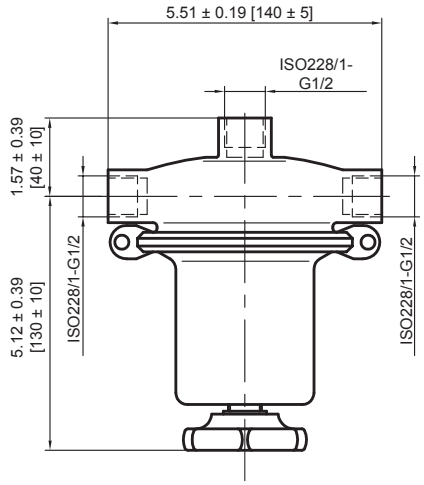
- For applications where very low outlet pressures are requested in combination with low to medium flows

Features and Benefits

- Regulation in mbar range without external energy
- Accurate and precise pressure control
- Flow up to 150 SLPM / 9 m^3/h
- Positive seal design for leak-tight shut-off
- Gauge port is standard

REGULUS STAINLESS STEEL

Regulus Stainless Steel Drawing



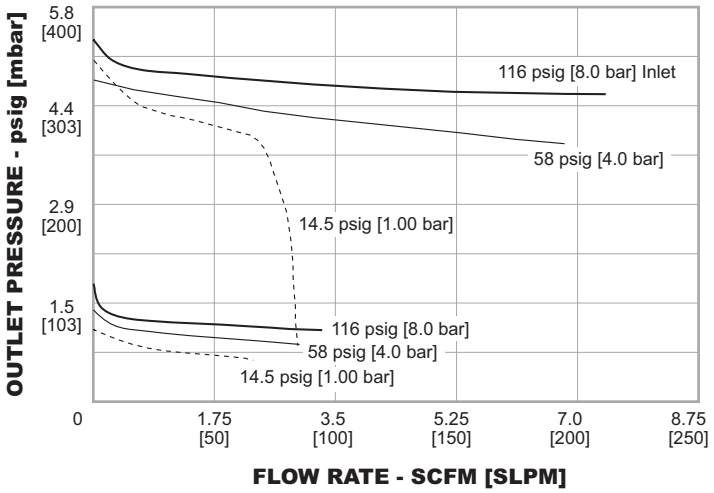
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Accessories

Part Number	Description
40187781	Gauge Ø100, 0-3.6 psig / 0-250 mbar G 1/2, Stainless Steel
632.05-E-MAEUZZ	Gauge Ø100, ES G 1/2, 0-7.3/8.7 psig / 0-500/600 mbar

Regulus Stainless Steel Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



Regulus Stainless Steel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D44595-320

ORDERING NUMBER	OUTLET PRESSURE RANGES
D44595-120	0.4-1.7 psig / 28-117 mbar
D44595-320	1.2-4.6 psig / 83-317 mbar
D44595-800	2.9-11.6 psig / 200-800 mbar

Specifications

For questions about this product, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of CGA E-4; ASME B31; ASME BPVC

Maximum Inlet Pressure
C_V = 0.06: 4500 psig / 310 bar
C_V = 0.2: 3000 psig / 207 bar

Maximum Outlet Pressure
15, 25, 50, 125, 250 psig
103, 172, 345, 862, 1724 kPa
1.0, 1.7, 3.4, 8.6, 17.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Designed to meet
< 2 x 10^{-8} atm cc/sec He / < 2 x 10^{-8} mbar l/s He

Operating Temperature
PCTFE seat: -40°F to 140°F / -40°C to 60°C
Polyimide* seat: -40°F to 250°F / -40°C to 121°C

Flow Capacity
C_V = 0.06, 0.2

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel, Nickel-Plated Brass

Seat
PCTFE, Polyimide*

Diaphragm
316L Stainless Steel, Neoprene

Filter
10 micron nominal sintered Bronze
10 micron nominal sintered 316 Stainless Steel

Seal
PTFE or Nitrile, Buna-N

Remaining Parts
Brass, 300 Series Stainless Steel

OTHERS

Connections
Inlet and outlet: 1/4" NPTF
Accessories: 1/4" NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
2.4 lbs / 1.1 kg

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**Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)*

TESCOM SG1 Series is a compact, lightweight high purity single-stage regulator for specialty and industrial gases. Sensitive, extra long-life metal diaphragm ensures gas purity and integrity. User-friendly model number enables the specifier to select optional gauges, relief and shut-off valves, and cylinder connections as part of the regulator assembly.

Applications

- Laboratory and Point-of-Use Gas Systems in medical, pharmaceutical, food and beverage, and other high purity applications
- Process analyzer gases, metal fabrication and specialty and industrial gas cylinders

Features and Benefits

- Cartridge valve design incorporates a 10 micron filter that protects the regulator seat and makes service simple
- Optional neoprene diaphragm provides exceptional sensitivity for precise pressure control

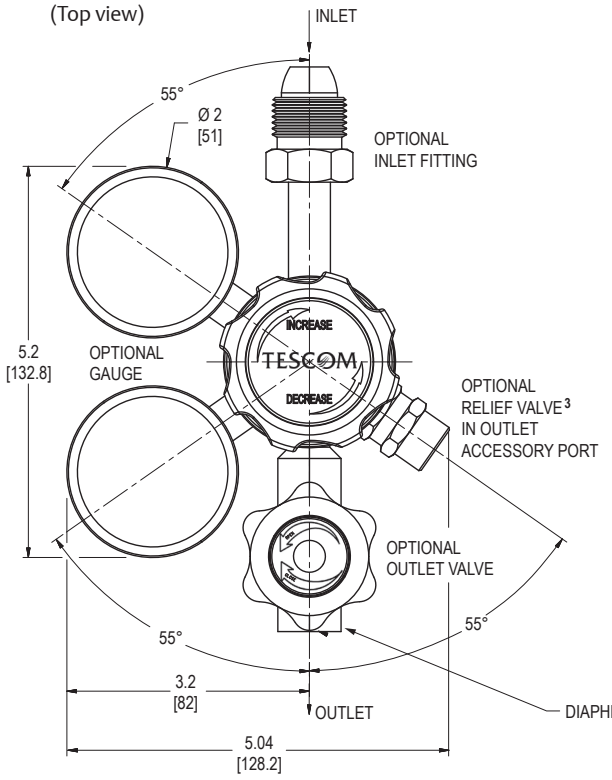
NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

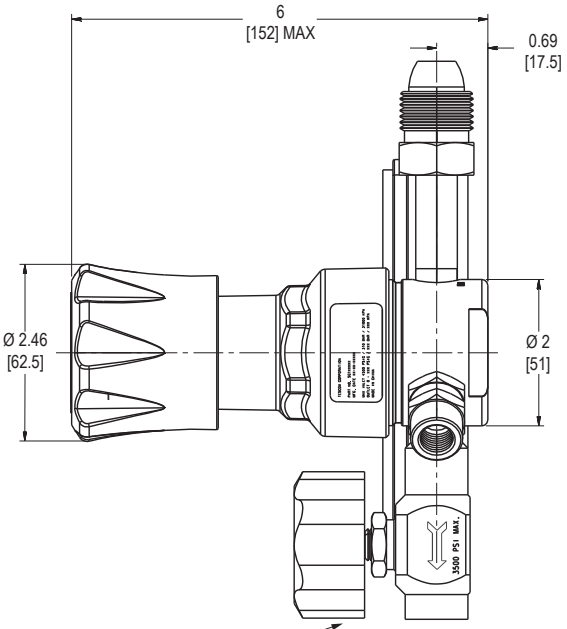
For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

SG1 SERIES

SG1 Series Regulator Drawing

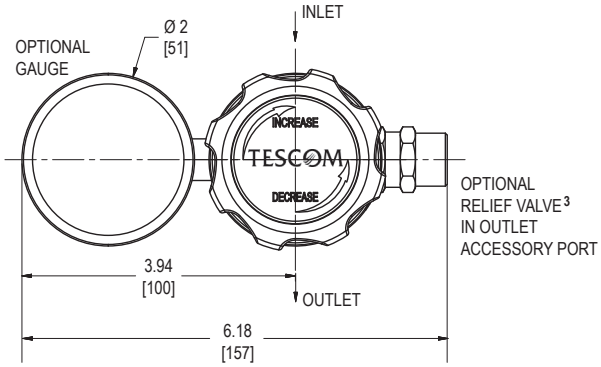
5 Ports
(Top view)



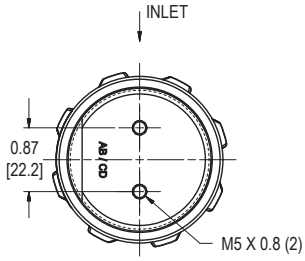


DIAPHRAGM VALVE SHOWN

4 Ports
(Top view)



Bottom Mounting



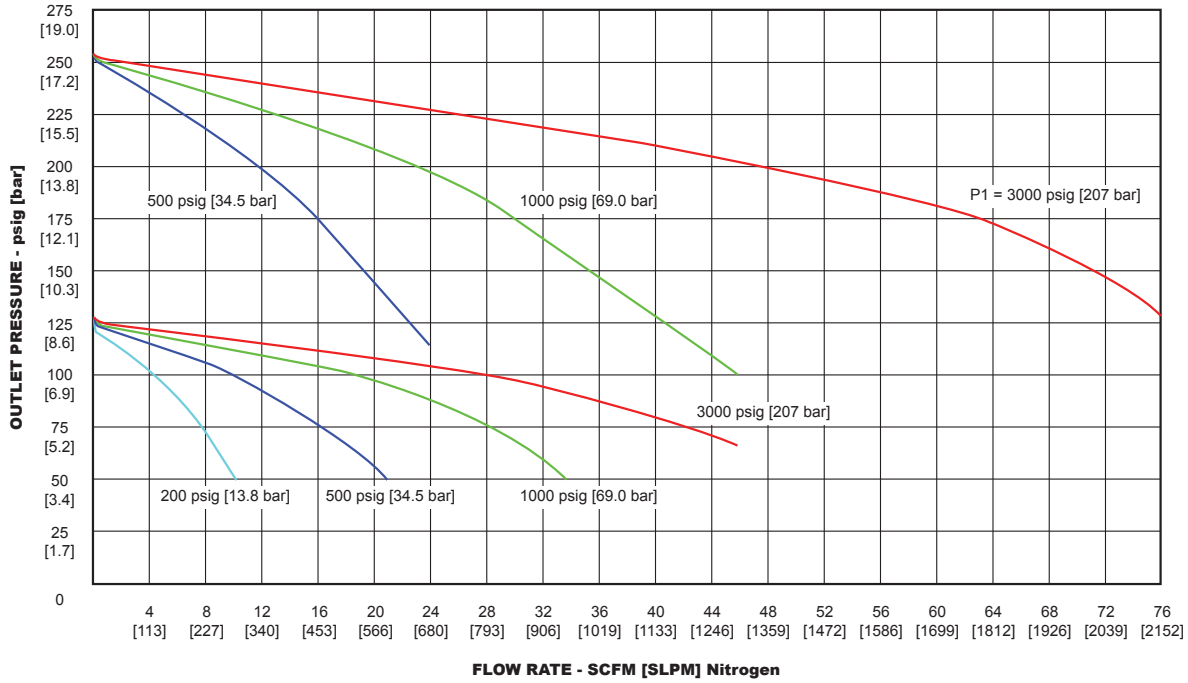
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

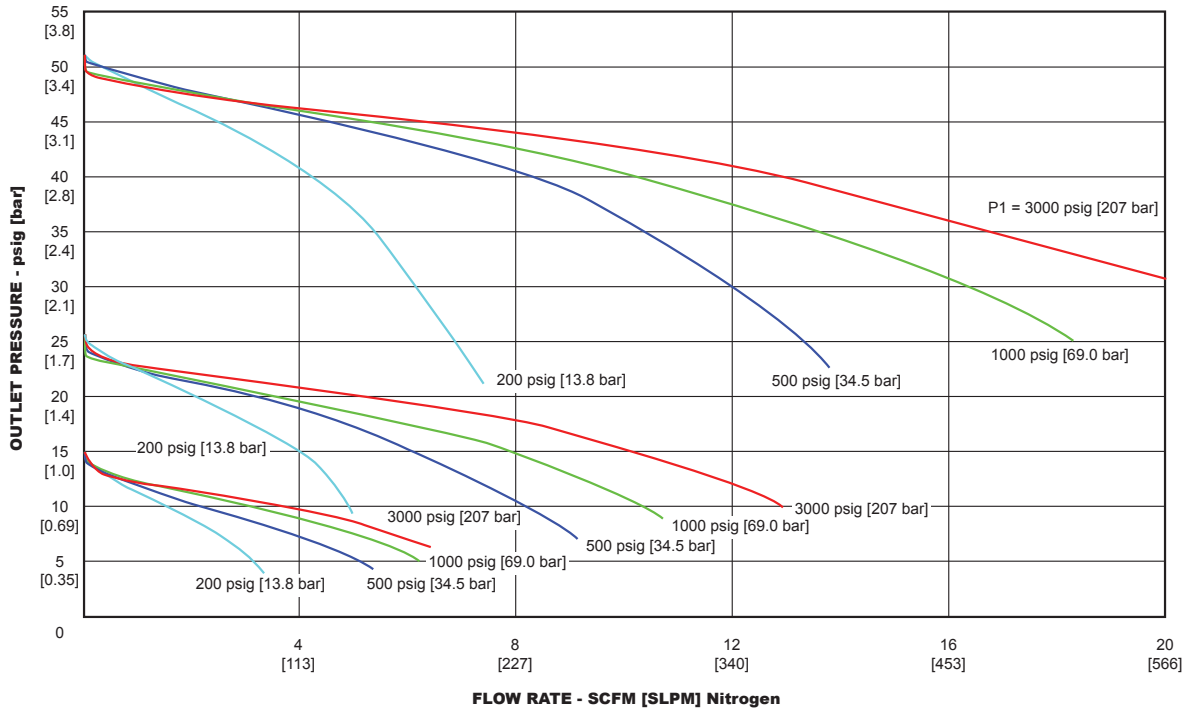
SG1 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.06 Model

Metal Diaphragm





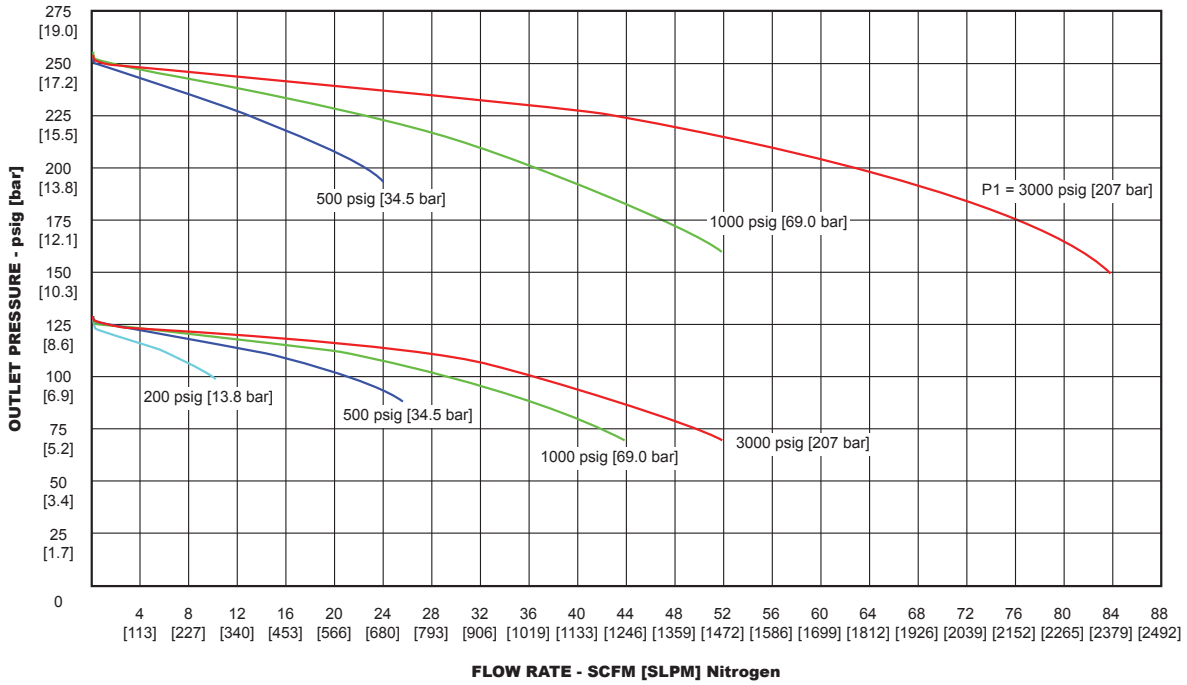
SG1 SERIES

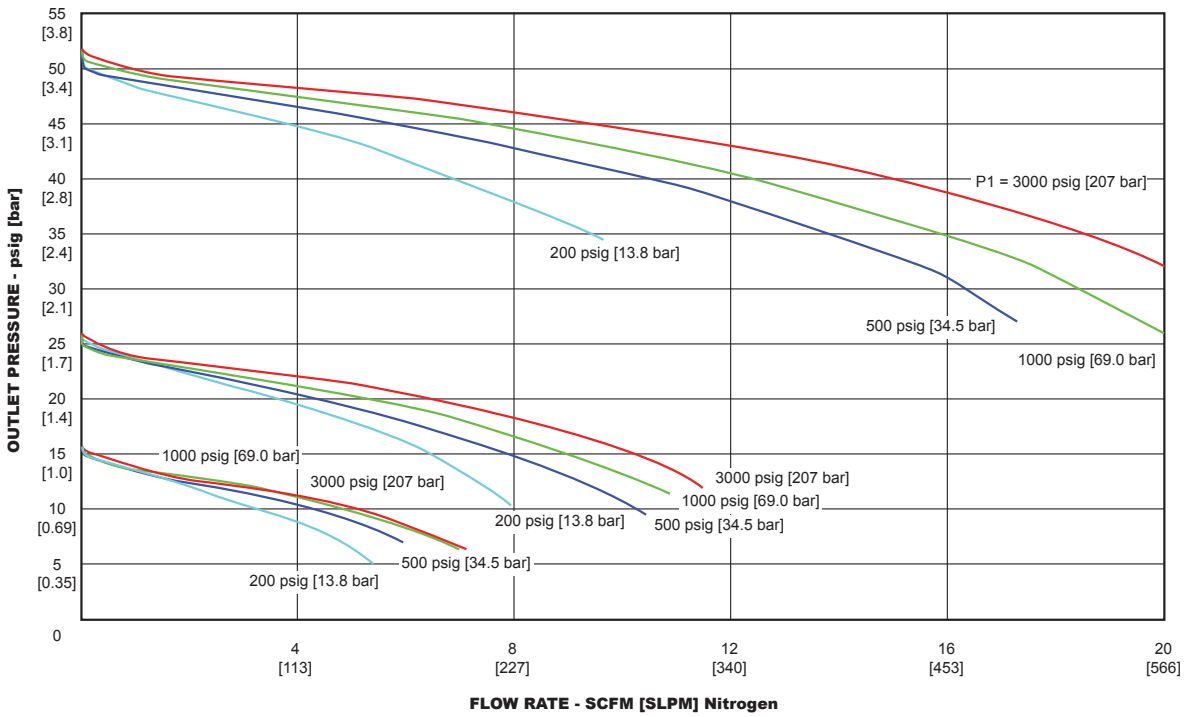
SG1 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.06 Model

Neoprene Diaphragm



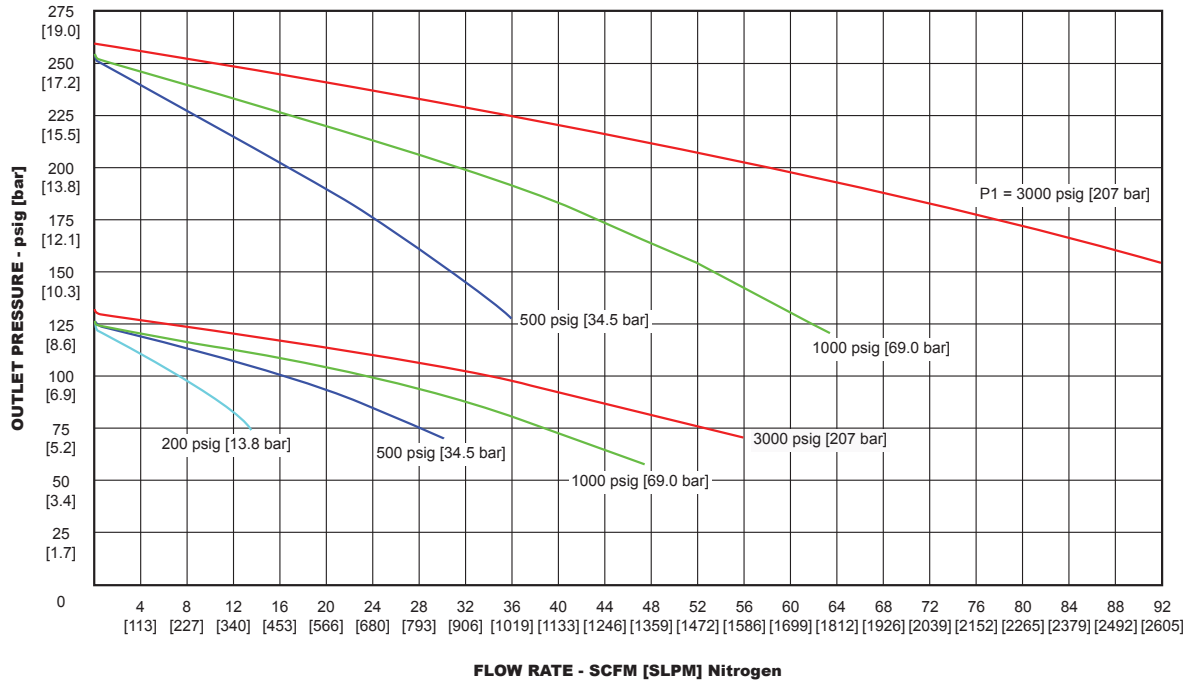


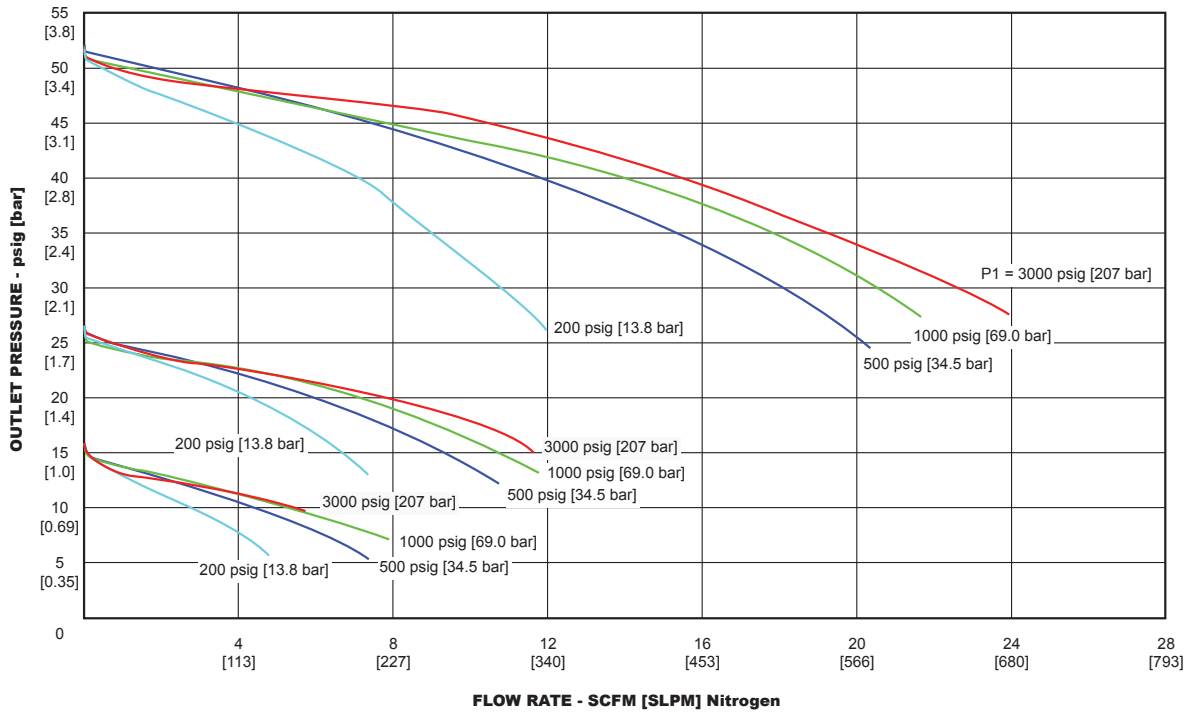
SG1 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.20 Model

Metal Diaphragm





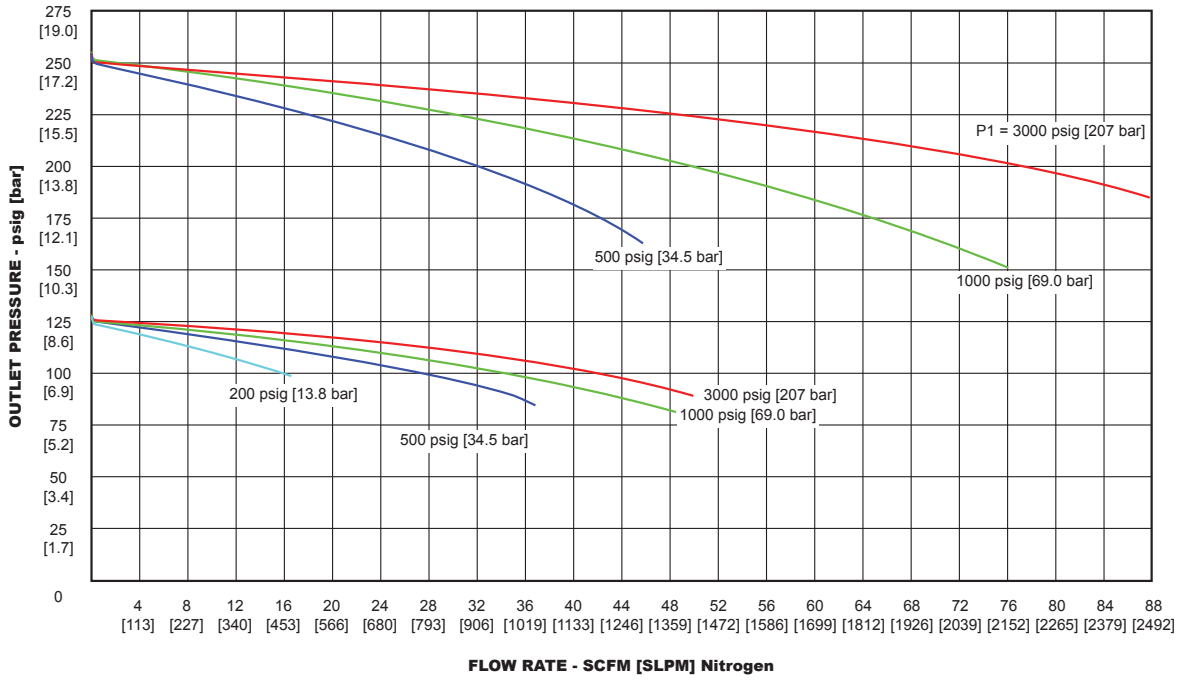
SG1 SERIES

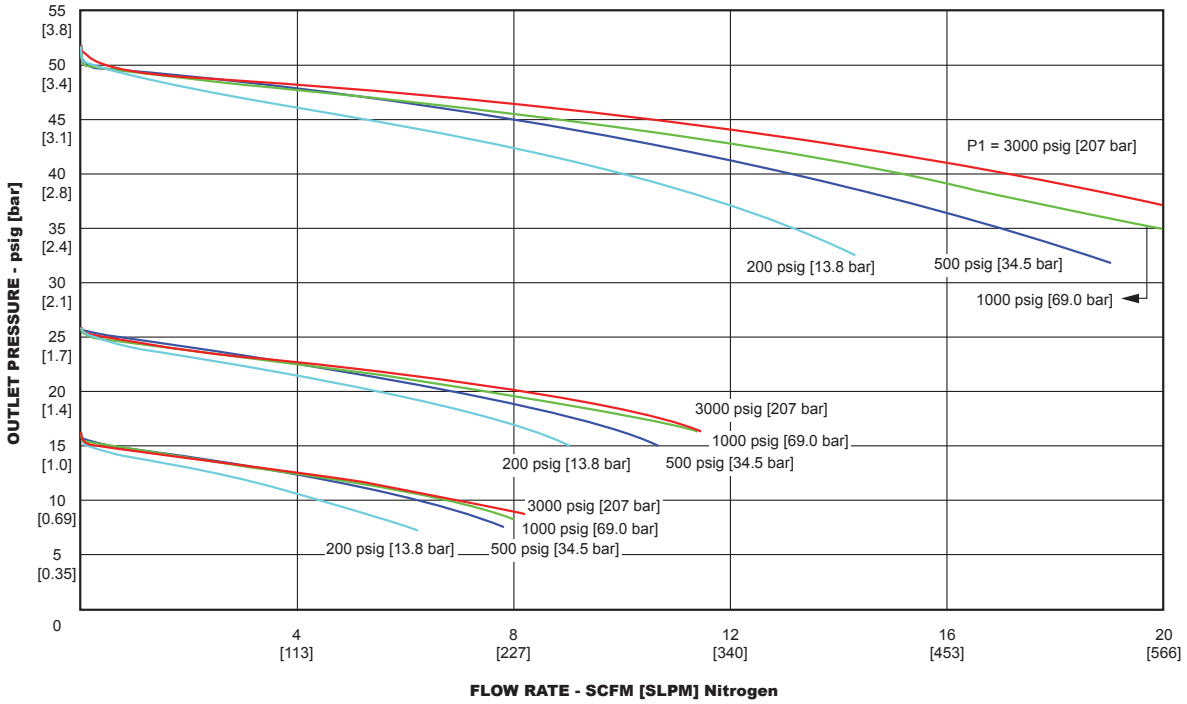
SG1 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.20 Model

Neoprene Diaphragm



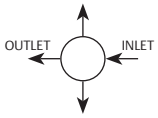
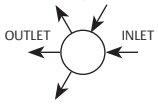


SG1 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Base Model

Example for selecting a part number:

SG1	6	3	1		4	1		[Blank]
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**DIAPHRAGM MATERIAL**	**SEAL MATERIAL**	**PORTS (TOP VIEW)**	**FLOW C_V**	**P1**	**SEAT MATERIAL**
SG1	**P –** Nickel-Plated Brass **6 –** 316L Stainless Steel	**1 –** 15 psig / 103 kPa / 1.0 bar[1] **2 –** 25 psig / 172 kPa / 1.7 bar **3 –** 50 psig / 345 kPa / 3.4 bar **4 –** 125 psig / 862 kPa / 8.6 bar **5 –** 250 psig / 1724 kPa / 17.2 bar	**1 –** 316L Stainless Steel **2 –** Neoprene	PTFE Nitrile, Buna-N	**4 –** 4 port  **5 –** 5 port 	**1 –** 0.06 **2 –** 0.2	4500 psig 31,026 kPa 310 bar 3000 psig 20,684 kPa 207 bar	**[Blank] –** PCTFE **V –** Polyimide[2]

1. Consider a two-stage regulator (SG2) if using full range of inlet pressure capabilities
2. Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)

Accessories

Extension to base model part number:

SG1XXXXXX	—	06	A	1	A
BASE MODEL NUMBER		**CYLINDER CONNECTIONS**	**GAUGES[4]**	**RELIEF VALVE[3]**	**OUTLET VALVE**
		00 – None **01 –** CGA 296 **02 –** CGA 350 **C1 –** CGA 510 **03 –** CGA 540 **04 –** CGA 580 **05 –** CGA 590 **C2 –** CGA 660 **06 –** DIN 477-1.1 **07 –** DIN 477-1.3 **08 –** DIN 477-1.5 **09 –** DIN 477-1.6 **10 –** DIN 477-1.7 **11 –** DIN 477-1.8 **12 –** DIN 477-1.9 **13 –** DIN 477-1.10 **14 –** DIN 477-1.14 **15 –** DIN 477-5.54 **16 –** DIN 477-5.57 **17 –** DIN 477-5.59 **19 –** BS 341 (2002) #02 **20 –** BS 341 (2002) #03 **21 –** BS 341 (2002) #04 **23 –** BS 341 (2002) #06 **24 –** BS 341 (2002) #07 **25 –** BS 341 (2002) #08 **27 –** BS 341 (2002) #10 **28 –** BS 341 (2002) #11 **30 –** BS 341 (2002) #13 **31 –** BS 341 (2002) #14 **32 –** BS 341 (2002) #15	**0 –** None **P –** Plug(s) **A –** psi / kPa **B –** bar / psi *Note: Cylinder connections are available in all world areas.*	**A –** None **P –** Plug **1 –** PTFE Pipe-away	**0 –** None **A –** Diaphragm valve **B –** Needle valve

3. The relief valve is not intended to be a "Pressure Relief Device" as defined by ASME Boiler & Pressure Vessel Code - Section VIII, nor is it intended to be a "Safety Accessory" or "Pressure Limiting Device" as defined by the Pressure Equipment Directive (2014/68/EU). The relief valve is intended to indicate a potential problem with the regulator and prevent further damage to the regulator. The relief valve is not intended to protect the downstream process equipment.

[4]GAUGE PRESSURE RANGES

OUTLET PRESSURE RANGE	OUTLET GAUGE PRESSURE RANGE
SG1X1XXXX – 15 psig / 103 kPa / 1.0 bar	0-30 psig / 200 kPa / 2 bar
SG1X2XXXX – 25 psig / 172 kPa / 1.7 bar	0-30 psig / 200 kPa / 2 bar
SG1X3XXXX – 50 psig / 345 kPa / 3.4 bar	0-60 psig / 400 kPa / 4 bar
SG1X4XXXX – 125 psig / 862 kPa / 8.6 bar	0-160 psig / 1100 kPa / 11 bar
SG1X5XXXX – 250 psig / 1724 kPa / 17.2 bar	0-300 psig / 2000 kPa / 20 bar
INLET PRESSURE RANGE	**INLET GAUGE PRESSURE RANGE**
All	6000 psig / 41,000 kPa / 400 bar

SG1 SERIES

SG1 Series Rebuild Kits

Rebuild Kits include replacement cartridges, diaphragms, diaphragm seals, lubrication and instruction sheet.

KIT PART NUMBER	FOR SG PART NUMBER
JT389-8927	SG1PX1X1
JT389-8928	SG1PX1X2
JT389-8929	SG1PX2X1
JT389-8930	SG1PX2X2
JT389-8931	SG16X1X1
JT389-8932	SG16X1X2
JT389-8933	SG16X2X1
JT389-8934	SG16X2X2
JT389-8927V	SG1PX1X1V
JT389-8928V	SG1PX1X2V
JT389-8929V	SG1PX2X1V
JT389-8930V	SG1PX2X2V
JT389-8931V	SG16X1X1V
JT389-8932V	SG16X1X2V
JT389-8933V	SG16X2X1V
JT389-8934V	SG16X2X2V

Specifications

For questions about this product, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of CGA E-4; ASME B31; ASME BPVC

Maximum Inlet Pressure
4500 psig / 310 bar

Maximum Outlet Pressure
15, 25, 50, 125, 250 psig
103, 172, 345, 862, 1724 kPa
1.0, 1.7, 3.4, 8.6, 17.2 bar

Design Proof Pressure
150% of rated pressure

Leakage
Internal: Bubble-tight
External: Designed to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature
PCTFE seat: -40°F to 140°F / -40°C to 60°C
Polyimide* seat: -40°F to 250°F / -40°C to 121°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel, Nickel-Plated Brass

Seat
PCTFE, Polyimide*

Diaphragm
316L Stainless Steel, Neoprene

Filter
10 micron nominal sintered Bronze
10 micron nominal sintered 316 Stainless Steel

Seal
PTFE or Nitrile, Buna-N

Remaining Parts
Brass, 300 Series Stainless Steel

OTHERS

Connections
Inlet and outlet: 1/4" NPTF
Accessories: 1/4" NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
4.0 lbs / 1.8 kg

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**Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)*

TESCOM SG2 Series is a compact, lightweight, high purity two-stage cylinder regulator for specialty, flammable and industrial gases. Sensitive, extra long-life metal diaphragm ensures gas purity and integrity. User-friendly model number enables the specifier to select optional gauges, relief and shut-off valves, and cylinder connections as part of the regulator assembly.

Applications

- Laboratory and Point-of-Use Gas Systems in medical, pharmaceutical, food and beverage and other high purity applications
- Process analyzer gases, metal fabrication and specialty and industrial gas cylinders

Features and Benefits

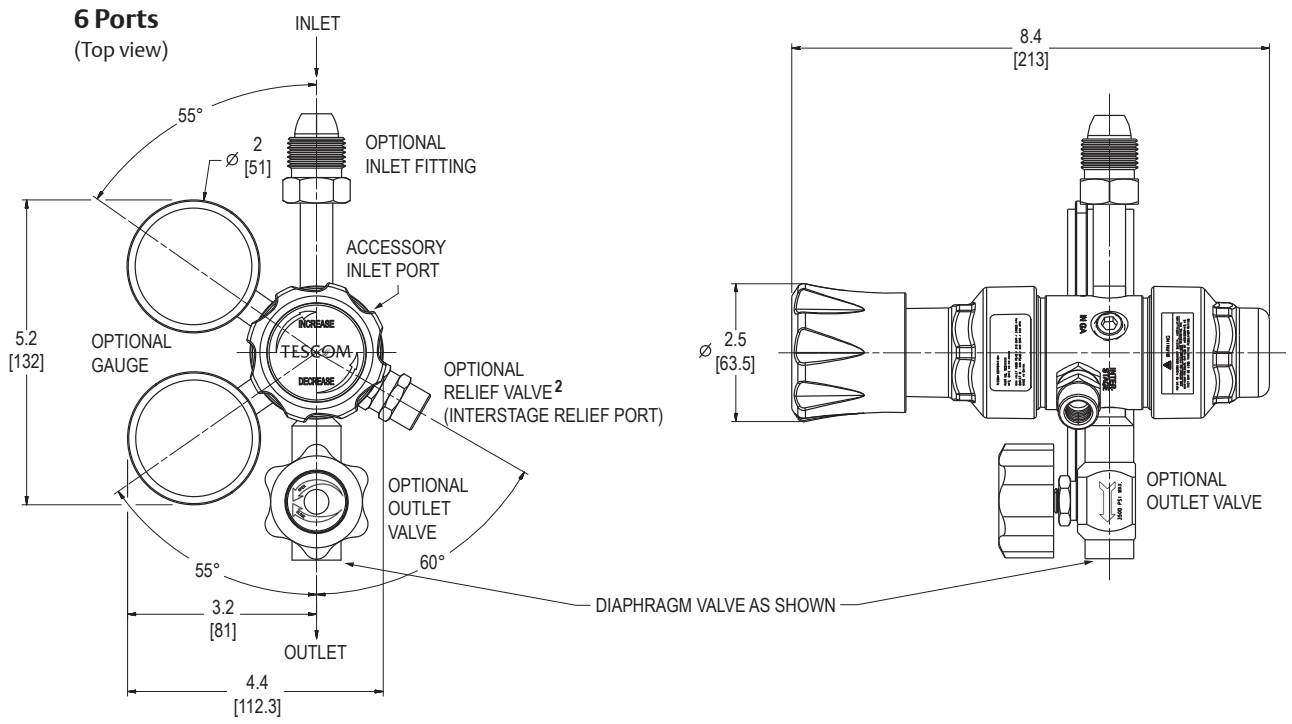
- Cartridge valve design incorporates 10 micron filter to protect the regulator seat and makes service simple
- Optional neoprene diaphragms provide exceptional sensitivity for precise pressure control

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

SG2 SERIES

SG2 Series Regulator Drawing



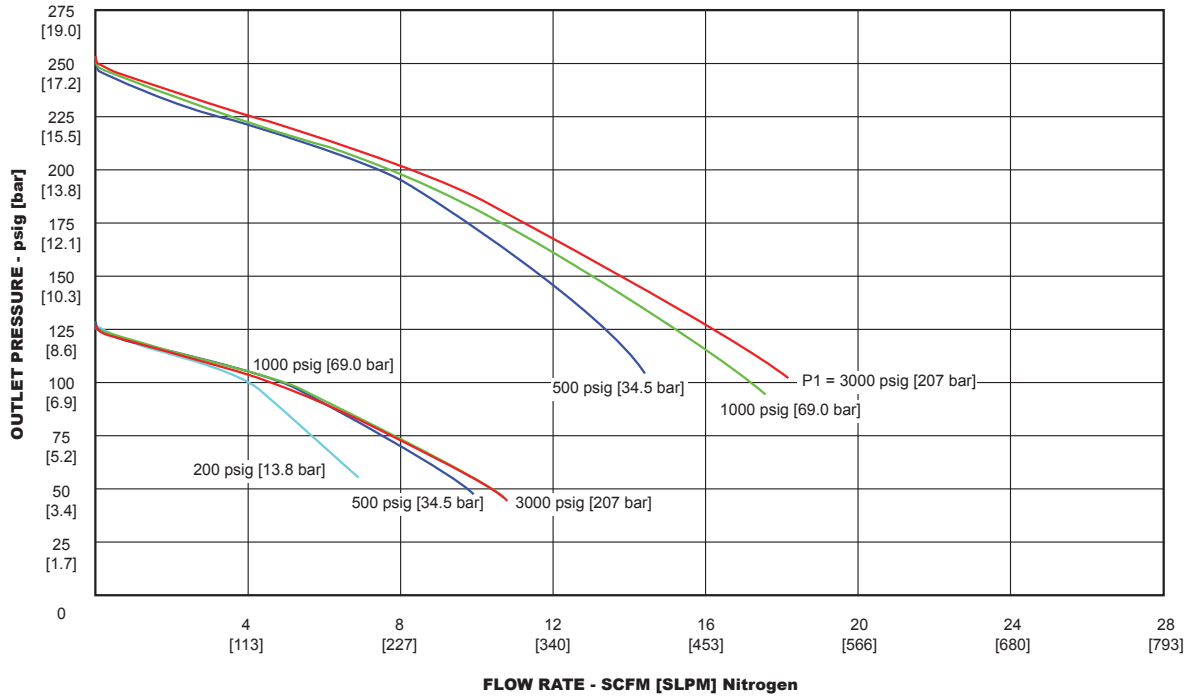
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

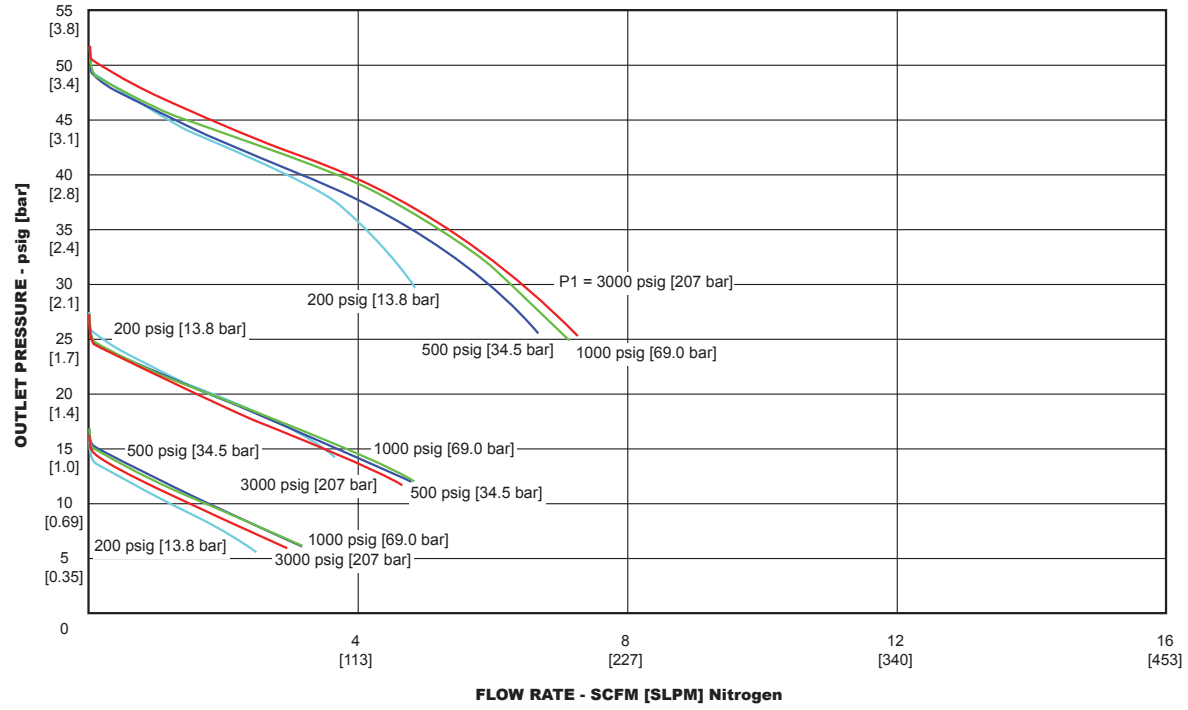
SG2 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.06 Model

Metal Diaphragm





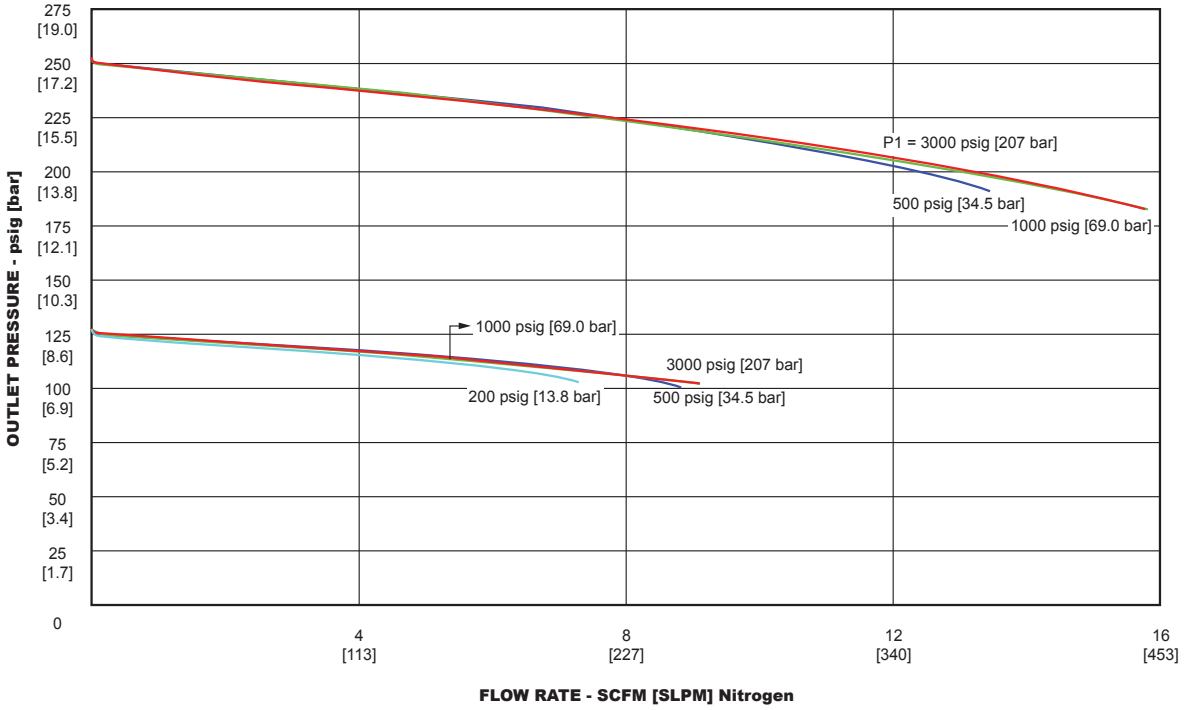
SG2 SERIES

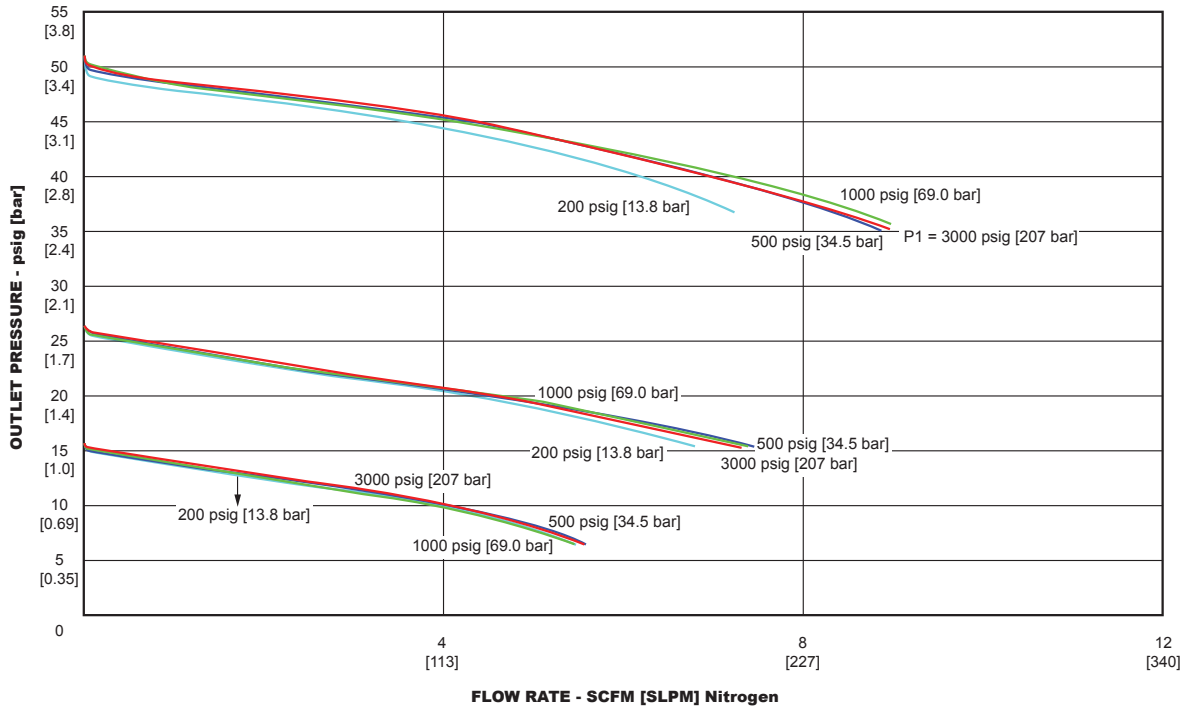
SG2 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.06 Model

Neoprene Diaphragm



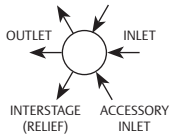


SG2 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Base Model

Example for selecting a part number:

SG2	6	3	1		0	0	[Blank]
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**DIAPHRAGM MATERIAL**	**SEAL MATERIAL**	**PORTS (TOP VIEW)**	**C_V**	**SEAT MATERIAL**
SG2	**P –** Nickel-Plated Brass **6 –** 316L Stainless Steel	**1 –** 15 psig / 103 kPa / 1.0 bar **2 –** 25 psig / 172 kPa / 1.7 bar **3 –** 50 psig / 345 kPa / 3.4 bar **4 –** 125 psig / 862 kPa / 8.6 bar **5 –** 250 psig / 1724 kPa / 17.2 bar	**1 –** 316L Stainless Steel **2 –** Neoprene	PTFE Nitrile, Buna-N	**0 –** 6 Port 	**0 –** 0.06	**[Blank] –** PCTFE **V –** Polyimide[1]

1. Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)

Accessories

Extension to base model part number:

SG2XXXXXX	—	06	A	1	A
BASE MODEL NUMBER		**CYLINDER CONNECTIONS**	**GAUGES[3]**	**RELIEF VALVE[2]**	**OUTLET VALVE**
		00 – None **01 –** CGA 296 **02 –** CGA 350 **C1 –** CGA 510 **03 –** CGA 540 **04 –** CGA 580 **05 –** CGA 590 **C2 –** CGA 660 **06 –** DIN 477-1.1 **07 –** DIN 477-1.3 **08 –** DIN 477-1.5 **09 –** DIN 477-1.6 **10 –** DIN 477-1.7 **11 –** DIN 477-1.8 **12 –** DIN 477-1.9 **13 –** DIN 477-1.10 **14 –** DIN 477-1.14 **15 –** DIN 477-5.54 **16 –** DIN 477-5.57 **17 –** DIN 477-5.59 **19 –** BS 341 (2002) #02 **20 –** BS 341 (2002) #03 **21 –** BS 341 (2002) #04 **23 –** BS 341 (2002) #06 **24 –** BS 341 (2002) #07 **25 –** BS 341 (2002) #08 **27 –** BS 341 (2002) #10 **28 –** BS 341 (2002) #11 **30 –** BS 341 (2002) #13 **31 –** BS 341 (2002) #14 **32 –** BS 341 (2002) #15	**0 –** None **P –** Plug(s) **A –** psi / kPa **B –** bar / psi	**A –** None **P –** Plug **1 –** PTFE Pipe-away	**0 –** None **A –** Diaphragm Valve **B –** Needle Valve

Note: Cylinder connections are available in all world areas.

2. The relief valve is not intended to be a "Pressure Relief Device" as defined by ASME Boiler & Pressure Vessel Code - Section VIII, nor is it intended to be a "Safety Accessory" or "Pressure Limiting Device" as defined by the Pressure Equipment Directive (2014/68/EU). The relief valve is intended to indicate a potential problem with the regulator and prevent further damage to the regulator. The relief valve is not intended to protect the downstream process equipment.

[3]GAUGE PRESSURE RANGES

OUTLET PRESSURE RANGE	OUTLET GAUGE PRESSURE RANGE
SG2X1XXXX – 15 psig / 103 kPa / 1.0 bar	0-30 psig / 200 kPa / 2 bar
SG2X2XXXX – 25 psig / 172 kPa / 1.7 bar	0-30 psig / 200 kPa / 2 bar
SG2X3XXXX – 50 psig / 345 kPa / 3.4 bar	0-60 psig / 400 kPa / 4 bar
SG2X4XXXX – 125 psig / 862 kPa / 8.6 bar	0-160 psig / 1100 kPa / 11 bar
SG2X5XXXX – 250 psig / 1724 kPa / 17.2 bar	0-300 psig / 2000 kPa / 20 bar
INLET PRESSURE RANGE	**INLET GAUGE PRESSURE RANGE**
All	6000 psig / 41,000 kPa / 400 bar

SG2 SERIES

SG2 Series Rebuild Kits

Rebuild Kits include replacement cartridges, diaphragms, diaphragm seals and instruction sheet.

KIT PART NUMBER	FOR SG PART NUMBER
JT389-8935	SG2PX100
JT389-8936	SG2PX200
JT389-8937	SG26X100
JT389-8938	SG26X200
JT389-8935V	SG2PX100V
JT389-8936V	SG2PX200V
JT389-8937V	SG26X100V
JT389-8938V	SG26X200V

Specifications

For questions about this product, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of CGA E-4; ASME B31; ASME BPVC

Maximum Inlet Pressure
4500 psig / 310 bar

Maximum Outlet Pressure
15, 50, 125, 250 psig
103, 345, 862, 1724 kPa
1.0, 3.4, 8.6, 17.2 bar

Design Proof Pressure
150% of rated pressure

Leakage
Internal: Bubble-tight
External: Designed to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 1.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel, Nickel-Plated Brass

Seat
PCTFE

Diaphragm
316L Stainless Steel or Neoprene

Filter
10 micron nominal sintered Bronze
10 micron nominal sintered 316 Stainless Steel

Seal
PTFE or Nitrile, Buna-N

Remaining Parts
Brass, 300 Series Stainless Steel

OTHERS

Connections
Inlet and outlet: 1/2" NPTF
Accessories: 1/4" NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
5.5 lbs / 2.5 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM SG3 Series is a compact, lightweight, high purity single-stage regulator for specialty, flammable and industrial gas flows of 5-200 SCFM / 141-5600 SLPM. Sensitive, extra long-life metal diaphragm ensures gas purity and integrity. Exceptionally low decaying inlet characteristic provides a stable outlet pressure as inlet pressure varies. User-friendly model number enables the specifier to select optional gauges, relief and shut-off valves and cylinder connections as part of the regulator assembly.

Applications

- Laboratory and Point-of-Use Gas Systems in medical, pharmaceutical, food and beverage and other high purity applications
- High flow, high purity air (CDA and APR) in semiconductor and biotech facilities

Features and Benefits

- Optional neoprene diaphragm provides exceptional sensitivity for precise pressure control
- Cartridge valve design incorporates 10 micron filter to protect the regulator seat and makes service simple

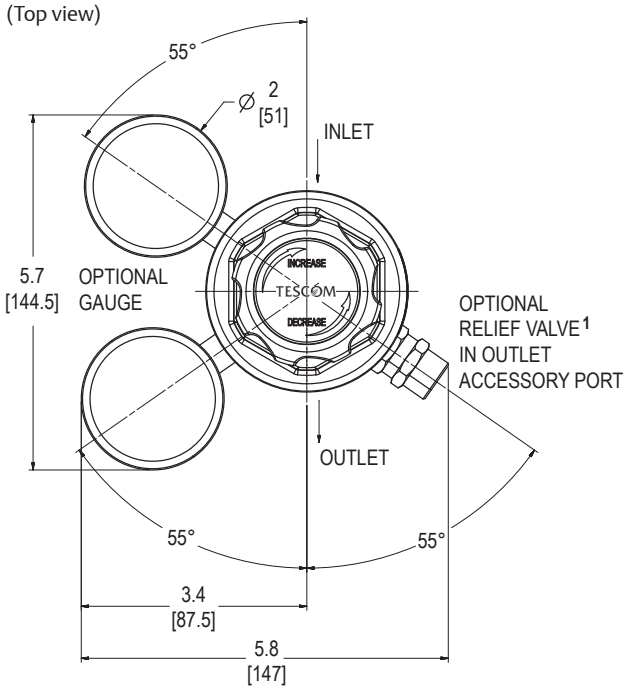
NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

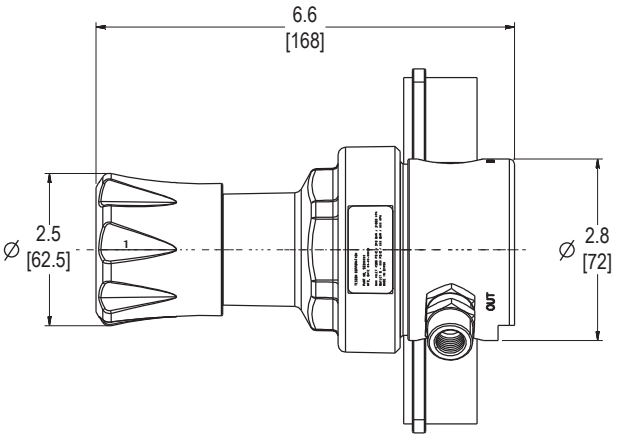
For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

SG3 SERIES

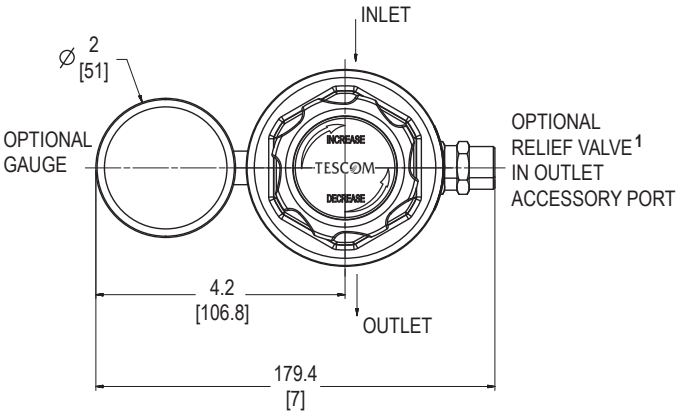
SG3 Series Regulator Drawing

5 Ports
(Top view)

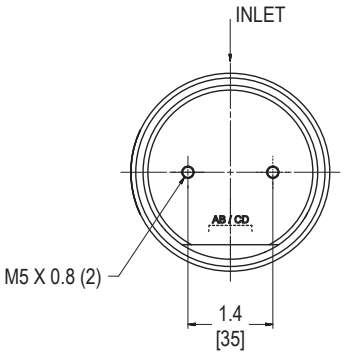




4 Ports
(Top view)



Bottom Mounting



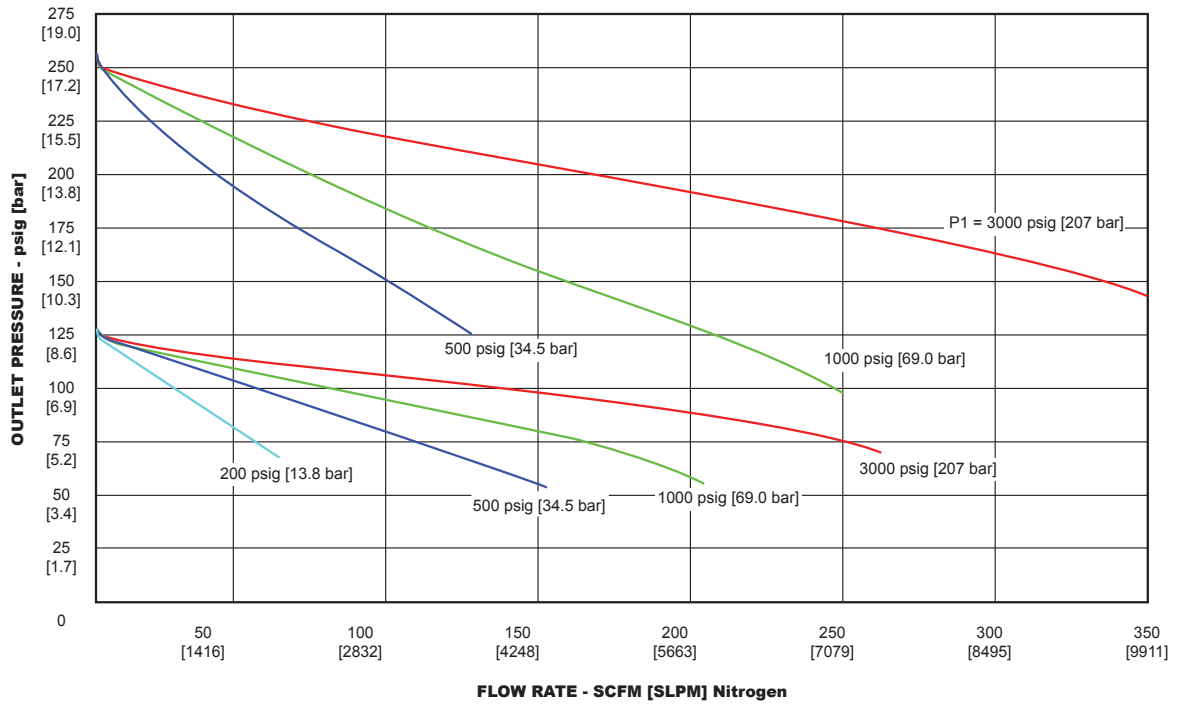
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

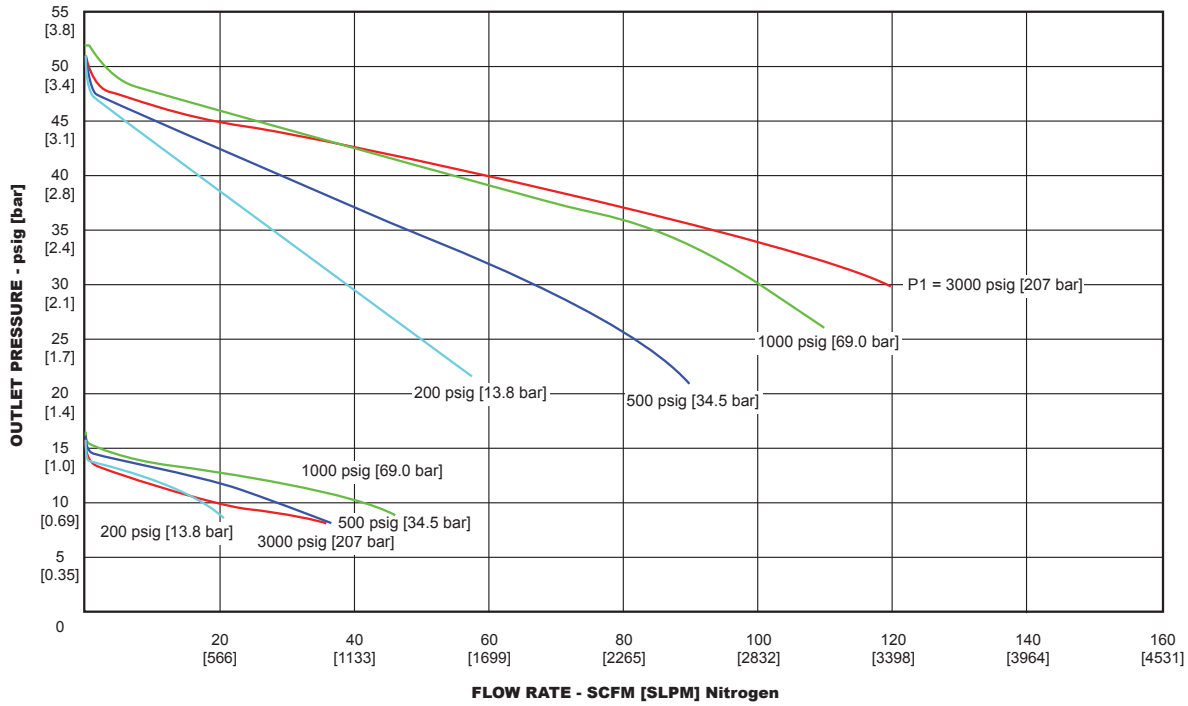
SG3 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 1.0 Model

Metal Diaphragm





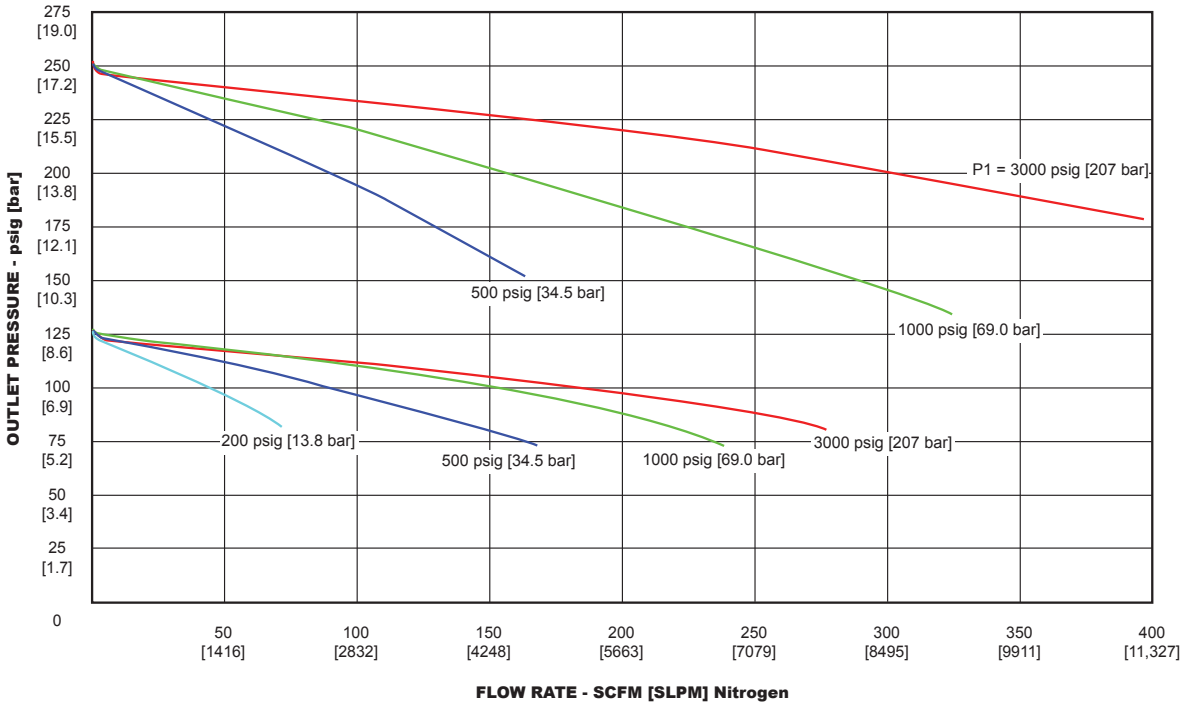
SG3 SERIES

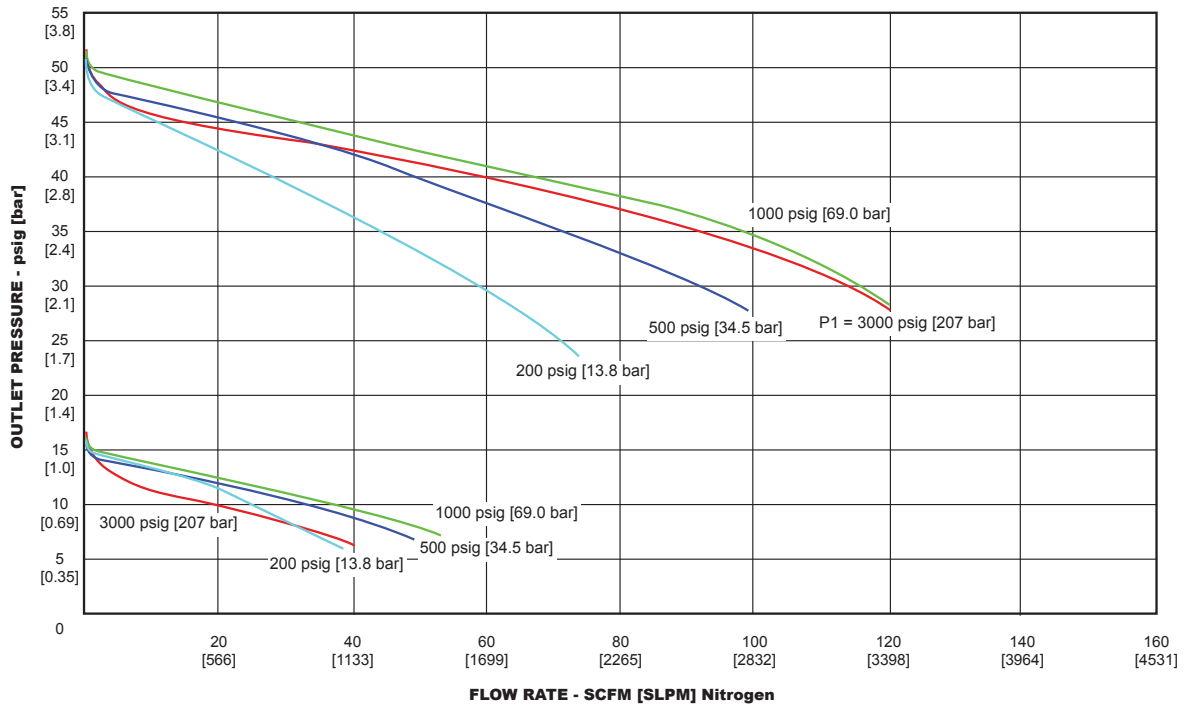
SG3 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 1.0 Model

Neoprene Diaphragm



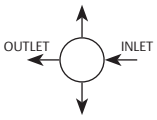
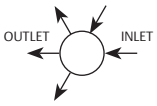


SG3 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Base Model

Example for selecting a part number:

SG3	6	3	1		4	0
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES**	**DIAPHRAGM MATERIAL**	**SEAL MATERIAL**	**PORTS[2] (TOP VIEW)**	**C_V**
SG3	**P –** Nickel-Plated Brass **6 –** 316L Stainless Steel	**1 –** 15 psig / 103 kPa / 1.0 bar **3 –** 50 psig / 345 kPa / 3.5 bar **4 –** 125 psig / 862 kPa / 8.6 bar **5 –** 250 psig / 1724 kPa / 17.2 bar	**1 –** 316L Stainless Steel **2 –** Neoprene	PTFE Nitrile, Buna-N	**4 –** 4 port  **5 –** 5 port 	**0 –** 1.0

Accessories

Extension to base model part number:

SG3XXXXX	—	0	0	A	1	0
BASE MODEL NUMBER				**GAUGES[2]**	**RELIEF VALVE[1]**	
				0 – None **P –** Plug(s) **A –** psi / kPa **B –** bar / psi	**A –** None **P –** Plug **1 –** PTFE Pipe-away	

[1] The relief valve is not intended to be a "Pressure Relief Device" as defined by ASME Boiler & Pressure Vessel Code - Section VIII, nor is it intended to be a "Safety Accessory" or "Pressure Limiting Device" as defined by the Pressure Equipment Directive (2014/68/EU). The relief valve is intended to indicate a potential problem with the regulator and prevent further damage to the regulator. The relief valve is not intended to protect the downstream process equipment.

[2]GAUGE PRESSURE RANGES

OUTLET PRESSURE RANGE	OUTLET GAUGE PRESSURE RANGE
SG3X1XXX – 15 psig / 103 kPa / 1.0 bar	0-30 psig / 200 kPa / 2 bar
SG3X3XXX – 50 psig / 345 kPa / 3.4 bar	0-60 psig / 400 kPa / 4 bar
SG3X4XXX – 125 psig / 862 kPa / 8.6 bar	0-160 psig / 1100 kPa / 11 bar
SG3X5XXX – 250 psig / 1724 kPa / 17.2 bar	0-300 psig / 2000 kPa / 20 bar
INLET PRESSURE RANGE	**INLET GAUGE PRESSURE RANGE**
All	6000 psig / 41,000 kPa / 400 bar

SG3 SERIES

SG3 Series Rebuild Kits

Rebuild Kits include replacement cartridges, diaphragms, diaphragm seals, lubrication and instruction sheet.

KIT PART NUMBER	FOR SG PART NUMBER
JT389-8939	SG3PX1X0
JT389-8940	SG3PX2X0
JT389-8941	SG36X1X0
JT389-8942	SG36X2X0

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
500 psig / 34.5 bar

Maximum Reference Pressure
400 psig / 27.6 bar

Maximum Outlet Pressure - Bias and Reference
500 psig / 34.5 bar

Bias Pressure Range
0-100 psig / 0-6.9 bar

Design Outlet Proof Pressure
150% of maximum rated

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Leakage
Internal: Bubble-tight
External: design to meet < 2 x 10^{-8} atm cc/sec He

Flow Capacity
C_V = 0.12

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seats
Pressure Reducing: PTFE
Backpressure: Polyimide (Vespel®)

Friction Sleeve
Inner: PTFE
Outer: 316 Stainless Steel

Diaphragms
Cobalt Chrome Nickel Alloy (Eligiloy®)

Remaining Parts
316 Stainless Steel

OTHER

Connections
1/4" NPTF inlet, outlet, and vent ports

Weight (without gauges)
2 lbs / 0.9 kg

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Elgiloy® is a registered trademark of Elgiloy Corp.

SJS REGULATOR SHOWN WITH THE 42MW WELDED DIAPHRAGM INSTRUMENT ISOLATOR (OPTIONAL)

TESCOM SJS Series is excellent for use on dual mechanical pump seal systems to help control fugitive emissions, prolong seal life, increase safety, and reduce seal maintenance costs. The SJS is commonly used with the 42MW Series instrument isolator.

Application

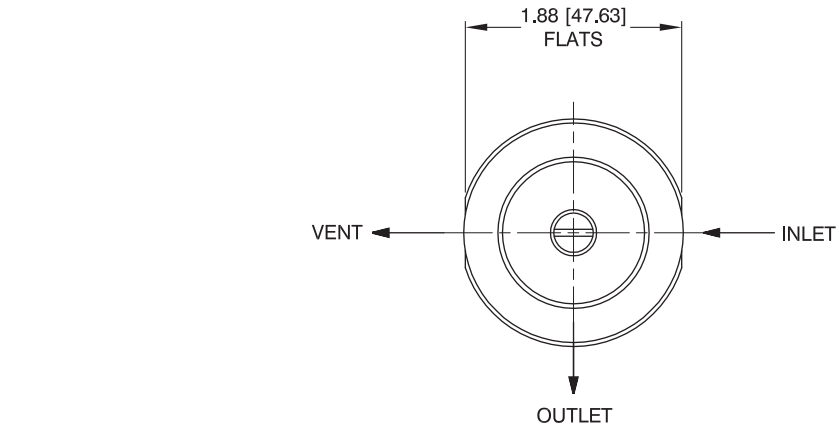
- Dual mechanical seal differential pressure control

Features and Benefits

- Maintains accurate differential pressure when incorporated into a double seal system
- Tracks upsets in system pressure and decreases downtime by increasing seal life
- NACE compatible version available: Modification number -01
- Available with optional 42MW Welded Diaphragm Instrument Isolator

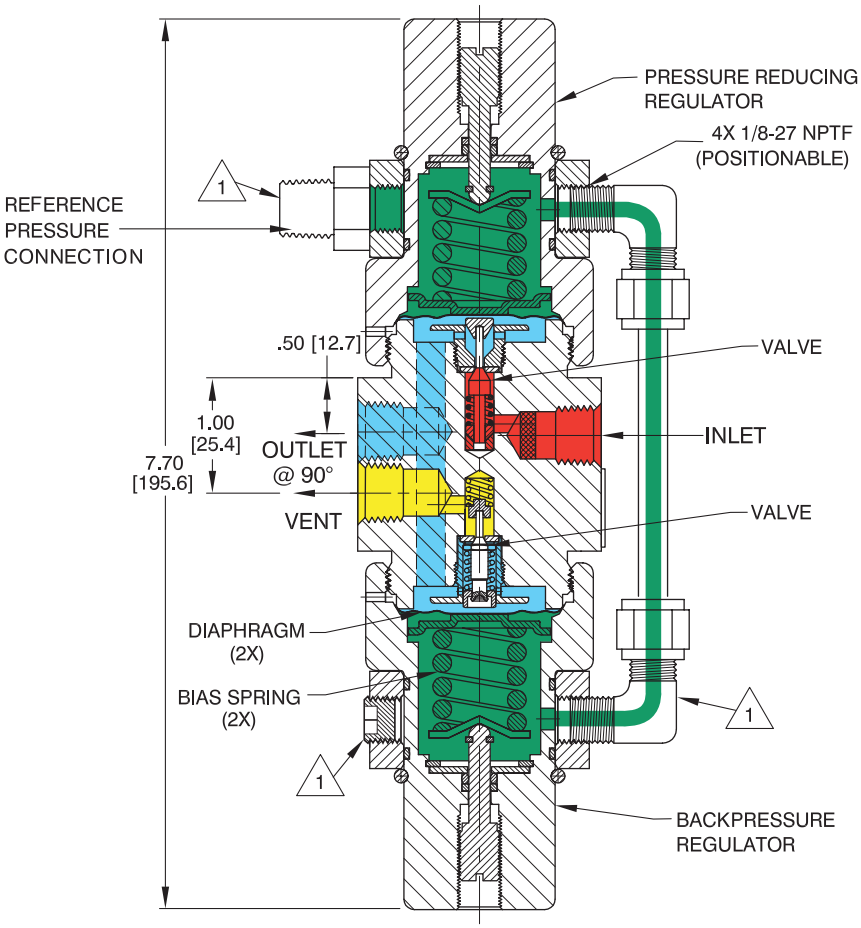
SJS SERIES

SJS Series Regulator Drawing



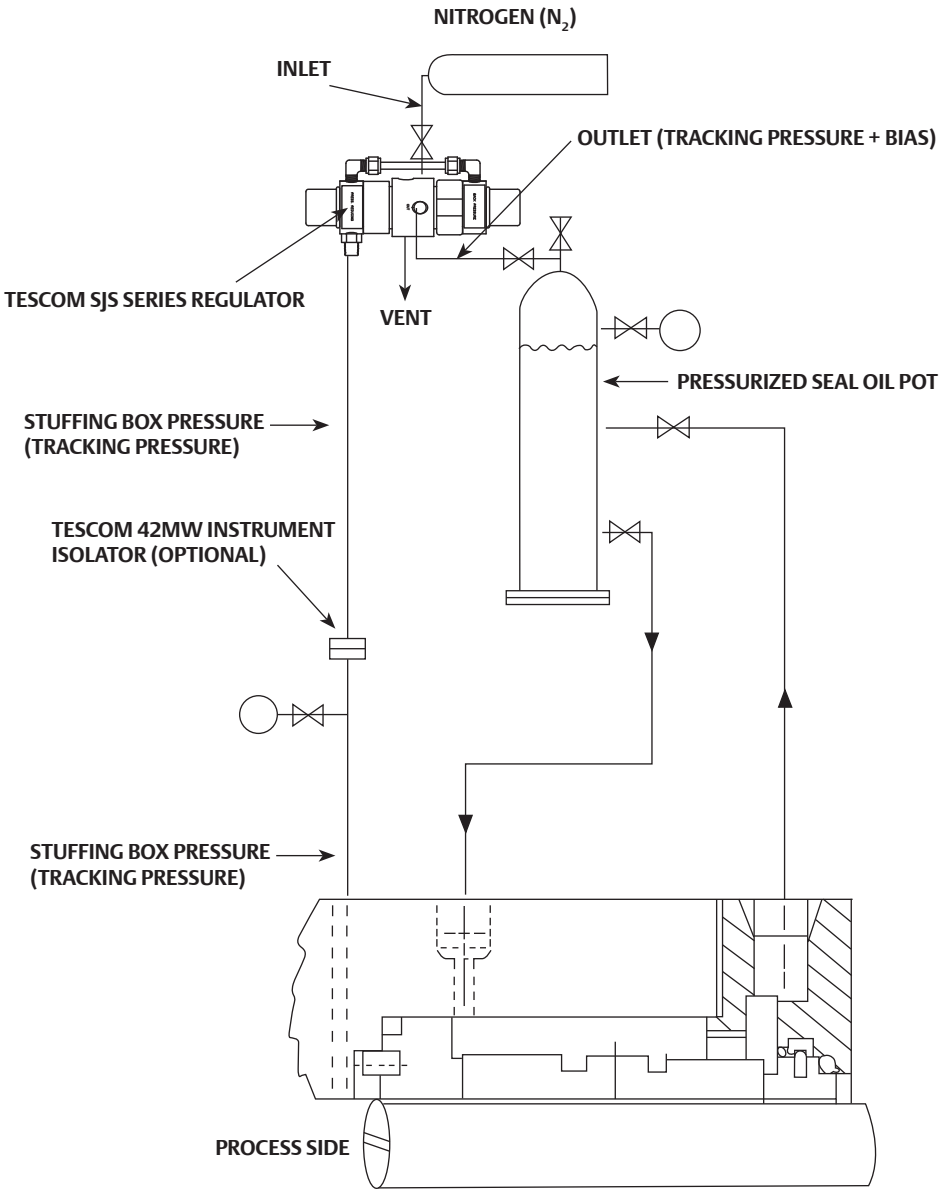
NOTE:

1 INCLUDED WITH FITTING OPTION



All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

SJS Series Typical Application



DOUBLE SEAL SYSTEM

SJS SERIES

SJS Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

SJ	S	6	5	V	E	A	O	E	FFF
BASIC SERIES	**TYPE**	**BODY MATERIAL**	**OUTLET PRESSURE**	**O-RING MATERIAL**	**DIAPHRAGM MATERIAL**	**SEAT MATERIAL**	**FITTINGS OPTION**	**PORTING**	**INLET, VENT, AND OUTLET PORT TYPE**
SJ	**S –** Screwdriver Adjustment	**6 –** 316 Stainless Steel	**5 –** 500 psig 34.5 bar Max. (Bias + Ref. Pressure)	**E** – Ethylene Propylene **K** – Kalrez® ** **V** – FKM (Viton®-A)	**E –** Cobalt Chrome Nickel Alloy (Eligiloy®)	**A –** Pressure Reducing: PTFE Backpressure: Polyimide (Vespel®) **B –** Pressure Reducing: PTFE Backpressure: PTFE	**O –** No fittings **F –** Fittings	**E –** 90° Vent 	**FFF –** 1/4" NPTF

** FFKM, Perfluoroelastomer (Kalrez®)

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non-corrosive gases and gas mixtures up to 6.0 (99.999 Vol %) purities
Stainless Steel versions for calibration gases with NH_3, SO_2, or NO content (ppm range)

OPERATING PARAMETERS

Maximum Inlet Pressure
2900 psig / 200 bar
4350 psig / 300 bar (optional)

Outlet Pressure Ranges
Single-stage: 7.3-58, 14.5-145, 29-290 psig
0.50-4.0, 1.00-10.0, 2.0-20.0 bar
Dual-stage: 1.5-22, 7.3-58, 14.5-145 psig
0.10-1.5, 0.50-4.0, 1.00-10.0 bar

Leakage Rate Against Atmosphere
10^{-8} mbar l/s He

Nominal Flow
10 m^3/h (depending on pressure and gas)

Inlet Connection
According to DIN 477-1 (2900 psig / 200 bar) or
DIN 477-5 (4350 psig / 300 bar)
Other national standards on request

Outlet Connection
Regulator: G 1/4" female
Valve: G 1/8" female

Standard Outlet Connection Mounted
6 mm compression fitting including 6 mm hose connector

Options at Outlet
Diaphragm metering valve

MEDIA CONTACT MATERIALS

Body
Stainless Steel 1.4404 / 316L or Nickel-plated Brass

Diaphragm
316L Stainless Steel

Relief Valve
FKM

OTHER

Weight
Wega 1: 3.30 lbs / 1.5 kg
Wega 2: 4.20 lbs / 1.9 kg

TESCOM single-stage WEGA 1 and dual-stage WEGA 2 cylinder pressure regulators are for gas purities up to 6.0 quality. A relief valve is integrated into the body for low internal gas volume. Both models are lightweight with a compact design.

Applications

- Reduction of high pressure gases in storage cylinders to a low operating pressure
- For calibration gases with NH_3, SO_2, or NO content

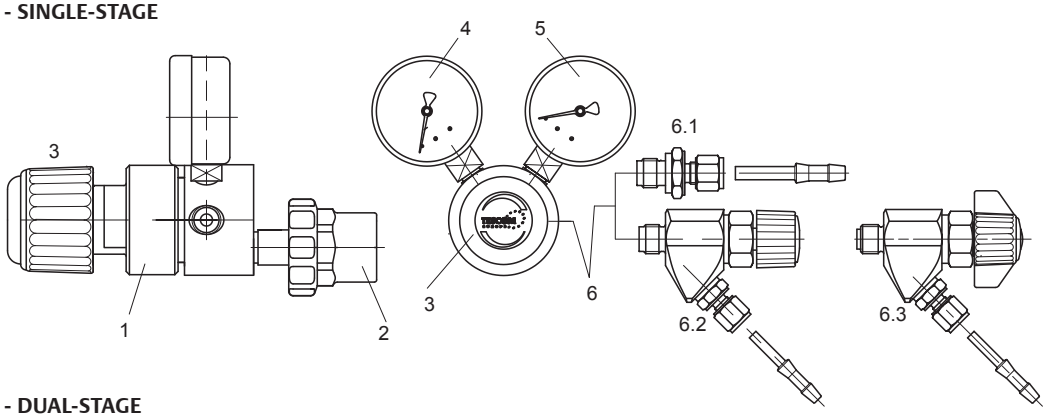
Features and Benefits

- Maximum inlet pressure of 2900 psig / 200 bar or 4350 psig / 300 bar (new 4350 psig / 300 bar cylinder technique)
- Modular inlet and outlet connectors offers versatility
- Relief valve integrated into the body
- Dual-stage version avoids decaying inlet pressure deviation
- Low internal gas volume
- Compact dual-stage version

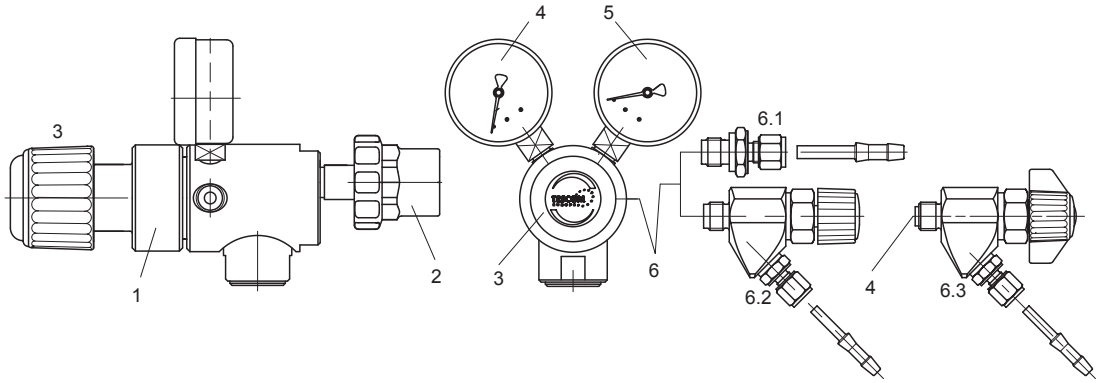
WEGA 1 & 2

WEGA 1 and 2 Adjustable Regulator Drawings

WEGA 1 - SINGLE-STAGE



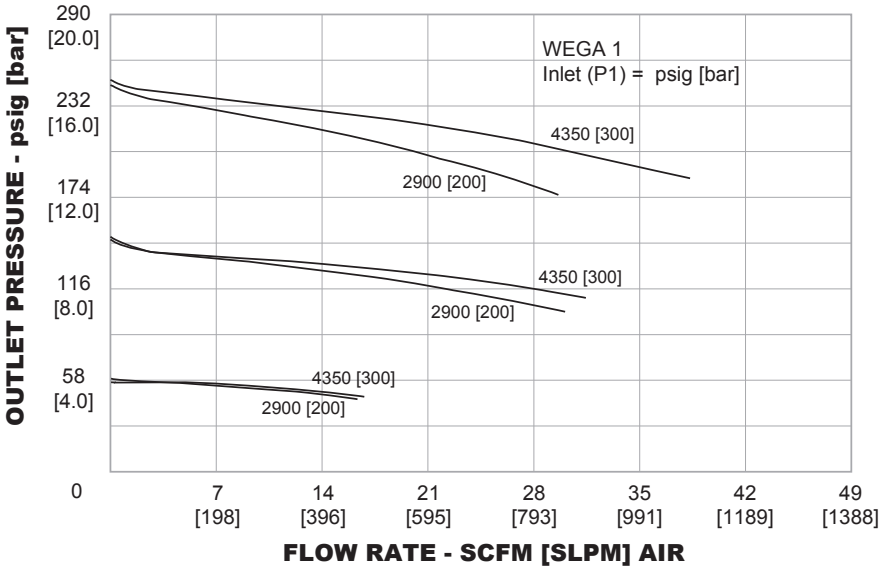
WEGA 2 - DUAL-STAGE

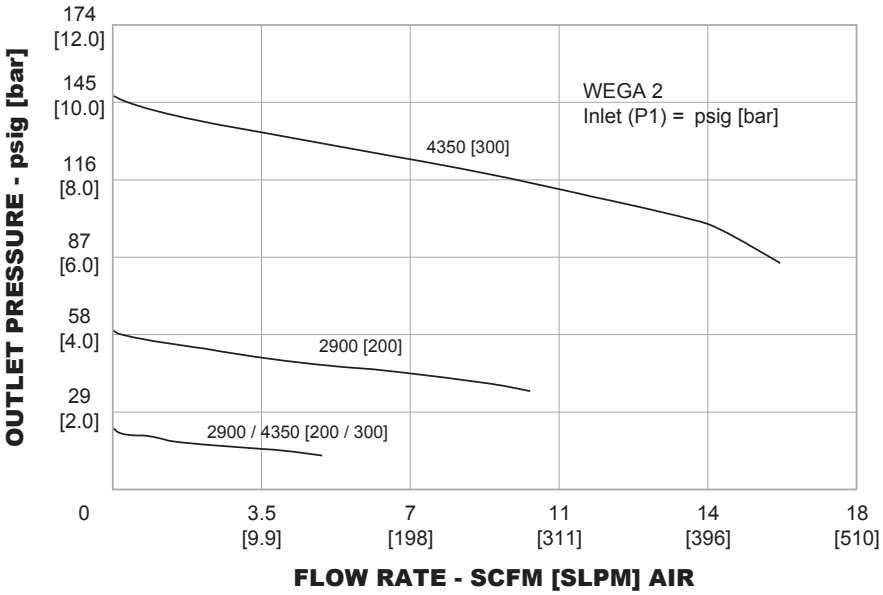


1 - BASIC UNIT
2 - INLET CONNECTION
3 - PRESSURE ADJUSTING HANDWHEEL
4 - HIGH PRESSURE GAUGE (P1)
5 - LOW PRESSURE GAUGE (P2)
6 - OUTLET CONNECTION
6.1 - COMPRESSION FITTING
6.2 - DIAPHRAGM METERING VALVE
6.3 - DIAPHRAGM SHUT-OFF VALVE

WEGA 1 and 2 Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





Notice

If you do not want to use the ordering system it is important to specify the following items:

- *Gas or gas mixture*
- *Inlet pressure (P1): 2900 or 4350 psig / 200 or 300 bar*
- *Outlet pressure (P2): check last column of ordering information*
- *Flow per minute or hour*
- *Outlet connection e.g. compression fitting, hose connector, none (= female thread)*
- *Options such as shutoff or metering valve*
- *For CO or gas mixtures containing CO, please choose Stainless Steel version*

WEGA 1 & 2

WEGA 1 and 2 Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D45170 - NS - 44 - 3

BASIC SERIES	INLET CONNECTION DEPENDING ON NATIONAL STANDARDS	OUTLET CONNECTION PROCESS GAS RANGE	OUTLET PRESSURE
D45170 - WEGA 1 single-stage, Nickel-plated Brass **D45176** - WEGA 2 dual-stage, Nickel-plated Brass **D45173** - WEGA 1 single-stage, Stainless Steel **D45179** - WEGA 2 dual-stage, Stainless Steel	Available inlet connectors / Cylinder valve standards: DIN 477-1- 2900 psig / 200 bar Germany DIN 477-5- 4350 psig / 300 bar Germany NEN 3268 Netherlands BS 341 U.K. AFNOR / NF E 29-650 France CGA-V1 U.S.A. UNI 11144 Italy *For other standards, please consult TESCOM.*	**00** – G 1/4" female **05** – 6 mm fitting, with 6 mm hose connector **08** – 8 mm fitting, with 8 mm hose connector***, * **44** – With diaphragm metering valve, 6 mm fitting, with 6 mm hose connector** **62** – With diaphragm shut-off valve, 6 mm fitting, with 6 mm hose connector	**1** – 1.5-22 psig*** / 0.10-1.5 bar **2** – 7.3-58 psig / 0.50-4.0 bar **3** – 14.5-145 psig / 1.00-10.0 bar **4** – 29-290 psig**** / 2.0-20 bar

* *Only Brass*
** *Only Stainless Steel*
*** *Only dual-stage*
**** *Only single-stage*

- Please specify gas to identify inlet connector according to national standards.
- For gas mixtures, please consult your gas supplier for the connection number or cylinder valve thread.
- Please reference "Cylinder Valve Connections" in the TESCOM catalog for additional information.
- For CO or gas mixtures containing CO, please select Stainless Steel.

REPAIR KITS:

PART NUMBER	REGULATOR SERIES
D43441	WEGA 1, Brass
D43442	WEGA 1, Stainless Steel
D43439	WEGA 2, Brass
D43440	WEGA 2, Stainless Steel

ACCESSORIES: Reference WEGA Accessories datasheet

Regulators - Pressure Reducing

DCATLABO12104XEN2

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For corrosive gases and gas mixtures.
For calibration gases with corrosive content.

OPERATING PARAMETERS

Maximum Inlet Pressure
2900 psig / 200 bar

Outlet Pressure Range
7.3-22, 7.3-58, 14.5-102, 14.5-145 psig
0.50-1.5, 0.50-4.0, 1.00-7.0, 1.00-10.0 bar

Leakage Rate Against Atmosphere
10^{-8} mbar l/s He (for each connection)

Nominal Flow
10 m^3/h (acc. to pressure and used gas)
44-2200 Series Regulator: C_V = 0.06
44-2800 Series Regulator: C_V = 0.16
44-3400 Series Regulator: C_V = 0.05

Options
Shut-off valve at outlet dual stage
Also available as absolute pressure 44-46 Series

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Diaphragm
316L Stainless Steel and Nickel Alloy (Hastelloy®)

OTHERS

Inlet Port
According to National Standard

Outlet Port
Regulator: 1/4" NPTF Female
Valve: G 1/8" Female

Connections
6 mm compression fitting

Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM WEGA Corrosive Gases and Purging cylinder pressure regulators are designed with a captured bonnet for use with corrosive gases and gas mixtures (based on the highly reliable 44-2200 and 44-2800 Series regulator technology). Dual-stage version is available.

Applications

- Reduction of high pressure gases in storage cylinders to a low operating pressure
- Suitable for inert gas purging

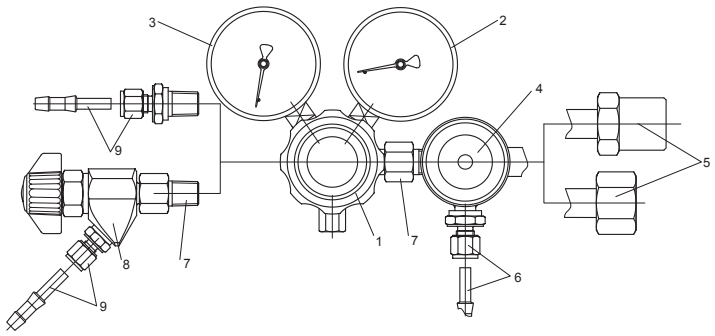
Features and Benefits

- Captured bonnet for the use of corrosive gases, leak-tight construction, safe and reliable
- Effective purging due to integrated shut-off valve and check valve, low purge gas consumption, minimized risk of corrosion
- Based on 44-2200 and 44-2800 Series regulators
- Dual-stage version available as an option (44-3400 Series)
- Multiple outlet connections are available

WEGA CORROSIVE GASES & PURGING

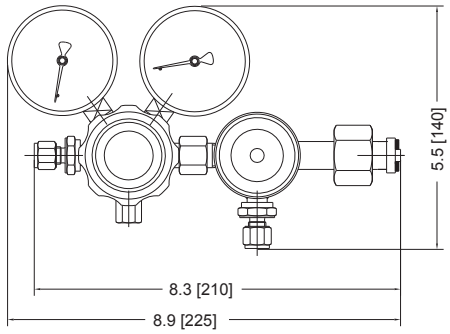
WEGA Corrosive Gases and Purging Regulator Drawing

Assembly Drawing



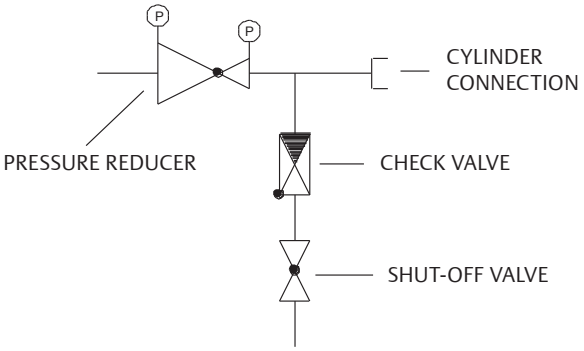
1 Pressure reducer
2 Inlet gauge
3 Outlet gauge
4 Purging block with shut-off and check valve
5 Inlet connection according to National Standards
6 Purge inlet connection fitting for 6 mm tube / hose
7 Adapter
8 Metal diaphragm shut-off valve
9 Outlet connection fitting for 6 mm tube / hose

Dimensional Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Functional Drawing



WEGA Corrosive Gases and Purging Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43276 - NS - 05 - C 1 K

BASIC SERIES	INLET CONNECTION DEPENDS ON NATIONAL STANDARDS	OUTLET PRESSURE PORT	REGULATOR	OUTLET PRESSURE RANGE	INLET PRESSURE PORT
D43276	Available inlet connectors / Cylinder valve standards: DIN 477-1 - 2900 psig / 200 bar Germany DIN 477-5 - 4351 psig / 300 bar Germany NEN 3268 Netherlands BS 341 U.K. AFNOR / NF E 29-650 France CGA-V1 U.S.A. UNI 11144 Italy	**00** – 1/4" NPTF Female **05** – 6 mm fitting with 6 mm hose connector **62** – Diaphragm shut-off valve with 6 mm fitting and 6 mm hose connector *Note: For other standards, please consult TESCOM.*	**A** – 44-22 for NH_3, SO_2, NO and calibration gas **C** – 44-28 for CL_2, HCL, H_2S	**1** – 7.3-22 psig 0.50-1.5 bar **2** – 7.3-58 psig 0.50-4.0 bar **3** – 14.5-102 psig 1.00-7.0 bar **4** – 14.5-145 psig 1.00-10.0 bar	**Without** – Hand tightening nut with O-Ring seal **K** – Hexagon coupling nut, Stainless Steel, with flat gasket CL_2, HCL, NO, H_2S and calibration gas **M** – Monel Hexagon coupling nut, (available only for DIN connections number 6 and 7)

- Please specify gas to identify inlet connector according to national standards.
- For gas mixtures, please consult your gas supplier for the connection number or cylinder valve thread.
- Please reference "Cylinder Valve Connections" in the TESCOM catalog for additional information.

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For high purity gases and calibration gases without corrosive components except NO, NH_3, SO_2 (ppm range).

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
2900 psig / 200 bar

Outlet Pressure Ranges
Maximum 60 psig / 4.1 bar or 145 psig / 10.0 bar

Leak Rate
10^{-8} mbar l/sec He for each connection

Nominal Flow Rate
Outlet Pressure 145 psig /10.0 bar: Maximum 20 SLPM
Outlet Pressure 60 psig / 4.1 bar: Maximum 10 SLPM

Flow Capacity
C_V = 0.02

MEDIA CONTACT MATERIALS

Body
Nickel-plated Brass or Stainless Steel

Diaphragm
316L Stainless Steel

Seat
NBR

OTHERS

Inlet Connection
DIN 477-1 or other national standards

Outlet Connection
Regulator: 1/4" NPTF internal
Fittings: Compression fitting 6 mm with additional hose connector 6 mm

Weight
1.9 lbs / 0.85 kg

TESCOM WEGA Mini is a cylinder pressure reducer for gas purities up to 6.0 (99.9999 Vol %) used for lecture bottle and mobile applications. Lightweight and compact design due to the relief valve integrated into the body.

Applications

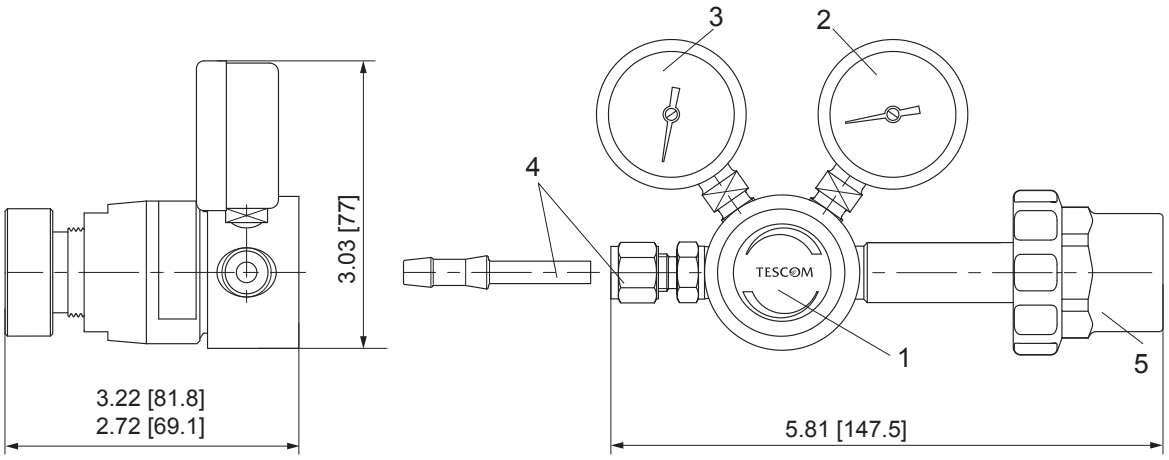
- Lecture bottles
- Mobile applications

Features and Benefits

- Lecture bottle regulator with metal diaphragm
- Based on the field proven TESCOM 04 Series
- Ideal for space saving installations

WEGA MINI

WEGA Mini Regulator Drawing



1 Basic regulator with integrated relief valve and hand wheel
2 Inlet gauge
3 Outlet gauge
4 Compression fitting 6 mm with hose connector 6 mm
5 Cylinder connector

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

WEGA Mini Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D45390 - 06 - 05 - 2

BASIC SERIES	INLET CONNECTION*	OUTLET CONNECTION	OUTLET PRESSURE
D45390 – Nickel-plated Brass **D45394** – Stainless Steel	**01 -** Flammable Gases **06 -** Inert Gas, CO_2, SF_6, CF_4 **10 -** Nitrogen **11 -** Nitrous Oxide **13 -** Compressed Air **14 -** Calibration Gas	**00 -** 1/4" NPTF internal **05 -** 6 mm fitting with 6 mm hose connector	**2 -** 60 psig / 4.1 bar **3 -** 145 psig / 10.0 bar

** Please ask for national standards other than DIN 477-1*

Specifications

For other materials or modifications, please consult TESCOM.

MEDIA

For inert and corrosive gases.
For high purity calibration gases / gas mixtures.

OPERATING PARAMETERS

Maximum Inlet Pressure
2900 psig / 200 bar

Outlet Pressure Ranges
7.25—21.75, 7.25—58, 14.5—101.5, 14.5—145 psig
0.5-1.5, 0.5-4.0, 1.0-7.0, 1.0-10.0 bar

Leakage Rate Against Atmosphere
2 x 10^{-8} atm cc/sec He

Nominal Flow Capacity
10 m^3/h (according to pressure and used gas)
C_V = 0.06
C_V = 0.15
Cv = 0.24 optional

Temperature Range
Seat PCTFE: -25°C to +60°C [-13°F to 140°F]
Seat TEFLON® PFA 350/PTFE: -25°C to +74°C [-13°F to 165°F]

Optional
Higher outlet pressure up to 500 psig / 35 bar
Relief valve with captured venting
Shut-off and metering valve at outlet
Absolute pressure version

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Diaphragm
316 Stainless Steel, Nickel Alloy (Hastelloy®)

Seat
PCTFE, PTFE

Purging Seat
EPDM, FKM

OTHER

Inlet Connection
According to national standards like DIN477-1, CGA V-1 and BS341

Outlet Connection
1/4" NPTF female or compression fitting

Hastelloy® is a registered trademark of Haynes International, Inc.

WEGA-SP with manual connection & O-ring

TESCOM WEGA-SP (single stage) with integrated purge function includes shut-off function and check valve and is specially designed for use with corrosive or toxic gases and gas mixtures. The integrated purging device effectively removes residual moisture, aerial oxygen and remaining process gas.

Applications

- Pressure reduction of corrosive or toxic gas from pressure cylinders by inducting the purge gas. The process gas will be effectively eliminated from the regulator and the cylinder connection.
- Ideal for use in laboratories.

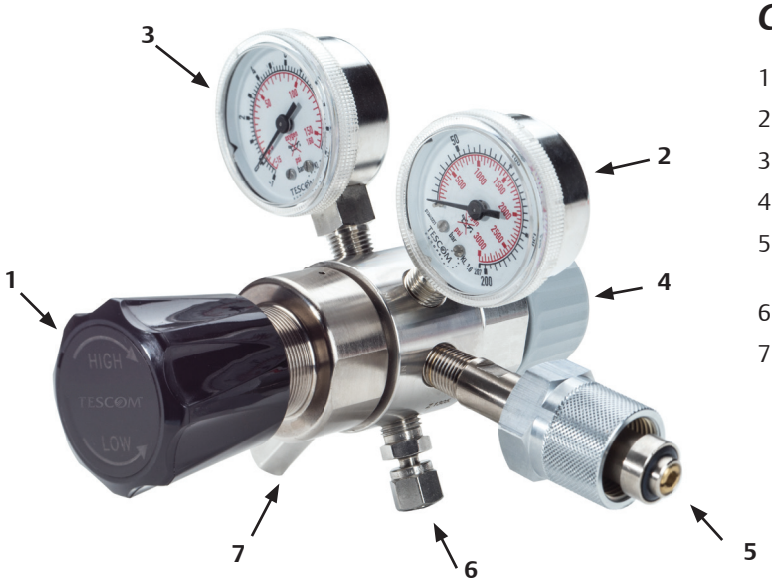
Features and Benefits

- Compact design without externally mounted purging device. Reduces weight, internal volume and installation length.
- Effective purging due to integrated purge valve and check-valve, low purge gas consumption, minimized risk of corrosion.
- Reduces consumption of expensive calibration gases and test gases because residual moisture and external gases are eliminated before starting-up the process.
- Optional tied diaphragm "positive seal" design provides additional shut-off assistance for corrosive gases.
- Valve trim and diaphragm made of Hastelloy® are available for extended life by reducing corrosion.
- Minimized helium leak rate due to reduced number of connections.

WEGA-SP

WEGA-SP with Integrated Purging Function

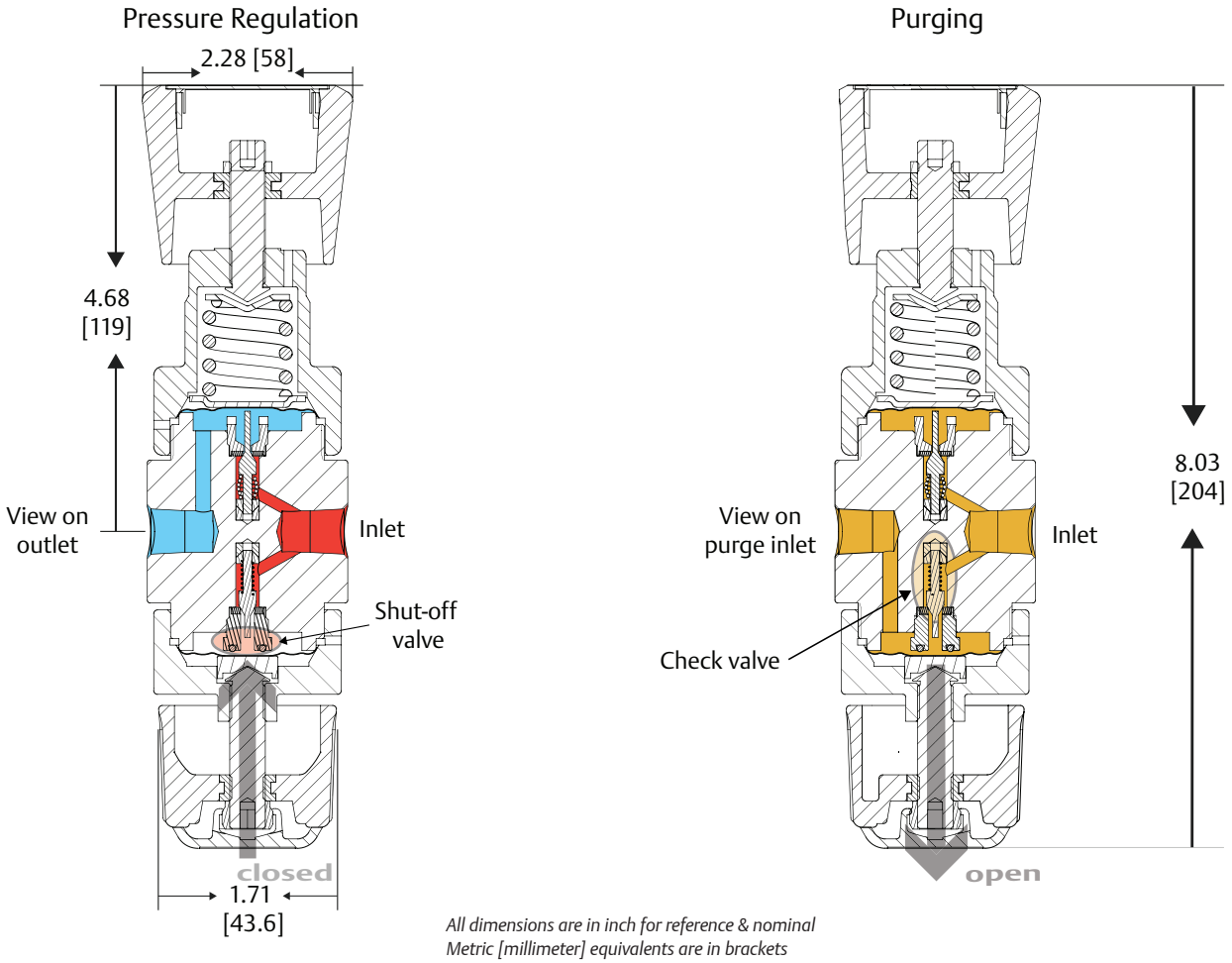
Assembly



Components

1 Pressure reducing regulator
2 Inlet gauge
3 Outlet gauge
4 Purging function with check valve
5 Inlet connection according to national standard
6 Purging inlet connection
7 Relief valve

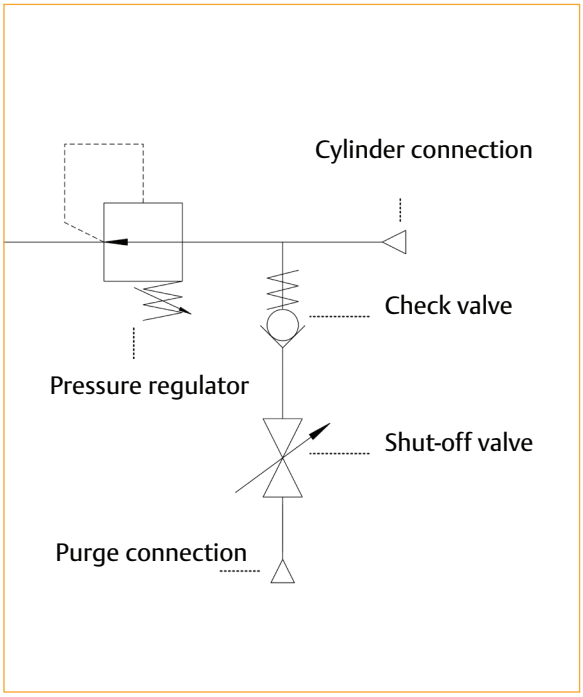
Assembly



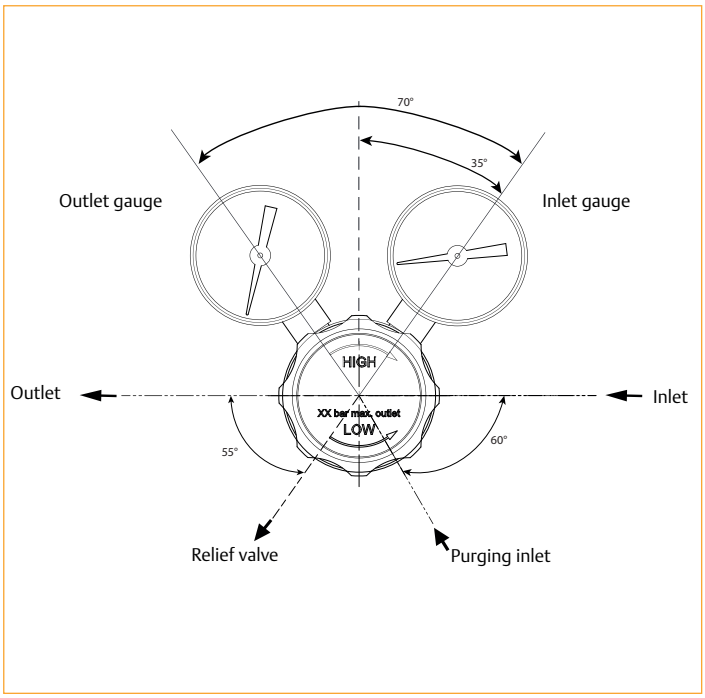
All dimensions are in inch for reference & nominal
Metric [millimeter] equivalents are in brackets

WEGA-SP with Integrated Purging Function

Functional Drawing

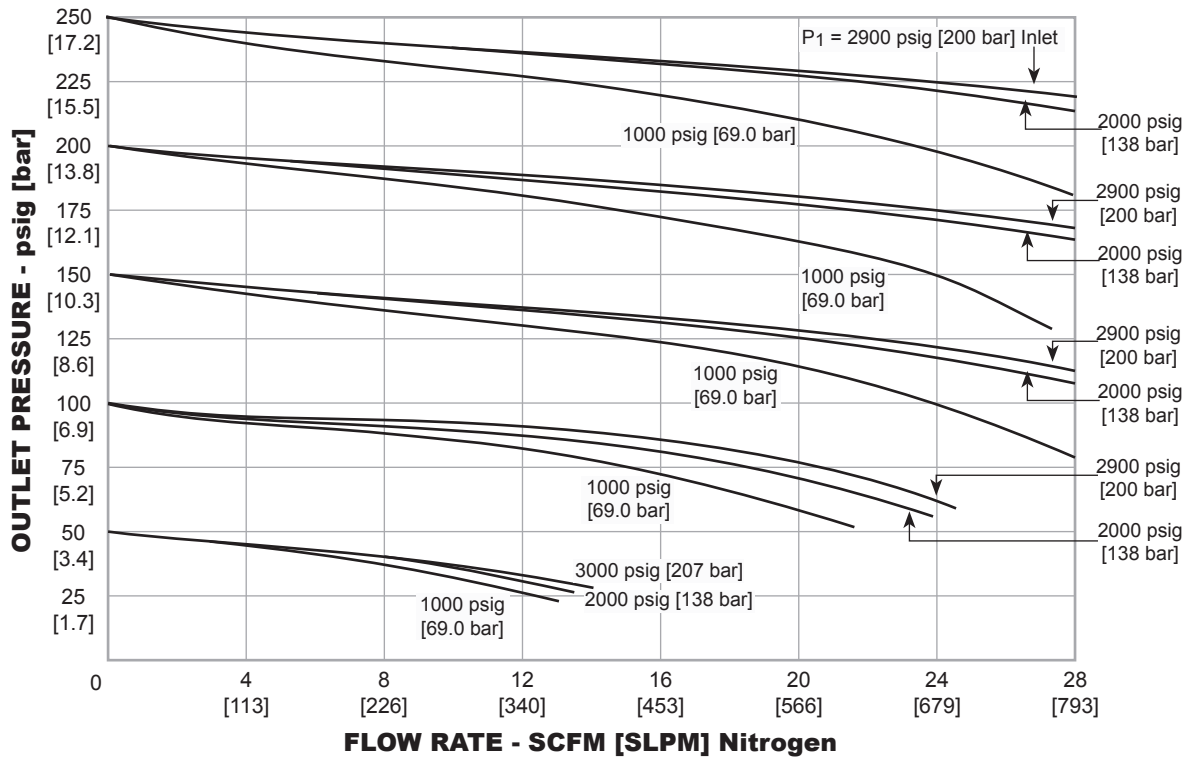


Connection Configuration



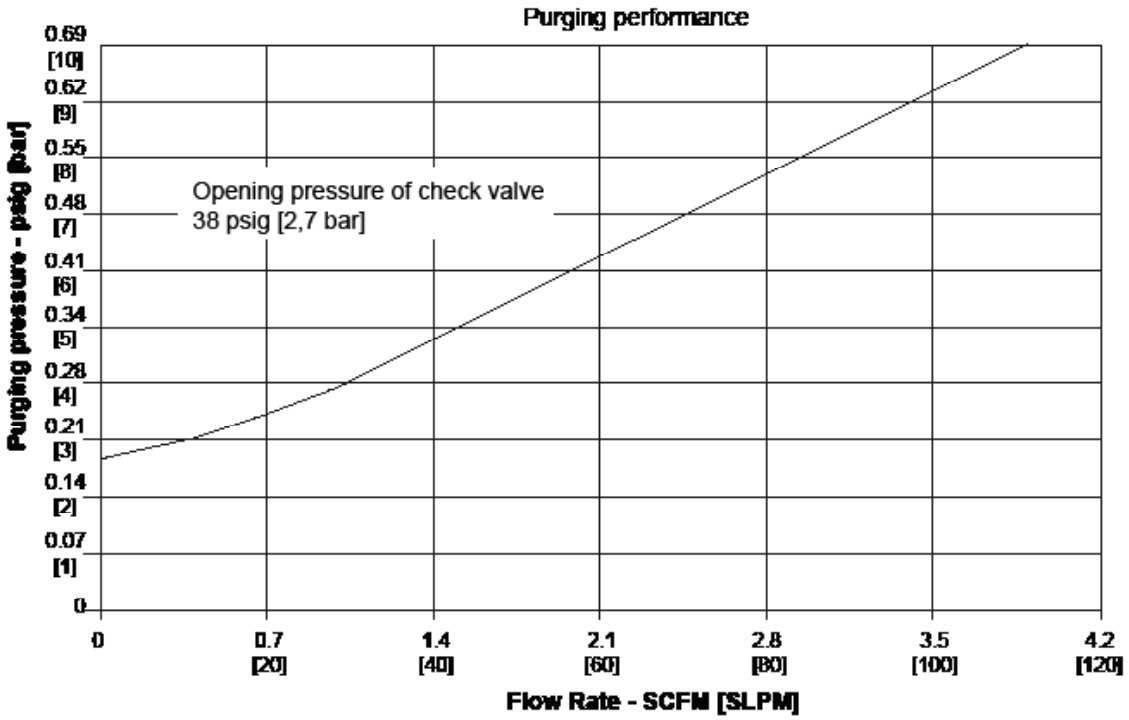
WEGA-SP with integrated Purging Function Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



WEGA-SP

WEGA-SP with Integrated Purging Function Flow Charts



WEGA-SP with Integrated Purging Function – Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

WSP - D K 20 - 05 - A 1 R

TYPE	CYLINDER CONNECTION STANDARD	INLET PRESSURE-CONNECTION	GAS	OUTLET CONNECTION	VALVE STEM	OUTLET PRESSURE RANGE BAR [PSIG]	RELIEF VALVE
WSP	**B** – BS341 **C** – CGA V-1 **D** – DIN 477-1	**H** – Hand connection with O-Ring-sealing [4] **K** – Hex swivel nut, Stainless Steel, with flat seal	**17** – Test gas [1] **18** – Test gas with Ammonia-, sulfur dioxide- or hydrogen sulfide-content [1] **19** – Sulfur dioxide [2] **20** – Ammonia [2, 3] **21** – Hydrogen sulfide [2] **24** – Chlorine [2] **25** – Nitrogen monoxide [1] **26** – Hydrogen chloride [2, 3]	**00** – 1/4" NPTF female **05** – compression fitting for 6 mm OD tube **08** – compression fitting for 1/4" OD tube **62** – Diaphragm shut-off valve with 6 mm compression fitting and 6 mm hose connector	**A** – No Positive Seal **B** – Positive Seal (*longer life for corrosive gases*)	**1** – 0.5 - 1.5 [7.25 - 21.75] **2** – 0.5 - 4.0 [7.25 - 58.0] **3** – 1.0 - 7.0 [14.5 - 101.5] **4** – 1.0 - 10.0 [14.5 - 145.0]	**R** – Relief valve and compression fitting for 6 mm OD tube *(mandatory for Gas ID 17 & 18)* **P** – Plug
	N – none (1/4" NPTF)	**N** – none (1/4" NPTF)					

[1] Cv = 0.06 [2] Cv = 0.15 [3] Positive Seal: Hastelloy ® -Stem & diaphragm [4] Only available for DIN standard

Regulators - Pressure Reducing D12XX1890X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
150 psig / 10.3 bar

Maximum Outlet Pressure
250 mm Hg-15 psig / 250 mm Hg-1.0 bar
0-30, 0-60, 0-100 psig / 0-2.1, 0-4.1, 0-6.9 bar

Design Proof Pressure
150% maximum rated

Inboard Leak Rate
<1 x 10^{-9} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
Standard: C_V = 0.04
High Flow: C_V = 0.08

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel

Diaphragm
Nickel Alloy (Hastelloy®)*

Seat
PCTFE

Valve Stem
Nickel Alloy (Hastelloy®)*

Remaining Parts
316L VAR Stainless Steel

OTHER

Connections
Surface Mount: 1.125" or 1.50" footprint
Welded Fittings: 1/4" VCR® or tube stubs

Internal Volume
1/4" VCR®: 3.0 cc
1.125" C Seal: 1.8 cc
1.50" C Seal: 1.5 cc

Weight
VCR®, IGS: 0.60 lbs / 0.3 kg
A-Style: 1.08 lbs / 0.5 kg

VCR® is a registered trademark of Cajon Co.
Hastelloy® is a registered trademark of Haynes International, Inc.
**Material to be Hastelloy® or equivalent per ASTM B 574*

VCR® **IGS**

TESCOM 12 Series is a miniature ultra high purity IGS/VCR pressure reducing regulator. The 12 Series offers 5 R_a or 10 R_a microinch finishes, tied diaphragm and internally springless and threadless design. It provides inlet pressures of 150 psig / 10.3 bar, outlet pressure from 250 mm Hg-15, 30, 60, 100 psig / 250 mm Hg-1.0, 2.1, 4.1, 6.9 bar with flow rates up to 120 SLPM.

Applications

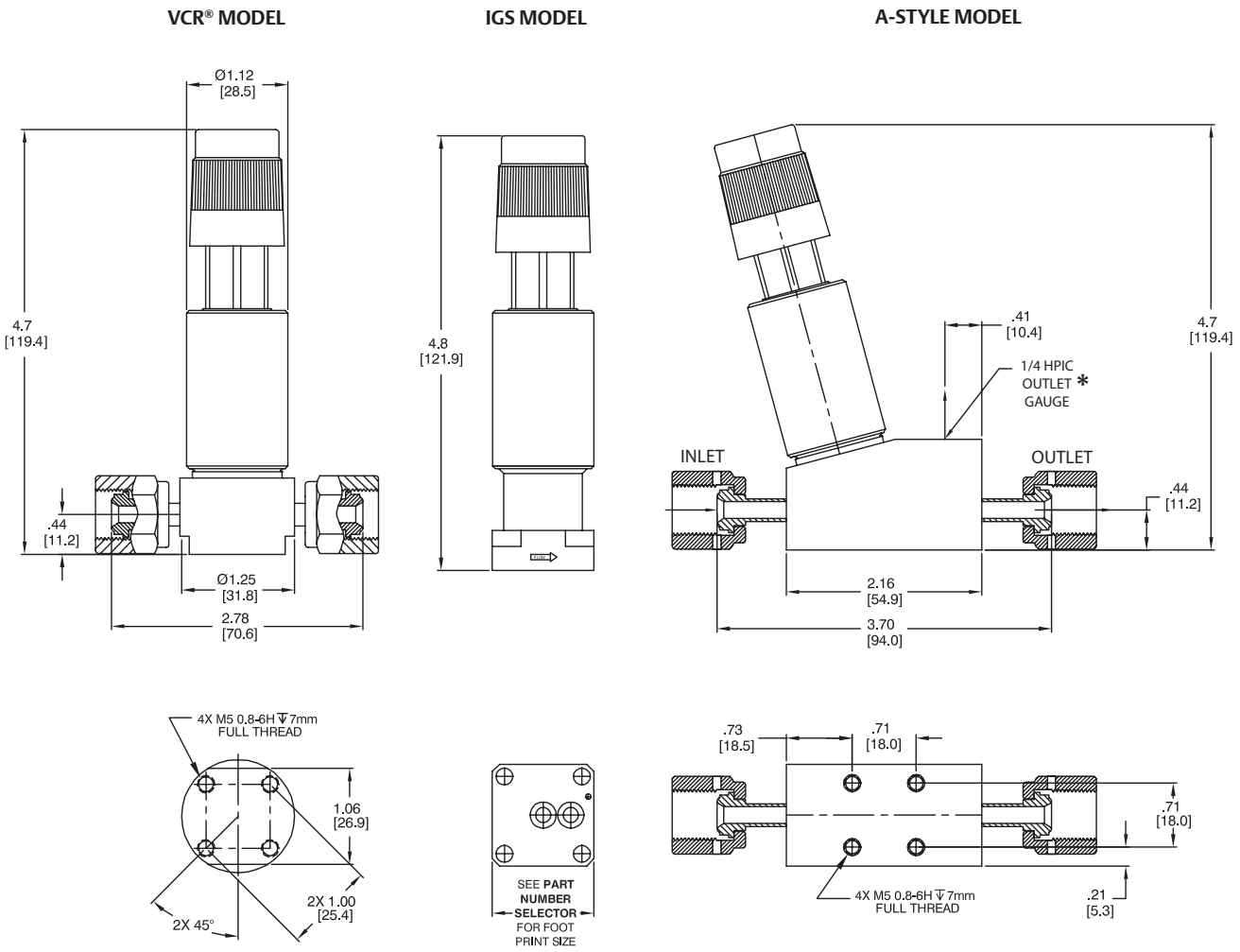
- OEM Tools
- Gas Boxes
- Low-Pressure Gas Cabinets

Features and Benefits

- Product of choice for state-of-the-art OEM gas systems
- Ultra-sensitive pressure control enhances MFC performance
- Superior performance in a wide range of applications
- Flows from 2 SCFM to 120 SLPM
- Unsurpassed droop and repeatability in a micro component
- Metal-to-metal diaphragm to body seal for high leak integrity
- 10 R_a or 5 R_a microinch internal surface finish
- Meets SEMI F19 and SEMI Modular Interface specifications

12 SERIES

12 Series Regulator Drawing

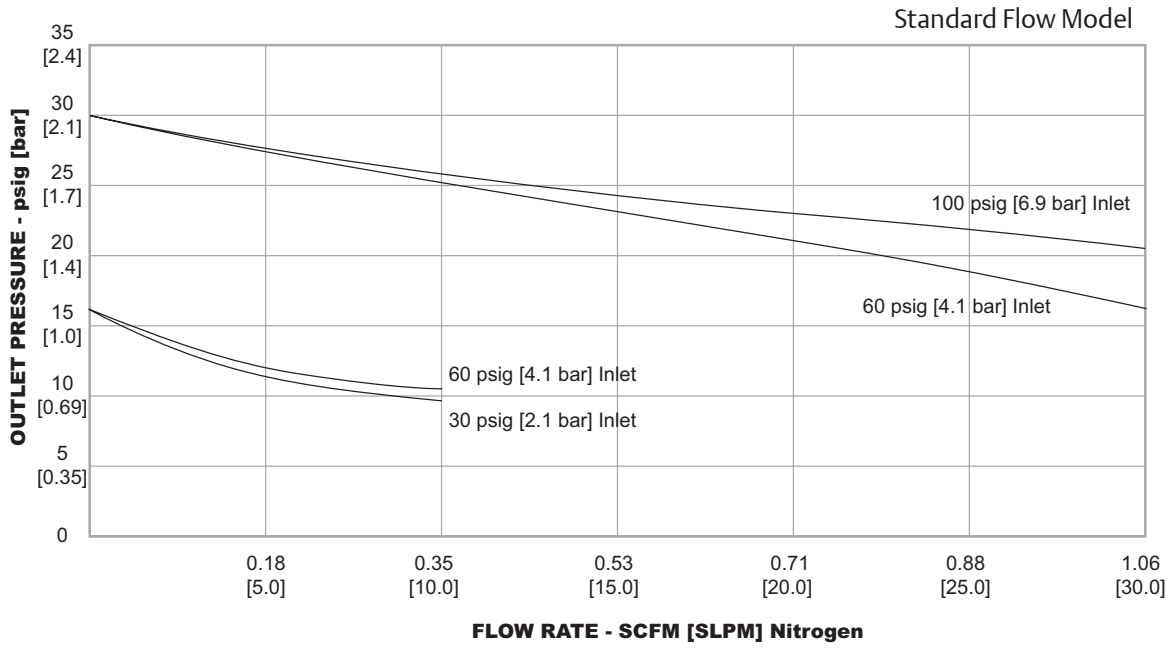


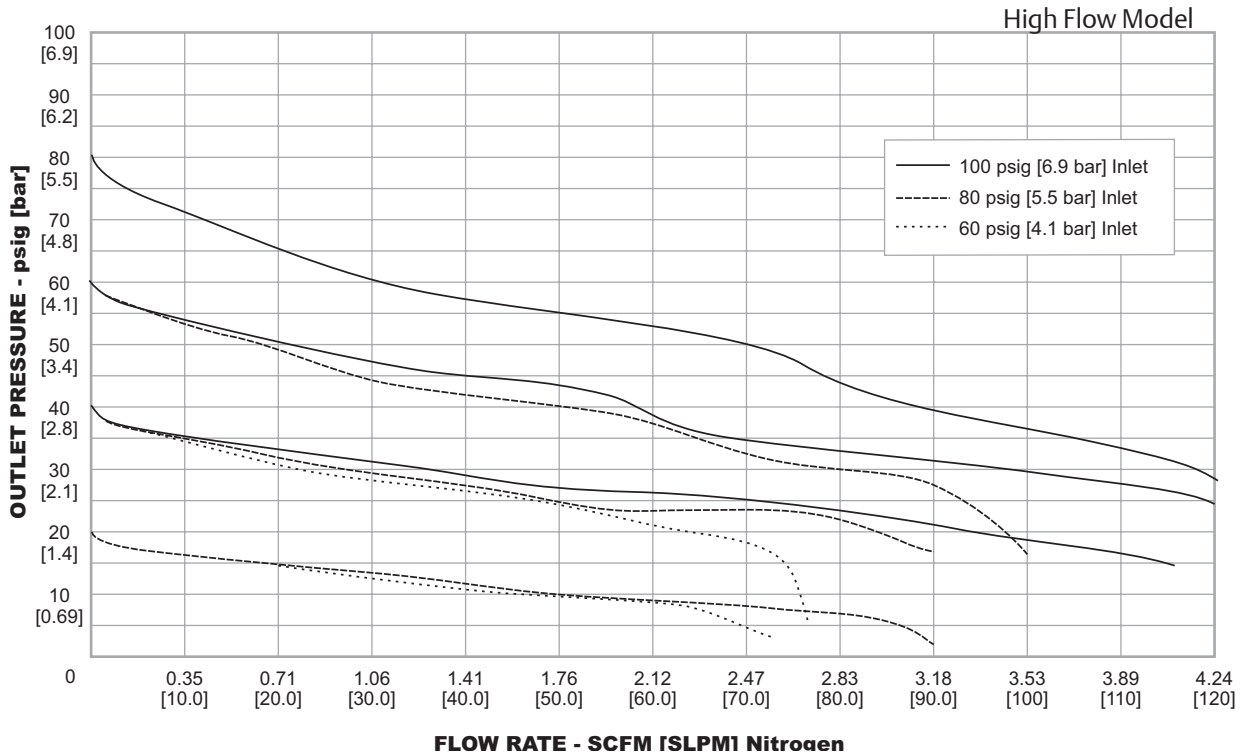
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

**High Purity Internal Connections (H.P.I.C.): Tescom High Purity Internal Connections. These are machined inside the regulator body and are designed to be compatible with VCR® (or equivalent) male fittings - swivel only.*

12 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





12 SERIES

12 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

12	–	1	A				1	1	AADM6DM6	Z

BASIC SERIES	FLOW OPTION	TYPE	MATERIAL				OUTLET PRESSURE	HAND KNOB COLOR	PORTING CONFIGURATION (END-TO-END DIMENSIONS)	OPTIONS (Choose only 1)
			Body	Trim	Seat	Internal Finish				
12	**–** Standard Flow Model **H –** High Flow Model	**1 –** Non-captured bonnet	**A –** 316L VAR Stainless Steel **B –** 316L VAR Stainless Steel	Nickel Alloy (Hastelloy®)[1] Nickel Alloy (Hastelloy®)[1]	PCTFE Pv	10 R_a 5 R_a	**0 –** 250 mm Hg–15 psig 250 mm Hg–1.0 bar **1 –** 0-30 psig 0-2.1 bar **2 –** 0-60 psig 0-4.1 bar **3 –** 0-100 psig 0-6.9 bar	**1 –** Black **5 –** White	**IGS2C1.5 –** 1.50" C Seal **IGS2C1.1 –** 1.125" C Seal **IGS21.5W –** 1.50" W Seal **IGS2W1.1 –** 1.125" W Seal **AADM6DM6 –** 1/4" Female VCR® (2.78" ETE[2]) **AAEM6EM6 –** 1/4" Fixed Male VCR® (2.78" ETE[2]) **AABM5BM5 –** 1/4" Tube Stubs (2.00" ETE[2]) **For A-Style Only:** **ABEB7EB7 –** 1/4" Fixed Male VCR® (3.70" ETE[2]) **ABDB7DB7 –** 1/4" Female VCR® (3.70" ETE[2]) **ABDB7EB7 –** 1/4" Female VCR® IN 1/4" Fixed Male VCR® OUT (3.70" ETE[2]) **ABEB7DB7 –** 1/4" Fixed Male VCR® IN 1/4" Female VCR® OUT (3.70" ETE[2])	**Z –** Precision Electropolish **4 –** Standard Electropolish (available with 12-1A only) **T –** Test report - typical (includes Helium Leak and Particle Count Certification) **C –** Certification of Conformance

1. Material to be Hastelloy® or equivalent per ASTM B 574
2. ETE - End-to-End dimension

Regulators - Pressure Reducing D15XX1858X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar

Outlet Pressure Ranges
130 and 150 psig / 9.0 and 10.3 bar

Design Proof Pressure
150% maximum rated

Certified Maximum Inboard Leak Rate
Diaphragm: 1 x 10^{-9} atm cc/sec He
Seat: 1 x 10^{-6} atm cc/sec He

Operating Temperature
-20°F to 150°F / -29°C to 65°C

Flow Capacity
Diaphragm: C_V = 8.0
Bellows: C_V = 14.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Diaphragm or Bellows
316L Stainless Steel

Seat
PCTFE or PTFE

Seal
FKM (Viton®-A)

Remaining Parts
316L Stainless Steel

OTHER

Connections
Tube extensions

Cleaning
DI water electronic grade cleaned

Weight
55 lbs / 24.9 kg

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

Supplied mounting holes must be used for attachment of regulator to a support structure. Support structure for tube extensions, components or accessories attached to regulator is the responsibility of the system integrator.

TESCOM 15 Series is designed for ultra high flow applications of up to 28,300 SLPM. The 15 Series is an ultra high purity, 10 R_a, bulk gas pressure reducing regulator. Inlet of 300 psig / 20.7 bar, outlet up to 150 psig / 10.3 bar. Electronically controlled option is available.

Application

- Facility Bulk Gas Delivery

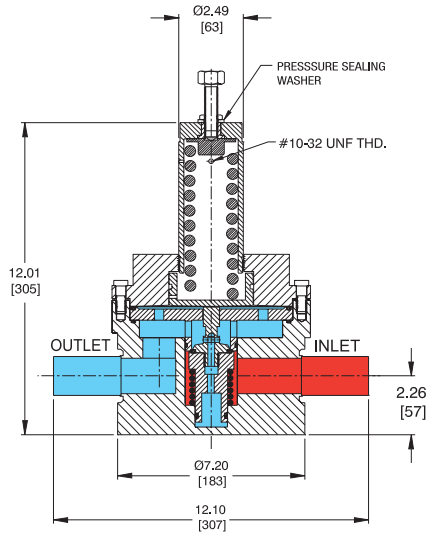
Features and Benefits

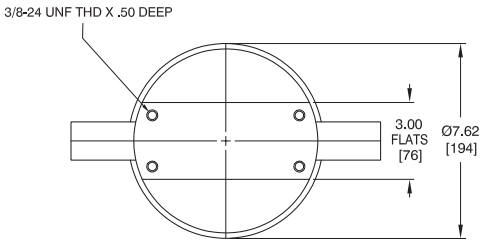
- Diaphragm sensing element maintains very accurate downstream pressure
- 10 R_a microinch internal surface finishes with full internal electropolish
- 316L Stainless Steel bar stock construction
- Two loading options available: Spring/wrench-adjust and air-actuated
- Two sensing options available: Diaphragm and bellows (bellows sensing element expands flow capability beyond 1200 SCFM / 33,960 SLPM)
- Compatible with ER5000 Electronic Controller

15 SERIES

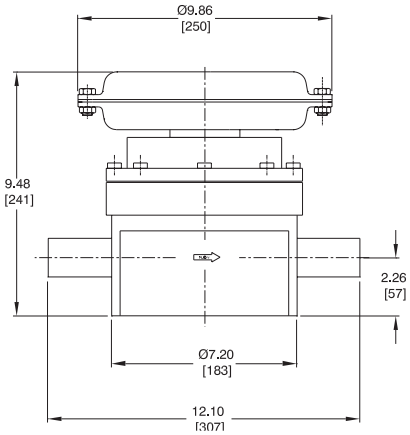
15 Series Regulator Drawing

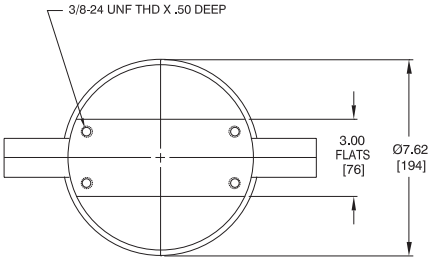
SPRING LOADED - DIAPHRAGM SENSED



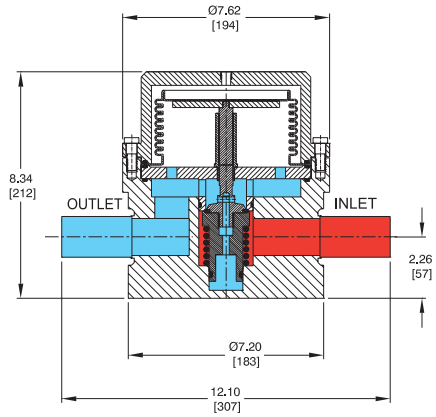


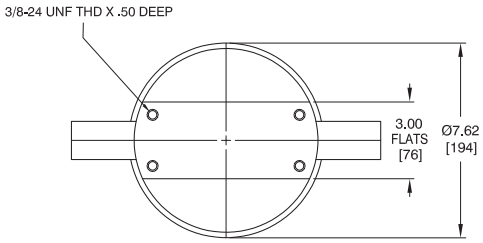
AIR ACTUATED - DIAPHRAGM SENSED





AIR ACTUATED - BELLOWS SENSED



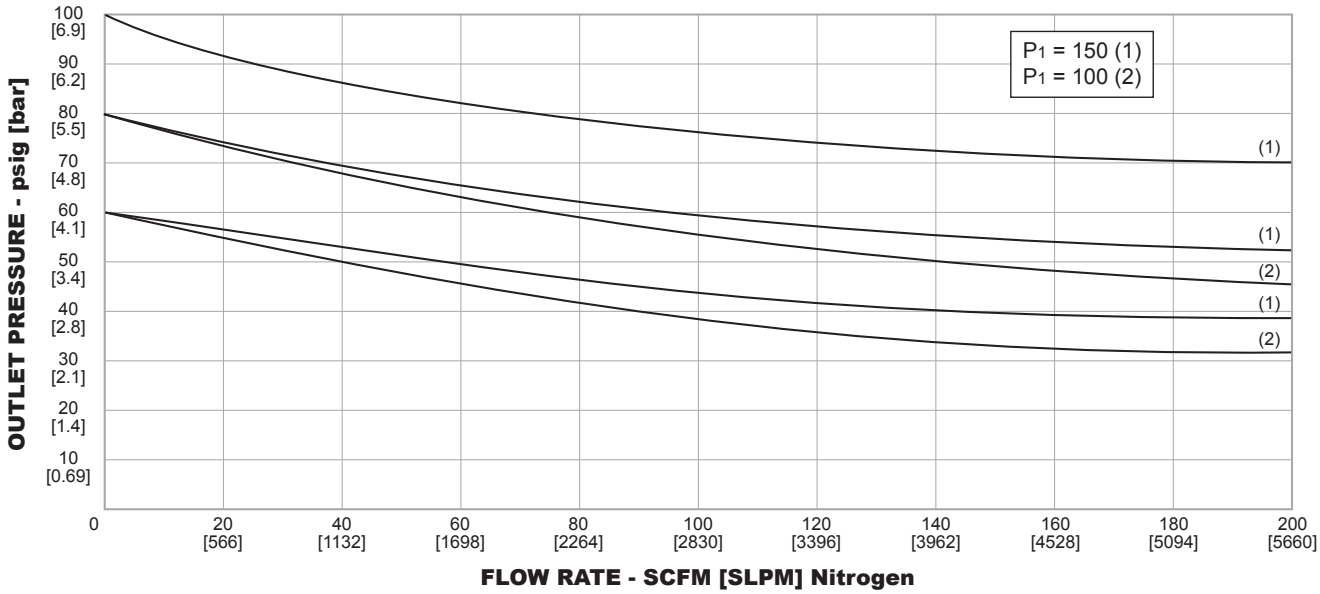


All dimensions are reference & nominal
Metric [millimeter] equivalents are in bracket

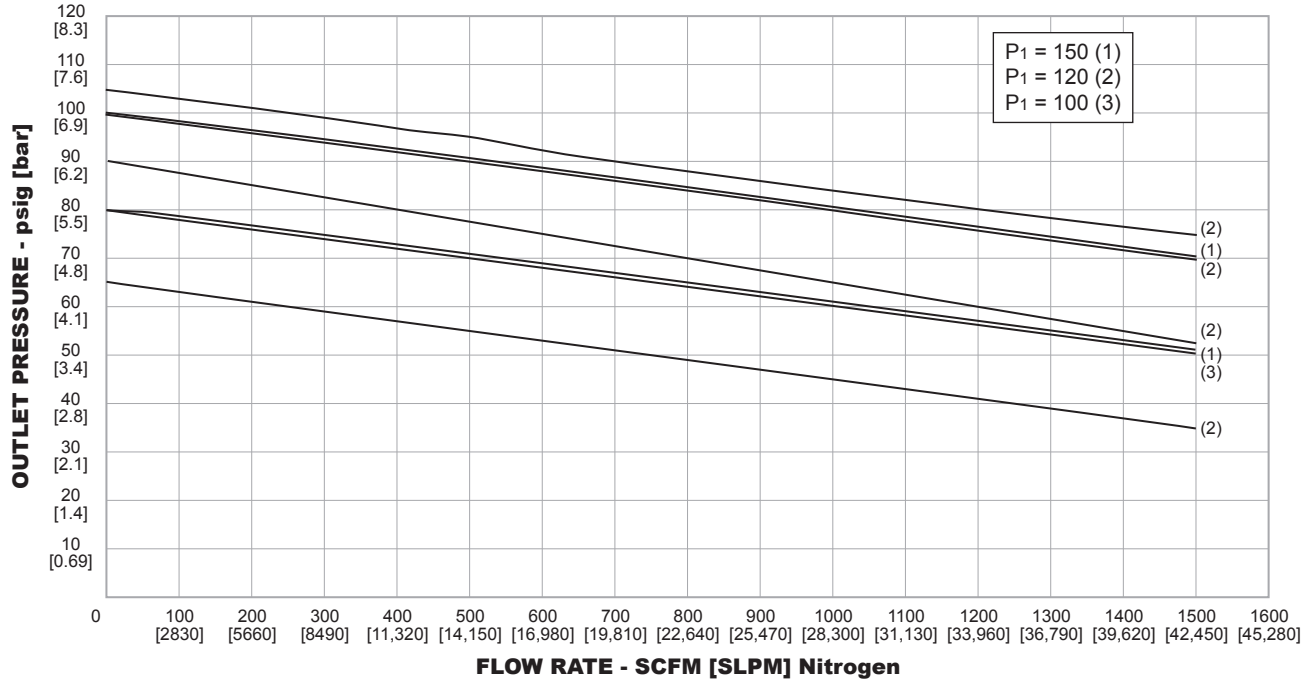
15 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

SPRING LOADED - DIAPHRAGM SENSED AND AIR ACTUATED - DIAPHRAGM SENSED



AIR ACTUATED - BELLOWS SENSED



15 SERIES

15 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

15 -	1	2	T	V	1	66		Z
BASIC SERIES	**INLET PRESSURE**	**OUTLET PRESSURE**	**SEAT MATERIAL**	**SEAL MATERIAL**	**ADJUSTMENT METHOD**	**INLET AND OUTLET PORT SIZE AND TYPE**	**END-TO-END DIMENSIONS**	**OPTIONS (choose only one)**
15	**1 –** 300 psig 20.7 bar	**1 –** 150 psig 10.3 bar	**K –** PCTFE	**V –** FKM FKM (Viton®-A)	**1 –** Spring Loaded Diaphragm Sensed	**UU –** 3/4" Tubes	12.10"	**Z –** None
		2 – 130 psig 9.0 bar	**T –** PTFE		**2 –** Air Actuated Diaphragm Sensed	**VV –** 1" Tubes	12.10"	**T –** Test Report (typical)
					3 – Air Actuated Bellows Sensed	**66 –** 1-1/2" Tubes	12.10"	**C –** Certification of Conformance
						SS – 2" Tubes	12.10"	

Regulators - Pressure Reducing D22221914X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
250 psig / 17.2 bar

Outlet Pressure Ranges
30, 60, 100, and 150 psig
2.1, 4.1, 6.9, and 10.3 bar

Design Proof Pressure
150% maximum rated

Design Burst Pressure
400% maximum rated

Inboard Leak Rate
2 x 10^{-8} atm cc / sec PER ASTM E449

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 0.24

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Diaphragm
316 Stainless Steel

Seat
PCTFE or PTFE

Trim
316 Stainless Steel

Valve
316 Stainless Steel

OTHER

Internal Body Surface Finish
25 R_a microinch / 0.63 micrometer

Connections
Welded female, male VCR®
Tube stubs or compression type
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Internal Body Surface Finish
25 R_a microinch / 0.63 micrometer

Cleaning
DI water electronic grade cleaned

Weight (without gauges)
2.0 lbs / 1 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company
VCR® is a registered trademark of Cajon Co.

TESCOM 22-2200 Series high purity BA Grade pressure reducing regulator provides 316 Stainless Steel construction with 25 R_a surface finish and is electronic grade cleaned. Inlet pressure is 250 psig / 17.2 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

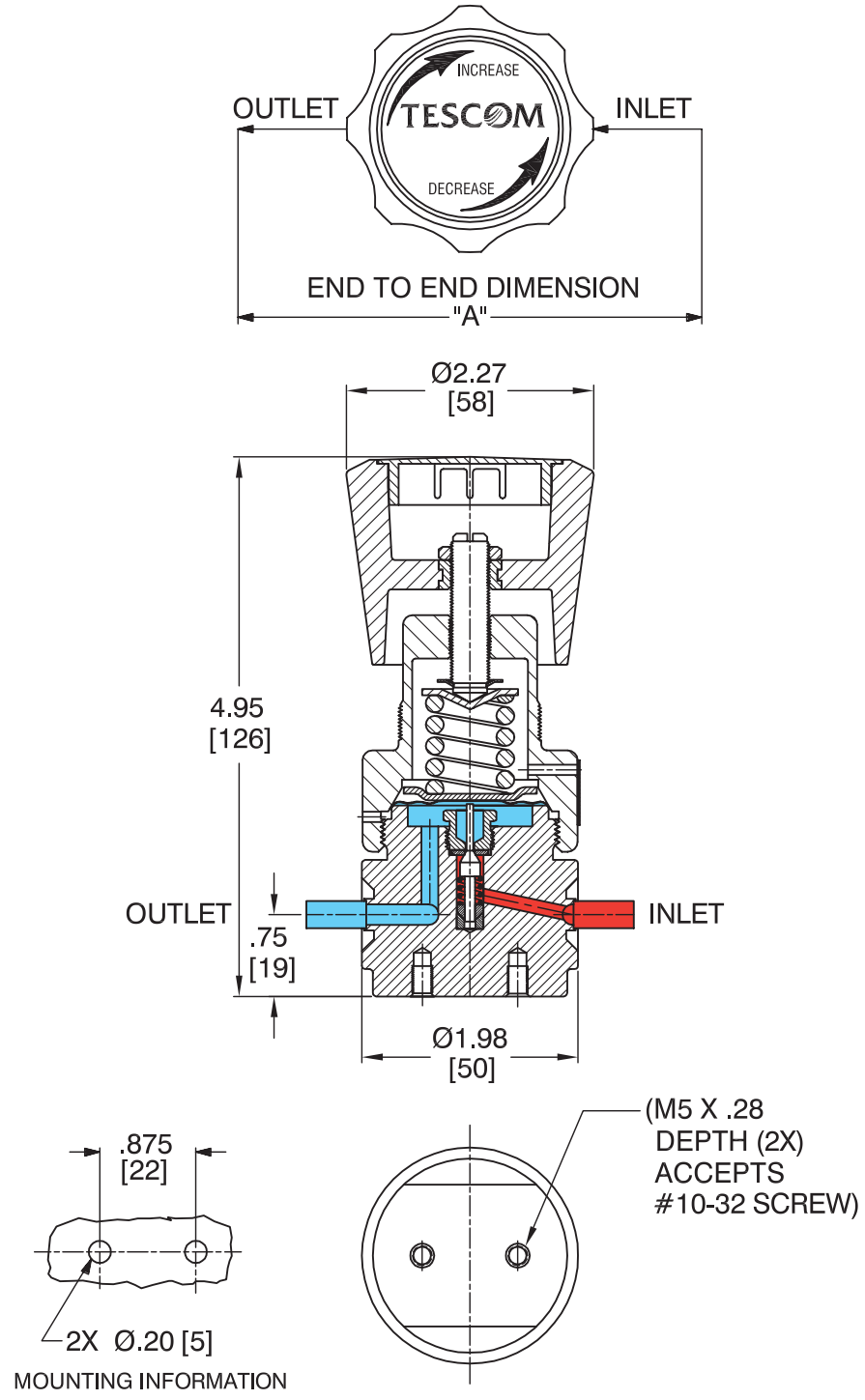
- Regulating corrosive and specialty gases
- Gas and liquid chromatography
- Sampling systems
- Research labs
- Instrumentation

Features and Benefits

- Metal-to-metal diaphragm to seal for high leak integrity
- 3.5 SCFM / 100 SLPM flow capacity
- Welded VCR®, tube stubs and compression fittings are available
- Enhanced cleanliness and reduced leak rates
  - a substantial improvement over the conventional NPTF product

22-2200 SERIES

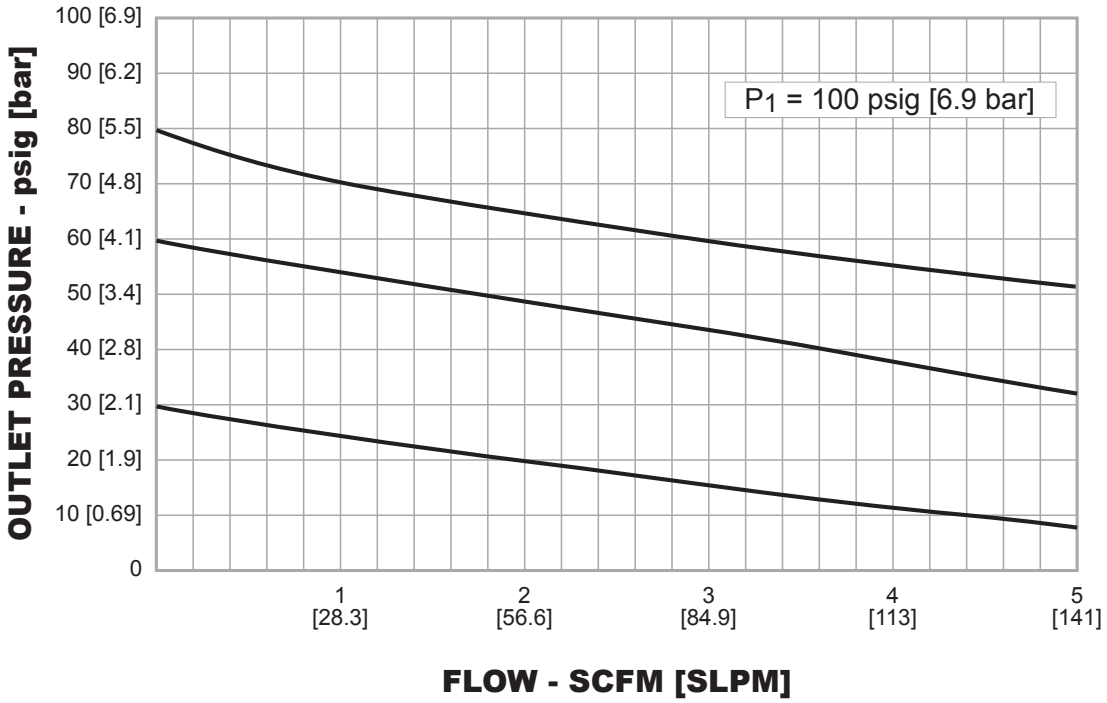
22-2200 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

22-2200 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



22-2200 SERIES

22-2200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

22-22	4	3	K	RM		2	0
BASIC SERIES	**BODY MATERIAL AND FINISH**	**OUTLET PRESSURE**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± 0.06"**	**INLET PRESSURE TRIM MATERIAL FLOW CAPACITY**	**PORTING CONFIGURATION GAUGE PORT TYPE**
22-22	**4 –** 316L Stainless Steel 25 R_a	**0 –** 30 psig 2.1 bar **1 –** 60 psig 4.1 bar **2 –** 100 psig 6.9 bar **3 –** 150 psig 10.3 bar	**K –** PCTFE **T –** PTFE	**A4 -** 1/4" H.P.I.C **T4 -** 1/4" O.D. Tube **T6 -** 3/8" O.D. Tube **T8 -** 1/2" O.D. Tube **RM -** 1/4" Male Swivel **RT -** 1/4" Female Swivel **RK -** 1/2" Male Swivel **RL -** 1/2" Female Swivel **RU -** IN Port: 1/4" Male Swivel OUT Port: 1/4" Female Swivel **RV -** IN Port: 1/4" Female Swivel OUT Port: 1/4" Male Swivel **C4 -** 1/4" Compression **C6 -** 3/8" Compression	1.09" 3.50" 3.50" 3.50" 3.70" 3.70" 4.75" 4.75" 3.70" 3.70" 4.97" 5.99"	**2 –** 250 psig 17.2 bar 316 Stainless Steel C_V = 0.24	 **0 –** No gauge ports  **2 –** 1/4" H.P.I.C. - A **B –** 1/4" NPTF **S –** 1/4" MVCR, Fixed **7 –** 1/4" FVCR

Regulators - Pressure Reducing D22541988X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600 psig / 41.4 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig
2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% maximum rated

Inboard Leak Rate
< 2 x 10^{-8} atm cc/sec He

Operating Temperature
PCTFE Seat
-40°F to 140°F / -40°C to 60°C
Teflon® PFA Seat
-40°F to 160°F / -40°C to 71°C

Flow Capacity
C_V = 1.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel with Electropolish

Diaphragm
Nickel Alloy (Hastelloy®)

Valve Seat
PCTFE or PTFE PFA

Seat Retainer
Nitronic 60 Stainless Steel

Stem, Seal, and Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
25 R_a microinch / 0.63 micrometer

Connections
Welded female or male VCR®
Tube stubs
Compression fittings
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
DI water electronic grade cleaned

Weight (without gauges)
3.5 lbs / 1.6 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.
Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM 22-5400 Series high purity, high flow BA Grade pressure reducing regulator offers a C_V = 1.0 and a 316 Stainless Steel Electropolished body of 25 R_a. Inlet pressure is 600 psig / 41.4 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- High flow purging
- Regulating corrosive and specialty gases
- Bulk gas delivery

Features and Benefits

- Compact, hand-loaded and pressure reducing
- Low internal volume
- Metal-to-metal diaphragm to body seal for high leak integrity
- 1.3 C_V is available - consult TESCOM

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

22-5400 Series Regulator Drawing

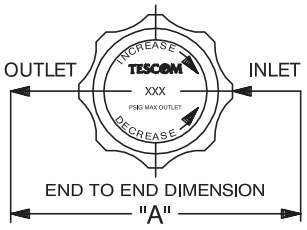


Figure A (no gauges)

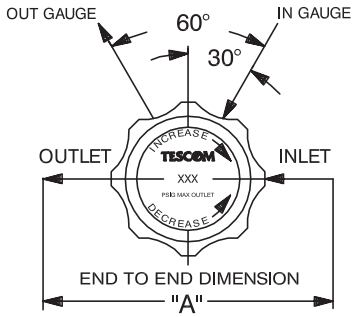


Figure B (2 gauges)

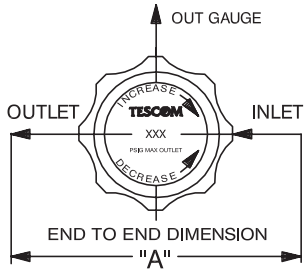
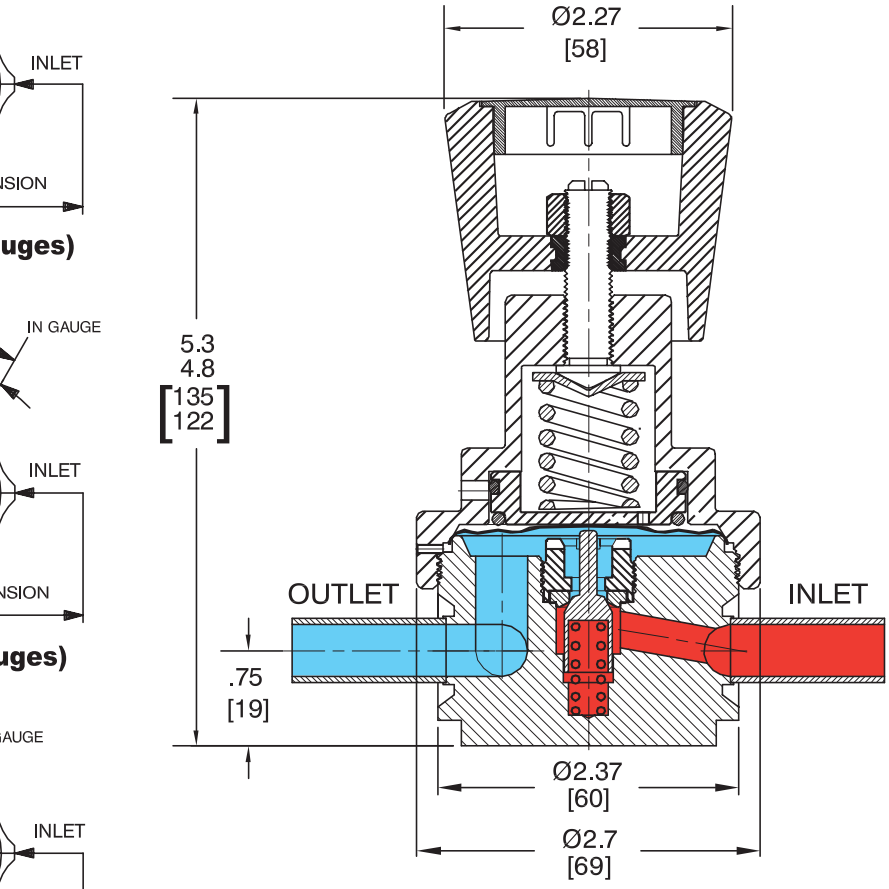
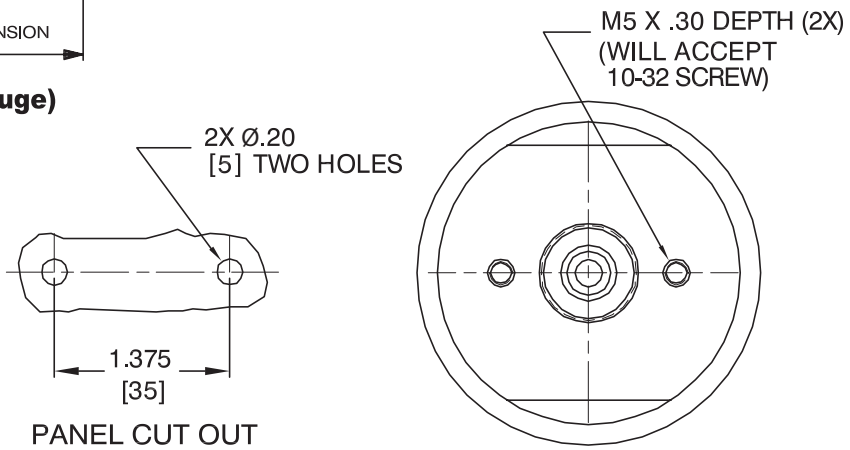


Figure C (1 gauge)

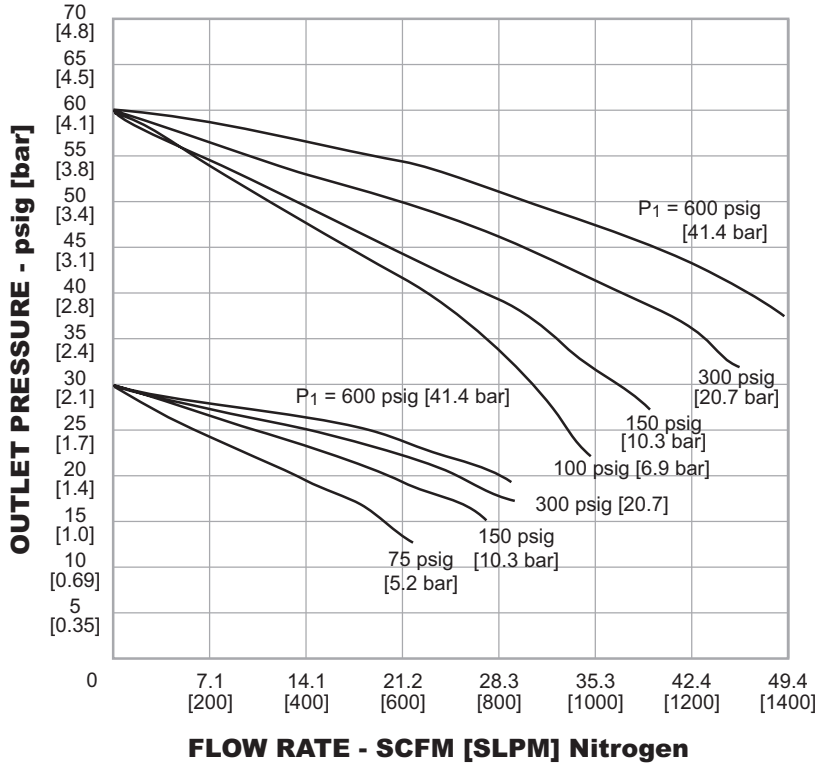


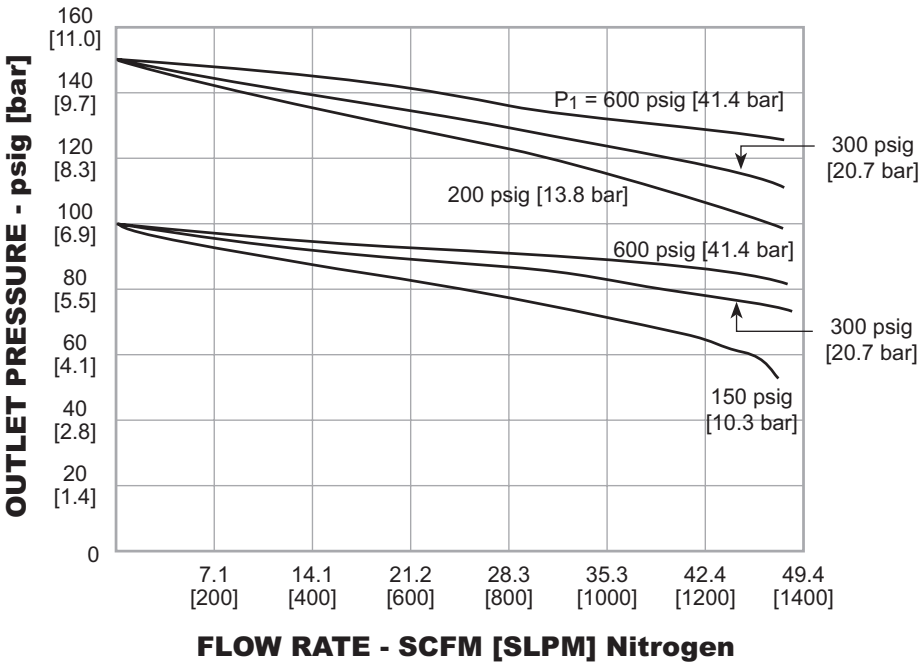


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

22-5400 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





22-5400 SERIES

22-5400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

22-54 4 2 K RW 1 1

BASIC SERIES	BODY MATERIAL	FINISH	OUTLET PRESSURE	SEAT MATERIAL	INLET AND OUTLET PORT TYPE AND SIZE	'A' ± .06"	MAXIMUM INLET PRESSURE	GAUGE PORT OPTION	NUMBER OF GAUGE PORTS (FIGURE)
22-54	**4 –** 316 Stainless Steel Electropolish	25 R_a	**0 –** 30 psig 2.1 bar	**K –** PCTFE	**T6** – 3/8" O.D. Tube	3.70	**1 –** 600 psig 41.4 bar	**0 –** None	0 (A)
			1 – 60 psig 4.1 bar	**T –** PTFE PFA	**T8** – 1/2" O.D. Tube	3.70		**1 –** 1/4" H.P.I.C.	1 (C)
			2 – 100 psig 6.9 bar		**RU** – 1/2" Male Swivel	5.59		**2 –** 1/4" H.P.I.C.	2 (B)
			3 – 150 psig 10.3 bar		**RW** – 1/2" Female Swivel	5.59			
					C6 – 3/8" Compression Fitting	6.42			
					C8 – 1/2" Compression Fitting	6.00			

Regulators - Pressure Reducing D23XX1787X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
150 or 250 psig / 10.3 or 17.2 bar

Outlet Pressure Ranges
0-30, 0-60, 0-100 psig / 0-2.1, 0-4.1, 0-6.9 bar

Design Proof Pressure
150% maximum rated

Certified Maximum Inboard Leak Rate
$<1 \times 10^{-9}$ atm cc/sec He

Operating Temperature
Teflon® Seat: -40°F to 160°F / -40°C to 71°C
PCTFE Seat: -40°F to 140°F / -40°C to 60°C

Flow Capacity
$C_V = 1.8$

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel with Electropolish

Valve Seat
PTFE or PCTFE

Diaphragm
316L Stainless Steel

Stem
316L Stainless Steel

Seal
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
Internal style of VCR®, compatible with male swivel VCR®

Cleaning
DI water electronic grade cleaned

Internal Volume
18.5 cc with 1/2" VCR

Weight
3.2 lbs / 1.5 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.

TESCOM 23 Series ultra high purity in-line regulator offers 10 R_a microinch finish with high flow capabilities up to 950 SLPM. The tied diaphragm 23 Series provides an internally springless and threadless design with inlet pressure of 250 psig / 17.2 bar and outlet pressure up to 100 psig / 6.9 bar.

Application

- High flow in-line regulator excellent for purging

Features and Benefits

- Smooth unobstructed flow path for complete purging
- Minimized particle generation because of springless and threadless construction
- Positive shut-off seal with positionable bonnet
- Excellent leak integrity is created by metal-to-metal diaphragm to body seal
- Meets SEMI F19, UHP Grade

23 SERIES

23 Series Regulator Drawing

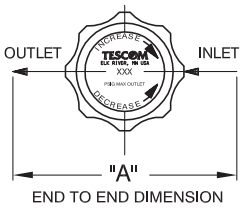


Figure A (No Gauges)

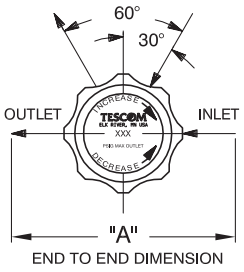


Figure B (2 Gauges)

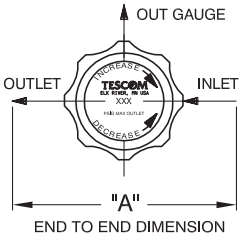


Figure C (1 Gauge)

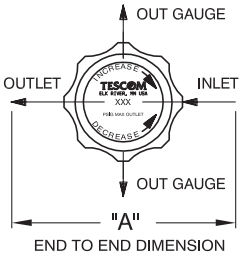
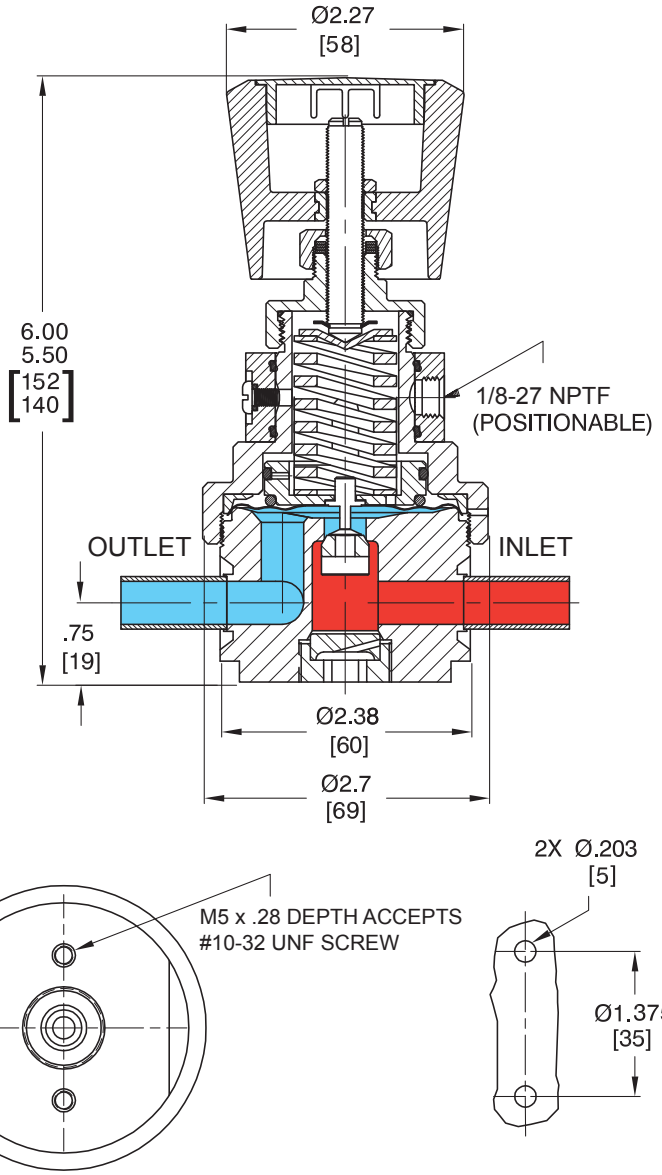


Figure D (1 Out Gauges)

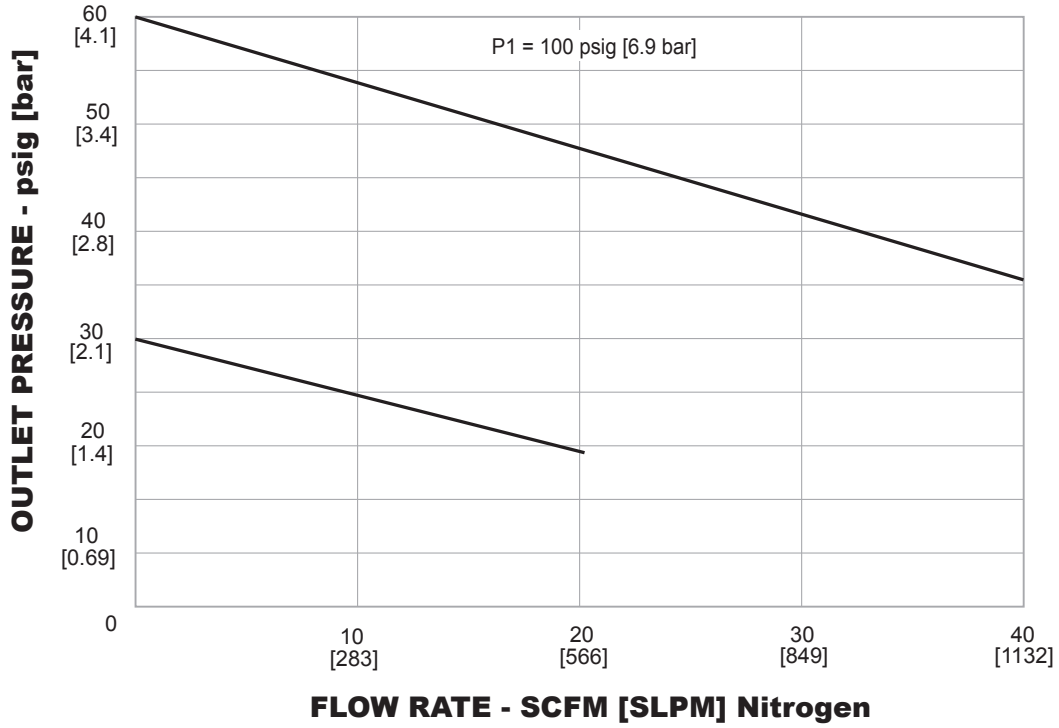
23-3
TIED DIAPHRAGM DESIGN



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

23 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

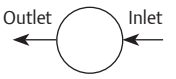
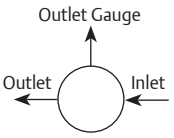
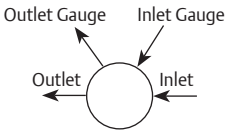


23 SERIES

23 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

23-3	B	1	5	AA	GF4GF4	Z
BASIC SERIES	**INLET PRESSURE** **INTERNAL SURFACE FINISHES AND BODY/TRIM/ SEAT MATERIAL**	**OUTLET PRESSURE**	**ADJUSTMENT** **METHOD AND COLOR**	**PORTING CONFIGURATION - TYPE AND SIZE*** **GAUGE PORT OPTIONS**	**INLET AND OUTLET PORT** **END-TO-END DIMENSION 'A'**	**OPTIONS** **CHOOSE ONE ONLY**
23-3 Tied diaphragm/ positive shutoff	**B –** 250 psig 17.2 bar – **10 R_a finishes** – 316L VAR Stainless Steel body with Eletropolish – 316 Stainless Steel trim – PCTFE seat **C –** 150 psig 10.3 bar – **10 R_a finishes** – 316L VAR Stainless Steel body with Eletropolish – 316 Stainless Steel trim – PTFE seat	**0 –** 30 psig 2.1 bar **1 –** 60 psig 4.1 bar **2 –** 100 psig 6.9 bar	**5 –** Handknob – White	 **AA –** No gauge ports  **AB –** 1/4" H.P.I.C. **AC –** 1/4" FVCR **AD –** 1/4" MVCR, swivel **AE –** 1/4" MVCR, fixed  **AM –** 1/4" H.P.I.C. **AN –** 1/4" FVCR **AP –** 1/4" MVCR, swivel **AR –** 1/4" MVCR, fixed ** Consult factory for other porting configurations, type and size.*	**EN7EN7** 1/4" MVCR, fixed - 3.97" **HF4HF4** 1/2" FVCR - 5.59" **GF4GF4** 1/2" MVCR - 5.59" **FB7FB7** 1/2" Tube - 3.70" **UR2UR2** 3/4" Tube - 5.75"	**Z –** None **T –** Test Report (typical) (Includes Helium Leak Certification and Particle Count Certification) **C –** Certification of Conformance **E –** Centerline to bottom (0.680")

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
1500 psig / 103 bar

Outlet Pressure Range
25-400 psig / 1.7-27.6 bar

Design Proof Pressure
150% maximum rated

Inboard Leak Rate
<1 x 10^{-9} atm cc/sec

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 1.0

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel

Diaphragm
Cobalt Chrome Nickel Alloy (Eligiloy®)

Seat
PCTFE

Trim
Nickel Alloy (Hastelloy®)*

Valve
Nickel Alloy (Hastelloy®)*

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded Female or Male VCR®
Tube Stubs

Internal Volume
12 cc

Weight
3.5 lbs / 1.6 kg

VCR® is a registered trademark of Cajon Co.
Elgiloy® is a registered trademark of Elgiloy Corp.
Hastelloy® is a registered trademark of Haynes International, Inc.

**Material to be Hastelloy® or equivalent per ASTM B 574*

TESCOM 449-254 Series high purity, high flow pressure reducing regulators are ideal for high pressure bulk specialty gas delivery systems (BSGS). The 449-254 Series offers a C_V = 1.0, surface finish of 10 R_a and is available with Hastelloy® trim. Inlet pressure is 1500 psig / 103 bar with outlet pressures up to 400 psig / 27.6 bar.

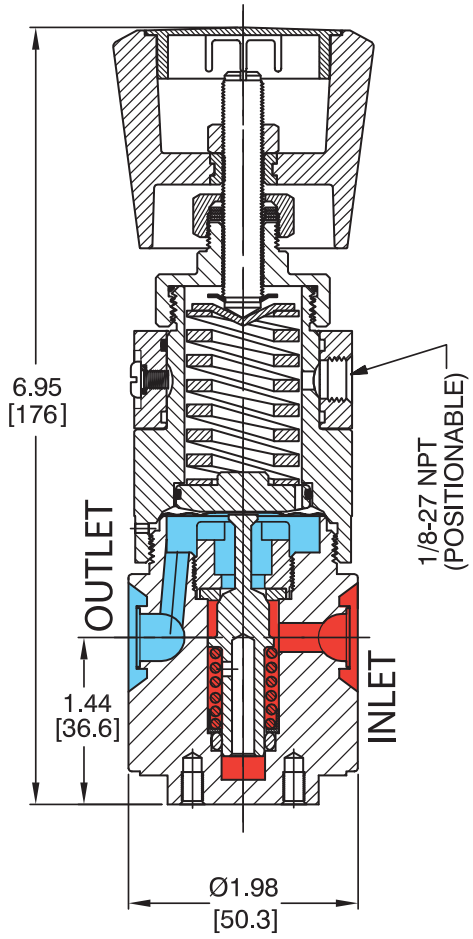
Application

- High purity bulk specialty gas delivery systems

Features and Benefits

- Exclusively designed to handle the demands of high purity bulk specialty gas delivery systems
- Its proven design, high outlet capabilities, bubble-tight shutoff valve and standard Hastelloy® trim provides dependability required for demanding regulator applications
- Metal-to-metal sealed diaphragm
- C_V = 1.0 with 10 R_a microinch finish on wetted surfaces
- Meets SEMI F19 and SEMI Modular Interface specifications

449-254 Series Regulator Drawing



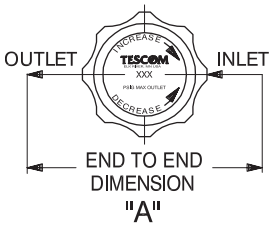


Figure A
(no gauges)

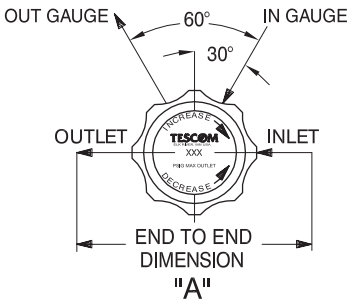


Figure B
(2 gauges)

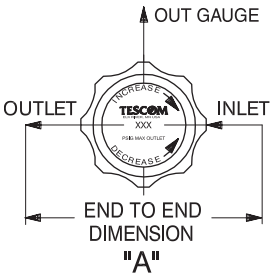


Figure C
(1 gauge)

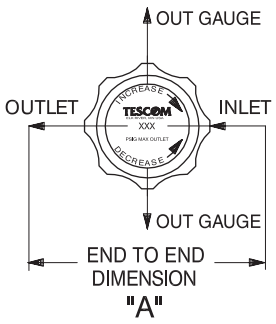
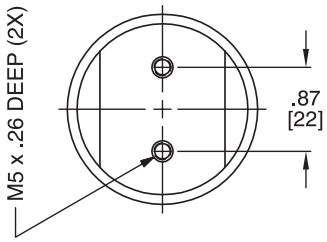


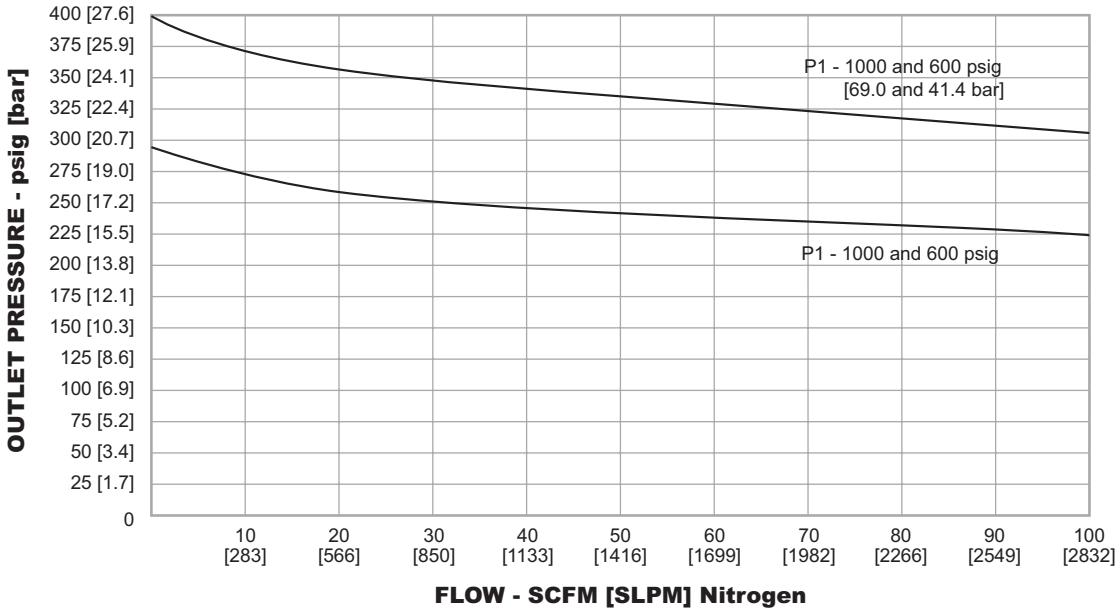
Figure D
(2 out gauges)



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

449-254 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



449-254 SERIES

449-254 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

449-254	4	R	K		0	
BASIC SERIES	**OUTLET PRESSURE**	**PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**"A" ± 0.06**	**GAUGE PORT OPTION**	**NUMBER OF PORTS (FIGURE)**
449-254	**4 –** 25-400 psig 1.7-27.6 bar	**R –** Welded **T –** Tube Stubs	**G –** 1/4" Male Swivel (High Flow) **H –** 1/4" Female Swivel (High Flow) **K –** 1/2" Male Swivel **L –** 1/2" Female Swivel **8 –** 1/2" Tube Stubs	4.00" 4.00" 5.21" 5.21" 5.21"	**0 –** None **4 –** 1/4" Male Swivel **5 –** 1/4" Male Swivel **6 –** 1/4" Male Swivel **7 –** 1/4" Female Swivel **8 –** 1/4" Female Swivel **9 –** 1/4" Female Swivel **S –** 1/4" Fixed Male **T –** 1/4" Fixed Male **U –** 1/4" Fixed Male	0 (Figure A) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D)

Regulators - Pressure Reducing

D64261732X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600 or 3500 psig / 41.4 or 241 bar

Outlet Pressure Ranges
0-30, 0-60, 0-100, 0-150 and 250 psig
0-2.1, 0-4.1, 0-6.9, 0-10.3 and 17.2 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon® Seat: -40°F to 160°F / -40°C to 71°C
Vespel® Seat: -40°F to 350°F / -40°C to 177°C

Flow Capacity
C_V = 0.06 (3500 psig / 241 bar model)
C_V = 0.15 (600 psig / 41.4 bar model)

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or
316L VAR Stainless Steel Electropolish

Diaphragm
316L Stainless Steel or Nickel Alloy (Hastelloy®)*

Seat
PCTFE or PTFE (Polyimide (Vespel®) optional for 3500 psig / 241 bar model only)

Spring
316 Stainless Steel or Cobalt Chrome Nickel Alloy (Eligiloy®)

Stem, Seat Retainer, Valve Guide
316 Stainless Steel or Nickel Alloy (Hastelloy®)*

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
1/4" fitting / 5.75 cc

Weight (without gauges)
2 lbs / 0.9 kg

Teflon® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
Elgiloy® is a registered trademark of Elgiloy Corp.
VCR® is a registered trademark of Cajon Co.

**Material to be Hastelloy® or equivalent per ASTM B 574*

TESCOM 64-2600 Series economical high purity pressure reducing regulator provides Stainless Steel construction with 10 R_a surface finish and is electronic grade cleaned. Inlet pressures are 600 or 3500 psig / 41.4 or 241 bar with outlet pressures of up to 250 psig / 17.2 bar.

Applications

- 1/4" point-of-use
- Gas cabinets
- Semiconductor manufacturing
- Valve manifold boxes
- Research labs

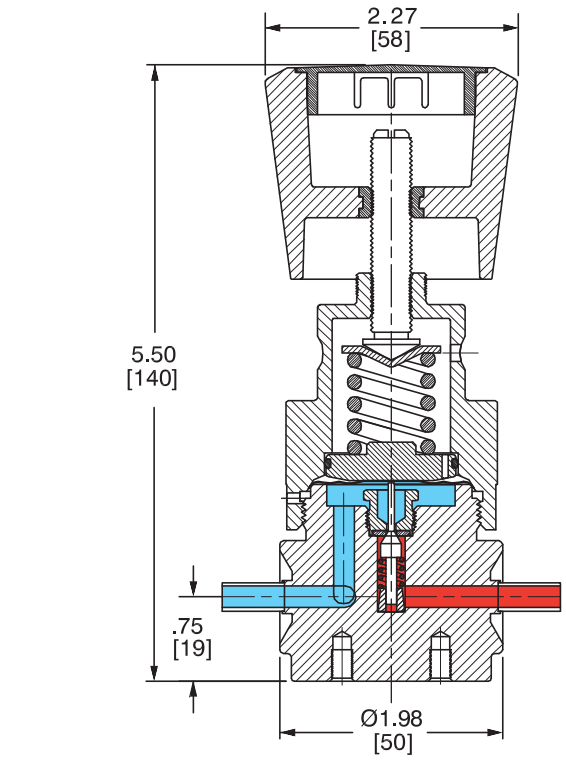
Features and Benefits

- Optimum performance and cleanliness at a great value
- Internal surface finished to 10 R_a microinch / 0.25 micrometer ensures minimal particle generation or entrapment
- True metal-to-metal body diaphragm seal provides enhanced leak integrity
- No bias spring or friction device in the flow stream
- Adjustable stop to limit outlet pressure
- Positionable ported bonnet ring is available

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-2600 Series Regulator Drawing



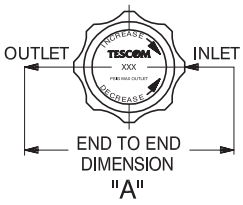


Figure A (no gauges)

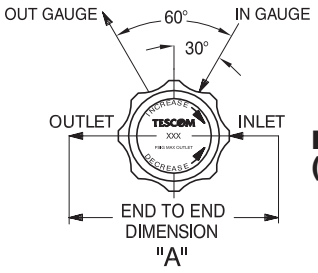


Figure B (2 gauges)

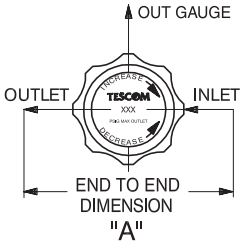


Figure C (1 gauge)

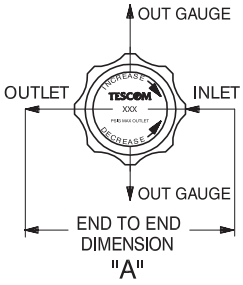
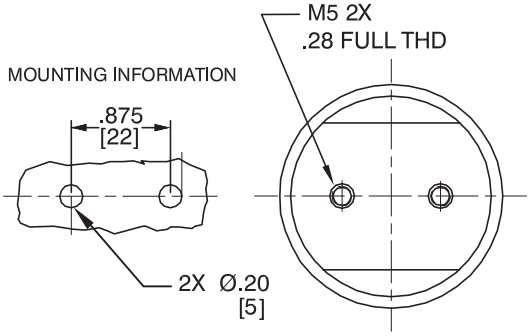


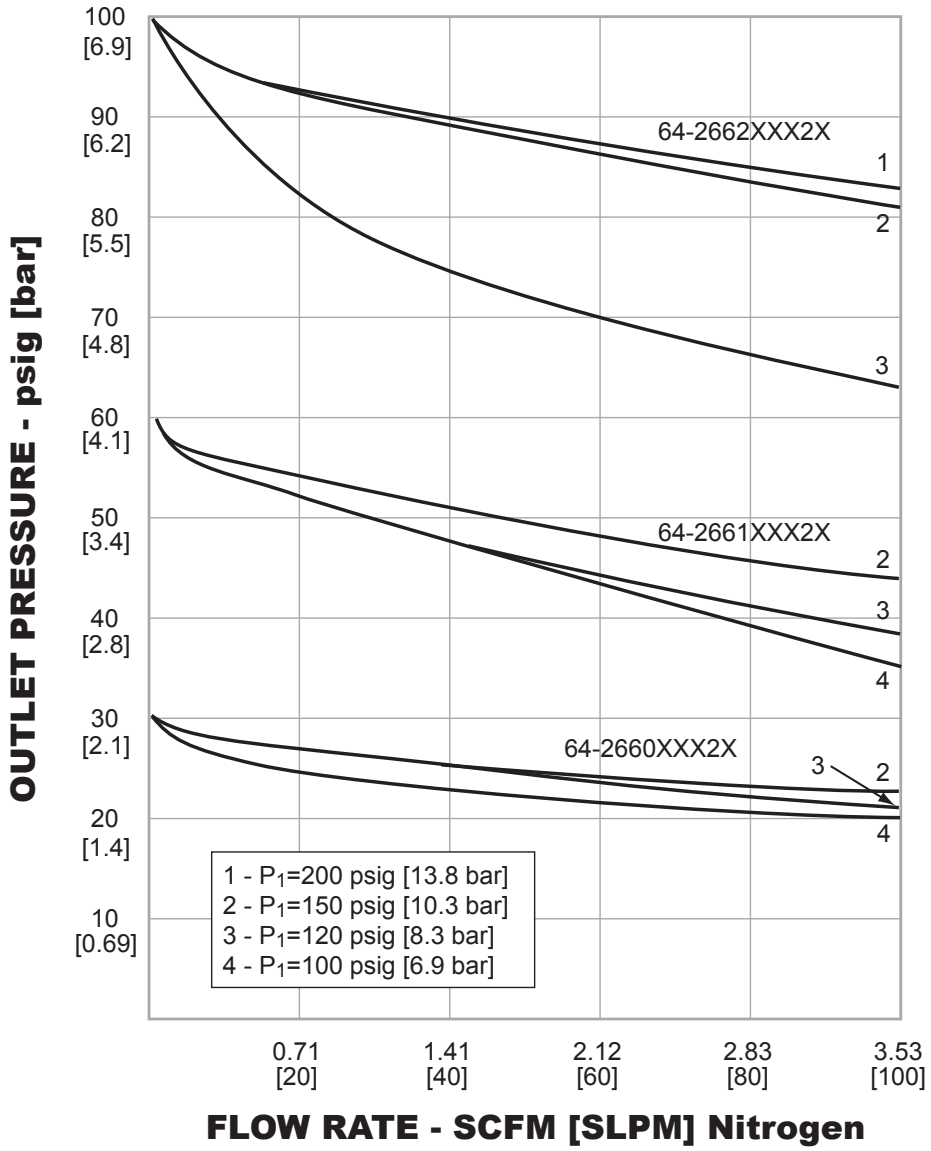
Figure D (2 out gauges)



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-2600 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



64-2600 SERIES

64-2600 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-26	4	2	K	A4		1	0	
BASIC SERIES	**BODY MATERIAL/ FINISH**	**OUTLET PRESSURE RANGES**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± .06"**	**MAXIMUM INLET**	**GAUGE PORT OPTION**	**NO. OF GAUGE PORTS (SEE FIGURE)**
64-26	**4** – 316L Stainless Steel Electropolish: 10 R_a[1] **6** – 316L VAR Stainless Steel Electropolish: 10 R_a[2] *1. Per ASTM B 912* *2. Per SEMI F19, HP grade*	**0** – 0-30 psig 0-2.1 bar **1** – 0-60 psig 0-4.1 bar **2** – 0-100 psig 0-6.9 bar **3** – 0-250 psig 0-17.2 bar **6** – 0-150 psig 0-10.3 bar	**K** – PCTFE **T** – PTFE **V** – Polyimide (Vespel®) (3500 psig / 241 bar model only)	**A4** – 1/4" H.P.I.C. **RK** – 1/2" Male Swivel **RL** – 1/2" Female Swivel **RM** – 1/4" Male Swivel **RT** – 1/4" Female Swivel **RU** – IN Port:1/4" Male; OUT Port: 1/4" Female **RV** – IN Port:1/4" Female; OUT Port: 1/4" Male **T4** – 1/4" Tube Stubs	- 4.75" 4.75" 3.70" 3.70" 3.70" 3.70" 3.00"	**1** – 3500 psig 241 bar 316 Stainless Steel Trim **2** – 600 psig 41.4 bar 316 Stainless Steel Trim **3** – 3500 psig 241 bar Hastelloy® Trim **4** – 600 psig 41.4 bar Hastelloy® Trim	**0** – None **1** – 1/4" H.P.I.C. **2** – 1/4" H.P.I.C. **3** – 1/4" H.P.I.C. **4** – 1/4" Male Swivel **5** – 1/4" Male Swivel **6** – 1/4" Male Swivel **7** – 1/4" Female Swivel **8** – 1/4" Female Swivel **9** – 1/4" Female Swivel **S** – 1/4" Fixed Male **T** – 1/4" Fixed Male **U** – 1/4" Fixed Male	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D)

Regulators - Pressure Reducing D64281743X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
1000 or 3500 psig / 69.0 or 241 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig / 2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% of maximum rated

Design Burst Pressure
400% of maximum rated

Inboard Leak Rate
Internal: Bubble-tight
External: 1 x 10^{-9} atm cc/sec He (ASTM test E499)

Operating Temperature
PCTFE: -40°F to 140°F / -40°C to 60°C
Vespel®: -40°F to 350°F / -40°C to 176°C

Flow Capacity
3500 psig / 241 bar Model: C_V = 0.06
1000 psig / 69.0 bar Model: C_V = 0.15

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or 316L VAR Stainless Steel Electropolish

Valve Seat
PCTFE

Diaphragm, Stem, Spring
316 Stainless Steel, Nickel Alloy (Hastelloy®)

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
Highly Purity Internal Connections (H.P.I.C.)
(Internal style for VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal Electropolish models

Internal Volume
5.75 cc

Weight (without gauges)
2 lbs / 0.9 kg

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Cajon Co.

TESCOM 64-2800 Series high purity, tied diaphragm pressure reducing regulator offers Stainless Steel construction with 10 R_a microinch / 0.25 micrometer surface finish and is electronic grade cleaned. Inlet pressures of 1000 or 3500 psig / 69.0 or 241 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- 1/4" point-of-use
- Gas cabinet
- Regulation of specialty gases
- Crystal growing
- Diffusion Furnaces

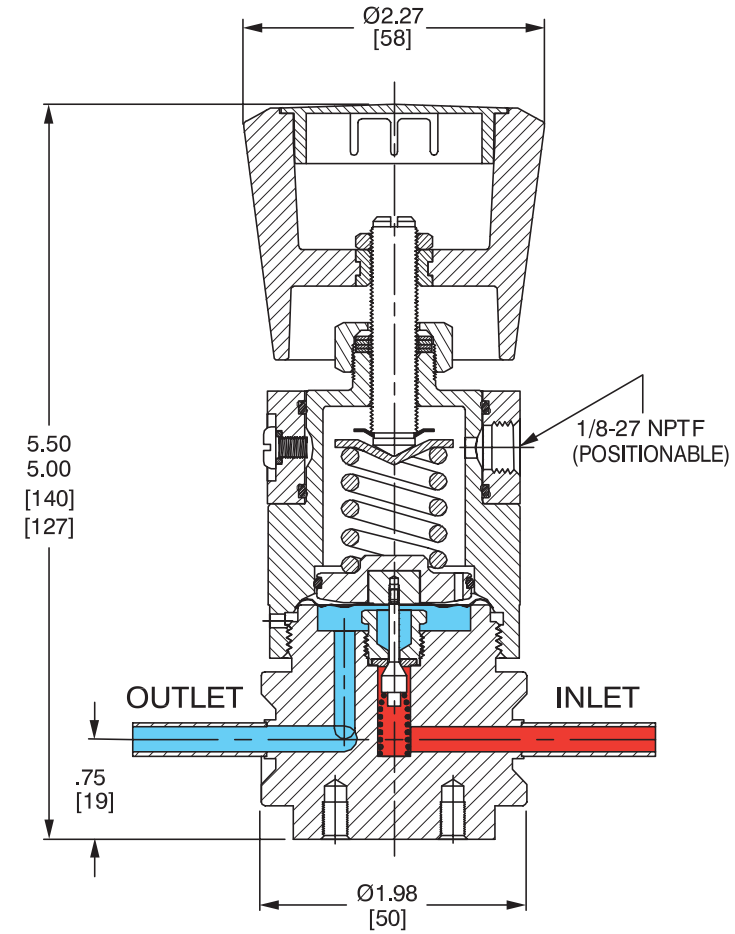
Features and Benefits

- Positive shutoff minimizes creep
- Metal-to-metal diaphragm to body seal for high leak integrity
- 10 R_a microinch / 0.25 micrometer internal surface finish
- Hastelloy® trim is optional
- Captured bonnet

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-2800 Series Regulator Drawing



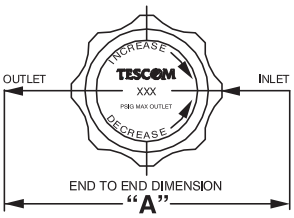


FIGURE A (NO GAUGES)

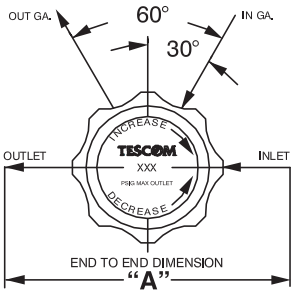


FIGURE B (2 GAUGES)

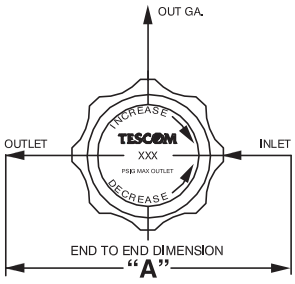
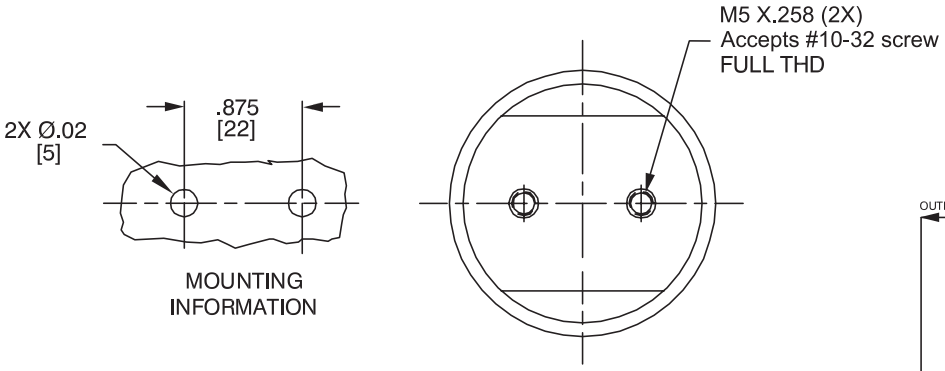


FIGURE C (1 GAUGE)



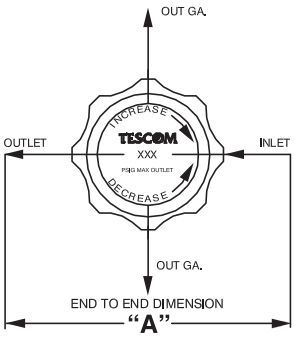
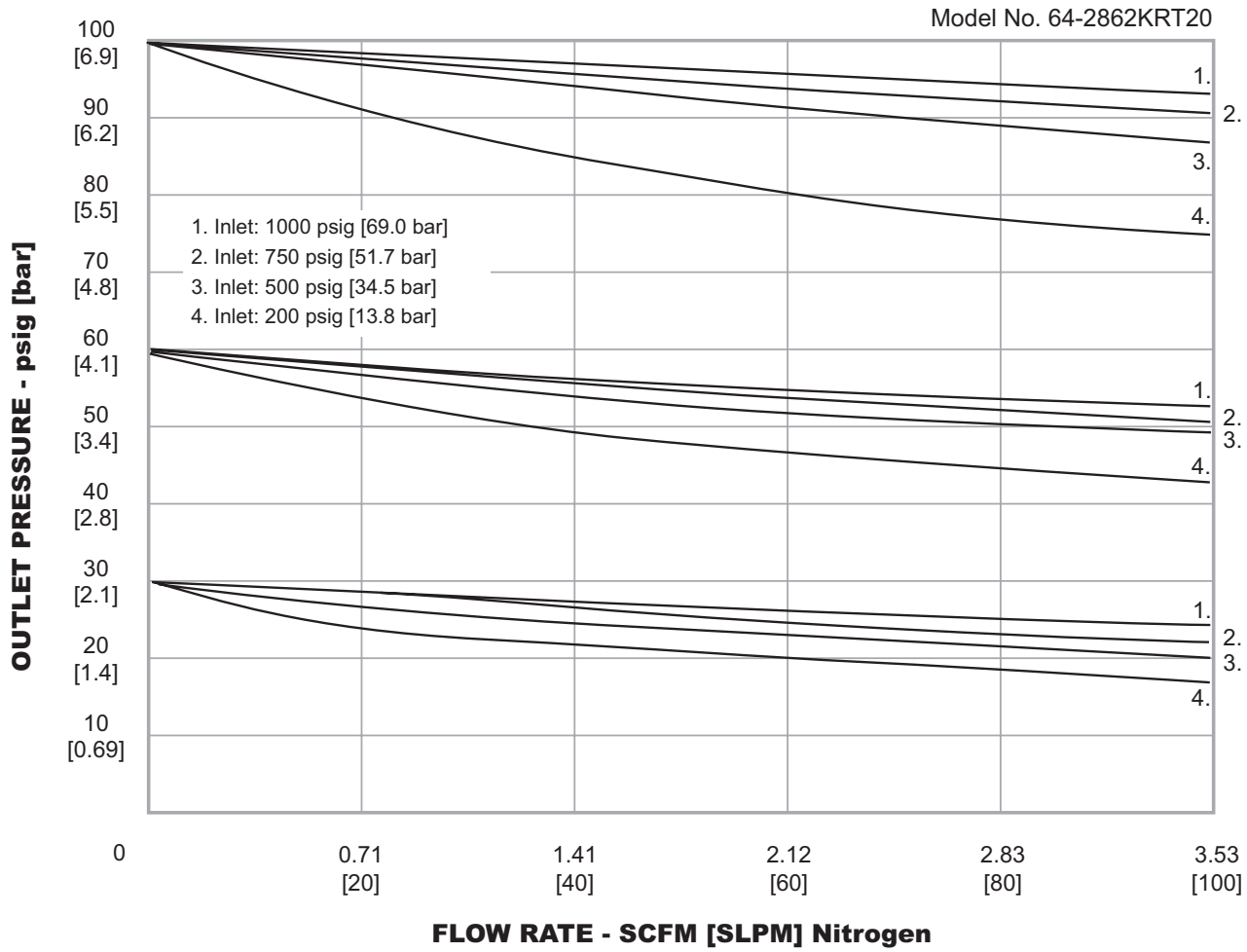


FIGURE D (2 OUT GAUGES)

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-2800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



64-2800 SERIES

64-2800 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-28	6	2	K	A4		1	0	
BASIC SERIES	**BODY MATERIAL / FINISH**	**OUTLET PRESSURE RANGES**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± .06"**	**MAXIMUM INLET PRESSURE**	**GAUGE PORT OPTION**	**NO. OF GAUGE PORTS (FIGURE)**
64-28	**4 –** 316L Stainless Steel Electropolish: 10 R_a[1] **6 –** 316L VAR Stainless Steel Electropolish: 10 R_a[2] *1. Per ASTM B 912* *2. Per SEMI F19, HP Grade*	**0 –** 30 psig 2.1 bar **1 –** 60 psig 4.1 bar **2 –** 100 psig 6.9 bar **3 –** 150 psig 10.3 bar	**K –** PCTFE	**A4 –** 1/4" H.P.I.C. **RK –** 1/2" Male Swivel **RL –** 1/2" Female Swivel **RM –** 1/4" Male Swivel **RT –** 1/4" Female Swivel **RU –** IN Port: 1/4" Male; OUT Port: 1/4" Female **RV –** IN Port: 1/4" Female; OUT Port: 1/4" Male **T4 –** 1/4" Tube Stubs	1.09" 4.75" 4.75" 3.70" 3.70" 3.70" 3.70" 3.00"	**1 –** 3500 psig 241 bar **2 –** 1000 psig 69.0 bar **3 –** 1000 psig 69.0 bar Hastelloy® trim	**0 –** None **1 –** 1/4" H.P.I.C. **2 –** 1/4" H.P.I.C. **3 –** 1/4" H.P.I.C. **4 –** 1/4" Male Swivel **5 –** 1/4" Male Swivel **6 –** 1/4" Male Swivel **7 –** 1/4" Female Swivel **8 –** 1/4" Female Swivel **9 –** 1/4" Female Swivel **S –** 1/4" Fixed Male **T –** 1/4" Fixed Male **U –** 1/4" Fixed Male	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
150, 1000, 1500 psig / 10.3, 69.0, 103 bar

Outlet Pressure Ranges
30, 60, 100, 150, 200 psig / 2.1, 4.1, 6.9, 10.3, 13.8 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
<1 x 10^{-9} atm cc/sec He

Operating Temperature
Teflon® Seat: -40°F to 160°F / -40°C to 71°C
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Vespel® Seat: -40°F to 350°F / -40°C to 177°C

Flow Capacity
C_V = 1.2

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or
316L VAR Stainless Steel Electropolish

Diaphragm
Nickel Alloy (Hastelloy®)

Seat Retainer
316 Stainless Steel

Poppet
316 Stainless Steel or Nickel Alloy (Hastelloy®)

Valve Seat
PTFE, Polyimide (Vespel®), PCTFE

Valve Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
1/2" fitting / 32 cc

Weight (without gauges)
3.5 lbs / 1.6 kg

Teflon® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Cajon Co.

TESCOM 64-3200 Series ultra high purity, high flow tied diaphragm pressure reducing regulator offers 10 R_a microinch / 0.25 micrometer surface finish and is available in Hastelloy® trim. Maximum flow rates are up to 31.8 SCFM / 900 SLPM, with inlet pressures of 150, 1000, 1500 psig / 10.3, 69.0, 103 bar and outlet pressures up to 200 psig / 13.8 bar.

Applications

- Bulk Specialty Gas Systems (BSGS)
- 1/2" point-of-use
- Tool hookups
- Gas cabinets

Features and Benefits

- Designed for high flow, bulk specialty gas
- Hastelloy® trim option is available
- Positive shut-off seal, tied diaphragm design
- Metal-to-metal diaphragm to body seal for high leak integrity
- Captured bonnet

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-3200 SERIES

64-3200 Series Regulator Drawing

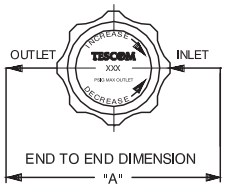


FIGURE A (NO GAUGES)

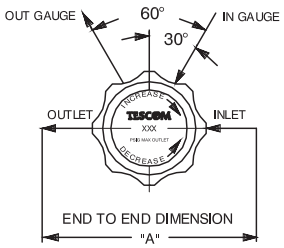


FIGURE B (2 GAUGES)

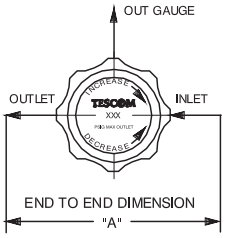


FIGURE C (1 GAUGE)

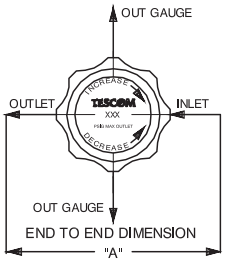
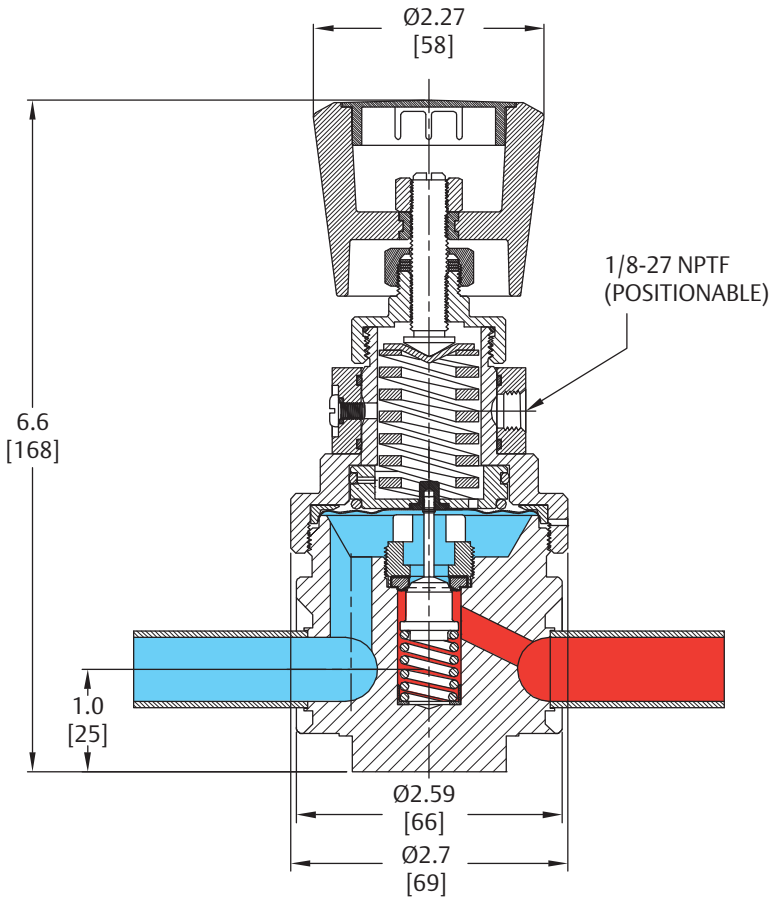
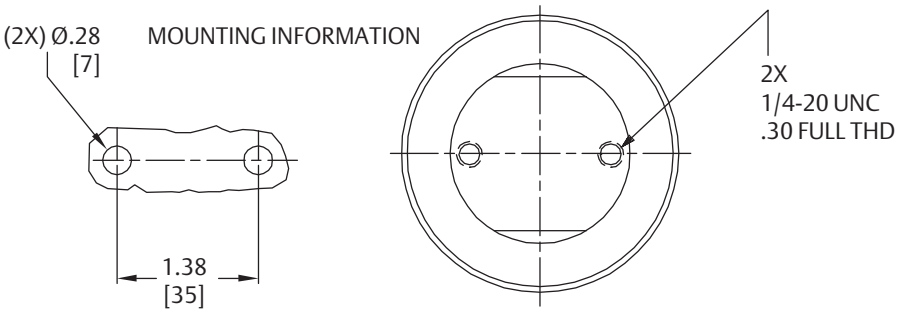


FIGURE D (2 OUT GAUGES)

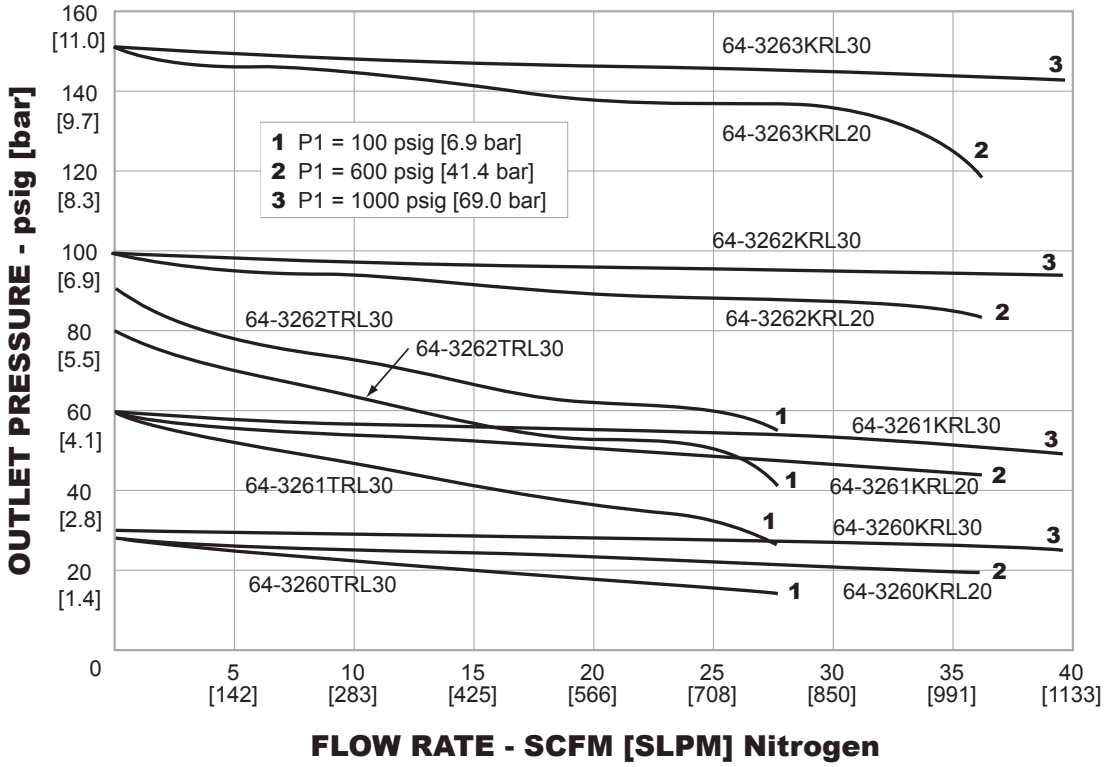




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-3200 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



64-3200 SERIES

64-3200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-32	6	3	K	RL		1	0	
BASIC SERIES	**BODY MATERIAL/ FINISH**	**OUTLET PRESSURE RANGES**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± .06"**	**MAXIMUM INLET PRESSURE**	**GAUGE PORT OPTION**	**NO. OF GAUGE PORTS (FIGURE)**
64-32	**4** – 316L Stainless Steel Electropolish: 10 R_a[1] **6** – 316L VAR Stainless Steel Electropolish: 10 R_a[2] *1. Per ASTM B 912* *2. Per SEMI F19, HP grade*	**0** – 30 psig 2.1 bar **1** – 60 psig 4.1 bar **2** – 100 psig 6.9 bar **3** – 150 psig 10.3 bar (1000 or 1500 psig / 69.0 or 103 bar inlet only) **4** – 200 psig 0-13.8- bar (1000 or 1500 psig / 69.0 or 103 bar inlet only)	**K** – PCTFE (1000 or 1500 psig / 69.0 or 103 bar inlet only) **T** – PTFE (150 psig / 10.3 bar inlet only) **V** – Polyimide (Vespel®) (1000 or 1500 psig / 69.0 or 103 bar inlet only)	**T1** – 1" Tube Ends **T6** – 3/8" Tube Ends **T7** – 3/4" Tube Ends **T8** – 1/2" Tube Ends **RA** – 1/4" Male Fixed **RB** – 3/4" Male Swivel **RC** – 3/4" Female Swivel **RG** – 1/4" Male Swivel High Flow **RH** – 1/4" Female Swivel High Flow **RK** – 1/2" Male Swivel **RL** – 1/2" Female Swivel **RU** – IN Port: 1/4" Male Fixed; OUT Port: 1/4" Female Swivel **RV** – IN Port: 1/2" Male Swivel; OUT Port: 1/2" Female Swivel **RY** – IN Port: 1/4" Female High Flow; OUT Port: 1/4" Male Fixed **RZ** – IN Port: 1/2" Female Swivel; OUT Port: 1/2" Male Swivel **SA** – 1/4" Male Fixed **SK** – 1/2" Male Swivel	5.75" 3.70" 5.75" 3.70" 3.70" 6.30" 6.30" 4.27" 4.27" 5.59" 5.59" 3.70" 5.59" 4.27" 5.59" 4.08" 5.21"	**316 Stainless Steel Trim** **1** – 1500 psig / 103 bar **2** – 1000 psig / 69.0 bar **3** – 150 psig / 10.3 bar **Hastelloy® Trim** **4** – 1500 psig / 103 bar **5** – 1000 psig / 69.0 bar **6** – 150 psig / 10.3 bar	**0** – None **1** – 1/4" H.P.I.C. **2** – 1/4" H.P.I.C. **3** – 1/4" H.P.I.C. **4** – 1/4" Male Swivel **5** – 1/4" Male Swivel **6** – 1/4" Male Swivel **7** – 1/4" Female Swivel **8** – 1/4" Female Swivel **9** – 1/4" Female Swivel **N** – 1/4" Tube Stub **P** – 1/4" Tube Stub **R** – 1/4" Tube Stub **S** – 1/4" Fixed Male **T** – 1/4" Fixed Male **U** – 1/4" Fixed Male	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D) 2 (Figure B) 1 (Figure C) 2 (Figure D)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3500 psig / 241 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig / 2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
Seat: < 4 x 10^{-9} atm cc/sec He
Diaphragm: < 1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon PFA® Seat: -40°F to 160°F / -40°C to 71°C

Flow Capacity
See Part Number Selector

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or 316L VAR Stainless Steel Electropolish

Diaphragm
316L Stainless Steel

Valve Seat
PCTFE or PTFE PFA®

Valve Spring
316 Stainless Steel

Valve Stem and Remaining Parts
316 Stainless Steel (Nickel Alloy (Hastelloy®) optional)

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
10 cc

Weight
3.0 lbs / 1.4 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Cajon Co.

TESCOM 64-3400 Series dual-stage, ultra high purity pressure reducing regulator offers a tied diaphragm design and 10 R_a microinch / 0.25 micrometer surface finish with optional Hastelloy® trim. Inlet pressure is 3500 psig / 241 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- Gas cabinets
- Semiconductor manufacturing
- Research labs

Features and Benefits

- 10 R_a microinch / 0.25 micrometer internal surfaces
- Full internal Electropolish is available
- Metal-to-metal body to diaphragm seal for high leak integrity
- Choice of free poppet or tied diaphragm

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-3400 SERIES

64-3400 Series Regulator Drawing

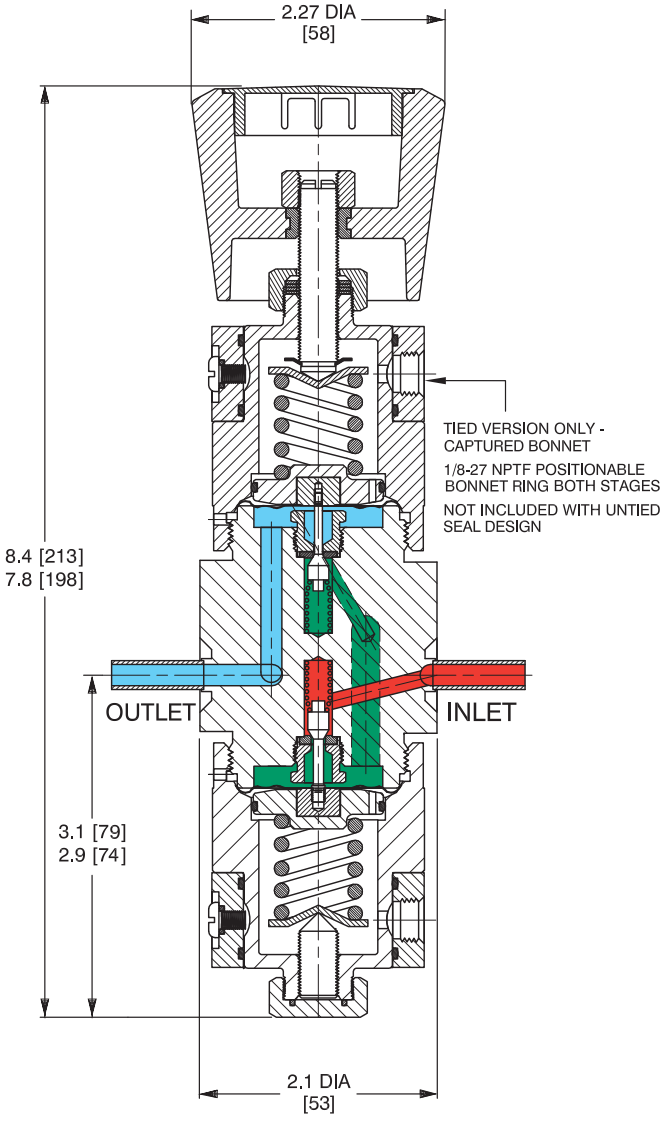


Figure A

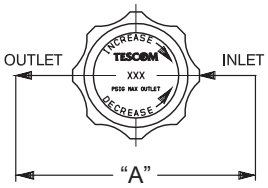


Figure B

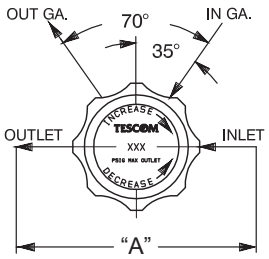


Figure C

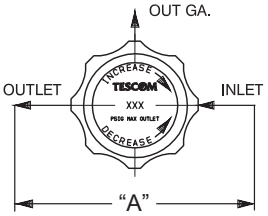
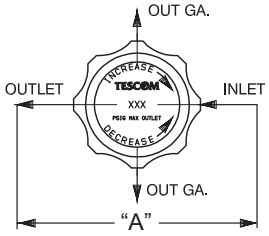


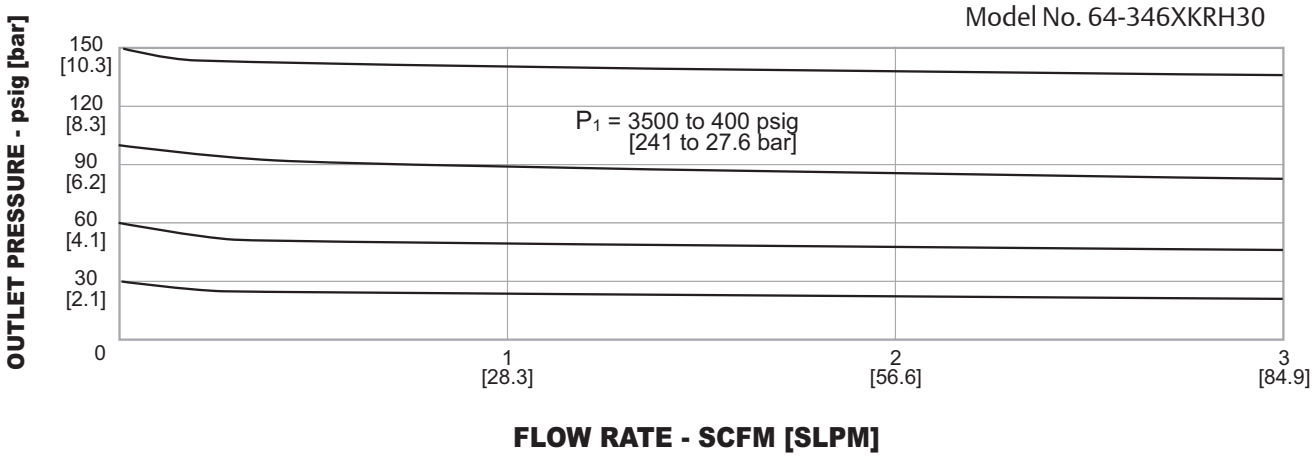
Figure D



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-3400 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



64-3400 SERIES

64-3400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-34 6 2 K A4 2 0

BASIC SERIES	BODY MATERIAL/ FINISH	OUTLET PRESSURE RANGES	SEAT MATERIAL	INLET AND OUTLET PORT SIZE AND TYPE	'A' ± .06"	SEAL DESIGN	C_V	GAUGE PORT OPTIONS	NO. OF GAUGE PORTS (FIGURE)
64-34	**4 –** 316L Stainless Steel Electropolish: 10 R_a[1] **6 –** 316L VAR Stainless Steel Electropolish: 10 R_a[2] *1. Per ASTM B 912* *2. Per SEMI F19, HP grade*	**0 –** 30 psig 2.1 bar **1 –** 60 psig 4.1 bar **2 –** 100 psig 6.9 bar **3 –** 150 psig 10.3 bar	**K –** PCTFE **T –** PTFE PFA® (untied models only)	**A4 –** 1/4" H.P.I.C. (see Connections)	-	**1 –** Untied	C_V = 0.06	**0 –** None	0 (Figure A)
				RK – 1/2" Male Swivel	4.92"	**2 –** Tied	C_V = 0.06	**1 –** 1/4" H.P.I.C.	1 (Figure C)
				RL – 1/2" Female Swivel	4.92"	**3 –** Tied	C_V = 0.15	**2 –** 1/4" H.P.I.C.	2 (Figure B)
				RM – 1/4" Fixed Male	3.70"	**4 –** Tied Nickel Alloy (Hastelloy®) Trim	C_V = 0.15	**3 –** 1/4" H.P.I.C.	2 (Figure D)
				RT – 1/4" Female Swivel	3.70"			**4 –** 1/4" Male Swivel	2 (Figure D)
				RU – IN Port: 1/4" Male; OUT Port: 1/4" Female	3.70"			**5 –** 1/4" Male Swivel	1 (Figure C)
								6 – 1/4" Male Swivel	2 (Figure B)
				RV – IN Port: 1/4" Female; OUT Port: 1/4" Male	3.70"			**7 –** 1/4" Female Swivel	2 (Figure D)
								8 – 1/4" Female Swivel	1 (Figure C)
				T4 – 1/4" Tube Stubs	3.00"			**9 –** 1/4" Female Swivel	2 (Figure B)
								S – 1/4" Fixed Male	2 (Figure B)
								T – 1/4" Fixed Male	1 (Figure C)
								U – 1/4" Fixed Male	2 (Figure D)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600 or 3500 psig / 41.4 or 241 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig / 2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon® Seat: -40°F to 160°F / -40°C to 71°C
Vespel® Seat: -40°F to 350°F / -40°C to 177°C

Flow Capacity
C_V = 0.15 or 0.06

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or 316L VAR Stainless Steel Electropolish

Diaphragm
Nickel Alloy (Hastelloy®)

Valve Seat
PCTFE, PTFE or Polyimide (Vespel®)

Stem and Valve Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel or Nickel Alloy (Hastelloy®)

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
Internal style of VCR®, compatible with male swivel VCR®

Cleaning
DI water electronic grade cleaned and ES500 Particle Certified for internal electropolish models

Internal Volume
12 cc

Weight
2 lbs / 0.9 kg

Teflon®and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Cajon Co.

TESCOM 64-3600 Series ultra high purity, highly sensitive pressure reducing regulator offers a low droop, tied diaphragm design, 10 R_a / 0.25 micrometer surface finish with available Hastelloy® trim. Inlet pressures are 600 or 3500 psig / 41.4 or 241 bar with outlet pressure up to 150 psig / 10.3 bar.

Applications

- 1/4" point-of-use
- Gas cabinets
- Semiconductor manufacturing
- Valve manifold boxes

Features and Benefits

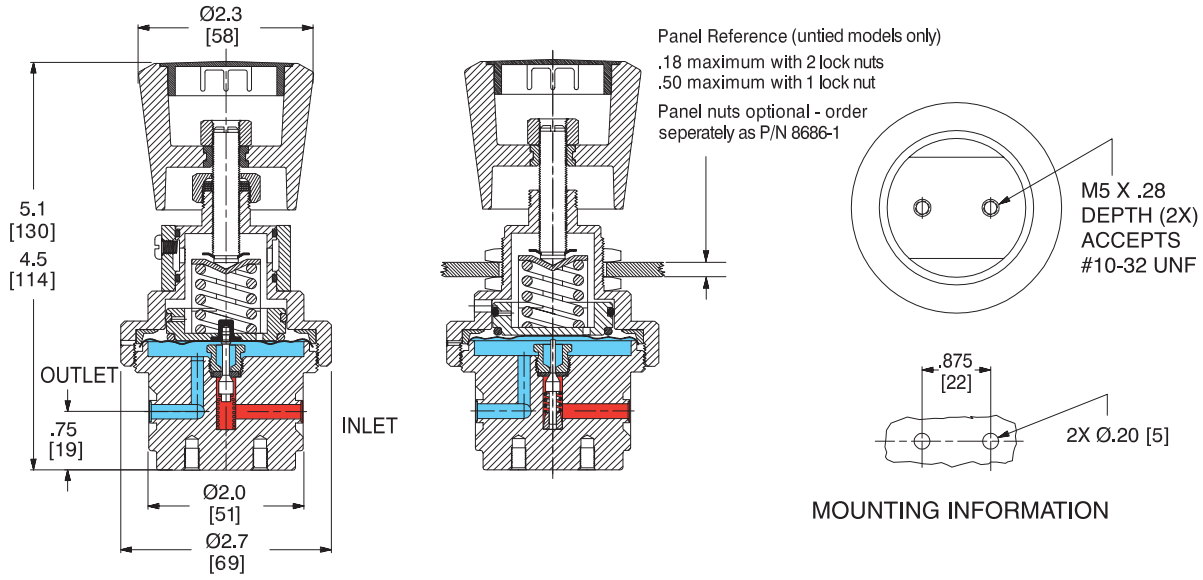
- 10 R_a microinch / 0.25 micrometer internal surface finishes
- Metal-to-metal seal (diaphragm to body seal for high leak integrity)
- Full internal electropolish is available
- Designed to reduce pressure fluctuations in semiconductor gas systems
- Meets the stringent semiconductor requirements of both point-of-use and cylinder applications

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-3600 SERIES

64-3600 Series Regulator Drawing



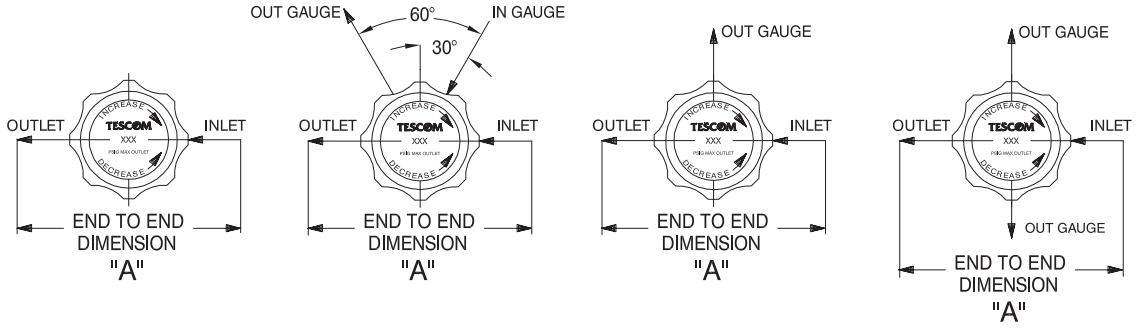
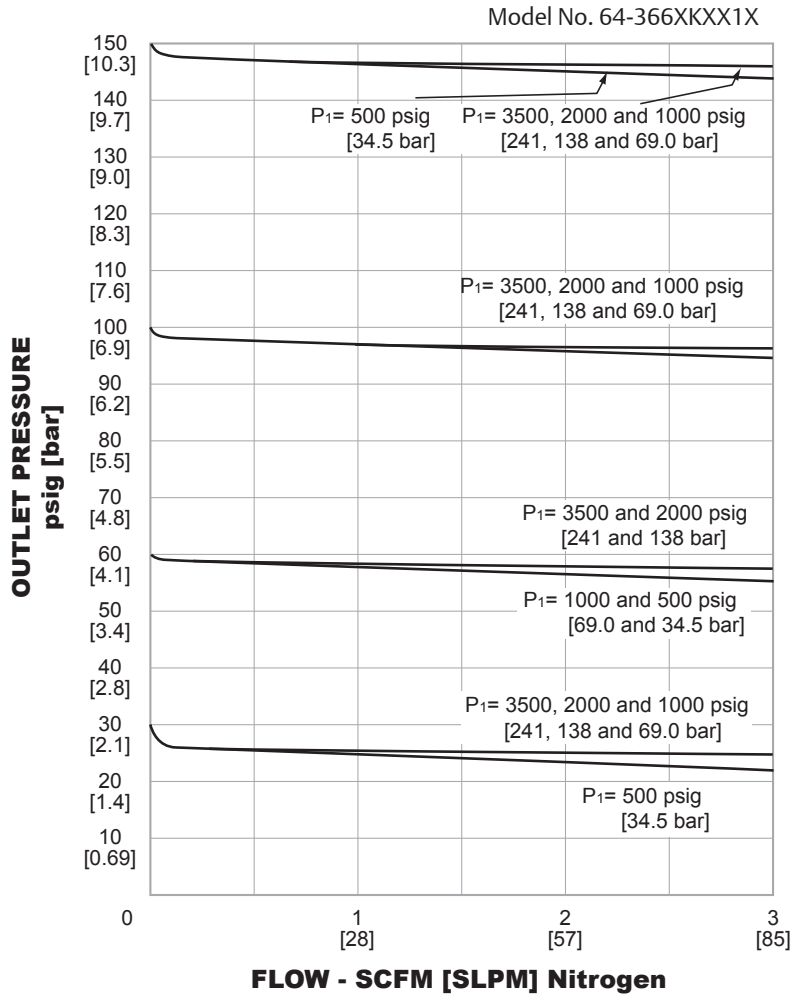


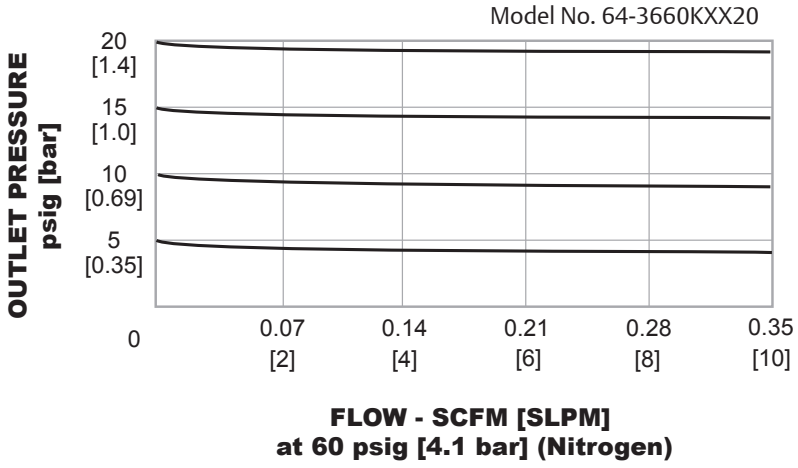
Figure A (no gauges) **Figure B (2 gauges)** **Figure C (1 gauge)** **Figure D (2 out gauges)**

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-3600 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





64-3600 SERIES

64-3600 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-36	6	2	K	A4		2	0	
BASIC SERIES	**BODY MATERIAL/ FINISH**	**OUTLET PRESSURE RANGES**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± .06"**	**SEAL, FLOW (C_V) MAXIMUM INLET PRESSURE**	**GAUGE PORT OPTIONS**	**NUMBER OF GAUGE PORTS**
64-36	**4** – 316L Stainless Steel Electropolish: 10 R_a[1] **6** – 316L VAR Stainless Steel Electropolish: 10 R_a[2]	**0** – 30 psig 2.1 bar **1** – 60 psig 4.1 bar **2** – 100 psig 6.9 bar **3** – 150 psig 10.3 bar	**K** – PCTFE **T** – PTFE (untied model only) **V** – Polyimide (Vespel®)	**A4** – 1/4" H.P.I.C. **RG** – 1/4" Male Swivel **RK** – 1/2" Male Swivel **RL** – 1/2" Female Swivel **RA** – 1/4" Male Fixed **RM** – 1/4" Male Fixed **RT** – 1/4" Female Swivel **RU** – IN Port: 1/4" Male Fixed; OUT Port: 1/4" Female Swivel **RV** – IN Port: 1/4" Female Swivel; OUT Port: 1/4" Male Fixed **T4** – 1/4" Tube Stubs	1.11" 4.50" 4.75" 4.75" 3.51" 3.70" 3.70" 3.70" 3.70" 3.70"	**1** – Untied, C_V = 0.06 3500 psig / 241 bar **2** – Untied, C_V = 0.15 600 psig / 41.4 bar **3** – Tied, C_V = 0.06 3500 psig / 241 bar **4** – Tied, C_V = 0.15 3500 psig / 241 bar **5** – Tied, C_V = 0.15 3500 psig / 241 bar Hastelloy® trim	**0** – None **1** – 1/4" H.P.I.C. **2** – 1/4" H.P.I.C. **3** – 1/4" H.P.I.C. **4** – 1/4" Male Swivel **5** – 1/4" Male Swivel **6** – 1/4" Male Swivel **7** – 1/4" Female Swivel **8** – 1/4" Female Swivel **9** – 1/4" Female Swivel **S** – 1/4" Fixed Male **T** – 1/4" Fixed Male **U** – 1/4" Fixed Male	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D)

1. Per ASTM B 912
2. Per SEMI F19, HP grade

Regulators - Pressure Reducing D64501781X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
120, 600, or 3500 psig / 8.3, 41.4, or 241 bar

Outlet Pressure Ranges
50 mm Hg absolute - 15 psig / 1.0 bar
50 mm Hg absolute - 30 psig / 2.1 bar
50 mm Hg absolute - 60 psig / 4.1 bar
50 mm Hg absolute - 100 psig / 6.9 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
<1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon® Seat: -40°F to 160°F / -40°C to 71°C

Flow Capacity
C_V = **0.24** (120 psig / 8.3 bar model)
C_V = **0.15** (600 psig / 41.4 bar model)
C_V = **0.06** (3500 psig / 241 bar model)

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or
316L VAR Stainless Steel Electropolish

Valve Seat
PTFE or PCTFE

Diaphragm
316L Stainless Steel

Valve Stem, Spring, and Valve Guide
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
2.9 cc

Weight
2.0 lbs / 0.9 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
Hastelloy® is a registered trademark of Haynes International, Inc.
VCR® is a registered trademark of Cajon Co.

TESCOM 64-5000 Series ultra high purity, absolute/subatmospheric pressure reducing regulator offers a 10 R_a surface finish. Inlet pressures are 120, 600, or 3500 psig / 8.3, 41.4, or 241 bar with outlet pressures ranges from 50 mm Hg absolute - 15 to 100 psig / 50 mm Hg absolute - 1.0 to 6.9 bar.

Applications

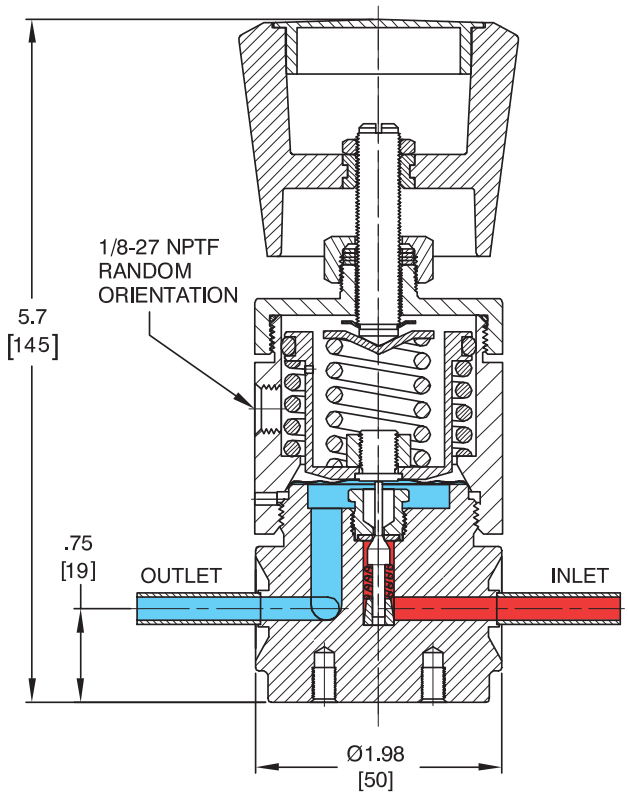
- Vacuum pressure control
- Toxic gas analysis
- Valve manifold boxes
- Gas cabinets
- Semiconductor manufacturing

Features and Benefits

- Negative bias for controlling vacuum and low positive pressures
- 10 R_a microinch / 0.25 micrometer internal surface finish
- Metal-to-metal diaphragm to body seal for high leak integrity
- Hastelloy® trim option is available

64-5000 SERIES

64-5000 Series Regulator Drawing



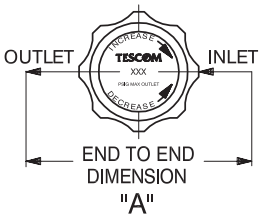


Figure A (no gauges)

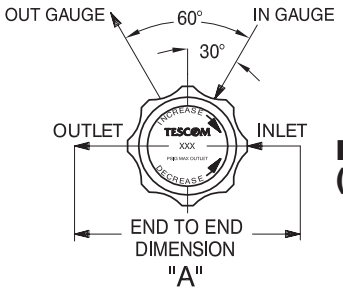


Figure B (2 gauges)

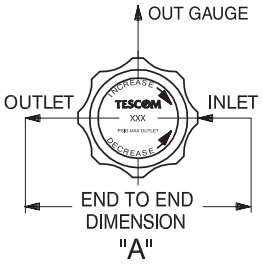


Figure C (1 gauge)

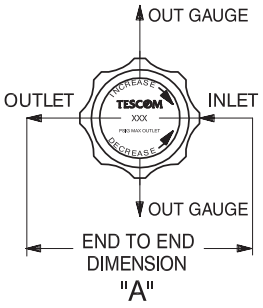
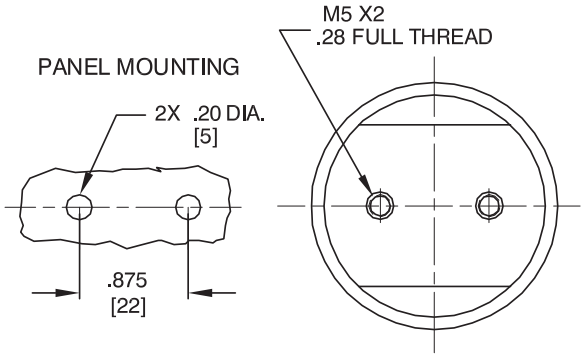


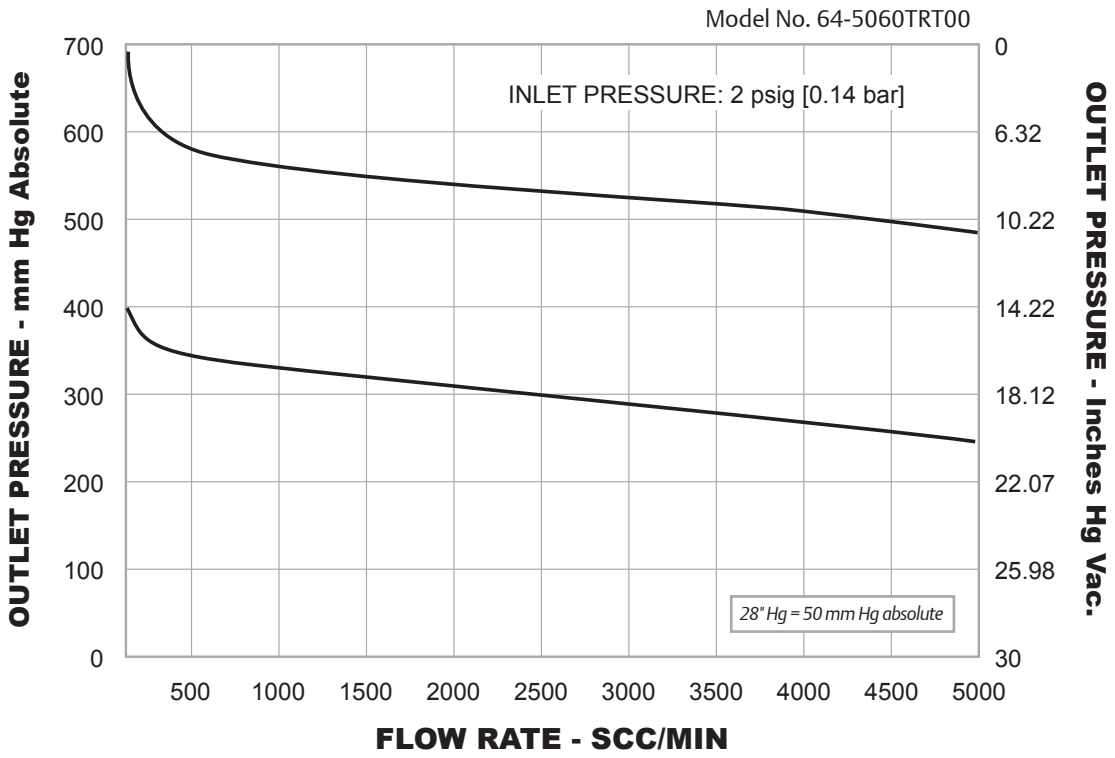
Figure D (2 out gauges)



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-5000 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



64-5000 SERIES

64-5000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-50	6	0	T	A4		1	0	
BASIC SERIES	**BODY MATERIAL**	**OUTLET PRESSURE RANGES[3]**	**SEAT MATERIAL**	**INLET AND OUTLET PORT SIZE AND TYPE**	**'A' ± .06"**	**MAXIMUM INLET PRESSURE C_V**	**GAUGE PORT OPTION**	**NO. OF GAUGE PORTS (FIGURE)**
64-50	**4** – 316L Stainless Steel Electropolish: 10 R_a[1] **6** – 316L VAR Stainless Steel Electropolish: 10 R_a[2]	**0** – 50 mm Hg absolute - 15 psig / 1.0 bar **1** – 50 mm Hg absolute - 30 psig / 2.1 bar **2** – 50 mm Hg absolute - 60 psig / 4.1 bar **3** – 50 mm Hg absolute - 100 psig / 6.9 bar	**K** – PCTFE **T** – PTFE	**A4** – 1/4" H.P.I.C. **RK** – 1/2" Male Swivel **RL** – 1/2" Female Swivel **RM** – 1/4" Male Swivel **RT** – 1/4" Female Swivel **RU** – IN Port: 1/4" Male; OUT Port: 1/4" Female **RV** – IN Port:1/4" Female; OUT Port: 1/4" Male **T4** – 1/4" Tube Stubs	– 4.75" 4.75" 3.70" 3.70" 3.70" 3.70" 3.00"	**0** – 120 psig 8.3 bar C_V = 0.24 **1** – 3500 psig 241 bar C_V = 0.06 **2** – 600 psig 41.4 bar C_V = 0.15	**0** – None **1** – 1/4" H.P.I.C. **2** – 1/4" H.P.I.C. **3** – 1/4" H.P.I.C. **4** – 1/4" Male Swivel **5** – 1/4" Male Swivel **6** – 1/4" Male Swivel **7** – 1/4" Female Swivel **8** – 1/4" Female Swivel **9** – 1/4" Female Swivel **S** – 1/4" Fixed Male **T** – 1/4" Fixed Male **U** – 1/4" Fixed Male	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure D)

1. Per ASTM B 912
2. Per SEMI F19, HP grade
3. 28" Hg = 50 mm Hg absolute

Regulators - Pressure Reducing

D64541987X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600 psig / 41.4 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig
2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% maximum rated

Inboard Leak Rate
< 1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon® PFA Seat: -40°F to 160°F / -40°C to 71°C

Flow Capacity
C_V = 1.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel Electropolish or
316L VAR Stainless Steel Electropolish

Diaphragm
Nickel Alloy (Hastelloy®)

Valve Seat
PCTFE or PTFE PFA

Seat Retainer
Nitronic 60 Stainless Steel

Stem, Seal, and Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded Female or Male VCR®
Tube Stubs
Compression Fittings

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
21 cc

Weight (without gauges)
3.5 lbs / 1.6 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.
Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM 64-5400 Series high purity pressure reducing regulator provides 316 Stainless Steel with Electropolish, 10 R_a surface finish and Hastelloy® diaphragm design. The 64-5400 Series offers high flow C_V = 1.0 and inlet pressure of 600 psig / 41.4 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- Bulk Specialty Gas Systems (BSGS)
- 1/2" point-of-use
- Tool hookups
- Gas cabinets

Features and Benefits

- Compact, hand-loaded and pressure reducing
- Low internal volume
- Metal-to-metal diaphragm to body seal for high leak integrity
- 1.3 C_V available upon request

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

64-5400 SERIES

64-5400 Series Regulator Drawing

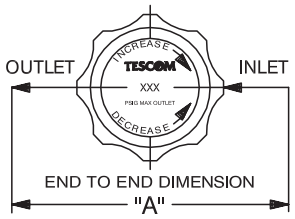


Figure A (no gauges)

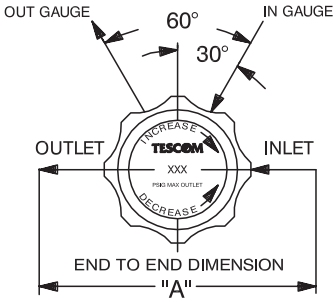


Figure B (2 gauges)

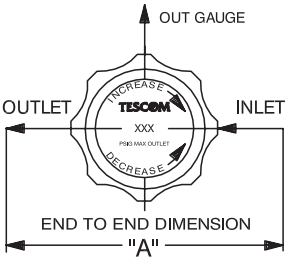
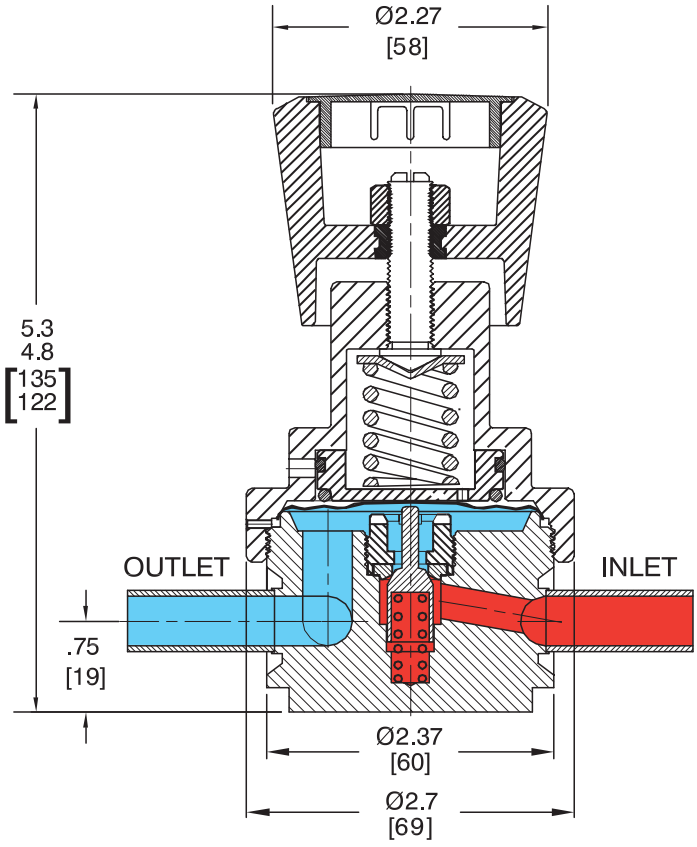
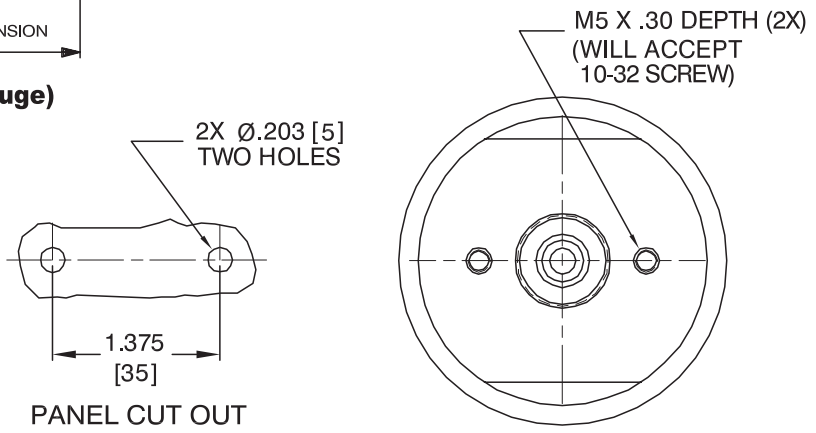


Figure C (1 gauge)

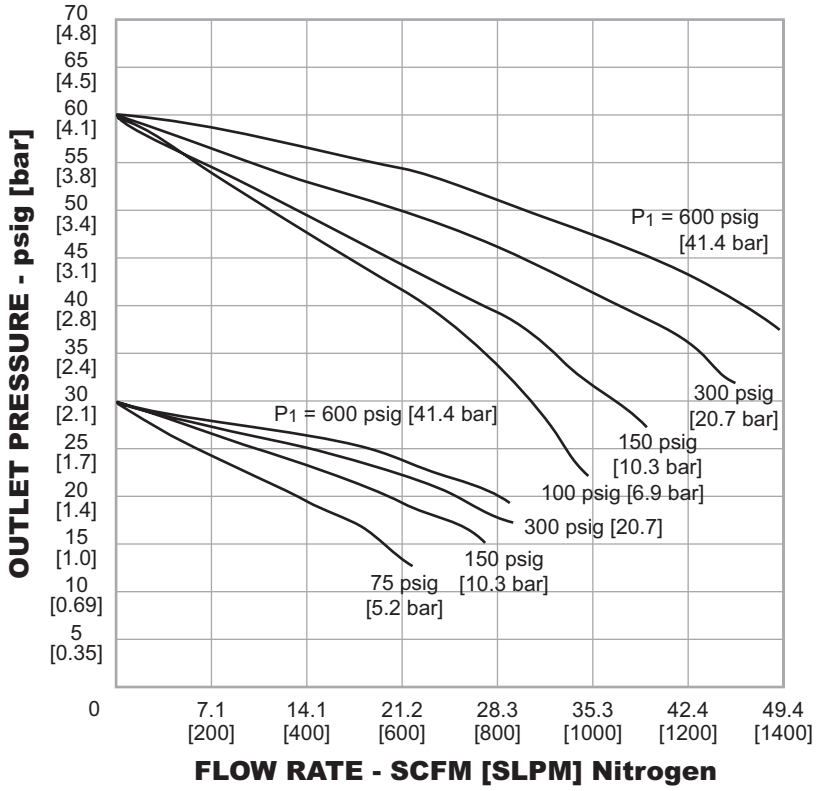


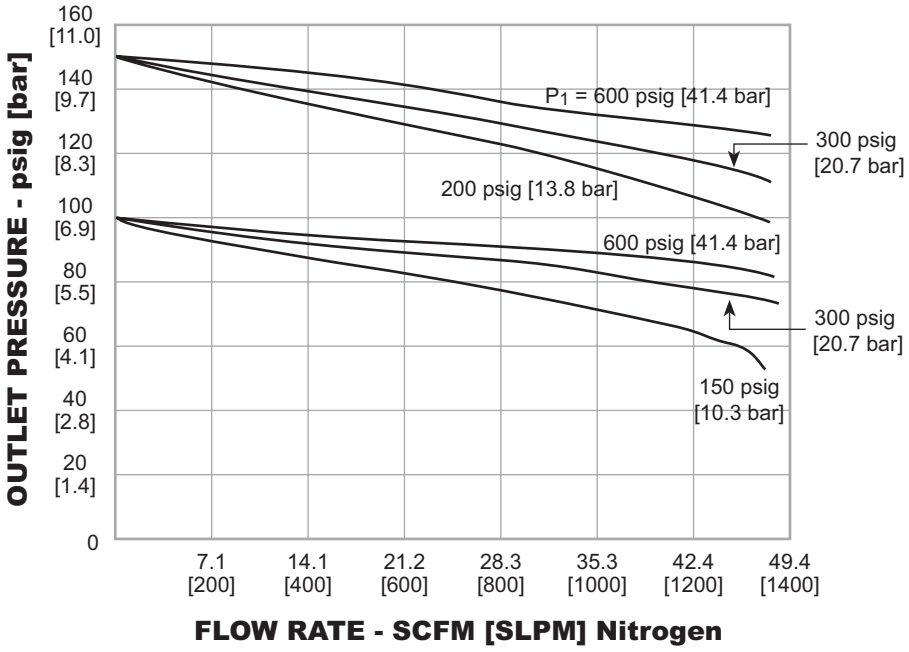


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

64-5400 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





64-5400 SERIES

64-5400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

64-54 6 2 K T6 1 0

BASIC SERIES	BODY MATERIAL	FINISH	OUTLET PRESSURE	SEAT MATERIAL	INLET AND OUTLET PORT TYPE AND SIZE	'A' ± .06"	MAXIMUM INLET PRESSURE	GAUGE PORT OPTION	NUMBER OF GAUGE PORTS (FIGURE)
64-54	**4 –** 316L Stainless Steel Electropolish[1]	10 R_a	**0 –** 30 psig 2.1 bar	**K –** PCTFE	**T6** – 3/8" Tube Stubs	3.70	**1 –** 600 psig 41.4 bar	**0 –** None	0 (A)
	6 – 316L VAR Stainless Steel Electropolish[2]	10 R_a	**1 –** 60 psig 4.1 bar	**T –** PTFE PFA	**T8** – 1/2" Tube Stubs	3.70		**1 –** 1/4" H.P.I.C.	1 (C)
			2 – 100 psig 6.9 bar		**RU** – 1/2" Male Swivel	5.59		**2 –** 1/4" H.P.I.C.	2 (B)
			3 – 150 psig 10.3 bar		**RW** – 1/2" Female Swivel	5.59			
					C6 – 3/8" Compression Fitting	6.42			
					C8 – 1/2" Compression Fitting	6.00			

1. Per ASTM B 912
2. Per SEMI F19, HP Grade

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600 or 3500 psig / 41.4 or 241 bar

Outlet Pressure Ranges
30, 60, or 100 psig / 2.1, 4.1, or 6.9 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
1 x 10^{-9} atm cc/sec He

Operating Temperature
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Vespel® Seat: -40°F to 350°F / -40°C to 177°C

Flow Capacity
C_V = 0.06 (3500 psig / 241 bar model)
C_V = 0.15 (600 psig / 41.4 bar model)

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel Electropolish

Diaphragm
316L Stainless Steel

Seat
PCTFE (Polyimide (Vespel®) Optional for 3500 psig / 241 bar model)

Valve Stem
316 Stainless Steel

Rear Seal
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(*Internal style of VCR®, compatible with male swivel VCR®*)

Cleaning
DI water electronic grade cleaned and ES 500 Particle Certified for internal electropolish models

Internal Volume
2.9 cc

Weight (without gauges)
2.0 lbs / 0.9 kg

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.

TESCOM 74-2400 Series ultra high purity, tied diaphragm pressure reducing regulator provides low internal volume and an internally springless and threadless design. The 74-2400 Series offers a 10 R_a surface finish and 316 Stainless Steel VAR. Inlet pressures are 600 or 3500 psig / 41.3 or 241 bar with outlet pressures up to 100 psig / 6.9 bar.

Applications

- 1/4" point-of-use
- Gas cabinets
- Semiconductor manufacturing
- Valve manifold boxes
- Research labs

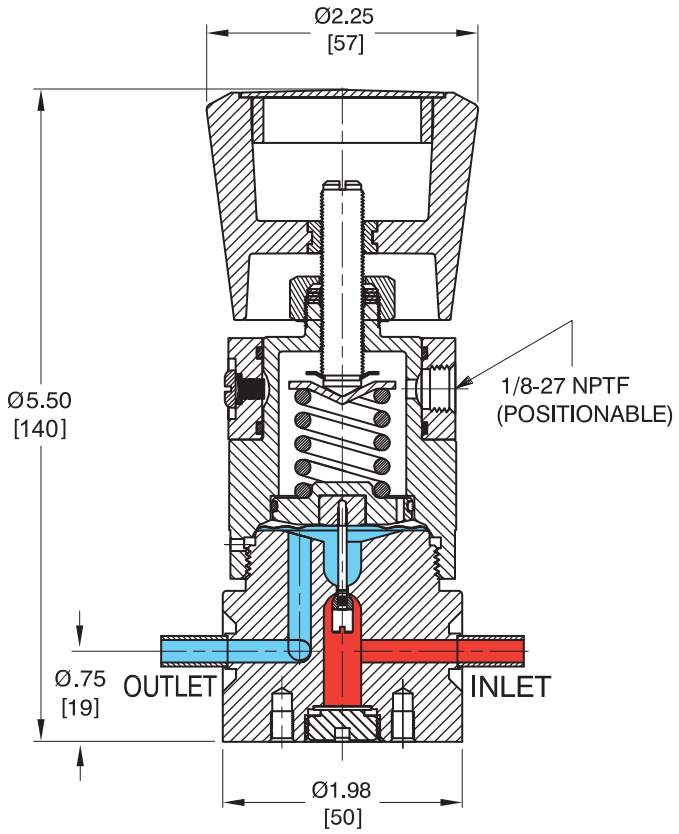
Features and Benefits

- Manufactured and tested using Total Quality tools including Statistical Process Control
- No internal springs and a low internal volume minimizes particle entrapment
- Metal-to-metal seal at diaphragm or body interface
- 10 R_a microinch / 0.25 micrometer finish is available

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

74-2400 Series Regulator Drawing



GAUGE PORT OPTIONS

Figure A (no gauges)

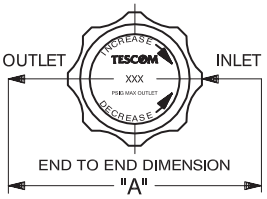
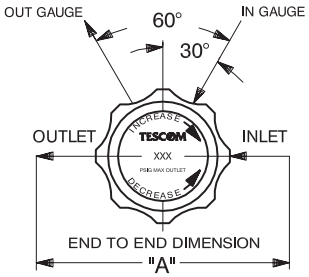


Figure B (2 gauges)



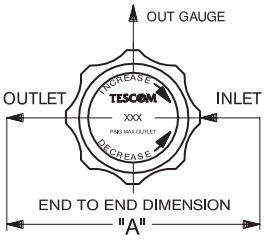


Figure C (1 gauge)

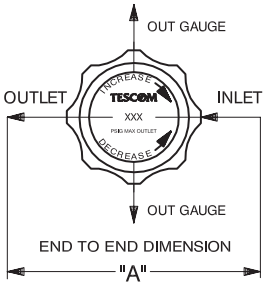
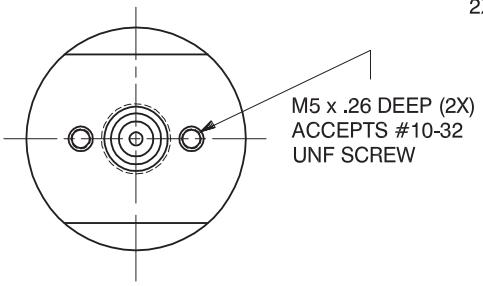
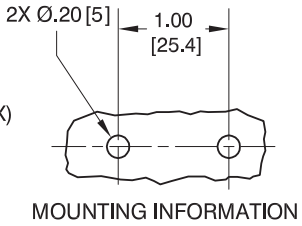


Figure D (2 gauges)



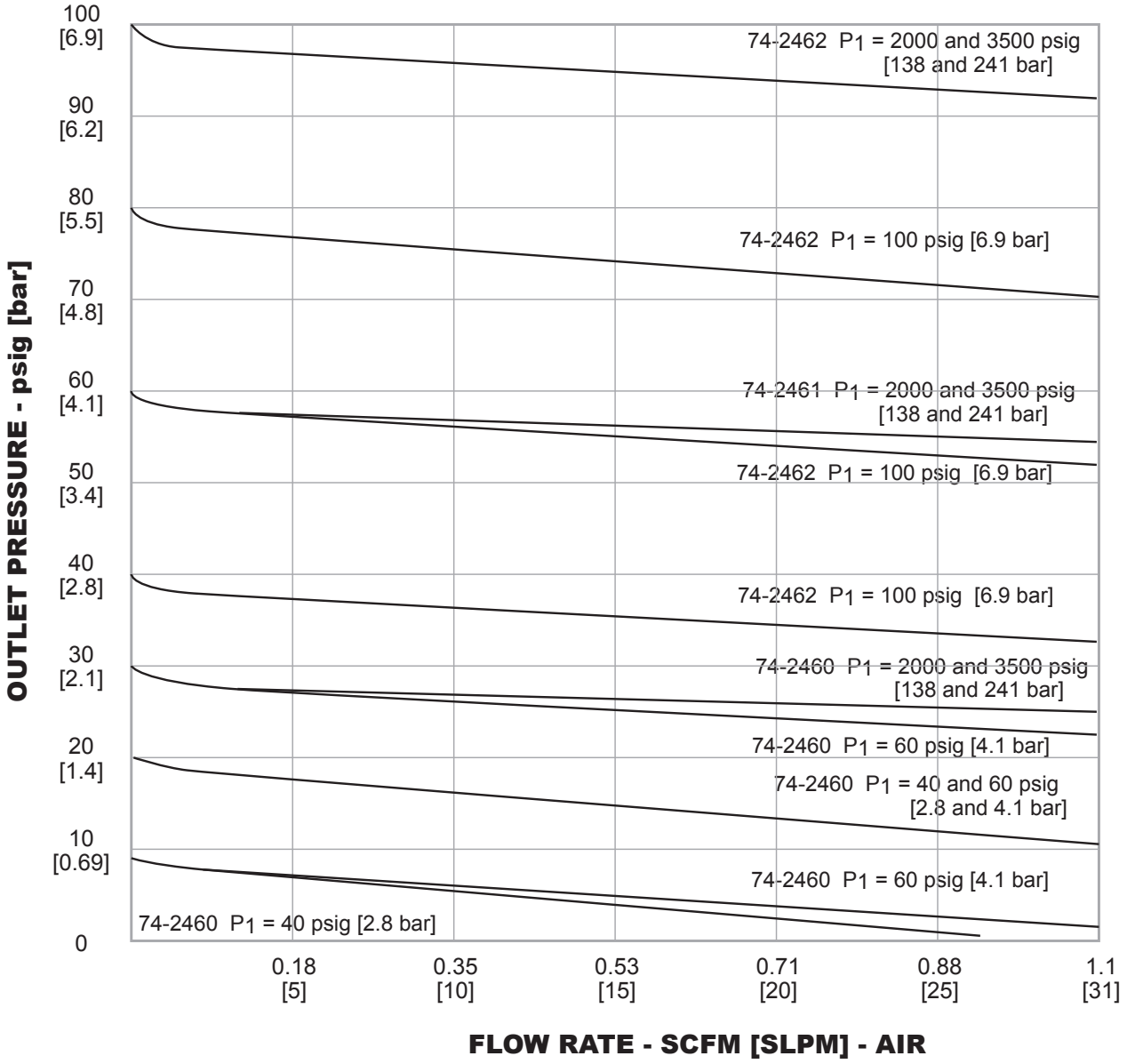


MOUNTING INFORMATION

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

74-2400 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



74-2400 SERIES

74-2400 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

74-24	6	2	K	A4	1	0

BASIC SERIES	BODY MATERIAL / FINISH	OUTLET PRESSURE RANGES	SEAT MATERIAL	INLET AND OUTLET PORT SIZE AND TYPE	'A' ± 0.06"	MAXIMUM INLET PRESSURE	GAUGE PORT OPTIONS	NUMBER OF GAUGE PORTS (FIGURE)
74-24	**6** – 316L VAR Stainless Steel Electropolish: 10 R_a[1]	**0** – 30 psig 2.1 bar	**K** – PCTFE (standard)	**A4** – 1/4" H.P.I.C.	1.09"	**1** – 3500 psig 241 bar	**0** – None	0 (Figure A)
		1 – 60 psig 4.1 bar	**V** – Polyimide (Vespel®) (3500 psig / 241 bar model only)	**RK** – 1/2" Male Swivel	4.75"	**2** – 600 psig 41.4 bar	**1** – 1/4" H.P.I.C.	1 (Figure C)
		2 – 100 psig 6.9 bar		**RL** – 1/2" Female Swivel	4.75"		**2** – 1/4" H.P.I.C.	2 (Figure B)
				RM – 1/4" Male Swivel	3.70"		**3** – 1/4" H.P.I.C.	2 (Figure D)
				RT – 1/4" Female Swivel	3.70"		**4** – 1/4" Male Swivel	2 (Figure D)
				RU – IN Port: 1/4" Male; OUT Port: 1/4" Female	3.70"		**5** – 1/4" Male Swivel	1 (Figure C)
				RV – IN Port: 1/4" Female; OUT Port: 1/4" Male	3.70"		**6** – 1/4" Male Swivel	2 (Figure B)
				T4 – 1/4" Tube Stubs	3.00"		**7** – 1/4" Female Swivel	2 (Figure D)
							8 – 1/4" Female Swivel	1 (Figure C)
							9 – 1/4" Female Swivel	2 (Figure B)
							S – 1/4" Fixed Male	2 (Figure B)
							T – 1/4" Fixed Male	1 (Figure C)
							U – 1/4" Fixed Male	2 (Figure D)

1. Per SEMI F19, UHP grade

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300, 600, 1000, or 3500 psig / 20.7, 41.4, 69.0, or 241 bar

Outlet Pressure Ranges
100 mm Hg absolute - 15 psig, 3-30, 3-60, 4-100, and 4-150 psig
100 mm Hg absolute - 1.0 bar, 0.21-2.1, 0.21-4.1, 0.28-6.9, and 0.28-10.3 bar

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Certified Maximum Inboard Leak Rate
<1 x 10^{-9} atm cc/sec He per ASTM E449

Operating Temperature:
Vespel® Seat: -40°F to 300°F / -40°C to 149°C
PCTFE Seat: -40°F to 140°F / -40°C to 60°C
Teflon® PFA Seat: -40°F to 160°F / -40°C to 71°C

Flow Capacity
C_V = 0.5

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel with Electropolish

Diaphragm
Nickel Alloy (Hastelloy®)

Stem, Seal and Remaining Parts
316 Stainless Steel

Valve Seat
3500 psig / 241 bar: Polyimide (Vespel®)
300 and 1000 psig / 20.7 and 69.0 bar: PCTFE
600 psig / 41.4 bar: PTFE PFA

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Cleaning
DI water electronic grade cleaned

Internal Volume
14 cc with 1/2" VCR®

Weight
3.2 lbs / 1.5 kg

Vespel® and Teflon® are registered trademarks of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.
Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM 74-3000 Series ultra high purity pressure reducing regulator offers 5 R_a or 10 R_a surface finishes, high flow C_V = 0.5 and an internally threadless and low internal volume design. Inlet pressures are 600, 1000, or 3500 psig / 41.3, 69, or 241 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- High flow purging systems
- 1/2" point-of-use
- Regulation of specialty gases
- Semiconductor manufacturing

Features and Benefits

- Compact, hand-loaded and pressure reducing
- Low internal volume
- Smooth unobstructed flow path for complete purging
- Internally threadless
- Absolute pressure range model is available
- Excellent leak integrity is created by metal-to-metal diaphragm to body seal

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

74-3000 SERIES

74-3000 Series Regulator Drawing

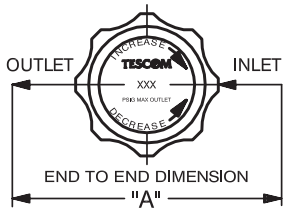


Figure A (no gauges)

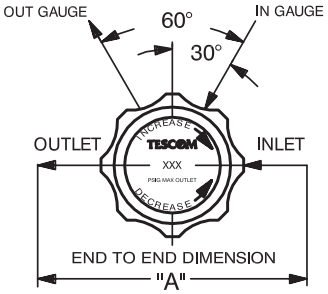


Figure B (2 gauges)

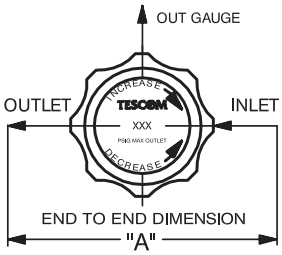


Figure C (1 gauge)

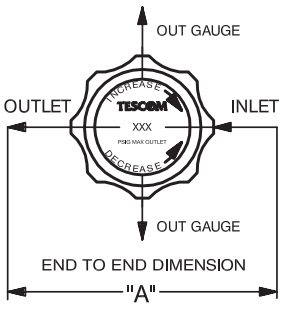
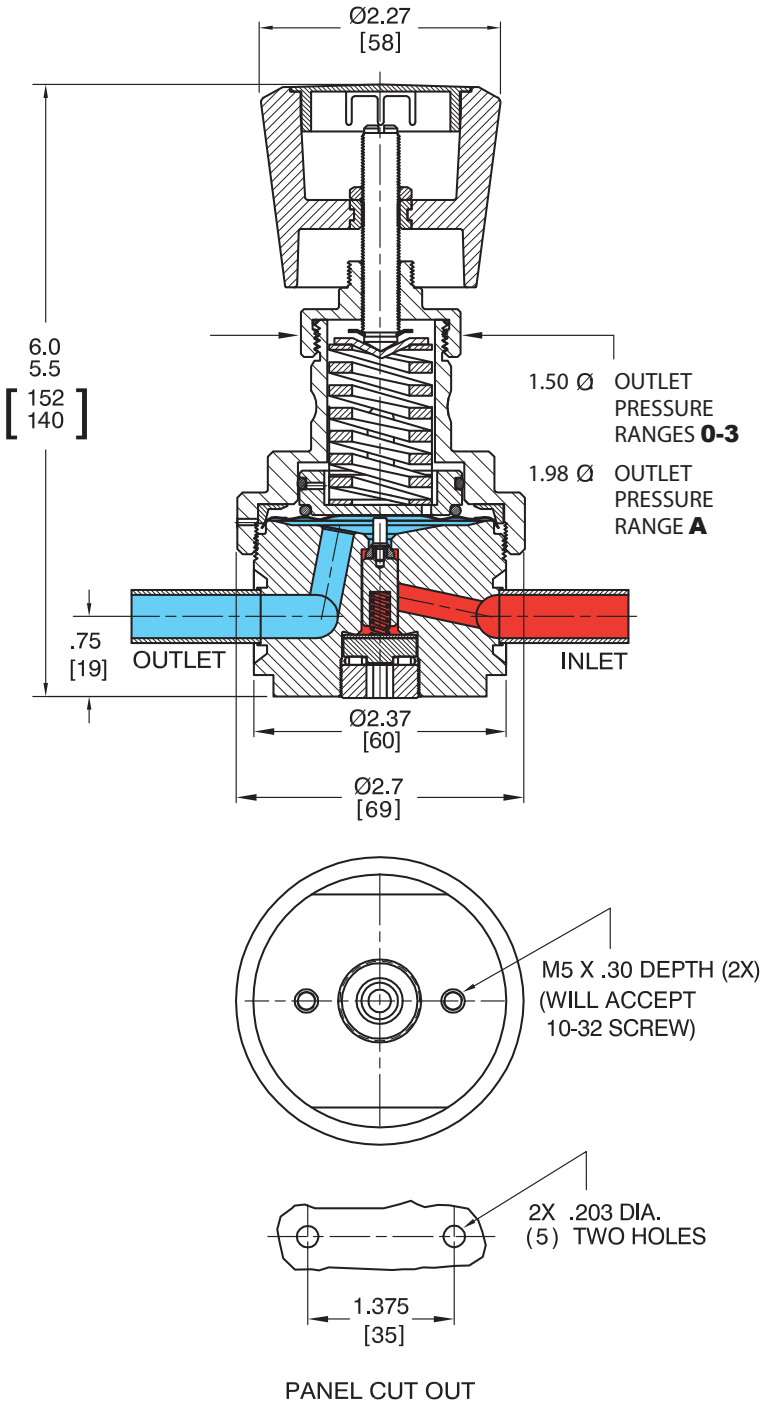


Figure D (2 gauges)

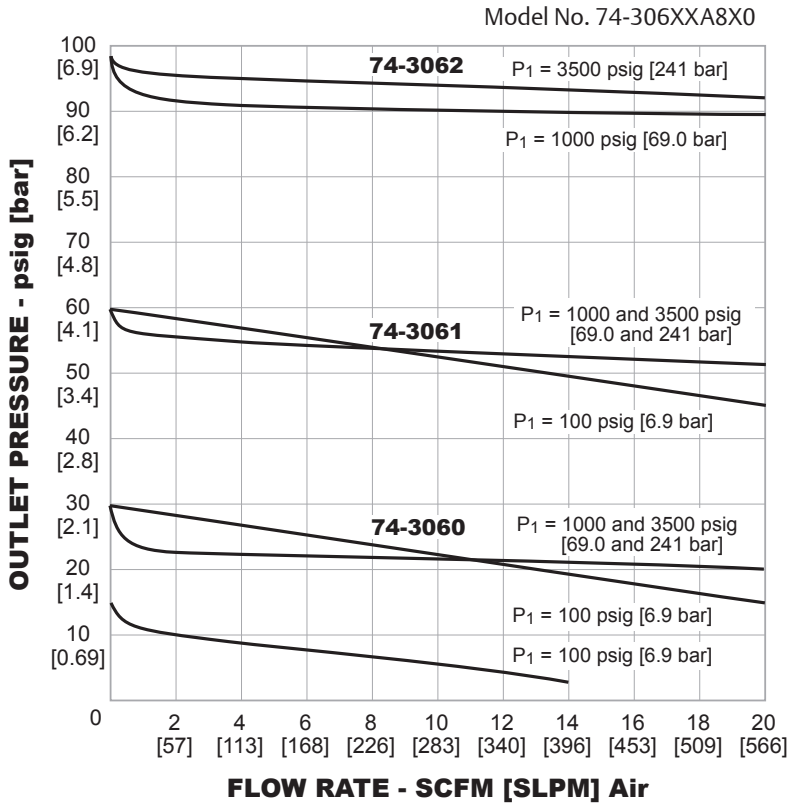


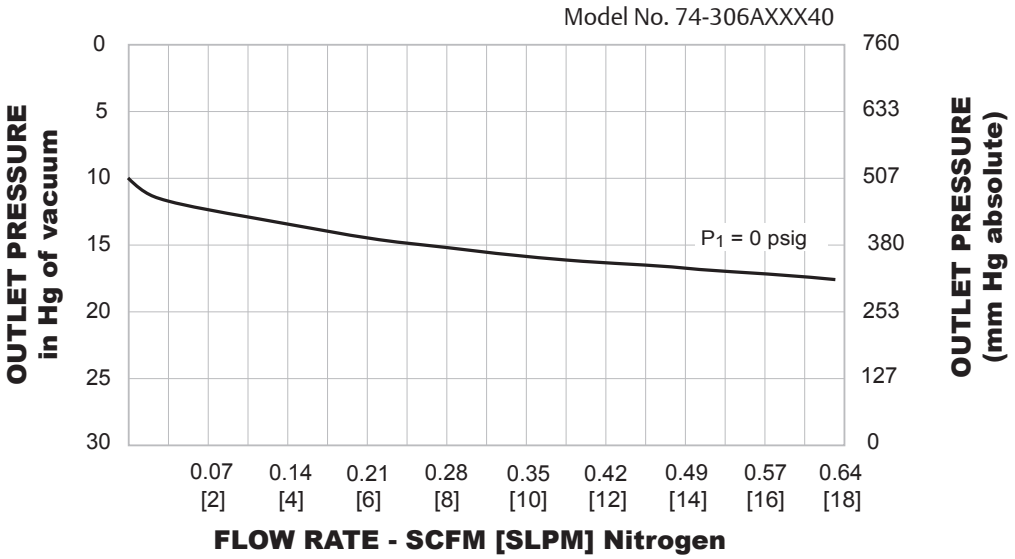
PANEL CUT OUT

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

74-3000 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





74-3000 SERIES

74-3000 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

74-30 6 2 K T6 2 0

BASIC SERIES	BODY MATERIAL	FINISH	OUTLET PRESSURE RANGES	SEAT MATERIAL	INLET AND OUTLET PORT TYPE AND SIZE	'A' ± .06"	MAXIMUM INLET PRESSURE	GAUGE PORT OPTION	NO. OF GAUGE PORTS (SEE FIGURE)
74-30	**6** – 316L VAR® Stainless Steel Electropolish[1]	10 R_a	**A** – 100 mm Hg absolute - 15 psig 100 mm Hg absolute - 1.0 bar	**V** – Polyimide (Vespel®) (3500 psig / 241 bar only)	**T4** – 1/4" Tube Stubs	3.70	**1** – 3500 psig 241 bar	**0** – None	0 (Figure A)
			0 – 3-30 psig 0.21-2.1 bar	**K** – PCTFE (not available with 3500 psig / 241 bar inlet)	**T6** – 3/8" Tube Stubs	3.70	**2** – 1000 psig 69.0 bar	**1** – 1/4" H.P.I.C.	1 (Figure C)
			1 – 3-60 psig 0.21-4.1 bar	**T** – PTFE PFA (600 psig / 41.4 bar only)	**T8** – 1/2" Tube Stubs	3.70	**3** – 600 psig 41.4 bar	**2** – 1/4" H.P.I.C.	2 (Figure B)
			2 – 4-100 psig 0.28-6.9 bar		**RA** – 1/4" Male Fixed	3.70	**4** – 300 psig 20.7 bar (Absolute only)	**3** – 1/4" H.P.I.C.	2 (Figure D)
			3 – 4-150 psig 0.28-10.3 bar		**RU** – 1/2" Male Swivel	5.59		**4** – 1/4" Male Swivel	2 (Figure D)
					RW – 1/2" Female Swivel	5.59		**5** – 1/4" Male Swivel	1 (Figure C)
					SV – IN Port:1/2" Male Swivel; OUT Port: 1/2" Female	5.59		**6** – 1/4" Male Swivel	2 (Figure B)
					SZ – IN Port:1/2" Female; OUT Port: 1/2" Male Swivel	5.59		**7** – 1/4" Female Swivel	2 (Figure D)
								8 – 1/4" Female Swivel	1 (Figure C)
								9 – 1/4" Female Swivel	2 (Figure B)
								S – 1/4" Fixed Male	2 (Figure B)
								T – 1/4" Fixed Male	1 (Figure C)
								U – 1/4" Fixed Male	2 (Figure D)

1. Per SEMI F19, UHP grade

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
600, 1000, 3500 psig / 41.4, 69.0, 241 bar

Outlet Pressure Ranges
30, 60, 100, 150 psig / 2.1, 4.1, 6.9, 10.3 bar

Design Proof Pressure
150% of maximum rated

Inboard Leak Rate
< 1 x 10^{-9} atm cc/sec He, per ASTM E449

Operating Temperature
Vespel®: -40°F to 350°F / -40°C to 177°C
PCTFE: -40°F to 140°F / -40°C to 60°C
Teflon® PFA: -40°F to 160°F / -40°C to 71°C

Flow Capacity
C_V = 0.5

MEDIA CONTACT MATERIALS

Body
316L VAR Stainless Steel with Electropolish

Diaphragm
316 Stainless Steel or Nickel Alloy (Hastelloy®)

Valve Seat
Polyimide (Vespel®) (3500 psig / 241 bar Inlet)
PCTFE (600, 100 psig / 41.4, 6.9 bar Inlet)
PTFE PFA (600 psig / 41.4 bar Inlet)

Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
10 R_a microinch / 0.25 micrometer

Connections
Welded female or male VCR®
Tube stubs
Compression
High Purity Internal Connections (H.P.I.C.)
(Internal style of VCR®, compatible with male swivel VCR®)

Internal Volume
15 cc

Weight (without gauges)
3.2 lbs / 1.5 kg

Teflon® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.
Hastelloy® is a registered trademark of Haynes International, Inc.

TESCOM 74-3800 Series ultra high purity, tied diaphragm pressure reducing regulator offers high flow and internally threadless and low internal volume design with C_V = 0.5. The 74-3800 Series is available with 10 R_a surface finish. Inlet pressures are 600, 1000, or 3500 psig / 41.3, 69, 241 bar with outlet pressures up to 150 psig / 10.3 bar.

Applications

- 1/2" point-of-use pressure regulator
- Gas cabinets
- High flow purging systems
- Semiconductor manufacturing

Features and Benefits

- Internally springless and threadless design
- Metal-to-metal diaphragm to body seal for high leak integrity
- Smooth unobstructed flow path allows for complete purging
- Positive shut-off seal, tied diaphragm design with positionable captured vent bonnet
- Hastelloy® trim option is available

NOTE:
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. It is important to make sure this effect does not cause the control pressure to exceed the pressure rating of the unit's outlet or that of the downstream system.

For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

74-3800 SERIES

74-3800 Series Regulator Drawing

FIGURE A (NO GAUGE)

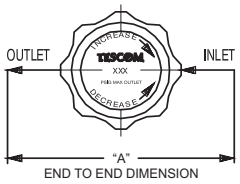
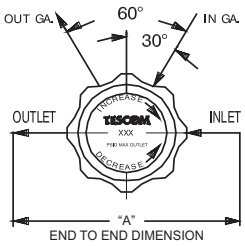


FIGURE B (2 GAUGES)



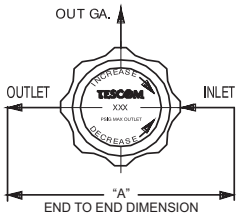


FIGURE C (1 GAUGE)

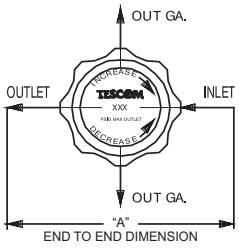
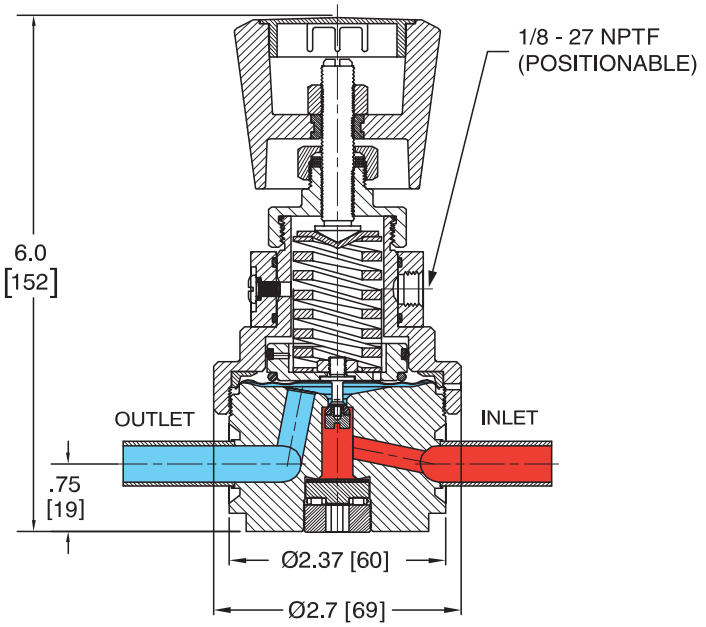
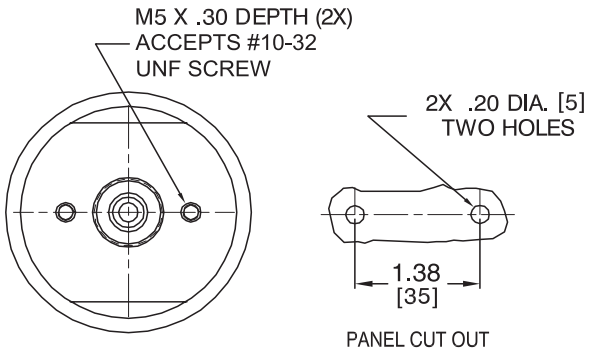


FIGURE D (2 OUTLET GAUGES)



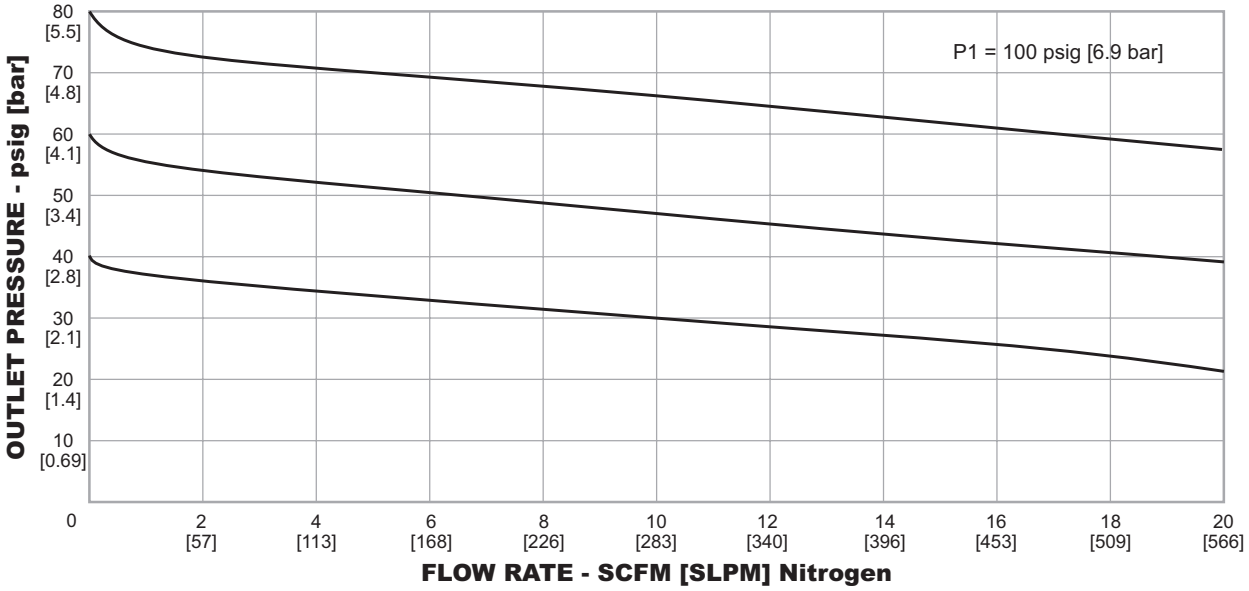


PANEL CUT OUT

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

74-3800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



74-3800 SERIES

74-3800 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

74-38	6	2	K	RW	1	0

BASIC SERIES	BODY MATERIAL	FINISH	OUTLET PRESSURE	SEAT MATERIAL	INLET AND OUTLET PORT SIZE AND TYPE	'A' ± .06"	INLET PRESSURE	GAUGE PORT OPTIONS	NUMBER OF GAUGE PORTS (FIGURE)
74 - 38	**6 –** 316L VAR Stainless Steel Electropolish	10 R_a[1]	**0 –** 30 psig 2.1 bar **1 –** 60 psig 4.1 bar **2 –** 100 psig 6.9 bar **3 –** 150 psig 10.3 bar	**V –** Polyimide (Vespel®) *(3500 psig / 241 bar only)* **K –** PCTFE *(600 and 1000 psig / 41.4 and 69.0 bar only)* **T –** PTFE PFA *(600 psig / 41.4 bar only)*	**C6 –** 3/8" Compression **C8 –** 1/2" Compression **RU –** 1/2" Male Swivel **RW–** 1/2" Female Swivel **T6 –** 3/8" Tube Stubs **T8 –** 1/2" Tube Stubs	6.42 6.00 5.59 5.59 3.70 3.70	**SST Trim** **1 –** 3500 psig 241 bar **2 –** 1000 psig 69.0 bar **3 –** 600 psig 41.4 bar **Hastelloy® Trim** **4 –** 1000 psig 69.0 bar **5 –** 3500 psig 241 bar **6 –** 600 psig 41.4 bar	**0 –** None **1 –** 1/4" H.P.I.C. **2 –** 1/4" H.P.I.C. **3 –** 1/4" H.P.I.C. **4 –** 1/4" Male Swivel **5 –** 1/4" Male Swivel **6 –** 1/4" Male Swivel **7 –** 1/4" Female Swivel **8 –** 1/4" Female Swivel **9 –** 1/4" Female Swivel	0 (Figure A) 1 (Figure C) 2 (Figure B) 2 (Figure D) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure D) 1 (Figure C) 2 (Figure B)

1. Per SEMI F19, HP grade

Regulators - Pressure Reducing DPH161979X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150, 0-250 psig
0-1.4, 0-3.4, 0-6.9, 0-10.3, 0-17.2 bar

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature
-20°F to 300°F / -28°C to 148°C

Flow Capacity
1/2" Port Size: C_V = 2.5
3/4" Port Size: C_V = 3.5
1 and 1-1/2" Port Size: C_V = 5.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Diaphragm
PTFE

Seat, Valve
Ethylene Propylene

O-Rings
Ethylene Propylene

Valve Spring
Cobalt Chrome Nickel Alloy (Eligiloy®)

Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
20 R_a, 30 R_a microinch / 0.63, 0.80 micrometer

Connections
Sanitary Fittings
Tube Ends
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
CGA 4.1 and ASTM G93 Clean Service Certificate of Conformance available

Weight
16 lbs / 7 kg

VCR® is a registered trademark of Cajon Co.
Gylon® is a registered trademark of Garlock, Inc.
Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

TESCOM PH-1600 Series is part of our Pharmpure™ product line. This high purity, high flow single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical applications. This regulator provides gas flows up to 400 SCFM / 11,320 SLPM. Its Gylon® diaphragm ensures gas purity and integrity.

Applications

- Clean steam for sanitization
- Vessel headspace pressurization

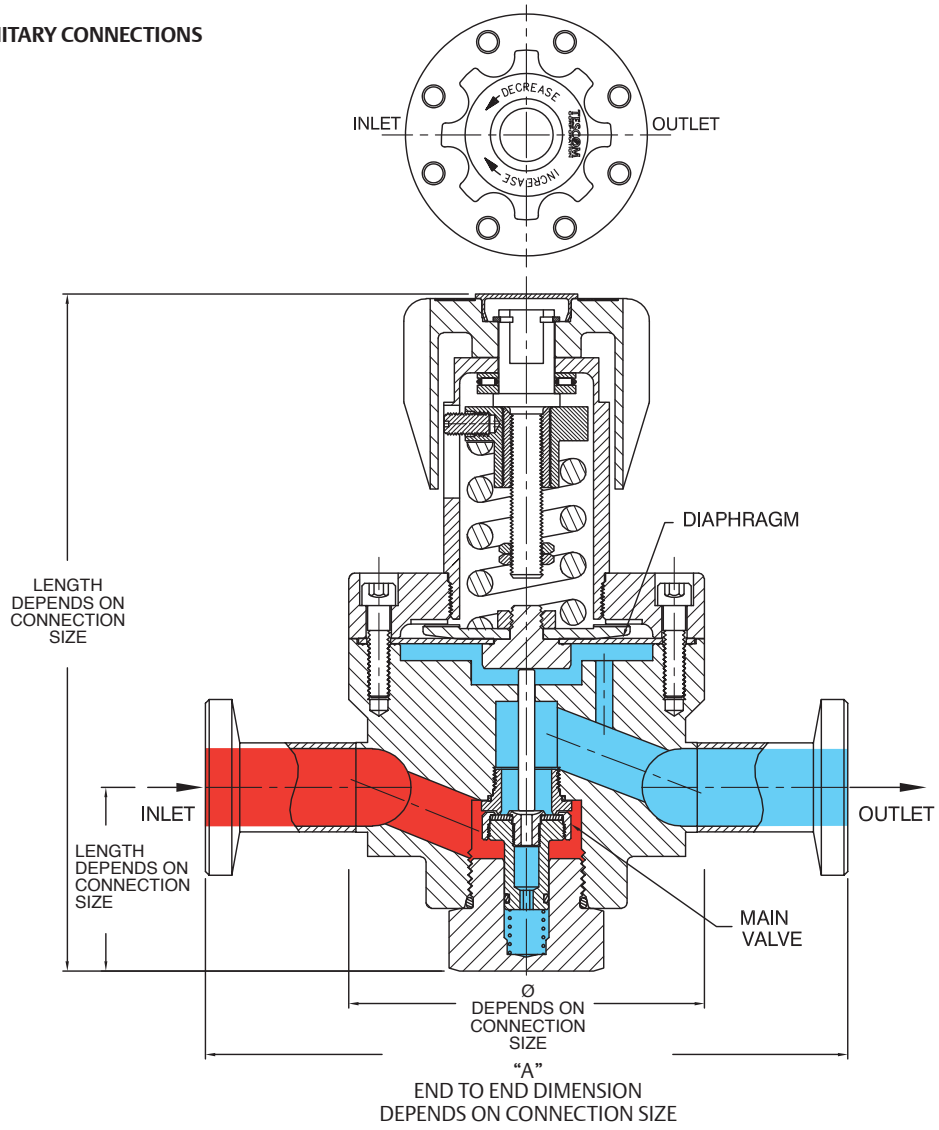
Features and Benefits

- Up to C_V = 5.0 flow capacity
- Gylon® diaphragm
- Low droop, high flow
- Five outlet pressure ranges
- Accurately regulates pressures up to 250 psig / 17.2 bar
- Welded sanitary connections and tube ends are available
- Soft goods USP Class VI compliant
- BPE 2009 compliant design

PH-1600 SERIES

PH-1600 Series Regulator Drawing

SHOWN WITH SANITARY CONNECTIONS

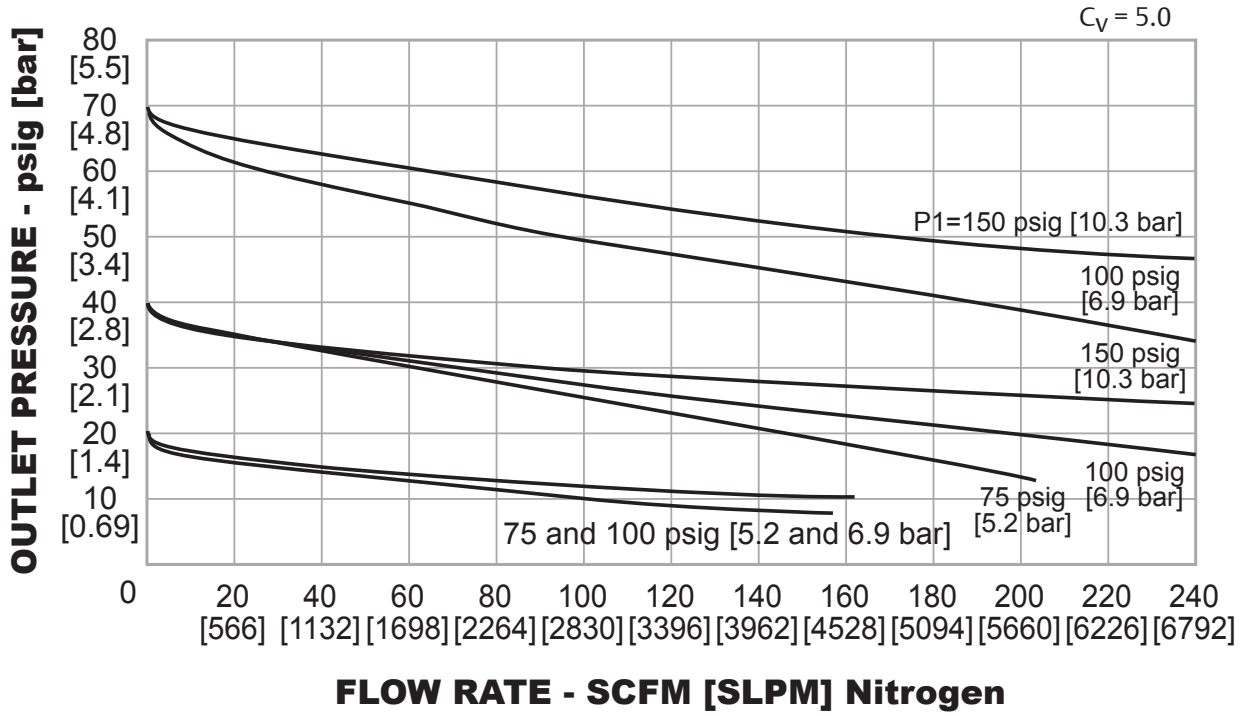


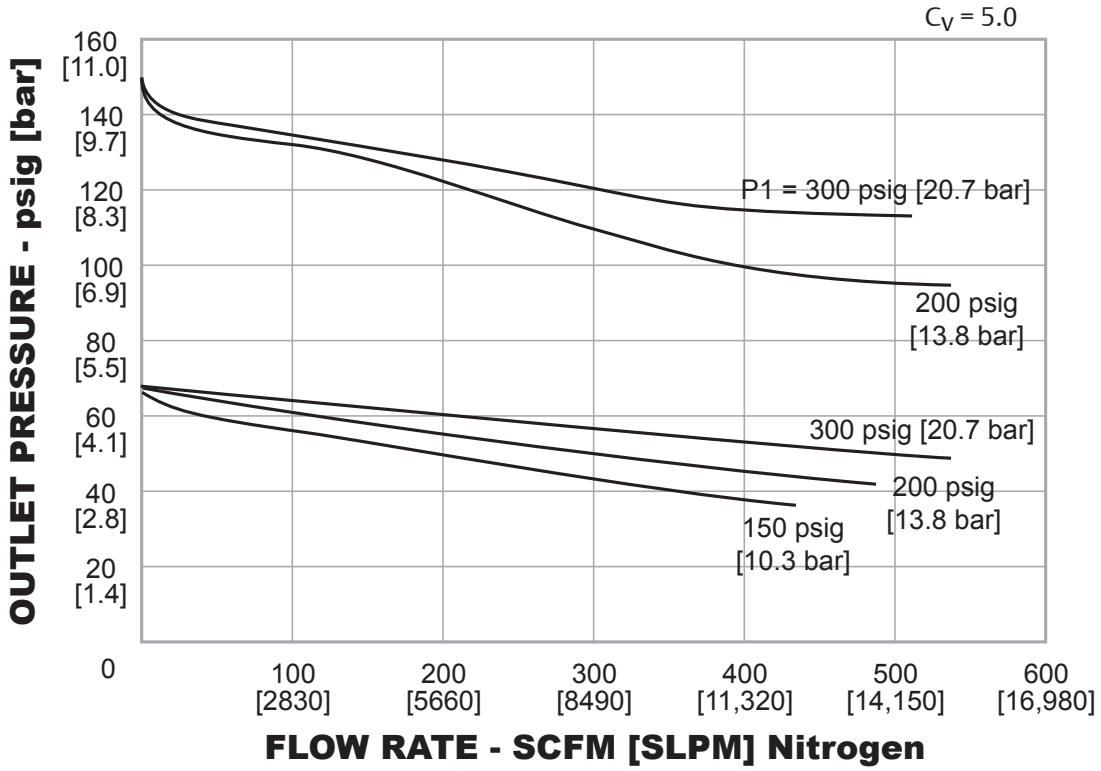
PART NUMBER	DIMENSION "A"	PART NUMBER	DIMENSION "A"
PH16XXXXXXAAX	7.25 / 7.13	PH16XXXXXX66X	9.91 / 9.79
PH16XXXXXXBBX	7.25 / 7.13	PH16XXXXXX77X	9.91 / 9.79
PH16XXXXXXCCX	7.25 / 7.13	PH16XXXXXX88X	9.91 / 9.79
PH16XXXXXXDDX	7.19 / 7.07	PH16XXXXXXWWX	9.91 / 9.79

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PH-1600 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





Note: Flow curves shown with 1" ports. Smaller ports will limit the maximum flow reached. Additional flow curves are available, please consult TESCOM.

PH-1600 SERIES

PH-1600 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

								INLET	OUTLET	GAUGE
PH16	**H**	**A**	**1**	**G**	**N**	**B**	**A**	**D**	**D**	**9**

BASIC SERIES	LOAD TYPE	BODY MATERIAL / BODY SURFACE FINISH	OUTLET PRESSURE	SOFT GOODS	VENT SEAT	CERTIFICATE OF CONFORMANCE	GAUGE PORT CONFIGURATION	INLET, OUTLET AND GAUGE PORTS
PH16	**D –** Dome load **H –** Spring load, handknob **W –** Spring load, wrench adjust	**A –** 316L Stainless Steel / 20 R_a SFV1 **C –** 316L Stainless Steel / 30 R_a SFV3	**0 –** 0-20 psig 0-1.4 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar **5 –** 0-250 psig 0-17.2 bar	**G – Diaphragm:** PTFE **O-rings:** E.P. **Seat:** E.P.	**N –** Non-Venting	**A –** None **B –** Clean Service Certificate	**A –** No gauge ports  **D –** One outlet gauge at 90° 	**A** – 1/2" Sanitary[1] **B** – 3/4" Sanitary[2] **C** – 1" Sanitary **D** – 1-1/2" Sanitary **6** – 1/2" Tube[1] **7** – 3/4" Tube[2] **8** – 1" Tube **W** – 1-1/2" Tube **Y** – 1/4" HPIC **9** – None

1. Port size limits regulator to $C_V = 2.5$
2. Port size limits regulator to $C_V = 3.5$

Regulators - Pressure Reducing

DPH181980X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar

Outlet Pressure Ranges
0-20, 0-50, 0-100, 0-150, 0-250 and 0-300 (Dome load only) psig
0-1.4, 0-3.4, 0-6.9, 0-10.3, 0-17.2 and 0-20.7 (Dome load only) bar

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature
-20°F to 300°F / -29°C to 149°C

Flow Capacity
C_V = 10.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Diaphragm
PTFE

Seat, Main Valve
Ethylene Propylene

O-Rings
Ethylene Propylene

Valve Spring
Cobalt Chrome Nickel Alloy (Eligiloy®)

Remaining Parts
316 Stainless Steel

OTHER

Internal Surface Finish
20 R_a, 30 R_a microinch / 0.51, 0.76 micrometer

Connections
Sanitary Fittings
Tube Ends
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
CGA 4.1 and ASTM G93
Clean Service Certificate of Conformance available

Weight (approximately)
35 lbs / 15.9 kg

Gylon® is a registered trademark of Garlock, Inc.
Elgiloy® is a registered trademark of Elgiloy Corp.

TESCOM PH-1800 Series is part of our Pharmpure™ product line. This high purity, high-flow single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical applications. This regulator offers gas flows of 5-2000 SCFM /142-56,634 SLPM. Its Gylon® diaphragm ensures gas purity and integrity.

Applications

- Clean steam for sanitization
- Vessel headspace pressurization

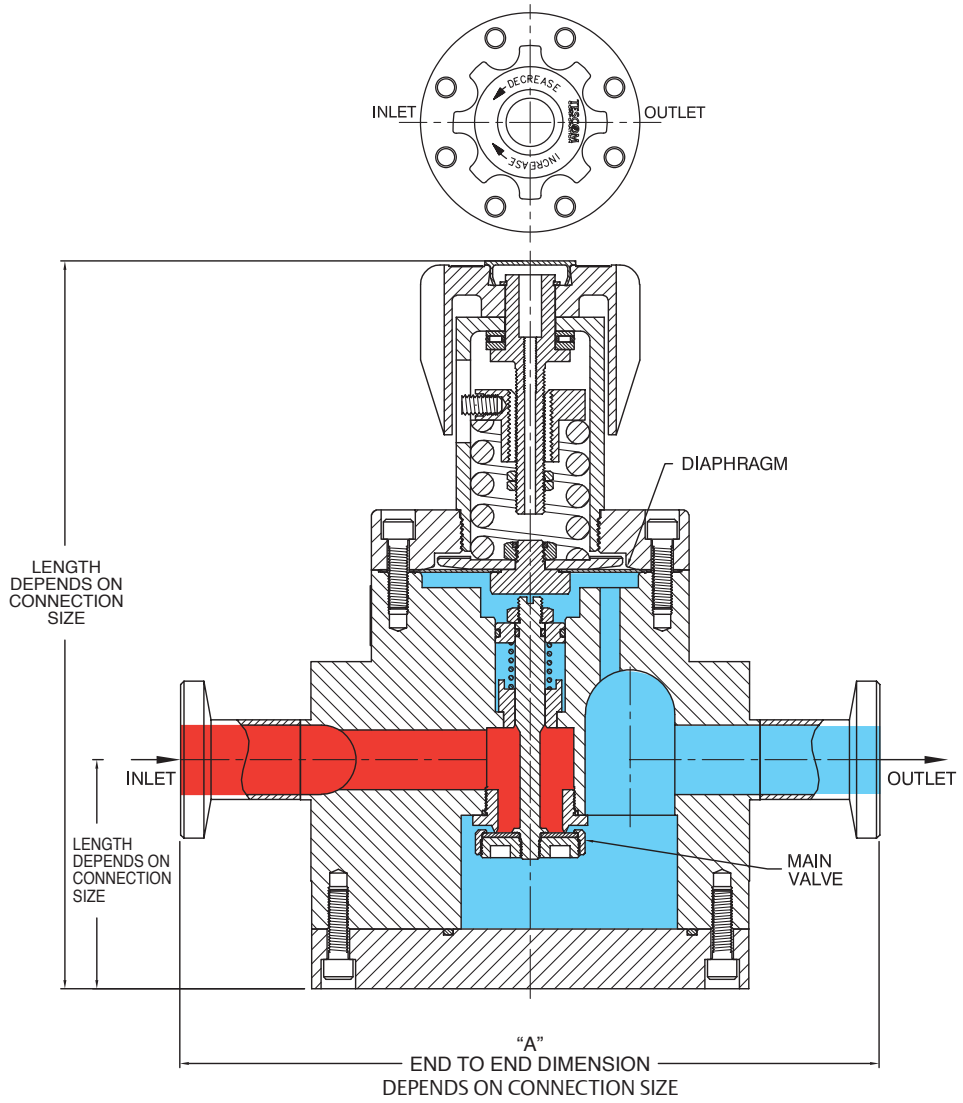
Features and Benefits

- Flow capacity C_V = 10.0
- Gylon® diaphragm
- Low droop, high-flow
- Five outlet pressure ranges
- Accurately regulates pressures up to 250 psig / 17.2 bar
- Welded sanitary connections and tube stubs are available
- Soft goods are USP Class VI compliant
- ASME BPE 2009 compliant design

PH-1800 SERIES

PH-1800 Series Regulator Drawing

SHOWN WITH SANITARY CONNECTIONS



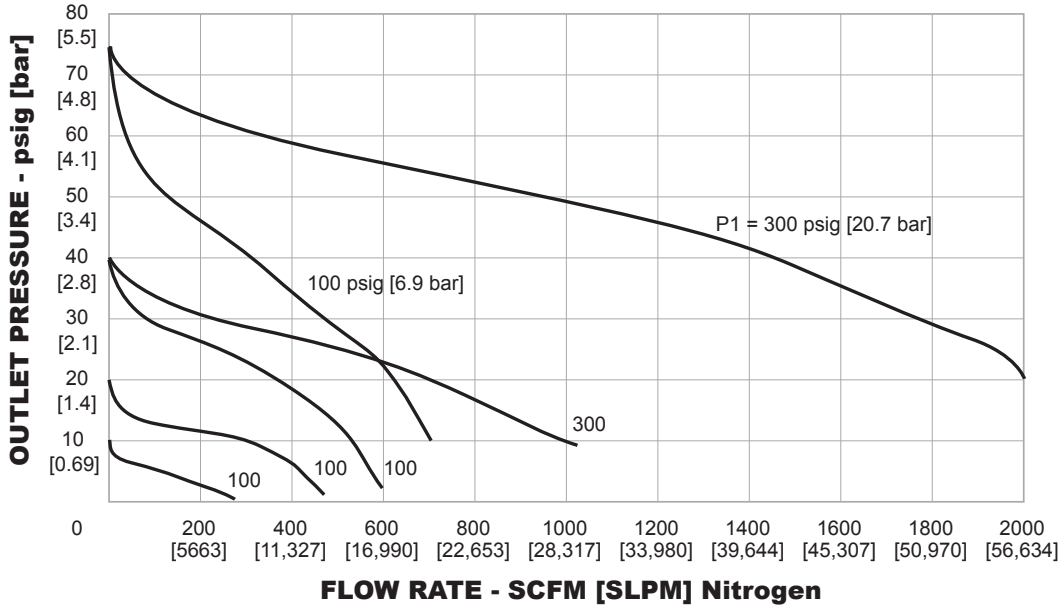
Part No.	Dimension "A"
PH18XXXXXXBBX	8.82/8.70
PH18XXXXXXCCX	8.82/8.70
PH18XXXXXXDDX	8.82/8.70
PH18XXXXXXEEX	8.66/8.54

Part No.	Dimension "A"
PH18XXXXXX77X	11.56/11.44
PH18XXXXXX88X	11.56/11.44
PH18XXXXXXWWX	11.56/11.44

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PH-1800 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



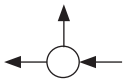
PH-1800 SERIES

PH-1800 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

PH-18	H	A	1	G	N	B	A	D D 9

BASIC SERIES	LOAD TYPE	BODY MATERIAL / BODY SURFACE FINISH	OUTLET PRESSURE	SOFT GOODS	VENT SEAT	CERTIFICATE OF CONFORMANCE	GAUGE PORT CONFIGURATION	INLET, OUTLET, AND GAUGE PORTS
PH-18	**D** – Dome load **H** – Spring load (handknob)	**A** – 316L Stainless Steel / 20 R_a SFV1 **C** – 316L Stainless Steel / 30 R_a SFV3	**0** – 0-20 psig 0-1.4 bar **1** – 0-50 psig 0-3.4 bar **2** – 0-100 psig 0-6.9 bar **3** – 0-150 psig 0-10.3 bar **5** – 0-250 psig 0-17.2 bar **D** – 0-300 psig 0-20.7 bar (Dome load only)	**G** – Diaphragm: PTFE O-Rings: E.P. Seat: E.P.	**N** – Non-venting	**A** – None **B** – Clean Service Certificate	**A** – No gauge ports  **D** – One outlet gauge at 90° 	**B** – 3/4" Sanitary[1] **C** – 1" Sanitary **D** – 1-1/2" Sanitary **E** – 2" Sanitary **7** – 3/4" Tube[1] **8** – 1" Tube **W** – 1-1/2" Tube **Y** – 1/4" HPIC **9** – None

1. Port size limits regulator to C_V = 6.5

Regulators - Pressure Reducing

DPH221972X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
150 psig / 10.3 bar

Outlet Pressure Ranges
Spring (handknob)
0-10, 0-25, 0-50, and 0-100 psig
0-0.69, 0-1.7, 0-3.4, and 0-6.9 bar
Spring Bias and Dome
0-100 psig / 0-6.9 bar *(See Part Number Selector for more details)*

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: designed to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature (media only)
Teflon® Seat: -40°F to 165°F / -40°C to 74°C
PEEK-OPTIMA® or PEEK-Classix® Seat: -40°F to 400°F / -40°C to 204°C

Flow Capacity
C_V = 0.06, 0.15, and 0.24

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Seat
PTFE, PEEK-OPTIMA®, PEEK-Classix®

Friction Sleeve
Inner: PTFE
Outer: 316 Stainless Steel

Valve Guide
316 Stainless Steel

Diaphragm
316 Stainless Steel

Seat Retainer
Nitronic 60

Remaining Parts
316 Stainless Steel

OTHER

Connections
Sanitary Fittings
Tube Ends
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
CGA 4.1 and ASTM G93, Clean Service Certificate of Conformance available

Weight (approximately)
2.0 lbs / 0.9 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
PEEK-OPTIMA® is a registered trademark of Invibio Ltd.
PEEK-Classix® is a registered trademark of Invibio Ltd.

TESCOM PH-2200 Series is part of our Pharmpure™ product line. This high purity single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for specialty, corrosive, and pyrophoric gases of < 5 SCFM / 142 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

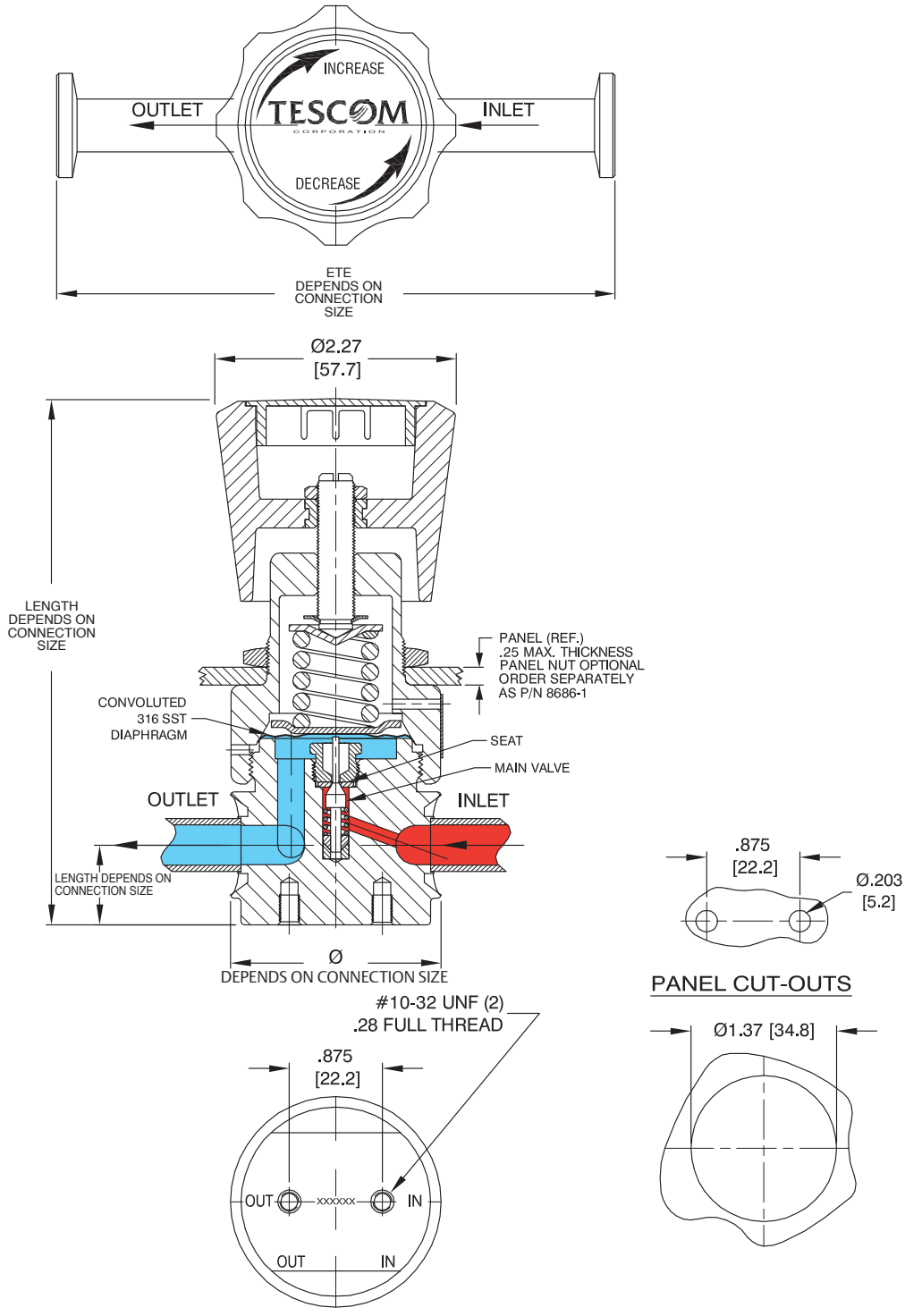
- Sparge gases
- Clean steam for sanitization
- Transfer panels
- Low flow specialty gas

Features and Benefits

- 316L Stainless Steel barstock regulator body design
- FDA/USP compliant designs are available
- Clean Service Certification of Compliance is available: Includes actual material certification, weld records, and bill of materials
- 15 or 32 R_a microinch / 0.38 or 0.81 micrometer body surface finish is standard
- Precise pressure control
- Gauge port is available
- ASME BPE 2009 compliant design

PH-2200 SERIES

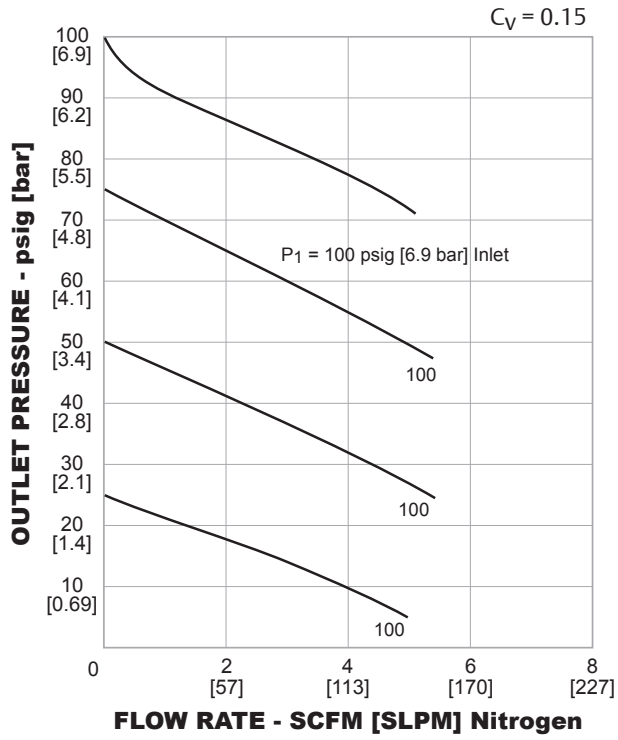
PH-2200 Series Regulator Drawing

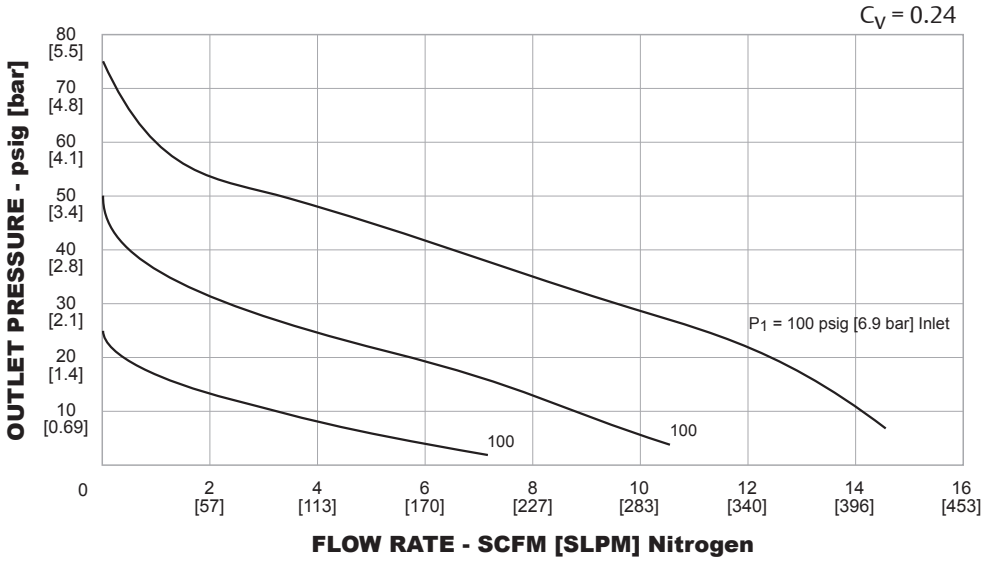


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PH-2200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



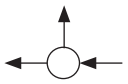


PH-2200 SERIES

PH-2200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

PH-22	A				2		8	8	1	0	B
BASIC SERIES	**BODY MATERIAL**	**BODY SURFACE FINISH**	**SEAT MATERIAL**	**VALVE SPRING**	**LOAD TYPE**	**OUTLET PRESSURE**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE WALL THICKNESS**	**FLOW CAPACITY**	**GAUGE PORT OPTIONS**	**CERTIFICATE OF CONFORMANCE**
PH-22	**A** – 316L Stainless Steel	15 R_a	PTFE	316 Stainless Steel	**0** – Spring	0-10 psig 0-0.69 bar	**8** – Sanitary	**6** – 3/8" (Tube Only) 0.375" OD x 0.035" wall	**1** – C_V = 0.06	**0** – No gauge ports	**A** – None
					1 – Spring	0-25 psig 0-1.7 bar	**9** – Tube	**8** – 1/2" 0.500" OD x 0.065" wall	**2** – C_V = 0.15		**B** – Clean Service Certification
	B – 316L Stainless Steel	15 R_a	Arlon® (PEEK)	Cobalt Chrome Nickel Alloy (Eligiloy®)	**2** – Spring	0-50 psig 0-3.4 bar			**4** – C_V = 0.24	**2** – One 1/4" HPIC outlet gauge port at 90°	
					3 – Spring	0-100 psig 0-6.9 bar					
					4 – Spring Bias 0-50 psig / 0-3.4 bar Spring Bias Pressure	0-100 psig 0-6.9 bar					
	C – 316L Stainless Steel	32 R_a	PTFE	316 Stainless Steel							
					5 – Spring Bias 0-100 psig / 0-6.9 bar Spring Bias Pressure	0-100 psig 0-6.9 bar					
	D – 316L Stainless Steel	32 R_a	Arlon® (PEEK)	Cobalt Chrome Nickel Alloy (Eligiloy®)							
					6 – Dome	0-100 psig 0-6.9 bar					

Regulators - Pressure Reducing

DPH261977X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
150 psig / 10.3 bar

Outlet Pressure Ranges
Spring (handknob)
0-10, 0-25, 0-50, 0-100, and 0-150 psig
0-0.69, 0-1.7, 0-3.4, 0-6.9, and 0-10.3 bar
Spring Bias and Dome
0-100 psi / 0-6.9 bar *(See Part Number Selector for more details)*

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: designed to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature (media only)
Teflon® Seat: -40°F to 165°F / -40°C to 74°C
PEEK-OPTIMA® or PEEK-Classix® Seat: -40°F to 400°F / -40°C to 204°C

Flow Capacity
C_V = 0.02, 0.06, 0.15, and 0.24

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Seat
PTFE or PEEK-OPTIMA®, PEEK-Classix®

Friction Sleeve
Inner: PTFE
Outer: 316 Stainless Steel

Valve Guide
316 Stainless Steel

Diaphragm
316 Stainless Steel

Seat Retainer
Nitronic 60

Remaining Parts
316 Stainless Steel

OTHER

Connections
Sanitary Fittings
Tube Ends
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
CGA 4.1 and ASTM G93, Clean Service Certificate of Conformance available

Weight (approximately)
2.0 lbs / 0.9 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
PEEK-OPTIMA® is a registered trademark of Invibio Ltd.
PEEK-Classix® is a registered trademark of Invibio Ltd.

TESCOM PH-2600 Series is part of our Pharmpure™ product line. This high purity single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for specialty, corrosive, and pyrophoric applications. This regulator offers gas flows of <10 SCFM / 283 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

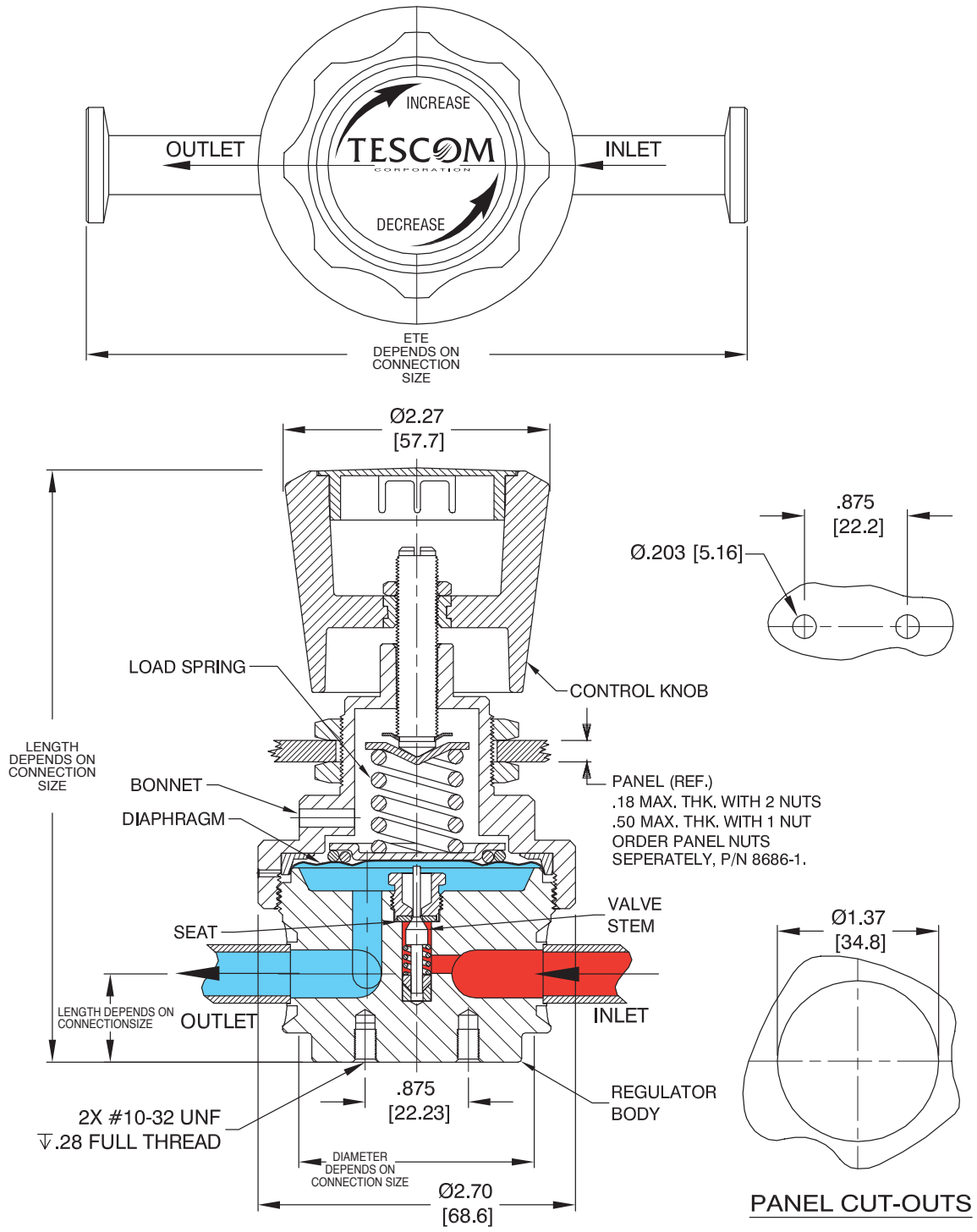
- Sparge gases
- Clean steam for sanitization
- Transfer panels
- Low flow specialty gas

Features and Benefits

- 316L Stainless Steel barstock regulator body design
- FDA/USP compliant designs are available
- Clean Service Certification of Compliance available: Includes actual material certification, weld records, and bill of materials
- 15 or 32 R_a microinch / 0.38 or 0.81 micrometer body surface finishes are available
- Precise pressure control
- Gauge port is available
- ASME BPE 2009 compliant design

PH-2600 SERIES

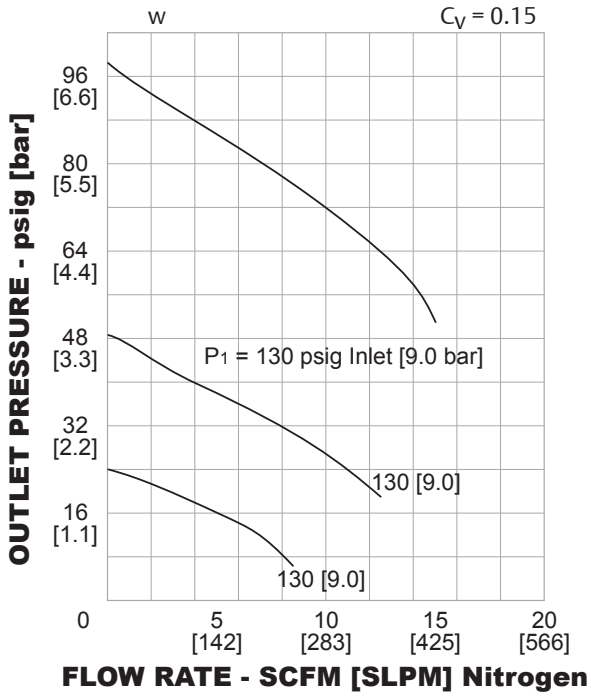
PH-2600 Series Regulator Drawing

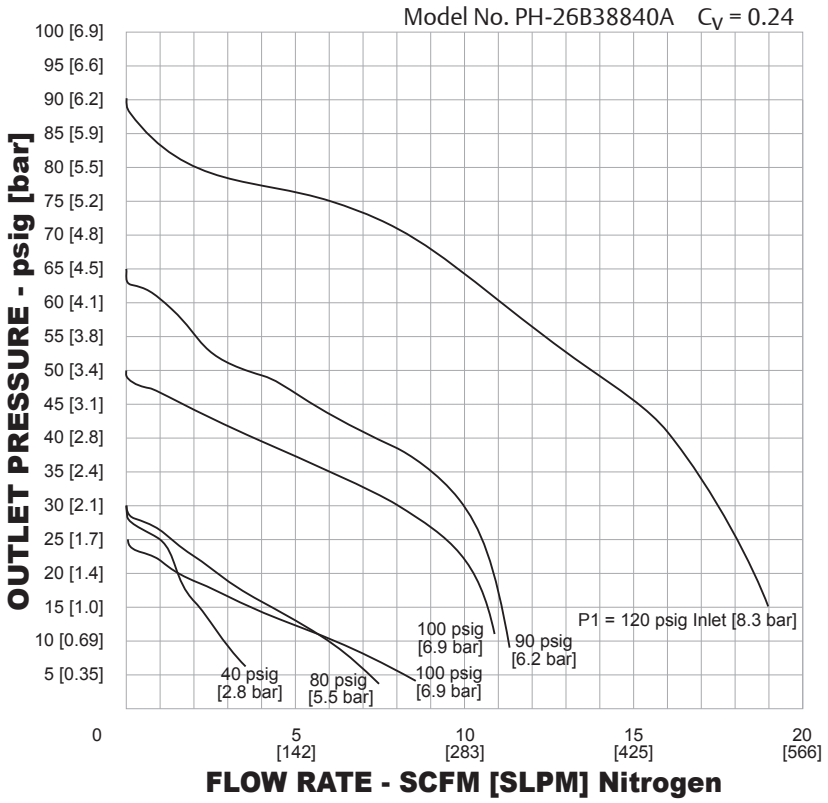


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PH-2600 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



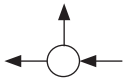


PH-2600 SERIES

PH-2600 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

PH-26	A				1		8	8	2	0	B
BASIC SERIES	**BODY MATERIAL**	**BODY SURFACE FINISH**	**SEAT MATERIAL**	**VALVE SPRING**	**LOAD TYPE**	**OUTLET PRESSURE**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE WALL THICKNESS**	**FLOW CAPACITY**	**GAUGE PORT OPTIONS**	**CERTIFICATE OF CONFORMANCE**
PH-26	**A –** 316L Stainless Steel	15 R_a	PTFE	316 Stainless Steel	**0 –** Spring	0-10 psig 0-0.69 bar	**8 –** Sanitary	**6 –** 3/8" (Tube Only) 0.375" OD x 0.035" wall	**0 –** C_V = 0.02	**0 –** No gauge ports 	**A –** None
	B – 316L Stainless Steel	15 R_a	PTFE	Cobalt Chrome Nickel Alloy (Eligiloy®)	**1 –** Spring	0-25 psig 0-1.7 bar	**9 –** Tube	**8 –** 1/2" 0.500" OD x 0.065" wall	**1 –** C_V = 0.06		**B –** Clean Service Certification
	C – 316L Stainless Steel	32 R_a	PTFE	316 Stainless Steel	**2 –** Spring	0-50 psig 0-3.4 bar			**2 –** C_V = 0.15	**2 –** One 1/4" HPIC outlet gauge port at 90° 	
	D – 316L Stainless Steel	32 R_a	PEEK	Cobalt Chrome Nickel Alloy (Eligiloy®)	**3 –** Spring	0-100 psig 0-6.9 bar			**4 –** C_V = 0.24		
					4 – Spring Bias 0-50 psig / 0-3.4 bar Spring Bias Pressure	0-100 psig 0-6.9 bar					
					5 – Spring Bias 0-100 psig / 0-6.9 bar Spring Bias Pressure	0-100 psig 0-6.9 bar					
					6 – Dome	0-100 psig 0-6.9 bar					

Regulators - Pressure Reducing

DPH321978X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
500 psig / 34.5 bar

Outlet Pressure Ranges
0-25, 0-50, 0-100, 0-150 psig / 0-1.7, 0-3.4, 0-6.9, 0-10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: ANSI Class VI Shutoff
External: designed to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature (media only)
Teflon® Seat: -40°F to 165°F / -40°C to 74°C
PEEK-OPTIMA® or PEEK-Classix® Seat: -40°F to 400°F / -40°C to 204°C

Flow Capacity
C_V = 1.8, 1.0

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Seat
PTFE, PEEK-OPTIMA®, PEEK-Classix®

O-Ring
Ethylene Propylene

Diaphragm
316 Stainless Steel

Seat Retainer
Nitronic 60

Remaining Parts
316 Stainless Steel

OTHER

Connections
Sanitary Fittings
Tube Ends
High Purity Internal Connections (H.P.I.C.) (gauge port only)

Cleaning
CGA 4.1 and ASTM G93, Clean Service Certificate of Compliance available

Weight (approximately)
3.5 lbs / 1.6 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
PEEK-OPTIMA® is a registered trademark of Invibio Ltd.
PEEK-Classix® is a registered trademark of Invibio Ltd.

TESCOM PH-3200 Series is part of our Pharmpure™ product line. This high purity high flow single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical applications. This regulator offers gas flows of 5-50 SCFM / 142-1416 SLPM. Diffusion-resistant metal-to-metal diaphragm seal ensures gas purity and integrity.

Applications

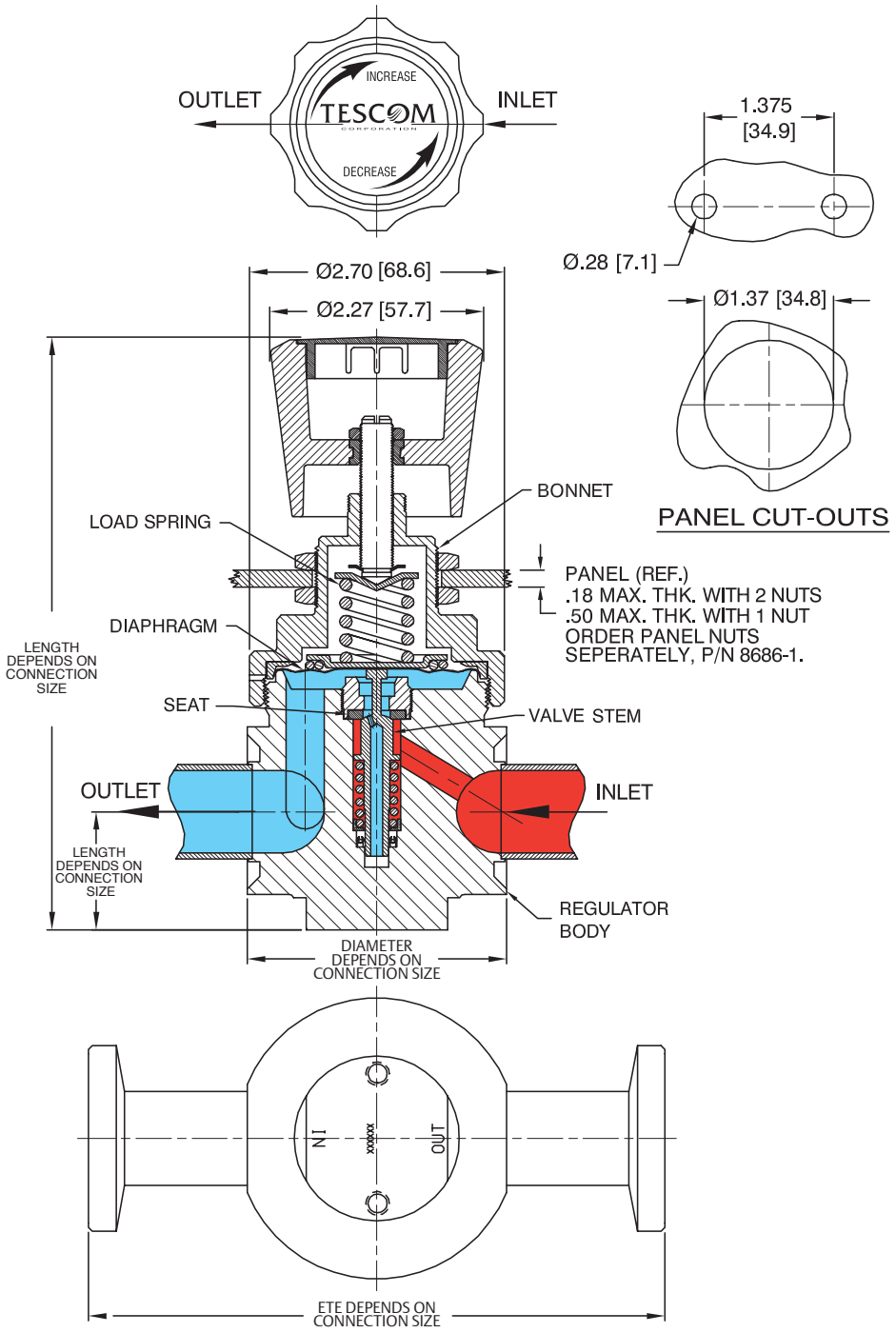
- Sparge gases
- Clean steam for sanitization
- Transfer panels

Features and Benefits

- 316L Stainless Steel barstock regulator body design
- FDA/USP compliant designs are available
- Clean Service Certification of Compliance is available: Includes actual material certification, weld records, and bill of materials
- 15 or 32 R_a microinch / 0.38 or 0.81 micrometer body surface finish standard
- Precise pressure control
- Gauge port is available
- ASME BPE 2009 compliant design

PH-3200 SERIES

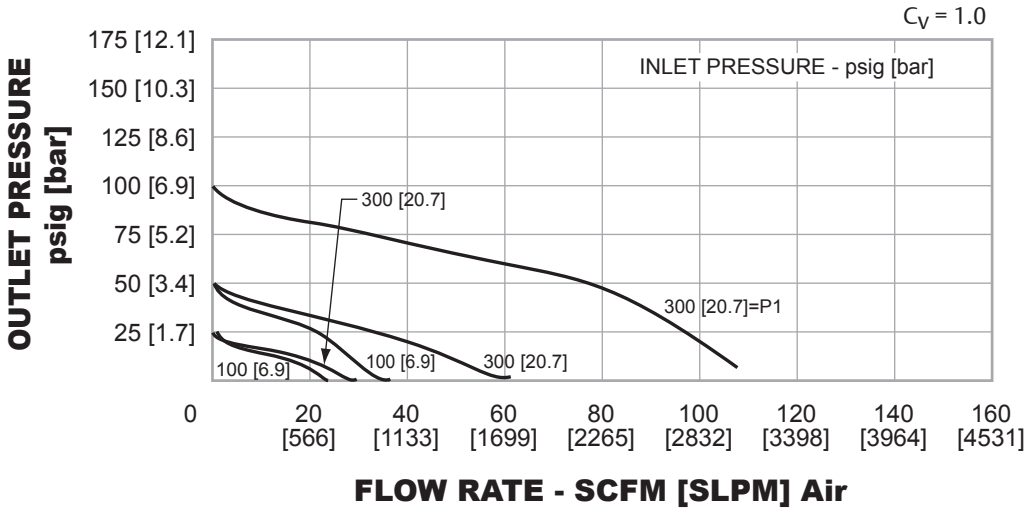
PH-3200 Series Regulator Drawing

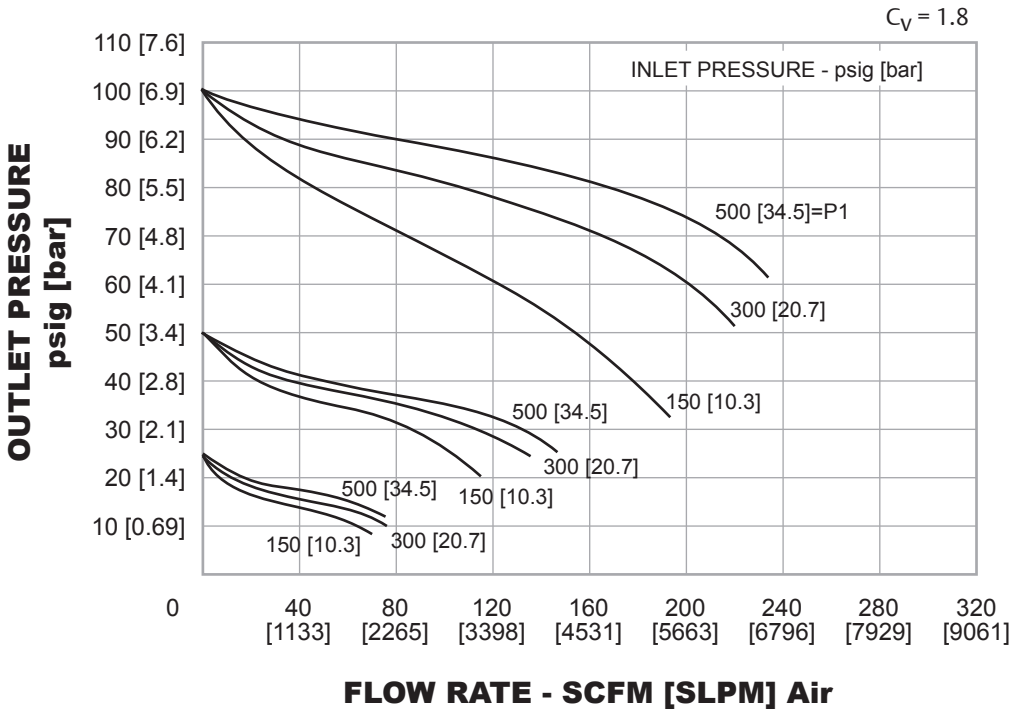


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

PH-3200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



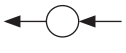
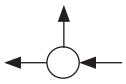


PH-3200 SERIES

PH-3200 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

PH-32	A				0		8	08	3	0	B
BASIC SERIES	**BODY MATERIAL**	**BODY SURFACE FINISH**	**SEAT MATERIAL**	**SEAL MATERIAL**	**LOAD TYPE**	**OUTLET PRESSURE**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE WALL THICKNESS**	**FLOW CAPACITY**	**GAUGE PORT OPTIONS**	**CERTIFICATE OF CONFORMANCE**
PH-32	**A –** 316L Stainless Steel	15 R_a	PTFE	E.P. O-Ring	**0 –** Spring	0-25 psig 0-1.7 bar	**8 –** Sanitary	**08 –** 1/2" 0.500" OD x 0.065" wall	**2 –** C_V = 1.8	**0 –** No gauge ports 	**A –** None
	B – 316L Stainless Steel	15 R_a	PEEK	E.P. O-Ring	**1 –** Spring	0-50 psig 0-3.4 bar	**9 –** Tube	**12 –** 3/4" 0.750" OD x 0.065" wall	**3 –** C_V = 1.0	**1 –** One 3/4" sanitary outlet gauge port at 90°	**B –** Clean Service Certification
	C – 316L Stainless Steel	32 R_a	PTFE	E.P. O-Ring	**2 –** Spring	0-100 psig 0-6.9 bar				**2 –** One 1/4" HPIC outlet gauge port at 90° 	
	D – 316L Stainless Steel	32 R_a	PEEK	E.P. O-Ring	**3 –** Spring	0-150 psig 0-10.3 bar					

Backpressure Selection Guide

CONTROL PRESSURE RATING	C_v	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
15,000 psig / 1034 bar	0.08	Spring, Dome, Air, Dome / Spring Biased	Piston	General purpose Hydraulic only	54-2100 Page 499
10,000 psig / 690 bar	0.02, 0.10, 0.14, 0.60	Spring, Dome, Air, Dome / Spring Biased	Piston	Versatile Up to 400°F / 204°C	26-1700 Page 457
10,000 psig / 690 bar (Air Only) 5000 psig / 345 bar (Spring and Dome)	1.6	Spring, Dome, Air, Dome / Spring Biased	Piston	High pressure, high flow Hydraulic only	54-2300 Page 511
10,000 psig / 690 bar	0.08	Spring, Dome, Air, Dome / Spring Biased	Piston	Two-stage, Gas and Hydraulic	54-3500 Page 521
5500 psig / 379 bar (Dome Only) 500 psig / 34.5 bar (Spring and Dome)	5.0	Spring, Dome, Air, Dome / Spring Biased	Piston	High flow	54-2700 Page 517
3000 psig / 207 bar (Dome Only) 1200 psig / 82.7 bar (Spring)	0.20	Spring, Dome	Piston	Compact	BB-3 Page 523

Backpressure Selection Guide

CONTROL PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
1000 psig / 69.0 bar (Dome Only) 450 psig / 31.0 bar (Air Only) 375 psig / 25.9 bar (Spring)	2.0	Spring, Dome, Air, Dome / Spring Biased	Diaphragm	Low pressure, high flow	26-2700 Page 475
1000 psig / 69.0 bar	2.0	Dome / Spring Biased, Air	Diaphragm	BIBS systems	26-2900 Page 479
800 psig / 55.2 bar	0.10	Spring, Dome	Piston	Economical	44-1700 Page 483
500 psig / 34.5 bar	0.14	Spring	Piston	Flanges according to DIN EN 1092-1	26-1700F Page 463
500 psig / 34.5 bar	0.06, 0.12, 0.60, 1.0	Spring, Dome, Air, Dome / Spring Biased	Diaphragm	Sensitive Versatile	26-2300 Page 467
500 psig / 34.5 bar	0.08	Spring, Dome, Dome / Spring Biased	Diaphragm	Low flow High temperature tolerance	44-2300 Page 487

Backpressure Selection Guide

CONTROL PRESSURE RATING	C_V	AVAILABLE LOADING TYPES	SENSING TYPE	NOTES	SERIES
500 psig / 34.5 bar	0.30	Spring, Dome	Piston	Economical	44-5500 Page 503
250 psig / 17.2 bar	0.30	Spring, Dome	Diaphragm	Economical	44-2500 Page 491
200 psig / 13.8 bar 300 psig / 20.7 bar (Air Only)	5.0	Spring, Dome, Air, Dome / Spring Biased	Diaphragm	Low pressure, high flow	26-2500 Page 471
150 psig / 10.3 bar	0.30	Spring, Dome	Diaphragm	Economical Sensitive	44-2900 Page 495
150 psig / 10.3 bar 450 psig / 31.0 bar (Air Only)	0.04, 0.30	Spring, Dome, Air, Dome / Spring Biased	Diaphragm	Sub-atmospheric	44-4700 Page 499
0-28 inch-Hg / 0-948 mbar	0.25	Spring, Dome	Diaphragm	Vacuum	DV Page 527

Regulators - Relief/Backpressure

Regulators that maintain desired upstream pressure by varying the flow in response to changes in upstream pressure

Product Selection Guide

Don't know where to start? This guide lists TESCOM relief/backpressure regulators by control pressures, flow rates and loading and sensing types to help you find the right product in this catalog

447

Quick Find List

Know the model number? Here are TESCOM pressure reducing regulators listed in numerical/alphabetical order

Regulators - Relief / Backpressure D26170543X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10,000 psig / 689 bar

Controlled Pressure Ranges
5-500, 5-800, 10-1500,15-2500, 25-4000, 50-6000, and 200-10,000 psig

0.35-34.5, 0.35-55.2, 0.69-103, 1.03-172, 1.72-276, 3.45-414, and 13.8-689 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.10 (26-17X1 through 26-17X4)
C_V = 0.14 (26-17X5 through 26-17X7)

Maximum Operating Torque
40 in-lbs / 4.5 N • m

MEDIA CONTACT MATERIALS

Back-up Ring
PTFE

Body
316 Stainless Steel

O-Rings
Nitrile, Buna-N

Seal
PCTFE

Seat
PCTFE (26-17X1 through 26-17X4)
PTFE (26-17X5 through 26-17X7)

Trim
300 Series Stainless Steel

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
5 lbs / 2.2 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 26-1700 Series regulator controls pressures up to 15,000 psig / 1034 bar and is suitable for gas or liquid service.

Applications

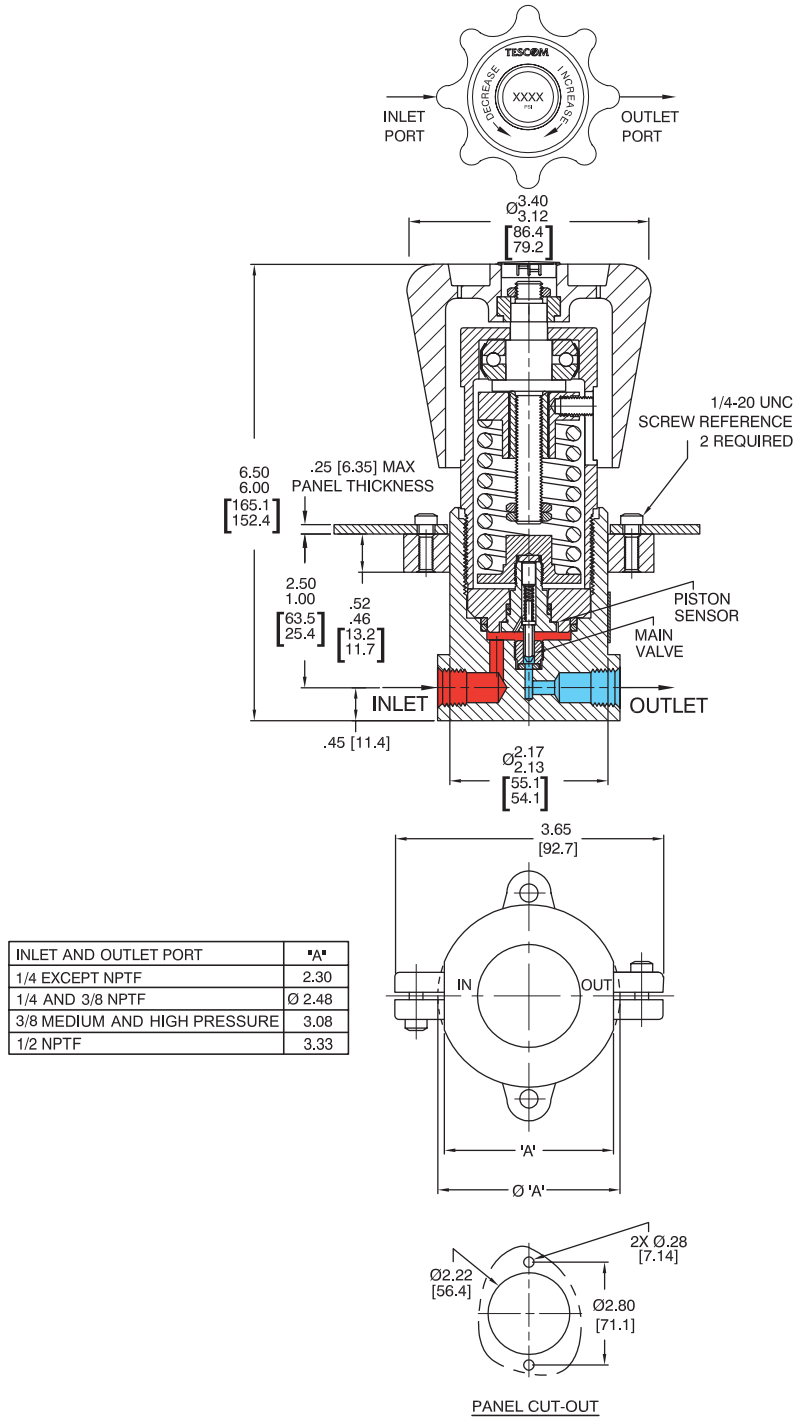
- Pump discharge pressure control
- Reactor pressure control
- Over-pressurization relief

Features and Benefits

- Accuracy: ±1% of central pressure range
- NACE Compatible design available
- Wide range of applications due to:
  - Seven different control pressure ranges
  - 200-15,000 psig / 13.8-1034 bar control is optional
  - High flow C_V = 0.60 and low flow C_V = 0.02 models are available
- Bubble-tight shut-off at all reseat pressures
- Safe and reliable piston-style sensor
- Panel mounting is standard
- Compatible with TESCOM Air Actuators and ER5000 Electropneumatic Controllers
- Flanged end connections available

26-1700 SERIES

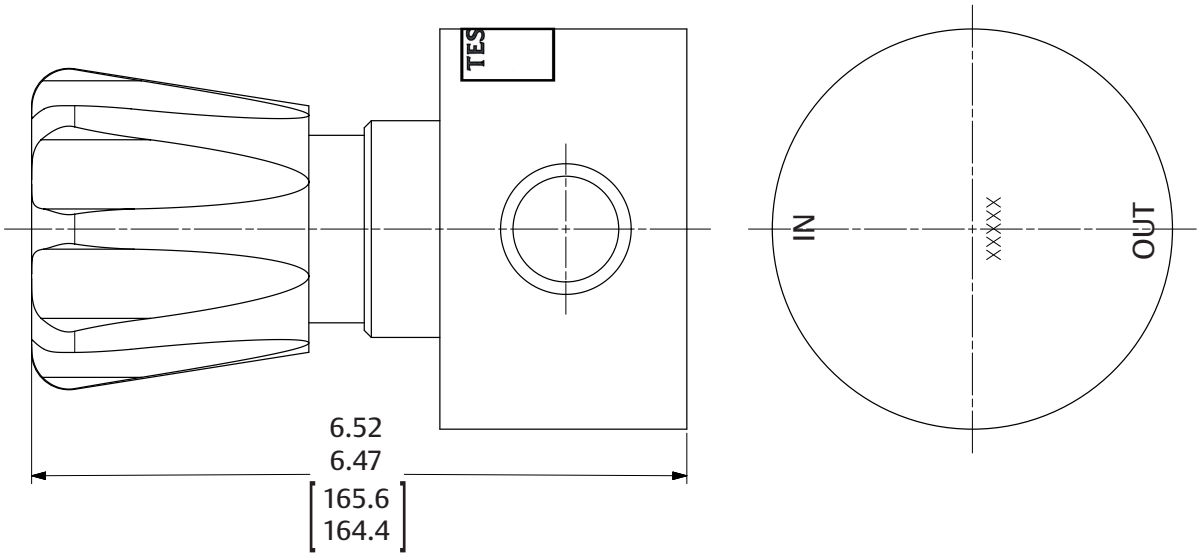
26-1700 Series Regulator Drawing



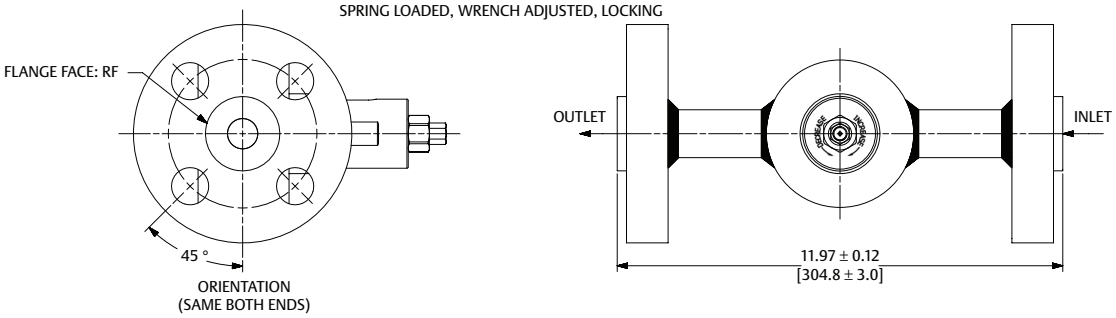
INLET AND OUTLET PORT	"A"
1/4 EXCEPT NPTF	2.30
1/4 AND 3/8 NPTF	Ø 2.48
3/8 MEDIUM AND HIGH PRESSURE	3.08
1/2 NPTF	3.33

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

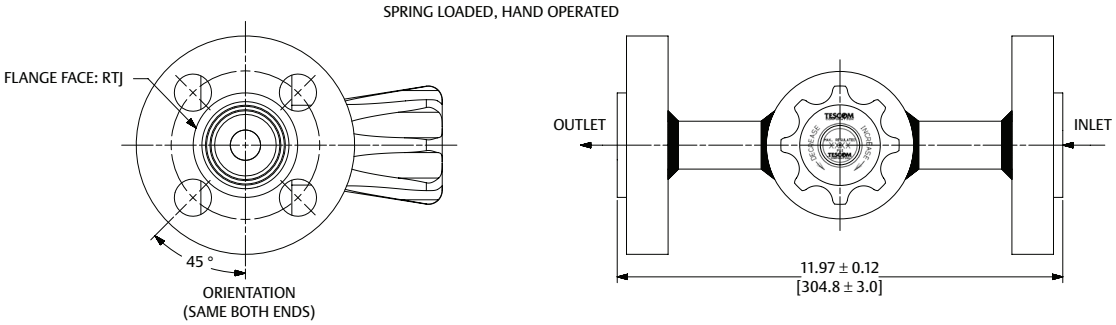
26-1700 Series Regulator with Flanges Drawing



SPRING LOADED, WRENCH ADJUSTED, LOCKING



SPRING LOADED, HAND OPERATED

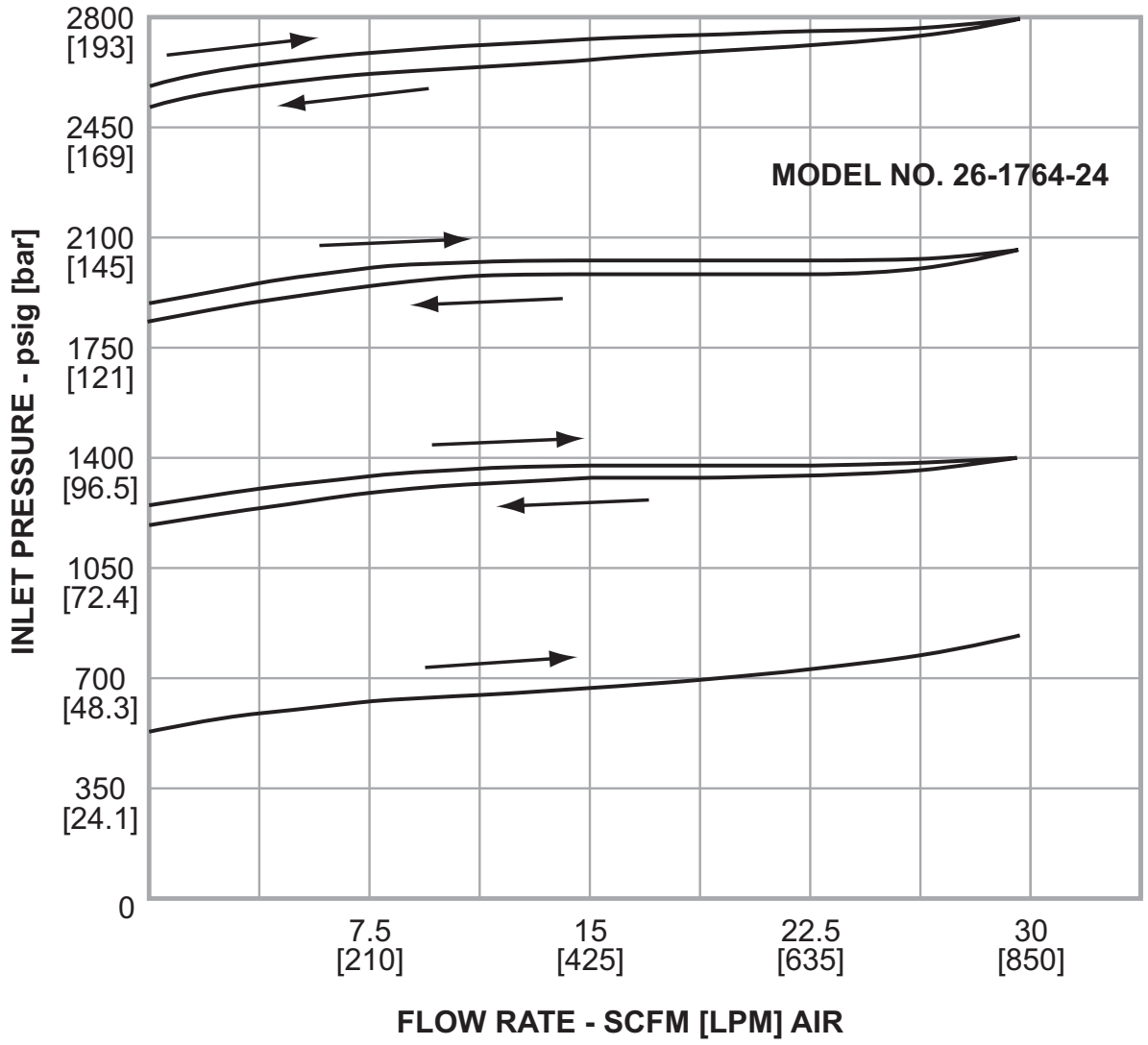


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1700 SERIES

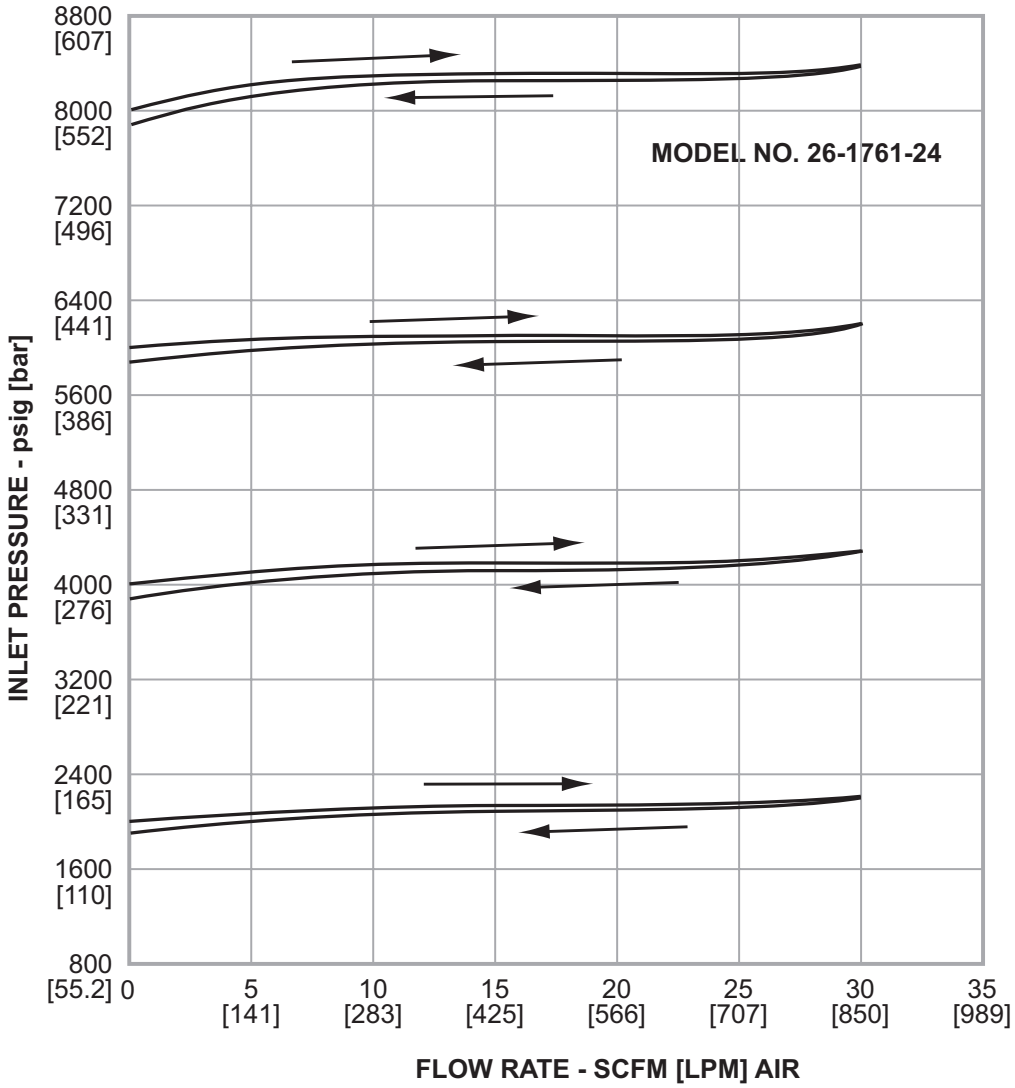
26-1700 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



26-1700 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



26-1700 SERIES

26-1700 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connector Part Number Selection:

26-17 6 4 - 2 4 [BLANK]

BASIC SERIES	BODY AND BONNET MATERIAL	CONTROLLED PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	OPTIONS (ADDITIONAL TO STANDARD AS MODIFICATION)
26-17	**6 –** 316 Stainless Steel	**1 –** 200-10,000 psig 13.8-689 bar **2 –** 50-6000 psig 3.45-414 bar **3 –** 25-4000 psig 1.72-276 bar **4 –** 15-2500 psig 1.03-172 bar **5 –** 10-1500 psig 0.69-103 bar **6 –** 5-800 psig 0.35-55.2 bar **7 –** 5-500 psig 0.35-34.5 bar	**1 –** SAE **2 –** NPTF **3 –** MS33649 **4 –** High Pressure **6 –** Medium Pressure	**2 –** 1/8" ** **4 –** 1/4" **6 –** 3/8" **8 –** 1/2" *	**[BLANK] –** No modification **- 065 –** 316 Stainless Steel Wetted **- 099 –** 200-15,000 psig / 13.8-1034 bar Control Range, C_V = 0.02 **- 154 –** C_V = 0.02 **- 161 –** Urethane O-Rings CO_2 Service **- 184 –** C_V = 0.60, 5000 psig / 345 bar, 1/2" NPTF Ports

* *Available for NPTF only.*
** *Not available for High & Medium Pressure*

Flanged End Connector Part Number Selection:

26-17W H 6 2 1 A 1 52 1

BASIC SERIES	LOAD TYPE	BODY, PIPE & FLANGE MATERIAL	INLET PRESSURE psig / bar	FLOW CAPACITY	DASH NO.	SEAT	SEAL	O-RING	OPERATING TEMPERATURE	FLANGE SIZE	FLANGE CLASS	FLANGE FACE
26-17W	**H –** Hand operated **W –** Locking wrench adjusted	**6 –** 316 SST	**2 –** 25-5000 3.72-344.8 **3 –** 25-4000 1.72-276 **4 –** 15-2500 1.03-172 **5 –** 10-1500 0.69-103 **6 –** 5-800 0.35-55.2 **7 –** 5-500 0.35-34.5	**1 –** Cv = 0.1 **2 –** Cv = 0.14 **3 –** Cv = 0.6	A	PCTFE	PCTFE	Nitrile, Buna-N	-20 to 140°F -29 to 60 °C	**1 –** 1/2" **3 –** 1"	**21 –** 1 - 300# **41 –** 1 - 600# **52 –** 1 - 900# / 1500# **63 –** 1 - 2500#	**1 –** RF **2 –** RTJ
					B			PTFE				
					C	PTFE	PCTFE	Nitrile, Buna-N	-20 to 140°F -29 to 60°C			
					D			FKM	-15 to 140°F -26 to 60°C			
					E	Polyimide (Vespel®)	Polyimide (Vespel®)	Nitrile, Buna-N	-20 to 165°F -29 to 74°C			
					F			FKM	-15 to 200°F -26 to 93°C			
					G			Kalrez® **	0 to 200°F -17 to 93°C			

** FFKM, Perfluoroelastomer (Kalrez®)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Range
5-500 psig / 0.34-34.5 bar

Design Proof Pressure
150% of rated pressure

Design Burst Pressure
400% of rated pressure

Leakage
Bubble-tight

Flow Capacity
C_V = 0.14

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Maximum Operating Torque
40 in-lbs / 4.5 N•m

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Main Valve Seat
PTFE

Seal
PCTFE

Back-up Rings
PTFE

O-Ring
Nitrile, Buna-N

Remaining Parts
300 Series Stainless Steel

OTHER

Weight (approximate)
DN 15: 8 lbs / 3.6 kg
DN 20/25: 11 lbs / 5 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM 26-1700F Series backpressure regulators provide welded flanges according to EN 1092 and are suitable for gas or liquid service.

Applications

- Pilot plants (i.e. in the chemical industry)
- Pressure control of reactor or vessel applications

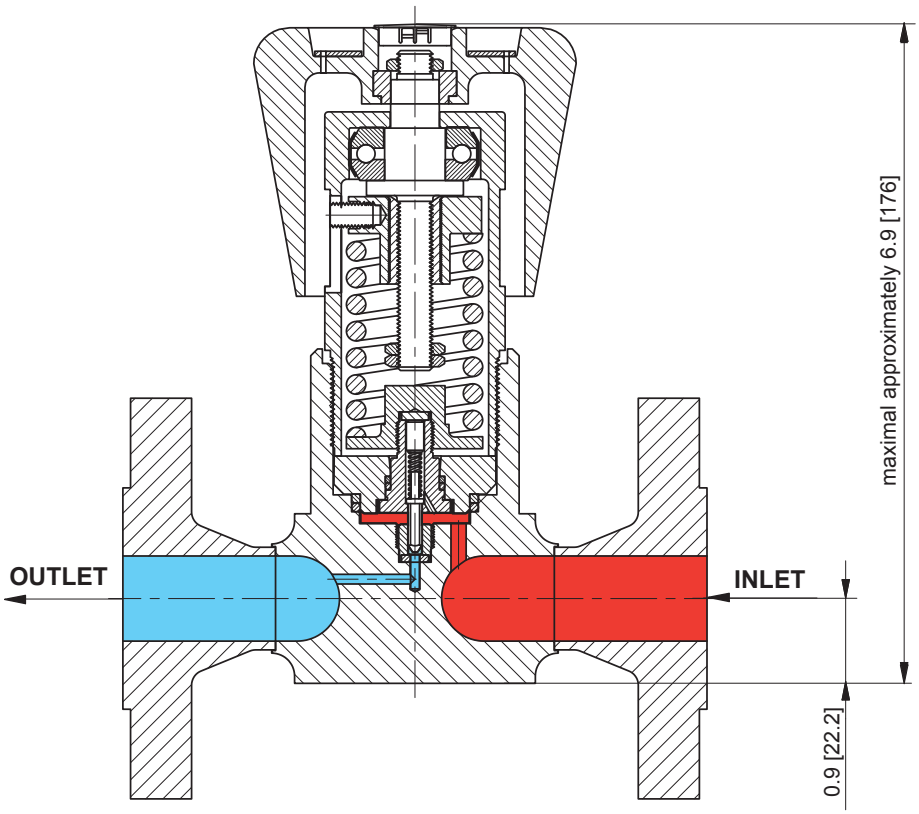
Features and Benefits

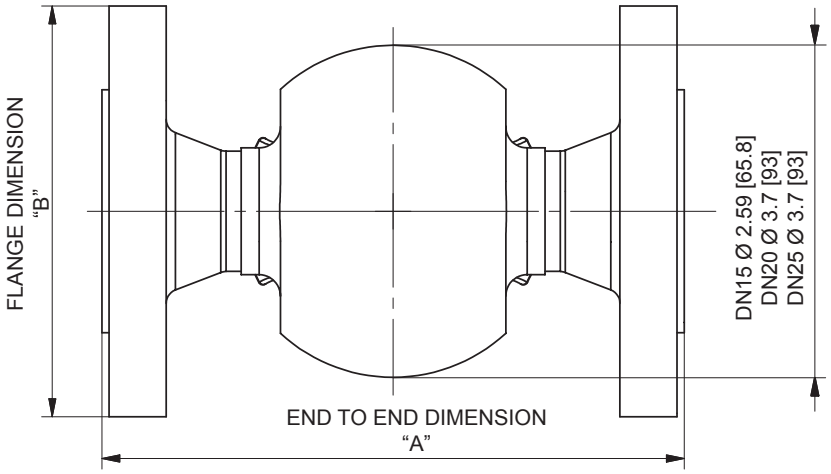
- Flange connections according to DIN EN 1092-1 Type 11 for easy line integration
- Face-to-face dimensions according to DIN EN 558, Row 1
- Connection up to DN 25
- Setpoint repeatability exceeds conventional relief valves
- Bubble-tight shutoff at all reseat pressures
- Safe and reliable piston-style sensor
- Compatible with the TESCOM Air Actuator and ER5000 Electropneumatic Controller for remote control
- Other connection standards upon request

26-1700 SERIES

Europe and Middle East only

26-1700F Series Regulator Drawing

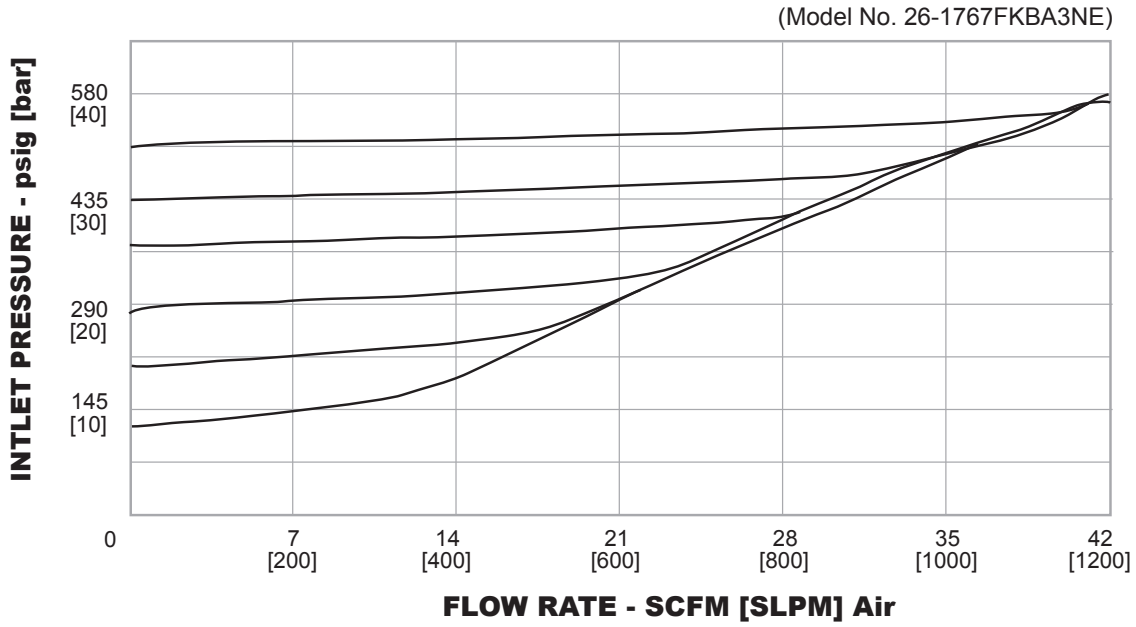




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1700F Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



26-1700 SERIES
Europe and Middle East only
26-1700F Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

FLANGE — EN1092-1

26-17 6 7 F K B F 3 N E

BASIC SERIES	BODY AND FLANGE MATERIAL	CONTROLLED PRESSURE RANGE	INLET AND OUTLET PORT TYPE	"A" ±.08" ±2 mm	"B" ±.08" ±2 mm	FLANGE TYPE	GAUGE PORT OPTIONS	FLOW CAPACITY	OPTIONAL ITEM
26-17	**6 –** 316L Stainless Steel	**7 –** 5-500 psig 0.34-34.5 bar	**K –** DN 15	5.12 130	3.74 95	**B –** Form B - raised face	**A –** None 	**3 –** C_V = 0.14	**N –** None
			L – DN 20	5.90 150	4.13 105	**D –** Form D - ring joint	**F –** 1/4" NPTF 1 x in 		
			M – DN 25	6.30 160	4.53 115		**G –** 1/4" NPTF 1 x in 		
							L – 1/4" NPTF 1 x in, 1 x out 		

Kits

	BASIC SERIES	PART NUMBER
NON METALLIC	26-17XXFXXXXXX	389-1268
REPAIR	26-17XXFXXXXXX	389-6574

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
0-50, 0-150, 0-250 psig / 0-3.4, 0-10.3, 0-17.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature[1]
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.60

Maximum Operating Torque
25 in-lbs / 2.8 N•m

1. For extended temperatures from -40°F to 400°F / -40°C to 204°C, please consult TESCOM.

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel, 316 Stainless Steel, or Aluminum 2024-T351

Diaphragm
Nitrile, Buna-N

Main Valve Seat
PTFE

O-Rings
Nitrile, Buna-N

Seals
PTFE

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
Stainless Model: 2.25 lbs / 1.0 kg
Aluminum Model: 1.25 lbs / 0.6 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

AIR LOAD

SPRING LOAD

DOME LOAD

TESCOM 26-2300 Series is a highly accurate, diaphragm sensed backpressure regulator. It controls pressures up to 500 psig / 34.5 bar and offers many C_Vs from 0.02 up to 1.0. Air and dome loaded versions are available for remote operation or for use with the TESCOM ER5000 Electropneumatic Controller for automation.

Applications

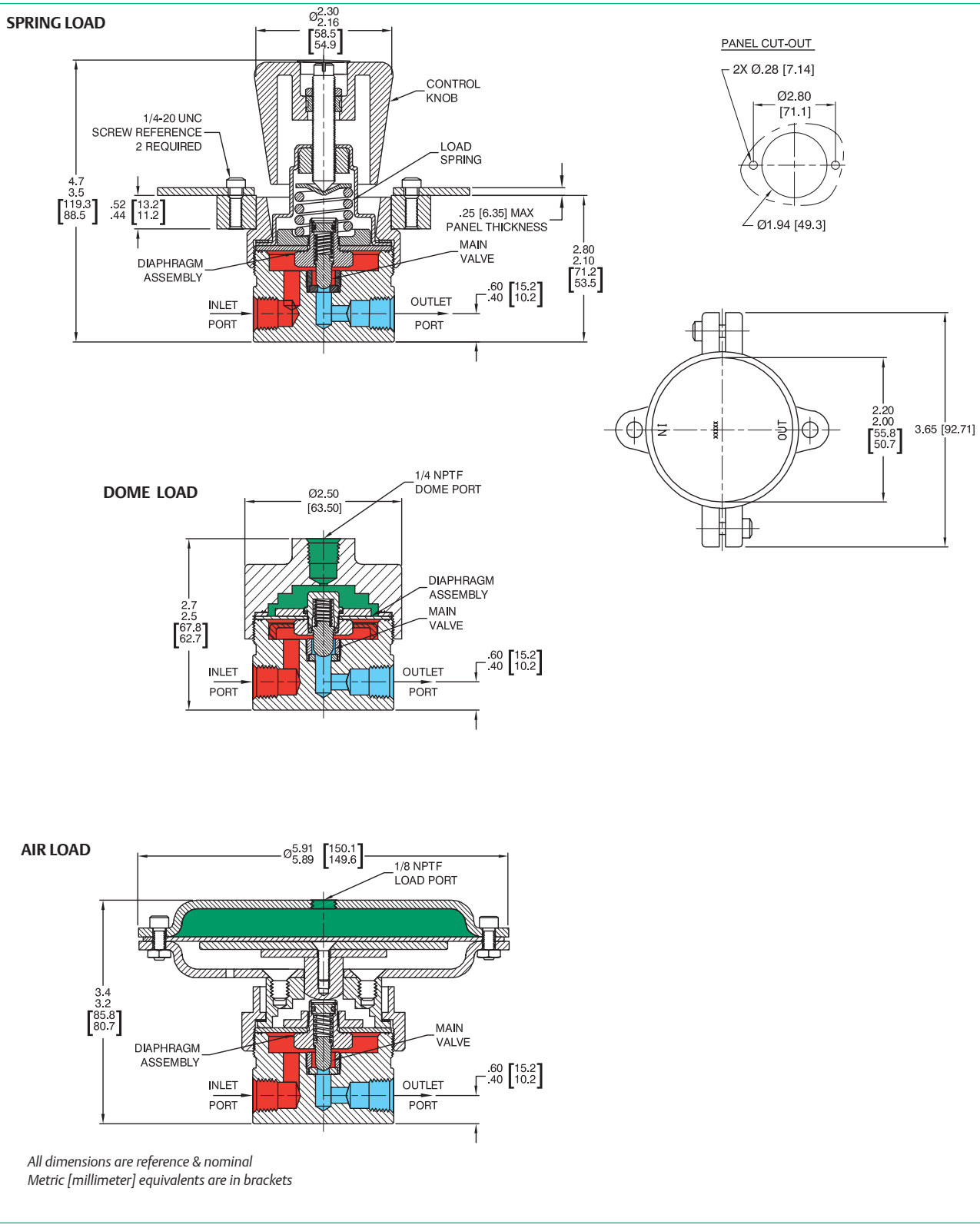
- Hydraulic or pneumatic testing
- Calibration
- Pump discharge pressure control

Features and Benefits

- Crack to reseat - 2% of set pressure
- Easily adjusted, low torque handknob control
- Bubble-tight shutoff at all reseat pressures
- Four flow capacities available:
  C_V = 0.60 standard
  C_V = 0.06, 0.12, 1.0 optional
- Spring, dome, and air loaded models are available
- Panel mounting is standard
- Compatible with TESCOM ER5000 Electropneumatic Controller

26-2300 SERIES

26-2300 Series Regulator Drawings

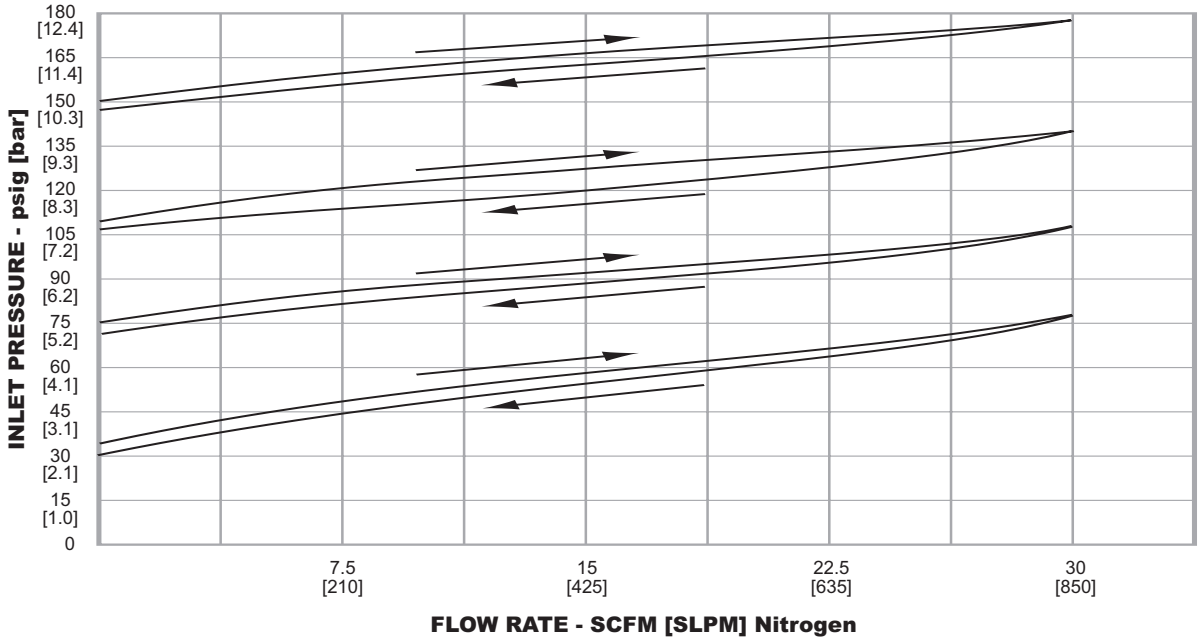


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

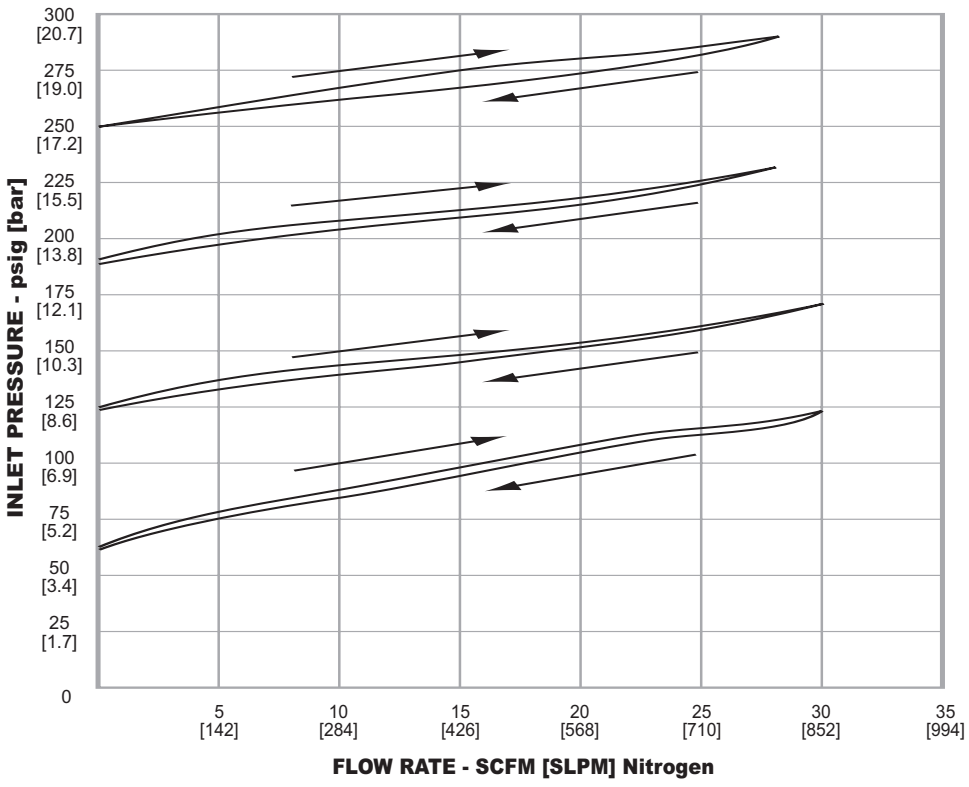
26-2300 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

C_V = 0.60
Model No. 26-2321-24



C_V = 0.60
Model No. 26-2322-24



26-2300 SERIES

26-2300 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

26-23 2 1 - 2 4

BASIC SERIES	BODY MATERIAL	CONTROL PRESSURE RANGE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
26-23	**2 –** 303 Stainless Steel **3 –** 2024-T351 Aluminum **6 –** 316 Stainless Steel	**0 –** 0-50 psig 0-3.4 bar **1 –** 0-150 psig 0-10.3 bar **2 –** 0-250 psig 0-17.2 bar	**1 –** SAE **2 –** NPTF **3 –** MS33649	**4 –** 1/4" **6 –** 3/8" **8 –** 1/2"

Regulators - Relief / Backpressure

D26251944X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Ranges
0-20, 0-50, 0-125, 0-200 psig
0-1.4, 0-3.4, 0-8.6, 0-13.8 bar
0-300 psig / 0-20.7 bar for Air Load

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-20°F to 165°F / -29°C to 74°C

Flow Capacity
C_V = 5.0

MEDIA CONTACT MATERIALS

Body, Bonnet, Back-cap
316 Stainless Steel or Brass

Main Valve Seat
Nitrile, Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Chemraz®), or FKM (Viton®-A)

Diaphragm
PTFE, FKM (Viton®-A)

O-Rings
Nitrile, Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Chemraz®), or FKM (Viton®-A)

Remaining Parts
300 Series Stainless Steel, Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
Stainless Steel: 15 lbs / 6.8 kg
Brass: 16 lbs / 7.3 kg

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.
Gylon® is a registered trademark of Garlock, Inc.
Chemraz® is a registered trademark of Greentweed.

DOME LOADED

SPRING LOADED

TESCOM 26-2500 Series has a C_V = 5.0 for high flow backpressure applications. Large diaphragm provides excellent sensitivity and minimal crack-to-reseat pressure differential.

Application

- Pump discharge pressure control

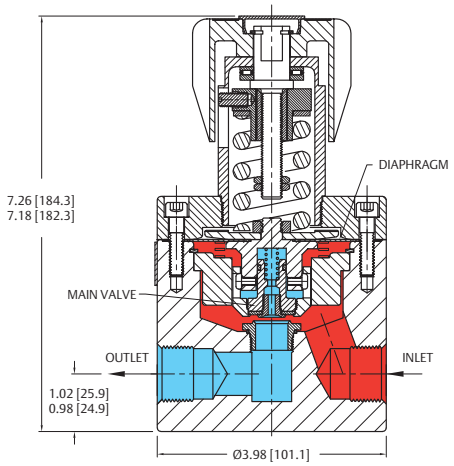
Features and Benefits

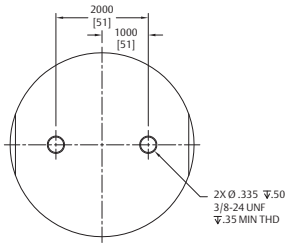
- High flow capacity
- Close pressure differential between crack and reseat
- Bubble-tight shutoff at all reseating pressures
- Large diaphragm provides maximum sensitivity
- Dome loaded and air actuated options are available
- Four control pressure ranges

26-2500 SERIES

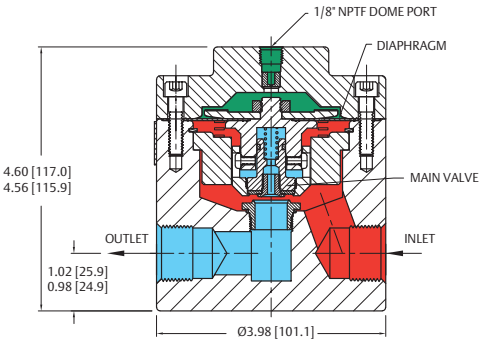
26-2500 Series Regulator Drawings

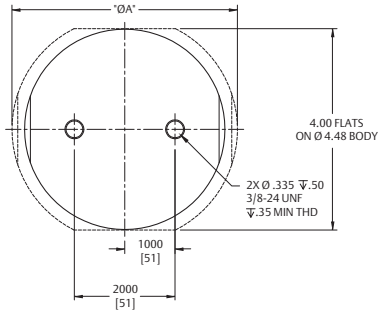
SPRING LOAD



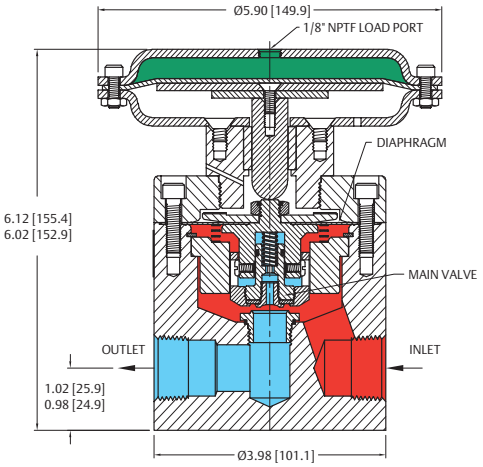


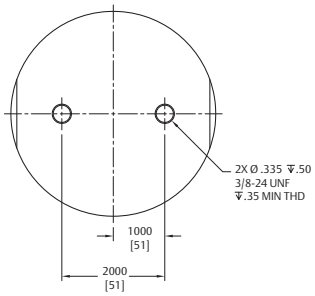
DOME LOAD





AIR LOAD

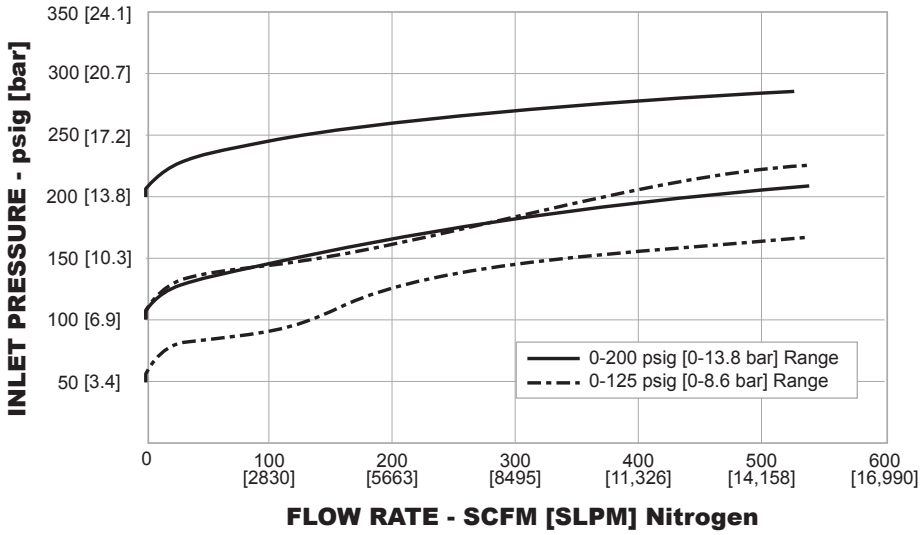


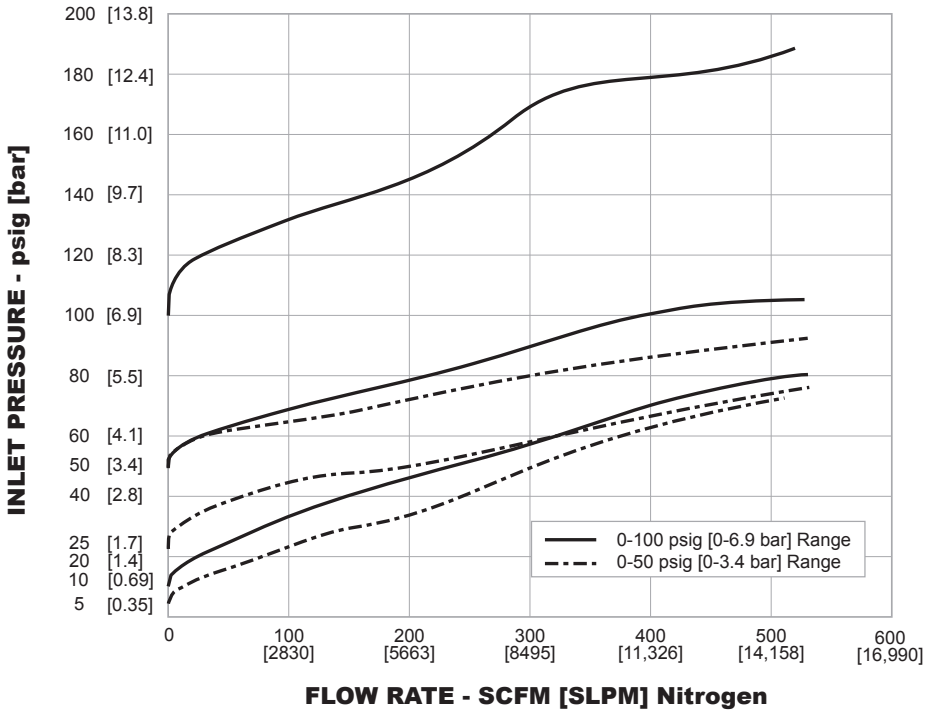


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-2500 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





26-2500 SERIES

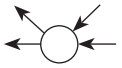
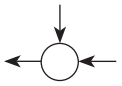
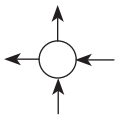
26-2500 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

H – SPRING LOAD, HANDKNOB ADJUST
D – DOME LOAD
A – AIR LOAD

26-25	6	1	E		2	08	H	G	A

BASIC SERIES	BODY, BONNET, BACK-CAP MATERIAL	INLET PRESSURE	O-RING AND VALVE SEAT MATERIAL		INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	DIAPHRAGM MATERIAL	PORTING CONFIGURATION
			O-Ring	Valve Seat				
26-25	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** 0-20 psig 0-1.4 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-125 psig 0-8.6 bar **3 –** 0-200 psig 0-13.8 bar **3 –** 0-300 psig 0-20.7 bar *(air loaded only)* **D –** 0-200 psig 0-13.8 bar *(dome loaded only)*	**B –** Nitrile, Buna-N **E –** Ethylene Propylene **M –** Chemraz®** **V –** FKM (Viton®-A)	Nitrile, Buna-N 90 Durometer Ethylene Propylene 80 Chemraz® 75** FKM (Viton®-A)	**1 –** SAE **2 –** NPTF **3 –** MS33649	**08 –** 1/2" **12 –** 3/4" **16 –** 1"	**G –** PTFE **V –** FKM (Viton®-A) *(spring and dome load only)*	**A –** No gauge ports  **B –** 2 gauge ports at 60°  **F –** 1 inlet gauge port at 90°  **L –** 2 gauge ports at 90° 

** FFKM, Perfluoroelastomer (Chemraz®)

Regulators - Relief / Backpressure

D26271957X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressures
Air Loaded: 450 psig / 31.0 bar
Dome Loaded: 1000 psig / 68.9 bar
Spring Loaded: 0-30 psig / 0-2.1 bar
0-80 psig / 0-5.5 bar
0-185 psig / 0-12.8 bar
0-300 psig / 0-20.7 bar
0-375 psig / 0-25.9 bar

Reference Pressure
Air Loaded: 150 psig maximum (3.1 ratio) / 10.3 bar
Dome Loaded: 1000 psig maximum / 68.9 bar

Design Proof Pressure
150% rated pressure

Leakage
Bubble-tight

Operating Temperature
See Part Number Selector

Flow Capacity
C_V = 2.0

MEDIA CONTACT MATERIALS

Seat, Main Valve
CTFE, Polyimide (Vespel® SP21)

Body, Bonnet, Back Cap
Brass, 303 Stainless Steel, 316 Stainless Steel

O-Rings
Nitrile, Buna-N, Ethylene Propylene, FKM (Viton®-A)

Diaphragm
PTFE

Remaining Parts
300 Series Stainless Steel, Nitronic 60

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
10.5 lbs / 4.8 kg

Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.
Gylon® is a registered trademark of Garlock, Inc.

DOME

SPRING

TESCOM 26-2700 Series is a high flow, low pressure backpressure regulator with spring, dome and air loading options.

Applications

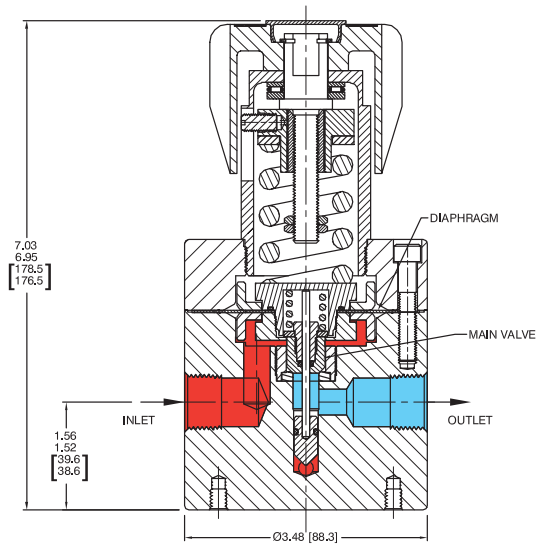
- Pump and compressor control
- Process pressure control
- High flow, low pressure chemical injection

Features and Benefits

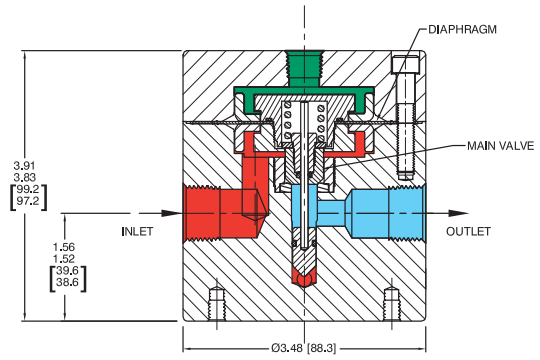
- Gas or liquid service
- Dome and air actuated models are available
- Compatible with TESCOM ER5000 Electropneumatic Controllers
- High flow capabilities

26-2700 SERIES

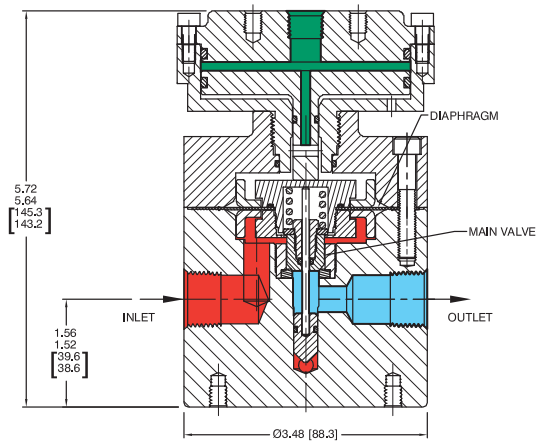
26-2700 Series Regulator Drawing



Spring Load



Dome Load

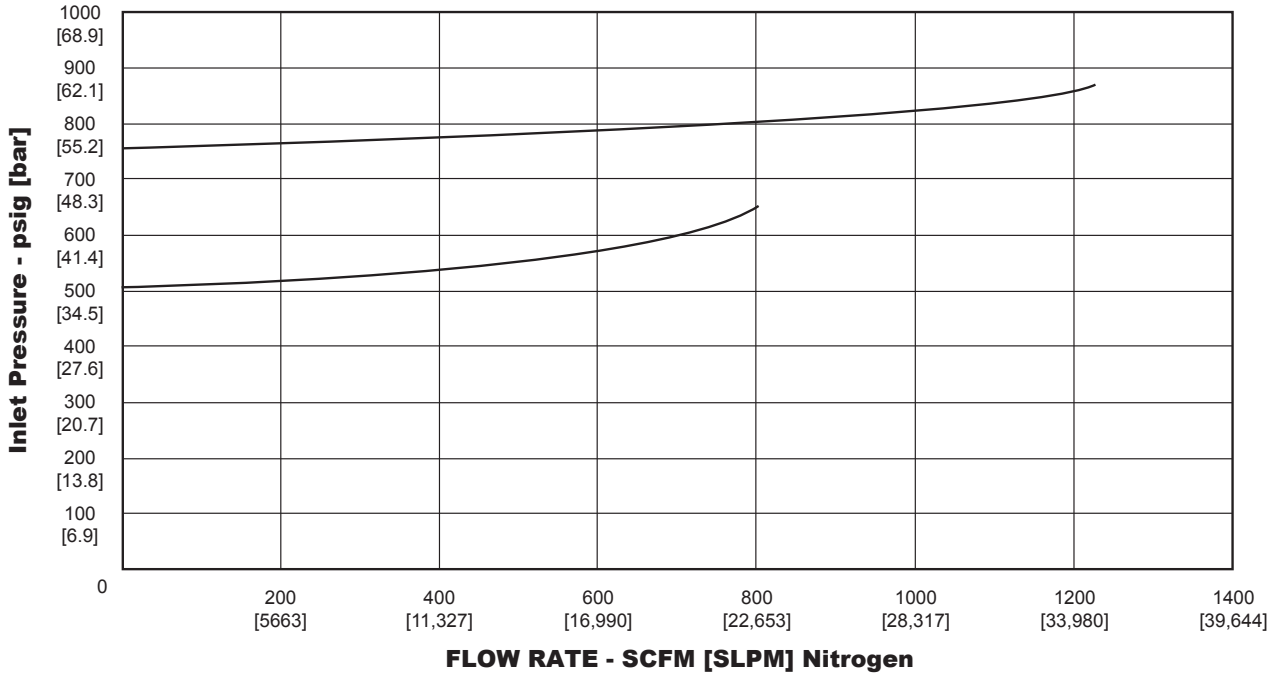


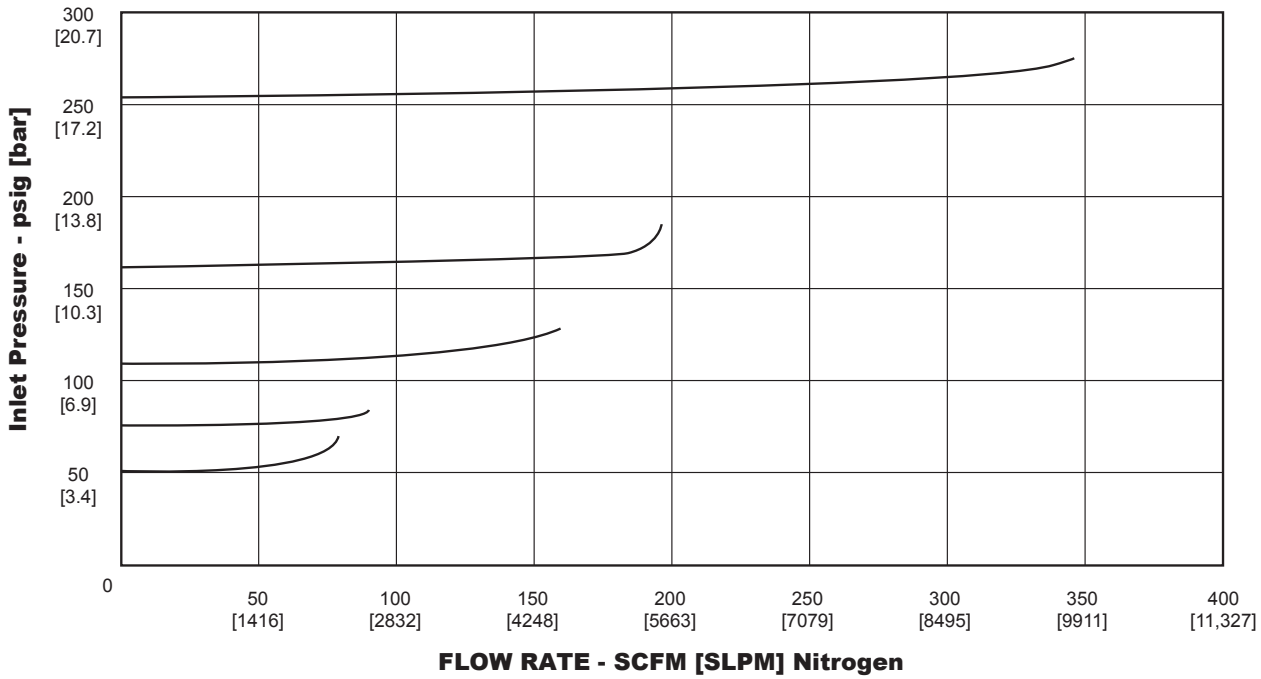
Air Load

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-2700 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





26-2700 SERIES

26-2700 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

Air Loaded

26-27 2 0 - V 2 08A

BASIC SERIES	BODY MATERIAL	MAXIMUM INLET PRESSURE	MATERIALS		OPERATING TEMPERATURE*	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
			O-RING	VALVE SEAT			
26-27	**1** – Brass	**0** – 450 psig 31.0 bar	**B** – BUNA-N	CTFE	-40°F to 165°F / -40°C to 74°C	**1** – SAE	**08** – 1/2"
	2 – 303 Stainless Steel		**E** – E.P.	Vespel® SP21	-40°F to 165°F / -40°C to 74°C	**2** – NPTF	**12** – 3/4"
			M – E.P.	CTFE	-40°F to 165°F / -40°C to 74°C		
			V – Viton®	CTFE	0°F to 165°F / -18°C to 74°C		
			W – Viton®	Vespel® SP21	0°F to 300°F / -18°C to 149°C		

Dome Loaded

26-27 2 0 - V 2 08D

BASIC SERIES	BODY MATERIAL	MAXIMUM INLET PRESSURE	MATERIALS		OPERATING TEMPERATURE*	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
			O-RING	VALVE SEAT			
26-27	**1** – Brass	**0** – 1000 psig 68.9 bar	**E** – E.P.	Polyimide (Vespel® SP21)	-40°F to 165°F / -40°C to 74°C	**1** – SAE	**08** – 1/2"
	2 – 303 Stainless Steel		**M** – E.P.	PCTFE	-40°F to 165°F / -40°C to 74°C	**2** – NPTF	**12** – 3/4"
	6 – 316 Stainless Steel		**V** – FKM (Viton®-A)	PCTFE	0°F to 165°F / -18°C to 74°C		
			W – FKM (Viton®-A)	Polyimide (Vespel® SP21)	0°F to 300°F / -18°C to 149°C		

Spring Loaded

26-27 2 2 - V 2 08S

BASIC SERIES	BODY MATERIAL	MAXIMUM INLET PRESSURE	MATERIALS		OPERATING TEMPERATURE*	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
			O-RING	VALVE SEAT			
26-27	**1** – Brass	**0** – 0-30 psig 0-2.1 bar	**E** – E.P.	Polyimide (Vespel® SP21)	-40°F to 165°F / -40°C to 74°C	**1** – SAE	**08** – 1/2"
	2 – 303 Stainless Steel	**1** – 0-80 psig 0-5.5 bar	**M** – E.P.	PCTFE	-40°F to 165°F / -40°C to 74°C	**2** – NPTF	**12** – 3/4"
	6 – 316 Stainless Steel	**2** – 0-185 psig 0-12.8 bar	**V** – FKM (Viton®-A)	PCTFE	0°F to 165°F / -18°C to 74°C		
		3 – 0-300 psig 0-20.7 bar	**W** – FKM (Viton®-A)	Polyimide (Vespel® SP21)	0°F to 300°F / -18°C to 149°C		
		4 – 0-375 psig 0-25.9 bar					

** Brass body is limited to +200 °F (93 °C) maximum.*

Regulators - Relief / Backpressure D26291387X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Control Pressure
1000 psig / 69.0 bar

Maximum Reference Ranges
1000 psig / 69.0 bar

Bias Pressure Ranges
0, 0-15, 0-30, 0-45 psig / 0, 0-1.0, 0-2.1, 0-3.1 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
0°F to 165°F / -18°C to 74°C

Flow Capacity
C_V = 2.0

Crack-to-Reseat Differential
0-15 psig / 0-1.0 bar Range: 3 psid / 0.21 bar
0-30 psig / 0-2.1 bar Range: 5 psid / 0.34 bar

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel or Brass

Seat
PCTFE

Diaphragm
(Unreinforced) FKM (Viton®-A)

O-Rings
FKM (Viton®-A)

Back-up Rings
PTFE

Remaining Parts
300 Series Stainless Steel and Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
10 lbs / 4.5 kg

Viton® and Teflon® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 26-2900 Series is a dome loaded, negative bias, backpressure tracking regulator with a balanced main valve. This regulator controls upstream pressures up to 1000 psig / 69.0 bar with spring bias setting.

Applications

Constant bias applications:

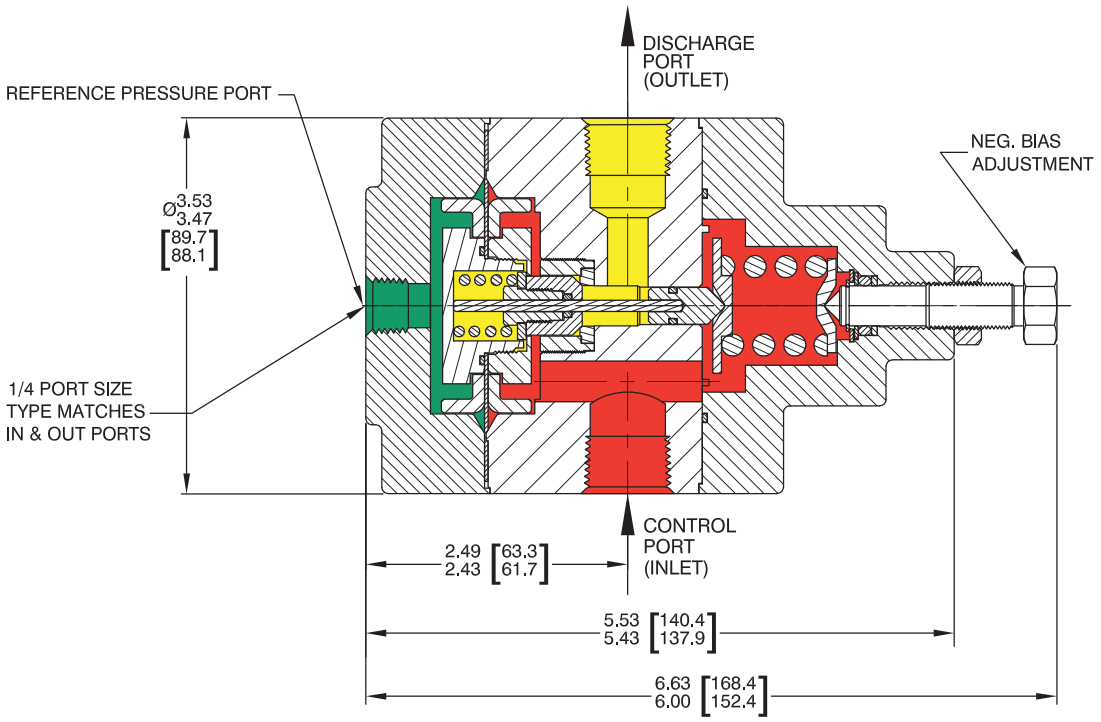
- Offshore diving applications
- Dumping exhaled breath from pressure chamber (BIBS)
- Diving bell

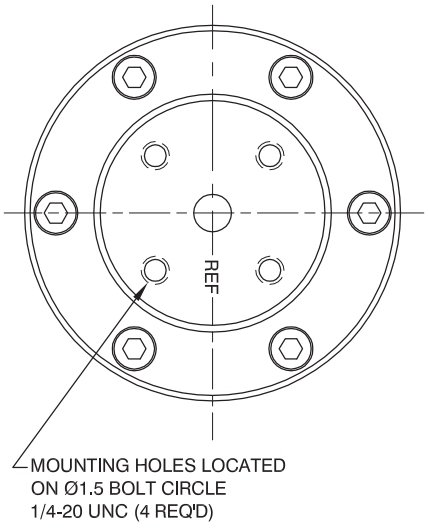
Features and Benefits

- Balanced stem design eliminates the need to adjust bias over a wide range of operating pressures
- High flow capacity: C_V = 2.0
- Diaphragm sensed
- Low accumulation
- Mounts in any position
- Choice of Stainless Steel or Brass construction

26-2900 SERIES

26-2900 Series Regulator Drawing

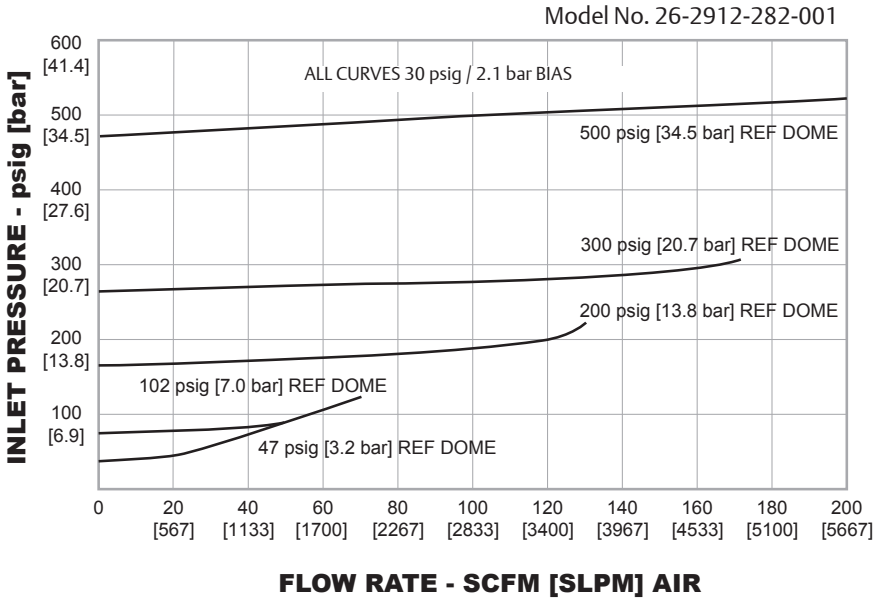




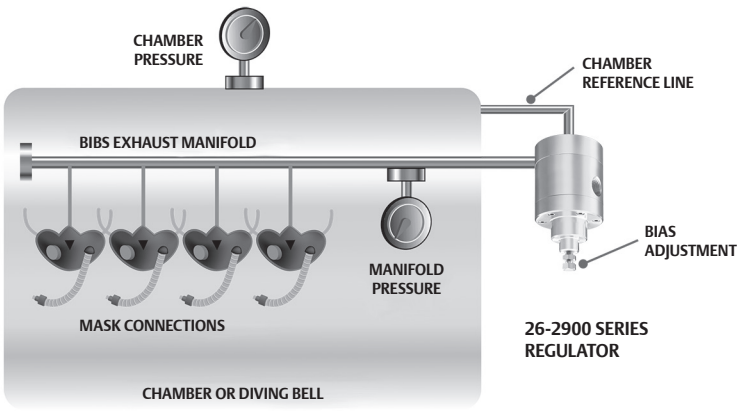
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-2900 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



26-2900 Series Regulator Typical Installations



- Dumping exhaled breath out of a pressure chamber (BIBS)
- Constant bias applications such as offshore diving apparatus

26-2900 SERIES

26-2900 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

26-29 1 2 - 2 8 2 A

BASIC SERIES	BODY MATERIAL	BIAS PRESSURE RANGE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	BIAS MODE	FLOW CAPACITY
26-29	**1** – Brass **2** – 303 Stainless Steel	**0** – Zero bias **1** – 0-15 psig / 0-1.0 bar **2** – 0-30 psig / 0-2.1 bar[1] 0-25 psig / 0-1.7 bar[2] **3** – 0-45 psig / 3.1 bar	**1** – SAE **2** – NPTF **3** – MS33649 **9** – BSP	**8** – 1/2"	**2** – Negative	**A** – C_V = 2.0

1. Inlet pressures 0-500 psig / 34.5 bar
2. Inlet pressures 500-1000 psig / 34.5-69.0 bar

Regulators - Relief / Backpressure

D44171768X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
800 psig / 55.2 bar

Controlled Pressure Ranges
40-150, 40-300, 100-700, 100-800 psig
2.8-10.3, 2.8-20.7, 6.9-48.3, 6.9-55.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Operating Temperature
-15°F to 140°F / -26°C to 60°C

Flow Capacity
C_V = 0.10

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Seat
PCTFE

O-Ring
FKM (Viton®-A)

Back-up Ring
PTFE

Remaining Parts
Stainless Model: 316 Stainless Steel
Brass Model: Brass and 300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
2 lbs / 0.9 kg

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-1700 Series is a general purpose, compact backpressure regulator for control pressures up to 800 psig / 55.2 bar.

Application

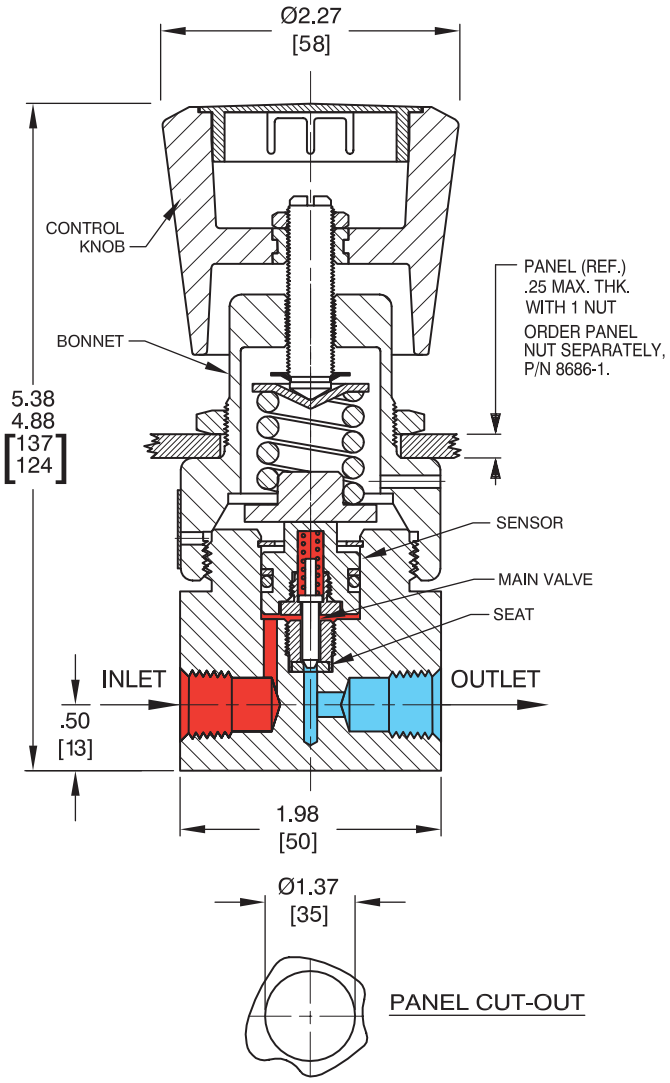
- Industrial equipment for hydraulic or pneumatic service

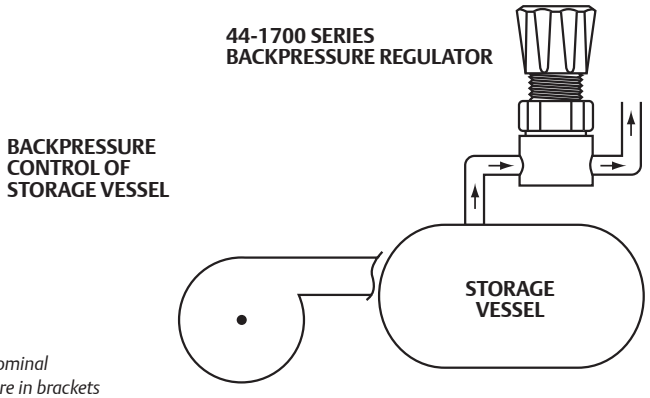
Features and Benefits

- Economical, compact design
- Piston sensed design is safe and reliable
- Available in a Stainless Steel or Brass design
- Optional gauge ports and panel mounting
- Flow capacity C_V = 0.10
- Low handknob torque for easy operation
- Bubble-tight shutoff at all reseating pressures

44-1700 SERIES

44-1700 Series Regulator Drawing





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44-1700 Series Regulator Flow Chart

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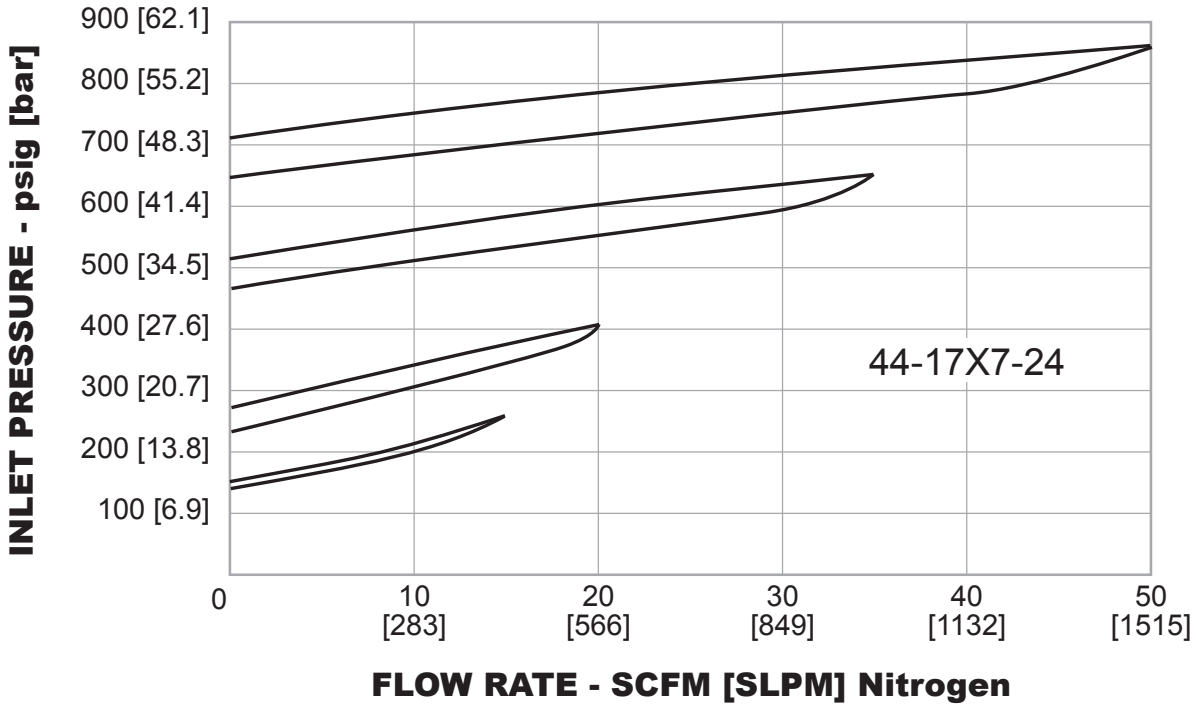


44-1700 SERIES

44-1700 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-17 6 7 - 2 4

BASIC SERIES	BODY MATERIAL	INLET PRESSURE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
44-17	**1 –** Brass **6 –** 316 Stainless Steel	**2 –** 40-150 psig 2.8-10.3 bar **3 –** 40-300 psig 2.8-20.7 bar **7 –** 100-700 psig 6.9-48.3 bar **8 –** 100-800 psig 6.9-55.2 bar	**2 –** NPTF	**4 –** 1/4"

Regulators - Relief / Backpressure

D44231774X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Ranges
0-25, 0-50, 0-100, 0-250 psig
0-1.7, 0-3.4, 0-6.9, 0-17.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 0.08

Maximum Operating Torque
30 in-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass, or Monel

Bonnet
300 Series Stainless Steel, Brass

Seat
PCTFE

Diaphragm
316 Stainless Steel or Cobalt Chrome Nickel Alloy (Eligiloy®)

Remaining Parts
316 Stainless Steel, Monel (for Monel body)

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2 lbs / 0.9 kg

Elgiloy® is a registered trademark of Elgiloy Corp.

TESCOM 44-2300 Series is a compact, lightweight, single-stage backpressure regulator for specialty, flammable, and industrial gas flows of less than 4 SCFM / 113 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Applications

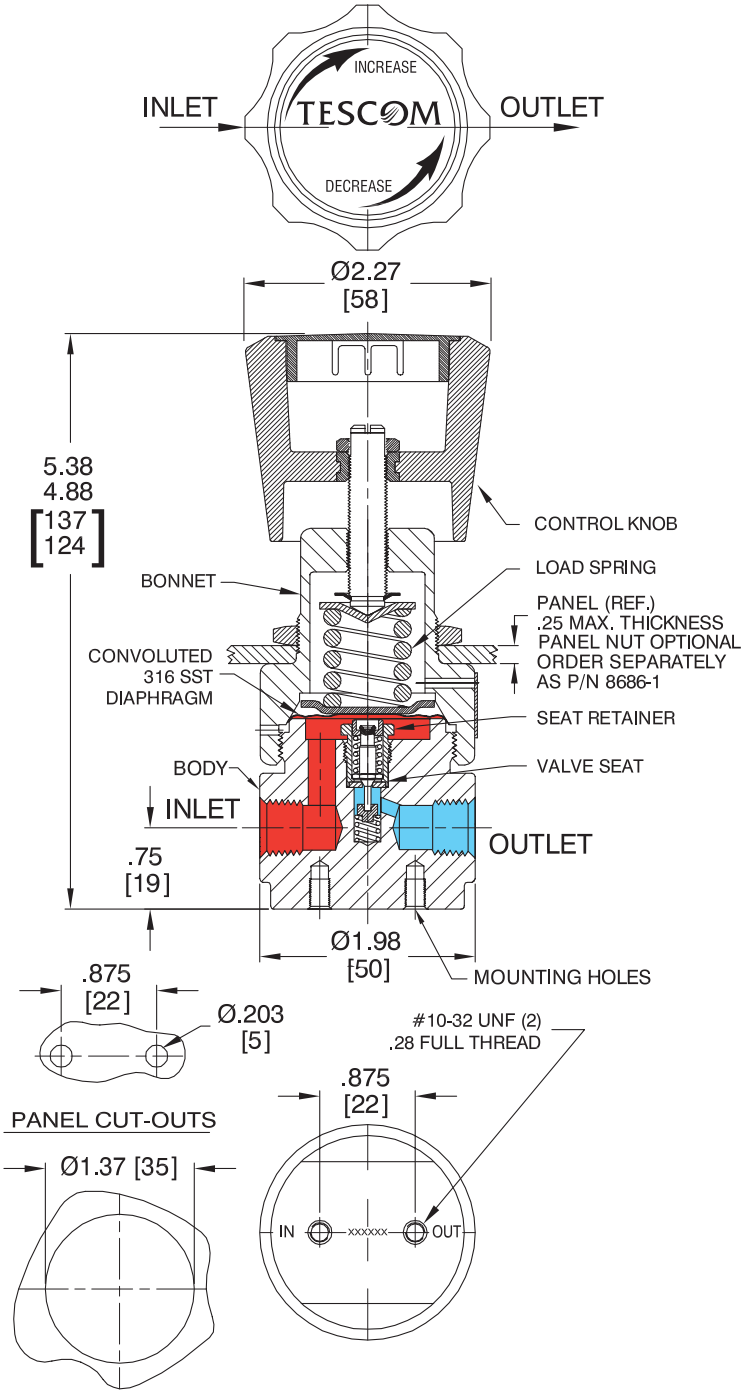
- Analytical systems
- Gas sampling
- Pilot plants
- OEM packages
- R & D laboratories

Features and Benefits

- Reduces contamination and provides accurate regulation of corrosive or non-corrosive gases
- Convoluted metal-to-metal sealed diaphragm
- Close pressure differential between crack and reseat
- Compact and economical
- Dome loading is optional
- Panel mounting is available

44-2300 SERIES

44-2300 Series Regulator Drawing



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44-2300 Series Regulator Flow Chart

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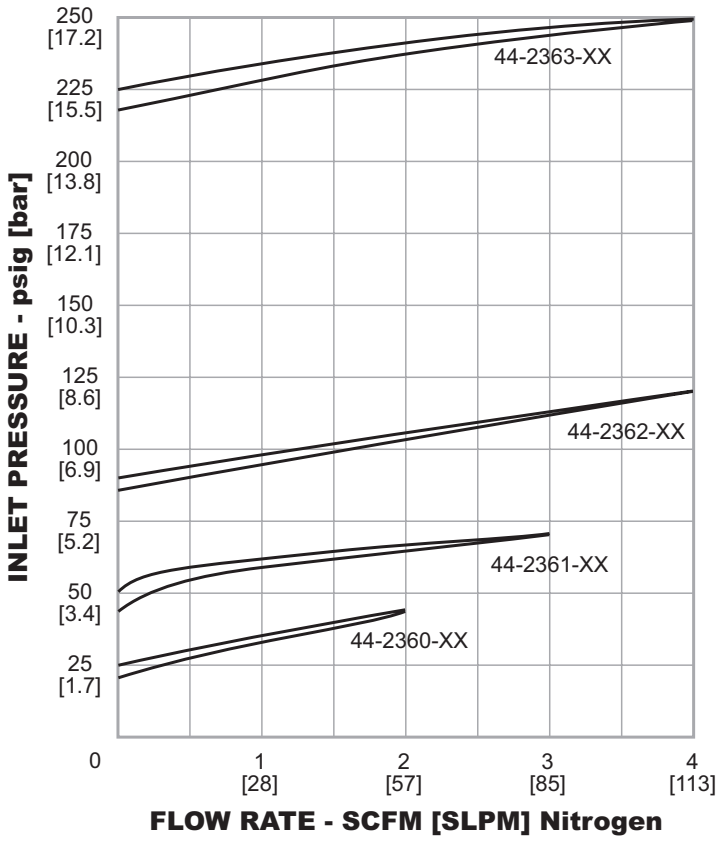
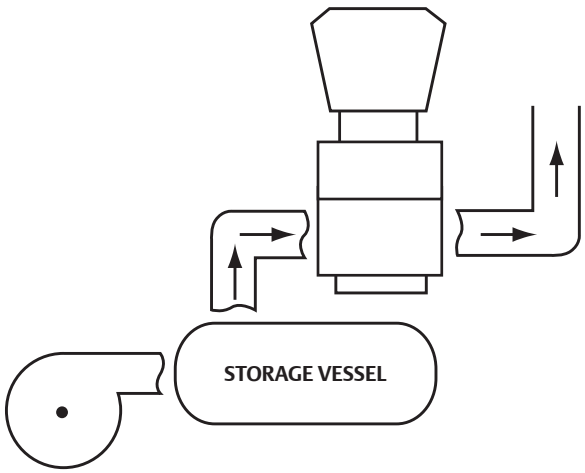


44-2300 Typical Application



44-2300 SERIES

44-2300 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

44-23 6 3 - 2 4

BASIC SERIES	BODY MATERIAL	DIAPHRAGM	SPRING	REMAINING PARTS	CONTROLLED PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
44-23	**1** – Brass	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	**0** – 0-25 psig 1.7 bar	**2** – NPTF	**4** – 1/4"
	6 – 316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	**1** – 0-50 psig 3.4 bar		
	9 – Monel	Cobalt Chrome Nickel Alloy (Eligiloy®)	Cobalt Chrome Nickel Alloy (Eligiloy®)	Monel	**2** – 0-100 psig 6.9 bar		
					3 – 0-250 psig 17.2 bar		

Regulators - Relief / Backpressure

D44251995X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Ranges
0-25, 0-50, 0-100, 0-250 psig
0-1.7, 0-3.4, 0-6.9, 0-17.2 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet < 2 x 10^{-8} atm cc/sec He

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.30

Maximum Operating Torque
30 in-lbs / 3.4 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Seat Retainer
PEEK

O-Ring
FKM (Viton®-A), FFKM, Perfluoroelastomer (Kalrez®)

Diaphragm, Filter, Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel or Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2 lbs / 0.9 kg

Viton® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-2500 Series is a compact, lightweight, single-stage regulator for specialty, flammable, and industrial gases for flows up to 30 SCFM / 850 SLPM. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity.

Application

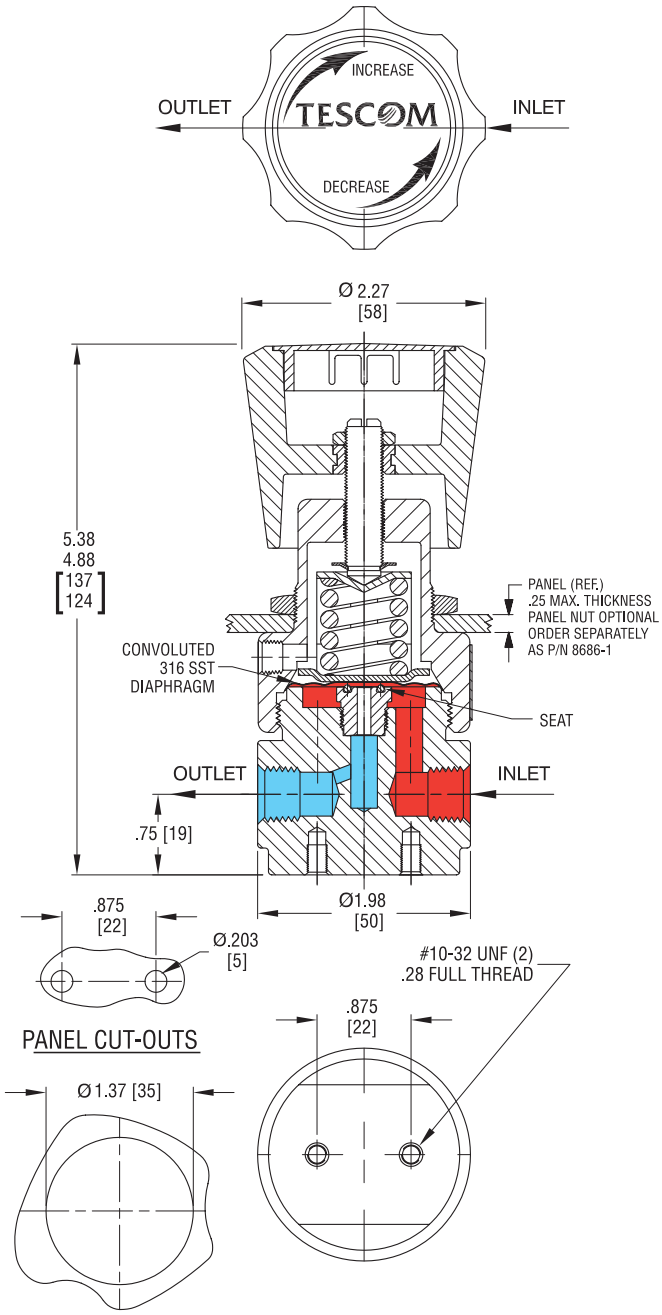
- General purpose

Features and Benefits

- Reduces contamination and provides accurate regulation of non-corrosive and corrosive gases
- Convoluted metal-to-metal sealed diaphragm
- Close pressure differential between crack and reseat
- Economically priced
- Panel mounting is standard
- Bubble-tight shutoff at all reseating pressures
- Flow capacity C_V = 0.30

44-2500 SERIES

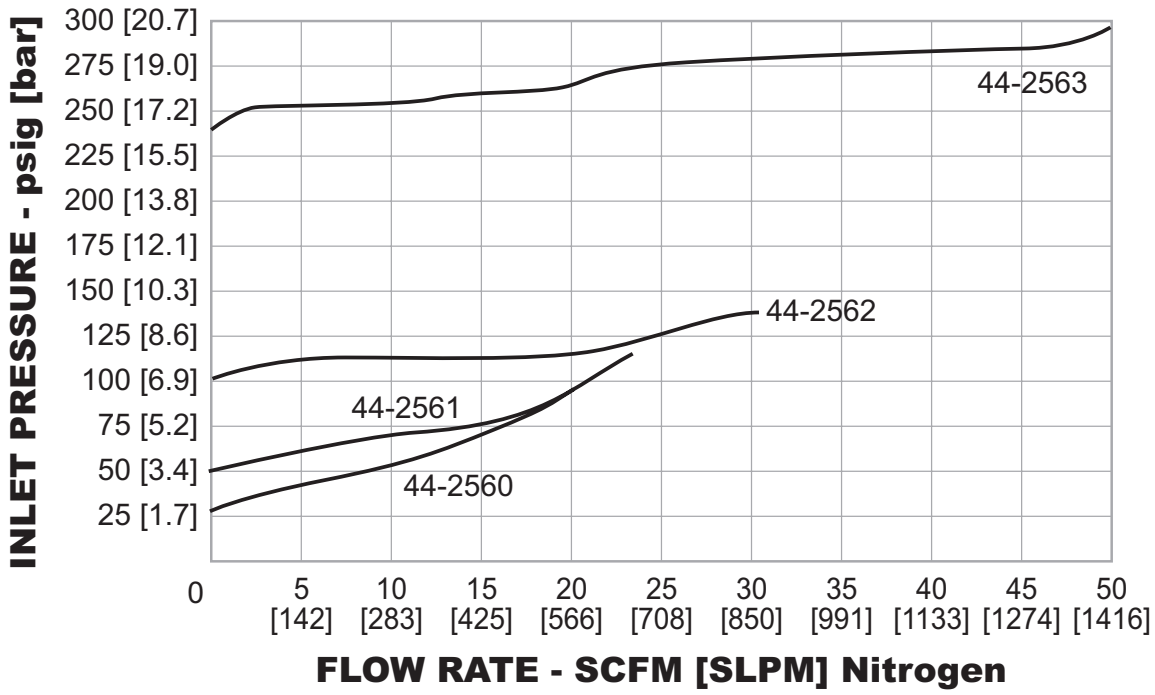
44-2500 Series Regulator Drawing



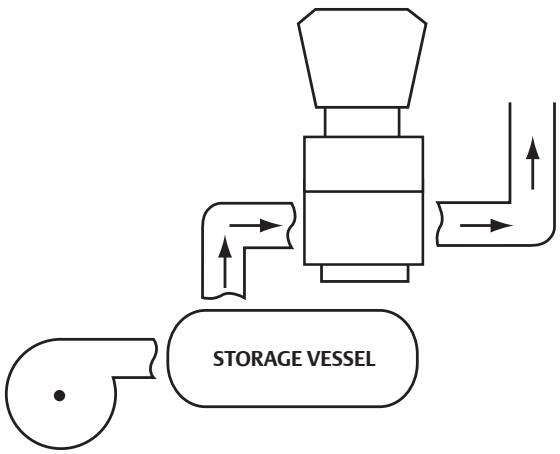
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2500 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-2500 Series Typical Application

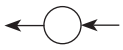
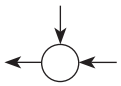


44-2500 SERIES

44-2500 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-25	6	2	T	2	4	A
BASIC SERIES	**BODY MATERIAL**	**CONTROLLED PRESSURE RANGES**	**O-RING MATERIAL**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**GAUGE PORT OPTIONS**
44-25	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-250 psig 0-17.2 bar	**T –** FKM (Viton®-A) **K –** FFKM, Perfluoroelastomer (Kalrez®)	**2 –** NPTF	**4 –** 1/4"	**A –** No gauge ports  **F –** One inlet gauge at 90° 

Regulators - Relief / Backpressure

D44291996X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Ranges
0-12, 0-25, 0-50, 0-100, 0-150 psig
0-0.83, 0-1.7, 0-3.4, 0-6.9, 0-10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Design to meet < $2x10^{-8}$ atm cc/sec He

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.3

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat Retainer
PEEK

O-Ring
FKM (Viton®-A), FFKM, Perfluoroelastomer (Kalrez®)

Diaphragm, Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
3 lbs / 1.4 kg

Viton® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 44-2900 Series backpressure regulator is designed to be compact, extremely sensitive and for industrial gases with flows up to 20 SCFM / 566 SLPM. The convoluted Stainless Steel diaphragm provides excellent sensitivity and repeatability; metal-to-metal diaphragm seal minimizes the potential for leakage.

Applications

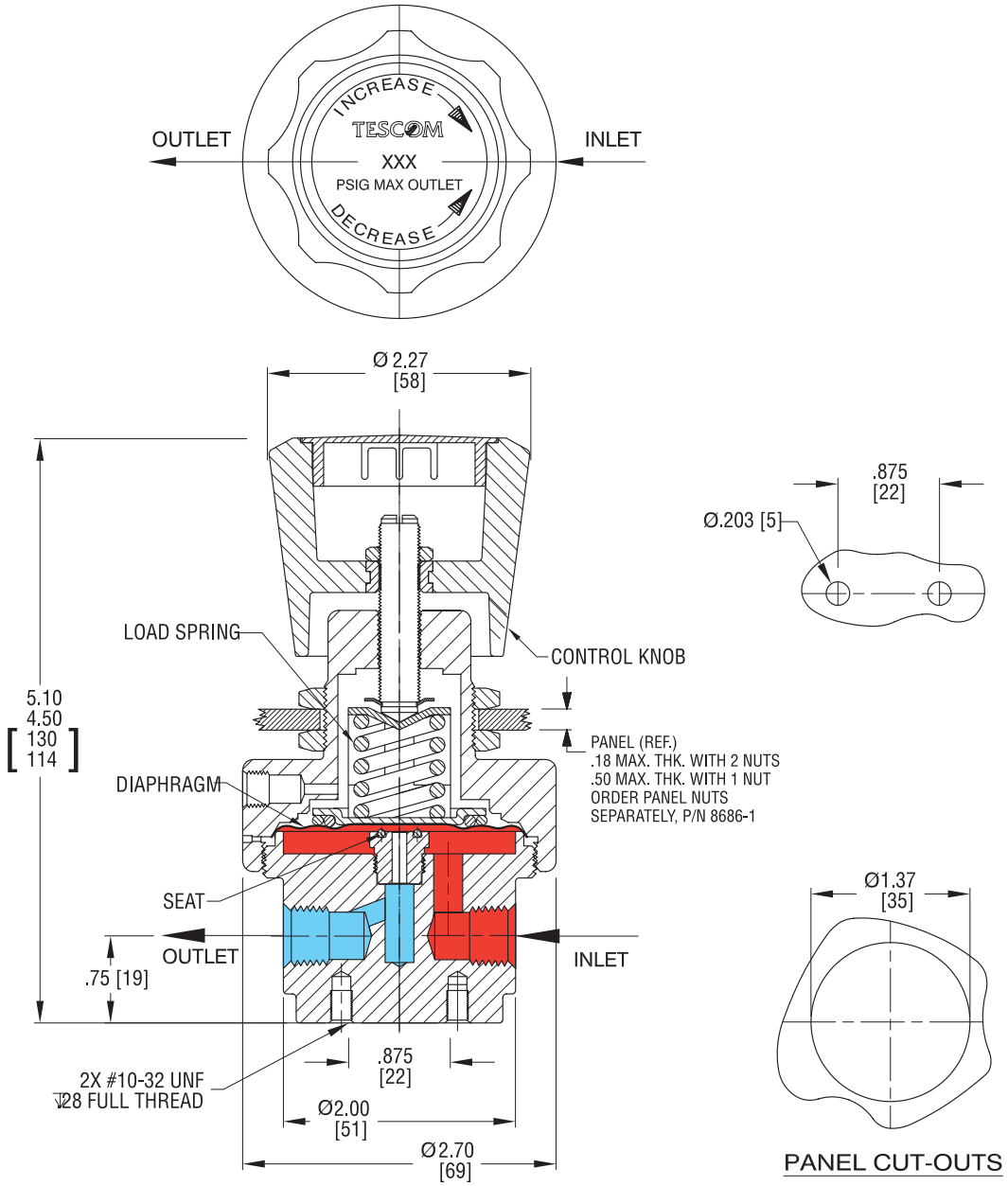
- R&D laboratories
- Process systems
- Pilot plants

Features and Benefits

- 316 Stainless Steel diaphragm provides metal-to-metal sealing integrity and good sensitivity
- Large sensing seat area ratio provides a low crack to reseat pressure differential and excellent repeatability
- Bubble-tight shutoff at all reseating pressures
- Flow capacity C_V = 0.3
- Panel mounting is standard
- Suitable for non-corrosive and corrosive gases

44-2900 SERIES

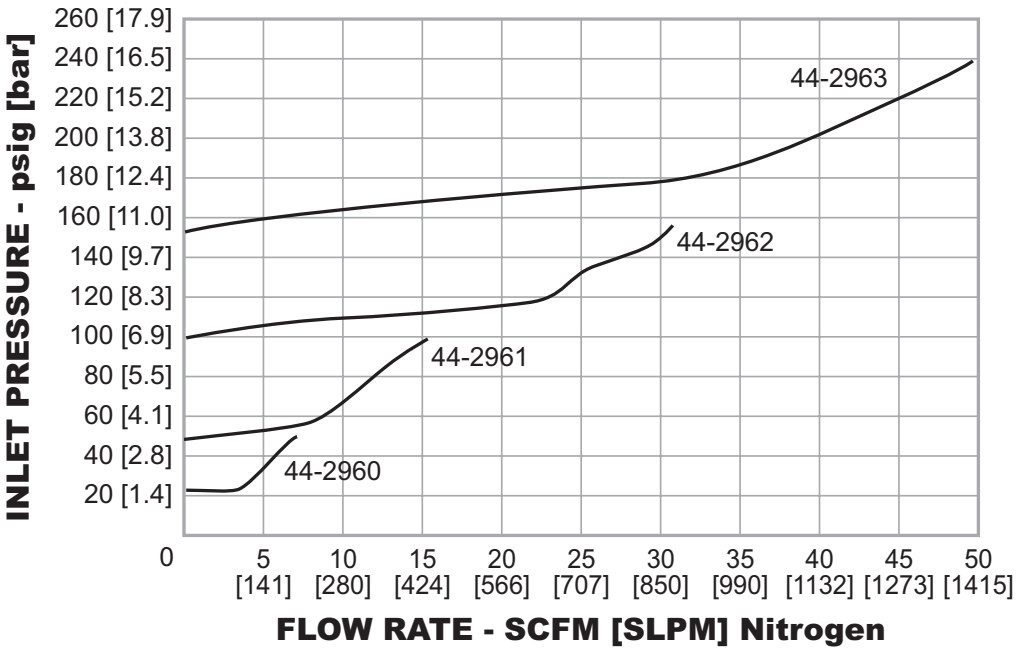
44-2900 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2900 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

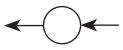
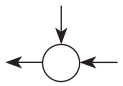


44-2900 SERIES

44-2900 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-29	6	2	T	2	4	A
BASIC SERIES	**BODY MATERIAL**	**CONTROLLED PRESSURE RANGES**	**O-RING MATERIAL**	**INLET AND OUTLET PORT TYPE**	**INLET AND OUTLET PORT SIZE**	**GAUGE PORT OPTIONS**
44-29	**6 –** 316 Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9bar **3 –** 0-150 psig 0-10.3 bar **L –** 0-12 psig 0-0.83 bar	**T –** FKM (Viton®-A) **K –** FFKM, Perfluoroelastomer (Kalrez®)	**2 –**NPTF	**4 –** 1/4"	**A –** No gauge ports  **F –** 1 inlet gauge at 90° 

Regulators - Relief / Backpressure

D44471777X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
50 mm Hg absolute - 15 psig / 1 bar
50 mm Hg absolute - 50 psig / 3.4 bar
50 mm Hg absolute - 100 psig / 6.9 bar
50 mm Hg absolute - 150 psig / 10.3 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: ≤ 2 x 10^{-8} atm cc/sec He

Ambient Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.04
C_V = 0.30 (optional)

Maximum Operating Torque
25 in-lbs / 2.8 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Bonnet
Electroless Nickel Plated Brass

Seat
PTFE

Spring Main Valve and Bias
316 Stainless Steel

Diaphragm
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2.75 lbs / 1.2 kg

Teflon® is a registered trademark of E.I du Pont de Nemours and Company.

TESCOM 44-4700 Series is an extremely sensitive, high purity, backpressure regulator for specialty, flammable and industrial gases for low pressure, and sub-atmospheric pressure control. Diffusion-resistant metal diaphragm seal ensures gas purity and leak integrity.

Applications

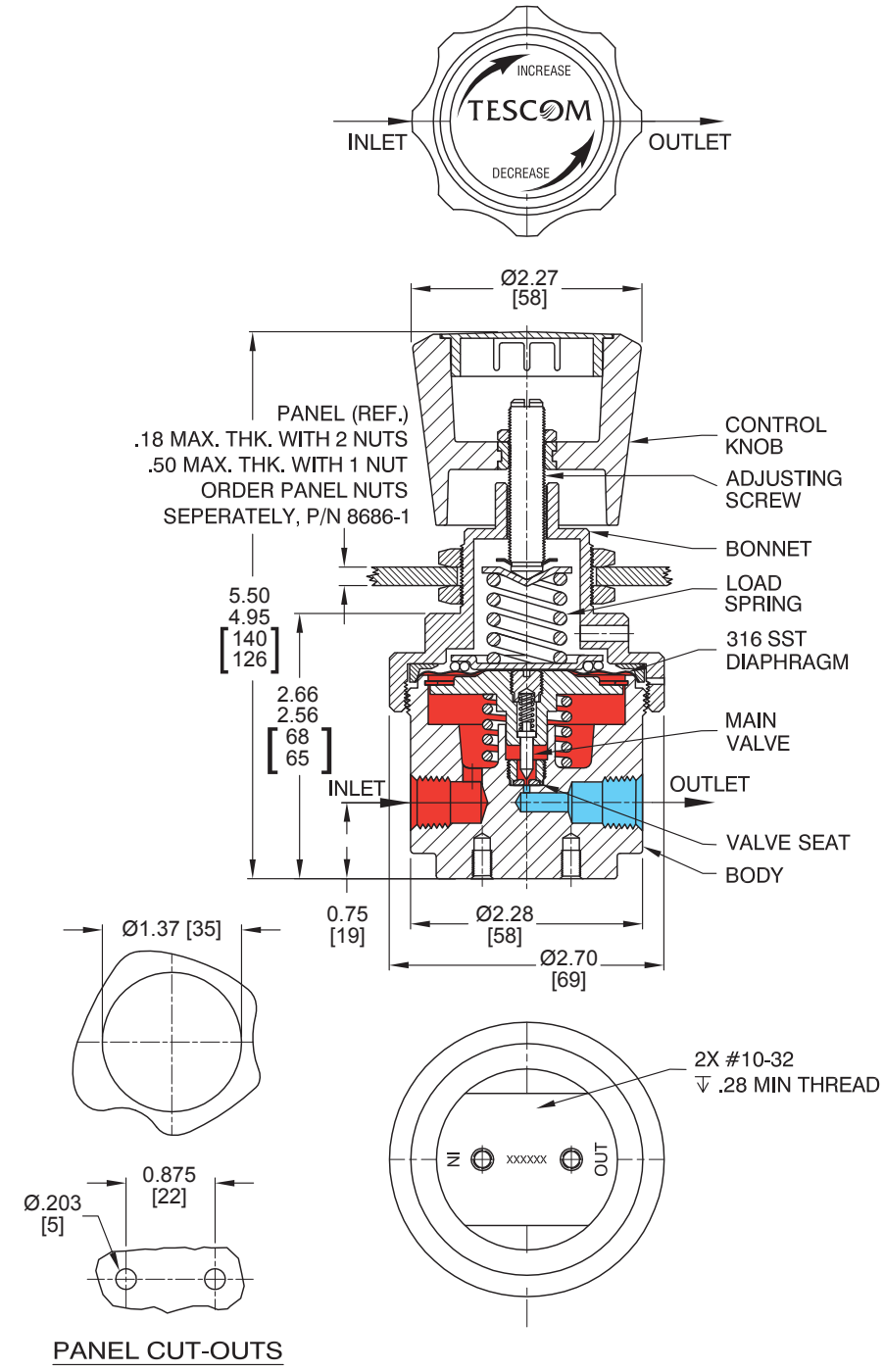
- Analytical systems
- Sample systems
- Pilot plants

Features and Benefits

- 316 Stainless Steel diaphragm provides metal-to-metal sealing integrity and good sensitivity
- Large sensing seat area ratio provides a low crack-to-reseat pressure differential and excellent repeatability
- Negative spring bias for vacuum systems
- Adjustable stop limits maximum outlet pressure
- NACE compliant designs are available

44-4700 SERIES

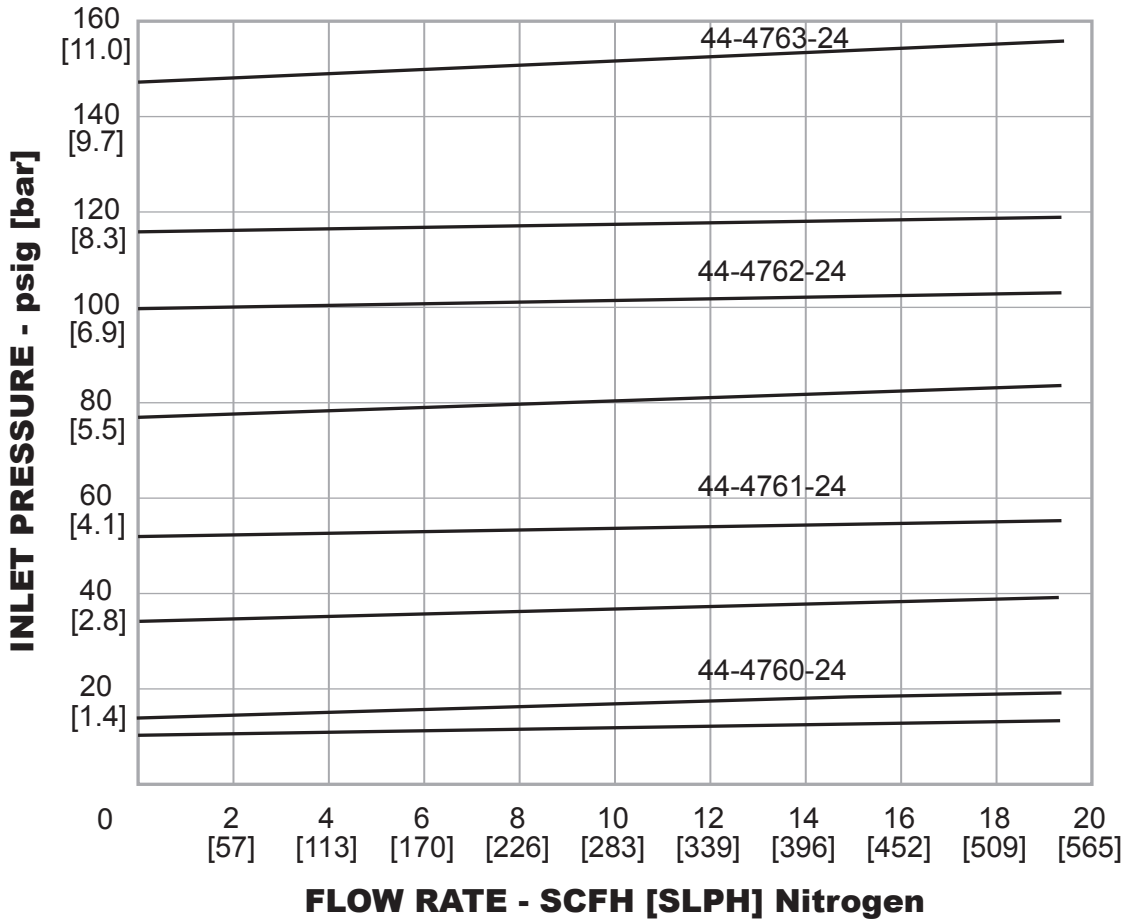
44-4700 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-4700 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-4700 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-47 6 0 - 2 4

BASIC SERIES	BODY MATERIAL	INLET PRESSURE RANGES[1]	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	OPTIONS
44-47	**6** – 316 Stainless Steel	**0** – 50 mm Hg absolute - 15 psig / 1 bar **1** – 50 mm Hg absolute - 50 psig / 3.4 bar **2** – 50 mm Hg absolute - 100 psig / 6.9 bar **3** – 50 mm Hg absolute - 150 psig / 10.3 bar *1. 28" Hg = 50 mm Hg absolute*	**1** – SAE **2** – NPTF **3** – MS33649 **H** – HPIC	**4** – 1/4" **6** – 3/8"	**-501** – C_V = 0.30

Regulators - Relief / Backpressure

D44551997X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Ranges
0-50, 0-100, 0-300 psig
0-3.4, 0-6.9, 0-20.7 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating Temperature
-15°F to 200°F / -26°C to 93°C

Flow Capacity
C_V = 0.3

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Seat Retainer
PEEK

O-Ring
FKM (Viton®-A), FFKM, Perfluoroelastomer (Kalrez®)

Remaining Parts
Stainless Model: Stainless Steel
Brass Model: Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
2 lbs / 0.9 kg

Viton® and Kalrez® are registered trademarks of E.I. du Pont Nemours and Company.

TESCOM 44-5500 Series general purpose, compact backpressure regulator controls pressures up to 300 psig / 20.7 bar and is suitable for gas or liquid service.

Applications

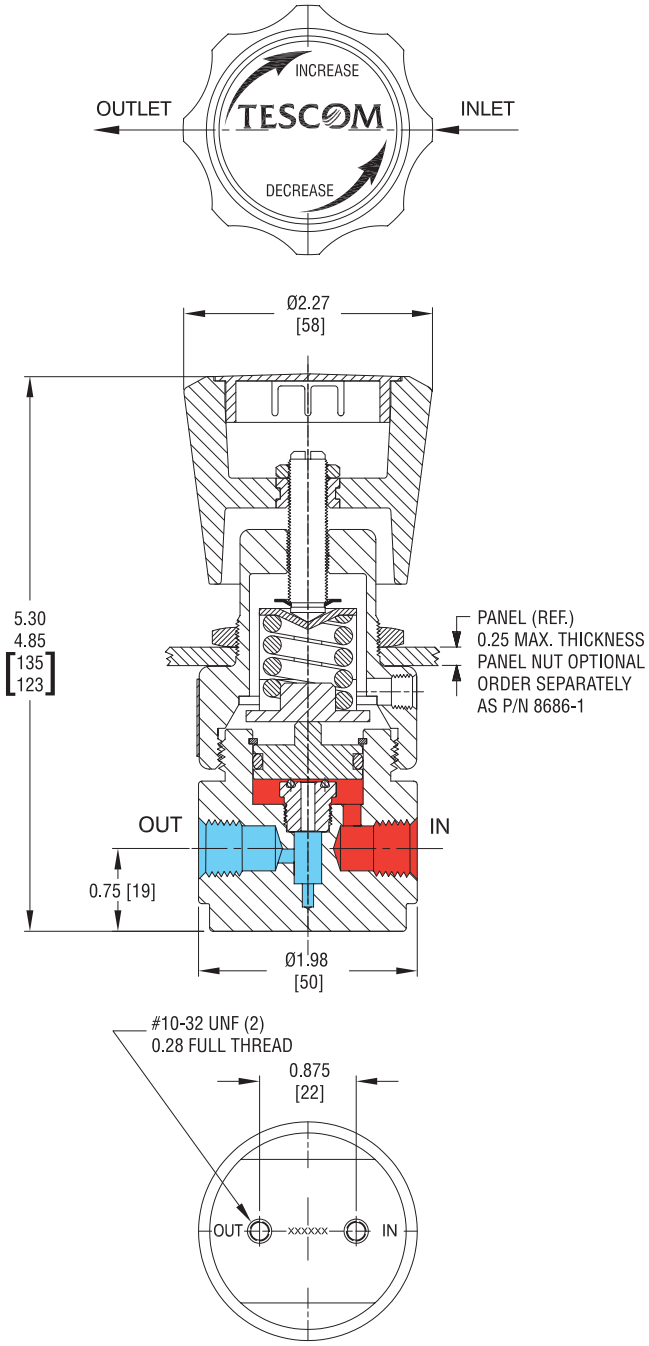
- General purpose
- Industrial equipment for hydraulic or pneumatic service
- Backpressure pump control

Features and Benefits

- Economical, compact design
- Piston sensed design is safe and reliable
- Choice of Stainless Steel or Brass construction
- C_V = 0.3
- Low handknob torque
- Bubble-tight shutoff at all reseating pressures
- Panel mounting is standard
- Optional gauge ports

44-5500 SERIES

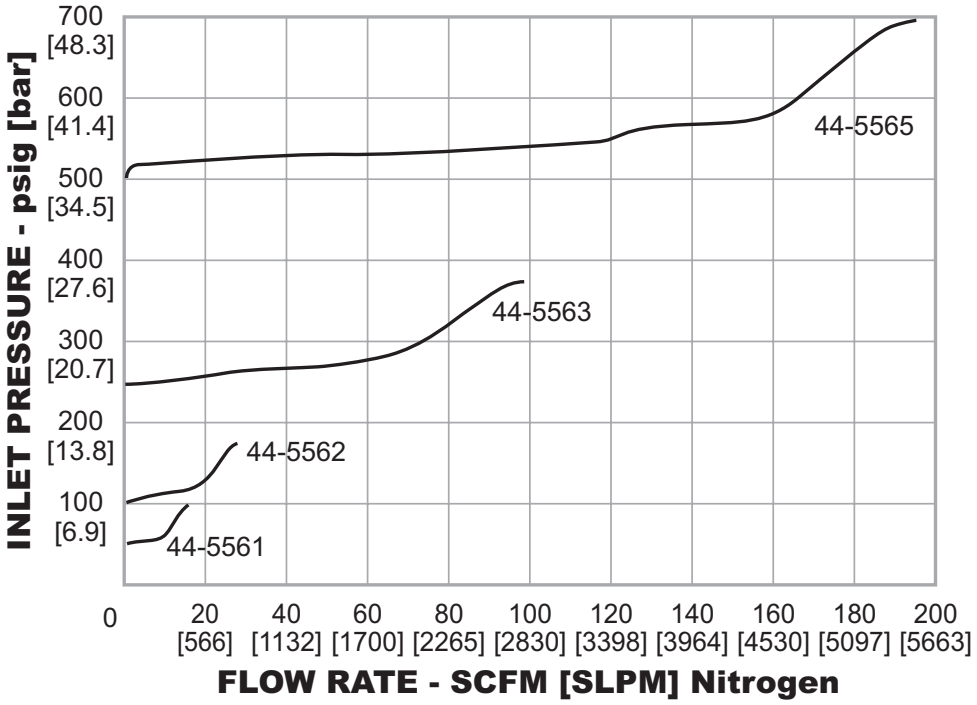
44-5500 Series Regulator Drawing



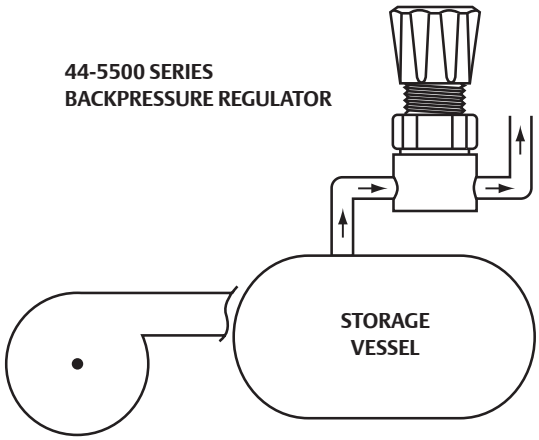
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-5500 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



44-5500 Series Vessel Mounting



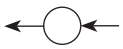
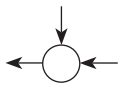
44-5500 SERIES

44-5500 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

44-55	6	2	V	2	4	A

BASIC SERIES	BODY MATERIAL	CONTROLLED PRESSURE RANGES	O-RING MATERIAL	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	GAUGE PORT OPTIONS
44-55	**1 –** Brass **6 –** 316 Stainless Steel	**1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-300 psig 0-20.7 bar	**T –** FKM (Viton®-A) **K –** FFKM, Perfluoroelastomer (Kalrez®)	**2 –** NPTF	**4 –** 1/4"	**A –** No gauge ports  **F –** 1 inlet gauge at 90° 

Regulators - Relief / Backpressure D54211635X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
15,000 psig / 1034 bar

Controlled Pressure Ranges
0-500, 0-800, 10-1500, 15-2500, 25-4000, 50-6000, 200-10,000, 300-15,000 psig
0-34.5, 0-55.2, 0.69-103, 1.0-172, 1.7-276, 3.4-414, 13.8-690, 20.7-1034 bar

Design Proof Pressure
150% maximum rated

Leakage
Maximum 2 drops/minute at 150 SUS at 2500 psig / 172 bar

Ambient Operating Temperature[1]
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.08

Maximum Operating Torque
40 in-lbs / 4.5 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat and Poppet
17-4 PH Stainless Steel

O-Ring
See Part Number Selector

Back-up Ring
Inlet Pressure Ranges
2500-10,000 psig / 172-690 bar: PTFE
15,000 psig / 1034 bar: PCTFE

Valve Seal
Polyimide (Vespel®)

Sensor Seal
Inlet Pressure Ranges
500-10,000 psig / 34.5-690 bar: PCTFE
15,000 psig / 1034 bar: Polyimide (Vespel®)

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
5 lbs / 2.3 kg

1. For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult TESCOM.

AIR LOADED

SPRING LOADED

DOME LOADED

TESCOM 54-2100 Series backpressure regulator is suitable for 15,000 psig / 1034 bar liquid applications. Modifications are also available for 20,000 psig / 1379 bar and 30,000 psig / 2068 bar. Hardened Stainless Steel seat and stem provide excellent wear resistance in harsh applications.

Applications

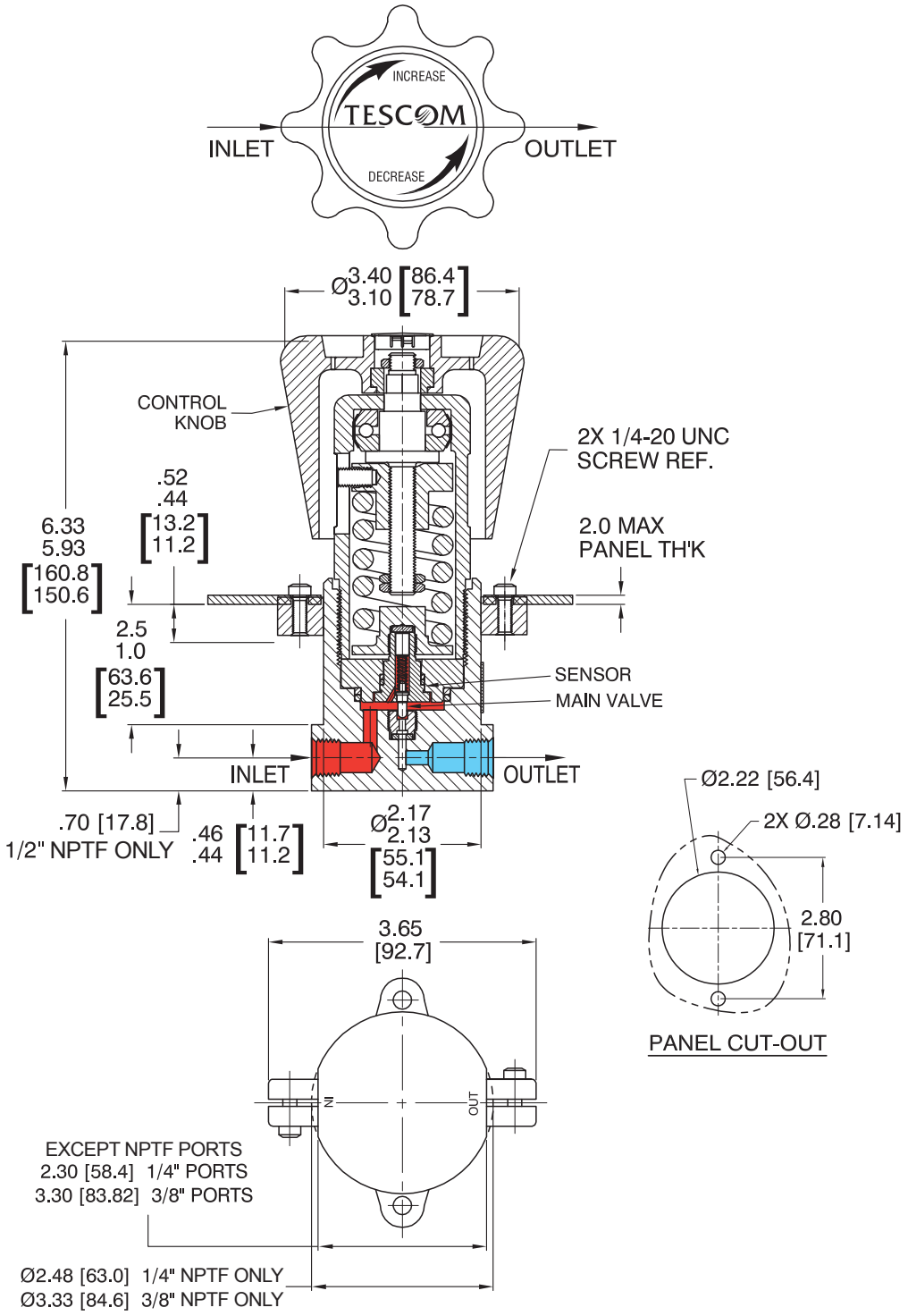
- Pump discharge pressure control
- Chemical injection
- Burst testing

Features and Benefits

- Accuracy ± 1% of control pressure range
- Easily adjusted, low torque handknob control, dome and air loaded versions are available
- Hardened Stainless Steel seats
- Safe and reliable piston-style sensor
- Panel mounting is standard
- Compatible with TESCOM's air actuator and ER5000 Electropneumatic Controllers

54-2100 SERIES

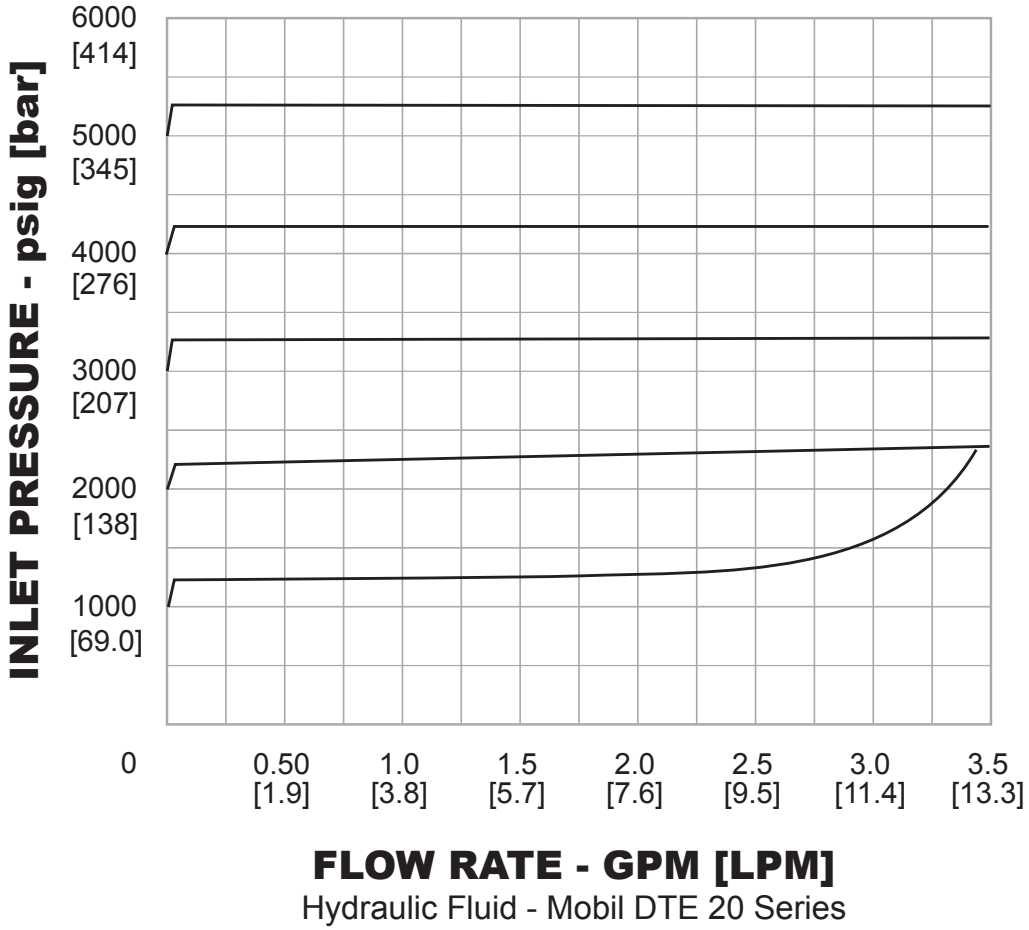
54-2100 Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2100 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



54-2100 SERIES

54-2100 Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

54-21	6	1	D			2	4	
BASIC SERIES	BODY MATERIAL	INLET PRESSURE	SOFT GOODS MATERIAL			INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	LOADING
			DYNAMIC	STATIC	SEAT			
54-21	**6** – 316 Stainless Steel	**0** – 300-15,000 psig 20.7-1034 bar[1] *(Spring only)* **1** – 200-10,000 psig 13.8-690 bar[2] **2** – 50-6000 psig 3.4-414 bar *(Spring and Air only)* **3** – 25-4000 psig 1.7-276 bar *(Spring only)* **4** – 15-2500 psig 1.0-172 bar *(Spring and Air only)* **5** – 10-1500 psig 0.69-103 bar *(Spring and Air only)* **6** – 0-800 psig 0-55.2 bar *(Spring only)* **7** – 0-500 psig 0-34.5 bar *(Spring and Dome only)*	**D** – Nitrile, Buna-N **T** – FKM (Viton®-A) **V** – FFKM, Perfluoroelastomer (Kalrez®) **Z** – Ethylene Propylene	Nitrile, Buna-N FKM (Viton®-A) FFKM, Perfluoroelastomer (Kalrez®) Ethylene Propylene	17-4 Stainless Steel 17-4 Stainless Steel 17-4 Stainless Steel 17-4 Stainless Steel	**1** – SAE **2** – NPTF **3** – MS33649 **4** – High Pressure/ Amico **6** – Medium Pressure/ Slimline	**4** – 1/4" **6** – 3/8" **8** – 1/2" *(NPTF/SAE/ MS33649 only)* **9** – 9/16" *(MP/HP only)* **12** – 3/4" *(MP only)*	– Spring *(no letter required)* **H** – Dome **A** – Air[3]

For extended temperatures of soft goods material, please consult TESCOM.

1. Available with 1/4" and 3/8" high pressure, 1/4" and 3/8" medium pressure, 1/4" NPTF only
2. Not to be used with 3/8" SAE or 3/8" MS33649 ports
3. 80 psig / 5.5 bar minimum loading pressure needed

Regulators - Relief / Backpressure

D54231641X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Spring and Dome Loaded: 5000 psig / 345 bar
Air Actuated: 10,000 psig / 690 bar

Control Pressure Ranges
1000, 1500, 2500, 3500, 5000 and 10,000 psig
69.0, 103, 172, 241, 345 and 690 bar

Design Proof Pressure
150% of maximum rated

Leakage
2 drops/min at 150 S.U.S. at 2500 psig / 172 bar

Operating Temperature (media)[1]
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 1.6

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel or 316 Stainless Steel

Seat, Poppet and Sensor
17-4 PH Stainless Steel

O-Rings
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene or Polyurethane

Back-up Rings
PTFE

Bonnet (Spring load only)
303 Stainless Steel, Stainless Steel

Remaining Parts
300 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
Spring and Dome Loaded: 15 lbs / 6.8 kg
Air Actuated: 30 lbs / 13.6 kg

1. Operating temperature range dependent on o-ring material.

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM 54-2300 Series backpressure hydraulic regulator is capable of flows from 5-50 GPM and is available in air load for use with the TESCOM ER5000 Electropneumatic Controller.

Applications

- Hydraulic test stands
- Process control

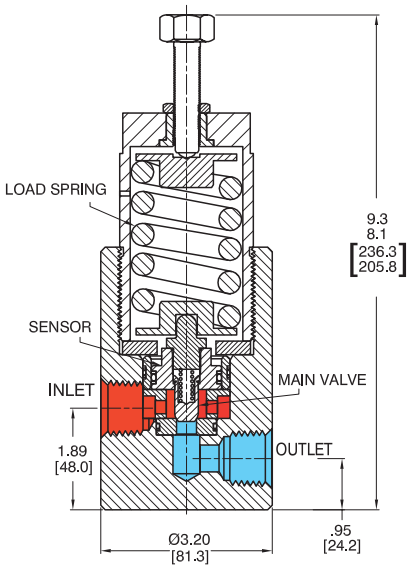
Features and Benefits

- Wear rings available for non-lubricating media
- Control pressure up to 10,000 psig / 690 bar
- Flow Capacity C_V = 1.6
- Excellent crack-to-reseat ratio
- Hardened metal-to-metal seats for heavy duty service
- Choice of spring, dome and air actuated loading
- Standard side mounting holes
- Flanged end connections available

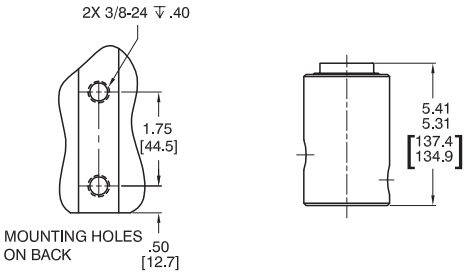
54-2300 SERIES

54-2300 Series Regulator Drawing

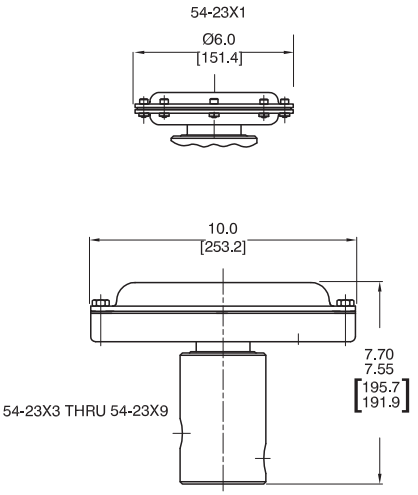
SPRING LOAD



DOME LOAD (1/2) SCALE

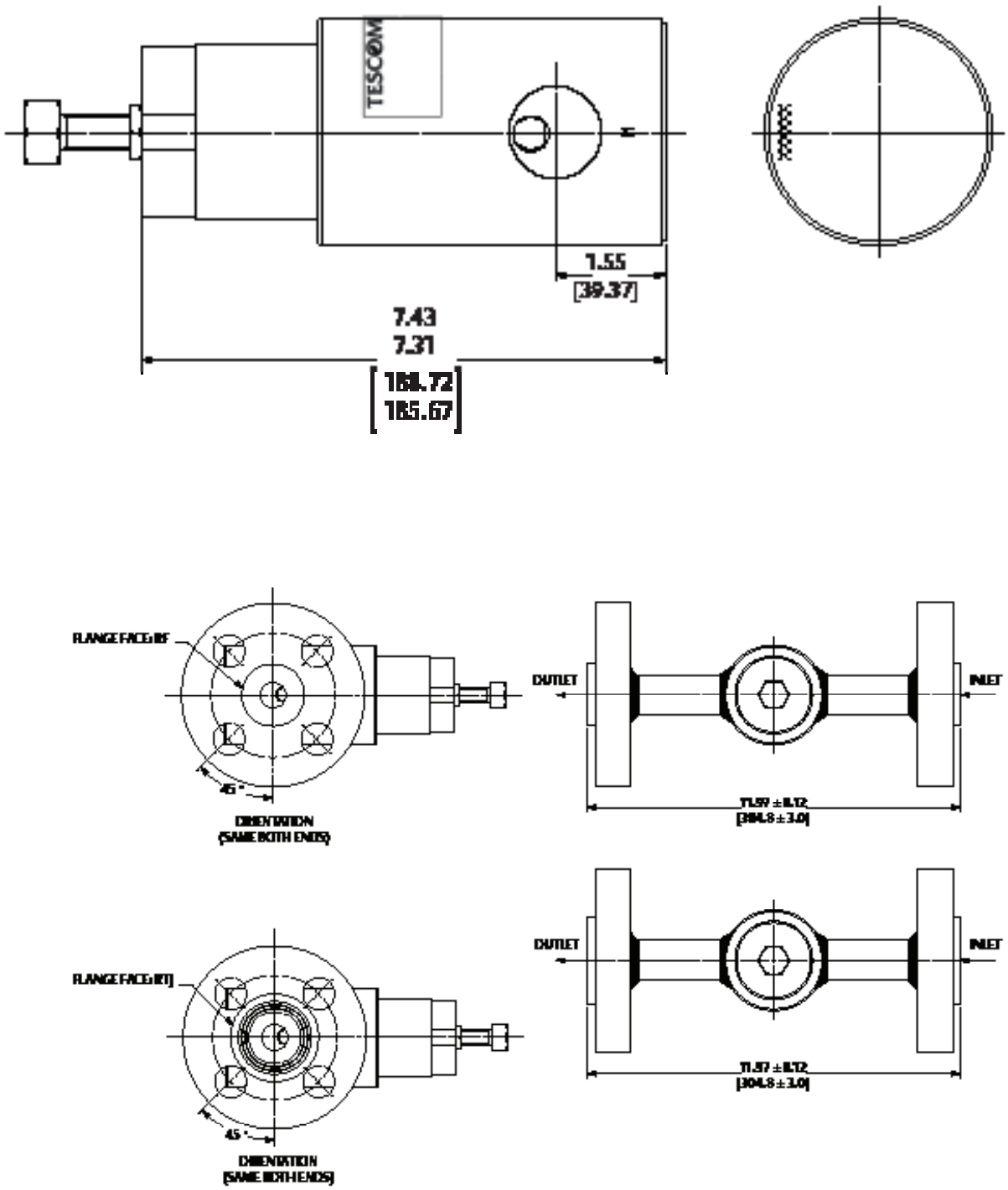


AIR LOAD (1/2) SCALE



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2300 Series Regulator with Flanges Drawing

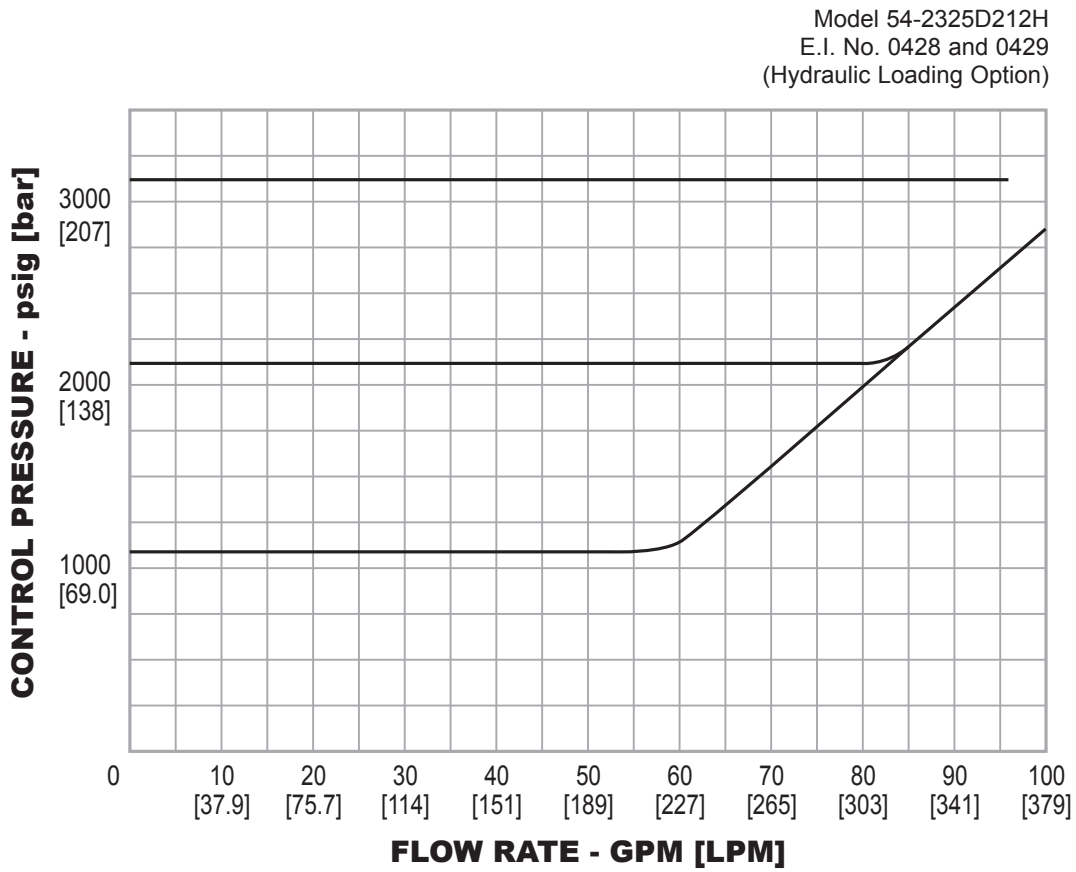


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2300 SERIES

54-2300 Series Regulator Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



54-2300 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Threaded End Connector Part Number Selection:

54-23	2	1	T				2	12	S
BASIC SERIES	BODY MATERIAL	CONTROL PRESSURE RANGES	SOFT GOODS MATERIAL				PORT TYPE	PORT SIZE	LOADING METHOD
			O-RINGS DYNAMIC	O-RINGS STATIC	SEAT	TEMPERATURE (MEDIA ONLY)			
54-23	**2** – 303 Stainless Steel **6** – 316 Stainless Steel	**0** – 20-1000 psig 1.4-69.0 bar (spring only) **1** – 20-1500 psig 1.4-103 bar (spring and air only) **3** – 50-3500 psig 3.4-241 bar (spring only) 50-2500 psig 3.4-172 bar (air only 30:1*) **5** – 200-5000 psig 13.8-345 bar (spring and dome 1:1 and air 75:1) **9** – 250-10,000 psig 17.2-690 bar (air only 125:1*)	**D** – Buna-N	Buna-N	17-4 Stainless Steel	-40°F to 165°F -40°C to 74°C	**1** – SAE **2** – NPTF	**08** – 1/2" **12** – 3/4"	**S** – Spring **H** – Dome **A** – Air
			T – Viton®	Viton®	17-4 Stainless Steel	-15°F to 300°F -26°C to 149°C			
			U – Polyurethane	Polyurethane	17-4 Stainless Steel	-15°F to 125°F -26°C to 52°C			
			Z – Ethylene Propylene	Ethylene Propylene	17-4 Stainless Steel	-40°F to 225°F -40°C to 107°C			

**Ratio is for reference only.*

54-2300 SERIES

54-2300 Series Regulator Part Number Selector

Flanged End Connector Part Number Selection:

54-23W 6 1 A 1 52 1

BASIC SERIES	BODY, PIPE & FLANGE MATERIAL	INLET PRESSURE	SOFT GOOD MATERIAL					FLANGE SIZE	FLANGE CLASS	FLANGE FACE
			Dash No.	O-Rings		SEAT	Operating Temperature			
				Dynamic	Static					
54-23W	**6 –** 316 Stainless steel	**0 –** 20-600 psig 1.4-41.4 bar **1 –** 20-1000 psig 1.4-69.0 bar **2 –** 20-1500 psig 1.4-103.0 bar **3 –** 50-3500 psig 3.4-172.0 bar **4 –** 200-5000 psig 13.8-344.0 bar	A	Nitrile, Buna-N	Nitrile, Buna-N	17-4 SST	-20 to 165°F / -29 to 74°C	**3 –** 1"	**21 –** 300# **41 –** 600# **52 –** 900# /1500# **63 –** 2500#	**1 –** RF **2 –** RTJ
			B	FKM	FKM	17-4 SST	-10 to 200°F / -23 to 93°C			
			C			Polyimide (Vespel® SP21)				
			D			Polyimide (Vespel® SP21)				
			E	EP	EP	17-4 SST	-20 to 200°F / -29 to 93°C			
			F			Polyimide (Vespel® SP21)				
			G	PTFE	PTFE	17-4 SST	-20 to 200°F / -29 to 93°C			

Regulators - Relief / Backpressure D54271905X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Air Loaded: 500 psig / 34.5 bar
Dome Loaded: 5500 psig / 379 bar
Spring Loaded: 500 psig / 34.5 bar

Design Proof Pressure
150% of maximum operating

Maximum Air Operator Pressure
100 psig / 6.9 bar

Operating Temperature[1]
-40°F to 165°F / -40°C to 74°C

Internal Leakage
Bubble-tight

Flow Capacity (main valve)
C_V = 5.0

MEDIA CONTACT MATERIALS

Body
303 Stainless Steel and 316 Stainless Steel

Seat
Glass Filled Peek, Polyimide (Vespel® SP21)

O-Rings
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene

Back-up Rings
PTFE

Remaining Parts
303 Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximately)
30 lbs / 13.6 kg

1. Operating temperature range dependent on O-ring material.
Teflon®, Viton® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

SPRING LOADED

TESCOM 54-2700 Series high flow backpressure regulator. The soft seat allows for hydraulic or pneumatic service. Optional with air load for use with the TESCOM ER5000 Electropneumatic Controller.

Applications

- Process control
- High flow pump discharge control
- Hydraulic test stands

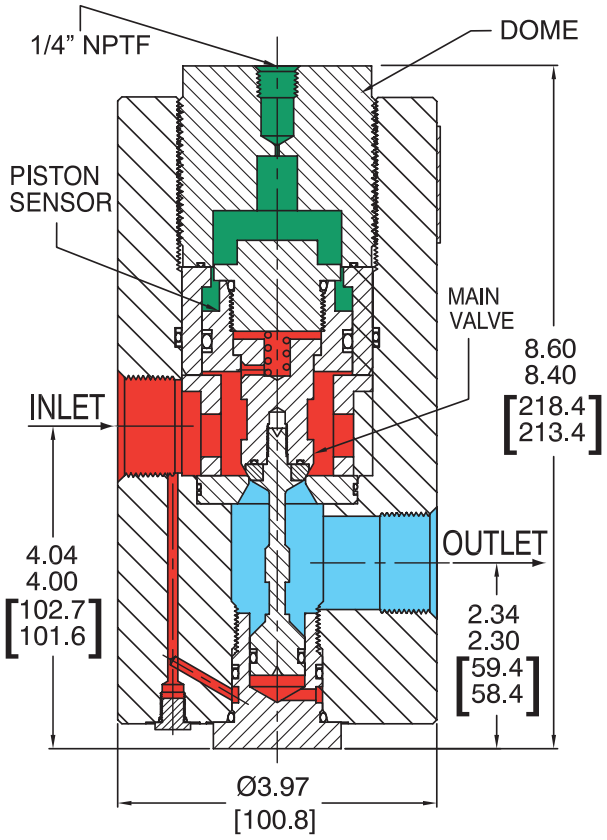
Features and Benefits

- Available in air, dome, and spring loaded versions
- Compatible with TESCOM ER5000 Electropneumatic Controller (air load only)
- High flow: C_V = 5.0
- 500 or 5500 psig / 34.5 or 379 bar maximum controlled pressure range

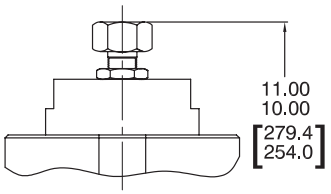
54-2600 SERIES

54-2700 Series Regulator Drawing

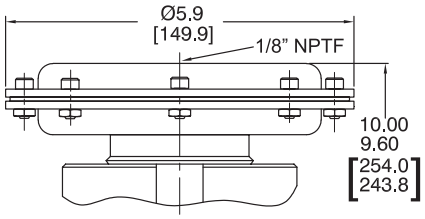
DOME LOAD



SPRING LOAD



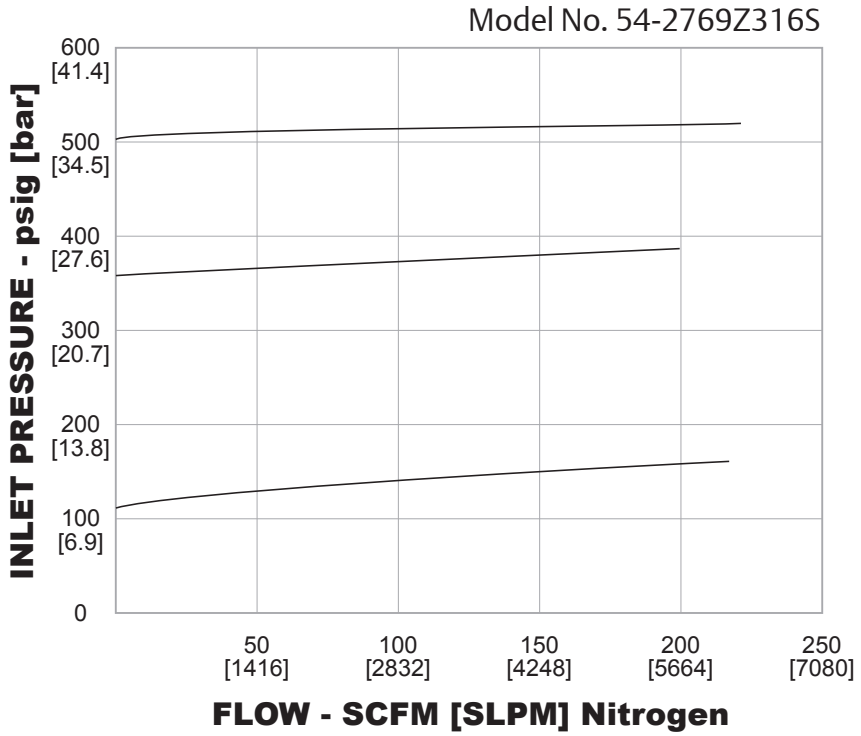
AIR LOAD

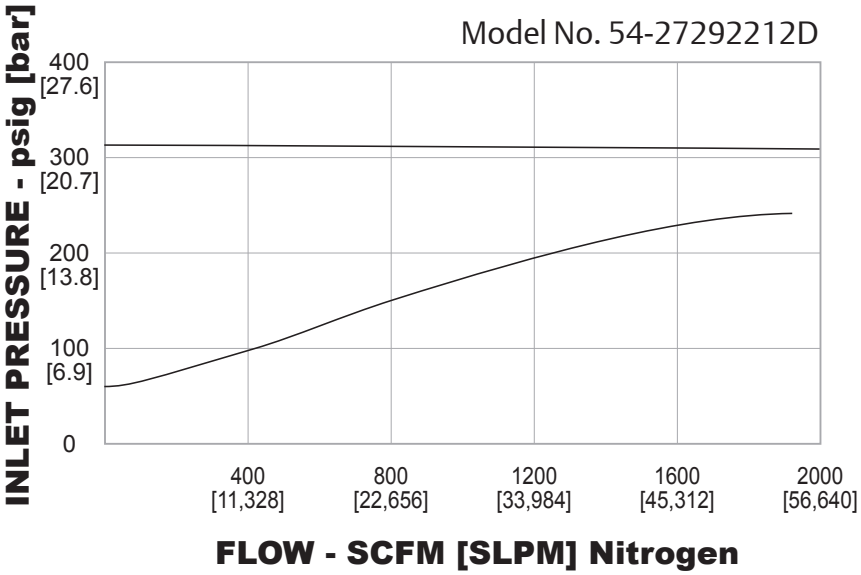


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

54-2700 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





54-2600 SERIES

54-2700 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

54-27	2	9	Z			2	16	A
BASIC SERIES	**BODY MATERIAL**	**CONTROL PRESSURE**	**SOFT GOODS MATERIAL**			**INLET AND OUTLET PORT TYPE**	**PORT SIZE**	**LOADING OPTIONS**
			O-RINGS	**SEAT**	**TEMPERATURE**			
54-27	**2 –** 303 Stainless Steel **6 –** 316 Stainless Steel	**9 –** 500 psig / 34.5 bar (5500 psig / 379 bar for dome load only)	**T –** FKM (Viton®-A)	Glass Filled Peek	-15°F to 300°F -26°C to 149°C	**1 –** SAE*	**16 –** 1"	**A –** Air **D –** Dome **S –** Spring
				Glass Filled Peek	-40°F to 250°F -40°C to 121°C	**2 –** NPTF		
			Z – Ethylene Propylene	Glass Filled Peek	-40°F to 165°F -40°C to 74°C	**3 –** MS33649		
			D – Nitrile, Buna-N	Polyimide (Vespel® SP21)	-15°F to 300°F -26°C to 149°C	**Body diameter is 4.50"*		
			V – FKM (Viton®-A)					

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Controllable Inlet Pressure
10.000 psig / 690 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal & external: Bubble-tight

Operating Temperature
-15°F to 140°F / -26°C to 60°C

Flow Capacity
C_V = 0.08

MEDIA CONTACT MATERIALS

Body
316L Stainless Steel

Bonnet
300 Series Stainless Steel

Seat
PCTFE, Polyimide (Vespel® SP21), PEEK, 17-4 hardened Stainless Steel

Remaining Parts
300 Series Stainless Steel

Inlet & Outlet Port Type
NPTF and Medium Pressure

Inlet and Outlet Port Size
1/4", 3/8"

Weight
6 lbs / 2.7 kg

Teflon®, Kalrez®, Vespel® and Viton® are registered trademarks of E.I du Pont de Nemours and Company.

TESCOM 54-3500 two-stage hydraulic back pressure regulator reduces the controlled inlet pressure in 2 steps. The integrated second stage is self loading and adjusts itself to 50% of the inlet pressure, regardless if the unit is spring, air or dome loaded. This reduction of differential pressure per stage significantly reduces the destructive force of erosion and cavitation. A wide range of soft goods and valve trim materials, including ceramic option, allow for media specific regulator selection.

Applications

- High Pressure Hydraulic test benches
- Injection Valve Manufacturing & Testing
- Supercritical media applications
- Chemical injection

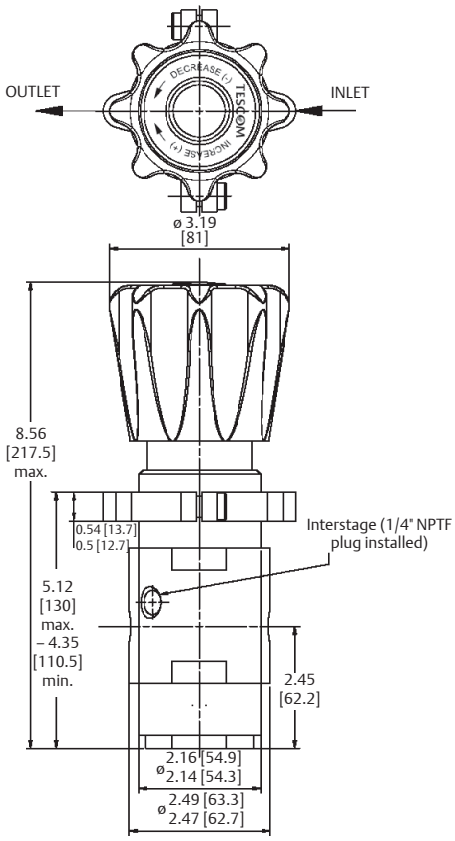
Features and Benefits

- Longer lifetime than single stage solutions by reduced erosion and cavitation
- Lower cost of ownership
- Proven Tescom valve trim modules with many options available

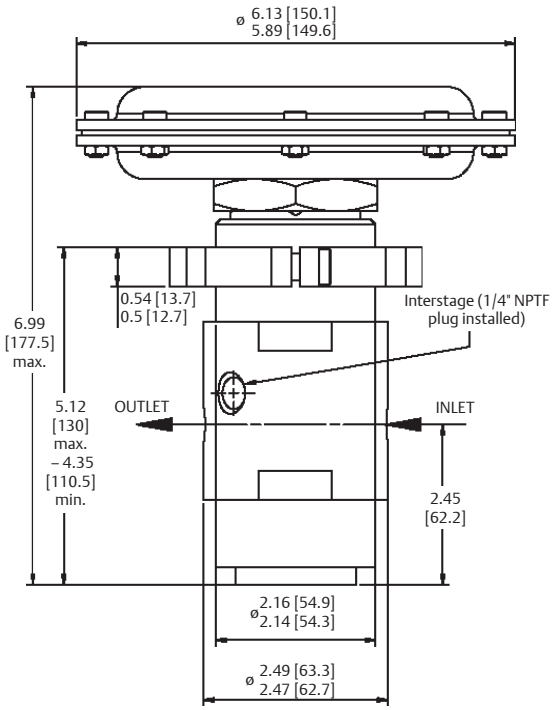
54-3500 SERIES

54-3500 Series Regulator Drawing

54-3500 Spring Loaded



54-3500 Air Loaded



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number :

A = Air Loaded
D = Dome Loaded
S = Spring Loaded

54-35 6 1 T 2 4 A 1 5 0

BASIC SERIES	MATERIAL	INLET PRESSURE	SOFT GOODS MATERIAL		INLET OUTLET PORT TYPE	INLET OUTLET PORT SIZE	FLOW CAPACITY	SEAT MATERIAL	GAUGE PORT OPTIONS	MOD
			O-RING	BACK-UP RING						
54-35	**6 –** Stainless Steel	**1 –** 200 - 10000 psig 14 - 690 bar **2 –** 50 - 6000 psig 3.4 - 414 bar	**B -** Nitrile, Buna-N **T -** FKM (Viton®-A) **U -** Urethane **V -** FFKM, Perfluoroelastomer (Kalrez®) **Z -** EP	PTFE PTFE PTFE PTFE PTFE	**2 –** NPTF **6 –** Medium Pressure	**4 –** 1/4" **6 –** 3/8"	**1 –** Cv = 0.08	**0 – P**CTFE **5 –** 17-4 Stainless Steel **7 –** Polyimide (Vespel® SP1) **8 –** PEEK	**0 –** NONE	**001 –** Ceramic Stem

Regulators - Relief / Backpressure DBB031790X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Inlet Pressure Ranges
See Part Number Selector

Design Proof Pressure
150% of maximum pressure

Operating Temperature[1]
-15°F to 140°F / -26°C to 60°C

Flow Capacity
C_V = 0.2

Internal Leakage
Bubble-tight

MEDIA CONTACT MATERIALS

Body
Nickel-plated Aluminum or 316 Stainless Steel

Seat
ETFE (Tefzel®), PCTFE, PTFE or Polyimide (Vespel®)

O-Rings
Ethylene Propylene, Nitrile, Buna-N, FKM (Viton®-A) or FFKM, Perfluoroelastomer (Kalrez®)

Remaining Parts
300 Series Stainless Steel or Aluminum

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
1/4" NPTF or SAE inlet and outlet ports

Weight
Aluminum: 0.5 lbs / 0.2 kg
Stainless Steel: 1 lbs / 0.5 kg

1. For extended temperatures from -40°F to 204°F / -40°C to 96°C, consult TESCOM.

Viton®, Vespel®, Kalrez® and Tefzel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM BB-3 is a high pressure, low flow, miniature backpressure regulator. Six control pressure ranges are available up to 1200 psig / 83 bar outlet. This regulator can be used for hydraulic or pneumatic service and is small and compact, weighing approximately 4 oz / 0.11 kg in the standard Aluminum construction (316 Stainless Steel also available).

Applications

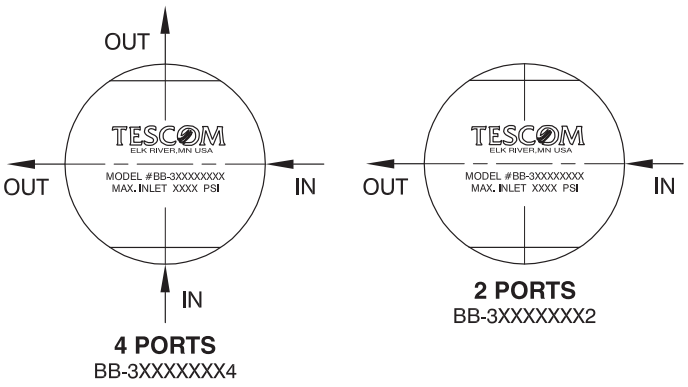
- Portable equipment
- OEM equipment

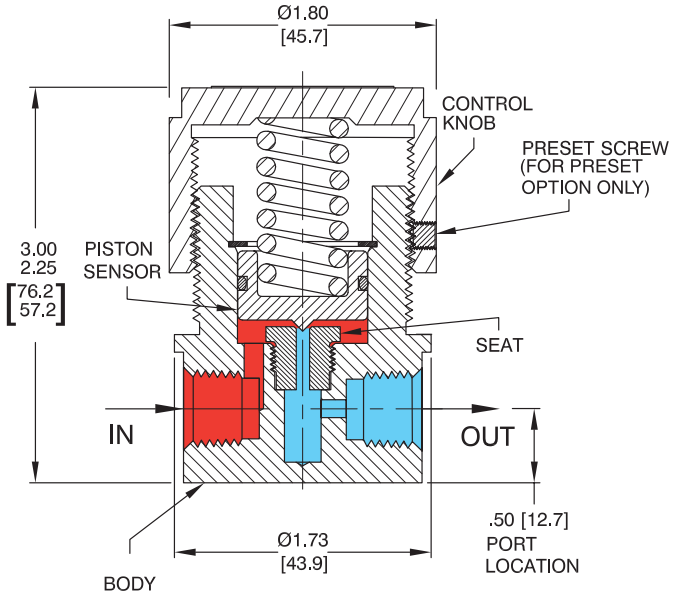
Features and Benefits

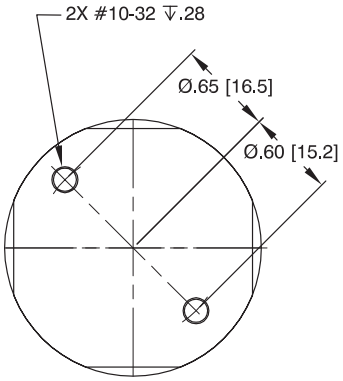
- Economical and extremely compact
- Durable piston sensor design
- High flow capacity
- High temperature version (up to 204°F / 96°C)
- Close pressure differential between crack and reseat
- Bubble-tight shutoff at all reseating pressures
- Six control pressure ranges

BB-3 SERIES

BB-3 Series Regulator Drawing



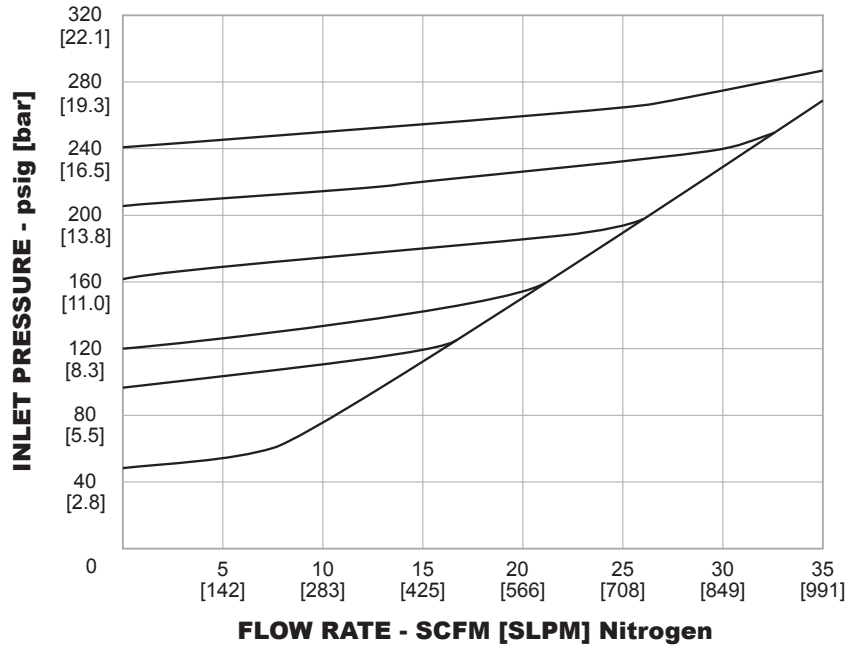


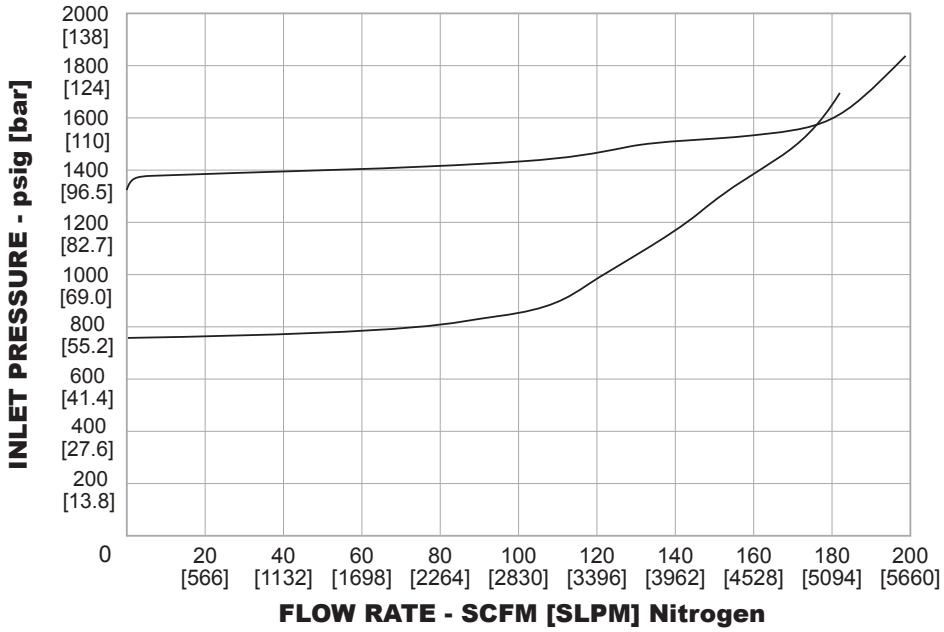


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

BB-3 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.





BB-3 SERIES

BB-3 Series Regulator Part Number Selector

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

BB	-	3	3	A	L1	K	E	A4

BASIC SERIES	FUNCTION	BODY MATERIAL	LOAD TYPE	INLET PRESSURE RANGES		SEAT MATERIAL	O-RING SEAL	PORTING	NUMBER OF PORTS
				ADJUSTABLE	PRESET				
BB	**3** – Backpressure	**3** – Nickel-plated Aluminum (Spring Load only)	**A** – Adjustable	**L1** – 0-80 psig 0-5.5 bar	0-80 psig 0-5.5 bar	**A** – ETFE (Tefzel®)	**E** – Ethylene Propylene	**A4** – 1/4" NPTF	4
		6 – 316 Stainless Steel	**P** – Preset	**L2** – 0-140 psig 0-9.7 bar	80-140 psig 5.5-9.7 bar	**K** – PCTFE	**N** – Nitrile, Buna-N	**B4** – 1/4" SAE	4
			D – Dome Load (250 psig / 17.2 bar* maximum reference pressure)	**L3** – 0-220 psig 0-15.2 bar	140-220 psig 9.7-15.2 bar	**V** – Polyimide (Vespel®)	**S** – Special	**B2** – 1/4" SAE	2
				H1 – 0-700 psig 0-48.3 bar	220-700 psig 15.2-48.3 bar	**T** – PTFE (250 psig / 17.2 bar maximum inlet pressure)	**V** – FKM (Viton®-A)	**A2** – 1/4" NPTF	2
				H2 – 0-1200 psig 0-82.7 bar	700-1200 psig 48.3-82.7 bar		**K** – FFKM, Perfluoroelastomer (Kalrez®)		
				D1 – 0-250 psig 0-17.2 bar*	Dome Load Only				

**3000 psig / 207 bar available, please consult factory.*

Regulators - Relief / Backpressure

DDVXX1800X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Controlled Pressure Range
760 - 50 mm Hg absolute

Design Proof Pressure
150% of maximum operating

Leakage
Bubble-tight

Operating Temperatures[1]
Buna-N: -40°F to 165°F / -40°C to 74°C
Ethylene Propylene: -40°F to 250°F / -40°C to 121°C
Viton®: -15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.25

Maximum Operating Torque
15 in-lbs / 1.7 N•m

MEDIA CONTACT MATERIALS

Body
Brass or Nickel-plated Aluminum

Diaphragm
Nitrile, Buna-N, Ethylene Propylene, FKM (Viton®-A)

O-Ring
Nitrile, Buna-N, Ethylene Propylene, FKM (Viton®-A)

Remaining Parts
300 Series Stainless Steel and Brass

OTHER

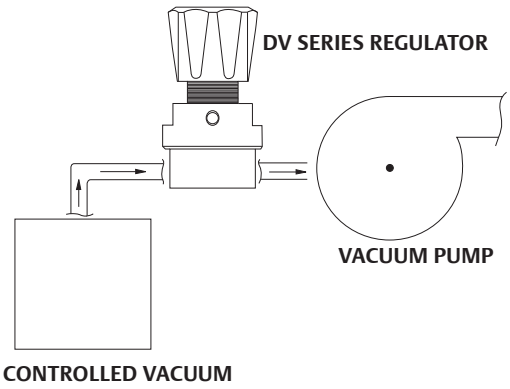
Cleaning
CGA 4.1 and ASTM G93

Weight (without gauges)
Brass: 2.4 lbs / 1.1 kg
Aluminum: 1 lb / 0.5 kg

1. For extended temperatures from -40°F to 400°F / -40°C to 204°C, consult Tescom.

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.

DV Series Typical Application



TESCOM DV Series is a compact, lightweight, diaphragm regulator that offers vacuum control up to 0.1% accuracy. Optional constant bleed feature allows for pressure adjustment in both directions.

Applications

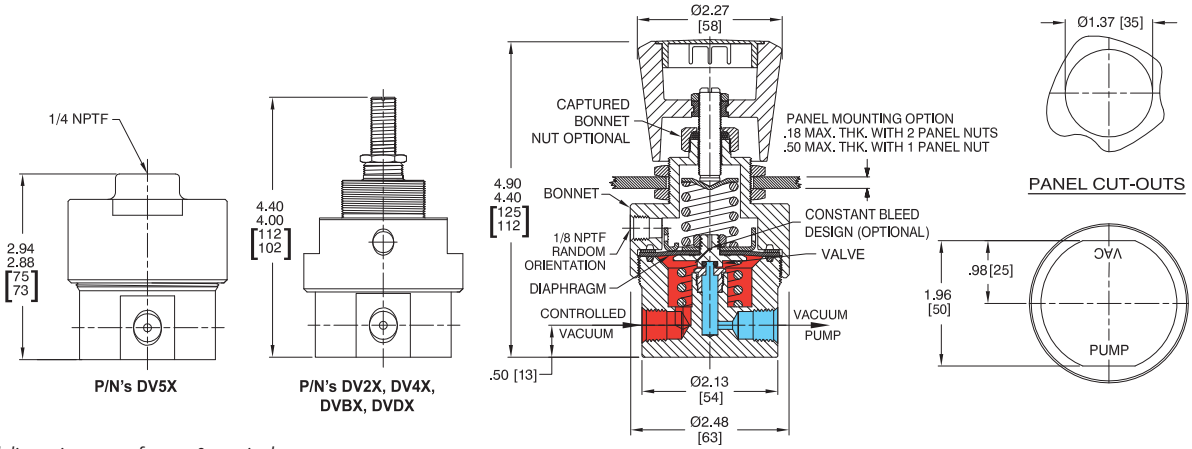
- Instrumentation testing
- Calibration equipment

Features and Benefits

- Controls sub-atmospheric pressure
- Excellent repeatability
- Accurate diaphragm-type regulation ± 0.1% full scale accuracy
- High sensitivity of 10 mm Hg absolute achieved with constant bleed option
- Easy maintenance
- Low operating handknob torque
- Captured bonnet and panel mounting options are available

DV SERIES

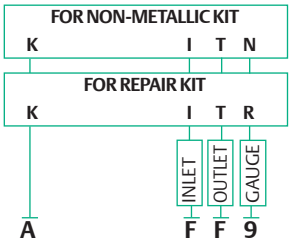
DV Series Regulator Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DV Series Regulator Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.



Example for selecting a part number:

DV -	1	3	5	B	B	9	A	F F 9

BASIC SERIES	FUNCTION / LOAD TYPE	BODY MATERIAL	CONTROLLED VACUUM PRESSURE[1]	VALVE PARTS	DIAPHRAGM AND O-RING MATERIAL	MOUNTING	PORTING CONFIGURATION (1/4" NPTF GAUGE PORTS)	INLET AND OUTLET GAUGE PORTS TYPE AND SIZE
DV	**Standard Vacuum NO BLEED** **1** – Handknob adjust **2** – Screwdriver adjust **3** – Captured bonnet Hand adjust **4** – Captured bonnet Screw adjust **5** – Dome loaded **Standard Vacuum CONSTANT BLEED** **A** – Handknob adjust **B** – Screwdriver adjust **C** – Captured bonnet Hand adjust **D** – Captured bonnet-Screw adjust	**1** – Brass **3** – Aluminum	**NO BLEED** **5** – 0 - 710 mm Hg absolute **CONSTANT BLEED** **5** – 0-635 mm Hg absolute **9** – 0-255 mm Hg absolute	**B** – Brass	**B** – Nitrile, Buna-N **E** – Ethylene Propylene **V** – FKM (Viton®-A)	**9** – None **P** – Panel Mounting	**A** – No gauge ports **B** – Gauge ports at 60° **F** – In gauge at 90° **G** – In gauge at 90° **L** – Gauge ports at 90°	**B** – 1/4" SAE **E** – 1/8" NPTF **F** – 1/4" NPTF **J** – 1/4" MS33649 **9** – None

1. 28" Hg = 50 mm Hg absolute

Valves Selection Guide

NOMINAL PRESSURE	C_V	AVAILABLE LOADING TYPES	NOTES	SERIES
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	0.75	Pnuematic-Standard Solenoid (Pnuematic Assist) - Available Toggle	High cycle life, fast response 20,000 psig / 1380 bar available	VA Page 557
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	2.0	Pnuematic-Standard Solenoid (Pnuematic Assist) - Available Toggle	High cycle life, fast response 15,000 psig / 1035 bar available	VG Page 557
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	0.28	Hand	Block and bleed	VK Page 565
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	0.75	Pneumatic-Standard Solenoid (Pnuematic Assist) - Available	2 position 3-way	VT Page 571
10,000 psig / 690 bar 6000 psig / 414 bar (Brass)	0.28 (Globe) 0.49 (Angle)	Hand	Economical	VJ Page 563
10,000 psig / 690 bar	0.00005, 0.00125	Hand	Metering	CC Page 539

Valves Selection Guide

NOMINAL PRESSURE	C_v	AVAILABLE LOADING TYPES	NOTES	SERIES
10,000 psig / 690 bar	0.28 (Globe) 0.49 (Angle)	Hand	Robust Low flow	**30-1100** Page 535
10,000 psig / 690 bar	1.57 (Globe) 2.30 (Angle)	Hand	Robust Medium flow	**30-1300** Page 535
10,000 psig / 690 bar	20.0	Hand	High flow, high pressure Inline	**VN** Page 569
10,000 psig / 690 bar	8.0 (Globe) 10.0 (Angle)	Hand	Robust High flow	**30-1200** Page 535
6000 psig / 413 bar	4.5	Air Operated	High flow, high pressure AOP	**VM** Page 567
4350 psig / 300 bar	DN 10	Hand	Laboratory High Flow, high pressure robust in-line valve	**High Pressure Valve** Page 547

Valves Selection Guide

NOMINAL PRESSURE	C_v	AVAILABLE LOADING TYPES	NOTES	SERIES
580 psig / 40 bar	DN 8	Hand	Laboratory Low to medium pressures Very precise High flow Full metal design	**Metal Bellows Shut-Off Valve** Page 549
580 psig / 40 bar	DN 8	Hand	Laboratory - line shut-off component Medium pressure Medium flow Leak tight	**Metal Diaphragm Shut-Off Valve** Page 551
290 psig / 20 bar	DN 2 0-40 l/min C_V = 0.04	Hand	Laboratory - Point-of-Use component Precise control of flow Metal-to-metal seal For gases of purity up to 6.0 Oxygen clean	**Diaphragm Metering Valve** Page 543
145 psig / 10 bar	DN 2 0-20 l/min C_V = 0.024	Hand	Laboratory - Point-of-Use Precise control of flow Oxygen clean	**Needle Metering Valve** Page 553

On/Off and Shut-off Valves

Highly reliable valves that keep your system running

Product Selection Guide

Don't know where to start? This guide lists TESCOM on/off and shut-off valves by pressures, flow, and loading types to help guide you in finding the right product in this catalog

529

Quick Find List

Know the model number? Here are TESCOM pressure reducing regulators listed in numerical/alphabetical order

On/Off and Shut-off Valves D30XX0555X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
6000, 10,000 psig
414, 690 bar

Design Proof Pressure
150% maximum rated

Leakage
Bubble-tight

Ambient Operating and Fluid Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
See table on back page

Maximum Operating Torque
See table on back page

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat
30-1100 and 30-1300: Filled Nylon (Nylatron®)
30-1200 and 30-1400: PCTFE

O-Ring
Nitrile, Buna-N

Back-up Ring
30-1100: PCTFE
30-1200: 15% graphite filled Teflon®
30-1300 and 30-1400: PTFE

Remaining Parts
316 Stainless Steel, 17-4 PH Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
See table on back page

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

30-1100

30-1300

30-1200

30-1400

TESCOM 30 Series shut-off valves are high pressure, high flow applications up to 10,000 psig / 690 bar and offer C_V = 0.28-20.0. The 30 Series offer globe and angle pattern bidirectional flow, soft seat and built-in metallic stop.

Applications

- GSE support pressure panels
- Instrumentation pressure panels and manifolds
- Research and Development labs
- Gas analysis sampling systems

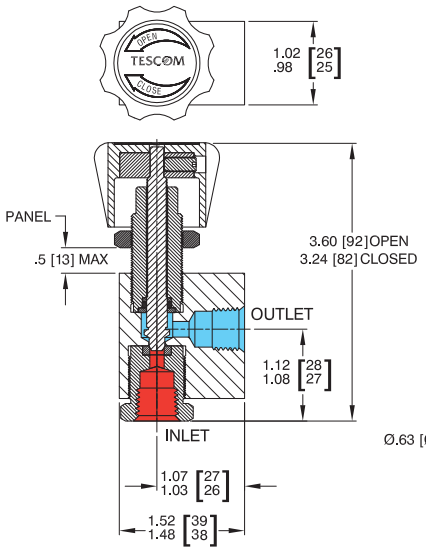
Features and Benefits

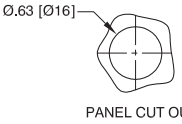
- 6000 and 10,000 psig / 414 and 690 bar capability
- C_V = 0.28 through 20.00
- Globe or angle configuration
- Port sizes available from 1/4" to 1-1/2"
- Low operating and shut-off torque at high pressures
- Bidirectional liquid or gas service
- Soft seat insures bubble-tight shutoff

30 SERIES

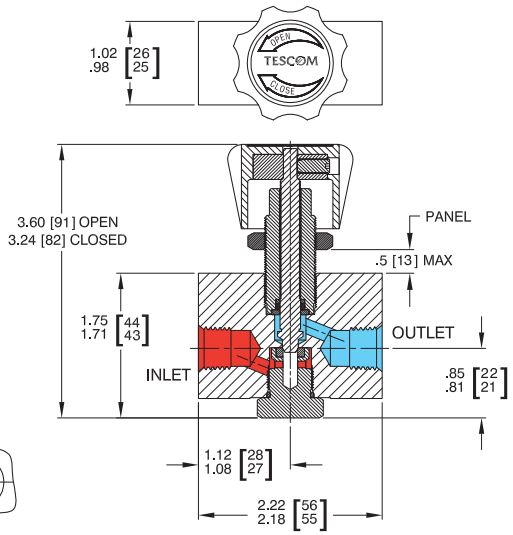
30 Series Valves Drawing

30-1100 ANGLE PATTERN

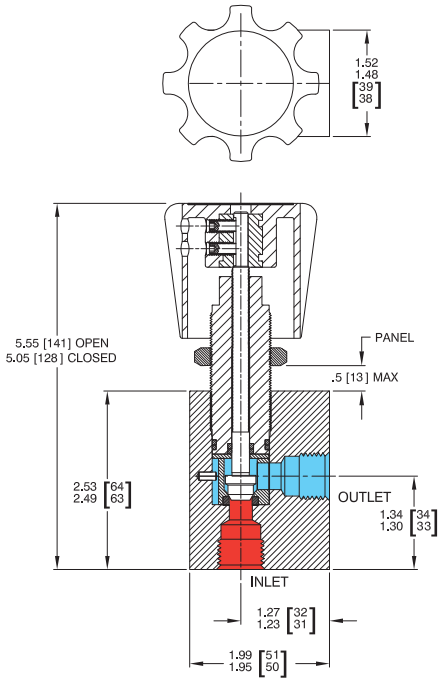




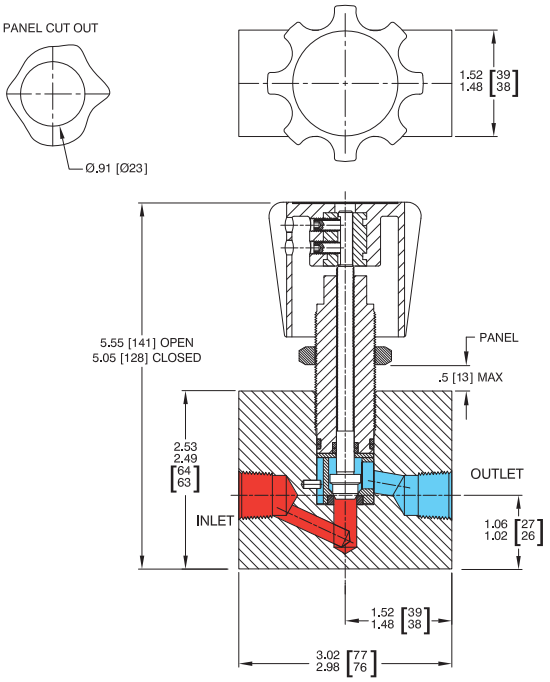
30-1101 GLOBE PATTERN



30-1300 ANGLE PATTERN



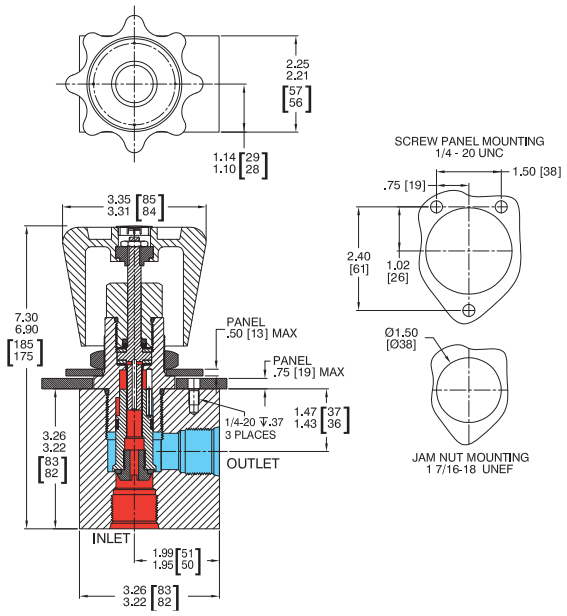
30-1301 GLOBE PATTERN



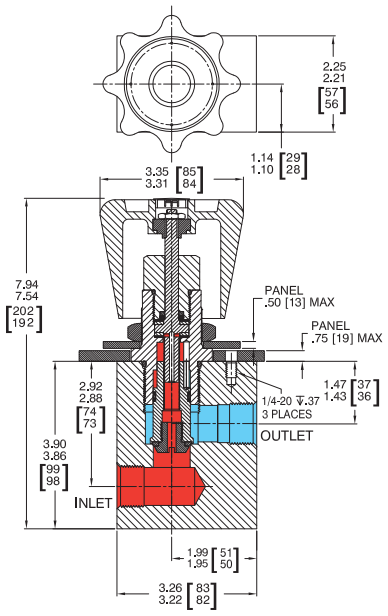
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

30 Series Valves Drawing

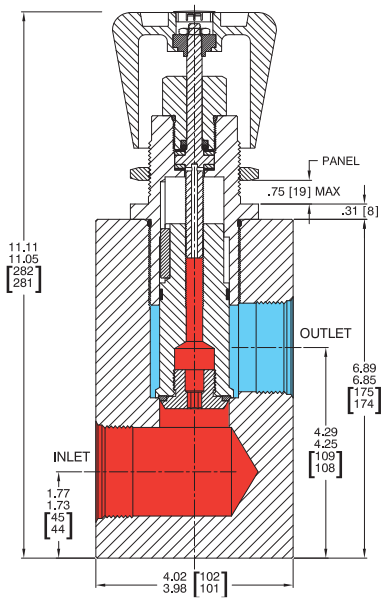
30-1200 ANGLE PATTERN

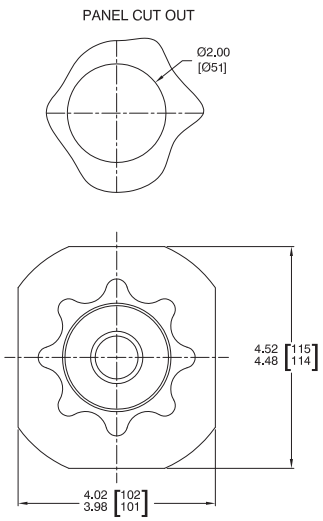


30-1201 GLOBE PATTERN



30-1400 GLOBE PATTERN





All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

30 SERIES

30 Series Valves Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

30-11 0 1 - 2 04

BASIC SERIES	VALVE STEM TYPE	PATTERN TYPE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE
30-11 – 30-1100 10,000 psig 690 bar **30-12 –** 30-1200 6000 psig 414 bar **30-13 –** 30-1300 10,000 psig 690 bar **30-14 –** 30-1400 6000 psig 414 bar	**0 –** Shut-off (Standard) **1 –** Metering (optional on 30-1100 only)	**0 –** Angle[2] **1 –** Globe	**0 –** BSP[1] **1 –** SAE[2] **2 –** NPTF[2] **3 –** MS33649 **6 –** Medium Pressure[1]	**04 –** 1/4" (30-1100) **06 –** 3/8" (30-1100[3], 30-1300) **08 –** 1/2" (30-1300) **12 –** 3/4" (30-1200) **16 –** 1" (30-1200) **24 –** 1-1/2" (30-1400)

1. Available on 30-1100 only
2. Not available on 30-1400
3. Available in Globe Pattern only

SERIES	PATTERN	C_V	WEIGHT	CONTROL TORQUE
30-11X1-XXX 30-11X0-XXX	Globe Angle	0.28 0.49	1 lb / 0.5 kg 3/4 lbs / 0.3 kg	15 in-lbs / 1.7 N•m 15 in-lbs / 1.7 N•m
30-1301-XXX 30-1300-XXX	Globe Angle	1.57 2.30	3-1/4 lbs / 2 kg 2-1/4 lbs / 1 kg	25 in-lbs / 2.8 N•m 25 in-lbs / 2.8 N•m
30-1201-XXX 30-1200-XXX	Globe Angle	8.00 10.00	8 lbs / 4 kg 7-1/4 lbs / 3 kg	35 in-lbs / 4.0 N•m 35 in-lbs / 4.0 N•m
30-1400-XXX	Globe	20.00	30 lbs / 14 kg	35 in-lbs / 4.0 N•m

On/Off and Shut-off Valves DCCXX1788X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Pressure
50 mm Hg-10,000 psig / 50 mm Hg-690 bar

Design Proof Pressure
150% of maximum rated

Leakage
< 4 x 10^{-8} Torr liter sec^{-1} at 50 psid / 3.4 bar d Helium

Operating Temperature
-30°F to 300°F / -34 °C to 149 °C

Flow Capacity
C_V = 0.00125 Maximum
C_V = 0.00005 Maximum
C_V = 0.01 Maximum

Maximum Operating Torque
10 inch-lbs / 1.1 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat
Peek, Polyimide (Vespel®)

O-Rings
Ethylene Propylene, FKM (Viton®-A), Nitrile, Buna-N 90 Durometer, FFKM, Perfluoroelastomer (Kalrez®)

Back-up Ring
PTFE

Remaining Parts
300 Series Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Connections
NPTF, SAE (1/8" only), High Purity Internal Connections (HPIC) (3500 psig / 241 bar Maximum)

Internal Volume
Approximately 0.25 cc

Weight
0.9 lbs / 0.4 kg

Viton®, Kalrez®, Vespel® and Teflon® are registered trademarks of E.I. du Pont de Nemours and Company.
VCR® is a registered trademark of Cajon Co.

TESCOM CC Series metering valve is rated to 10,000 psig / 690 bar and contains a non-rotating stem to reduce seat and stem wear. The valve features over 20 turns from shutoff to full open, providing excellent flow control.

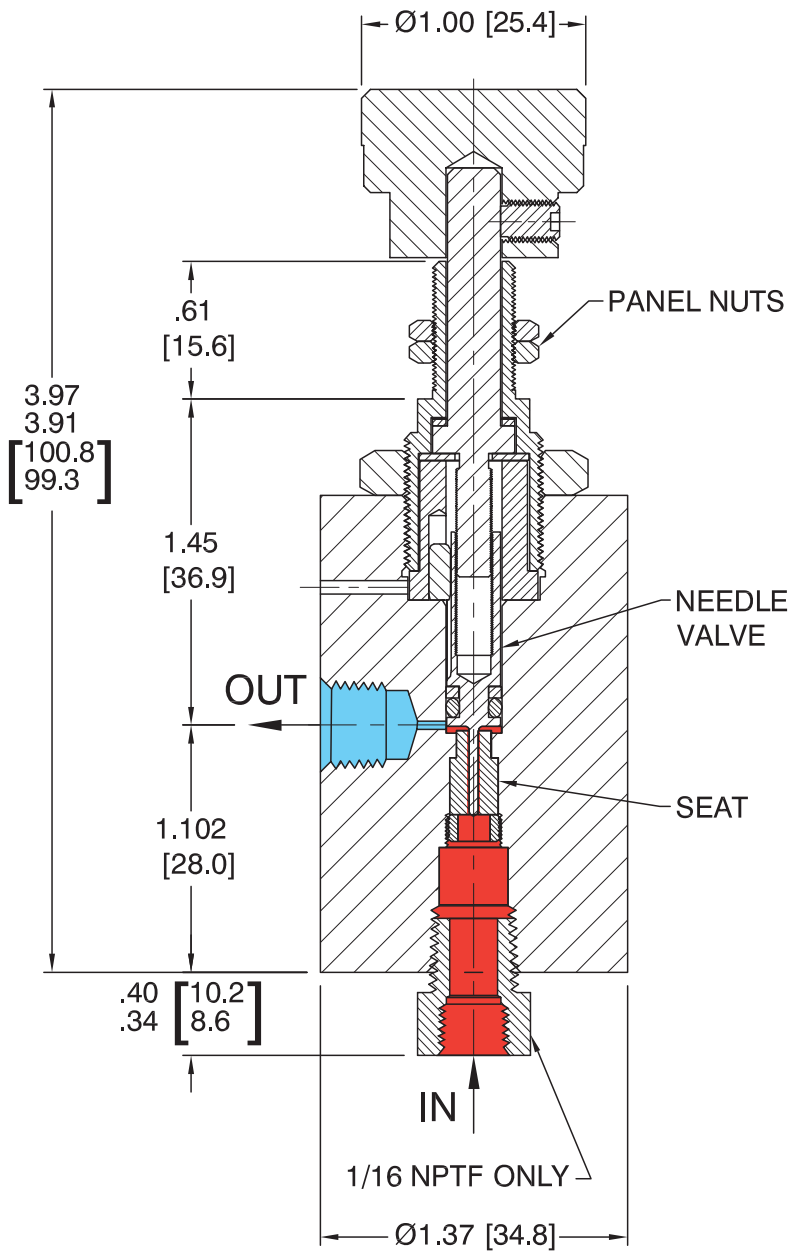
Applications

- Injection systems
- Calibration systems
- Sample systems
- GC carrier gas
- Super critical fluid extraction

Features and Benefits

- Compact design
- Can be used at high and low pressures
- Controls gas flow with extreme accuracy
- Accurate flow control into both vacuum and/or positive pressure application
- Non-rotating stem assists in reducing seat wear

CC Series Metering Valve Drawing

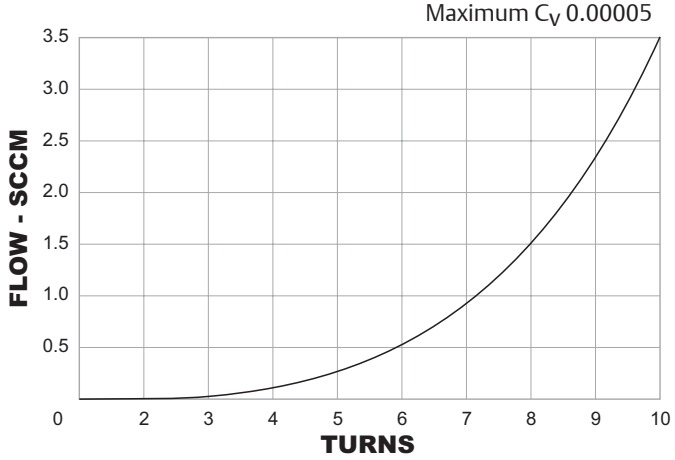


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

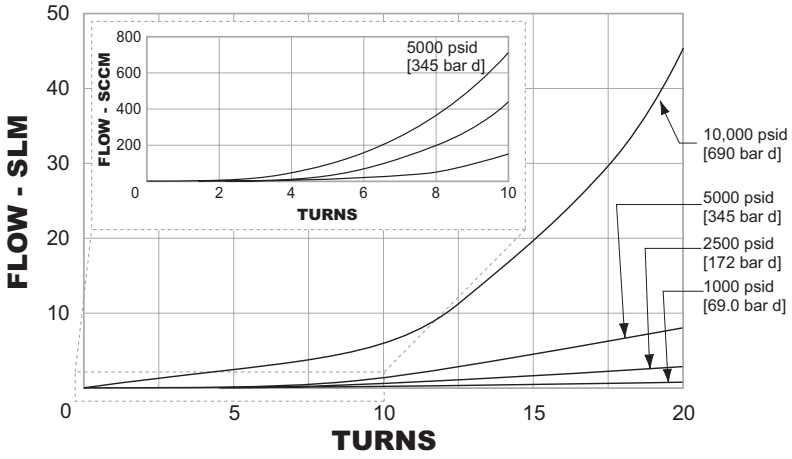
CC Series Metering Valve Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

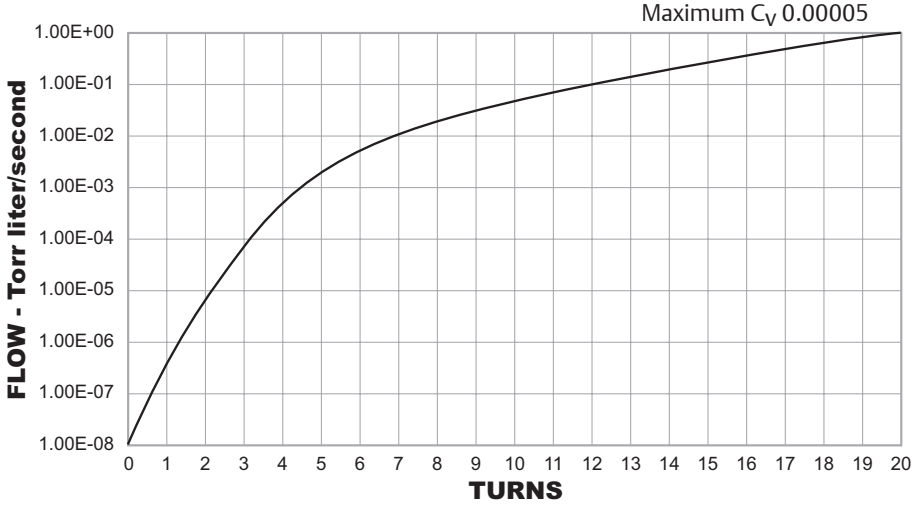
Flow vs. Turns
- tested at 50 psid [3.4 bar d] with Helium
Maximum C_V 0.00005



Flow vs. Turns - tested with Nitrogen
Maximum C_V 0.00005



Flow vs. Turns - tested at 50 psid [3.4 bar d] with Helium
Maximum C_V 0.00005



CC SERIES

CC Series Metering Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

CC	A	1	6	A	2	1	A	P	V
BASIC SERIES	**FLOW CAPACITY**	**MAXIMUM PRESSURE**	**BODY MATERIAL**	**PORTING TYPE**	**PORTING SIZE**	**BODY TYPE**	**ADJUSTMENT**	**SEAT MATERIAL**	**O-RING SEAL TYPE OPERATING TEMPERATURE**
CC	**A** – C_V=0.00005 (maximum) **B** – C_V=0.00125 (maximum) **C** – C_V=0.01 (maximum)	**1** – 50 mm Hg-10,000 psig 50 mm Hg-690 bar[1]	**6** – 316 Stainless Steel	**A** – NPTF **C** – SAE (1/8" only) **D** – HPIC*	**1** – 1/16" **2** – 1/8" **4** – 1/4"	**1** – Body Diameter 1.37"	**A** – Standard **D** – Allen Wrench	**P** – Peek **V** – Polyimide (Vespel®)	**E** – Ethylene Propylene -30°F to 250°F -34°C to 121°C **V** – FKM (Viton®-A) 0°F to 300°F -17°C to 149°C **B** – Nitrile, Buna-N 90 Durometer -30°F to 200°F -34°C to 93°C **K** – Kalrez®** 0°F to 300°F -17°C to 149°C **D** – Fluorocarbon 0°F to 300°F -17°C to 149°C

1. Operating pressure is 3500 psig / 241 bar for HPIC ports

** FFKM, Perfluoroelastomer (Kalrez®)

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Fluid Media

Brass: All non-corrosive gases, except CO

Stainless Steel: All corrosive gases and CO. Use for toxic gases only if confirmed by Tescom and with appropriate purging methods (moisture free vent of toxic gases)

Nominal Diameter

DN 2

Nominal Pressure PN

290 psig / 20.0 bar

Control Range at 44 psig / 3.0 bar Inlet Pressure and 2.5 turns of handknob

0-20 l/min

Flow Capacity

C_V = 0.024

Operating Temperature

-4°F to 158°F / -20°C to 70°C

Leak Rate

$<10^{-9}$ mbar l/s

MEDIA CONTACT MATERIAL

Body

Brass or Stainless Steel

Surface of Other Parts

Brass, Chromium Plated

Diaphragm

Nickel Alloy (Hastelloy®)

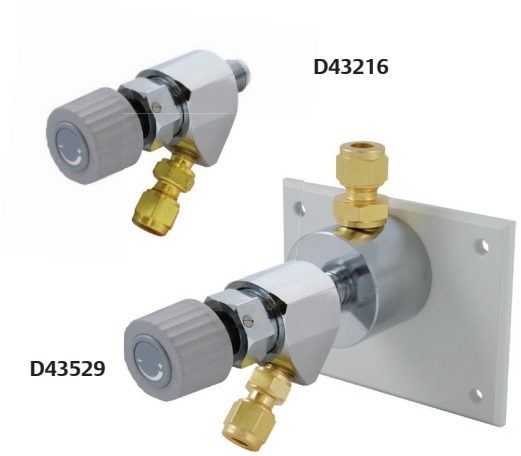
OTHER

Weight

Diaphragm metering valve without wall mounting plate:

0.66 lbs / 0.3 kg

Hastelloy® is a registered trademark of Haynes International, Inc.



TESCOM Diaphragm Metering Valve provides precision flow control of high purity gases in point-of-use assemblies or in combination with pressure regulators.

Applications

- Controlling the flow of process media with high accuracy
- Laboratory, R&D and analyzer applications
- Suitable for ECD (Electronic Capture Detector) applications

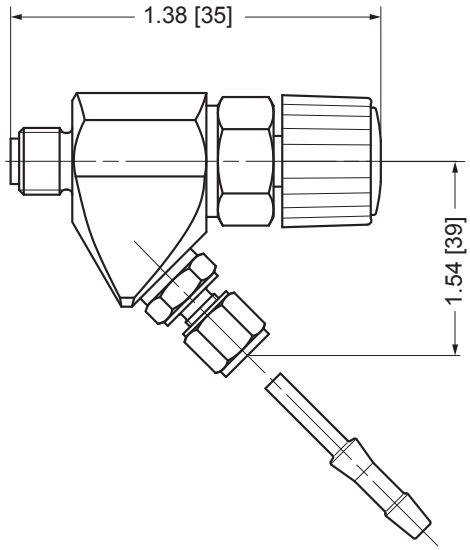
Features and Benefits

- Precise control of flows
- Almost linear flow characteristic
- Metal-to-metal seals
- For gas purity up to 6.0 (99.9999% purity)
- Suitable for corrosive gases
- Cleaned for Oxygen service

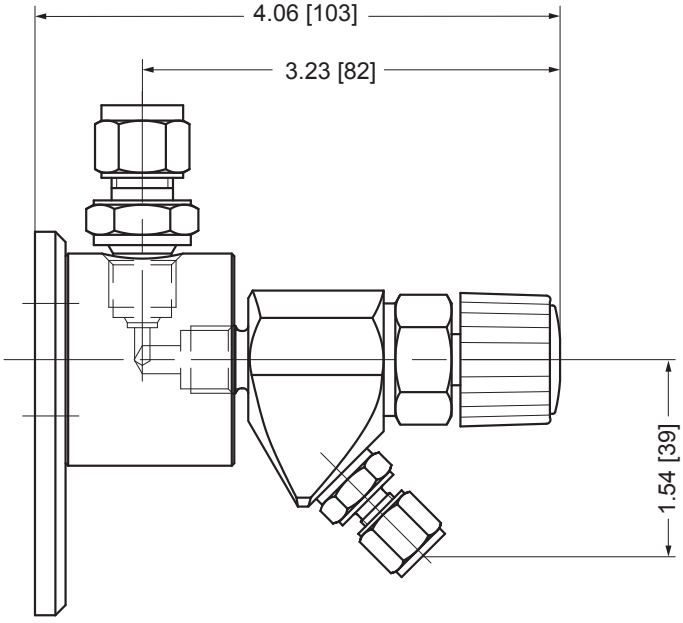
DIAPHRAGM METERING VALVE

Diaphragm Metering Valve Drawings

D43216



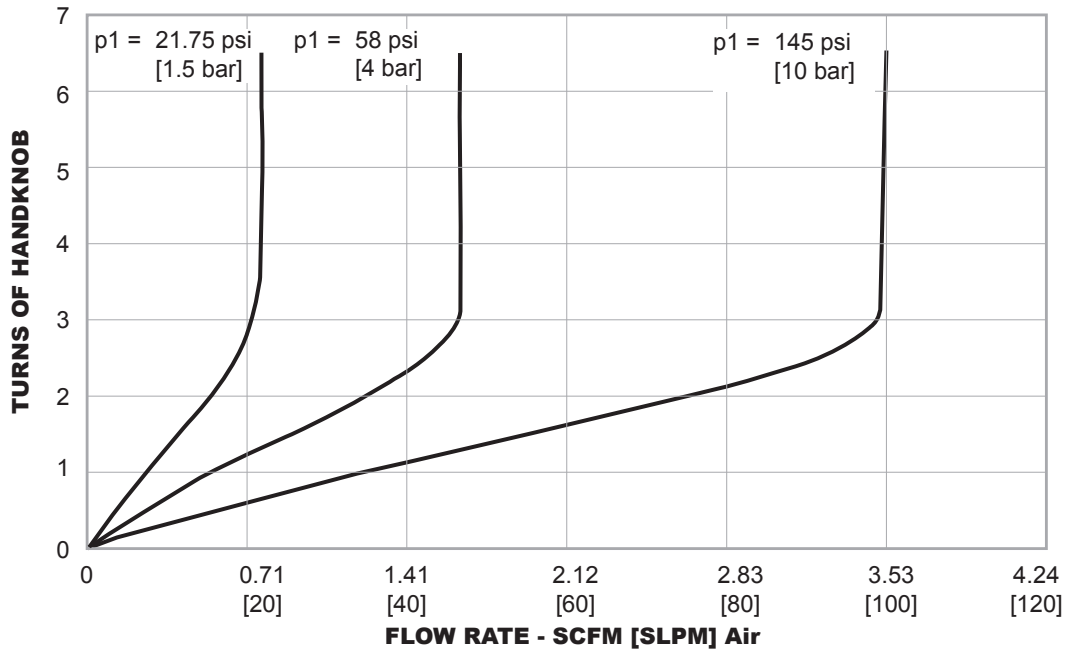
D43529



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Diaphragm Metering Valve Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



DIAPHRAGM METERING VALVE

Diaphragm Metering Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43215 - AR 05

BASIC SERIES	GAS	OUTLET CONNECTION
D43215 – Brass **D43216 –** Stainless Steel **Inlet Connection –** G 1/4" male **Standard color of handknob and cap:** Grey ***Please reference datasheet "Point-of-Use Accessories"*** ***Gas specific label acc. EN 13792 available on request***	**AR (BRASS) –** Oxygen, all other non-corrosive gases **Attention: For CO or test gases including CO, please use Stainless Steel version** **AK (Stainless Steel) –** Corrosive Gases	**00 –** Without (G 1/8" female) **05 –** Compression fitting ø 6 mm with nozzle 6 mm **08 –** Compression fitting tube G 1/4" with nozzle* **Not available for D43216 Stainless Steel*

Diaphragm Metering Valve with Wall Mounting Plate - Part Number Selector

Example for selecting a part number:

D43528 - AR 02 E

BASIC SERIES	GAS	OUTLET CONNECTION	INLET CONNECTION
D43528 – Brass **D43529 –** Stainless Steel	**AR (BRASS) –** Oxygen, all other non-corrosive gases **Attention: For CO or test gases including CO, please use Stainless Steel version** **AK (Stainless Steel) –** Corrosive Gases	**00 –** Without (G 1/8" female) **02 –** Compression fitting tube G 1/8" **04 –** Compression fitting tube G 1/4"* **05 –** Compression fitting ø 6 mm with nozzle 6 mm **Not available for D43529 Stainless Steel*	**E –** Without (G 1/8" female) **F –** Compression fitting ø 8 mm* **G –** Compression fitting ø 10 mm **Not available for D43528 Brass*

Accessories for Wall Mounting

PART NUMBER	DESCRIPTION
D43342	Wall mounting bracket
D43371	Kit countersunk screws and dowels for wall plate
D42663-00-X	Wall plate, Brass
D42663-22-X	Wall plate, Stainless Steel (for Acetylene)
V09166	Wall plate cover, grey
D42572	Gas label

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For non-corrosive gases and gas mixtures up to 5.0 purity (99.999 Vol%)

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Nominal Width (DN)
Line Valve: 0.394" / 10 mm

Nominal Pressure
Line Valve: 4351 psig / 300 bar

Design
Line Valve: Angle / Straight valve

Operating Temperature
-4°F to 158°F / -20°C to 70°C

MEDIA CONTACT MATERIALS

Body Material
Brass

Shaft Gasket
O-ring package, FSI

Seat
Line Valve: PA 6.6, O_2: Polyimide (Vespel®)

OTHER

Inlet/Outlet Connection
Line Valve: G 1/2" female

Weight
Line Valve: 1.4 lbs / 0.65 kg

Vespel® is registered trademark of E.I. du Pontde Nemours and Company.

D41935

TESCOM High Pressure Valve for the supply of high purity gases in laboratory gas supply lines.

Applications

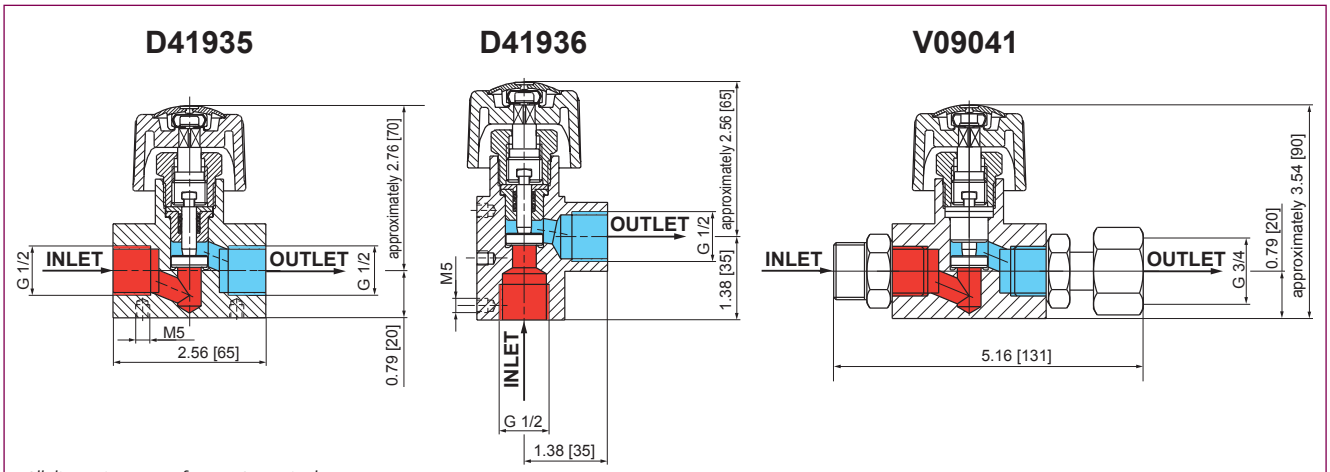
- High pressure systems
- High flow systems
- Suitable for 5.0 purity gas applications
- Used in main lines
- Used in specialty panel solutions

Features and Benefits

- No contamination of the gas due to full metal design
- Very high flows
- Reliable design
- Proven and safe design
- Long service life
- Easy to install and serviceable
- Optional colored gas code on the handknob for easy identification

HIGH PRESSURE VALVE

High Pressure Valve Drawings



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

High Pressure Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

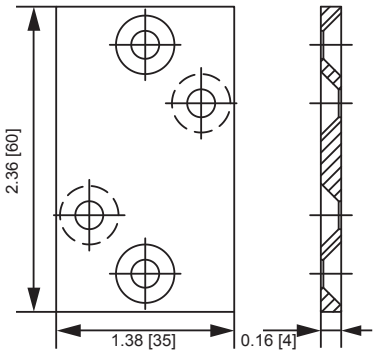
Example for selecting a part number:

D41935 - AO - 00

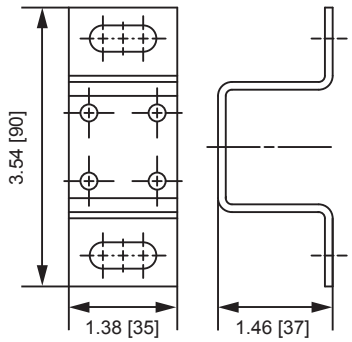
TYPE	GASES	CONNECTIONS
D41935 – Straight valve DN 10 **V09041** – Straight valve with inlet G 3/4" and outlet G 3/4" coupling nut	**AO** – Oxygen, non-corrosive gases and gas mixtures with more than 20% O_2	**00** – **Standard** G 1/2" female
D41936 – Angle valve DN 10 **not for Oxygen and Carbon above 20 bar**	**AR** – Non-corrosive gas mixtures	**00** – **Standard** G 1/2" female

Accessories

PART NUMBER	DESCRIPTION	APPLICATION
D41604	Compression fitting G 1/2" male - 8 mm	Pipe connection to HP-Line valves
D40081	Compression fitting G 1/2" male - 12 mm	Pipe connection to HP-Line valves
D44456	Adapter W 24, 32 x 1/14" male - G 1/2" male	Cylinder valve thread Nitrogen, DIN 477-1
V08489	Adapter G 1/2" male - G 3/4" male	Cylinder valve crew thread Oxygen, DIN 477-1
V08490	Adapter G 1/2" male - W 21, 8 x 1/14" male	Cylinder valve crew thread non-flammable gases, DIN 477-1
V08907	Adapter G 1/2" male - G 5/8" female 200 bar	Cylinder valve crew thread compressed air, DIN 477-1
D42556	Mounting plate set	Mounting for D41935
D42506	Mounting bracket	Mounting for D41936



D42647 MOUNTING PLATE (PART OF D42556)



D42506 MOUNTING BRACKET

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For pure gases up to 6.0 (99,9999 Vol%) quality
used for room and main shutoffs in pipe systems

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Nominal Width (mm)
D43129, D42528: DN 8

Operating Pressure (bar)
PN 40

Design
Flow Capacity: C_V = 1.4
D43129: Globe Style Valve
D42528: Angle Style Valve

Temperature Range
-4°F to 158°F / -20°C to 70°C

MEDIA CONTACT MATERIALS

Body Material
Brass

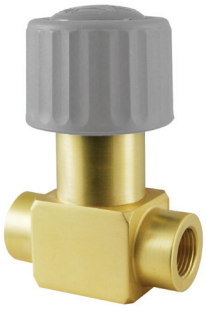
Valve
Stainless Steel Poppet and Bellows

OTHER

Inlet/Outlet Connection
D43129: G 3/8 female
D42528: G 3/8 female

Weight
D43129: 1.3 lbs / 0.6 kg
D42528: 0.9 lbs / 0.4 kg

D42528



D43129

TESCOM Metal Bellows Shut-off valve for high purity gases in Laboratory applications.

Applications

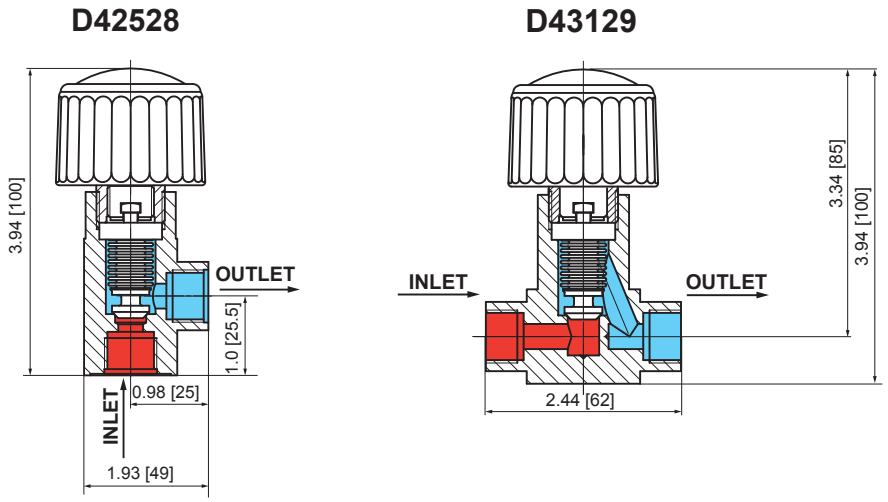
- Purity gas applications
- High flow systems
- Purging process
- Used in main lines

Features and Benefits

- Full metal design prevents gas contamination
- Stainless Steel bellows and poppet
- Colored gas code on the handknob for easy identification
- Oxygen cleaned
- Free of oil and grease

METAL BELLOWS SHUT-OFF VALVE

Metal Bellows Shut-off Valve Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Metal Bellows Shut-off Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43129 - AR - 11

BASIC SERIES	GAS TYPE LABELING ON HANDKNOB AND CAPS	CONNECTIONS
D42528 **D43129**	**According to DIN EN 13792*** **AO** – Oxygen and other gases Grey handknob and cap + gas label according to DIN EN 13792 **State type of gas when ordering.* *Standard color for handknobs is grey.* *Please ask for additional colors if needed.*	**00** – Female G 3/8 *Compression fittings in Brass/Stainless Steel are available; please refer to datasheet "Fittings"*
Note: When selecting valves, the compatibility of the materials with the process gas must be verified.		

Accessories

PART NUMBER	DESCRIPTION	APPLICATION
D42556	Mounting plate	Wall mounting of D43129
V01699	Sealing ring Brass for G 3/8	For male swivel G 3/8 Brass
D50002	Sealing ring Cu for G 3/8	For male swivel G 3/8 Brass
D40582	Sealing ring Stainless Steel for G 3/8	For male swivel G 3/8 Stainless Steel

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For inert, reactive, corrosive (only Stainless Steel), flammable and oxidizing gases and gas mixtures

OPERATING PARAMETERS

Nominal Width DN
D43712 / D43715: DN 3
D44931 / D44932: DN 8

Nominal Pressure
580 psig / 40.0 bar

Leakage Rate Against Atmosphere
< 10^{-8} mbar l/sec He

Operating Temperature
-4°F to 158°F / -20°C to 70°C

MEDIA CONTACT MATERIALS

Type of Construction
In-line

Body
D43712: Brass
D43715 / D44932: Stainless Steel
D44931: Chrome-plated Brass

Diaphragm
Stainless Steel

OTHERS

Inlet Connection
1/4" NPT Internal

Outlet Connection
1/4" NPT Internal

Weight
D43712 / D44931: 0.8 lbs / 0.35 kg
D43715 / D44932: 0.9 lbs / 0.40 kg

D43712 / D43715

D44931 / D44932

TESCOM Metal Diaphragm Shut-off Valve is designed for use with inert, reactive, corrosive (Stainless Steel body), flammable and oxidizing gases and gas mixtures.

Applications

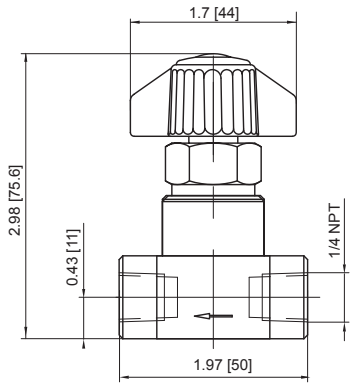
- Laboratories, R&D and analyzer applications
- Line shut-off components in central pure gas supply systems

Features and Benefits

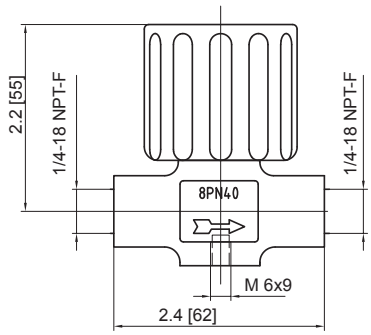
- Short and effective purging due to the metal diaphragm construction
- Clearly visible open or close position
- Leakage rate against atmosphere 10^{-8} mbar l/sec He
- Variability of nominal width and connections

METAL DIAPHRAGM SHUT-OFF VALVE

Metal Diaphragm Shut-off Valve Drawing



D43712 / D43715



D44931 / D44932

Metal Diaphragm Shut-off Valve Accessories

Compression fittings for all valves with 1/4" NPT

METRIC PIPE	CONNECTION	PART NUMBER	
		BRASS	STAINLESS STEEL
For pipe 8 mm	1/4" NPT-8 mm	D44987-8-1-4-1	D44987-8-1-4-6
For pipe 10 mm	1/4" NPT-10 mm	D44987-10-1-4-1	D44987-10-1-4-6
For pipe 12 mm	1/4" NPT-12 mm	D44987-12-1-4-1	D44987-12-1-4-6

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Metal Diaphragm Shut-off Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D43712 - AO - 43

BASIC SERIES	GAS	CONNECTION
D43712 - Brass	**AO** - Oxygen **AR** - Other Gases **22** - Acetylene **23** - Carbon Monoxide	**10** - Compression fitting Ø 8 mm / 1/4" NPT (not for gas 22 Acetylene) **43** - 1/4" NPT female
D43715 - Stainless Steel	**AO** - Oxygen **AR** - Other Gases **AK** - Corrosive Gases **20** - Ammonia **22** - Acetylene **23** - Carbon Monoxide	**03** - Compression fitting Ø 6 mm / 1/4" NPT **43** - 1/4" NPT female

D44931

BASIC SERIES	GAS	CONNECTION
D44931 - Brass	Non-corrosive gases	1/4" NPT female
D44932 - Stainless Steel	Corrosive and non-corrosive gases	1/4" NPT female

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Nominal Diameter
DN 2

Nominal Pressure PN
145 psig / 10.0 bar

Type of Construction
In-line

Control Range at 44 psig / 3.0 bar Inlet Pressure
0-20 l/min

Flow Capacity
C_V = 0.024

Operating Temperature
Needle Valve: 32°F to 158°F / 0°C to 70°C
Needle Metering Valve: 32°F to 86°F / 0°C to 30°C

Leak Rate
Needle Metering Valve: $<10^{-5}$
Needle Metering Valve with Flow Meter: $<10^{-4}$

MEDIA CONTACT MATERIAL

Body
Brass

Seat
Needle Metering Valve: Copper
Needle Metering Valve with Flow Meter: Silver

OTHER

Weight
Needle Metering Valve: 0.27 lbs / 0.12 kg
Needle Metering Valve with Flow Meter: 0.49 lbs / 0.22 kg

D43472 with Inlet Connector

D43595 with Wall Bracket

TESCOM Needle Metering Valves are used for point-of-use applications. In combination with low pressure reducers or as stand-alone versions they offer precise control of gas flows.

Applications

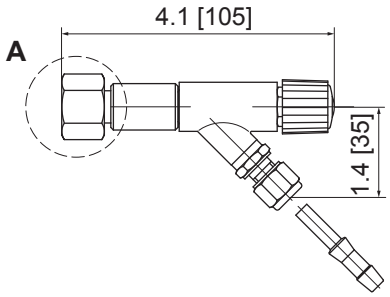
- Laboratory, R&D and analyzer applications
- Low pressure sampling valve applications

Features and Benefits

- Precise control of flows
- Available with a flow meter
- Linear flow characteristic
- Suitable for Oxygen and non-corrosive gases
- Suitable for gases up to 5.0 quality, except for ECD (Electronic Capture Detector) applications

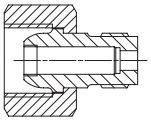
NEEDLE METERING VALVE

Needle Metering Valve Drawings

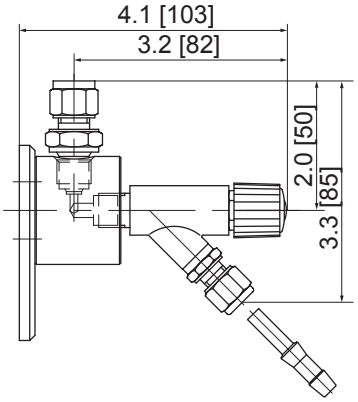


D43472
Needle Metering Valve
with Inlet Connector
(G 3/8" female Swivel Nut)

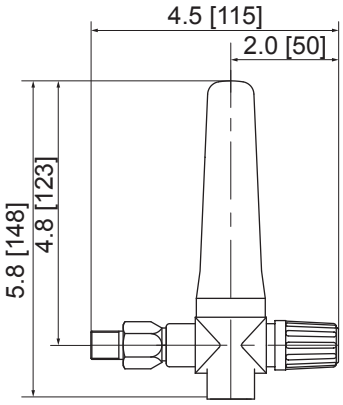
View **A**



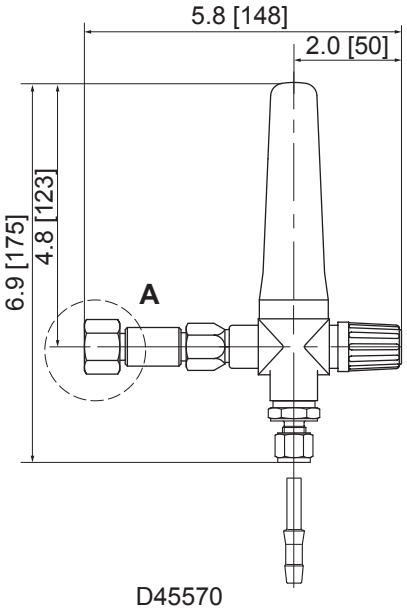
G 3/8" Swivel Nut
Connector



D43595
Needle Metering Valve
with Wall Mounting Plate



D45547
Needle Metering Valve
with Flow Meter

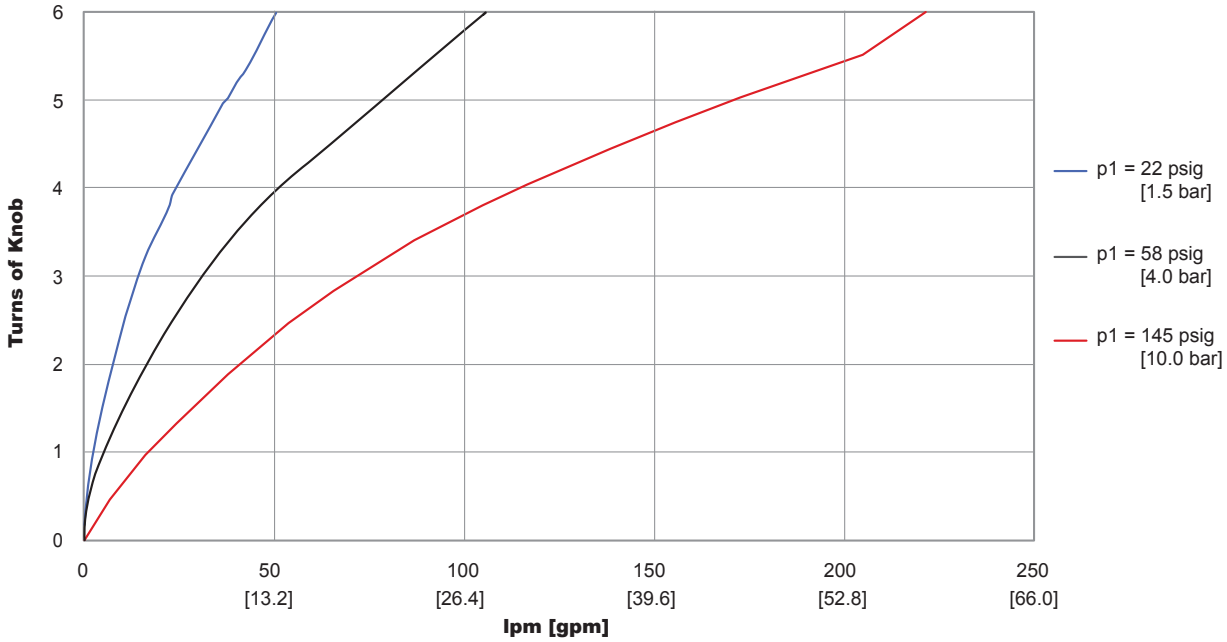


D45570
Needle Metering Valve
with Flow Meter and Inlet Connector

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Needle Metering Valve Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



Needle Metering Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Needle Metering Valve with Inlet G 3/8" Swivel Nut Connector - Part Number Selector

Example for selecting a part number:

D43472 - AO 05

BASIC SERIES	FLOW METER	OUTLET PRESSURE CONNECTOR
D43472 –	**AO** – Oxygen, all other non-corrosive gases **Attention: For CO or test gases including CO, please use Stainless Steel Diaphragm Metering Valve**	**02 –** Compression fitting 1/8" **05 –** Compression fitting 6 mm with nozzle 6 mm

Needle Metering Valve with Wall Mounting Plate - Part Number Selector

Example for selecting a part number:

D43595 - AO 03 E

BASIC SERIES	GAS	OUTLET PRESSURE CONNECTION	INLET PRESSURE CONNECTOR
D43595 –	**AO** – Oxygen, all other non-corrosive gases **Attention: For CO or test gases including CO, please use Stainless Steel Diaphragm Metering Valve**	**00 –** Without (G 1/8" male) **02 –** Compression fitting tube G 1/8" **02 –** Compression fitting tube G 1/4" **05 –** Compression fitting 6 mm with nozzle 6 mm	**E –** Without (G 1/4" female) **F –** Compression fitting 8 mm **G –** Compression fitting 10 mm

NEEDLE METERING VALVE

Needle Metering Valve with Flow Meter - Part Number Selector

Example for selecting a part number:

D45570 - B N

BASIC SERIES	FLOW METER	INLET PRESSURE CONNECTION
D45570 – **Outlet –** Compression fitting 6 mm with nozzle 6 mm	**A –** Size I (0.06 - 1 l/min) **B –** Size II (0.5 - 4 l/min) **C –** Size III (2 - 16 l/min) **D –** Size IV (4 - 32 l/min)	**None** – G 3/8" female swivel nut connector **N –** 1/4" NPTF female

Needle Metering Valve Nickel-plated and Flow Meter - Part Number Selector

Example for selecting a part number:

D45547 - 52 C V

BASIC SERIES	GAS	OUTLET PRESSURE CONNECTION	SURFACE
D45547 – **Can be used with wall bracket (See "Accessories for Wall Mounting")** **Outlet –** G 3/8" female calibrated for AIR	**52 –** Adapter G 1/4" male	**A –** Size I (0.06 - 1 l/min) **B –** Size II (0.5 - 4 l/min) **C –** Size III (2 - 16 l/min) **D –** Size IV (4 - 32 l/min)	**V –** Chemically Nickel-Plated

Accessories for Wall Mounting

PART NUMBER	DESCRIPTION
D43342	Wall mounting bracket
D43371	Kit countersunk screws + dowels for wall plate
D42663-00-X	Wall plate, Brass
D42663-22-X	Wall plate, Stainless Steel
V09166	Wall plate cover
D42572	Gas label

On/Off and Shut-off Valves DVAVG1862X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Operating Pressure
3500, 6000, 10,000 psig / 241, 414, 690 bar

Design Proof Pressure
150% maximum rated

Leak Rate
Bubble-tight

Ambient Operating Temperature
See Part Number Selector

Flow Capacity
VA Series Valve: C_V = 0.75
VG Series Valve: C_V = 2.0

Low Actuation Pressure Range
60 psig / 4.1 bar

Maximum Actuation Pressure
VA Series Valve: 125 psig / 8.6 bar
VG Series Valve: 150 psig / 10.3 bar

Actuation Times with 80 psig / 5.5 bar Actuation Pressure
VA Series Valve: 50 milliseconds
VG Series Valve: 75 milliseconds

MEDIA CONTACT MATERIALS

Body
Brass, 316 Stainless Steel

Seats
PCTFE, PEEK, ETFE (Tefzel®) ETFE, Polyimide (Vespel®)

Valve Stem
17-4 PH Stainless Steel

O-Rings
Nitrile, Buna-N, FFKM, Perfluoroelastomer (Kalrez®), FKM (Viton®-A), Ethylene Propylene, Urethane

Back-up Rings
PTFE, PCTFE

Remaining Parts
316 Stainless Steel, Brass

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
VA Series Valve: 3 lbs / 1.4 kg
VG Series Valve: 5 lbs / 2.3 kg

Kalrez®, Viton®, Tefzel®, Teflon®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM VA and VG Series are air operated valves offering normally open/normally closed capabilities, operating pressures of 6000, 10,000, and 15,000 psig / 414, 690, and 1034 bar, very high cycle life and optional integrated solenoid valve. Suitable for liquid and gas applications.

Applications

- High pressure cycling testing
- Pneumatic and hydraulic control panels
- R&D labs

Features and Benefits

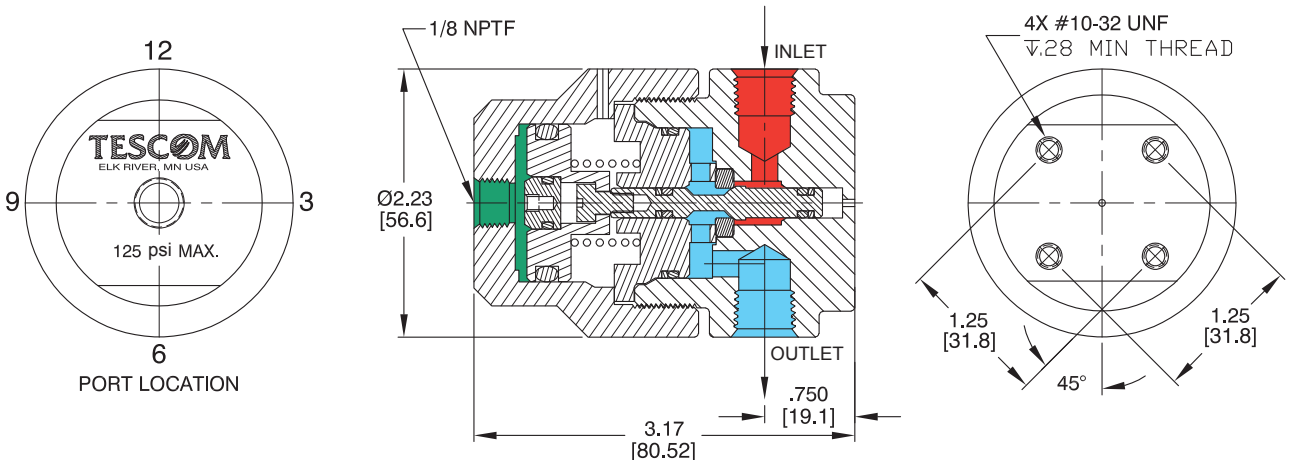
- Balanced poppet design means high reliability and exceptional cycle life
- High flow capacity: C_V = 0.75 or 2.0
- Normally open or normally closed
- Brass or 316 Stainless Steel machined bar stock
- Low actuation: 60 psig / 4.1 bar - minimum
- High operating pressure: 6000 psig / 414 bar maximum (Brass), 10,000 psig / 690 bar maximum (Stainless Steel)
- 15,000 psig / 1034 bar version is available
- Oxygen model is available that has passed adiabatic compression test per ISO 10524
- Optional pneumatic assist solenoid valve actuation (12V, 24V or 115V)

VA/VG SERIES

VA/VG Series Valve Drawings

VA SERIES

NORMALLY CLOSED VERSION

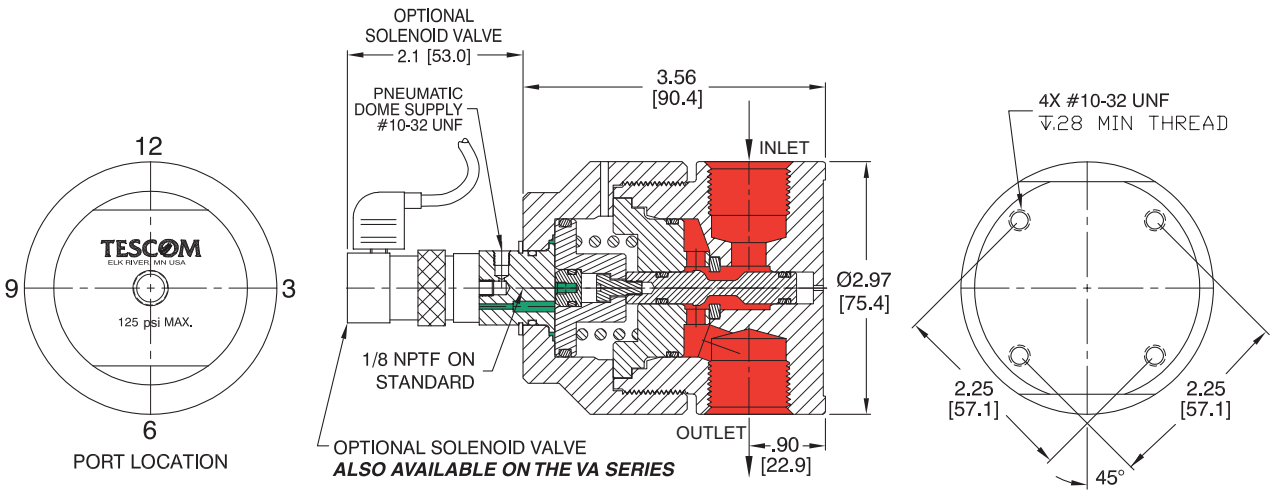


TOOLS FOR ASSEMBLY FOR VA VALVE

PART NO.	DESCRIPTION	QUANTITY	PART NO.	DESCRIPTION	QUANTITY
64082-1	Tool, Spacer	1	64096	Collet Spanner Wrench	1
64083-1	Tool, Base	1	64097	Collet, 1/4" / 6.35 mm	1
64095	Hex Collet Chuck	1	64084	Complete Kit	

VG SERIES

NORMALLY OPEN VERSION



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

VA Series Valve Part Number Selector

Repair Kits, Accessories & Modifications are available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VA SERIES

					For Non-Metallic Kit			
					K	I	T	N
VA	C	1	AB	9	A	9	B	9

SERIES	TYPE	BODY AND TRIM MATERIAL	SEAT: SEAT MATERIAL	SEAT: O-RING	SEAT: MAXIMUM OPERATING PRESSURE	SEAT: OPERATING TEMPERATURE*	OPTIONS	PORT LOCATION 3 SIZE AND TYPE	PORT LOCATION 6 SIZE AND TYPE	PORT LOCATION 9 SIZE AND TYPE	PORT LOCATION 12 SIZE AND TYPE
VA	**C** – Normally Closed **P** – Normally Open	**1** – Brass **6** – 316 Stainless Steel	**AB** – ETFE (Tefzel®) **AK** – ETFE (Tefzel®) **AV** – ETFE (Tefzel®) **AE** – ETFE (Tefzel®) **AU** – ETFE (Tefzel®)	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) E.P. Urethane	Brass 3500 psig 241 bar Stainless Steel 3500 psig 241 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C	**9** – None **C** – CCL **V** – Solenoid Valve (24 volt) **W**– Solenoid Valve (12 volt)	**A** – 1/4" NPTF Inlet **C** – 3/8" NPTF Inlet **E** – 1/4" SAE Inlet **N** – 1/8" NPTF Inlet *(changes C_V to 0.5)*	**A** – 1/4" NPTF Inlet **B** – 1/4" NPTF Outlet **C** – 3/8" NPTF Inlet **D** – 3/8" NPTF Outlet **E** – 1/4" SAE Inlet **F** – 1/4" SAE Outlet **P** – 1/8" NPTF Outlet *(changes C_V to .5)* **9** – None	**A** – 1/4" NPTF Inlet **B** – 1/4" NPTF Outlet **C** – 3/8" NPTF Inlet **D** – 3/8" NPTF Outlet **E** – 1/4" SAE Inlet **F** – 1/4" SAE Outlet **P** – 1/8" NPTF Outlet *(changes C_V to .5)* **9** – None	**A** – 1/4" NPTF Inlet **B** – 1/4" NPTF Outlet **C** – 3/8" NPTF Inlet **D** –3/8" NPTF Outlet **E** – 1/4" SAE Inlet **F** – 1/4" SAE Outlet **P** – 1/8" NPTF Outlet *(changes C_V to .5)* **9** – None
			CB – PCTFE **CK** – PCTFE **CV** – PCTFE **CE** – PCTFE **CU** – PCTFE	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 3500 psig 241 bar Stainless Steel 3500 psig 241 bar	-40°F to 165°F -40°C to 74°C 20°F to 165°F -7°C to 74°C -15°F to 165°F -26°C to 74°C -40°F to 165°F -40°C to 74°C -40°F to 165°F -40°C to 74°C					
			PB – PEEK **PK** – PEEK **PV** – PEEK **PE** – PEEK **PU** – PEEK	Nitrile, Buna-N Kalrez®** Viton® E.P. Urethane	Brass 6000 psig 414 bar Stainless Steel 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C					
			VB – Polymide (Vespel®) **VK** – Polymide (Vespel®) **VV** – Polymide (Vespel®) **VE** – Polymide (Vespel®) **VU** – Polymide (Vespel®)	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) E.P. Urethane	Brass 6000 psig 414 bar Stainless Steel 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C					

** For additional porting types, consult factory.*

* Brass body is limited to +200 °F (93 °C) maximum.
**FFKM, Perfluoroelastomer (Kalrez®)

VG Series Valve Part Number Selector

Repair Kits, Accessories & Modifications are available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VG SERIES

For Non-Metallic Kit: K I T N

VG	C	1	CB	9	C	9	D	9

SERIES	TYPE	BODY AND TRIM MATERIAL	SEAT				OPTIONS	PORT LOCATION 3 SIZE AND TYPE	PORT LOCATION 6 SIZE AND TYPE	PORT LOCATION 9 SIZE AND TYPE	PORT LOCATION 12 SIZE AND TYPE
			SEAT MATERIAL	O-RING	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURE*					
VG	C – Normally Closed P – Normally Open	1 – Brass 6 – 316 Stainless Steel	CB – PCTFE CK – PCTFE CV – PCTFE CE – PCTFE CU – PCTFE	Nitrile Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 3500 psig 241 bar Stainless Steel 3500 psig 241 bar	-40°F to 165°F -40°C to 74°C 20°F to 165°F -7°C to 74°C -15°F to 165°F -26°C to 74°C -40°F to 165°F -40°C to 74°C -40°F to 165°F -40°C to 74°C	9 – None C – CCL V – Solenoid Valve (24 volt) W – Solenoid Valve (12 volt)	C – 3/8" NPTF Inlet G – 1/2" NPTF Inlet J – 3/4" NPTF Inlet L – 3/8" SAE Inlet P – 1/2" SAE Inlet	C – 3/8" NPTF Inlet D – 3/8" NPTF Outlet G – 1/2" NPTF Inlet H – 1/2" NPTF Outlet J – 3/4" NPTF Inlet K – 3/4" NPTF Outlet L – 3/8" SAE Inlet M – 3/8" SAE Outlet P – 1/2" SAE Inlet R – 1/2" SAE Outlet 9 – None	C – 3/8" NPTF Inlet D – 3/8" NPTF Outlet G – 1/2" NPTF Inlet H – 1/2" NPTF Outlet J – 3/4" NPTF Inlet K – 3/4" NPTF Outlet L – 3/8" SAE Inlet M – 3/8" SAE Outlet P – 1/2" SAE Inlet R – 1/2" SAE Outlet 9 – None	C – 3/8" NPTF Inlet D – 3/8" NPTF Outlet G – 1/2" NPTF Inlet H – 1/2" NPTF Outlet J – 3/4" NPTF Inlet K – 3/4" NPTF Outlet L – 3/8" SAE Inlet M – 3/8" SAE Outlet P – 1/2" SAE Inlet R – 1/2" SAE Outlet 9 – None
			PB – PEEK PK – PEEK PV – PEEK PE – PEEK PU – PEEK	Nitrile Buna-N Kalrez®** FKM (Viton®-A Ethylene Propylene Urethane	Brass 6000 psig 414 bar Stainless Steel 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C					
			VB – Polymide (Vespel®) VK – Polymide (Vespel®) VV – Polymide (Vespel®) VE – Polymide (Vespel®) VU – Polymide (Vespel®)	Nitrile Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 6000 psig 414 bar Stainless Steel 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C					

* Brass body is limited to +200 °F (93 °C) maximum.
**FFKM, Perfluoroelastomer (Kalrez®)

VA Series Valve Modules

Repair Kits, Accessories & Modifications are available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

63583 - C 6 CV

SERIES	TYPE	BODY AND TRIM MATERIAL	SEAT MATERIAL	BACK-UP RING MATERIAL	O-RING	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURE*
63583	**C** – Normally Closed **P** – Normally Open	**1** – Brass **6** – 316 Stainless Steel	**AB** – ETFE (Tefzel®)	PTFE	Nitrile, Buna-N	Brass 3500 psig / 241 bar Stainless Steel 3500 psig / 241 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -40°F to 165°F / -40°C to 74°C
					Kalrez®**		
			AK – ETFE (Tefzel®)	PTFE	FKM (Viton®-A)		
			AV – ETFE (Tefzel®)	PTFE	Ethylene Propylene		
			AE – ETFE (Tefzel®)	PTFE	Urethane		
			AU – ETFE (Tefzel®)	PTFE	Nitrile, Buna-N		
			CB – PCTFE	PTFE	Kalrez®**	Brass 3500 psig / 241 bar Stainless Steel 500 psig / 241 bar	-40°F to 165°F / -40°C to 74°C 20°F to 165°F / -7°C to 74°C -15°F to 165°F / -26°C to 74°C -40°F to 165°F / -40°C to 74°C -40°F to 165°F / -40°C to 74°C
			CK – PCTFE	PTFE	FKM (Viton®-A)		
			CV – PCTFE	PTFE	Ethylene Propylene		
			CE – PCTFE	PTFE			
			CU – PCTFE	PTFE	Urethane		
			PB – PEEK	PCTFE	Nitrile, Buna-N	Brass 6000 psig / 414 bar Stainless Steel 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -40°F to 165°F / -40°C to 74°C
			PK – PEEK	PCTFE	Kalrez®**		
			PV – PEEK	PCTFE	FKM (Viton®-A)		
			PE – PEEK	PCTFE	Ethylene Propylene		
			PU – PEEK	PCTFE	Urethane		
			VB – Polymide (Vespel®)	PCTFE	Nitrile, Buna-N	Brass 6000 psig / 414 bar Stainless Steel 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -40°F to 165°F / -40°C to 74°C -40°F to 165°F / -40°C to 74°C
			VK – Polymide (Vespel®)	PCTFE	Kalrez®**		
			VV – Polymide (Vespel®)	PCTFE	FKM (Viton®-A)		
			VE – Polymide (Vespel®)	PCTFE	Ethylene Propylene		
			VU – Polymide (Vespel®)	PCTFE	Urethane		
			VG – Polymide (Vespel®)	PCTFE	Buna-N 90 Duro		

* Brass body is limited to +200 °F (93 °C) maximum.
** FFKM, Perfluoroelastomer (Kalrez®)

VA/VG SERIES

VG Series Valve Modules

Learn more about common options.
For modifications, repair kits and accessories, contact factory.

Example for selecting a part number:

67270 - C 6 VV

SERIES	TYPE	BODY AND TRIM MATERIAL	SEAT MATERIAL	BACK-UP RING MATERIAL	O-RING	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURE*
67270	**C** – Normally Closed **P** – Normally Open	**1** – Brass **6** – 316 Stainless Steel	**CB** – PCTFE **CK** – PCTFE **CV** – PCTFE **CE** – PCTFE **CU** – PCTFE	PTFE PTFE PTFE PTFE PTFE	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 3500 psig / 241 bar Stainless Steel 3500 psig / 241 bar	-40°F to 165°F / -40°C to 74°C 20°F to 165°F / -7°C to 74°C -15°F to 165°F / -26°C to 74°C -40°F to 165°F / -40°C to 74°C -40°F to 165°F / -40°C to 74°C
			PB – PEEK **PK** – PEEK **PV** – PEEK **PE** – PEEK **PU** – PEEK	PCTFE PCTFE PCTFE PCTFE PCTFE	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 6000 psig / 414 bar Stainless Steel 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -40°F to 165°F / -40°C to 74°C
			VB – Polymide (Vespel®) **VK –** Polymide (Vespel®) **VV –** Polymide (Vespel®) **VE –** Polymide (Vespel®) **VU –** Polymide (Vespel®)	PCTFE PCTFE PCTFE PCTFE PCTFE	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass 6000 psig / 414 bar Stainless Steel 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -40°F to 165°F / -40°C to 74°C

* Brass body is limited to +200 °F (93 °C) maximum.
**FFKM, Perfluoroelastomer (Kalrez®)

POPULAR MODIFICATIONS

- Cartridge style for manifolds – fitting reduction
- Explosion Proof solenoid, Class I, Div I & II, Groups A, B, C, D
- Oxygen model is available that has passed adiabatic compression test per ISO 10524 (VA Series only)
- On/Off switch
- Hand Toggle actuated option
- Stepper motor options 24VDC (VA Series only)
- 15,000 psig / 1034 bar
- 20,000 psig / 1379 bar (VA Series only)
- High force actuator to prevent flow with high delta (VA Series only)
- Special porting including welded fittings
- Captured breather ports (bonnet and body)

For additional modifications, consult the factory.

On/Off and Shut-off Valves DVJXX1916X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Operating Pressure
316 Stainless Steel Body: 10,000 psig / 690 bar
Brass Body: 6000 psig / 414 bar

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature
See table

Flow Capacity
C_V = 0.49 Angle
C_V = 0.28 Globe

Maximum Operating Torque
15 in-lbs / 1.7 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Seat
PCTFE, Nylatron, PEEK, PTFE, or Polyimide (Vespel®)

Back-up Ring
PTFE

O-Ring
Nitrile, Buna-N, Ethylene Propylene, FFKM, Perfluoroelastomer (Kalrez®), or FKM (Viton®-A)

Remaining Parts
Monel and Brass or Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight
1.5 lbs / 0.7 kg

Teflon®, Viton-A®, Kalrez®, and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM VJ Series hand valves offer control pressure of 6000 and 10,000 psig / 414 and 690 bar. Available in angle and globe patterns.

Applications

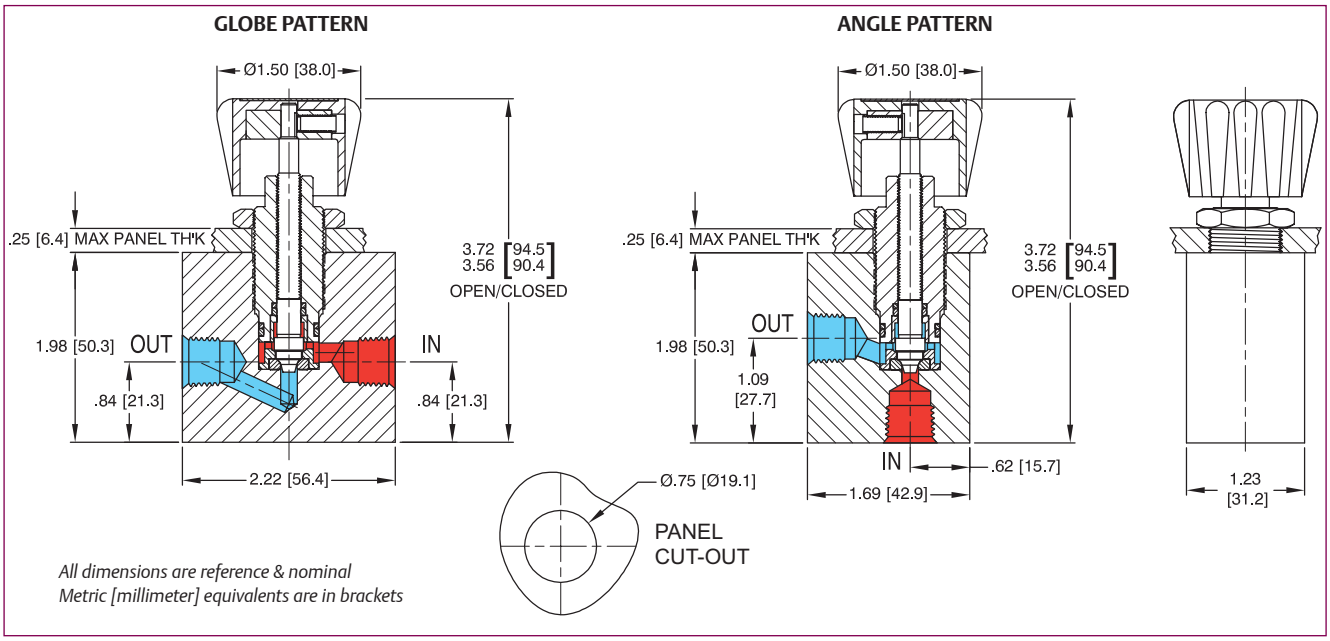
- Pressure control panels
- Ground Support Equipment (GSE)

Features and Benefits

- Versatile bi-directional flow
- Built-in metallic stop prevents overtightening of the valve
- Angle or globe pattern options are available, easy adaptation
- Designed to be O_2 compatible with correct materials of construction

VJ SERIES

VJ Series Valve Drawing, Part Number Selector, and Operating Temperature



Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VJ	1	0	3	04	V	K

BASIC SERIES	BODY MATERIAL	PATTERN TYPE	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	SEAT MATERIAL	O-RING MATERIAL
VJ	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** Angle **1 –** Globe	**0 –** BSPP **1 –** SAE **2 –** NPTF **3 –** MS33649	**04 –** 1/4" **06 –** 3/8" (available in globe pattern only)	**K –** PCTFE **P –** PEEK **T –** PTFE **V –** Polyimide (Vespel®)	**D –** Nitrile, Buna-N **E –** Ethylene Propylene **K –** Kalrez® ** **V –** FKM (Viton®-A)

**FFKM, Perfluoroelastomer (Kalrez®)

Operating Temperature

SEAT MATERIAL	O-RING	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURE *
PTFE PTFE PTFE PTFE	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 3500 psig / 241 bar **Stainless Steel:** 3500 psig / 241 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C
PEEK PEEK PEEK PEEK	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -15°F to 250°F / -26°C to 121°C
PCTFE PCTFE PCTFE PCTFE	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 6000 psig / 414 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C
Polyimide (Vespel®) Polyimide (Vespel®) Polyimide (Vespel®) Polyimide (Vespel®)	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C

** Brass body is limited to +200 °F (93 °C) maximum.*

On/Off and Shut-off Valves DVKXX2048X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Operating Pressure
Stainless Steel: 10,000 psig / 689 bar
Brass: 6000 psig / 414 bar

Design Proof Pressure
150% of rated pressure

Operating Temperature
See table

Leakage
Bubble-tight

Flow Capacity (approximate)
C_V = 0.28

Maximum Operating Torque
15 in-lbs / 1.7 N•m

MEDIA CONTACT MATERIALS

Body
Brass, 316 Stainless Steel

Seat
CTFE, PTFE, Polyimide (Vespel®) or Peek

Back-up Ring
PCTFE

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene, FFKM, Perfluoroelastomer (Kalrez®)

Remaining Parts
300 Series Stainless Steel, 17-4 PH Stainless Steel

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
5 lbs / 2.3 kg

Teflon®, Viton®, Vespel® and Kalrez® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM VK Series block and bleed manifold offers control pressures of 6000 and 10,000 psig / 414 and 690 bar. This valve is based on TESCOM's field proven VJ Series.

Application

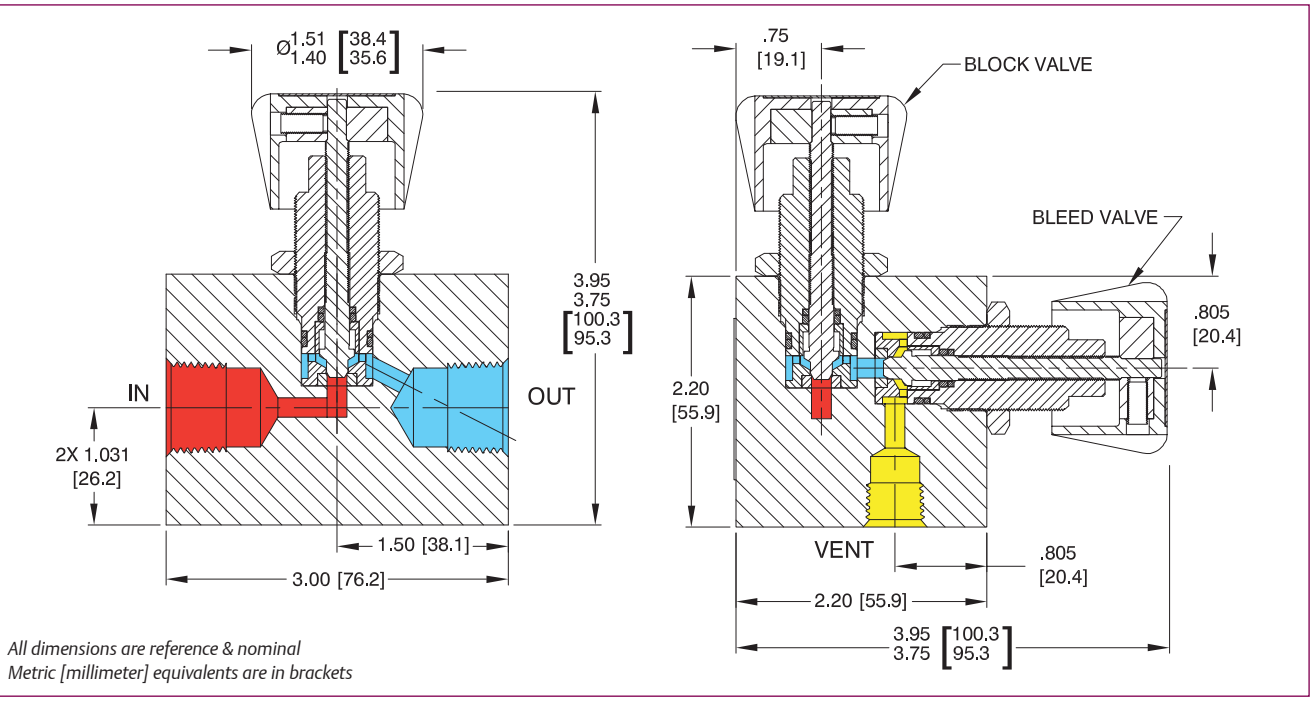
- Purge applications

Features and Benefits

- High pressure
- Material options
- Built-in metallic stop
- Allows construction or repair along a pressurized line
- Allows residual downstream pressure to bleed to zero
- Low operating torque
- High cycle life

VK SERIES

VK Series Valve Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

VK Series Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VK	6	3	02	2	04	4

BASIC SERIES	BODY MATERIAL	SEAT MATERIAL	O-RING MATERIAL	PORT TYPE	INLET & OUTLET PORT SIZE	VENT PORT SIZE
VK	**1 -** Brass **6 -** 316 Stainless Steel	**0 -** PCTFE **3 -** PTFE **7 -** Polyimide (Vespel®) **P -** Peek	**00 -** Nitrile, Buna-N **02 -** FKM (Viton®-A) **05 -** Ethylene Propylene **11 -** FFKM, Perfluoroelastomer (Kalrez®)	**2 -** NPTF **3 -** MS33649	**04 -** 1/4" **08 -** 1/2"	**4 -** 1/4"

Operating Temperature

SEAT MATERIAL	O-RING	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURE
PTFE PTFE PTFE PTFE	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 3500 psig / 241 bar **Stainless Steel:** 3500 psig / 241 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C
Peek Peek Peek Peek	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -15°F to 250°F / -26°C to 121°C
PCTFE PCTFE PCTFE PCTFE	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 6000 psig / 414 bar	-40°F to 165°F / -40°C to 74°C 20°F to 165°F / -7°C to 74°C -15°F to 165°F / -26°C to 74°C -40°F to 165°F / -40°C to 74°C
Polyimide (Vespel®) Polyimide (Vespel®) Polyimide (Vespel®) Polyimide (Vespel®)	Nitrile, Buna-N FFKM, Perfluoroelastomer (Kalrez®) FKM (Viton®-A) Ethylene Propylene	**Brass:** 6000 psig / 414 bar **Stainless Steel:** 10,000 psig / 690 bar	-40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C

On/Off and Shut-off Valves DVMXX2051X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Operating Pressure
6000 psig / 414 bar

Design Proof Pressure
150% maximum rated

Leakage
Internal: Bubble-tight
External: Bubble-tight

Operating Temperature
See Part Number Selector

Flow Capacity
C_V = 4.5

Minimum Actuation Pressure
80 psig / 5.5 bar

Maximum Actuation Pressure
125 psig / 8.6 bar

MEDIA CONTACT MATERIALS

Body and Trim
316 Stainless Steel

Seat
Polyimide (Vespel®)

Valve
316 Stainless Steel

O-Rings
Nitrile, Buna-N, FFKM, Perfluoroelastomer (Kalrez®), FKM (Viton®-A), Ethylene Propylene, Urethane

Back-up Rings
PTFE

OTHER

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
19 lbs / 8.6 kg

Teflon®, Vespel®, Kalrez® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM VM Series is an air-operated high pressure, high flow valve.

Applications

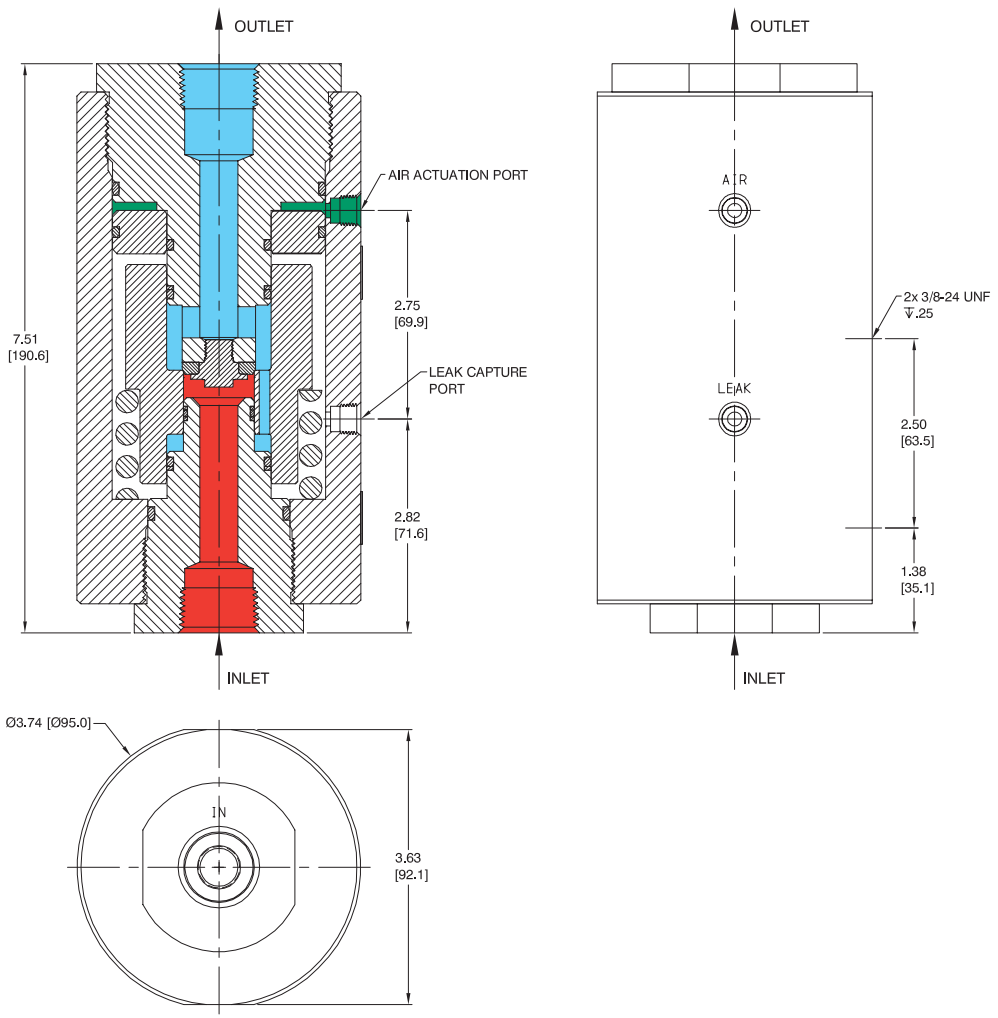
- High pressure gas and liquid
- High flow filling applications
- Testing of high pressure and high flow components

Features and Benefits

- Normally closed valve
- Balanced valve
- In-line flow path to minimize the pressure drop across the valve
- High operating pressures of 6000 psig / 414 bar

VM SERIES

VM Series Valve Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

VM Series Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VM 6 VV 2 12 2 12 2

BASIC SERIES	BODY AND TRIM MATERIAL	SEAT MATERIAL	O-RING MATERIAL	MAXIMUM OPERATING PRESSURE	OPERATING TEMPERATURES	INLET PORT TYPE	INLET PORT SIZE	OUTLET PORT SIZE	OUTLET PORT SIZE	AIR AND LEAK PORT SIZE/TYPE
VM	**6** – 316 Stainless Steel	Polyimide (Vespel®)	**VB** – Nitrile, Buna-N **VK** – FFKM, Perfluoroelastomer (Kalrez®) **VV** – FKM (Viton®-A) **VE** – E.P. **VU** – Urethane	6000 psig / 414 bar	-40°F to 165°F / -40°C to 74°C -15°F to 250°F / -26°C to 121°C -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C -20°F to 165°F / -29°C to 74°C	**1** – SAE **2** – NPTF **3** – MS33649	**12** – 3/4" **16** – 1"	**1** – SAE **2** – NPTF **3** – MS33649	**12** – 3/4" **16** – 1"	**2** – 1/8" NPTF

On/Off and Shut-off Valves DVNXX2052X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10,000 psig / 689 bar

Design Proof Pressure
150% of rated pressure

Leakage
Bubble-tight

Operating Temperature
-20°F to 165°F / -29°C to 74°C

Flow Capacity
C_V = 20

Maximum Operating Torque
35 in-lbs / 4.0 N•m

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel

Seat
Polyimide (Vespel® SP21)

O-Ring
Nitrile, Buna-N, FKM (Viton®-A), Ethylene Propylene

Back-Up Ring
PTFE

Wear Ring
PEEK

Grayloc Hubs
Nitronic 60

Remaining Parts
316 Stainless Steel, 17-4 PH Stainless Steel

OTHER

Cleaning
CGA 4.1 AND ASTM G93

Weight
35 lbs / 15.9 kg

Teflon®, Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM VN Series high flow, bidirectional valve.

Application

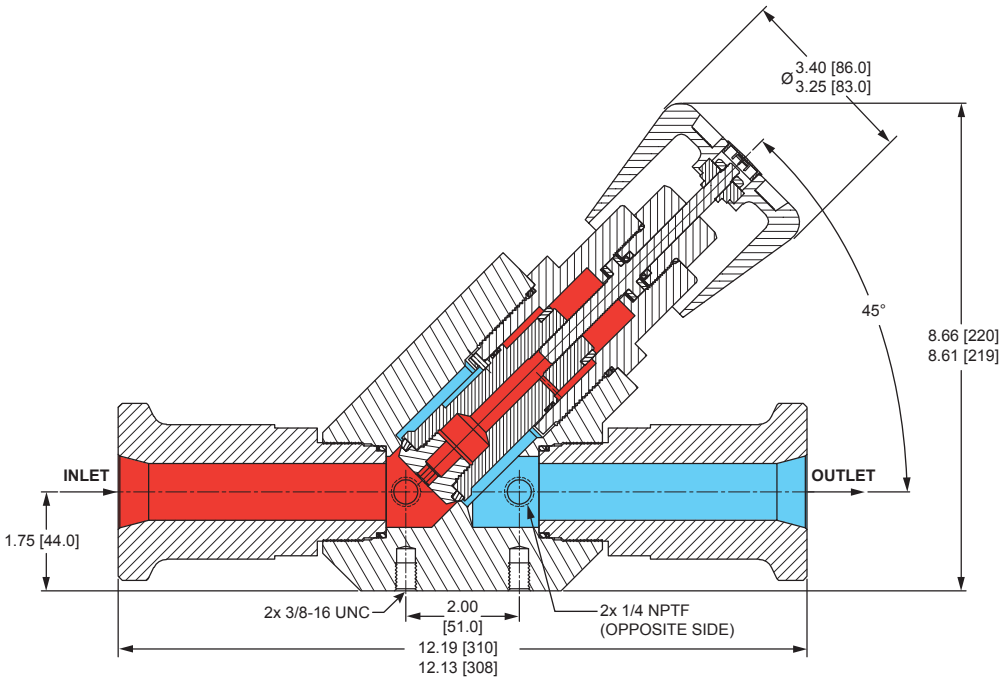
- High pressure / high flow supply lines

Features and Benefits

- Y-Pattern flow path
- Low torque handknob
- Replaceable soft seats
- Grayloc hub connections are available

VN SERIES

VN Series Valve Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

VN Series Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VN 6 V B 12 9 12 9 2 – 01

BASIC SERIES	BODY MATERIAL	SEAT MATERIAL	O-RING MATERIAL	INLET PORT SIZE	INLET PORT TYPE	OUTLET PORT SIZE	OUTLET PORT TYPE	GAUGE PORTS	MODIFICATION NUMBER
VN	**6 –** 316 Stainless Steel	**V –** Polyimide (Vespel® SP1)	**B –** Nitrile, Buna-N **E –** E.P. **V –** FKM (Viton®-A)	**12 –** 1-1/2"	**9 –** Threaded Grayloc Hub	**12 –** 1-1/2"	**9 –** Threaded Grayloc Hub	**2 –** 1/4" NPTF	**01 –** 1-1/2" Grayloc Hubs

Pressure at which valve is used must be compatible with the pressure rating of the valve and port size/type provided.

3-Way On/Off and Shut-off Valves DVTXX2016X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Operating Pressure

3500 psig / 241 bar

Body: Brass, 316 Stainless Steel

Seat: Tefzel® ETFE, CTFE

6000 psig / 414 bar

Body: Brass

Seat: Vespel®, PEEK

10,000 psig / 690 bar

Body: 316 Stainless Steel

Seat: Vespel®, PEEK

Design Proof Pressure

150% maximum rated

Leakage

Internal: Bubble-tight

External: Bubble-tight

Operating Temperature

See Part Number Selector

Flow Capacity

C_V = 0.75

Actuation Pressure

Minimum: 80 psig / 5.5 bar

Maximum: 110 psig / 7.6 bar

MEDIA CONTACT MATERIALS

Body

Brass, 316 Stainless Steel

Metallic Trim

316 Stainless Steel, 17-4 PH Stainless Steel, Brass (Brass bodies only)

Seat

ETFE (Tefzel®), CTFE, PEEK, Polyimide (Vespel®)

O-Ring

Nitrile, Buna-N, FFKM, Perfluoroelastomer (Kalrez®), FKM (Viton®-A), Ethylene Propylene, Urethane

Back-up Rings

PTFE for PCTFE and ETFE (Tefzel®) seats

PCTFE for PEEK and Polyimide (Vespel®) seats

OTHER

Weight

5 lbs / 2.3 kg

TESCOM VT Series 3-way air-operated valve provides high cycle life in a compact design.

Applications

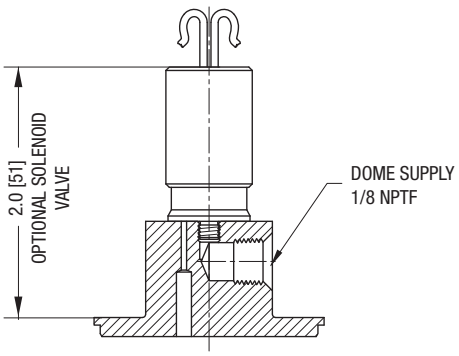
- Component pressure cycle testing
- Two source selector valve
- Fill and dump applications (e.g. airbag canister filling, gas spring filling)
- Emergency shutoff
- Pneumatic and hydraulic applications

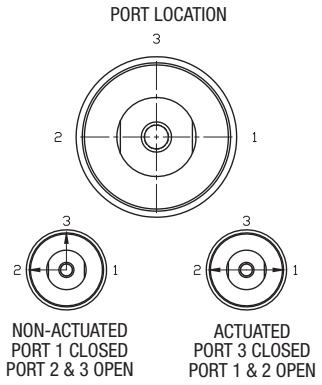
Features and Benefits

- 1/4" and 3/8" ports
- C_V = 0.75
- Balanced main valve
- Solenoid valve is optional
- 2 position, 3-way
- Leak tight integrity - Class VI shutoff (bubble-tight)

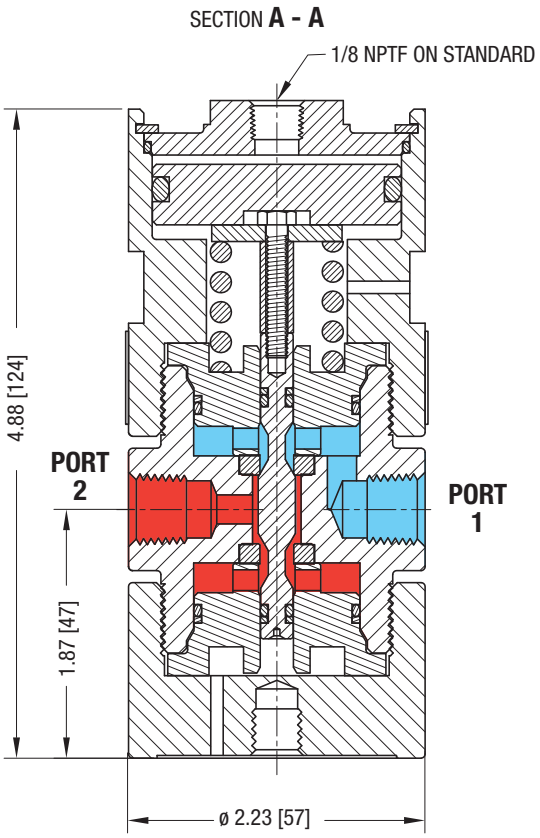
VT SERIES

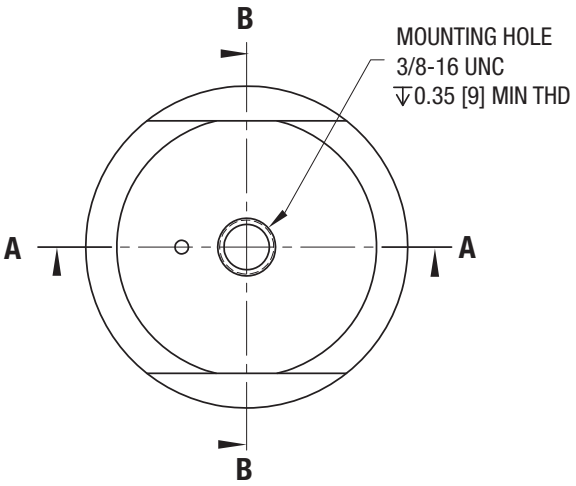
VT Series 3-Way Valve Drawing





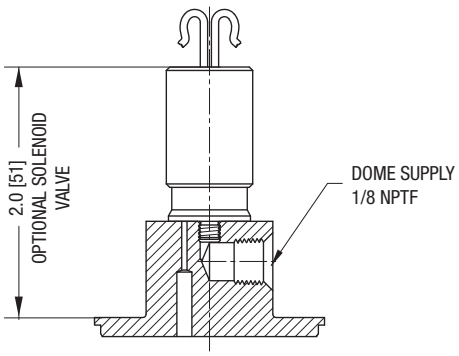
NON-ACTUATED
PORT 1 CLOSED, PORT 2 & 3 OPEN

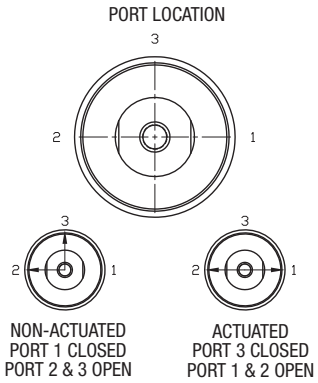




All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

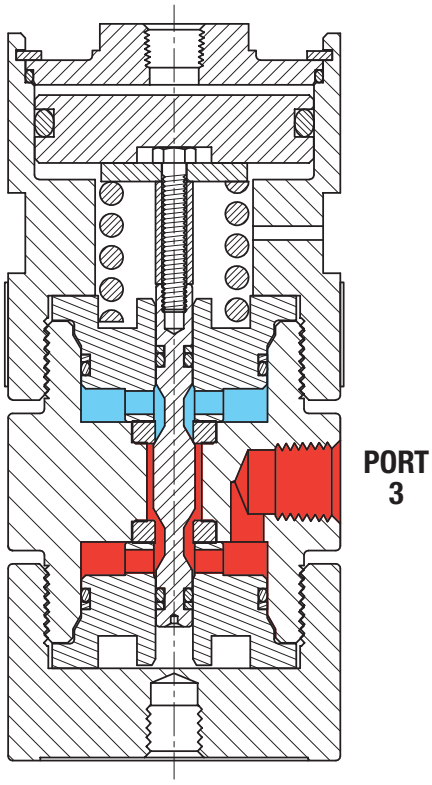
VT Series 3-Way Valve Drawing

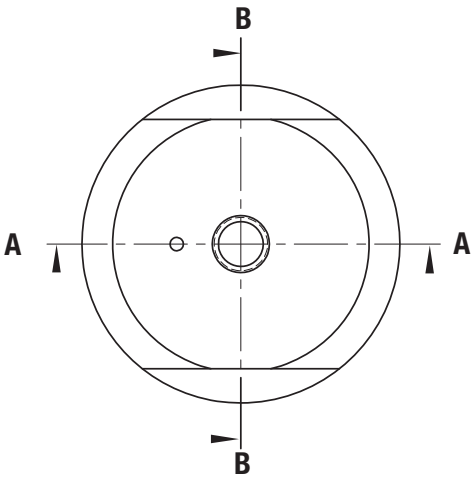




NON-ACTUATED
PORT 1 CLOSED, PORT 2 & 3 OPEN

SECTION **B - B**





All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

VT SERIES

VT Series 3-Way Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

VT	6	AB				9	A	A	A
BASIC SERIES	**BODY MATERIAL**	**SEAT MATERIAL**	**O-RING MATERIAL**	**MAXIMUM OPERATING PRESSURE**	**OPERATING TEMPERATURE***	**OPTIONS**	**1 PORT LOCATION SIZE AND TYPE**	**2 PORT LOCATION SIZE AND TYPE**	**3 PORT LOCATION SIZE AND TYPE**
VT	**1 –** Brass **6 –** 316 Stainless Steel	**AB –** ETFE (Tefzel®) **AK –** ETFE (Tefzel®) **AV –** ETFE (Tefzel®) **AE –** ETFE (Tefzel®) **AU –** ETFE (Tefzel®)	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass body 3500 psig 241 bar 316 Stainless Steel body 3500 psig 241 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C	**9 –** None **C –** CCL **V –** Solenoid valve 24 Volt DC **W –** Solenoid valve 12 Volt DC	**A –** 1/4" NPTF **C –** 3/8" NPTF **E –** 1/4" SAE **J –** 3/8" SAE	**A –** 1/4" NPTF **C –** 3/8" NPTF **E –** 1/4" SAE **J –** 3/8" SAE	**A –** 1/4" NPTF **C –** 3/8" NPTF **E –** 1/4" SAE **J –** 3/8" SAE
		CB – PCTFE **CK –** PCTFE **CV –** PCTFE **CE –** PCTFE **CU –** PCTFE	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass body 3500 psig 241 bar 316 Stainless Steel body 3500 psig 241 bar	-40°F to 165°F -40°C to 74°C 20°F to 165°F -7°C to 74°C -15°F to 165°F -26°C to 74°C -40°F to 165°F -40°C to 74°C -40°F to 165°F -40°C to 74°C				
		PB – PEEK **PK –** PEEK **PV –** PEEK **PE –** PEEK **PU –** PEEK	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass body 6000 psig 414 bar 316 Stainless Steel body 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C				
		VB – Polymide (Vespel®) **VK –** Polymide (Vespel®) **VV –** Polymide (Vespel®) **VE –** Polymide (Vespel®) **VU –** Polymide (Vespel®)	Nitrile, Buna-N Kalrez®** FKM (Viton®-A) Ethylene Propylene Urethane	Brass body 6000 psig 414 bar 316 Stainless Steel body 10,000 psig 690 bar	-40°F to 165°F -40°C to 74°C 20°F to 250°F -7°C to 121°C -15°F to 250°F -26°C to 121°C -40°F to 250°F -40°C to 121°C -40°F to 165°F -40°C to 74°C				

* Brass body is limited to +200 °F (93 °C) maximum.
**FFKM, Perfluoroelastomer (Kalrez®)

Manifolds/Changeover Regulators

Manifold and panel designs that minimize space and potential leak paths and changeover regulators that provide continuous gas and fluid pressure management

ACS012 - Low Flow Changeover Regulator

- Maximum inlet pressure: 400 or 3500 psig / 27.6 or 241 bar
- Four delivery pressures from 100 to 250 psig / 6.9 to 17.2 bar
- Designed to provide a continuous flow of gas for applications requiring stored gas supplies
- Available in 316 Stainless Steel, Brass, or Nickel-plated Brass
- Based on Tescom's field-proven 44-2200 Regulator
- Mounting bracket is standard

CS-2200 - Low Flow Changeover System

- Maximum inlet pressure: 3500 psig / 241 bar
- Four maximum delivery pressures from 25 to 150 psig / 1.7 to 10.3 bar
- Designed to provide a continuous flow of gas for applications requiring stored gas supplies
- Available in 316 Stainless Steel or Brass
- Based on Tescom's field-proven 44-2200 Regulator
- Mounting bracket is standard

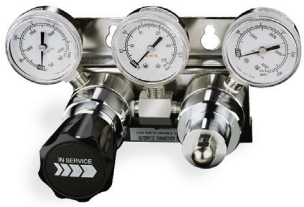
ACS3200 - High Flow Changeover Regulator

- Maximum inlet pressure: 3000 psig / 207 bar
- Delivery pressure: 160/200 psig / 11.0/13.8 bar
- Available in 316 Stainless Steel or Brass
- Based on Tescom's field-proven 44-3200 Regulator
- Mounting bracket is standard

CR441800 - High Pressure Changeover System

- Maximum inlet pressure: 3500 or 6000 psig / 241 or 414 bar
- Seven maximum delivery pressures from 500 to 2000 psig / 34.5 to 138 bar
- Designed to provide a continuous flow of gas for applications requiring stored gas supplies
- Available in 316 Stainless Steel or Brass
- Based on Tescom's field-proven 44-1800 Regulator

ACS012



CS-2200

ACS3200

CR441800

Applications

- CO_2 for tissue and cell culture incubators supply
- Shielding and laser assist gases in metal fabrication (ACS3200 only)
- Analyzer carrier gas
- Laser cutting assist gas

AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

ACS3200 Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3000 psig / 207 bar

Outlet Pressure
160-200 psig / 11.0-13.8 bar

Design Proof Pressure
150% of maximum operating

Leak Rate
Internal: Bubble-tight
External: Designed to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

Flow Capacity
C_V = 1.2

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Bonnet
Nickel-plated Brass

Valve Seat
PCTFE

Valve O-Ring
FKM (Viton®-A)

Diaphragm
316 Stainless Steel

Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel

OTHERS

Gauges (3 standard)
316 Stainless Steel gauges with Stainless Steel regulators, Brass gauges with Brass regulators

Cleaning
CGA 4.1 and ASTM G93

Weight
10 lbs / 4.5 kg

Viton® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM ACS3200 Series is a compact, lightweight high purity, high flow changeover system for specialty, corrosive, and pyrophoric gases. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity. It provides continuous flow of gas from two pressure sources.

CS2200 Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3500 psig / 241 bar

Design Proof Pressure
150% of maximum rated

Leak Rate
Internal: Bubble-tight
External: Designed to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Brass

Bonnet
300 Series Stainless Steel or Brass

Valve Seat
PTFE

Diaphragm
316 Stainless Steel

Friction Sleeve
Inner: PTFE
Outer: 316 Stainless Steel

Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel (and Brass for Brass bodies)

OTHERS

Gauges (3 standard)
316 Stainless Steel gauges with Stainless Steel regulators, Brass gauges with Brass regulators

Connections
1/4" Female NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
5 lbs / 2.3 kg

TESCOM CS-2200 Series is a complete high purity changeover system which combines the changeover regulator and a line regulator into a compact wall mount system for specialty, corrosive, and pyrophoric gases. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity. It provides continuous low flow of gas from two pressure sources.

ACS012 Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
400 or 3500 psig / 27.6 or 241 bar

Maximum Delivery Pressure
85/115, 135/165, 185/215, 235/265 psig
5.9/7.9, 9.3/11.4, 12.8/14.8, 16.2/18.3 bar

Design Proof Pressure
150% of maximum operating

Leak Rate
Internal: Bubble-tight
External: Designed to meet ≤ 2 x 10^{-8} atm cc/sec He

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel, Brass, or Nickel-plated Brass

Bonnet
300 Series Stainless Steel or Brass

Valve Seat
PTFE

Diaphragm
316 Stainless Steel

Friction Sleeve
Inner: PTFE
Outer: 316 Stainless Steel

Spring
316 Stainless Steel

Remaining Parts
316 Stainless Steel (and Brass for Brass bodies)

OTHERS

Gauges (3 standard)
316 Stainless Steel gauges with Stainless Steel regulators,
Brass gauges with Brass regulators

Connections
1/4" Female NPTF

Cleaning
CGA 4.1 and ASTM G93

Weight
5 lbs / 2.3 kg

Vespel® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM ACS012 Series is a compact, lightweight high purity changeover system for specialty, corrosive, and pyrophoric gases. Diffusion-resistant metal diaphragm seal ensures gas purity and integrity. It provides continuous low flow of gas from two pressure sources.

CR441800 Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3500 or 6000 psig / 241 or 414 bar

Maximum Outlet Pressure Ranges
475/525, 575/625, 675/725, 775/825, 875/925, 975/1025, 1975/2025 psig
32.8/36.2, 39.6/43.1, 46.5/50.0. 53.4/56.9, 60.3/63.8, 67.2/70.7, 136/140 bar

Design Proof Pressure
150% of maximum operating

Leak Rate
Bubble-tight

Operating Temperature
-15°F to 165°F / -26°C to 74°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Body
Brass, 316 Stainless Steel, or Nickel-plated Brass

Bonnet
300 Series Stainless Steel, Brass, or Nickel-plated Brass

Valve Seat
Polyimide (Vespel®)

O-Ring
FKM

Remaining Parts
Brass and 300 Series Stainless Steel

OTHERS

Cleaning
CGA 4.1 and ASTM G93

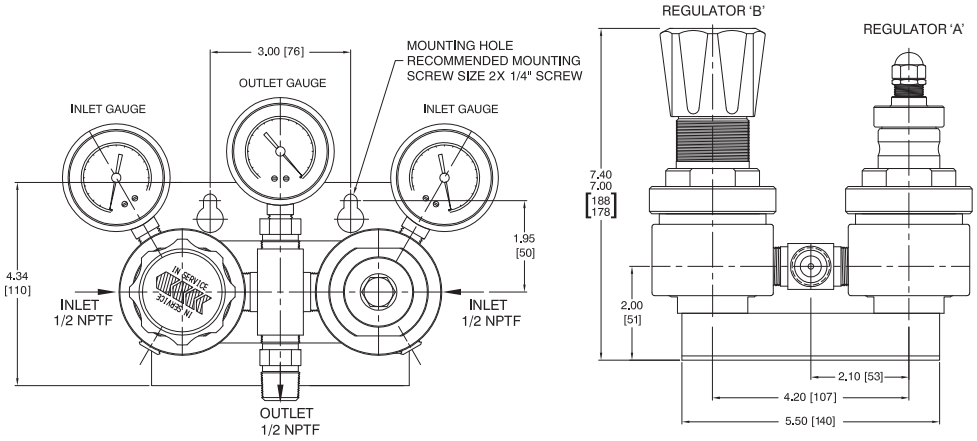
Weight
3 lbs / 1.4 kg

TESCOM CR441800 Series is a compact, high pressure changeover system which combines the changeover regulator and a line regulator into a compact wall mount system for general purpose and industrial gases. It provides continuous low flow of gas from two high pressure sources.

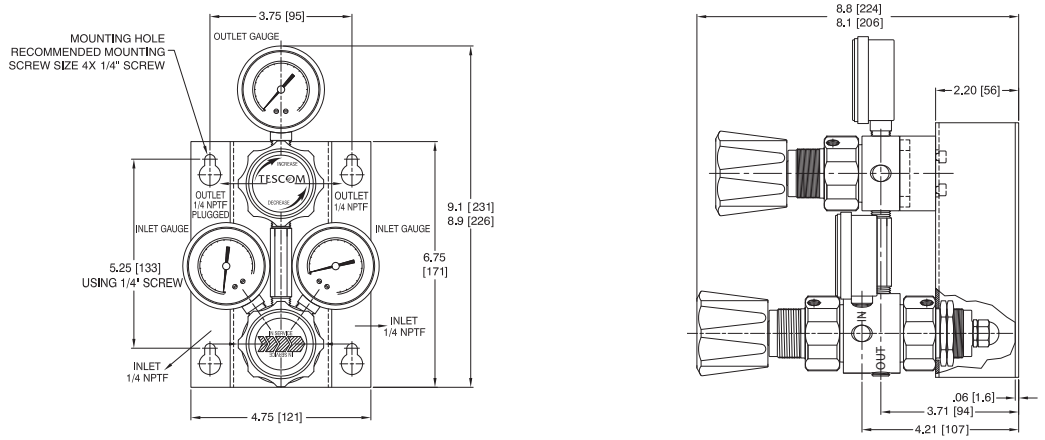
AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

Automatic Changeover Regulators and Systems Drawings

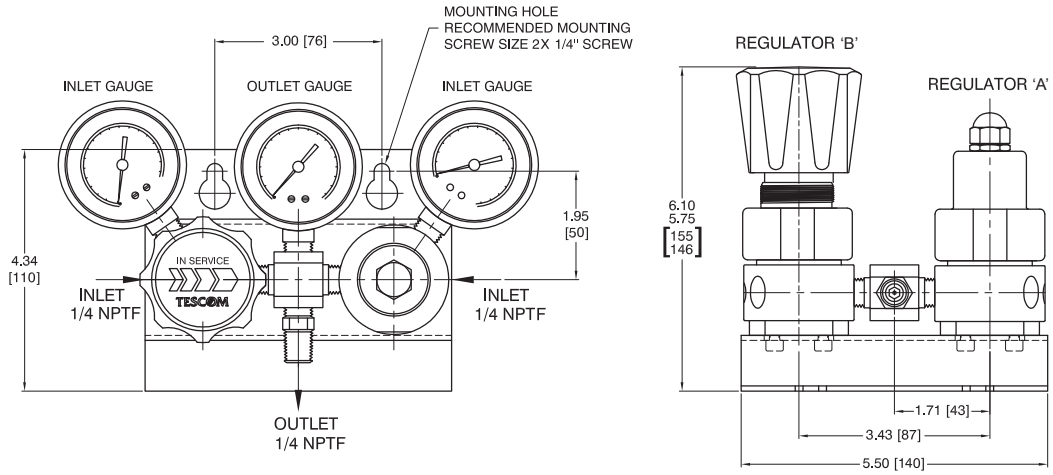
ACS3200 SERIES CHANGEOVER SYSTEMS (HIGH FLOW)



CS2200 SERIES CHANGEOVER SYSTEMS (LOW FLOW)



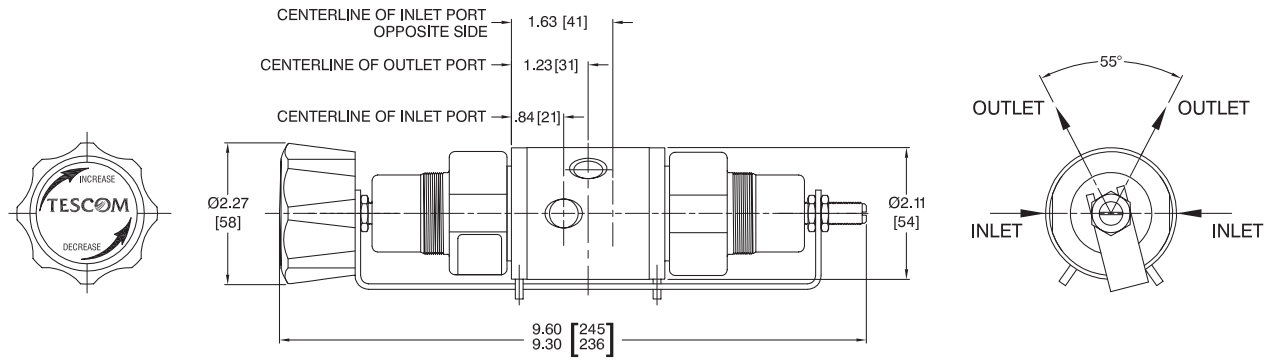
ACS012 SERIES CHANGEOVER SYSTEMS (LOW FLOW)



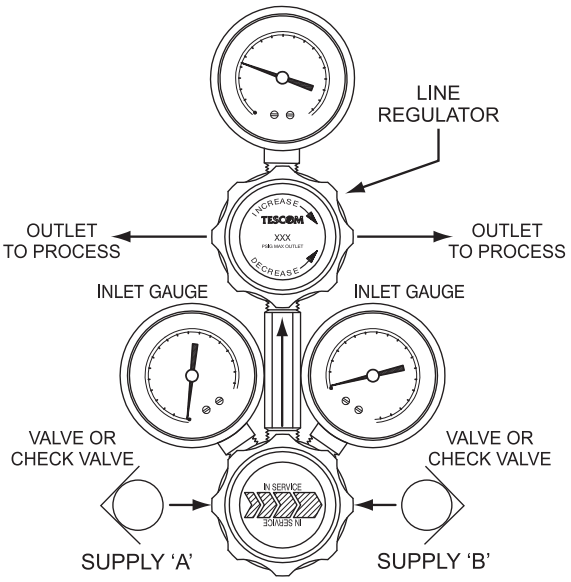
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Automatic Changeover Regulators and Systems Drawings

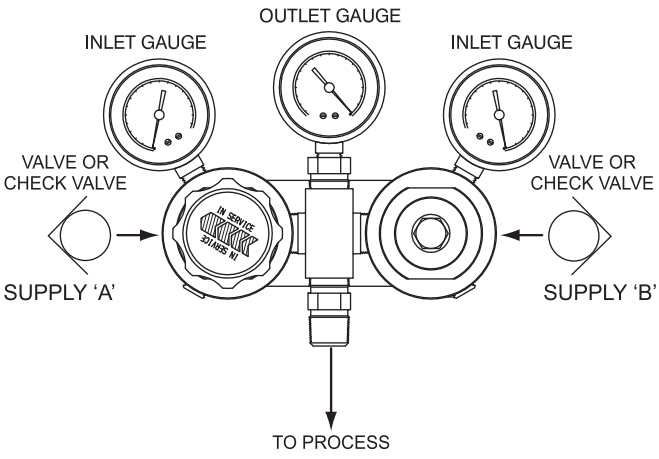
CR441800 SERIES CHANGEOVER SYSTEMS (HIGH PRESSURE)



BASIC FUNCTIONAL DESCRIPTION CHANGEOVER SYSTEMS



SINGLE BODY CHANGEOVER SYSTEM



TWO BODY CHANGEOVER SYSTEM

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

When primary supply to the changeover regulator (supply 'A') is consumed, the secondary supply (supply 'B') feeds the line regulator and/or process. The line regulator supplies media to the process at the precise pressure required. By turning the changeover regulator handknob clockwise, supply 'A' can then be replenished. When supply 'B' is depleted, supply 'A' will then begin to feed the line regulator and/or process. With a counterclockwise turn of the changeover regulator handknob, supply 'B' can be replenished.

AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

Automatic Changeover Regulators and Systems Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

ACS32 1 4 1 1

BASIC SERIES	BODY AND TRIM	OUTLET PRESSURE	GAUGE OPTION	MAXIMUM INLET PRESSURE
ACS32	**1 –** Brass **6 –** 316 Stainless Steel	**4 –** 160/200 psig 11.0/13.8 bar (optional 400 psig / 27.6 gauge)	**0 –** No gauges installed **1 –** Gauges installed	**1 –** 3000 psig 207 bar (optional 4000 psig / 276 bar gauge)

CS - 22 6 3 - 2 4 1

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MAXIMUM INLET PRESSURE
CS - 22	**1 –** Brass **6 –** 316 Stainless Steel	**0 –** 0-25 psig 0-1.7 bar **1 –** 0-50 psig 0-3.4 bar **2 –** 0-100 psig 0-6.9 bar **3 –** 0-150 psig 0-10.3 bar	**2 –** NPTF	**4 –** 1/4"	**1 –** 3500 psig 241 bar (with gauges) **2 –** 3500 psig 241 bar (no gauges)

ACS012 1 3 0 1

BASIC SERIES	BODY MATERIAL	PRESSURE SETTINGS	OUTLET GAUGE INSTALLED (OPTIONAL)	GAUGES	MAXIMUM INLET PRESSURE
ACS012	**1 –** Brass **6 –** 316 Stainless Steel **P –** Nickel-plated Brass	**0 –** 85/115 psig 5.9/7.9 bar **1 –** 135/165 psig 9.3/11.4 bar **2 –** 185/215 psig 12.8/14.8 bar **3 –** 235/265 psig 16.2/18.3 bar	200 psig 13.8 bar 200 psig 13.8 bar 300 psig 20.7 bar 300 psig 20.7 bar	**0 –** No Gauges **1 –** With Three Gauges[1] (installed)	**1 –** 3500 psig 241 bar (optional 4000 psig / 276 bar gauge) **2 –** 400 psig 27.6 bar (optional 600 psig / 41.4 bar gauge)

1. Brass gauges are provided with Brass regulators and Stainless Steel gauges are provided with Stainless Steel regulators.

CR4418 6 2 - 2 4 1

BASIC SERIES	BODY MATERIAL	OUTLET PRESSURE RANGES	INLET AND OUTLET PORT TYPE	INLET AND OUTLET PORT SIZE	MAXIMUM INLET PRESSURE
CR4418	**1 –** Brass **6 –** 316 Stainless Steel **P –** Nickel-plated Brass	**1 –** 475/525 psig 32.8/36.2 bar **2 –** 575/625 psig 39.6/43.1 bar **3 –** 675/725 psig 46.5/50.0 bar **4 –** 775/825 psig 53.4/56.9 bar **5 –** 875/925 psig 60.3/63.8 bar **6 –** 975/1025 psig 67.2/70.7 bar **7 –** 1975/2025 psig 136/140 bar	**2 –** NPTF	**4 –** 1/4"	**1 –** 3500 psig 241 bar **3 –** 6000 psig 414 bar

Manifolds/Changeover Regulators DCATLABO1264XEN2

Specifications

For other materials or modifications, please consult TESCOM.

REGULATOR

Maximum Inlet Pressure
1000 or 3480 psig / 69.0 or 240 bar

Outlet Pressure Range
145, 247 psig / 10.0, 17.0 bar maximum

Body Material
316L Stainless Steel

Regulator Seat
PCTFE

Valve Seat
Ceramic on Stainless Steel

Remaining Parts
316 Stainless Steel

Flow Capacity
< 9 Nm^3/h at C_V = 0.06 trim

Leak Rate
$1x10^{-8}$ mbar l/s He

Operating Temperature
-40°F to 140°F / -40°C to 60°C

GAUGES

Material
Stainless Steel

Connection
1/4" HPIC (VCR® compatible internal connection)

RELIEF VALVE

Outlet Connection
6 mm Compression fitting

Body Material
Stainless Steel 1.4404

Seat Material
FKM (Viton®-A)

CONTACT GAUGES 2.5"

Material
Stainless Steel

Scale Range
2900 or 4570 psig / 200 or 315 bar (other ranges on request)

Switch
Reed switch, opens with decreasing pressure

Surge Current
1 A

Permanent Current
0.6 A

Power
30 Watt, 50 VA

Cable
3 wire, 2 m length

OTHERS

Weight
Single Cylinder Panel: 8.2 lbs / 3.7 kg
Automatic Changeover Panel: 18.5 lbs / 8.4 kg

Hastelloy® is a registered trademark of Haynes International.
VCR® is a registered trademark of Swagelok.
Viton® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company.

TESCOM Ultra High Purity Compact Panel is a VCR® compatible central gas supply unit for pressure control of high grade analytical gases in laboratory facilities. Depending on the requirements, these units switch over to a spare cylinder in order to enable an uninterrupted gas supply. The use of contact gauges allows the monitoring of empty gas cylinders, in combination with an annunciator.

Application

- Central gas supply for the distribution of gases in laboratory applications

Advantages

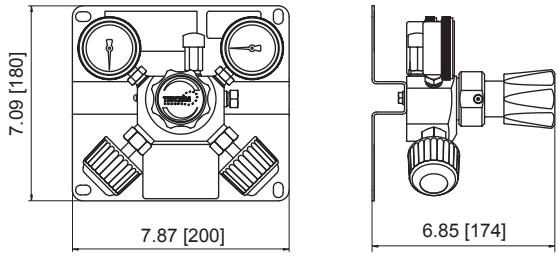
- VCR® technology for high purity application
- Automatic changeover for continuous gas supply
- Integrated purge and shut-off valve for fast purging
- Optional Hastelloy® trim and positive seal for corrosive media
- Field-proven TESCOM 64 Series regulator design

ULTRA HIGH PURITY COMPACT PANEL

Ultra High Purity Compact Panel Drawing

CYLINDER PANEL STAINLESS STEEL AUTOMATIC CHANGEOVER SYSTEM

SINGLE CYLINDER PANEL



All dimensions are reference & nominal
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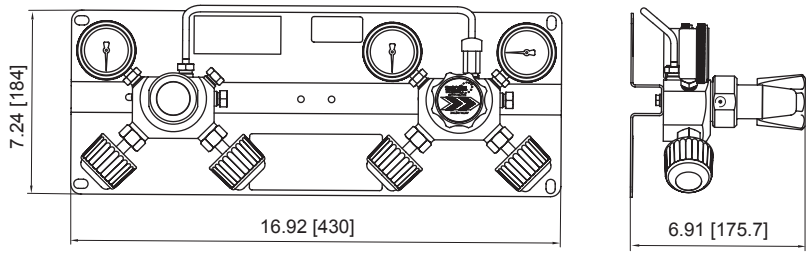
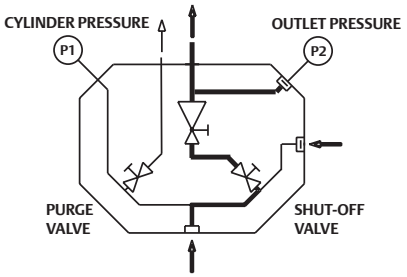
AUTOMATIC CHANGEOVER PANEL

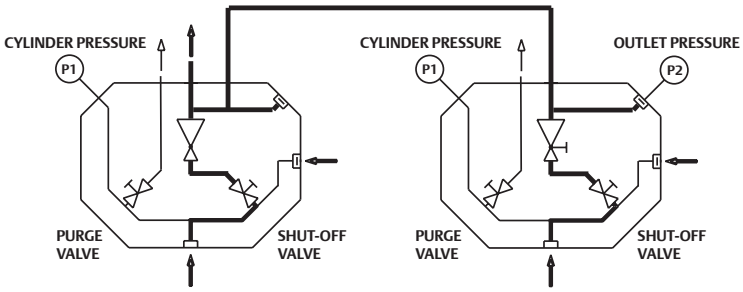


FUNCTIONAL DIAGRAM
SINGLE CYLINDER PANEL



OPEN AND CLOSE VALVES SLOWLY

FUNCTIONAL DIAGRAM
AUTOMATIC CHANGEOVER PANEL



OPEN AND CLOSE VALVES SLOWLY

Ultra High Purity Compact Panel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D45429 - SM - S - 2 - XXX

TYPE	GAUGES	VALVE UNIT	OUTLET PRESSURE	OPTIONS (PLEASE CONSULT FACTORY)
D45429 – Single Cylinder Panel **D45450** – Automatic Changeover Panel	**SM** – Standard gauges **KM** – Contact gauges	**S** – Untied **P** – Positive Seal	**1** – 145 psig / 10.0 bar **2** – 247 psig / 17.0 bar	• C_V = 0.15 or C_V = 0.24 • Inlet filter • Vespel® regulator seat • Pigtail with cylinder connector

Standard Features:
Stainless Steel mounting plate, regulator with integrated valves, inlet/outlet pressure gauges and relief valve.
All connections 1/4" HPIC.

Manifolds/Changeover Regulators DCATLABO1259X012

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

Non corrosive/corrosive gases and mixtures up to high purity of 6.0 (99.9999 Vol%)

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
4350 psig / 300 bar

Outlet Pressure Range
50/101/145/174/217/290/507/725/870/1450/2175 PSIG*
3,5/7/10/12/15/17/20/35/50/60/100/150 bar *

Material
Brass or Stainless Steel

Leak Rate
10^{-7} mbar l/s He

Operating Temperature
-4°F to 158°F / -20 °C to 70 °C

Nominal Flow Rate (Air 145 PSIG/10 bar Outlet Pressure)
1Nm³/h [0.6 scfm] reduced version for H_2/He, Cv = 0,06
9 Nm³/h [5.3 scfm], C_V = 0,06
15 Nm³/h [8.8 scfm], C_V = 0,15

* Outlet pressure range depends on compact panel version

MEDIA CONTACT MATERIALS

Body
316 Stainless Steel or Nickel-plated Brass

Diaphragm
316L Stainless Steel

OTHER

Inlet Port Type and Size
G 3/8" female with compression fitting
Compression fitting 6 mm

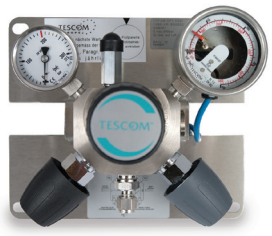
Outlet Port Type and Size
Process Outlet: G 1/4" *
Purge Gas: G 1/4" *
Relief Valve: M 12x1 **

Cleaning
Cleaned for Oxygen Service

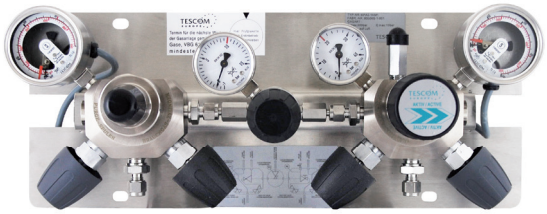
Weight (approximately)
17.6 lbs / 8.0 kg for 2x1 cylinder
7.7 lbs / 3.5 kg for 1 cylinder

* *Adapters to all metric and imperial tube sizes available! Please check data sheet "Fittings" for adaptors*

** *Adapter PIN to metric tube available! Please contact TESCOM.*



PANEL FOR 1 CYLINDER WITH CONTACT GAUGE



DUAL STAGE COMPACT PANEL AUTOMATIC CHANGEOVER WITH CONTACT GAUGES

The TESCOM Compact Panel is a central gas supply unit for the pressure control of analytical gases in laboratory facilities. Depending on the requirements, these units switch over to a spare cylinder in order to enable a continuous gas supply. The use of contact gauges allows the monitoring of empty gas cylinders.

Applications

- For inert,corrosive, flammable and specialty gas pressure reduction
- Central gas supply for the distribution of gases in laboratory applications
- Supply of gases for laser cutting applications
- Various other processes requiring continuos gas supply

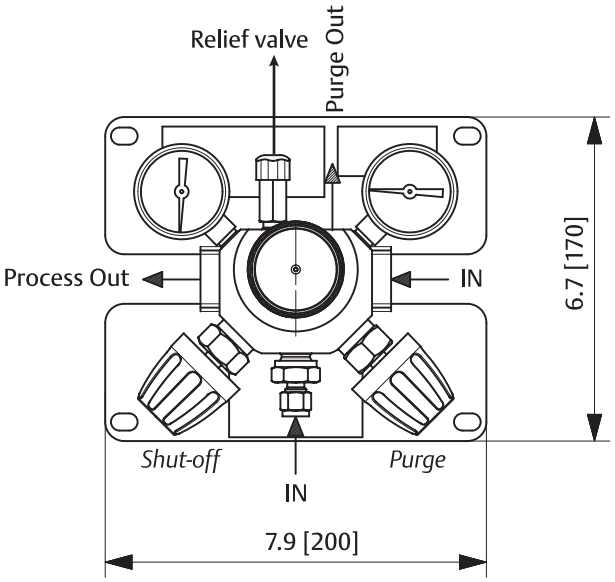
Features and Benefits

- Monoblock construction with reduced fitting and pure metal to metal sealing for high leak integrity
- Low internal volume with no thread in contact with media to maintain the gas purity and Short purge time when changing the cylinders
- Built-in diaphragm purge and shutoff valve for high leak tightness and maintain the gas purity
- Stainless Steel mounting plate for corrosive environment
- Compact in size, fits into standard gas cabinets even 9.84 inch /25 cm grid dimension
- Relief valve is standard (pipe away outlet is optional)

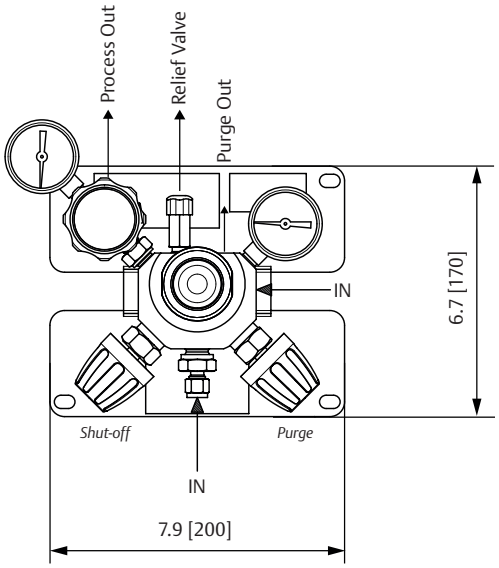
COMPACT PANEL

Compact Panel Drawing

KP1 *(Compact panel, 1 cylinder, standard manometer)*



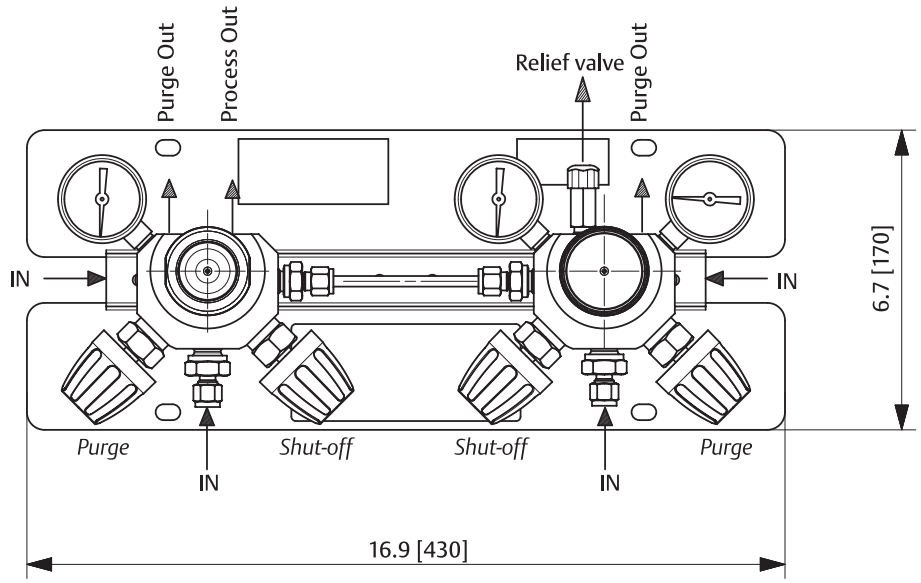
KP12 *(Compact panel, 1 cylinder, dual stage)*



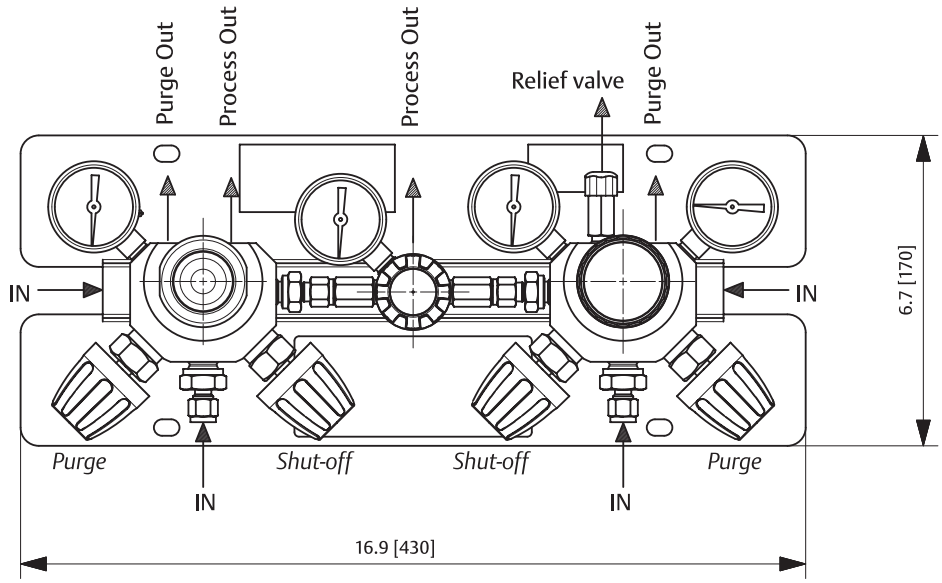
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Compact Panel Drawing

KPA – Automatic changeover, single-stage *(Compact Panel, 2x1 cylinder, standard manometer)*



KPA2 – Automatic changeover, dual-stage *(Compact Panel, 2x1 cylinder, standard manometer)*

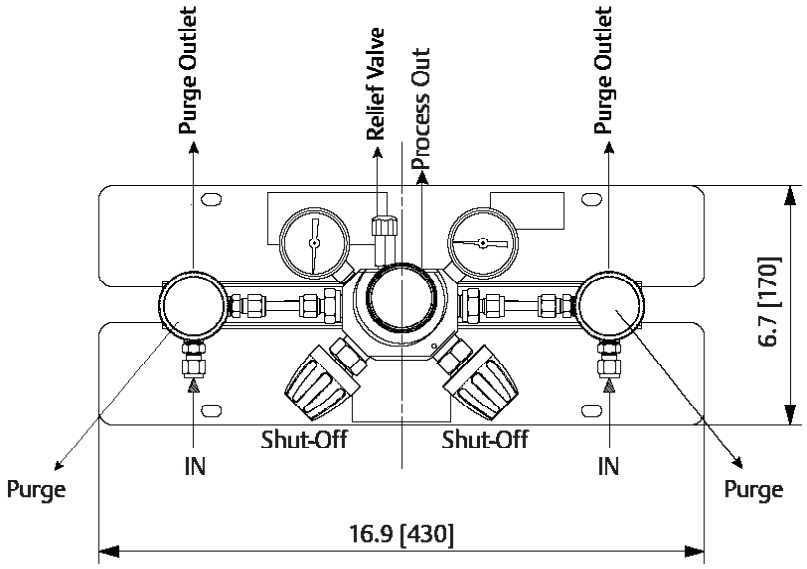


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

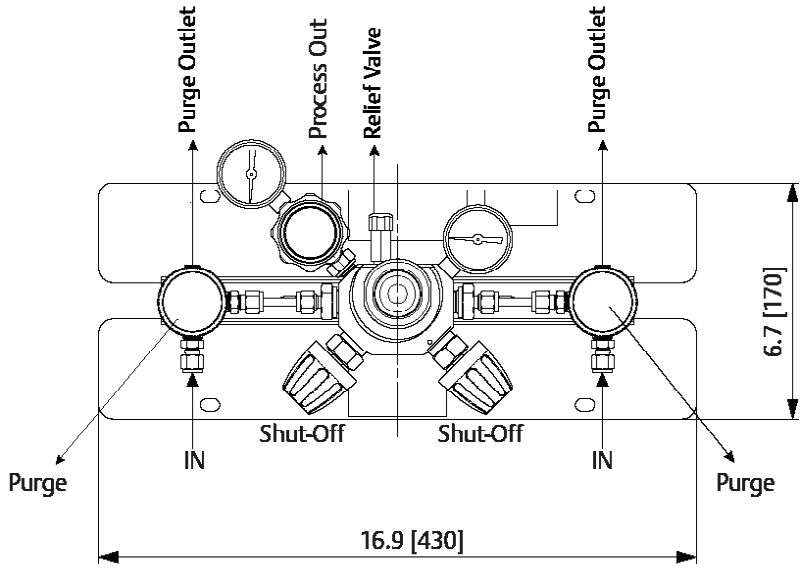
COMPACT PANEL

Compact Panel Drawing

KPME -Manual changeover *(for 2x1 cylinder, manual changeover, with relief valve)*



KPME2 – Manual changeover *(Compact Panel, 2x1 cylinder, manual changeover with relief valve dual stage)*



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Compact Panel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

KPA2-	6	SM	1	R	T	A	A	14	F	1
BASIC SERIES	**MATERIAL**	**INLET PRESSURE DISPLAY**	**OUTLET PRESSURE PSIG / BAR**	**PERFOR-MANCE**	**LABEL**	**CONNECTION PROCESS** *	**CONNECTION FOR DISCHARGE** *	**GAS GROUPS CONNECTING BEND PN 200** **	**ACCESSORY**	**UPSTREAM PRESSURE PSIG / BAR**
KP1 1 cylinder **KP12** 1 cylinders dual stage **KPA** 2x1 cylinders, automatic changeover, single stage **KPA2** 2x1 cylinders, automatic changeover, dual stage **KPME** 2x1 cylin-ders, manual changeover with relief valve **KPME2** 2x1 cylin-ders, manual changeover with relief valve dual stage	**1** – Brass **6** – SST	**SM** – Standard gauge **KM** – Contact gauge **EX** – Inductiv contact gauge **PS** – Standard pressure transducer **PT** – Explosion tested pressure transducer	**1** – 145 /10 **2** – 290 / 20 **3** – 507 /35 **4** – 870 / 60 **5** – 1450 / 100 **6** – 2175 / 150 **7** – 101 / 7 omly KP12 **8** – 217 / 15 **9** – 246 /17 only KP12 **10** – 174 / 12 only KPA2 **11** – 725 / 50 only KPA **12** – 50 / 3,5 only KP12	**blank** – Standard 9 Nm^3/h [5.3 scfm] Air Cv 0.06 **R** – reduced 1 Nm^3/h [0.6 scfm] Air for H_2 and He Cv 0.06 **H** – Standard 15 Nm^3/h [8.8 scfm] Air Cv 0.15	**T** – TESCOM	**A** – G1/4 female **B** – ø 6 mm SST **C** – ø 8 mm SST **D** – ø 10 mm SST **E** – ø 12 mm SST **F** – ø 8 mm Brass **G** – ø 10 mm Brass **H** – ø 12 mm Brass **J** – ø 1/4" SST **K** – ø 1/2" SST	**A** – no screw connection **B** – ø 6 mm SST purge valve ø 8 mm SST relief valve **C** – ø 8 mm Brass purge valve ø 8 mm SST relief valve **D** – ø 8 mm brass purge valve without screw connetion * for relief valve **E** – ø 6 mm SST purge valve ø 6 mm SST relief valve **F** – ø 1/4" SST purge valve ø 1/4" SST relief valve **G** – without screw connection * for purge valve ø 8 mm SST relief valve **H** – ø 8 mm SST purge valve ø 8 mm SST relief valve	**0** – without connecting bend **9** – Oxygen **13** – Compressed air **6** – non flammable gases **1** – Flammable gases **10** – Nitrogen **14** – Test gas **11** – Nitrous oxide **5** – Toxic, flammable gases (only SST) **GAS GROUPS CONNECTING BEND PN 200 CGA** **23** – Hydrogen, Natural gas (CGA–350) **24** – Inert gas, Nitrogen (CGA–580) **25** – Nitrous oxide (CGA–326) **26** – Compressed air (CGA–590) **27** – Non flammable gases (CGA–320) **28** – Oxygen (CGA–540) **GAS GROUPS CONNECTING BEND PN 300** *** **56** – Compressed air **59** – Oxygen **54** – non flammable gases **57** – flammable gases **N** – 1/4 NPT female	**Blank** – no accessory **F** – Cylinder rack **S** – Collector pipe/extension	**Blank** – 4350 /300 **1** – 1450 / 100 CO_2/Nitrous oxide **6** – 232 / 16 Liquid gas Ammonia **** only SST

* *Double ferrule fitting /* ** *DIN 477-1 /* *** *DIN 477-5 /* **** *only Stainless Steel*

Please reference data sheets "Accessories for Panels" and "Fittings" for additional accessories for compact panel.
Please reference data sheet "System Components for Compact Panels" for information about annunciator system and emergency switch-off components.".

COMPACT PANEL

Annunciator System

The annunciator system is used in combination with a cylinder station in order to avoid a complete discharge of the cylinder which would cause an interruption of the process. The annunciator system consists of a signal box, the pressure switches or contact gauges and the electrical wiring. For Explosion Proof environments a Switch Amplifier Box (Ex-Modul) must be added. The annunciation consists of an integrated horn, lights or an additional external indicator.

Annunciator signal box

Application

- Easy continuous monitoring of gas storage

Features and Benefits

- One annunciator system monitors up to 10 contact pressure gauges
- Acoustical and optical signals
- Error messages can be forwarded to external systems using potential-free relay contacts

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Power Supply
Connection: Terminal clamp X4, cage clamps
Voltage: 230 V AC, 50 Hz
Power Consumption: < 3 VA

Outlets
Connection: Terminal clamp X3, cage clamps
Type: Change-over relay contact, potential-free
Load: 8A/230 V AC ohmic load
Function: Collective error report
Connection: Terminal clamp X2, cage clamps
Type: Change-over relay contact, potential-free
Load: 8A/230 V AC ohmic load
Function: Non-confirmed error report

Inputs
Connection: Terminal clamp X1, 2-tier cage clamps
Number:
02: 2 inputs
06: 6 inputs
10: 10 inputs
Type: internal direct current supply to the inputs, potential free
Voltage between terminals: approximately 6 VC / 10 mA

Dimensions
Casing: 7.9" x 4.7" x 3" / 200 mm x 120 mm x 75 mm (WxHxD)
Protection: IP65
Material: ABS
Joints: 4 x M16
Ambient temperature: 32°F to 131°F / 0°C to 55°C

Switch Amplifier Box

SYSTEM COMPONENTS FOR COMPACT PANEL

Emergency Switch-Off System

(Solenoid Valve, Control Box and Emergency Switch)

The emergency switch-off system acts in case of emergency or other hazardous events as an electrical operated quick shut-off for main pipe systems, floor pipe systems or room pipe systems. All gas supplies will be stopped at the feeding points already. In combination with a control box and a gas warning system the emergency switch-off system is an important part of the central gas supply system.

Applications

- Solenoid valves control the gas stream after the compact panels
- The Solenoid Valve Control Box is needed to control solenoid valves in case an emergency shut-down is necessary
- Safety device according TRG 280

Features and Benefits

- Easy to install
- Reliable design
- Long-life system

Solenoid Valve

SOLENOID VALVE TYPE 214	SOLENOID VALVE TYPE 220
Nominal Width / Connection DN 4 / G 1/4" internal **Operating Pressure** 0-260 psig / 0-18 bar **Function** 2/2-way powerless closed **Voltage** 230 V AC, 50 Hz **Type of Protection** IP65 / Ex EEx em II T4 **Body Material** Brass / Stainless Steel **Seats** **For Ex-Version:** FPM **For all IP65-Types:** EPDM	**Nominal Width / Connection** DN 10 / G 3/8" internal **Operating Pressure*** 2.9-145 psig / 0.2-10 bar **Function** 2/2-way powerless closed **Voltage** 230 V AC, 50 Hz **Type of Protection** IP65 / Ex EEx em II T4 **Body Material** Brass / Stainless Steel **Seats** **For Ex-Version:** FPM **For all IP65-Types:** EPDM

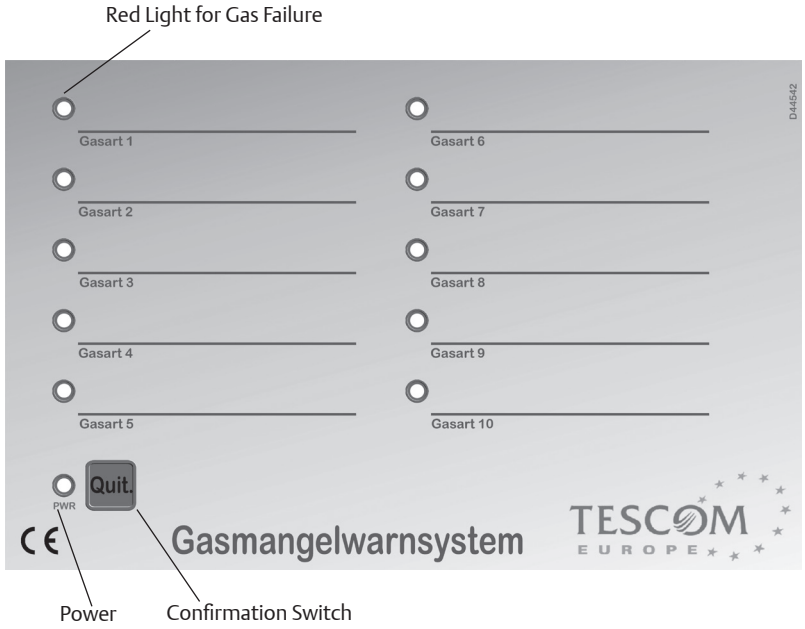
*Do not use for line pressures below 3 psig / 200 mbar.

Solenoid Valve Control Box

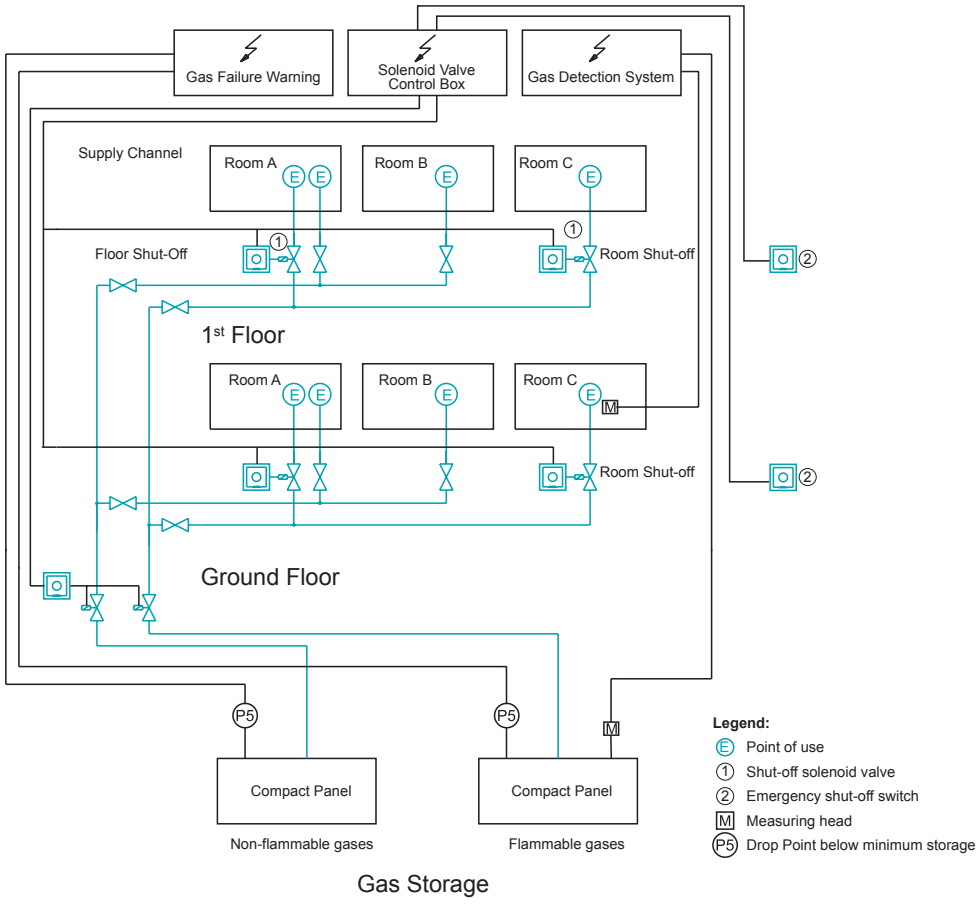
SOLENOID VALVE CONTROL BOX SPECIFICATIONS

Voltage 230 V AC, 50 Hz **Input Power** < 3 VA **Dimensions for Box Width x Height x Depth** 200 x 120 x 75 mm **Material** ABS **Protection** IP65 **Ambient Temperature** 32°F to 131°F / 0 °C to 55 °C

Annunciator Signal Box - Interface Panel



Annunciator System Drawing



SYSTEM COMPONENTS FOR COMPACT PANEL

Annunciator System Part Number Selector

D44542 - 02 BLANK

BASIC SERIES	NUMBER OF SHOWN SIGNALS	USAGE
D44542	**02** – Dual **06** – Sixfold **10** – Tenfold	**[Blank]** – not for Ex-proof area (Standard) **EX** – for Ex-proof area

If you like to upgrade your existing annunciator signal box with an switch amplifier box for Ex-proof area later, please contact TESCOM.

Emergency Switch-Off System Number Selector

Repair Kits, Accessories & Modifications may be available for all products. Please contact TESCOM for more information.

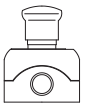
Solenoid Valve

BASIC SERIES	NOMINAL WIDTH	BODY MATERIAL	PROTECTION	OPTIONS
D45093	**04** – DN 3.5 Valve Type 214 **10** – DN 10 Valve Type 220 Certificate EN 10204-2.2 available - Please, add "Z" at the end when ordering!	**1** – Brass **6** – Stainless Steel	**[BLANK]** – IP65 (this is standard) **EX** – Ex EEx em T4	**A** –24 V DC **[BLANK]** –230 V AC (this is standard)

Solenoid Valve Control Box

BASIC SERIES	NUMBER OF CONTROLLED SOLENOID VALVES
D44700	**05** – 5 Valves **10** – 10 Valves

Emergency Switch

PART NUMBER	DESCRIPTION	DRAWING
V09556	Emergency-Switch **Key-operated: After emergency switch-off, the key must be turned to activate the system again.**	

Contact Pressure Gauges

Material: **Stainless Steel**
Type of protection: **IP54 or EX II 1 G EExia IIC T6**
Connection: **G 1/4" male**
Diameter: **2.48" / 63 mm**

PRESSURE RANGE*	ORDERING NUMBER: SOLENOID CONTACT	MINIMUM SWITCH POINT	ORDERING NUMBER: INDUCTIVE CONTACT**
4569 psi / 315 bar	D44500-00G3156	218 psi / 15.0 bar	D44272-00G3156
5802 psi / 400 bar	D44500-00G4006	290 psi / 20.0 bar	D44272-00G4006
580 psi / 40.0 bar	D44500-00G0406	44 psi / 3.0 bar	D44272-00G0406
580 psi / 40.0 bar Acetylene	- - - -	12 psi / 1.5 bar	D44272-22G0406

** Please, contact us for additional pressure ranges and connection types (e.g. NPT or VCR®).*
***For use with EX-proof version!*

Specifications

For other materials or modifications, please consult TESCOM.

FLUID MEDIA

For non-corrosive gases and mixtures up to purity 6.0 (99.9999 Vol %)

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
2900 psig / 200 bar
4350 psig / 300 bar

Outlet Pressure Range
2175 psig / 150 bar

Operating Temperature
-4°F to 158°F / -20°C to 70°C

Nominal Flow
10 m^3/h, C_V = 0.06 (depending on pressure and gas)

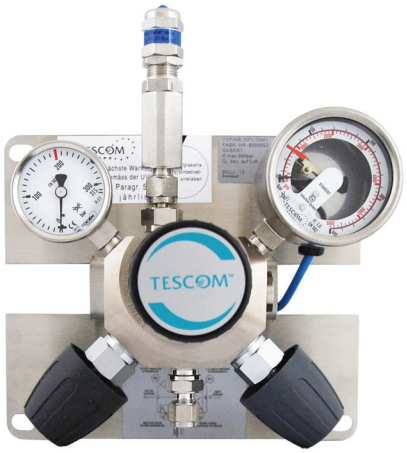
MEDIA CONTACT MATERIAL

Material
Chrome plated Brass or Stainless Steel

OTHER

Connections
6 mm compression fitting or G 3/8" female
Other outlet options on request

Weight
9.26 lbs / 4.2 kg



TESCOM High Pressure Panel is a central gas supply unit for the pressure control of analytical gases in laboratory facilities. The use of contact gauges allows the monitoring of the filling pressure of gas cylinders.

Applications

- High pressure central gas supply for the distribution of gases in laboratory applications
- Suitable for ECD (Electronic Capture Detector) applications

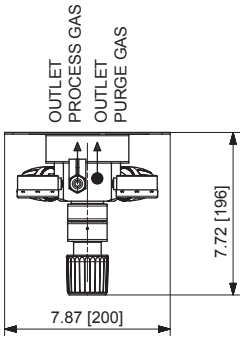
Features and Benefits

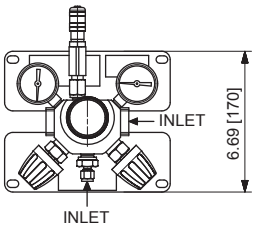
- For very high work pressures up to 2175 psig / 150 bar
- Inlet section with purge valve, purging with process or inert gas
- Easy to use and safe operation (includes relief valve)
- Few connections and minimized internal volume due to the integrated design of valves and pressure regulators in one body
- Quick and simple installation
- Small dimensions
- Stainless Steel mounting plate for corrosive environment
- High pressure, explosion proof contact gauge is available

HIGH PRESSURE PANEL

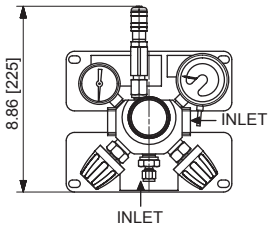
High Pressure Panel Drawing

HIGH PRESSURE PANEL FOR 1 CYLINDER



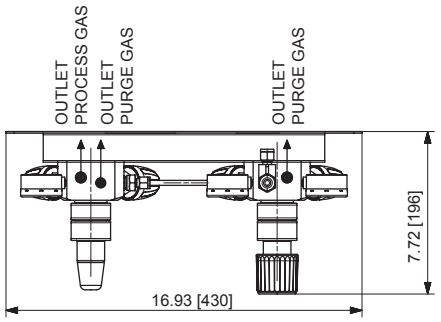


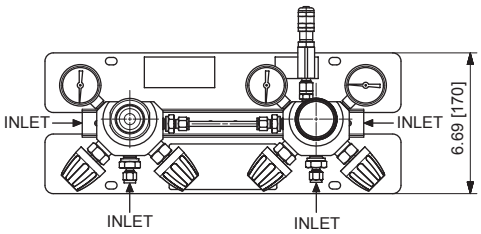
WITH STANDARD GAUGES



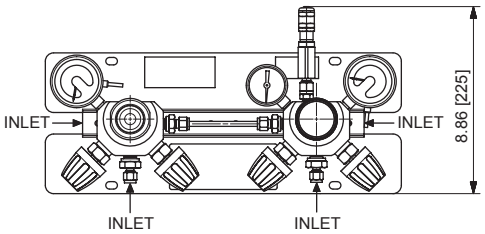
WITH CONTACT GAUGES OR
INDUCTIVE CONTACT GAUGES

HIGH PRESSURE PANEL FOR 2 CYLINDERS WITH AUTOMATIC CHANGEOVER





WITH STANDARD GAUGES

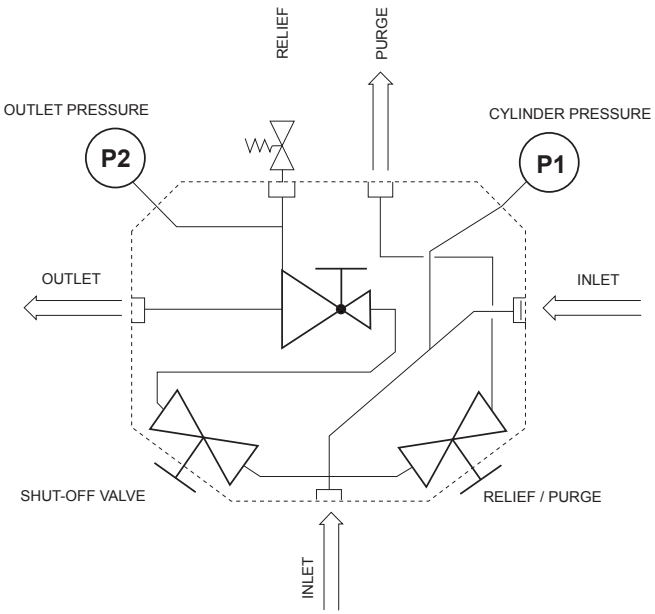


WITH CONTACT GAUGES OR
INDUCTIVE CONTACT GAUGES

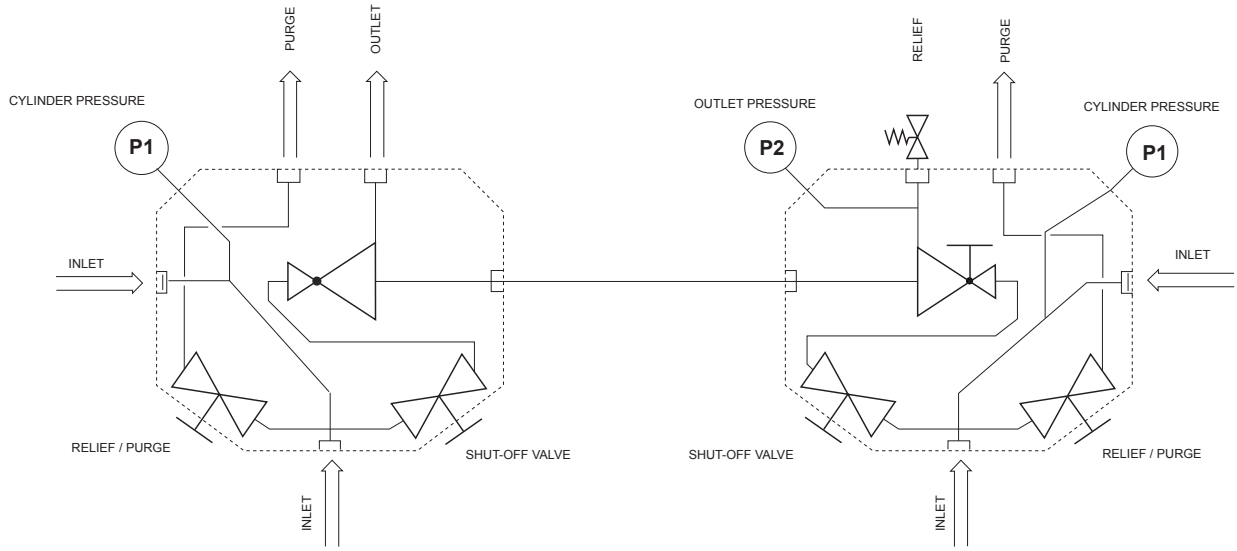
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

High Pressure Panel Functional Diagram

HIGH PRESSURE PANEL FOR 1 CYLINDER



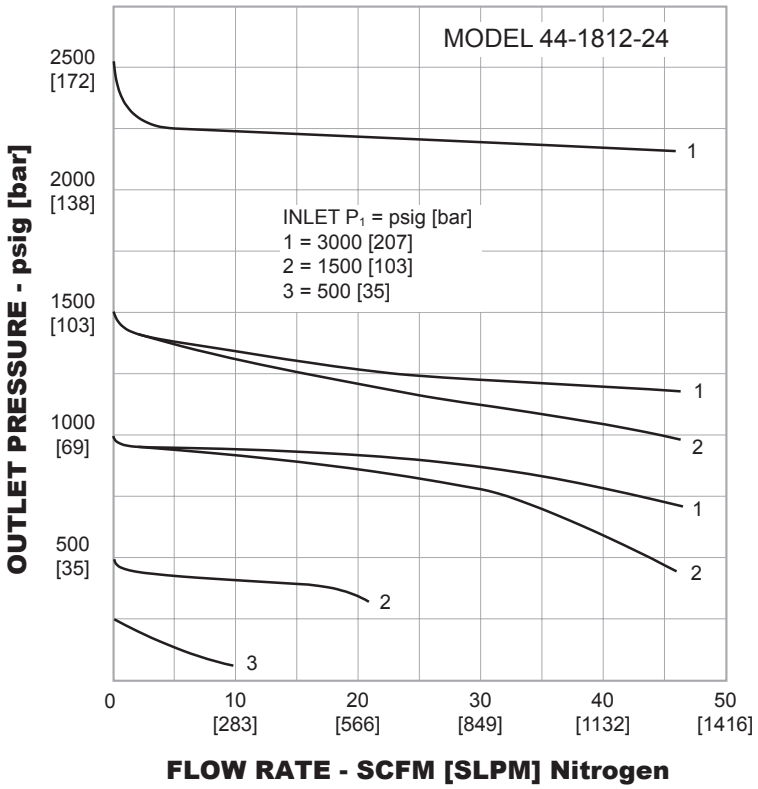
HIGH PRESSURE PANEL FOR 2 CYLINDERS WITH AUTOMATIC CHANGEOVER



HIGH PRESSURE PANEL

High Pressure Panel Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



High Pressure Panel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

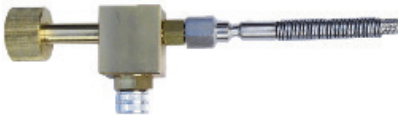
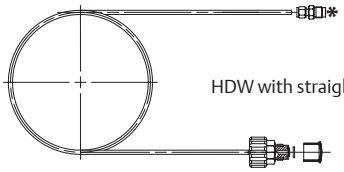
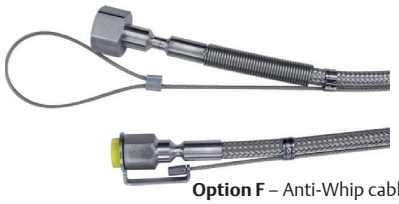
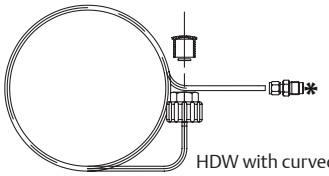
Example for selecting a part number:

KP1	6	SM	3
BASIC SERIES	MATERIAL	GAUGES	OUTLET PRESSURE RANGE
KP1 **KPA**	**1 –** Brass **6 –** Stainless Steel	**SM –** Standard gauge **KM –** Contact gauge **EX –** Inductive contact gauge	**3 –** 2175 psig / 150 bar

Please reference the "Accessories for Panels" datasheet in the Manifolds/Changeover Regulators section or "Fittings" in the Accessories section for pigtail or high pressure hoses, etc.

High Pressure Pigtail Assemblies

The pigtail assembly consists of a metal cylinder lead, that is either a looped tube or a flexible hose with a gas specific connector at one end and a compression fitting at the other end. It is used to interconnect the Compact Panel manifold to a storage gas cylinder or a cylinder bundle. Loop construction permits spacing adjustments between cylinders. TESCOM Pigtails are made of Stainless Steel and available for various national gas cylinder valves. TESCOM Pigtails are designed for high pressure applications up to a nominal pressure of 4350 psig / 300 bar. **All TESCOM Pigtails are manufactured with a compression fitting 6 mm.**

FLEXIBLE HOSE PIGTAIL, STAINLESS STEEL WITH ANTI-KINK SPRINGS		PIGTAIL RIGID, LOOPED TUBE, STAINLESS STEEL
 **Standard:** Anti-Kink Springs	 **Option E** – Integrated purging valve **Required for KPM, manual changeover**	 HDW with straight ends
 **Option L** – 90° Elbow	 **Option F** – Anti-Whip cable	 HDW with curved ends

*Contains just compression ring.

High Pressure Pigtail Part Number Selector

HDS-9-3-F – High pressure flexible hose for Oxygen according to DIN 477-1, 2900 psig / 200 bar, No.9.

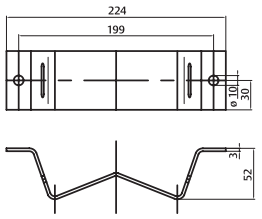
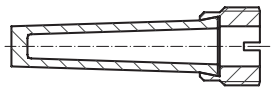
Example part number:

HDS - 9 - 3 - F

PIGTAIL TYPE	BASIC SERIES	CYLINDER CONNECTION – National Standard*	LENGTH	OPTIONS **	CERTIFICATES
Flexible hose	**HDS**	**N** – NPT 1/4" female **1** – DIN 477-1, 200 bar, No.1 **6** – DIN 477-1, 200 bar, No.6 **9** – DIN 477-1, 200 bar, No.9 **10** – DIN 477-1, 200 bar, No.10 **13** – DIN 477-1, 200 bar, No.13 **14** – DIN 477-1, 200 bar, No.14 **54** – DIN 477-5, 300 bar, No.54 **55** – DIN 477-5, 300 bar, No.55 **56** – DIN 477-5, 300 bar, No.56 **57** – DIN 477-5, 300 bar, No.57 **59** – DIN 477-5, 300 bar, No.59 **LU1** – NEN3268, LU1 **LU4** – NEN3268, LU4 **LI2** – NEN3268, LI2 **RI2** – NEN3268, RI2 **RU1** – NEN3268, RU1 **RU3** – NEN3268, RU3 **RU4** – NEN3268, RU4 **RU6** – NEN3268, RU6 **BS3** – BS 341, No.3 **BS4** – BS 341, No.4 **BS8** – BS 341, No.8	**1** – 1 m **2** – 2 m **3** – 3 m **5** – 5 m	**F** – Anti-whip cable mounted to the hose; with incorporated fixtures or loops for external fixing **E** – Integrated purging valve to control the purging of the hose system before disconnecting **L** – 90° Elbow at cylinder connection to prevent the kinking and cracking of the hose at cylinder or bundle side **G** – Anti-whip cable with two loops and 90° Elbow at cylinder connection	**Z** – 3.1
Pigtail rigid	**HDW**		–	**C** – curved end (standard) **S** – straight end ** Other options available on request	

*** Other National Standards on request, for example CGA or AFNOR.**
Spare Parts (O-Rings, Gaskets) available on request.

Additional Accessories Ordering Information

PART NUMBER	DESCRIPTION	
D44924	Gas Cylinder bracket (wall mounted type)	
D02316	Sintered filter for inlet connection of compact panel (Brass version)	
D42724-XX-01	• Gas type label 70 x 270 x 1.5 (lasered) • Please indicate gas type when ordering • Gas table D41716 will be sent on request	OXYGEN

COMPRESSION FITTING FOR OUTLET, G 1/4" MALE		
METRIC TUBE SIZE	PART NUMBER RELATING TO MATERIAL	
	Brass	Stainless Steel
6 mm	D40619	D40579
8 mm	D42669	D42754
10 mm	D41756	D41933
12 mm	D44792	ERAA02388
IMPERIAL TUBE SIZE		
Ø 1/8"	D41329	D41362
Ø 1/4"	D41328	D41360
Ø 3/8"	B-600-1-4RS	SS-600-1-4RS
Ø 1/2"	–	D51252

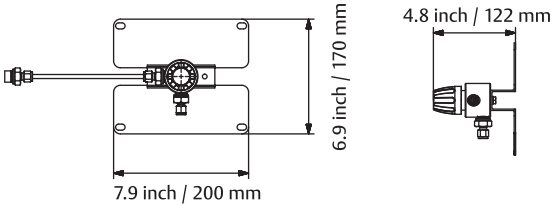
FITTINGS FOR RELIEF VALVE OUTLET, MATERIAL BRASS		
THREAD	TUBE SIZE	PART NUMBER
M12x1	Ø 8 mm	D51275

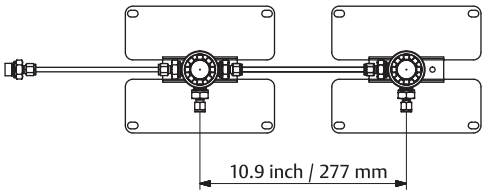
Manifold Extension Kit for Automatic or Manual Changeover Compact Panel

Facilitates the extension of the 2 x 1 CP; allows for the connection of additional cylinders to the CP system. Mounted on wall bracket. Available in two versions:

1. Manifold with shut-off valve

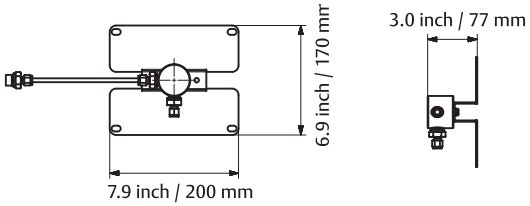
Enables the exchange of an empty cylinder without the interruption of the gas flow.

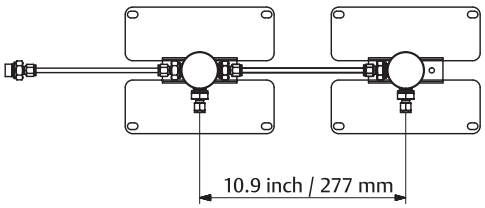




2. Manifold without shut-off valve

Pure extension function. Cylinders must be changed at the same time.





Manifold Extension Kit Part Number Selector

Example part number:

ERCA02607 - L71 G V

BASIC SERIES	MATERIAL	OUTLET CONNECTION	SHUT OFF VALVE	PERFORMANCE
ERCA02607	**1 –** Brass **6 –** Stainless Steel	**G -** G3/8a for KP1, KP12, KPA, KPA2 **N -** 1/4" NPT for KPME	**V -** with shutt off valve **T -** w/o shutt off valve	**Blank –** Standard **R –** reduced for H2 + He

Manifolds/Changeover Regulators DNA042026X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
3000 psig / 207 bar

Outlet Pressure Ranges
0-30 psig / 0-2.1 bar
0-60 psig / 0-4.1 bar
0-100 psig / 0-6.9 bar
0-150 psig / 0-10.3 bar
0-200 psig / 0-13.8 bar
0-300 psig / 0-20.7 bar
0-500 psig / 0-34.5 bar
0-750 psig / 0-51.7 bar
0-1000 psig / 0-68.9 bar
0-1500 psig / 0-103 bar

Design Proof Pressure
150% of rated pressure

Leakage
Internal: Bubble-tight
External: Bubble-tight

Operating Temperature
-40°F to 165°F / -40°C to 74°C

Flow Capacity
C_V = 0.06

MEDIA CONTACT MATERIALS

Seat
PTFE (Regulators), CTFE (Valves)

Friction Sleeve (Inner)
PTFE

Friction Sleeve (Outer)
316 Stainless Steel

Body
Brass, 316 Stainless Steel

Diaphragm (Outlet Option 0-5)
316 Stainless Steel

O-Rings (Outlet Option 6-9)
Nitrile, Buna-N

Remaining Parts
Brass, 316 Stainless Steel

OTHER

Panel
Brushed 304 Stainless Steel

Cleaning
CGA 4.1 and ASTM G93

Weight (approximate)
10 lbs / 4.5 kg

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.

TESCOM NA4 Series Changeover System is designed to ensure a continuous supply of carrier and calibration gases with no interruption due to supply depletion or change out. Complete systems can include CGA connections, hoses, check valves, purge valves, pressure switches, alarms, etc.

Applications

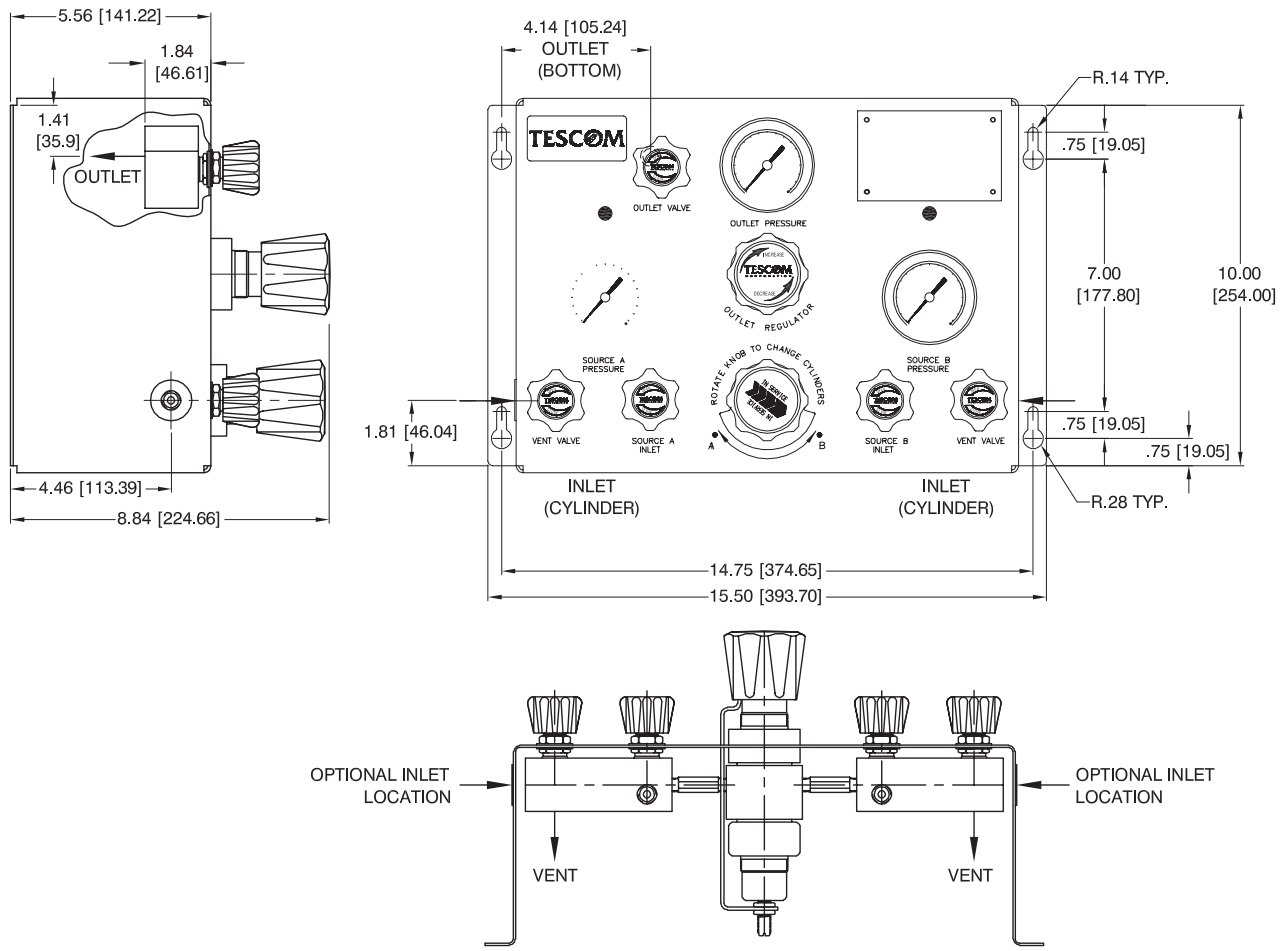
- Petrochemical analyzer sampling systems
- Gas delivery systems
- Laboratories
- Welding gases

Features and Benefits

- Supports up to eight cylinders per side - 16 total
- Brass or Stainless Steel regulators and valves
- Flexibility in shut-off valve type and location for increased customizing
- Available with either a low pressure or high pressure line regulator
- Optional remote mount annunciator

NA4 SERIES

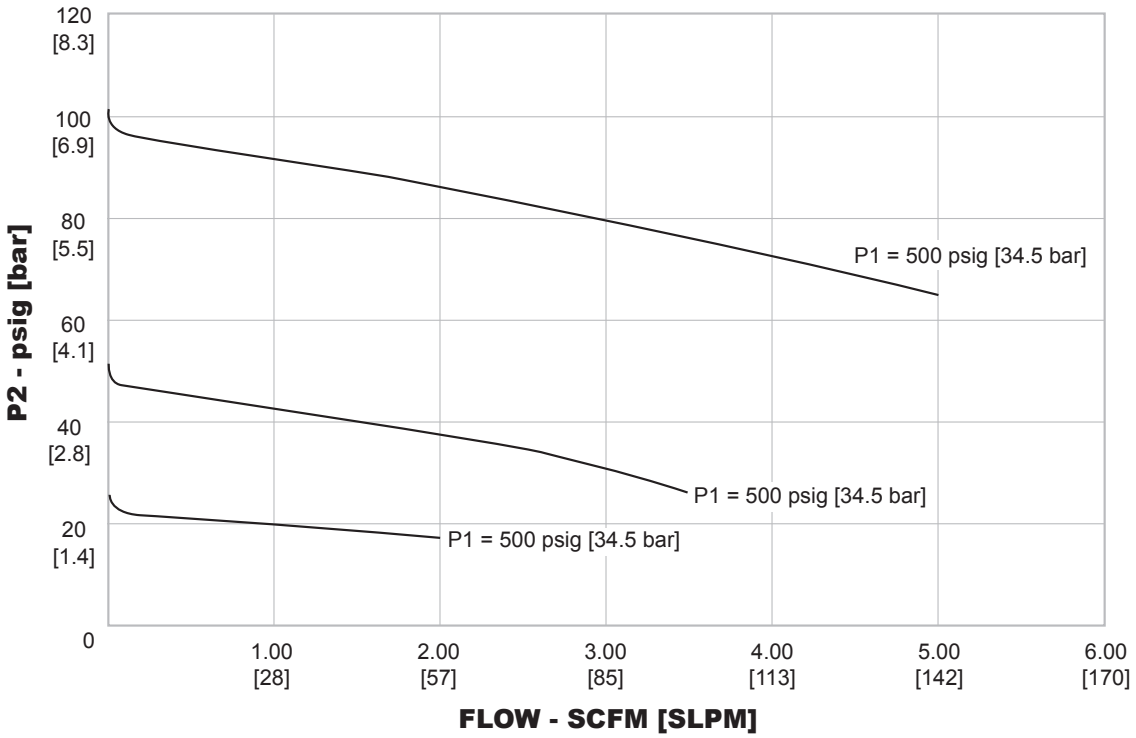
NA4 Series Changeover System Drawing



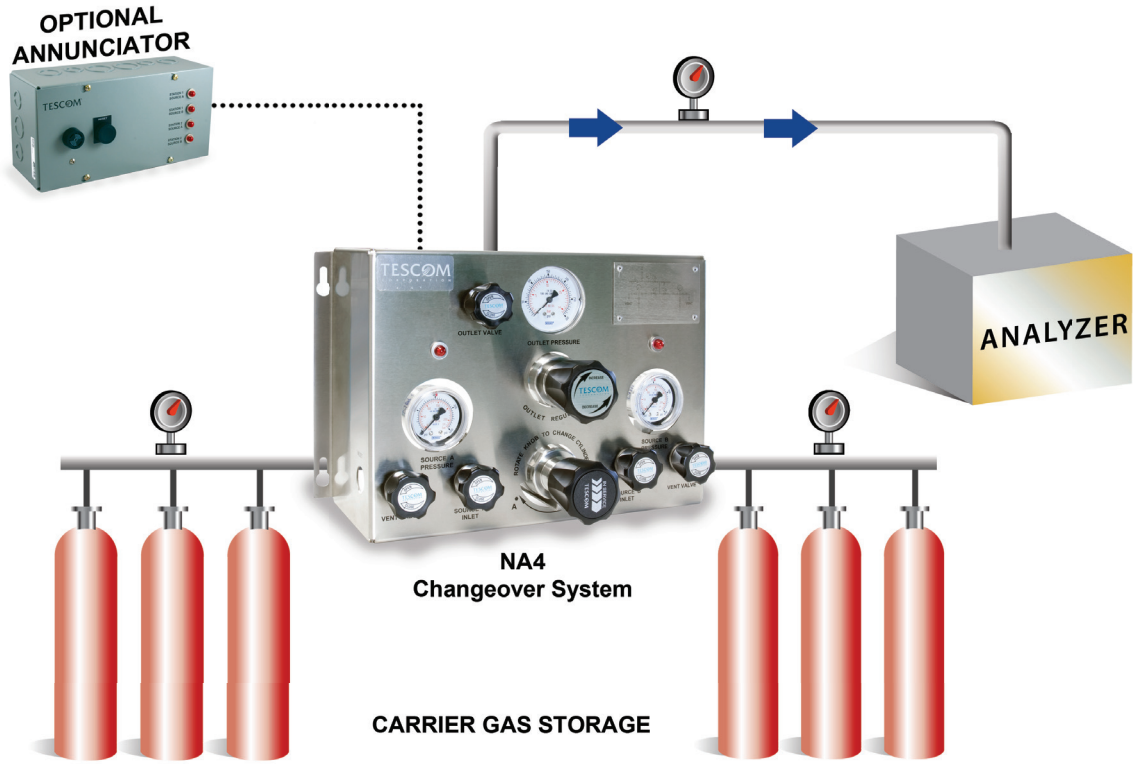
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

NA4 Series Changeover System Flow Chart

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.



NA4 Series Typical Installations



NA4 SERIES

NA4 Series Changeover System Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

NA4	1	6	2	1	1	0	0	5	4	6	4
BASIC SERIES	**INLET & OUTLET PORT SIZE & TYPE**	**BODY MATERIAL**	**OUTLET PRESSURE RANGE**	**MAXIMUM INLET PRESSURE**	**OUTLET RELIEF VALVE**	**REGULATOR TYPE**	**PRESSURE SWITCH OPTIONS**	**ANNUNCIATOR OPTIONS**	**CHECK/SHUT-OFF VALVE OPTIONS**	**CONNECTION TYPE**	**NUMBER OF BOTTLES**
NA4	**1 -** 1/4" NPTF	**1 -** Brass **6 -** 316 Stainless Steel		**1 -** 3000 psig 206 bar	**0 -** No **1 -** Yes	**0 -** Non-Venting **3 -** Venting	**4 -** None **0 -** Gauge with integral switch on inlets; lights on panel **1 -** Gauge with integral switch on inlets; NO lights or light holes on panel	**0 -** None **5 -** Four channel remote mount annunciator with enclosure	**0 -** None **1 -** Standard check valves (at inlets of panel) **2 -** Check valves integrated with CGA or BS nipple on each hose **3 -** Shut-off valve on each hose **4 -** Shut-off valve and integrated check on each hose **5 -** Standard check valves (at inlets of panel) and shut-off valve on each hose		**0** **2** **4** **6** **8** **10** **12** **14** **16**

NO.	OUTLET PRESSURE	CHANGEOVER DELIVERY	PRESSURE SWITCH SETTING	OUTLET GAUGE	RELIEF VALVE CRACK PRESSURE
C	0-30	150	200	60	45
0	0-30	270	300	60	45
1	0-50	270	300	160	90
2	0-100	270	300	200	150
3	0-150	270	300	300	225
B	0-200	270	300	300	225
4	0-200	450	500	600	300
5	0-300	450	500	600	450
6	0-500	700	770	1000	750
7	0-750	900	990	1500	1125
8	0-1000	1200	1320	2000	1500
9	0-1500	2000	2200	2000	2000

NO.	CONNECTION TYPE	PRESSURE SWITCH AND RELIEF VALVE O-RING	HOSE CORE MATERIAL	HOSE JACKET MATERIAL
0	No CGA Fittings, No Hoses	N/A	N/A	N/A
1	1/4" Female End	Buna	Teflon®	Stainless Steel Braid
2	1/4" Female End	Buna	Nylon	Polyurethane
3	CGA 580 (Helium)	Buna	Nylon	Polyurethane
4	CGA 580 (Argon, Nitrogen)	Buna	Teflon®	Stainless Steel Braid
5	CGA 350 (Hydrogen)	Buna	Nylon	Polyurethane
6	CGA 320 (Carbon Dioxide)	Buna	Teflon®	Stainless Steel Braid
7	BS3 (Helium)	Buna	Nylon	Polyurethane
8	BS3 (Argon, Nitrogen)	Buna	Teflon®	Stainless Steel Braid
9	BS4 (Hydrogen)	Buna	Nylon	Polyurethane
A	BS8 (Carbon Dioxide)	Buna	Teflon®	Stainless Steel Braid
E	1/4" Female End	Buna	Stainless Steel	Stainless Steel Braid

Electropneumatic Controllers/ Motors

Provides true distributed control of media from vacuum to 30,000 psig / 2068 bar
Motorized actuators adjust regulator to any setpoint by remote control

DBR AUTOMATION SL, Malaga Spain, Telf: +34 951709474 E-mail: comercial@dbrautomation.com

Electropneumatic Controller/Motors DEBUL2061X012

What is an ER5000 Series?
- An electropneumatic device
- A PID controller
- A low pressure, low flow, pressure reducing regulator
- Pilot pressure controller to another regulator

What is an electropneumatic device?
The user inputs an electronic signal, the device gives a pneumatic output.

What are PIDs?
P=proportional, I=integral, D=derivative PID is one of the oldest controls algorithm, which is commonly used in various industries.

What do I need in order to run an ER5000?
- 24 VDC power supply
- A setpoint signal
- A feedback signal
- Pneumatic supply (up to 120 psig / 8.2 bar)

Can I operate an ER5000 Series without a computer?
Yes. The computer MAY be used to send the setpoint signal (digital), but there are other options (analog signal or a profile already onboard the ER).

Can I tune the ER5000 Series without a computer?
No.

What is "tuning"?
Tuning is the selection of the proper values for your P, I, and D gains so that the system gives you the optimal performance characteristics that include speed, stability, and agility.

Do I have to tune the ER5000 Series periodically?
No. Once the ER5000 Series is tuned for a system in the setup phase, there is no need to re-tune the system, unless the system's conditions and characteristics change so severely that the existing P, I, D values do not deliver the performance goals anymore.

How does ER5000 Series communicate with a computer?
USB or RS485 communication.

What is an A/D and its resolution in the ER5000 Series?
An analog to digital converter and the resolution is 16 bits.

Can I use a digital transducer for feedback to the ER?
No, unless it is converted to an analog signal using a D/A.

What kind of analog signals can I send to the ER5000 Series?
- 4-20 mA or 1-5 VDC (selectable jumpers) for both setpoint and/or feedback (ER5000XI-X)
- 0-10 VDC for both setpoint and feedback (ER5000XV-X)

What kind of overall accuracy can I expect from a system with ER5000 Series?
0.1% of the range of the transducer if the transducer has a 0.1% accuracy or better. Otherwise as accurate as the transducer.

What does an ER5000 Series do for my system?
- Controls pressure to the given setpoint
- Improves accuracy and repeatability
- The ER automatically compensates for the changes in the system (flow, temperature, inlet pressure, etc.)
- Provides closed-loop control
- Automation
- Easy downloadable profiles eliminate PC or PLC for cycling applications
- Data acquisition

What about the software?
The ER5000 comes with:
1. The ERTune Program for communication with PC, PID Tuning, Diagnostics and Data Acquisition
2. Software examples provided for LabVIEW, Visual Basic, C and C#
3. DLL provided for process control software development
4. Written description of the software protocol and un-compiled source code

What does 1 "bit" in the system amount to in regards to pressure?
1 bit is equal to 0.03% of the sensor's range (the sensor that is used for feedback). You can never do better than 1 bit.

Do I lose my PID parameters on the ER when power is lost (or ER is unplugged)?
No.

Do I lose communication with the PC in case of a power loss?
Yes.

Do I lose communication with the PC, if I am sending an analog setpoint to the ER?
No.

What happens to pressure when power is lost?
As both solenoid valves inside the ER5000 are normally closed, the valves will close and the pressure will be trapped if the ER is mounted into a dead headed system, e.g. dome of a regulator. The pressure will be lost if the ER is in a flowing condition.

What should I do if I want the ER5000 to exhaust its internal pressure upon loss of power?
Install a normally open solenoid valve into the ER's gauge port (TESCOM P/N 85178).

ER5000 FAQ

What do the Control Limits offer in the ER5000?
The Control Limits feature in the ERTune software allows the user to set minimum and maximum limits on five operational parameters of the system. If one or more of the parameters fall below or exceed the limit, the ER5000's internal solenoid valves will go into a user selected condition. The solenoid valve condition choices are: Inlet Closed/Exhaust Open, Inlet Closed/Exhaust Closed, Inlet Open/Exhaust Closed. The five operational parameters are: Analog Setpoint, Internal Sensor, External Sensor, Inner Error and Outer Error.

What happens if I lose my analog setpoint source?
If a Control Limits range has already been established, once the setpoint goes below its minimum, the ER will go into the control limits mode (the valves will be open or closed depending on your selection). If the Control Limit for analog setpoint is disabled, then losing the setpoint will be translated into asking for 0 setpoint. The ER will open the exhaust valve, and the pressure is lost.

What happens if the feedback signal is lost?
If a control limits range has already been established, once the feedback goes below its minimum, the ER will go into the control limits mode (the valves will be open or closed depending on your selection). If the Control Limit is disabled for the feedback, then losing the feedback will be translated into having 0 feedback. The ER will open the inlet valve to bring the feedback up to the setpoint value (if the setpoint is not zero) but the feedback will not change and the ER will stay fully open. A "No Feedback" warning will appear above the Plot Screen Display of the ERTune program.

What happens if the pneumatic signal is lost (0-120 psig / 0-8.2 bar into the ER)?
The pressure is eventually lost if either solenoid valve opens.

What happens if communications with a PC is lost?
- If the PC was sending a constant setpoint to the unit, the unit will continue on with the last setpoint it received and try to hold the feedback at that level (no major change).
- If the PC was sending a varying setpoint to the ER, the ER will take the very last setpoint (before communication is lost) and hold that as the setpoint.
- If the PC had already downloaded the profile into the ER and started the profile, the profile will continue without interruptions if communication with the PC is lost.
- If an analog setpoint was being sent to the ER, the ER5000 Series will not be affected by the loss of communication with the PC.
- The ER5000 provides a "Setpoint to Zero on Power Up" option to utilize if the above options are not suitable for the application.

Can I adjust the PID parameters on the board using pots or jumpers?
No.

What are the things I can do with the boards to setup the system?
- For ER5000XI-1 models, selection between 4-20mA and 1-5VDC can be made for setpoint and feedback signals by changing jumper positions
- For ER5000FI-1 models, selection between 4-20mA or 1-5VDC for the extra inputs can be made, in addition to the setpoint and feedback signals, by changing jumper positions
- Select between ER5000 and ER3000 mode
- Use the LEDs for troubleshooting

How durable are the solenoid valves?
The manufacturer for the ER valves had cycled their valves over 100,000,000 times but then stopped because it had far exceeded any requirements.

What is the C_V of the solenoid valves?
0.01

What is the maximum flow and pressure that I can use the ER for?
As high of a flow and pressure that your mechanical regulator is capable of delivering. If the ER5000 Series is used as a standalone unit, it is a pressure reducing regulator with the following characteristics: P_1(max)= 120 psig / 8.2 bar, P_2(max)=100 psig / 6.9 bar, C_V=0.01, media compatibility: dry clean air, N_2, Argon.

Can I use the ER5000 for High Purity applications?
Yes, you will need to couple it with a high purity regulator/transducer.

Can I use it for hydraulic applications?
Yes, you will need to couple it with a hydraulic regulator/transducer.

Can I use the ER with a back pressure regulator?
Yes, you will need to couple it with a back pressure regulator and the transducer needs to be on the inlet side of the back pressure regulator.

Can I use the ER5000 Series in vacuum service?
- If the ER5000 Series is used as a standalone, connect the vacuum pump to its exhaust port, put the absolute range transducer on the outlet of the ER, and operate in the external feedback mode. The inlet may be open to atmosphere, or you may apply up to 120 psig / 8.2 bar, depending on availability of your supply and the flow needed in the system.
- If the ER5000 Series is used with a vacuum service regulator (Models 44-4600, 44-4700, 44-5000, FR, or DV) then the ER5000 Series will act as the pilot to the regulator.

Electropneumatic Controller/Motors DER502060X012

Description

The ER5000 Series (the latest generation of TESCOM electronic controllers) is a microprocessor based PID (Proportional, Integral, Derivative) controller that brings precise algorithmic pressure control to a wide range of applications.

It can be used as a standalone unit to control the pressure of clean, dry inert gases from 0–100 psig / 0–6.9 bar, or be connected to any pneumatically actuated regulator or valve. Used with TESCOM regulators, the ER5000 provides pressure control of gases and liquids from vacuum to 30,000 psig / 2068 bar, with a C_V of up to 12+. Whether piloting a mechanical regulator or used standalone, it provides for true closed loop control with exceptional accuracy and response time. The ER5050 is designed for Hazardous Location use.

Applications

- Test equipment
- Calibration stands
- Proof & burst testing
- Production equipment
- Metal or plastic forming/molding
- Hydraulic Power Units
- Chemical Injection Units

Features and Benefits

ER5000SI-1 – Standard ER5000

- Precise accuracy
- 16 Bit for Data Acquisition
- Compatible with TESCOM's extensive dome loaded and air actuated pressure regulators available from vacuum to 30,000 psig / 2068 bar, with flow capacities from C_V 0.02 to C_V 12.0
- Control algorithms for Internal Feedback, External Feedback or Cascade Control modes
- Selectable **SETPOINT Signal** Source
  - USB
  - RS485
  - External analog (4-20mA or 1-5VDC)
  - Downloadable Profile (runs independent of PC or external analog source)
- Selectable **FEEDBACK Signal** Source
  - Internal Sensor (0-100 psig / 0-6.9 bar)
  - External Analog: 4-20mA or 1-5VDC
- Selectable Control Limits
  - Programmable limits for analog setpoint, feedback and error signals
  - Selectable control states: "Hold Last Pressure", "Vent", or "Full Open"
- TESCOM ERTune™ software provided for data acquisition, PID tuning (real time graphic display of setpoint and feedback), creating and downloading profiles
- TESCOM DLL provided for easy custom software development
- Software examples are provided for VB.NET, LabVIEW, C and C#
- USB cable included for quick computer connection (Not included with ER5050)
- NEMA 4X IP66 enclosure (water tight, corrosion resistant)
- 1/2" SAE x 1/8" NPTF fitting included (mates to most TESCOM air actuated regulators)
- Automated solenoid valve leak test
- Trigger data acquisition based on system events

ER5000SV-1 – Standard ER5000

- All features of the ER5000SI-1 except with 0-10 VDC Setpoint and Feedback signals

ER5000FI-1 and ER5000FV-1 –Enhanced ER5000

- All features of the ER5000SI-1 and ER5000SV-1 are included plus two additional analog/digital inputs and two digital outputs that allow the user to:
  - Monitor an external signal in addition to feedback (e.g. flow, temp, force)
  - Alternate between two separate external feedback sources
  - Start/Stop or Resume/Pause pressure profiles
  - Wait for event to occur before proceeding to the next step in a downloaded profile (digital input)
  - Indicate that an event occurred in a downloaded profile (digital output)
- Analog output of the internal pressure sensor
- Conditional control with "IF/THEN" and "GoTo" profile commands
- Suspend control feature to lock output pressure for an extended period of time

ER5050 for Hazardous Locations

- Includes SI, SV, FI, FV options
- Approvals: CSA, IECEx, ATEX

ER 5000 SERIES

ER5000 Electropneumatic Controller

Specifications

For other materials or modifications, please consult TESCOM.

ELECTRICAL

Power Requirement
22 to 28.5 VDC, 340 mA maximum, 180 mA nominal

Turn-on Time
< 240 milliseconds

Restart from Power Interruption
< 1.9 seconds

SUPPLY REQUIREMENT

Media Type
Clean, dry inert gas or instrument grade air

Pressure
Minimum: Outlet pressure +1 psig / 0.07 bar
Maximum:
ER5000: 120 psig / 8.2 bar
ER5050: 110 psig / 7.5 bar
Nominal: 110 psig / 7.5 bar

Temperature
ER5000: -4°F to 167°F / -20°C to 75°C
ER5050: -4°F to 140°F / -20°C to 60°C

INPUT SIGNALS

Setpoint
USB, RS485, 4-20 mA, 1-5 VDC (0-10 VDC for ER5XX0XV-1), downloaded Profile

Feedback (external)
4-20 mA or 1-5 VDC (0-10 VDC for ER5XX0XV-1)

PERFORMANCE

Accuracy
Linearity: ± 0.05% Full Scale Output (FSO)
Hysteresis: ± 0.05% (FSO)
Repeatability: ± 0.05% (FSO)
Resolution Sensitivity: ± 0.03% (FSO)
Measured Reference Accuracy (total accuracy all effects including zero and span error): ± 0.10% (FSO)
Low Pressure Capability with External Transducer
± 0.25 inches water (0.635 g/sq. cm) into 2 liter volume

Response Time
Sensor Update Rate: 25 milliseconds
Lift Off: < 70 milliseconds
Rise Time (10-90 psig / 0.69-6.2 bar): 350 milliseconds (1 cubic inch volume / 32.8 cc)
Fall Time (90-10 psig / 6.2-0.69 bar): 650 milliseconds (1 cubic inch volume / 32.8 cc)

Frequency Response
Amplitude Attenuation: -3db at 2 Hz
Phase Shift: -90 degrees at 2 Hz

Flow Capacity: C_V = 0.01 (Maximum Flow = 18 SLPM)

Solenoid Valve Rated Cycle Life: > 150 million cycles

PHYSICAL

Size
Gas Port (Inlet, Exhaust and Gauge): 1/8 inch - 27 NPTF
Controlled Outlet Port: 1/2 inch SAE
Enclosure Volume: 16.3 cubic inches / 267 cc
Flow Stream Volume: 0.73 cubic inches / 11.96 cc
Height: 3.9 inches / 99 mm
Length: 3.72 inches / 94.5 mm
Width: 3.72 inches / 94.5 mm
Conduit Openings: Two, 1/2 inch NPTF

Weight
ER5000: 3.1 lbs / 49 oz / 1.4 kg
ER5050: 2.6 lbs / 42.2 oz / 1.2 kg

Housing
Standard: NEMA 4X IP66 (aluminum and epoxy polyester paint)
Optional: Stainless steel

Flow Stream Materials
Solenoids: Nickel-plated Brass, FKM Seat and O-rings
Sensor: Glass, Ceramic, Silicon, RTV, Nickel
Tubing: Polyurethane
Plug: Brass
O-rings: Silicone, Buna-N, FKM

Outlet Fitting
Stainless steel

Mounting
Four #10-32 UNF / M5x0.8 mounting holes

Mounting Orientation Effect
None

ENVIRONMENT

Temperature Range
ER5000: -4°F to 167°F / -20°C to 75°C
ER5050: -4°F to 140°F / -20°C to 60°C

Relative Humidity
To 100% R.H. (non-condensing at
ER5000: 32°F to 167°F / 0°C to 75°C
ER5050: 32°F to 140°F / 0°C to 60°C)

Vibration
Resonance: 10-2000 Hz at 3.0 g constant acceleration
Tested per IEC 61298-3 (3.0 g standard)

Storage Temperature
-58°F to 200°F / -50°C to 93°C

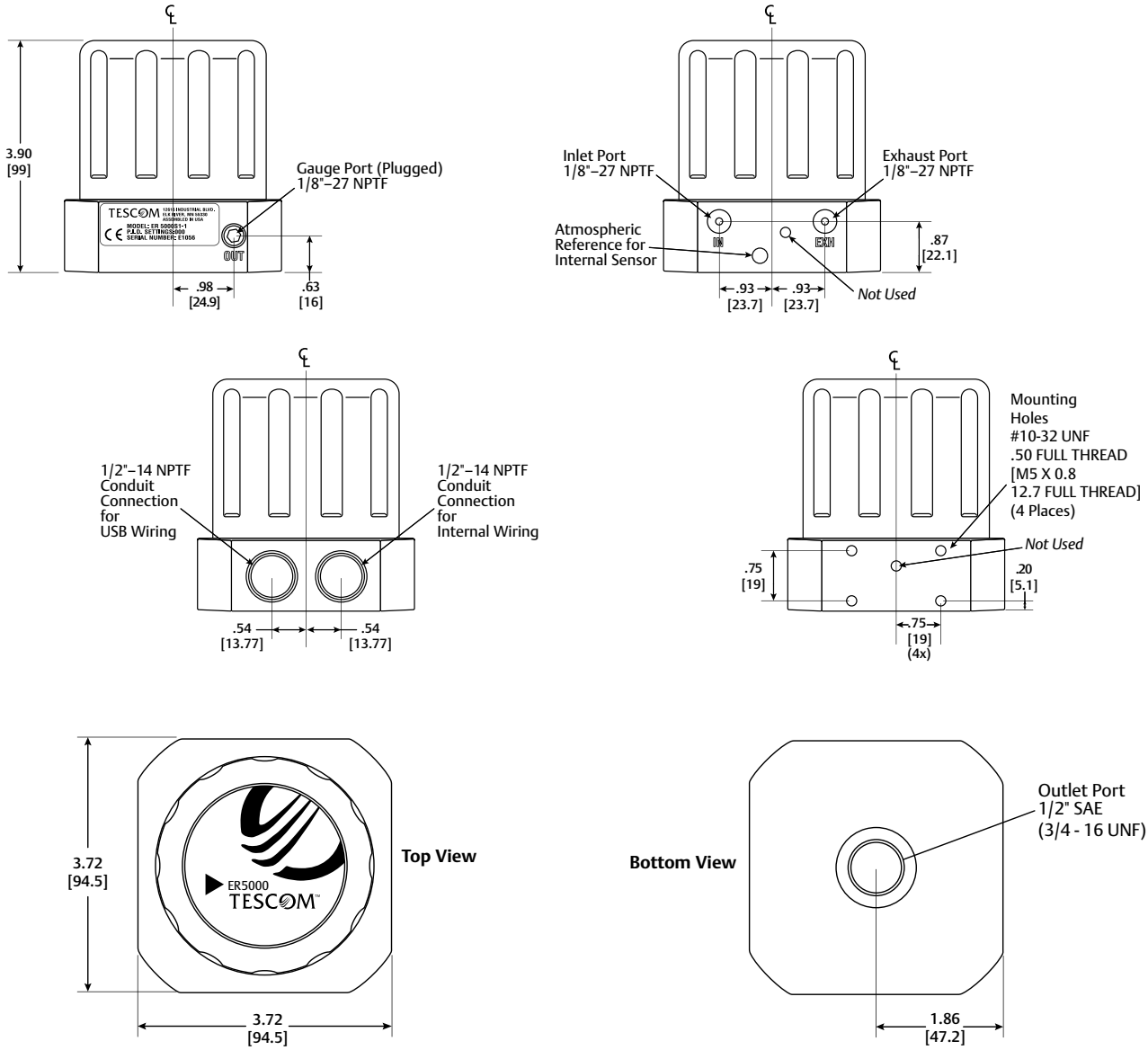
CERTIFICATIONS

CE Approval
All ER5000 units have CE approval when wired per CE approved wiring instructions in the *ER5000 User Manual*

Hazardous Location Approvals
CSA, IECEx, ATEX

ER5000 Electropneumatic Controller Installation Drawing

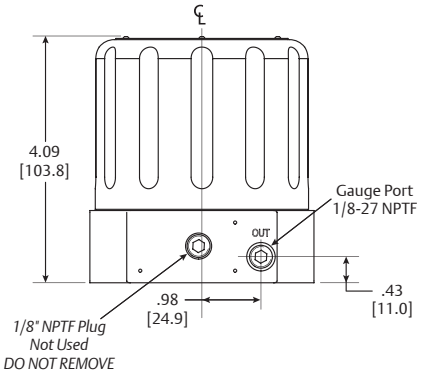
INSTALLATION DIMENSIONS

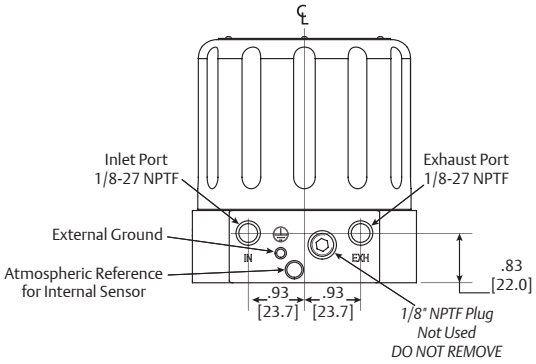


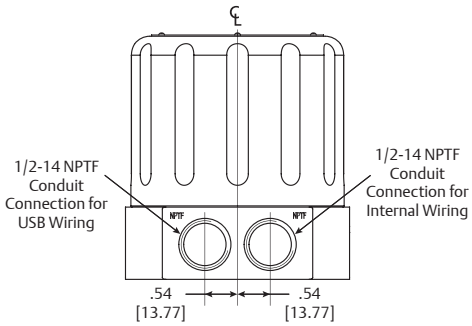
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

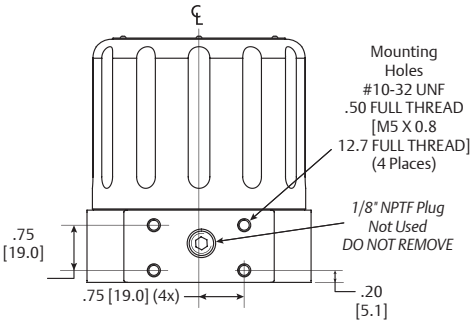
ER 5000 SERIES

ER5050 Hazardous Location Model Dimensions





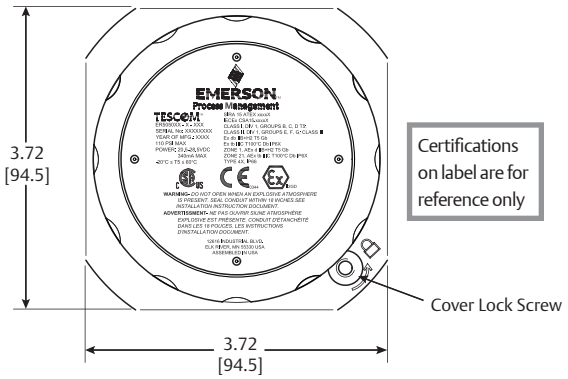




⚠ CAUTION

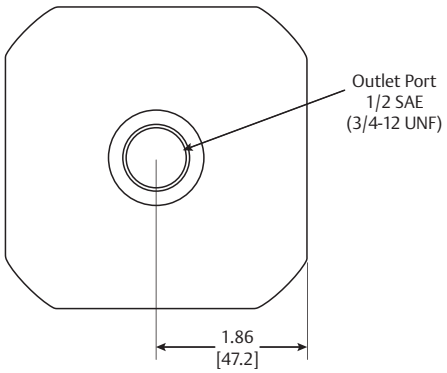
Removal of ANY of the 1/8" NPTF plugs called out on this page, other than the Gauge Port plug, will invalidate the Hazardous Location certification for the ER5050.

TOP VIEW



Certifications on label are for reference only

BOTTOM VIEW



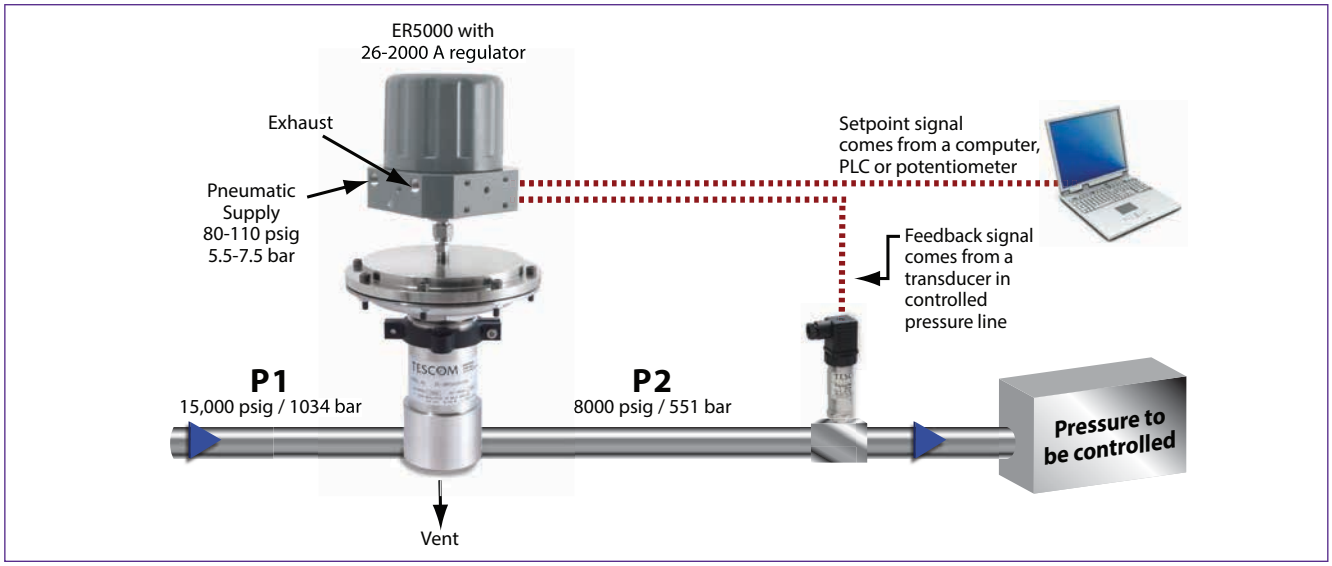
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

ER5000 Typical Applications

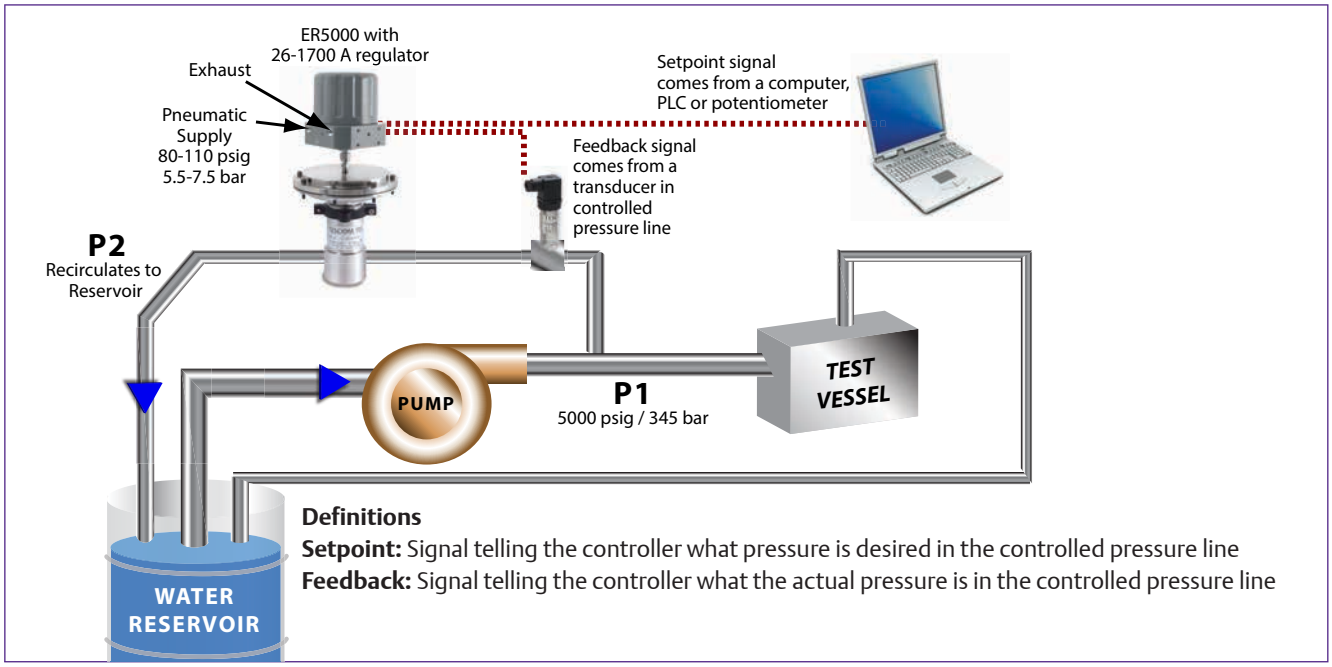
The variety of applications is limitless. Any process variable that can be manipulated using the pneumatic output of the ER5000 can be controlled. Some possibilities include controlling pressure, flow, temperature, position, speed, force, consistency, torque, and acceleration. The ER5000 improves both speed and accuracy because it implements the control strategy directly at the control element (valve or regulator). Some possible applications include:

- Test stands
- Calibration
- Laser cutting systems
- Vacuum forming
- Super plastic metal forming
- Plastic extrusion
- Gas assisted plastic injection molding
- Lamination and composite material curing
- Tire molding
- Chromatography capillary inlet pressure
- Spray coating
- Water jet cutting
- Burst testing
- High pressure gas or liquid injection
- Replacement for valve positioners and I/Ps
- Spot welding pressure control

ER5000 Typical Pressure Reducing Application



ER5000 Typical Back Pressure Application

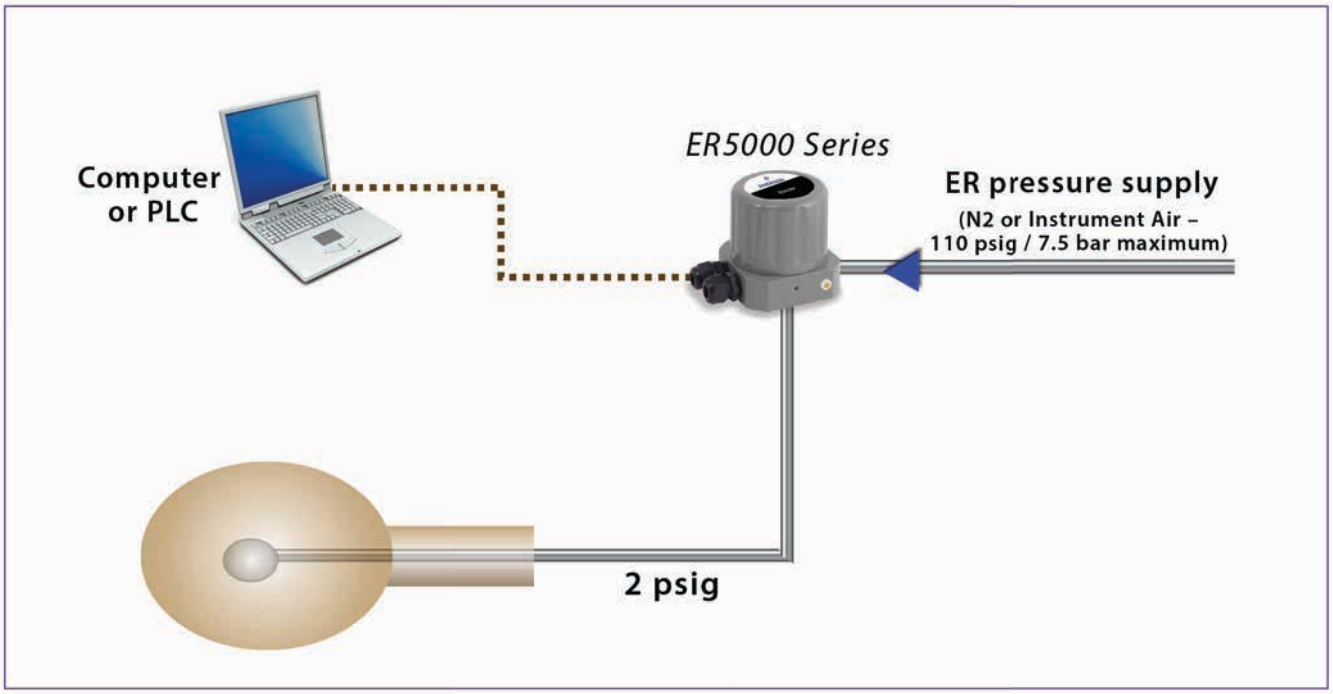


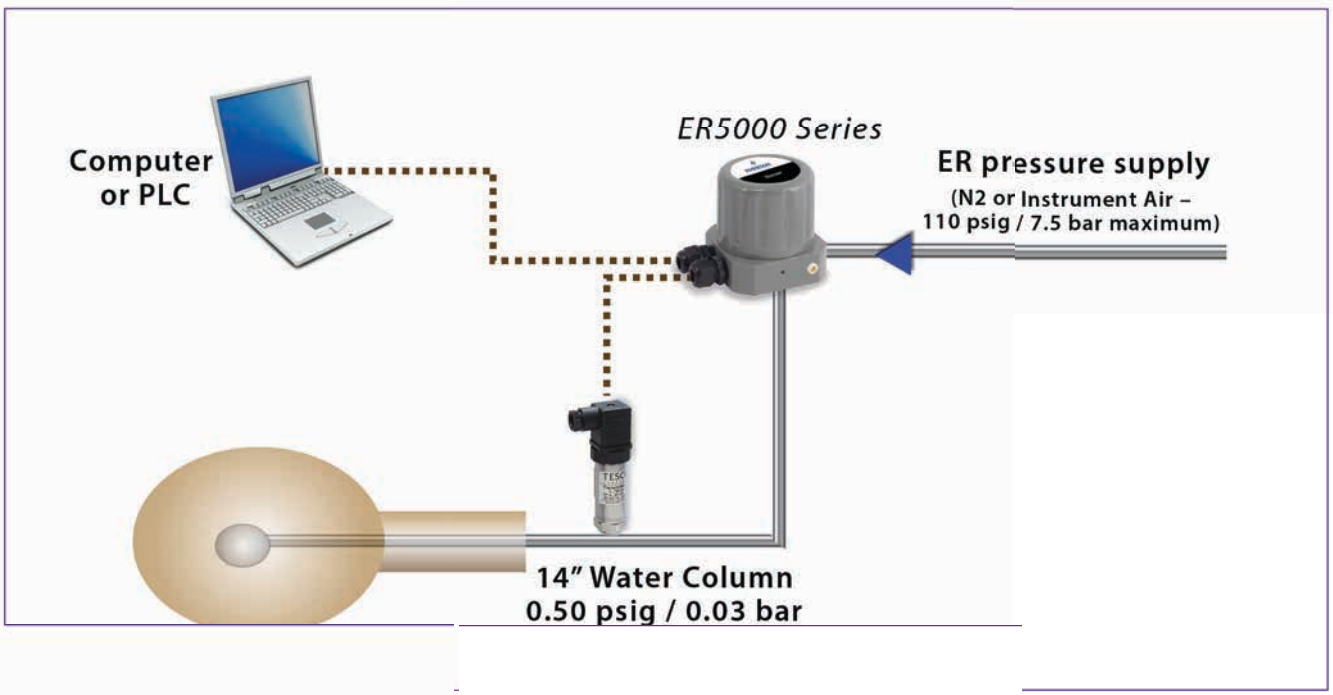
Definitions

Setpoint: Signal telling the controller what pressure is desired in the controlled pressure line

Feedback: Signal telling the controller what the actual pressure is in the controlled pressure line

ER5000 Standalone Application - Internal Feedback Mode





ER5000 Basics

ER5000 System Requirements

All ER5000 controllers require:

- Power: 24 VDC, 340 mA maximum, 180 mA nominal
- Pressure: ER5000: Up to 120 psig / 8.2 bar maximum clean, dry inert gas
  ER5050: Up to 110 psig / 7.5 bar maximum clean, dry inert gas
- Setpoint signal: From PC, PLC, Analog
- Feedback signal: Internal or External

The ER5000 senses system pressure using either its internal sensor or a user supplied external transducer (4–20 mA, 1–5V or 0–10V) placed within the actual process line. You can operate the ER5000 in one of three control modes:

- Internal Feedback, which uses only the internal sensor;
- External Feedback, which uses only the external source;
- Cascade, which uses both internal and external sources in a “loop within a loop” configuration

ER5000 Communication

The ER5000 communicates using a USB or RS485 interface. The onboard USB port and included USB cable provide for quick and easy direct communication to a PC. The required USB driver is provided on the ER5000 User Support Software and Manual CD or online. An RS485 communications link can be established between the ER5000 and a PC using either a USB to RS485 or RS232 to RS485 converter. RS485 communication must be used for daisy-chaining two or more (up to 32) ER5000s on the same network. RS485 is recommended for ER5050 communication.

ERTune™ Software Features

TESCOM’s ERTune™ program is an all encompassing software package which allows the user to address the ER5000 controller using a PC. ERTune™ allows users to tune the PID loop, monitor system operation, create and download profiles, specify control limits, enable password protection, acquire data and review previously recorded data. The basic screens are Tuning, Profile, Data, Configure and Diagnostic Tools.

ER5000 Software Development Support

The ER5000 protocol document is provided to assist in developing process control software that communicates with the ER5000 on any platform. Sample programs in VB.NET, LabVIEW, C and C# are available on the included CD along with the source code for the ER5000 DLL for Windows.

The TESCOM implementation of the protocol uses six functions to communicate: StartUp, ReadNetVar, WriteNetVar, ReadProfileSegment, WriteProfileSegment and Shutdown.

ER5000 Tuning

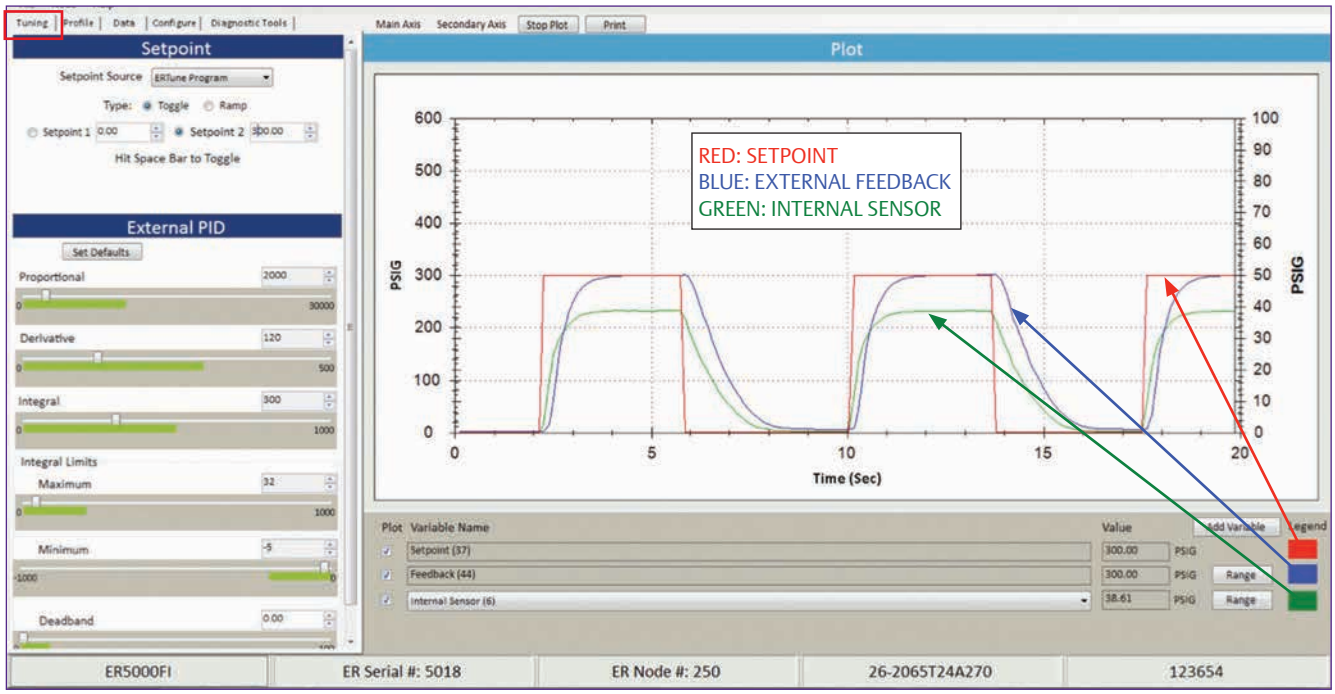
The ER5000 is factory set to default PID parameters that work well for many TESCOM regulators in laboratory conditions. During initial startup, the user has the option to download the PID parameters for a specific TESCOM regulator series. The user can also adjust the Proportional, Integral and Derivative (PID) variables to:

- Achieve the quickest response to a setpoint change without overshoot or oscillation
- Achieve the best performance for a non-changing setpoint
- Optimize performance in the specific application conditions

ER 5000 SERIES

ERTune™ Software Screens

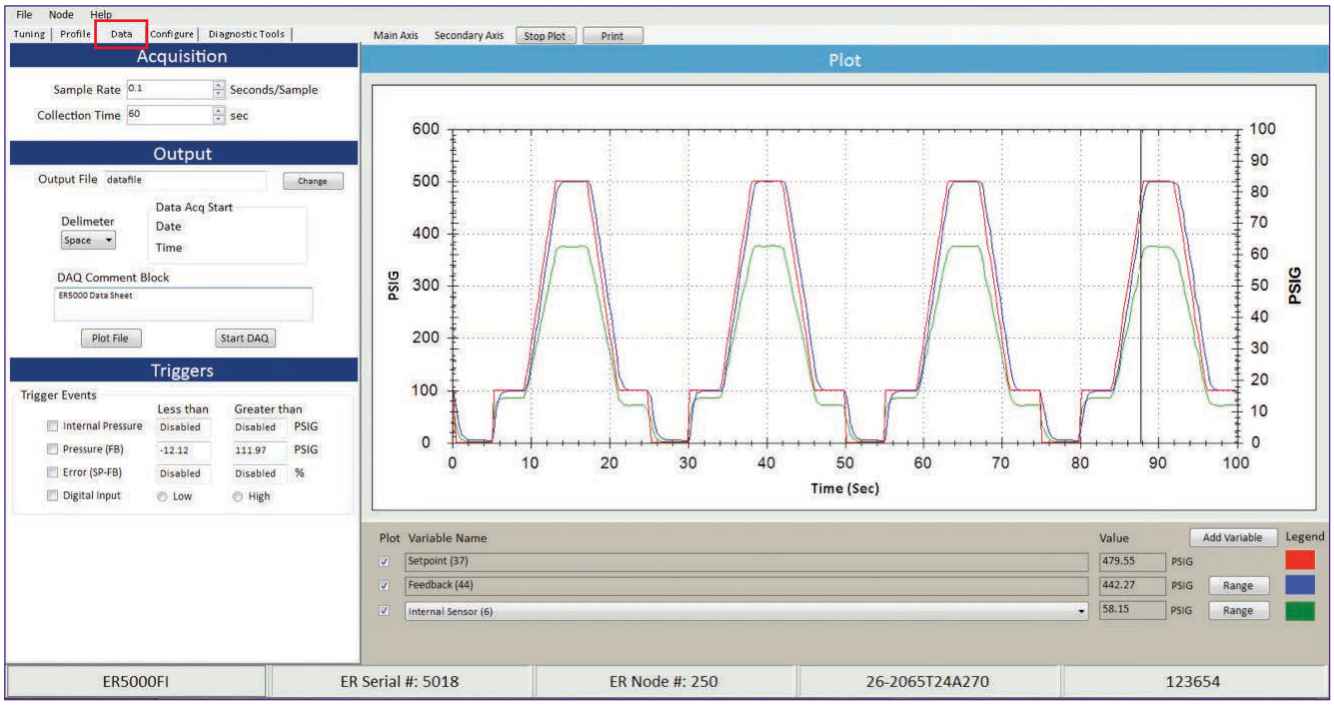
Tuning Screen



Profile Screen

ERTune™ Software Screens

Data Acquisition Screen

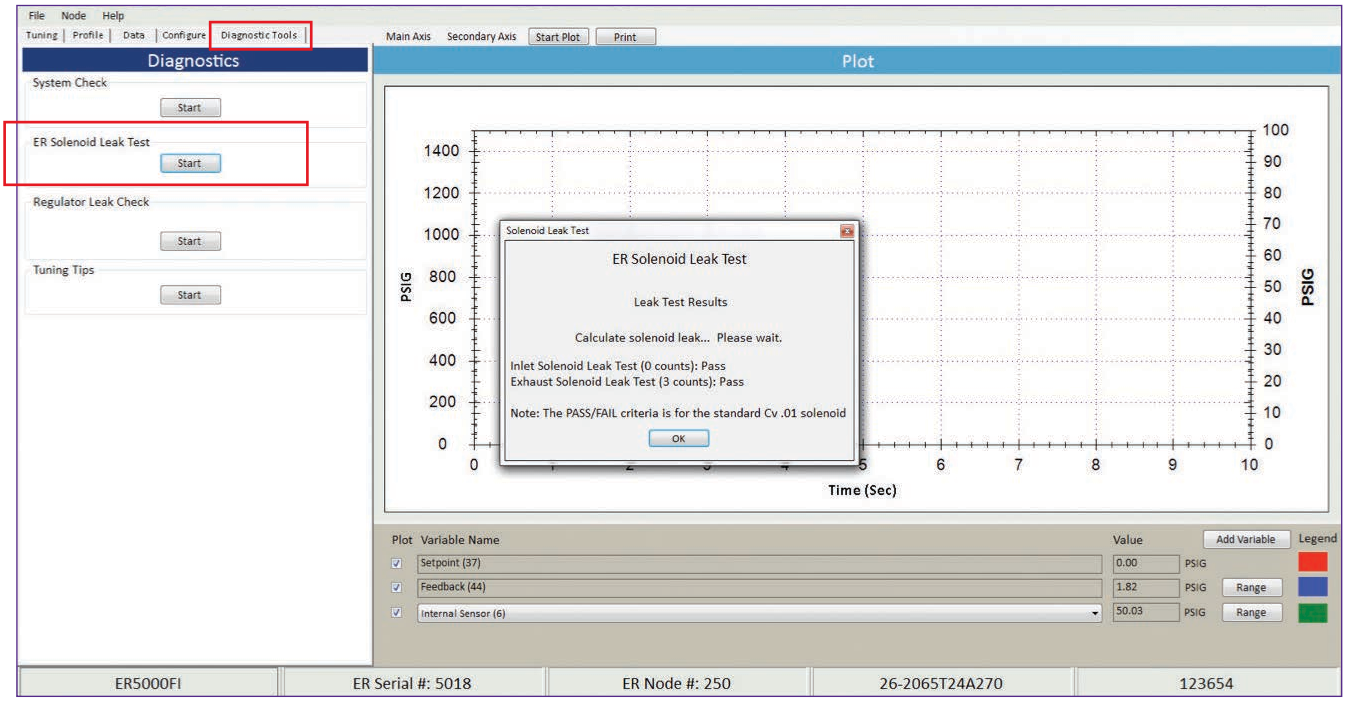


Configure Screen

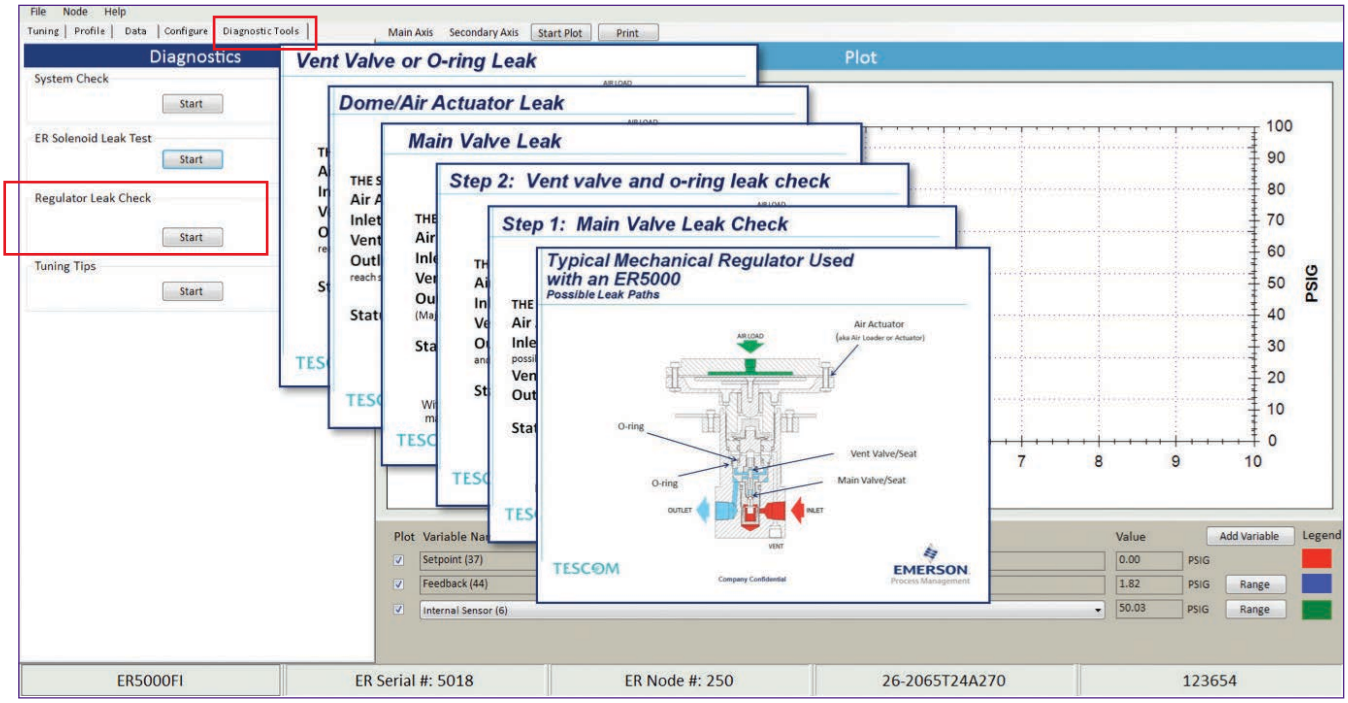
ER 5000 SERIES

ERTune™ Software Screens

Diagnostics Screen - Solenoid Valve Leak Test "Pass"



Diagnostics Tools - Regulator Leak Check



ER5000 Electropneumatic Controller Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

ER5	00	0	S	I	-	1

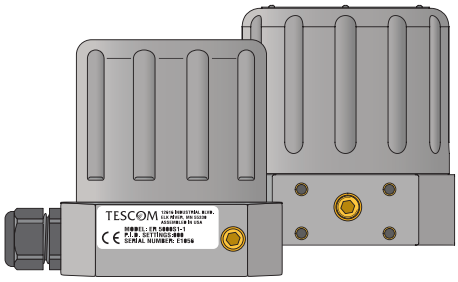
BASIC SERIES	BASE/ENCLOSURE STYLE [1]	INTERNAL SENSOR	FEATURES	SIGNAL TYPE	C_V CONFIGURATION
ER5	**00** – Standard NEMA 4X **02** – Integrated Double piston **04** – OEM base **05** – Aluminum HAZLOC **10** – Integrated 44-4000 **11** – Integrated 44-5200	**0** – 0-100 psig / 0-6.9 bar 0.1% accuracy	**S** – Basic **F** – Enhanced	**I** – 4-20 mAmp / 1-5 VDC **V** – 0-10 VDC	**1** – Standard, C_V = 0.01

1. For Stainless steel option, please contact TESCOM.

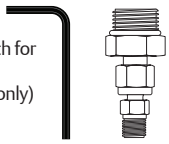
ER5000 Accessories

PART NUMBER	DESCRIPTION
85145	Filter Kit
85061	RS232 to RS485 Converter Kit (plugs into standard PC serial port). Includes: 2.75" x 4.8" x 1.2" converter and 6 foot, 9 pin cable
82948	USB to RS485 converter
82919	Potentiometer with digital display
82575-25	Power Supply for ER5000 (Output: 24 VDC at 250 mA / Input: 120 VAC, 60 HZ)
ERAA03409	USB Cable (one included) (Not included with the ER5050)
ERAA05146	MTA Connector Replacement Kit

What's in the box

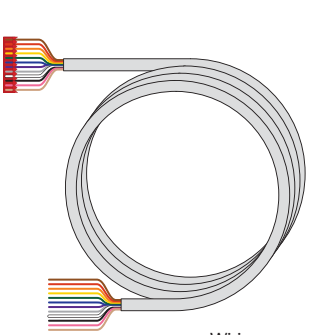


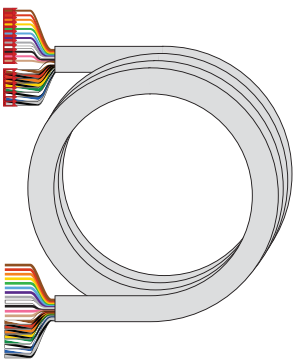
ER5000 or ER5050 Hazardous Location Electronic Pressure Controller



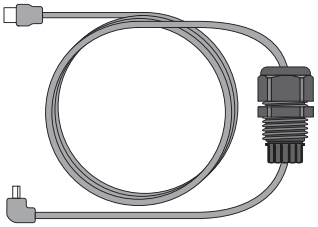
3 mm hex wrench for cover lock screw (ER5050 model only)

1/2" SAE x 1/8" NPTF adapter





Wiring connectors, pre-installed with strain relief



USB cable with integrated strain relief (Not included with the ER5050)

ER 5000 SERIES

Regulator Selection for use with the ER5000*

SPECIFICATION REQUIRED	EXPLANATION
Pressure	Selected regulator must be capable of handling the system pressures. For best resolution, the control pressure range of the regulator should be nearest (yet above) the maximum application control pressure requirement.
Flow Rate	Regulator must be capable of handling the required flow rate of the application.
Media	Regulator materials of construction must be compatible with the process media used for the application.

**Contact your TESCOM Representative for assistance in selecting a suitable pressure regulator*

Compatible TESCOM Pressure Regulators

REGULATOR SERIES	MAXIMUM INLET PRESSURE	OUTLET PRESSURE RANGES	FLOW CAPACITY C_V
Pressure Reducing Regulators			
Cv = .06 - .30			
26-2000A	Up to 20,000 psig / 1379 bar	Up to 20,000 psig / 1379 bar	0.02, 0.06, 0.12, 0.30
44-1500A	6000 psig / 414 bar	600 psig / 41.4 bar	0.30
44-1500D (Dome Load)	6000 psig / 414 bar	90 psig / 6.2 bar *	0.30
44-5200 (VA027)	3500 psig / 241 bar	500 psig / 34.5 bar	0.06, 0.15
50-2000A	Up to 30,000 psig / 2068 bar	Up to 22,500 psig / 1551 bar	0.06, 0.12, 0.30
54-2000A	Up to 20,000 psig / 1379 bar	Up to 20,000 psig / 1379 bar	0.06
C_V = greater than .30			
269-529	300 psig / 21.0 bar	90, 300 psig / 6.2, 21.0 bar	1.5 to 10.0
44-1300A	6000 psig / 414 bar	Up to 2500 psig / 172.4 bar	0.8, 2.0
44-4000A	6000 psig / 414 bar	Up to 6000 psig / 414 bar	0.70, 2.0
54-2200A	Up to 10,000 psig / 689 bar	Up to 10,000 psig / 689 bar	2.0
54-2800A	5000 psig / 345 bar	Up to 5000 psig / 345 bar	8.0
DG (Air Load)	600 psig / 41.4 bar	500 psig / 34.5 bar	10.0
DG (Dome Load)	300 psig / 21.0 bar	90 psig / 6.2 bar *	10.0
DH (Air Load)	500, 600 psig / 34.5, 41.4 bar	Up to 500 psig / 34.5 bar	5.0
DH (Dome Load)	500 psig / 34.5 bar	90 psig / 6.2 bar *	5.0
DK (Air Load)	1000 psig / 69.0 bar	600 psig / 41.4 bar	0.35
DK (Dome Load)	1000 psig / 69.0 bar	90 psig / 6.2 bar *	0.35
PH16 (Dome Load)	300 psig / 21.0 bar	90 psig / 6.2 bar *	5.0
PH18 (Dome Load)	300 psig / 21.0 bar	90 psig / 6.2 bar *	10.0
Backpressure Regulators			
26-1700A	Up to 20,000 psig / 1379 bar	N/A	0.02, 0.10, 0.14, 0.60
26-2300 (Dome Load)	90 psig / 6.2 bar	N/A	0.06, 0.12, 0.60, 1.0
26-2300 (Air Load)	500 psig / 34.5 bar	N/A	0.06, 0.12, 0.60, 1.0
54-2100A	Up to 30,000 psig / 2068 bar	N/A	0.08, 0.60
54-2700A	500 psig / 34.5 bar	N/A	5.0
54-2900A	10,000 psig / 689 bar	N/A	4.3

**Assuming 110 psig / 7.5 bar available to the ER5000*

Electropneumatic Controller/Motors DER5K2092X012

Description

ER5000 PRESSURE CONTROL KIT

Provides a complete pressure control system to get you up and running with minimum effort. All components of the kit are completely assembled, professionally plumbed together, and tested for proper operation. Easy to set up and configure. Saves money and setup time.

Kit (assembled on plate or in enclosure) includes:

- ER5000FI-1
- Pressure reducing regulator:
  Flow booster, DK dome loaded, DK air loaded, 26-2000 air loaded
  OR
  Back pressure regulator:
  54-2100 air loaded or 26-1700 air loaded
- 4-20 mA Feedback Transducer; 0.125% accuracy
- ER supply regulator with relief valve
- All connections and fittings
- Electrical Junction Box
- Documentation package which includes
  ER5000 User Kit:
  – ER5000 Getting Started Manual
  – ER5000 User Support Software & Manual CD
  ER5K Kit Manual:
  – Operating Manual
  – Regulator drawing and wiring diagram

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressures
ER Supply Regulator:
3500 psig / 241 bar
Process Pressure Supply:
See specifications for Kit Regulator Type
Power Requirements
90-264 VAC
Setpoint Signal
Analog: 4-20 mA or 1-5 V DC
Serial: RS485, USB
Communication Protocol
USB and RS485

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ER5K Series
Enclosure Assembly

ER5K Series
Plate Assembly

Applications

- Component testing and development
- Pressure sensor calibration and testing
- Superplastic and metal forming
- Coating applications
- Flow meter calibration
- Catheter / rupture disk testing
- Pump discharge control
- Burst and proof testing
- Reactor vessel pressure control

Features and Benefits

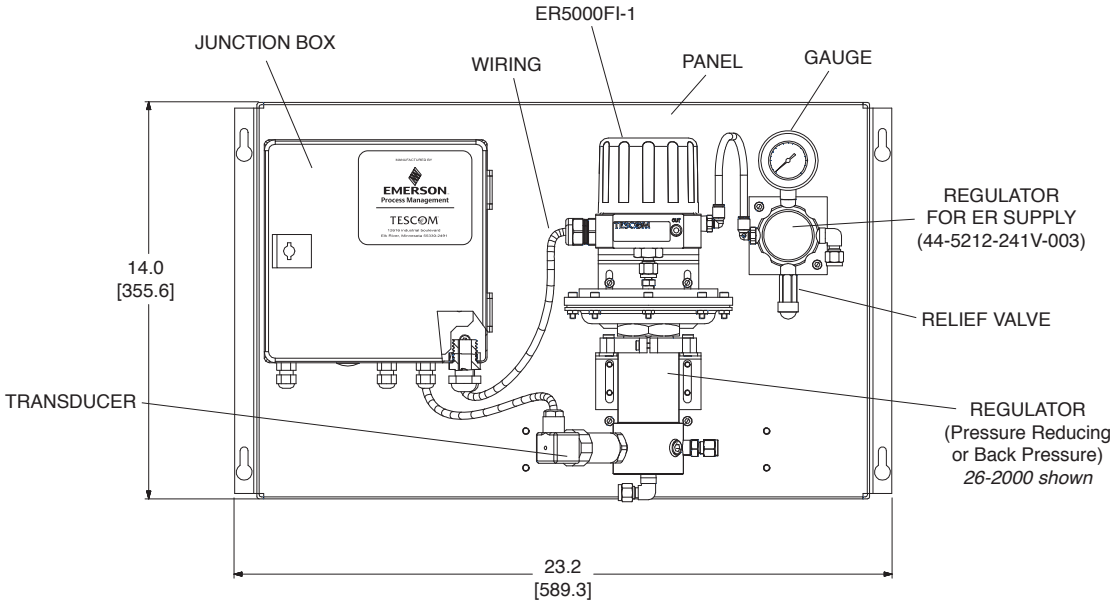
- Complete automated pressure control system, pre-assembled and tested, ready for use
- Closed loop control provides precise accuracy
- TESCOM ERTune™ program included for setup, tuning, and data acquisition
- Set-up Wizard loads PID parameters for quicker start-up
- Captured venting with 26-2000 and DK Series - ideal for liquid applications
- Venting regulator with gauge and relief valve for ER supply

ER 5K SERIES KITS

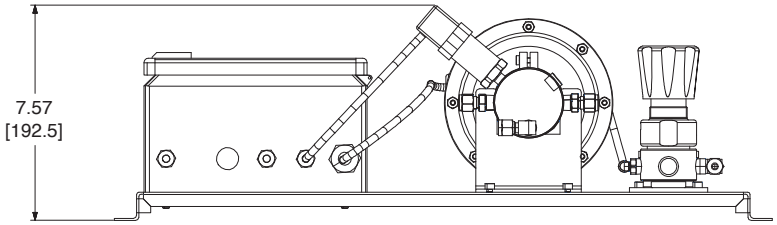
ER5K Series Kit Drawings

ER5K SERIES KIT ASSEMBLED ON PLATE

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

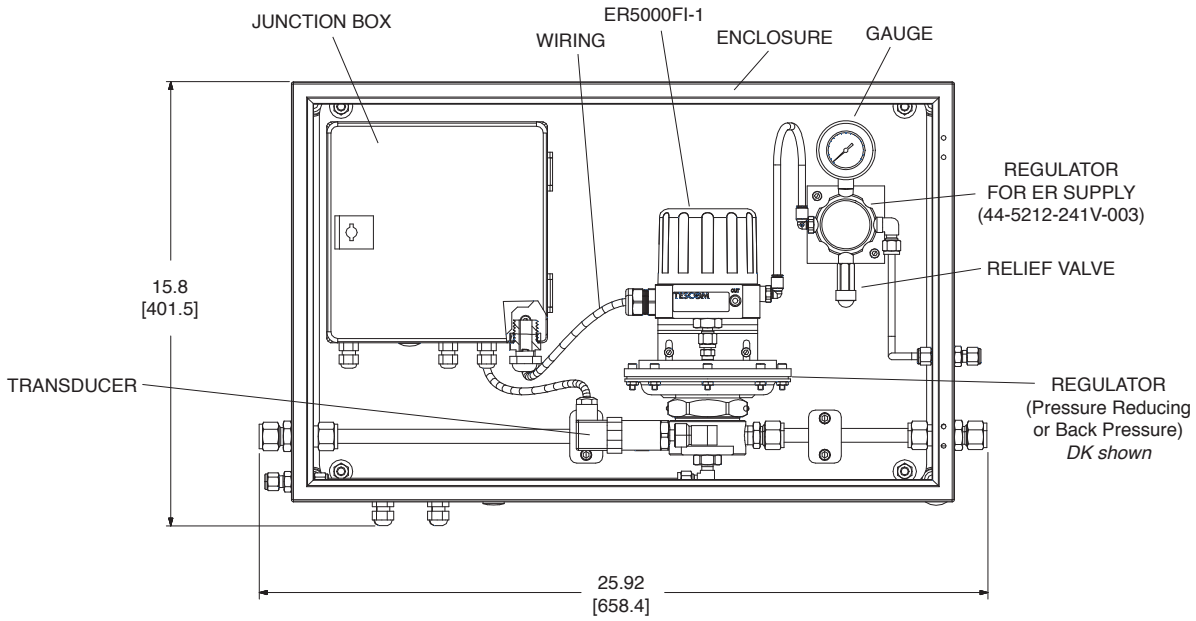


BOTTOM VIEW

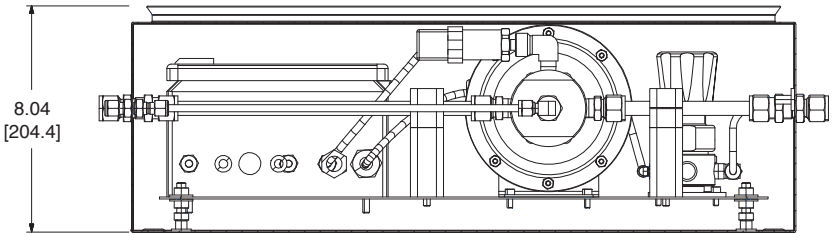


ER5K SERIES KIT IN AN ENCLOSURE (all components included)

All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets



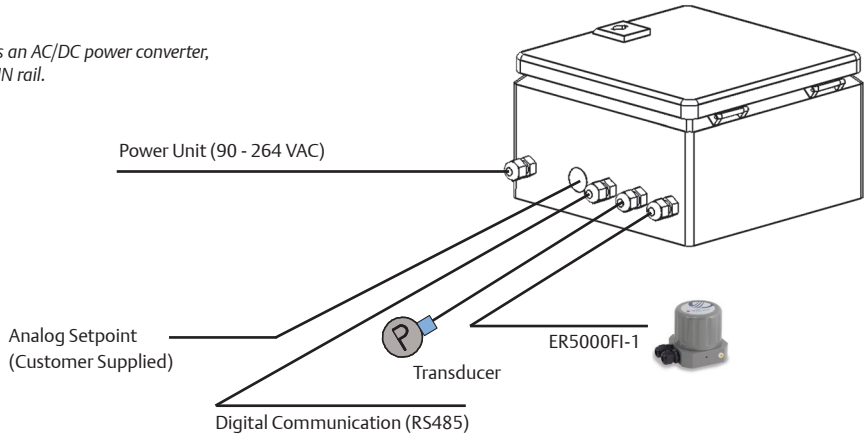
BOTTOM VIEW



JUNCTION BOX

The Junction box is internally wired and includes an AC/DC power converter, fuses and wire terminal blocks mounted on a DIN rail.

Footprint: 7.9" x 7.9" [200 x 200 mm]
Height: 4.7" [120 mm]



ER 5K SERIES KITS

ER5000 Kit Types – with pressure reducing regulators

Flow Booster Kit

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
300 psig / 20.7 bar
Maximum Outlet Pressure
ER5000 inlet minus 10 psig / 0.7 bar
Temperature Range
40°F to 120°F / 4°C to 48°C
Body
Zinc
Venting Regulator
Constant bleed through diaphragm
Brass bottom plug

See Part Number Selector for additional information

DK Series Kit

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
1000 psig / 69 bar
Maximum Outlet Pressure
See Part Number Selector
Design Proof Pressure
150 % maximum rated pressure
Leakage
Bubble-tight
Temperature Range
-15°F to 165°F / -26°C to 74°C
Body
316 Stainless Steel
Filter
40 micron Sintered 316 Stainless Steel
Remaining Parts
300 Series Stainless Steel

See Part Number Selector for additional information

26-2000 Series Kit

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel: 10,000 psig / 690 bar
Outlet Pressure Ranges
See Part Number Selector
Design Proof Pressure
150% maximum rated pressure
Leakage
Bubble-tight
Operating Temperature
-15°F to 165°F / -26°C to 74°C
Body
316 Stainless Steel
Back-up Ring
Teflon®
Filter
300 Series Stainless Steel
Remaining Parts
316 Stainless Steel and 17-4 Stainless Steel

See Part Number Selector for additional information

ER5000 Kit Types – with back pressure regulators

54-2100 Series Kit

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
10.000 psig / 690 bar
Controlled Pressure Ranges
See Part Number Selector
Design Proof Pressure
150 % maximum rated pressure
Leakage
Maximum 2 drops/minute at 150 SUS at 2500 psig /172 bar
Operating Temperature
-15°F to 165°F / -26°C to 74°C
Body
316 Stainless Steel
Back-up Ring
Teflon®
Remaining Parts
300 Series Stainless Steel

See Part Number Selector for additional information

26-1700 Series Kit

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure
Stainless Steel: 10.000 psig / 690 bar
Outlet Pressure Ranges
See Part Number Selector
Design Proof Pressure
150 % maximum rated pressure
Leakage
Bubble-tight
Operating Temperature
-40°F to 165°F / -40°C to 74°C
Body
316 Stainless Steel
Back-up Ring
Teflon®
Trim
300 Series Stainless Steel
Remaining Parts
300 Stainless Steel

See Part Number Selector for additional information

ER 5K SERIES KITS

ER5K Series Kit Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

ER5K -	L	F								T	B
BASIC SERIES	ASSEMBLY	REGULATOR SERIES	BODY	MAXIMUM CONTROL PRESSURE BY TRANSDUCER		SEAT	C_V	PORTING/TUBING SIZE		O-RING MATERIAL	PORTING/ TUBING
				bar	psig			METRIC	IMPERIAL		
ER5K	**L** – Parts assembled on plate **E** – Parts assembled in an enclosure	**A –** Flow booster Pressure reducing	Zinc	6	100	Nitrile, Buna-N	1.5	12 mm	1/2"	**D –** Nitrile, Buna-N (NBR) only option with flow booster	**A** – Metric System **B** – Imperial System
		B – Flow booster Pressure reducing	Zinc	6	100	Nitrile, Buna-N	2.2	12 mm	1/2"		
		C – DK (Dome-loaded) Pressure reducing	SST	6	100	PCTFE	0.35	12 mm	1/2"	**D –** Nitrile, Buna-N (NBR) **T –** FKM (Viton®-A) **U –** Urethane (PUR) **Z –** EP (EPDM)	
		D – DK (Air-loaded) Pressure reducing	SST	40	600	PCTFE	0.35	12 mm	1/2"		
		F – 26-2000 Pressure reducing	SST	100	1500	Polyimide (Vespel®)	0.06	6 mm	1/4"		
		G – 26-2000 Pressure reducing	SST	160	3000	Polyimide (Vespel®)	0.06	6 mm	1/4"		
		H – 26-2000 Pressure reducing	SST	400	6000	Polyimide (Vespel®)	0.06	6 mm	1/4"		
		J – 26-2000 Pressure reducing	SST	690	10,000	Polyimide (Vespel®)	0.06	6 mm	1/4"		
		K – 54-2100 Back pressure	SST	100	1500	17-4 SST	0.08	6 mm	1/4"		
		L – 54-2100 Back pressure	SST	160	3000	17-4 SST	0.08	6 mm	1/4"		
		M – 54-2100 Back pressure	SST	400	6000	17-4 SST	0.08	6 mm	1/4"		
		N – 54-2100 Back pressure	SST	690	10,000	17-4 SST	0.08	6 mm	1/4"		
		P – 26-1700 Back pressure	SST	100	1500	PTFE	0.14	6 mm	1/4"		
		R – 26-1700 Back pressure	SST	160	3000	PCTFE	0.10	6 mm	1/4"		
		S – 26-1700 Back pressure	SST	400	6000	PCTFE	0.10	6 mm	1/4"		
		T – 26-1700 Back pressure	SST	690	10,000	PCTFE	0.10	6 mm	1/4"		

NOTES:

Power Requirements: *All kits include a prewired electrical junction box with a 24 VDC power supply. 90-264 VAC customer supplied input required.*

Communications: *ER5000 has built in USB communication capability; cable is provided. RS485 converter, if desired, may be purchased separately.*

DERNG2108X012

Description

The ERNG-X is a steady state no bleed engineered system for accurate and reliable control of Natural Gas. The ERNG-X includes a pressure regulator, preconditioning filters, and an electropneumatic controller for automated control. The ERNG-X is panel mounted and can be easily installed in an enclosure or on a wall.

Applications

- Automated natural gas pressure or flow control

ERNG-X Specifications

ELECTRICAL

Power Requirement
20.5 to 28.5 VDC, 340 mA maximum, 180 mA nominal

Turn-on Time
< 240 milliseconds

Restart from Power Interruption
< 1.9 seconds

SUPPLY REQUIREMENT

Media Type
Natural Gas with a maximum upper explosion limit below 18% by volume at atmospheric conditions
Media Quality:
Corrosives: H_2S and other sulfides below 10 ppm
Impurities: CO_2 below 3%; O_2 below 0.5%

Pressure
System:
Maximum: 2750 psig / 190 bar
ER5050FX-1-002:
Maximum: 110 psig / 7.5 bar
Minimum: Outlet pressure 1 psig / 0.07 bar

Temperature
Dry gas required below 32°F / 0°C
ERNG: -4°F to 140°F / -20°C to 60°C

INPUT SIGNALS

Setpoint
USB, RS485, Downloaded Profile
4-20 mA, 1-5 VDC (ERNG-I)
0-10 VDC (ERNG-V)

Feedback (external)
ERNG-I: 4-20 mA or 1-5 VDC
ERNG-V: 0-10 VDC

PERFORMANCE[1]

Accuracy
Measured Reference Accuracy (total accuracy all effects including zero and span error): ± 0.10% (FSO)
Low Pressure Capability with External Transducer
± 0.25 inches water (0.635 g/sq. cm) into 2 liter volume

Response Time
Sensor Update Rate: 500 milliseconds (can be adjusted between 25 milliseconds and 2,500 milliseconds)

Flow Capacity: C_V = 0.01 (Maximum Flow = 18 SLPM)

Solenoid Valve Rated Cycle Life: > 150 million cycles

1. With clean dry sweet gas.

PHYSICAL

Size
Gas Ports
Inlet: 1/4 - 18 NPT
Exhaust and Gauge: 1/8 - 27 NPTF
Control Port: 1/2 inch SAE with supplied adapter to 1/8 -27 NPT Male
Height: 8.5 inches / 216 mm
Length: 15.75 inches / 400 mm
Width: 6 inches / 152 mm
Conduit Openings: Two, 1/2 NPTF

Weight
ERNG: 12.5 lbs / 5.7 kg

ER5050FX-1-002 Housing
Standard: NEMA 4X IP66 (aluminum and epoxy polyester paint)
Optional: Stainless steel

Flow Stream Materials
Solenoids: Nickel-plated Brass, FKM Seat and O-rings
Fittings: Brass, 316 SST
Seats: FKM, PCTFE, PTFE, DELRIN
Body: Aluminum, 316 SST, Brass, Nickel Plated Brass
Filter Element: Borosilicate Glass
Sensor: Glass, Ceramic, Silicon, RTV, Nickel
Tubing: Polyurethane, 316 SST
O-rings: Buna-N, FKM Teflon

Mounting
Four through holes that allow 3/8" or 9 mm bolts (14.75 x 5 inch / 374.7 x 127 mm Bolt Pattern)

Mounting Orientation Effect
Filter Drain Vertically Down

- continued -

ERNG-X

ERNG-X Specifications (continued)

ENVIRONMENT

Temperature Range
-4°F to 140°F / -20°C to 60°C

Relative Humidity
To 100% R.H. (non-condensing at 32°F to 140°F / 0°C to 60°C)

Storage Temperature
-58°F to 200°F / -50°C to 93°C

CERTIFICATIONS

CE Approval
All ER5000 units have CE approval when wired per CE approved wiring instructions in the *ER5000 User Manual*

Hazardous Location Approvals on ER5050FX-1-002 Only
CSA, IECEx, ATEX
Class I, DIV 1, Groups BCD T5
Class II, DIV 1, Groups EFG
Class III
Ex db IIB+H2 T5 Gb
Ex tb IIIC T100°C Db IP6X
Zone 1, AEx d IIB+H2 T5 Gb
Zone 21, AEx tb IIIC T100°C Db IP6X

Features and Benefits

ERNG-I

- Precise accuracy
- 16 Bit for Data Acquisition
- Steady state no bleed
- Control algorithms for Internal Feedback, External Feedback or Cascade Control modes
- Selectable **SETPOINT Signal** Source
  - USB (Not recommended)
  - RS485
  - External analog (4-20mA or 1-5VDC)
  - Downloadable Profile (runs independent of PC or external analog source)
- Selectable **FEEDBACK Signal** Source
  - Internal Sensor (0-100 psig / 0-6.9 bar)
  - External Analog: 4-20mA or 1-5VDC
- Selectable Control Limits
  - Programmable limits for analog setpoint, feedback and error signals
  - Selectable control states: “Hold Last Pressure”, “Vent”, or “Full Open”
- TESCOM ERTune™ software provided for data acquisition, PID tuning (real time graphic display of setpoint and feedback), creating and downloading profiles
- TESCOM DLL provided for easy custom software development
- Software examples are provided for VB.NET, LabVIEW, C and C#
- Trigger data acquisition based on system events
- Two additional analog/digital inputs and two digital outputs that allow the user to:
  - Monitor an external signal in addition to feedback (e.g. flow, temp, force)
  - Alternate between two separate external feedback sources
  - Start/Stop or Resume/Pause pressure profiles
  - Wait for event to occur before proceeding to the next step in a downloaded profile (digital input)
  - Indicate that an event occurred in a downloaded profile (digital output)
- Analog output of the internal pressure sensor
- Conditional control with "IF/THEN" and "GoTo" profile commands
- Suspend control feature to lock output pressure for an extended period of time
- ER5050FX-1-002: NEMA 4X and IP66 (water tight, corrosion resistant)

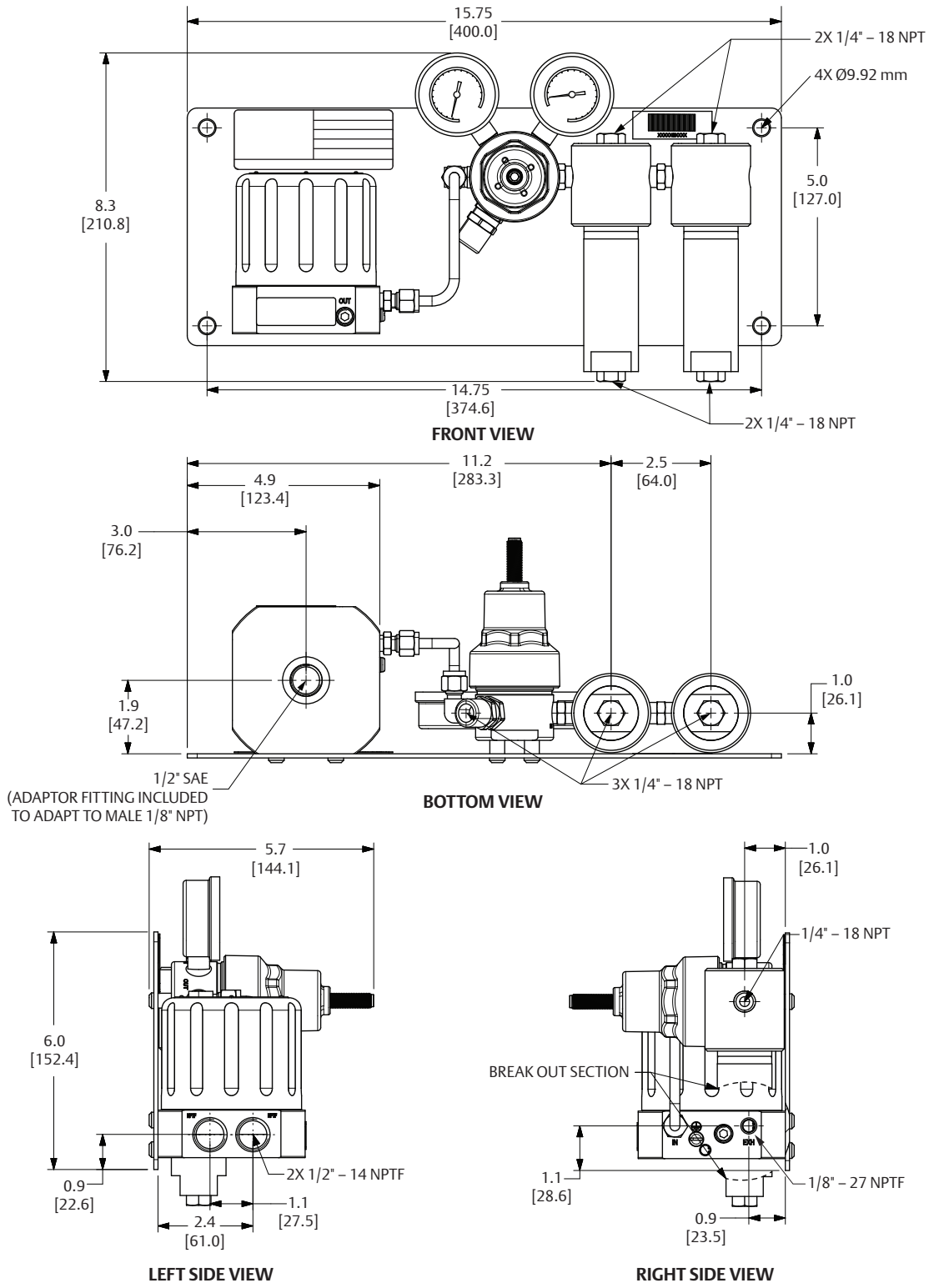
ERNG-V

- All features of the ERNG-I except with 0-10 VDC Setpoint and Feedback signals

Special Control Features Available

- Suspend Mode
- Diaphragm protection
- Pulse Mode
- Control Limits

ERNG-X Dimensions



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

Figure 1. ERNG-X Dimensions

ERNG-X

ERNG-X Typical Applications

The following diagram is an example of a typical ERNG-X application. Remote set point control for a district station. The ERNG-X controls the downstream pressure on the pipeline main regulator by varying the spring case pressure of the pipeline pilot regulator.

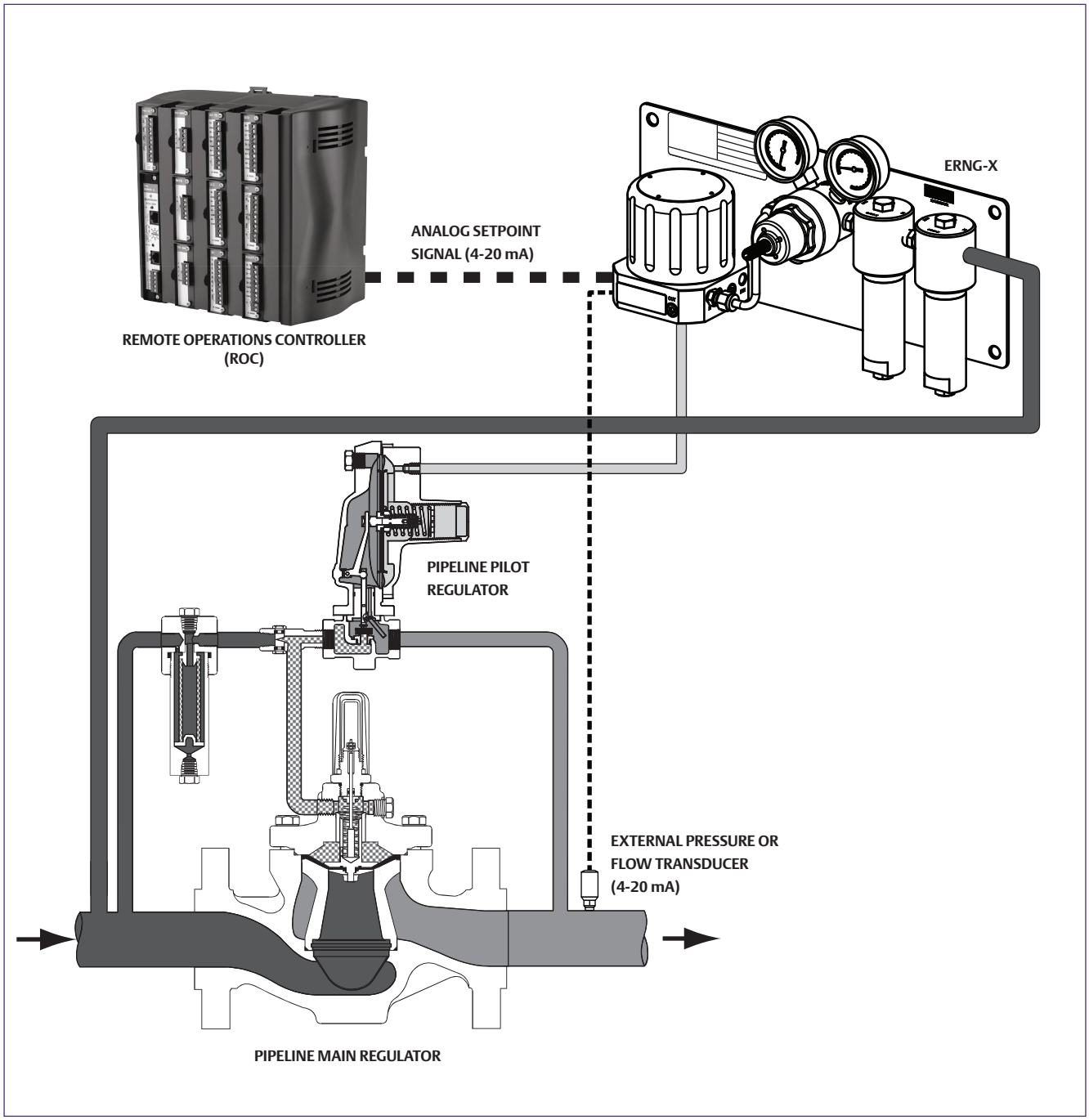


Figure 2. ERNG-X Typical Applications

ER5000 Basics

ER5000 System Requirements

All ER5000 controllers require:

- Power: 24 VDC, 340 mA maximum, 180 mA nominal
- Setpoint signal: From PC, PLC, Analog
- Feedback signal: Internal or External

The ER5000 senses system pressure using either its internal sensor or a user supplied external transducer (4–20 mA, 1–5V or 0–10V) placed within the actual process line. You can operate the ER5000 in one of three control modes:

- Internal Feedback, which uses only the internal sensor;
- External Feedback, which uses only the external source;
- Cascade, which uses both internal and external sources in a “loop within a loop” configuration

ER5000 Communication

The ER5000 communicates using a USB or RS485 interface. The required USB driver is provided on the ER5000 User Support Software and Manual CD or online. An RS485 communications link can be established between the ER5000 and a PC using either a USB to RS485 or RS232 to RS485 converter. RS485 communication must be used for daisy-chaining two or more (up to 32) ER5000s on the same network. RS485 is recommended for ERNG-X communication. USB is not recommended for hazardous locations and is also not recommended for distances greater than 10 ft.

ERTune™ Software Features

TESCOM’s ERTune™ program is an all encompassing software package which allows the user to address the ER5000 controller using a PC. ERTune™ allows users to tune the PID loop, monitor system operation, create and download profiles, specify control limits, enable password protection, acquire data and review previously recorded data. The basic screens are Tuning, Profile, Data, Configure and Diagnostic Tools.

ER5000 Software Development Support

The ER5000 protocol document is provided to assist in developing process control software that communicates with the ER5000 on any platform. Sample programs in VB.NET, LabVIEW, C and C# are available on the included CD along with the source code for the ER5000 DLL for Windows.

The TESCOM implementation of the protocol uses six functions to communicate: StartUp, ReadNetVar, WriteNetVar, ReadProfileSegment, WriteProfileSegment and Shutdown.

ER5000 Tuning

The ER5000 is factory set to default PID parameters. The user can also adjust the Proportional, Integral and Derivative (PID) variables to:

- Achieve the quickest response to a setpoint change without overshoot or oscillation
- Achieve the best performance for a non-changing setpoint
- Optimize performance in the specific application conditions

Refer to ER5000 user manual for more information.

ERNG-X

ERNG-X Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

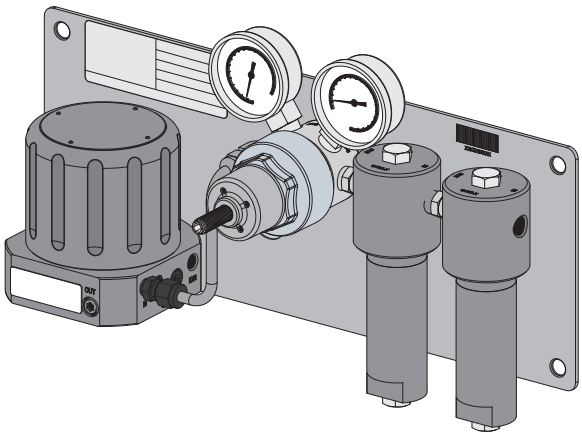
Example for selecting a part number:

ERNG - I

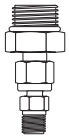
BASIC SERIES	DASH NUMBER	ER OPTION
ERNG	**I**	Current
	V	Voltage

RECOMMENDED SPARE PARTS		PART NUMBER
Supply Regulator Repair Kit		JT389-8927
Filter Elements Kit	C195-1	ERAA23983-1
	C195-2	ERAA23983-2

What's Included

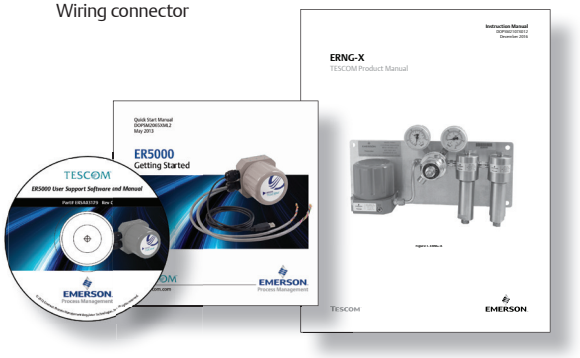


Wiring connector



1/2" SAE x 1/8" NPTF adapter

3 mm hex wrench for cover lock screw



Full ER5000 Manual can be found at www.TESCOM.com

Electropneumatic Controller/Motors DER512093X012

Specifications

For other materials or modifications, please consult TESCOM.

ER5100 SYSTEM

Maximum Inlet Pressure
4500 psig / 310 bar

Maximum Outlet Pressure
400, 900 psig / 27.6, 62.1 bar

Flow Capacity
C_V = 0.7, 2.0

Features and Benefits
- Captured venting
- Fast responding, high flow system
- Compact size
- Includes all the features of the ER5000 Series (0.1% accuracy, onboard PID loop, free software)

ER5110 SYSTEM

Maximum Inlet Pressure
3500 psig / 241 bar

Maximum Outlet Pressure
500 psig / 34.5 bar

Flow Capacity
C_V = 0.06, 0.15

Features and Benefits
- Venting (not captured) or non-venting
- Fast responding, low pressure, low flow system
- Suitable for both static and dynamic applications
- Includes all the features of the ER5000 Series (0.1% accuracy, onboard PID loop, free software)

ER5100 (WITH 44-4000 SERIES REGULATOR)

ER5110 (WITH 44-5200 SERIES REGULATOR)

TESCOM ER5100 Series consists of the ER5000 Series controller and a 44-4000 Series pressure reducing regulator integrated together. Inlet pressures are up to 4500 psig / 310 bar with two different outlet ranges of 400 and 900 psig / 27.6 and 62.1 bar. The ER5100 Series may be ordered with a C_V = 0.7 or a C_V = 2.0. This series offers fast accurate control in applications requiring continuous flow. Also available with the 44-5200 Series regulator (ER5110).

Applications

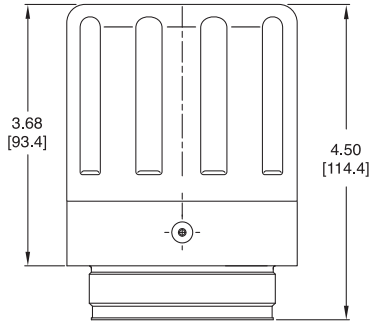
- Gas assist laser cutting
- OEM equipment

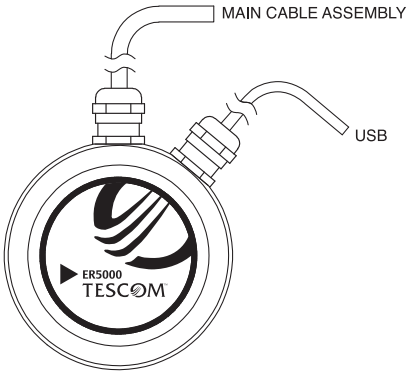
ER5100 SERIES

ER5100 Series Drawing

ER5100

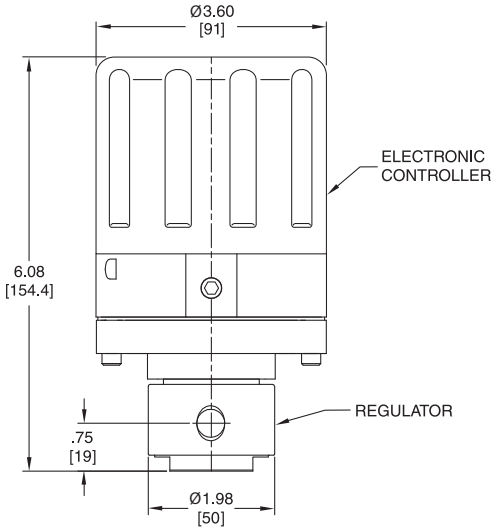
(PLEASE REFER TO THE 44-4000 SERIES DRAWING FOR COMPLETE DIMENSIONS)





ER5110

(WITH 44-5200 SERIES REGULATOR)



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

ER5100 Series Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

ER51 00 S I - 1

BASIC SERIES	BASE STYLE	CONFIGURATION OPTIONS	ANALOG SIGNALS	MODIFICATIONS
ER51	**00** **10**	**S -** Standard **F -** Enhanced[2]	**I -** 4-20 mA 1-5 VDC **V -** 0-10 VDC	**1 -** Standard solenoid valves

For ER5100 Series, order one of the following regulators:[1]

- **44-40X1XXXXER042** (Outlet: 400 psig / 27.6 bar, C_V = 0.7)
- **44-40X2XXXXER042** (Outlet: 750 psig / 51.7 bar, C_V = 0.7)
- **44-40X1XXXXER046** (Outlet: 500 psig / 34.5 bar, C_V = 2.0)
- **44-40X2XXXXER046** (Outlet: 900 psig / 62.1 bar, C_V = 2.0)

For ER5110 Series, order one of the following regulators:[1]

- **44-52X5XX4N1X34** (Non-venting, Outlet: 500 psig / 34.5 bar, C_V = 0.06)
- **44-52X5XX4N2X34** (Non-venting, Outlet: 500 psig / 34.5 bar, C_V = 0.15)
- **44-52X5XX4V1X34** (Venting, Outlet: 500 psig / 34.5 bar, C_V = 0.06)
- **44-52X5XX4V2X34** (Venting, Outlet: 500 psig / 34.5 bar, C_V = 0.15)

1. *The "X" in the regulator part number is to be finalized depending on desired soft goods and port configurations.*
2. *Enhanced models have extra analog inputs and outputs.*

WARNING! Do not attempt to select, install, use or maintain this product until you have read and fully understood the *TESCOM Safety, Installation and Operation Precautions.*

Electropneumatic Controller/Motors D70200579X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Application

Any application requiring remotely controlled, electronically operated:

Pressure Reducing Regulators

26-1000, 26-1600, 26-2000, 54-2000 Series

Backpressure Regulators

26-1700, 26-2300, 54-2100 Series

Electrical

10-24 VDC nominal
1.0 AMP operational current
6.0 AMP surge current
2.0 AMP time delay actuator control fuse
1.5 AMP fast acting motor protection fuse

Mechanical

Actuator connector (3 pins): MS3102A-10SL-3P

Note: Mating electrical plug connector and cable clamp is included with the actuator. The electrical cable is not included.

Continuous Motor Torque: 51 in-lbs / 5.8 N•m

Intermittent Motor Torque (approximate): 100 in-lbs / 11 N•m

GEAR SPEED	NO LOAD	VOLTS	10	15	20	24
		RPM	11.5	18	24	30
	31 IN-LBS LOAD	VOLTS	10	15	20	24
		RPM	6	11	19	24

Actuation time for complete range of regulator outlet pressure (at 24 VDC):

26-1000 Series (11-1/2 full turns): 25 seconds

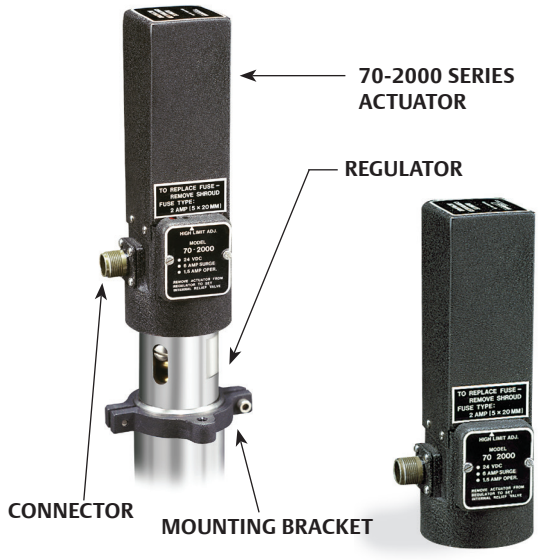
26-1600 Series (5-1/2 full turns): 15 seconds

Note: The motorized regulator provides a linear discharge pressure curve.

OTHER

Weight (with regulator mounted)

26-1000 Series (Brass and Stainless Steel): 8 lbs / 3.6 kg
26-1000 Series (Aluminum): 6 lbs / 2.7 kg
26-1600 Series (Stainless Steel): 6 lbs / 2.7 kg
26-1600 Series (Aluminum): 5 lbs / 2.3 kg



TESCOM 70-2000 Series motorized actuator is designed for any application requiring remotely controlled, electronically operated, pressure reducing / backpressure regulators.

Applications

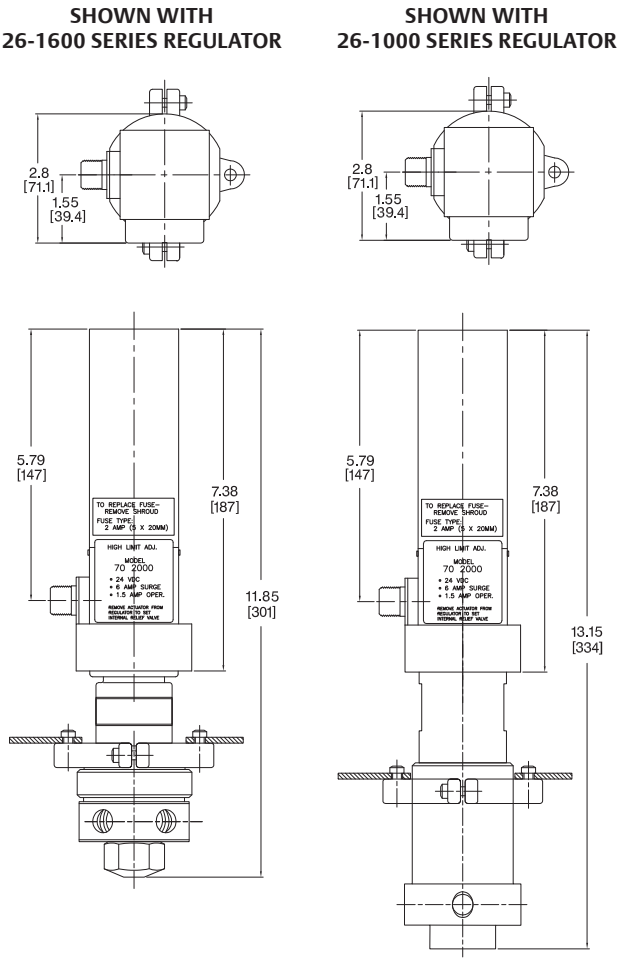
- Test Equipment
- Remote Actuation
- Oil Patch Control

Features and Benefits

- Adjusts regulator to any setpoint by remote control, eliminating the need for an operator in the pressure area
- Compatible with several TESCOM pressure reducing and backpressure regulators in many applications
- Limit switches provide operating range and prevent overtravel
- Variable speed control
- Replaceable fuse protection
- Easily mounted on regulator
- Hazloc enclosure is available

70-2000 SERIES

70-2000 Series Actuator Drawings



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

70-2000 Series Actuator Requirements

70-2000 ADAPTABLE TO	REQUIREMENTS
26-1000, 26-1700, 26-2000, 54-2000, 54-2100 Series regulators	Removal of handknob
26-1600, 26-2300 Series regulators	Removal of handknob, addition of the bonnet adapter and 3 set screws *(see table below)*

70-2000 Series Actuator Part Numbers

QUANTITY	PART NUMBER	DESCRIPTION
1	70-2000	Actuator complete with limit switches
1	3883-3	Bonnet adapter (26-1600, 26-2300 (500 psig / 34.5 bar) Series)
3	3647	Set Screw (26-1600, 26-2300 (500 psig / 34.5 bar) Series)

Note: Actuators may be ordered with or without a regulator.

Integrated Custom Systems

From simple to complex, systems of different levels of integration to match your individual hydraulic and pneumatic application needs

Systems Capabilities Overview ?
Custom integration systems to simplify your pressure, flow and measurement applications

Aircraft Charging Carts ?
Heavy duty carts offering two, three and six bottle designs

Standard Products and Custom Integrated Systems

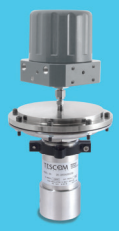
Standard Mechanical Solutions

Manifold Blocks

Compact Panels

Closed Loop Control

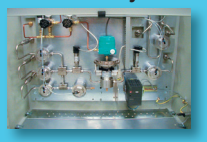
Electronic Control



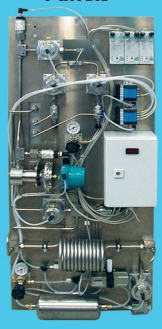
Configurable Kits

Custom Solutions

Assembly



Panels



Automation OR Test Stands?

Test Stands

LEVEL OF INTEGRATION

ENTRY → ADVANCED

Standard Mechanical Solutions	Closed Loop Control	Custom Solutions	Automation OR Test Stands?
• Easy configuration • Mechanical automation • Reduced leak paths • Reduced footprint • Custom designed to application	• Electromechanical automation • Software enabled • High accuracy • Eliminate droop • Data acquisition	• Integrate third party components • Eases preventative maintenance and troubleshooting • Subsystem for larger projects • Build to print or complete design and build	• Complete system hardware and software • Networked or stand alone • Safety interlocks and FMEA • Factory Acceptance Test and documentation packages

Services provided by TESCOM include design and engineering, software design, documentation and assembly/test. TESCOM offers Control Implementation (PC Solution, Controller Solution, Hardware Only) and Data Management (Data Storage and Test Reports).

Integrated Custom Systems

DSYSX2044X012

Burst & Proof Testing

Test bench allows accurate hydrostatic testing of car radiator hoses according to DIN EN ISO 1402 European standard. Inspects initial samples and randomly tests hoses during ongoing production.

Test stand allows hydrostatic durability and leak test up to 60,000 psig / 4000 bar.

Automated design for leak testing hoses and hose assemblies with an accuracy and repeatability not possible using the manual test this unit replaced.

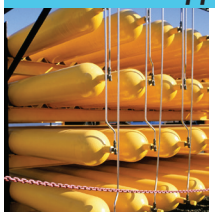
Calibration

APT-Automated Performance Tester provides a test gas sequence for automotive exhaust analyzers to check the entire gas sampling path.

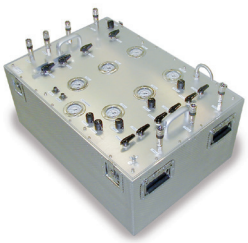
Control unit simulates pressure conditions at different altitudes.

Allows automated calibration and trimming of pressure sensors, pressure switches and gauges.

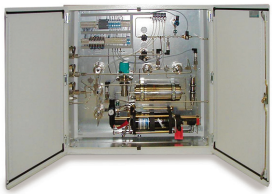
Gas & Fluid Supply



For central gas supply. A turn key system that provides Compressed Natural Gas (CNG) to a motor test stand.



Aerospace gas supply box provides a supply of cooling gas to sensors on infrared detector calibration equipment.



Precise high pressure bottle filling up to 12,000 psig / 1000 bar pressure for helium, argon and air. Meets cleanliness requirement to guarantee a bottle shelf life of 20 years.

SYSTEMS CAPABILITIES OVERVIEW

Leak & Flow Testing

Quality verification of aerospace air ducts by measurement of the leak and flow capacity.

Mobile test rig monitors medical systems in hospitals. Pressure, flow capacity and leakage demands are verified.

Detailed testing for CO_2 permeation of sealing materials, fittings and hose assemblies.

Manifolds & Blocks

Gas delivery system for testing sensitive sensors; optimized to fit inside existing equipment with tight space restrictions.

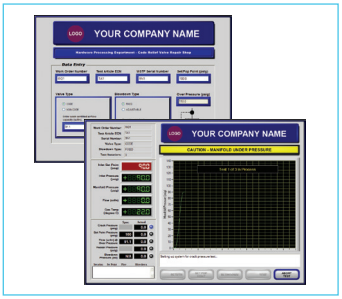
Compact, durable manifold block minimizes potential leak paths for cascade bottle filling.

Hydrogen supply system for alternative fuel testing can remotely turn on or off any of the 6 hydrogen bottles while monitoring the pressure in each.

Automation

Electromechanical automation allows for data acquisition and networking. Provides extremely accurate and stable pressure control.

System integration allows for automated workflow and remote operation. Helps improve uniformity, efficiency and quality while ensuring worker safety.



Custom user interface and software design provides easy data collection for customer validation reports while monitoring process parameters.

WARNING! Do not attempt to select, install, use or maintain this product until you have read and fully understood the *TESCOM Safety, Installation and Operation Precautions.*

Integrated Custom Systems DCART2056X012

Specifications

For other materials or modifications, please consult TESCOM.

Application

- Commercial and military aircraft ground support

Features and Benefits

Modular block manifold

- Unique block manifold design greatly minimizes potential leak paths
- Modular style manifold and cartridge components significantly reduces service time
- Most cart components (e.g., regulators, valves, tires, hoses) are interchangeable throughout the models ... fewer spare parts are needed in inventory
- Check valve design eliminates excess loss of pressure or media... no backfilling!

Quick media replenishment

- Carts are designed for easy bottle removal
- Six bottle cart features an optional 300 lb capacity ladder providing a 16 ft / 4.87 m maximum work height
- Onboard recharge system - replenish source without time-consuming bottle removal ... saves time and money!
- Control panel is easy to access and read
- Custom colors, graphics and logos are available upon request

Thick wall steel construction

- Pressure control instrumentation shielded from weather
- Full one year replacement warranty for all carts!
- Heavy-duty thick wall steel construction means a long service life
- Durable powder coat paint is standard

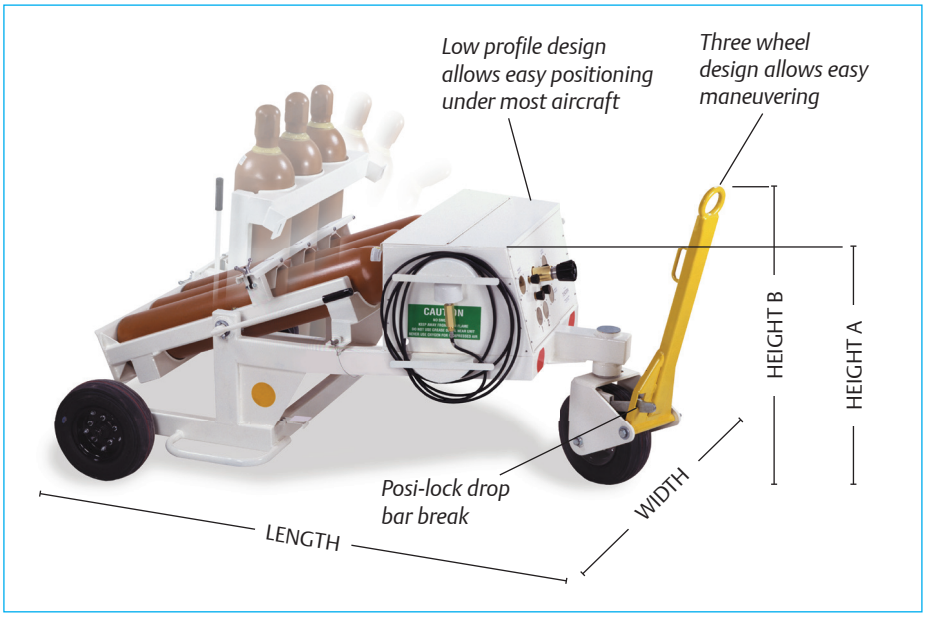
Safety is built in

- All carts designed for optimal safety...
  - manifolds are constructed of brass and cleaned for oxygen service
  - manifold soft goods are oxygen compatible
  - prominent labels warn of potential safety hazards
- Oxygen pressure system independently tested and verified by Wendell Hull & Associates - leading oxygen experts
- All pressure systems meet ASTM G93 and CGA 4.3 requirements
- All instructions and parts lists are included

3 Bottle Cart

SPECIFICATIONS	
Weight	900 lbs / 408.2 kg
Capacity	450 lbs / 204.1 kg
Width	58.5 in / 148.59 cm
Length	88.5 in / 224.79 cm
Height A	40.5 in / 102.87 cm
Height B	67.5 in / 171.45 cm

PART NO.	DESCRIPTION
UA-3B	3 bottle Oxygen Charge Cart with 3 bottle manifold
UA-3G	Galvanized 3 bottle Oxygen Chart Cart with 3 bottle manifold
UA-1T	3 bottle Nitrogen Charge Cart with 3 bottle Nitrogen manifold



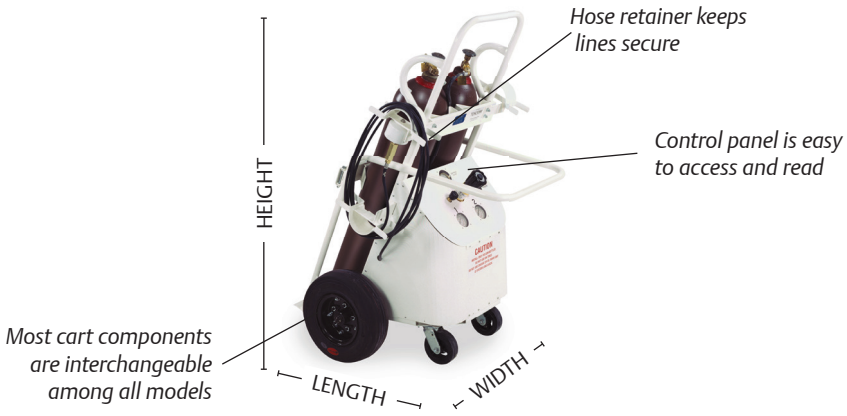
AIRCRAFT CHARGING CARTS

Aircraft Charging Carts

2 Bottle Cart

SPECIFICATIONS	
Weight	300 lbs / 136 kg
Capacity	300 lbs / 136 kg
Width	32.5 in / 82.55 cm
Length	36.0 in / 91.44 cm
Height	64.0 in / 162.56 cm

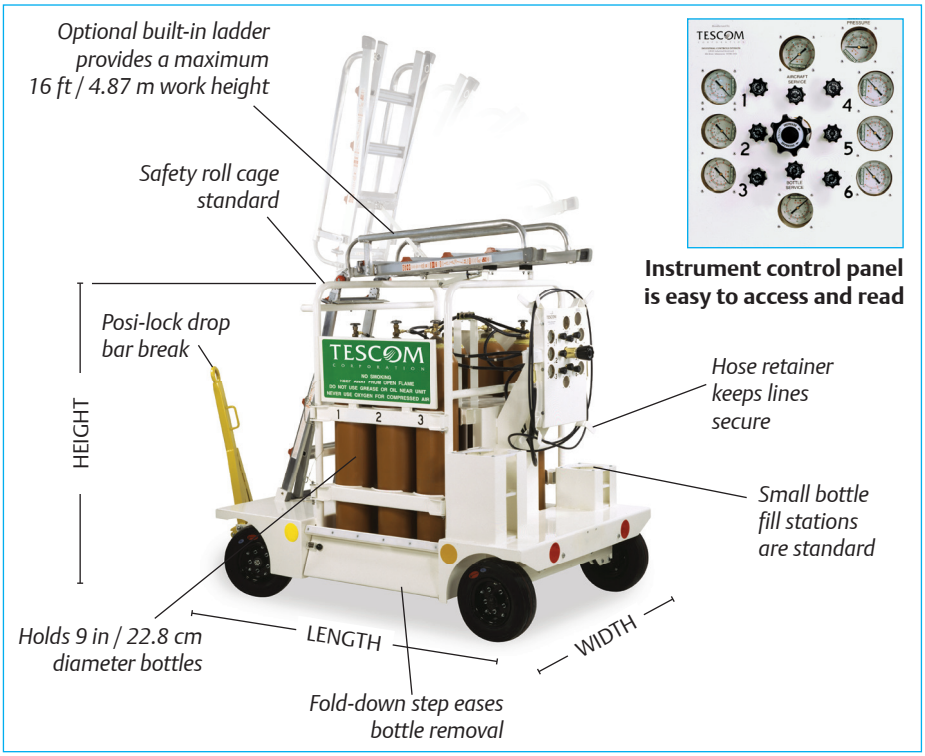
PART NO.	DESCRIPTION
UA-6T	2 bottle Oxygen Charge Cart
UA-4T	2 bottle Nitrogen Charge Cart
UA-5T	2 bottle Helium Charge Cart



6 Bottle Cart

SPECIFICATIONS	
Weight	1760 lbs / 798.3 kg
Capacity	900 lbs / 408.2 kg
Width	54.5 in / 138.43 cm
Length	95.0 in / 241.3 cm
Height	82.5 in / 209.55 cm
Optional Ladder	12.0 ft / 3.65 m

PART NO.	DESCRIPTION
UA-2BT	6 bottle Oxygen Charge Cart without ladder
UA-2T	6 bottle Oxygen Charge Cart with ladder
UA-2G	Galvanized 6 bottle Oxygen Charge Cart
UA-7T	6 bottle Nitrogen Charge Cart with or without ladder
UA-8T	6 bottle Helium Charge Cart



Accessories

Completes the hardware needs of liquid and process/specialty gas installation

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

100 Series
Full Scale Accuracy: +/- 0.25%
Ports: 1/4" NPT (external)
Connections: Mini Hirschmann
Output Signal: 4-20 mA

200 Series
Full Scale Accuracy: +/- 0.25%
Ports: 1/4" NPT (external)
Connections: Mini Hirschmann
Output Signal: 0-10 VDC

300 Series
Full Scale Accuracy: +/- 0.50%
Ports: 1/4" NPT (external)
Connections: Hirschmann
Output Signal: 4-20 mA

615 Series
Full Scale Accuracy: +/-0.125%
Ports: 1/2" NPT (external)
Connections: Hirschmann
Output Signal: 4-20 mA

625 Series (intrinsically safe)
Full Scale Accuracy: +/- 0.25%
Ports: 1/2" NPT (external)
Connections: Hirschmann
Output Signal: 4-20 mA

OTHER

Includes Mating Connector
Compensated Temperature Range: 32°F to 175°F / 0°C to 79°C
Repeatability of +/- 0.05% full scale
Response time is less than 1 mS (100, 200, 615, 625 Series)
Response time is less than 4 mS (300 Series)

TESCOM Pressure Transducers are used in heavy duty applications requiring high accuracy and durability. The 100-625 Series utilize diffused semiconductor and sputtered thin film strain gauge technology. Pressure ranges come in all the standard values from -30 inch-Hg to 15,000 psig / -1.0 to 1034 bar including absolute transducers to 300 psia / 20 bar. Higher pressure ranges available in some series models. Pressure Transducers offer full scale accuracies of 0.5%, 0.25%, and 0.125%. The 625 Series is an intrinsically safe rated pressure transmitter.

Applications

- Used with the TESCOM ER5000 Electropneumatic Controller
- Ideal for use in ER5000 applications where an external feedback signal is required

Features and Benefits

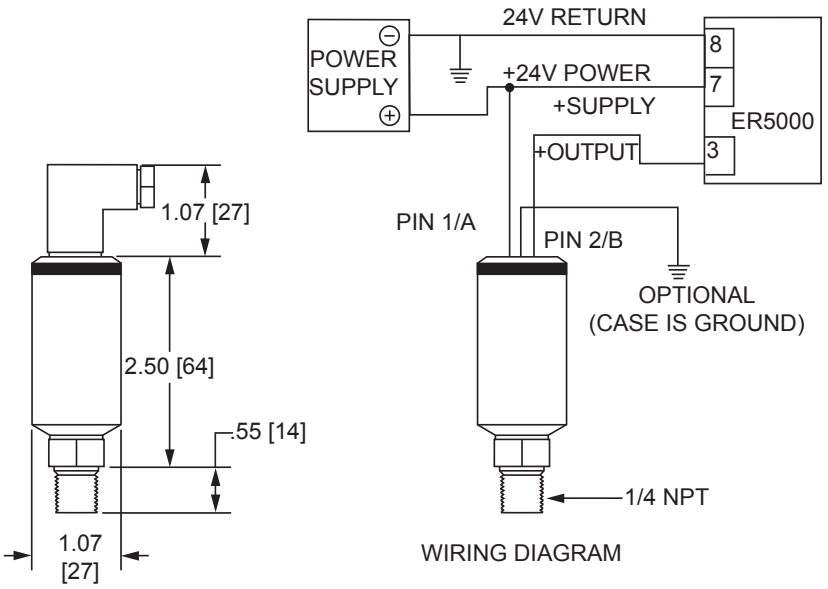
- Provides extremely stable and repeatable hydraulic and pneumatic pressure measurements
- Suitable for a wide variety of industrial, laboratory, and test applications
- Provides significant immunity to noise due to RFI (walkie-talkie), EMC (electrical noise from motors), and ESD (static electricity generated in the application)[1]

1. Indicated by The CE marking, a requirement for sale in Europe

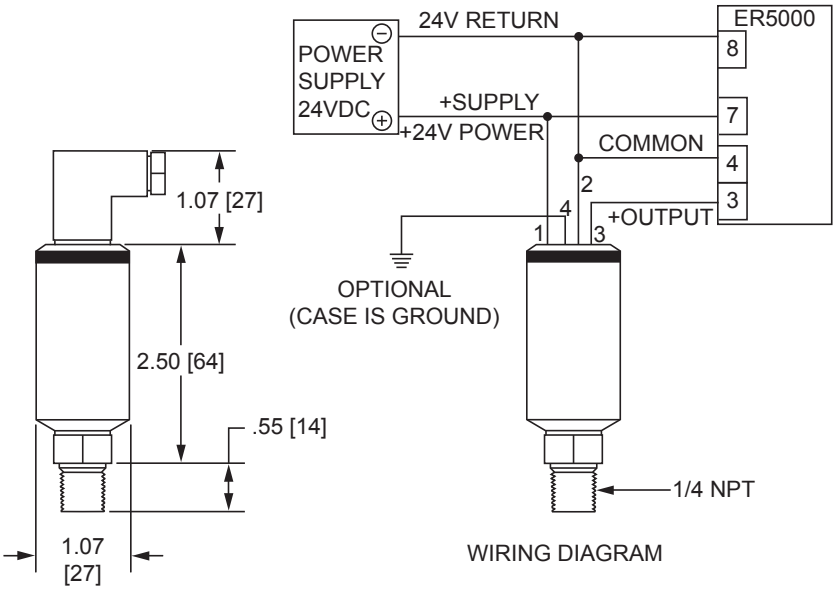
100-625 PRESSURE TRANSDUCERS

100-625 Pressure Transducers Accessories Drawings

100 SERIES



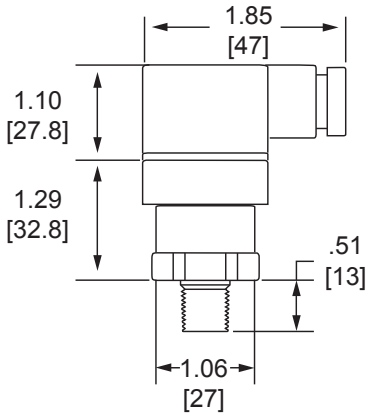
200 SERIES

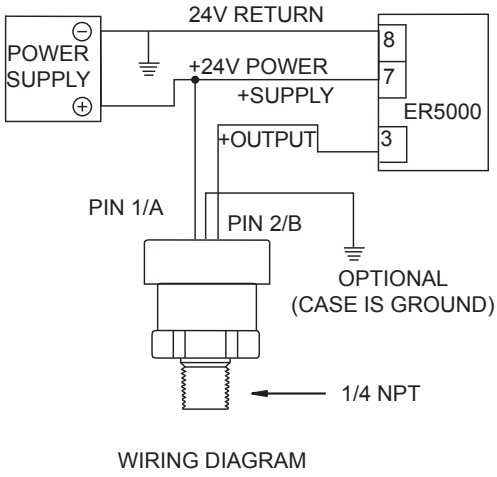


All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

100-625 Pressure Transducers Accessories Drawings

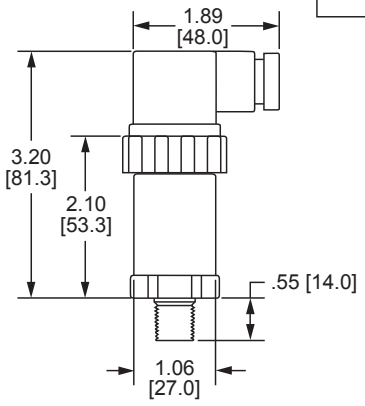
300 SERIES

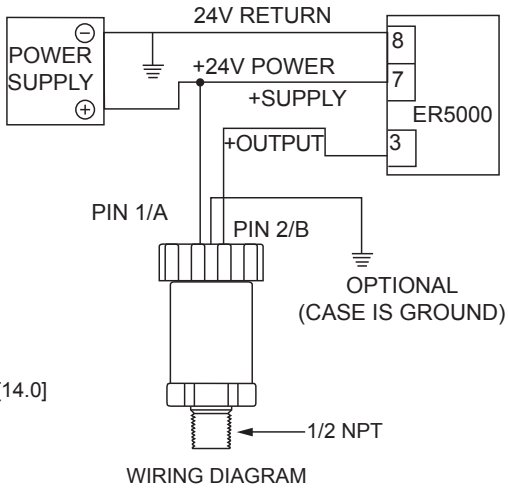




WIRING DIAGRAM

615/625 SERIES





WIRING DIAGRAM

All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

100-625 PRESSURE TRANSDUCERS

100-625 Pressure Transducers Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

100 - 300 A - 2127

BASIC SERIES	PRESSURE RANGE*	VACUUM AND PSIA OPTIONS	CONNECTION		
				SERIES	SIZE
100 **200** **300** **615** **625**	30" Vac to 15,000 psig / 1034 bar * 615 Series is available up to 60,000 psig / 4137 bar	**A –** Absolute **V –** Vacuum **Blank –** Gauge	**2127** **2527** **1128** **2128** **2188** **1128** **1188**	100 200 300 615 615 625 625	1/4" NPT 1/4" NPT 1/4" NPT 1/4" NPT 1/2" NPT 1/4" NPT 1/2" NPT

Accessories D42MW1909X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Rated Pressure
2500 psig / 172 bar

Operating Temperature
-40°F to 600°F / -40°C to 315°C

MEDIA CONTACT MATERIALS

Upper and Lower Housing
316 Stainless Steel

Diaphragm
Welded 316 Stainless Steel

Remaining Parts
316 Stainless Steel

PROCESS CONNECTIONS

1/4", 3/8", and 1/2" NPTF

Hastelloy® is a registered trademark of Haynes International, Inc.

42MW ISOLATOR SHOWN WITH SJS SERIES REGULATOR

TESCOM 42MW Series instrument isolator is typically used with a TESCOM SJS Series pressure tracking regulator - see SJS Series tracking regulator. This device isolates the regulator from corrosive and incompatible fluids.

Application

- Dual mechanical seal differential pressure control

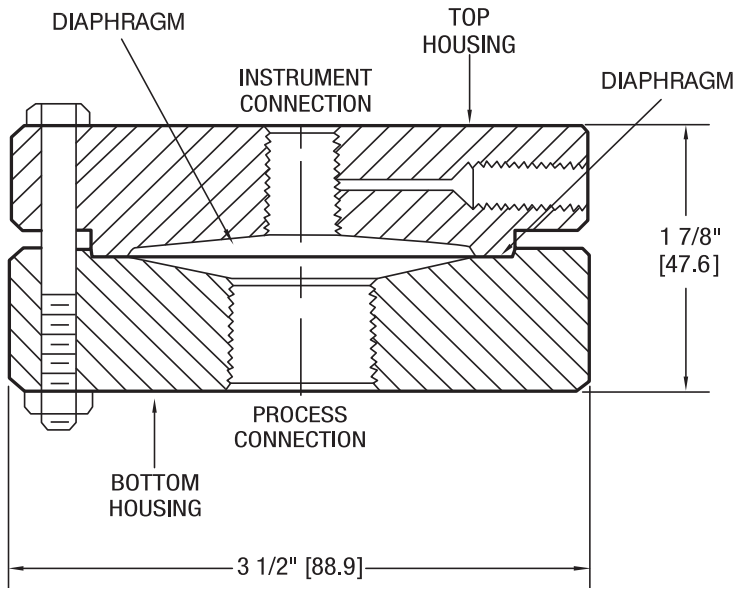
Features and Benefits

- Designed to be used with TESCOM's wide range of tracking regulators
- Assists in the control of pressure in fugitive emission and/or mechanical seals applications when combined with tracking regulators
- Complete 316 Stainless Steel construction is standard (Hastelloy® trim available)
- 5 feet / 1.5 meters Stainless Steel armored capillary line filled with Clearco HT-110 is included (additional lengths of capillary line are available)

42MW SERIES

42MW Series Drawing

42MW INSTRUMENT ISOLATOR CROSS-SECTION



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

42MW Series Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

42MW	6	2	08	00	S
BASIC SERIES	**MATERIALS**	**CONNECTION PORT TYPE**	**PROCESS CONNECTION PORT SIZE**	**CAPILLARY TUBE LENGTH**	**FILL MATERIAL**
42MW	**5** – Hastelloy® **6** – 316 Stainless Steel	**2** – NPTF	**04** – 1/4" **06** – 3/8" **08** – 1/2"	**00** – Direct Connect **05** – 5 feet / 1.5 meters **10** – 10 feet / 3.0 meters	**S** – Clearco HT-110

Accessories D98XX1846X012

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

98-1010 Mini In-Line Series

Maximum Rated Operating Pressure
6000 psig / 414 bar
Design Maximum Proof Pressure
9000 psig / 621 bar
Materials of Construction
Body: 304 Stainless Steel
Internal Filter - 10 micron: Pleated 304 Stainless Steel
Porting
See Part Number Selector
Operating Temperature
-320°F to 550°F / -196°C to 288°C

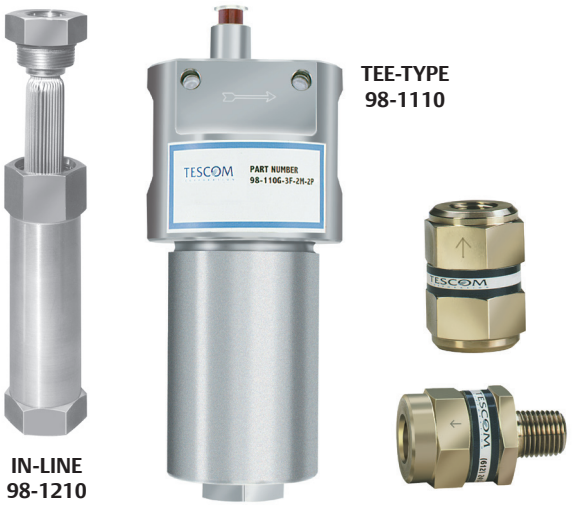
98-1110 TEE-Type Series

Maximum Rated Operating Pressure
6000-10,000 psig / 414-690 bar
Design Maximum Proof Pressure
9000-15,000 psig / 621-1034 bar
Materials of Construction
Body: 303 Stainless Steel
Internal Fllter - 10 micron: Pleated 304 Stainless Steel
O-rings: Buna, Teflon®, or Viton®
Porting
See Part Number Selector
Operating Temperature
Buna O-ring: -20°F to 165°F / -29°C to 74°C
Teflon® O-ring: -40°F to 165°F / -40°C to 74°C
Viton® O-ring: 0°F to 220°F / -18°C to 104°C

98-1210 In-Line Series

Maximum Rated Operating Pressure
3000-10,000 psig / 207-690 bar
Design Maximum Proof Pressure
4500-15,000 psig / 310-1034 bar
Materials of Construction
Body
3000 psig / 207 bar: 303 Stainless Steel
6000 and 10,000 psig / 414 and 690 bar: 17-4 Stainless Steel
Internal Filter, 10 micron: Pleated 304 Stainless Steel
O-rings: Buna, Teflon®, or Viton®
Porting
See Part Number Selector
Operating Temperature
Buna O-ring: -20°F to 165°F / -29°C to 74°C
Teflon® O-ring: -40°F to 165°F / -40°C to 74°C
Viton® O-ring: 0°F to 220°F / -18°C to 104°C
Ethylene Propylene O-ring: -40°F to 225°F / -40°C to 107°C

Teflon® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company.



IN-LINE
98-1210

TEE-TYPE
98-1110

MINI IN-LINE
98-1010

TESCOM 98 Series high pressure filters offer operating pressure ratings up to 10,000 psig / 690 bar with Mini In-line and TEE-Type designs.

Application

- Filtration prior to pressure control components, protects from particulate contamination

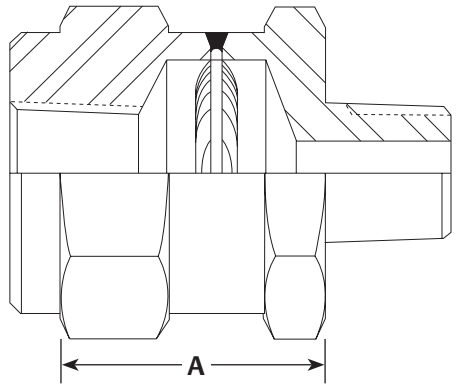
Features and Benefits

- Operating pressure ratings up to 10,000 psig / 690 bar
- In-line, Mini In-line and TEE-Type styles
- Pleated, 10 micron, 304 Stainless Steel internal filter material for maximum contaminant control
- Cleanable element reduces operating cost

98 SERIES FILTERS

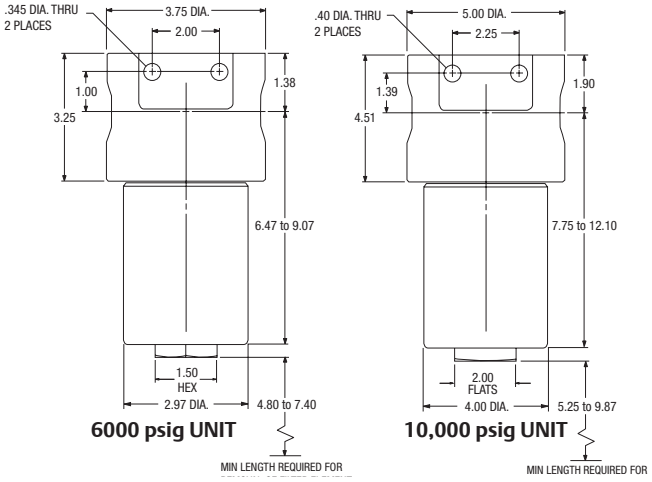
98 Series Drawings

98-1010 SERIES MINI IN-LINE



PART NUMBER	DIMENSION A
98-1010-T-2PM	1.10"
98-1010-T-2PP	1.58"
98-1010-T-2BT	1.10"
98-1010-T-3PP	1.58"
98-1010-T-3BT	1.10"
98-1010-T-4PM	1.42"
98-1010-T-4PP	1.58"
98-1010-T-4BT	1.10"

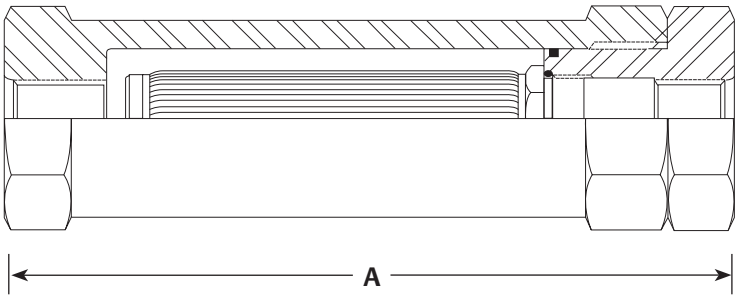
98-1110 SERIES TEE-TYPE



PART NUMBER	DIAMETER	LENGTH	ELEMENT REPLACEMENT
98-1110-T-2P	3.75"	7.85"	61667-[1]
98-1110-T-2B	3.75"	7.85"	61667-[1]
98-1110-T-2F	3.75"	7.85"	61667-[1]
98-1110-T-3P	3.75"	7.85"	61667-[1]
98-1110-T-3B	3.75"	7.85"	61667-[1]
98-1110-T-3F	3.75"	7.85"	61667-[1]
98-1110-T-4P	3.75"	7.85"	61667-[1]
98-1110-T-4B	3.75"	7.85"	61667-[1]
98-1110-T-4F	3.75"	7.85"	61667-[1]
98-1110-S-2P	5.00"	9.65"	61667-[1]
98-1110-S-2B	5.00"	9.65"	61667-[1]
98-1110-S-2F	5.00"	9.65"	61667-[1]
98-1110-S-3P	5.00"	9.65"	61667-[1]
98-1110-S-3B	5.00"	9.65"	61667-[1]
98-1110-S-3F	5.00"	9.65"	61667-[1]
98-1110-S-4P	5.00"	9.65"	61667-[1]
98-1110-S-4B	5.00"	9.65"	61667-[1]
98-1110-S-4F	5.00"	9.65"	61667-[1]

1. See O-ring material table on page 6.

98-1210 SERIES IN-LINE



All dimensions are reference & nominal

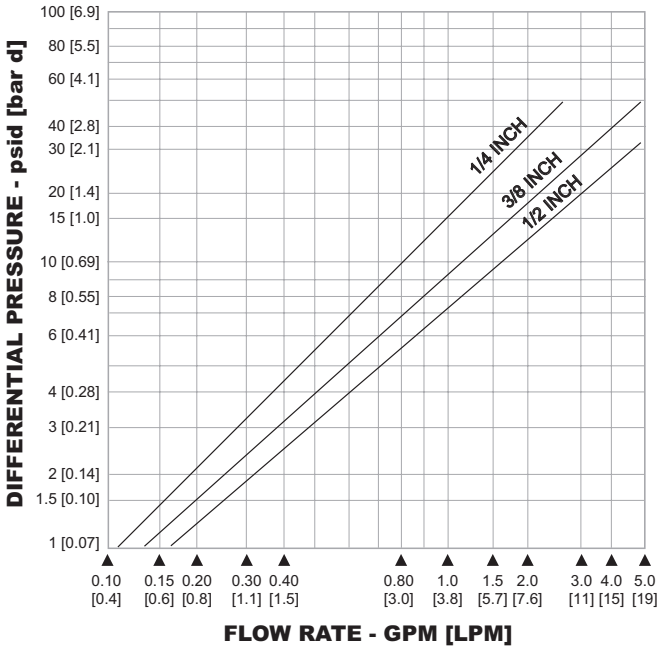
PART NUMBER	DIMENSION A	ELEMENT REPLACEMENT
98-1210-U-2PP	6.00"	61666-413
98-1210-U-2BB	4.19"	61666-411
98-1210-U-4PP	7.75"	61666-415
98-1210-U-4BB	6.00"	61666-413
98-1210-T-2PP	6.00"	61666-413
98-1210-T-2BB	4.19"	61666-411
98-1210-T-4PP	7.75"	61666-415
98-1210-T-4BB	6.00"	61666-413
98-1210-S-2BB	4.19"	61666-411
98-1210-S-2PP	6.00"	61666-411

98 Series Flow Charts

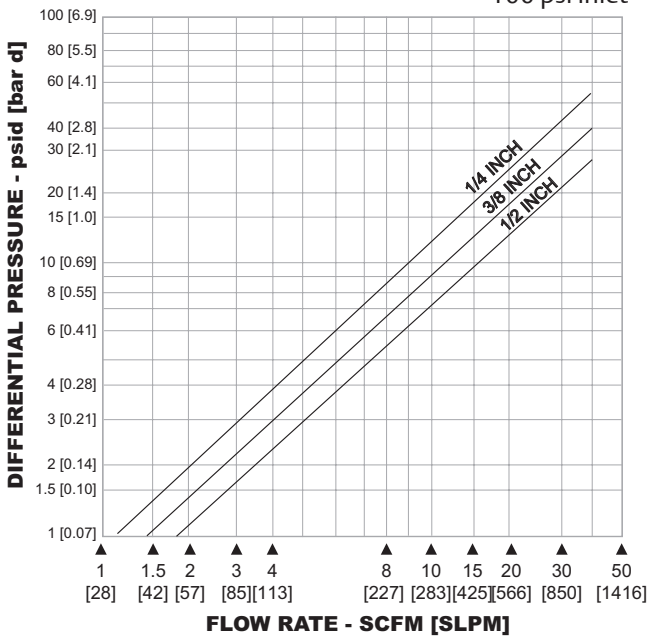
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

98-1010 SERIES MINI IN-LINE

Typical Flow Curve - Oil
98-1010 (10 Micron nominal)
100 Saubolt Second Unit

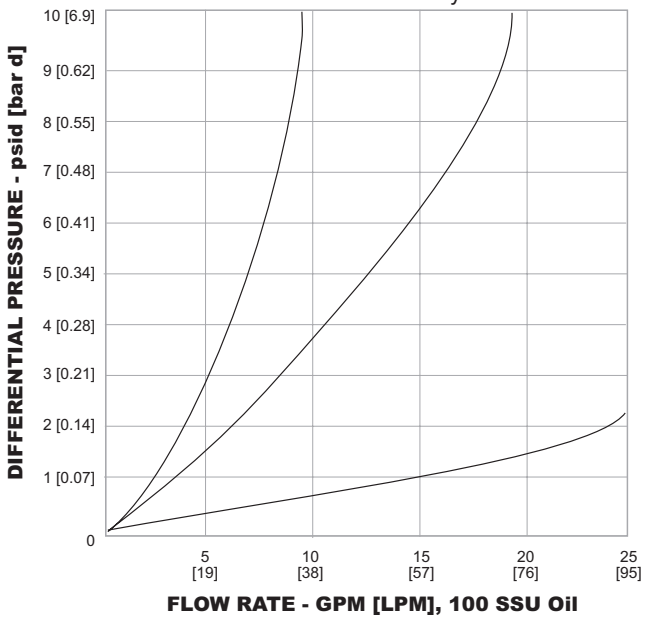


Typical Flow Curve - Air
98-1010 (10 Micron nominal)
100 psi inlet

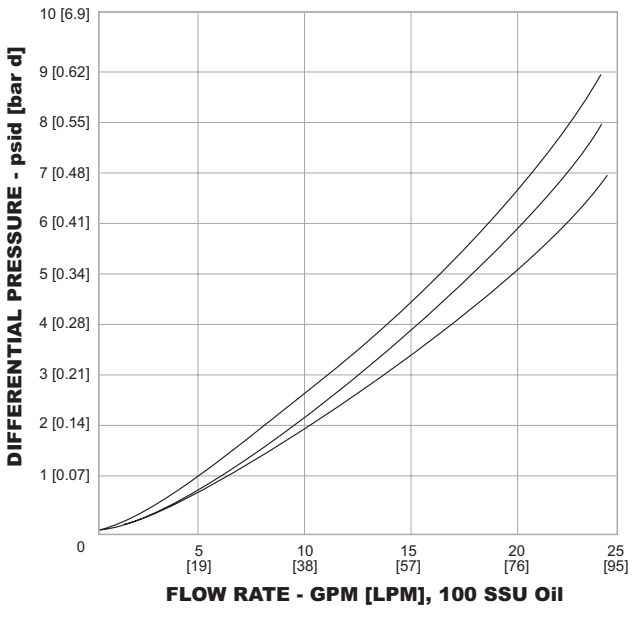


98-1110 SERIES TEE-TYPE

Filter Assembly Less Element



61667 Series Stainless Elements

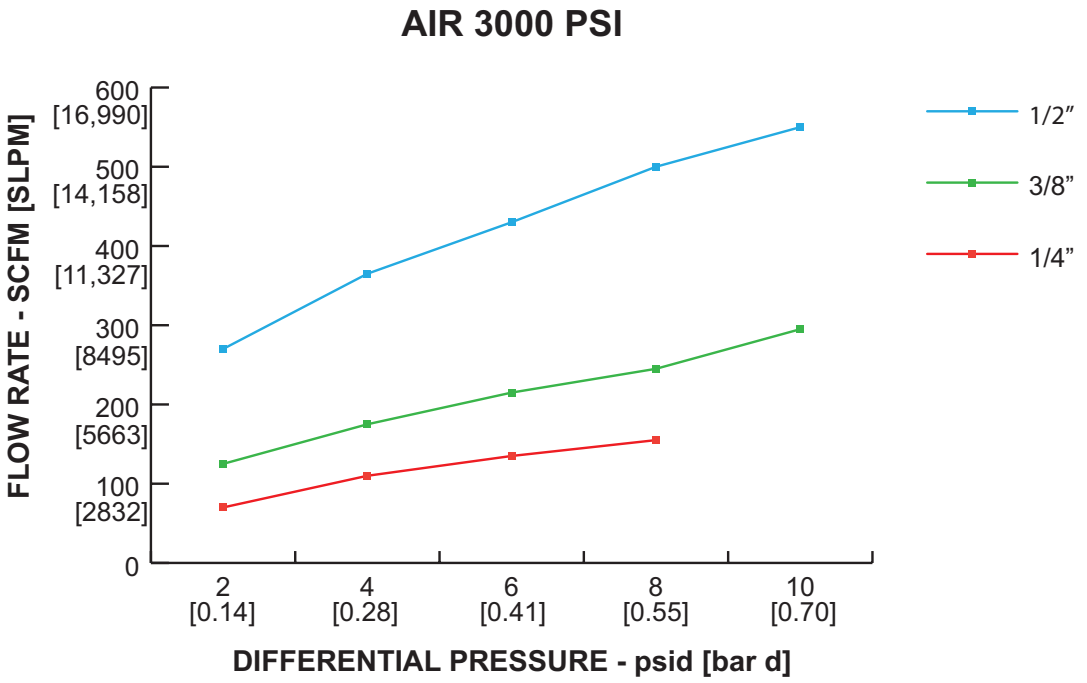


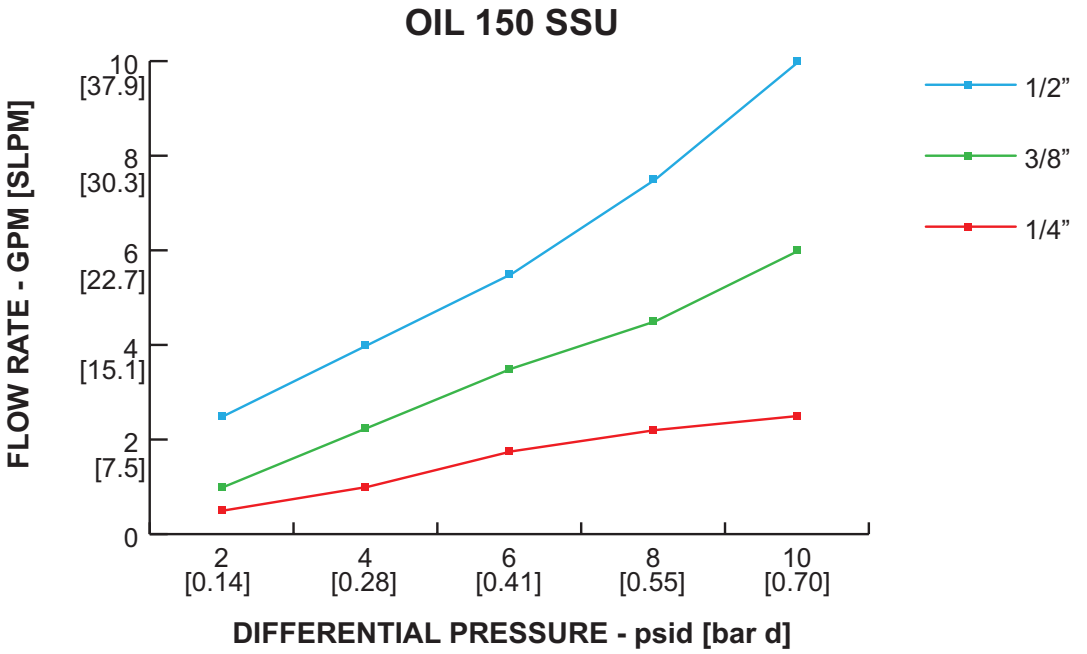
98 SERIES FILTERS

98 Series Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

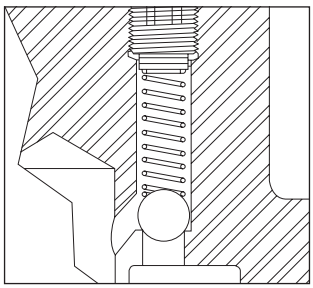
98-1210 SERIES IN-LINE



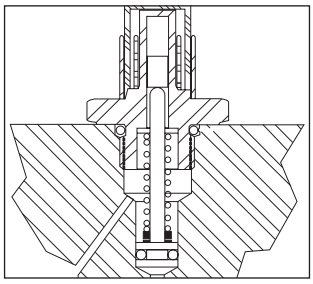


98 Series Optional Accessories

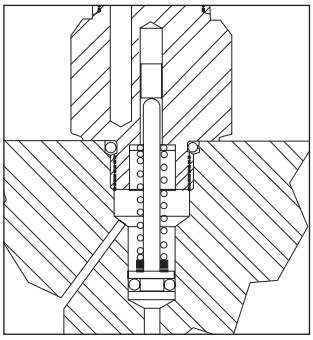
CODE R



CODE V



CODE E



CODE R - Bypass Relief Valve

At a predetermined setting, the system fluid bypasses the element assembly until the element is either cleaned or replaced. Standard setting: 50 psid / 3.4 bar d cracking pressure.

CODE V - △P Indicator

A Visual Differential Pressure Indicator enables an operator to read contaminant buildup before the element is plugged. The indicator is mounted on the head of the filter unit. It has an automatic reset. Stainless steel construction is standard. Standard setting is 40 psid / 2.8 bar d.

CODE E - Electrical △P Indicator

This electrical Visual Differential Pressure Indicator is ideal for applications where visual inspections are difficult due to location or when centralized process equipment monitoring is desired. By wiring the indicator into a central control panel, the filter can be remotely monitored quickly and easily. The Electrical △P Indicator is designed to be mounted on top of the filter unit. It is constructed of 303 Stainless Steel. An adjustable electric, normally open, reed switch △P indicator can operate signal devices. The contacts close when the △P increases and automatically resets when △P decreases. There is a 3/4" male pipe connection for the electrical hook-up. Voltage requirements: 10W-DC resistive 110 VA-AC resistive. The switch current is 0.5 amps. Relay required for heavier loads.

98 SERIES FILTERS

98 Series Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

98-1010 SERIES MINI IN-LINE

98-1010 - T - 2 PP

BASIC SERIES	PRESSURE RATING	INLET PORT SIZE	INLET AND OUTLET PORT TYPE
98-1010	**T –** 6000 psig / 414 bar	**2 –** 1/4" **3 –** 3/8" **4 –** 1/2"	**PP** – Female NPTF **PM –** Female/Male NPTF (1/4" and 1/2" only) **BT** – MS33649 Female/MS33656 Male

98-1110 SERIES TEE-TYPE

98-1110 - T - 2 B - L VR

BASIC SERIES	PRESSURE RATING	INLET PORT SIZE	INLET AND OUTLET PORT TYPE	O-RING MATERIAL[1]	HOUSING OPTIONS
98-1110	**T –** 6000 psig 414 bar **S –** 10,000 psig 690 bar	**2 –** 1/4" **3 –** 3/8" **4 –** 1/2"	**P –** Female NPTF **B –** MS33649 **F –** SAE	STANDARD: **L –** Nitrile, Buna-N OPTIONAL: **N –** PTFE **M –** FKM (Viton®-A)	**E** – Electrical **V** – Visual **R** – Bypass Valve **VR –** Visual ΔP Indicator and Bypass Relief Valve **ER –** Electrical/Bypass

1. See SPECIFICATIONS for operating temperatures for O-rings.

98-1210 SERIES IN-LINE

98-1210 - U - 2 BB - L

BASIC SERIES	PRESSURE RATING	INLET PORT SIZE	INLET AND OUTLET PORT TYPE	O-RING MATERIAL[1]
98-1210	**U –** 3000 psig 207 bar **T –** 6000 psig 414 bar **S –** 10,000 psig 690 bar	**2 –** 1/4" **3 –** 3/8" **4 –** 1/2" (3000 and 6000 psig / 207 and 414 bar only)	**PP –** Female NPTF **BB –** Male MS33649	STANDARD: **L –** Nitrile, Buna-N OPTIONAL: **N –** PTFE **M –** FKM (Viton®-A) **Z –** Ethylene Propylene

1. See SPECIFICATIONS for operating temperatures for O-rings.

Specifications

For other materials or modifications, please consult TESCOM.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Operating Pressures
Up to 10,150 psig / 700 bar

Operating Temperature
-40°F to 392°F / -40°C to 200°C

Flow Capacity
See Flow Rates Table

MEDIA CONTACT MATERIALS

Housing
316L Stainless Steel or Brass

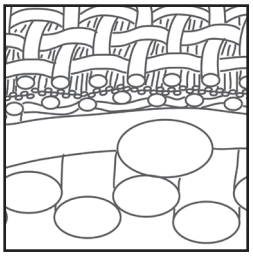
Filter Element
316L Stainless Steel

Gaskets
FKM (Viton®-A)

Viton® is registered trademark of E.I. du Pont de Nemours and Company.

Stainless Steel Filter Elements

Stainless Steel filter elements are made up of several layers of 316 mesh that are sintered together to form an integrated porous element. The middle mesh is of very fine gauge and determines the filtration rates. This layer is then overlaid with inner and outer layers of coarser mesh to give support and protection.



These filter elements are a typical surface filter and the contaminants are retained on the surface of the filtration layer, which makes cleaning and back flushing very easy. These filter elements should be ultrasonically cleaned for best results.

TESCOM TEE Type Filters offer a high quality filter housing and internal elements that provide the effective and efficient removal of contaminants from both gas and liquid applications.

Application

- TEE Type Filters are particularly suitable for the performance of the following TESCOM pressure regulator series: 26-1700, 44-1100, 44-1300, 44-2200, 44-4600, and DH

Features and Benefits

- Protects pressure system components from contaminants
- Operating pressure ratings up to 10,150 psig / 700 bar
- Pleated, 20-40 micron, 316L Stainless Steel internal filter material for maximum contaminant control
- Cleanable element reduces operating cost
- Housing available in 316 Stainless Steel and Brass

TEE TYPE FILTERS
Europe and Middle East only

TEE Type Filters Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

D51170 - S 690 - 6 20

BASIC SERIES	MATERIAL	MAXIMUM PRESSURE	NPT CONNECTION SIZE	FILTER RATE
D51170	**S** – Stainless Steel **B** – Brass	**690** – 10,000 psig / 690 bar (1)* **415** – 6000 psig / 415 bar (1)* **310** – 4500 psig / 310 bar (2)* **300** – 4350 psig / 300 bar (1)* **260** – 3770 psig / 260 bar (2)* **210** – 3500 psig / 210 bar (3)* **40** – 580 psig / 40 bar (4)*	**4** – 1/4" **6** – 3/8" **8** – 1/2" **12** – 3/4" **16** – 1"	**20** – 20 µm **40** – 40 µm

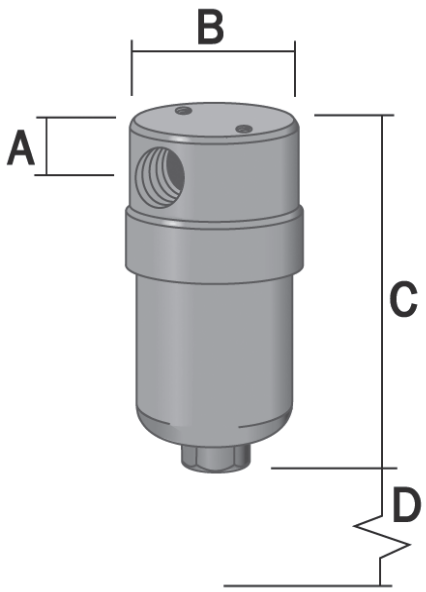
* *(1) only 1/4" connection size*
(2) only 1/2" or 3/4" connection size
(3) not for 1/4" connection size
(4) not for 1/4" or 3/8" connection size

TEE Type Filters Air Flow Rates – In Nm³/h at Stated Line Pressure and 0.1 bar Pressure Drop

Flow rates will depend on which filter element grade is installed in the filter housing. Use the chart below to read the flow rate at the desired pressure against the used filter elements you will find on next pages.

FILTER ELEMENT	FILTER RATE [µm]	AIR PRESSURE / bar											
		0.1	1	2	4	7	10	16	34	100	200	340	700
12.32	20	3.9	7.0	11	18	28	39	60	-	350	700	1200	2050
12.32	40	5.3	9.5	14	24	38	52	81	-	480	960	1620	2730
12.57	20	5.1	9.3	14	23	37	51	79	-	470	940	1590	2390
12.57	40	6.1	11	17	28	45	61	95	-	560	1120	1900	3250
25.64	20	8.5	16	23	39	62	85	130	-	780	1560	2320	4700
25.64	40	10	18	27	44	71	97	150	-	890	1780	2466	5350
38.152	20	27	50	75	122	197	275	425	850	-	-	-	-
38.152	40	30	52	80	132	210	287	450	900	-	-	-	-

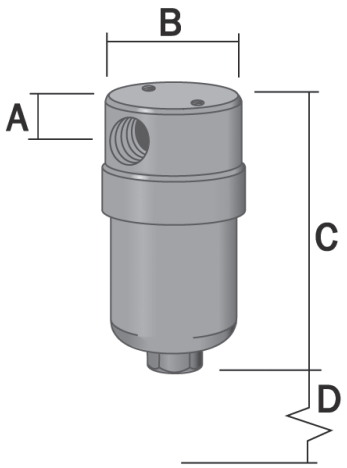
TEE Type Filters Drawing



TESCOM PART NUMBER	FILTER ELEMENT / RATE	MATERIAL	A	B	C	D
			Inch / mm			
D51170-S690-420	12.57 / 20	316L	0.87 / 22	2.56 / 65	5.32 / 135	1.58 / 40
D51170-S690-440	12.57 / 40	316L	0.87 / 22	2.56 / 65	5.32 / 135	1.58 / 40
D51170-B415-420	12.57 / 20	Brass	0.87 / 22	2.56 / 65	5.32 / 135	1.58 / 40
D51170-B415-440	12.57 / 40	Brass	0.87 / 22	2.56 / 65	5.32 / 135	1.58 / 40
D51170-B310-820	25.64 / 20	316L	0.79 / 20	3.54 / 90	7.87 / 200	3.94 / 100
D51170-B310-840	25.64 / 40	316L	0.79 / 20	3.54 / 90	7.87 / 200	3.94 / 100
D51170-B310-1220	25.64 / 20	316L	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100
D51170-B310-1240	25.64 / 40	316L	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100
D51170-B300-420	12.32 / 20	Brass	0.47 / 12	1.58 / 40	315 / 80	1.77 / 45
D51170-B300-440	12.32 / 40	Brass	0.47 / 12	1.58 / 40	315 / 80	1.77 / 45
D51170-S300-420	12.32 / 20	316L	0.39 / 10	1.42 / 36	2.91 / 74	1.58 / 40
D51170-S300-440	12.32 / 40	316L	0.39 / 10	1.42 / 36	2.91 / 74	1.58 / 40
D51170-B260-820	25.64 / 20	Brass	0.79 / 20	3.54 / 90	7.87 / 200	3.94 / 100
D51170-B260-840	25.64 / 40	Brass	0.79 / 20	3.54 / 90	7.87 / 200	3.94 / 100
D51170-B260-1220	25.64 / 20	Brass	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100
D51170-B260-1240	25.64 / 40	Brass	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100
D51170-S260-820	25.64 / 20	316L	0.79 / 20	3.54 / 90	7.87 / 200	3.94 / 100
D51170-S260-840	25.64 / 40	316L	0.79 / 20	3.54 / 90	7.87 /200	3.94 / 100
D51170-S260-1220	25.64 / 20	316L	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100
D51170-S260-1240	25.64 / 40	316L	0.98 / 25	3.94 / 100	8.27 / 210	3.94 / 100

TEE TYPE FILTERS
Europe and Middle East only

TEE Type Filters Drawing



TESCOM PART NUMBER	FILTER ELEMENT / RATE	MATERIAL	A	B	C	D
			Inch / mm			
D51170-B210-620	25.64 / 20	Brass	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-B210-640	25.64 / 40	Brass	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-B210-820	25.64 / 20	Brass	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-B210-840	25.64 / 40	Brass	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-B210-1220	25.64 / 20	Brass	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-B210-1240	25.64 / 40	Brass	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-B210-1620	25.64 / 20	Brass	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-B210-1640	25.64 / 40	Brass	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-S210-620	25.64 / 20	316L	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-S210-640	25.64 / 40	316L	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-S210-820	25.64 / 20	316L	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-S210-840	25.64 / 40	316L	0.59 / 15	2.52 / 64	5.08 / 129	2.76 / 70
D51170-S210-1220	25.64 / 20	316L	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-S210-1240	25.64 /40	316L	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-S210-1620	25.64 / 20	316L	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-S210-1640	25.64 / 40	316L	0.98 / 25	3.94 / 100	5.91 / 150	2.76 / 70
D51170-B40-820	31.152 / 20	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-B40-840	31.152 / 40	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-B40-1220	31.152 / 20	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-B40-1240	31.152 / 40	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-B40-1620	31.152 / 20	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-B40-1640	31.152 / 40	Brass	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-820	31.152 / 20	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-840	31.152 / 40	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-1220	31.152 / 20	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-1240	31.152 / 40	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-1620	31.152 / 20	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210
D51170-S40-1640	31.152 / 40	316L	1.18 / 30	3.94 / 100	10.40 / 264	8.27 / 210

Accessories

DCATINFO1281XEN2

FITTINGS BRASS	FOR TUBE Ø	THREAD	PART NUMBER
Fitting, Ø3-G 1/4 RS, Brass	3	G 1/4 RS	D41325
Fitting, Ø3-G 1/4 i, Brass	3	G 1/4 i	D41890
Fitting, Ø3-G 1/8 RP, Brass	3	G 1/8 RP	D20594
Elbow fitting, Ø3-G 1/4, Brass	3	G 1/4	D42878
Fitting, Ø6-G 1/4 RP, Brass	6	G 1/4 RP	D40619
Fitting, Ø6-G 1/8 RP, Brass	6	G 1/8 RP	D40076
Fitting, Ø6-G 3/8, Brass	6	G 3/8	D42641
Fitting, Ø6-G 3/8 RP, Brass	6	G 3/8 RP	D40015
Fitting, Ø6-M12 x 1, Brass	6	M12 x 1	D43407
Fitting, Ø6-M12 x 1, Chrome-plated Brass	6	M12 x 1	D42979
Elbow fitting, Ø6-G 1/4, Brass	6	G 1/4	D43031
Elbow fitting, Ø6-1/4 RT, Brass	6	1/4 RT	D43029
Fitting, Ø8-G 1/2 RP, Brass	8	G 1/2 RP	D41604
Fitting, Ø8-G 1/4 RS, Brass	8	G 1/4 RS	D42669
Fitting, Ø8-G 1/8 RP, Brass	8	G 1/8 RP	D40867
Fitting, Ø8-G 3/8 RP, Brass	8	G 3/8 RP	D40161
Fitting, Ø8-G 3/8 RS, Brass	8	G 3/8 RS	D42668
T-fitting, 3 x Ø8, Brass	8	----	V30033
Elbow fitting, Ø8-1/4 NPT, Brass	8	1/4 NPT	D42050
Elbow fitting, Ø8-1/4 RT, Brass	8	1/4 RT	D41715
Elbow fitting, MARLI, Ø8-G 1/4, Brass	8	G 1/4	D42721
Elbow fitting, Ø8-Ø8, Brass	8	----	D42052
Fitting, Ø10-G 1/2 RP, Brass	10	G 1/2 RP	D40080
Fitting, Ø10-G 1/4 RP, Brass	10	G 1/4 RP	D41712
Fitting, Ø10-G 1/4 RS, Brass	10	G 1/4 RS	D41756
Fitting, Ø10-G 3/8 RP, Brass	10	G 3/8 RP	D40078
Fitting, Ø10-G 3/8 RS, Brass	10	G 3/8 RS	D42708
Elbow fitting, Ø10-1/4 RT, Brass	10	1/4 RT	D41765
Elbow fitting, Ø10-G 1/4, Brass	10	G 1/4	D43458
Elbow fitting, Ø10-G 3/8, Brass	10	G 3/8	D44460
Fitting, Ø12-G 1/2 RP, Brass	12	G 1/2 RP	D40081
Fitting, Ø12-G 3/8 RS, Brass	12	G 3/8 RS	D42649
Fitting, Ø12-G 3/8 RP, Brass	12	G 3/8 RP	D40865
Elbow fitting, Ø12-1/4 NPT, Brass	12	1/4 NPT	D43646
Fitting, Ø1/8-G 1/8 RP, Brass	1/8	G 1/8 RP	D41309
Fitting, Ø1/8-G 1/4 RS, Brass	1/8	G 1/4 RS	D41329
Fitting, Ø1/8-1/4 NPT, Brass	1/8	1/4 NPT	D44986-2-1-4-1
Fitting, Ø1/4-G 1/8 RP, Brass	1/4	G 1/8 RP	D41606
Fitting, Ø1/4-G 1/4 RS, Brass	1/4	G 1/4 RS	D41328

NOZZLES BRASS	PART NUMBER	FITS TO
6 mm	D41681	D40619 / D40076 and others
8 mm	D50550	D42669 / D40867 and others

FITTINGS
Europe and Middle East only

FITTING STAINLESS STEEL	FOR TUBE Ø	THREAD	PART NUMBER
Fitting, Ø3-G 1/4 i, Stainless Steel	3	G 1/4 i	D42882
Fitting, Ø3-G 1/4 RP, Stainless Steel	3	G 1/4 RP	D40578
Fitting, Ø3-G 1/8 RP, Stainless Steel	3	G 1/8 RP	D41928
Fitting, Ø6-G 1/4 RP, Stainless Steel	6	G 1/4 RP	D40579
Fitting, Ø6-G 1/4 RP, with sealing ring, Stainless Steel	6	G 1/4 RP	D40589
Fitting, Ø6-G 1/4 RS, Stainless Steel	6	G 1/4 RS	D42644
Fitting, Ø6-G 1/8 RP, Stainless Steel	6	G 1/8 RP	D41930
Fitting, Ø6-G 3/8 RS, Stainless Steel	6	G 3/8 RS	D42643
Fitting, Ø6-M12 x 1, Stainless Steel	6	M12 x 1	D42984
Elbow fitting, Ø6-G 1/4 RT, Stainless Steel	6	1/4 RT	D43531
Elbow fitting, Ø6-G 1/4, Stainless Steel	6	G 1/4	D43559
Elbow fitting, Ø6-1/4 NPT, Stainless Steel	6	1/4 NPT	D43778
Fitting, Ø8-G 1/4 RS, Stainless Steel	8	G 1/4 RS	D43757
Fitting, Ø8-G 1/4 RP, Stainless Steel	8	G 1/4 RP	D42754
Fitting, Ø8-G 3/8 RP, Stainless Steel	8	G 3/8 RP	D42657
T-fitting, 3 x Ø8, Stainless Steel	8	- - - -	D43756
Elbow fitting, Ø8-1/4 RT, Stainless Steel	8	1/4 RT	D42666
Elbow fitting, Ø8-G 1/4, Stainless Steel	8	G 1/4	D42720
Fitting, Ø10-G 1/4 RS, Stainless Steel	10	G 1/4 RS	D41933
Fitting, Ø10-G 1/4, Stainless Steel	10	G 1/4	D42824
Fitting, Ø10-G 3/8 RP, Stainless Steel	10	G 3/8 RP	D42039
Fitting, Ø10-G 3/8 RT, Stainless Steel	10	G 3/8 RT	D44138
Fitting, Ø10-M12 X 1, Stainless Steel	10	M12 x 1	D42453
Fitting, Ø12-G 3/8, Stainless Steel	12	G 3/8	D44269
Inlet connection Ø12-M16 X 1.5, Stainless Steel	12	M16 x 1.5	D42583
Fitting, Ø1/8-G 1/4 RS, Stainless Steel	1/8	G 1/4 RS	D41362
Fitting, Ø1/8-G 1/8 RP, Stainless Steel	1/8	G 1/8 RP	D43390
Fitting, Ø1/4-G 1/4 RS, Stainless Steel	1/4	G 1/4 RS	D41360
Fitting, Ø1/4-1/4 NPT, Stainless Steel	1/4	1/4 NPT	D44143
Fitting, Ø1/2-1/2 NPT, Stainless Steel	1/2	1/2 NPT	D44986-8-1-8-6

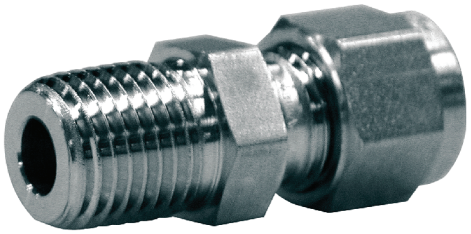
RP - Cutting ring, male-sealing
RS - Gasket at sealing surface

NOZZLES STAINLESS STEEL	PART NUMBER	FITS TO
6 mm	D41768	D41930 / D42644 and others
8 mm	D51315	D43757 / D42754 and others

Compression Fittings, NPT Male (tube metric)

TUBE Ø	THREAD SIZE	PART NUMBER
2 mm	1/8" NPT	D44987-2-1-2-X
3 mm	1/8" NPT	D44987-3-1-2-X
3 mm	1/4" NPT	D44987-3-1-4-X
4 mm	1/8" NPT	D44987-4-1-2-X
4 mm	1/4" NPT	D44987-4-1-4-X
6 mm	1/8" NPT	D44987-6-1-2-X
6 mm	1/4" NPT	D44987-6-1-4-X
6 mm	3/8" NPT	D44987-6-1-6-X
6 mm	1/2" NPT	D44987-6-1-8-X
8 mm	1/8" NPT	D44987-8-1-2-X
8 mm	1/4" NPT	D44987-8-1-4-X
8 mm	3/8" NPT	D44987-8-1-6-X
8 mm	1/2" NPT	D44987-8-1-8-X
10 mm	1/8" NPT	D44987-10-1-2-X
10 mm	1/4" NPT	D44987-10-1-4-X
10 mm	3/8" NPT	D44987-10-1-6-X
10 mm	1/2" NPT	D44987-10-1-8-X
10 mm	3/4" NPT	D44987-10-1-12-X
12 mm	1/8" NPT	D44987-12-1-2-X
12 mm	1/4" NPT	D44987-12-1-4-X
12 mm	3/8" NPT	D44987-12-1-6-X
12 mm	1/2" NPT	D44987-12-1-8-X
12 mm	3/4" NPT	D44987-12-1-12-X

X: Material Code
1 = Brass
6 = Stainless Steel



TUBE Ø	THREAD SIZE	PART NUMBER
14 mm	1/8" NPT	D44987-14-1-4-X
14 mm	1/4" NPT	D44987-14-1-6-X
14 mm	1/2" NPT	D44987-14-1-8-X
15 mm	1/2" NPT	D44987-15-1-8-X
16 mm	3/8" NPT	D44987-16-1-6-X
16 mm	1/2" NPT	D44987-16-1-8-X
16 mm	3/4" NPT	D44987-16-1-12-X
18 mm	1/2" NPT	D44987-18-1-8-X
18 mm	3/4" NPT	D44987-18-1-12-X
20 mm	1/2" NPT	D44987-20-1-8-X
20 mm	3/4" NPT	D44987-20-1-12-X
22 mm	3/4" NPT	D44987-22-1-12-X
22 mm	1" NPT	D44987-22-1-16-X
25 mm	1/2" NPT	D44987-25-1-8-X
25 mm	3/4" NPT	D44987-25-1-12-X
25 mm	1" NPT	D44987-25-1-16-X

COMPRESSION FITTINGS NTP MALE
Europe and Middle East only

Compression Fittings, NPT Male (tube inch)

1/16"	1/8" NPT	D44986-1-1-2-X
1/16"	1/4" NPT	D44986-1-1-4-X

1/8"	1/8" NPT	D44986-2-1-2-X
1/8"	1/4" NPT	D44986-2-1-4-X
1/8"	3/8" NPT	D44986-2-1-6-X
1/8"	1/2" NPT	D44986-2-1-8-X

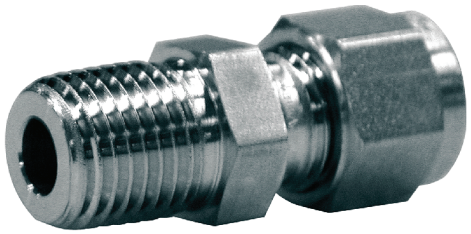
3/16"	1/8" NPT	D44986-3-1-2-X
3/16"	1/4" NPT	D44986-3-1-4-X

1/4"	1/8" NPT	D44986-4-1-2-X
1/4"	1/4" NPT	D44986-4-1-4-X
1/4"	3/8" NPT	D44986-4-1-6-X
1/4"	1/2" NPT	D44986-4-1-8-X
1/4"	3/4" NPT	D44986-4-1-12-X

5/16"	1/8" NPT	D44986-5-1-2-X
5/16"	1/4" NPT	D44986-5-1-4-X
5/16"	3/8" NPT	D44986-5-1-6-X

3/8"	1/8" NPT	D44986-6-1-2-X
3/8"	1/4" NPT	D44986-6-1-4-X
3/8"	3/8" NPT	D44986-6-1-6-X
3/8"	1/2" NPT	D44986-6-1-8-X
3/8"	3/4" NPT	D44986-6-1-12-X

X: Material Code
1 = Brass
6 = Stainless Steel



TUBE Ø	THREAD SIZE	PART NUMBER
1/2"	1/8" NPT	D44986-8-1-2-X
1/2"	1/4" NPT	D44986-8-1-4-X
1/2"	3/8" NPT	D44986-8-1-6-X
1/2"	1/2" NPT	D44986-8-1-8-X
1/2"	3/4" NPT	D44986-8-1-12-X
1/2"	1" NPT	D44986-8-1-16-X

5/8"	3/8" NPT	D44986-10-1-6-X
5/8"	1/2" NPT	D44986-10-1-8-X
5/8"	3/4" NPT	D44986-10-1-12-X

3/4"	1/2" NPT	D44986-12-1-8-X
3/4"	3/4" NPT	D44986-12-1-12-X
3/4"	1" NPT	D44986-12-1-16-X

7/8"	3/4" NPT	D44986-14-1-12-X
7/8"	1" NPT	D44986-14-1-16-X

1"	1/2" NPT	D44986-16-1-8-X
1"	3/4" NPT	D44986-16-1-12-X
1"	1" NPT	D44986-16-1-16-X

1-1/4"	1" NPT	D44986-20-1-16-X

MOUNTING BRACKETS, MOUNTING SCREWS, PLUGS FOR GUAGE PORTS

MOUNTING BRACKETS

DESCRIPTION	PART NUMBER
Mounting bracket for 44-1100 and 44-1300 Series, 2 screws 1/4-20 UNF, 25.4 mm length required (P/N 10032)	1129
Wall mounting bracket for 44-1100 Series	61386
Wall mounting bracket for two-stage assemblies, panel mounting nuts (P/N 8686-1) required	63996
Wall mounting bracket for single-stage assemblies, panel mounting nuts (P/N 8686-1) required	7743
Nut for panel mounting used on regulators with a threaded bonnet (e.g. 44-1700, 44-1800, 44-2200, 44-2300, 44-2600, 44-3200, 44-3400, 44-4600 Series)	8686-1

MOUNTING BRACKET

MOUNTING SCREWS

DESCRIPTION	PART NUMBER
1/4-20 UNF, length 25.4 mm, for mounting bracket 1129	5406-21328
10-32 UNF, length 7.9 mm, for rear mounting of US made products (e.g. 44-2200 Series)	D41584
1/4-20 UNC, length 9.5 mm, for rear mounting of US made products (e.g. 44-3200 Series)	D43634
M5, length 8 mm, for rear mounting of Europe made products (e.g. 44-2200 Series)	N10011
M6, length 12 mm, for rear mounting of Europe made products (e.g. 44-3200 Series)	1263196

WALL MOUNTING BRACKET

PLUGS FOR GAUGE PORTS

DESCRIPTION	PART NUMBER
NPT plug for gauge ports, Stainless Steel 1/8" port size	9668-22
NPT plug for gauge ports, Stainless Steel 1/4" port size	9668-36

NUT FOR PANEL MOUNTING

MOUNTING BRACKETS, MOUNTING SCREWS, PLUGS FOR GUAGE PORTS

Accessories DGAUGE1096XEN2

Standard ø 2" and ø 2-1/2" Pressure Gauges

Specifications

All standard gauges are stock items, please consult TESCOM for special gauge features.

Applications

- Designed for general, laboratory and semiconductor applications involving the measurement of compressed gases compatible with the materials of construction
- For gaseous media
- Gas filling pressure indicator on cylinder regulators
- Machine building and general plant construction

OPERATING PARAMETERS

Bourdon Tube
Phosphor Bronze, Beryllium copper or Stainless Steel, depending on gauge style and pressure

Accuracy

Brass
ASME B40.1 Grade B, middle half of scale - 2% of scale range, remainder: 3%

Stainless Steel
Grade A, middle half of scale - 1% of scale range, remainder 2%

Scale
Single-scale psi or multi-scale psi/bar; psi/kPa; psi / kg/cm²; psi / kg/cm² / inches Hg

Pressure Ranges
Vacuum up to 10,000 psig / 690 bar

Movement

Brass
Quality brass construction with gears precision generated and bearing surfaces finely finished to ensure smooth motion and extended service life

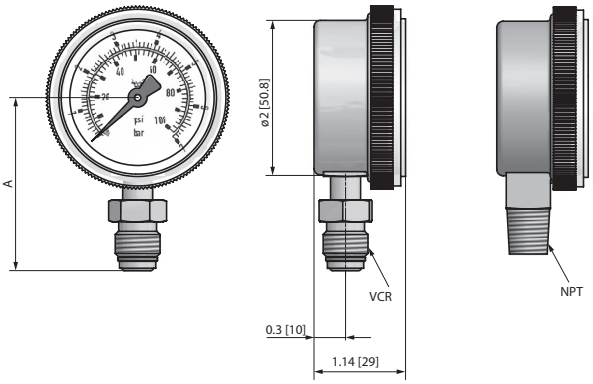
Stainless Steel
Glasstuf links with Stainless Steel pins

OTHERS

Cleaning
ASME B40.1 Level IV

VCR® is a registered trademark of Cajon Company.

ø 2" Stainless Steel Gauge Drawing



All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

CONNECTION 1/4"	DIMENSION A, inch [mm]
NPT	1.94 [49.0]
VCR® Male swivel Ultra High Purity	2.32 [58.9]

See next 2 pages for ordering information for ø 2" and ø 2-1/2" gauges by world area.

Standard ø 2" and ø 2-1/2" Pressure Gauges

Ordering Information

1/4" NPT, Stainless Steel		
PART NUMBER	SCALE	MAXIMUM PRESSURE
ø 2" Diameter		
62837-0030N20	psi / bar	30/2
62837-0060N20	psi / bar	60/4
62837-0100N20	psi / bar	100/7
62837-0200N20	psi / bar	200/14
62837-0400N20	psi / bar	400/28
62837-0600N20	psi / bar	600/42
62837-1000N20	psi / bar	1000/69
62837-2000N20	psi / bar	2000/137
62837-3000N20	psi / bar	3000/207
62837-4000N20	psi / bar	4000/280
62837-6000N20	psi / bar	6000/414
62837-7500N20	psi / bar	7500/517
62837-10000N20	psi / bar	10,000/690
62837-V015N20	psi / bar	30/0/15
62837-V030N20	psi / bar	30/0/30
62837-V060N20	psi / bar	30/0/60
62837-V100N20	psi / bar	30/0/100
62837-V200N20	psi / bar	30/0/200
ø 2 -1/2" Diameter		
62837-0060N25	psi / bar	60/4
62837-0100N25	psi / bar	100/7
62837-0200N25	psi / bar	200/14
62837-0400N25	psi / bar	400/28
62837-0600N25	psi / bar	600/42
62837-4000N25	psi / bar	4000/280
62837-6000N25	psi / bar	6000/414
62837-7500N25	psi / bar	7500/517
62837-10000N25	psi / bar	10,000/690

1/4" VCR® Male Swivel, Stainless Steel		
ø 2" Diameter		
47760-0030M	psi / kg/cm²	30/2
47760-0060M	psi / kg/cm²	60/4
47760-0100M	psi / kg/cm²	100/7
47760-0200M	psi / kg/cm²	200/14
47760-4000M	psi / kg/cm²	4000/280
47760-V030M	psi / kg/cm² / inches Hg	30/2/30"
47760-V060M	psi / kg/cm² / inches Hg	60/4/30"
47760-V100M	psi / kg/cm² / inches Hg	100/7/30"

1/4" NPT, Brass		
PART NUMBER	SCALE	MAXIMUM PRESSURE
ø 2" Diameter		
60500-0030N	psi	30
60500-0060N	psi	60
60500-0100N	psi	100
60500-0200N	psi	200
60500-0400N	psi	400
60500-0600N	psi	600
60500-1000N	psi	1000
60500-2000N	psi	2000
60500-3000N	psi	3000
60500-4000N	psi	4000
60500-6000N	psi	6000
62838-0060N20	psi / bar	60/4
62838-0100N20	psi / bar	100/7
62838-0200N20	psi / bar	200/14
62838-0400N20	psi / bar	400/28
62838-0600N20	psi / bar	600/42
62838-1000N20	psi / bar	1000/69
62838-2000N20	psi / bar	2000/137
62838-3000N20	psi / bar	3000/207
62838-4000N20	psi / bar	4000/280
62838-6000N20	psi / bar	6000/414
ø 2 -1/2" Diameter		
62838-0060N25	psi / bar	60/4
62838-0100N25	psi / bar	100/7
62838-0200N25	psi / bar	200/14
62838-0400N25	psi / bar	400/28
62838-0600N25	psi / bar	600/42
62838-2000N25	psi / bar	2000/137
62838-4000N25	psi / bar	4000/280
62838-7500N25	psi / bar	7500/517

Standard ø 2" and ø 2-1/2" Pressure Gauges

Ordering Information

1/4" NPT, Stainless Steel			
PART NUMBER	SCALE	PRESSURE RANGE	USAGE
ø 2" Diameter			
4802-0300N	psi / bar	0 to 300 psi / 0 to 20 bar	**Accessory for various TESCOM series** • High Purity Compact Panel (VCR®) • Compact Panel (Corrosive Gases) • Point-of-Use Regulator (VCR®) • Wega Series (Corrosive Gases) • In-line Regulators, Stainless Steel • Automatic Changeovers, Stainless Steel • 44-1100 Series, Stainless Steel • 44-1800 Series, Stainless Steel • 44-2200 Series, Stainless Steel • 44-2300 Series, Stainless Steel • 64-3600 Series, Stainless Steel • 74-3000 Series, Stainless Steel
4802-0400N	psi / bar	0 to 400 psi / 0 to 28 bar	
4802-0600N	psi / bar	0 to 600 psi / 0 to 40 bar	
4802-1000N	psi / bar	0 to 1000 psi / 0 to 70 bar	
4802-3000N	psi / bar	0 to 3000 psi / 0 to 200 bar	
4802-4000N	psi / bar	0 to 4000 psi / 0 to 275 bar	
4802-6000N	psi / bar	0 to 6000 psi / 0 to 415 bar	
4802-V030N	psi / bar	-15 to 30 psi / -1 to 2 bar	
4802-V060N	psi / bar	-15 to 60 psi / -1 to 4 bar	
4802-V100N	psi / bar	-15 to 100 psi / -1 to 7 bar	
4802-V160N	psi / bar	-15 to 160 psi / -1 to 11 bar	
4802-V200N	psi / bar	-15 to 200 psi / -1 to 14 bar	
1/4" VCR® Male Swivel, Stainless Steel			
ø 2" Diameter			
4802-4000M	psi / bar	0 to 4000 psi / 0 to 275 bar	
4802-V030M	psi / bar	-15 to 30 psi / -1 to 2 bar	
4802-V060M	psi / bar	-15 to 60 psi / -1 to 4 bar	
4802-V100M	psi / bar	-15 to 100 psi / -1 to 7 bar	
4802-V160M	psi / bar	-15 to 160 psi / -1 to 11 bar	
4802-V200M	psi / bar	-15 to 200 psi / -1 to 14 bar	

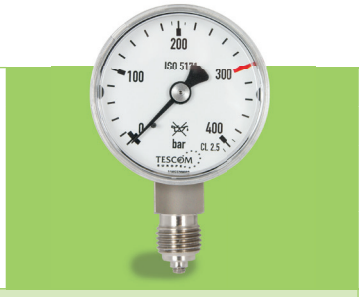
Please consult TESCOM for other options (e.g. different pressure ranges or center back mount connections).

PRESSURE GUAGES

Europe and Middle East only

Standard 1.9 inch / 50 mm Pressure Gauges

OPERATING PARAMETERS



Standard Process Connection: G 1/4" male/According to EN 562

Marking: bar, OXYGEN, TESCOM Logo

"Free of Oil and Grease", EN 562

Diameter: 1.9 inch / 50 mm

Array of connection: 6 o'clock

Ordering Information

PART NUMBER	MAXIMUM PRESSURE*	RED MARK	THREAD	ARRAY OF CONNECTION	USAGE
Low Pressure					• TESCOM Point-of-Use Regulator, MiniLabo 2, Brass • TESCOM Wega Series, Brass • TESCOM Compact Panel, Brass
D44150-00G0036	44 psi / 3 bar	22 psi / 1.5 bar	G 1/4"		
D44150-00N0036	44 psi / 3 bar	22 psi / 1.5 bar	1/4" NPT		
D44150-00G0056	73 psi / 5 bar	44 psi / 3 bar	G 1/4"		
D44150-00G0156	218 psi / 15 bar	145 psi / 10 bar	G 1/4"		
D44150-00N0116	218 psi / 15 bar	----	1/4" NPT		
D44150-00G0406	580 psi / 40 bar	290 psi / 20 bar	G 1/4"		
High Pressure					
D44150-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	G 1/4"		
D44150-12G0156	4569 psi / 315 bar	2900 psi / 200 bar	G 1/4"		
D44150-00G4016	5801 psi / 400 bar	----	G 1/4"		

** Other connections, e.g. NPT or VCR® and pressure ranges are available on request.*

Standard 2.5 inch / 63 mm Oxygen Pressure Gauges

OPERATING PARAMETERS PRESSURE GAUGE

Standard Process Connection: G 1/4" male/According to EN 562

Marking: bar, OXYGEN, TESCOM Logo

"Free of Oil and Grease", EN 562

Diameter: 2.5 inch / 63 mm

Array of connection: 6 o'clock

Ordering Information

PART NUMBER	MAXIMUM PRESSURE*	RED MARK	THREAD	ARRAY OF CONNECTION	USAGE
Low Pressure					• TESCOM Cylinder Regulator LABO • TESCOM Compact Panel, Brass
D44163-00G0156	218 psi / 15 bar	145 psi / 10 bar	G 1/4"		
D44163-00G0166	218 psi / 15 bar	----	1/4" NPT		
D44163-00G0266	363 psi / 25 bar	44 psi / 3 bar	G 1/4"		
High Pressure					
D44163-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	G 1/4"		
D44163-00G4006	5801 psi / 400 bar	4351 psi / 300 bar	1/4" NPT		

** Other connections, e.g. NPT or VCR® and pressure ranges are available on request.*

Safety Pressure Gauges with Solenoid Contact according to EN 562

GLOBAL TECHNICAL STANDARDS ACCORDING TO DIN 16005

OPERATING PARAMETERS

Suitable for oxygen and electronic control applications, solenoid spring contact and switch opens at decaying pressure.

Material: Stainless Steel

Type of protection: IP 54

Standard process connection: G 1/4" male*/According EN 562/ISO 5171

Marking: bar, psi, TESCOM Logo, KL. 1.6, EN 562/EN 837-1

"Free of Oil and Grease", EN 562

Accuracy Class: 1.6 According to EN 562 / ISO 5171

Array of connection: 6 o'clock

ORDERING INFORMATION

PART NUMBER	MAXIMUM PRESSURE	RED MARK	DIAMETER	USAGE
D44500-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	2.5 inches / 63 mm	• TESCOM Compact Panel • TESCOM Inline Regulators • TESCOM Cylinder Regulators
D44500-00G4006	5801 psi / 400 bar	4351 psi / 300 bar	1.6 inches / 40 mm	

** Other connections, e.g. NPT or VCR® is available on request.*

Safety Pressure Gauges with Inductive Contact according to EN 562

GLOBAL TECHNICAL STANDARDS ACCORDING TO DIN 16005

OPERATING PARAMETERS

Suitable for oxygen and electronic control applications, contact break with falling pressure, 2m cable.

Material: 316L Stainless Steel

Type of protection: EX II 1G Eex ia IIC T6

Diameter: 2.5 inches / 63 mm

Standard process connection: G 1/4" male*/According to EN 562/ISO 5171

Marking: bar, psi, TESCOM Logo, KL. 1.6, EN 562/EN 837-1

"Free of Oil and Grease", EN 562

Accuracy Class: 1.6 According to DIN 16005

Array of connection: 6 o'clock

ORDERING INFORMATION

PART NUMBER	MAXIMUM PRESSURE	RED MARK	USAGE
D44272-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	• TESCOM High Purity Compact Panel (VCR®) • TESCOM Compact Panel • TESCOM Cylinder Regulators
D44272-00G4006	5801 psi / 400 bar	4351 psi / 300 bar	

** Other connections, e.g. 1/4" NPT or 1/4" VCR-M® and different pressure ranges from 0/15 up to 0/400 bar are available on request.*

Safety Pressure Gauges with Capsule Element

OPERATING PARAMETERS

Safety Standard: According to VBG 61

Standard Process Connection: G 1/2" male/According DIN EN 837-1

Marking: mbar, OXYGEN, DIN, TESCOM Logo, KL.1.6

"Free of Oil and Grease", EN 562

Diameter: 3.9 inch / 100 mm

Accuracy Class: 1.6 According to DIN EN 837-3

Array of connection: 6 o'clock

ORDERING INFORMATION

PART NUMBER	MAXIMUM PRESSURE	USAGE
7232795	0-60 mbar	• TESCOM Cylinder Regulator Regulus • TESCOM Cylinder Regulator Doppelregulus
7232796	0-160 mbar	
7232797	0-600 mbar	
7232787	0-1.6 bar	

Safety Pressure Gauges

OPERATING PARAMETERS

Safety Standard: According to EN 837-1

Standard Process Connection: G 1/8" male/According EN 562/ISO 5171

Marking: bar/kPa or bar/psi or bar, oxygen, DIN, TESCOM Logo, Kl.2.5

"Free of Oil and Grease", EN 562

Accuracy Class: 2.5/According EN 562/ISO 5171

Array of connection: 6 o'clock

ORDERING INFORMATION

PART NUMBER	MAXIMUM PRESSURE	RED MARK	DIAMETER	USAGE
D44274-00G3156	315 bar / kPa x 100	200 bar / kPa x 100	1.6 inches / 40 mm	TESCOM Regulators for Medical
D44274-12G3156	315 bar / kPa x 100	200 bar / kPa x 100	1.6 inches / 40 mm	TESCOM Regulators for Medical
D45120-12G0026	36 psi /2.5 bar	22 psi / 1.5 bar	1.6 inches / 40 mm	TESCOM Point-of-Use Regulators, MiniLabo 2
D51674-00G3156W	315 bar	----	1.9 inches / 50 mm	TESCOM Regulators for Medical

ORDERING INFORMATION GASKETS FOR GAUGES

PART NUMBER	MATERIAL	PORT SIZE	THICKNESS	PART NUMBER	MATERIAL	PORT SIZE	THICKNESS
D1326	Brass	G 1/2"	0.75	D18909	Stainless Steel	G 1/4"	2.00
D13269	Brass	G 1/2"	1.00	D18929	Stainless Steel	G 1/4"	2.50
D13267	Brass	G 1/2"	1.50	D18930	Stainless Steel	G 1/4"	2.90
D12927	Brass	G 1/4"	0.50	D18909	Stainless Steel	G 1/4"	2.00
D12928	Brass	G 1/4"	0.75	D40583	Stainless Steel	G 1/4"	2.50
D12929	Brass	G 1/4"	1.00	V09535	Stainless Steel	1/4" VCR®	----
D42289	Brass	G 1/4"	2.00	D4917	Copper (Cu)	G 1/8"	0.50
D42339	Copper (Cu)	G 1/4"	3.30	D4916	Copper (Cu)	G 1/8"	0.75
V10055	Stainless Steel	G 1/4"	0.50	D4873	Copper (Cu)	G 1/8"	1.00

GAUGE

All gauges are Oxygen cleaned, free of oil and grease.

Standard Process Connection*
G 1/4" male / acc. EN 562

Marking
bar; OXYGEN

Graphical Symbol
"Free of Oil and Grease", EN 562

Standard Array of Connection*
6 o'clock

Diameter
1.97" / 50 mm

*Please consult TESCOM for additional pressure ranges or special array of connections (e.g. centrical connection)

GAUGE D43650-00G0036

Gauges - Standard Stock Items

PART NUMBER STAINLESS STEEL	PART NUMBER BRASS	MAXIMUM PRESSURE	RED MARK	ARRAY OF CONNECTION STANDARD
D43650-00G0036	D44150-00G0036	44 psi / 3.0 bar	22 psi / 1.5 bar	6 o'clock
D43650-00G0056	D44150-00G0056	73 psi / 5.0 bar	44 psi / 3.0 bar	6 o'clock
D43650-00G0156	D44150-00G0156	218 psi / 15.0 bar	145 psi / 10.0 bar	6 o'clock

Metering Valves*

Nominal diameter: DN 2

Inlet Connection: G 1/4" male

Outlet Connection: 6 mm compression fitting + 6 mm hose connector

PART NUMBER	MATERIAL	TYPE
D43215-AR-05	Brass	Diaphragm Metering Valve
D43216-AR-05	Stainless Steel	Diaphragm Metering Valve

*Please reference datasheets "Needle Metering Valve" and "Diaphragm Metering Valve" for detailed technical specifications.

DIAPHRAGM METERING VALVE D43216

Flame Arrestor

DESCRIPTION	PART NUMBER
Flame Arrestor H_2, 10 bar	**143.077**
Kit Flame Arrestor, O_2 and Air, 20 bar	**D50410-12-06**
Kit Flame Arrestor, Acethylene	**D50410-22-06**

FLAME ARRESTOR D42349 (PART OF D50410)

POINT-OF-USE ACCESSORIES

Accessories

Handwheel Knobs, Color Grey

PART NUMBER	DESCRIPTION
D43204-6	Handknob Diaphragm Metering Valve (DMV)
D45121-6	Cap DMV
D43237-6-PP	"Turning knob, Shut-off valve"
D45121-6	Cap, Shut-off valve
D43683-6	Handwheel MiniLabo
D44973	Cap MiniLabo
D44977-XX	Gas specific label MiniLabo acc. EN 13792
D43684	Handwheel MiniLabo
D45122-6	Handknob Needle Metering Valve (NMV)
D45123-6	Cap NMV

CAP MINILABO
D44973

HAND WHEEL MINILABO
D43683-6

Stainless Steel Fittings for Inlet and Outlet of Pressure Regulator

PART NUMBER	DESCRIPTION
D42644	G 1/4" to 6 mm tube
D43757	G 1/4" to 8 mm tube
D41933	G 1/4" to 10 mm tube
D41362	G 1/4" to 1/8" tube

FITTING G 1/4" TO 10 MM
D41933

Brass Fittings for Inlet and Outlet of Pressure Regulator

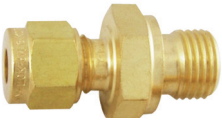
PART NUMBER	DESCRIPTION
D41329	G 1/4" to 1/8" tube or hose
D41359	1/8" hose nozzle for D41329
D40619	G 1/4" to 6 mm Cu-tube or hose
D41681	6 mm hose nozzle for D40619
D42669	G 1/4" to 8 mm Cu-tube
D41756	G 1/4" to 10 mm Cu-tube

6 MM HOSE NOZZLE FOR D40619
D41681

Brass Fittings for Outlet Valve

PART NUMBER	DESCRIPTION
D41309	G 1/8" to 1/8" tube / hose
D41359	1/8" hose nozzle for D41309
D40076	G 1/8" to 6 mm tube / hose
D41681	6 mm hose nozzle for D40076

FITTING G 1/4" TO 6 MM CU-TUBE OR
HOSE D40619



Accessories DCATLABO12106XEN2

Gauges for WEGA Single or Dual Stage Series*

ALL GAUGES OXYGEN CLEANED, FREE OF OIL & GREASE

Standard process connection: G 1/4" male / acc. EN 562

Marking: bar; OXYGEN

"Free of Oil & Grease", EN 562

Standard array of connection: 6 o'clock

Diameter: 1.97 inches / 50 mm

*Further gauges are available on request

Gauge D43650-00G0036

Gauges Stainless Steel - Standard Stock items

PART NUMBER	MAXIMUM PRESSURE	RED MARK	ARRAY OF CONNECTION
Low Pressure			
D43650-00G0036	44 psi / 3 bar	22 psi / 1.5 bar	6 o'clock
D43650-00G0056	73 psi / 5 bar	58 psi / 4 bar	6 o'clock
D43650-00G0156	218 psi / 15 bar	145 psi / 10 bar	6 o'clock
D43650-00G0266	363 psi / 25 bar	none	6 o'clock
High Pressure			
D43650-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	6 o'clock
D43650-00G4006	5801 psi / 400 bar	4351 psi / 300 bar	6 o'clock

Special Features for Stainless Steel gauges on request with additional charge

CERTIFICATES FOR STAINLESS STEEL GAUGES	PART NUMBER ADDER Please add to part number.
Cert 2.2	**2**
Cert 3.1	**3**
Calibration Cert	**4**
Cert 2.2 & Calibration Cert	**5**
Cert 3.1 & Calibration Cert	**6**
ARRAY OF CONNECTION	**code** The last character of part number defines the array of connection. Please replace it if you want to order a gauge different from standard.
12 o'clock	**0**
3 o'clock	**3**
9 o'clock	**9**
Centrical	**C**
Frontring	**F**

Gauges Brass - Standard Stock items

PART NUMBER	MAXIMUM PRESSURE	RED MARK	ARRAY OF CONNECTION
Low Pressure			
D44150-00G0036	44 psi / 3 bar	22 psi / 1.5 bar	6 o'clock
D44150-00G0056	73 psi / 5 bar	58 psi / 4 bar	6 o'clock
D44150-00G0156	218 psi / 15 bar	145 psi / 10 bar	6 o'clock
D44150-00G0406	580 psi / 40 bar	290 psi / 20 bar	6 o'clock
High Pressure			
D44150-00G3156	4569 psi / 315 bar	2900 psi / 200 bar	6 o'clock
D44150-00G4006	5801 psi / 400 bar	4351 psi / 300 bar	6 o'clock
D44150-00G4016	5801 psi / 400 bar	none	6 o'clock

Special Features for Stainless Steel gauges on request with additional charge

CERTIFICATES FOR BRASS GAUGES	PART NUMBER ADDER Please add to part number.
Calibration Cert	**K**
ARRAY OF CONNECTION	**code** The last character of part number defines the array of connection. Please replace it if you want to order a gauge different from standard.
12 o'clock	**0**
3 o'clock	**3**
9 o'clock	**9**
Centrical	**C**
Frontring	**F**

WEGA ACCESSORIES

Gauges for WEGA for Corrosive Gases and Purging Series

ALL GAUGES OXYGEN CLEANED, FREE OF OIL & GREASE AND SUITABLE FOR ECD APPLICATIONS

Standard process connection: G 1/4" NPT male / according ISO 5171

Marking: psi / bar

Standard array of connection: 6 o'clock

Diameter: 2.0 inches / 50.8 mm

Material: Stainless Steel

Certificates: calibration, 2.2 and 3.1 certificates available - please note when ordering

Gauge 4802-V060N

Gauges Stainless Steel - Standard Stock items

PART NUMBER	MAXIMUM PRESSURE	ARRAY OF CONNECTION
Low Pressure (Outlet)		
4802-V060N	60 psi / 4 bar	6 o'clock
4802-V100N	100 psi / 7 bar	6 o'clock
4802-V200N	200 psi / 14 bar	6 o'clock
High Pressure (Inlet)		
4802-4000N	4000 psi / 275 bar	6 o'clock

Metering Valves*

Nominal diameter: DN 2

Inlet Connection: G 1/4" male

Outlet Connection: 6 mm compression fitting + 6 mm hose connector

PART NUMBER	MATERIAL	TYPE
D43215-AR-05	Brass	Diaphragm Metering Valve
D43216-AR-05	Stainless Steel	Diaphragm Metering Valve

*Please reference datasheets "Needle Metering Valves" and "Diaphragm Metering Valves" for detailed technical specifications

Diaphragm Metering Valve
D43216

Repair Kits WEGA

PART NUMBER	DESCRIPTION
D43439	Repair Kit WEGA 2 Brass
D43440	Repair Kit WEGA 2 Stainless Steel
D43441	Repair Kit WEGA 1 Brass
D43442	Repair Kit WEGA 1 Stainless Steel

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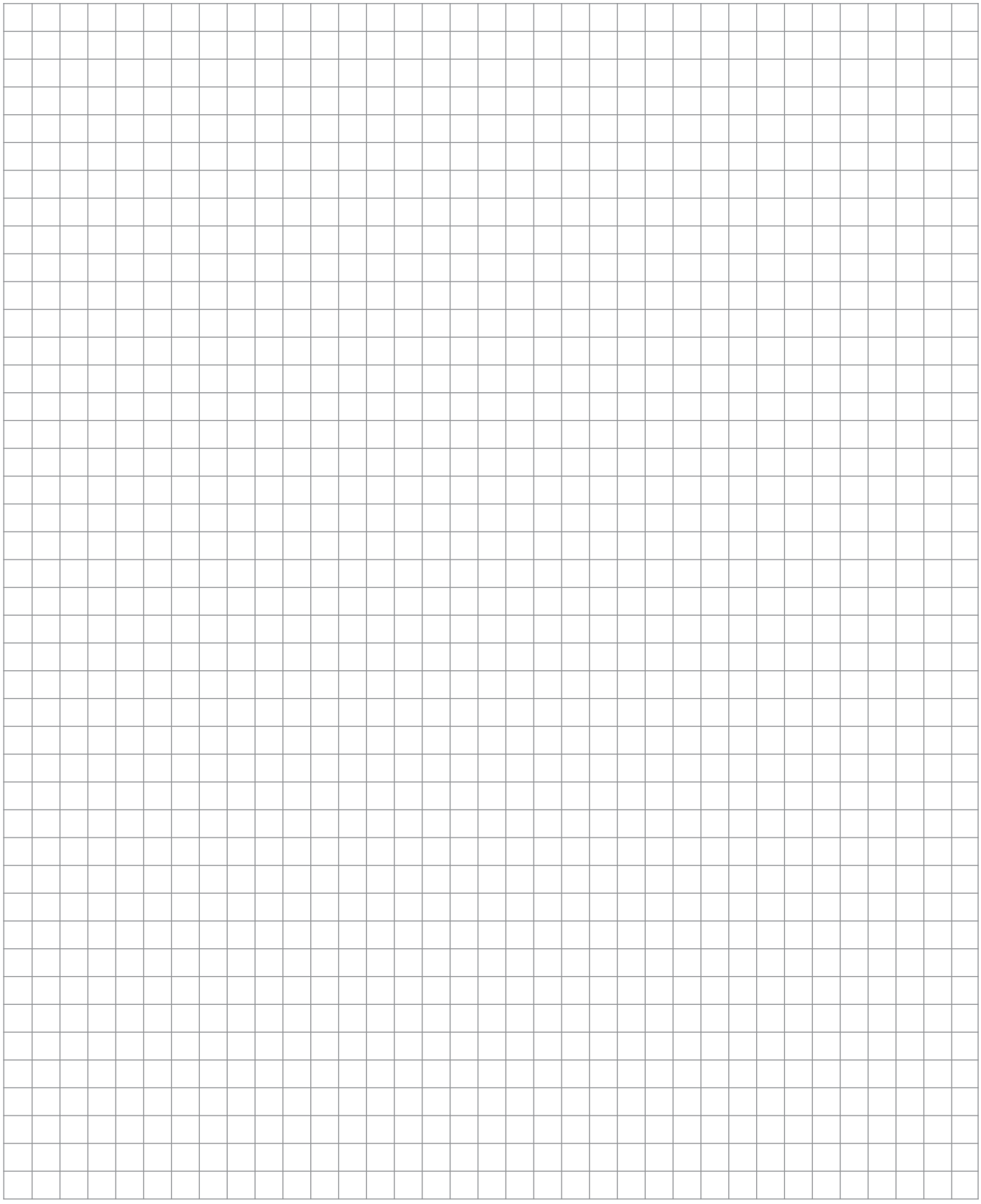

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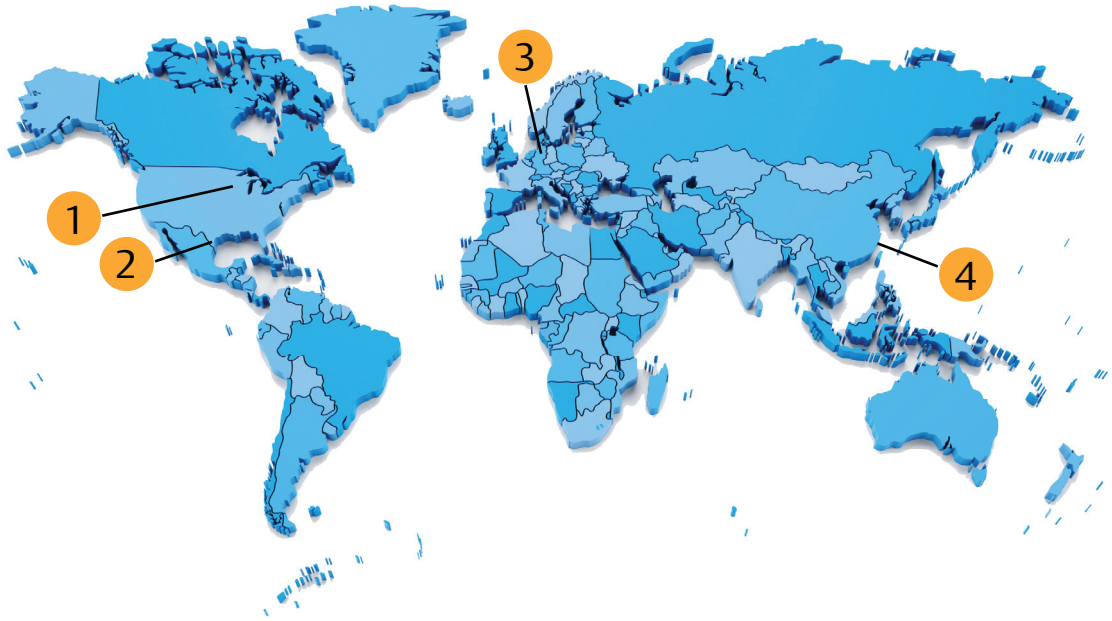

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