

TESCOM

Product Catalog - Edition IV

NOVEMBER 2018



Precision pressure control solutions for your industry.

TESCOM™


EMERSON™

INTRODUCTION

Welcome

This global catalog is designed to help you quickly and easily find technical information about TESCO 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 TESCO 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 TESCO regulators, valves and systems.

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



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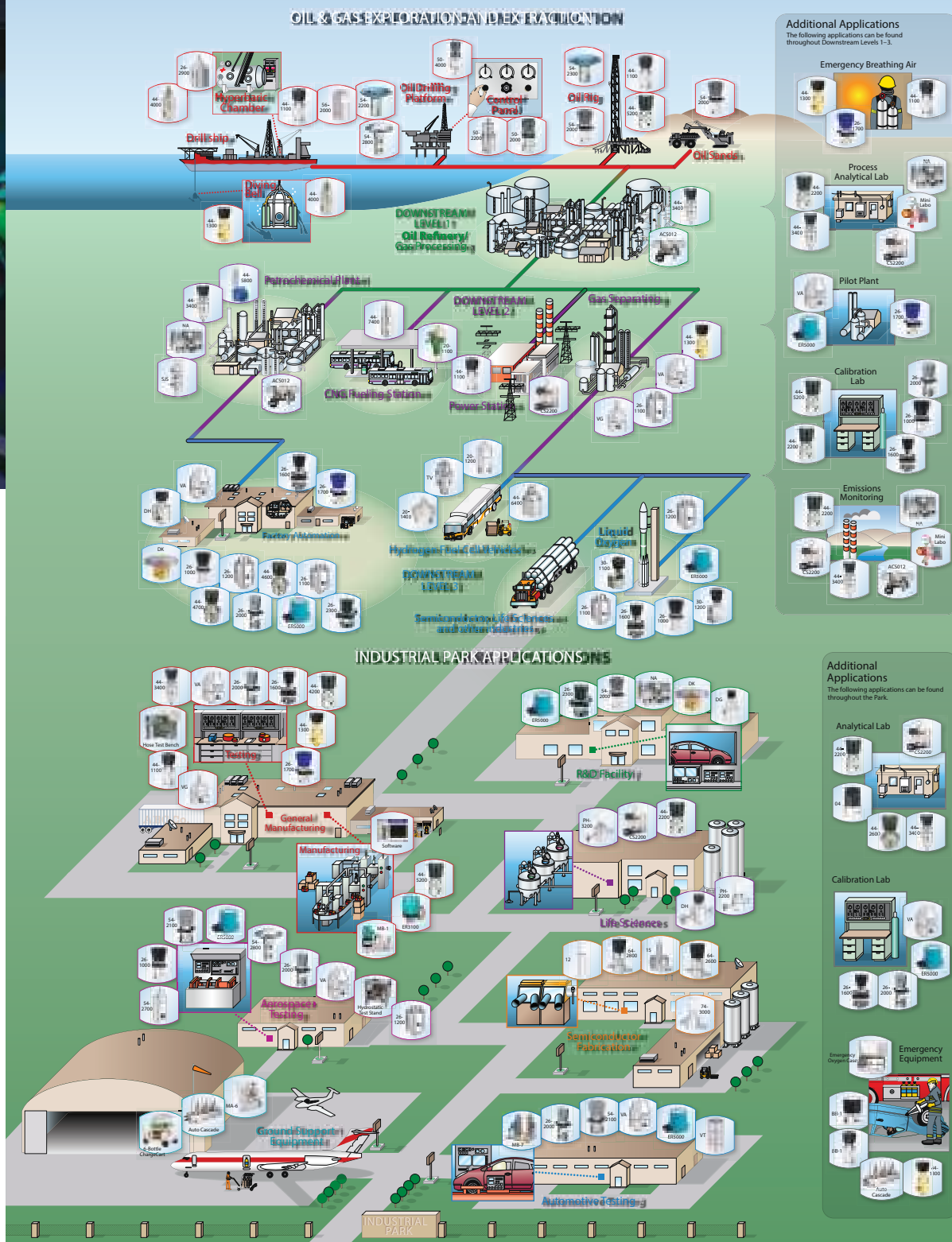
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PERFORMANCE TO TAKE YOU FURTHER

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.

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

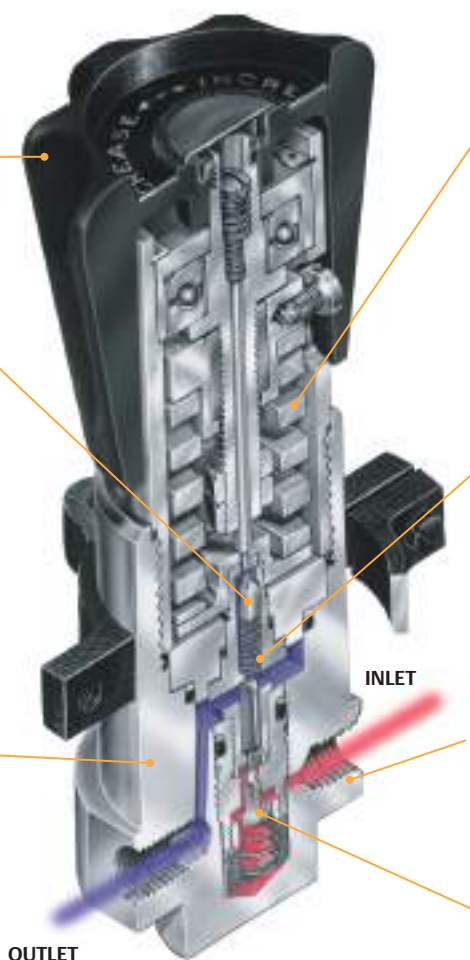
C_v is a measure of regulator flow capacity. The flow coefficient refers to the flow of one GPM of water at one psi drop across the main valve. The coefficient for gaseous service must be determined from the ratio of inlet to outlet pressure.

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.

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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.

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Company Information



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

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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.



Products By Industry

Company Information

DMISC2038X012

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 TESCO sales office or call us directly and we'll be happy to assist you.



AEROSPACE & DEFENSE

PAGE

26-1000 Series

High pressure, pressure reducing regulator typically used in test equipment, calibration stands and production equipment.

95

26-1200 Series

High flow pressure reducing regulator typically used in rocket engine testing and fueling.

117

26-2000 Series

High pressure, low flow piston sensed regulator typically used in R&D labs, pressure filling, calibration testing, burst testers and component testing.

131

ER5000 Series

Electropneumatic controller that can be combined with a wide range of pressure reducing regulators and an external transducer to provide true distributed control of liquids or gases. Typically used in test equipment, calibration stands and product equipment.

599

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

VA/VG Series

Air operated valves that offer normally open/closed capabilities, operating pressures for 6000, 10,000 and 15,000 psig / 413, 690 and 1034 bar. These high cycle life valves are suitable for liquid and gas applications.

547

30 Series

High flow, high pressure hand valves with 6000-10,000 psig / 413-690 bar pressure range, $C_v = 0.28$ to 20.0 flow rate and 316 Stainless Steel construction. Typically used on service carts, pressure control and gauge panels.

525



ALTERNATIVE ENERGY

20-1000 Series

Pressure reducing piston sensed regulator designed with aluminum construction for onboard compressed natural gas vehicles with 7 liter engines or larger.

95

20-1100 Series

A complete CNG pressure regulator system designed for onboard compressed natural gas vehicles with 7 liter engines or larger. The main function is the reduction of tank pressure to a preset outlet pressure but also includes other components critical to the gas delivery system. This proven design derived from the 20-1200 Series offers cost reduction in fittings in a pre-packaged system.

99

20-1200 Series

Aluminum construction preset, piston sensed regulator that offers high cycle life and an integrated 10 micron filter. Commonly used on 350 bar hydrogen fuel cell storage systems for onboard vehicles.

103

44-2600 Series

Compact and extremely sensitive, this high purity single-stage regulator is ideal for final pressure delivery for small and medium size hydrogen fuel cells. Features a large Stainless Steel diaphragm for best sensitivity and external leak integrity.

167

VA/VG Series

Air operated on/off valves for normally open/closed positions in gas or liquid media. These high pressure, compact valves are excellent for gas storage systems, bottle filling and priority filling for up to 20,000 psig/1380 bar service.

547

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

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 metal fabrication and specialty and industrial gas cylinders.

319

26-1700 Series

Backpressure regulator that controls pressures up to 20,000 psig/1380 bar for low and medium flow applications in gas or liquid service. Typically used in pump discharge control for product cycle and burst testing or reactor pressure control. The optional air load feature allows adapting the TESCO ER5000 for automation and improved accuracy.

449

26-2000 Series

High pressure, pressure reducing regulator for low and medium flow applications is available with seven different pressure ranges. The standard captured vent feature allows pressure adjustment up or down in either gas or liquid service. Ideal for product cycle testing, instrument calibration and process control. The optional air load feature allows adapting the TESCO ER5000 for automation and improved accuracy.

131

26-2300 Series

Highly accurate diaphragm sensed backpressure regulator for low and medium flow applications. Available with spring, dome and air load actuation as well as various Cvs to assure optimum performance. Typically used in hydraulic or pneumatic test stands and can be used with the TESCO ER5000 for automation.

459

44-1100 Series

High pressure, low flow venting regulator is available with six different outlet ranges. Ideal for test and calibration systems requiring preset or infrequent adjustments. Many modifications are available to satisfy your hydraulic or pneumatic application requirements.

135

DH Series

High flow, low pressure regulator with large diaphragm for excellent sensitivity. This design offers low droop and works well with low differential conditions. Ideal for high flow purging, tank blanketing and testing applications at low pressure settings. Available with spring, dome and air load actuation, and can be used with the TESCO ER5000 for automation.

267

ER5000 Series

Electropneumatic controller that is adapted to most TESCO mechanical regulators for automation and improved accuracy. The ER5000 requires a feedback signal from a transducer for closed loop control of liquids and gases. Typically used in test equipment, calibration equipment or production equipment.

599

Systems Capabilities

Manifolds, custom assemblies and complete systems save you time and money. We can simplify your existing system or create a new system with complete electrical, mechanical and design capabilities.

629

VA/VG Series

Air operated on/off valves for normally open or normally closed positions in gas or liquid media. This high pressure, compact valve saves considerable space compared to ball valves. These valves are ideal for isolation, cycle testing and emergency dump in hydraulic or pneumatic test stands up to 20,000 psig / 1380 bar. Three-way VT Series valve is also available.

547

Products by Industry



LABORATORY AND R&D

PAGE

26-1700 Series

Backpressure regulator that controls pressures up to 15,000 psig / 1034 bar and is suitable for gas or liquid service. Typically used in pump and reactor pressure control.

449

26-2000 Series

High pressure, low flow piston sensed regulator typically used in R&D labs, pressure filling, calibration testing, burst testers and component testing.

131

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. Ideal for use in high pressure gas cylinders for specialty and industrial gases.

183

WEGA 1 and 2

Single-stage (WEGA 1) and dual-stage (WEGA 2) cylinder pressure regulators for gas purities up to 6.0. Integrated relief valve - lightweight and compact design including dual-stage version.

343

WEGA Corrosive Gases and Purging

Single-stage cylinder regulator with captured bonnet. Ideal for use with corrosive gases. Includes integrated shut-off valve and check valve. Suitable for inert gas purging.

347

Compact Panel

Compact, lightweight unit for the pressure control of analytical, specialty or corrosive gases in laboratory facilities. Complete automatic switch-over system provides continuous gas supply. The use of contact gauges allows the monitoring of empty gas cylinders.

573

MiniLabo 2

Point-of-use regulator with a compact, modular and ergonomic design for non-corrosive/corrosive gases and mixtures up to 6.0 purity. Used in laboratory, R&D and analyzer applications.

297



LIFE SCIENCES

PH-1600 Series

High purity, high flow (5-200 SCFM / 141-5663 SLPM) single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical gases. Ideal for use in clean steam for sanitization and vessel headspace pressurization.

419

PH-1800 Series

High purity, high flow (5-2000 SCFM / 141-56633 SLPM) single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical gases. Ideal for use in clean steam for sanitization and vessel headspace pressurization.

423

PH-2200 Series

High purity, low flow single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for specialty gases and clean steam. Ideal for use in sparge gases and clean steam for sanitization.

427

PH-2600 Series

High purity, low flow, low pressure single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for specialty gases. Ideal for use in sparge gases and clean steam for sanitization.

431

PH-3200 Series

High purity, medium flow single-stage regulator offers a compact, USP Class VI and BPE compliant design suitable for biotech and pharmaceutical gas flows of 5-50 SCFM / 141-1415 SLPM. Ideal for use in sparge gases and clean steam for sanitization.

435



MEDICAL (AVAILABLE ONLY IN EUROPE)

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.

WegaMed 200 and WegaMed 300

The WegaMed 200 and 300 are single-stage cylinder regulators designed in correspondence with DIN EN ISO 10524-1 for pressure reduction of pressurized medical gases. Pressure rating is 2900 and 4350 psig / 200 and 300 bar respectively.

WegaMed Testgas

Single-stage cylinder regulator for the fixed assembly with medical devices. Preset pressure reduction of pressurized medical gas mixtures. Suitable for mobile and stationary applications.

WegaMed N/NO

This preset Stainless Steel pressure reducing regulator is for use with medical N₂/NO gas mixtures. Ideal for Pulmonary Vasodilation with NO (max. 1000 ppm) application. Single-stage and dual-stage versions are available (with high precision flowmeter).

Central Gas Supply - Regulator II

Single-stage adjustable pressure regulator designed according to DIN EN ISO 10524-4 for the reduction of pressurized medical gases in hospital central gas supply. Ideal for low pressure terminal units. Maximum pressure rating is 72.5 psig / 5 bar.

TESAM and TEGOM

Test benches that are designed to conduct the stringent requirements of the European medical legislation. The TEGOM is a mobile test bench for servicing Medical Terminal Units; the TESAM is a mobile test bench for servicing pressure regulators, vacuum regulators and flowmeters.



MICROELECTRONICS

12 Series

A miniature ultra high purity IGS/VCR pressure reducing regulator offers 5 Ra or 10 Ra micro inch finishes, tied diaphragm and internally springless and threadless design. Ideal for use in OEM tools, gas boxes and low pressure gas cabinets.

64-2600 Series

Economical, ultra high purity pressure reducing regulator provides Stainless Steel construction with 10 Ra surface finish and is electronic grade cleaned. Ideal for use in 1/4" point-of-use, semiconductor manufacturing, valve manifold boxes and research labs.

64-5400 Series

Ultra high purity, high flow pressure reducing regulator provides 316 Stainless Steel with Electropolish, 10 Ra surface finish and Hastelloy® diaphragm design. Ideal for use in Bulk Specialty Gas Systems (BSGS), 1/2" point-of-use, tool hook-ups and gas cabinets.

74-3800 Series

Ultra high purity, tied diaphragm pressure reducing regulator offers high flow and internally threadless and low internal volume design. Ideal for use in 1/2" point-of-use, gas cabinets, high flow purging systems and semiconductor manufacturing.

355

379

403

415

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

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

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DMISC2030X012

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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

| | |
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- 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 TESCO'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. SF₆, NH₃, HCL, CO₂ 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. TESCO 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 (H₂O < 5 ppm) the choice of material and the use of purging gas (Argon or Nitrogen) with a content of H₂O 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 aeration/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 TESCO, 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 acids, acetic anhydride, 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 (Vespe[®])

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 TESCO[®]M, 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 P₂ 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 (CO₂) 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, cryoprobe 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. TESCO 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 TESCO'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 destinés à être utilisés 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

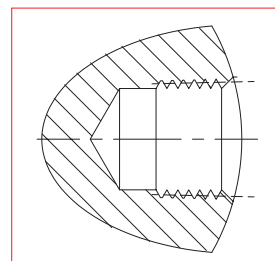
NPT (National Pipe Thread) and NPTF (National Pipe Thread Dry-seal)

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: TESCO allows these ports to be used in regulators intended for pressures up to the piping ratings. The standard ports in TESCO 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.



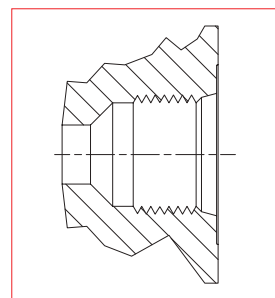
SAE (Straight Thread O-ring Boss Seal)

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: TESCO 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.

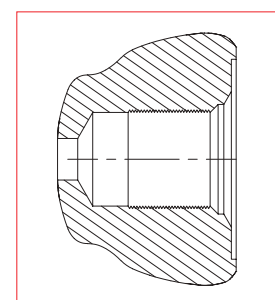


MS33649

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 is not recommended for new application use - SAE ports are recommended.

Pressure Capability: TESCO 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. TESCO recommends the use of SAE ports.



High Pressure (AMINCO®)

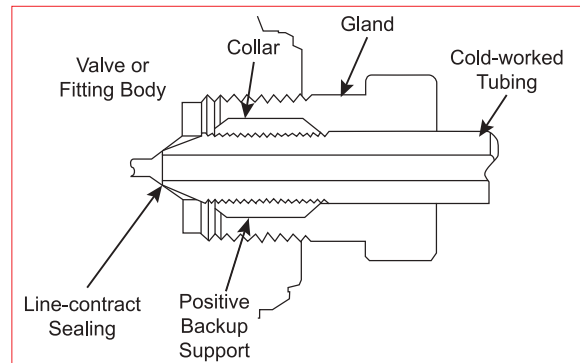
Limitations: High cost and very difficult to find fittings.

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).



Differences in angles exaggerated for clarity.

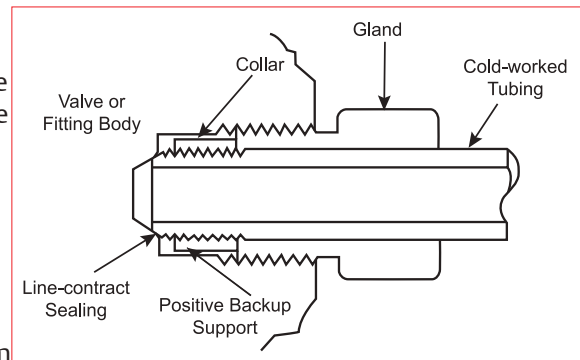
Medium Pressure (Autoclave®, Slim-Line®)

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).



Differences in angles exaggerated for clarity.

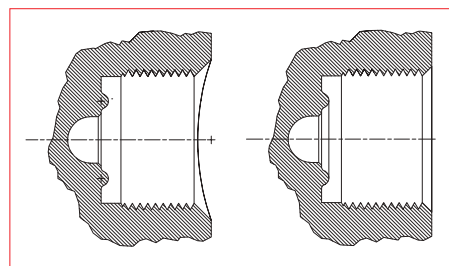
HPIC (High Purity Internal Connection)

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 1×10^{-9} mbar l/s Helium.

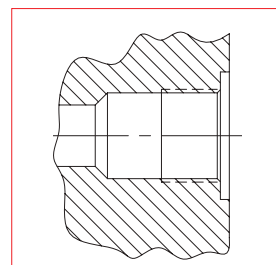
Limitations: Functionality depends on the surface roughness of the sealing lip. Costs are high due to opposite to flat sealing designs and requirements for high purity applications. Maximum HPIC port size is 1/2". Tooling for porting is needed.



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

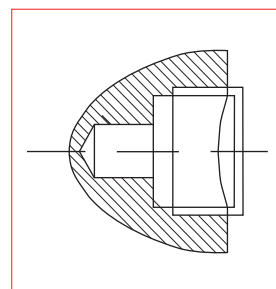
Advantages: The BSP port is reliable and provides ease of assembly and disassembly with metal gaskets, metal gaskets having an elastomeric lip or fittings with o-ring.

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: TESCO 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 1×10^{-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 1×10^{-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 feet ³ /s | feet ³ /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 feet ³ /s | 28.317 | 1699.2 | 448.8 | 1 | 60 |
| 1 feet ³ /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 x 10 ⁻⁷ | 0.00002 | 0.001 | 6.12 x 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

| | mm ³ | cm ³ | liter | m ³ | inch ³ | feet ³ | gal |
|---------------------|------------------------|------------------------|-----------|-------------------------|------------------------|-------------------------|-------------------------|
| 1 mm ³ | 1 | 0.001 | 0.000 001 | 1 x 10 ⁻⁹ | 0.0000621 | 3.53 x 10 ⁻⁸ | 2.64 x 10 ⁻⁷ |
| 1 cm ³ | 1000 | 1 | 0.001 | 1 x 10 ⁻⁶ | 0.06102 | 3.53 x 10 ⁻⁵ | 2.64 x 10 ⁻⁴ |
| 1 liter | 1 x 10 ⁶ | 1000 | 1 | 0.001 | 61.02 | 0.03532 | 0.2642 |
| 1 m ³ | 1 x 10 ⁹ | 1 x 10 ⁶ | 1000 | 1 | 6.10 x 10 ⁴ | 35.31 | 264.2 |
| 1 inch ³ | 16387.064 | 16.39 | 0.01639 | 1.64 x 10 ⁻⁵ | 1 | 5.79 x 10 ⁻⁴ | 0.00433 |
| 1 feet ³ | 2.83 x 10 ⁷ | 2.83 x 10 ⁴ | 28.32 | 0.02832 | 1728 | 1 | 7.481 |
| 1 gal | 3.79 x 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 x 10 ⁻⁷ |
| 1 cm | 10 | 1 | 0.01 | 1 x 10 ⁻⁵ | 0.3937 | 0.03281 | 6.21 x 10 ⁻⁶ |
| 1 m | 1000 | 100 | 1 | 0.001 | 39.37 | 3.281 | 6.21 x 10 ⁻⁴ |
| 1 km | 1 x 10 ⁶ | 1 x 10 ⁵ | 1000 | 1 | 3.94 x 10 ⁴ | 3281 | 0.6214 |
| 1 inch | 25.4 | 2.540 | 0.02540 | 2.54 x 10 ⁻⁵ | 1 | 0.08333 | 1.58 x 10 ⁻⁵ |
| 1 feet | 304.8 | 30.48 | 0.3048 | 3.05 x 10 ⁻⁴ | 12 | 1 | 1.89 x 10 ⁻⁴ |
| 1 mile | 1.61 x 10 ⁶ | 1.61 x 10 ⁵ | 1609 | 1.609 | 6.34 x 10 ⁴ | 5280 | 1 |

CONVERSION TABLES (continued)

Temperature

| | |
|---|---|
| $^{\circ}\text{C} = [^{\circ}\text{F} - 32] \times 5 / 9$ | $^{\circ}\text{F} = [^{\circ}\text{C} \times 9 / 5] + 32$ |
|---|---|

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 ₂ O | feet H ₂ O | bar | psi (lb/in ²) | kg/cm ² | 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 ₂ O | 2.49 | 0.07355 | 1 | 0.08333 | 0.00249 | 0.03613 | 0.002 | 0.0002 |
| 1 feet H ₂ O | 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/in ²) | 68.95 | 2.036 | 27.68 | 2.307 | 0.06895 | 1 | 0.07 | 0.007 |
| 1 kg/cm ² | 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 |

Regulator Specification Information and Services

Technical Information

DEBUL2029X012

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/cm²) | Maximum/Normal/Minimum Maximum Design Pressure (If Different) |
| OUTLET PRESSURE (psig, bar, or kg/cm²) | 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:

Americas

T +1 800 447 1250
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T +65 6777 8211 (Singapore)
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Flow Curves

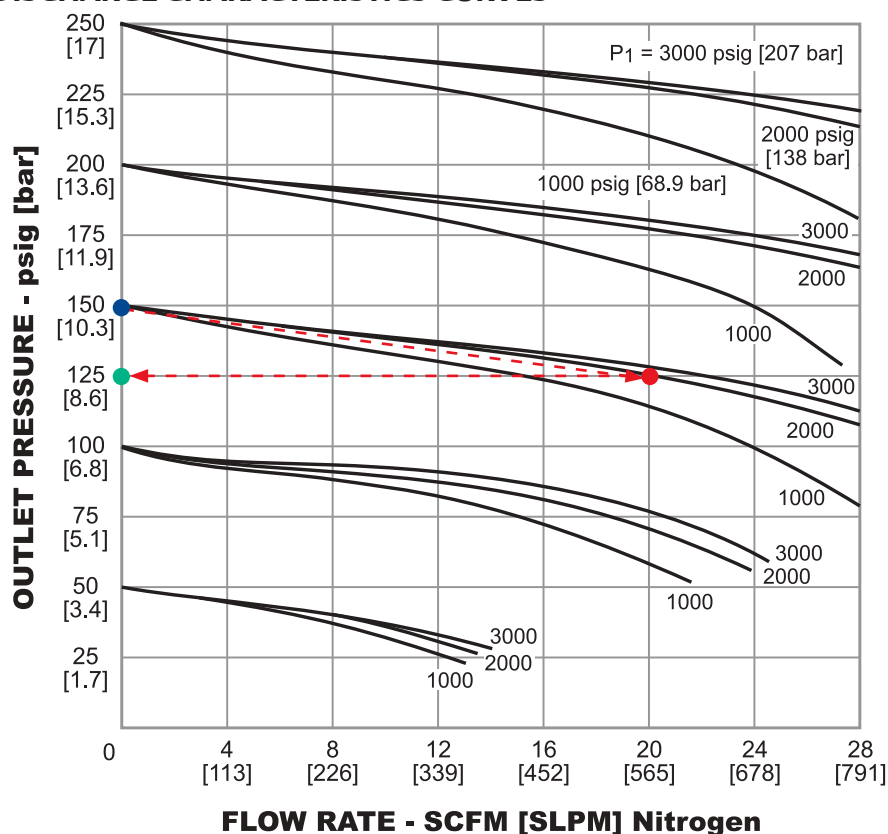
TESCOM flow charts are the graphic representation of test results which show the change in outlet pressure (P_2) with a varying flow rate. All curves are based on using nitrogen at ambient conditions as a media unless otherwise noted. Inlet pressure (P_1) is shown on the right end of each curve.

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.

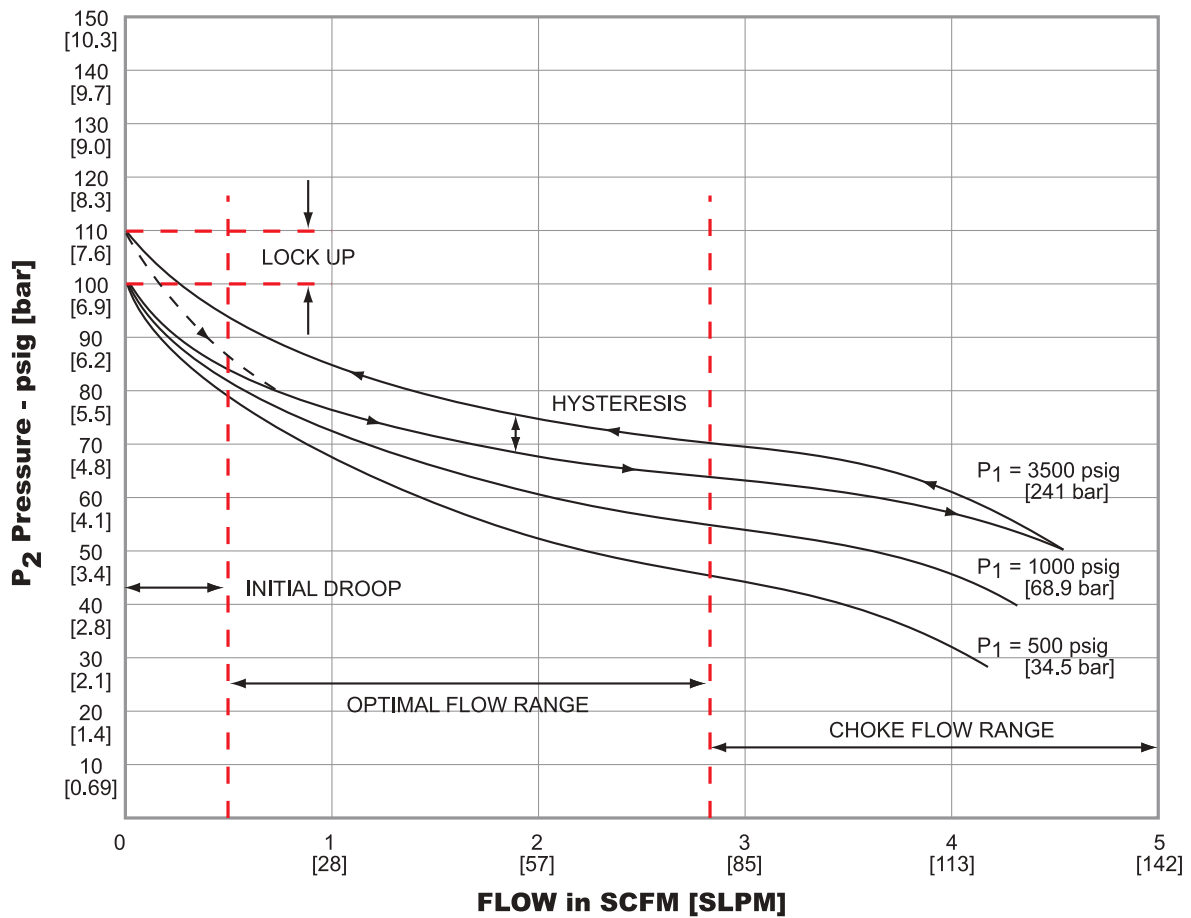
How does it work?

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 P₁=500 psig / 34.5 bar to see if the regulator will still meet expectations. Using the flow curve labeled P₁=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?

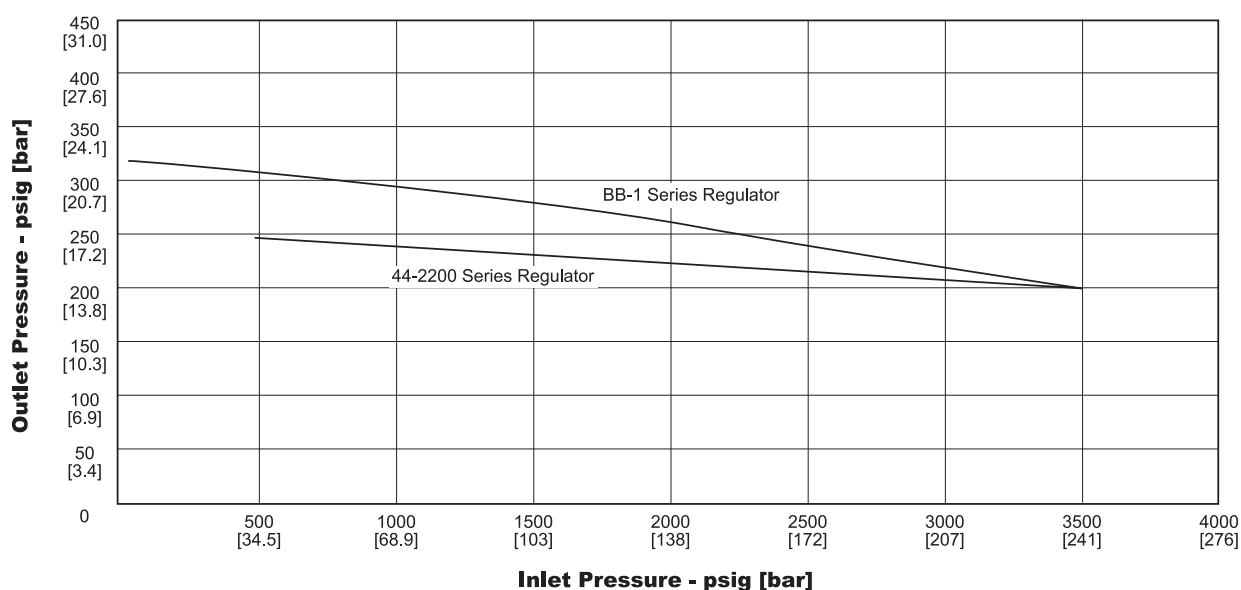
The effect on the set pressure of a regulator due to an inlet pressure change. This is usually an increase in outlet pressure due to a decrease in inlet pressure. Some people work with pressure regulators all of their lives and never know what is really going on inside. TESCOM spends a great deal of 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 TESCO 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.

$$\begin{aligned} 3000 \text{ psig change in inlet pressure} \div 100 \text{ psig} &= \text{Factor of 30} \\ \text{Factor of 30} \times 4 \text{ psig decaying inlet characteristic} &= 120 \text{ psig increase} \end{aligned}$$

$$\begin{aligned} 207 \text{ bar change in inlet pressure} \div 6.9 \text{ bar} &= \text{Factor of 30} \\ \text{Factor of 30} \times 0.28 \text{ bar decaying inlet characteristic} &= 8.4 \text{ bar increase} \end{aligned}$$

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 as 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 \div 100 psig = 0.22 psig \times 0.75 psig = 0.17 psig) (1.5 bar \div 6.9 bar = 0.22 bar \times 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, TESCO 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).

P₁

Inlet pressure expressed in psia.

P₂

Outlet pressure expressed in psia.

ΔP

Differential pressure (P₁ - P₂).

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 $2 \times P_2$.
(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:

$$P_1 = 1000 \text{ psia}$$

$$P_2 = 400 \text{ psia}$$

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

$$S_g = 1.0 \text{ (assume air in this example)}$$

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

*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 $2 \times P_2$ 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:

$$P_1 = 1000 \text{ psia}$$

$$P_2 = 600 \text{ psia}$$

$$C_V = 0.8$$

$$S_g = 1.0 \text{ (assume air in this example)}$$

Solve formula for Q_g :

$$\begin{aligned} Q_g &= \frac{C_V \sqrt{\Delta P \times P_2}}{\sqrt{S_g}} \\ &= \frac{.8 \sqrt{1000-600 \times 600}}{\sqrt{1}} = \frac{392}{1} \end{aligned}$$

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

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:

$$P_1 = 1000 \text{ psia}$$

$$P_2 = 600 \text{ psia}$$

$$S_L = 1.0$$

$$C_V = .08$$

$$\begin{aligned} Q_L &= \frac{C_V \sqrt{\Delta P}}{\sqrt{S_L}} = \frac{0.08 \sqrt{1000-600}}{\sqrt{1}} = \frac{0.08 \times 20}{1} \\ &= \underline{\underline{1.6 \text{ GPM (Water)}}} \end{aligned}$$

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:

$$Q = 20 \text{ CFM}$$

$$P = 294 \text{ psia}$$

$$\begin{aligned} Q_g &= \frac{Q \times P}{14.7} = \frac{20 \text{ CFM} \times 294 \text{ psia}}{14.7 \text{ psia}} \\ &= \underline{\underline{400 \text{ SCFM}}} \end{aligned}$$

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: $M (\text{He}) = 1 \text{ lb. min}$, $S_g (\text{He}) = .138$

$$\begin{aligned} Q_g &= \frac{M \times 13.36}{S_g \times \sqrt{\frac{1}{S_g}}} = \frac{1 \times 13.36}{.138 \times \sqrt{\frac{1}{.138}}} \\ &= \underline{\underline{35.96 \text{ SCFM (Air)}}} \end{aligned}$$

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.

$$\text{Kerosene flow} = 5 \text{ GPM (water)} \times 1.10 \text{ (kerosene multiplier)} = \underline{\underline{5.5 \text{ GPM}}}$$

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.

$$\text{Helium flow} = 300 \text{ SCFM (air)} \times 2.69 \text{ (helium multiplier)} = \underline{\underline{807 \text{ SCFM}}}$$

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

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.

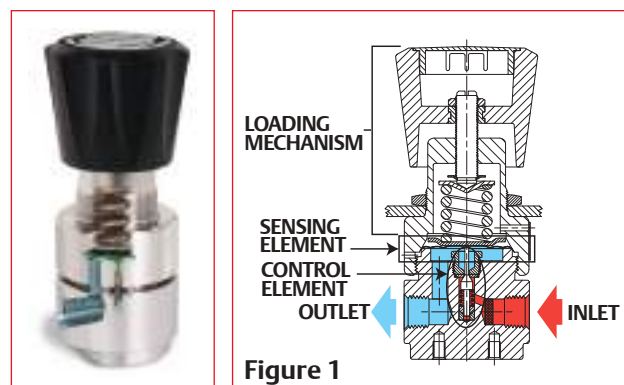
The basic elements of a regulator often will determine the regulator type and series selected for a specific application. In this manual, it will discuss the three basic elements common to all pressure reducing regulators whether manufactured by TESCO or other manufacturers.

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.



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 reseal very close to its original set pressure. Most TESCO backpressure regulators have "crack-to-reseat" pressures less than $\pm 2\%$ of the set-point (relief valves are typically $\pm 10\%$).

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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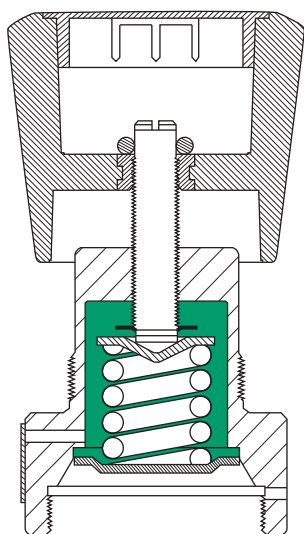
I. Loading Mechanisms

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.

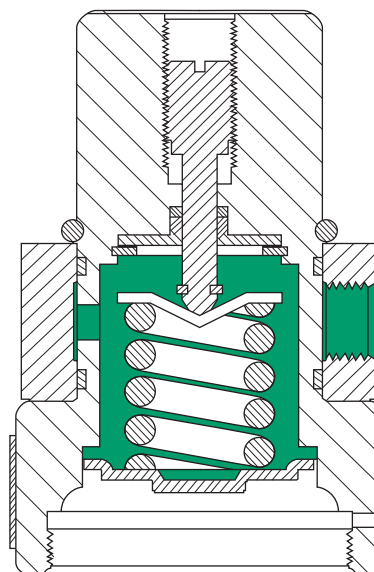
There are four types of loading:

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



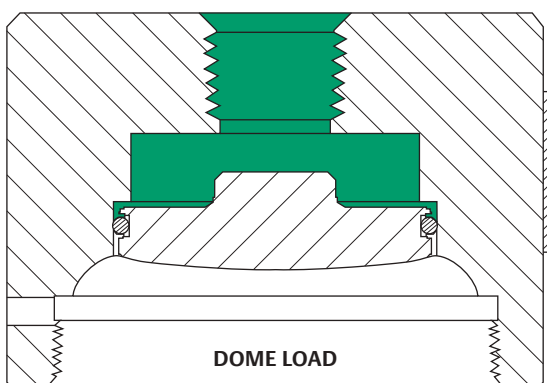
SPRING LOAD

Figure 2



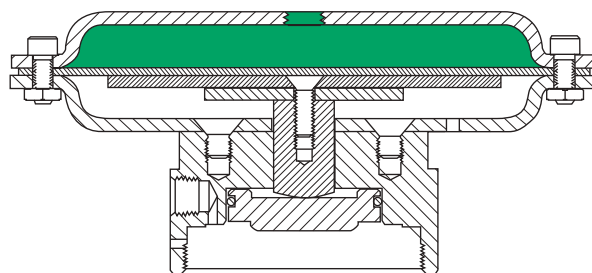
SPRING AND DOME LOAD

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, TESCO[®]M 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

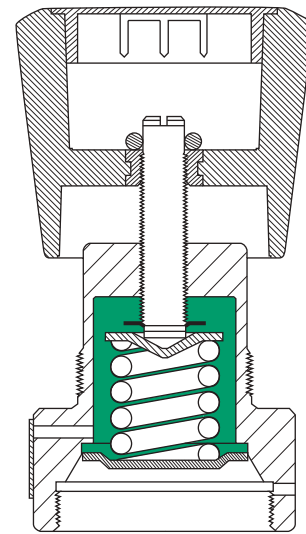


Figure 6

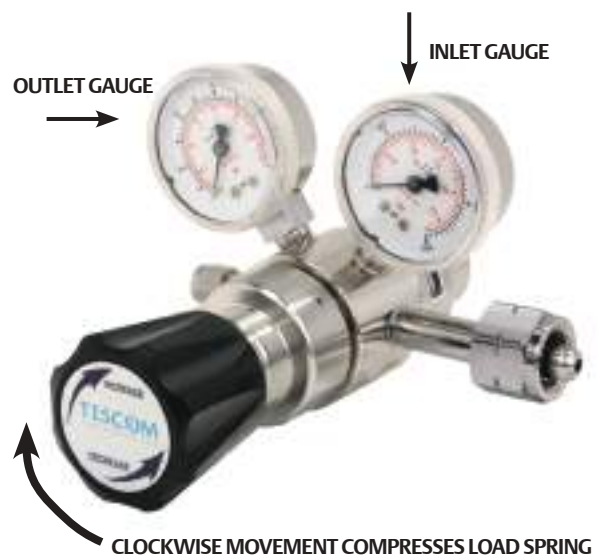


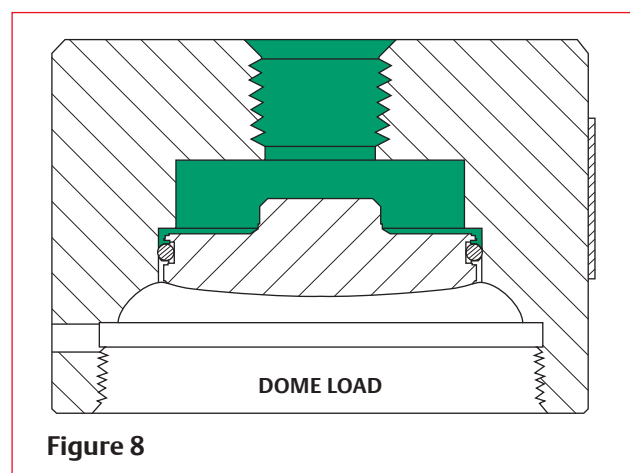
Figure 7

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.

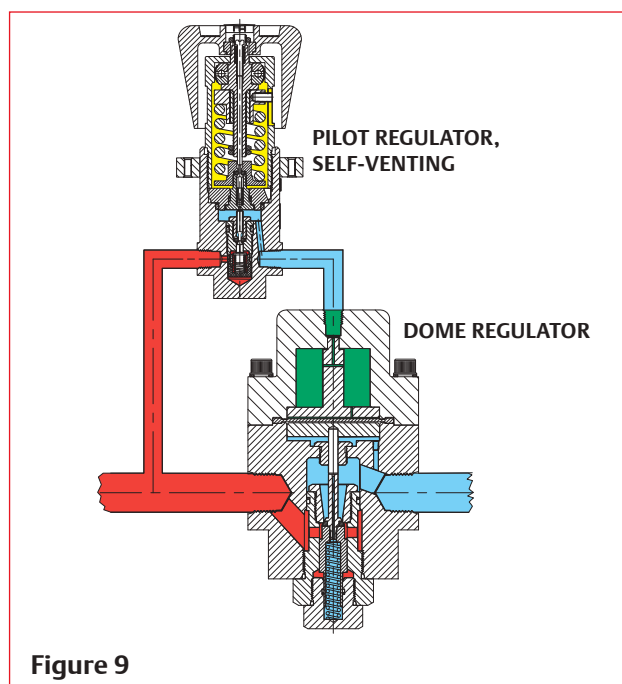
The pressure in the dome determines the regulator's outlet pressure. The dome pressure is essentially equal to the regulator outlet pressure.



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.



Almost all TESCO 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

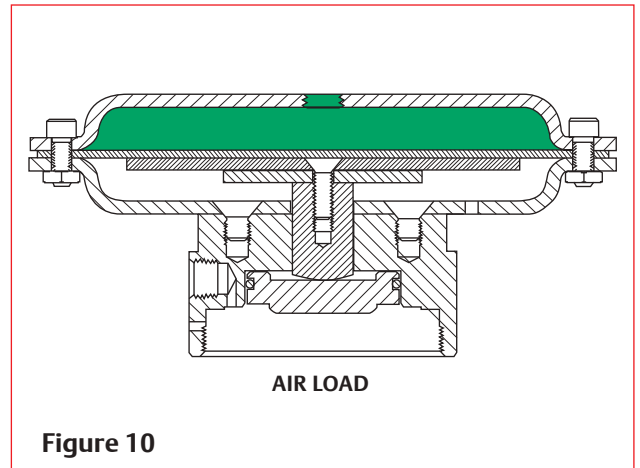
Disadvantage

- 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 TESCO[®] 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 TESCO'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.



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

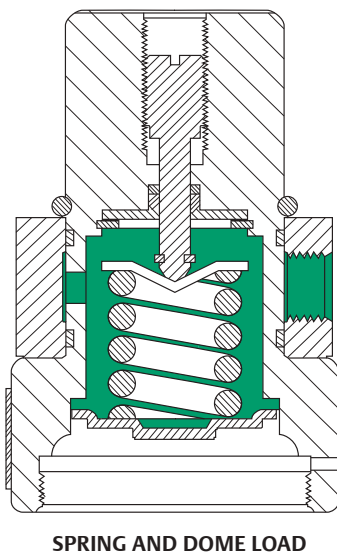


Figure 11

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.

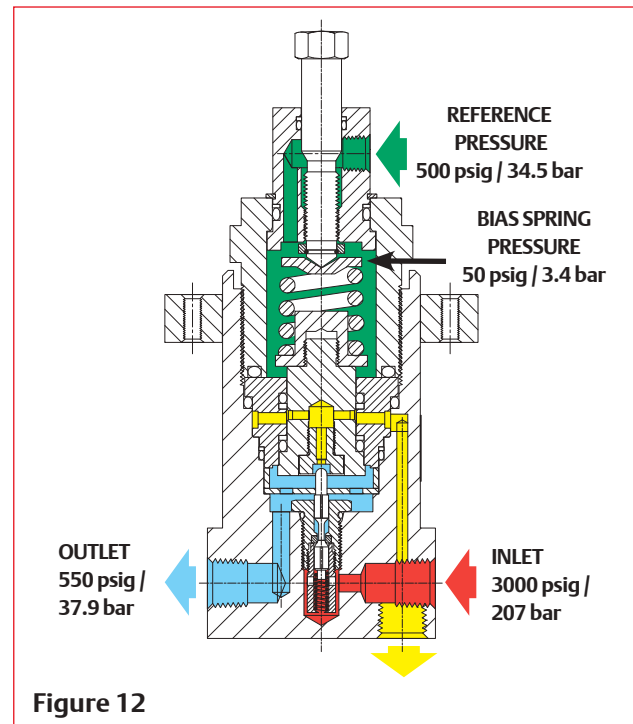


Figure 12

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)

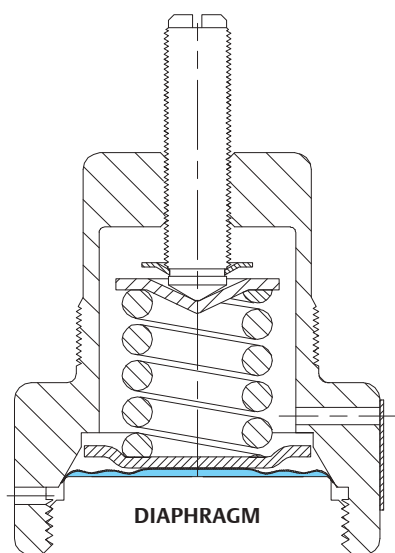


Figure 13

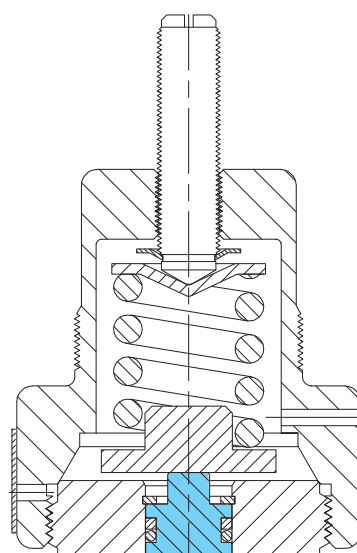


Figure 14

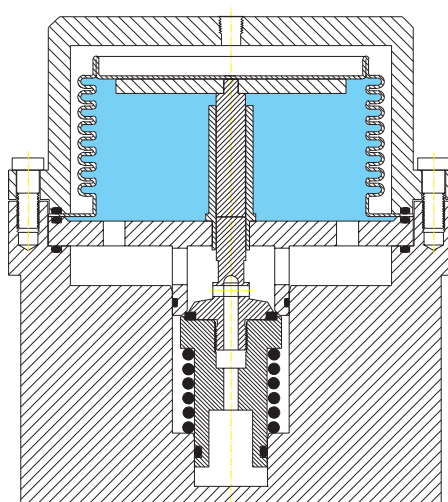


Figure 15

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.

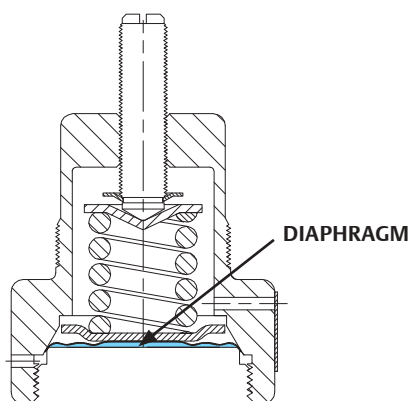


Figure 16

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). TESCO limits the use of diaphragms to outlet pressures up to a maximum of 500 psig / 34.5 bar.

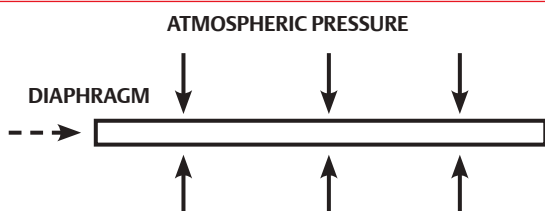


Figure 17

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.

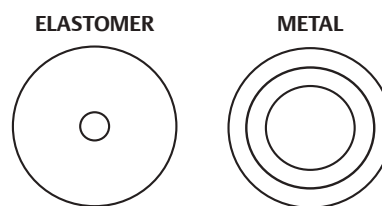


Figure 18

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 TESCO[®] 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

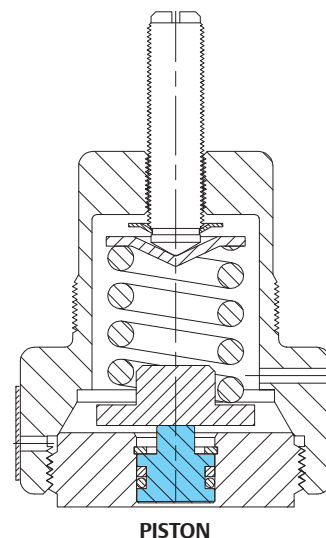


Figure 19

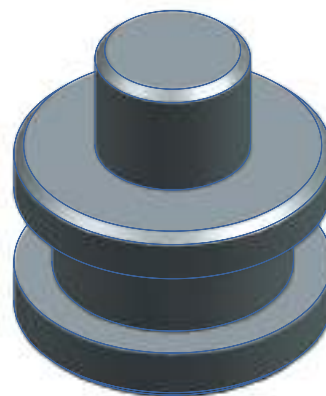


Figure 20

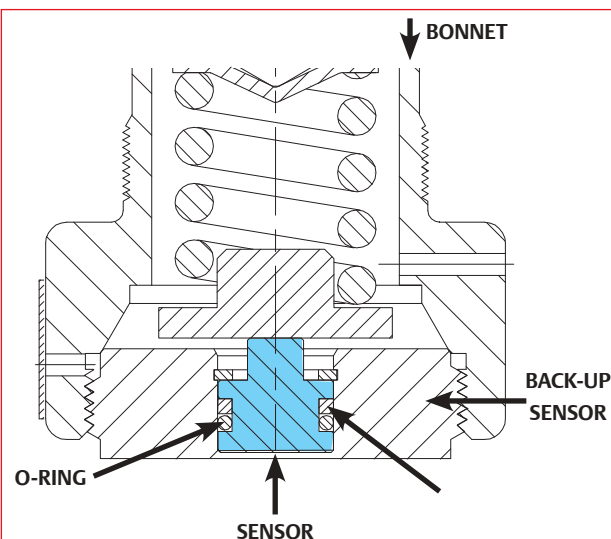
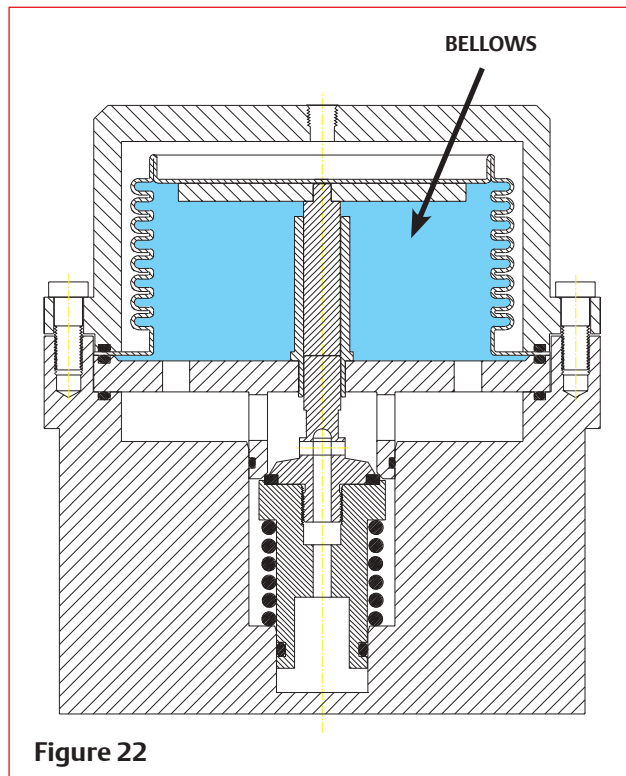


Figure 21

II. Sensing Elements

C. Bellows Sensing Element



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

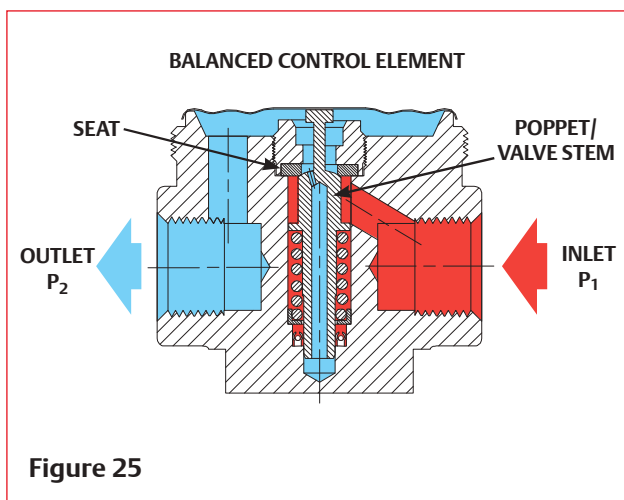
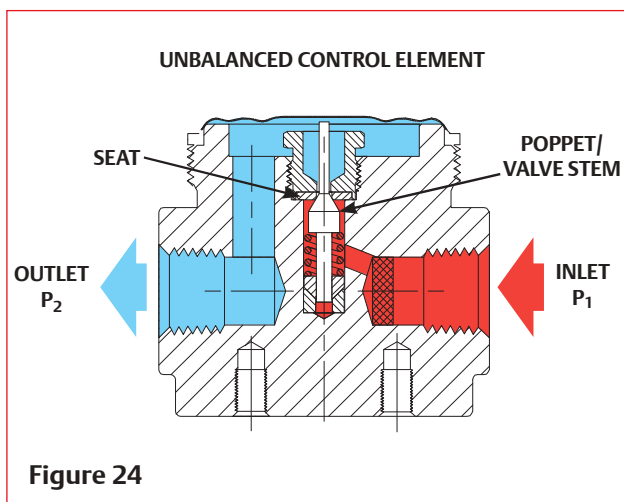
The third and last element is the CONTROL element of which there are two types:

- 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.

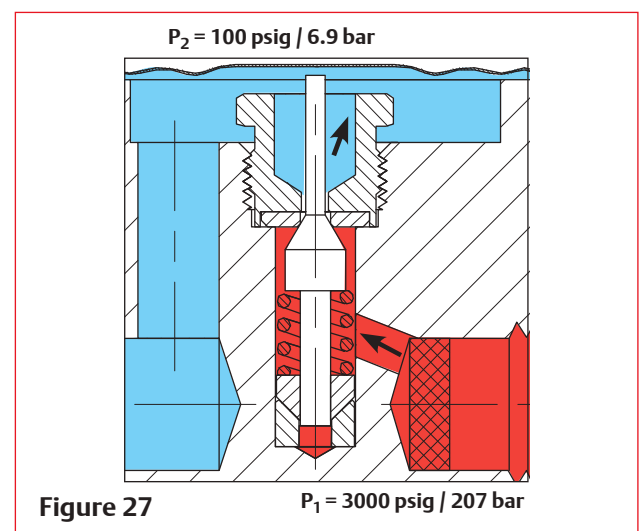
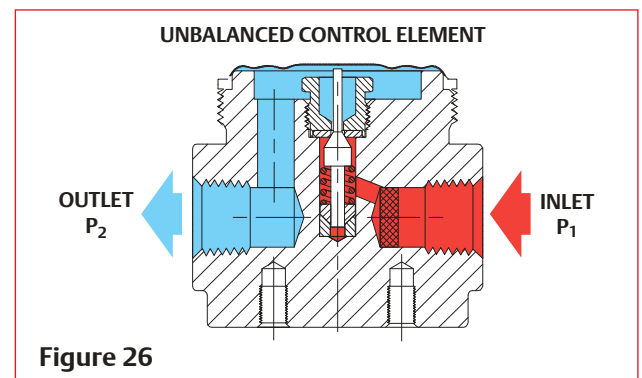
The valve moves towards or away from the regulator seat causing the orifice to become larger or smaller in order to provide the flow demanded and maintain the desired set pressure.



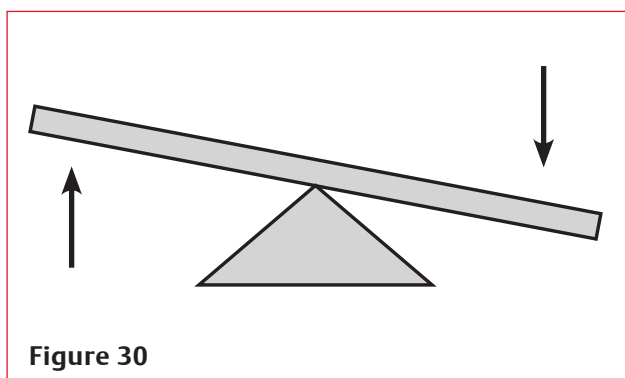
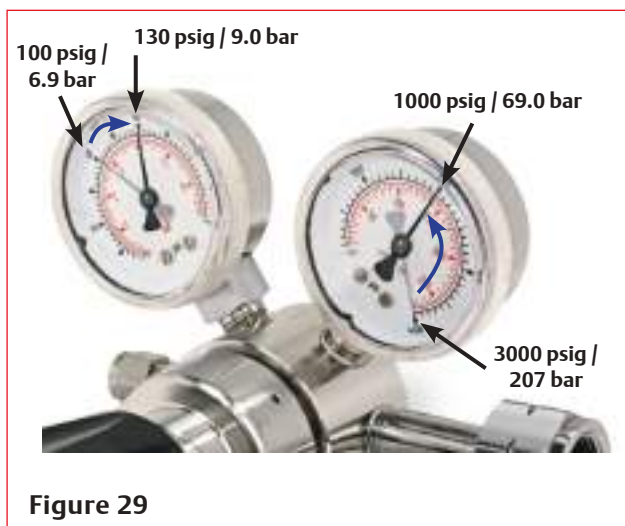
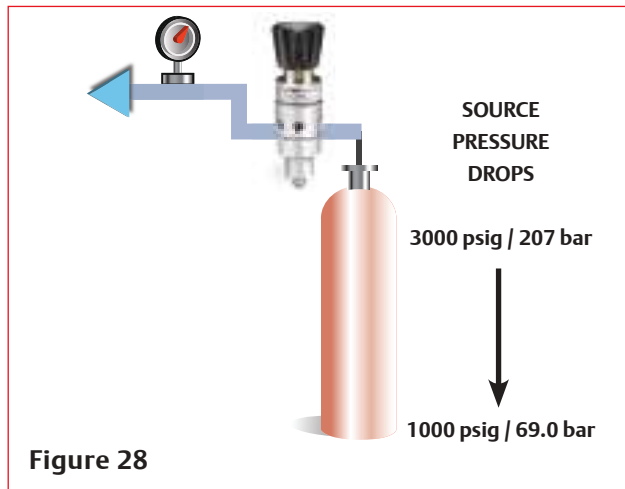
A. Unbalanced Control Element

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.



III. The Control Elements



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:

- Two-stage regulator
- Balanced type valve stem
- Two regulators in a series

Only the balanced type valve stem will be discussed here.

Advantages

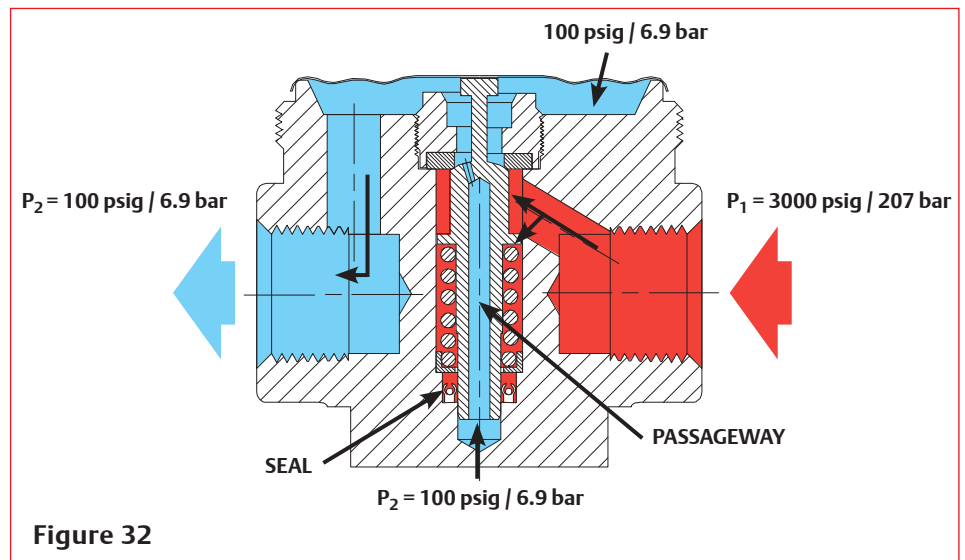
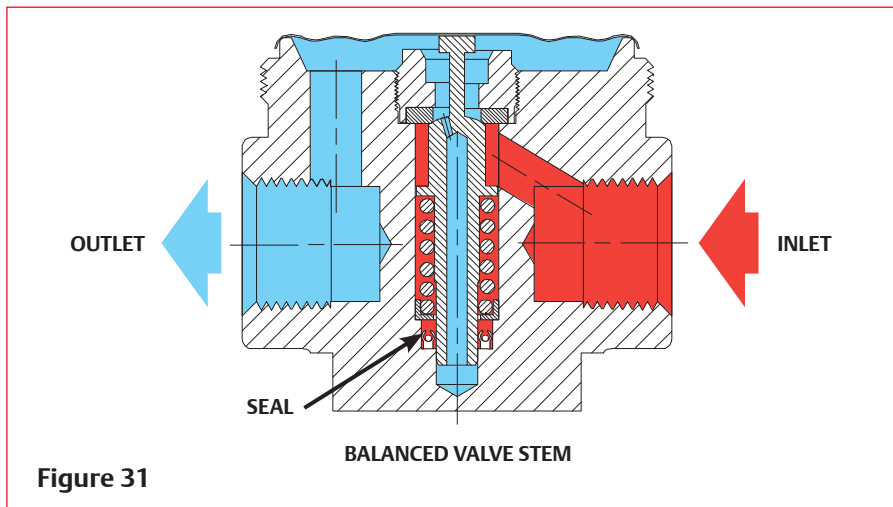
- Inexpensive
- Simple
- Easy to manufacture
- Inlet pressure is used as the main shut-off force

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



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

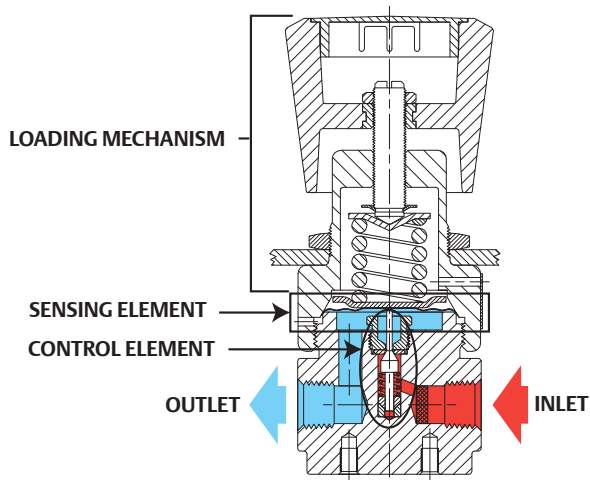


Figure 33

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 34

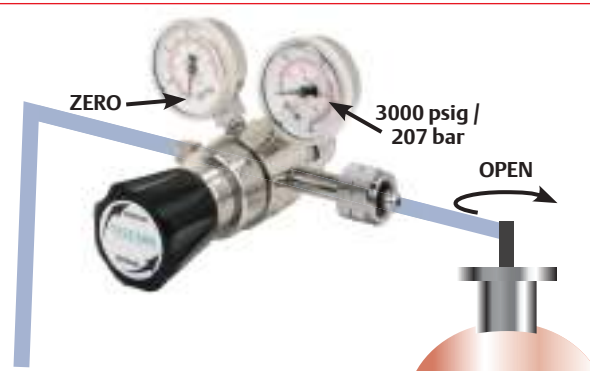


Figure 35

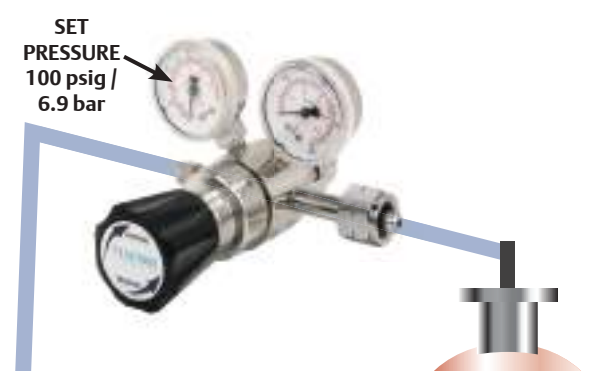


Figure 36

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.

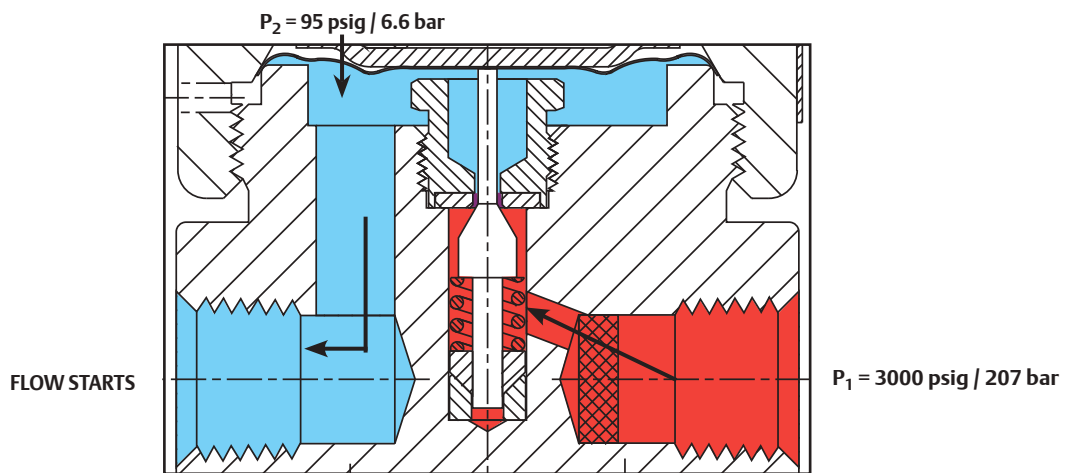


Figure 37

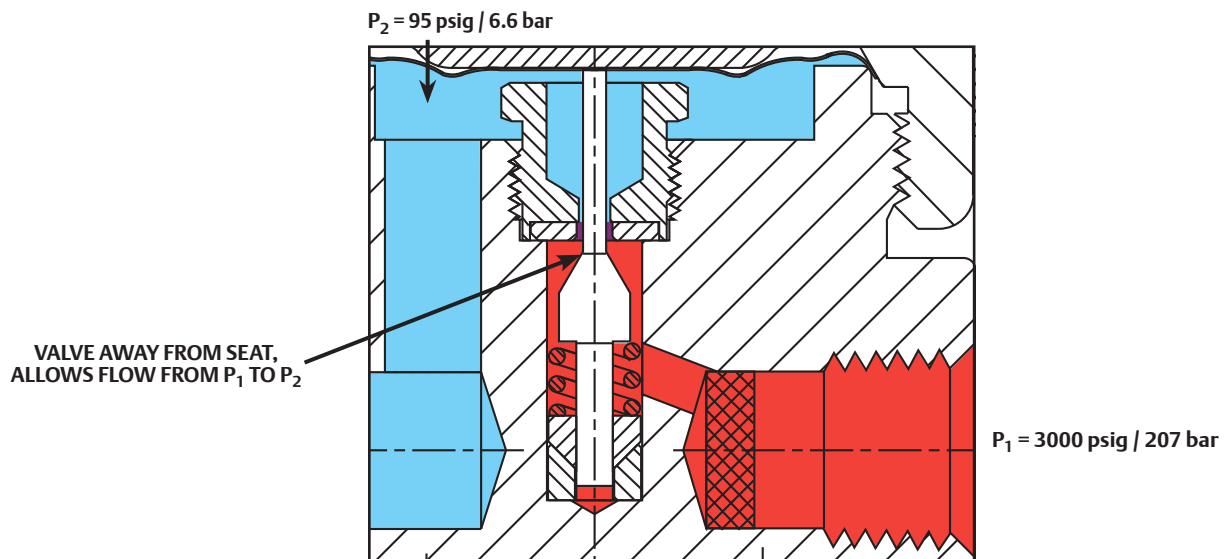


Figure 38

Three Basic Elements

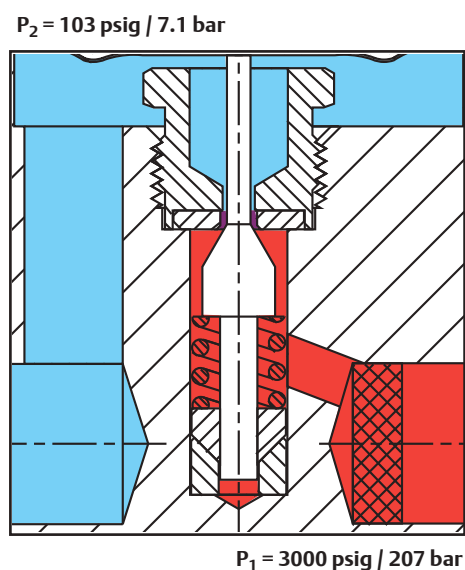


Figure 39

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

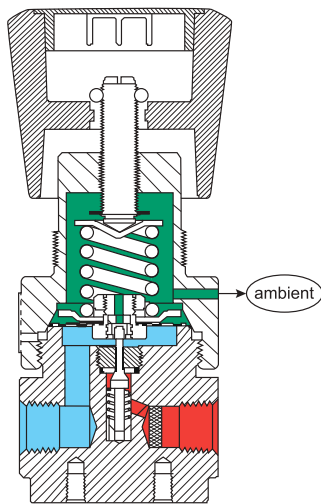


Figure 40

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

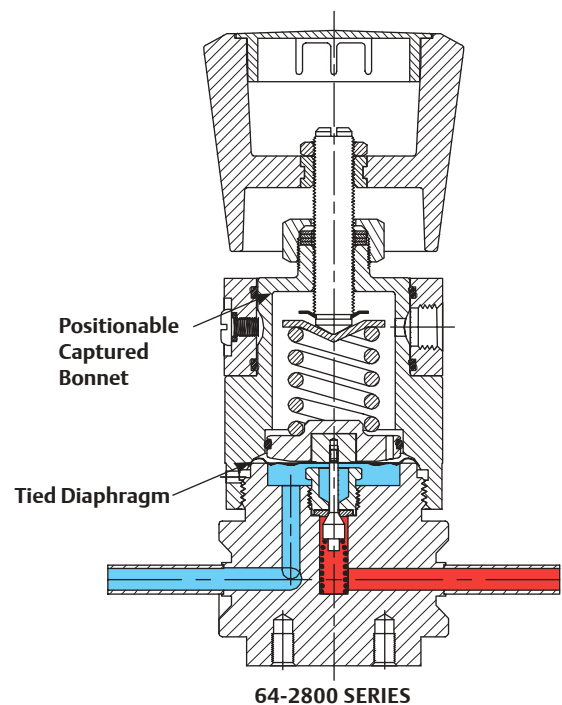


Figure 41

Heated Regulators

Certain speciality gases used in the semiconductor industry such as Hydrogen Chloride (HCl), Nitrous Oxide (N₂O) or Carbon Dioxide (CO₂) 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 condensing 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, TESCO 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 relieving 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
- P₁ (red) is reduced to the preset inter-stage pressure (dark blue)
- Inter-stage pressure is reduced to the adjustable outlet pressure P₂ (light blue)
- Reduces decaying inlet characteristic
- Decaying inlet effect on the inter-stage is equal to an unbalanced single-stage regulator
- Final outlet pressure P₂ is stable

Disadvantages

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

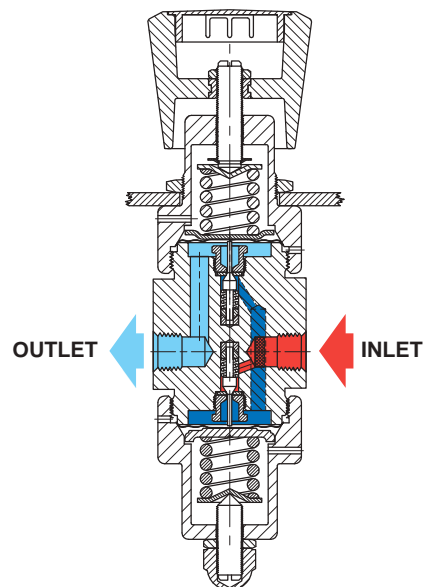


Figure 43

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 ₂ H ₆ | 0.95 | 2200 / 152 | Toxic Flammable | 350 / 632 | Compressed Gas | 64-2600 | 74-2400 12-1 | | | 64-3400 | |
| Dichlorosilane SiH ₂ Cl 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 ₂ H 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 ₂ F 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 ₂ ClF 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 ₂ F 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 ₂ Se | 2.8 | 125 / 8.6 | Toxic Flammable | 350 / 632 | Gas | 64-2600 | 74-2400 12-1 | | | 64-2800 | 74-2400 |
| Hydrogen Sulfide H ₂ S | 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 ₃ Cl | 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 ₂ O | 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 ₃ F 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 PF 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

DCATLAB01292XEN2

| 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 ₂ H 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 ₂ ClF ₅ | 5.49 | 8 | o | 5 | - | 6 | - | 165* | - | - | RU1 |
| Cyclopropane | C ₃ H 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 ₂ H ₆ | 0.95 | 150 | f, t | 1 | - | 4 | - | 350 | - | E | LU4 |
| Ethane | C ₂ H ₆ | 1.05 | 37.7 | f | 1 | - | 4 | - | 350 | - | E | LU1 |
| Ethylene | C ₂ H 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 ₂ F 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 ₂ S | 1.19 | 18.2 | f, t, c | 5 | - | 15 | - | 330 | - | E | LU4 |
| Isobutane | IC ₄ H ₁₀ | 2.09 | 3.02 | f | 1 | - | 4 | - | 510 | - | E | LU1 |
| Isobutene | C ₄ H 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 ₃ N | 1.11 | 3 | f, t | 1 | - | 11 | - | 705 | - | E | LU4 |
| Methyl Chloride | CH ₃ CL | 1.771 | 4.1 | f, t | 1 | - | 7, 17** | - | 510* | - | - | LU4 |
| Methyl Mercaptan | CH ₃ S | 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 ₂ O | 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 ₃ H ₈ | 1.56 | 8.4 | f | 1 | - | 4 | - | 510* | - | E | LU1 |
| Propylene (Propene) | C ₃ H 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 / NFE 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 (integrated 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 TESCO 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 TESCO pressure reducing regulators listed in numerical/alphabetical order

| Model | Page | Model | Page | Model | Page |
|---|------|-----------------|------|----------------------------------|------|
| MULTI-PURPOSE REGULATORS (For Industrial Applications) | | | | | |
| 04 Series | 91 | 44-3400 Series | 187 | | ? |
| 20-1000 Series | 95 | 44-4000 Series | 191 | DH-16 Series | 279 |
| 20-1100 Series | 99 | 44-4200 Series | 195 | DHF Series | 283 |
| 20-1200 Series | 103 | 44-4600 Series | 199 | DK Series | 287 |
| 26-1000 Series | 107 | 44-5000 Series | 203 | FR-2000 Series | 291 |
| 26-1100 Series | 113 | 44-5200 Series | 207 | High Pressure Point-of-Use | 295 |
| 26-1200 Series | 117 | 44-5200F Series | 211 | Labo-F and Doppelregulus | 299 |
| 26-1500 Series | 123 | 44-5800 Series | 215 | Line Pressure Reducer 6.0 | 301 |
| 26-1600 Series | 127 | 44-7400 Series | 219 | MiniLabo 2 | 305 |
| 26-2000 Series | 131 | 50-2000 Series | 223 | PS-3400 Series | 313 |
| 44-1100 Mod 834 | 139 | 50-2200 Series | 227 | Regulus 3 | 317 |
| 44-1100 Series | 135 | | ? | Regulus 4 | 321 |
| | ? | 50-2000 Series | 223 | Regulus Stainless Steel | ? |
| 44-1300F Series | 149 | 50-2200 Series | 227 | | ? |
| 44-1500 Series | 153 | 54-2800 Series | 243 | | ? |
| 44-1800 Series | 157 | 56 Series | 247 | | ? |
| 44-2200 Series | 161 | 56-2000 Series | 251 | SJS Series | 347 |
| 44-2200F Series | 165 | BB-1 Series | 253 | Ultra High Purity MiniLabo 2 | 309 |
| 44-2600 Series | 169 | BE Series | 257 | WEGA 1 and 2 | 351 |
| 44-2800 Series | 173 | CP32 Series | 261 | WEGA Corrosive Gases and Purging | 355 |
| | ? | DA Series | 265 | WEGA Mini | 357 |
| 44-3200F Series | 183 | DG Series | 269 | | ? |
| HIGH PURITY GASES (For Microelectronic Applications) | | | | | |
| 12 Series | 363 | 64-2600 Series | 387 | 64-5400 Series | 411 |
| 15 Series | 367 | 64-2800 Series | 391 | 74-2400 Series | 415 |
| 22-2200 Series | 371 | 64-3200 Series | 395 | 74-3000 Series | 419 |
| 22-5400 Series | 375 | 64-3400 Series | 399 | | ? |
| 23 Series | 379 | 64-3600 Series | 403 | | |
| 449-254 Series | 383 | 64-5000 Series | 407 | | |
| PHARMPURE™ (For Life Sciences Applications) | | | | | |
| | ? | PH-2200 Series | 435 | PH-3200 Series | 443 |
| PH-1800 Series | 431 | PH-2600 Series | 439 | | |

Specifications

For other materials or modifications, please consult TESCO.

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: $< 1 \times 10^{-6}$ atm cc/sec He

Operating Temperature¹

-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 (Elgiloy®)

Seat

PCTFE¹, 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

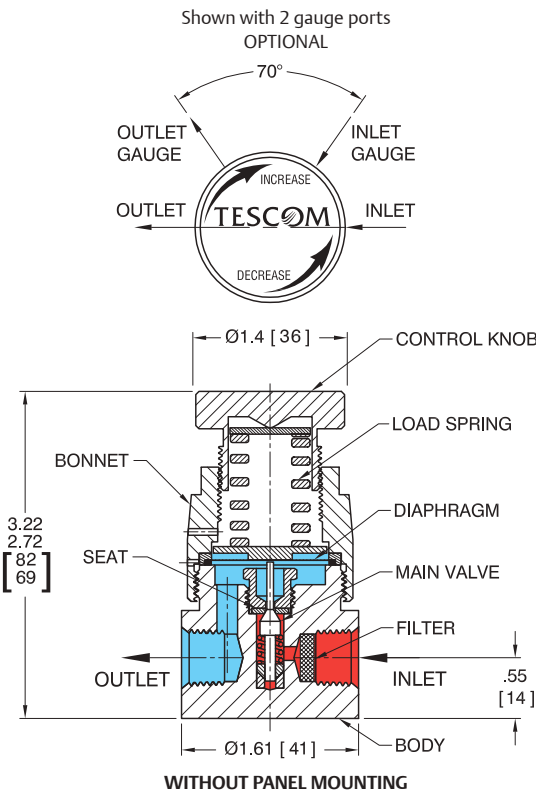
- Compact size (3" / 76 mm high) and constructed with lightweight materials
- Available in 316 Stainless Steel, Brass, or Aluminum body construction
- Elgiloy® diaphragm provides accurate and stable pressure control
- Minimal internal volume allows for rapid purging and carry-over
- Corrosion resistant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

NOTE:

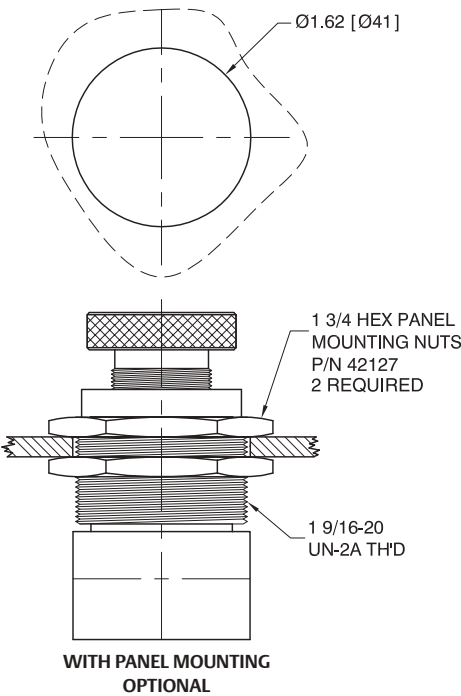
When choosing a regulator and control pressure, decaying inlet characteristic must be considered when the supply pressure is expected to change. The decaying inlet characteristic of a pressure reducing regulator is commonly known as the increase in control pressure due to the decrease in supply pressure. 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 TESCO customer support further assistance.

04 Series Regulator Drawing



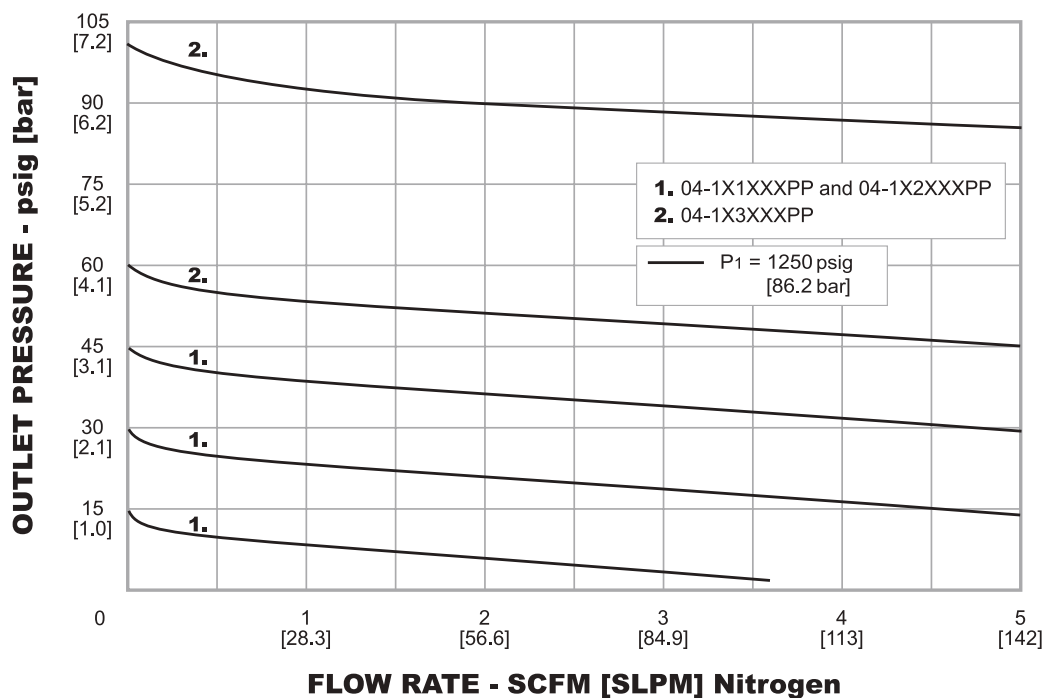
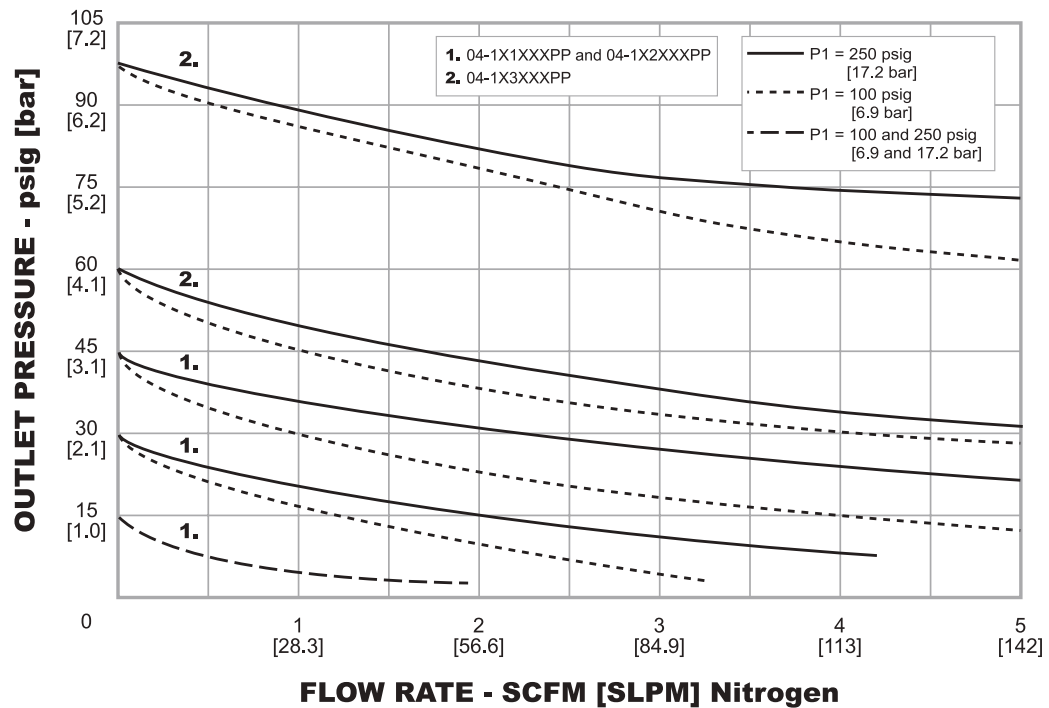
Required mounting hole for panel mounting



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 TESCO catalog or on www.tescom.com.



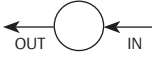
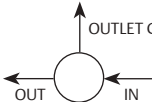
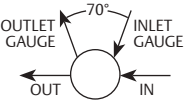
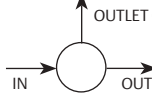
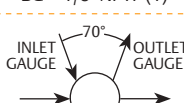
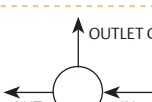

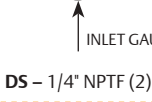
04 Series Regulator Part Number Selector



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 2 – 0-60 psig 0-4.1 bar 3 – 0-100 psig 0-6.9 bar | Without Panel Mounting A – Black knob With Panel Mounting E – Black knob |  AA – No Gauge Ports (0) | PP – 1/8" NPTF NN – 1/4" NPTF | Z – None |
| | B – 3500 psig 241 bar 316 Stainless Steel/Brass | Brass PTFE | | |  AF – 1/4" NPTF (1) AG – 1/8" NPTF (1) | | |
| | C – 3500 psig 241 bar 316 Stainless Steel/Brass | Aluminum PTFE | | |  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®) | | | | | |

Specifications

For other materials or modifications, please consult TESCO.

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.



TESCO 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.

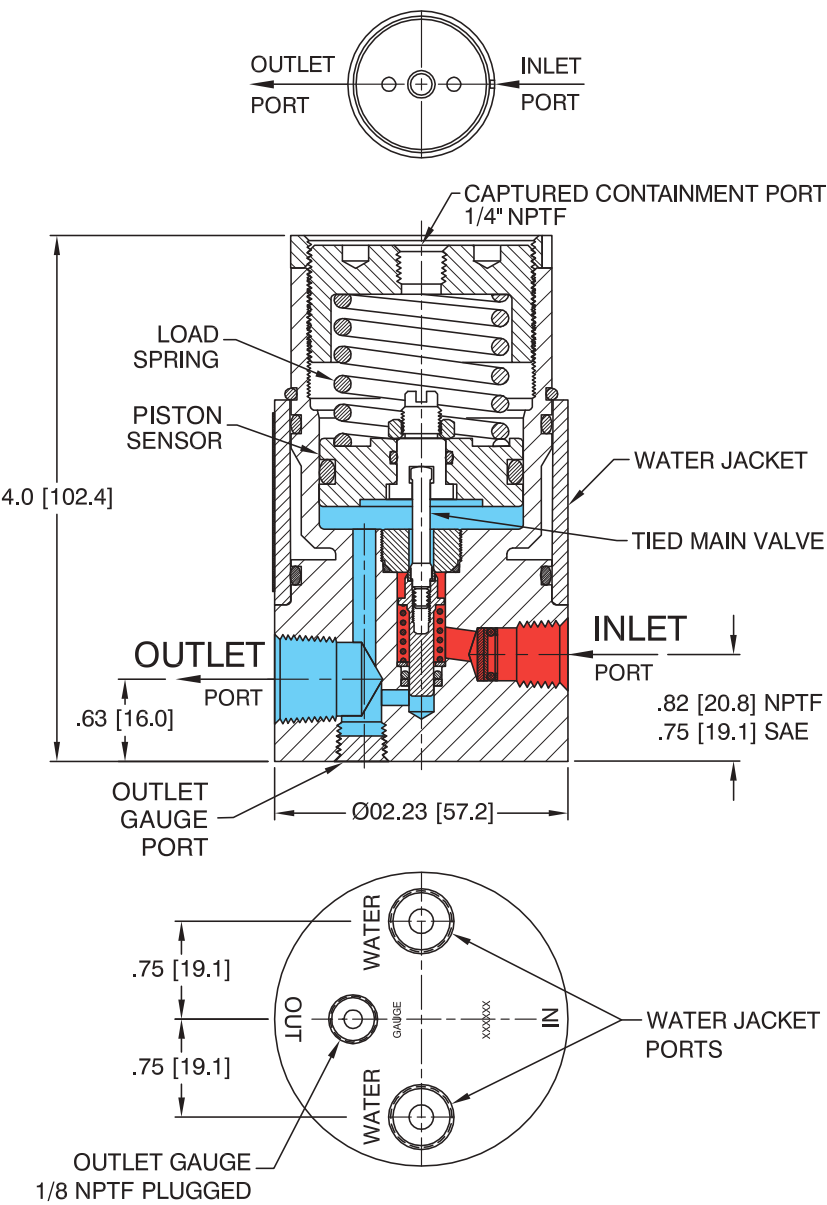
Application

- 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

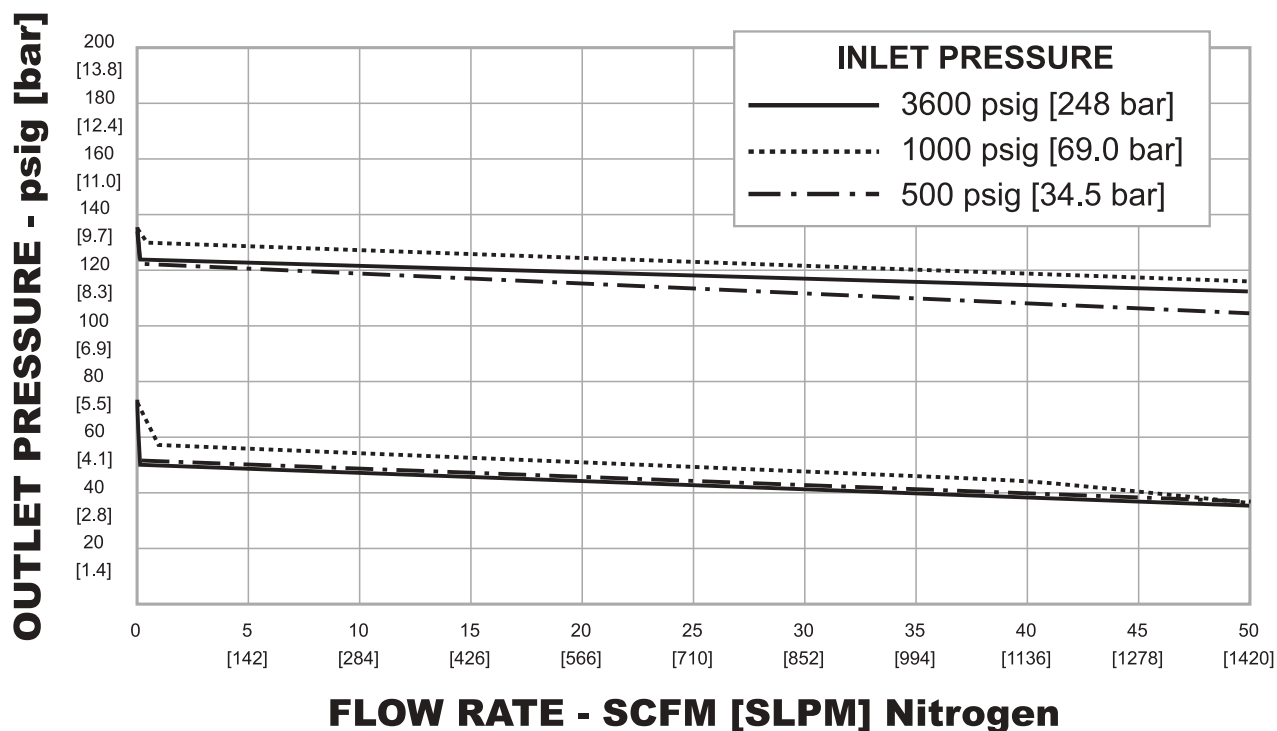
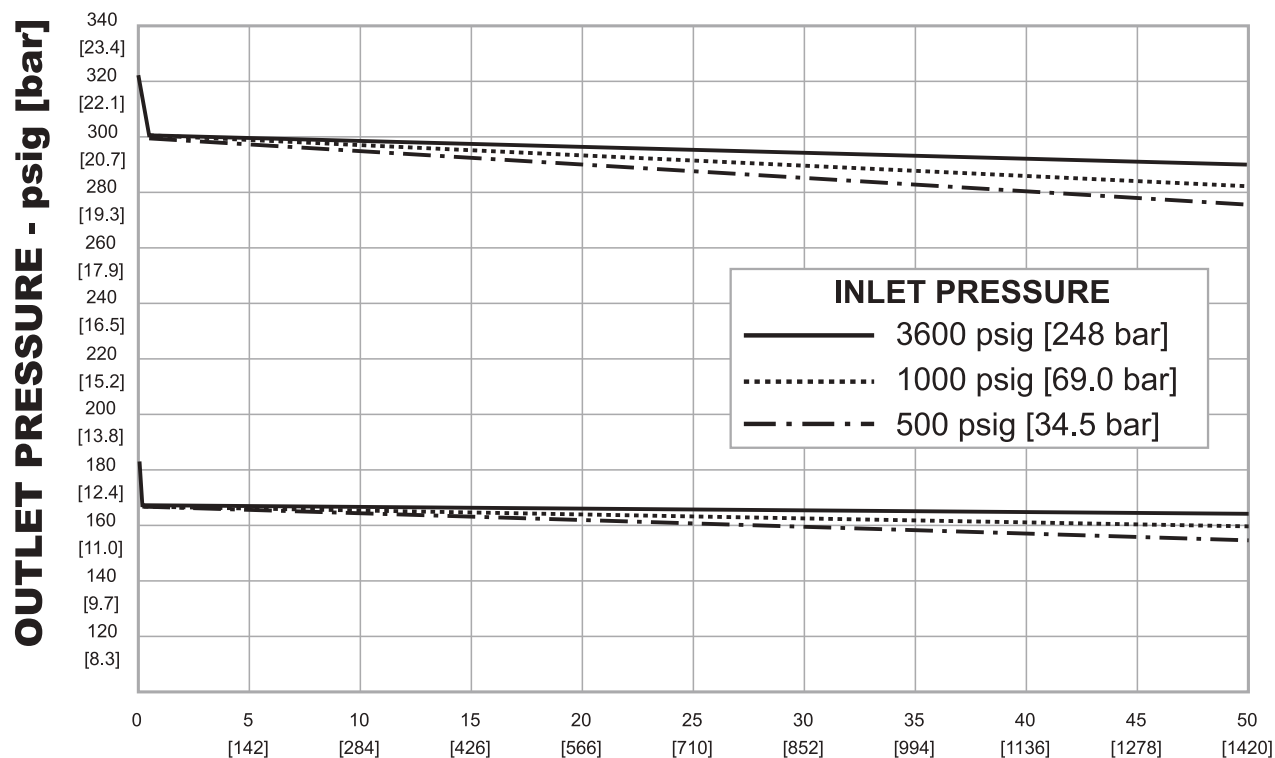
20-1000 Series Regulator Drawing



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 TESCO 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 |

Specifications

For other materials or modifications, please consult TESCO. M.

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/dm³)

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

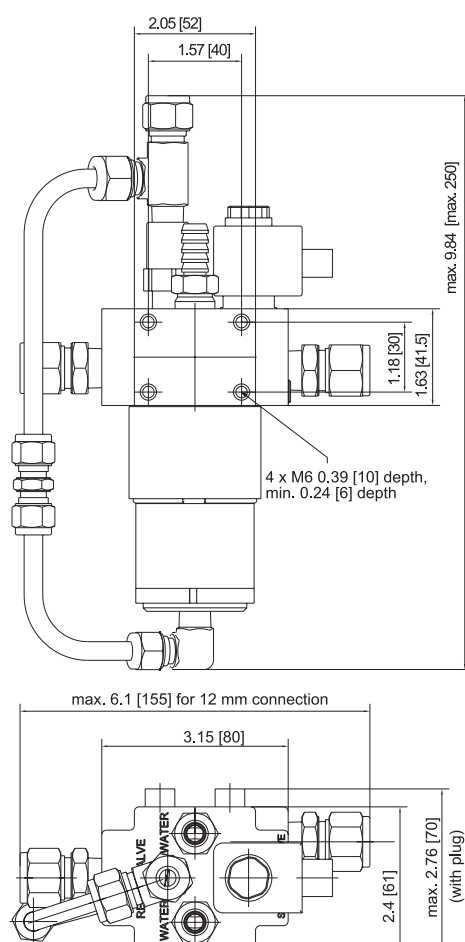
Application Details

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 TESCO 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

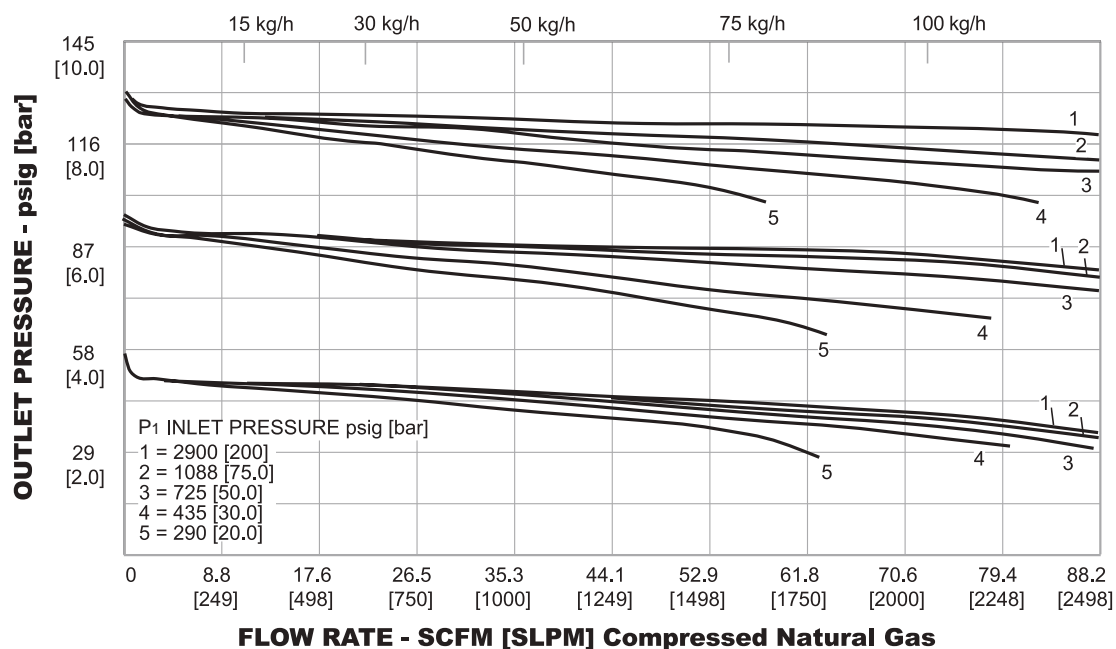
20-1100 Series Regulator Drawing



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 TESCO 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 O – 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 | | | | | | | | | |



Specifications

For other materials or modifications, please consult TESCO.

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.

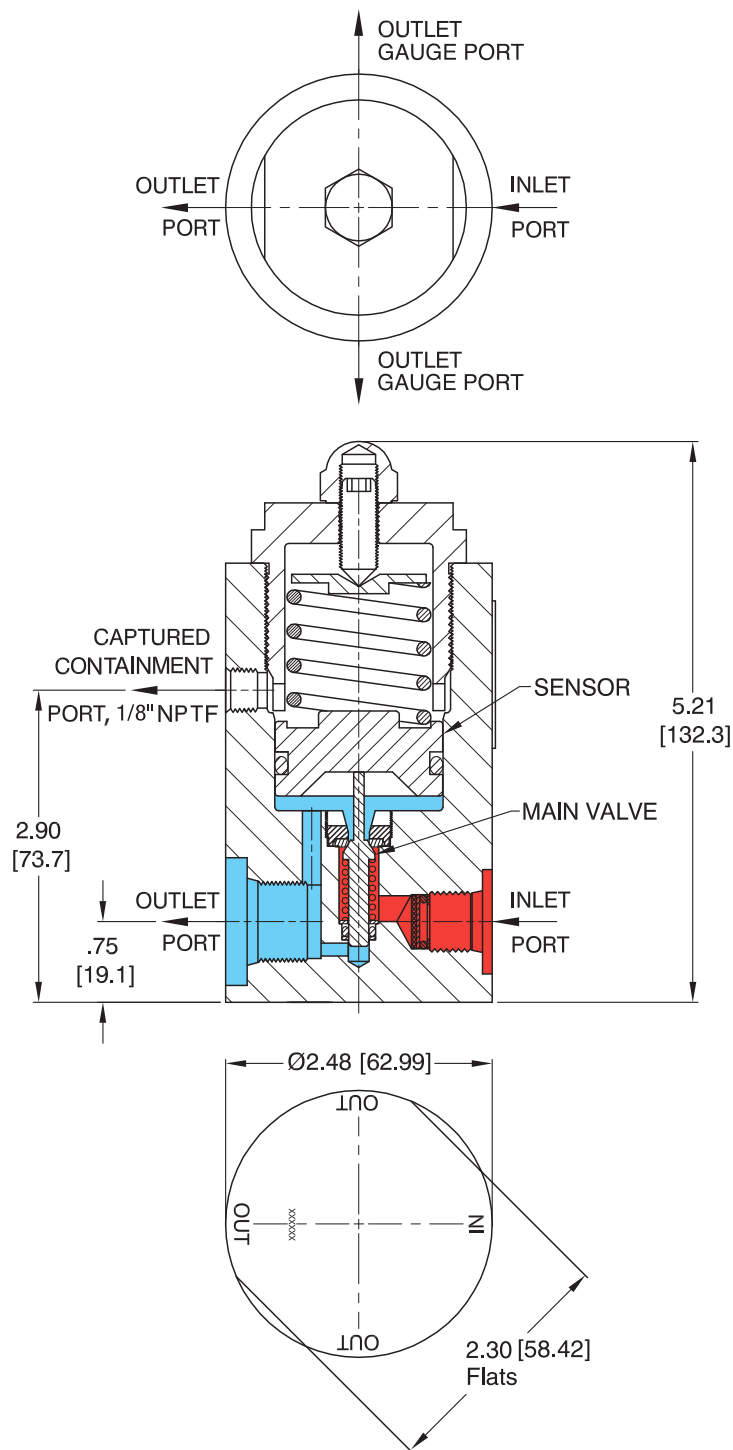
Application

- Hydrogen fuel cell vehicles

Features and Benefits

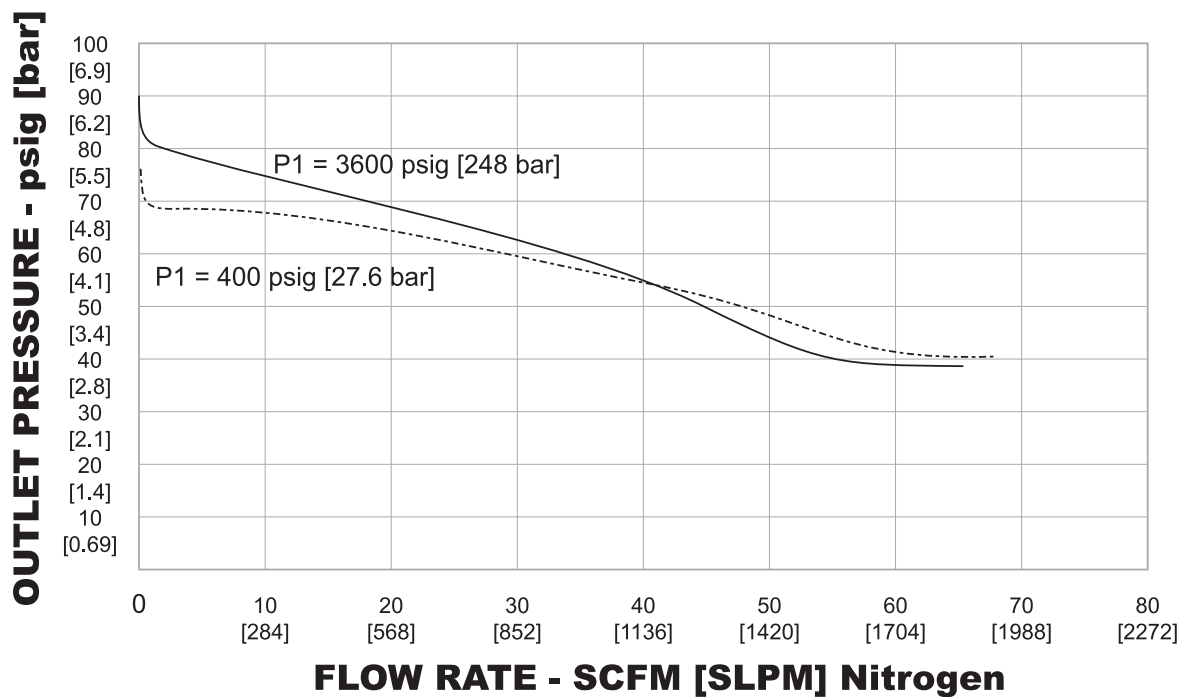
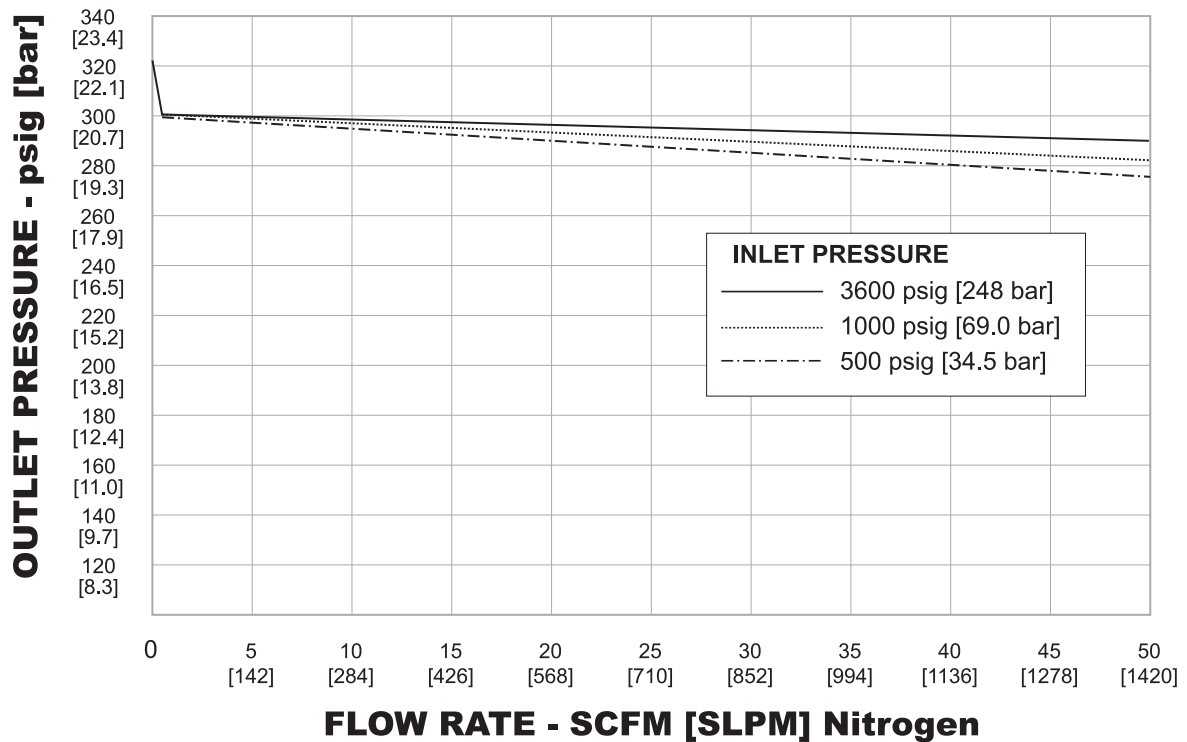
- Piston-sensed design provides a long service life and enhanced safety
- High flow and minimal flow droop
- Balanced valve design minimizes supply pressure effect
- Lightweight, precision machined aluminum construction
- Used in diverse applications for a broad range of temperatures, flows, and pressures
- 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 |

Regulators - Pressure Reducing

D26100538X012

Specifications*For other materials or modifications, please consult TESCO.***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

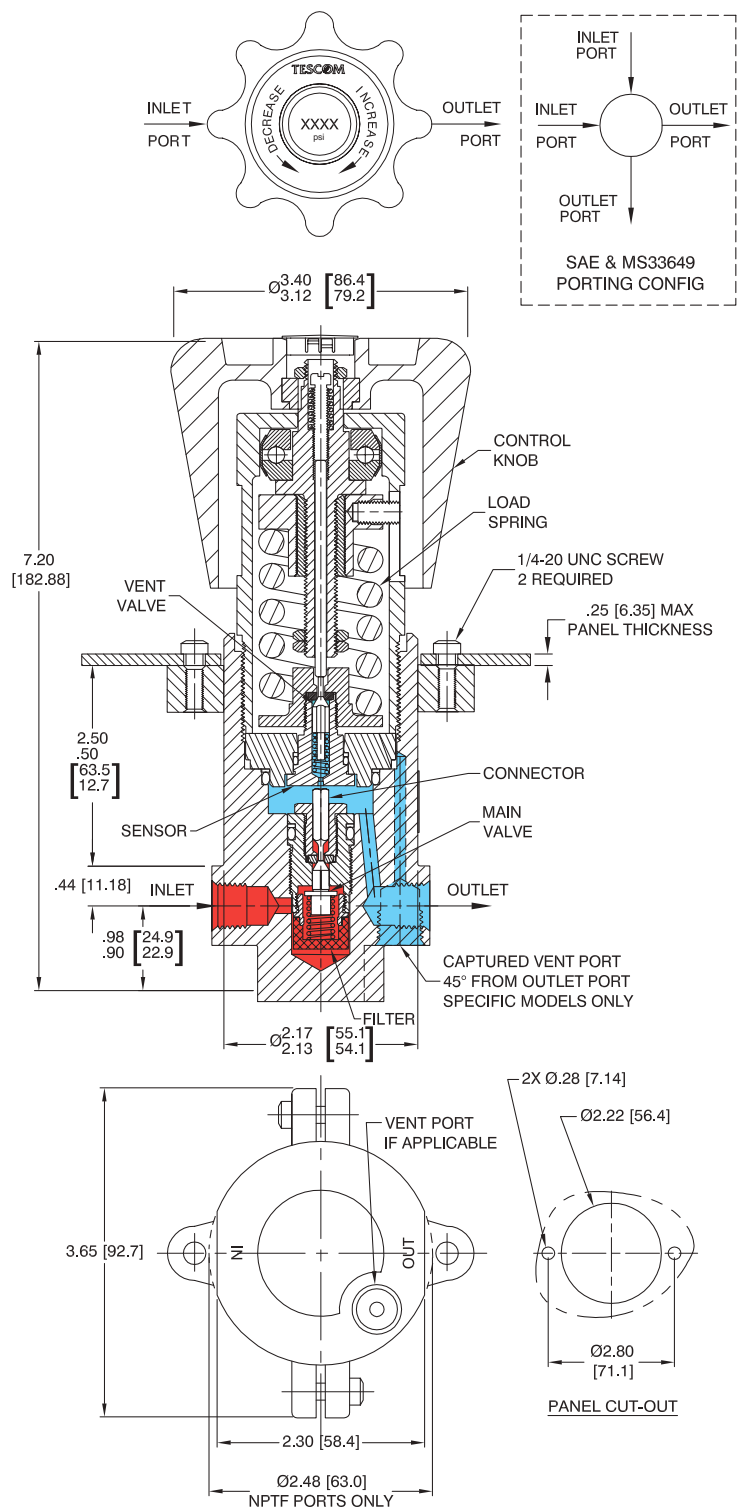
- Test equipment
- Calibration stands
- Production equipment

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

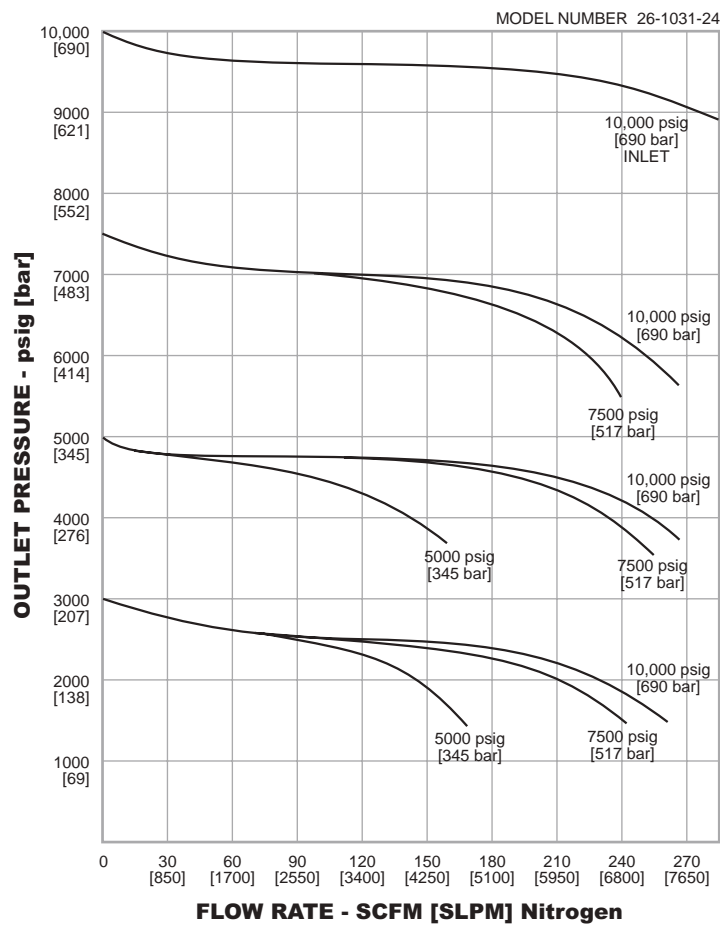
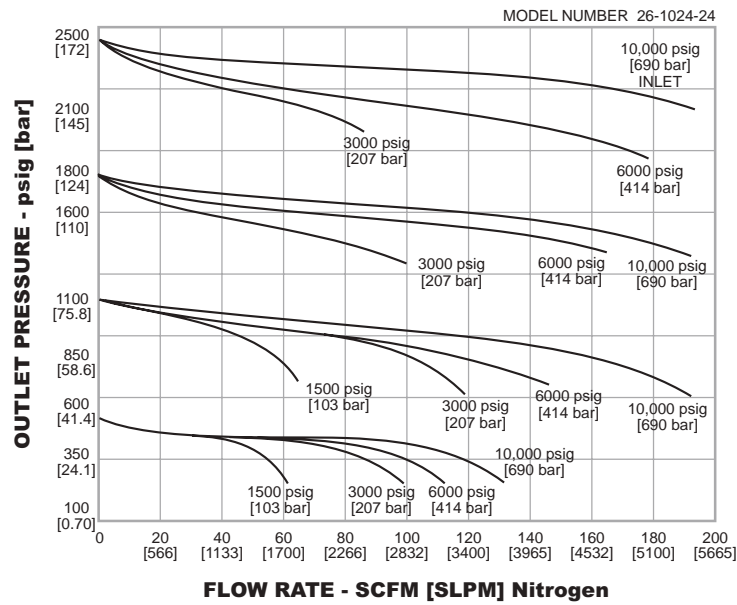


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 TESCO 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 <div>1. Two inlet and outlet ports standard at 90°</div> | 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 | FEATURE | PART NUMBER | SUFFIX |
|--|-----------------------|----------------|--------------------------|
| Captured Venting | | 002 | |
| <i>The captured bonnet vent port allows the user to: 1) capture fluids, 2) re-use vented media, and 3) provide a secondary sealed barrier.</i> | | | |
| 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 | |
| <i>For varied outlet capabilities, consult factory.</i> | | | |
| Wrench Adjustment with Locking Device | | 098 | |
| <i>For applications subject to vibration or accidental changes in pressure settings.</i> | | | |
| 1/2" Inlet and Outlet Ports | | 163 | |
| Non-Venting with Viton-A® O-Rings | | 280 | |
| Air Ratio Device, Non-Venting Only | | 045A | |
| <i>With pressure ranges of:</i> | | | |
| 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 |
| <i>* Ratio is for reference only</i> | | | |
| 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 |
| <i>** The air ratio model can provide up to 15,000 psig / 1034 bar outlet pressure. For specific ratios, consult factory.</i> | | | |
| 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 |
| <i>Available to automate your system. Can be used with air ratio or dome-loaded models.</i> | | | |

26-1000 with
Air Actuator

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 |
| <i>Consult Tescom about kits for modifications.</i> | |
| 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. | |
| <i>Consult Tescom for additional information and a specific part number.</i> | |

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.

- **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**

26-1000 Series Kit



| 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 |

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

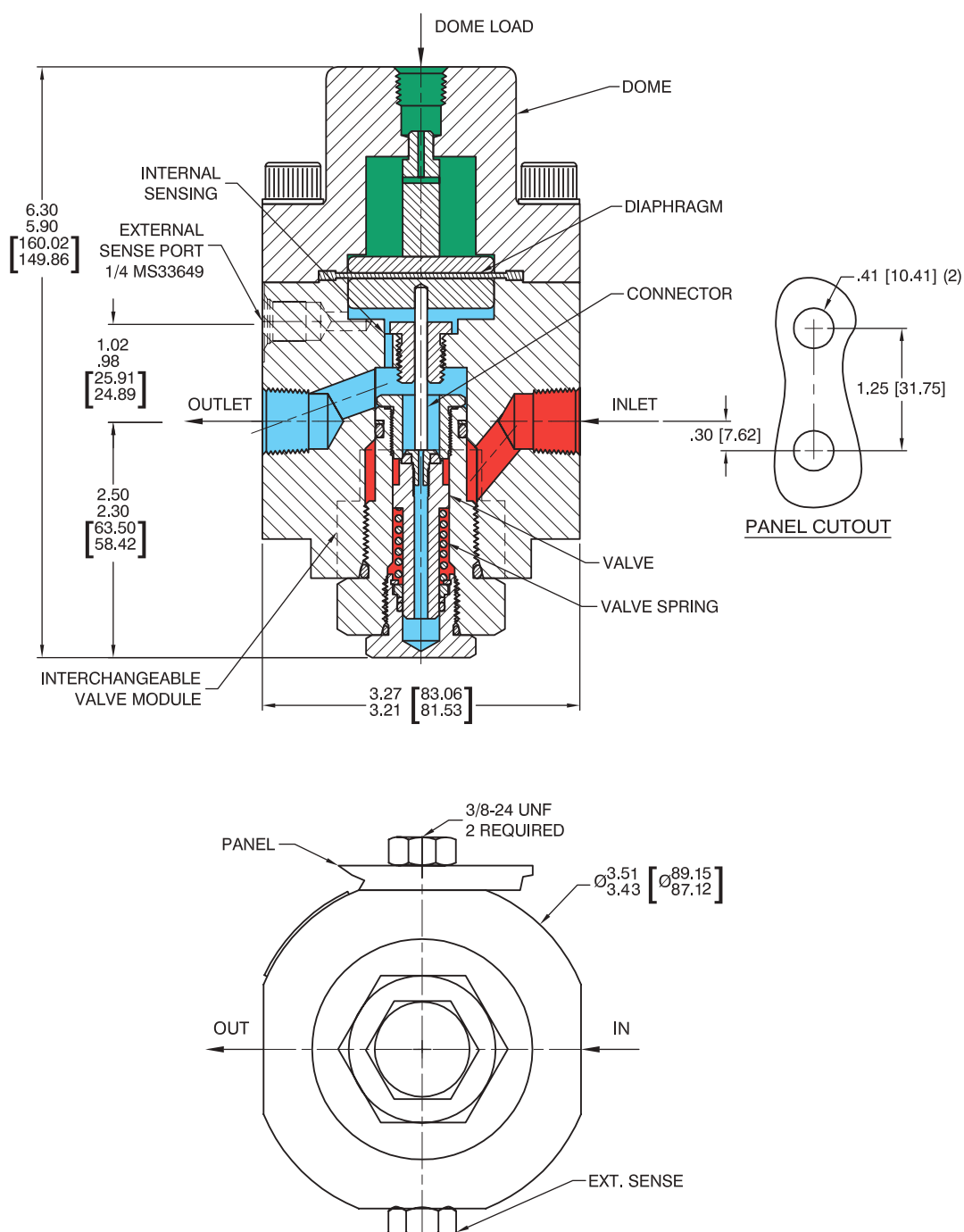
- Pneumatic test consoles
- R&D laboratories

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

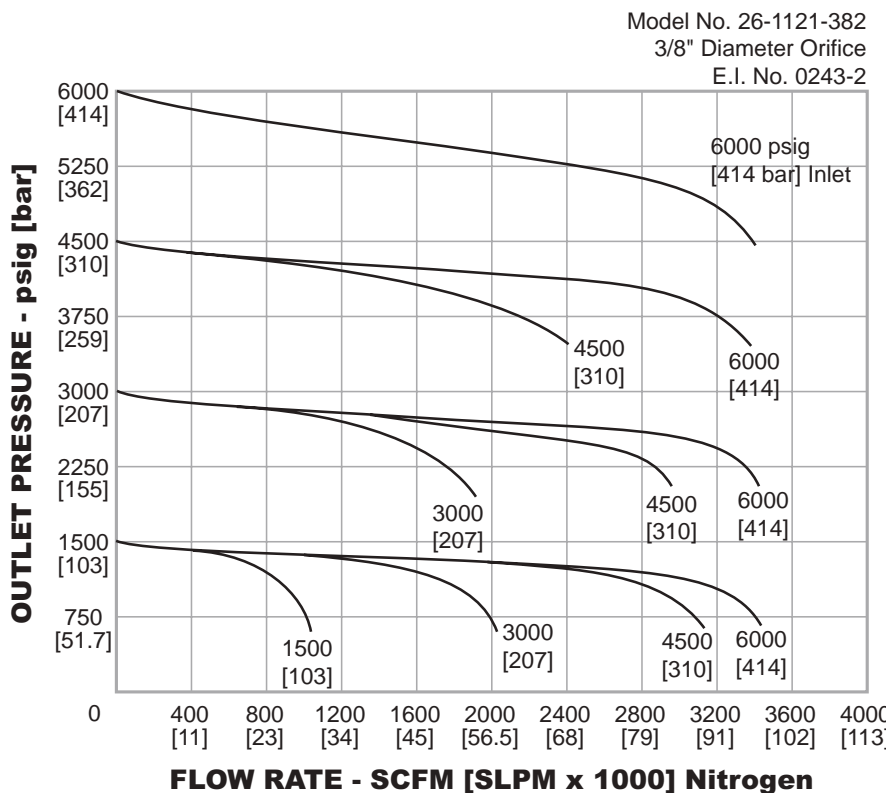
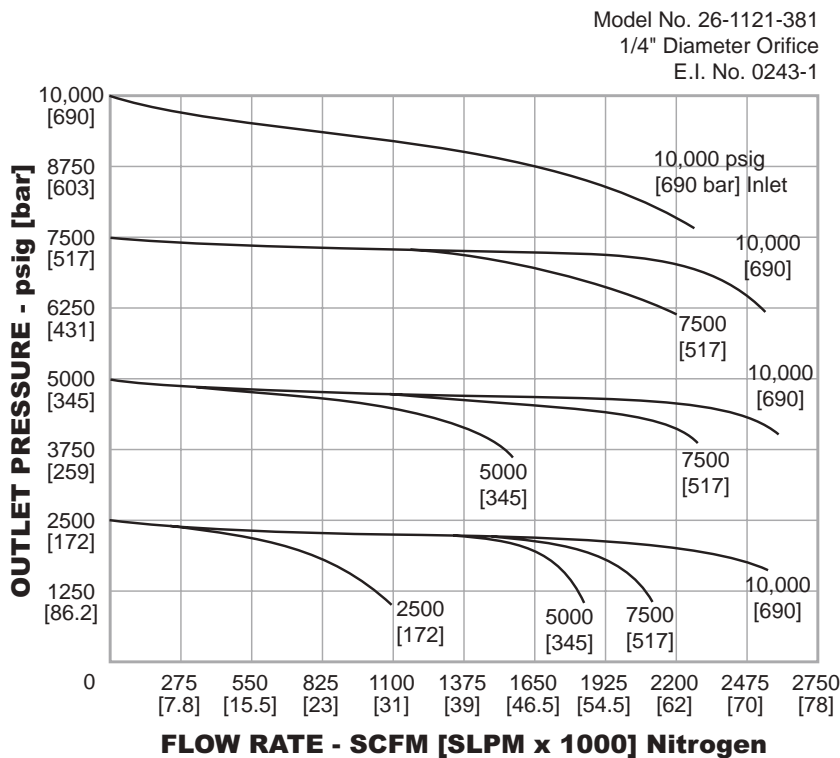
26-1100 Series Regulator Drawing



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 | DOMES 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 TESCO.

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

$C_v = 3.3, 6.0, 12.0^* \text{ or } 20.0$

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

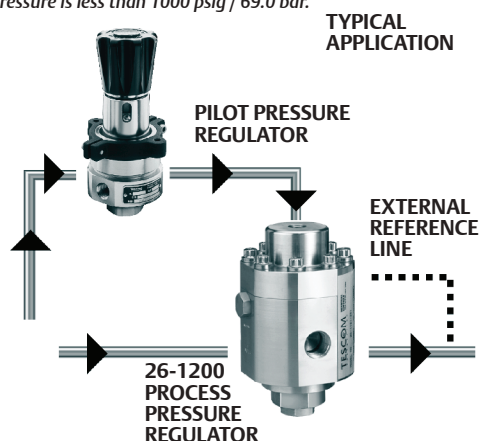
OTHER

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 TESCO 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 <i>Pressure rating per criteria of ANSI/ASME B31.3</i> | 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

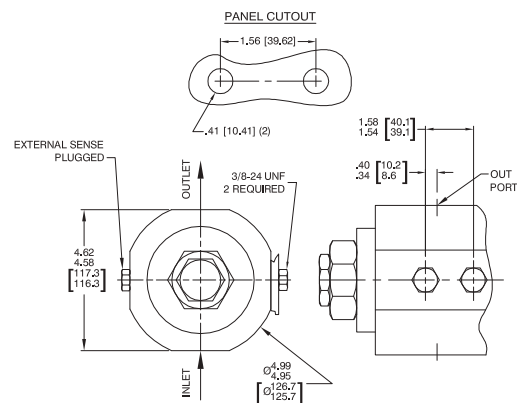
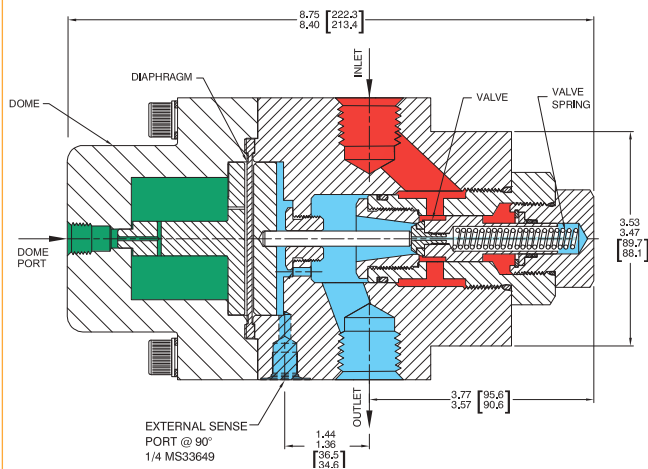
| CV | OPERATING PARAMETERS <i>Pressure rating per criteria of ANSI/ASME B31.3</i> | MEDIA CONTACT MATERIALS | OTHER |
|-----------------------------|--|--|--|
| C_V = 12.0 | Maximum Inlet Pressure 6000 psig / 414 bar Operating Temperature* -15°F to 165°F / -26°C to 74°C Flow Capacity C _V = 12.0 | Body 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 TESCO.

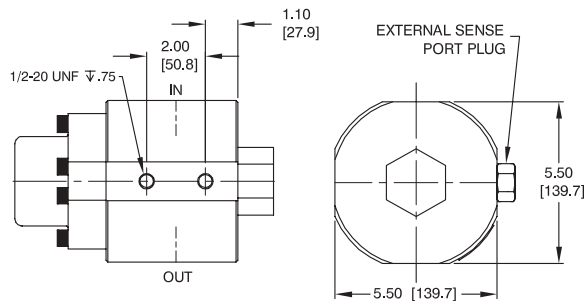
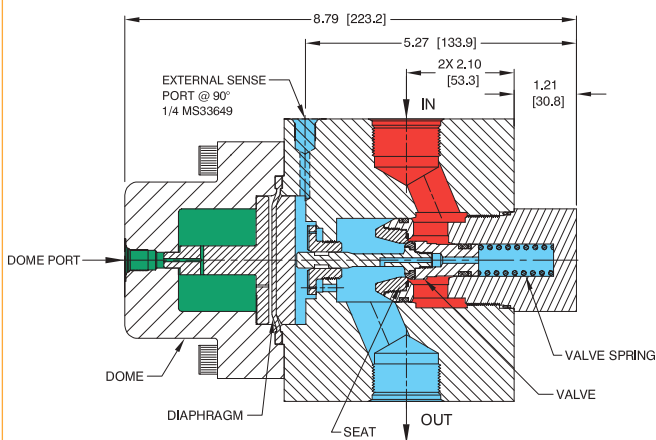
26-1200 SERIES

26-1200 Series Regulator Drawings

$C_v = 3.3 - 1/2" [12.7]$ ORIFICE



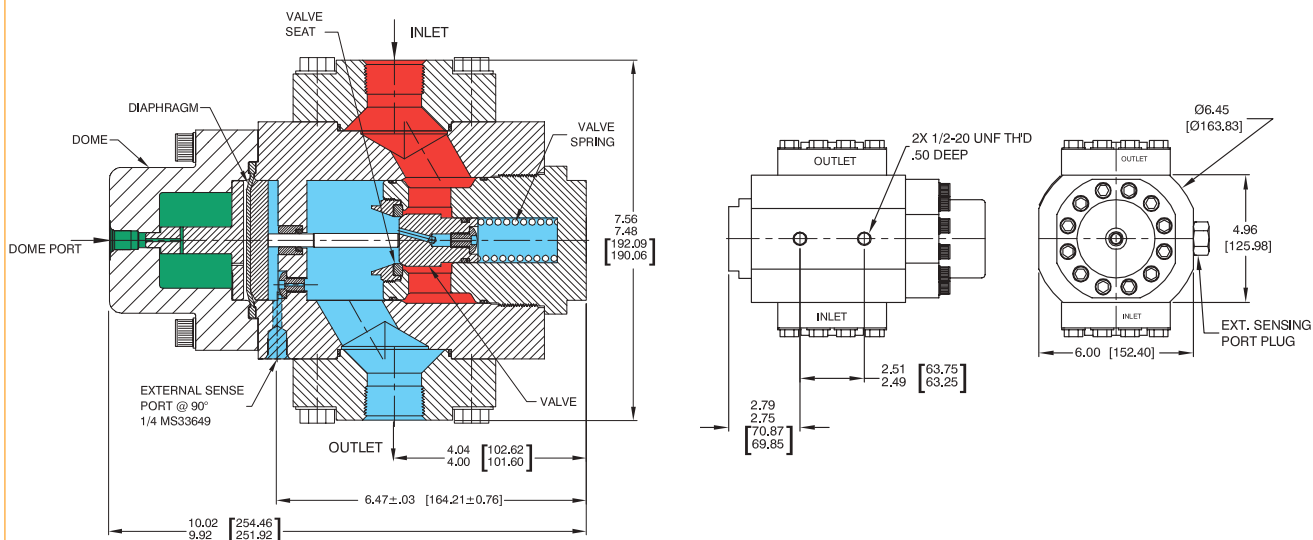
$C_v = 6.0 - 5/8" [15.9]$ ORIFICE



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

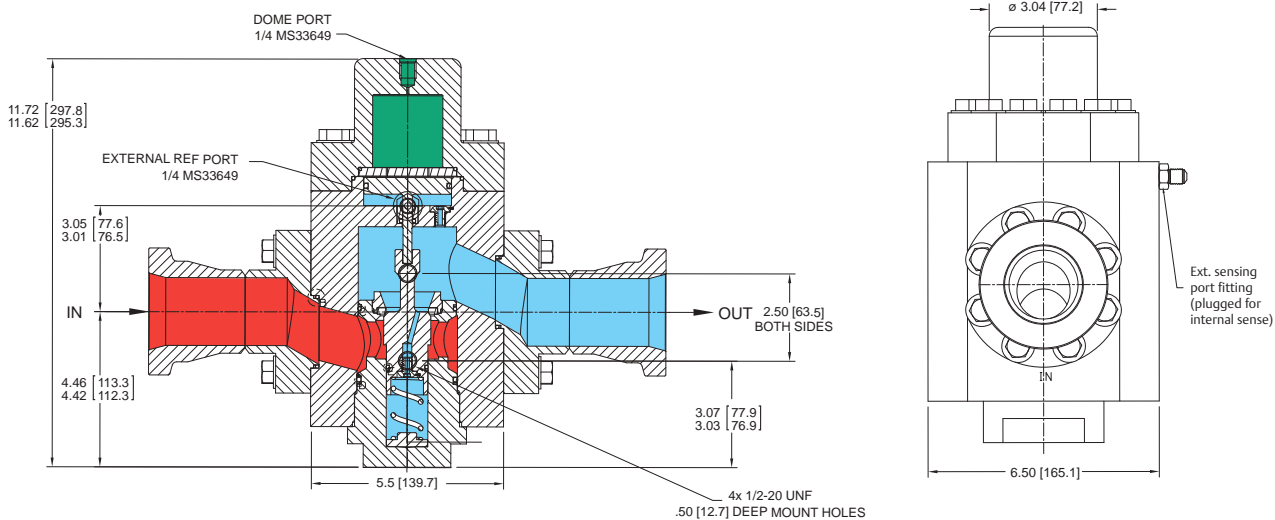
26-1200 Series Regulator Drawings

$C_v = 12.0 - 1" [25.4]$ 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

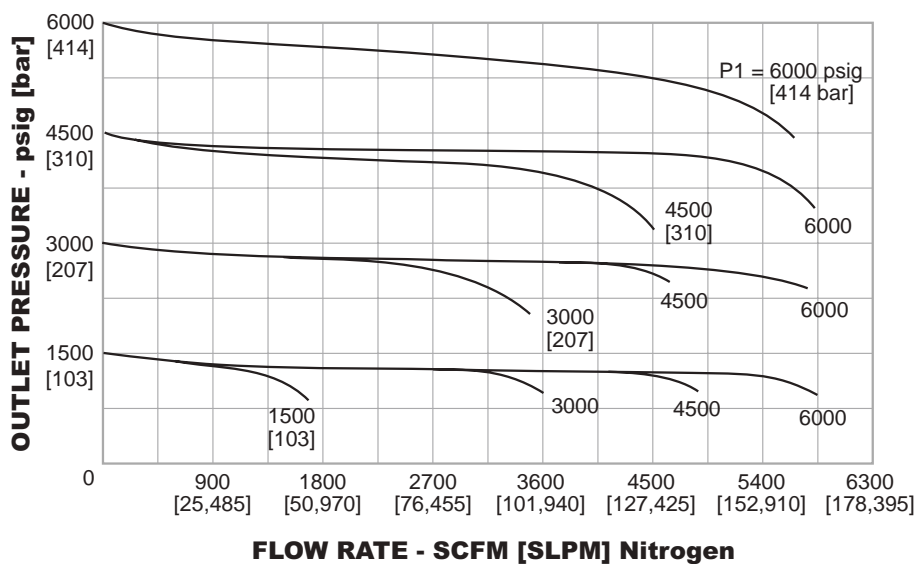
26-1200 SERIES

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.

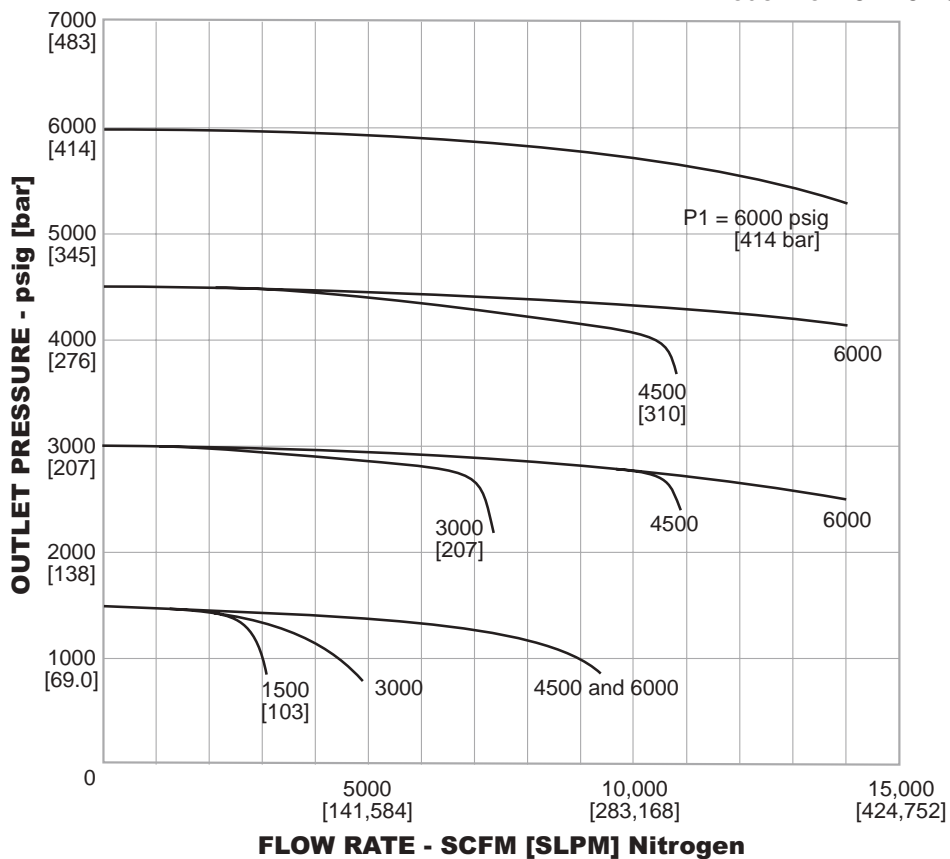
$C_v = 3.3$

Model No. 26-1261-3161



$C_v = 6.0$

Model No. 26-126T-3162-076

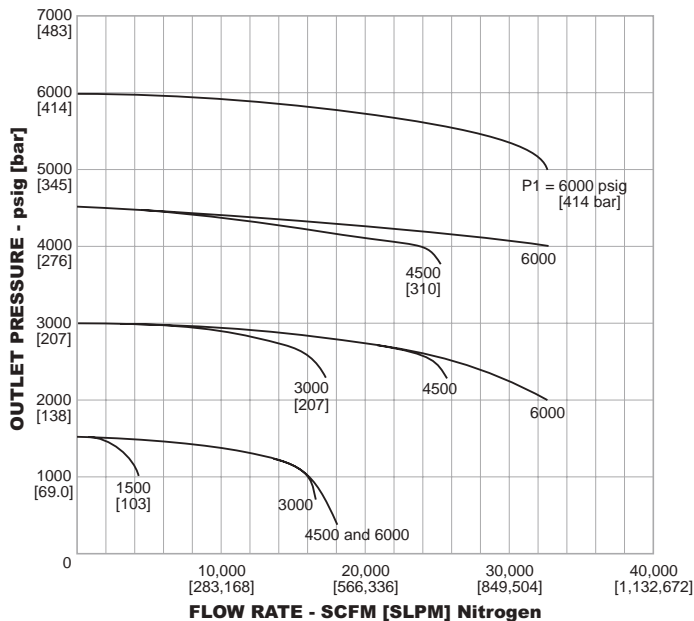


26-1200 Series Regulator Flow Charts

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

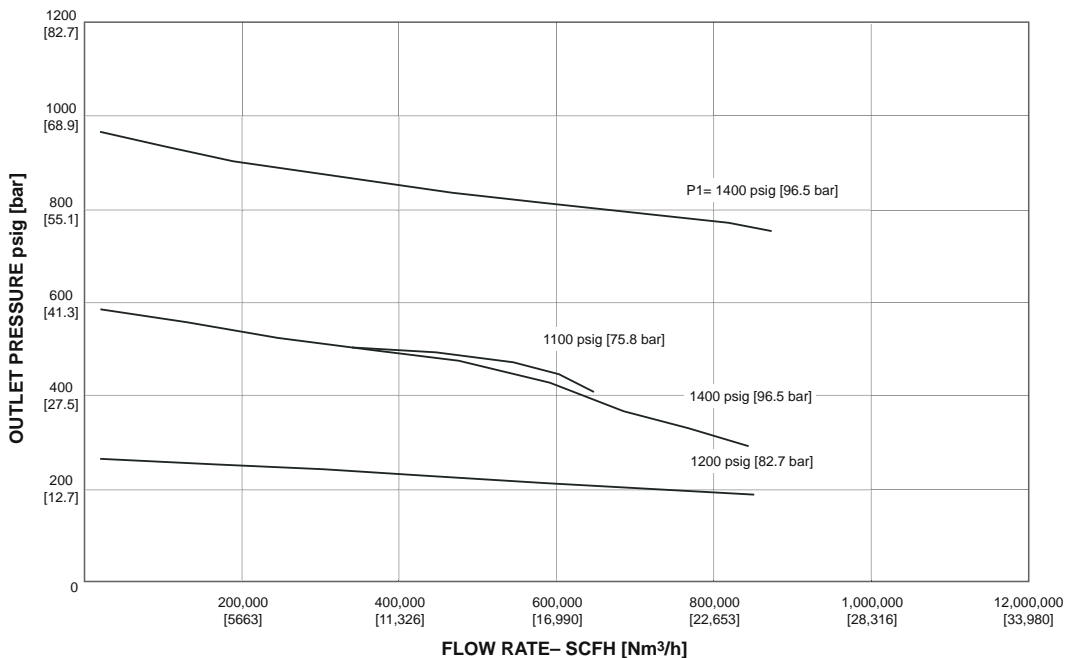
$C_v = 12.0$

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 $\pm 10\%$

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 | DOMES 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 | Polyimide (Vespel® SP1) | -40°F to 165°F -40°C to 74°C -40°F to 165°F -40°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 |
| | | B – Nitrile, Buna-N | Polyimide (Vespel® SP1) | -40°C to 74°C -40°F to 165°F -40°C to 74°C | | | | | | |
| | | D – Nitrile, Buna-N | PCTFE | -15°F to 300°F -26°C to 149°C | | | | | | |
| | | E – FKM (Viton®-A) | Polyimide (Vespel® SP1) | -15°F to 165°F -26°C to 74°C -15°F to 300°F | * 3/4" ports reduce overall C _v to 5.0 | | | | | |
| | | T – FKM (Viton®-A) | PCTFE | -26°C to 149°C | | | | | | |
| | | V – FKM (Viton®-A) | Polyimide (Vespel® SP1) ETFE | -15°F to 165°F -26°C to 74°C | | | | | | |
| | | W – FKM (Viton®-A) | (Tefzel®) | | | | | | | |

*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 | PCTFE PEEK® | -40°F to 165°F -40°C to 74°C | LA– 2" Grayloc GR20 LB– 2" Grayloc GR14 | Low Low | 3600 PSIG [248 bar] 3600 PSIG [248 bar] | 14.75 [374.7] 14.75 [374.7] | 5 – Internal 6 – External | 164 | |
| | | D-P – Nitrile, Buna-N | Polyimide (Vespel® SP1) | -40°F to 200°F -40°C to 93°C | LC– 2" 1500# RTJ LD– 2" 2500# RTJ | Low Low | 3100 PSIG [214 bar] 3600 PSIG [248 bar] | 17.88 [454.0] 19.88 [504.8] | | | |
| | | D-V – Nitrile, Buna-N | PCTFE | -40°F to 200°F -40°C to 93°C | LE– 2" 1500# RF LF– 2" 2500# RF | Low Low | 3100 PSIG [214 bar] 3600 PSIG [248 bar] | 17.75 [450.8] 19.75 [501.6] | | | |
| | | V-C – FKM (Viton®-A) | PEEK® | -10°F to 165°F -23°C to 74°C | Note: Contact Engineering for pressures above 3600 PSI/248 bar | | | | | | |
| | | V-P – FKM (Viton®-A) | Polyimide (Vespel® SP1) | -10°F to 200°F -23°C to 93°C | | | | | | | |
| | | V-V – FKM (Viton®-A) | | -10°F to 200°F -23 °C to 93°C | | | | | | | |
| | | | | | | | | | | | |

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

Specifications

For other materials or modifications, please consult TESCO.

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

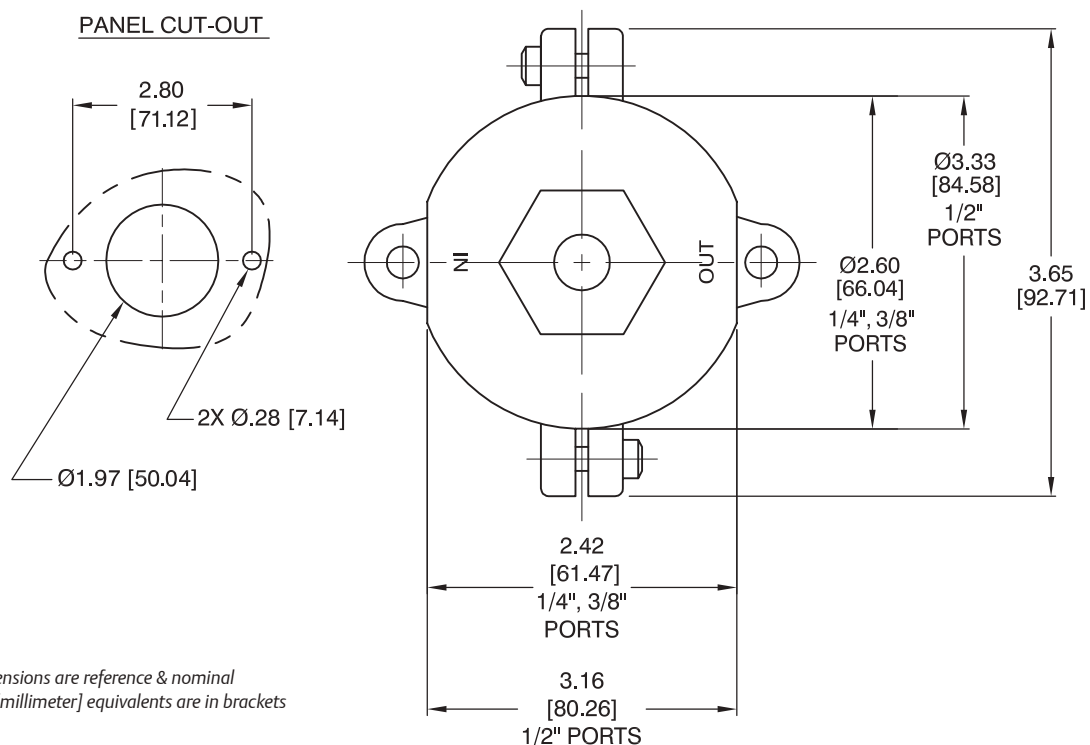
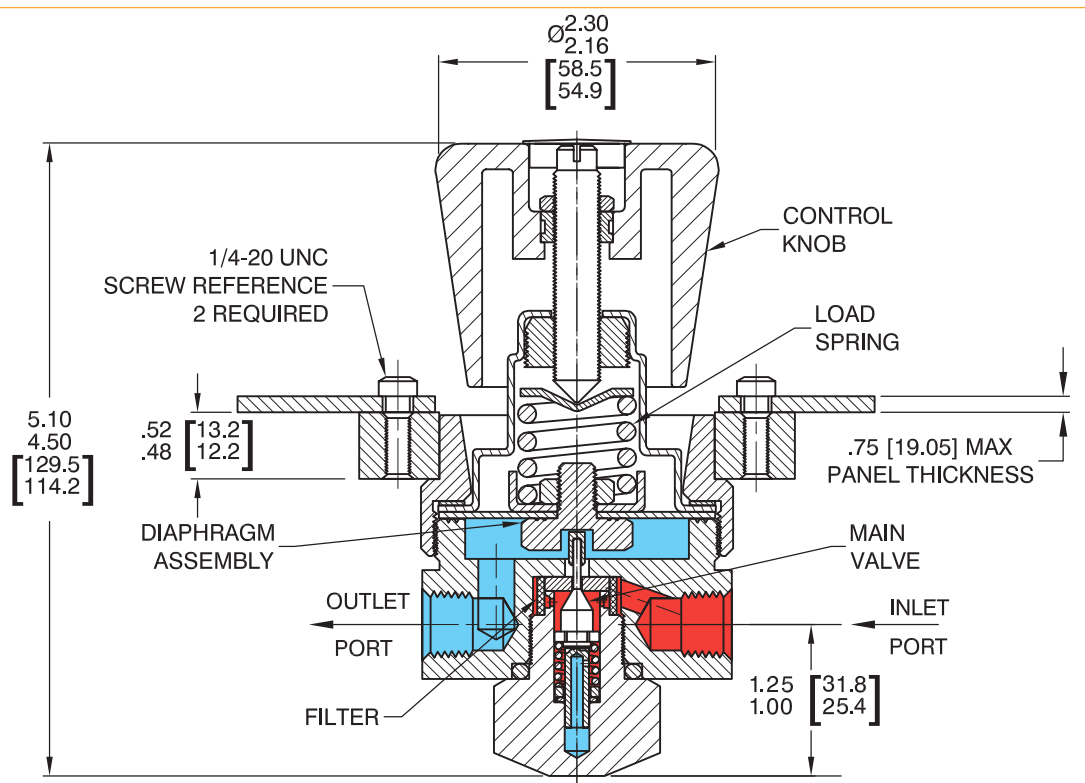
- Research labs
- Breathing air diving manifolds
- Low flow purge systems
- Gas and liquid sampling

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

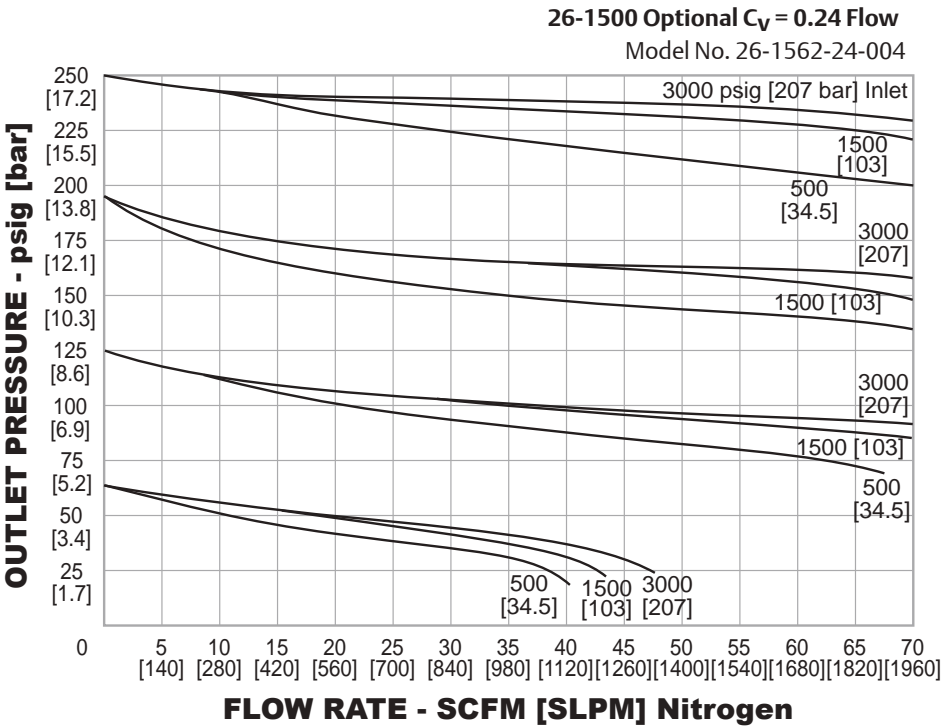
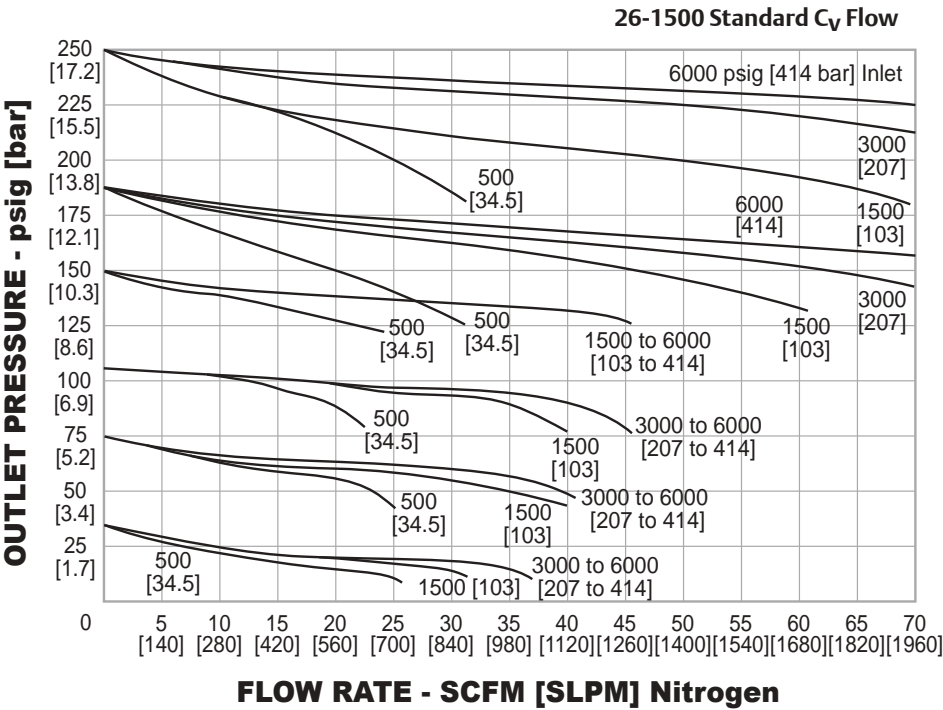
26-1500 Series Regulator Drawings



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 TESCO catalog or on www.tescom.com.



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) |

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 |

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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

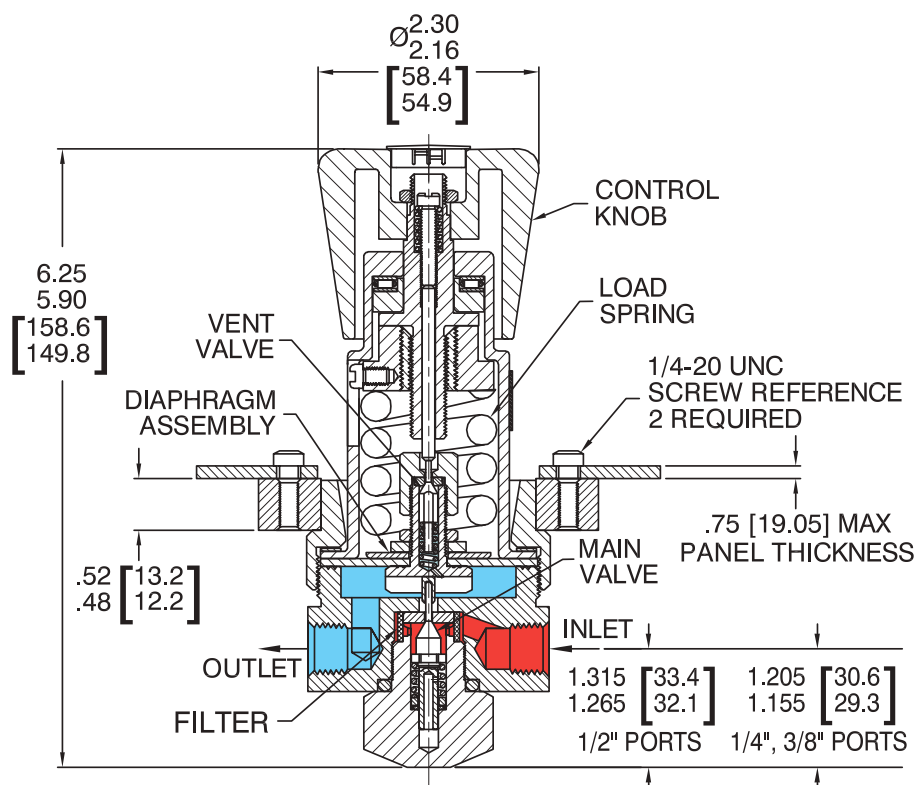
- Test equipment
- Calibration stands
- Production equipment

Features and Benefits

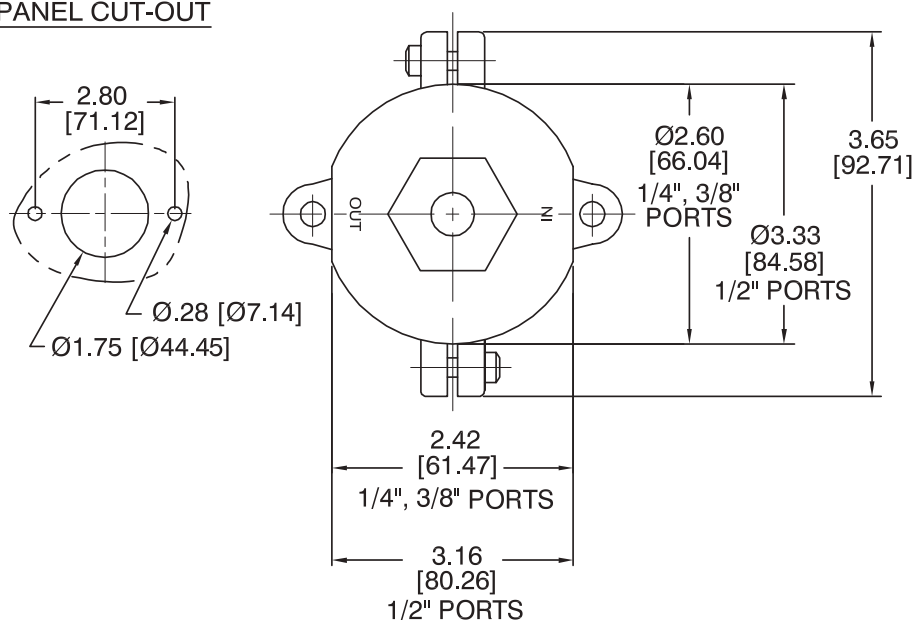
- Venting is standard (available with captured venting)
- Highly sensitive
- Features a non-rising stem and low operating torque
- Compact design
- Filter extends seat life
- Numerous porting options
- Panel mounting (bracket included)
- Easy maintenance with standard tools
- High flow C_v = 0.24 version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

26-1600 SERIES

26-1600 Series Regulator Drawings



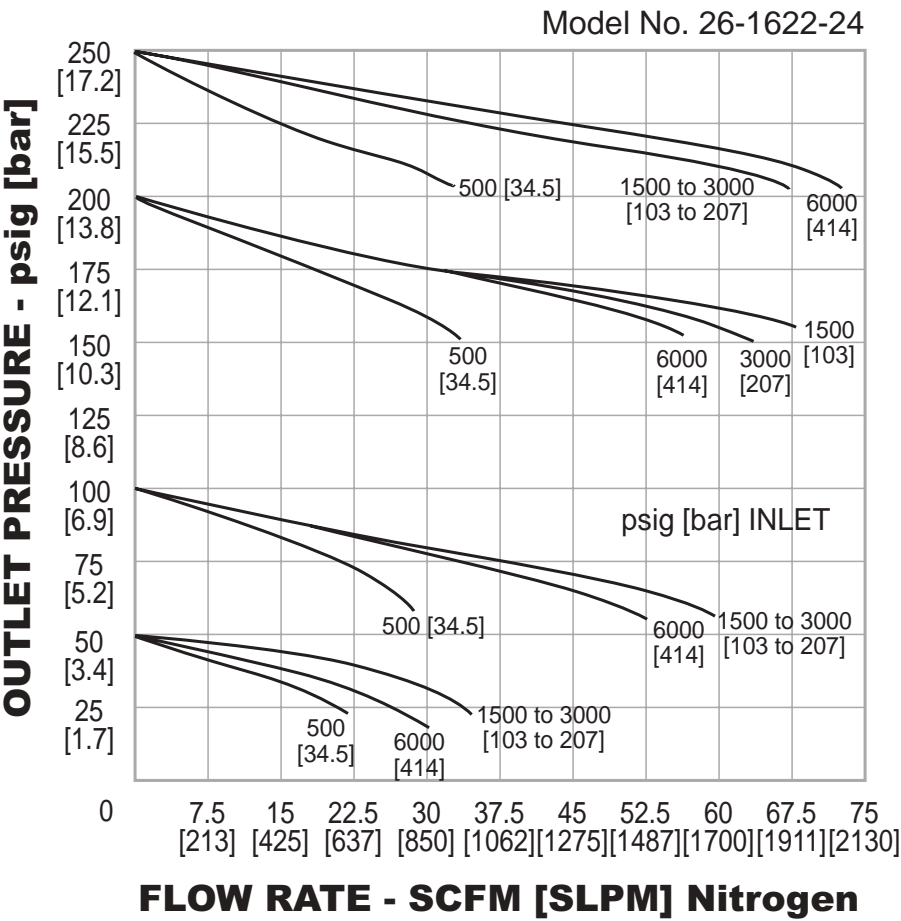
PANEL CUT-OUT



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 TESCO 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 | 5000 psig / 345 bar | 0 – 0-50 psig | 1 – SAE | 4 – 1/4" |
| | 3 – Aluminum (2024-T351) | 5000 psig / 345 bar | 0-3.4 bar | 2 – NPTF | 6 – 3/8" |
| | 6 – 316 Stainless Steel | 6000 psig / 414 bar | 1 – 0-150 psig | 3 – MS33649 | 8 – 1/2" (Stainless Steel only) |
| | | | 0-10.3 bar | | |
| | | | 2 – 0-250 psig | | |
| | | | 0-17.2 bar | | |
| | | | 3 – 0-500 psig | | |
| | | | 0-34.5 bar | | |

Regulators - Pressure Reducing

D26201821X012

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

$C_v = 0.02, 0.06, 0.12, \text{ or } 0.30$

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

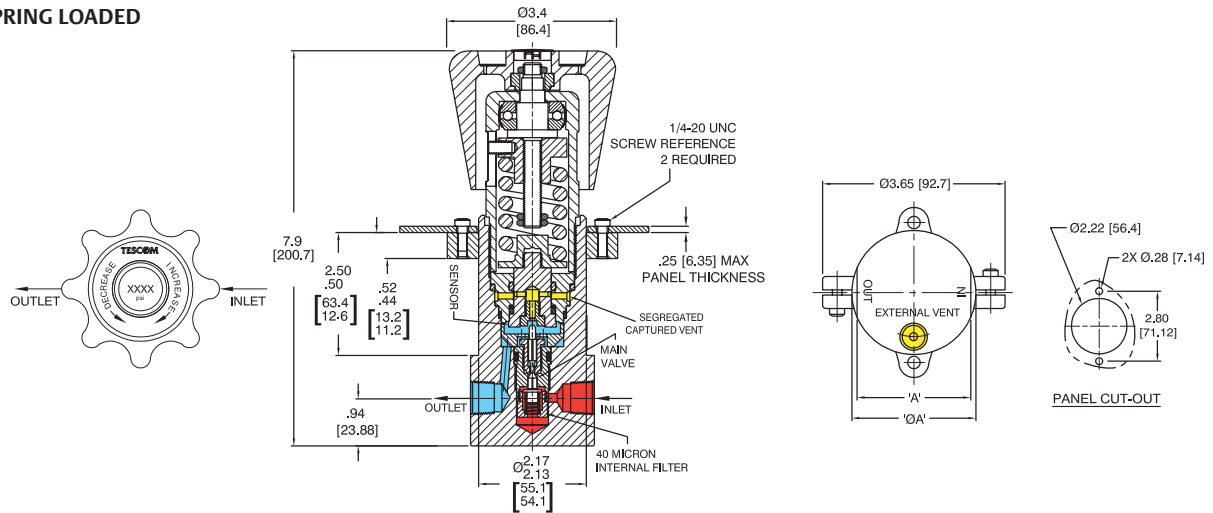
Features and Benefits

- 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

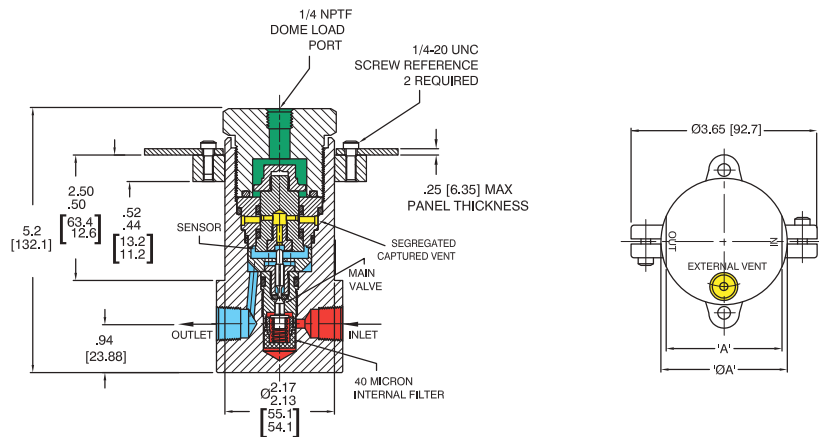
26-2000 Series Regulator Drawings

SPRING LOADED

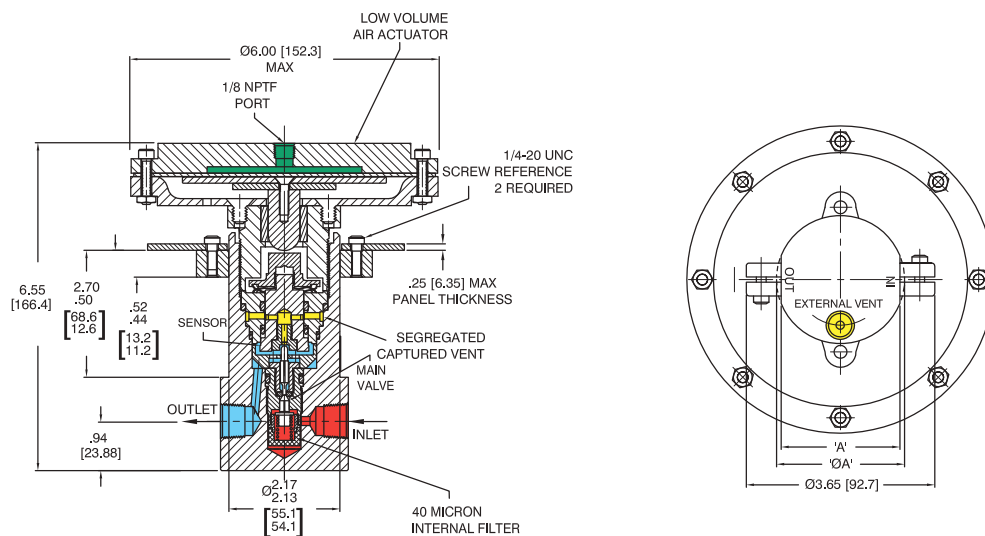


DOME LOADED

| 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

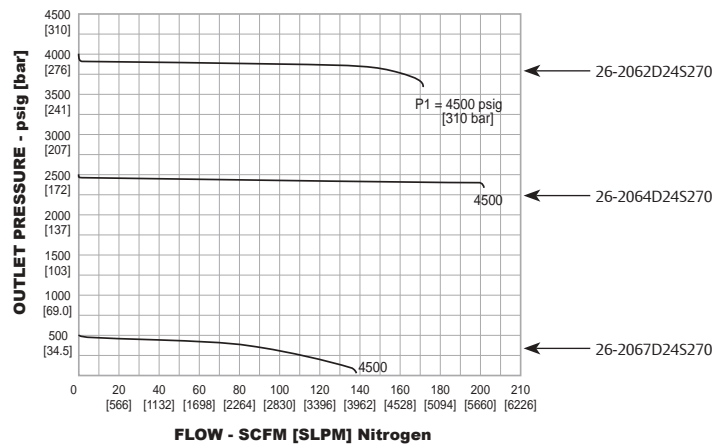


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

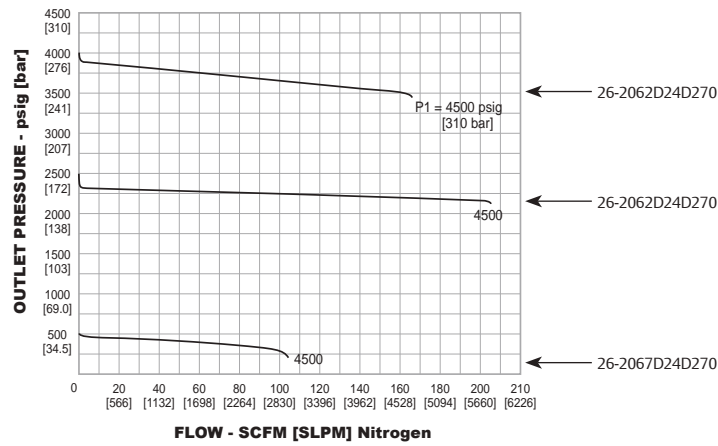
26-2000 Series Regulator Flow Charts

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.

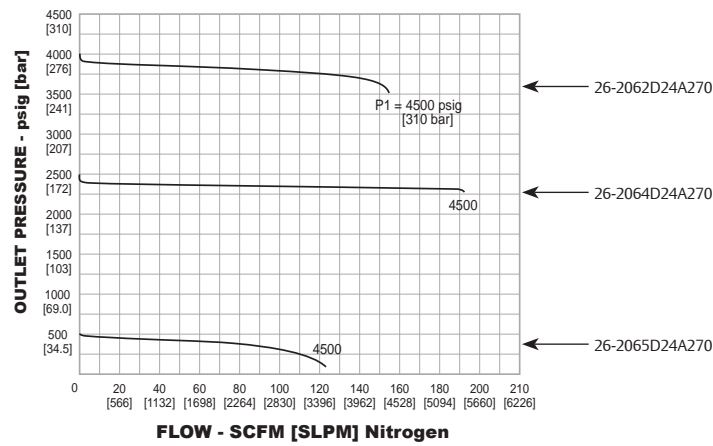
SPRING LOADED



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:

26-20 6 1 A 2 4 5 1 7 0

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

| BASIC SERIES | BODY MATERIAL | MAXIMUM INLET PRESSURE | OUTLET PRESSURE | SOFT GOODS MATERIAL | | 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 |
|--------------|---|--|---|---|--|---|-----------|---|---|---|--|
| | | | | O-RING | BACKUP RING | | | | | | |
| 26-20 | 1 – Brass 6 – 316 Stainless Steel 9 – 316 Stainless Steel (spring and air load only) | 6000 psig 413 bar 10,000 psig 690 bar 15,000 psig ¹ 1034 bar | Spring Load 1 – 200-10,000 psig 14-690 bar (Stainless steel body only) 2 – 50-6000 psig 3.4-413 bar 3 – 25-4000 psig 1.7-275 bar 4 – 15-2500 psig 1-172 bar 5 – 10-1500 psig 0.7-103 bar 6 – 5-800 psig 0.35-55 bar 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 | A – PTFE B – Nitrile, Buna-N (90 durometer) D – Nitrile, Buna-N (70 durometer) T – FKM (Viton®-A) U – Urethane V – FFKM, Perfluoroelastomer (Kalrez®) Z – E.P | PTFE PTFE PTFE PTFE PTFE PTFE | 1 – SAE 1/4" SAE 2 – NPTF 1/4" NPTF 3 – MS33649 1/4" MS33649 4 – High pressure/ Aminico 1/4" NPTF 6 – Medium pressure/ Slimline 1/4" NPTF | | 4 – 1/4" 6 – 3/8" 8 – 1/2" ² | 1 – .02 (not available for metal seated models) 2 – 0.06 3 – 0.12 ³ (metal and/or Polyimide (Vespel®) seat only) | 5 – 17-4 Stainless Steel 7 – Polyimide (Vespel®) 8 – Peek | 0 – None 1 – One Outlet Gauge at 90° 2 – Two Gauge Ports at 60° 3 – Two Gauge Ports at 60° (left hand inlet) 4 – Two Gauge Ports at 90° 5 – One Outlet Ports at 90° (left hand inlet) |
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1. 15,000 psig / 1034 bar inlet requires a CTFE back-up ring on main valve.
2. 1/2" not available in High (Aminico) or Medium (Slimline) pressure ports.
3. Not available with 15,000 psig / 1034 bar inlet.

Specifications

For other materials or modifications, please consult TESCO.

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

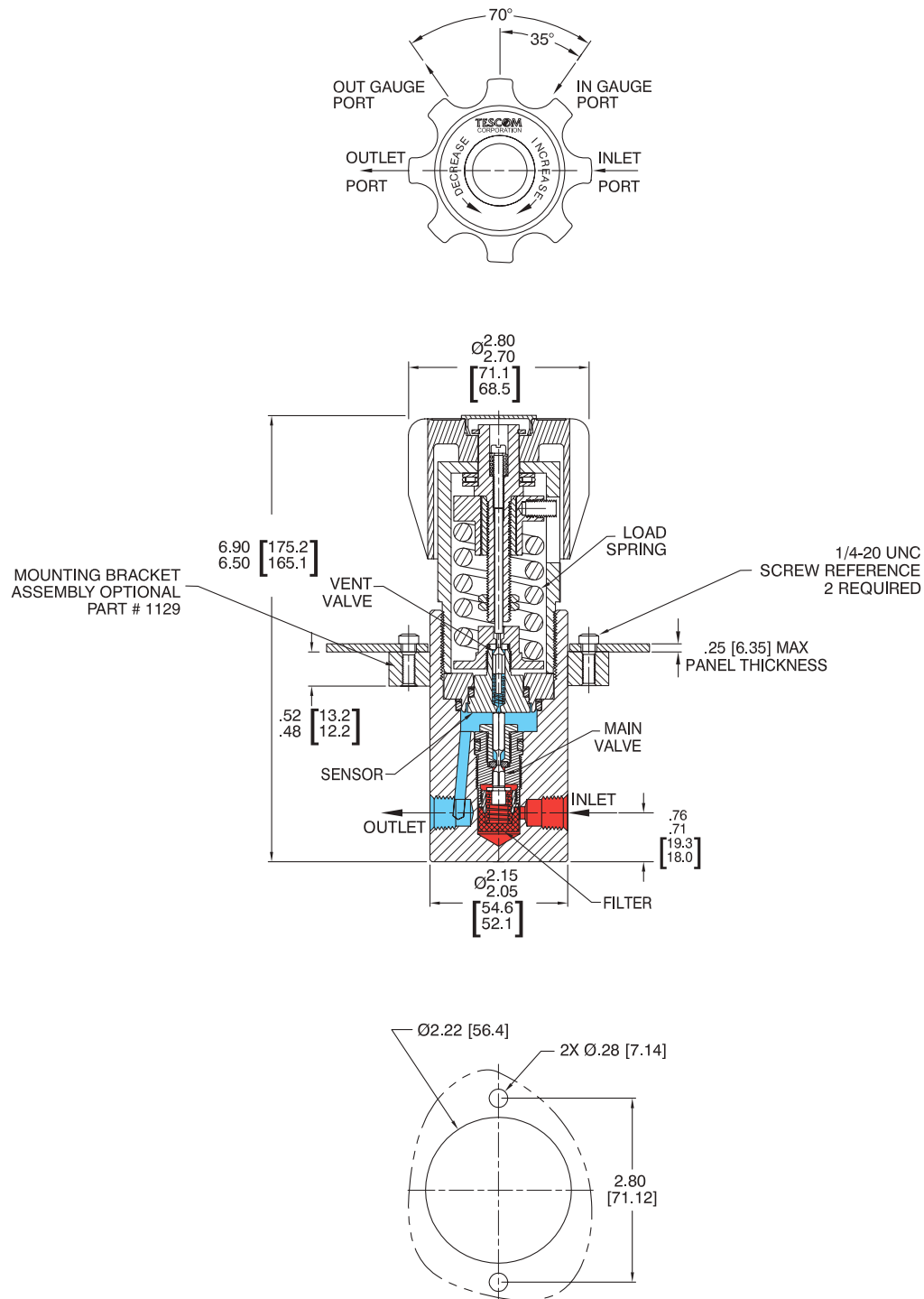
- Ground Support Equipment (GSE)
- Support pressure panels
- Aircraft charging carts
- R & D laboratories
- Calibration equipment

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

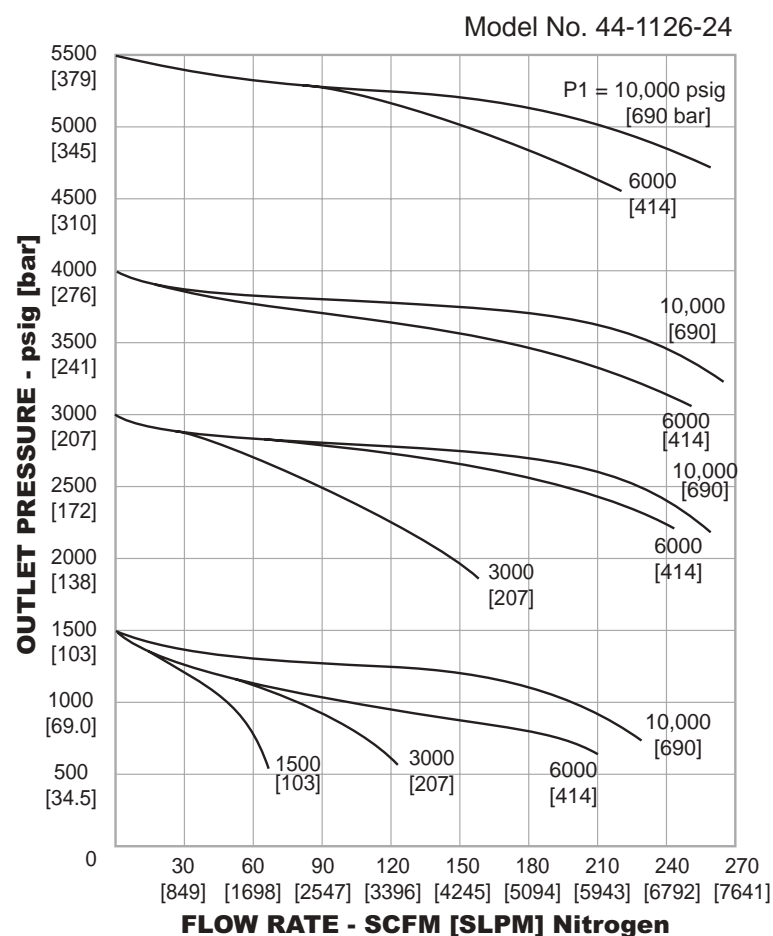
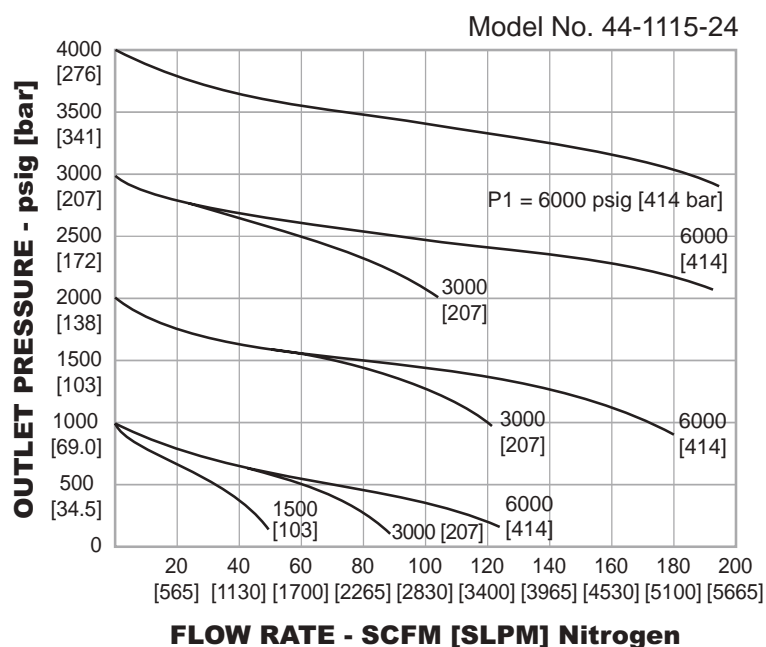


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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

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

OTHER

Weight

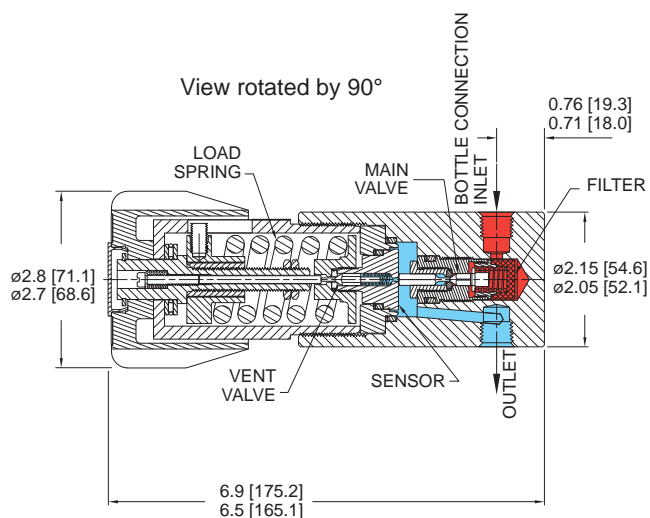
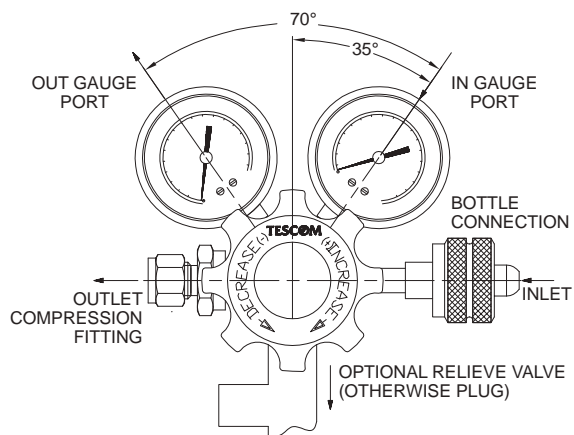
4.75 lbs / 2.2 kg

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44-1100 SERIES Mod 834

Europe and Middle East only

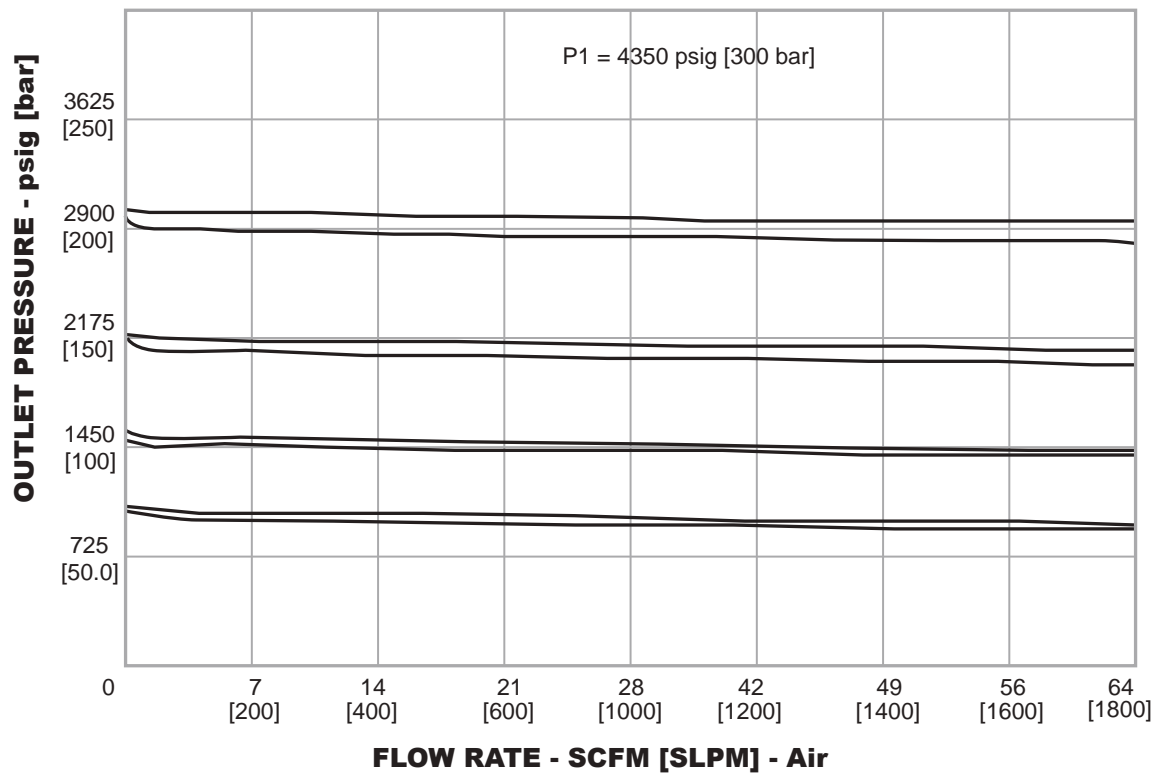
44-1100 Mod 834 Regulator Drawing



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 TESCO 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 |

Regulators - Pressure Reducing

D44130549X012

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 Temperature¹

-15°F to 220°F / -26°C to 104°C

Flow Capacity²**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**PCTFE:** 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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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

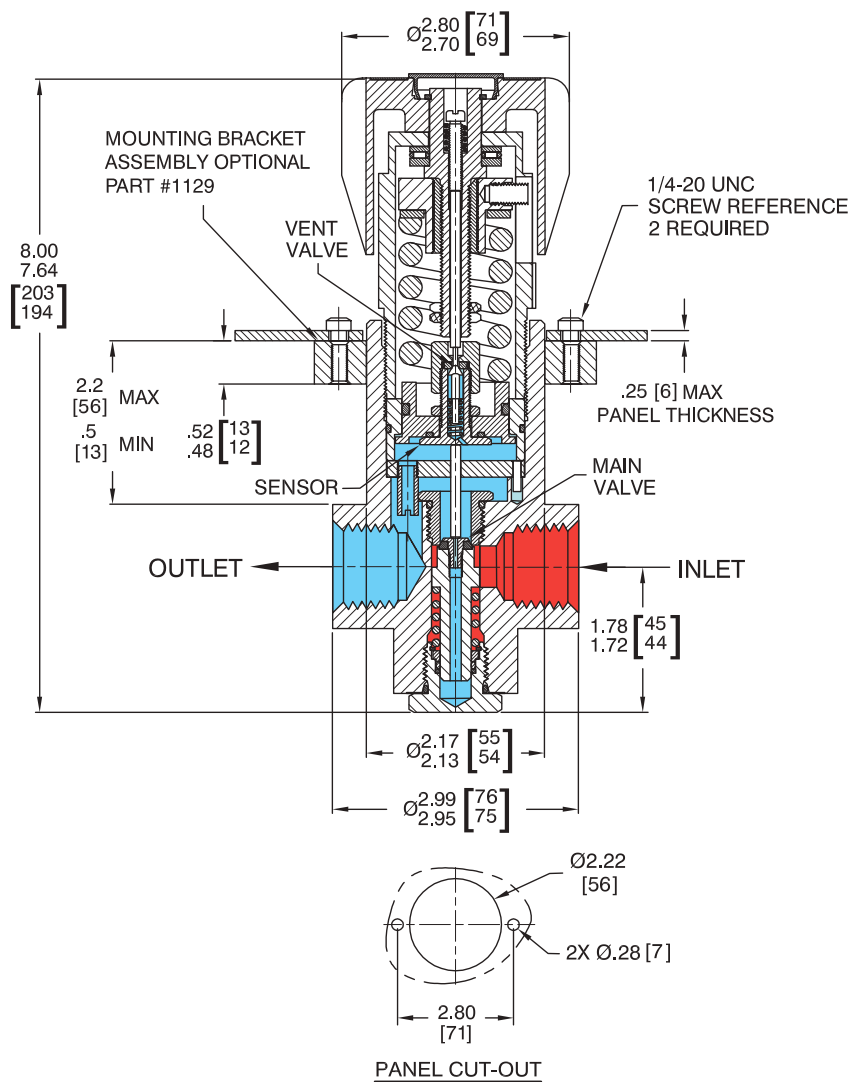
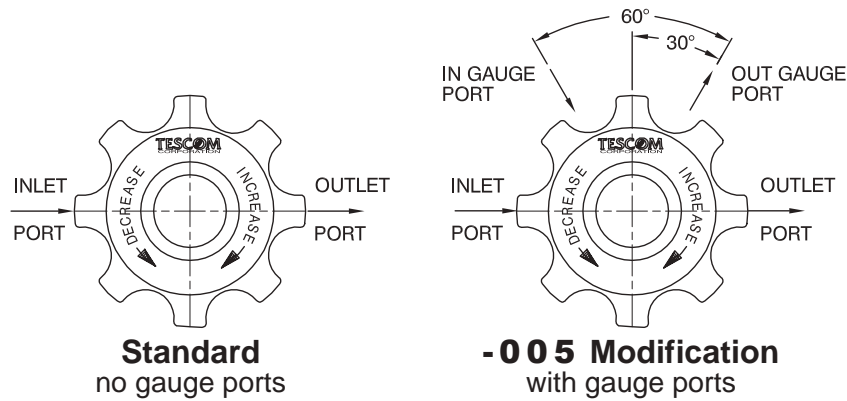
- Commercial diving - breathing air
- Special gas mix regulation hard suit diving
- High pressure tube trailer gas reduction

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

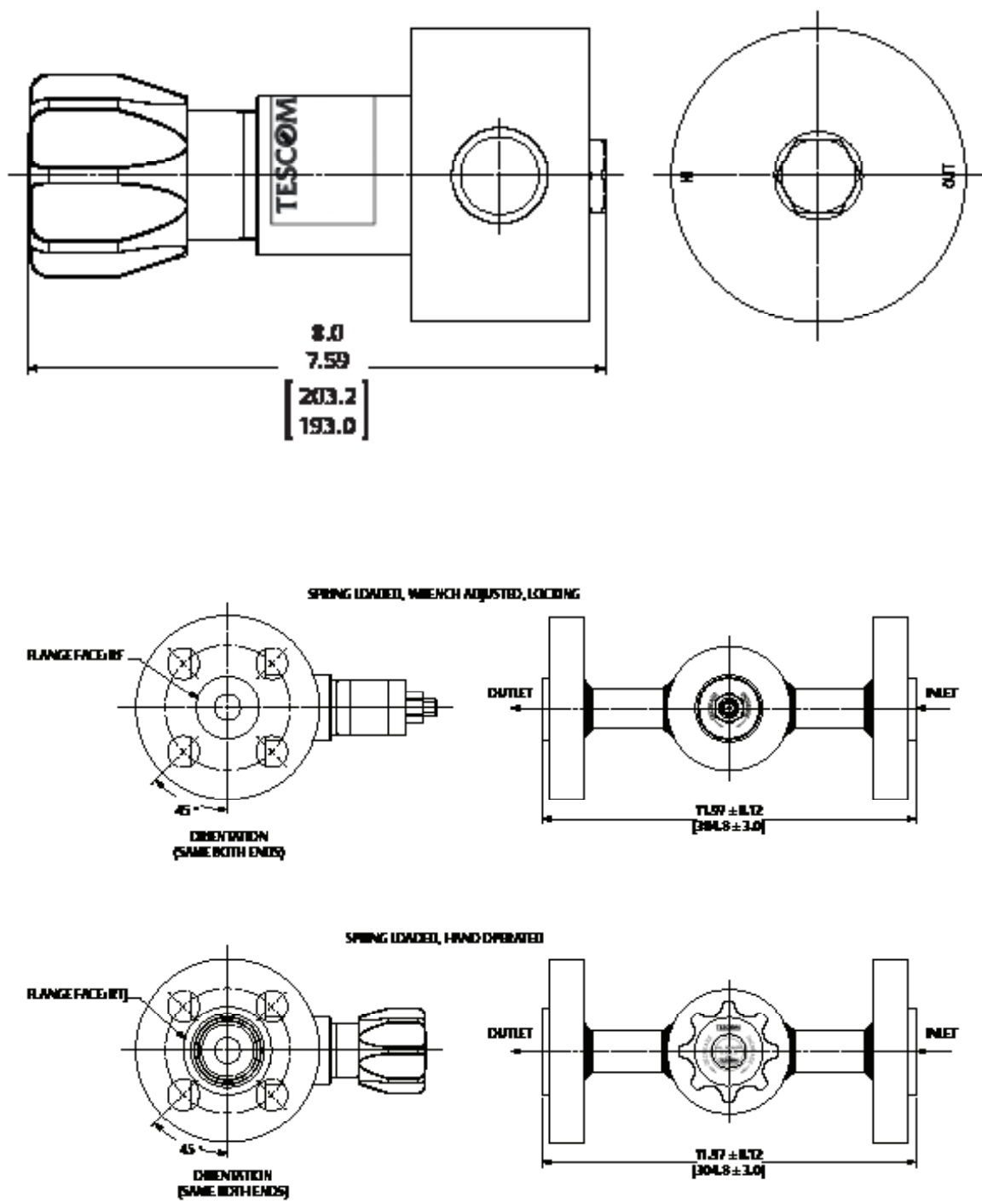
44-1300 SERIES

44-1300 Series Regulator Drawing



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

44-1300 Series Regulator with Flanges Drawing

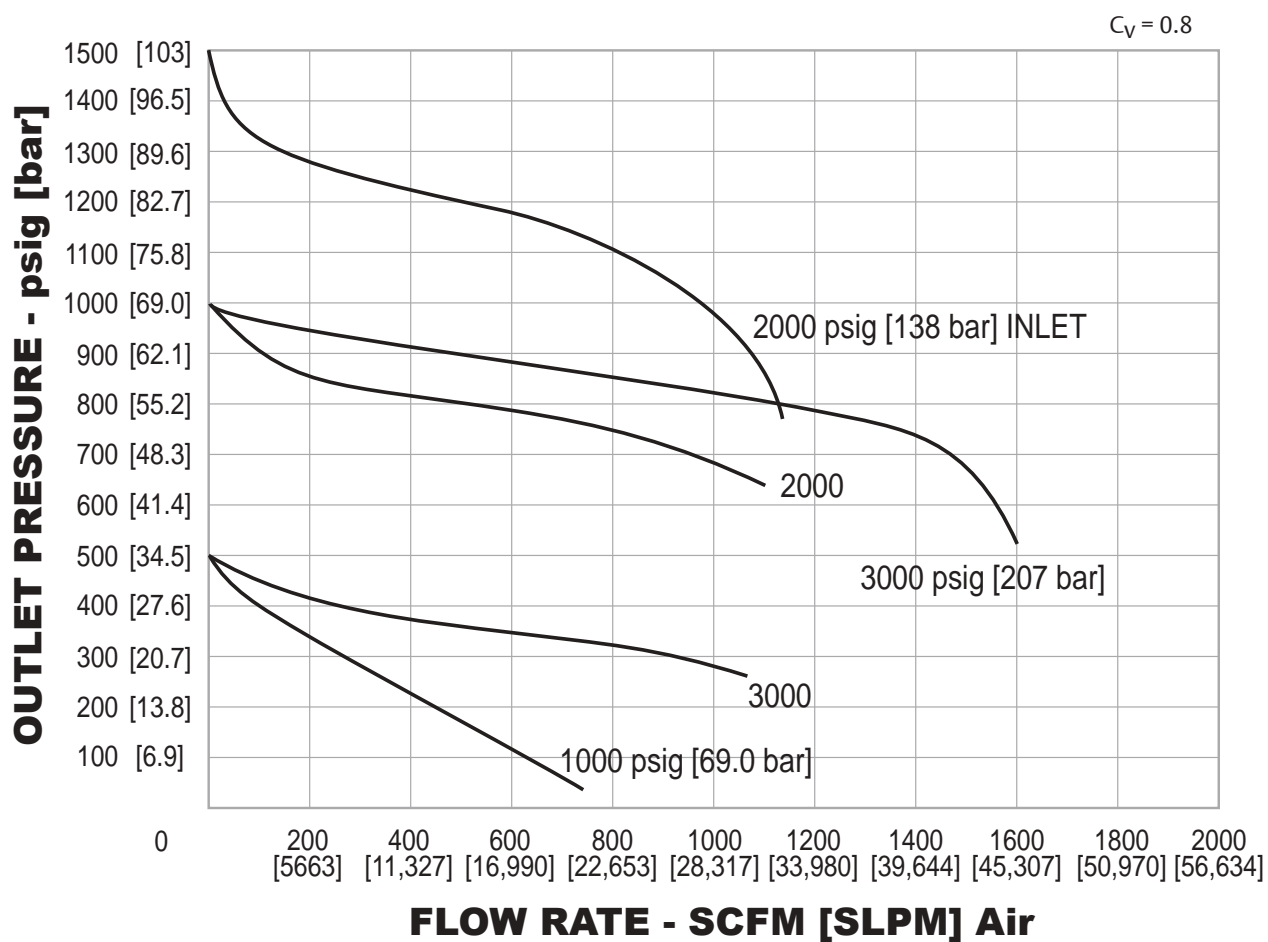


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-1300 SERIES

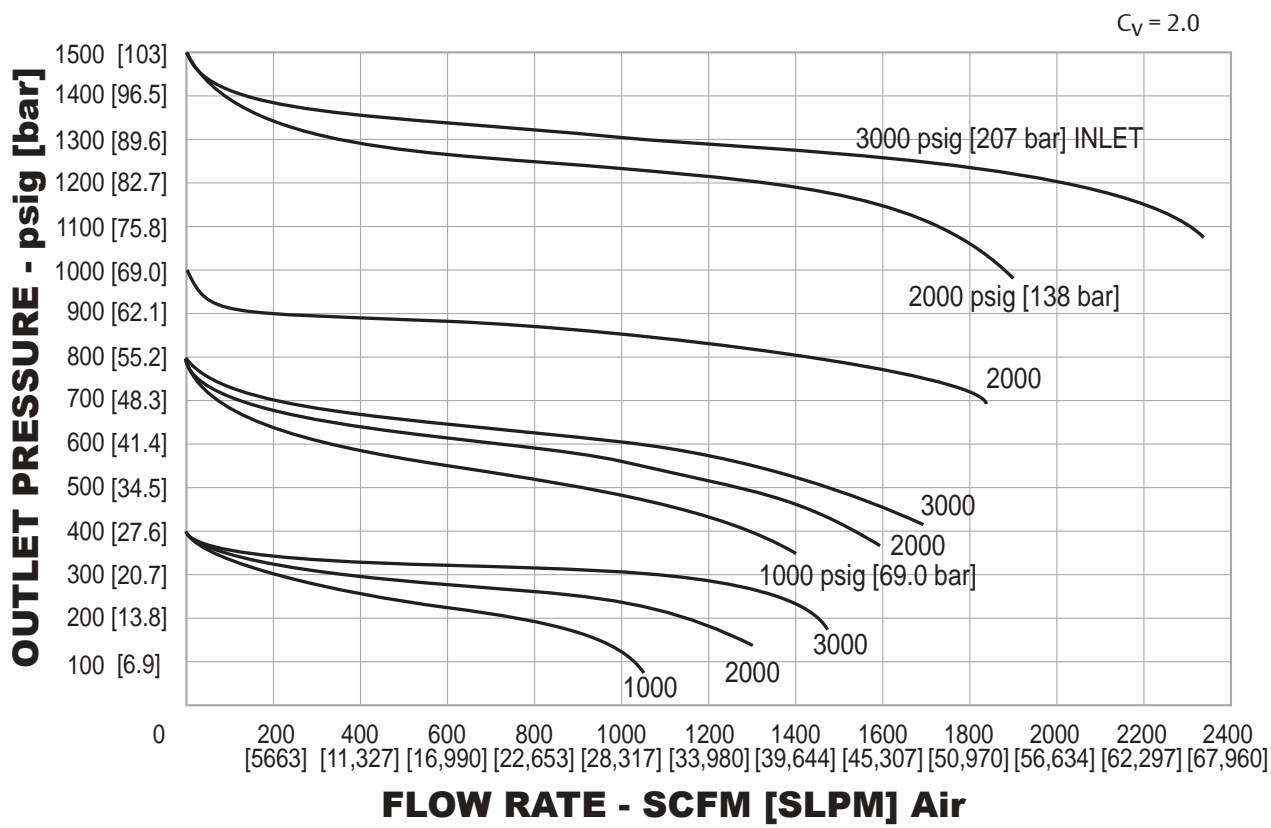
44-1300 Series Regulator Flow Charts

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



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

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 - 005 Modification – Venting with gauge ports - 019 Modification – Non-venting with gauge ports - 056 Modification – 6000 or 5000 psig / 414 or 345 bar inlet pressure with 2500 psig / 172 bar outlet pressure - 183 Modification – Corrosion Resistant Top Works |
| | 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 | |
| | 6 – 316 Stainless Steel | 4500 psig 310 bar | 5 – 0-1000 psig 0-69.0 bar | 3 – MS33649 | | | |
| | | | 6 – 0-1500 psig 0-103 bar | 9 – BSPP | | | |
| | | | 7 – 0-2500 psig 0-172 bar (-056 Mod only) | | | | |
| | | | | | | | |



Specifications

For other materials or modifications, please consult TESCO.

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)

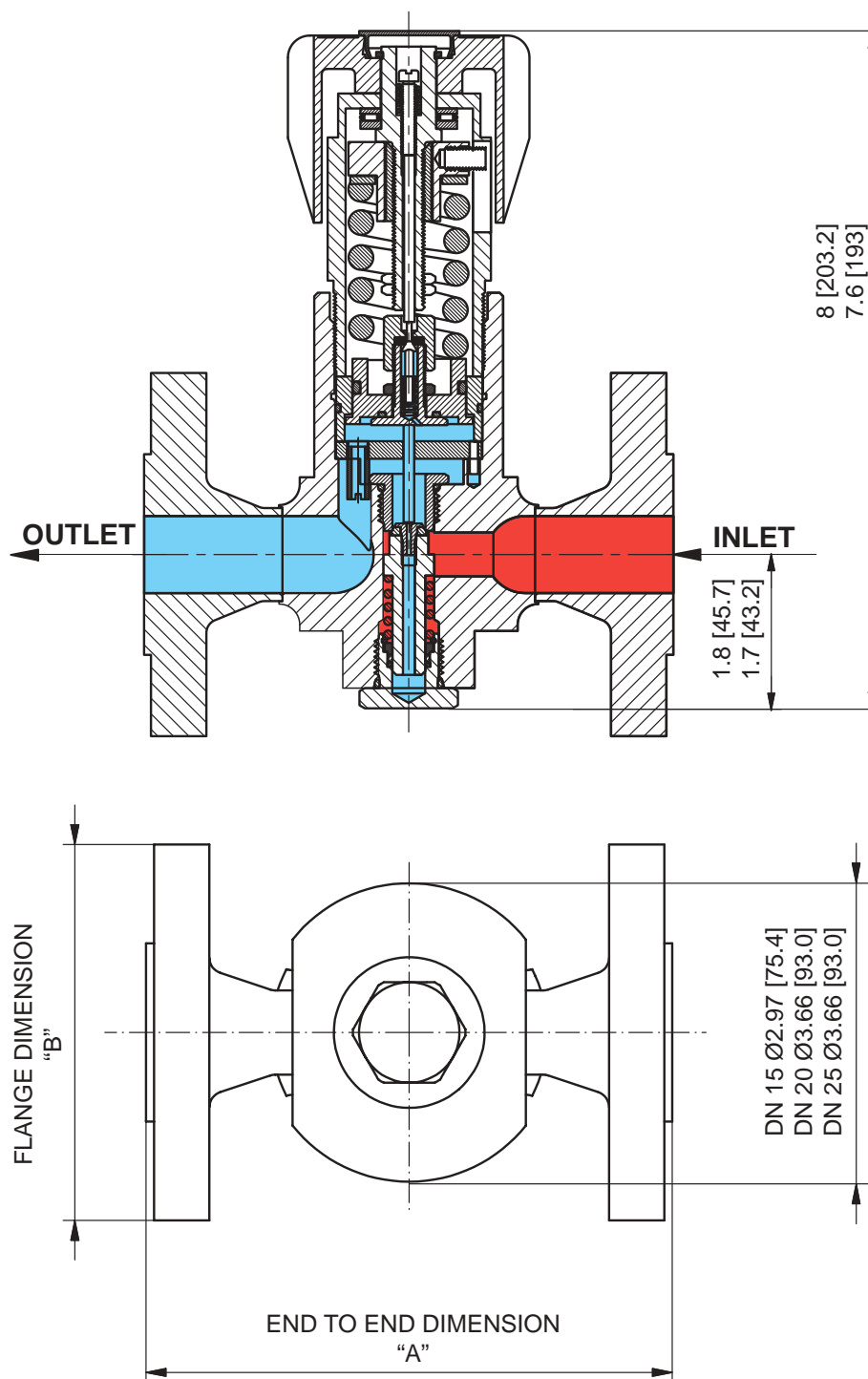
Features and Benefits

- 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

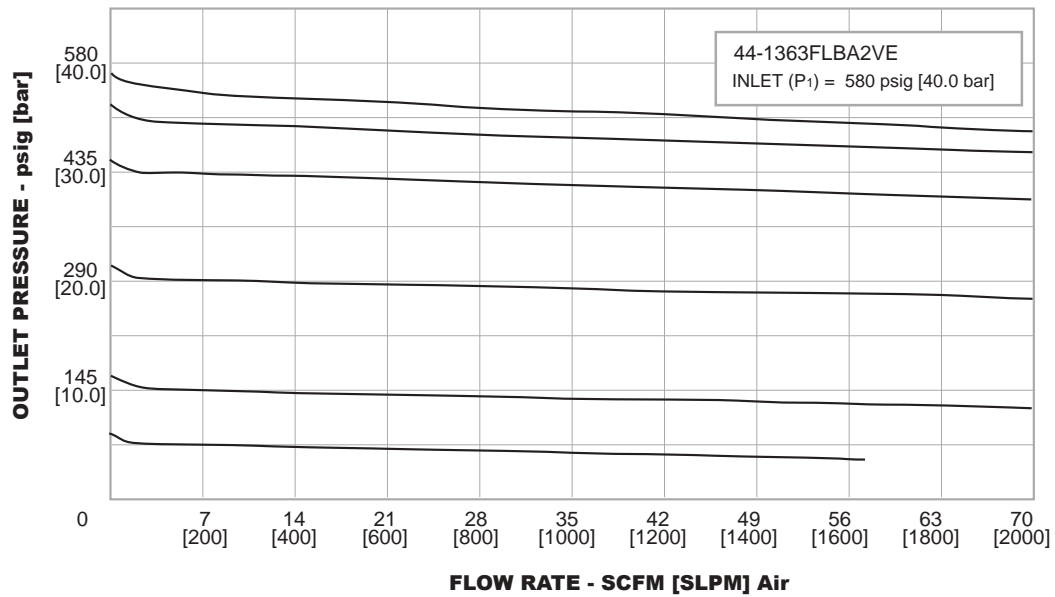
44-1300F Series Regulator Drawing



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 TESCO 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:

| 44-13 | 6 | 2 | F | K | B | F | 2 | V | E |
|--------------|--------------------------|--|---|---|--|---|---|--|---|
| | | | FLANGE | | | | | EN 1092-1 | |
| 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: $\varnothing 0.250 / 6.4$ 2 – $C_v = 2.0$ Orifice: $\varnothing 0.375 / 9.5$ | 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 |

Regulators - Pressure Reducing

D44151937X012

Specifications

For other materials or modifications, please consult TESCO.

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 TESCO 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 TESCO ER5000 Electropneumatic Controller

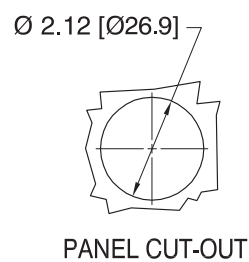
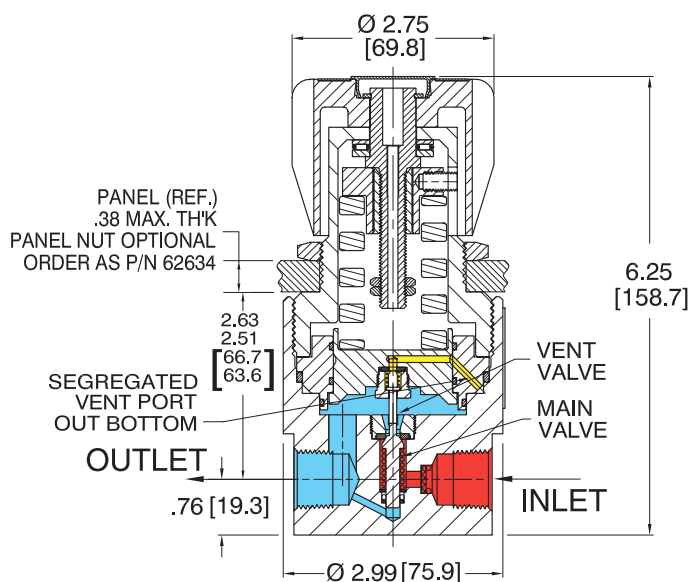
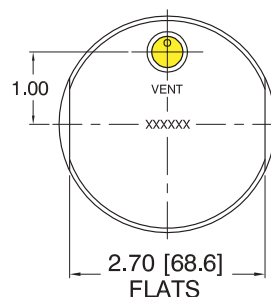
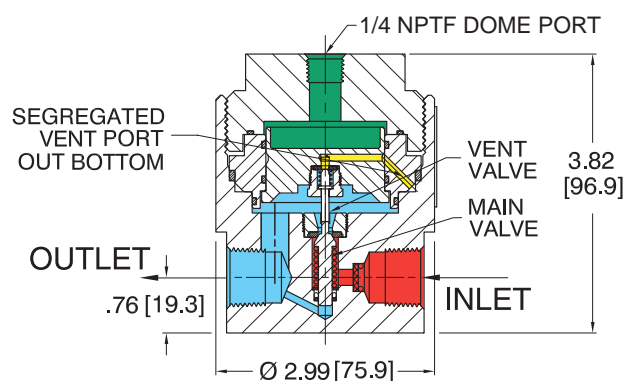
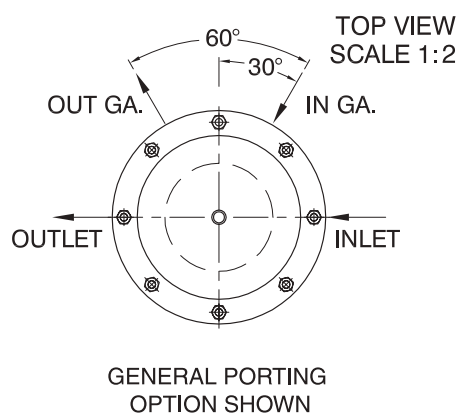
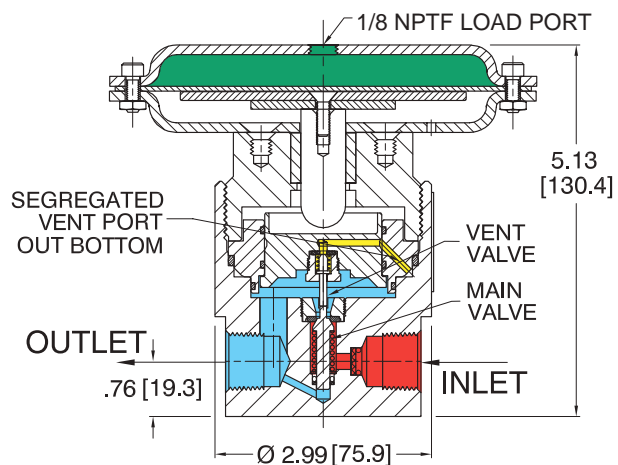
NOTE:

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 TESCO customer support further assistance.

44-1500 SERIES

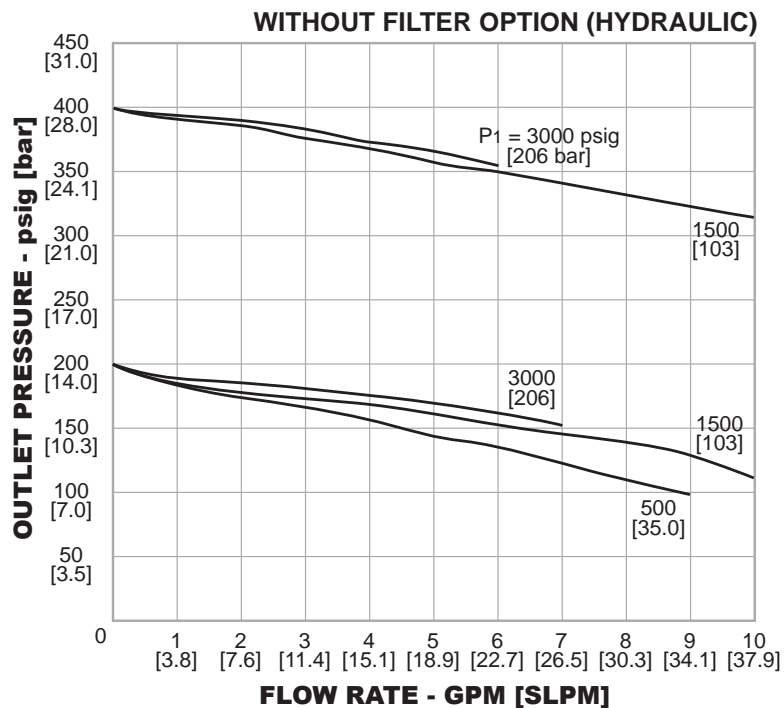
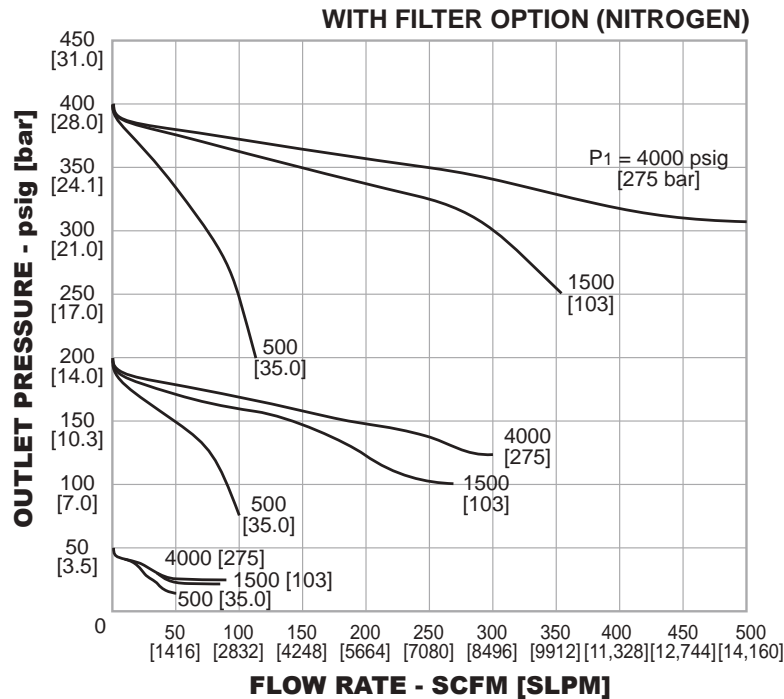
44-1500 Series Regulator Drawings



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.



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

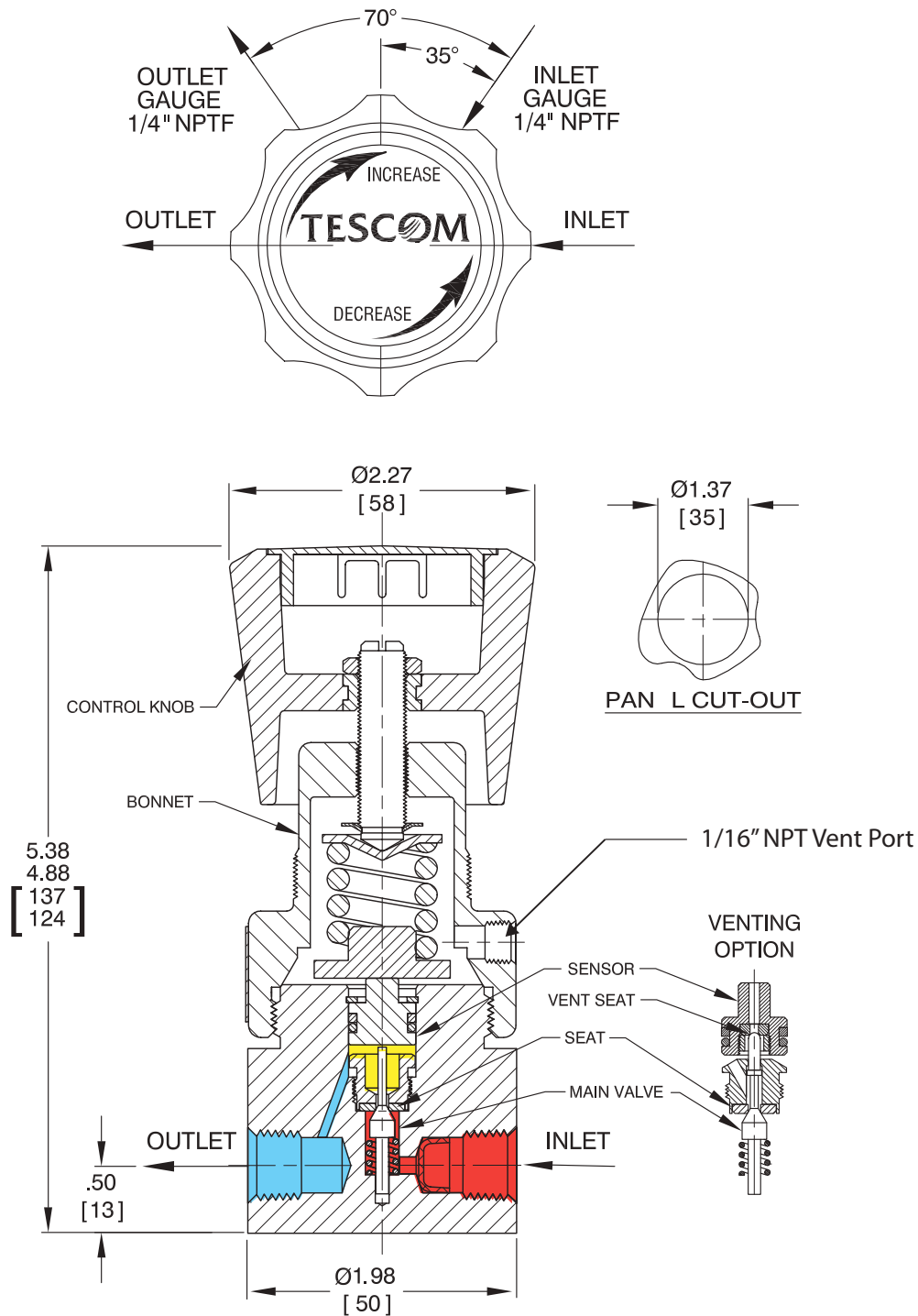
- General purpose test stands
- Industrial equipment

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

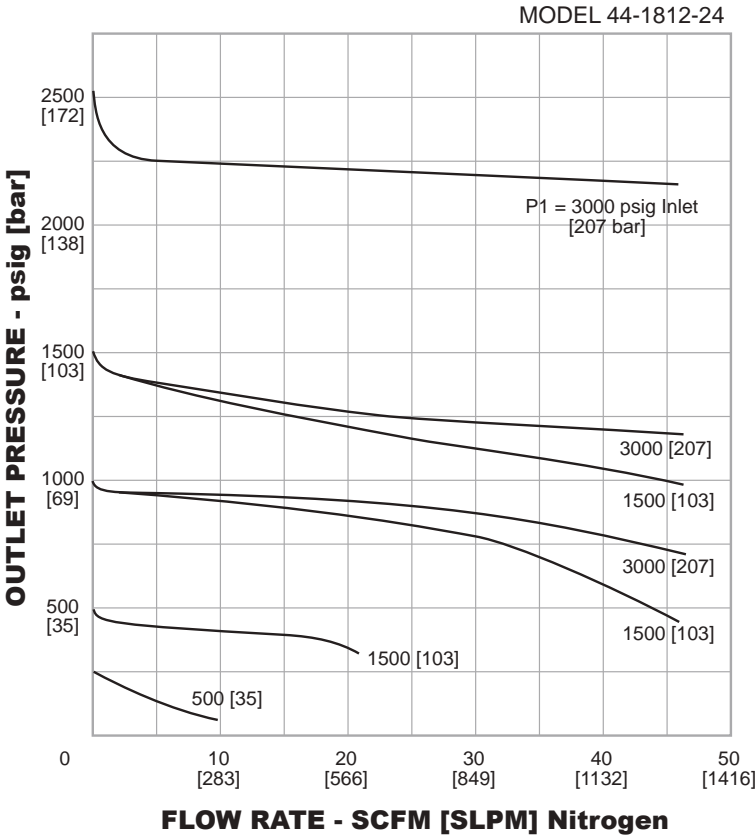
44-1800 Series Regulator Drawing



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 TESCO.

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 $\leq 2 \times 10^{-8}$ 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 (Elgiloy®)

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

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 TESCO customer support further assistance.



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

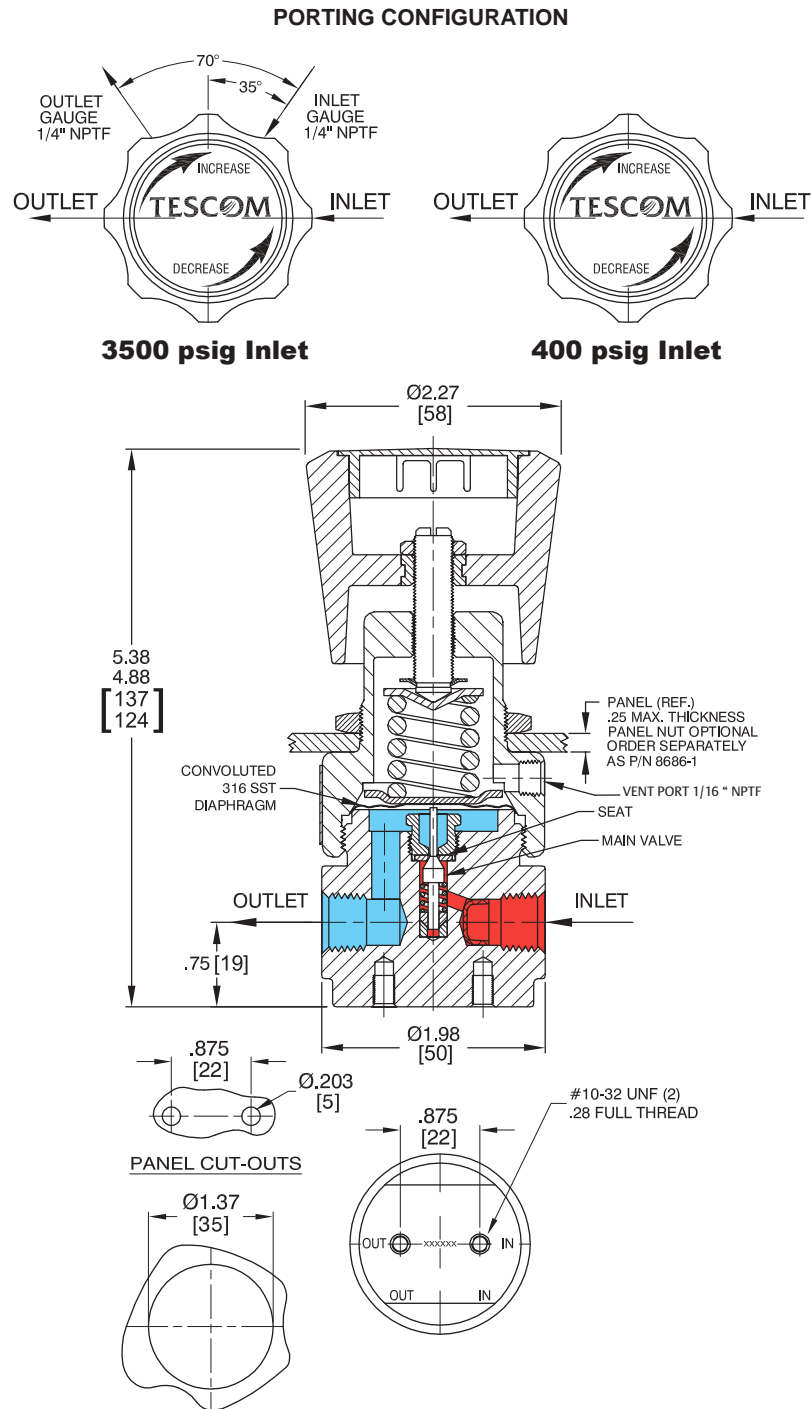
- Laboratory and point-of-use gas systems
- Sampling systems, zero, span and calibration analyzer gases
- Specialty and industrial gas cylinder regulator
- Chromatograph flame detector fuel supply

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
- Convolute diaphragm delivers excellent accuracy and long service life
- Panel mounting is available
- 300 Series Stainless Steel or Brass bonnet
- NACE compliant designs are available

44-2200 SERIES

44-2200 Series Regulator Drawing



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

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 | 0 – 0-25 psig 0-1.7 bar | 2 – NPTF | 4 – 1/4" | 1 – 3500 psig 241 bar | $C_v = 0.06$ | -010 – Outlet gauge port at 90° |
| | 5 – Nickel Alloy (Hastelloy®) | | | | | | |
| | 6 – 316L Stainless Steel | 1 – 0-50 psig 0-3.4 bar | | | 2 – 400 psig 27.6 bar | $C_v = 0.15$ | -115 – High temperature (400°F / 205°C) |
| | 9 – Nickel Alloy (Monel®) | 2 – 0-100 psig 0-6.9 bar | | | <i>See porting configuration</i> | | -118 – Hydraulic service outlet gauge ports at 70° |
| | | 3 – 0-250 psig 0-17.2 bar | | | | | |
| | | 4 – 0-500 psig 0-34.5 bar | | | | | |
| | | (with 3500 psig / 241 bar inlet only) | | | | | |

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: $< 2 \times 10^{-8}$ 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

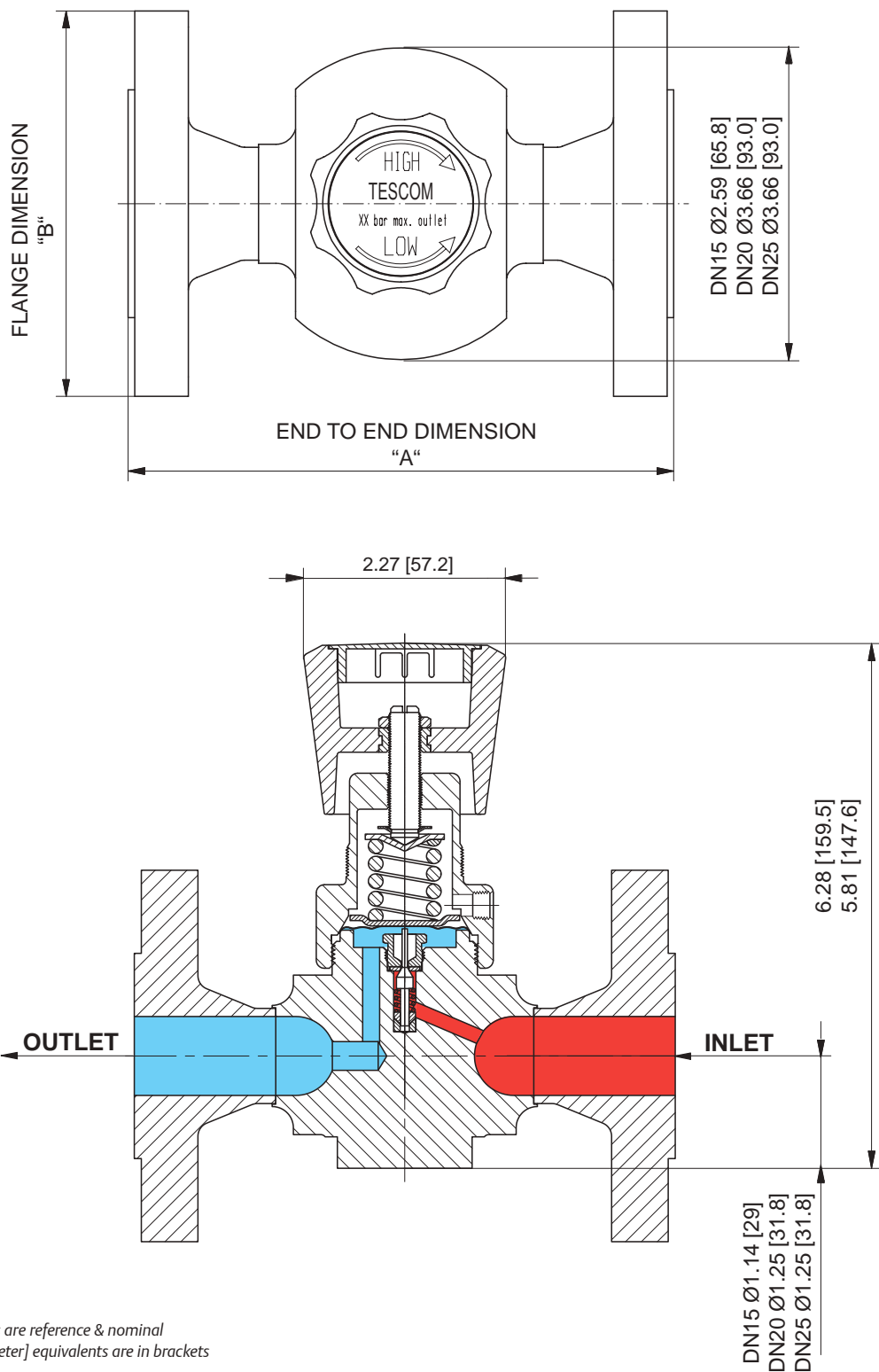
Features and Benefits

- 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
- Convolutioned diaphragm provides excellent accuracy and long service life
- Other connection standards are available upon request

44-2200F SERIES

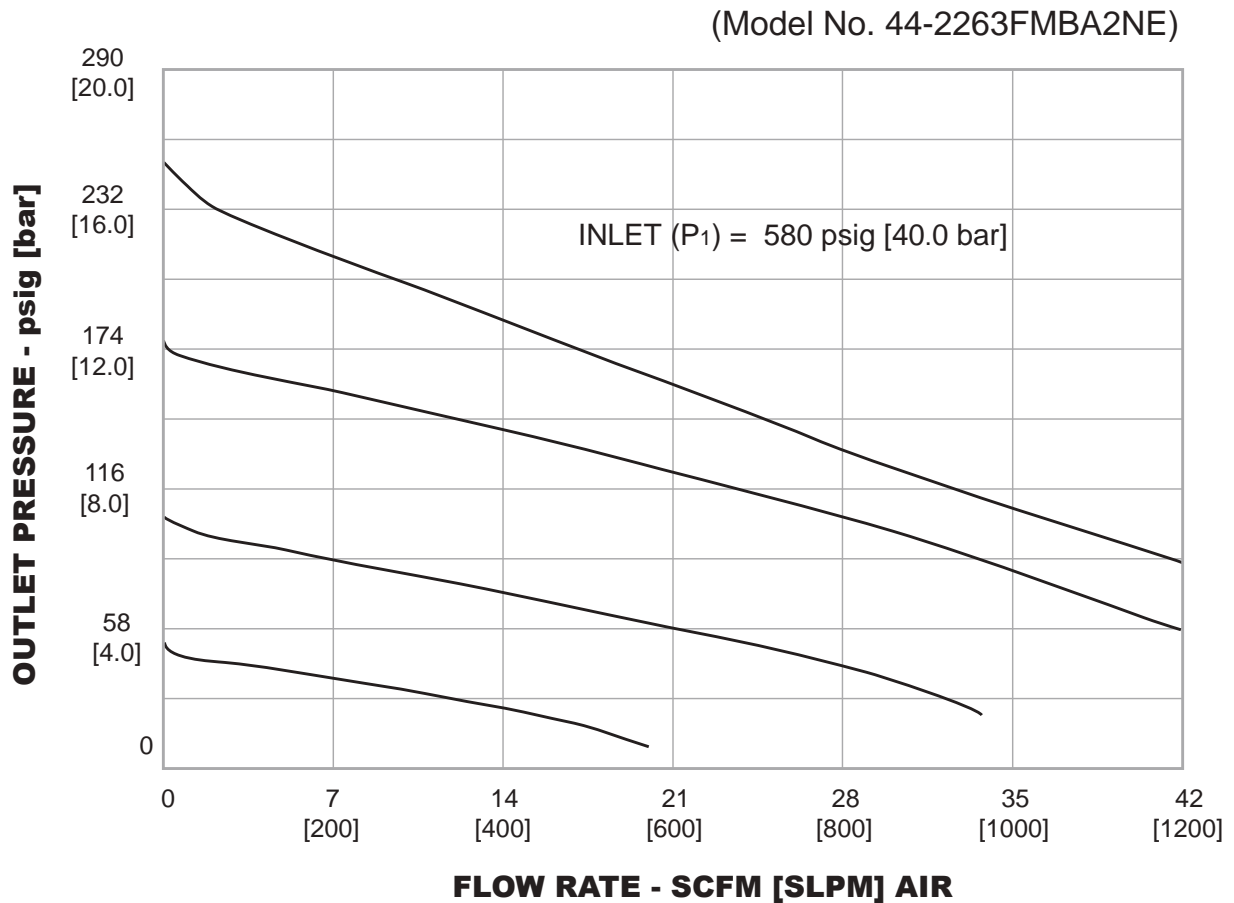
Europe and Middle East only

44-2200F Series Regulator Drawing



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 TESCO 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:

| 44-22 | 6 | 1 | F | K | B | F | 2 | N | E |
|--------------|--------------------------|---|-------------------------------------|---|-----------------|---|---|--------------------------------------|-----------------|
| | | | FLANGE | | | | EN 1092-1 | | |
| 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 $\leq 2 \times 10^{-8}$ 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

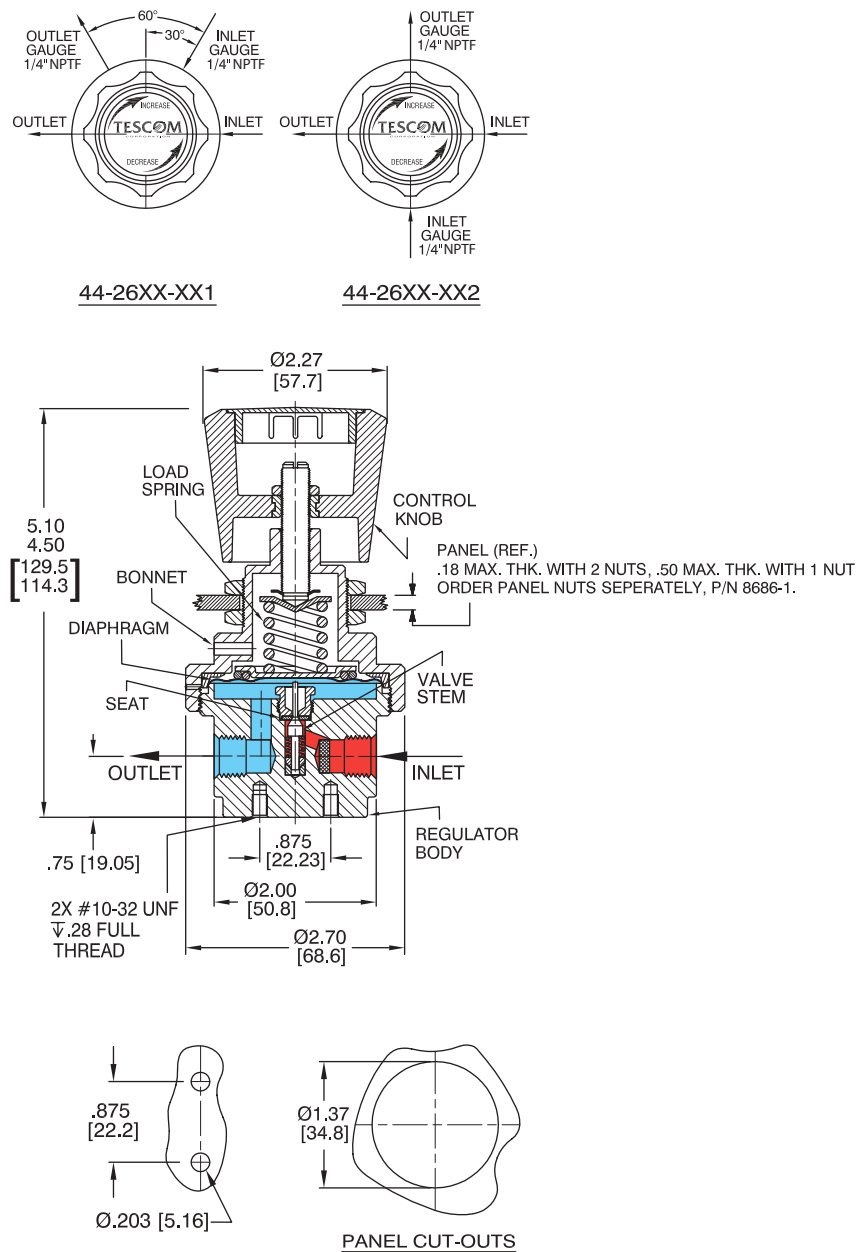
- Gas/Analyzer sampling systems
- Fuel cells
- Tissue and cell culture incubators
- Chromatograph flame detector fuel supply
- Excellent for low outlet and low differential pressure applications

Features and Benefits

- Features a large convoluted diaphragm for extreme sensitivity with minimum droop
- Repeatability: $\pm 0.5\%$ of outlet pressure range
- Metal-to-metal diaphragm to body seal
- Accuracy: $\pm 1\%$ 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

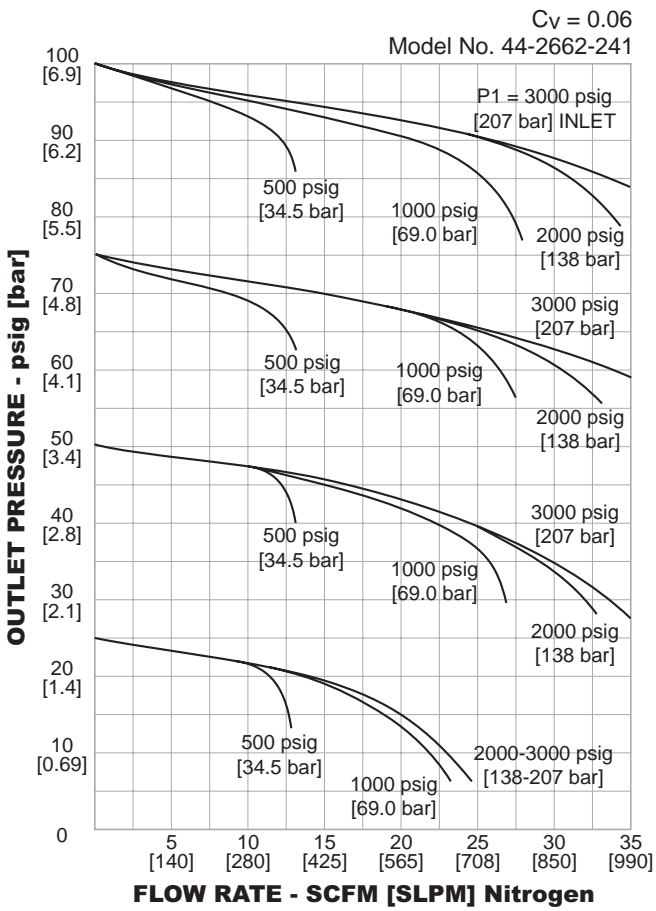
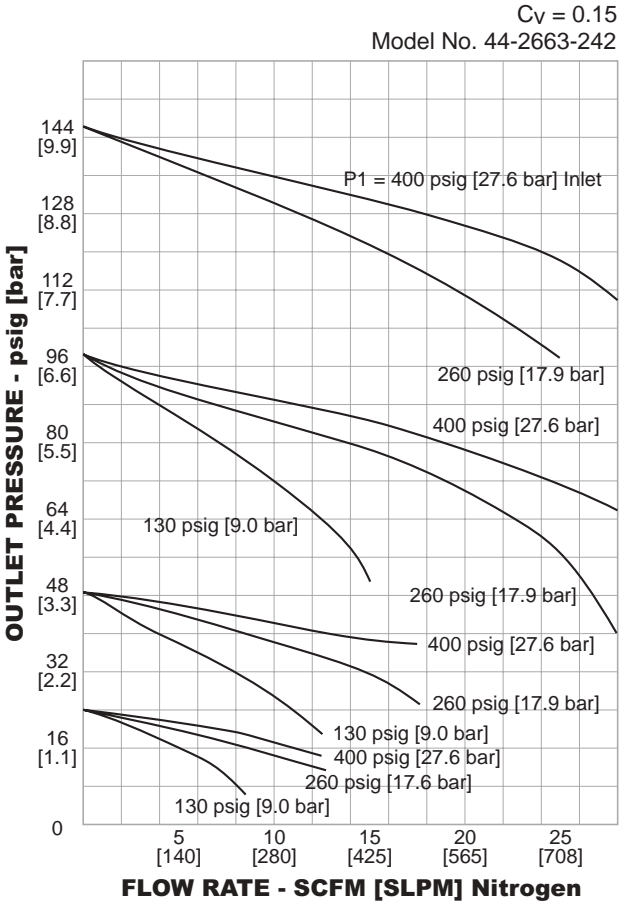
44-2600 Series Regulator Drawing



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. | | | |

Specifications

For other materials or modifications, please consult TESCO.

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 $\leq 2 \times 10^{-8}$ 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 (Elgiloy®)

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

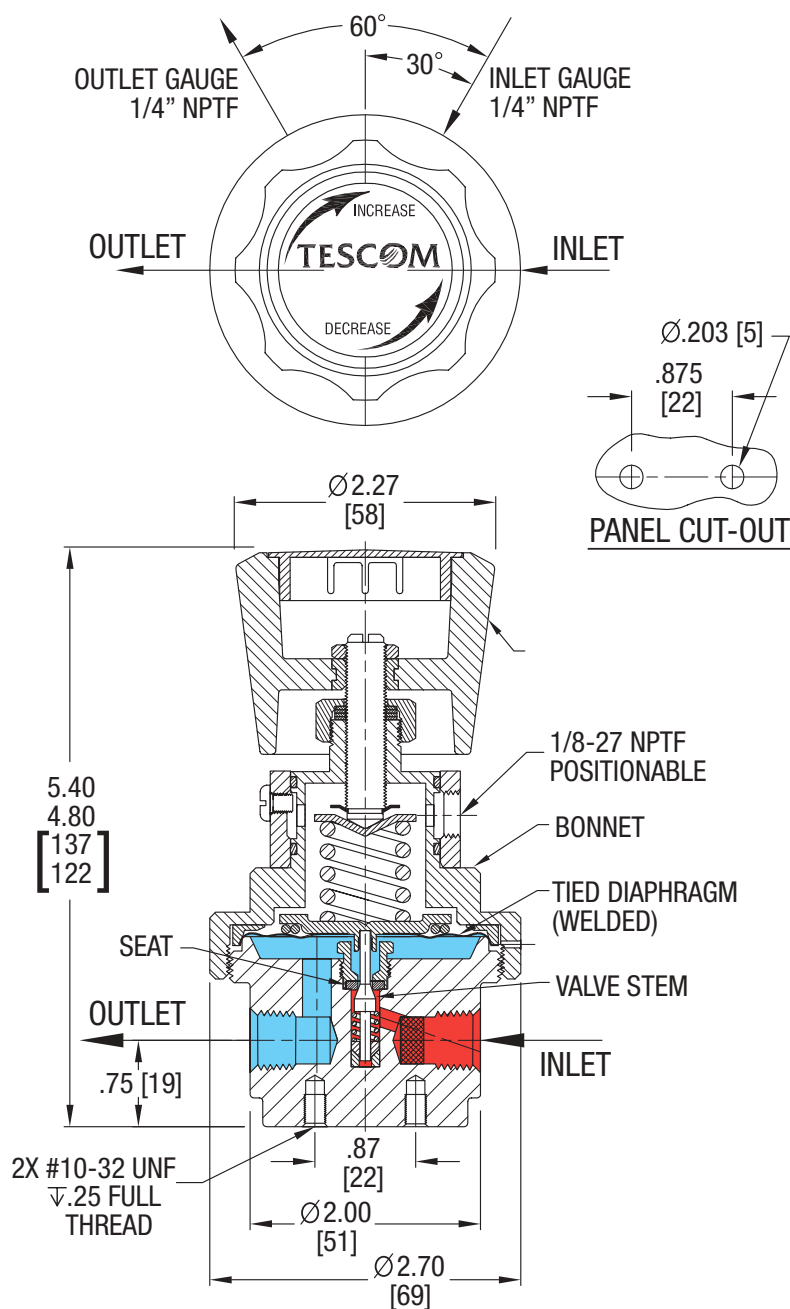
- Instrumentation/analyzer equipment

Features and Benefits

- Repeatability: $\pm 0.50\%$ of maximum rated outlet pressure
- Convolute 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

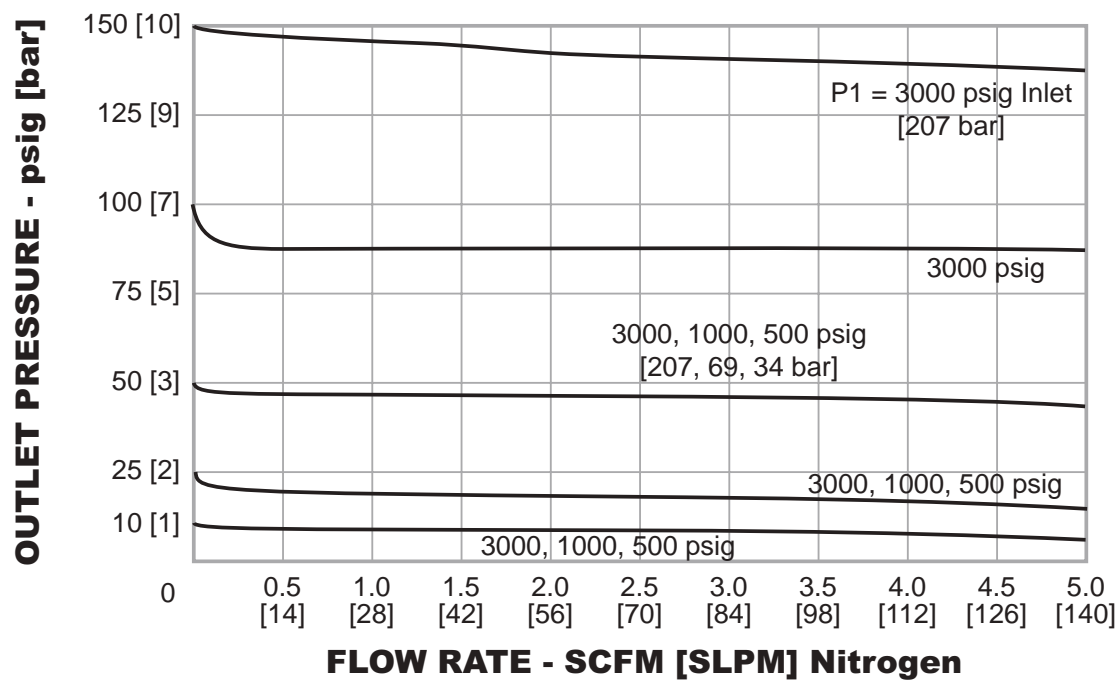
44-2800 Series Regulator Drawing



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 |

Specifications

For other materials or modifications, please consult TESCO.

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: $< 2 \times 10^{-8}$ 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

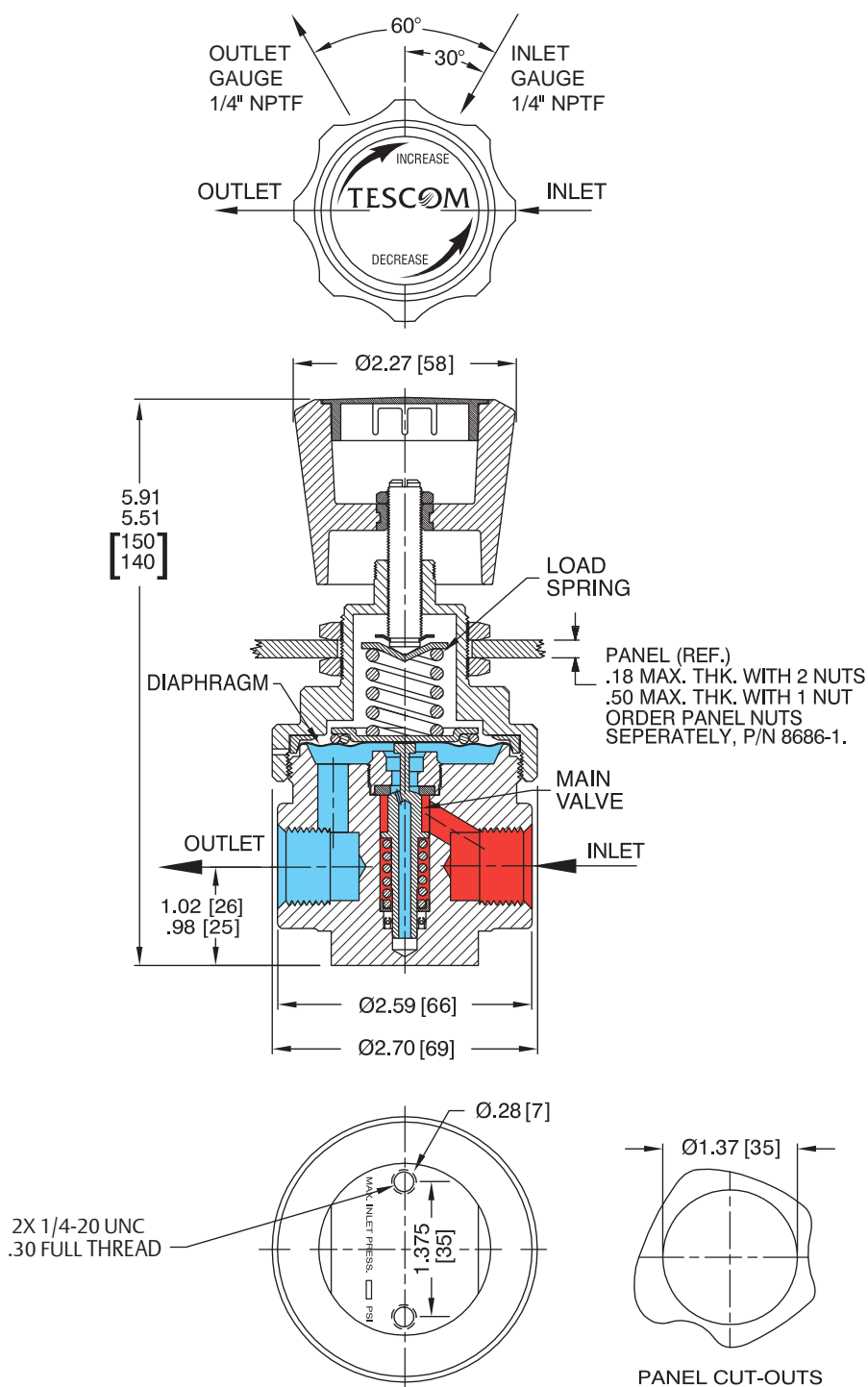
- Laboratory and point-of-use gas systems
- Laser assist and resonator gases
- Glove box and isolators

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

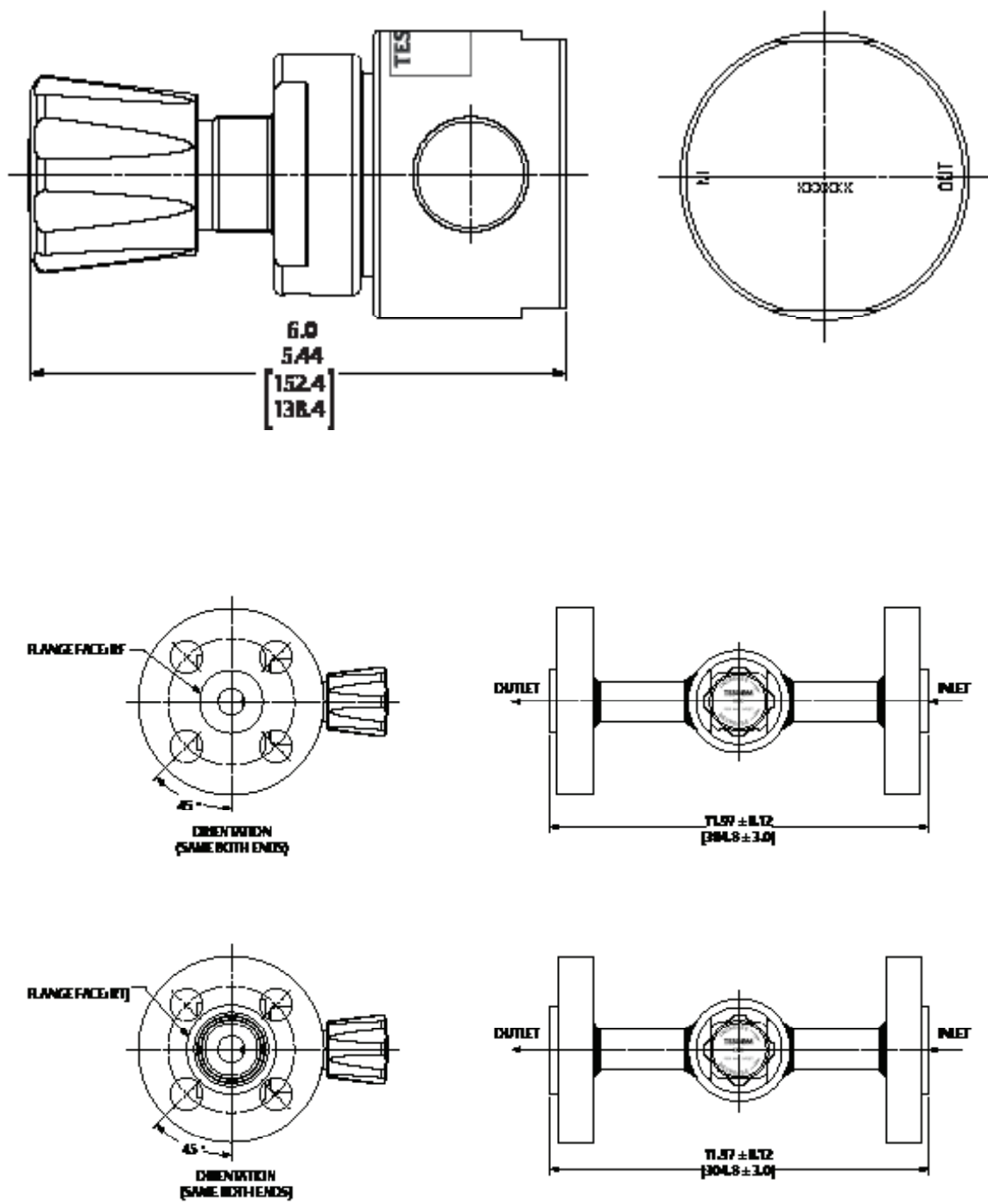
44-3200 SERIES

44-3200 Series Regulator Drawing



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

44-3200 Series Regulator with Flanges Drawing

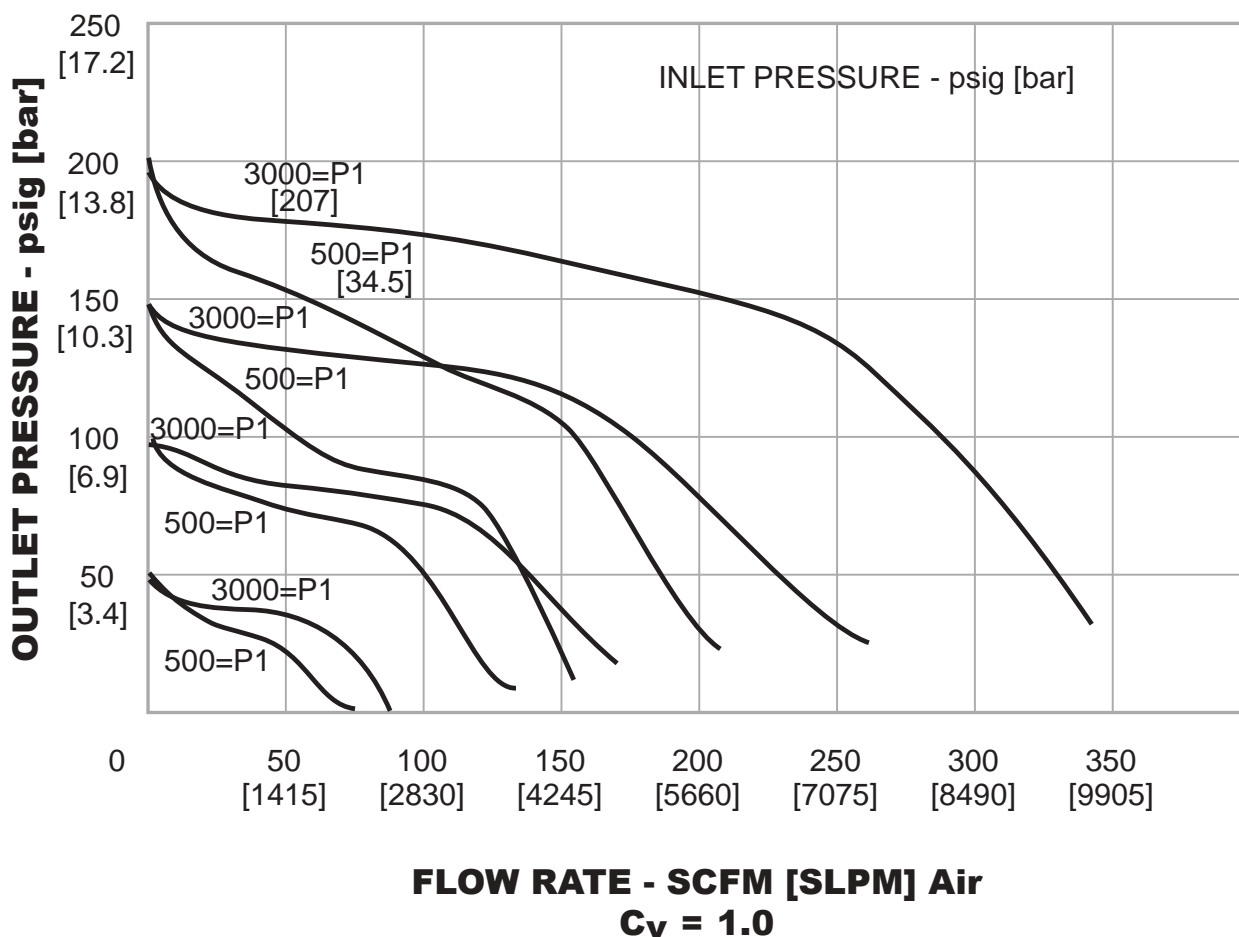


All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

44-3200 SERIES

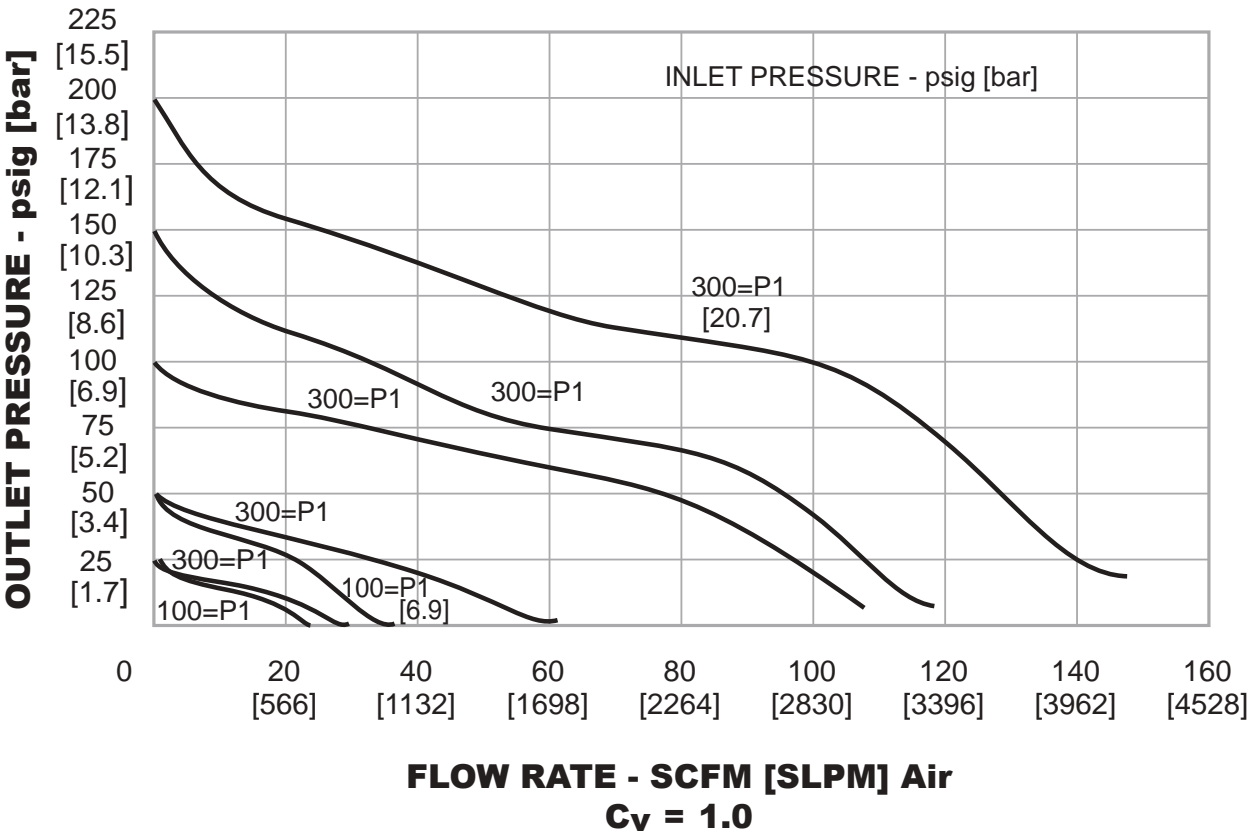
44-3200 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO 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





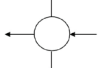
Learn more about common options.

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 | 1.0 | PCTFE | PTFE | -20 to 140°F -29 to 60°C | A – R.H. Inlet, no gauge port |  | 1 – 1/2" 3 – 1" | 11 – 150# | 1 – RF |
| | | 1 – 0-50 psig 0-3.4 bar | 2 | 1.0 | PTFE | PTFE | -20 to 165°F -29 to 74°C | B – R.H. Inlet, in & out gauge port at 60° |  | | 21 – 300# | 2 – RTJ |
| | | 2 – 0-100 psig 0-6.9 bar | | | | | | | | | 41 – 600# | |
| | | 3 – 0-150 psig 0-10.3 bar | | | | | | | | | 52 – 900# / 1500# | |
| | | 4 – 0-200 psig 0-13.8 bar | | | | | | | | | 63 – 2500# | |
| | | | | | | | | J – R.H. Inlet, 2 outlet gauge port at 90° |  | | | |

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: $< 2 \times 10^{-8}$ 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

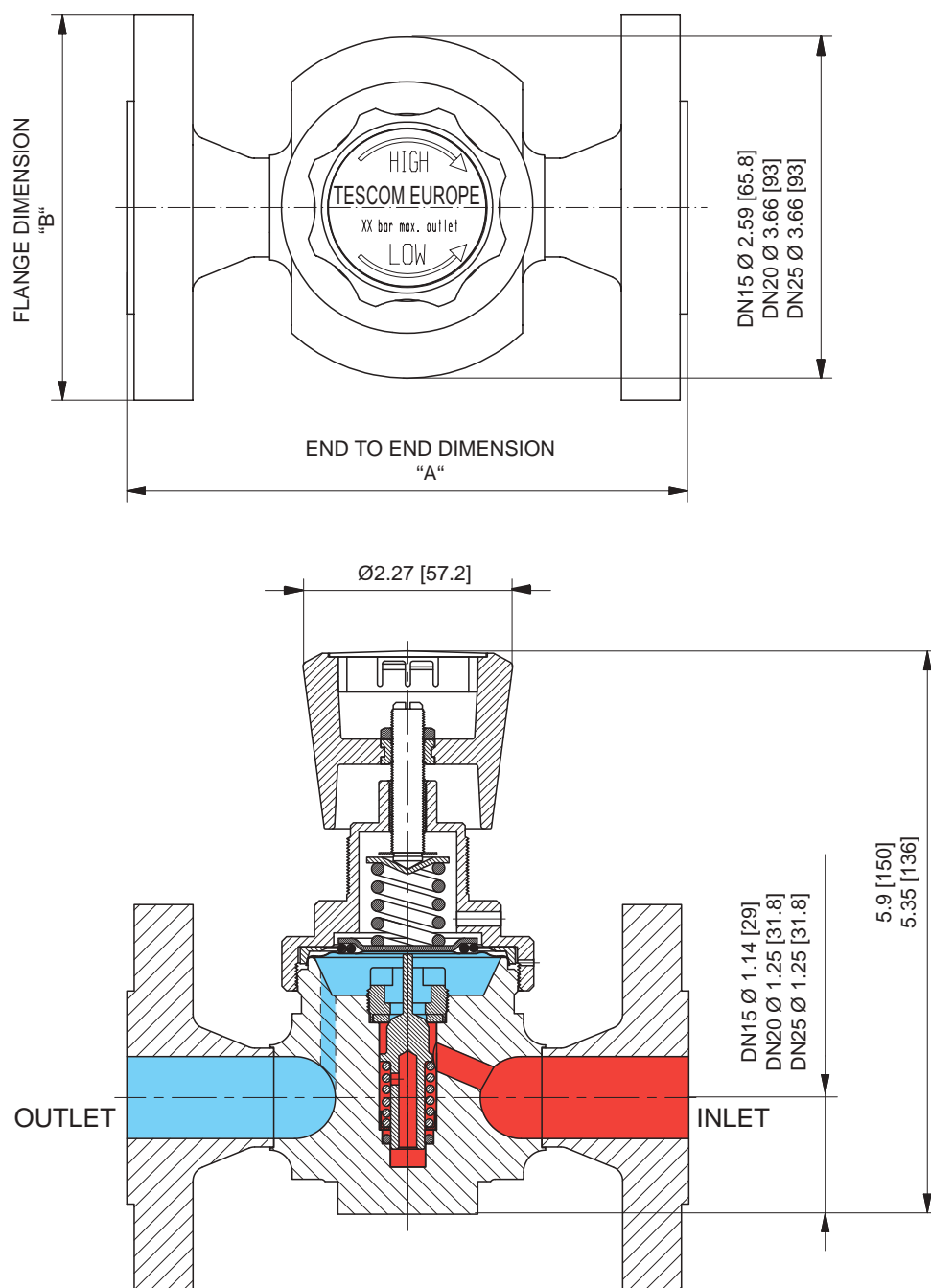
Features and Benefits

- 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

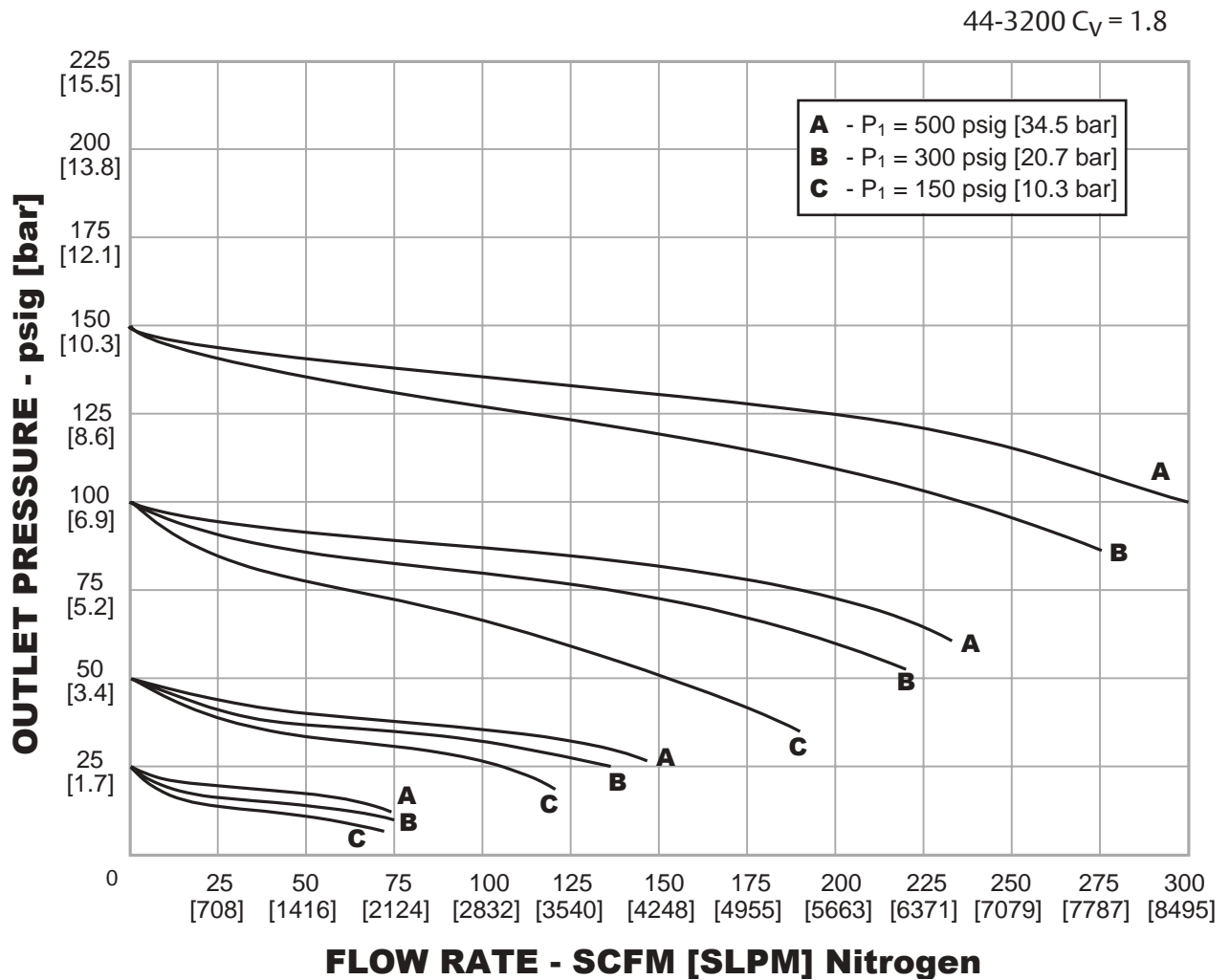
44-3200F Series Regulator Drawing



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 TESCO 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 | A – 28" Hg VAC-15 psig 65 mbar abs-1.0 bar ¹ | G – DN 10 | 5.12 [130] | 3.54 [90] | B – Form B - raised face | A – None  | 2 – C _V = 1.8 | N – Non-Venting | |
| | | B – 28" Hg VAC-30 psig 65 mbar abs-2.1 bar ¹ | K – DN 15 | 5.12 [130] | 3.74 [95] | D – Form D - ring joint | D – 1/4" NPTF 1 x out  | 3 – C _V = 1.0 ¹ | | |
| | 7 – 316L diaphragm: Nickel Alloy (Hastelloy®) | C – 28" Hg VAC-60 psig 65 mbar abs-4.1 bar ¹ | L – DN 20 | 5.9 [150] | 4.13 [105] | | E – 1/4" NPTF 1 x out  | | | |
| | | D – 28" Hg VAC-100 psig 65 mbar abs-6.9 bar ¹ | M – DN 25 | 6.3 [160] | 4.53 [115] | | F – 1/4" NPTF 1 x in  | | | |
| | | 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 | | | | | | | | |
| | | | | | | | | L – 1/4" NPTF 1 x in, 1 x out  | | |
| 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 TESCO.

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 $\leq 2 \times 10^{-8}$ 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 (Elgiloy®)

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

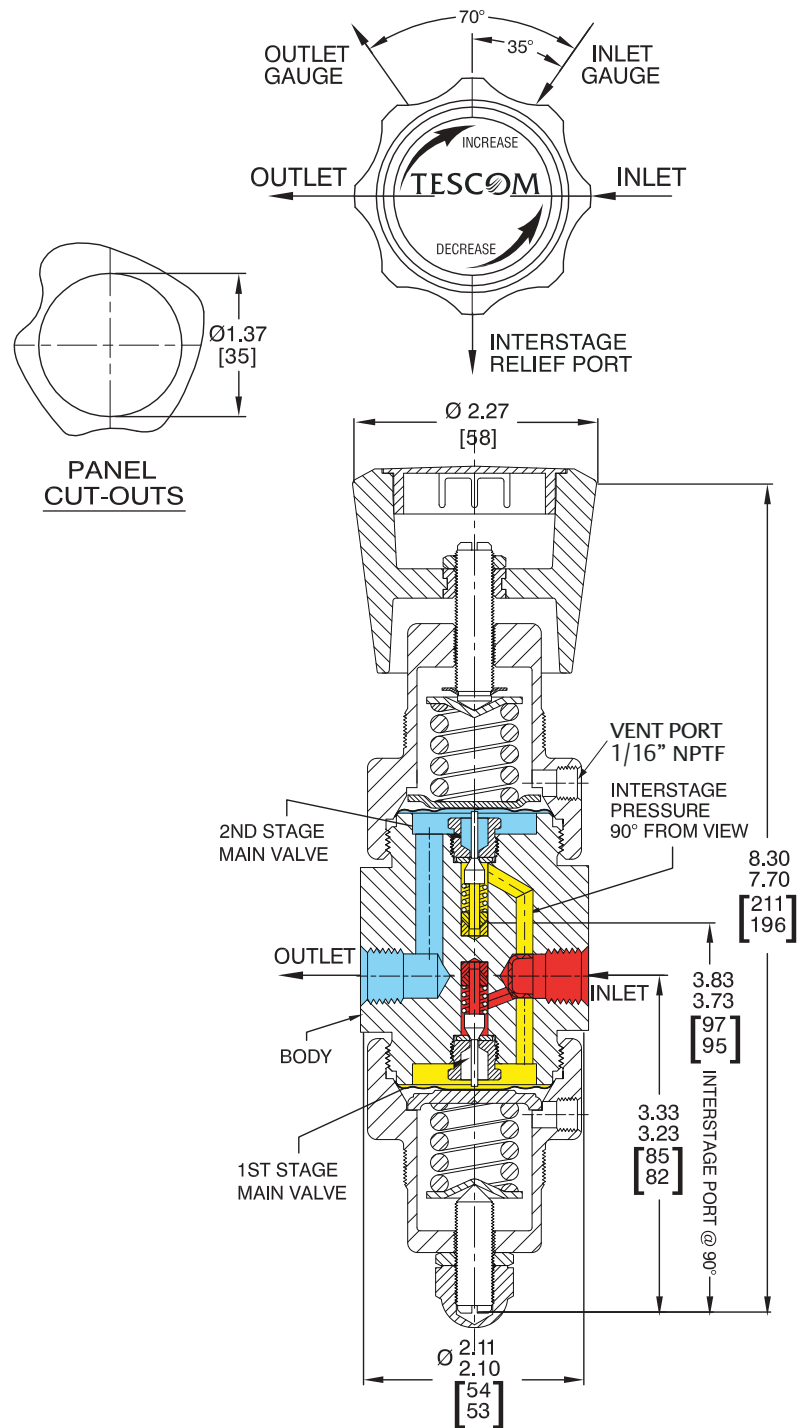
NOTE:

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 TESCO customer support further assistance.

44-3400 SERIES

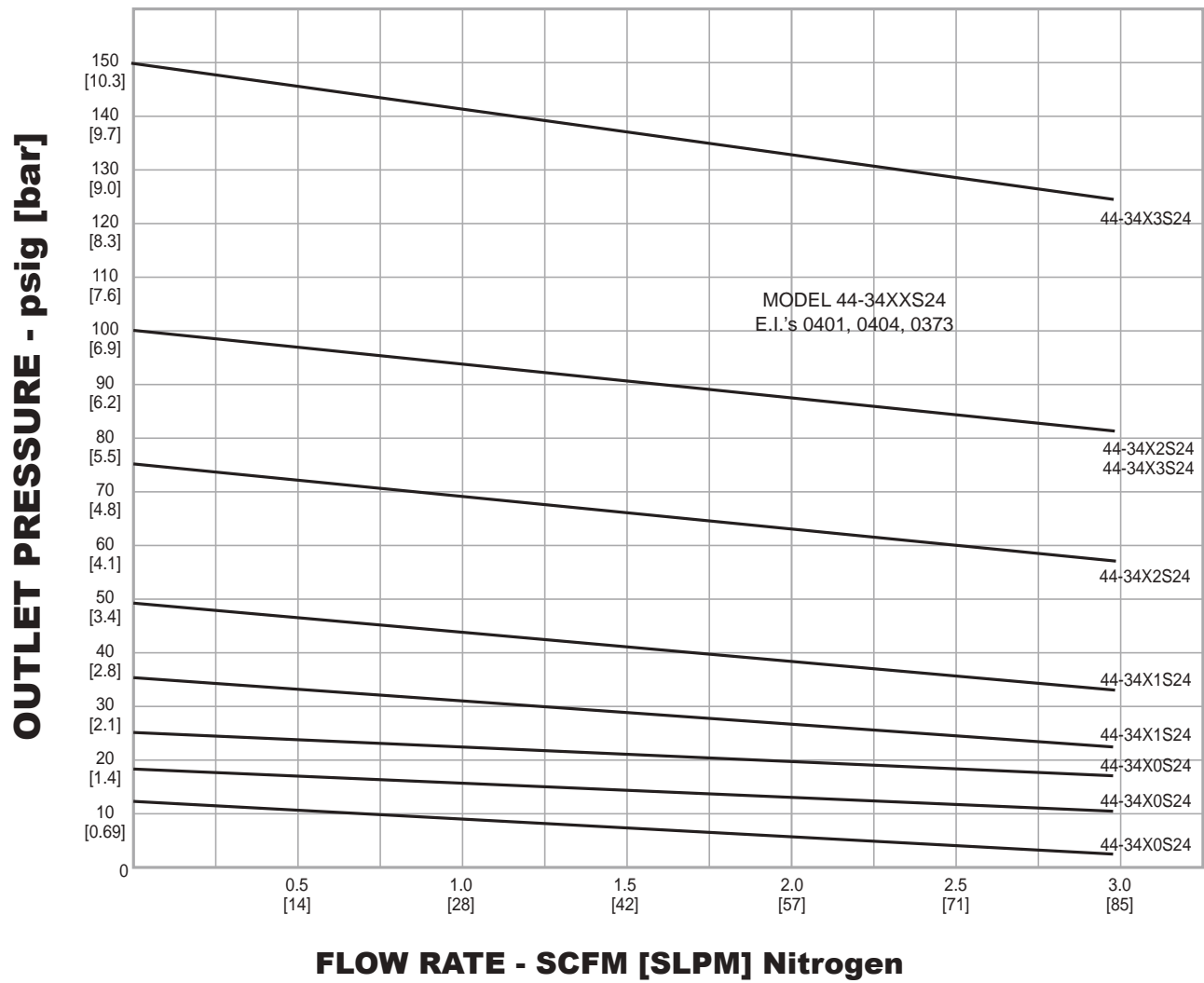
44-3400 Series Regulator Drawing



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 | S – PTFE | 2 – NPTF | 4 – 1/4" |
| | 6 – 316 Stainless Steel | 316 Stainless Steel | 316 Stainless Steel | 316 Stainless Steel | 316 Stainless Steel | 1 – 0 to 50 psig 0 to 3.4 bar | | | |
| | 9 – Nickel Alloy (Monel®) | Cobalt Chrome Nickel Alloy (Elgiloy®) | Cobalt Chrome Nickel Alloy (Elgiloy®) | PTFE | Nickel Alloy (Monel®) | 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 | | | |



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

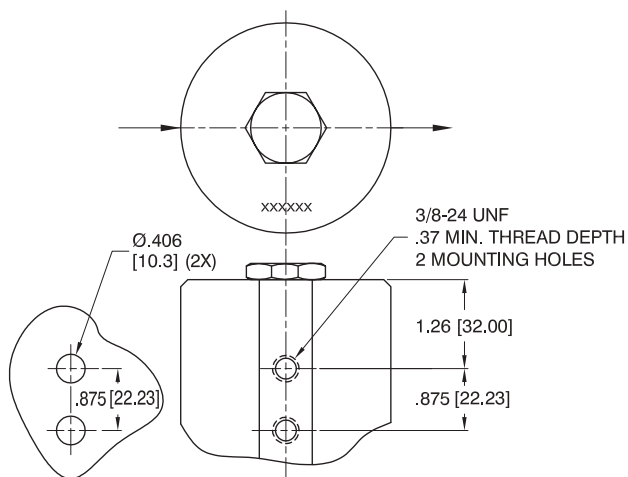
Features and Benefits

- 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

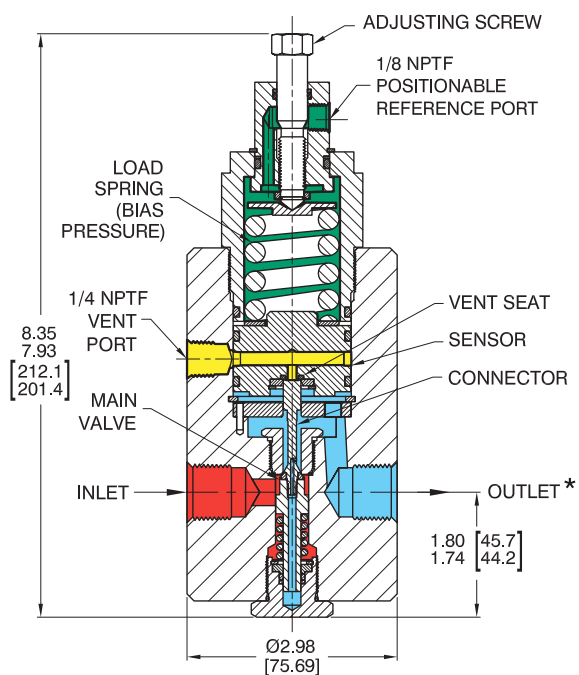
44-&" 00 SERIES

44-4000 Series Regulator Drawings

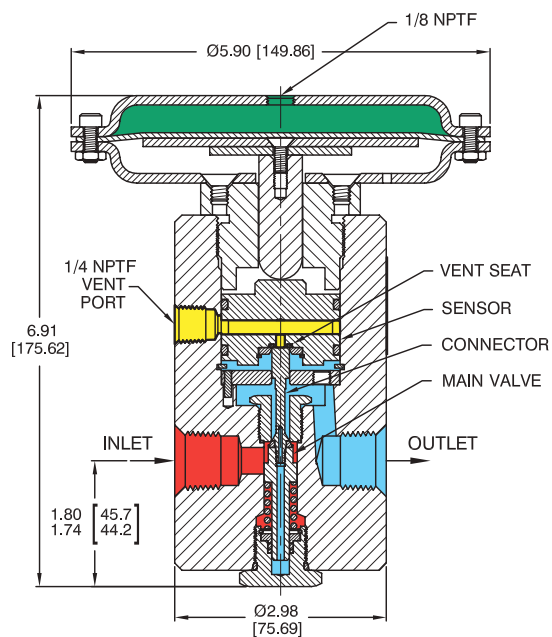
PANEL MOUNT DIMENSIONS



DOME LOAD/SPRING BIAS



AIR LOAD

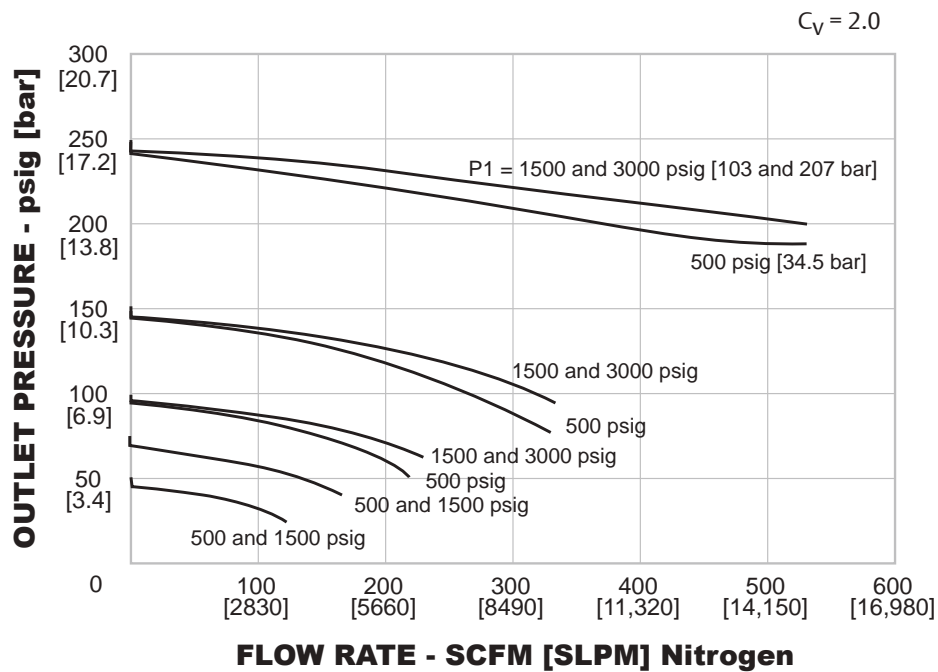
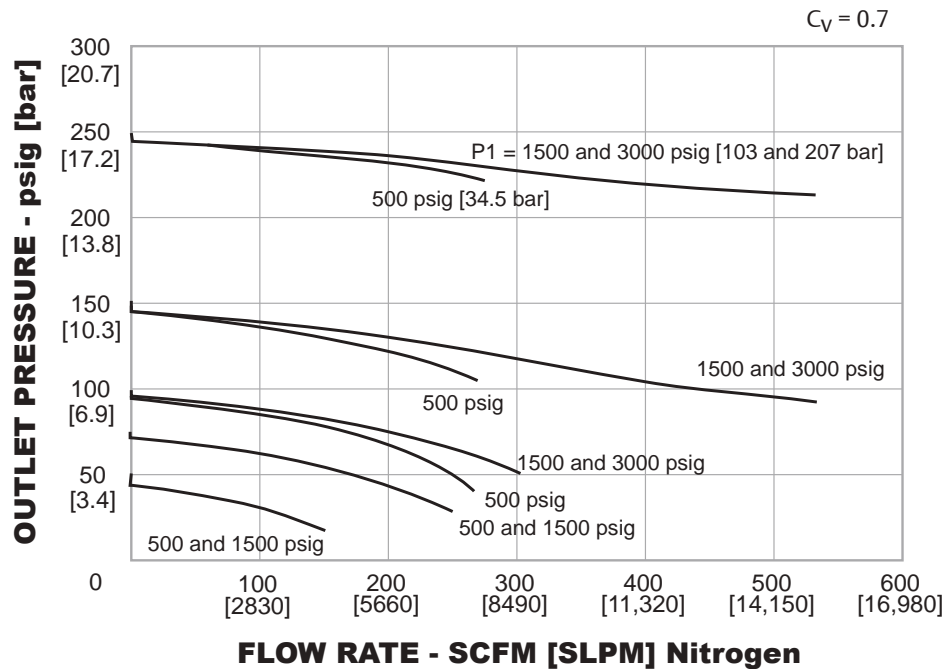


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

*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 TESCO catalog or on www.tescom.com.



44-&" 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:

DOMESTIC 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 | 1 – 100 psig 6.9 bar | E – FKM (Viton®-A) | PCTFE | PCTFE | -15°F to 165°F -26°C to 74°C | 0 – BSP | 8 – 1/2" | 2.98" | -002 – C _V = 2.0 |
| | 2 – 303 Stainless Steel | 2 – 200 psig 13.8 bar | | PCTFE | PCTFE | -40°F to 165°F -40°C to 74°C | 1 – SAE | 12 – 3/4" NPTF 3/4" SAE | 2.98" | |
| | 6 – 316 Stainless Steel | 3 – 350 psig 24.1 bar | M – Ethylene Propylene | PCTFE | PCTFE | 0°F to 165°F -17°C to 74°C | 2 – NPTF | | 3.48" | |
| | 9 – Chrome-plated Brass | 4 – 120-150 psig 8.3-10.3 bar (maximum) | P – FFKM, Perfluoroelastomer (Kalrez®) | Polyimide (Vespel®) | Polyimide (Vespel®) | -15°F to 400°F -26°C to 204°C | 3 – MS33649 | | | |
| | | 9 – 0-15 psig 0-1.0 bar | 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 | 8 – 600 psig 41.4 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 |
| | 2 – 303 Stainless Steel | 9 – 1500 psig 103 bar | PCTFE | PCTFE | -15°F to 165°F -26°C to 74°C | | | | |
| | 6 – 316 Stainless Steel | E – FKM (Viton®-A) | 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

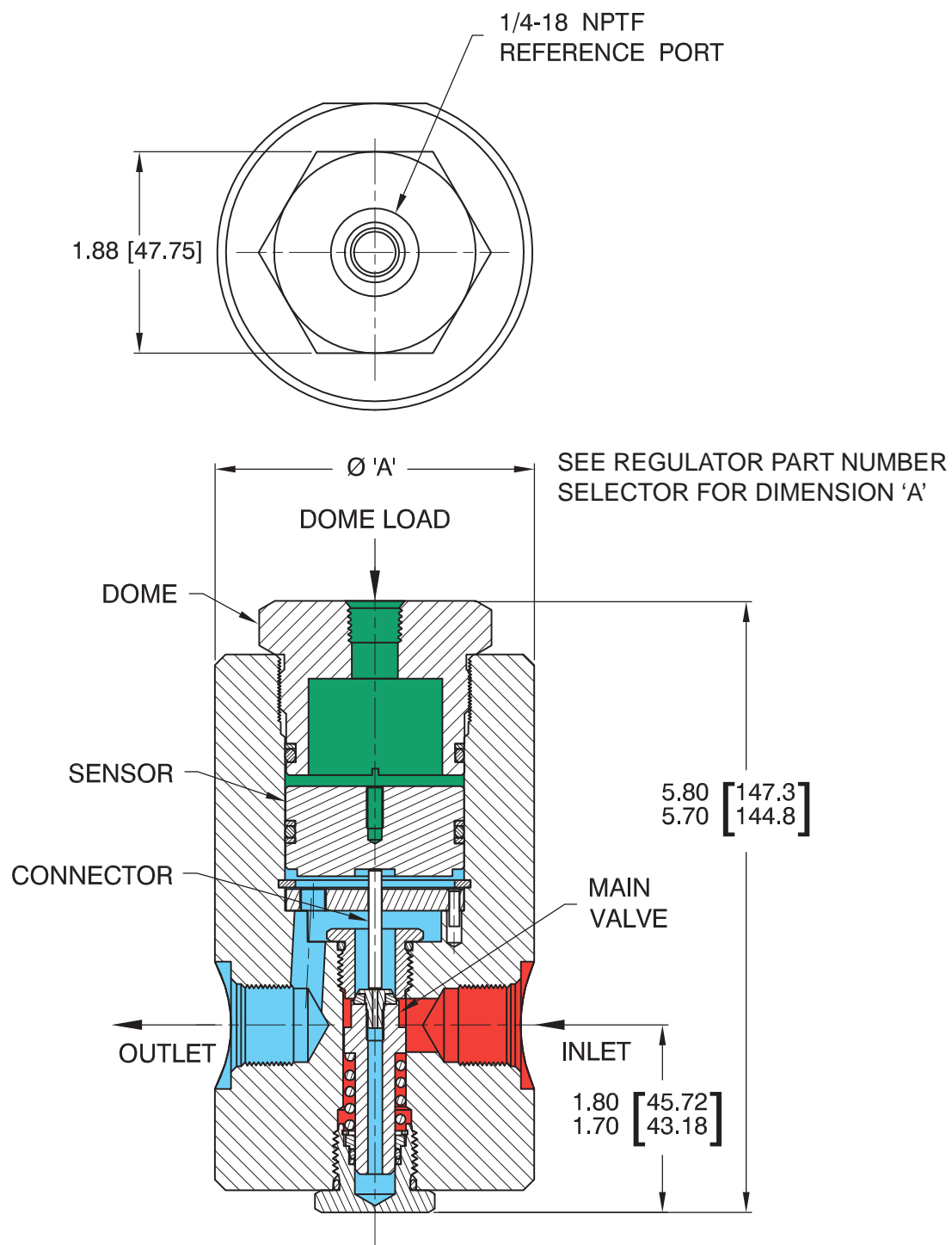
- Fire suppression equipment
- CNG filling

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

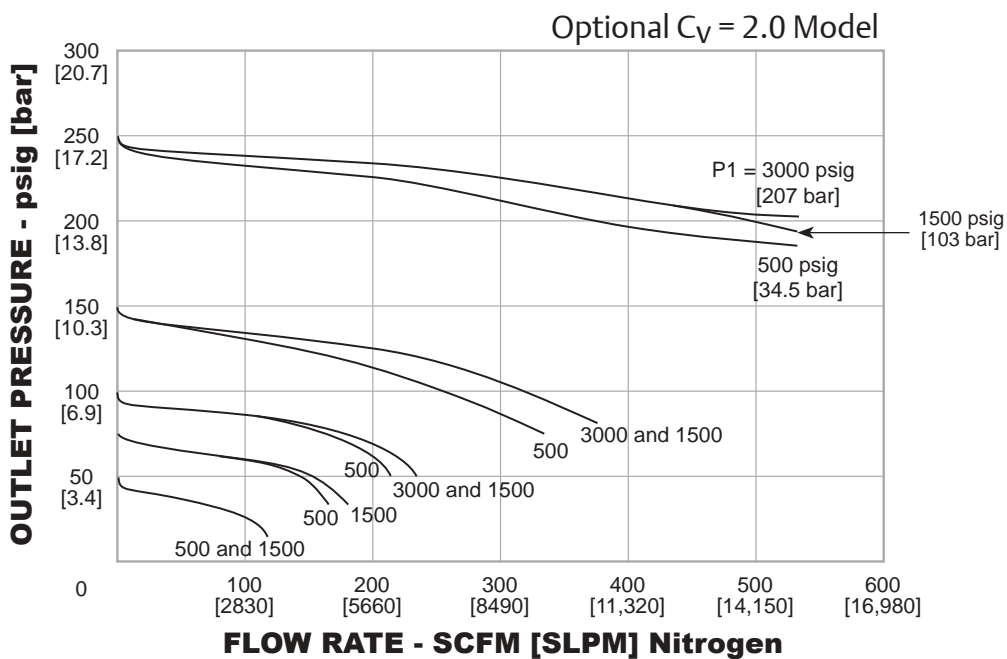
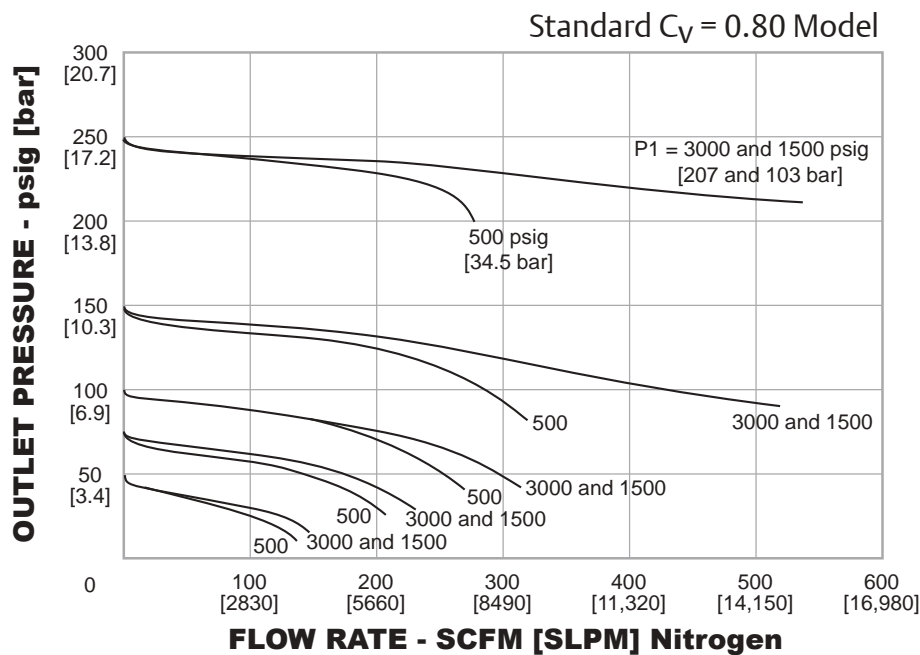
44-4200 Series Regulator Drawing



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 TESCO 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 | 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" | 2.47" 2.47" | -005 – C _V = 2.0 |
| | 2 – 303 Stainless Steel | | | PTFE | PCTFE | -40°F to 165°F -40°C to 74°C | | | | |
| | 6 – 316 Stainless Steel | | B – Nitrile, Buna-N | PCTFE | PCTFE | -40°F to 165°F -26°C to 74°C | | 12 – 3/4" (NPTF and SAE only) | 2.98" (3.48" SAE) | |
| | | | | E – FKM (Viton®-A) | PTFE | PCTFE | | | | |
| | | | 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®) | | | | |
| | | | H – E.P. | | PCTFE | PCTFE | | | | |
| | | | | L – E.P. | | | | | | |

* Brass body is limited to +200 °F (93 °C) maximum.

Specifications

For other materials or modifications, please consult TESCO.

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: $< 2 \times 10^{-8}$ 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 (Elgiloy®)

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

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Elgiloy® is a registered trademark of Elgiloy Corp.



SPRING LOADED

DOMES 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

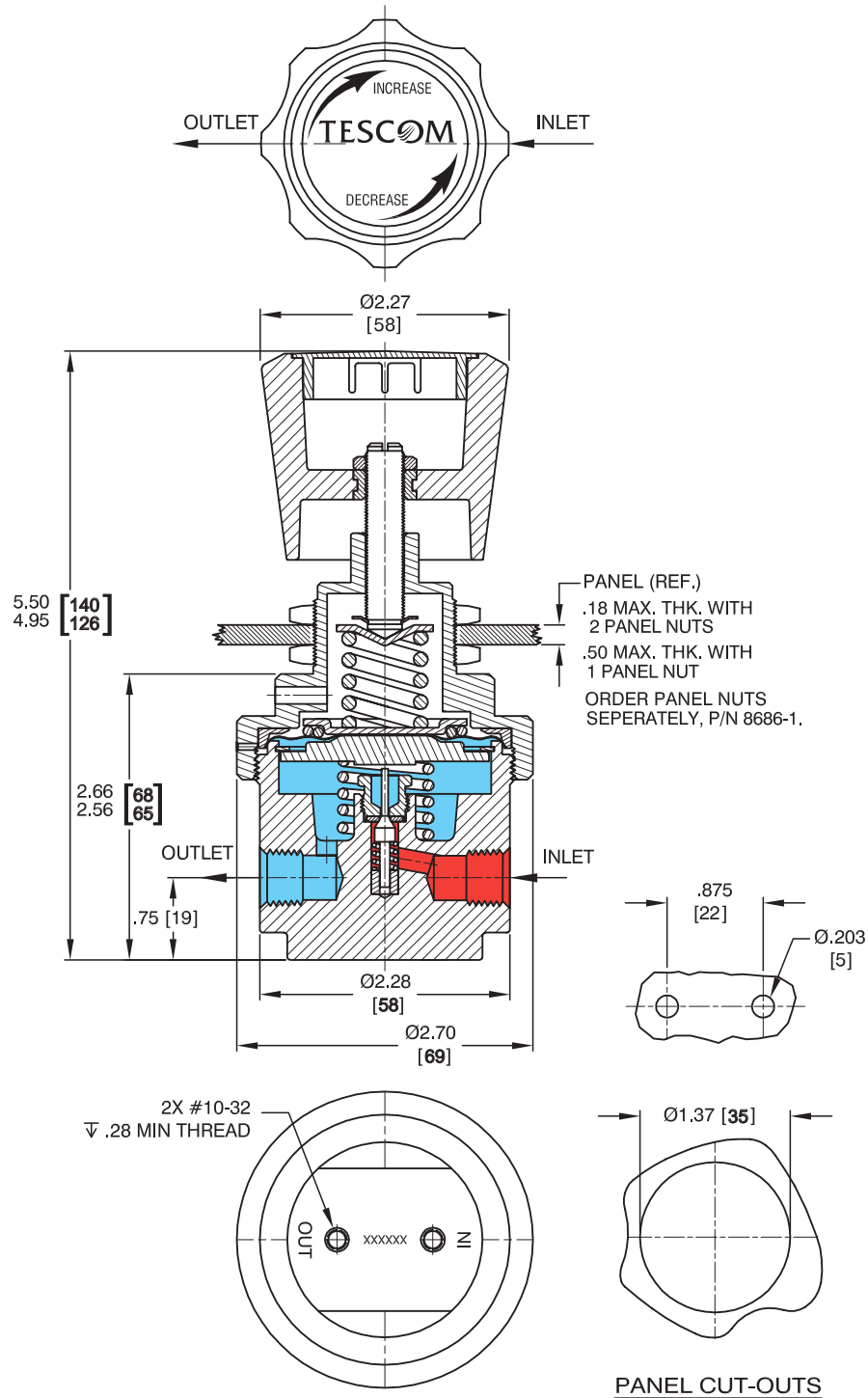
- Analytical systems
- Sample systems
- Process systems
- Pilot plants
- Calibration

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

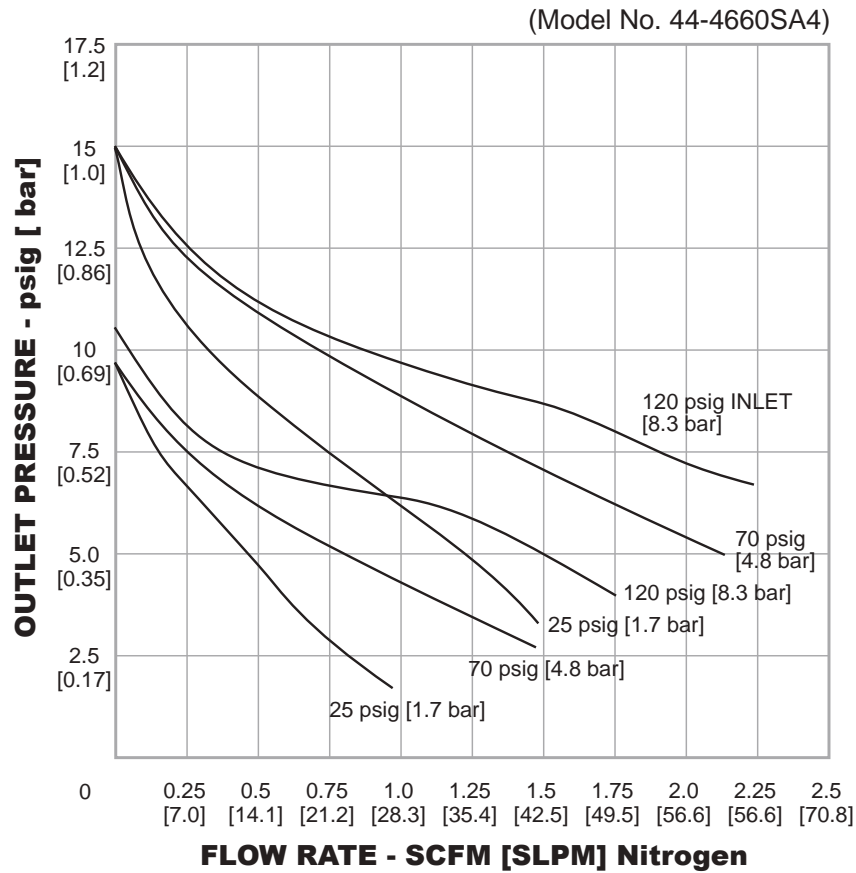
44-4600 Series Regulator Drawing



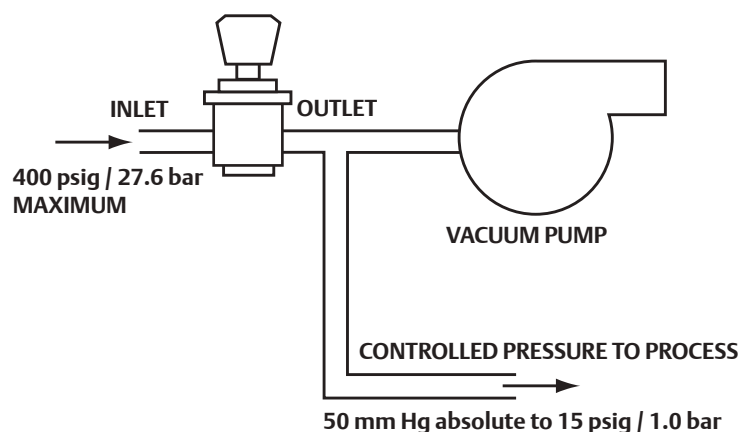
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 RANGE¹ | 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: $\leq 2 \times 10^{-8}$ 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

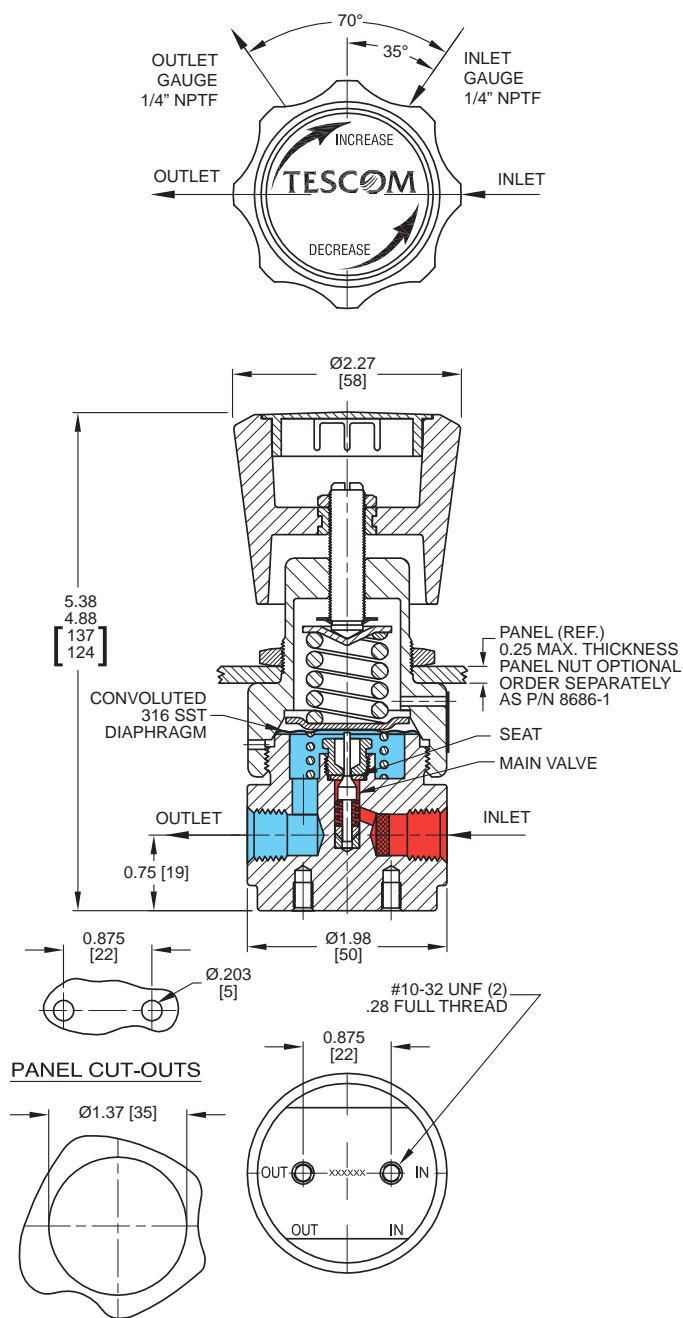
- Gas chromatograph sampling systems
- Delivery system cylinder regulator
- Low vapor pressure hydrocarbon gases

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

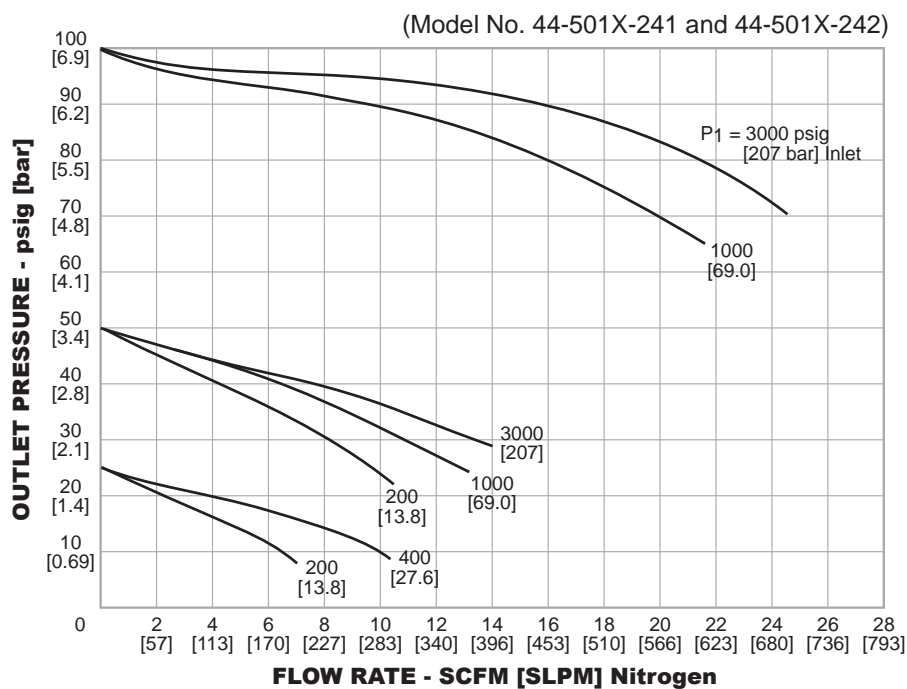
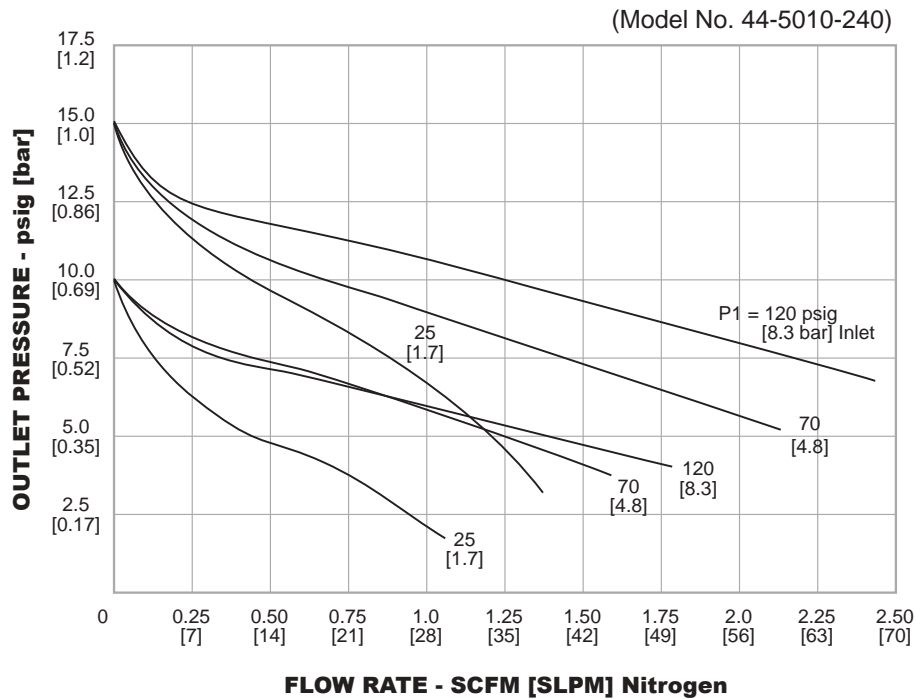
44-5000 Series Regulator Drawing



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 TESCO catalog or on www.tescom.com.



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 <div>1.28" Hg = 50 mm Hg absolute</div> | 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 |

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 Temperature¹

-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

¹For 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

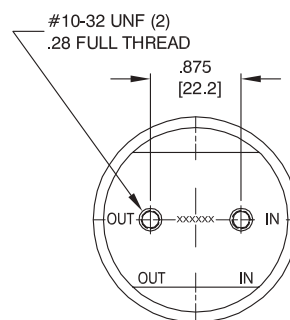
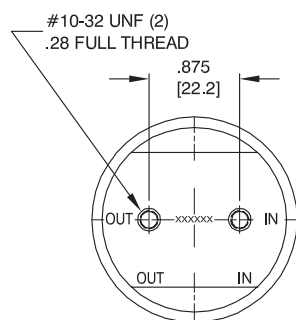
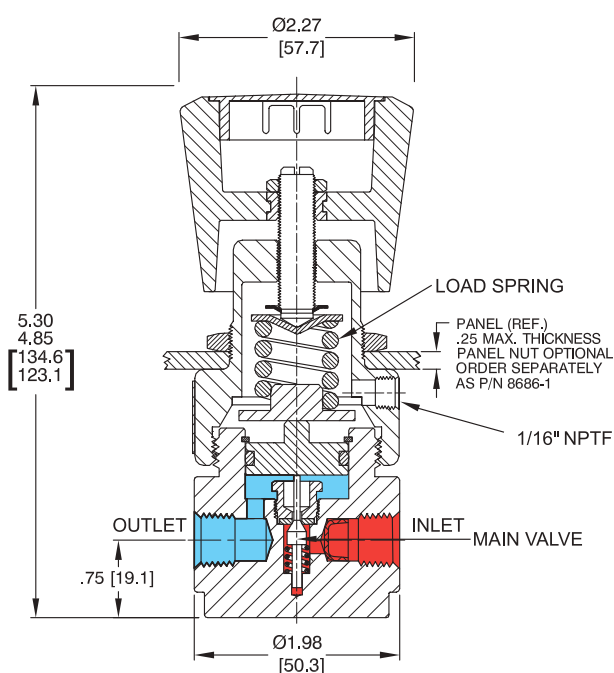
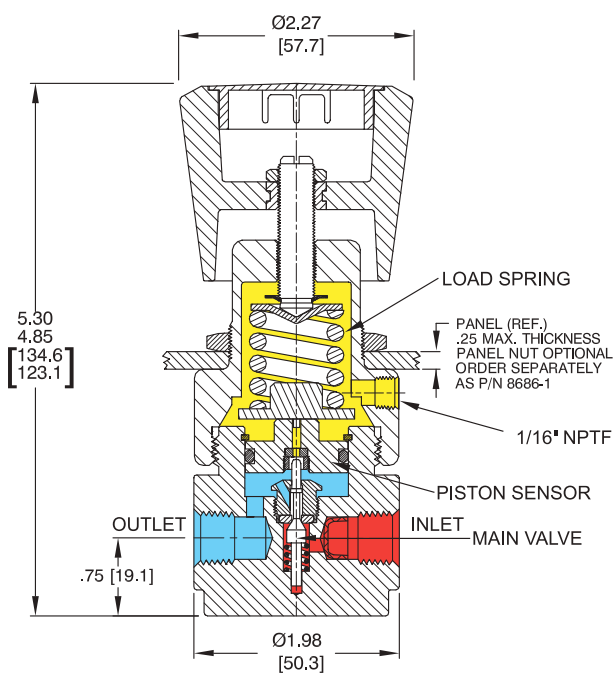
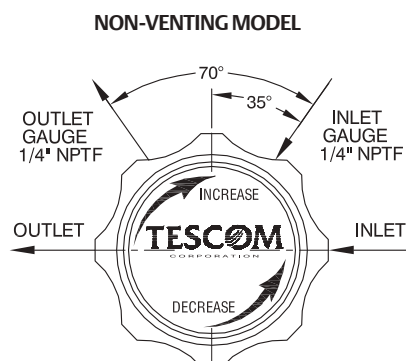
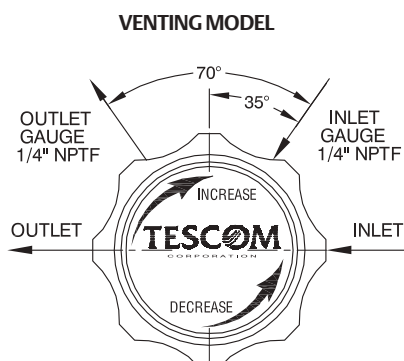
- Test equipment
- Calibration stands
- Production equipment

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

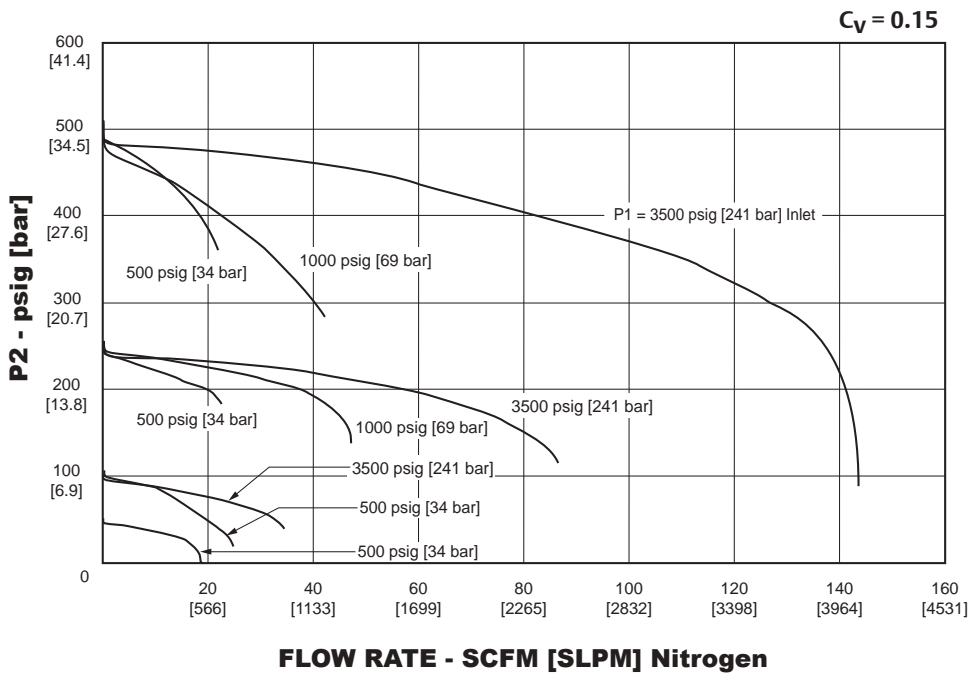
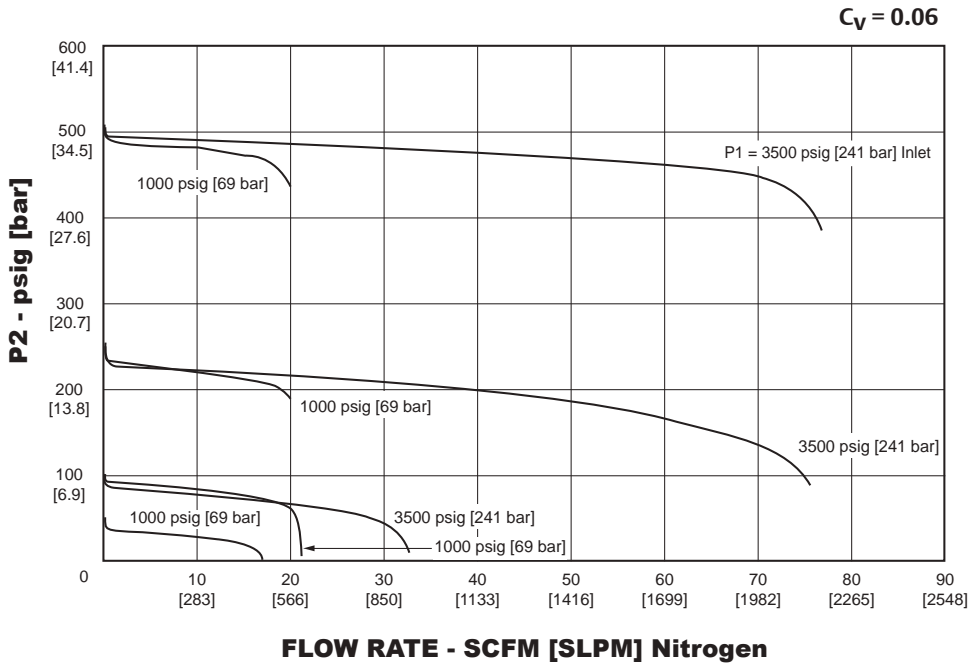
44-5200 Series Regulator Drawing



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 TESCO.

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

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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

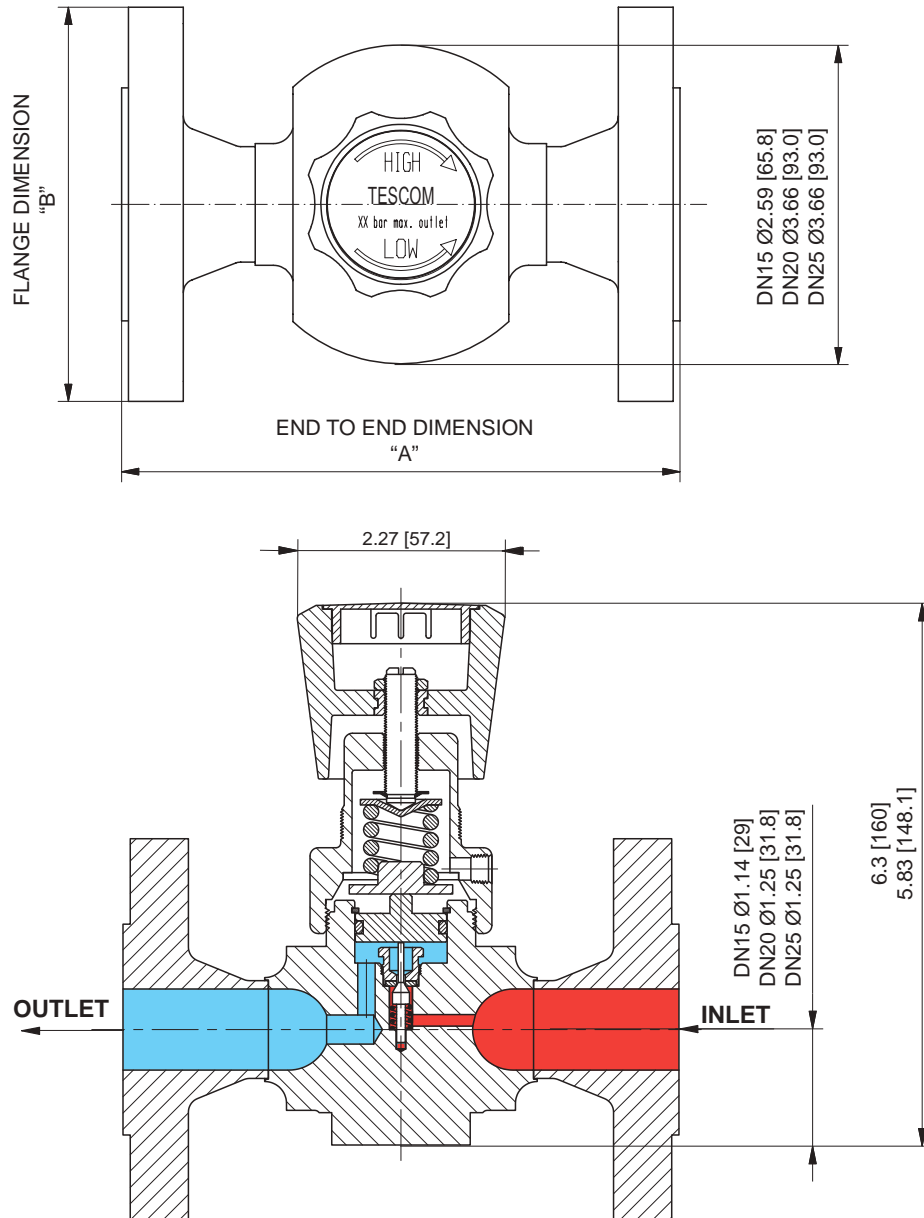
Features and Benefits

- 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

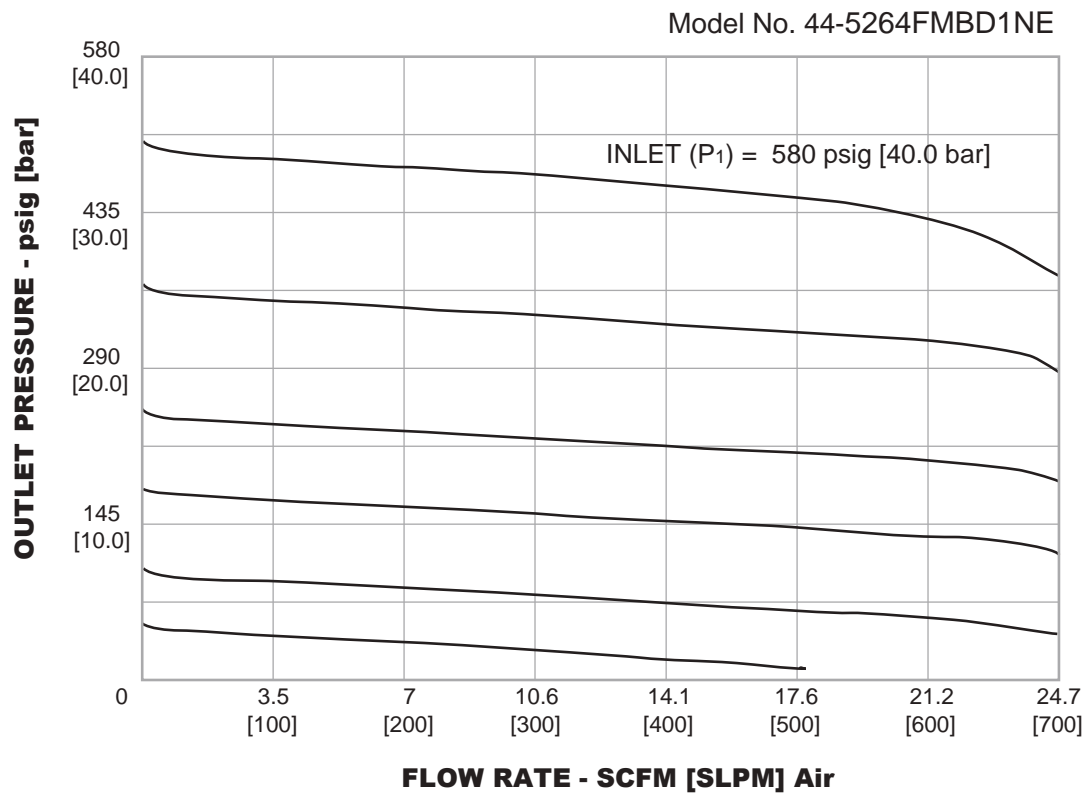
44-5200F Series Regulator Drawing



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 TESCO 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:

| <div>FLANGE</div> <div>EN1092-1</div> | | | | | | | | | | |
|---------------------------------------|-----------------------------|---------------------------------|----------------------------|-----------------------|---|-----------------------------|---|---------------------------|-----------------|---|
| 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 | K – DN 15 | 5.12 130 | 3.74 95 | B – Form B - raised face | A – None  | 1 – C _V = 0.06 | N – Non-venting | |
| | | 1 – 1-50 psig 0.07-3.4 bar | L – DN 20 | 5.90 150 | 4.13 105 | D – Form D - ring joint | D – 1/4" NPTF 1 x out  | 2 – C _V = 0.15 | | |
| | | 2 – 2-100 psig 0.14-6.9 bar | M – DN 25 | 6.30 160 | 4.53 115 | | E – 1/4" NPTF 1 x out  | | | |
| | | 3 – 2-250 psig 0.14-17.2 bar | | | F – 1/4" NPTF 1 x in  | | | | | |
| | | 5 – 5-500 psig 0.34-34.5 bar | | | L – 1/4" NPTF 1 x in, 1 x out  | | | | | |

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 TESCO. M.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure

6000 psig / 414 bar / 41,370 kPa

Maximum Outlet Pressure0-25, 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

LeakageBubble-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 | |
| 230 | 200 | 122 °F / 50 °C |
| | 50 | |
| | 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 CapacityC_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 (Elgiloy®), 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

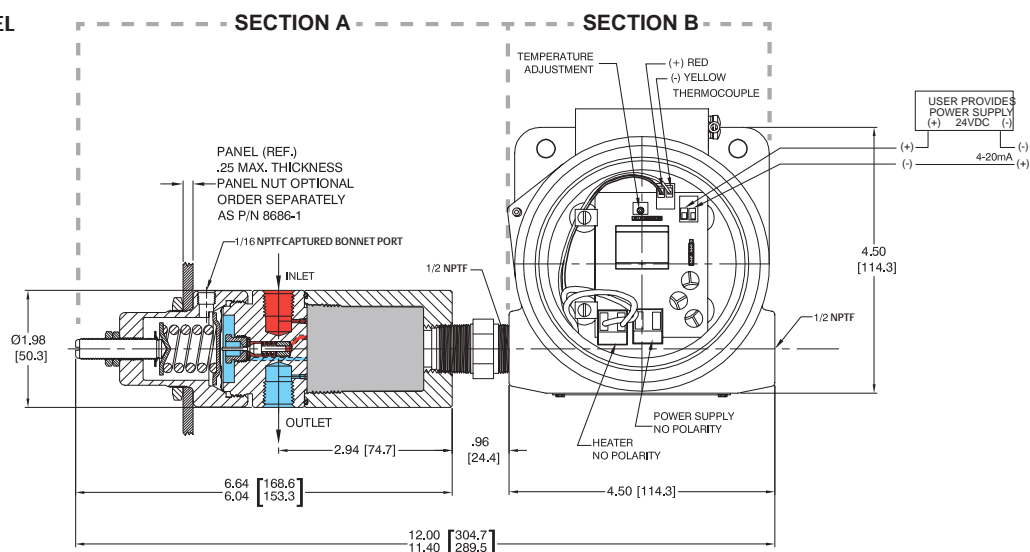
- For worldwide use: Designed for 115/230V VAC, 50/60 Hz
- 4-20 mA analog output for remote temperature monitoring and data acquisition
- Optional LCD temperature display
- Optional panel mounting
- Advanced heat transfer technology
- Single turn heater temperature control dial
- CSA, ATEX and IECEx Certification to T3 (200°C) Rating (Ratings are not applicable to steam version)
- NACE MR0175/ISO 15156

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Elgiloy® is a registered trademark of Elgiloy Corp.
Hastelloy® is a registered trademark of Haynes International, Inc.
Monel® is a registered trademark of Special Metals Corporation.

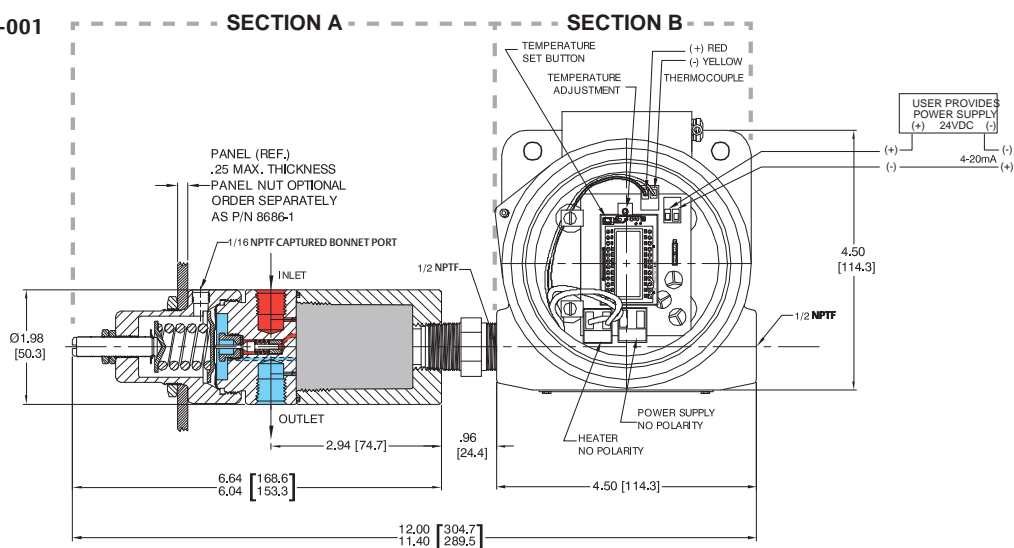
44-5800 SERIES

44-5800 Series Regulator Drawing

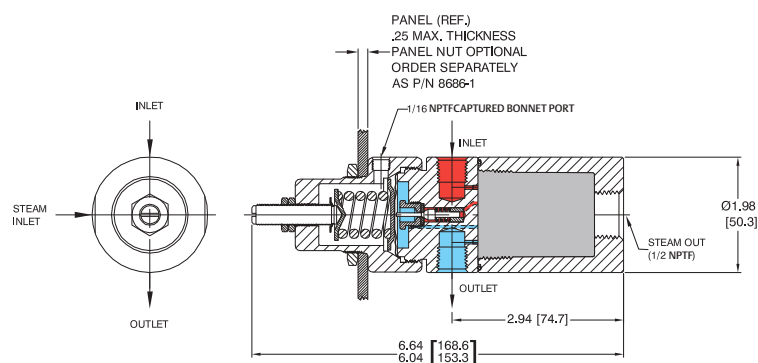
ELECTRIC MODEL



ELECTRIC MODEL-001 LCD DISPLAY



STEAM MODEL

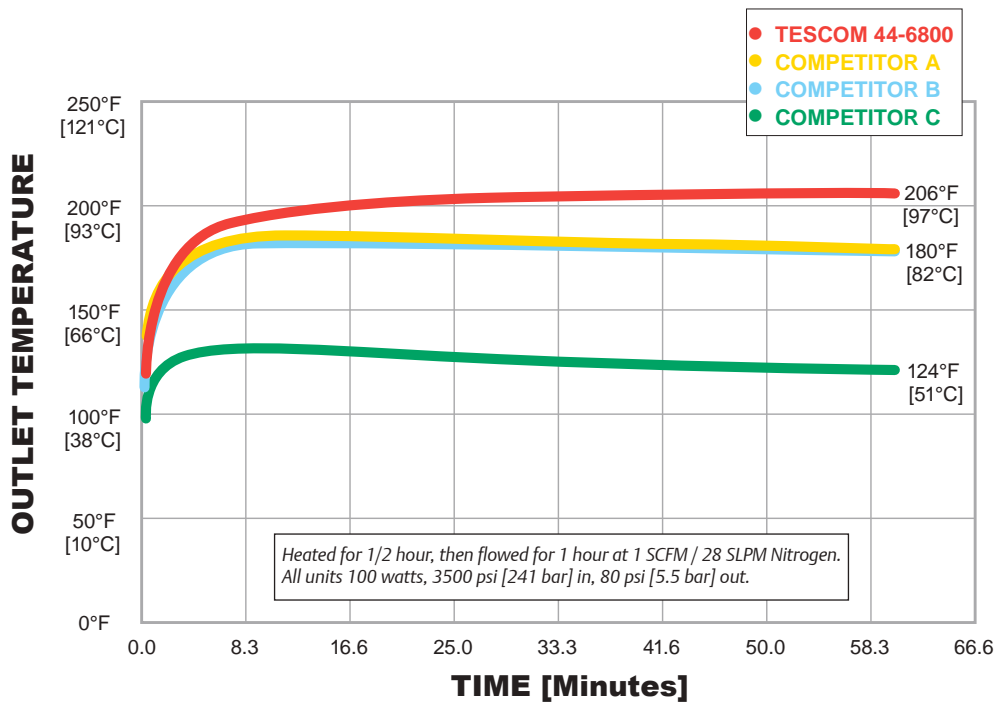


Note: Steam in at 90° to process connections (same **plane**).

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:

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®) | Nickel Alloy (Hastelloy®) | Cobalt Chrome | Nickel Alloy (Hastelloy®) | 0 – 0-25 psig 0-1.7 bar 0-172 kPa | A – 12.5 WATTS 0.10 amps | 50 WATTS 0.21 amps | 2 – NPTF | 4 – 1/4" | 1 – 6000 psig 414 bar 41,370 kPa | E – 115 VAC E1 – 230 VAC | |
| | 6 – 316 Stainless Steel | Chrome (Eligiloy®) | Cobalt Chrome | Stainless Steel | | | | | | | | |
| | 9 – Nickel Alloy (Monel®) | Nickel Alloy (Eligiloy®) | Cobalt Chrome | Nickel Alloy (Monel®) | 1 – 0-50 psig 0-3.4 bar 0-345 kPa | B – 25 WATTS 0.21 amps | 100 WATTS 0.42 amps | | | | | |
| | | | | | 2 – 0-100 psig 0-6.9 bar 0-690 kPa | C – 50 WATTS 0.42 amps | 200 WATTS 0.83 amps | | | | | |
| | | | | | 3 – 0-250 psig 0-17.2 bar 0-1724 kPa | D – 100 WATTS 0.83 amps | 400 WATTS 1.67 amps | | | | | |
| | | | | | 4 – 0-500 psig 0-34.5 bar 0-3448 kPa | E – 200 WATTS 1.67 amps | | | | | | |

STEAM MODEL

| 44-58 | 6 | 1 | - | 2 | 4 | 1 | S |
|--------------|-------------------------------|---------------------------|---------------|---------------------------|----------------------------|----------------------------|--|
| BASIC SERIES | MATERIAL | | | | INLET AND OUTLET PORT TYPE | INLET AND OUTLET PORT SIZE | INLET PRESSURE |
| | BODY | DIAPHRAGM | SPRING | REMAINING PARTS | | | |
| 44-58 | 5 – Nickel Alloy (Hastelloy®) | Nickel Alloy (Hastelloy®) | Cobalt Chrome | Nickel Alloy (Hastelloy®) | 2 – NPTF | 4 – 1/4" | 1 – 6000 psig 414 bar 41,370 kPa |
| | 6 – 316 Stainless Steel | Chrome (Eligiloy®) | Cobalt Chrome | Nickel Alloy (Hastelloy®) | | | |
| | 9 – Nickel Alloy (Monel®) | Cobalt Chrome | Cobalt Chrome | Nickel Alloy (Monel®) | | | |
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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_v s.

Applications

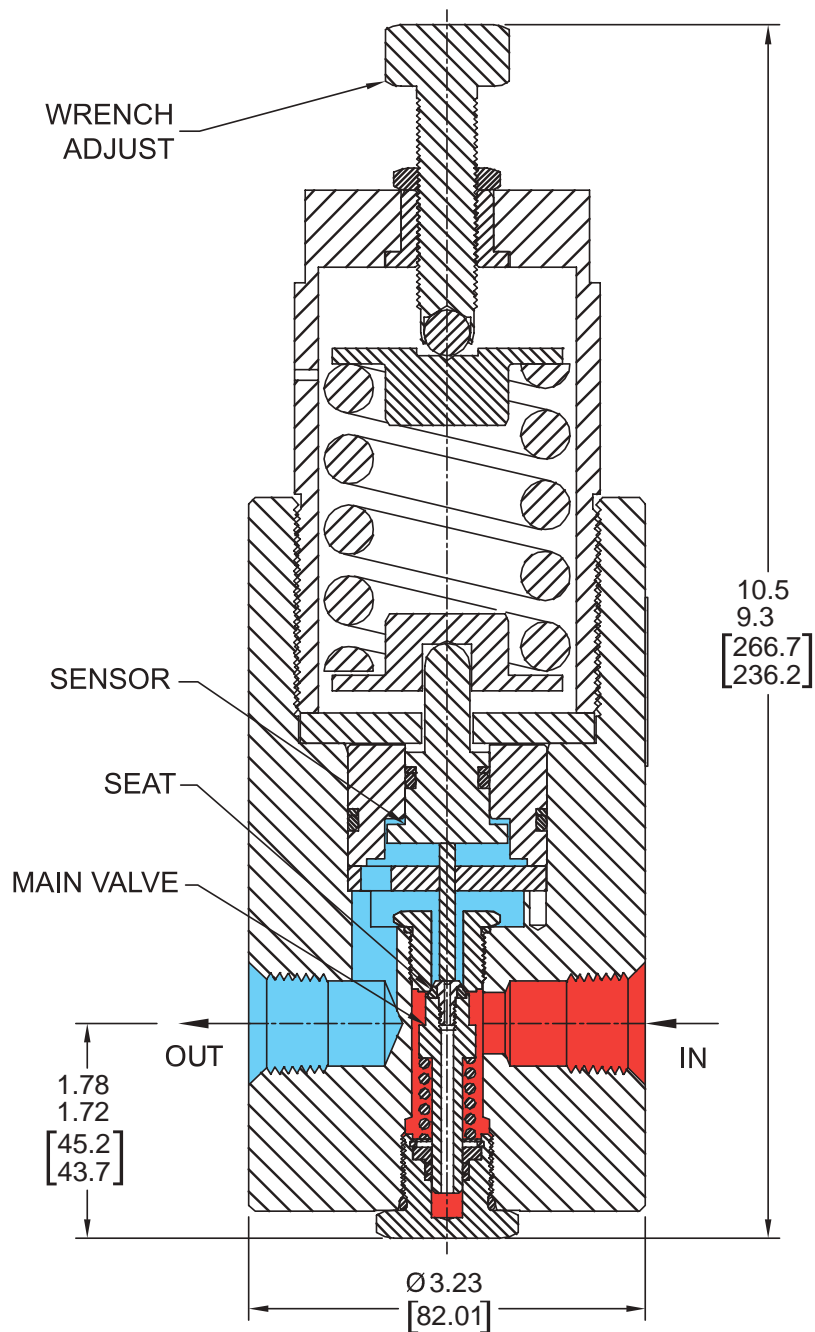
- CNG dispensing
- Hydraulic or pneumatic test stands

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

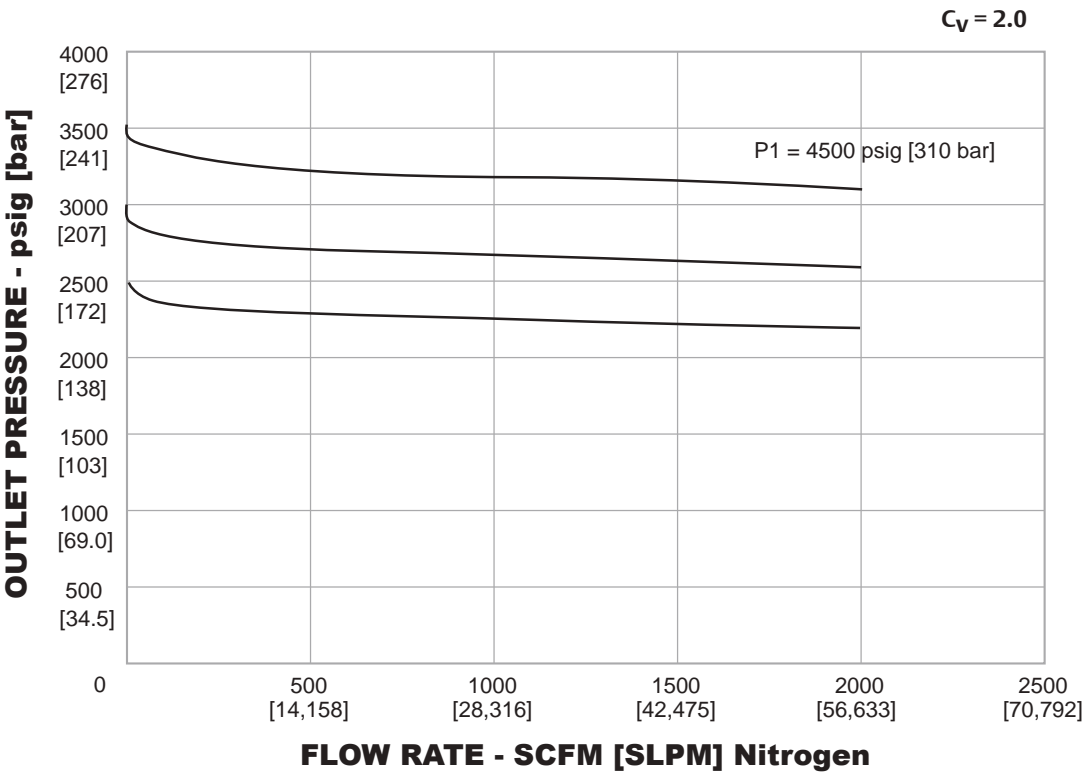
44-7400 Series Regulator Drawing



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 TESCO 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:

| 44-74 | 1 | 5 | T | 2 | 8 | W | 2 | 3 | 0 |
|--------------|-------------------------|------------------------|-----------------------------|---|----------------------------|----------------------------|-----------------|-------------------------|--|
| BASIC SERIES | BODY MATERIAL | MAXIMUM INLET PRESSURE | OUTLET PRESSURE | SOFT GOODS | INLET AND OUTLET PORT TYPE | INLET AND OUTLET PORT SIZE | FLOW CAPACITY | MAIN VALVE SEAT | GAUGE PORT OPTIONS |
| | | | | O-RINGS BACK-UP RINGS | | | | | |
| 44-74 | 1 – Brass | 4500 psig 310 bar | 5 – 4000 psig 276 bar | B – Nitrile, Buna-N | 1 – SAE | 8 – 1/2" | 1 – $C_V = 0.8$ | 3 – PCTFE | 0 – No gauge ports |
| | 2 – 303 Stainless Steel | 6000 psig 414 bar | (Brass body only) | 90 PTFE | 2 – NPTF | 7 – 3/4" | 2 – $C_V = 2.0$ | 7 – Polyimide (Vespel®) | 1 – One gauge port at 90° |
| | 6 – 316 Stainless Steel | 6000 psig 414 bar | 6 – 5000 psig 345 bar | D – Nitrile, Buna-N PTFE | 3 – MS33649 | | | | 2 – Two gauge ports at 60° |
| | | | (Stainless Steel body only) | T – FKM (Viton®-A) PTFE | | | | | 3 – Two gauge ports at 60° (left hand inlet) |
| | | | | U – Urethane PTFE | | | | | 4 – Two gauge port at 90° |
| | | | | V – FFKM, Perfluoroelastomer (Kalrez®) PTFE | | | | | 5 – One gauge port at 90° (left hand inlet) |
| | | | | Z – Ethylene Propylene PTFE | | | | | |

W – Wrench adjust

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)

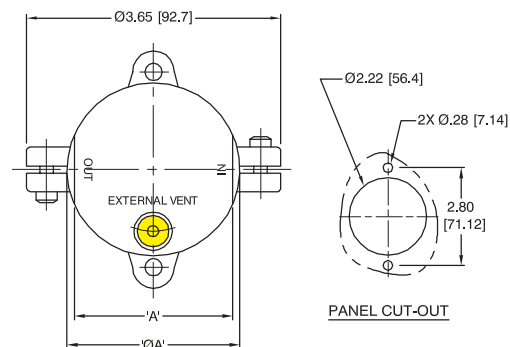
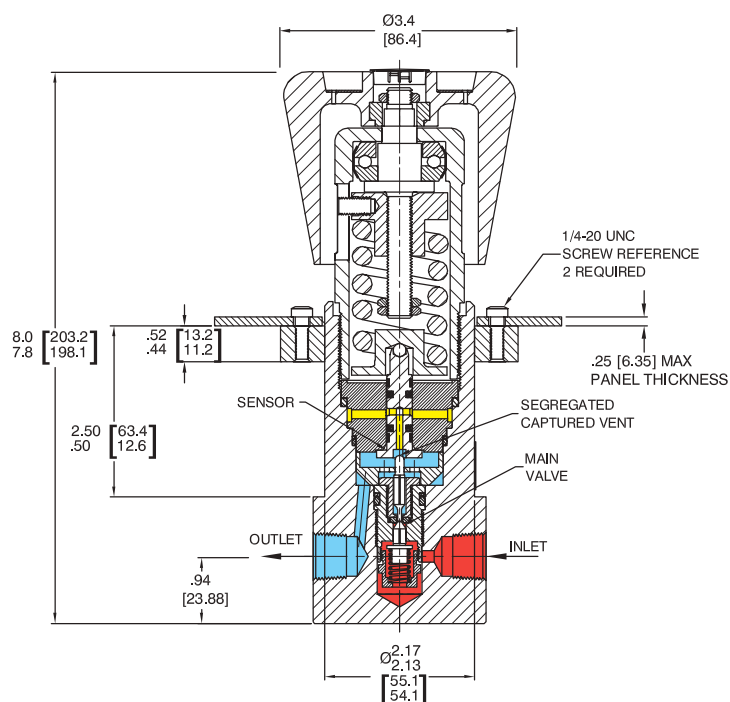
Features and Benefits

- 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

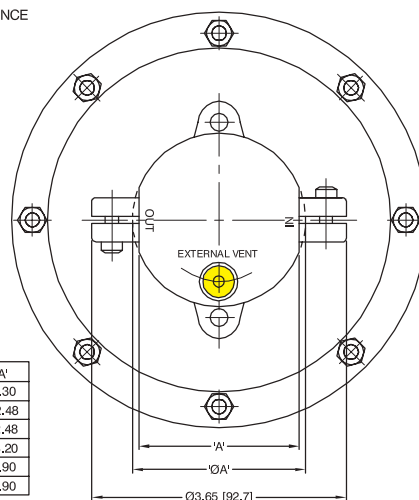
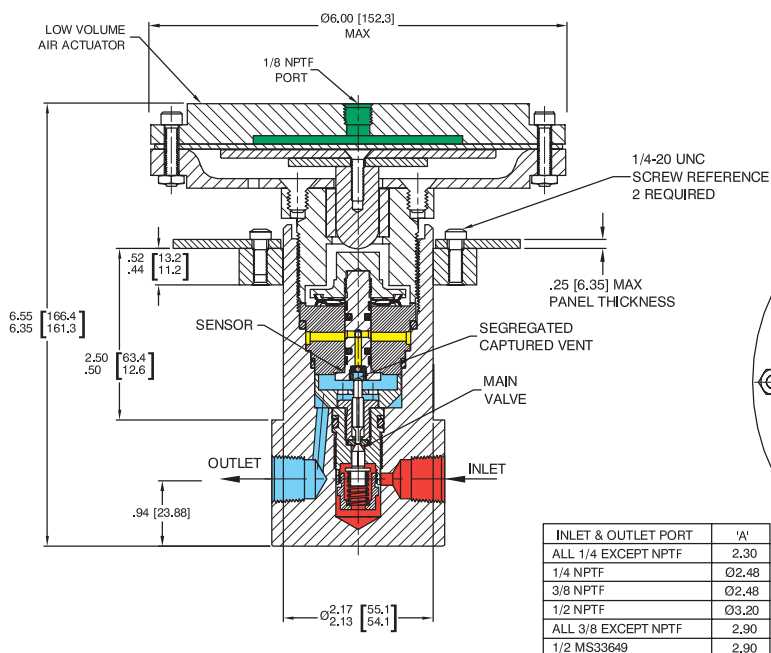
50-2000 Series Regulator Drawings

SPRING LOAD



| 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

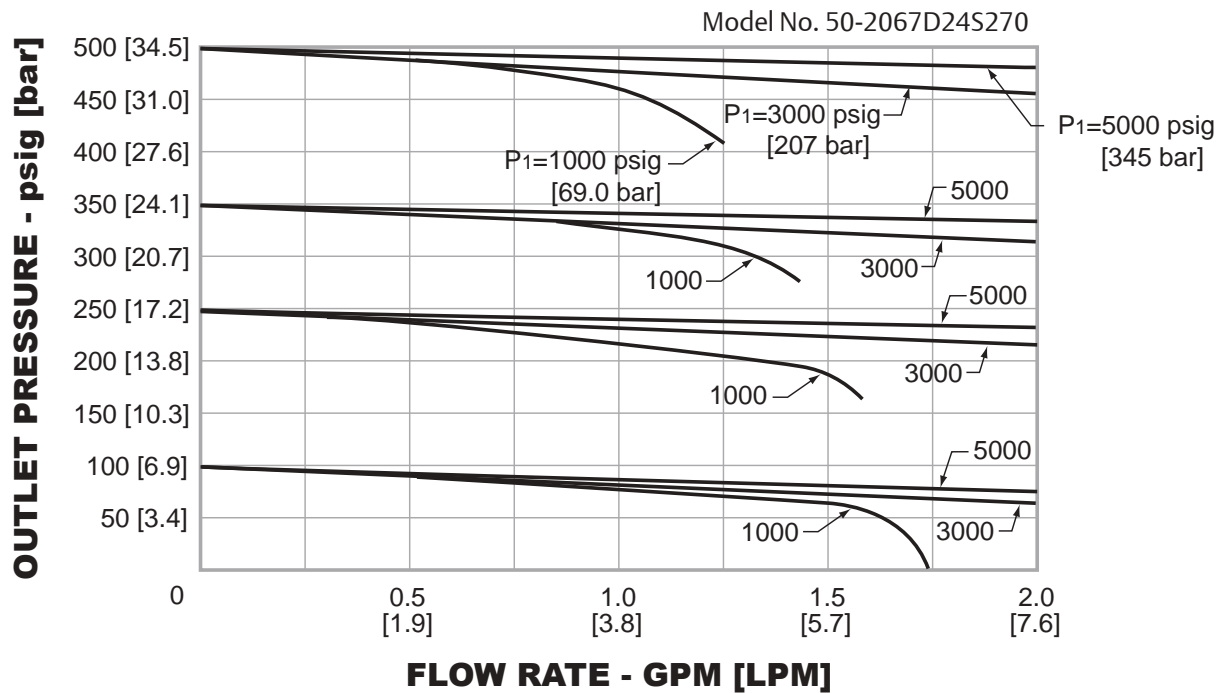
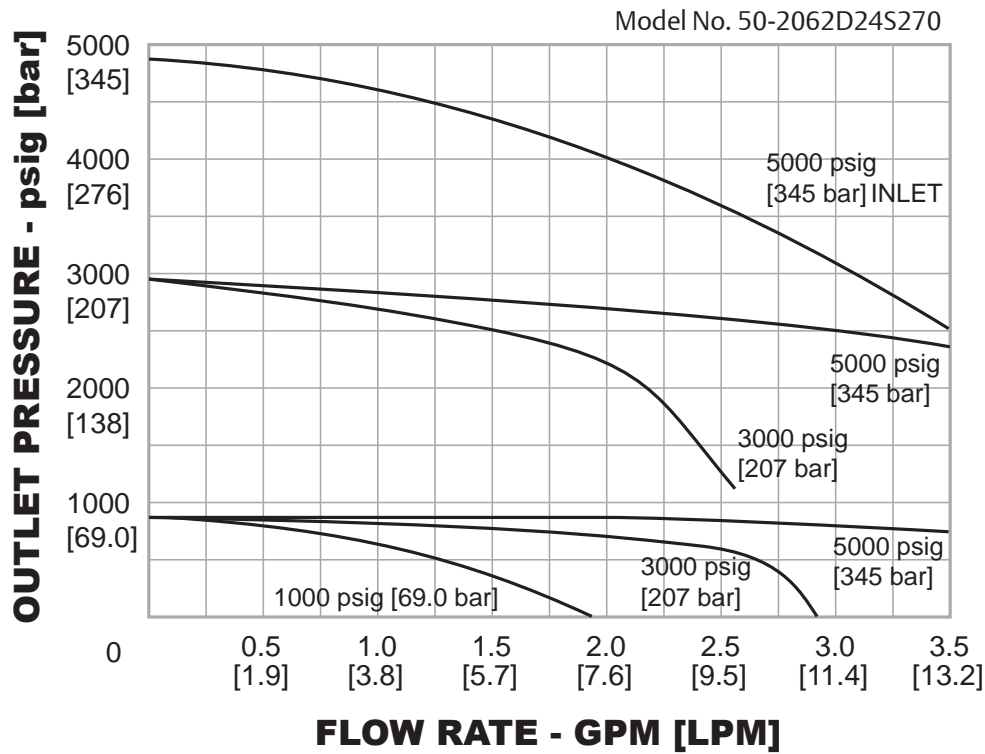


| INLET & OUTLET PORT | 'A' |
|---------------------|-------|
| ALL 1/4 EXCEPT NPTF | 2.30 |
| 1/4 NPTF | Ø2.48 |
| 3/8 NPTF | Ø2.48 |
| 1/2 NPTF | Ø3.20 |
| ALL 3/8 EXCEPT NPTF | 2.90 |
| 1/2 MS33649 | 2.90 |

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.

S – Spring Load
A – Air Load

Example for selecting a part number:

| 50-20 | 6 | 1 | - | D | | 2 | 4 | 5 | 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)  | | | | | |
| | | | | | | | | | | | <div>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.</div> | | | | |

Specifications

For other materials or modifications, please consult TESCO.

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

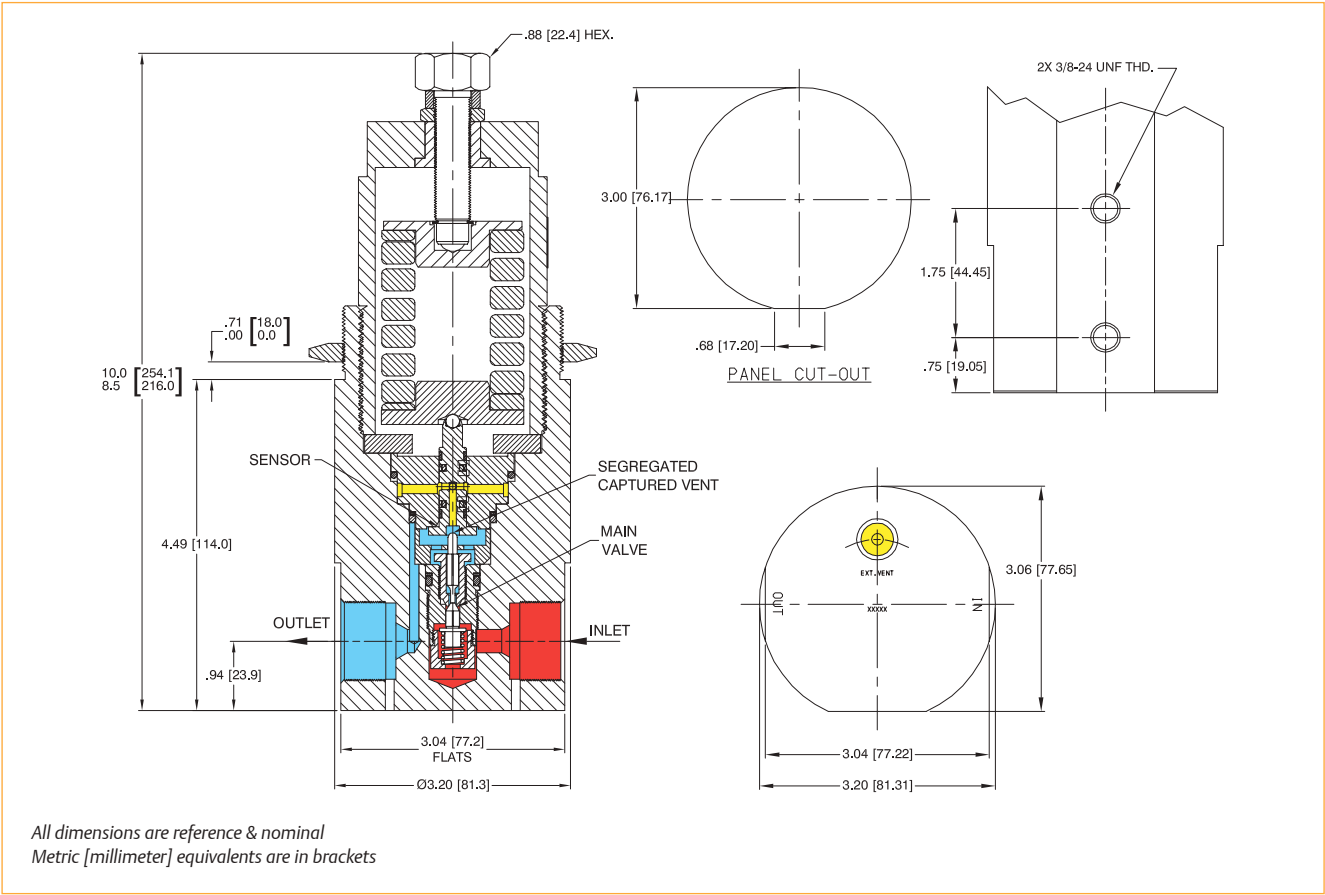
- Wellhead control panels
- Subsea valve actuation
- Chemical injection
- Hydraulic Power Units (HPU)

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



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:

| 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 TESCO.

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 to 15,000 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 (Vespe[®])

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.

Vespe[®] and Viton[®] are registered trademarks of E.I. du Pont de Nemours and Company. Nitronic[®] is a mark owned by MatWeb, LLC.



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

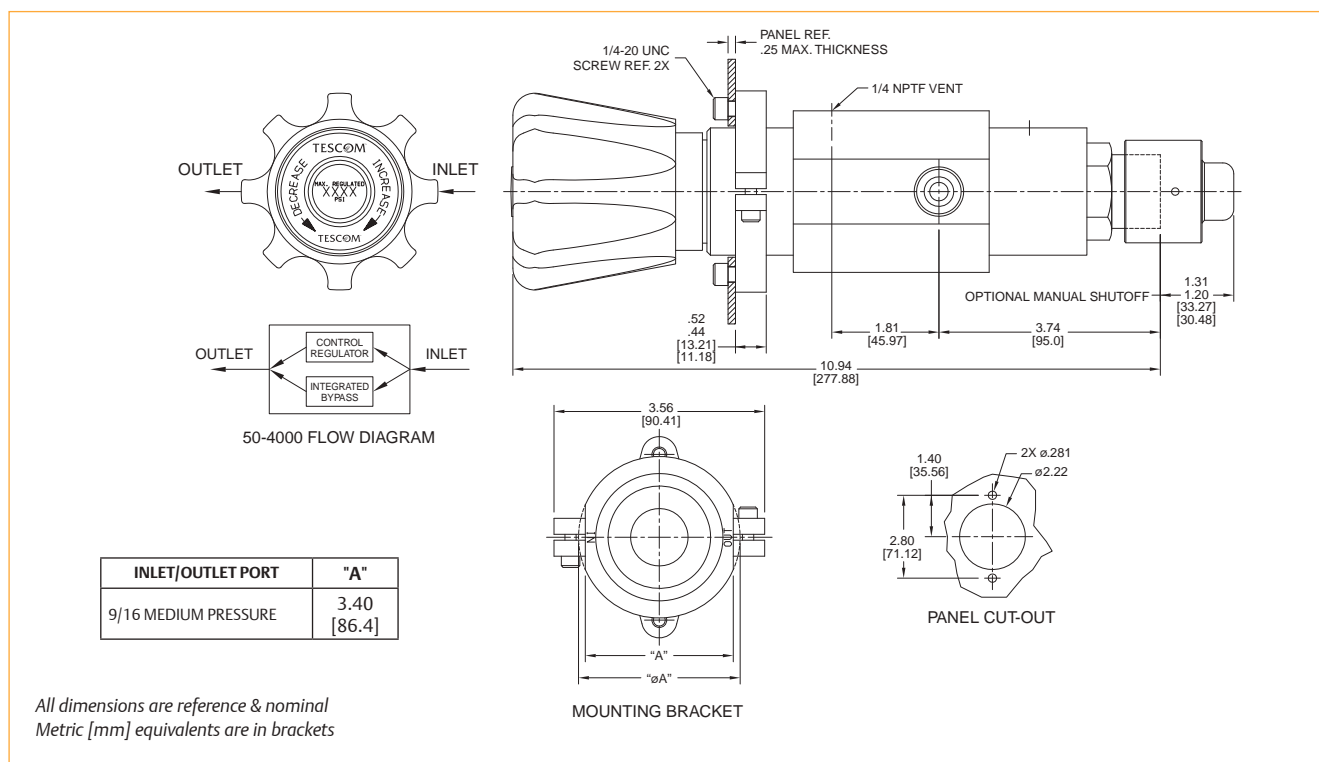
- Hydraulic Power Units (HPU)
- Wellhead control panels

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



50-4000 Series Regulator Part Number Selector

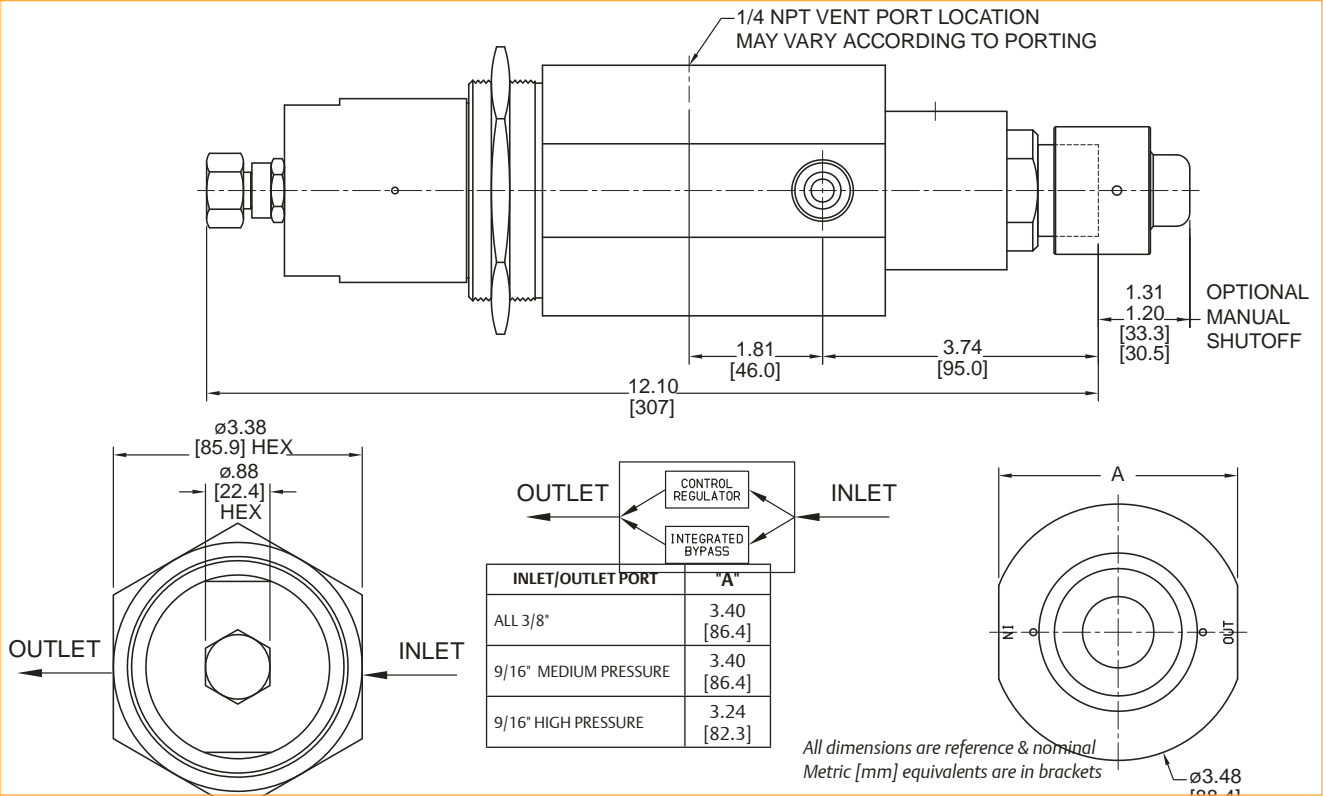
Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

Example for selecting a part number:

| 9 | | | 1 | | | D | | | 6 | | 9 | | S | | 3 | | 5 | | 0 | | A | |
|--|---|--|---|---------------------------------------|---------------|--|--|-------------------------------------|---|---|--|---|---|--|---|--|---|--|---|--|---|--|
| BASIC SERIES | BODY MATERIAL --- MAXIMUM INLET PRESSURE ¹ | OUTLET PRESSURE | SOFT GOODS MATERIAL | | | 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 | | | | | | | | | | |
| | | CONTROL REGULATOR --- INTEGRATED BYPASS | DYNAMIC O-RINGS | STATIC O-RINGS | BACK-UP RINGS | | | | | | | | | | | | | | | | | |
| 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 | D – Nitrile, Buna-N | Nitrile, Buna-N | 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 (Vespe [®]) | 0 – no gauge ports 1 – one outlet gauge port at 90° | A – Included Blank – Not Included | | | | | | | | | | |
| | | 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 | T – FKM (Viton [®] -A) Z – EP | FKM (Viton [®] -A) EP | PCTFE | | | | | | | | | | | | | | | | | |
| <div>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 to 1600 psig at 15,000 psig inlet / 0 to 110 bar at 1034 bar inlet.</div> | | | | | | | | | | | | | | | | | | | | | | |

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



50-4100 Series Regulator Drawing



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:

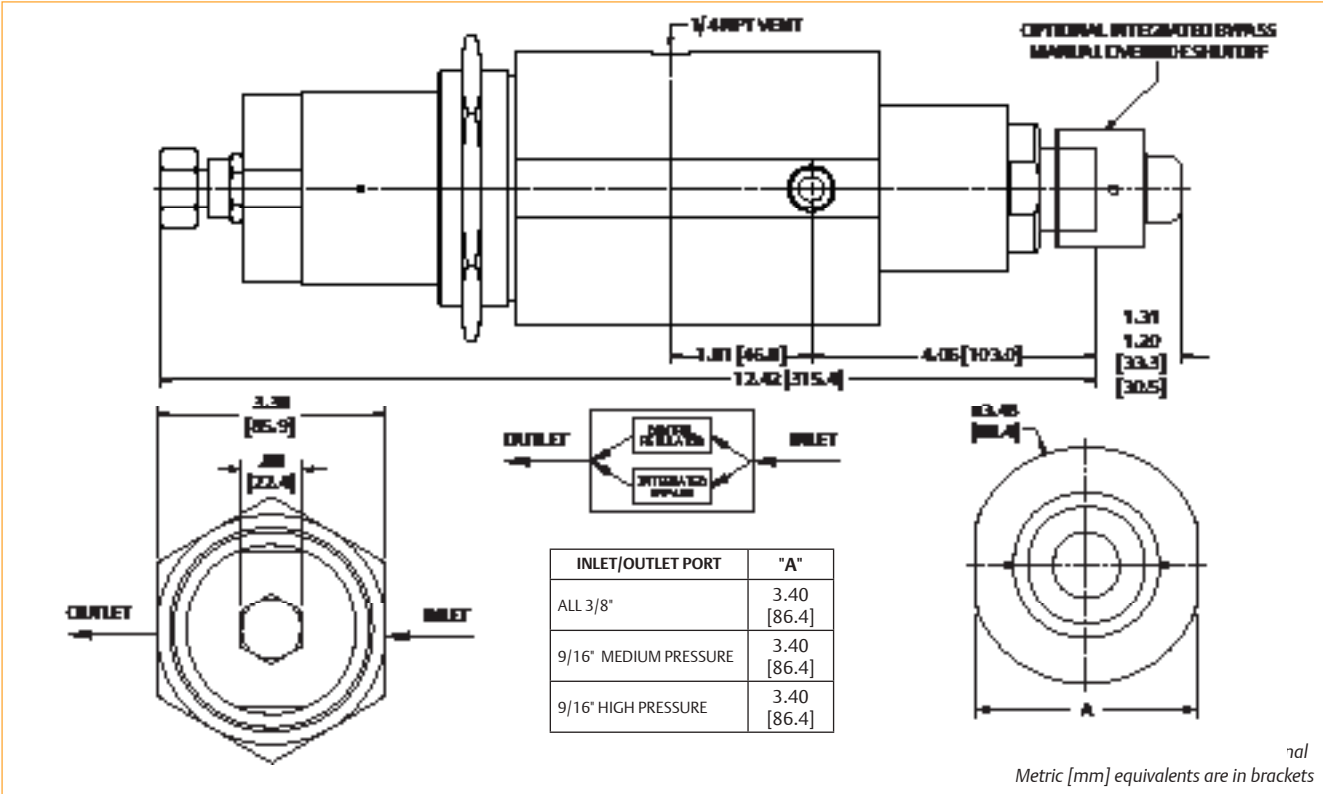
| 50-41 | 9 | 0 | D | | | 6 | 9 | S | 3 | 5 | 0 | A |
|--------------|---|---|---|---|-------------------------|--|----------------------------|---------------------------------|---|---|--|---|
| BASIC SERIES | BODY MATERIAL --- MAXIMUM INLET PRESSURE¹ | OUTLET PRESSURE | SOFT GOODS MATERIAL | | | INLET 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 |
| | | CONTROL REGULATOR --- INTEGRATED BYPASS | DYNAMIC O-RINGS | STATIC O-RINGS | BACK-UP RINGS | | | | | | | |
| 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 T – FKM (Viton®-A) Z – EP | Nitrile, Buna-N FKM (Viton®-A) EP | PCTFE 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 Stainless Steel 7 – Polyimide (Vespe [®]) | 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

Vespe[®] and Viton[®] are registered trademarks of E.I. du Pont de Nemours and Company.

50-4200 SERIES


50-4200 Series Regulator Drawing



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 | | | 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 |
| | DYNAMIC O-RINGS | STATIC O-RINGS | BACK-UP RINGS | | | | | | | | | |
| 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 |
| <div>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</div> | | | | | | | | | | | | |

Vespel® and Viton® are registered trademarks of E.I. du Pont de Nemours and Company. Nitronic® is a mark owned by MatWeb, LLC.

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 psig¹
0.35-34.5, 0.35-55.2, 0.69-103, 1.0-172, 1.7-276,
3.4-414, 13.8-690 bar¹

Design Proof Pressure

150% maximum rated

Leakage

2 drops per minute at 150 S.U.S. at 2500 psig / 172 bar

Ambient Operating Temperature²

-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

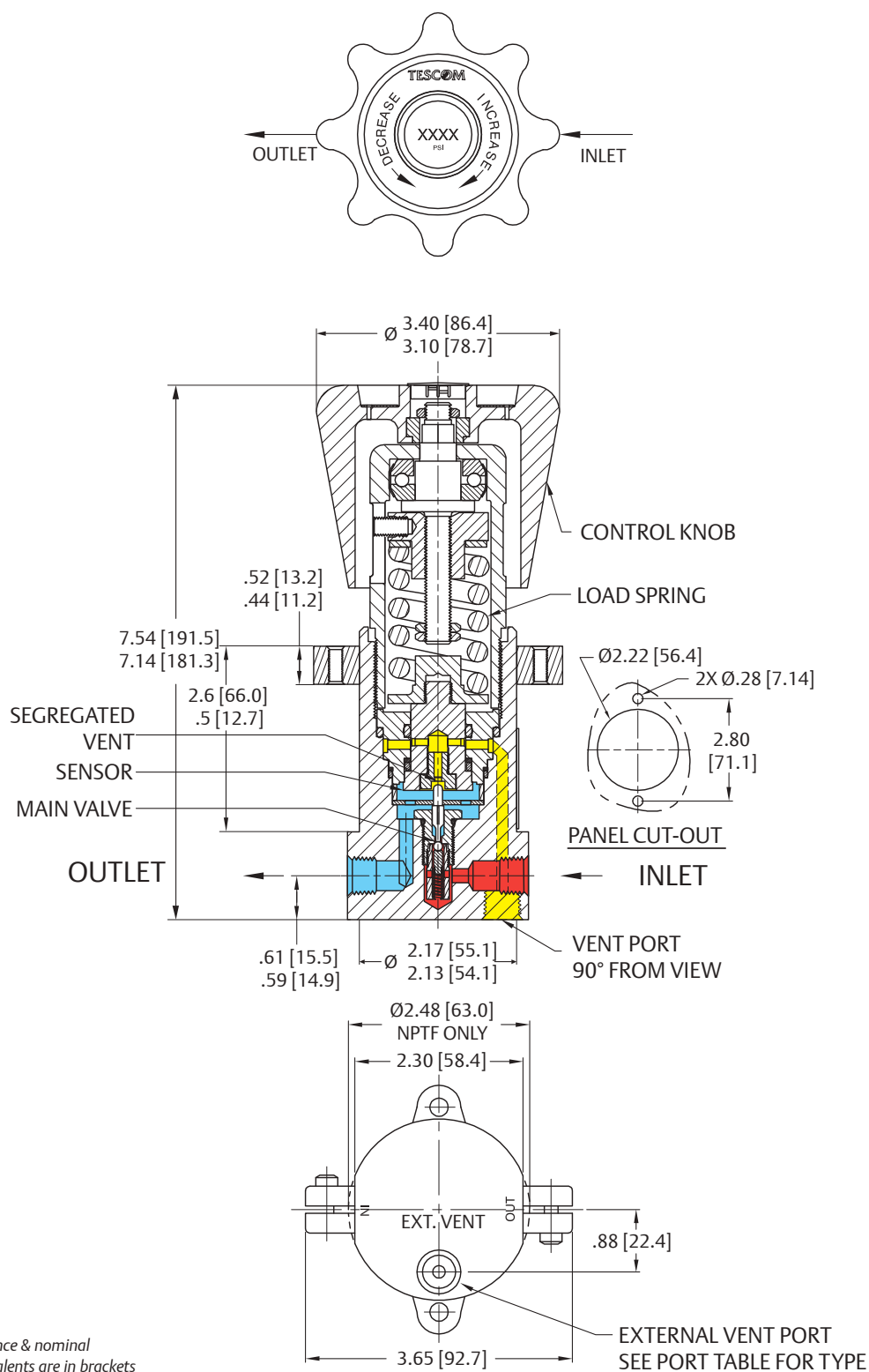
- Wellhead control panels
- Subsea valve actuations
- Hydraulic Power Units (HPU)
- Component testing

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

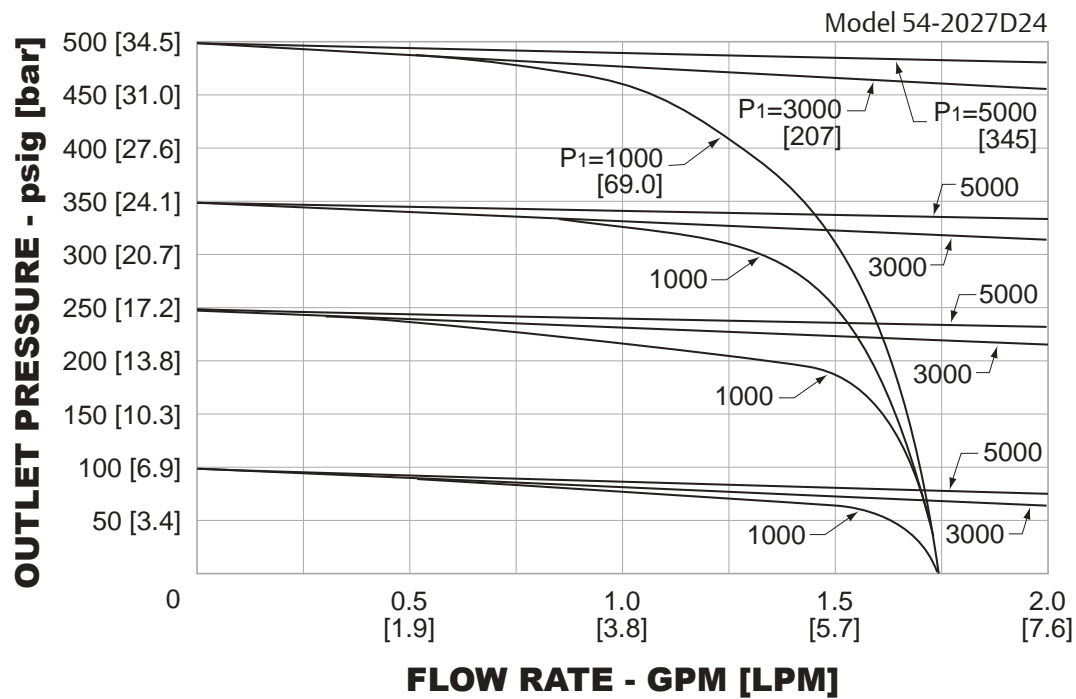
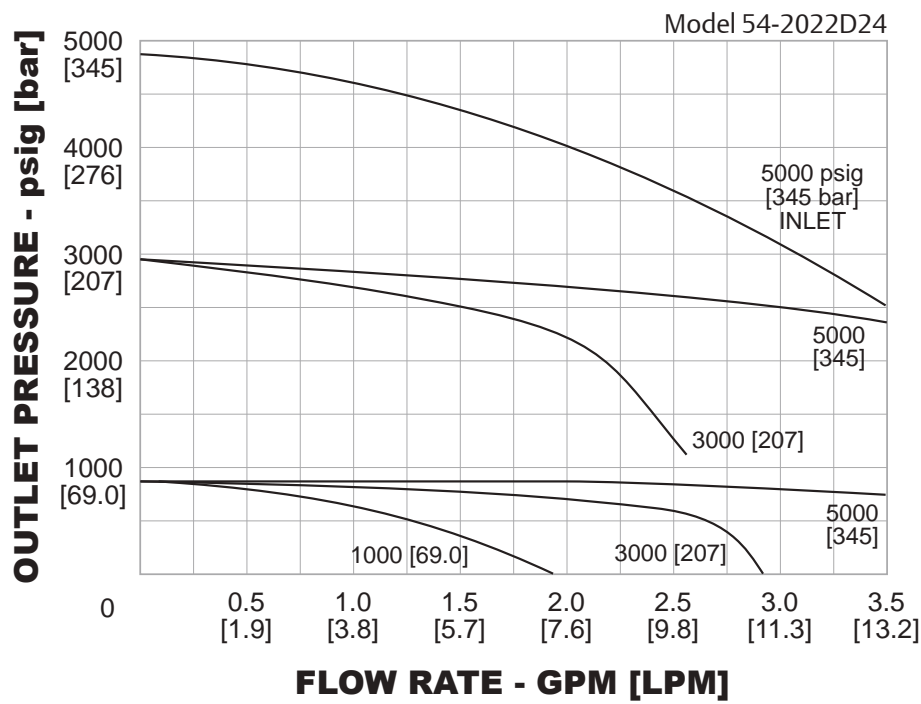
54-2000 SERIES

54-2000 Series Regulator Drawing



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 TESCO 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 | D – Nitrile, Buna-N | Nitrile, Buna-N | PTFE PTFE PTFE | 1 – SAE | SAE | 4 – 1/4" | |
| | | 2 – 50-6000 psig 3.4-414 bar | | | | 2 – NPTF | NPTF | 6 – 3/8" | |
| | | 3 – 25-4000 psig 1.7-276 bar | T – FKM (Viton®-A) | FKM (Viton®-A) | | 3 – MS33649 | MS33649 | 8 – 1/2" | |
| | | 4 – 15-2500 psig 1.0-172 bar | | | | 4 – High Pressure | NPTF | | |
| | | 5 – 10-1500 psig 0.69-103 bar | Z – Ethylene Propylene | Ethylene Propylene | | 6 – Medium Pressure | NPTF | | |
| | | 6 – 5-800 psig 0.35-55.2 bar | | | | | | | |
| | | 7 – 5-500 psig 0.35-34.5 bar | | | | | | | |



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 Ranges¹

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 Temperature²

-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.

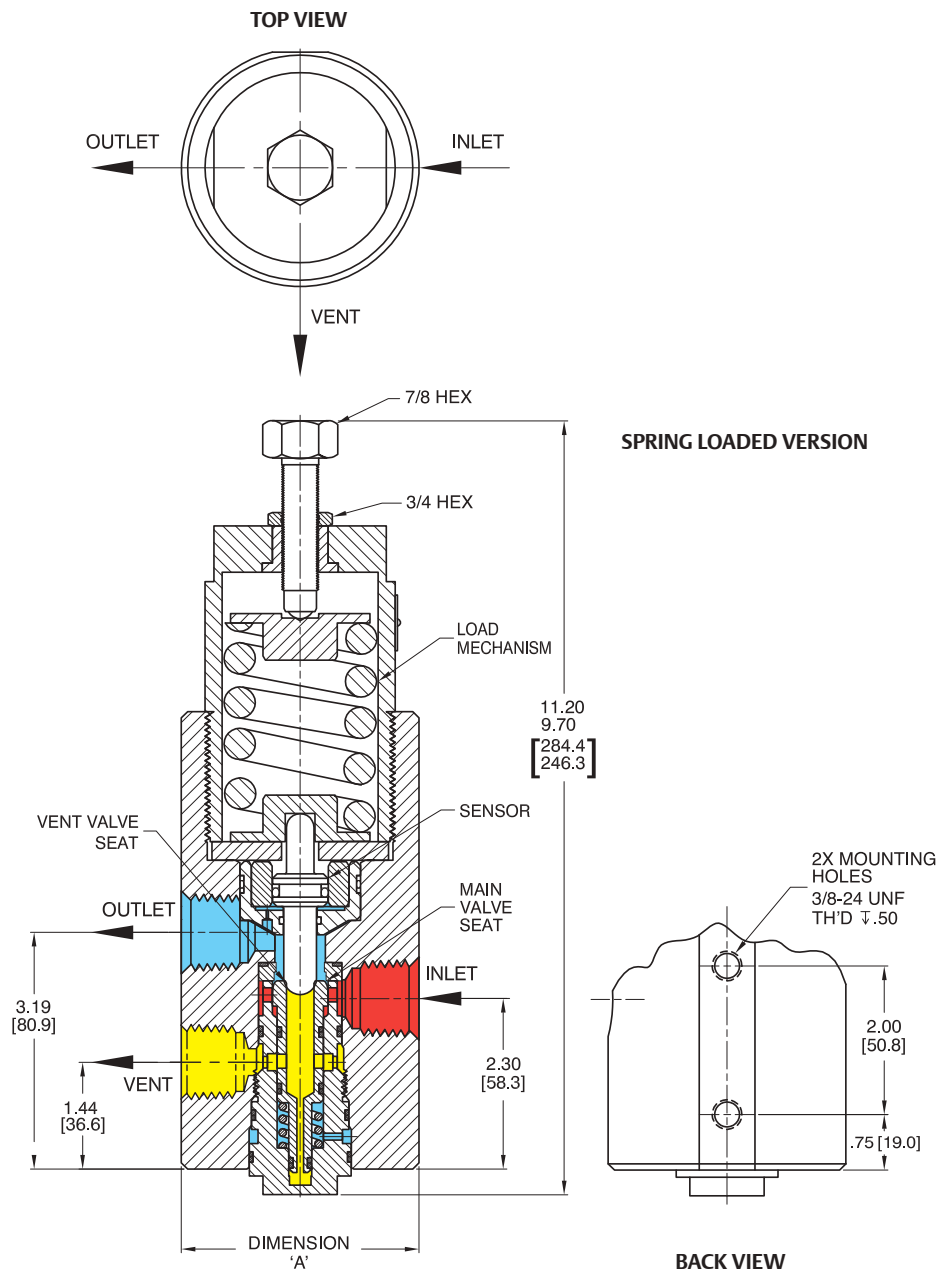
Applications

- Hydraulically operated blowout preventers (BOP)
- Hydraulic power units (HPUs)
- Hydraulic component testing

Features and Benefits

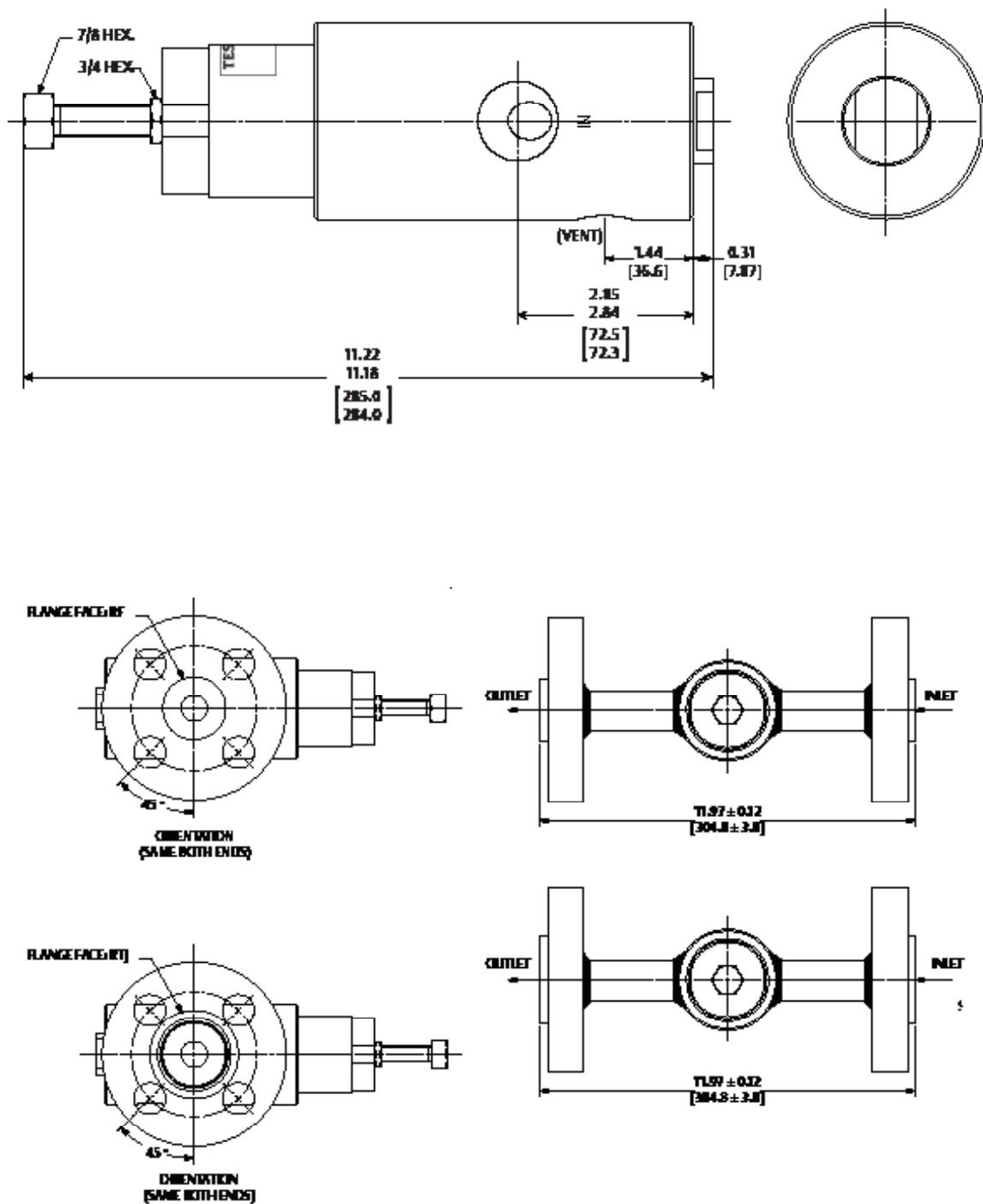
- Rugged design for tough conditions
- Pressure dampening orifice improves stability
- Features piston-style sensor, balanced main valve poppet and a non-adjustable manual vent system
- Hardened 17-4 Stainless Steel seats help provide long service in abrasive hydraulic applications
- Side mounting is 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

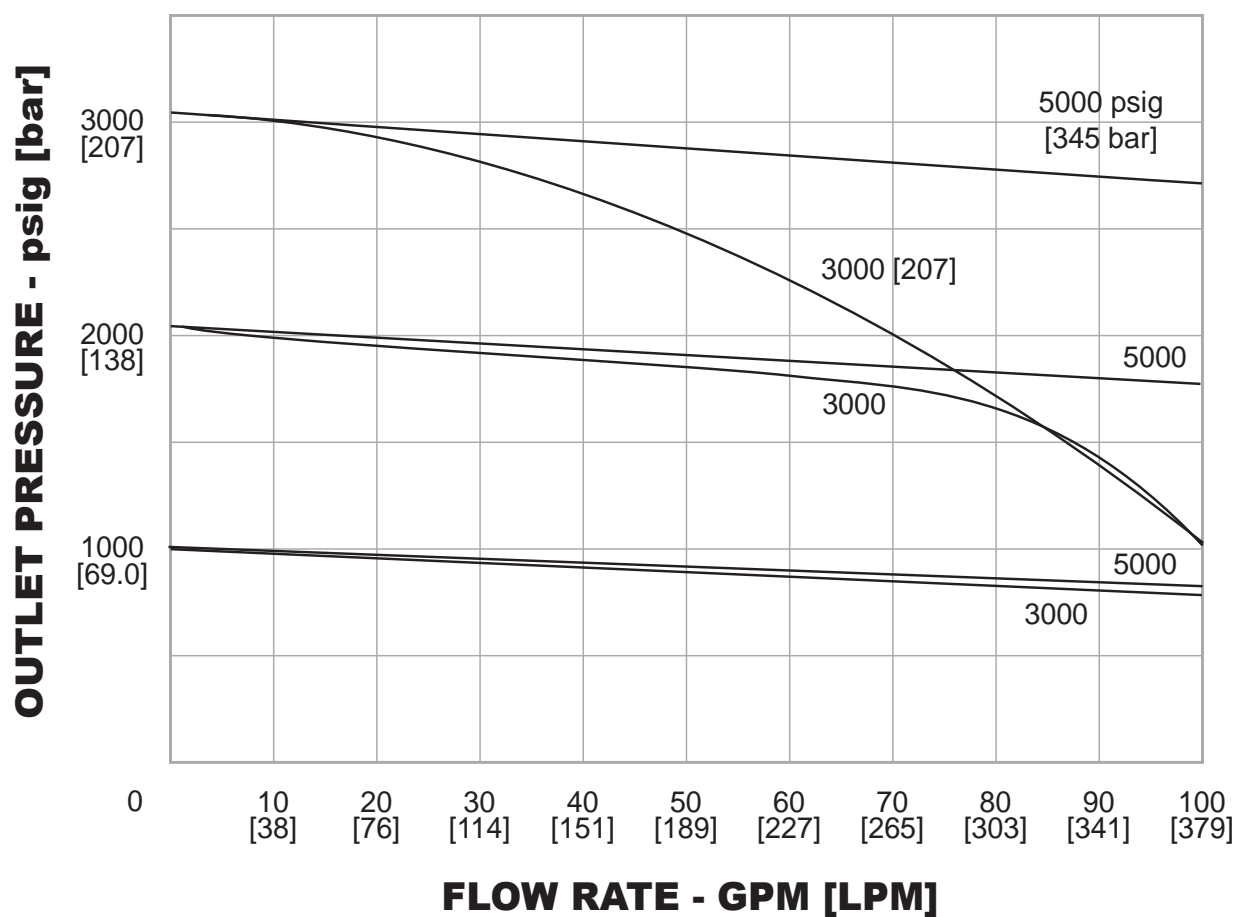


All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

54-2200 Series Regulator Flow Charts

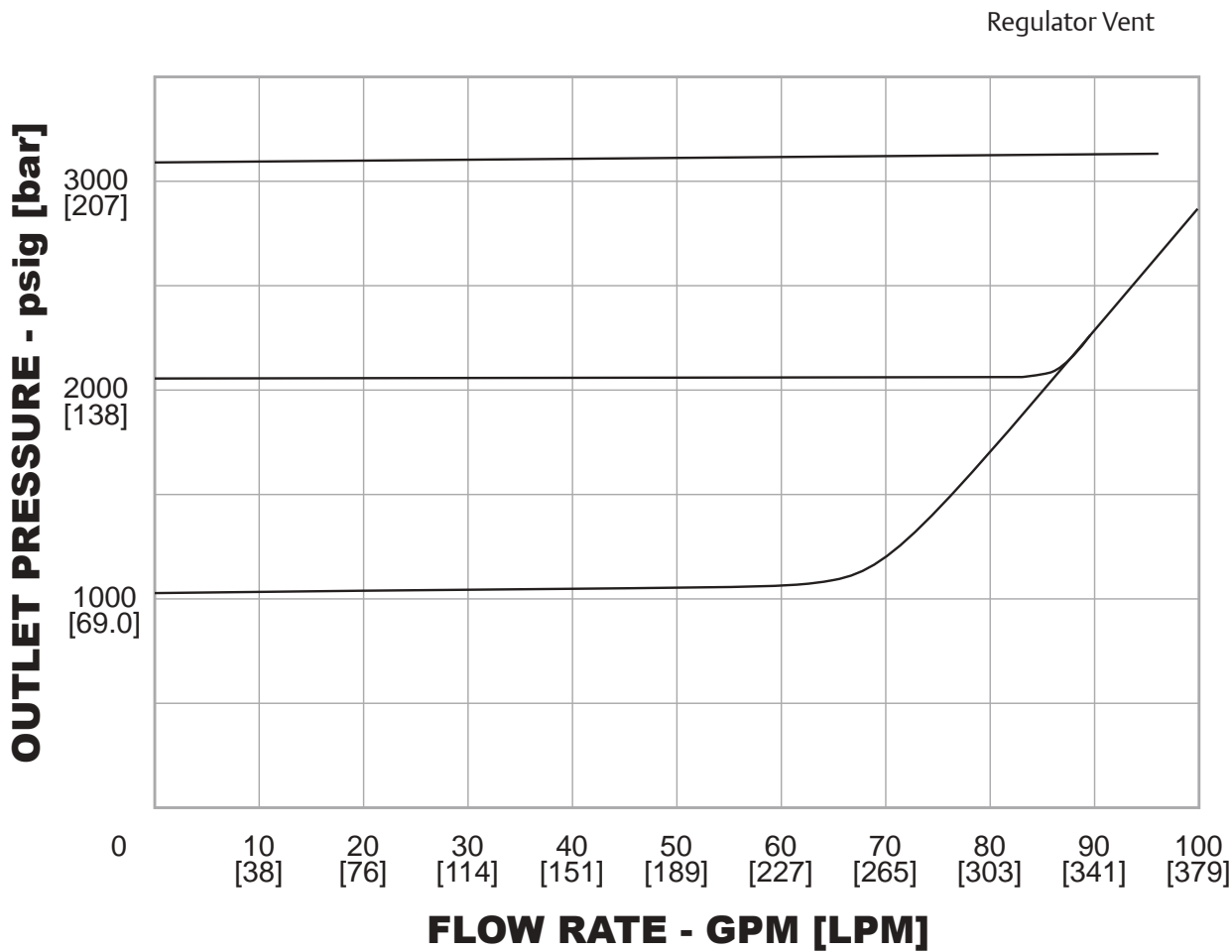
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCOM catalog or on www.tescom.com.

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

TESCOM Regulators - Pressure Reducing

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 | | SEAT | | | | |
| | | | DYNAMIC | STATIC | SEAT | | | | |
| 54-22 | 2 – 303 Stainless Steel | 1 – 1500 psig 103 bar | D – Nitrile, Buna-N | Nitrile, Buna-N | 17-4 Stainless Steel | 1 – SAE | 3.95" | 12 – 3/4" | S – Spring H – Hydraulic/ Dome A – Air |
| | 6 – 316 Stainless Steel | (spring only) | T – FKM (Viton®-A) | FKM (Viton®-A) | 17-4 Stainless Steel | 2 – NPTF | 3.20" | | |
| | | 3 – 3000 psig 207 bar | V – FFKM, | FFKM, | 17-4 Stainless Steel | 3 – MS33649 | 3.95" | | |
| | | (35:1 air only) | Perfluoroelastomer | Perfluoroelastomer | | | | | |
| | | 3 – 3500 psig 241 bar | (Kalrez®) | (Kalrez®) | | | | | |
| | | (spring only) | Z – Ethylene | Ethylene Propylene | | | | | |
| | | 5 – 5000 psig 345 bar | Propylene | | | | | | |
| | | (spring and 65:1 air) | | | | | | | |
| | | 6 – 6000 psig 414 bar | | | | | | | |
| | | (spring only) | | | | | | | |
| | 8 – 8000 psig 552 bar | | | | | | | | |
| | (hydraulic/ dome and 105:1 air) | | | | | | | | |

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 | | | |

Regulators - Pressure Reducing

D54281663X012

Specifications*For other materials or modifications, please consult TESCO.***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 Temperature¹

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



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

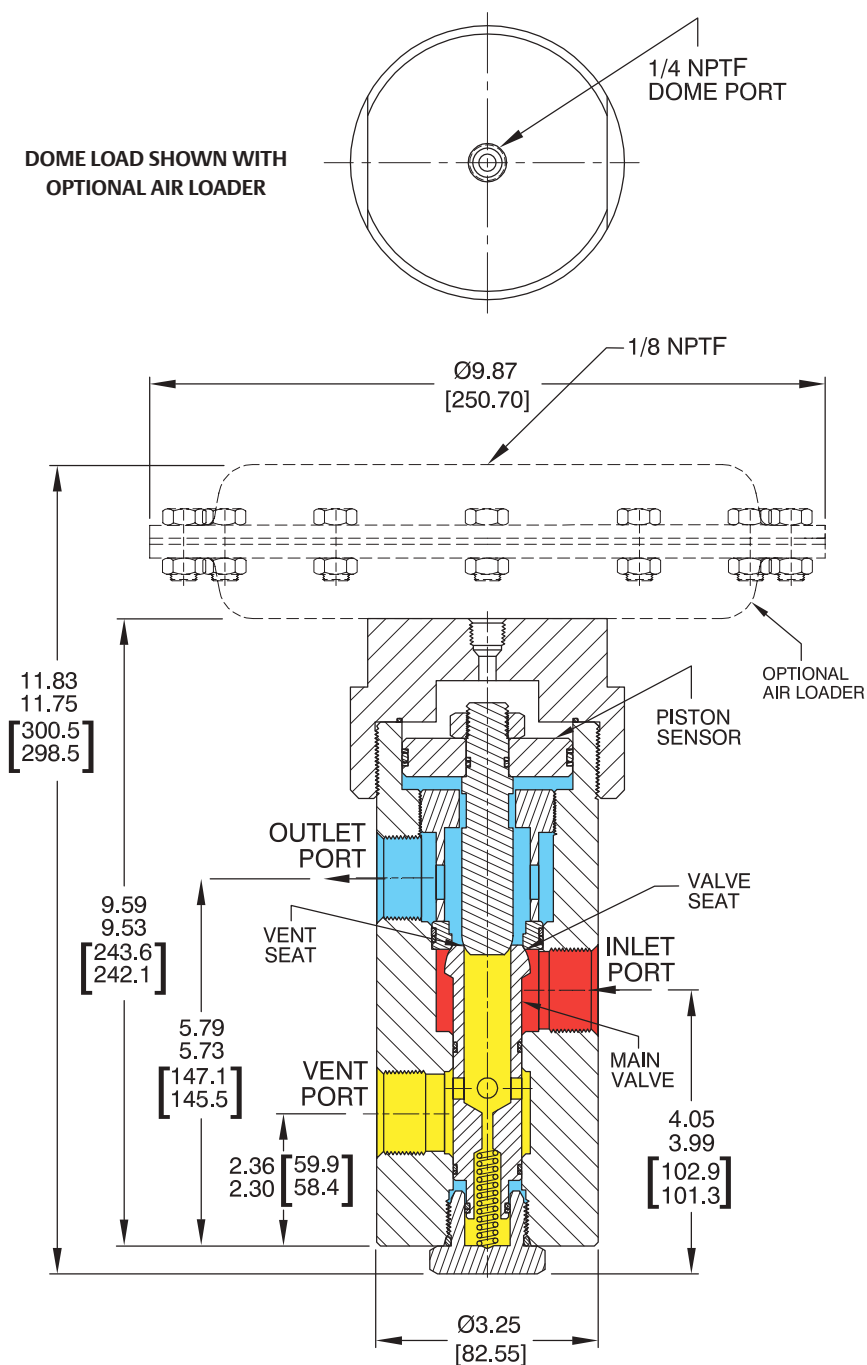
- Hydraulically operated blowout preventers (BOP)
- Hydraulic component testing

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

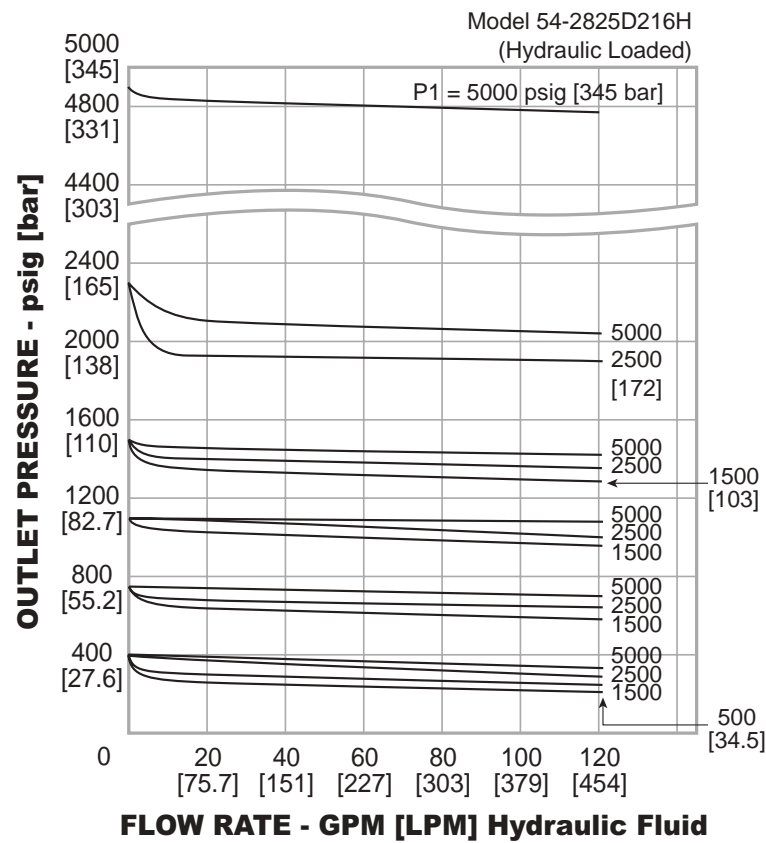


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 TESCO.

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

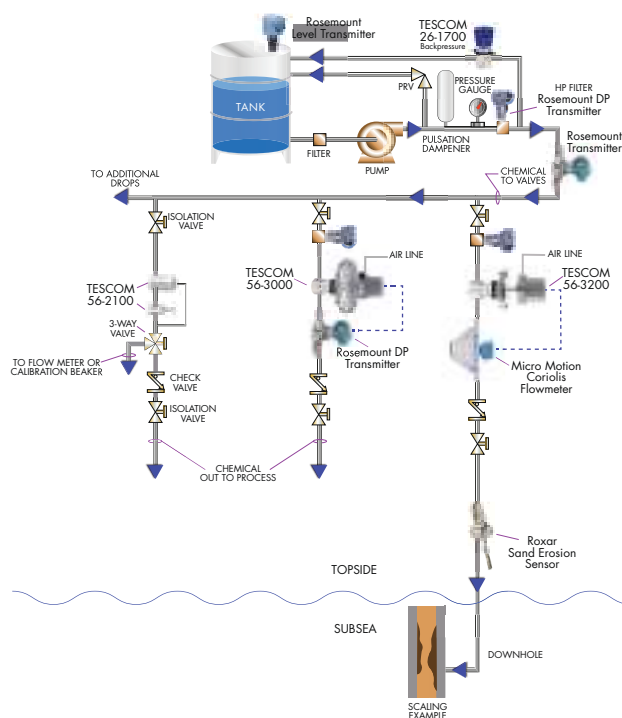
- Accurate and consistent flow control reduces the risk of flow assurance issues from over and under injection
- High-quality piston-sensed components for longevity in offshore applications reduce maintenance costs and unplanned downtime
- Alternative options for full automation of injection rate control 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

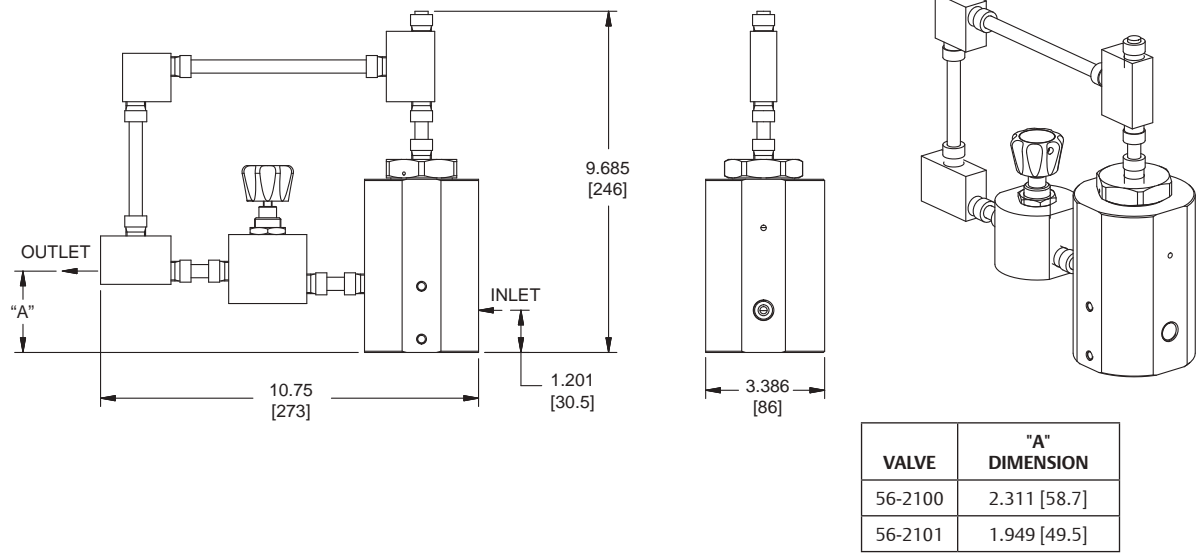
Typical Application



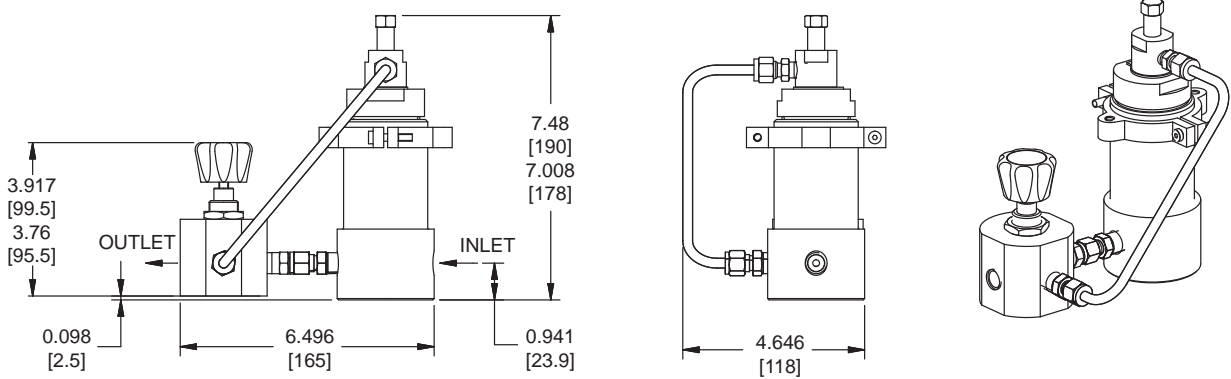
56 SERIES

56 Series Regulator Drawing

56-21XX



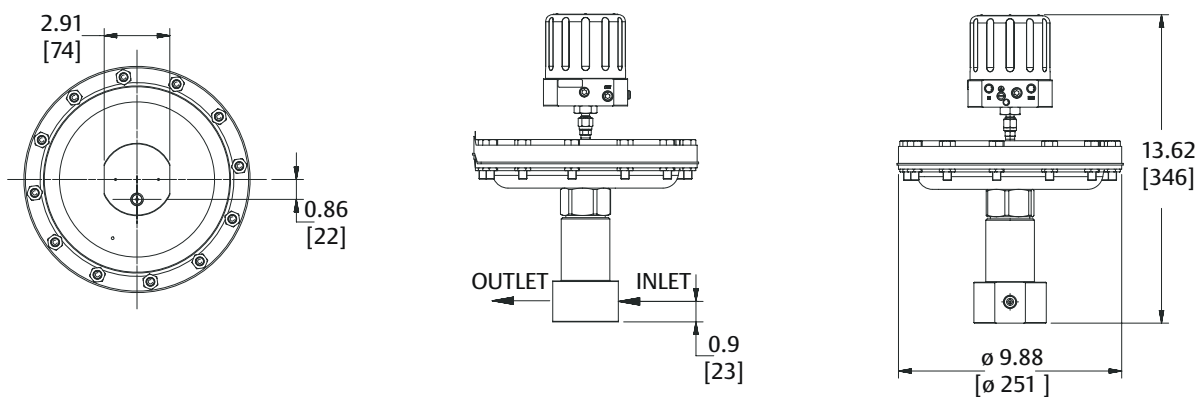
56-22XX



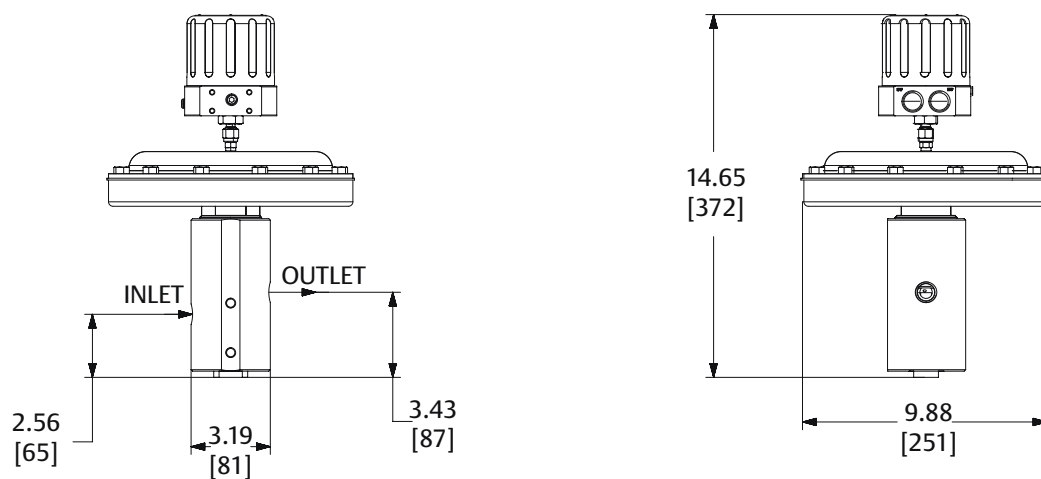
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 TESCO.

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).

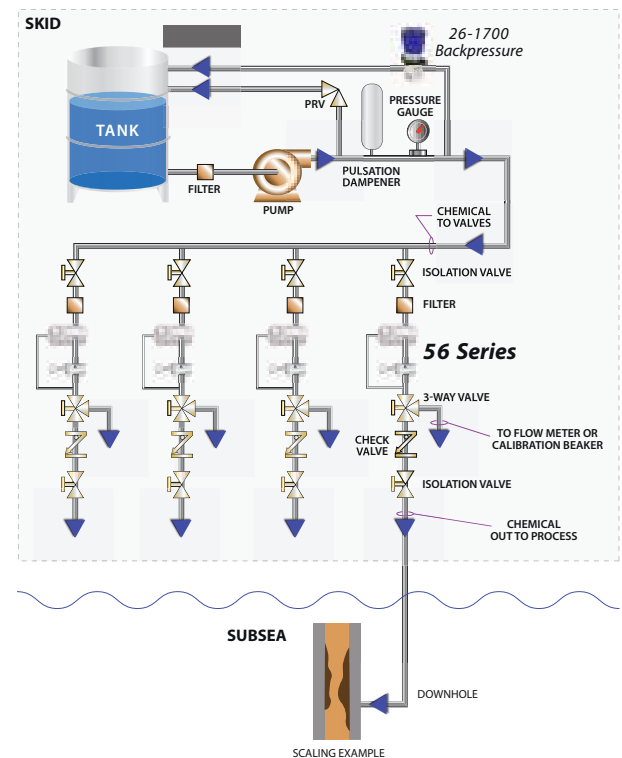


TESCOM 56-2000 Series provides accurate pressure control that allows customers to have consistent injection rates over the life of the well.

Applications

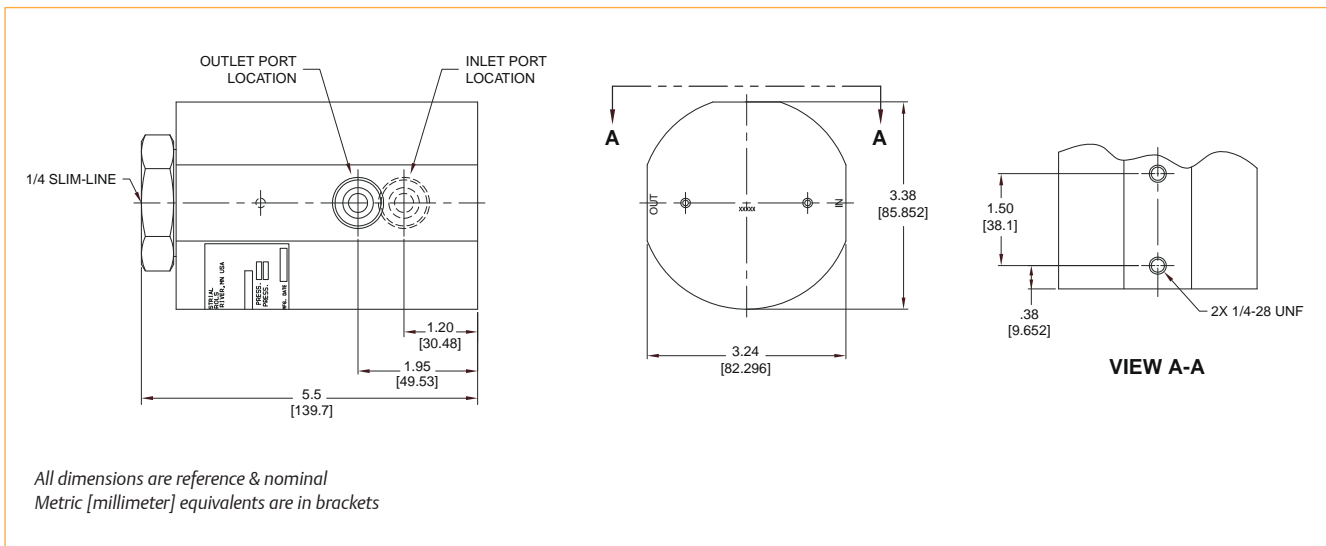
- Offshore Chemical Injection

Typical Scaling Application



56-2000 SERIES

56-2000 Series Regulator Drawing



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:

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 | | | INLET AND OUTLET PORT TYPE | INLET AND OUTLET PORT SIZE | FLOW CAPACITY | MAIN VALVE AND VENT SEAT | GAUGE PORT OPTIONS | |
| | | | DYNAMIC ROTO-SEALS | STATIC O-RINGS | BACK-UP RINGS | | | | | | |
| 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 – Vespe [®] 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. | | | | | | | | | | | |

Specifications

For other materials or modifications, please consult TESCO.

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.

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

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 |

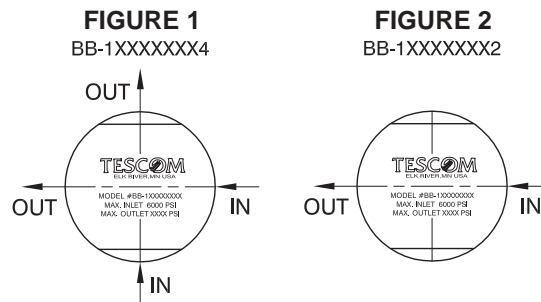
SEAT

OPERATING TEMPERATURE

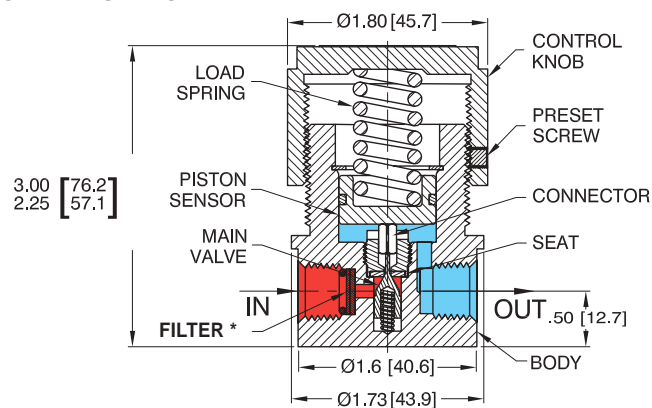
| | |
|--------|---------------------------------------|
| PCTFE | -30 °F TO +140 °F / -34 °C TO +60 °C |
| VESPEL | -30 °F TO +400 °F / -34 °C TO +204 °C |
| PEEK | -30 °F TO +350 °F / -34 °C TO +177 °C |

BB-1 SERIES

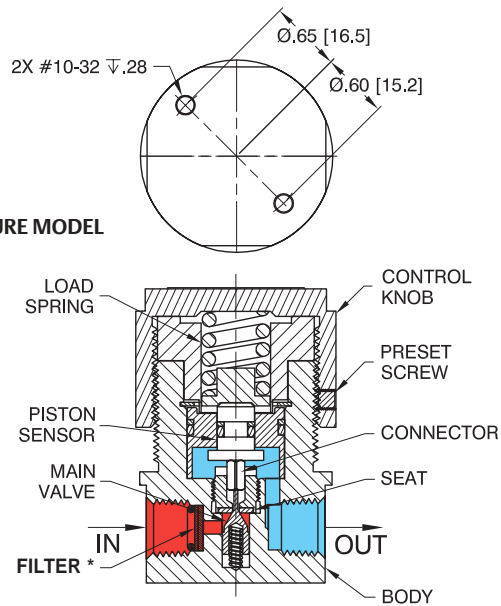
BB-1 Series Regulator Drawings



LOW PRESSURE MODEL



HIGH PRESSURE MODEL

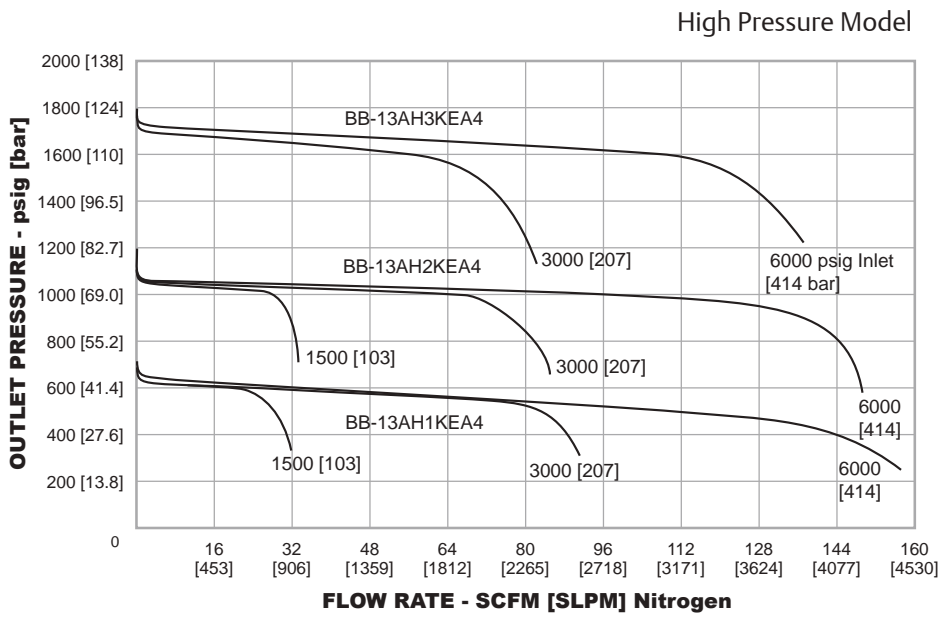
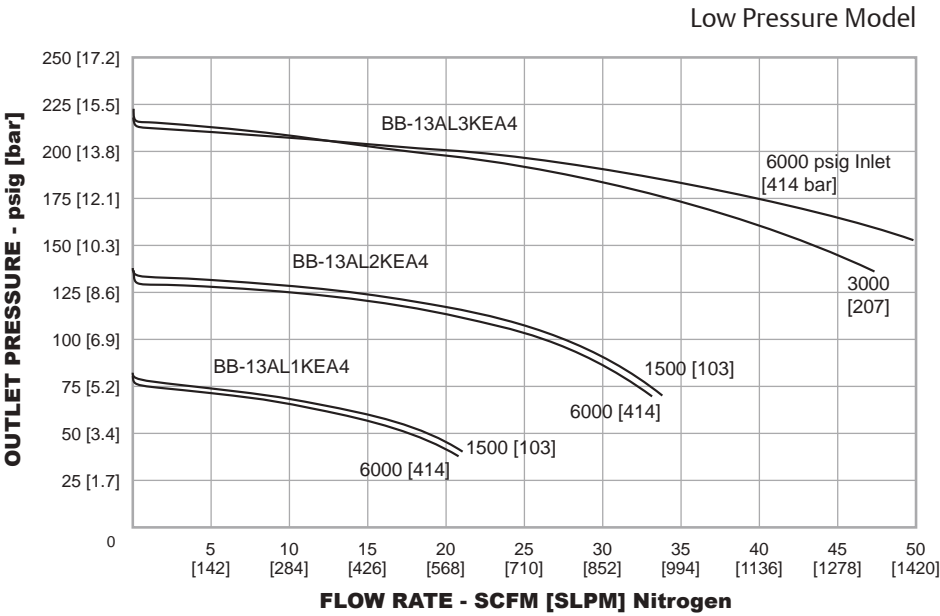


* Filter is only available for 1/4" NPTF

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 TESCO catalog or on www.tescom.com.



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 | 0-80 psig 0-5.5 bar | K – PCTFE | B – Nitrile, Buna-N 90 Durometer | A4 – 1/4" NPTF 4 (Figure 1) |
| | | | | L2 – 0-140 psig 0-9.7 bar | 80-140 psig 5.5-9.7 bar | P – PEEK | E – Ethylene Propylene | B4 – 1/4" SAE 4 (Figure 1) |
| | | | | L3 – 0-220 psig 0-15.2 bar | 140-220 psig 9.7-15.2 bar | V – Polyimide (Vespel®) | K – FFKM, Perfluoroelastomer (Kalrez®) | A2 – 1/4" NPTF 2 (Figure 2) |
| | | | | H1 – 0-700 psig 0-48.3 bar | 220-700 psig 15.2-48.3 bar | | N – Nitrile, Buna-N | B2 – 1/4" SAE 2 (Figure 2) |
| | | | | H2 – 0-1200 psig 0-82.7 bar | 700-1200 psig 48.3-82.7 bar | | U – Polyurethane | |
| | | | | H3 – 0-1800 psig 0-124 bar | 1200-1800 psig 82.7-124 bar | | V – FKM (Viton®-A) | |
| | | | | | | | | |

Regulators - Pressure Reducing

DBEXX2025X012

Specifications*For other materials or modifications, please consult TESCO.***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-RingNitrile, 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 TESCO low pressure regulators into a two-stage pressure reducer.

Applications

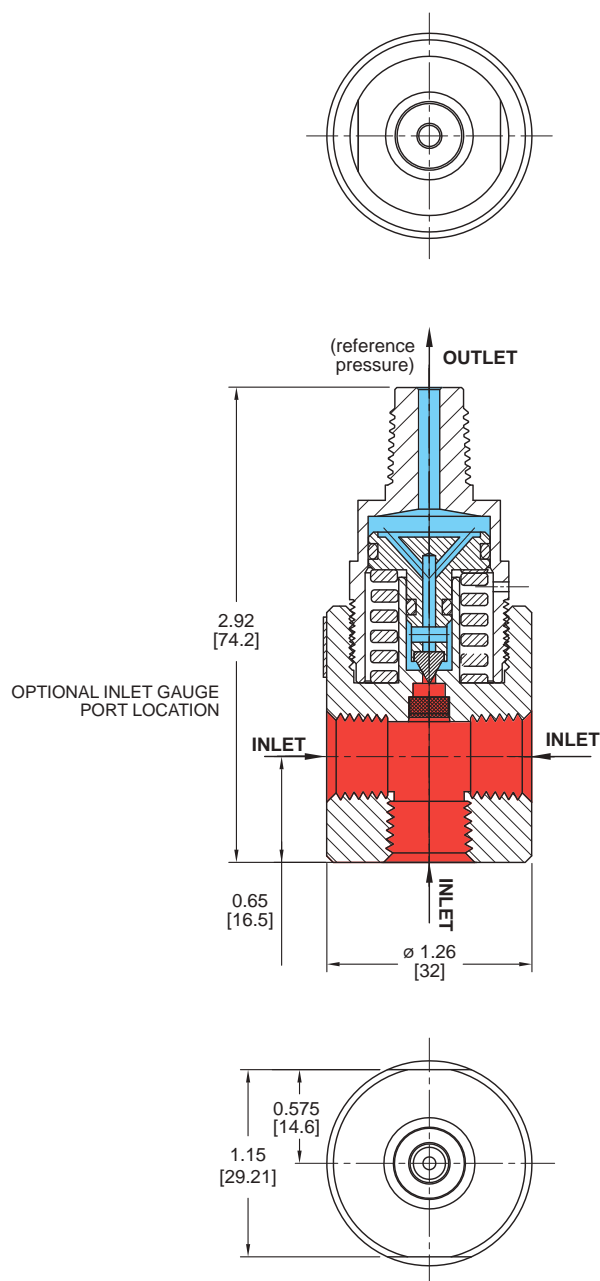
- Rough cut regulator
- Can be combined with a one-stage regulator to create a two-stage regulator
- Tee-ed in for a pilot source
- Non-venting

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

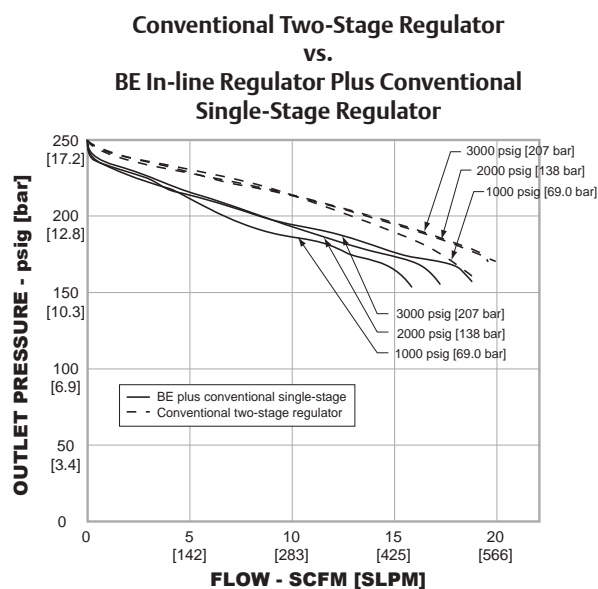
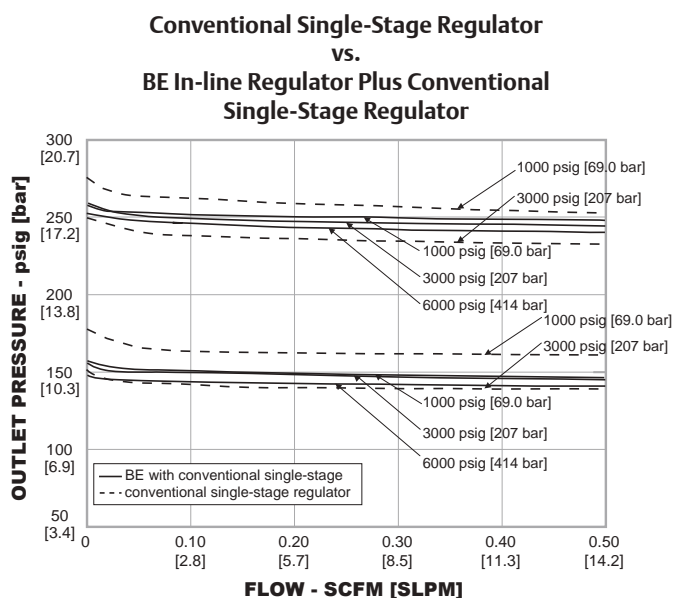
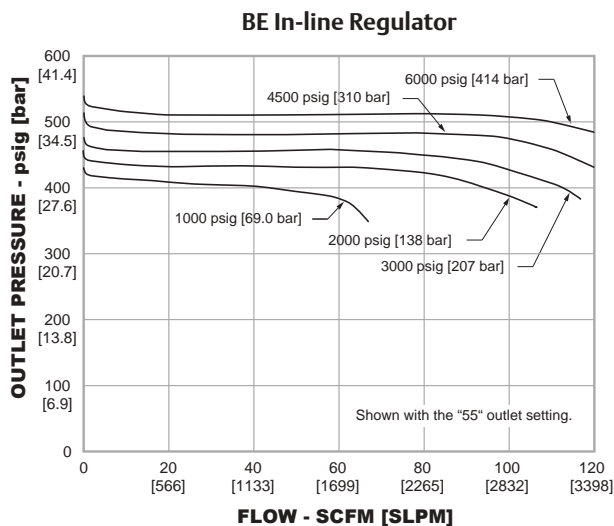
BE Series Regulator Drawing



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 TESCO catalog or on www.tescom.com.



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 |



| 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 | 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) | | -15°F to 250°F -26°C to 121°C | | 4 – 1/4" Female NPTF |
| | | 20 – 160 / 11.0 | 200 / 13.8 | 260 / 17.9 | ET – E.P. | | -40°F to 250°F -40°C to 121°C | F – one gauge port | B – 1/8" Male NPTF |
| | 6 – 316 Stainless Steel | 25 – 220 / 15.2 | 250 / 17.2 | 330 / 22.8 | UT – Urethane | | -40°F to 165°F -40°C to 74°C | | 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 | H – two gauge ports | E – 1/8" Female SAE |
| | | | | | VC – FKM (Viton®-A) | | -15°F to 140°F -26°C to 60°C | | F – 1/4" Female SAE |
| | | | | | EC – E.P. | | -40°F to 140°F -40°C to 60°C | Note: Porting configuration could restrict gauge port orientation. | H – 1/8" Male SAE |
| | | | | | UC – Urethane | | -40°F to 140°F -40°C to 60°C | | I – 1/4" Male SAE |
| | | | | | BY – Nitrile, Buna-N | Polyimide | -40°F to 165°F -40°C to 74°C | | 9 – None |
| | | | | | VY – FKM (Viton®-A) | | -15°F to 400°F -26°C to 204°C | | |
| | | | | | EY – E.P. | | -40°F to 250°F -40°C to 121°C | | |
| | | | | | UY – Urethane | | -40°F to 165°F -40°C to 74°C | | |

*Brass body is limited to +200 °F (93 °C) maximum.
Aluminum 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

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

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

OTHER

Cleaning

CGA 4.1 and ASTM G93

Weight

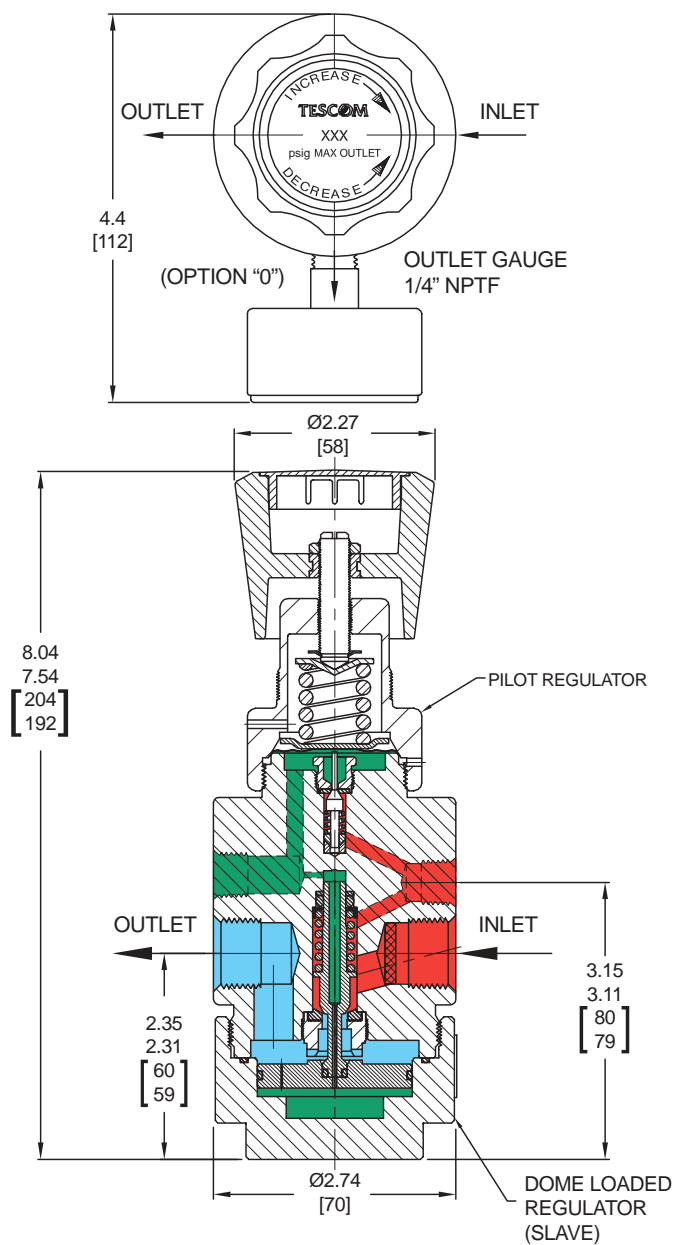
3.5 lbs / 1.6 kg

*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.

CP32 SERIES

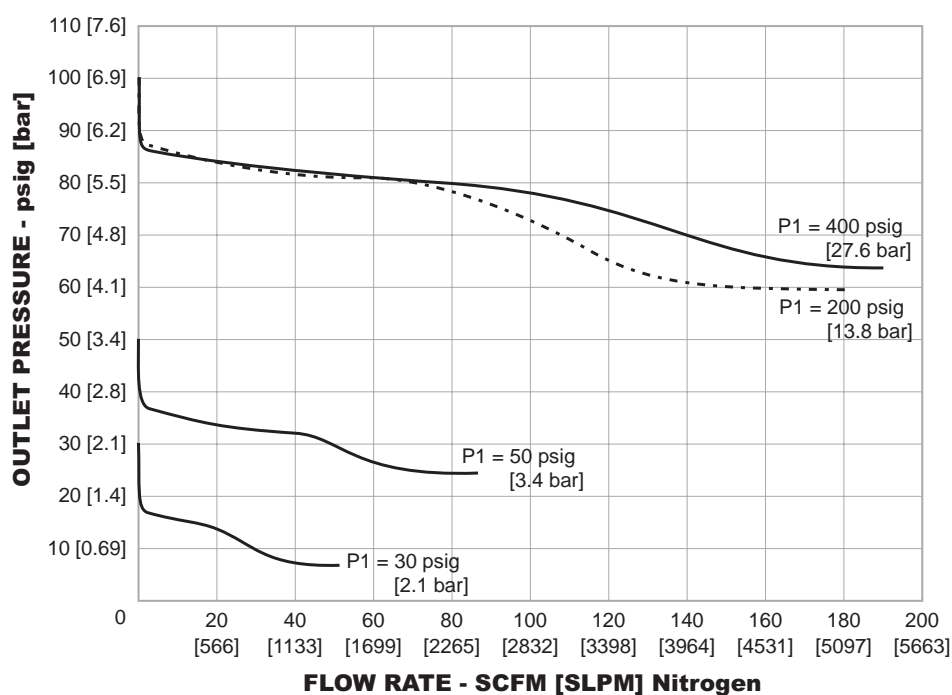
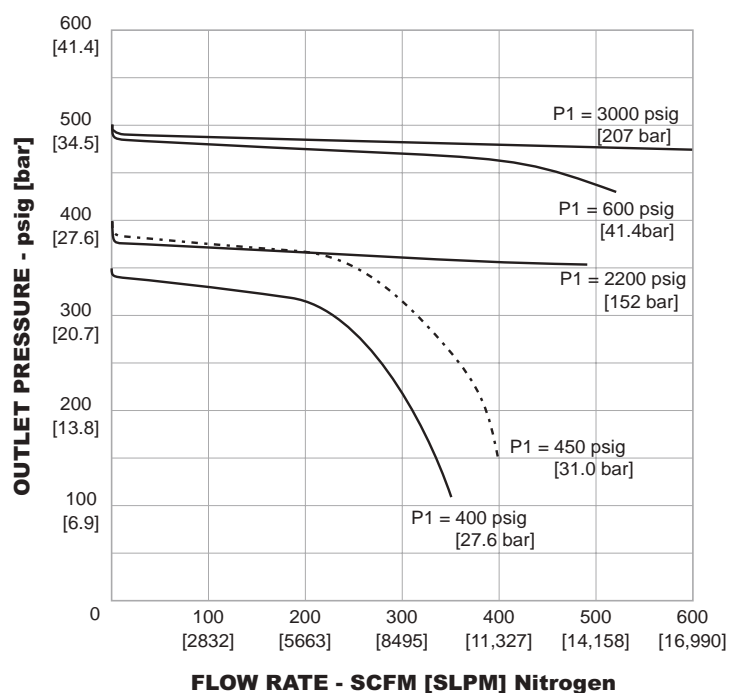
CP32 Series Regulator Drawing



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 TESCO catalog or on www.tescom.com.

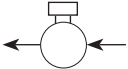
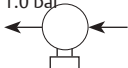
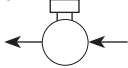


CP32 SERIES

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  |

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 Temperature¹

-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

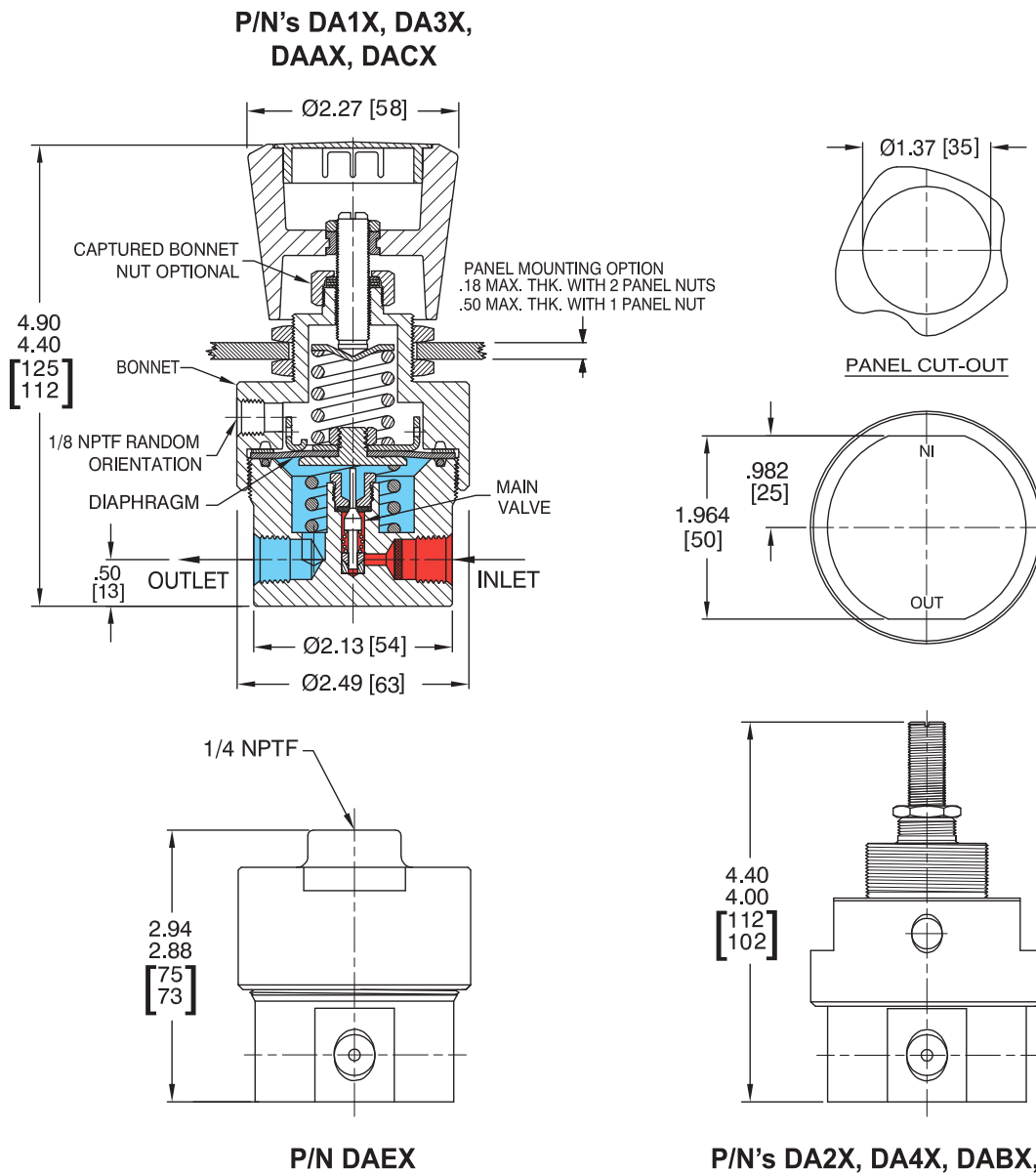
- Instrumentation testing
- Calibration equipment

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

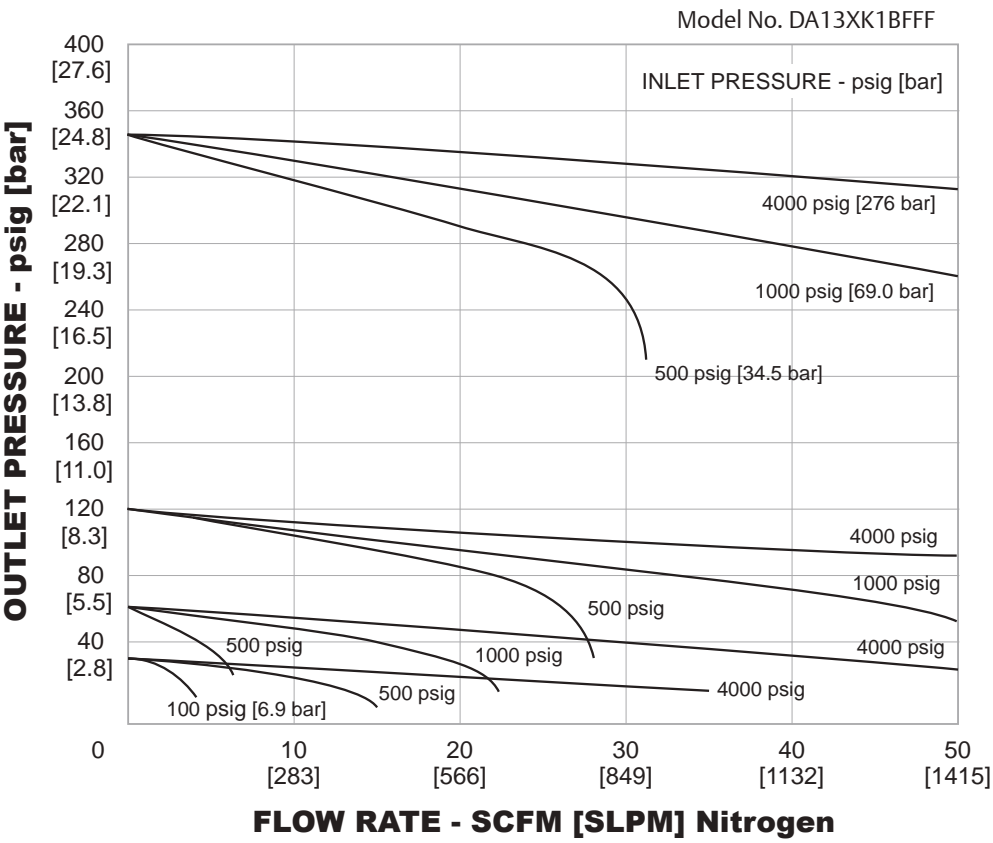
DA Series Regulator Drawing



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.




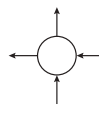


DA SERIES

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 | FF 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 – Screwdriver 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 1 – 0-15 psig 0-1.0 bar 2 – 0-50 psig 0-3.4 bar 3 – 0-100 psig 0-6.9 bar 4 – 0-350 psig 0-24.1 bar | 50 mm Hg absolute - 100 psig / 6.9 bar (Dome loaded only) 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 | 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. 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

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

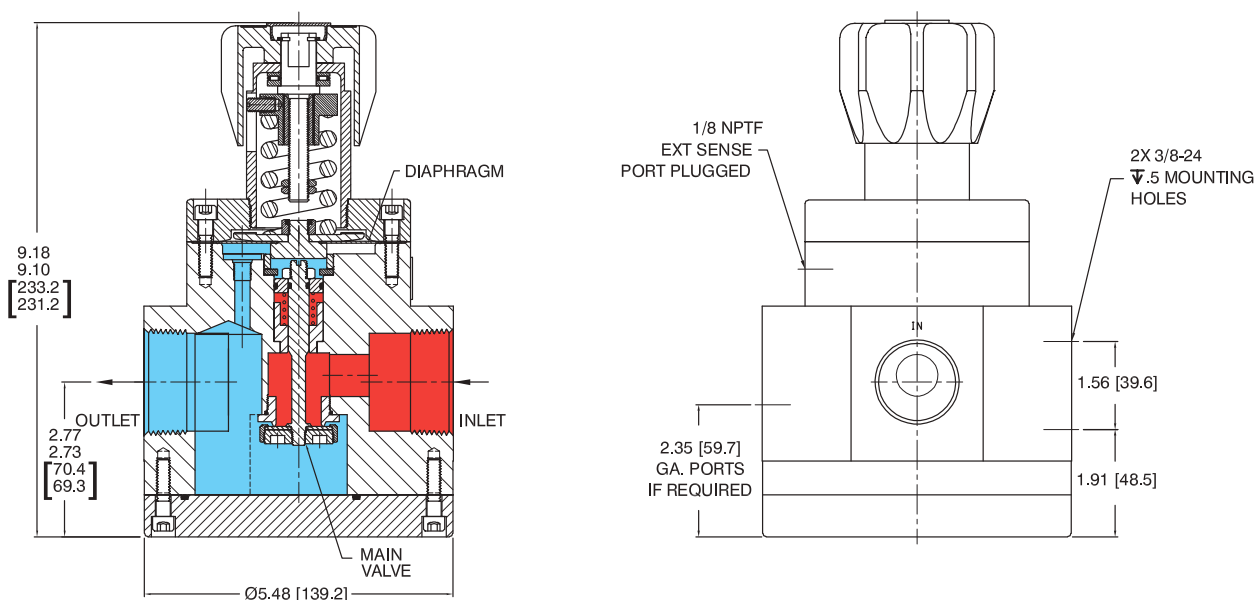
- Purging, blanketing, high flow inerting, heat-treating and shielding gases
- Performs well at very low pressure differentials such as Dewar-supplied processes
- Multi-drop breathing air stations

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

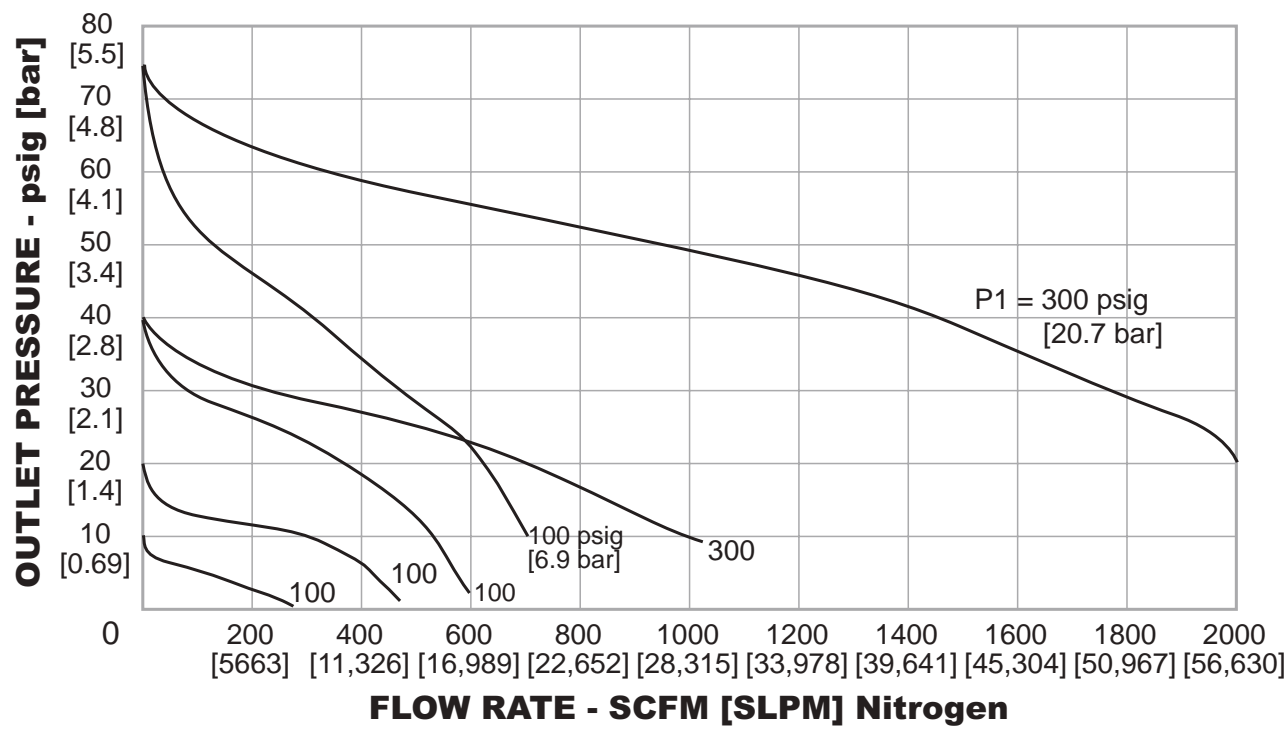
DG Series Regulator Drawing



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" | A – No gauge ports |
| 24 – 1-1/2" | C – Two gauge ports at 70° |
| | D – One 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

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 (VespeI®)

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

VespeI® 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

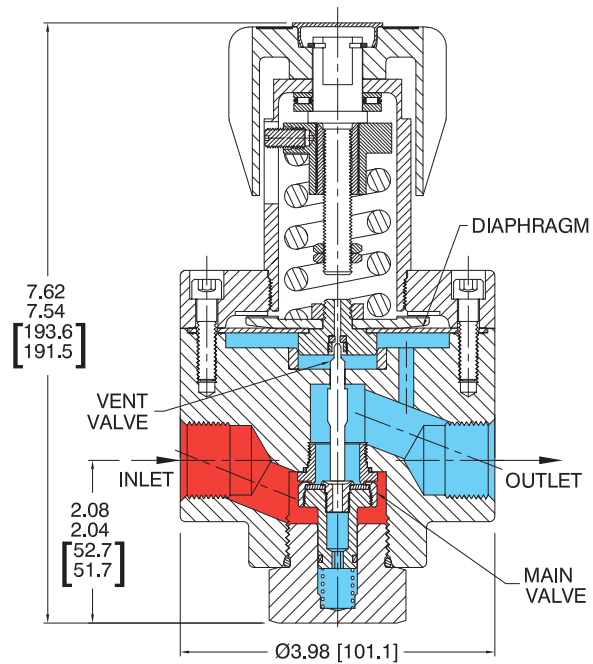
Features and Benefits

- 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

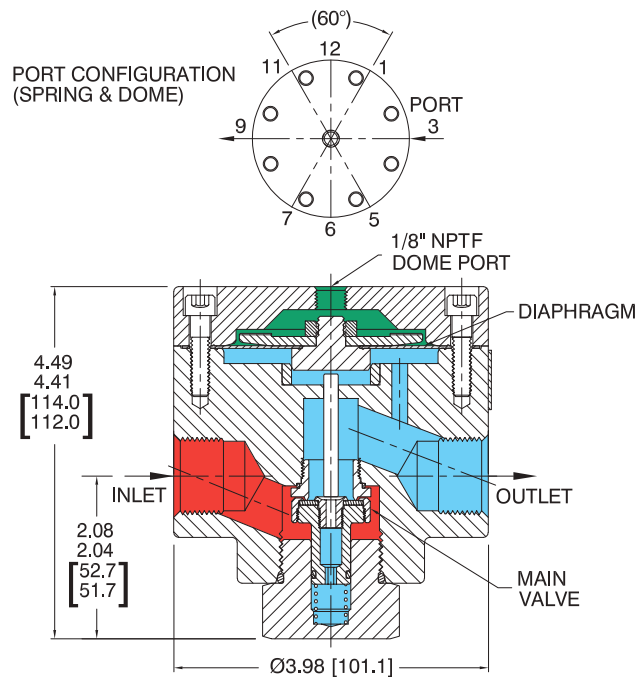
DH SERIES

DH Series Regulator Drawings

SPRING LOAD (VENTING)

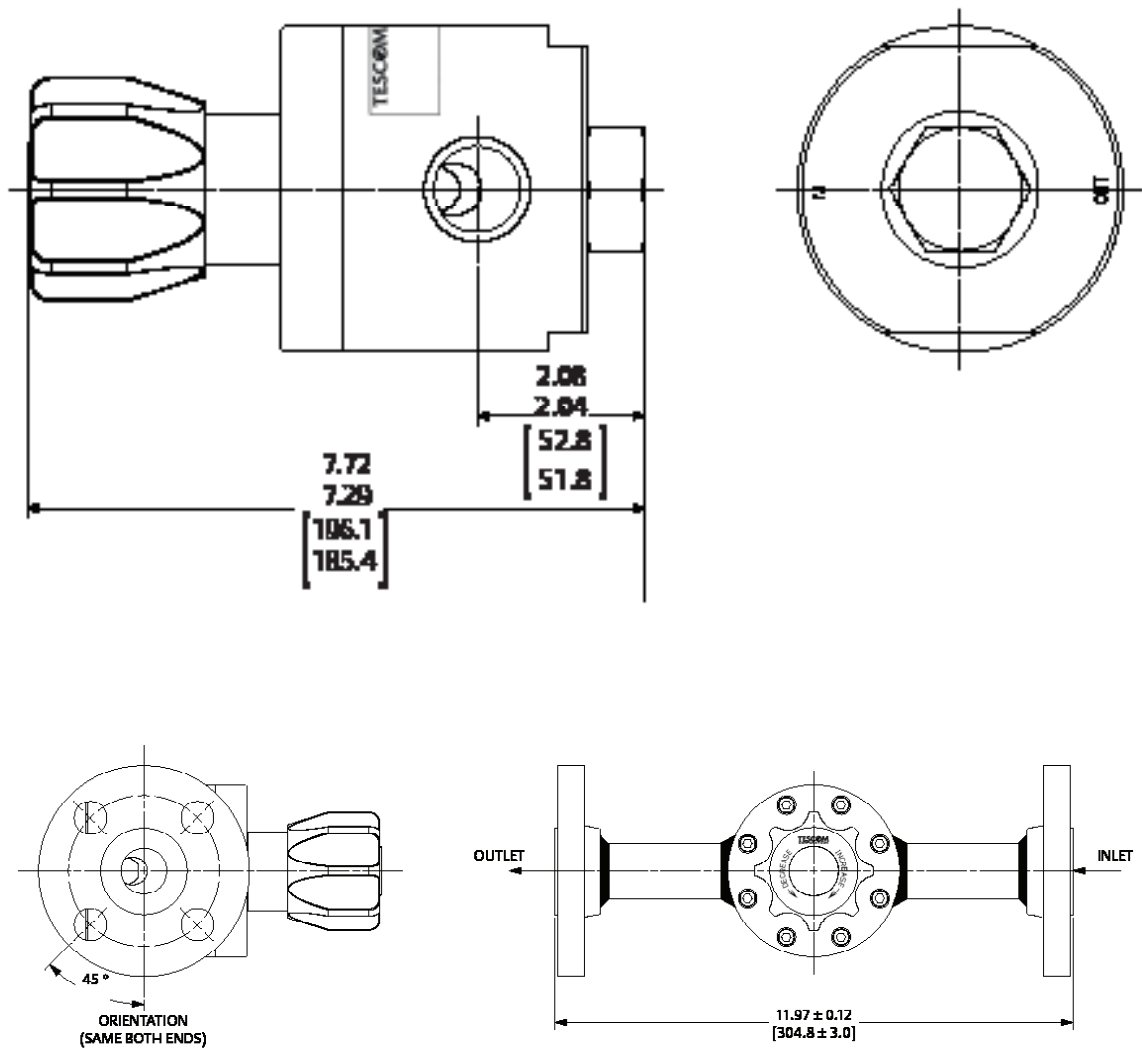


DOME LOAD (NON-VENTING SHOWN, VENTING AVAILABLE)



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

DH Series Regulator with Flanges Drawing

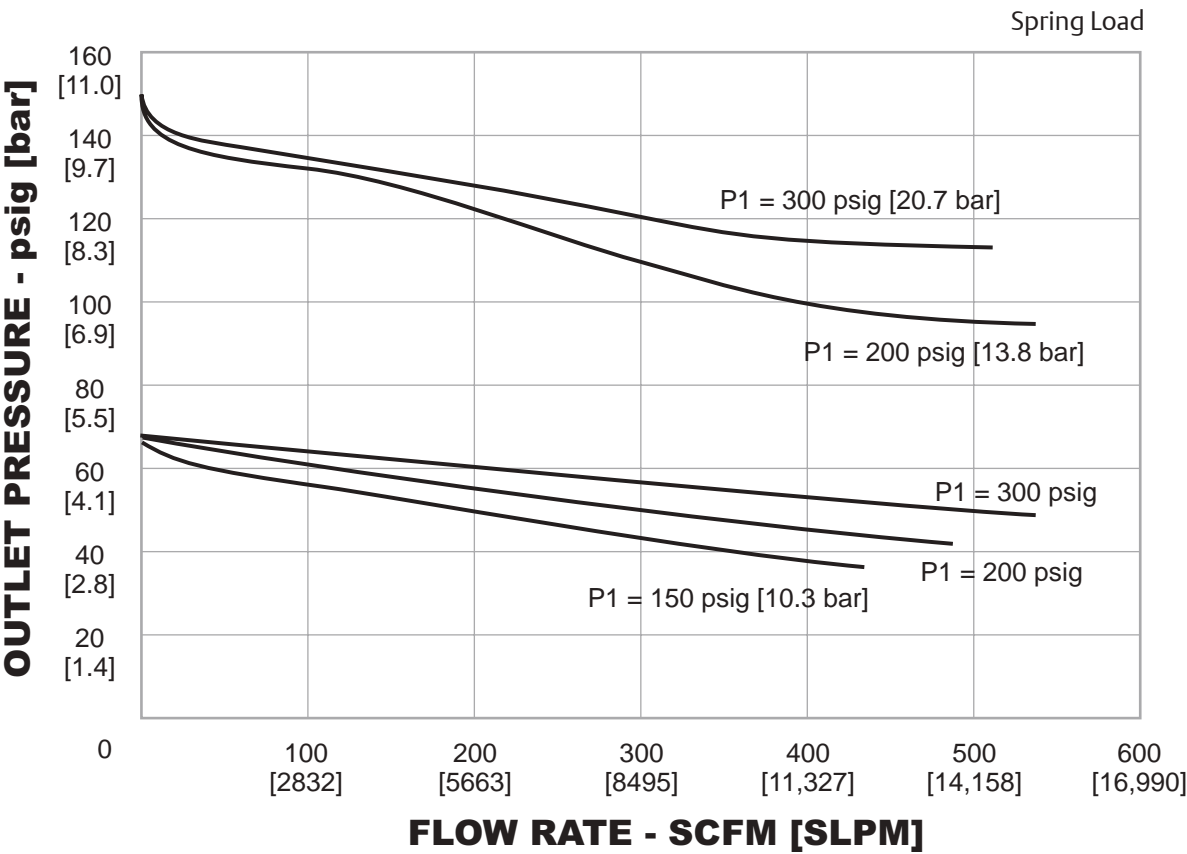


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

DH SERIES

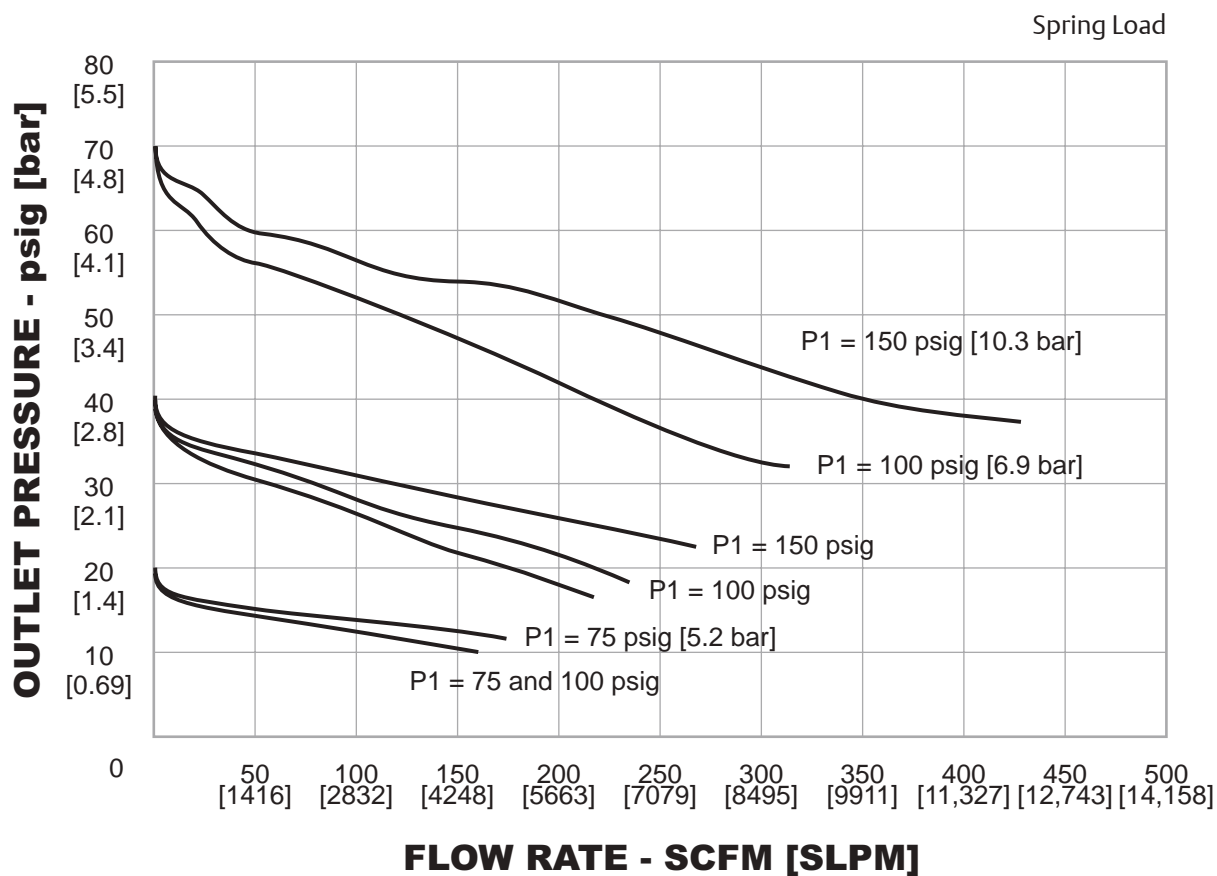
DH Series Regulator Flow Charts

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

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



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:

| 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° | 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) | | |

* Crossholes for 1/2" ports limits C_v to 3.5

** 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 TEMPERATURE | 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 | | | | | | | | | |
| | | | | | | <div>* The maximum operating temperature for PCTFE vent seat material is 140°F / 60 °C</div> | | | | | |

* The maximum operating temperature for PCTFE vent seat material is 140°F / 60 °C

** FFKM, Perfluoroelastomer (Chemraz®)

Specifications

For other materials or modifications, please consult TESCO.

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

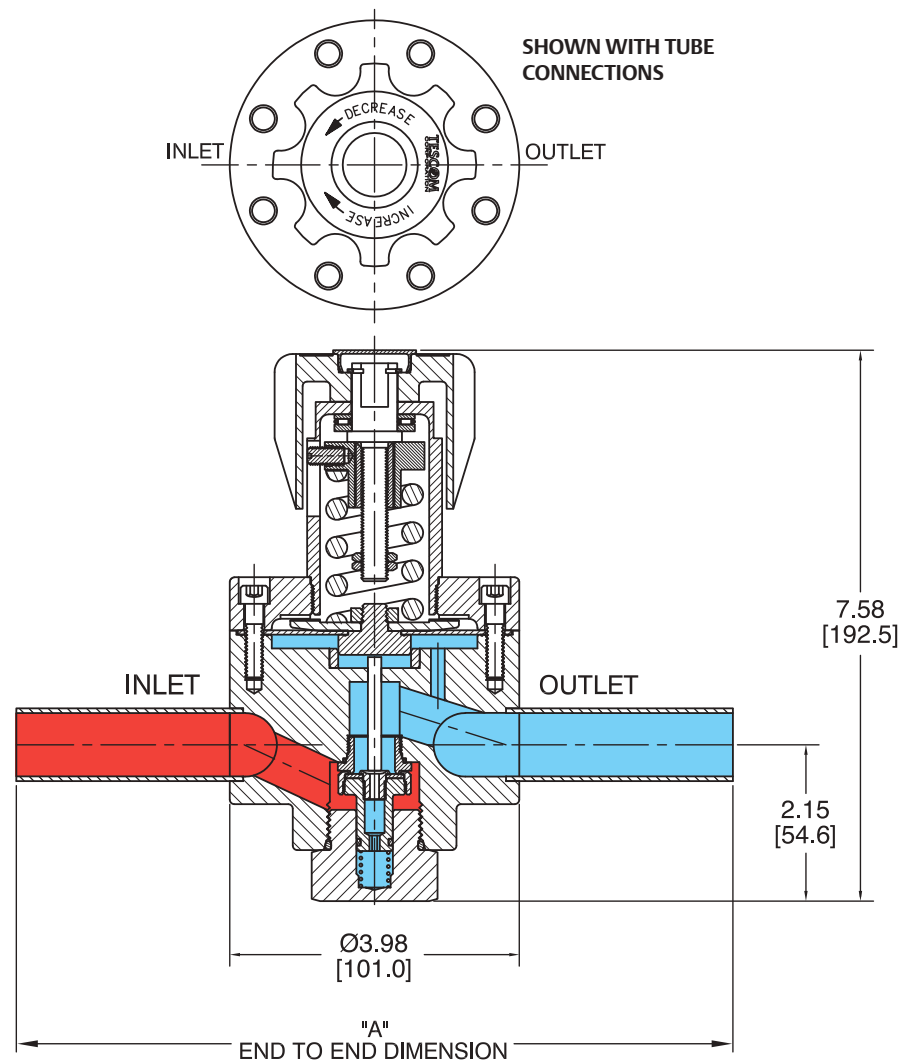
- Nitrogen purging
- Facility tool and equipment for air or nitrogen

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

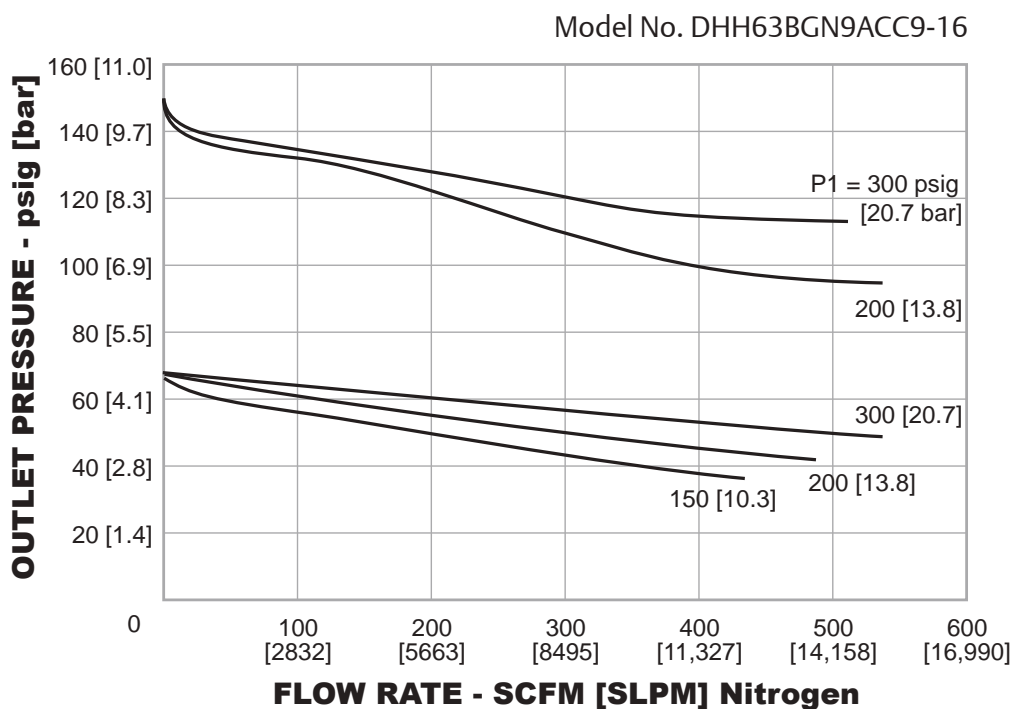
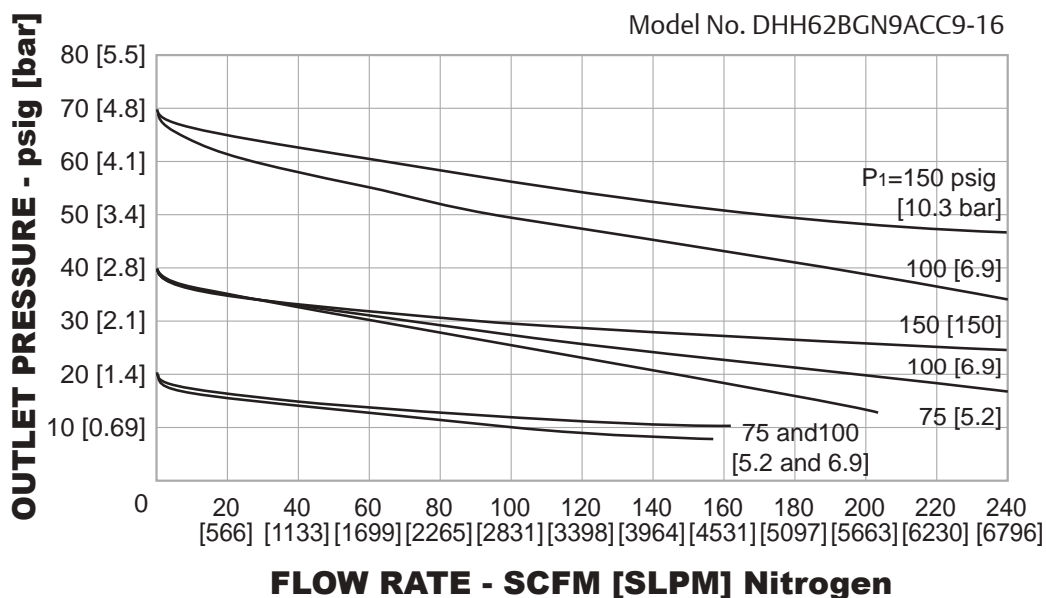


| PART NO. | DIMENSION "A" | PART NO. | DIMENSION "A" |
|-----------------------|---------------|-----------------------|---------------|
| DHX6XXXXXXAAX-16..... | 7.25 / 7.13 | DHX6XXXXXX66X-16..... | 9.91 / 9.79 |
| DHX6XXXXXXBBX-16..... | 7.25 / 7.13 | DHX6XXXXXX77X-16..... | 9.91 / 9.79 |
| DHX6XXXXXXCCX-16..... | 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 TESCO 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 | | | -16 |
|--------------|---|-------------------------------------|--|---|---------------------------------------|---|--|---|--|--------------------------|---|---|-----|
| 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 TESCO.

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

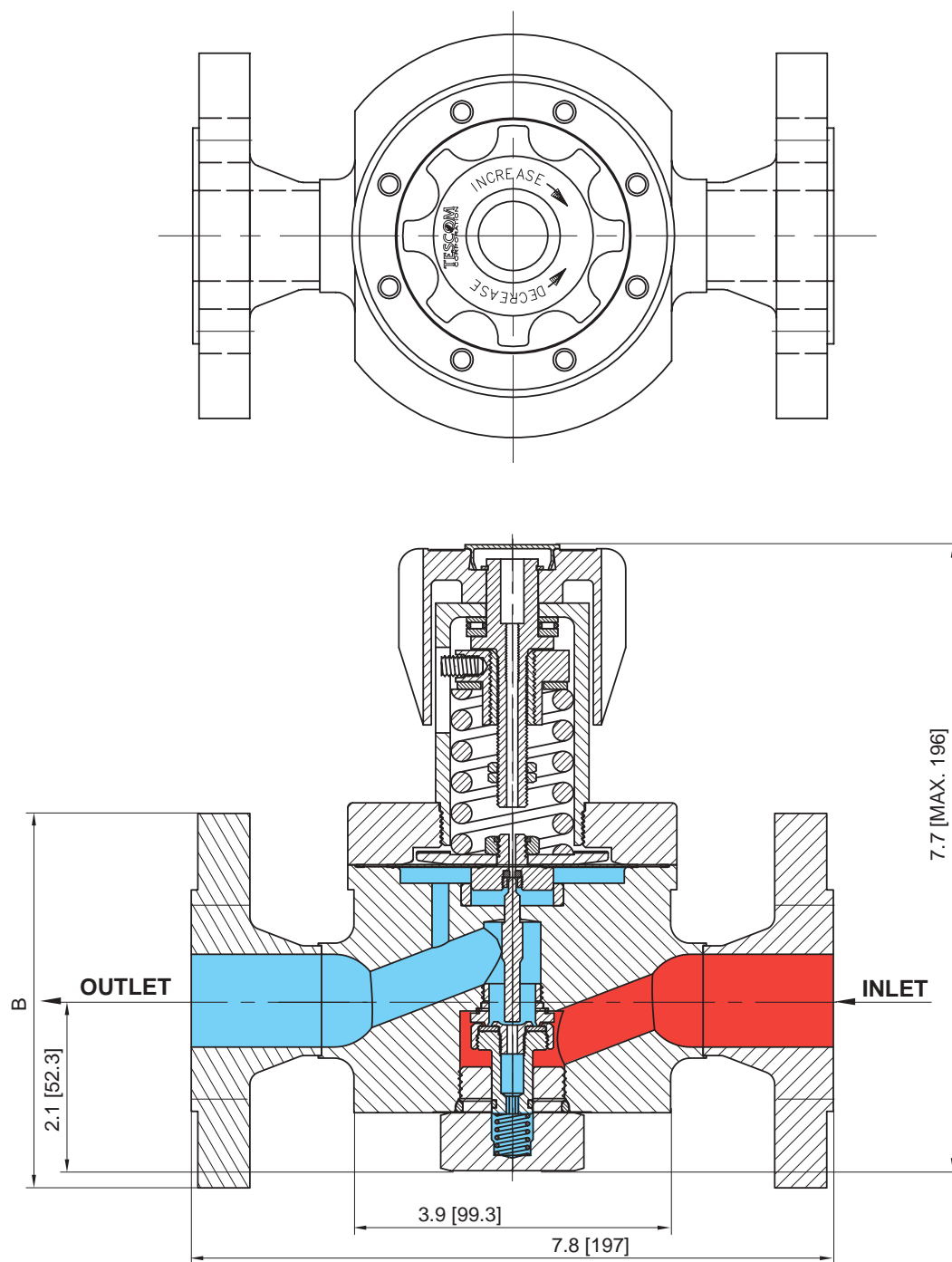
Features and Benefits

- 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

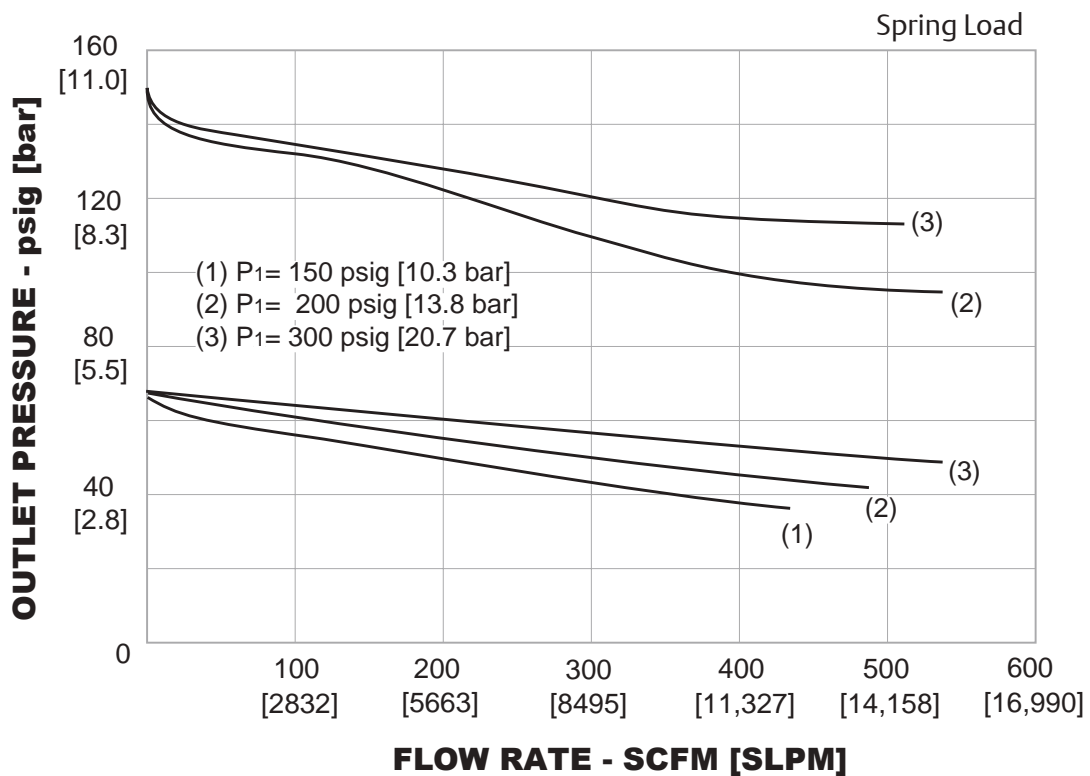
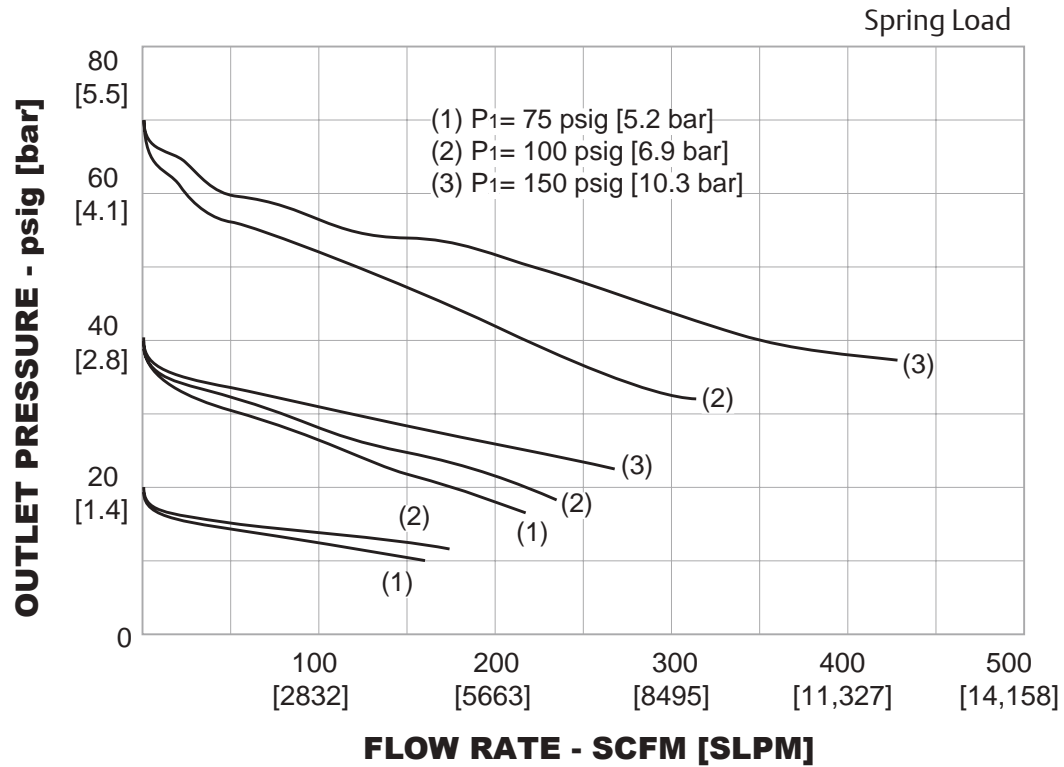
DHF Series Regulator Drawing



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 TESCO 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) | | | | |

| | | | | | | | | | | | |
|-----|--------|---|---|---|---|---|---|---|---|-----------|---|
| DHF | D | 6 | 1 | V | G | C | 9 | M | B | A | E |
| | FLANGE | | | | | | | | | EN 1092-1 | |

| 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

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



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 $\pm 0.1\%$.

Applications

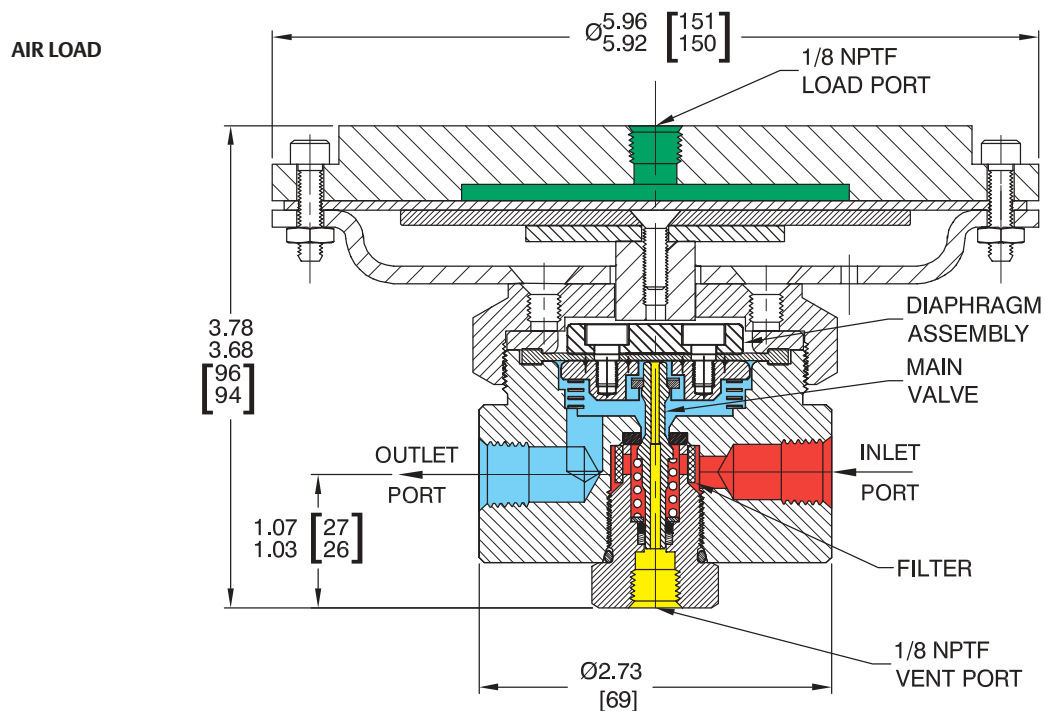
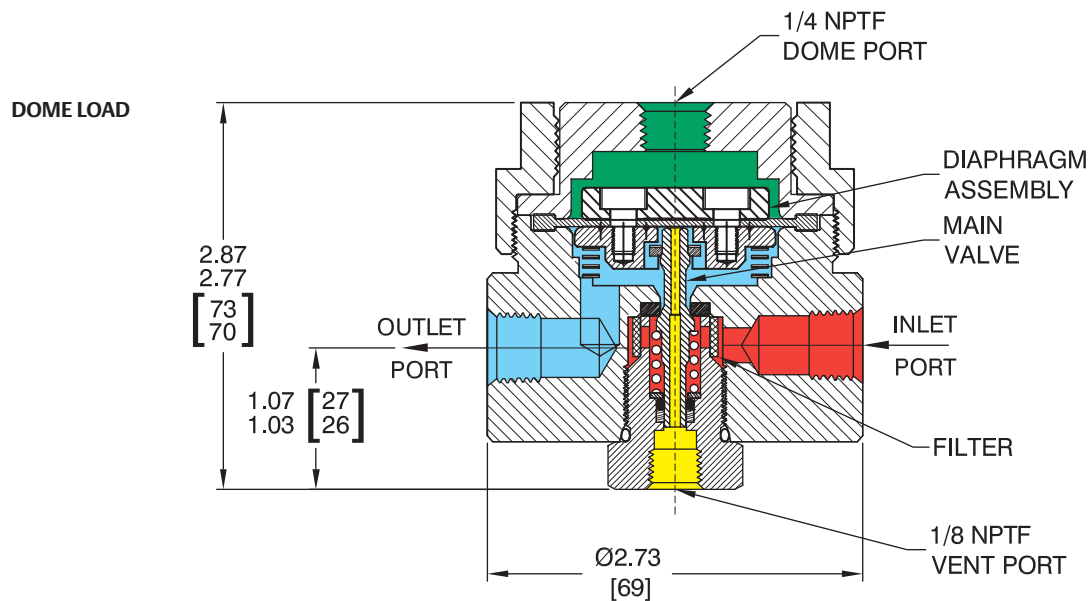
- Component testing and development
- Flow meter calibration
- Burst and proof testing
- Superplastic metal forming
- Vacuum forming
- Catheter testing or rupture disk testing
- Sensor and gauge calibration and test
- Coating applications

Features and Benefits

- Segregated and captured venting
- High flow capacity

DK SERIES

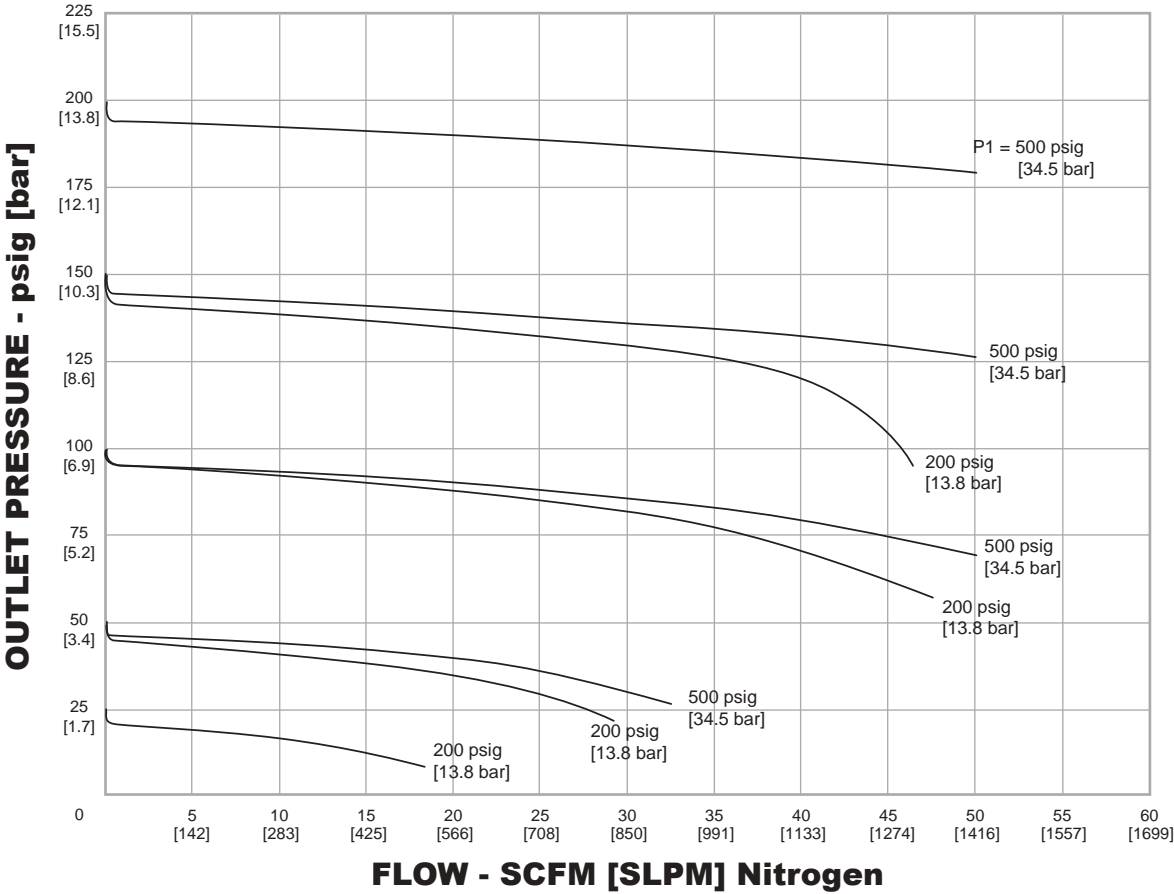
DK Series Regulator Drawing



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 | 1 – Brass | Air load only 6 – 0-600 psig 0-41.4 bar Dome load only 7 – 0-700 psig 0-48.3 bar | C – PCTFE | B – Nitrile, Buna-N E – E.P. V – FKM (Viton®-A) | V – Segregated (captured port 1/8") | 9 – None | A – No gauge ports | A – 1/4" SAE | | |
| | A – Air load | 6 – 316 Stainless Steel | | T – PTFE | | | |  | B – 3/8" SAE | | |
| | | | | V – Polyimide (Vespe®) | | | | B – Two gauge ports at 60°  | C – 1/2" SAE | | |
| | | | | | | | | D – One outlet gauge at 90°  | F – 1/4" NPTF | | |
| | | | | | | | | | G – 3/8" NPTF | | |
| | | | | | | | | | H – 1/2" NPTF | | |
| | | | | | | | | | 9 – None | | |

Specifications

For other materials or modifications, please consult TESCO.

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

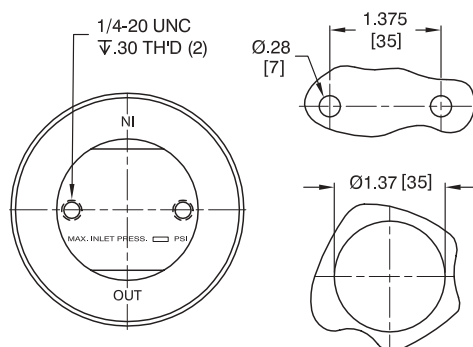
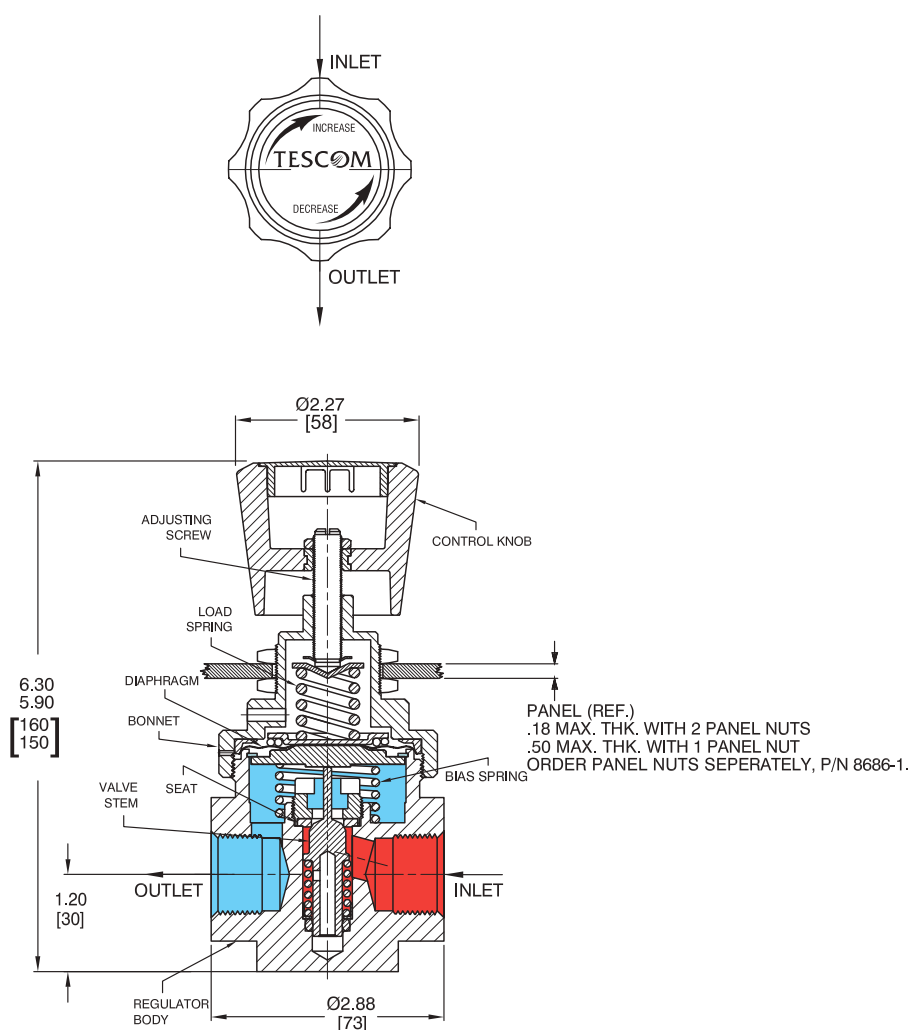
- Low pressure purge

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

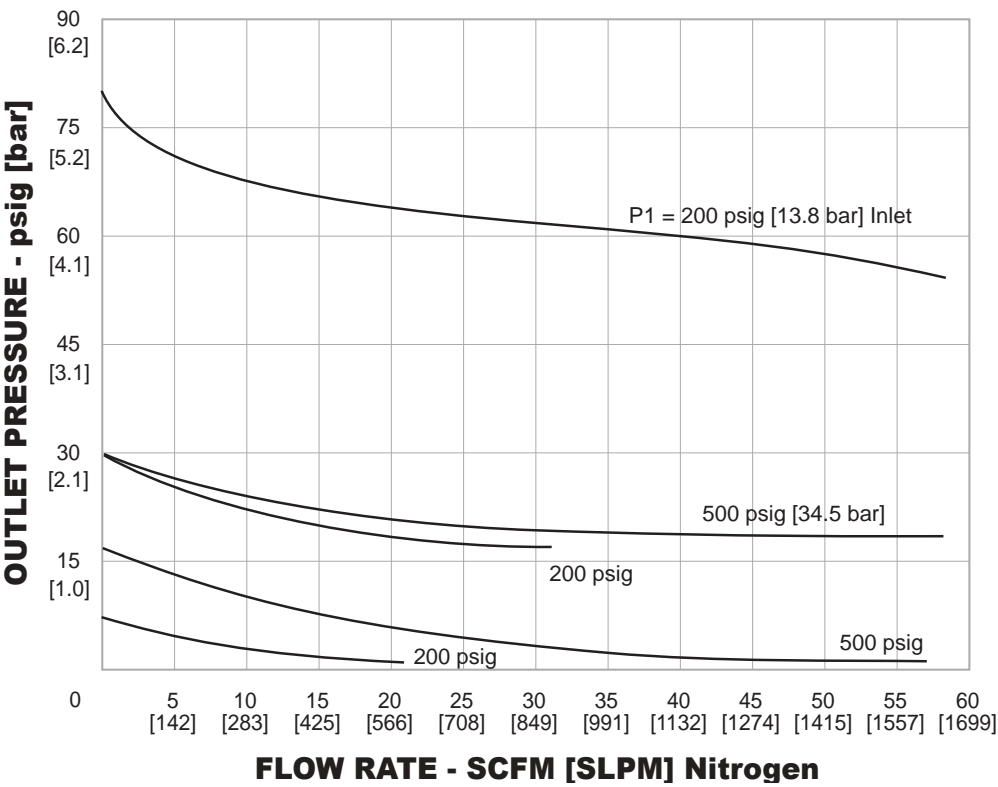


PANEL CUT-OUTS

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 TESCO M 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 TESCO.

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.



TESCO High Pressure Point-of-Use regulator is a 44-1800 Series pressure reducing regulator that is spring loaded, hand operated and piston sensed.

Application

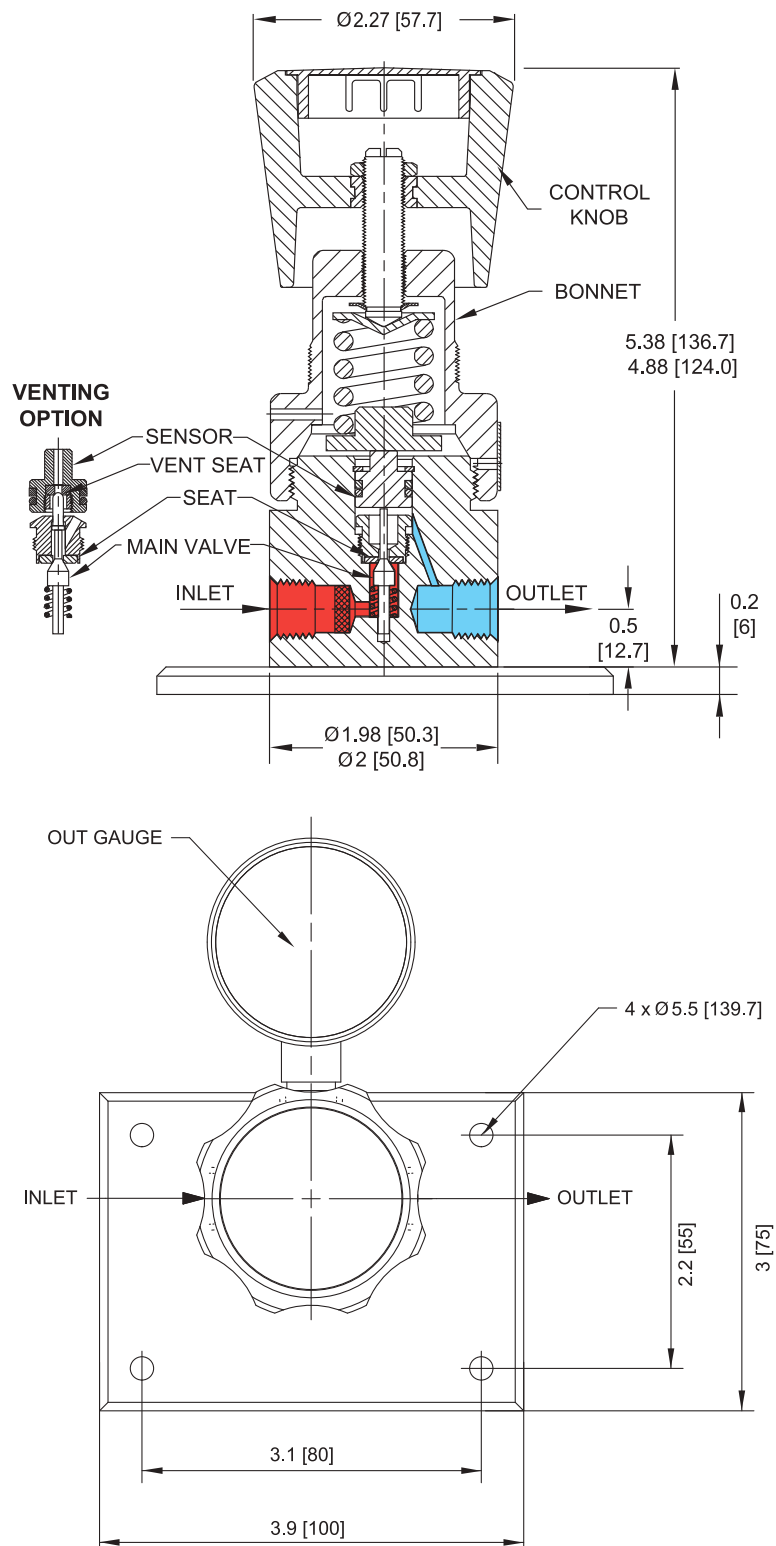
- Analyzers with high outlet pressures in Laboratory and R&D

Features and Benefits

- Compact and ergonomic design
- Easy installation with wall mounting plate
- Venting is optional

HIGH PRESSURE POINT-OF-USE

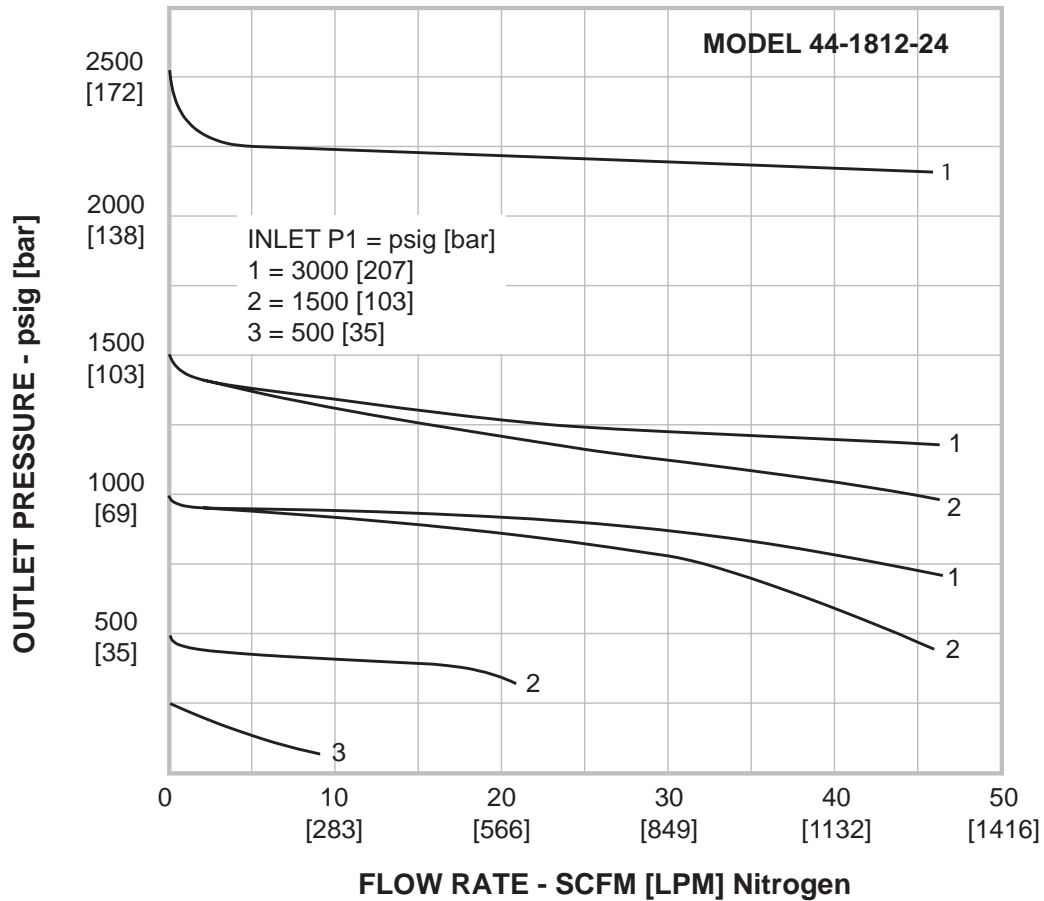
High Pressure Point-of-Use Drawing



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 TESCO 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 |

Specifications

For other materials or modifications, please consult TESCO.

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 \varnothing 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

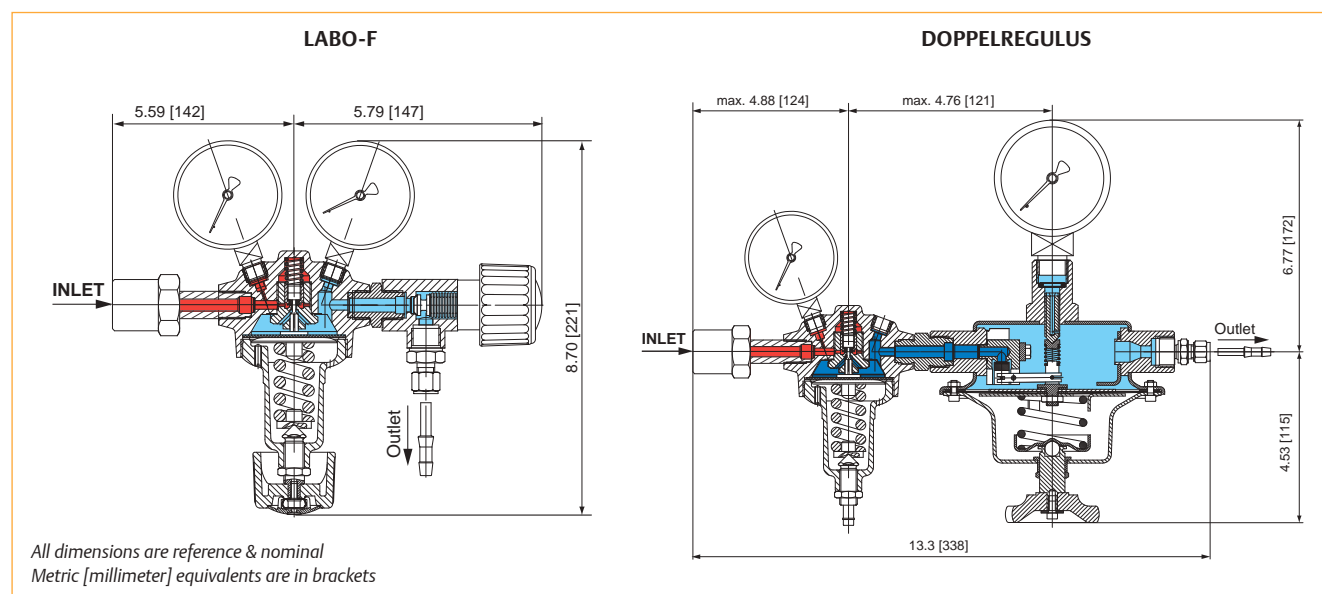
- Universal use - for all technical gases (gas purity up to 5.0)
- Precise control of low outlet pressures
- Control of low outlet pressures

Features and Benefits

- Single-stage Labo-F includes shut-off valve for high flow capacity (up to 50 m³/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 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 <div>Note: Other outlet connections are available</div> | | 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 | | 0050 – 0.73 psig / 50 mbar | 05 – Compression fitting ø 6 mm with hose nozzle ø 6 mm separately | |
| | 08 – Air | | 0100 – 1.45 psig / 100 mbar | | |
| | 09 – Synthetic air | | 0500 – 7.25 psig / 500 mbar | | |
| | 12 – Oxygen | | 1000 – 14.5 psig / 1.00 bar | | |
| | 13 – Nitrous oxide | | 1500 – 22 psig / 1.5 bar | | |
| | 15 – CO ₂ and inert gases | | | | |
| | 16 – Flammable gases (except Propane and Acetylene) | | | | |
| | 17 – Calibration gases | | | | |
| | 42 – Compressed air - 4350 psig / 300 bar | | | | |
| | | | | | |

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 TESCO. M.

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.



TESCO. M. 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

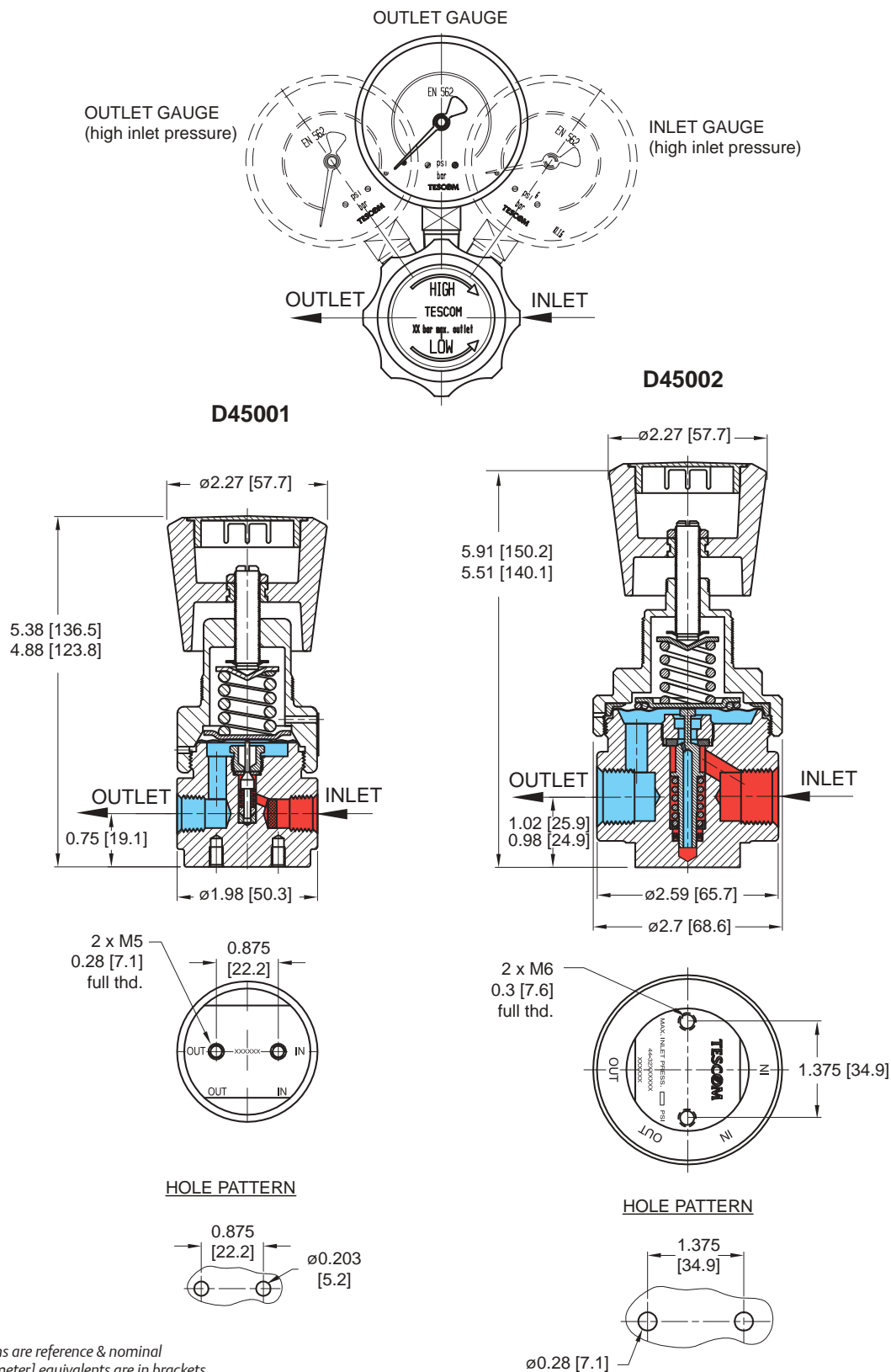
- Line pressure control
- Second stage regulator in gas supply lines

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

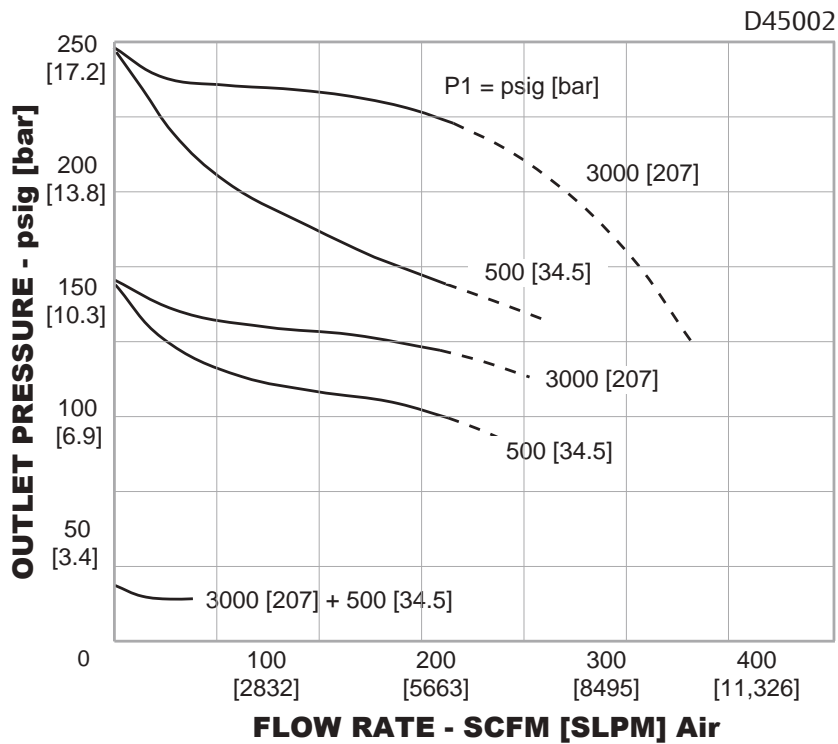
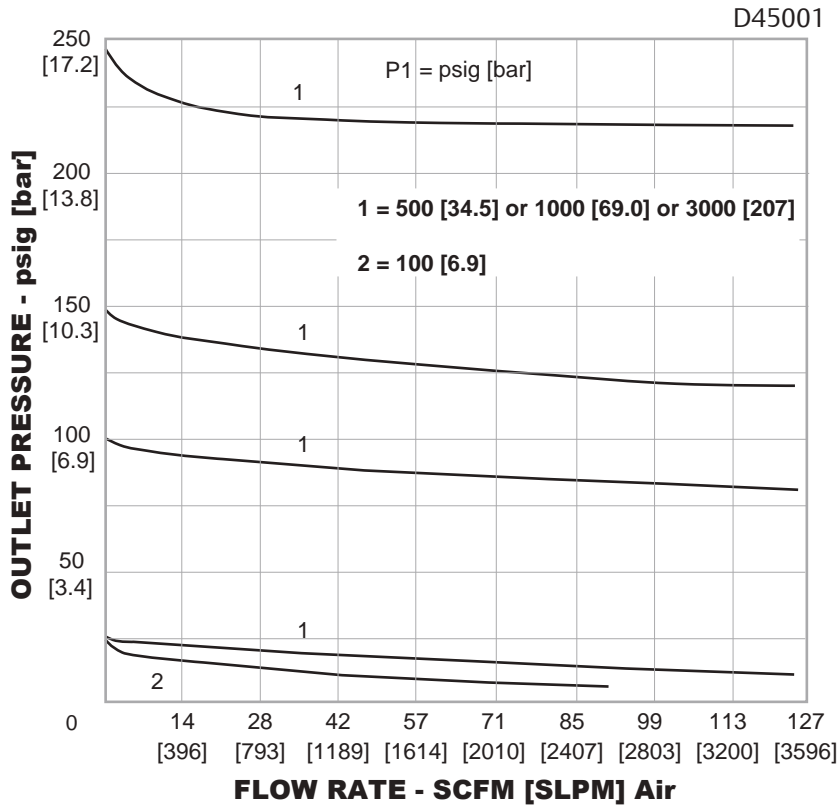
LINE PRESSURE REDUCER 6.0

Line Pressure Reducer 6.0 Regulator Drawing



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 | |
| <div>1. With inlet and outlet pressure gauge</div> <div>2. With outlet pressure gauge</div> | | | | | | |

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 TESCO.

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 (Elgiloy®) 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

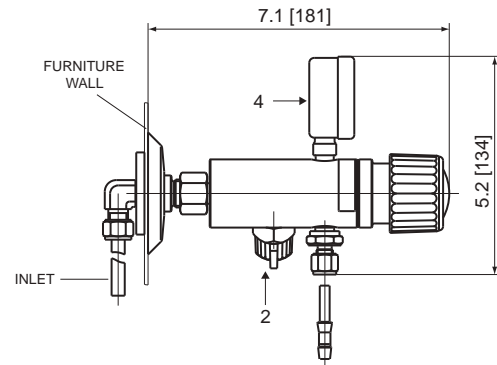
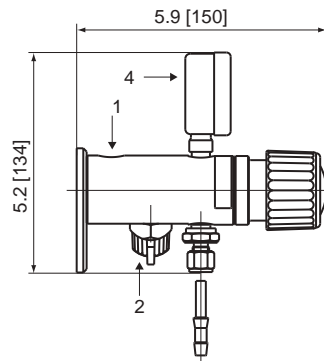
MINILABO 2

MiniLabo 2 Regulator Horizontal Drawings

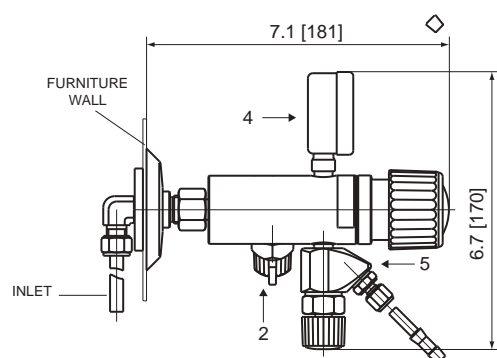
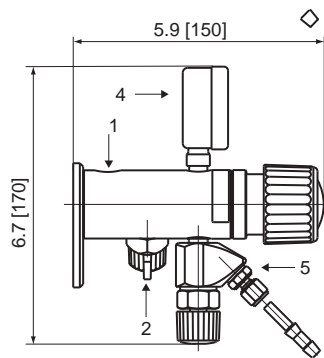
Wall Mounted Version
(with wall plate)

Furniture Installation Version

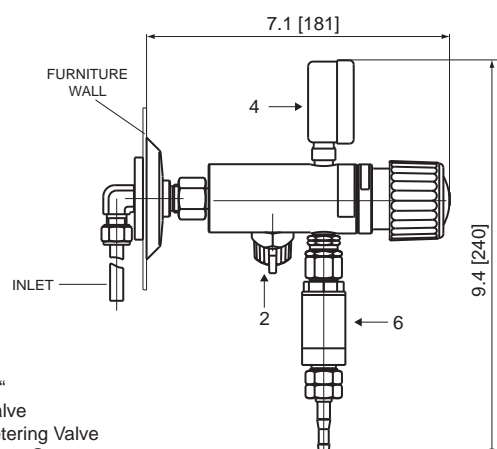
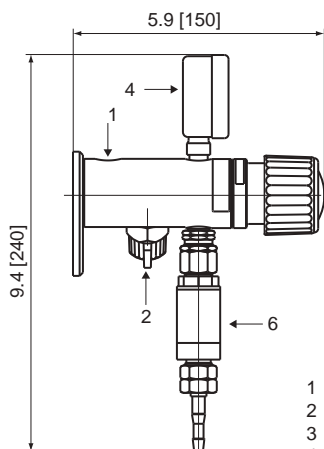
MiniLabo 2 horizontal
with shut-off valve



MiniLabo 2 horizontal
with shut-off valve
and diaphragm metering valve



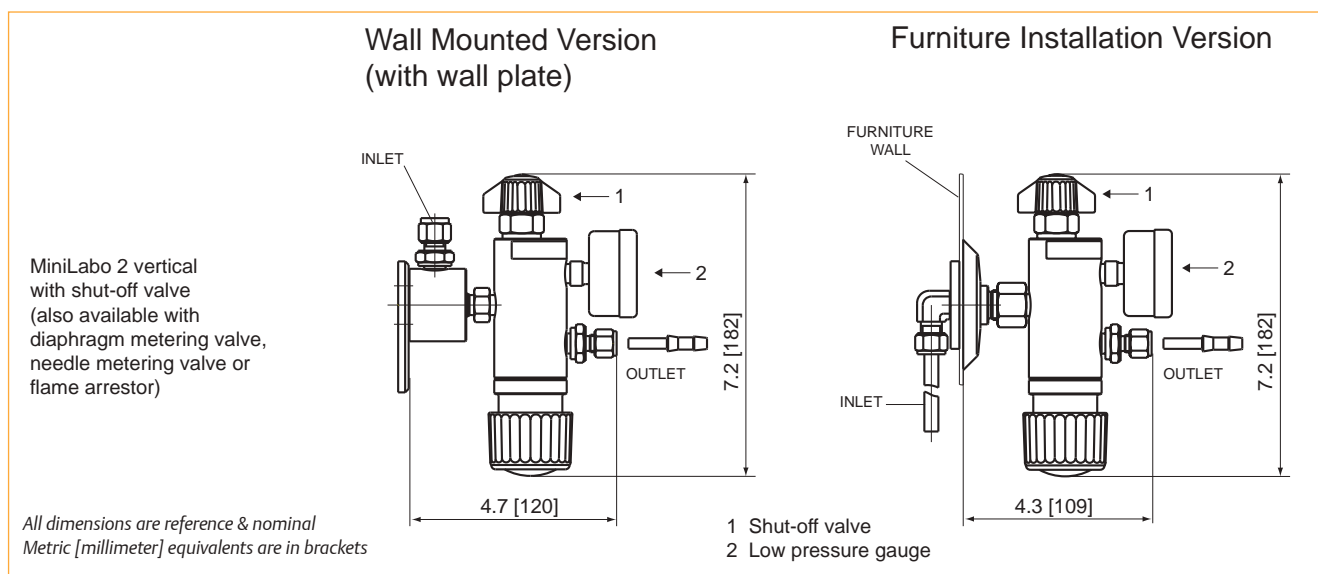
MiniLabo 2 horizontal
with shut-off valve
and flame arrestor



- 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

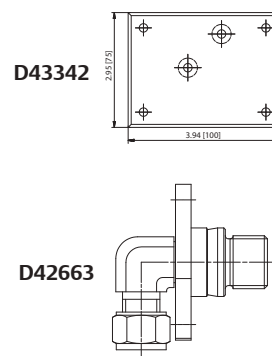
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

MiniLabo 2 Regulator Vertical Drawings



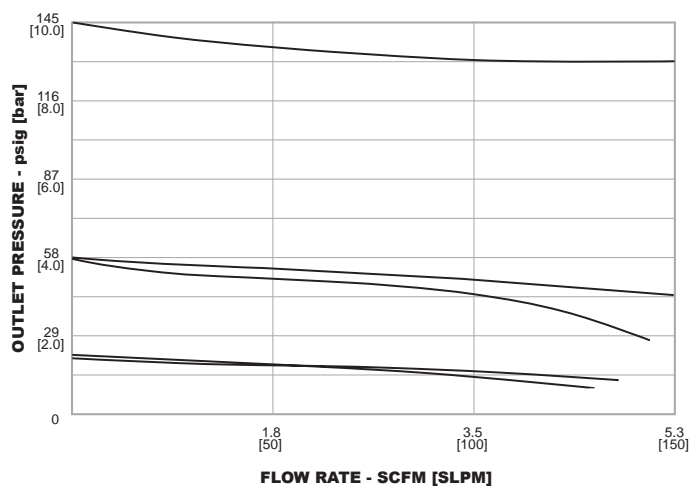
Accessories for Wall Mounting

| 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) |



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 TESCO 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.

Specifications

For other materials or modifications, please consult TESCO.

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 (Elgiloy®) / 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

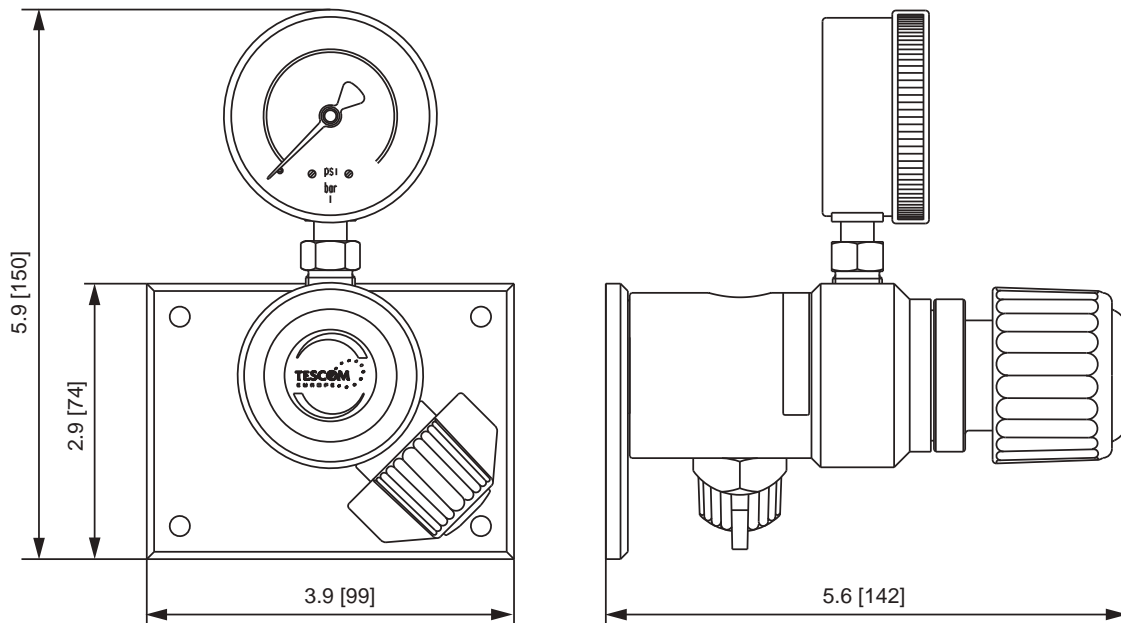
- High purity applications
- Reduces line pressure to working pressure
- Laboratory, research & development and analyzer applications

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

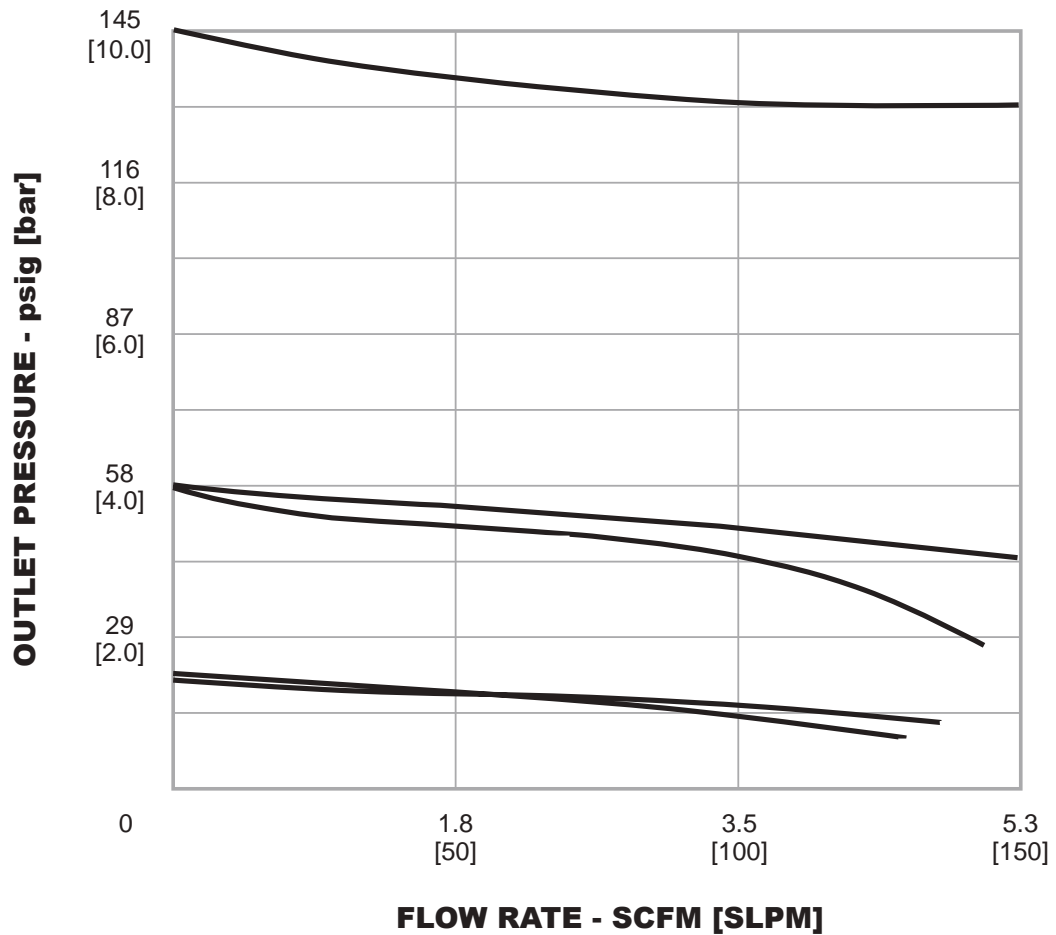
Ultra High Purity MiniLabo 2 Regulator Drawing



*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 TESCO 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 TESCO.

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 $< 2 \times 10^{-8}$ 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

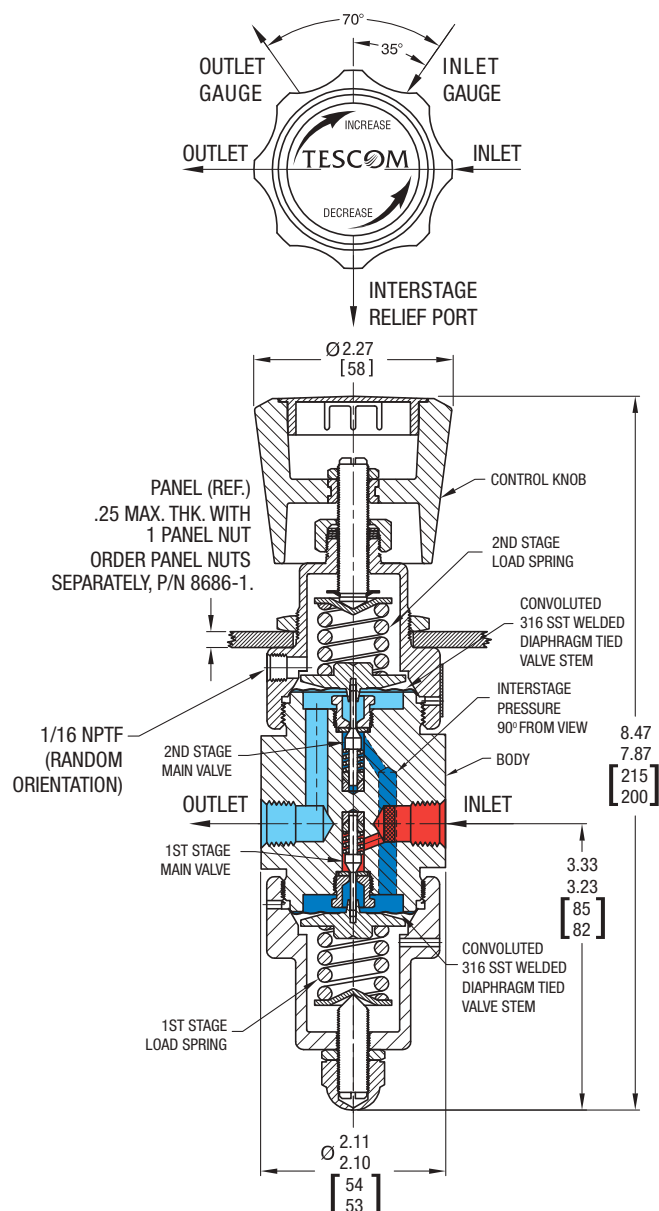
NOTE:

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 TESCO customer support further assistance.

PS-3400 SERIES

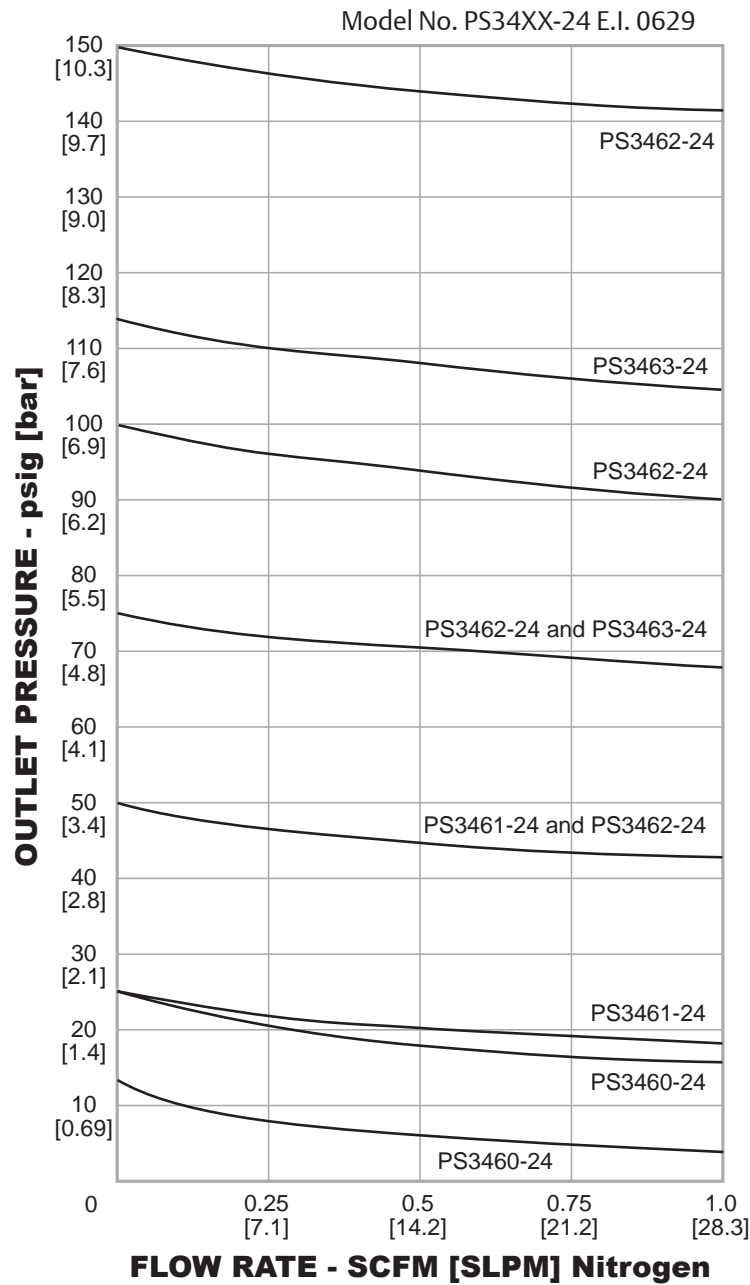
PS-3400 Series Regulator Drawing



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 TESCO.

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

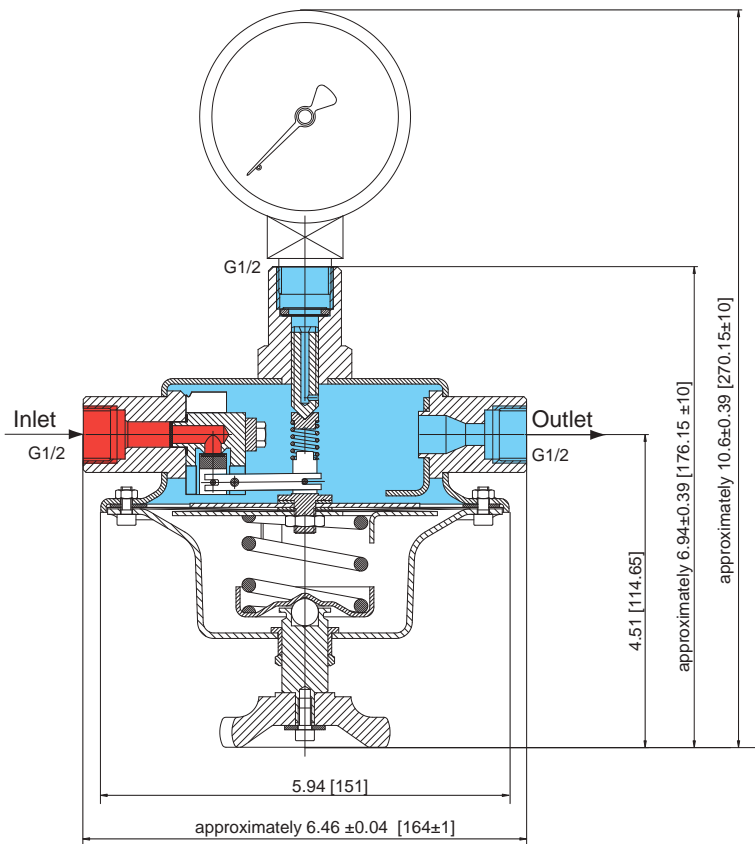
- Where very low outlet pressure is requested in combination with low flows
- Point-of-use regulator in central gas supply systems
- In machines or in combination with a first-stage reducer as a cylinder pressure reducer
- Laboratory and production testing

Features and Benefits

- Precise pressure control in the mbar range
- Accurate and reliable pressure control
- Positive shut-off seal

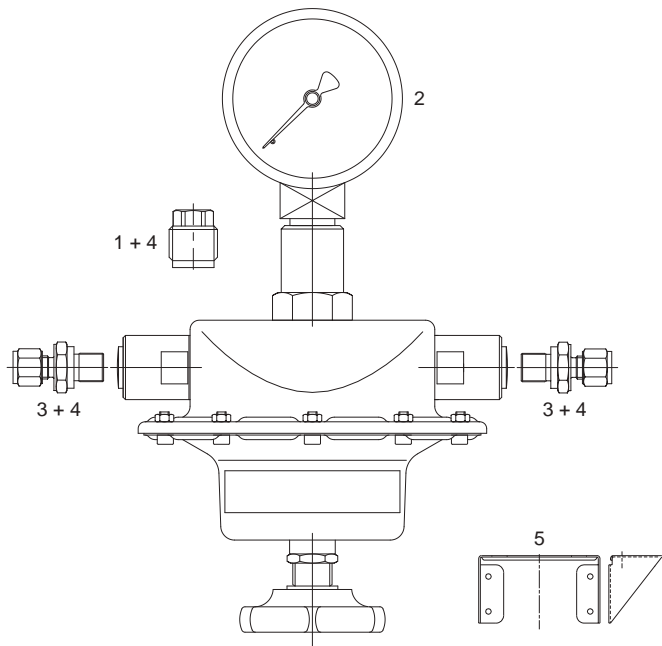
REGULUS 3

Regulus 3 Regulator Drawing



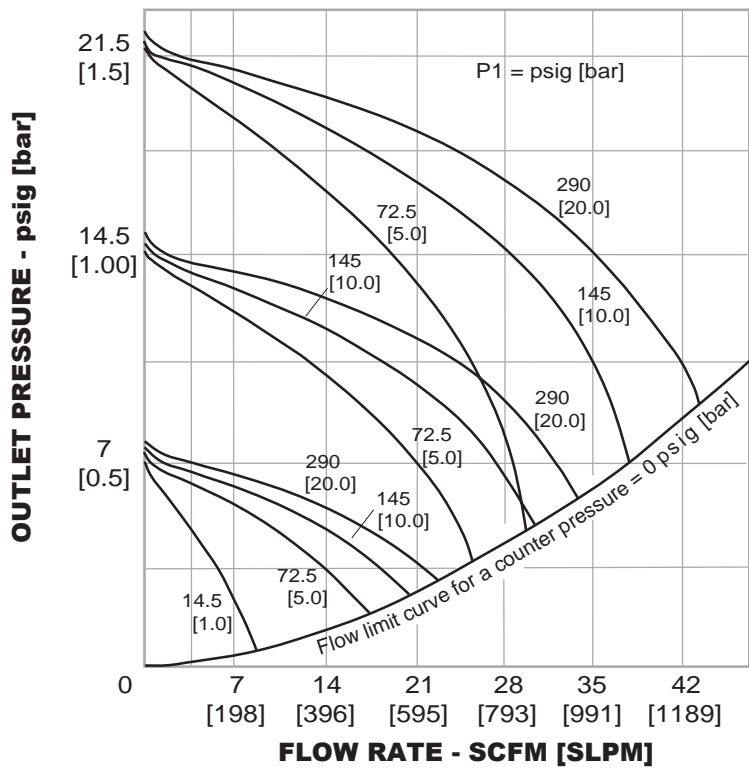
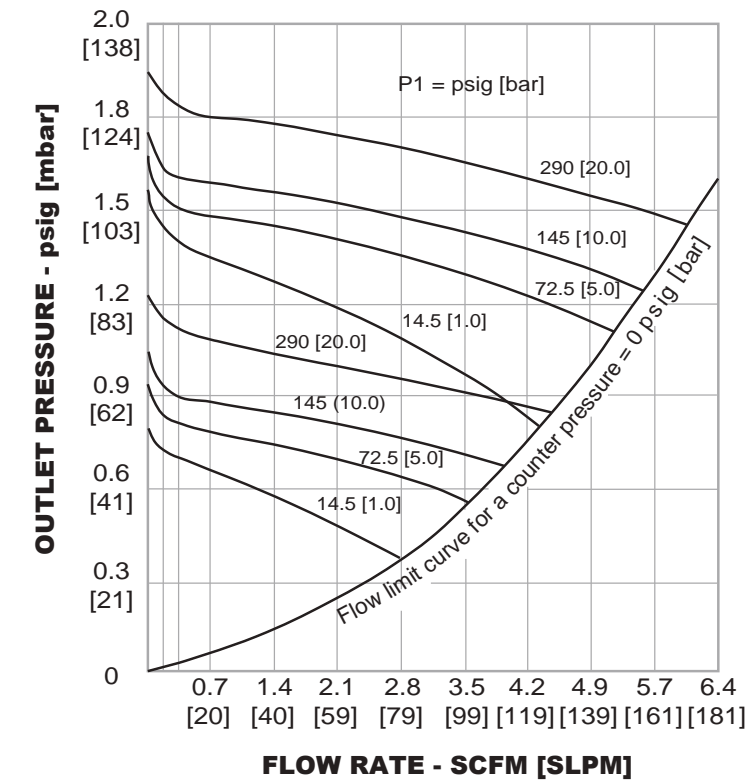
Accessories

| 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 (m³/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

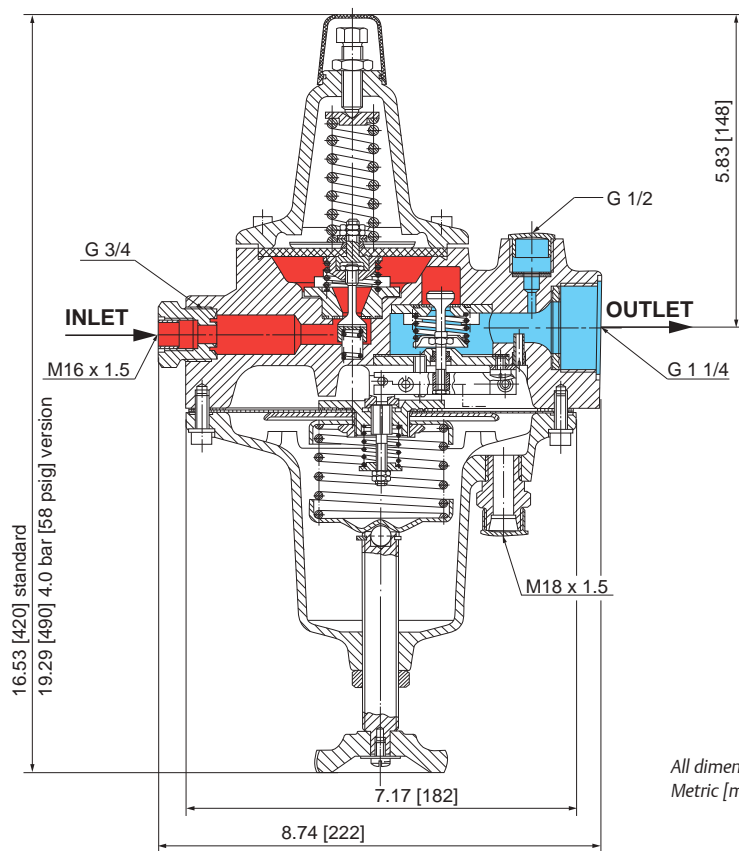
- Can be used as an in-line pressure reducer
- Suitable for non-corrosive gases
- Suitable for Oxygen service
- Commonly used in production testing

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

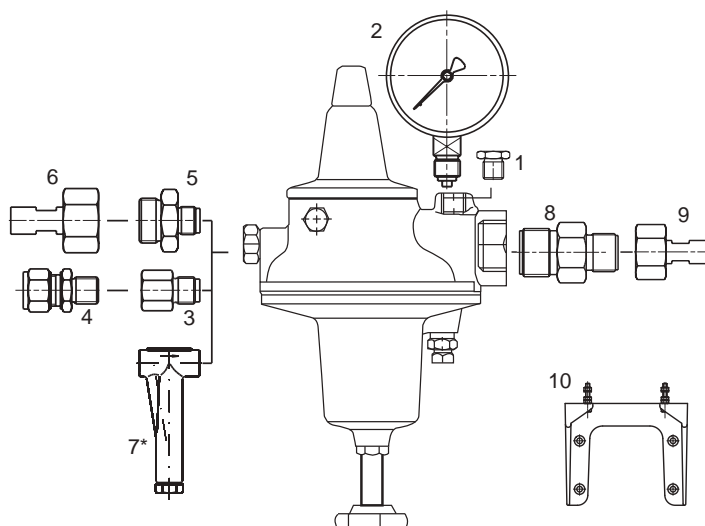
Regulus 4 Regulator Drawing



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

Accessories

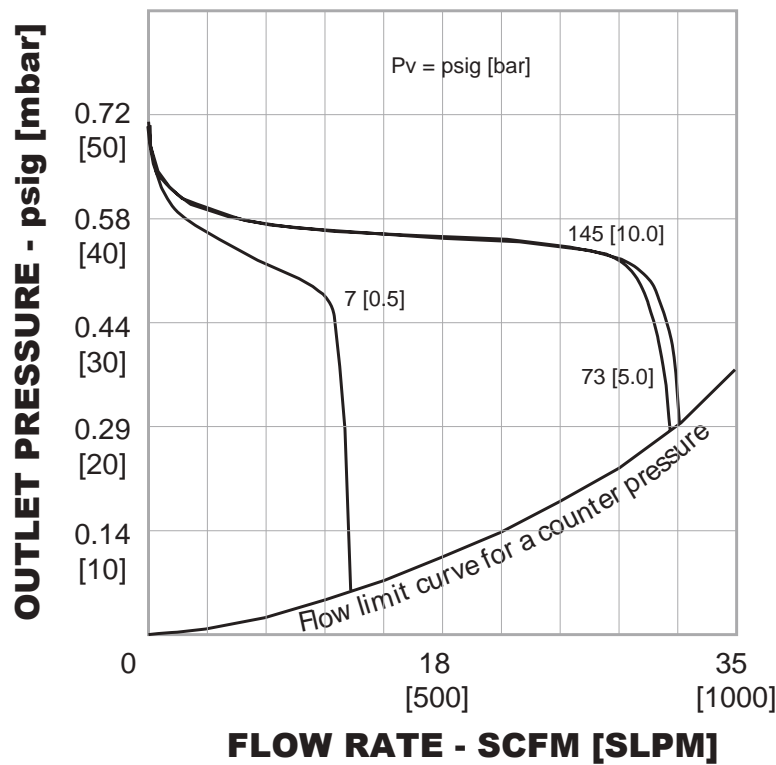
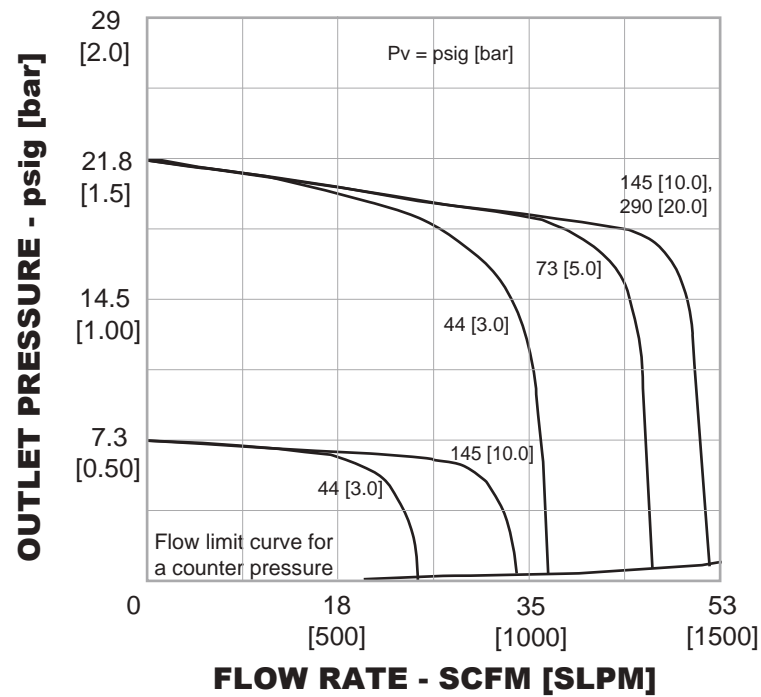
| Pos. | Part Number | Description |
|------|-------------|--|
| 1 | E08791 | Plug G 1/2" |
| 2 | 7232784 | Gauge Brass 100-60/50 mbar |
| 2 | 7232795 | Gauge Brass 100-60/50 mbar O ₂ |
| 2 | 7232786 | Gauge Brass 100-600/500 mbar |
| 2 | 7232797 | Gauge Brass 100-600/500 mbar O ₂ |
| 2 | 7232788 | Gauge 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 | 0.07-0.73 psig / 5-50 mbar | 12 – Oxygen | | 00 – Without | | M – Gauge | |
| D42320 | 0.73-7.25 psig / 50-500 mbar | 15 – Non-flammable gases | | 24 – Adapter G 1 1/4" and | | --- – No gauge, | |
| D42840 | 2.9-22 psig / 0.20-1.5 bar | 16 – Flammable gases | | soldering connection for | | with plug G 1/2" | |
| D17880 | 14.5-58 psig / 1.00-4.0 bar | | | tube Ø 28 mm | | | |

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 m³/h

100 SLPM / 6 m³/h

150 SLPM / 9 m³/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

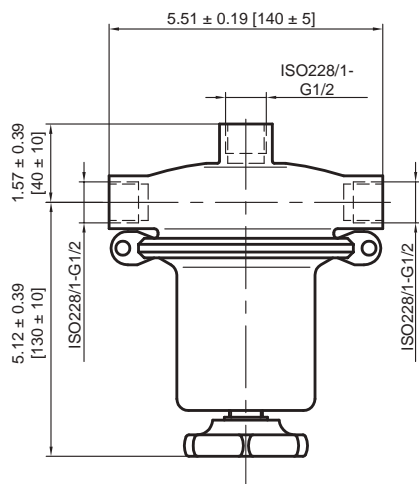
- For applications where very low outlet pressures are requested in combination with low to medium flows

Features and Benefits

- Regulation in mbar range without external energy
- Accurate and precise pressure control
- Flow up to 150 SLPM / 9 m³/h
- Positive seal design for leak-tight shut-off
- Gauge port is standard

REGULUS STAINLESS STEEL

Regulus Stainless Steel Drawing



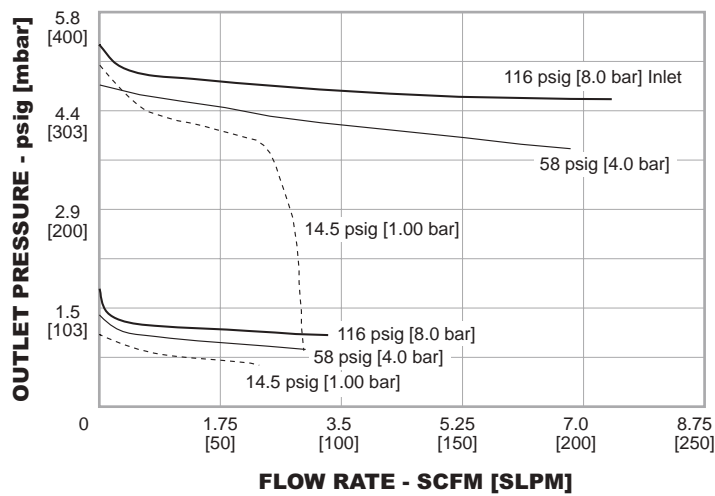
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 TESCO catalog or on www.tescom.com.



Regulus Stainless Steel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCO 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

$< 2 \times 10^{-8}$ atm cc/sec He / $< 2 \times 10^{-8}$ 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)

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.



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

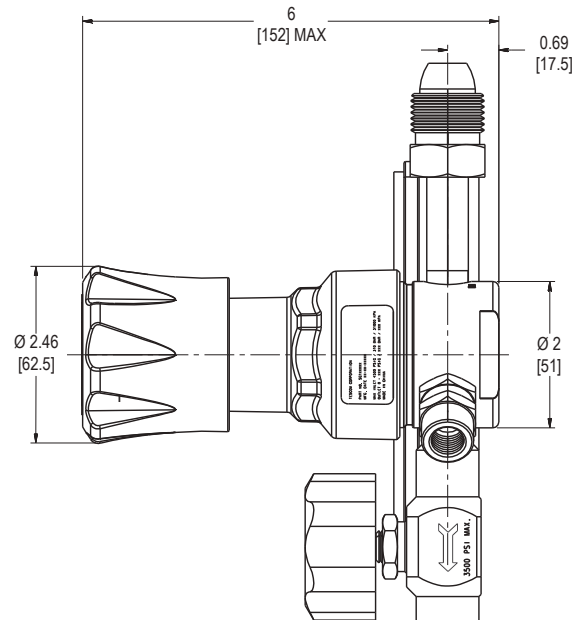
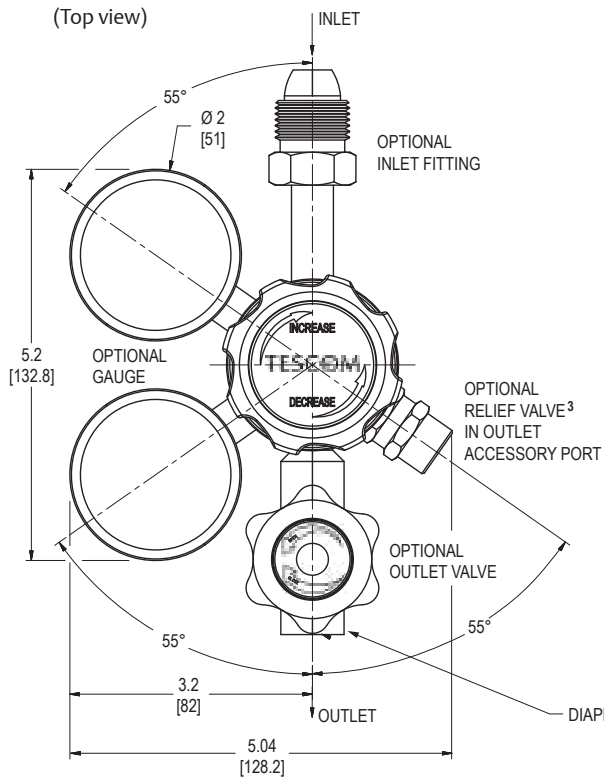
- Cartridge valve design incorporates a 10 micron filter that protects the regulator seat and makes service simple
- Optional neoprene diaphragm provides exceptional sensitivity for precise pressure control

SG1 SERIES

SG1 Series Regulator Drawing

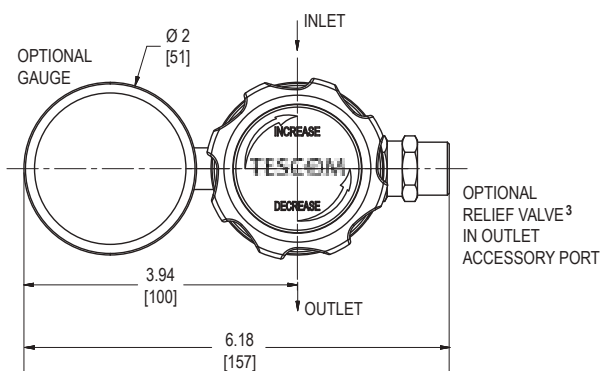
5 Ports

(Top view)

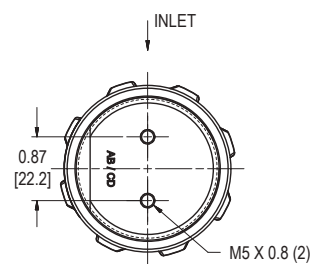


4 Ports

(Top view)



Bottom Mounting



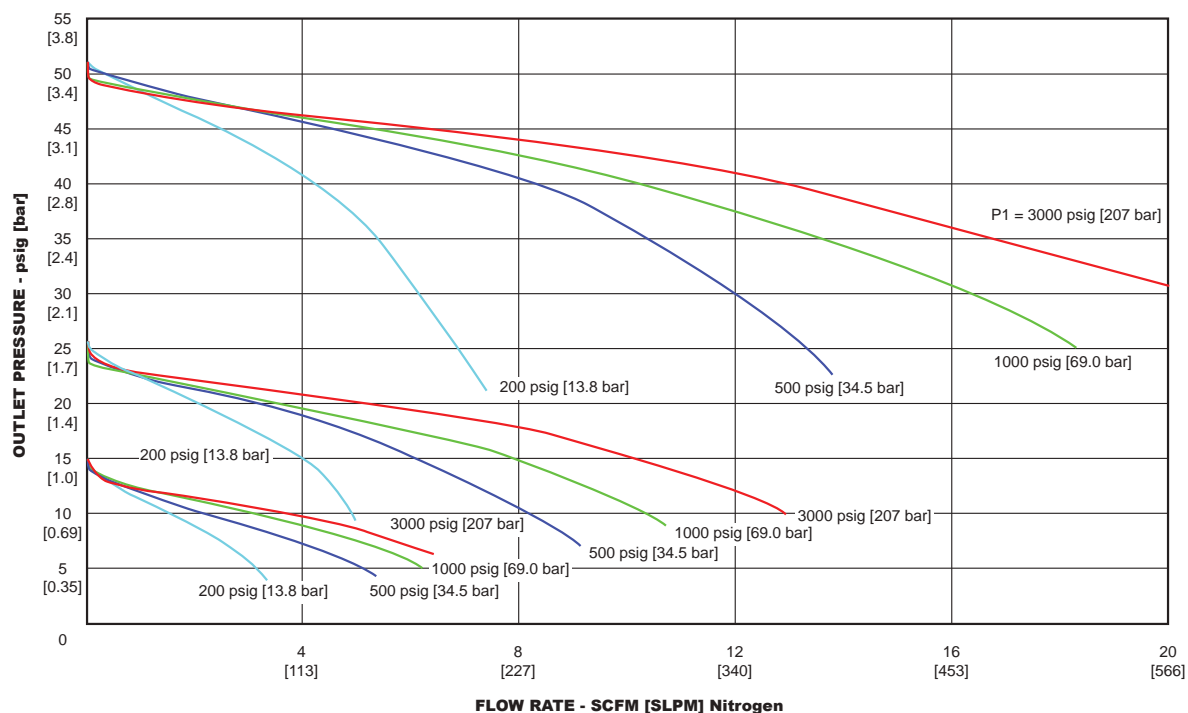
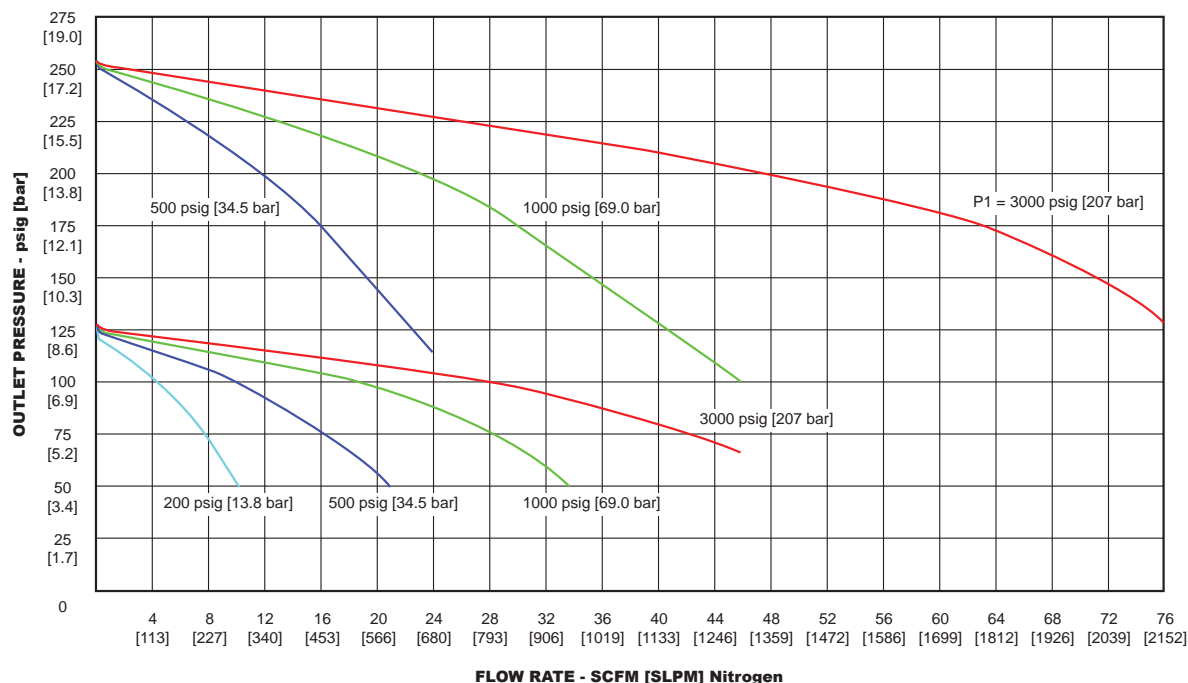
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 TESCO catalog or on www.tescom.com.

$C_v = 0.06$ Model

Metal Diaphragm



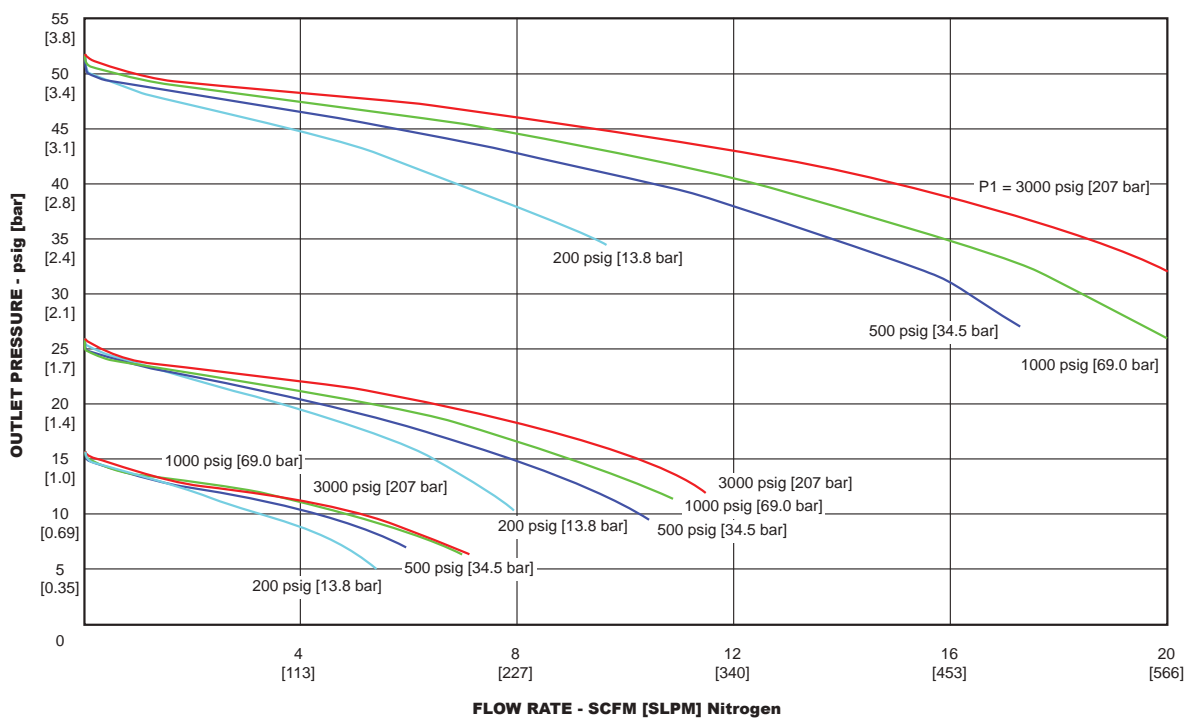
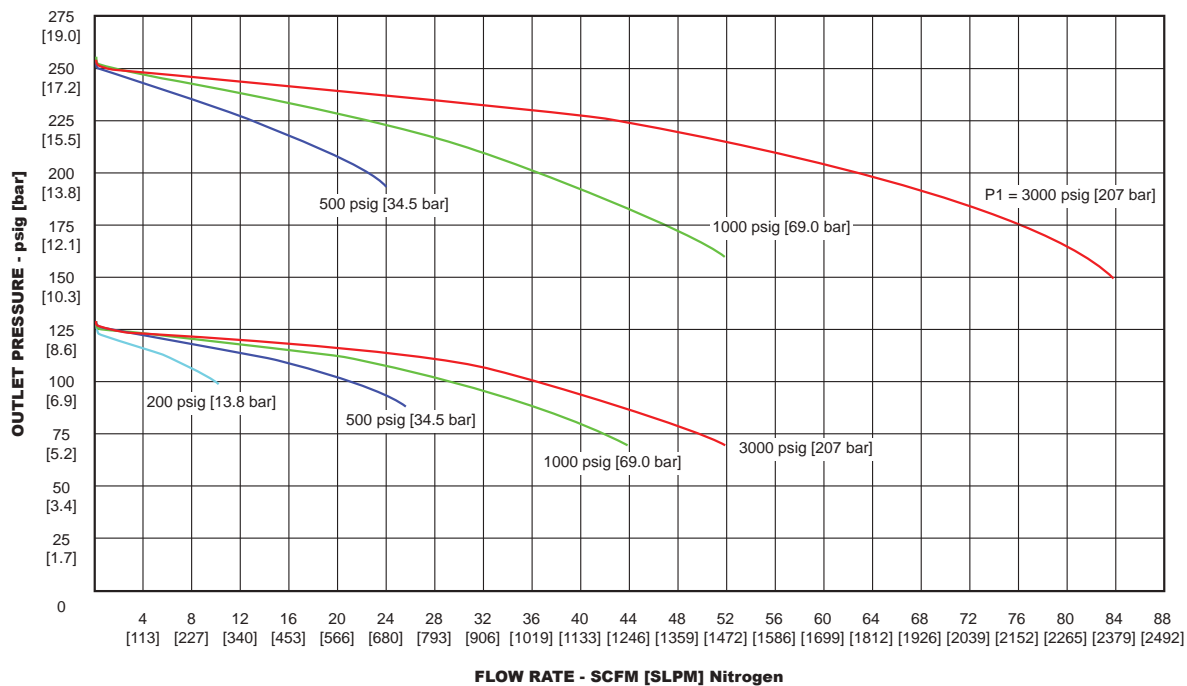
SG1 SERIES

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

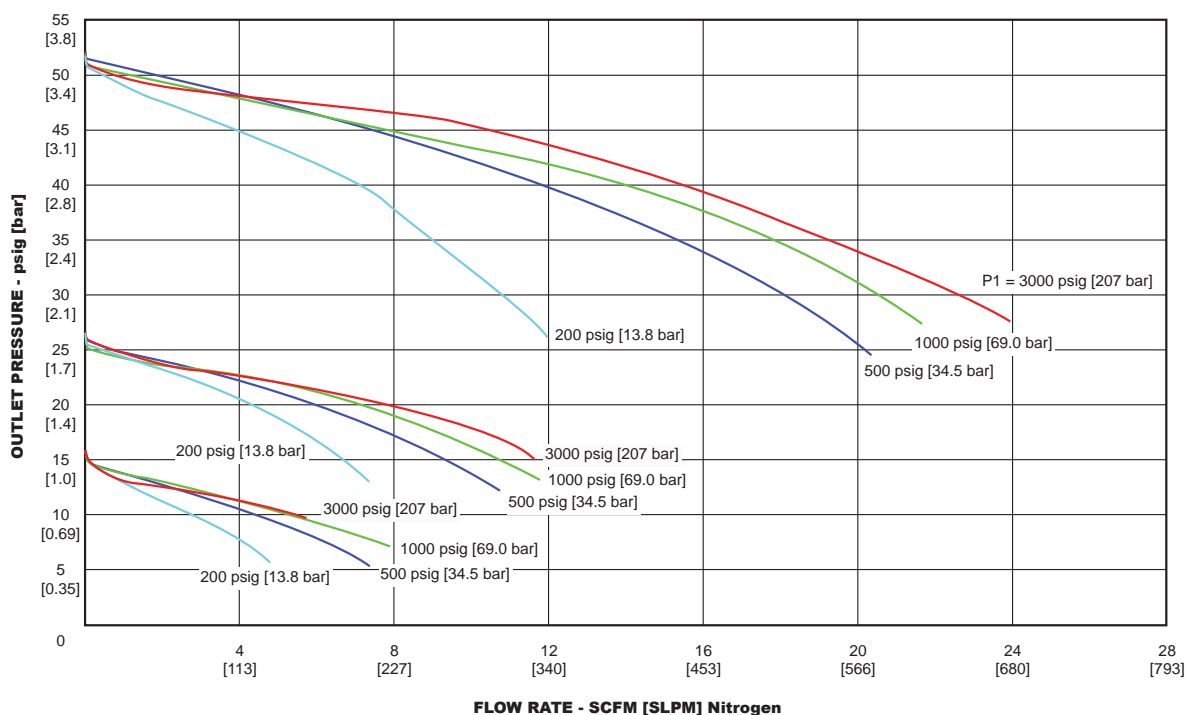
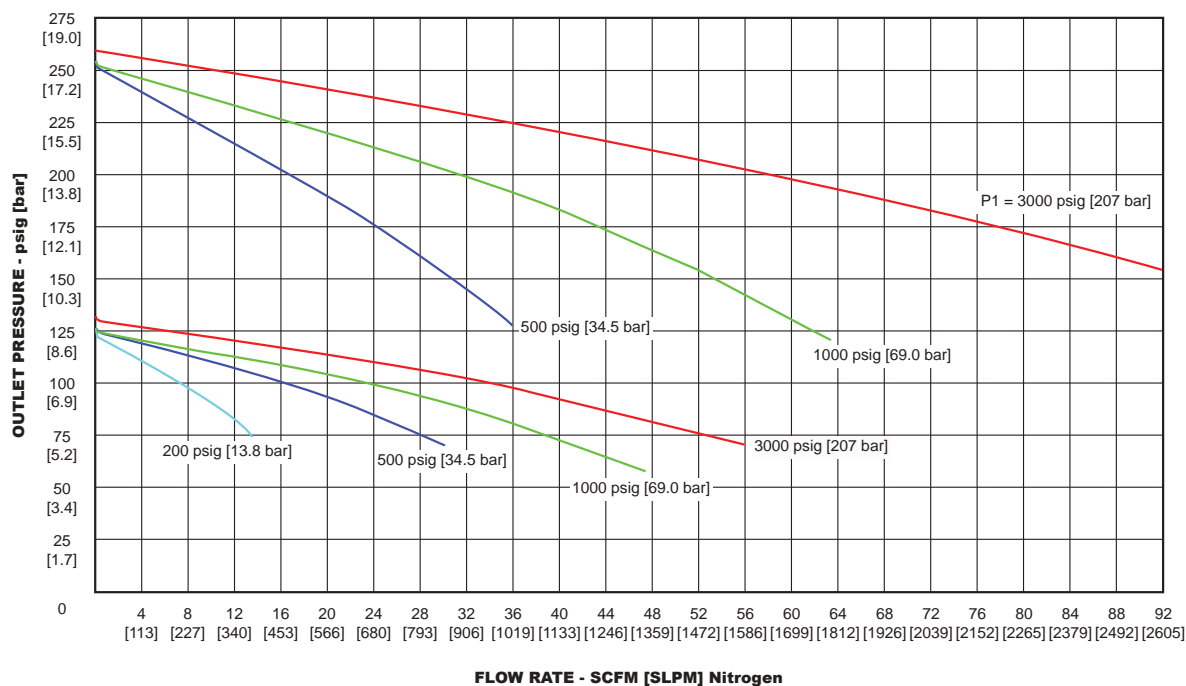


SG1 Series Regulator Flow Charts

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

C_v = 0.20 Model

Metal Diaphragm



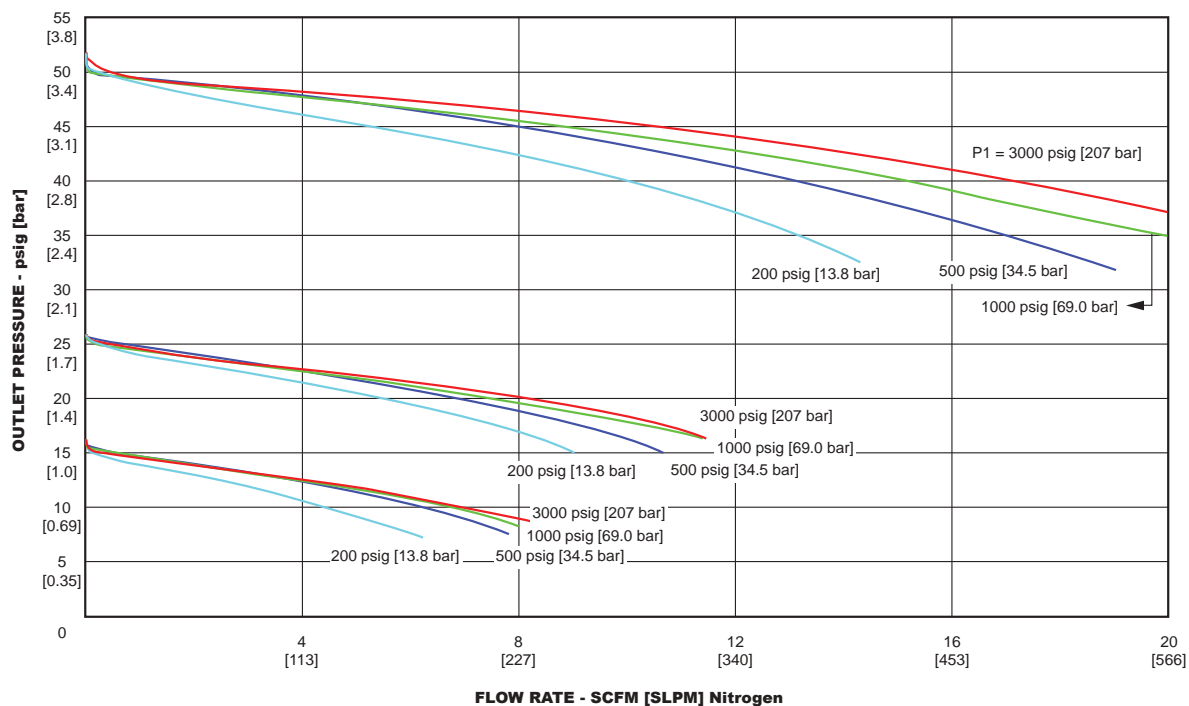
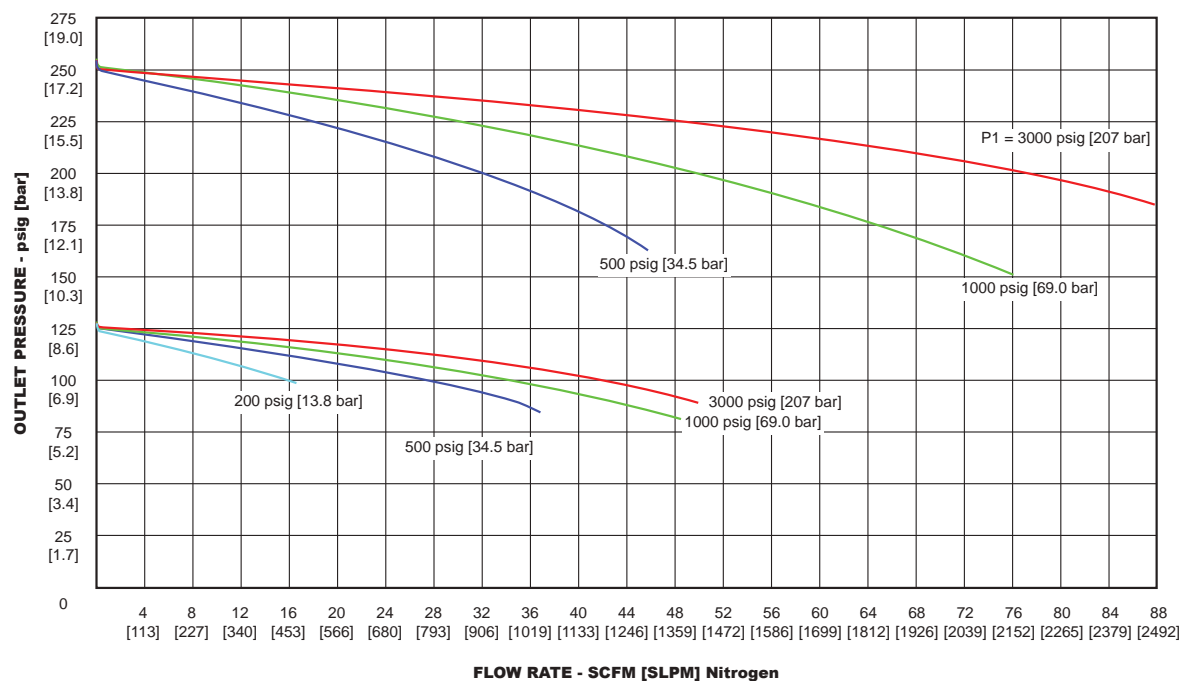
SG1 SERIES

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 4500 psig 31,026 kPa 310 bar 2 – 0.2 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 | 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.

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.

⁴GAUGE 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 TESCO.

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 $< 2 \times 10^{-8}$ 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

Teflon® and Vespel® are registered trademarks of E.I. du Pont de Nemours and Company. Meldin® is a registered trademark of Saint-Gobain.

*Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)

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 TESCO customer support further assistance.



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

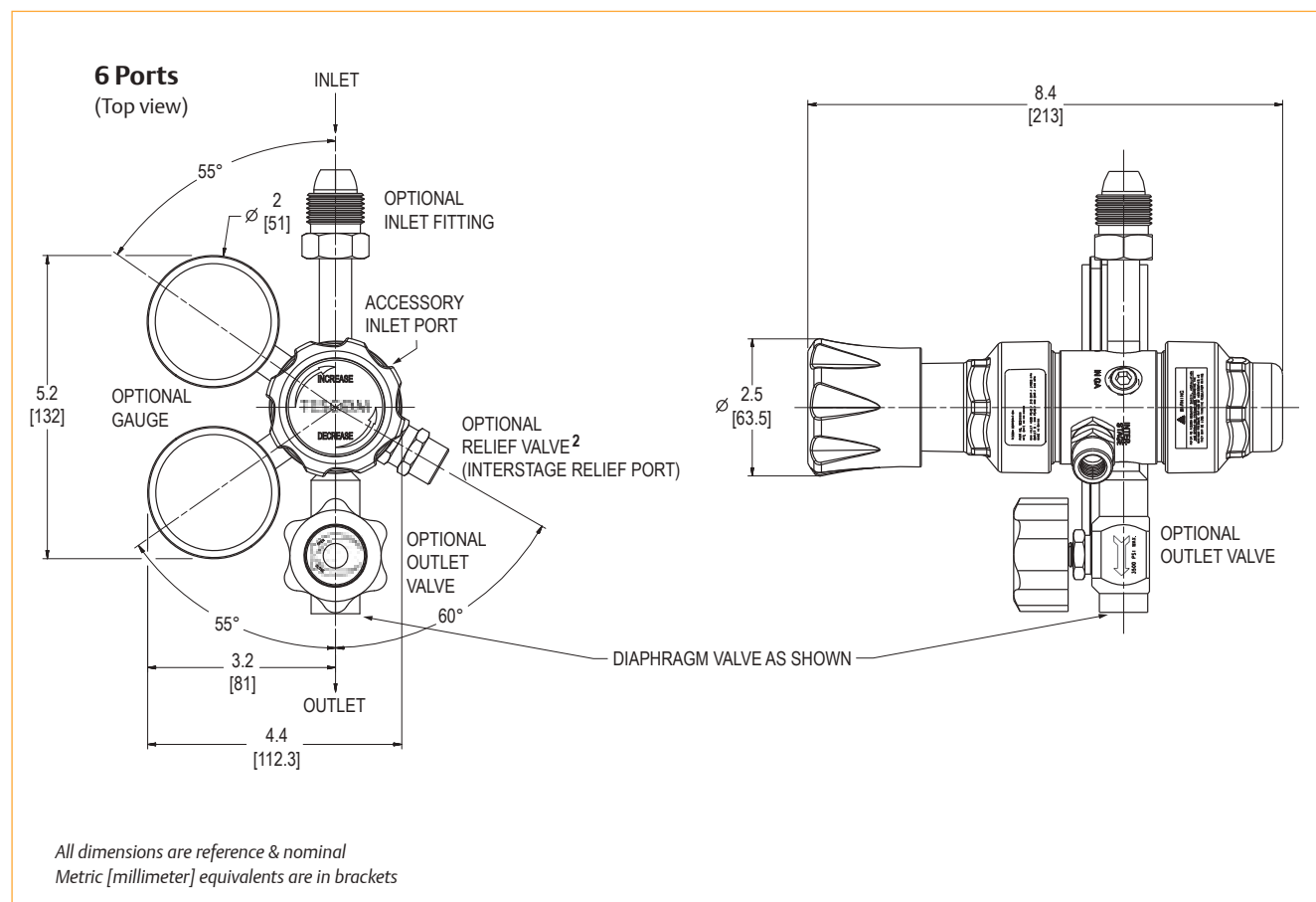
- Laboratory and Point-of-Use Gas Systems in medical, pharmaceutical, food and beverage and other high purity applications
- Process analyzer gases, metal fabrication and specialty and industrial gas cylinders

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

SG2 SERIES

SG2 Series Regulator Drawing

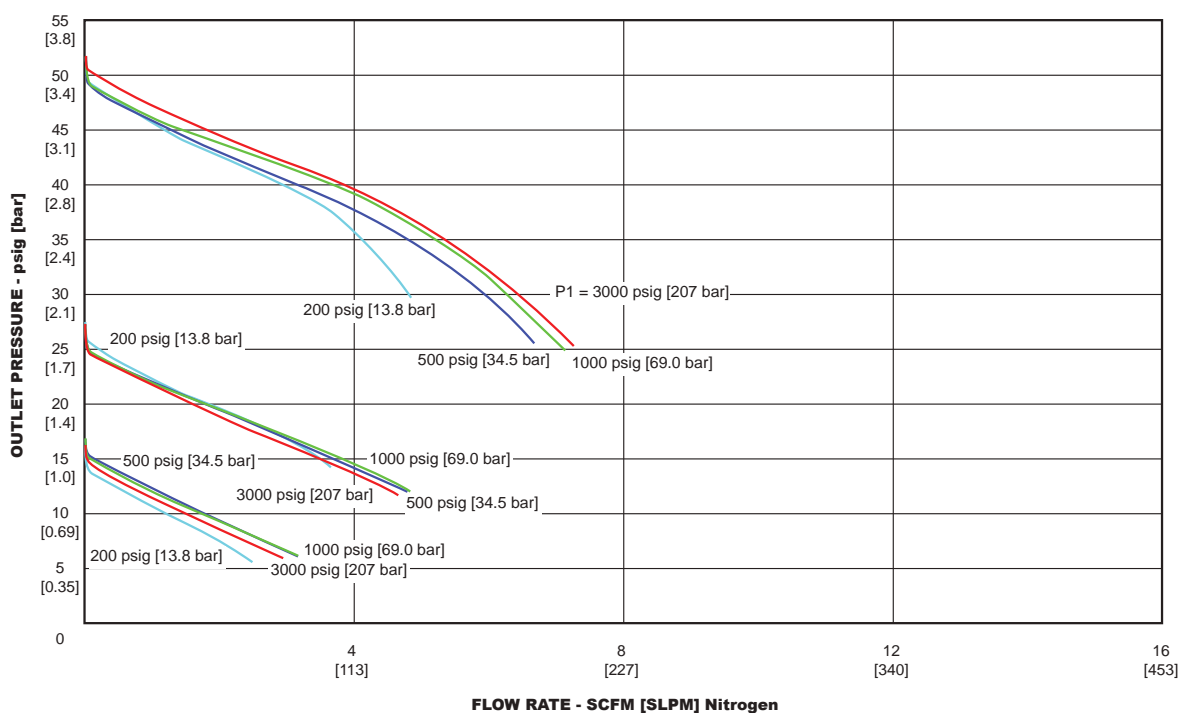
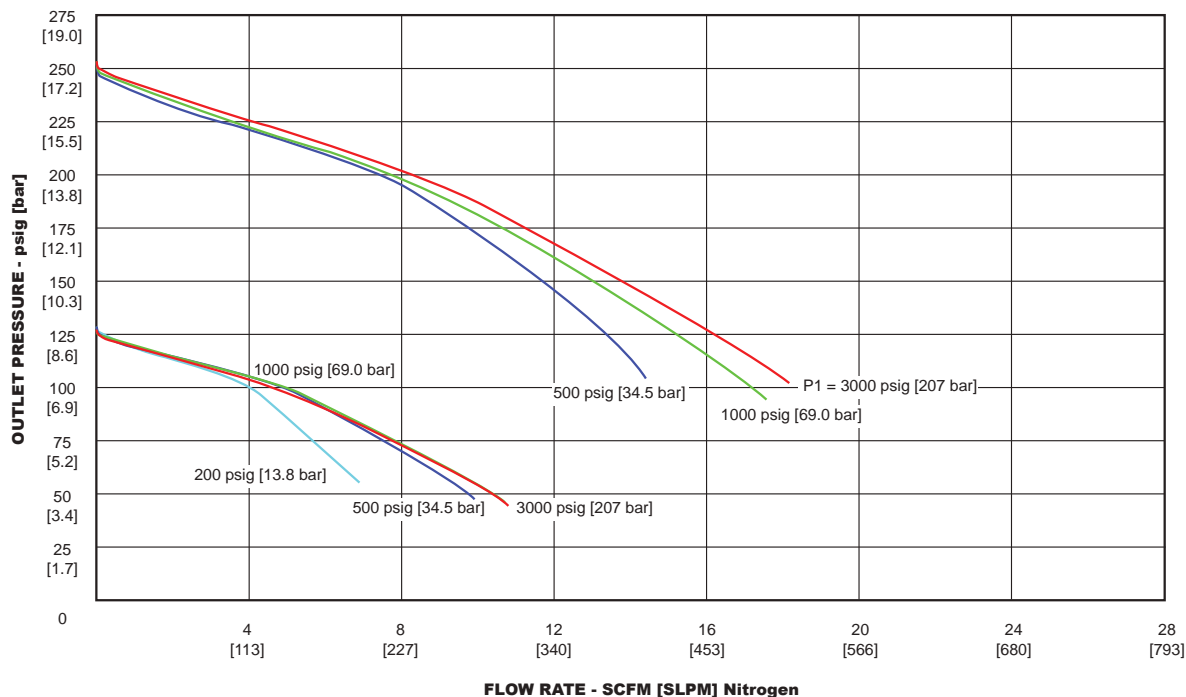


SG2 Series Regulator Flow Charts

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



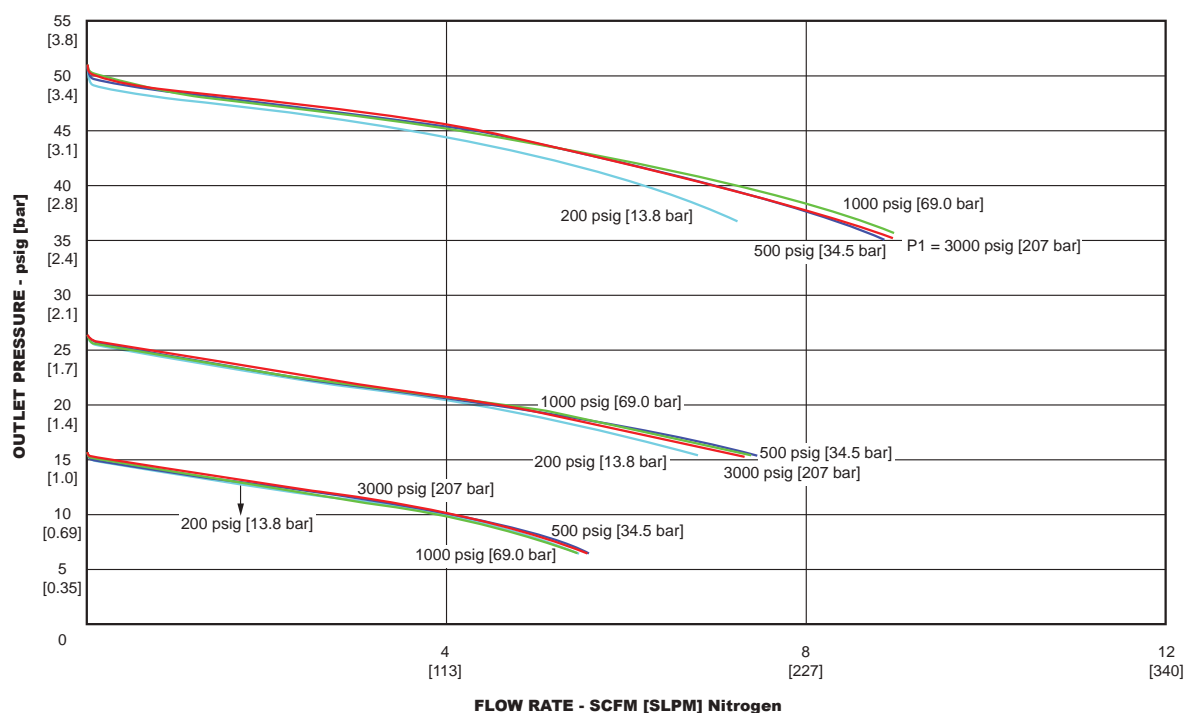
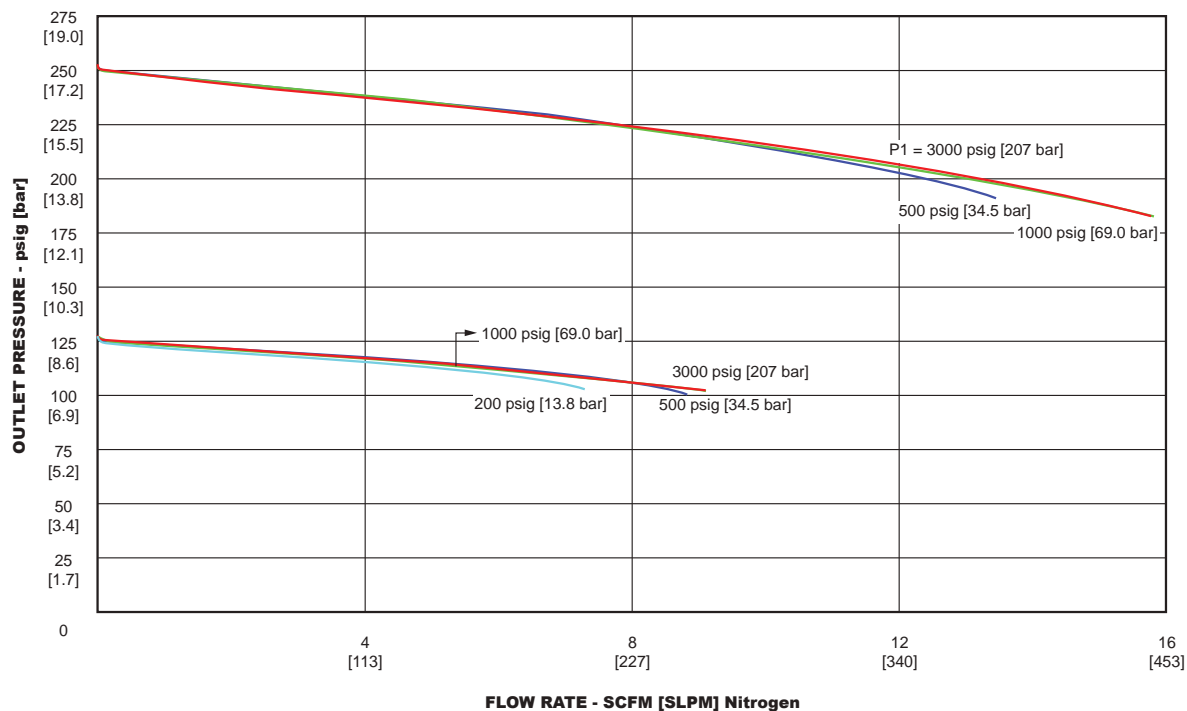
SG2 SERIES

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

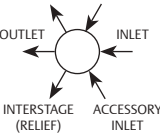


SG2 Series Regulator Part Number Selector

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) | 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 |

Accessories

1. Per ASTM D 6456-99 Type II Class 1M (Meldin® 7021 or Vespel® SP-21)

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.

³GAUGE 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 |

Regulators - Pressure Reducing

DSG032033X012

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 $< 2 \times 10^{-8}$ 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.

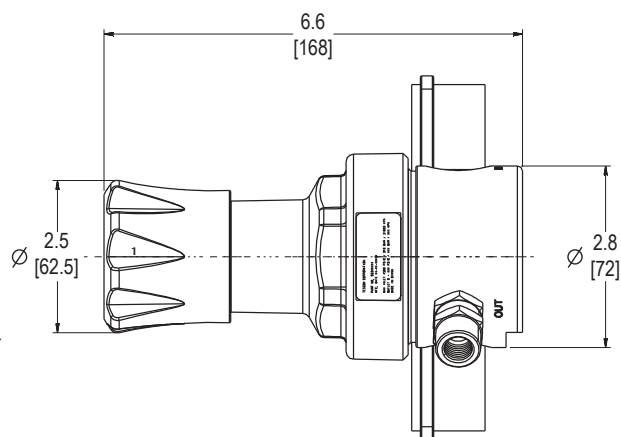
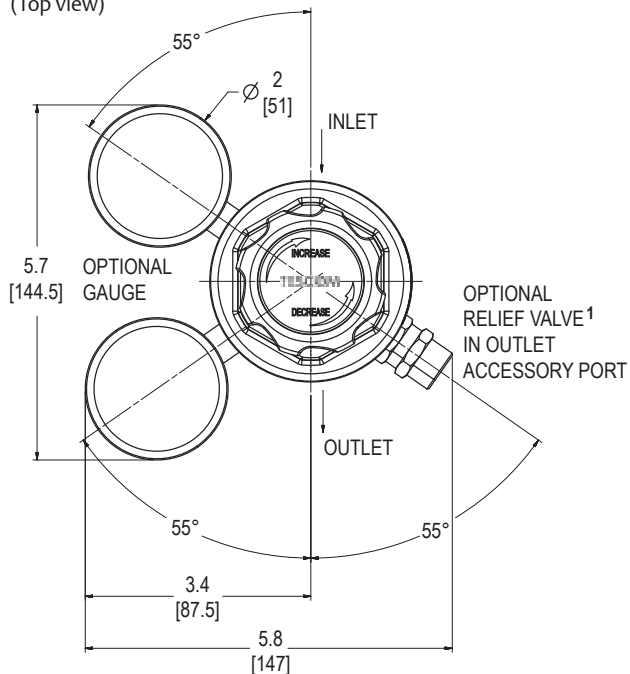
For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCOM customer support further assistance.

SG3 SERIES

SG3 Series Regulator Drawing

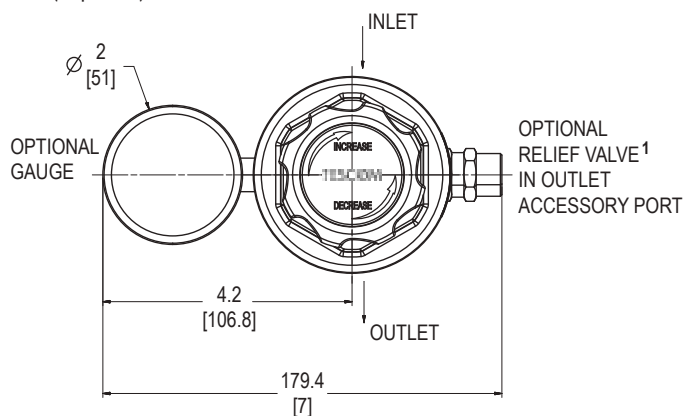
5 Ports

(Top view)

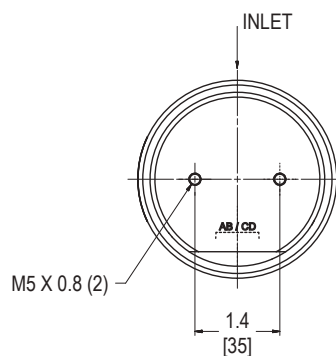


4 Ports

(Top view)



Bottom Mounting



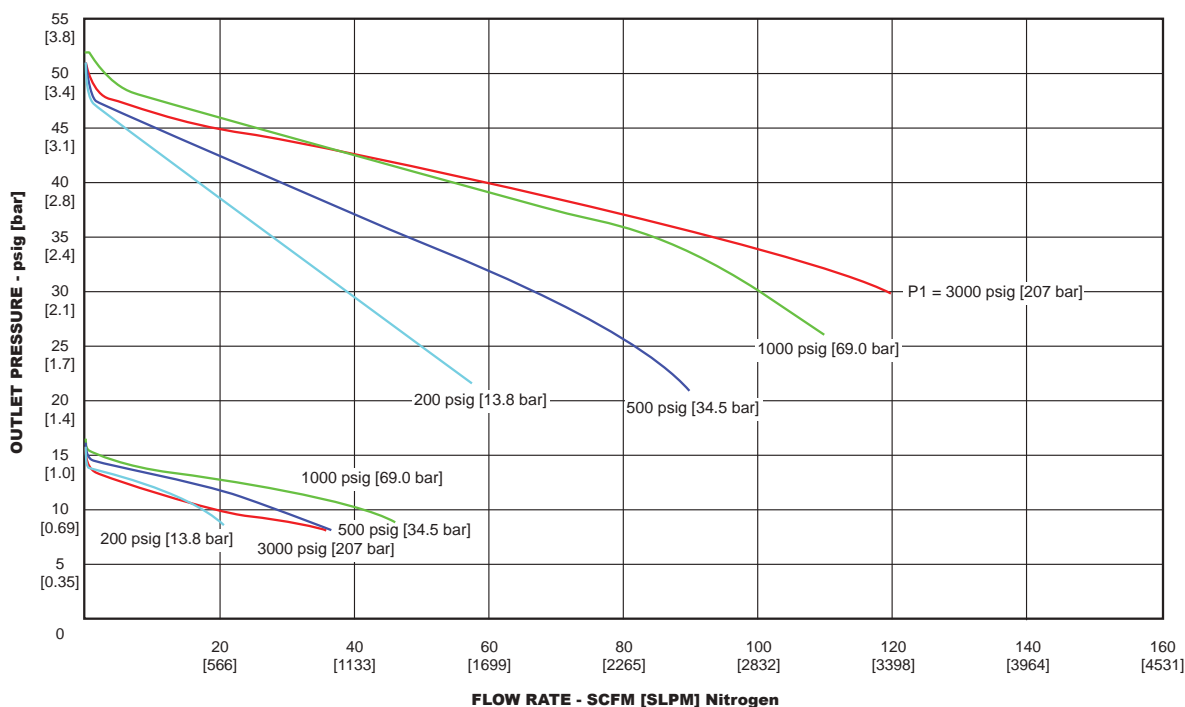
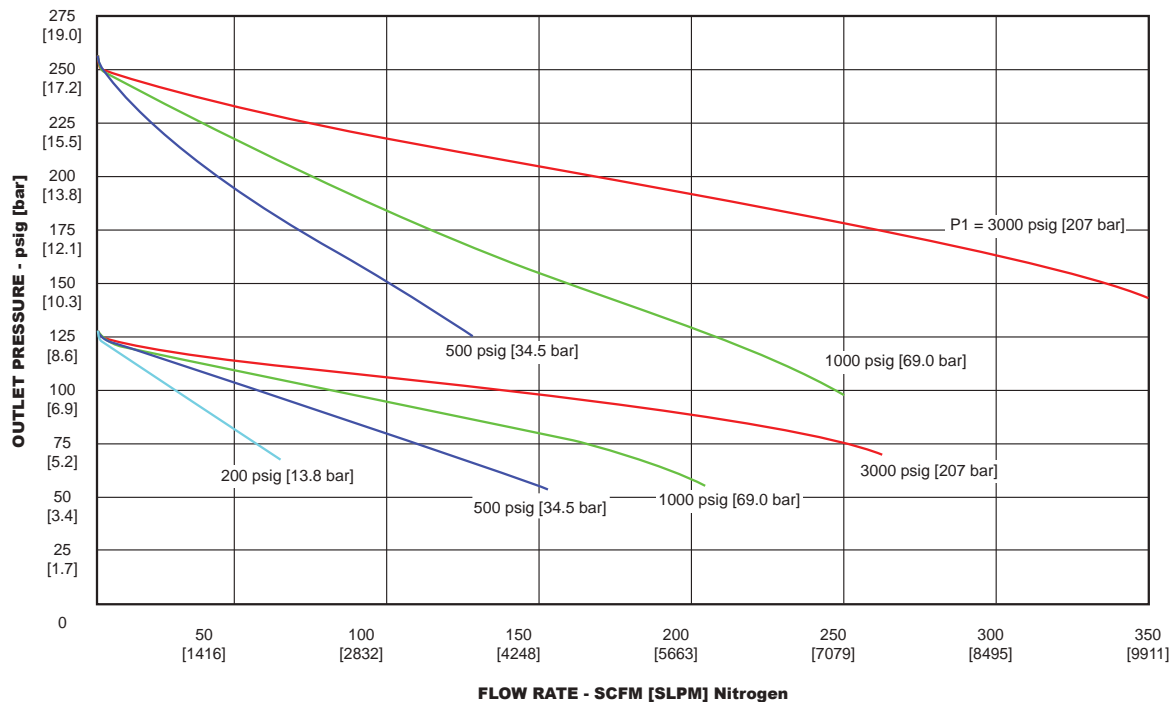
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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



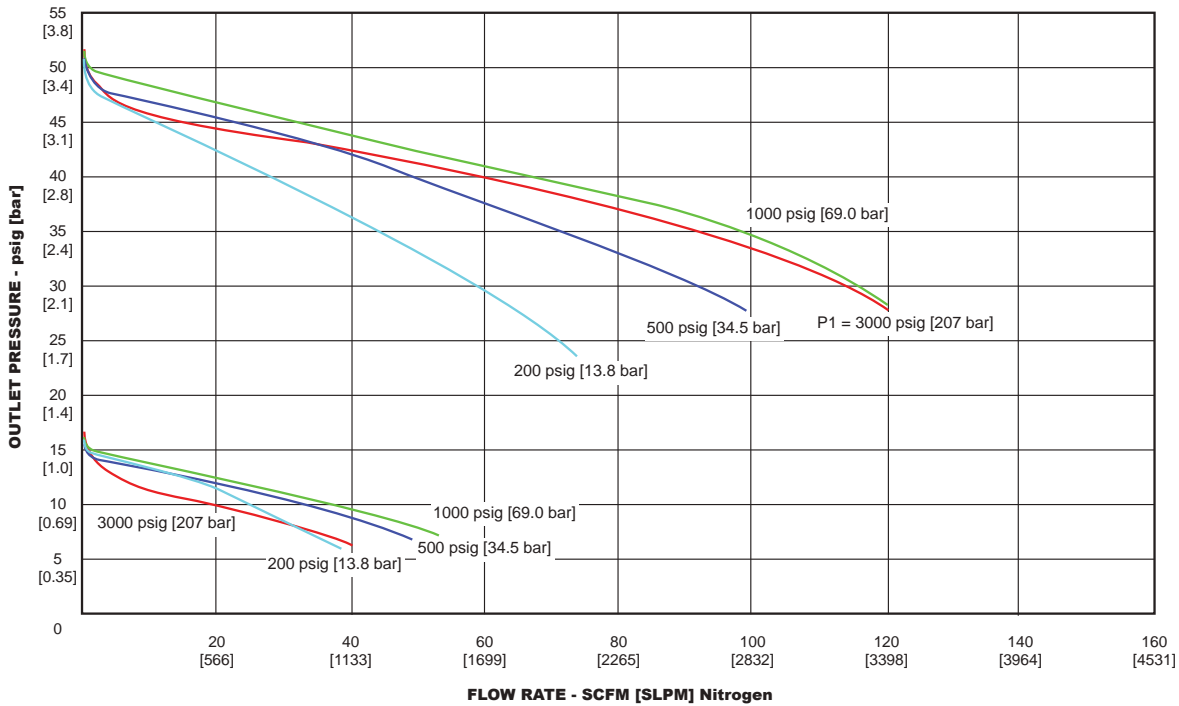
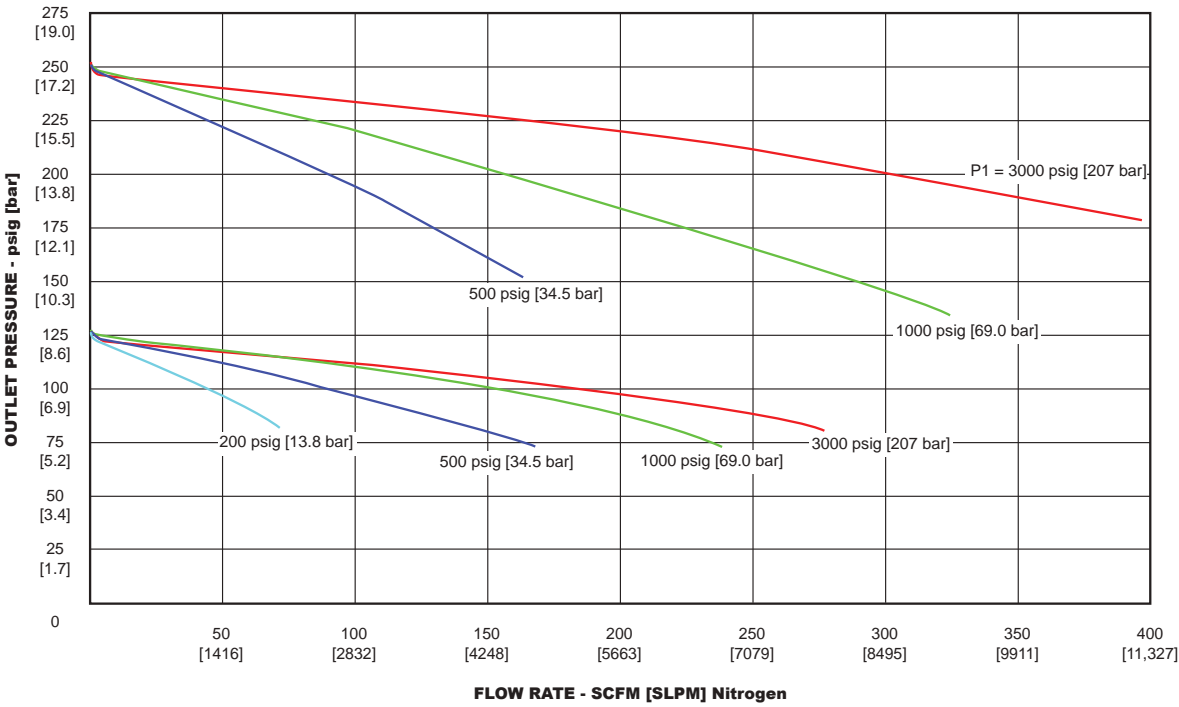
SG3 SERIES

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



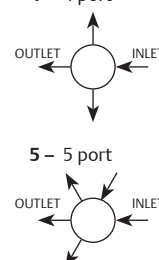
SG3 Series Regulator Part Number Selector

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) |
| 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 $< 2 \times 10^{-8}$ 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 (Elgiloy®)

Remaining Parts

316 Stainless Steel

OTHER

Connections

1/4" NPTF inlet, outlet, and vent ports

Weight (without gauges)

2 lbs / 0.9 kg

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

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

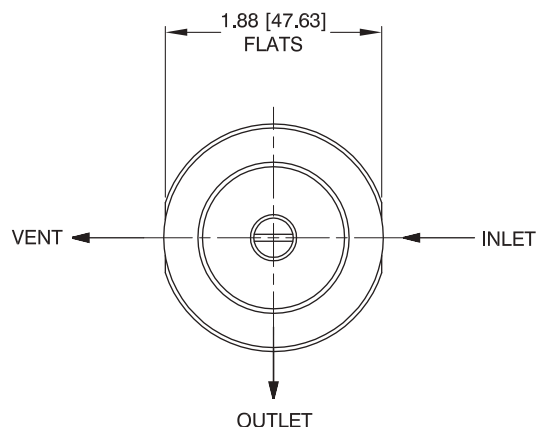
- Dual mechanical seal differential pressure control

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

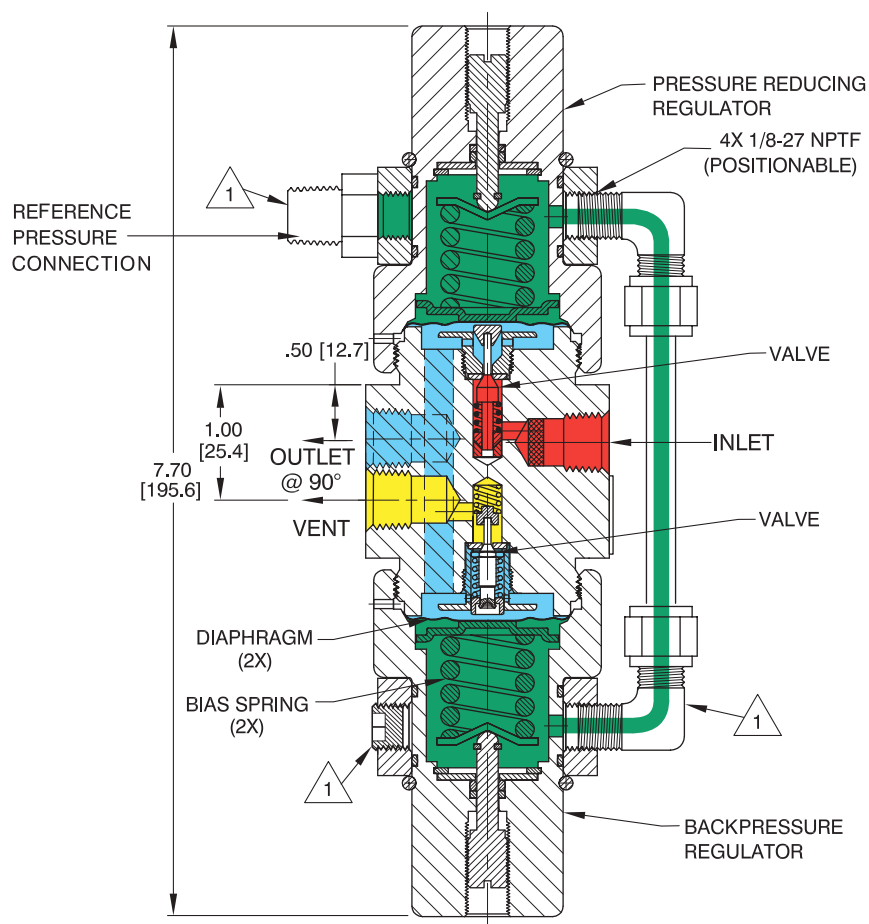
SJS SERIES

SJS Series Regulator Drawing



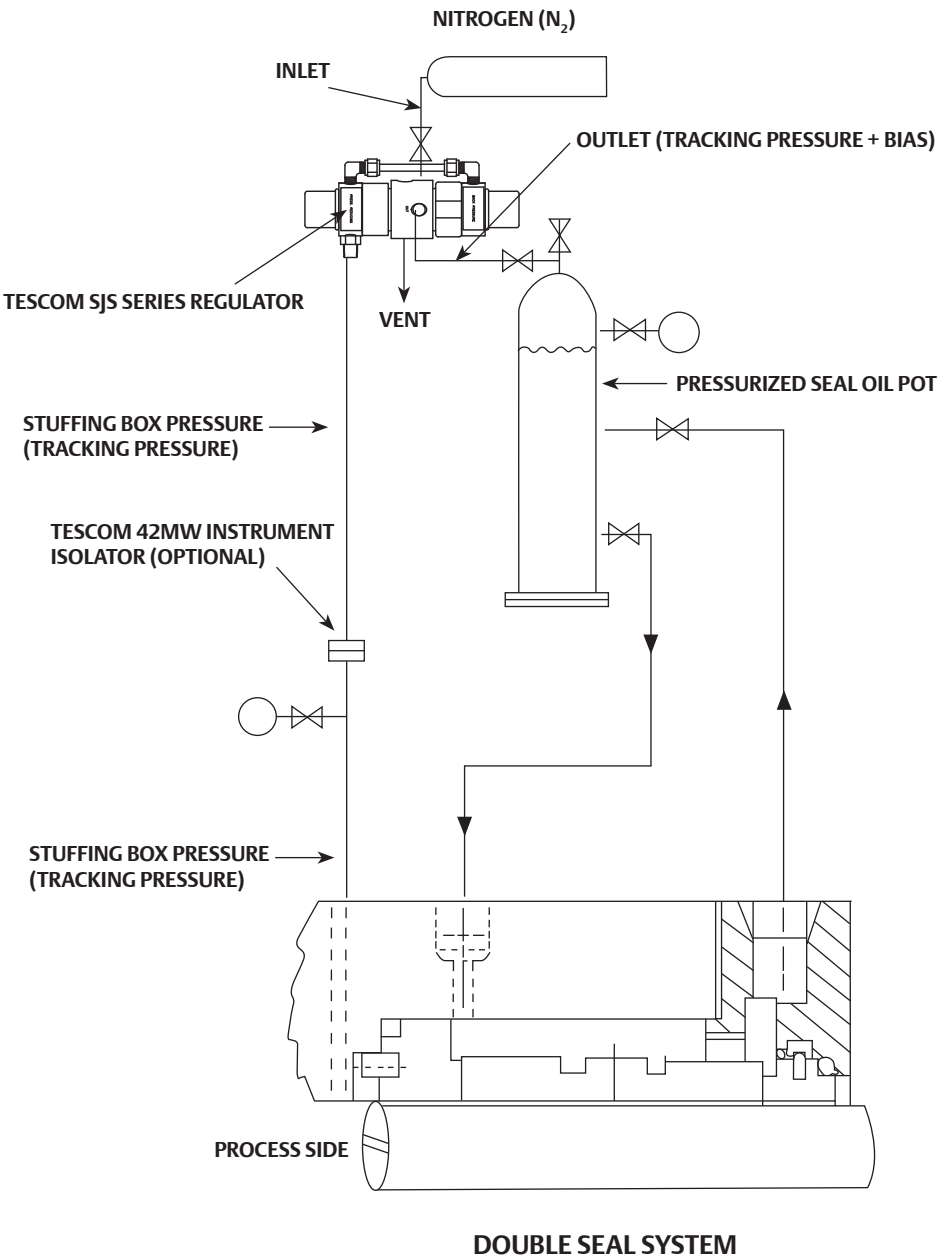
NOTE:

1 INCLUDED WITH FITTING OPTION



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

SJS Series Typical Application




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 (Vespe®) 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 TESCO.

FLUID MEDIA

Non-corrosive gases and gas mixtures up to 6.0 (99.999 Vol %) purities
Stainless Steel versions for calibration gases with NH₃, SO₂, 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 m³/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



WEGA 1



WEGA 2

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 NH₃, SO₂, or NO content

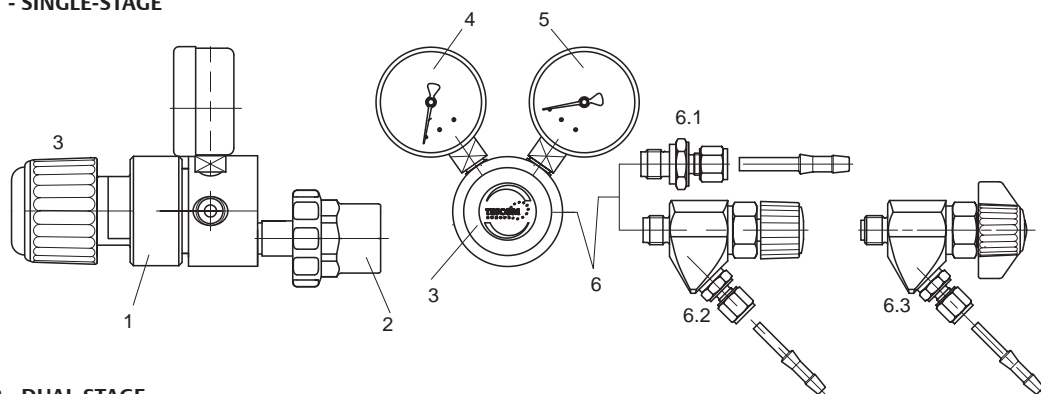
Features and Benefits

- 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

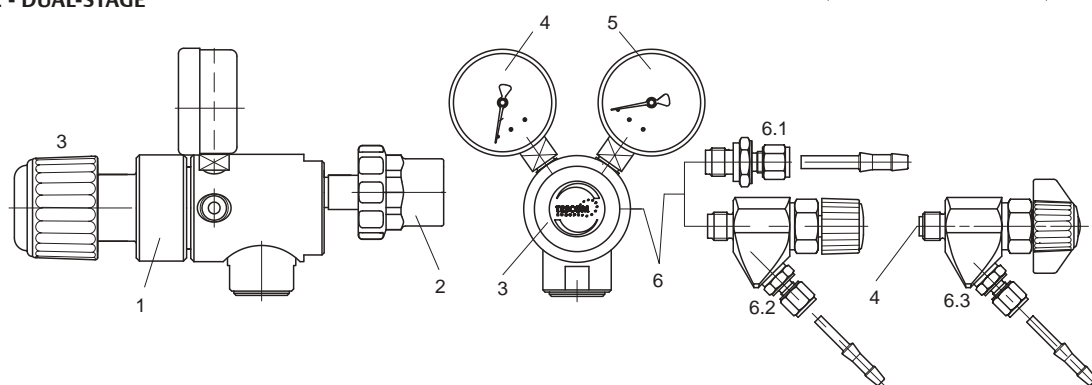
WEGA 1 & 2

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

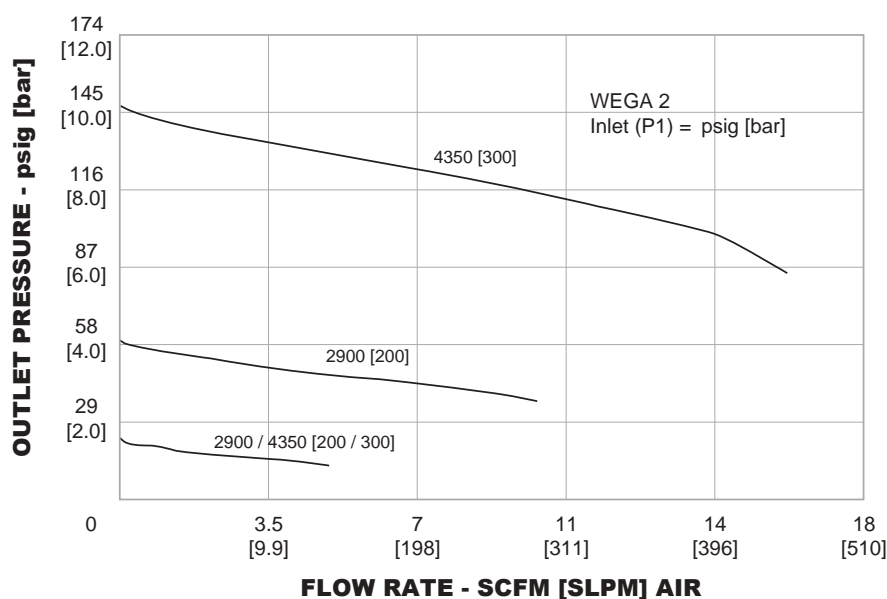
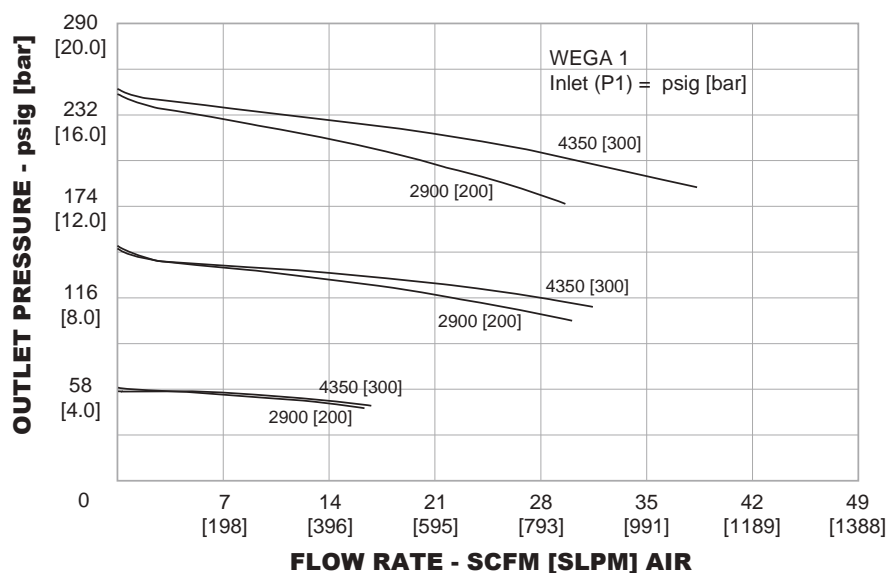
6.1 - COMPRESSION FITTING

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 TESCO 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 | Available inlet connectors / Cylinder valve standards: | | | 00 – G 1/4" female | 1 – 1.5-22 psig*** / 0.10-1.5 bar | |
| D45176 - WEGA 2 dual-stage, Nickel-plated Brass | DIN 477-1- 2900 psig / 200 bar | Germany | | 05 – 6 mm fitting, with 6 mm hose connector | 2 – 7.3-58 psig / 0.50-4.0 bar | |
| | DIN 477-5- 4350 psig / 300 bar | Germany | | 08 – 8 mm fitting, with 8 mm hose connector***, * | 3 – 14.5-145 psig / 1.00-10.0 bar | |
| D45173 - WEGA 1 single-stage, Stainless Steel | NEN 3268 | Netherlands | | 44 – With diaphragm metering valve, 6 mm fitting, with 6 mm hose connector** | 4 – 29-290 psig**** / 2.0-20 bar | |
| | BS 341 | U.K. | | | | |
| D45179 - WEGA 2 dual-stage, Stainless Steel | AFNOR / NF E 29-650 | France | | 62 – With diaphragm shut-off valve, 6 mm fitting, with 6 mm hose connector | | |
| | CGA-V1 | U.S.A. | | | | |
| | UNI 11144 | Italy | | | | |
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- 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 | |

Specifications

For other materials or modifications, please consult TESCO.

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 m³/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

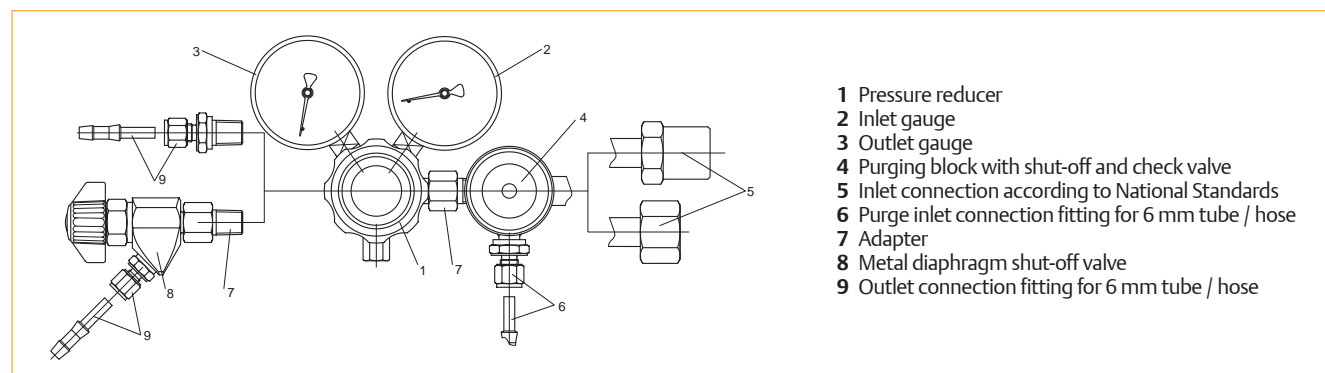
Features and Benefits

- 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

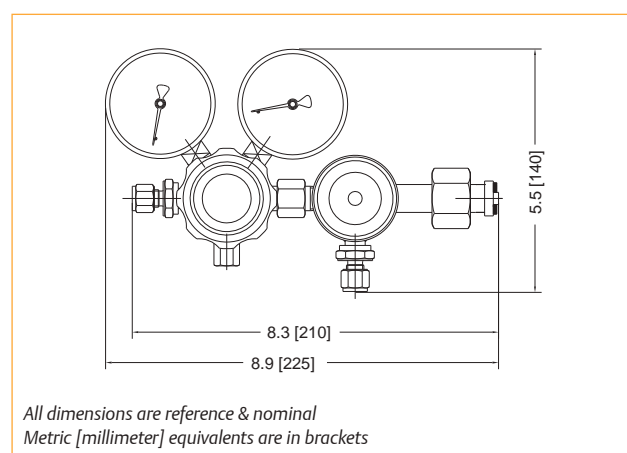
WEGA CORROSIVE GASES & PURGING

WEGA Corrosive Gases and Purging Regulator Drawing

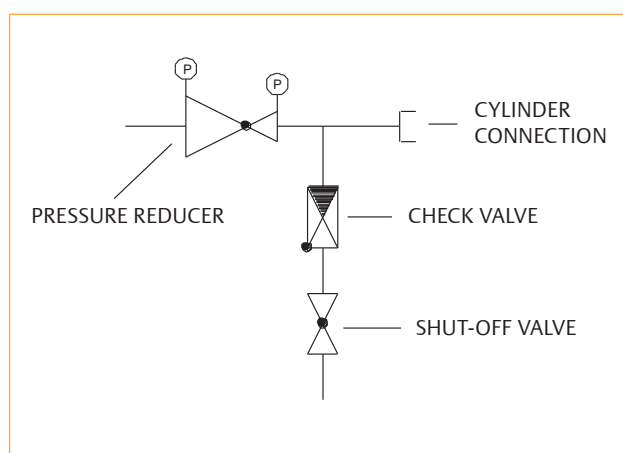
Assembly Drawing



Dimensional Drawing



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: | | | 00 – 1/4" NPTF Female | | A – 44-22 for NH ₃ , SO ₂ , NO and calibration gas | | 1 – 7.3-22 psig 0.50-1.5 bar | | Without – Hand tightening nut with O-Ring seal | |
| | 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 | | | 05 – 6 mm fitting with 6 mm hose connector | | C – 44-28 for CL ₂ , HCL, H ₂ S | | 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 | | K – Hexagon coupling nut, Stainless Steel, with flat gasket CL ₂ , HCL, NO, H ₂ S and calibration gas M – Monel Hexagon coupling nut, (available only for DIN connections number 6 and 7) | |
| | | | | 62 – Diaphragm shut-off valve with 6 mm fitting and 6 mm hose connector | | | | | | | |
| Note: For other standards, please consult TESCOM. | | | | | | | | | | | |

- 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, NH₃, SO₂ (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

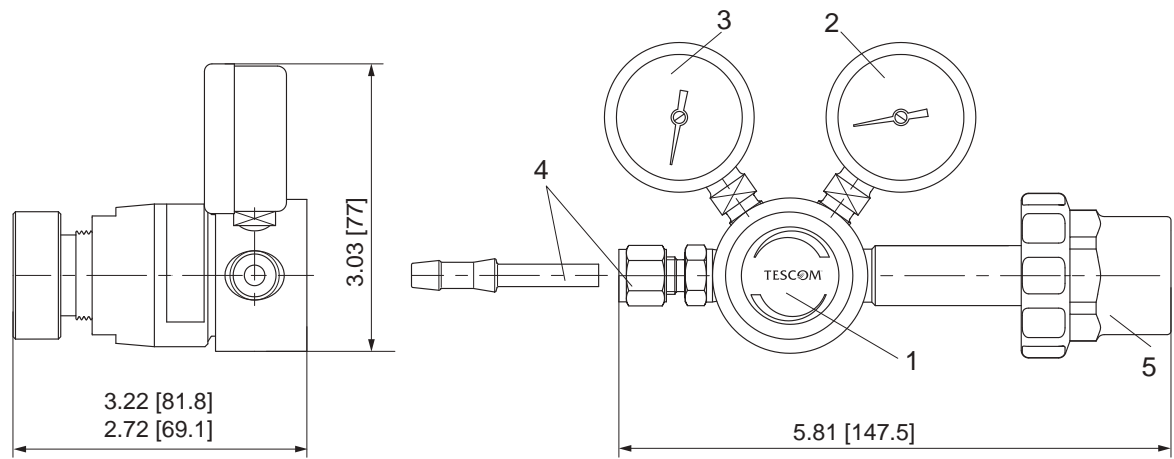
- Lecture bottles
- Mobile applications

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 TESCO.

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

2×10^{-8} atm cc/sec He

Nominal Flow Capacity

10 m³/h (according to pressure and used gas)

$C_v = 0.06$

$C_v = 0.15$

$C_v = 0.24$ 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.

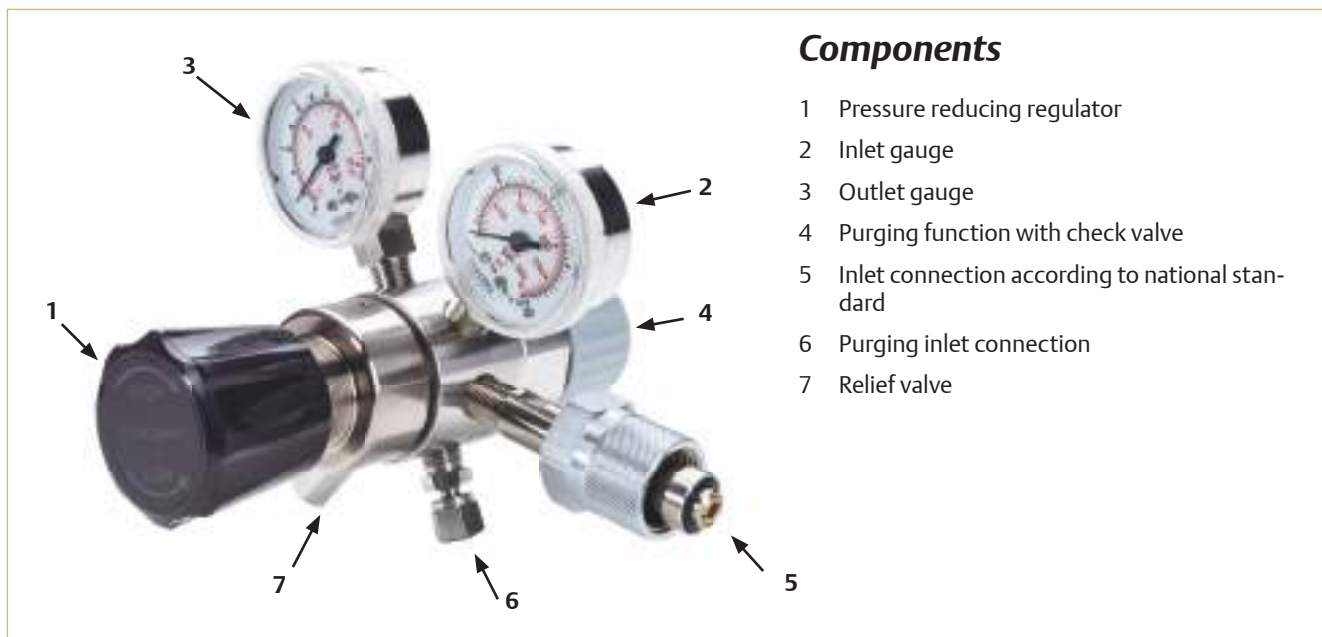
Features and Benefits

- 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.

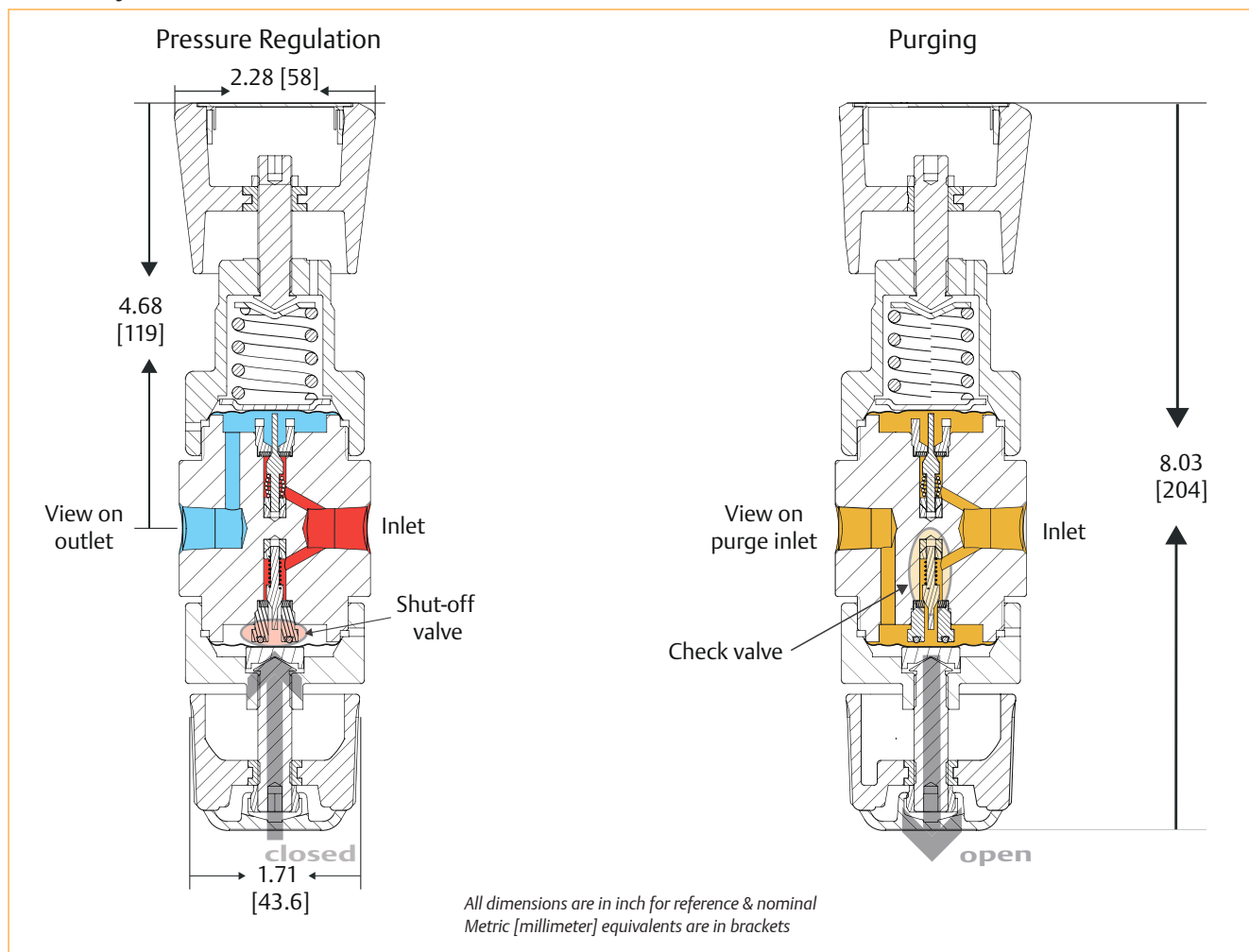
WEGA-SP

WEGA-SP with Integrated Purging Function

Assembly

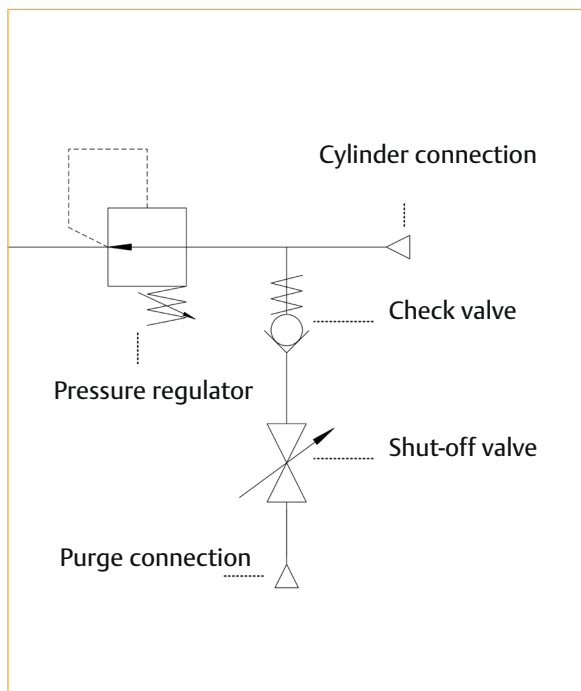


Assembly

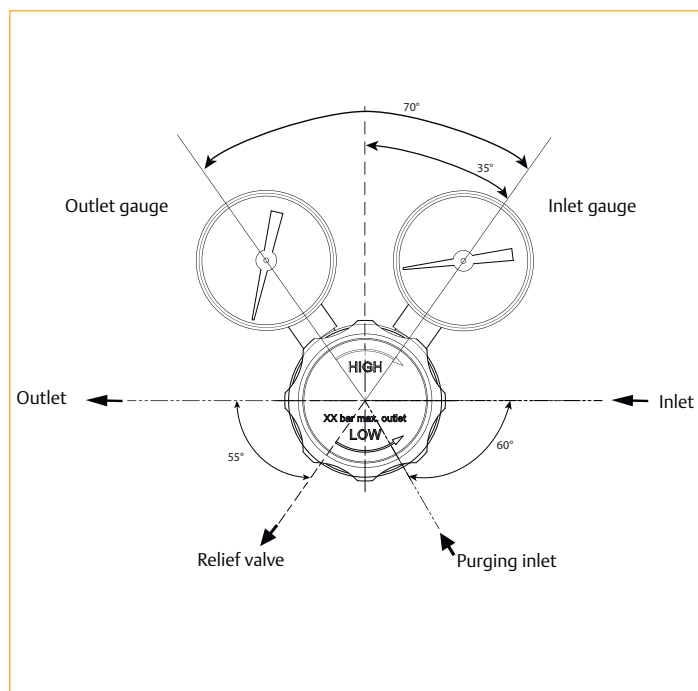


WEGA-SP with Integrated Purging Function

Functional Drawing

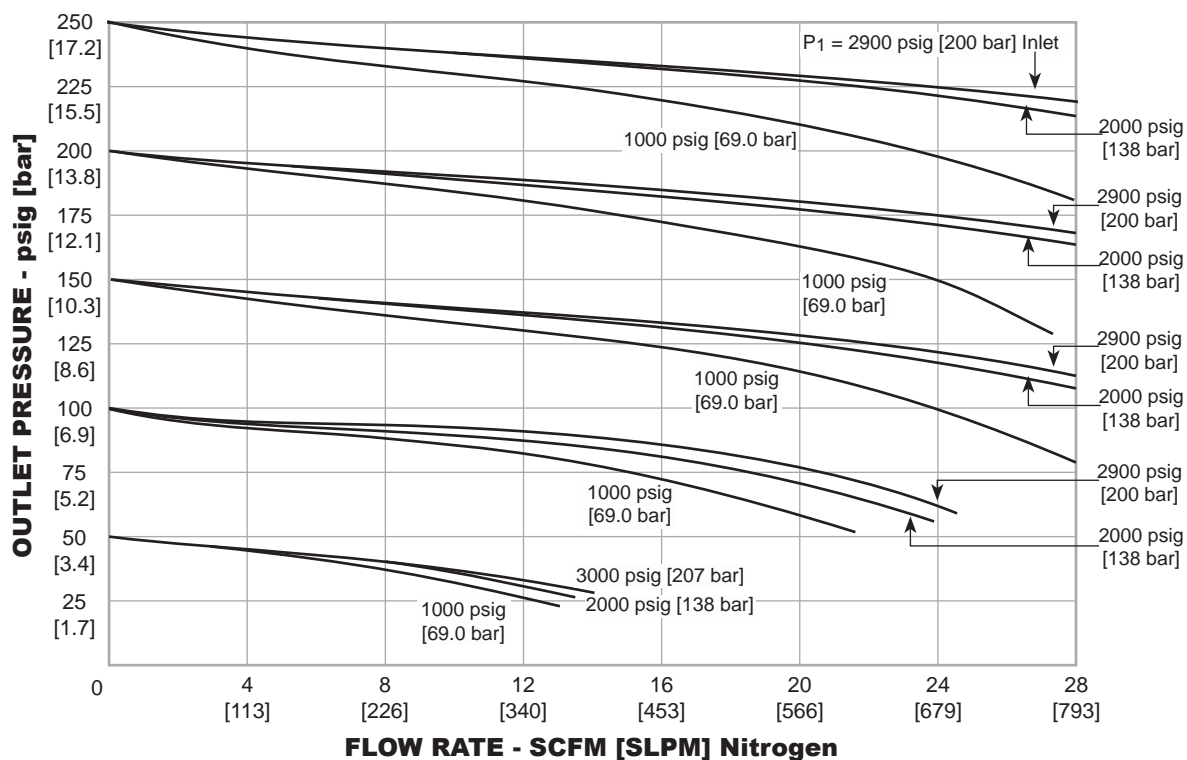


Connection Configuration



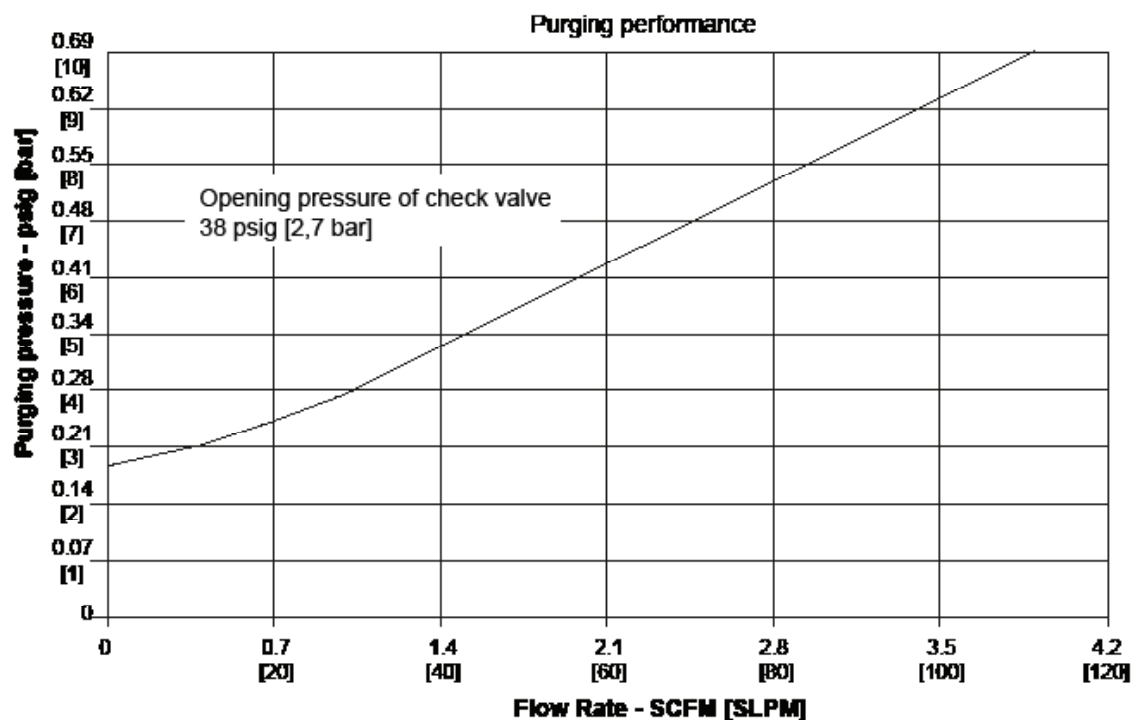
WEGA-SP with integrated Purging Function Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO 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 | | H – Hand connection with O-Ring-sealing ⁴ | | 17 – Test gas ¹ | | 00 – 1/4" NPTF female | | A – No Positive Seal | | 1– 0.5 - 1.5 [7.25 - 21.75] | | R – Relief valve and compression fitting for 6 mm OD tube (mandatory for Gas ID 17 & 18) | |
| | C – CGA V-1 | | K – Hex swivel nut, Stainless Steel, with flat seal | | 18 – Test gas with Ammonia-, sulfur dioxide- or hydrogen sulfide-content ¹ | | 05 – compression fitting for 6 mm OD tube | | B – Positive Seal (longer life for corrosive gases) | | 2– 0.5 - 4.0 [7.25 - 58.0] | | | |
| | D – DIN 477-1 | | | | 19 – Sulfur dioxide ² | | 08 – compression fitting for 1/4" OD tube | | | | 3– 1.0 - 7.0 [14.5 - 101.5] | | P – Plug | |
| | N – none (1/4" NPTF) | | N – none (1/4" NPTF) | | 20 – Ammonia ^{2, 3} | | 62 – Diaphragm shut-off valve with 6 mm compression fitting and 6 mm hose connector | | | | 4– 1.0 - 10.0 [14.5 - 145.0] | | | |
| | | | | | 21 – Hydrogen sulfide ² | | | | | | | | | |
| | | | | | 24 – Chlorine ² | | | | | | | | | |
| | | | | | 25 – Nitrogen monoxide ¹ | | | | | | | | | |
| | | | | | 26 – Hydrogen chloride ^{2, 3} | | | | | | | | | |
| 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 TESCO.

OPERATING PARAMETERS

Pressure rating per criteria of ANSI/ASME B31.3

Maximum Inlet Pressure

150 psig / 10.3 bar

Maximum Outlet Pressure250 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

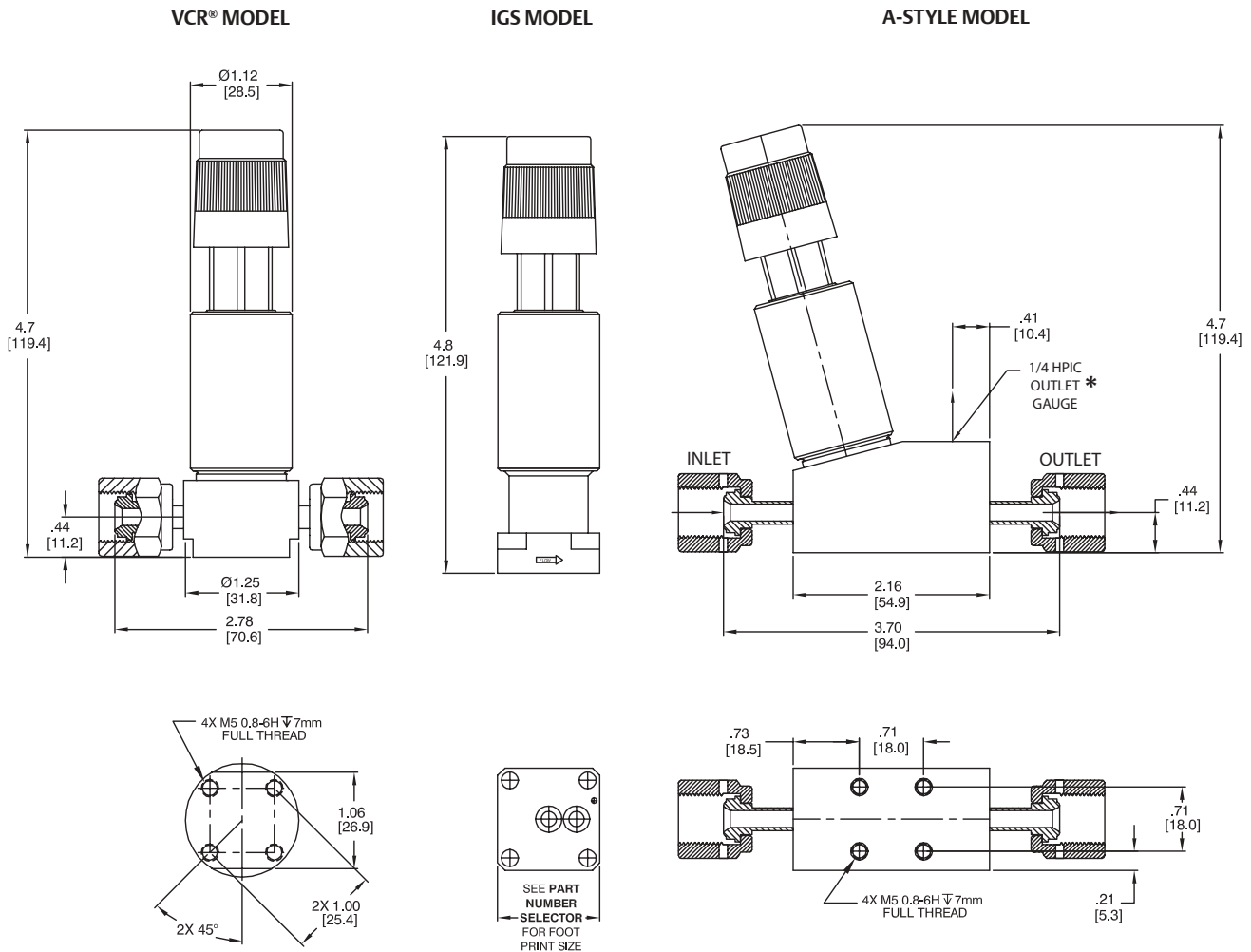
- OEM Tools
- Gas Boxes
- Low-Pressure Gas Cabinets

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

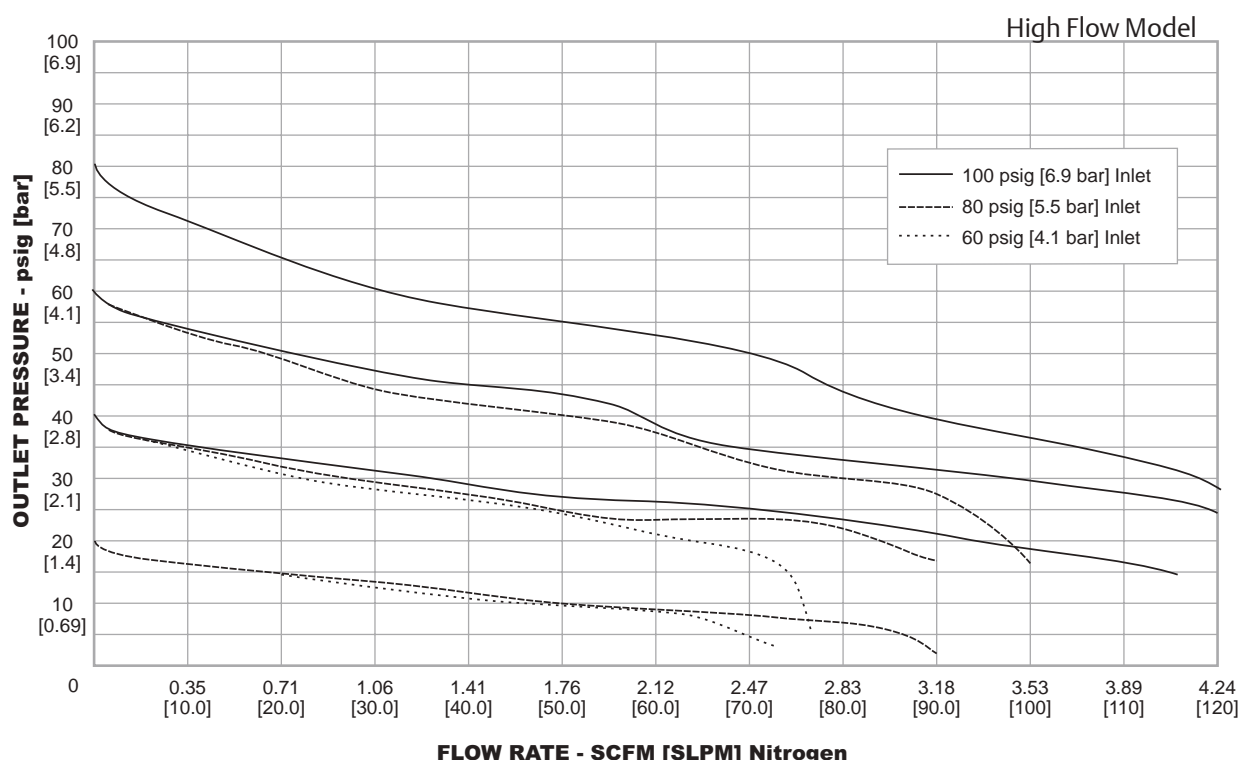
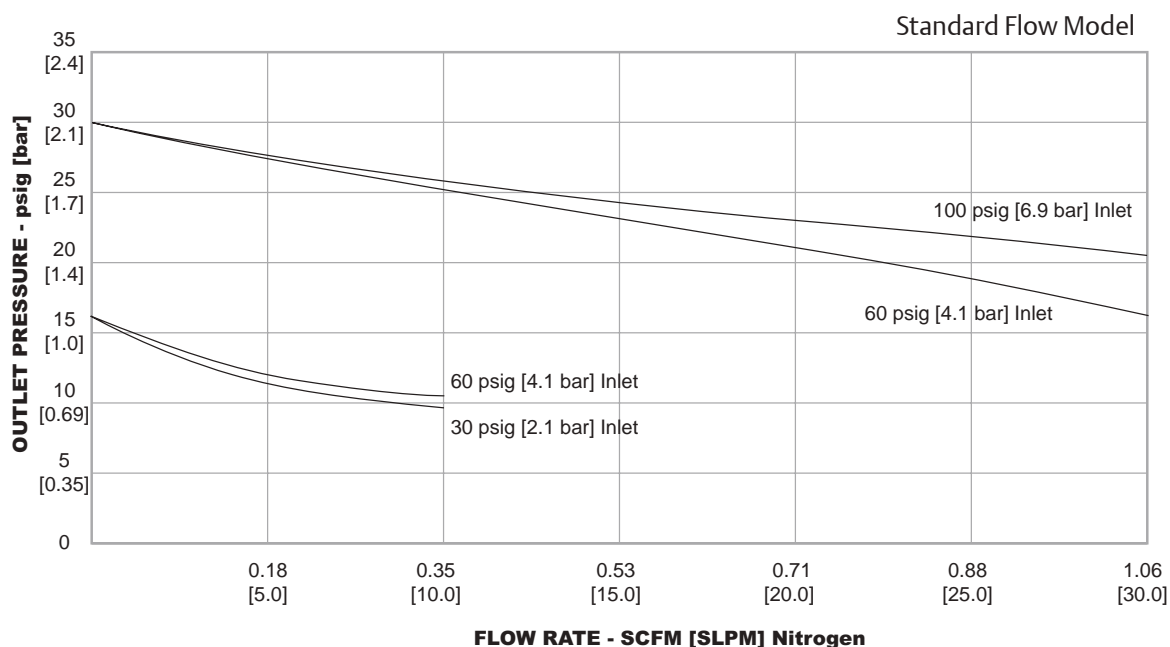


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

*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 TESCO 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 | Nickel Alloy (Hastelloy®) ¹ | PCTFE | 10 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) | 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 | |
| | | | B – 316L VAR Stainless Steel | Nickel Alloy (Hastelloy®) ¹ | Pv | 5 R _a | | | 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) | | |
| | | | 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 TESCO.***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:** 1×10^{-9} atm cc/sec He**Seat:** 1×10^{-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 Ra, 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

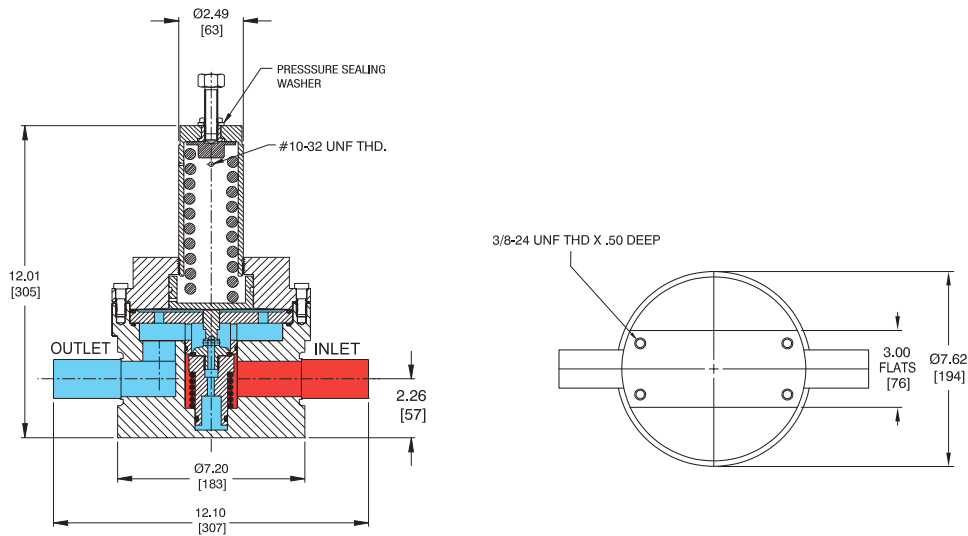
Features and Benefits

- Diaphragm sensing element maintains very accurate downstream pressure
- 10 Ra 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

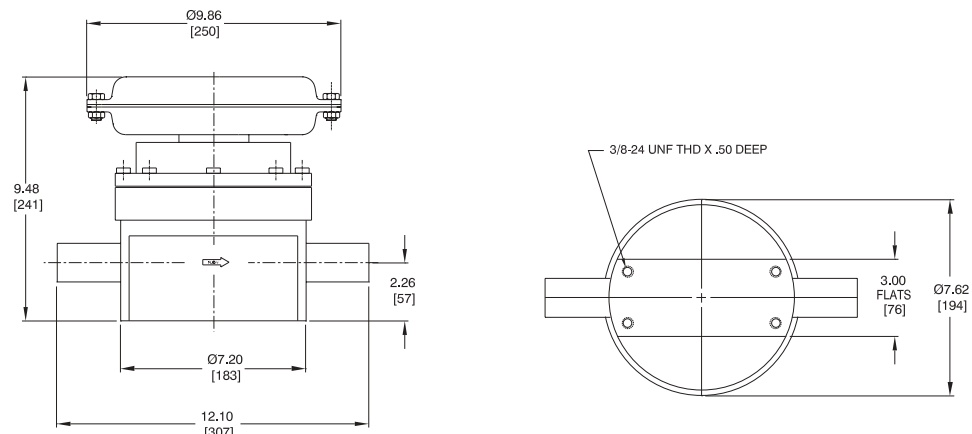
15 SERIES

15 Series Regulator Drawing

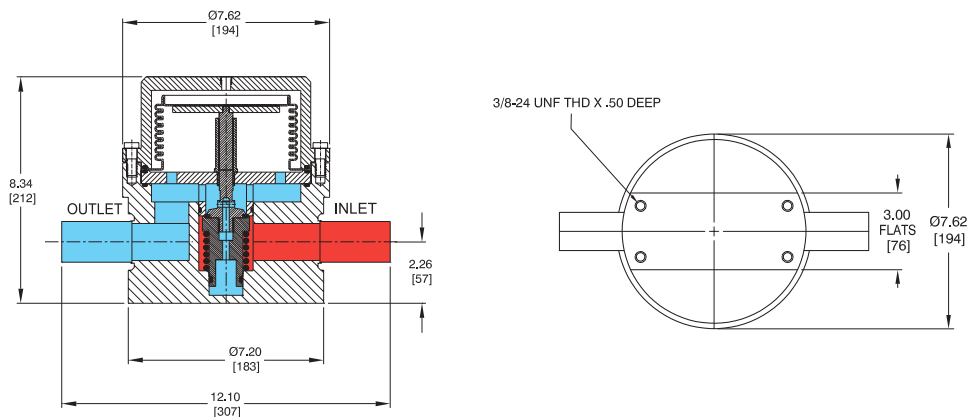
SPRING LOADED - DIAPHRAGM SENSED



AIR ACTUATED - DIAPHRAGM SENSED



AIR ACTUATED - BELLOWS SENSED

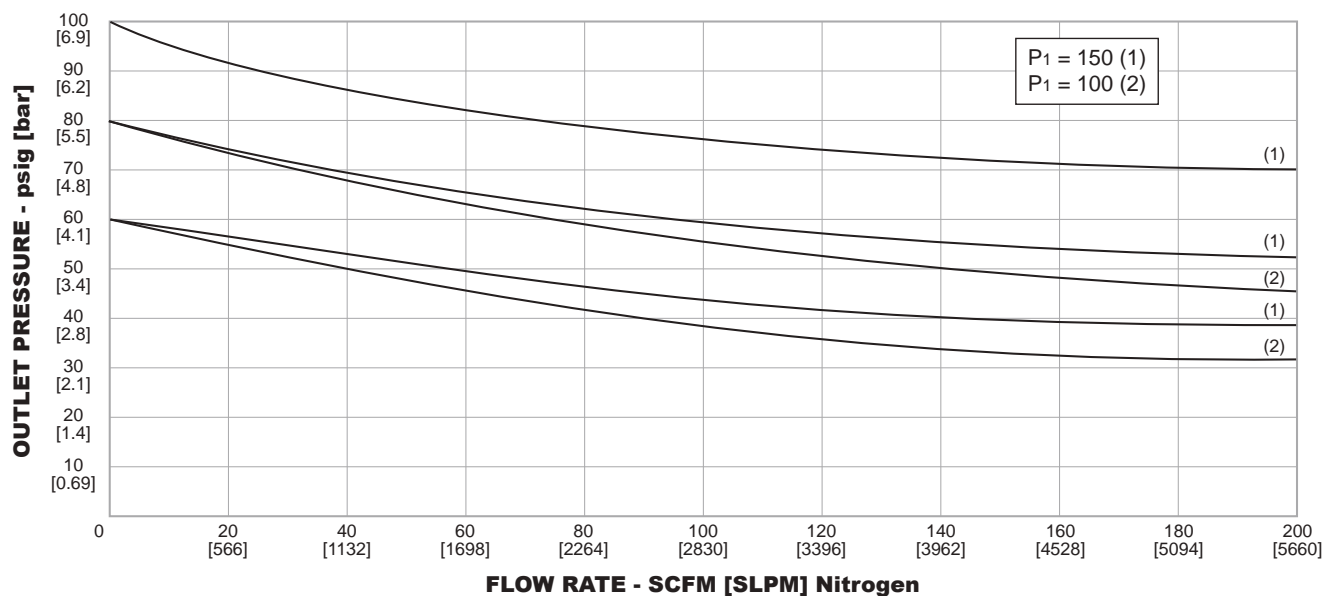


All dimensions are reference & nominal
Metric [millimeter] equivalents are in bracket

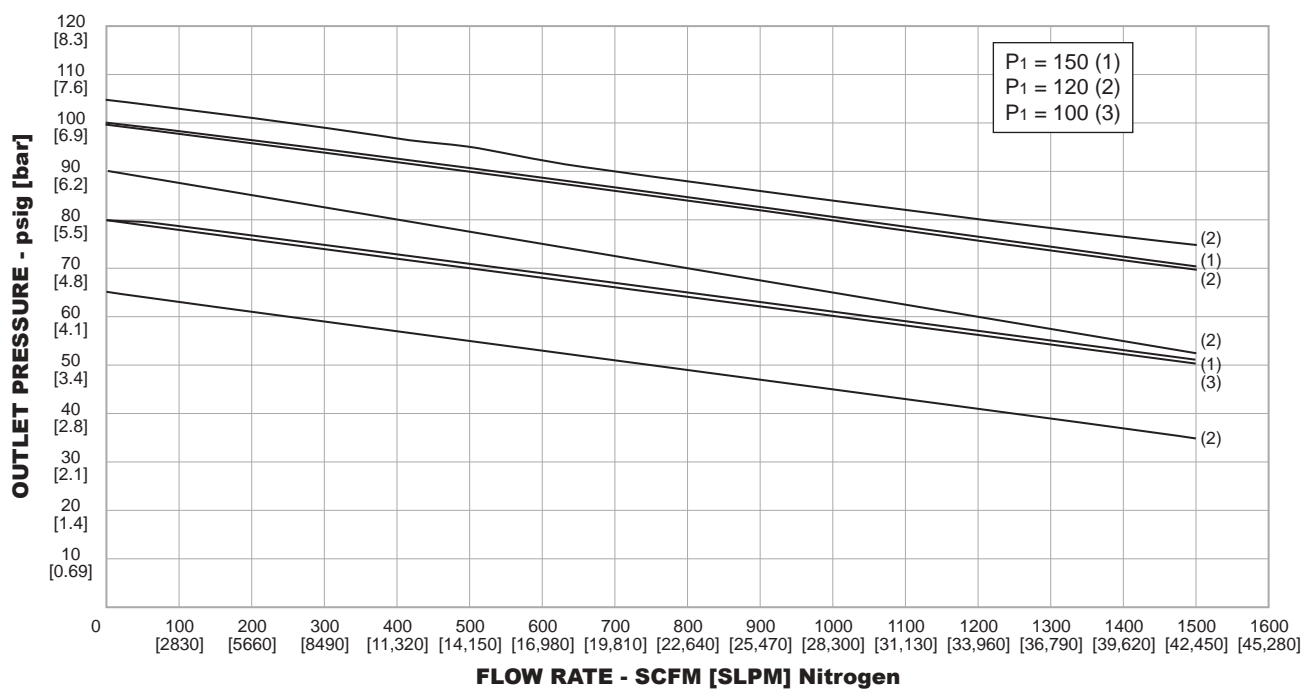
15 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO 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 2 – 130 psig 9.0 bar | K – PCTFE T – PTFE | V – FKM FKM (Viton®-A) | 1 – Spring Loaded Diaphragm Sensed 2 – Air Actuated Diaphragm Sensed 3 – Air Actuated Bellows Sensed | UU – 3/4" Tubes VV – 1" Tubes 66 – 1-1/2" Tubes SS – 2" Tubes | 12.10" 12.10" 12.10" 12.10" | Z – None T – Test Report (typical) C – Certification of Conformance |

Specifications

For other materials or modifications, please consult TESCO. M.

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

2×10^{-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

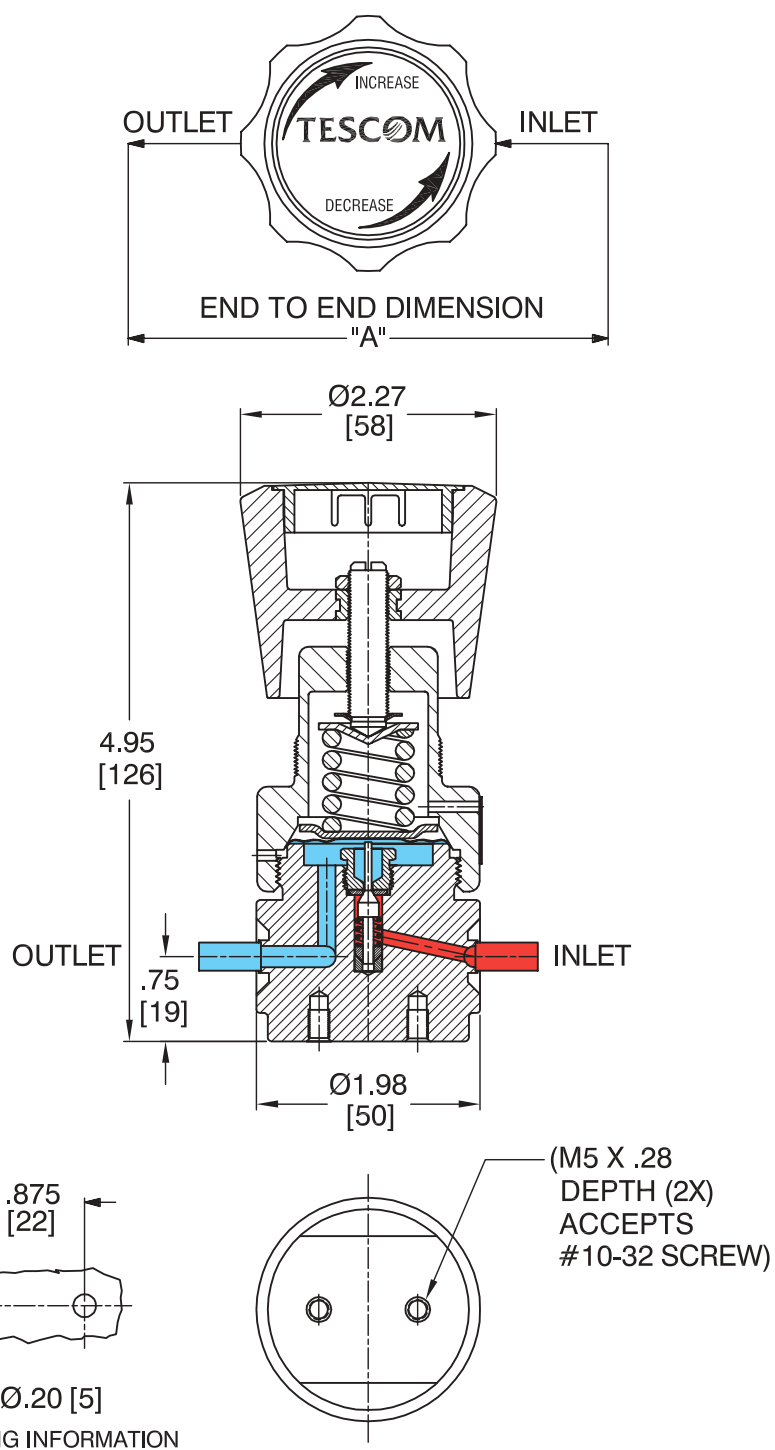
- Regulating corrosive and specialty gases
- Gas and liquid chromatography
- Sampling systems
- Research labs
- Instrumentation

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

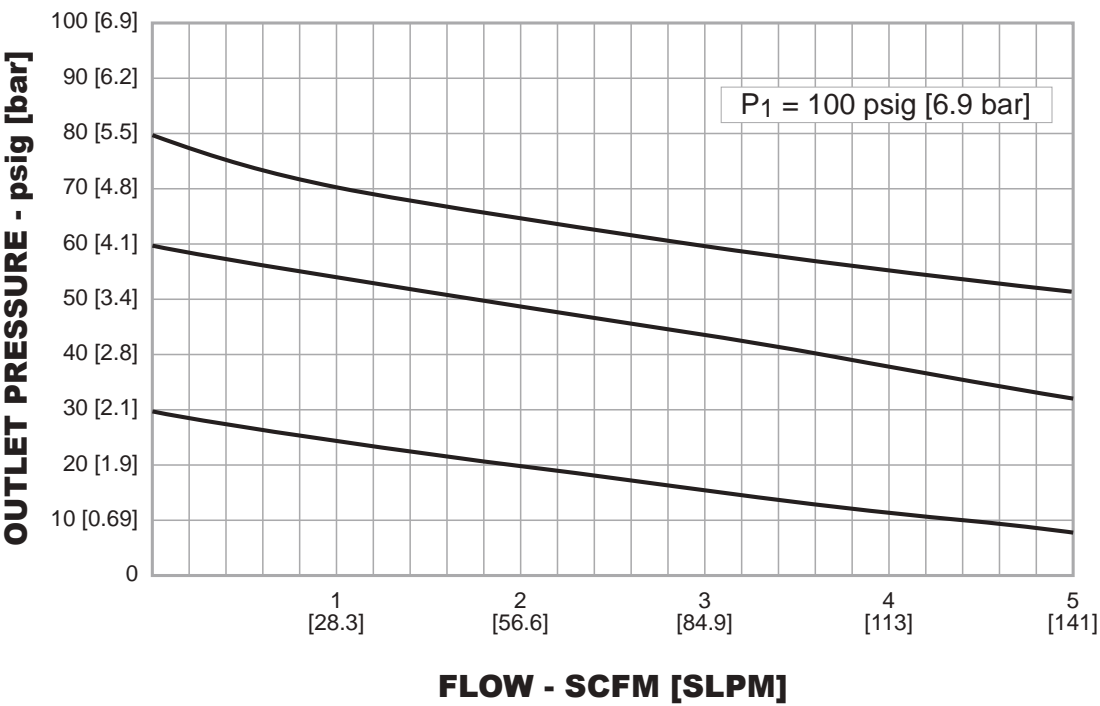
22-2200 Series Regulator Drawing



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 |

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

$< 2 \times 10^{-8}$ 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

22-5400 Series Regulator Drawing

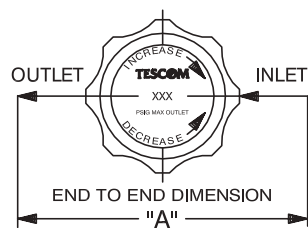


Figure A (no gauges)

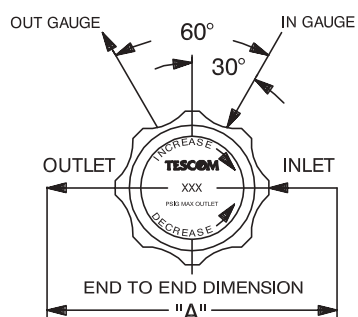


Figure B (2 gauges)

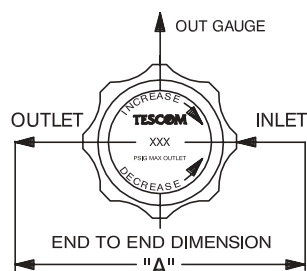
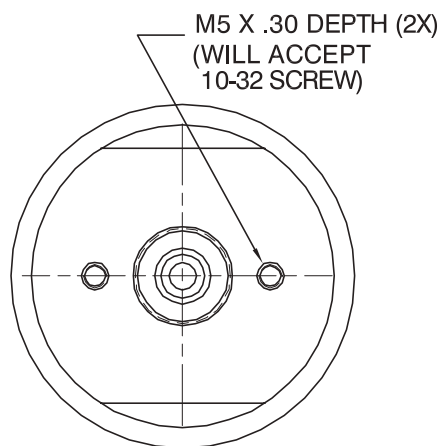
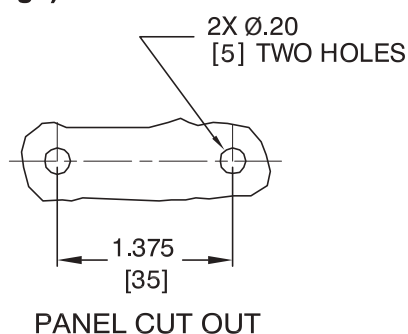
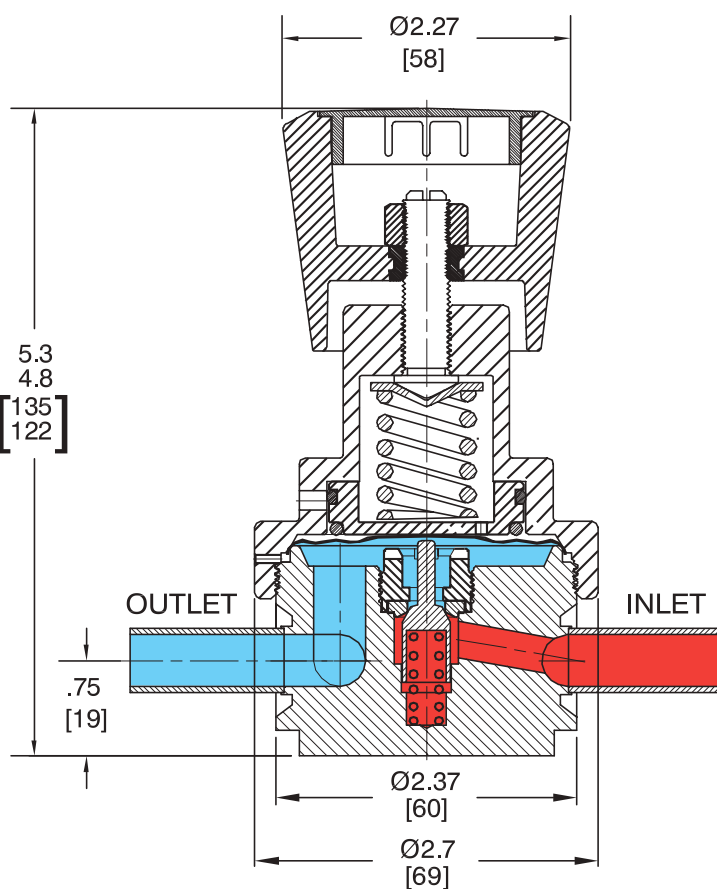


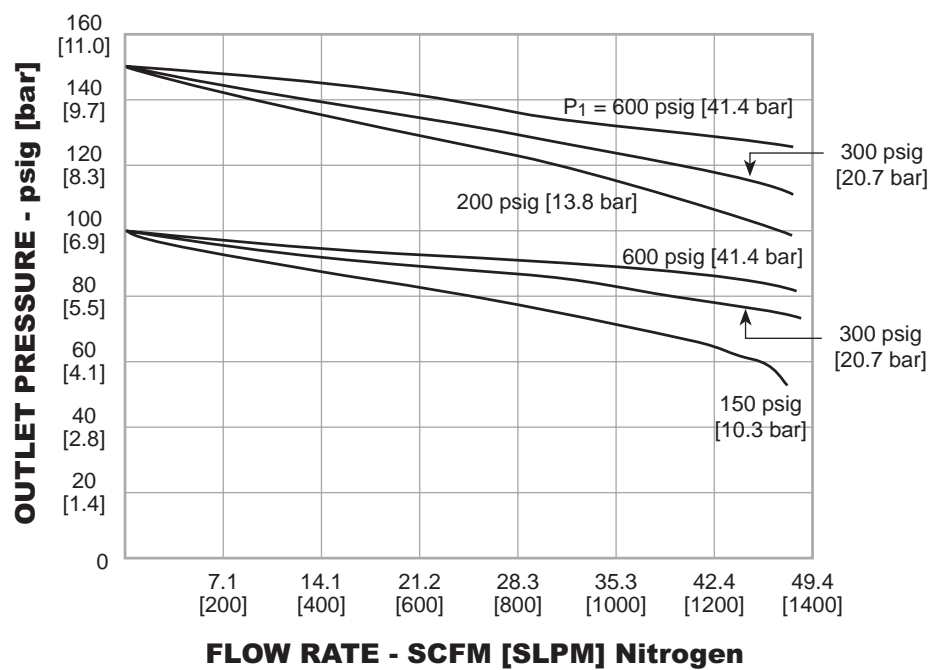
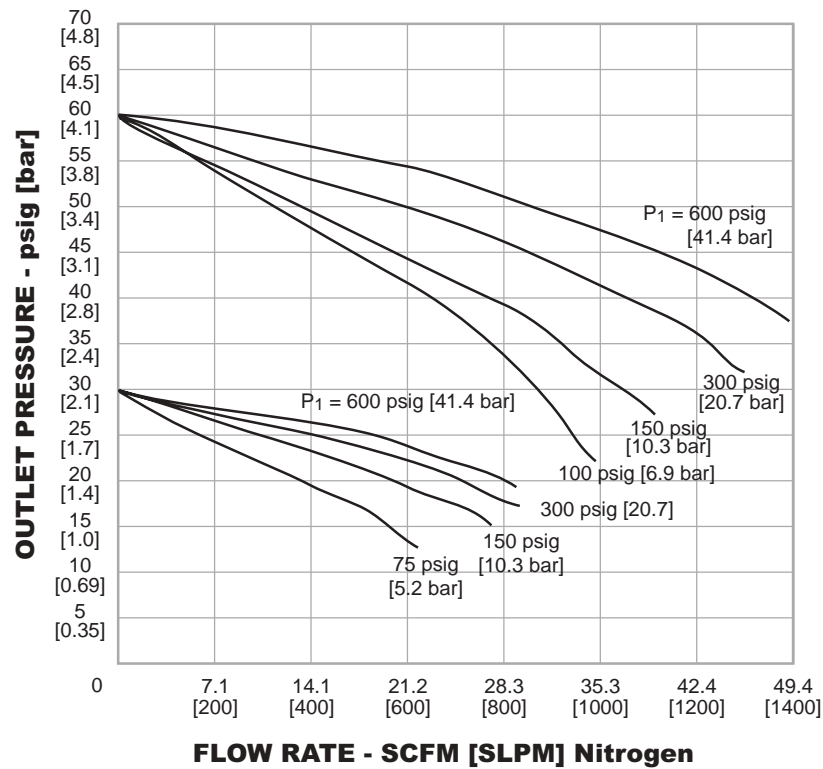
Figure C (1 gauge)



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 TESCO 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

TESCOM 23 Series ultra high purity in-line regulator offers 10 Ra 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

OTHER**Internal Surface Finish**

10 Ra 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.*

23 SERIES

23 Series Regulator Drawing

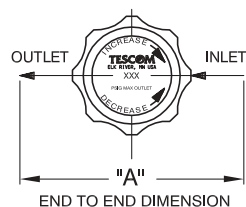


Figure A (No Gauges)

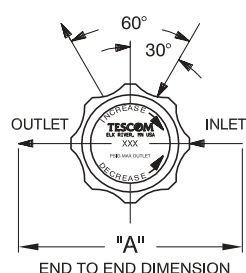


Figure B (2 Gauges)

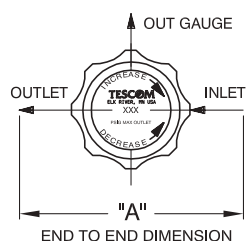


Figure C (1 Gauge)

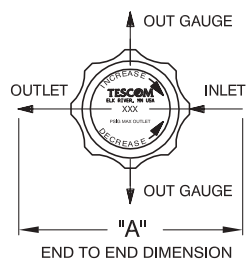
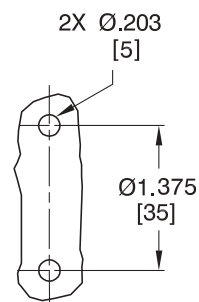
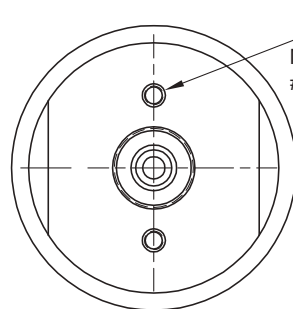
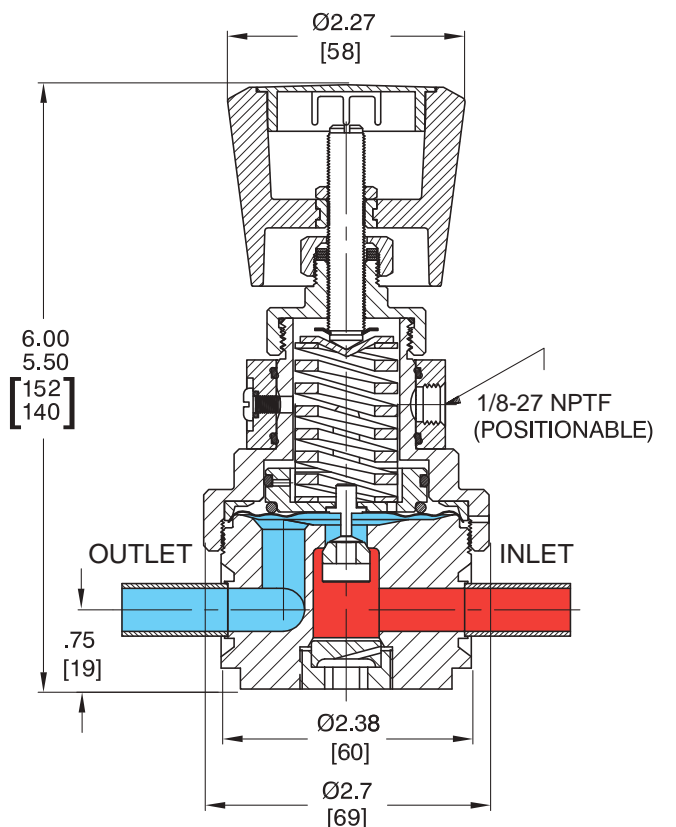


Figure D (1 Out Gauge)

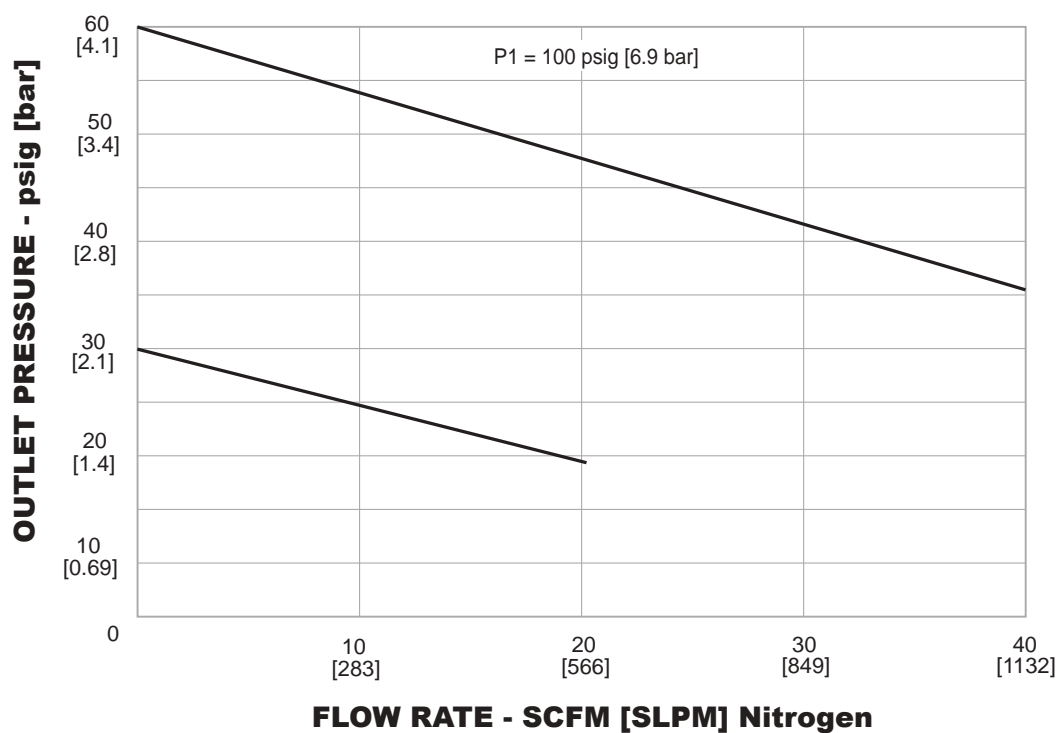
23-3 TIED DIAPHRAGM DESIGN



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 TESCO catalog or on www.tescom.com.


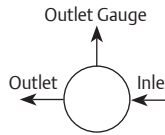
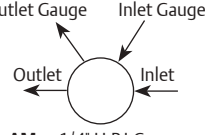


23 SERIES

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* | | OPTIONS CHOOSE ONE ONLY |
| | | | | GAUGE PORT OPTIONS | INLET AND OUTLET PORT END-TO-END DIMENSION 'A' | |
| 23-3 Tied diaphragm/ positive shutoff | B – 250 psig 17.2 bar – 10 Ra finishes – 316L VAR Stainless Steel body with Eletropolish – 316 Stainless Steel trim – PCTFE seat C – 150 psig 10.3 bar – 10 Ra 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 | 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") |
| | | | |  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. | | |

Specifications

For other materials or modifications, please consult TESCO.

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

$<1 \times 10^{-9}$ 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 (Elgiloy®)

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

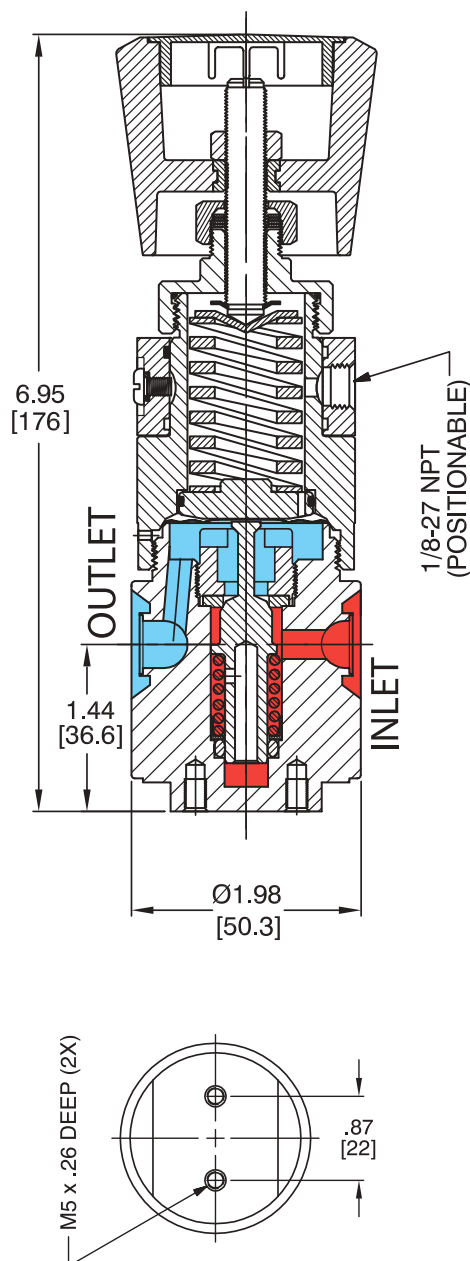
- High purity bulk specialty gas delivery systems

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

449-254 Series Regulator Drawing



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

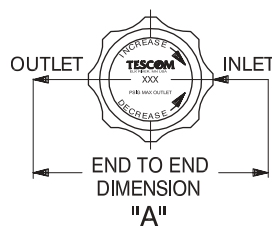


Figure A
(no gauges)

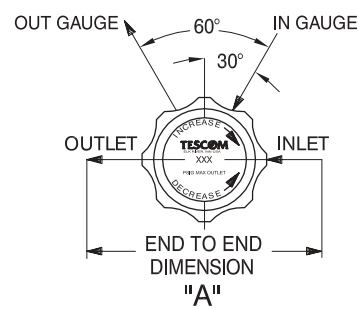


Figure B
(2 gauges)

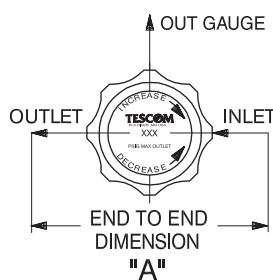


Figure C
(1 gauge)

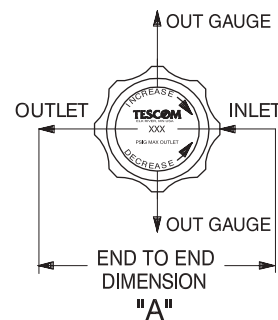
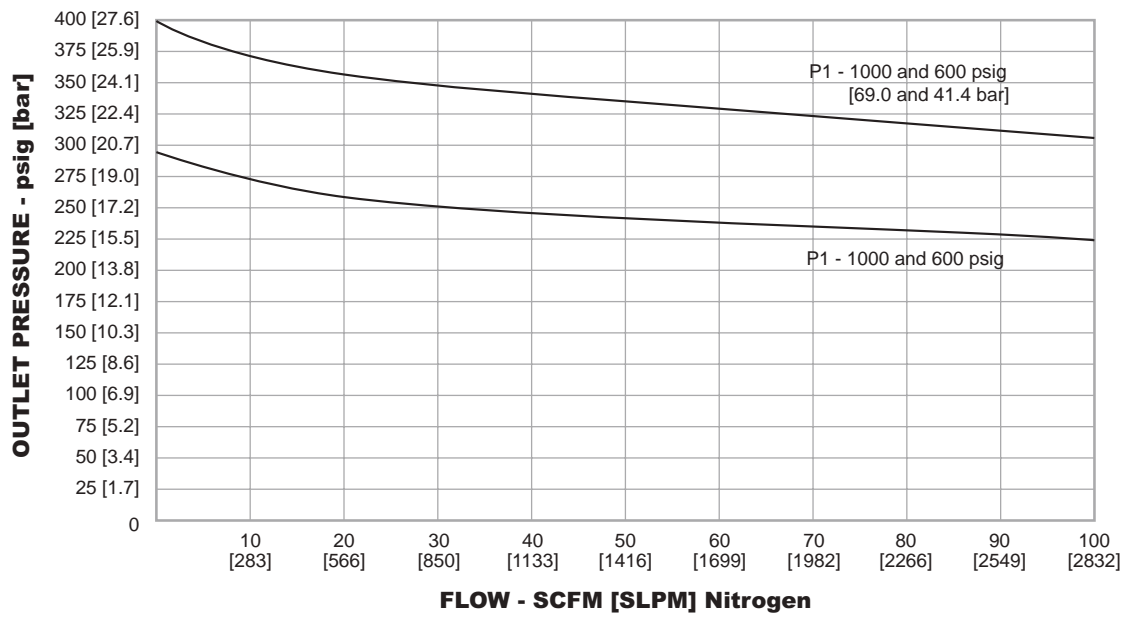


Figure D
(2 out gauges)

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) | 4.00" | 0 – None | 0 (Figure A) |
| | | | H – 1/4" Female Swivel (High Flow) | 4.00" | 4 – 1/4" Male Swivel | 2 (Figure D) |
| | | | K – 1/2" Male Swivel | 5.21" | 5 – 1/4" Male Swivel | 1 (Figure C) |
| | | | L – 1/2" Female Swivel | 5.21" | 6 – 1/4" Male Swivel | 2 (Figure B) |
| | | | 8 – 1/2" Tube Stubs | 5.21" | 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) |

Regulators - Pressure Reducing

D64261732X012

Specifications

For other materials or modifications, please consult TESCO. M.

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 Ranges0-30, 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 1×10^{-9} atm cc/sec He**Operating Temperature****PTCFE Seat:** -40°F to 140°F / -40°C to 60°C**Teflon® Seat:** -40°F to 160°F / -40°C to 71°C**Vespe l® 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

Body316L Stainless Steel Electropolish or
316L VAR Stainless Steel Electropolish**Diaphragm**

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

Seat

PCTFE or PTFE (Polyimide (Vespe l®) optional for 3500 psig / 241 bar model only)

Spring

316 Stainless Steel or Cobalt Chrome Nickel Alloy (Elgiloy®)

Stem, Seat Retainer, Valve Guide

316 Stainless Steel or Nickel Alloy (Hastelloy®)*

OTHER

Internal Surface Finish10 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 Vespe l® 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

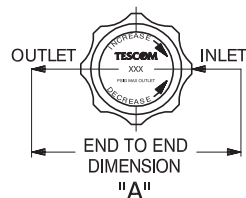
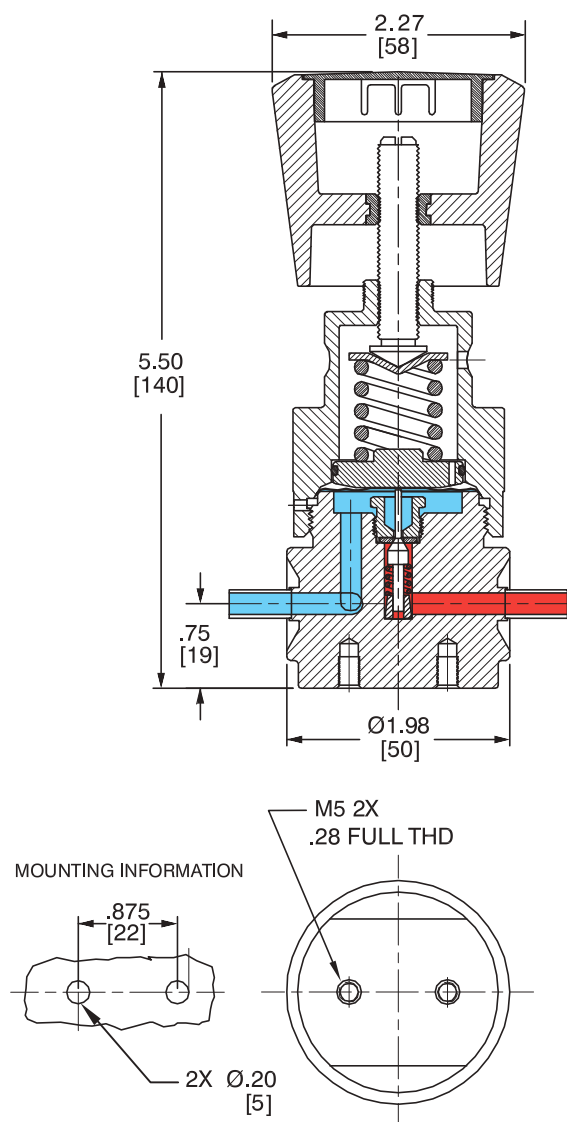
NOTE:

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.

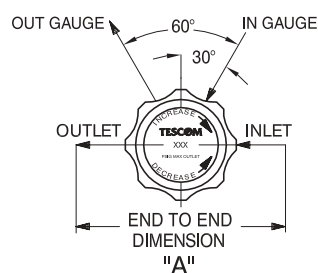
For more information on decaying inlet, please refer to the Technical Information section of the product catalog and/or contact the TESCO customer support further assistance.

64-2600 SERIES

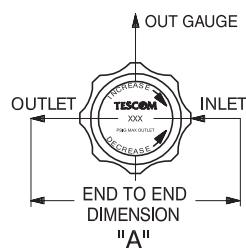
64-2600 Series Regulator Drawing



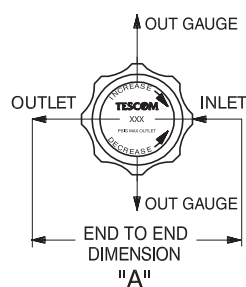
**Figure A
(no gauges)**



**Figure B
(2 gauges)**



**Figure C
(1 gauge)**

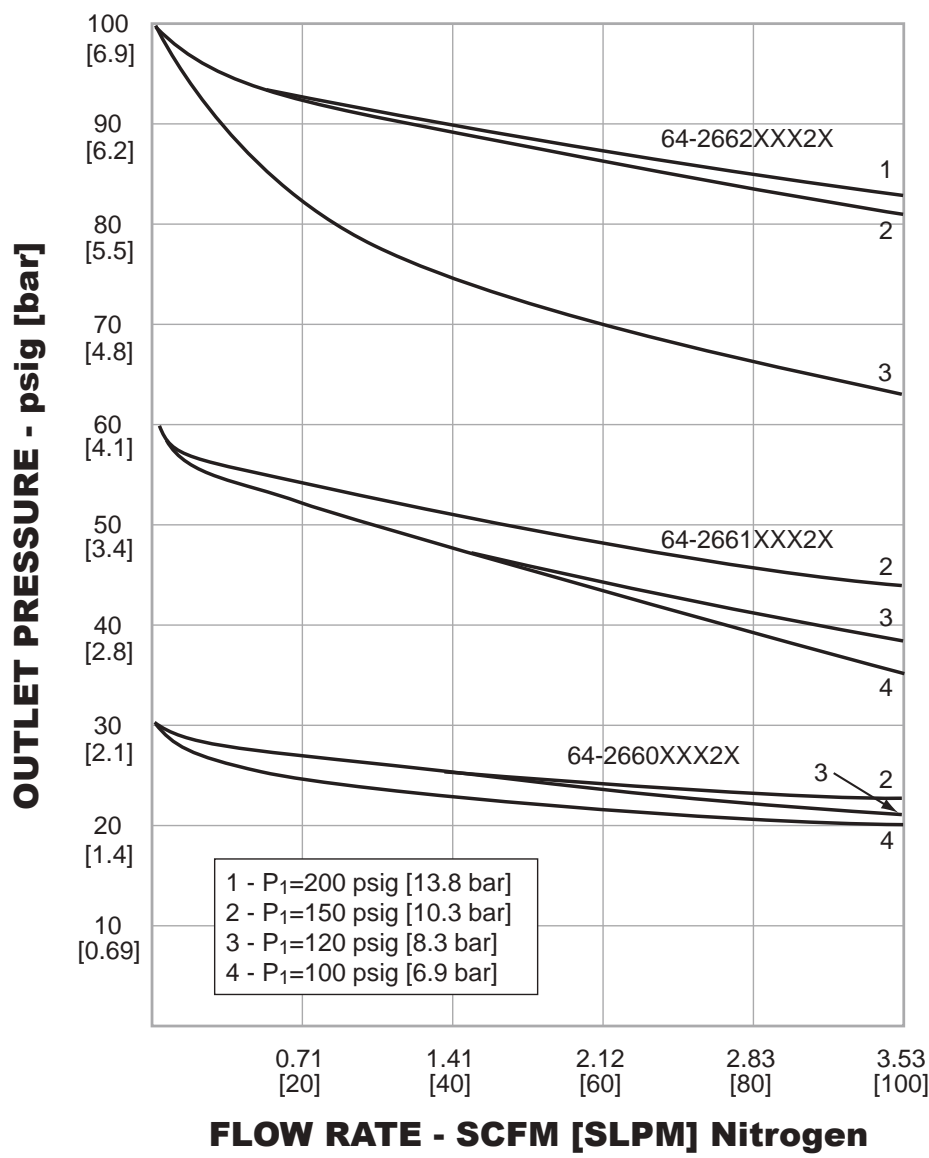


**Figure D
(2 out gauges)**

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 TESCO 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 | 0 – 0-30 psig 0-2.1 bar | K – PCTFE | A4 – 1/4" H.P.I.C. | - | 1 – 3500 psig 241 bar | 0 – None | 0 (Figure A) |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _a ² | 1 – 0-60 psig 0-4.1 bar | T – PTFE | RK – 1/2" Male Swivel | 4.75" | 316 Stainless Steel Trim | 1 – 1/4" H.P.I.C. | 1 (Figure C) |
| | | 2 – 0-100 psig 0-6.9 bar | V – Polyimide (Vespel®) (3500 psig / 241 bar model only) | RL – 1/2" Female Swivel | 4.75" | 2 – 600 psig 41.4 bar | 2 – 1/4" H.P.I.C. | 2 (Figure B) |
| | | 3 – 0-250 psig 0-17.2 bar | | RM – 1/4" Male Swivel | 3.70" | 316 Stainless Steel Trim | 3 – 1/4" H.P.I.C. | 2 (Figure D) |
| | | 6 – 0-150 psig 0-10.3 bar | | RT – 1/4" Female Swivel | 3.70" | 2 – 600 psig 41.4 bar | 4 – 1/4" Male Swivel | 2 (Figure D) |
| | | | | RU – IN Port: 1/4" Male; OUT Port: 1/4" Female | 3.70" | 316 Stainless Steel Trim | 5 – 1/4" Male Swivel | 1 (Figure C) |
| | | | | RV – IN Port: 1/4" Female; OUT Port: 1/4" Male | 3.70" | 3 – 3500 psig 241 bar | 6 – 1/4" Male Swivel | 2 (Figure B) |
| | | | | T4 – 1/4" Tube Stubs | 3.00" | Hastelloy® Trim | 7 – 1/4" Female Swivel | 2 (Figure D) |
| | | | | | | 4 – 600 psig 41.4 bar | 8 – 1/4" Female Swivel | 1 (Figure C) |
| | | | | | | Hastelloy® Trim | 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 ASTM B 912
2. Per SEMI F19, HP grade

Specifications

For other materials or modifications, please consult TESCO M.

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: 1×10^{-9} atm cc/sec He (ASTM test E499)

Operating Temperature

PCTFE: -40°F to 140°F / -40°C to 60°C

Vespe l®: -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

Vespe l® 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.

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 TESCO M customer support further assistance.



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

64-2800 SERIES

64-2800 Series Regulator Drawing

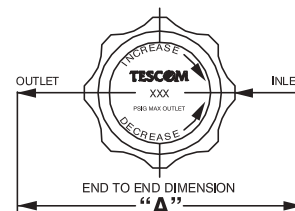
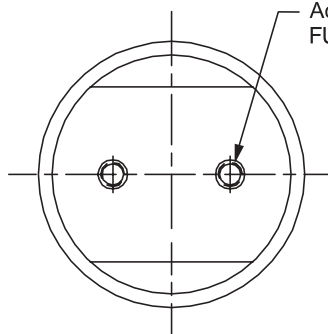
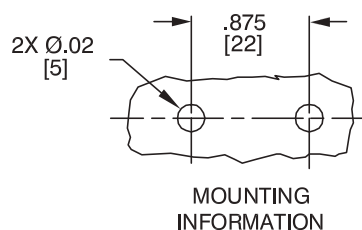
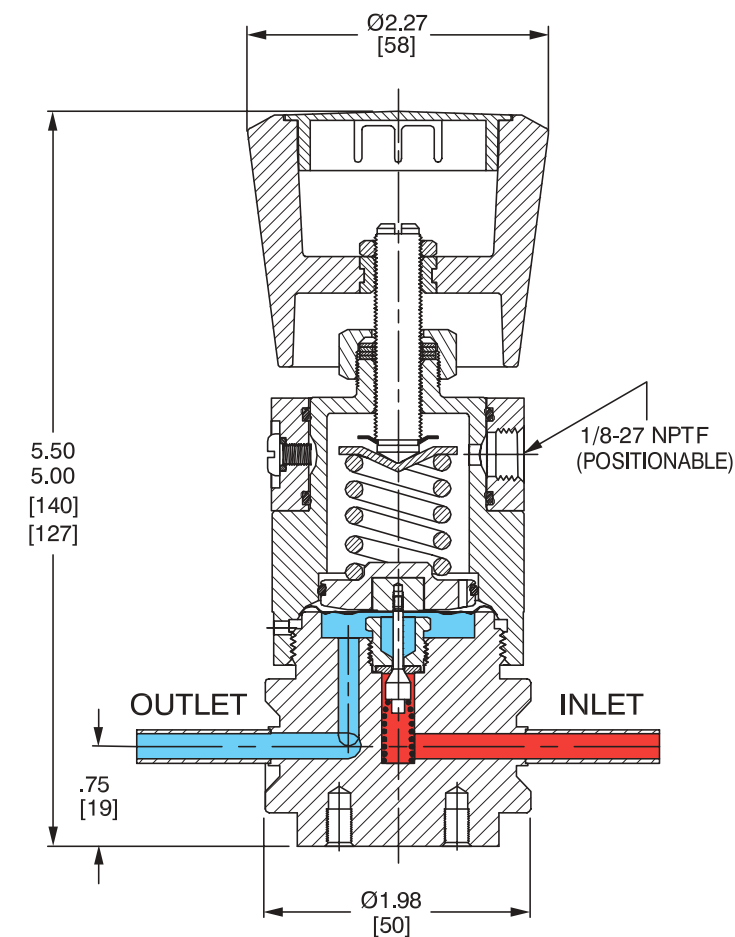


FIGURE A (NO GAUGES)

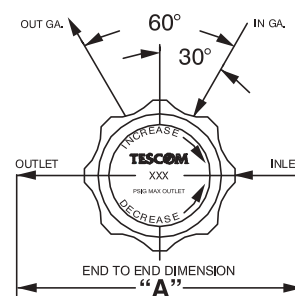


FIGURE B (2 GAUGES)

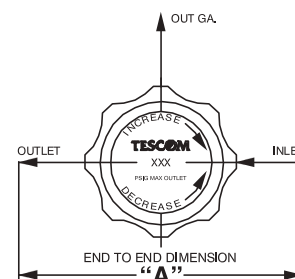


FIGURE C (1 GAUGE)

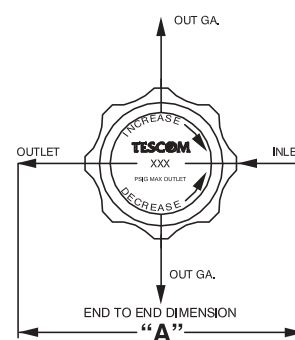
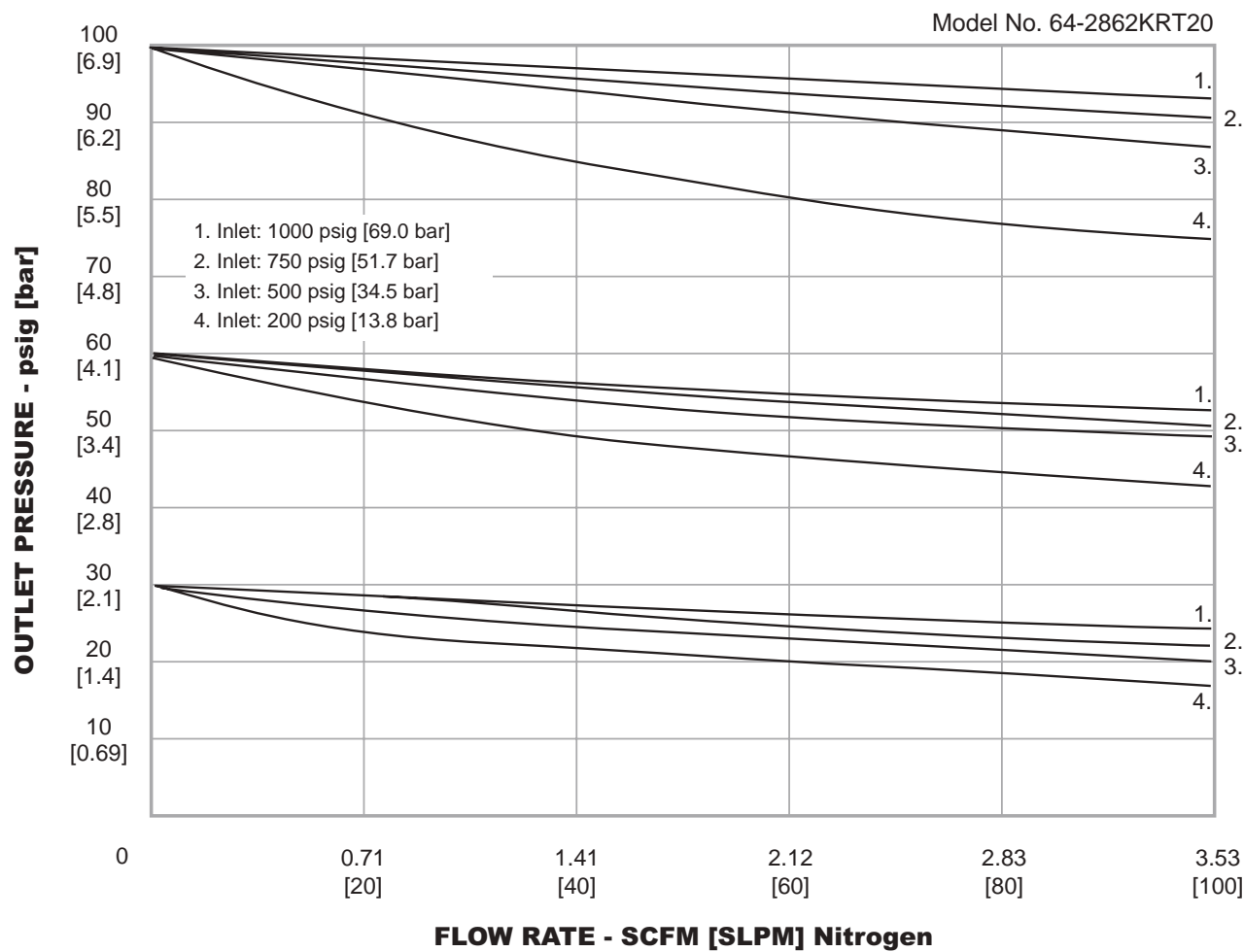


FIGURE D (2 OUT GAUGES)

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 | 0 – 30 psig 2.1 bar | K – PCTFE | A4 – 1/4" H.P.I.C. | 1.09" | 1 – 3500 psig 241 bar | 0 – None | 0 (Figure A) |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _A ² | 1 – 60 psig 4.1 bar | | RK – 1/2" Male Swivel | 4.75" | 2 – 1000 psig 69.0 bar | 1 – 1/4" H.P.I.C. | 1 (Figure C) |
| | | 2 – 100 psig 6.9 bar | | RL – 1/2" Female Swivel | 4.75" | 3 – 1000 psig 69.0 bar Hastelloy® trim | 2 – 1/4" H.P.I.C. | 2 (Figure B) |
| | | 3 – 150 psig 10.3 bar | | 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 D) |
| | | | | 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 ASTM B 912 2. Per SEMI F19, HP Grade | | | | | | | |

1. Per ASTM B 912
2. Per SEMI F19, HP Grade

Regulators - Pressure Reducing

D64321837X012

Specifications*For other materials or modifications, please consult TESCO.***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 $<1 \times 10^{-9}$ 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**Vespal® 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 (Vespal®), 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®)

CleaningDI 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 Vespal® 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

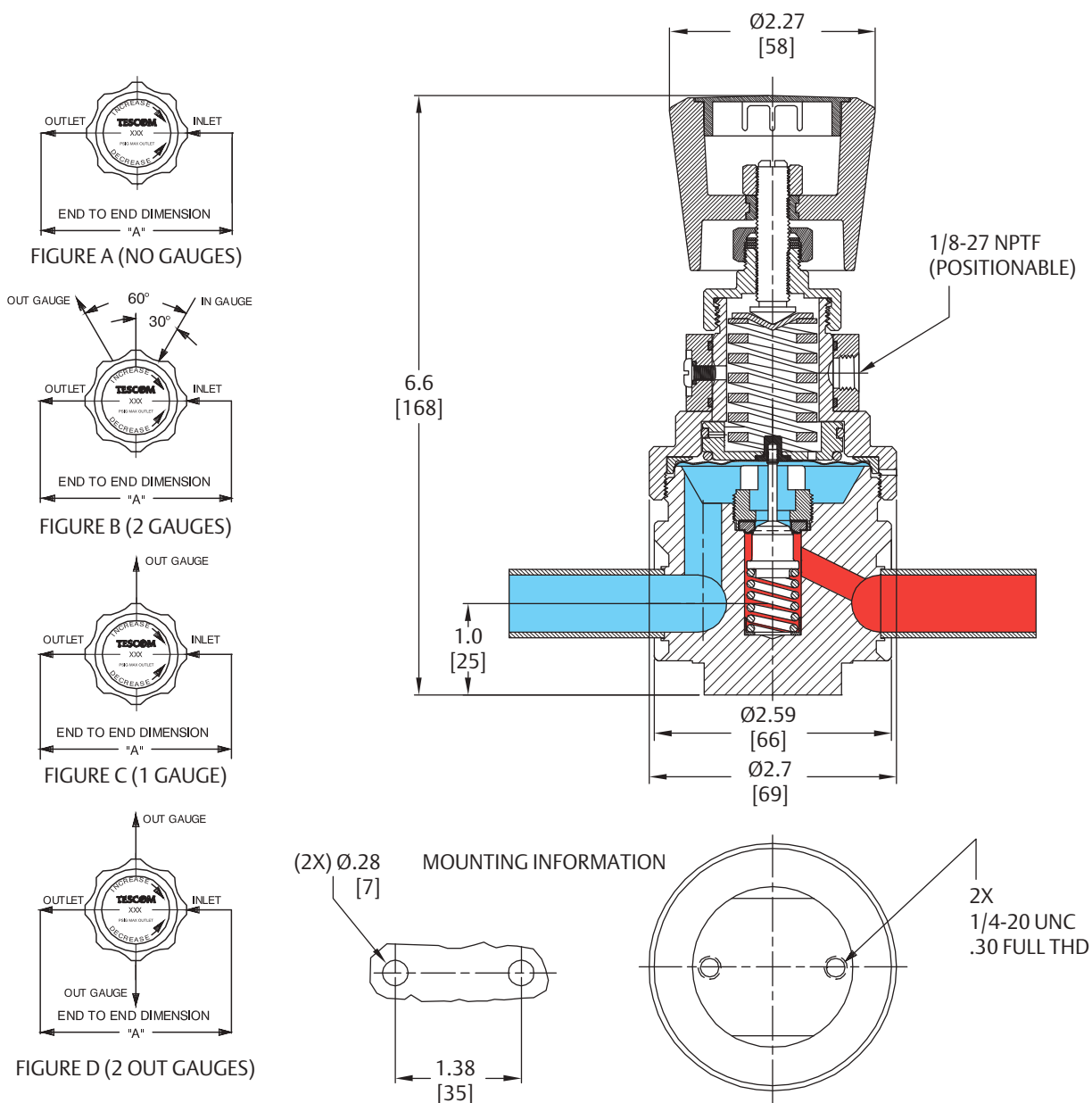
NOTE:

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 TESCO customer support further assistance.

64-3200 SERIES

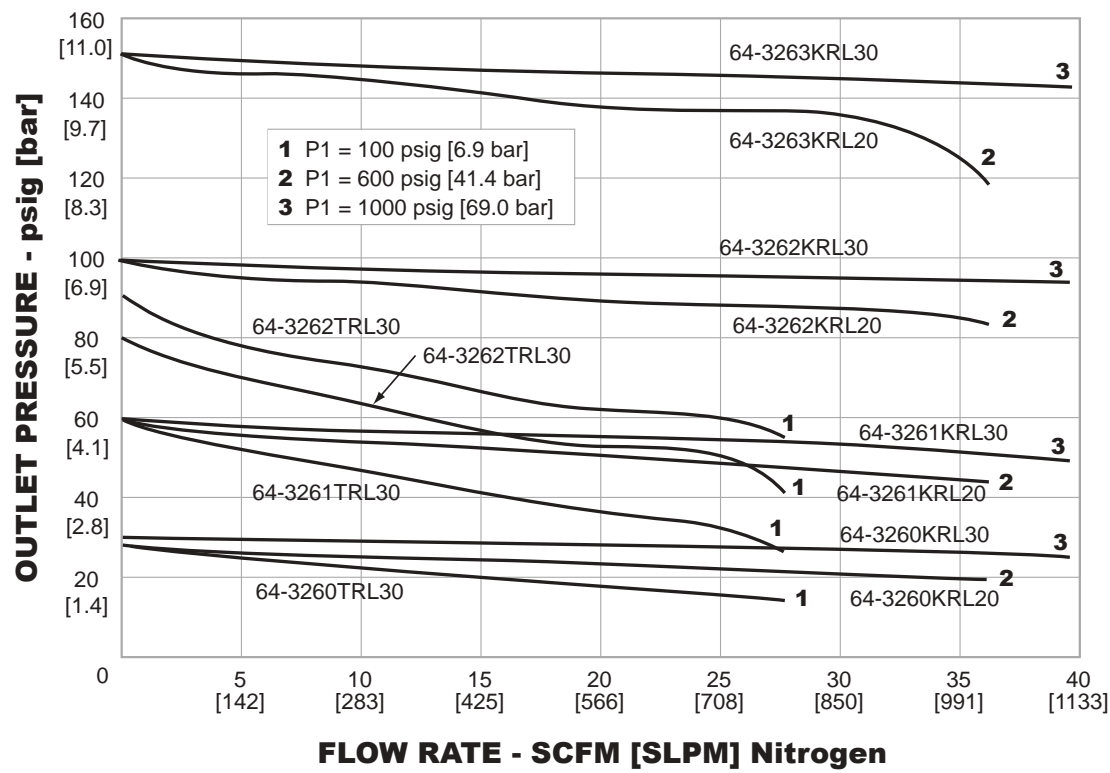
64-3200 Series Regulator Drawing



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 TESCO 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 | 0 – 30 psig 2.1 bar | K – PCTFE (1000 or 1500 psig / 69.0 or 103 bar inlet only) | T1 – 1" Tube Ends | 5.75" | 316 Stainless Steel Trim | 0 – None | 0 (Figure A) |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _a ² | 1 – 60 psig 4.1 bar | | T6 – 3/8" Tube Ends | 3.70" | | 1 – 1/4" H.P.I.C. | 1 (Figure C) |
| | | 2 – 100 psig 6.9 bar | T – PTFE (150 psig / 10.3 bar inlet only) | T7 – 3/4" Tube Ends | 5.75" | 2 – 1000 psig / 69.0 bar | 2 – 1/4" H.P.I.C. | 2 (Figure B) |
| | | 3 – 150 psig 10.3 bar (1000 or 1500 psig / 69.0 or 103 bar inlet only) | | RA – 1/4" Male Fixed | 3.70" | | 3 – 150 psig / 10.3 bar | 3 – 1/4" H.P.I.C. |
| | | 4 – 200 psig 0-13.8- bar (1000 or 1500 psig / 69.0 or 103 bar inlet only) | V – Polyimide (Vespal®) (1000 or 1500 psig / 69.0 or 103 bar inlet only) | RB – 3/4" Male Swivel | 6.30" | Hastelloy® Trim | 4 – 1/4" Male Swivel | 2 (Figure D) |
| | | | | RC – 3/4" Female Swivel | 6.30" | 4 – 1500 psig / 103 bar | 5 – 1/4" Male Swivel | 1 (Figure C) |
| | | | | RG – 1/4" Male Swivel High Flow | 4.27" | 5 – 1000 psig / 69.0 bar | 6 – 1/4" Male Swivel | 2 (Figure B) |
| | | | | RH – 1/4" Female Swivel High Flow | 4.27" | 6 – 150 psig / 10.3 bar | 7 – 1/4" Female Swivel | 2 (Figure D) |
| | | | | RK – 1/2" Male Swivel | 5.59" | | 8 – 1/4" Female Swivel | 1 (Figure C) |
| | | | | RL – 1/2" Female Swivel | 5.59" | | 9 – 1/4" Female Swivel | 2 (Figure B) |
| | | | | RU – IN Port: 1/4" Male Fixed; OUT Port: 1/4" Female Swivel | 3.70" | | N – 1/4" Tube Stub | 2 (Figure B) |
| | | | | RV – IN Port: 1/2" Male Swivel; OUT Port: 1/2" Female Swivel | 5.59" | | P – 1/4" Tube Stub | 1 (Figure C) |
| | | | | RY – IN Port: 1/4" Female High Flow; OUT Port: 1/4" Male Fixed | 4.27" | | R – 1/4" Tube Stub | 2 (Figure D) |
| | | | | RZ – IN Port: 1/2" Female Swivel; OUT Port: 1/2" Male Swivel | 5.59" | | S – 1/4" Fixed Male | 2 (Figure B) |
| | | | | SA – 1/4" Male Fixed | 4.08" | | T – 1/4" Fixed Male | 1 (Figure C) |
| | | | | SK – 1/2" Male Swivel | 5.21" | | U – 1/4" Fixed Male | 2 (Figure D) |

Regulators - Pressure Reducing

D64341782X012

Specifications*For other materials or modifications, please consult TESCO.***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:** $< 4 \times 10^{-9}$ atm cc/sec He**Diaphragm:** $< 1 \times 10^{-9}$ 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 TESCO customer support further assistance.

64-3400 SERIES

64-3400 Series Regulator Drawing

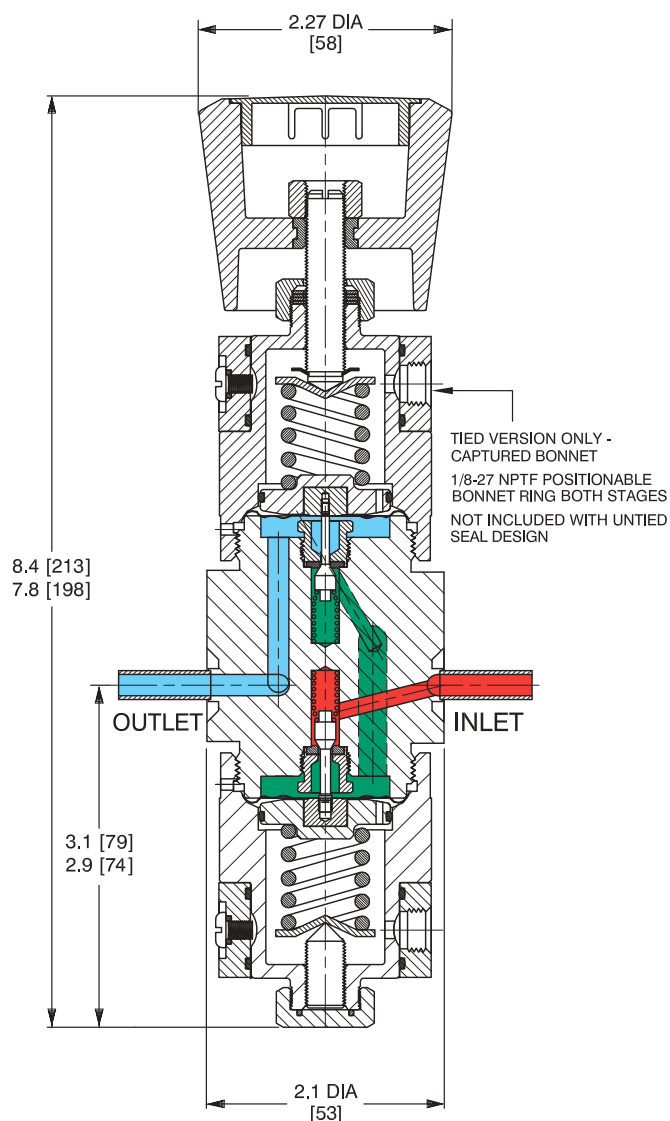


Figure A

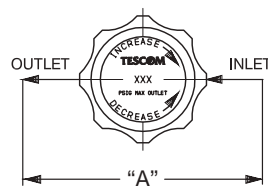


Figure B

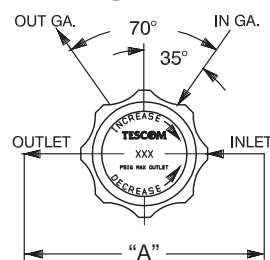


Figure C

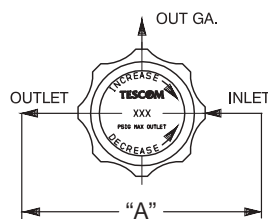
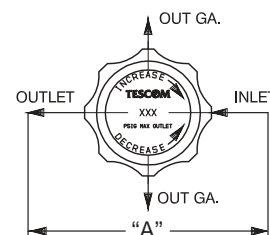


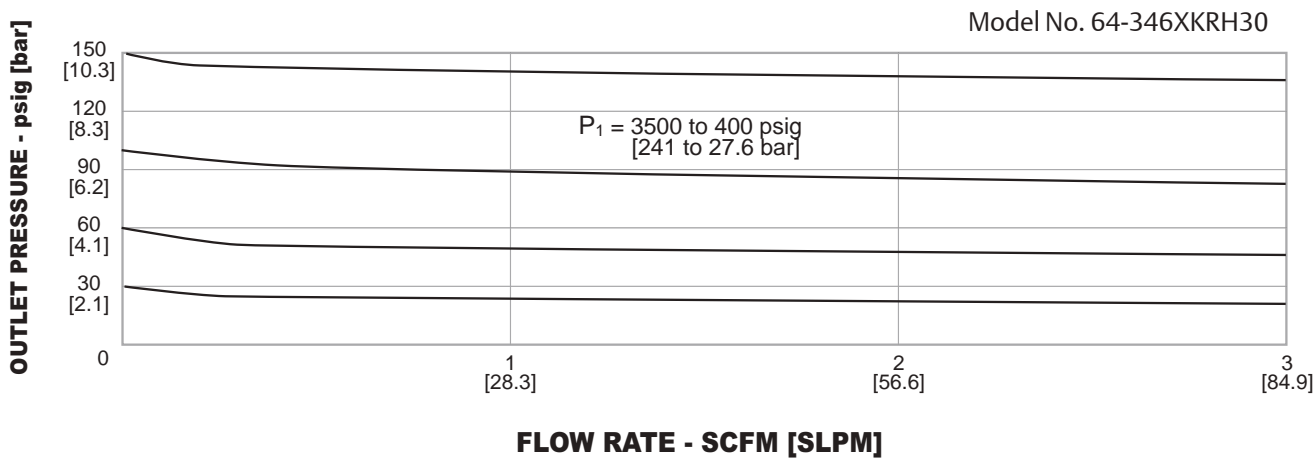
Figure D



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 | 0 – 30 psig 2.1 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) | |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _A ² | 1 – 60 psig 4.1 bar | | RK – 1/2" Male Swivel | 4.92" | 2 – Tied | C _v = 0.06 | 1 – 1/4" H.P.I.C. | 1 (Figure C) | |
| | | 2 – 100 psig 6.9 bar | | RL – 1/2" Female Swivel | 4.92" | 3 – Tied | C _v = 0.15 | 2 – 1/4" H.P.I.C. | 2 (Figure B) | |
| | | 3 – 150 psig 10.3 bar | | 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) | |
| | | | | 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) | |
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1. Per ASTM B 912
2. Per SEMI F19, HP grade

Regulators - Pressure Reducing

D64361770X012

Specifications*For other materials or modifications, please consult TESCO.***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 1×10^{-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**Vespe® 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 (Vespe®)

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 Vespe® 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.***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 TESCO customer support further assistance.



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

64-3600 SERIES

64-3600 Series Regulator Drawing

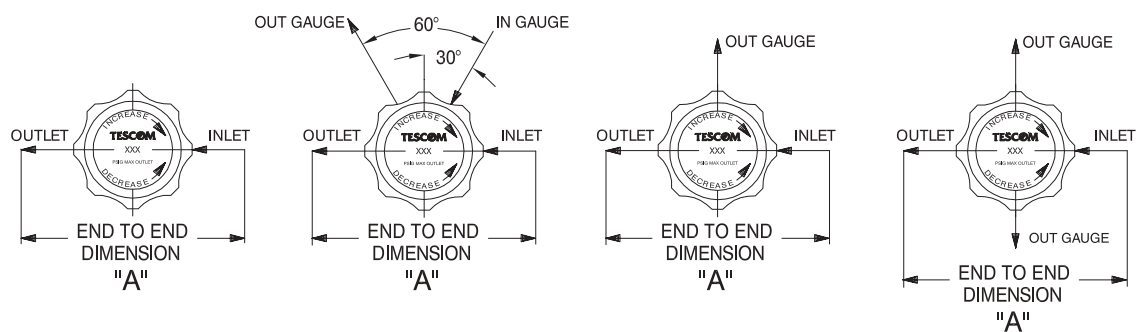
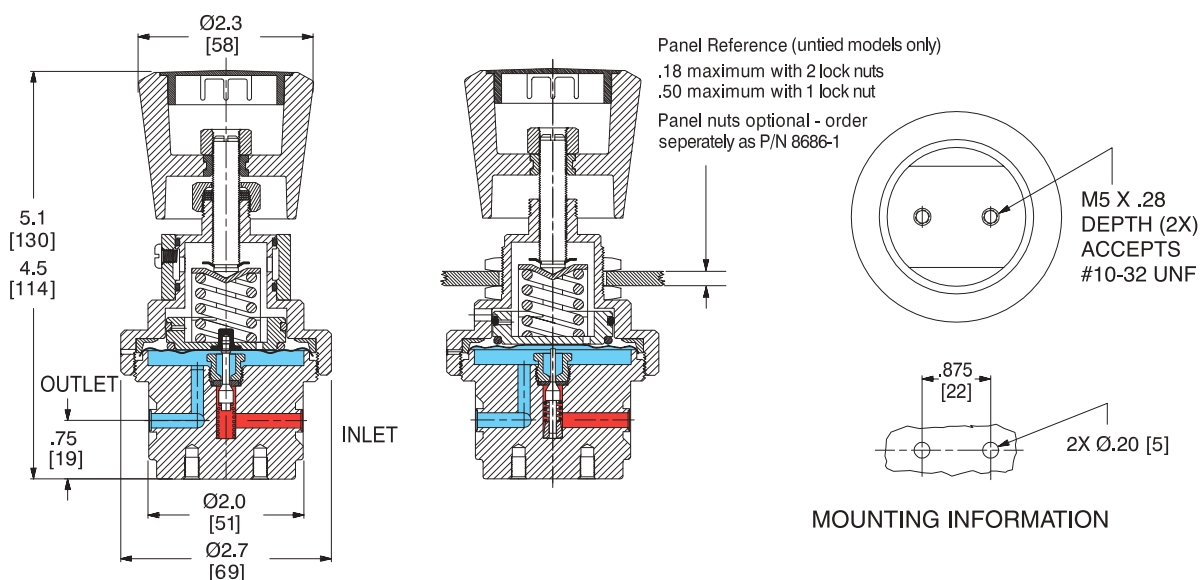


Figure A (no gauges)

Figure B (2 gauges)

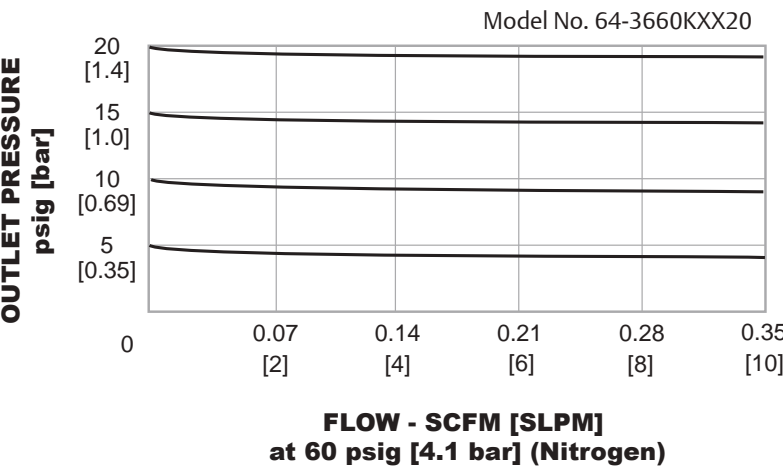
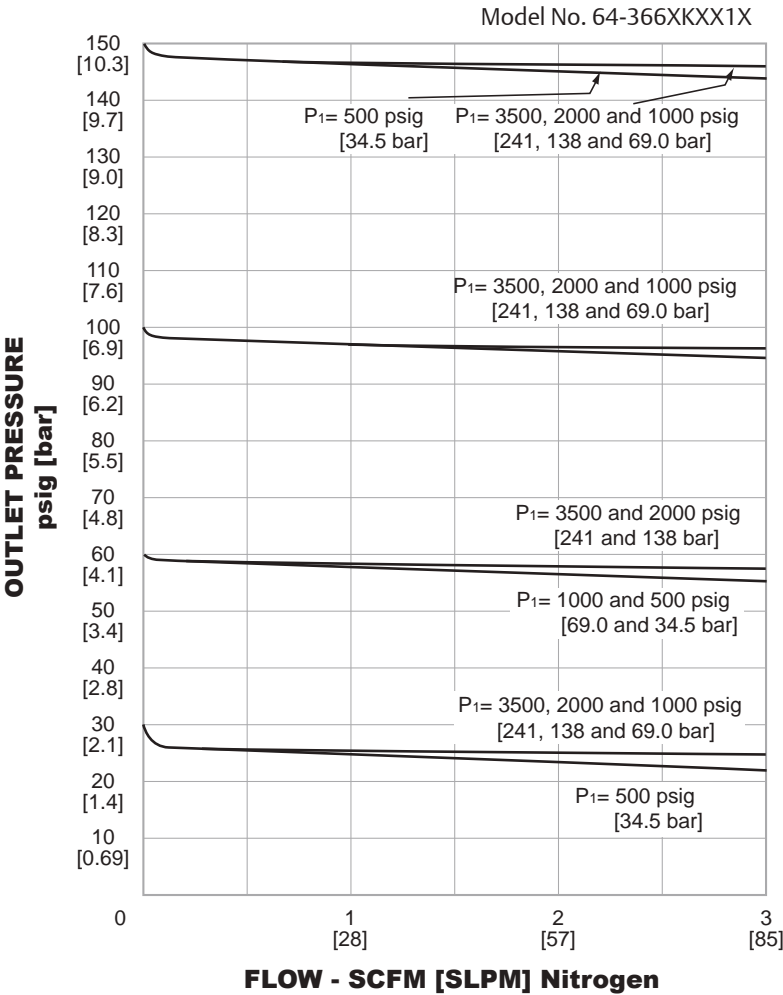
Figure C (1 gauge)

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 TESCO 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 | 0 – 30 psig 2.1 bar | K – PCTFE | A4 – 1/4" H.P.I.C. | 1.11" | 1 – Untied, C _v = 0.06 3500 psig / 241 bar | 0 – None | 0 (Figure A) |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _a ² | 1 – 60 psig 4.1 bar 2 – 100 psig 6.9 bar 3 – 150 psig 10.3 bar | T – PTFE (untied model only) | RG – 1/4" Male Swivel | 4.50" | 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 | 1 – 1/4" H.P.I.C. | 1 (Figure C) |
| | | | V – Polyimide (Vespel®) | RK – 1/2" Male Swivel | 4.75" | | 2 – 1/4" H.P.I.C. | 2 (Figure B) |
| | | | | RL – 1/2" Female Swivel | 4.75" | | 3 – 1/4" H.P.I.C. | 2 (Figure D) |
| | | | | RA – 1/4" Male Fixed | 3.51" | | 4 – 1/4" Male Swivel | 2 (Figure D) |
| | | | | RM – 1/4" Male Fixed | 3.70" | | 5 – 1/4" Male Swivel | 1 (Figure C) |
| | | | | RT – 1/4" Female Swivel | 3.70" | | 6 – 1/4" Male Swivel | 2 (Figure D) |
| | | | | RU – IN Port: 1/4" Male Fixed; OUT Port: 1/4" Female Swivel | 3.70" | | 7 – 1/4" Female Swivel | 2 (Figure D) |
| | | | | RV – IN Port: 1/4" Female Swivel; OUT Port: 1/4" Male Fixed | 3.70" | | 8 – 1/4" Female Swivel | 1 (Figure C) |
| | | | | T4 – 1/4" Tube Stubs | 3.70" | | 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 ASTM B 912 2. Per SEMI F19, HP grade | | | | | | | | |

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

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

$<1 \times 10^{-9}$ 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

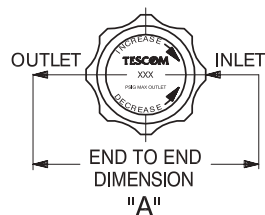
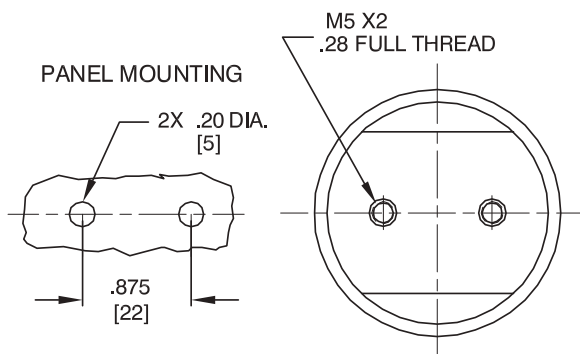
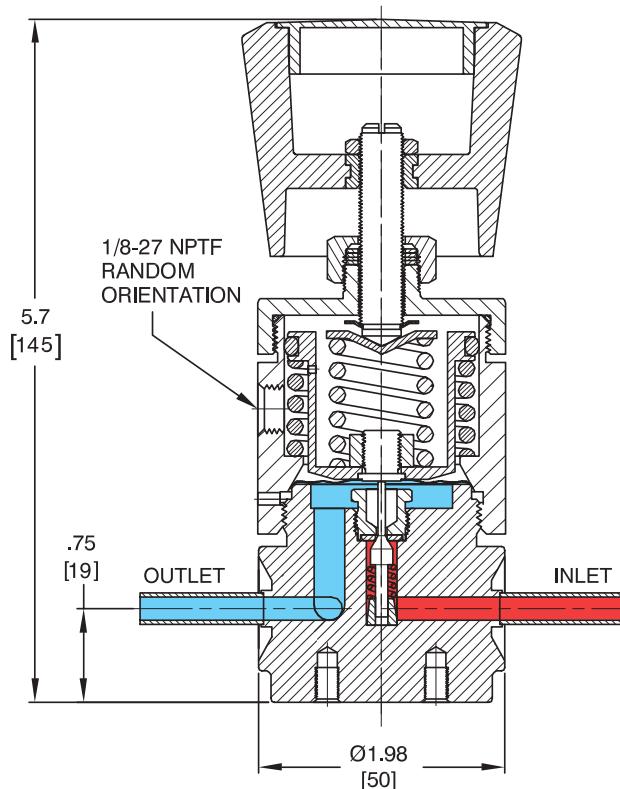
- Vacuum pressure control
- Toxic gas analysis
- Valve manifold boxes
- Gas cabinets
- Semiconductor manufacturing

Features and Benefits

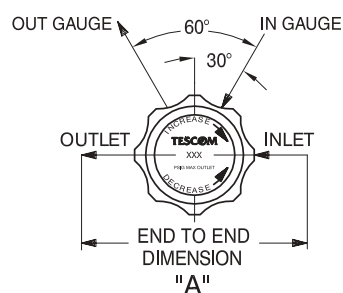
- Negative bias for controlling vacuum and low positive pressures
- 10 R_a microinch / 0.25 micrometer internal surface finish
- Metal-to-metal diaphragm to body seal for high leak integrity
- Hastelloy® trim option is available

64-5000 SERIES

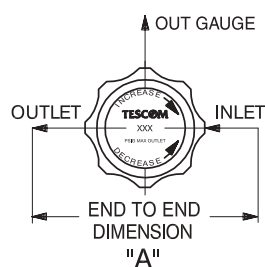
64-5000 Series Regulator Drawing



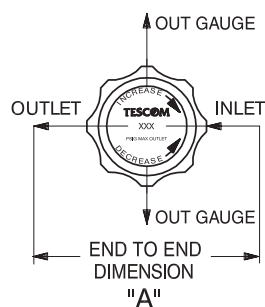
**Figure A
(no gauges)**



**Figure B
(2 gauges)**



**Figure C
(1 gauge)**

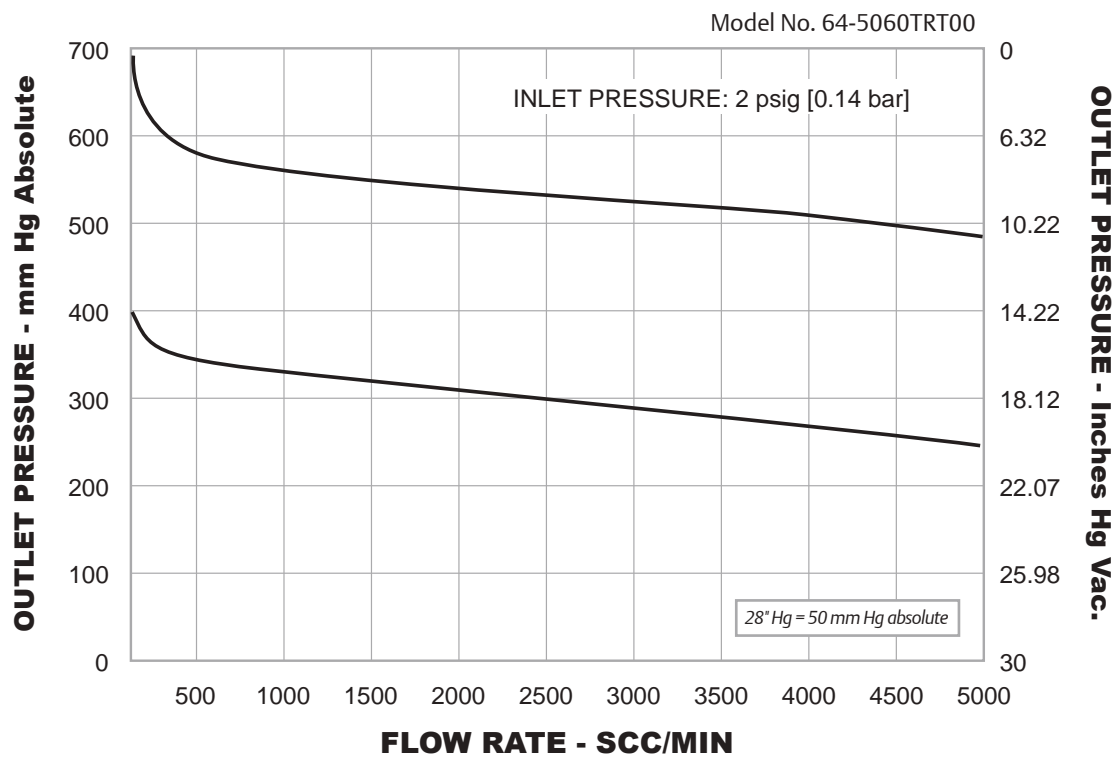


**Figure D
(2 out gauges)**

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 | 0 – 50 mm Hg absolute - 15 psig / 1.0 bar | K – PCTFE T – PTFE | A4 – 1/4" H.P.I.C. | – | 0 – 120 psig 8.3 bar | 0 – None | 0 (Figure A) |
| | 6 – 316L VAR Stainless Steel Electropolish: 10 R _A ² | 1 – 50 mm Hg absolute - 30 psig / 2.1 bar | | RK – 1/2" Male Swivel | 4.75" | C _v = 0.24 | 1 – 1/4" H.P.I.C. | 1 (Figure C) |
| | | 2 – 50 mm Hg absolute - 60 psig / 4.1 bar | | RL – 1/2" Female Swivel | 4.75" | 1 – 3500 psig 241 bar | 2 – 1/4" H.P.I.C. | 2 (Figure B) |
| | | 3 – 50 mm Hg absolute - 100 psig / 6.9 bar | | RM – 1/4" Male Swivel | 3.70" | C _v = 0.06 | 3 – 1/4" H.P.I.C. | 2 (Figure D) |
| | | | | RT – 1/4" Female Swivel | 3.70" | 2 – 600 psig 41.4 bar | 4 – 1/4" Male Swivel | 2 (Figure D) |
| | | | | RU – IN Port: 1/4" Male; OUT Port: 1/4" Female | 3.70" | C _v = 0.15 | 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 ASTM B 912

2. Per SEMI F19, HP grade

3. 28" Hg = 50 mm Hg absolute

Specifications

For other materials or modifications, please consult TESCO. M.

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

$< 1 \times 10^{-9}$ 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.

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 TESCO customer support further assistance.



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

64-5400 SERIES

64-5400 Series Regulator Drawing

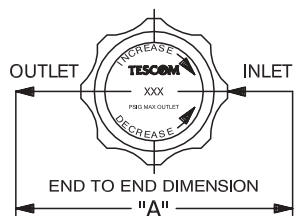


Figure A (no gauges)

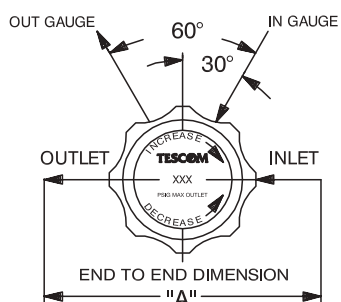


Figure B (2 gauges)

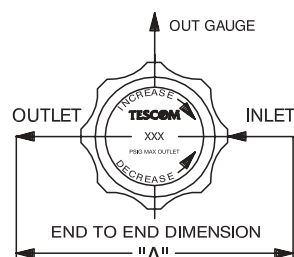
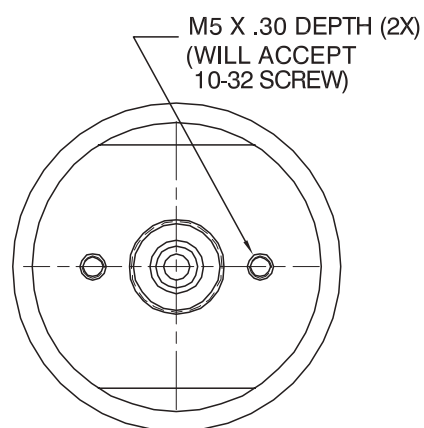
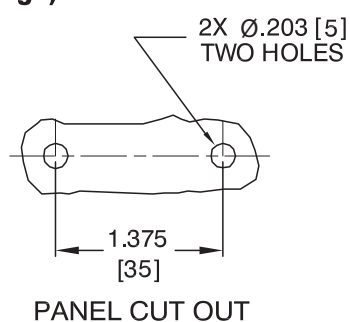
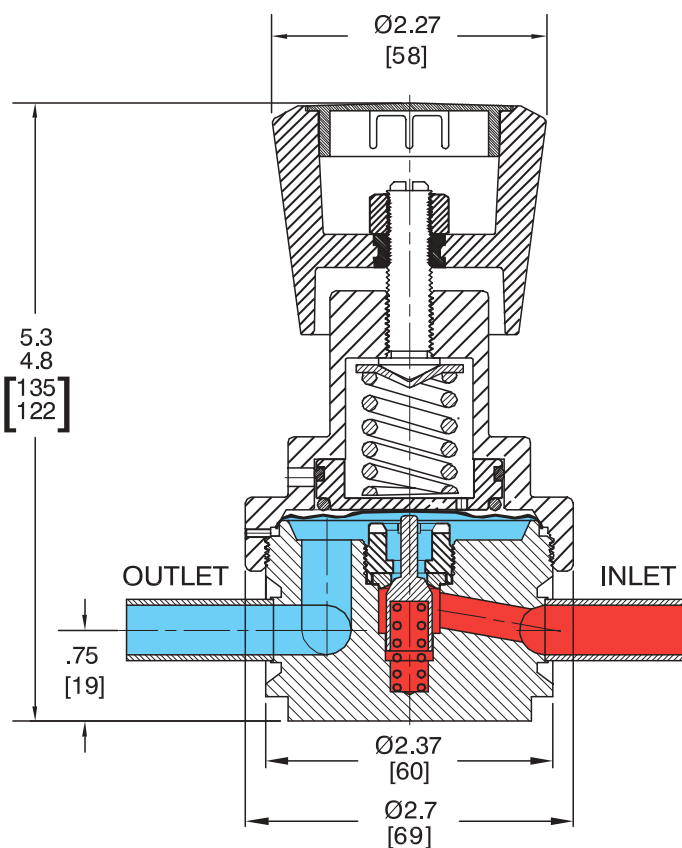


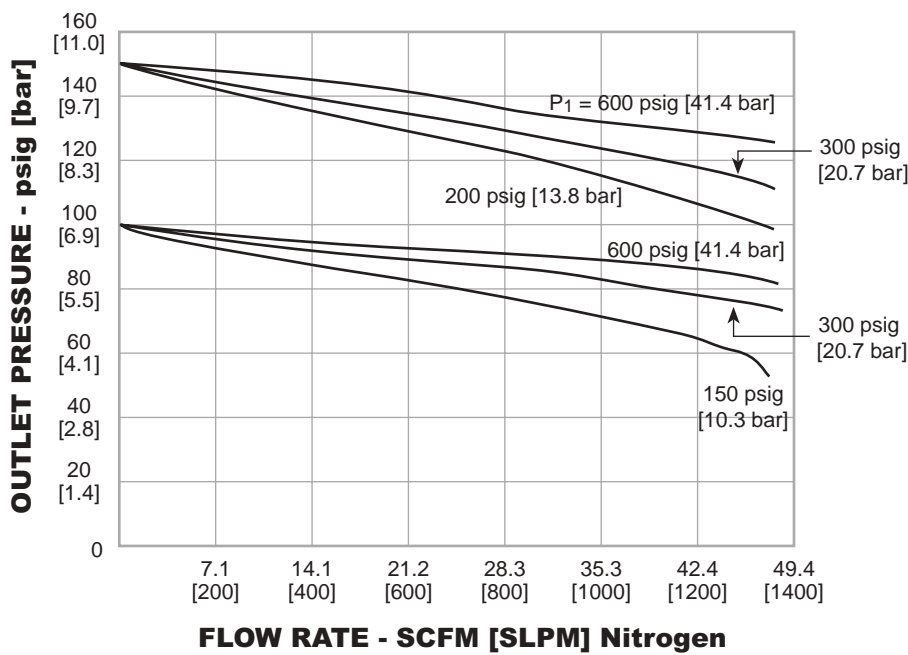
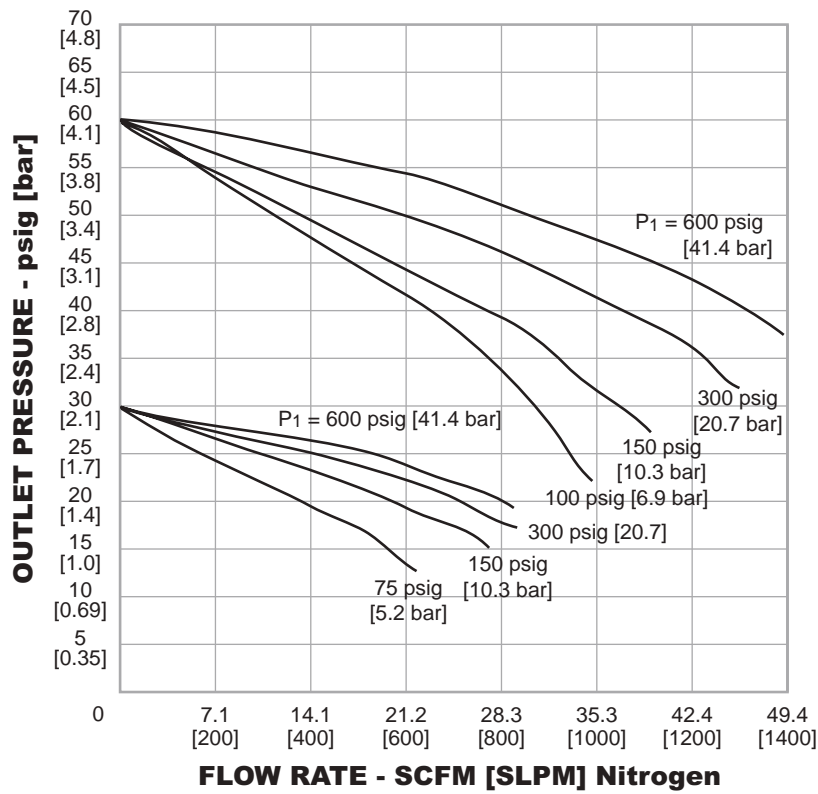
Figure C (1 gauge)



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 TESCO 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 T – PTFE PFA | 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 | | T8 – 1/2" Tube Stubs | 3.70 | | 1 – 1/4" H.P.I.C. | 1 (C) |
| | | | | | RU – 1/2" Male Swivel | 5.59 | | 2 – 1/4" H.P.I.C. | 2 (B) |
| | | | | | 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

1×10^{-9} atm cc/sec He

Operating Temperature

PCTFE Seat: -40°F to 140°F / -40°C to 60°C

Vespe[®] 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 (Vespe[®]) 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

Vespe[®] is a registered trademark of E.I. du Pont de Nemours and Company.

VCR[®] is a registered trademark of Cajon Co.

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.



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

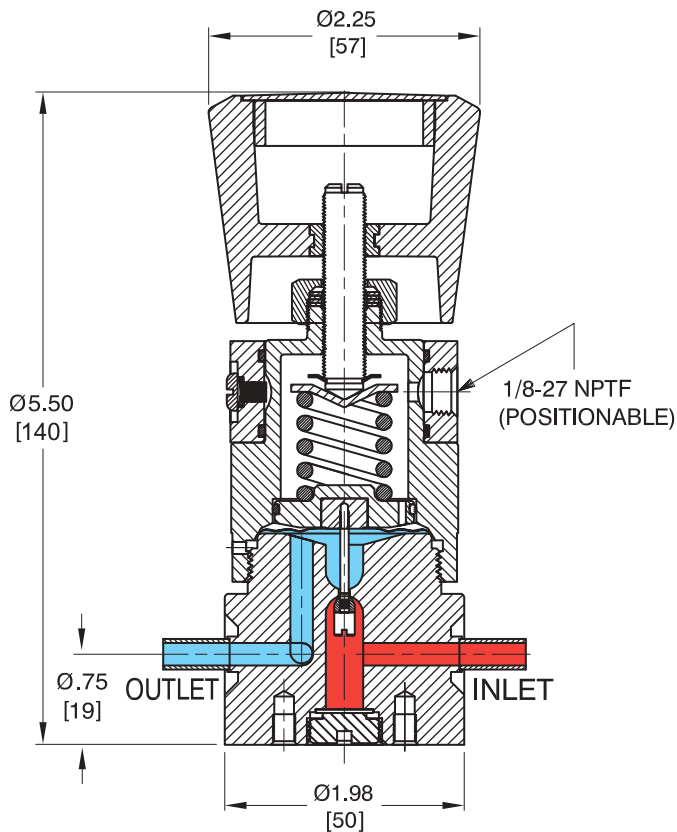
- 1/4" point-of-use
- Gas cabinets
- Semiconductor manufacturing
- Valve manifold boxes
- Research labs

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

74-2400 SERIES

74-2400 Series Regulator Drawing



GAUGE PORT OPTIONS

Figure A (no gauges)

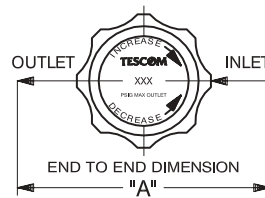


Figure B (2 gauges)

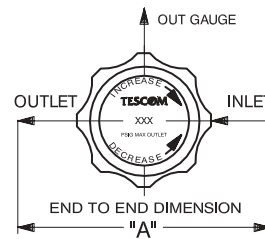
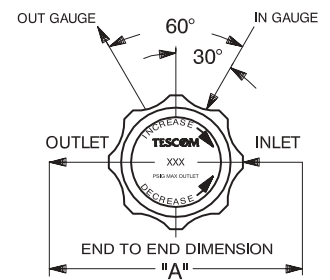


Figure C (1 gauge)

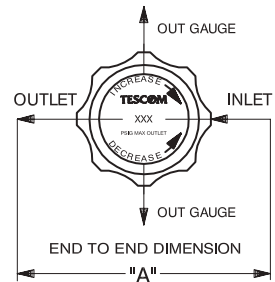
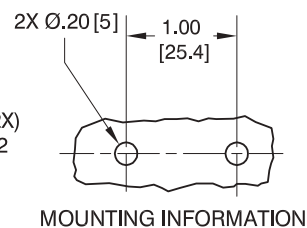
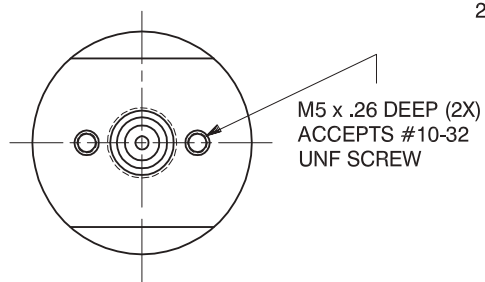


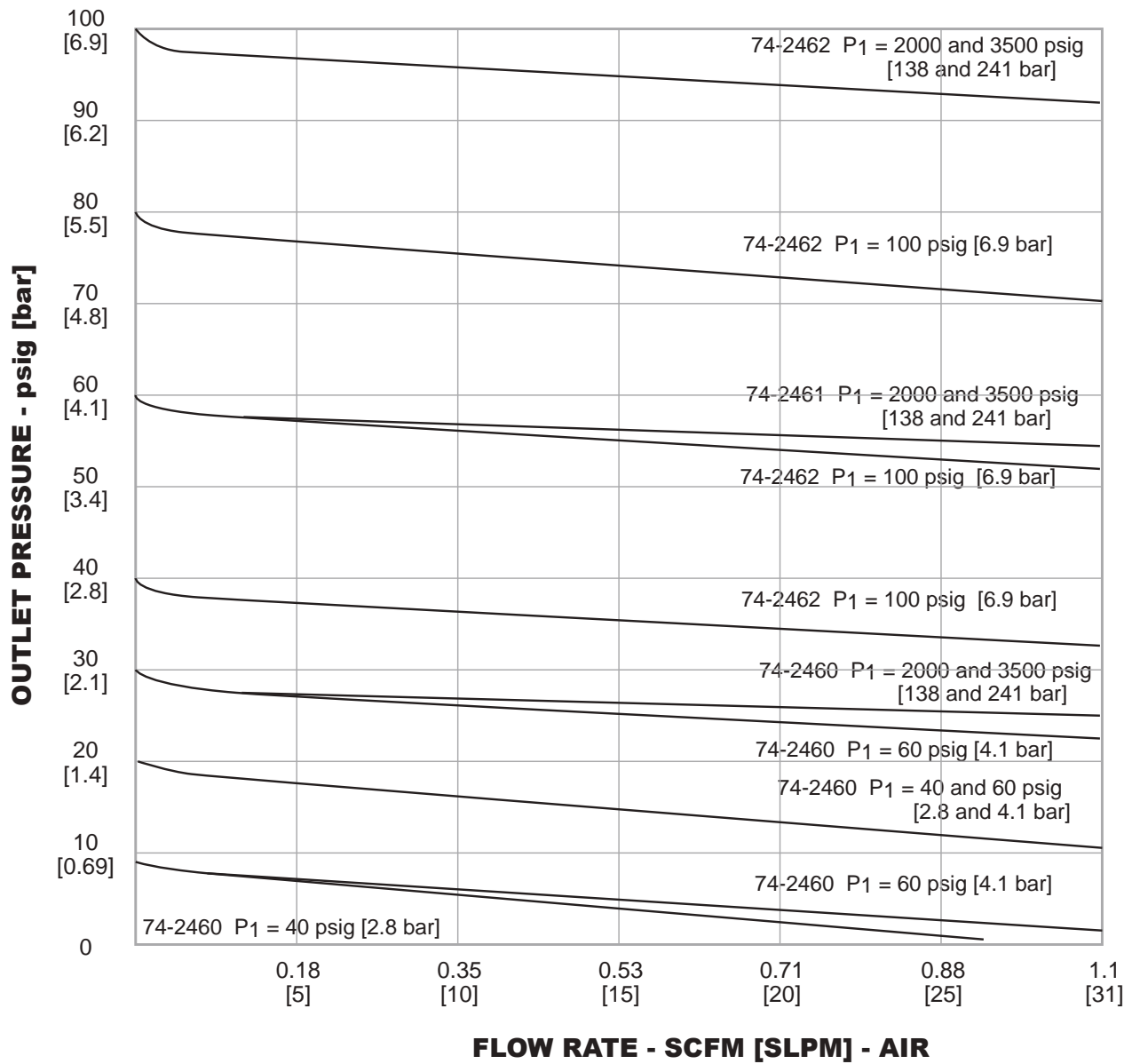
Figure D (2 gauges)



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 TESCO 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 <div>1. Per SEMI F19, UHP grade</div> | 0 – 30 psig 2.1 bar 1 – 60 psig 4.1 bar 2 – 100 psig 6.9 bar | K – PCTFE (standard) 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 | 1.09" 4.75" 4.75" 3.70" 3.70" 3.70" 3.70" 3.00" | 1 – 3500 psig 241 bar 2 – 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 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) 2 (Figure D) 1 (Figure C) 2 (Figure B) 2 (Figure B) 1 (Figure C) 2 (Figure B) |

Specifications

For other materials or modifications, please consult TESCO. M.

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

$<1 \times 10^{-9}$ atm cc/sec He per ASTM E449

Operating Temperature:

Vespe[®] 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 (Vespe[®])

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

Vespe[®] 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 TESCO customer support further assistance.

74-3000 SERIES

74-3000 Series Regulator Drawing

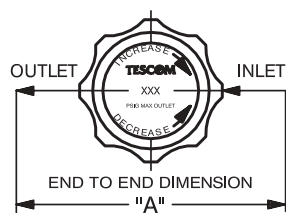


Figure A (no gauges)

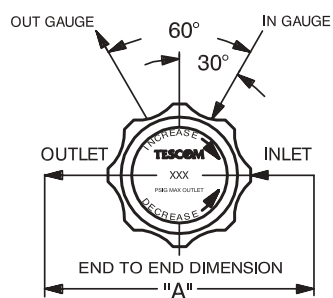


Figure B (2 gauges)

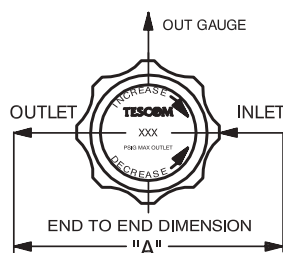


Figure C (1 gauge)

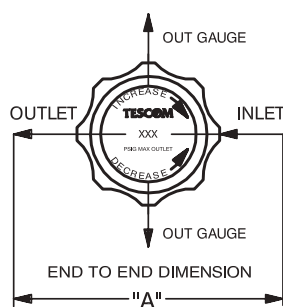
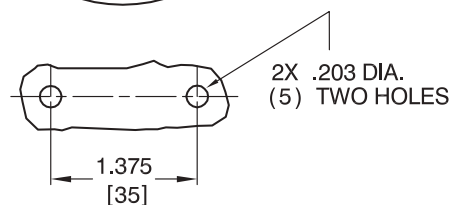
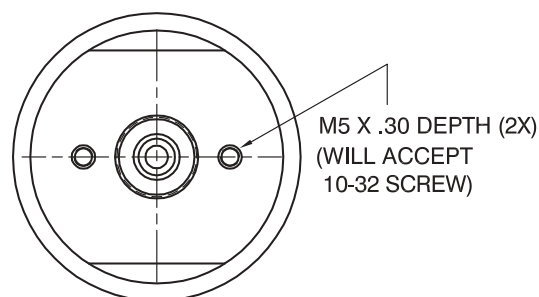
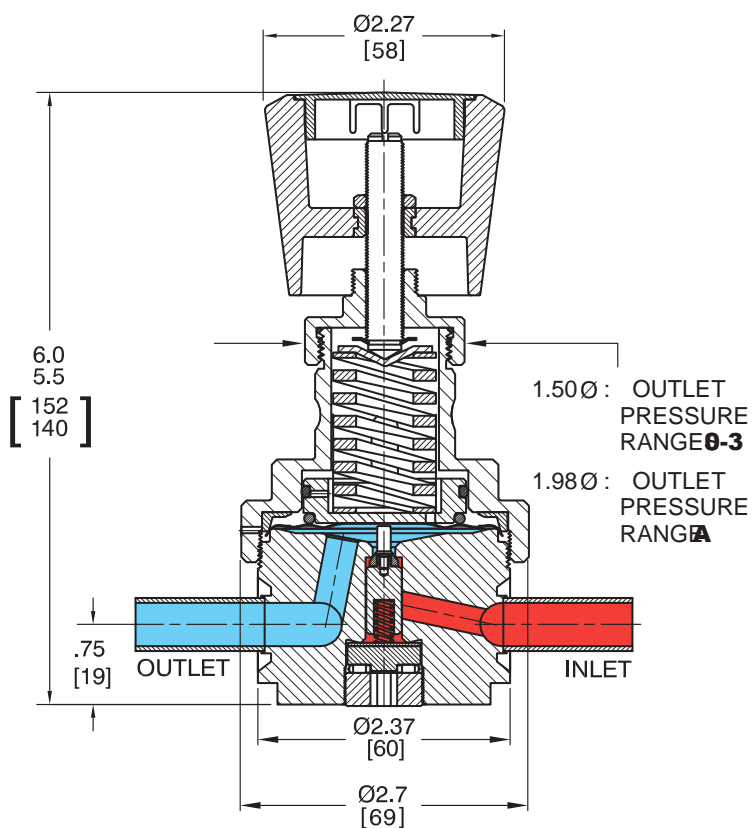


Figure D (2 gauges)

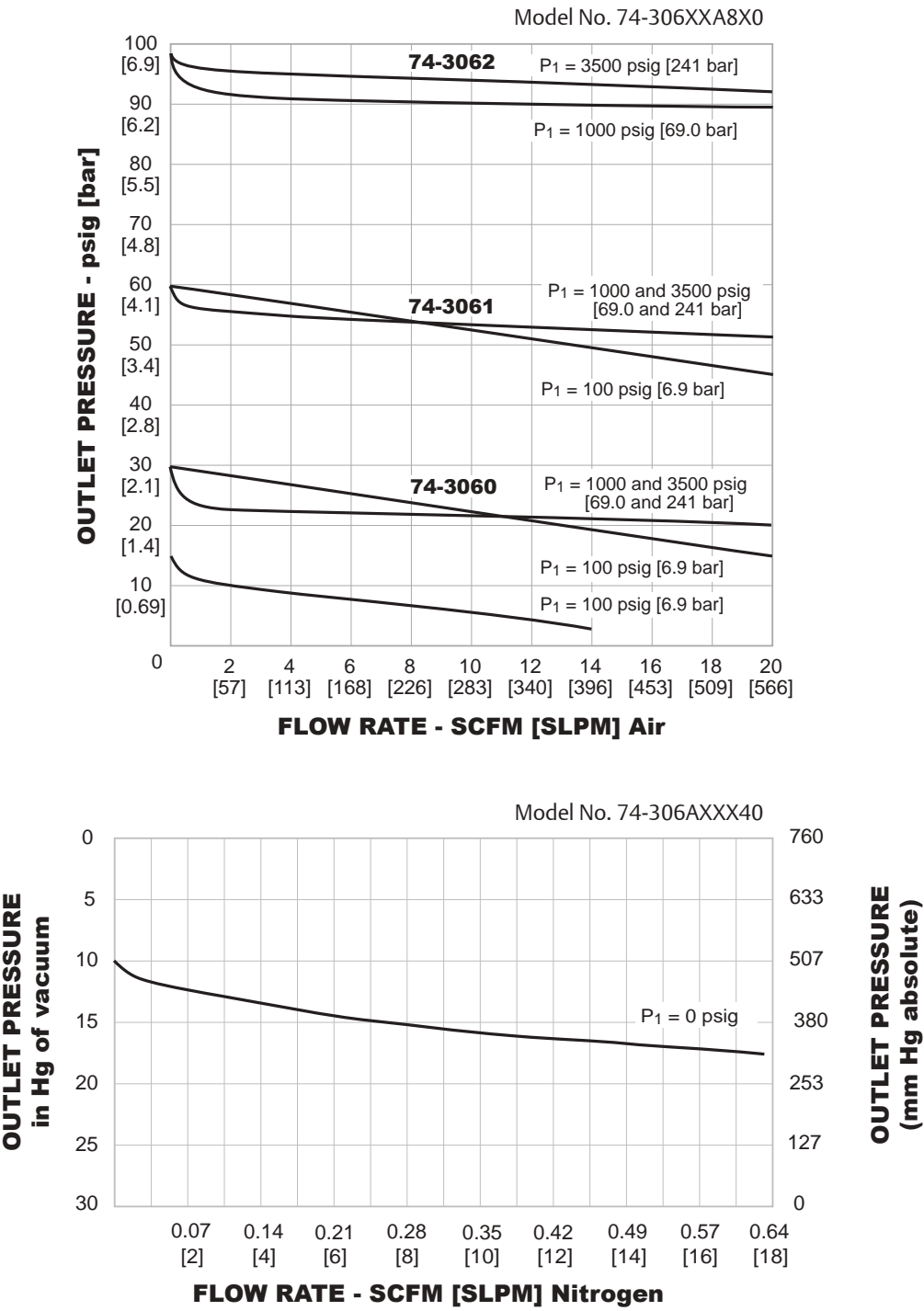


PANEL CUT OUT

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 TESCO 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 0 – 3-30 psig 0.21-2.1 bar 1 – 3-60 psig 0.21-4.1 bar 2 – 4-100 psig 0.28-6.9 bar 3 – 4-150 psig 0.28-10.3 bar | V – Polyimide (Vespel®) (3500 psig / 241 bar only) K – PCTFE (not available with 3500 psig / 241 bar inlet) T – PTFE PFA (600 psig / 41.4 bar only) | T4 – 1/4" Tube Stubs | 3.70 | 1 – 3500 psig 241 bar 2 – 1000 psig 69.0 bar 3 – 600 psig 41.4 bar 4 – 300 psig 20.7 bar (Absolute only) | 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 D) | | | | | | | |
| | | | | | T6 – 3/8" Tube Stubs | 3.70 | | | | 2 – 1000 psig 69.0 bar | | | | | | |
| | | | | | T8 – 1/2" Tube Stubs | 3.70 | | | | 3 – 600 psig 41.4 bar | | | | | | |
| | | | | | RA – 1/4" Male Fixed | 3.70 | | | | 4 – 300 psig 20.7 bar | | | | | | |
| | | | | | RU – 1/2" Male Swivel | 5.59 | | | | | | | | | | |
| | | | | | RW – 1/2" Female Swivel | 5.59 | | | | | | | | | | |
| | | | | | SV – IN Port:1/2" Male Swivel; OUT Port: 1/2" Female | 5.59 | | | | | | | | | | |
| | | | | | SZ – IN Port:1/2" Female; OUT Port: 1/2" Male Swivel | 5.59 | | | | | | | | | | |
| | | | | | 1. Per SEMI F19, UHP grade | | | | | | | | | | | |

Regulators - Pressure Reducing

D74381734X012

Specifications

For other materials or modifications, please consult TESCO. M.

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****Vespe[®]**: -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

Diaphragm316 Stainless Steel or Nickel Alloy (Hastelloy[®])**Valve Seat**Polyimide (Vespe[®]) (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 Finish10 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 Vespe[®] 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.**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 TESCO customer support further assistance.



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

74-3800 SERIES

74-3800 Series Regulator Drawing

FIGURE A (NO GAUGE)

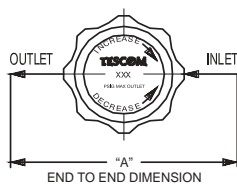


FIGURE B (2 GAUGES)

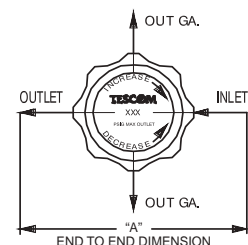
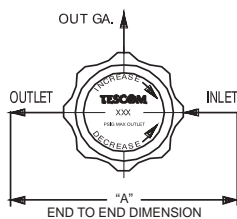
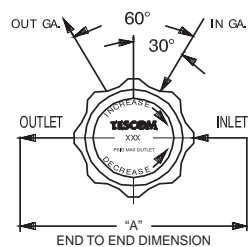
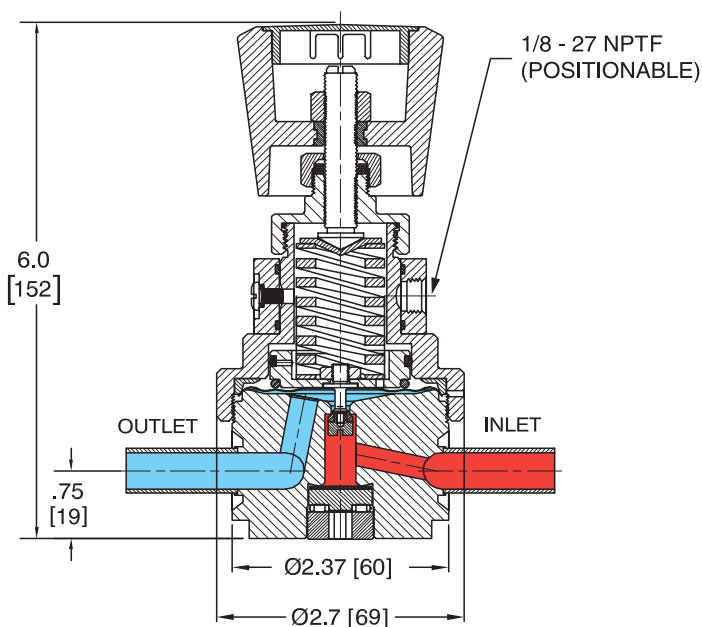
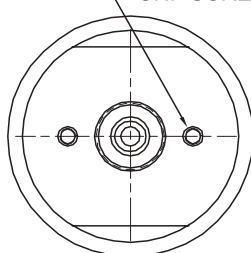


FIGURE C (1 GAUGE)

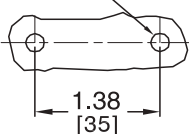
FIGURE D (2 OUTLET GAUGES)



M5 X .30 DEPTH (2X)
ACCEPTS #10-32
UNF SCREW



2X .20 DIA. [5]
TWO HOLES

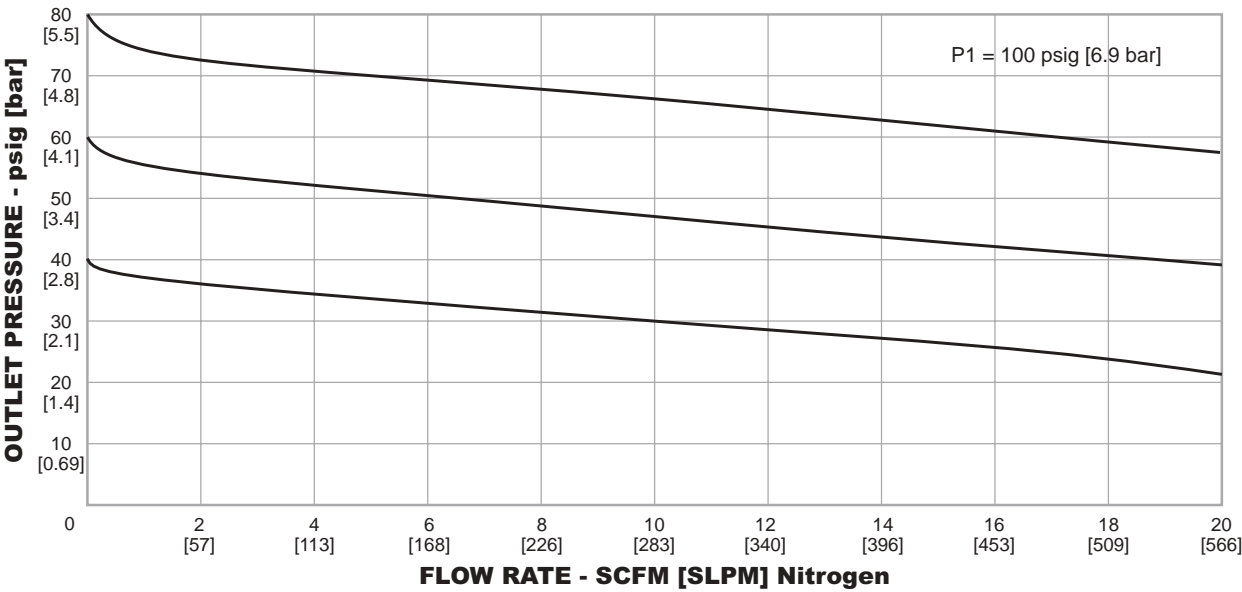


PANEL CUT OUT

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 | | | | | | | | |

1. Per SEMI F19, HP grade

Specifications

For other materials or modifications, please consult TESCO.

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 (Elgiloy®)

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

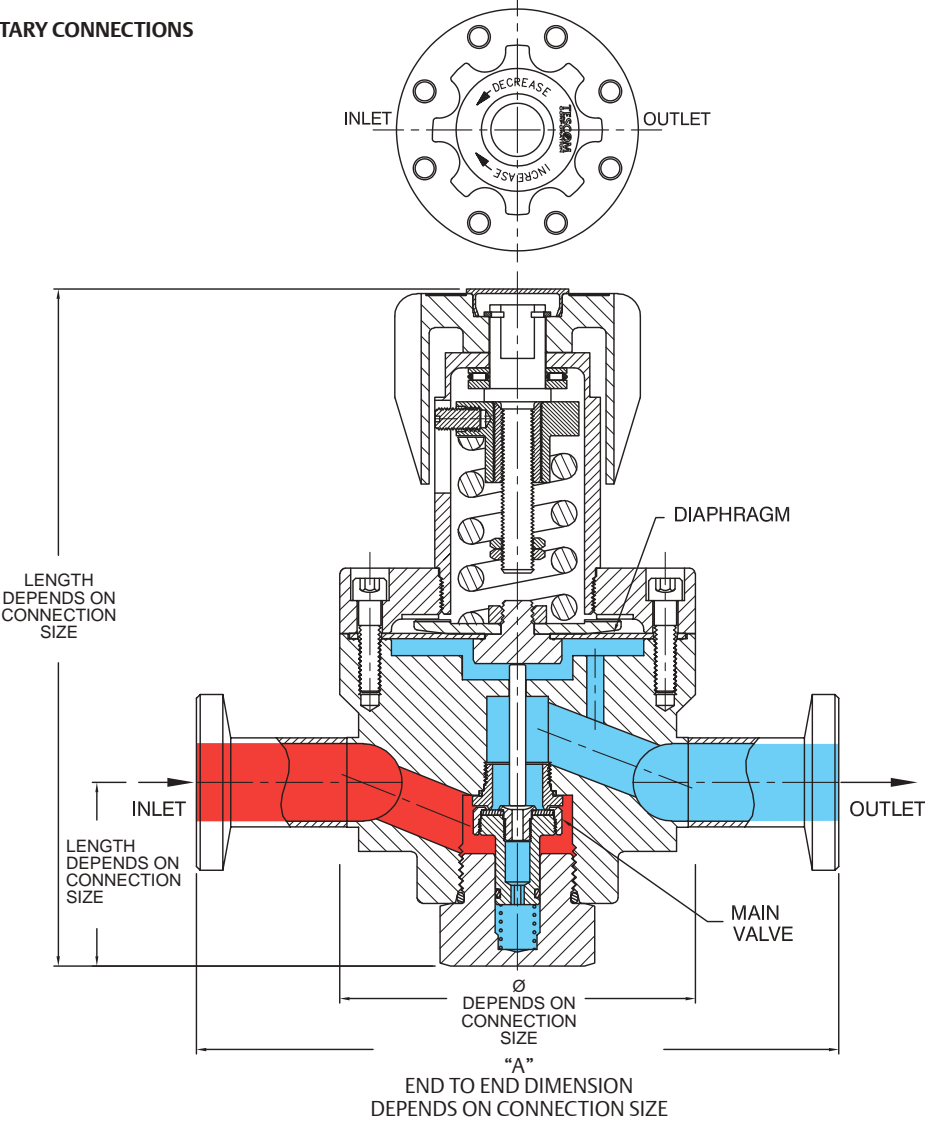
Features and Benefits

- 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

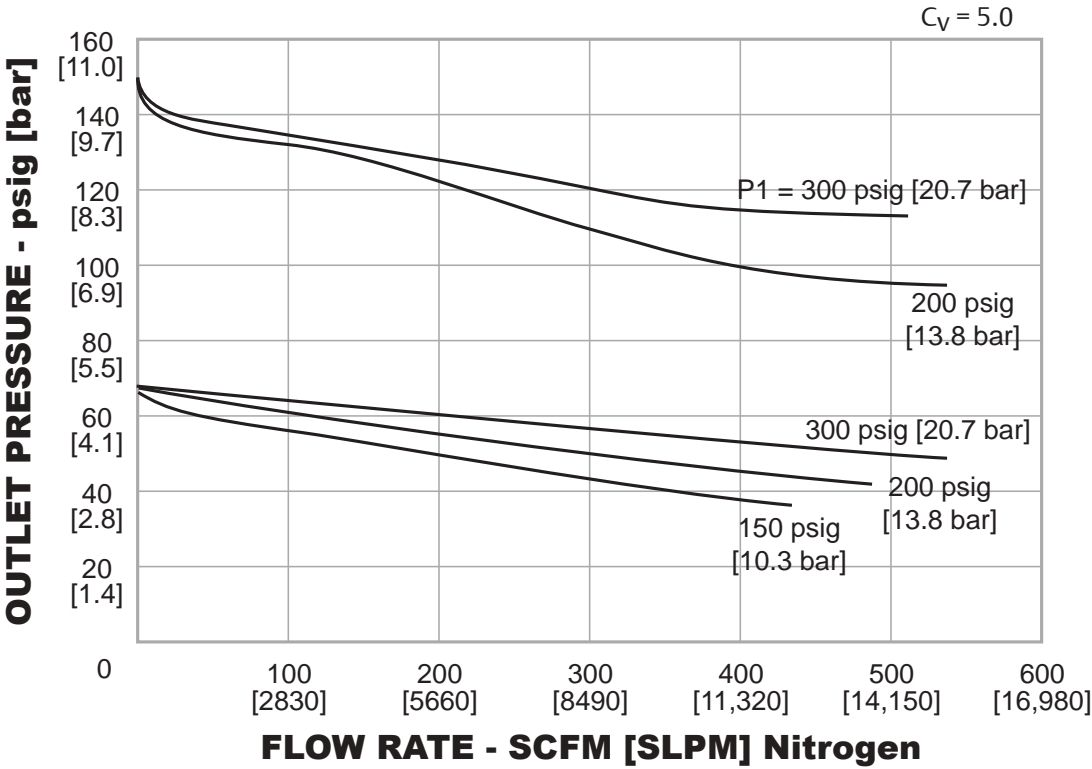
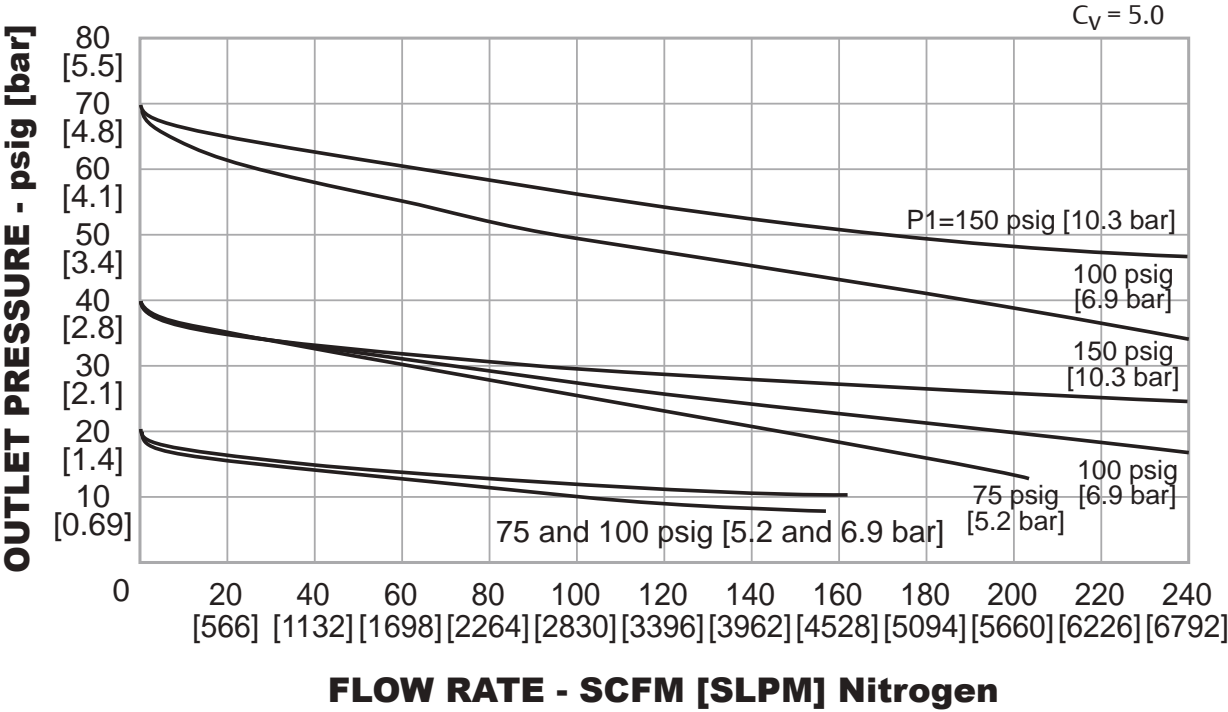


| PART NUMBER | DIMENSION "A" | PART NUMBER | DIMENSION "A" |
|---------------|---------------|---------------|---------------|
| PH16XXXXXXAAX | 7.25 / 7.13 | PH16XXXXXX66X | 9.91 / 9.79 |
| PH16XXXXXXBBX | 7.25 / 7.13 | PH16XXXXXX77X | 9.91 / 9.79 |
| PH16XXXXXXCCX | 7.25 / 7.13 | PH16XXXXXX88X | 9.91 / 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 TESCO 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 TESCO.



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:

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 | A – 316L Stainless Steel / 20 R _a SFV1 | 0 – 0-20 psig 0-1.4 bar | G – Diaphragm: PTFE O-rings: E.P. Seat: E.P. | N – Non-Venting | A – None B – Clean Service Certificate | A – No gauge ports | 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 | | |
| | H – Spring load, handknob | C – 316L Stainless Steel / 30 R _a SFV3 | 1 – 0-50 psig 0-3.4 bar | | | |  | | | |
| W – Spring load, wrench adjust | | | 2 – 0-100 psig 0-6.9 bar 3 – 0-150 psig 0-10.3 bar 5 – 0-250 psig 0-17.2 bar |  | | | | | | |
| | | | | 1. Port size limits regulator to C _V = 2.5 2. Port size limits regulator to C _V = 3.5 | | | | | | |

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 (Elgiloy®)

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

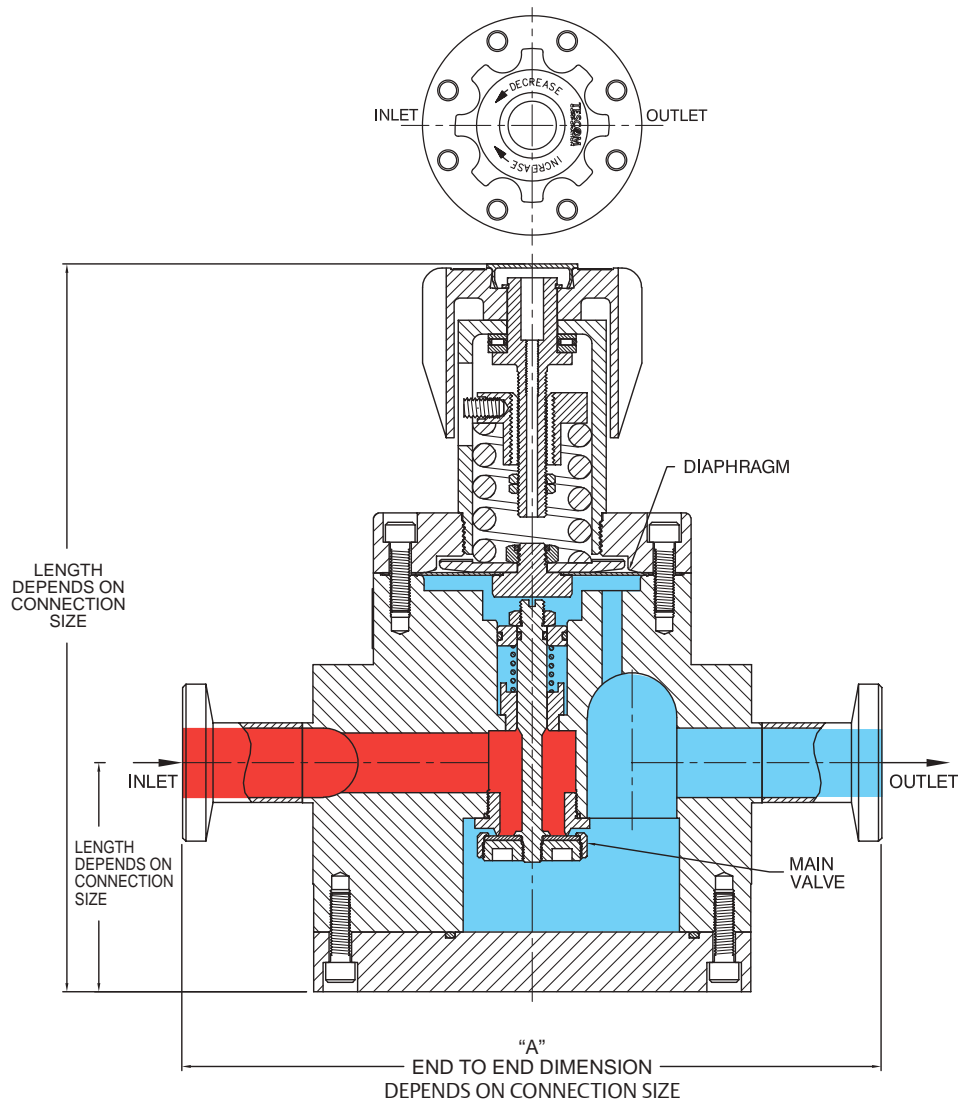
Features and Benefits

- 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



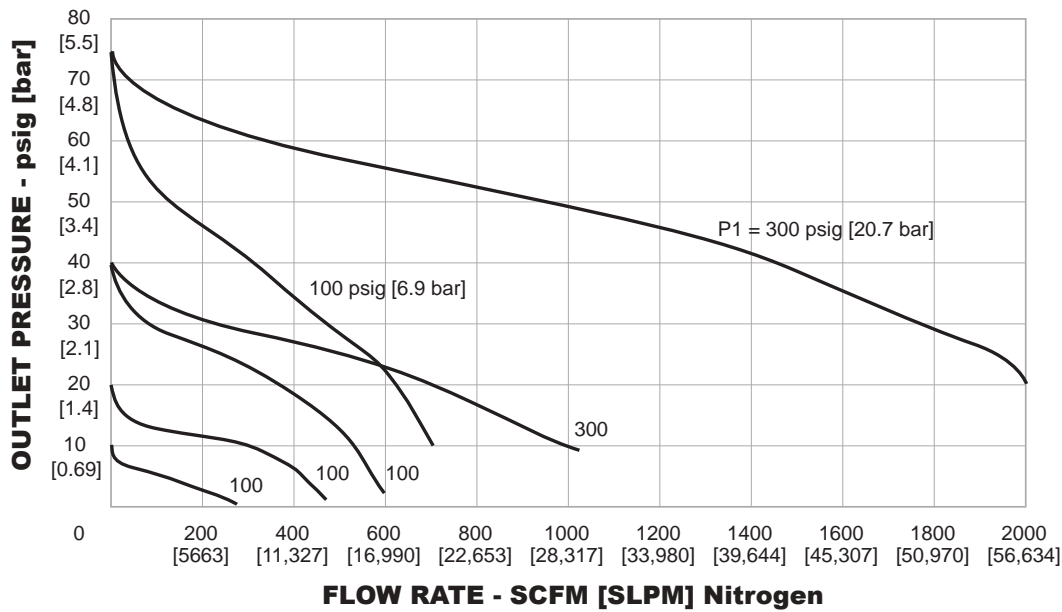
| Part No. | Dimension "A" |
|---------------------|---------------|
| PH18XXXXXXBBX | 8.82/8.70 |
| PH18XXXXXXCCX | 8.82/8.70 |
| PH18XXXXXXDDX | 8.82/8.70 |
| PH18XXXXXXEEX | 8.66/8.54 |

| 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.


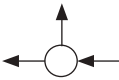


PH-1800 SERIES

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 | | | | | | | | |

Specifications

For other materials or modifications, please consult TESCO.™

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 $< 2 \times 10^{-8}$ 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

$C_v = 0.06, 0.15, \text{ and } 0.24$

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

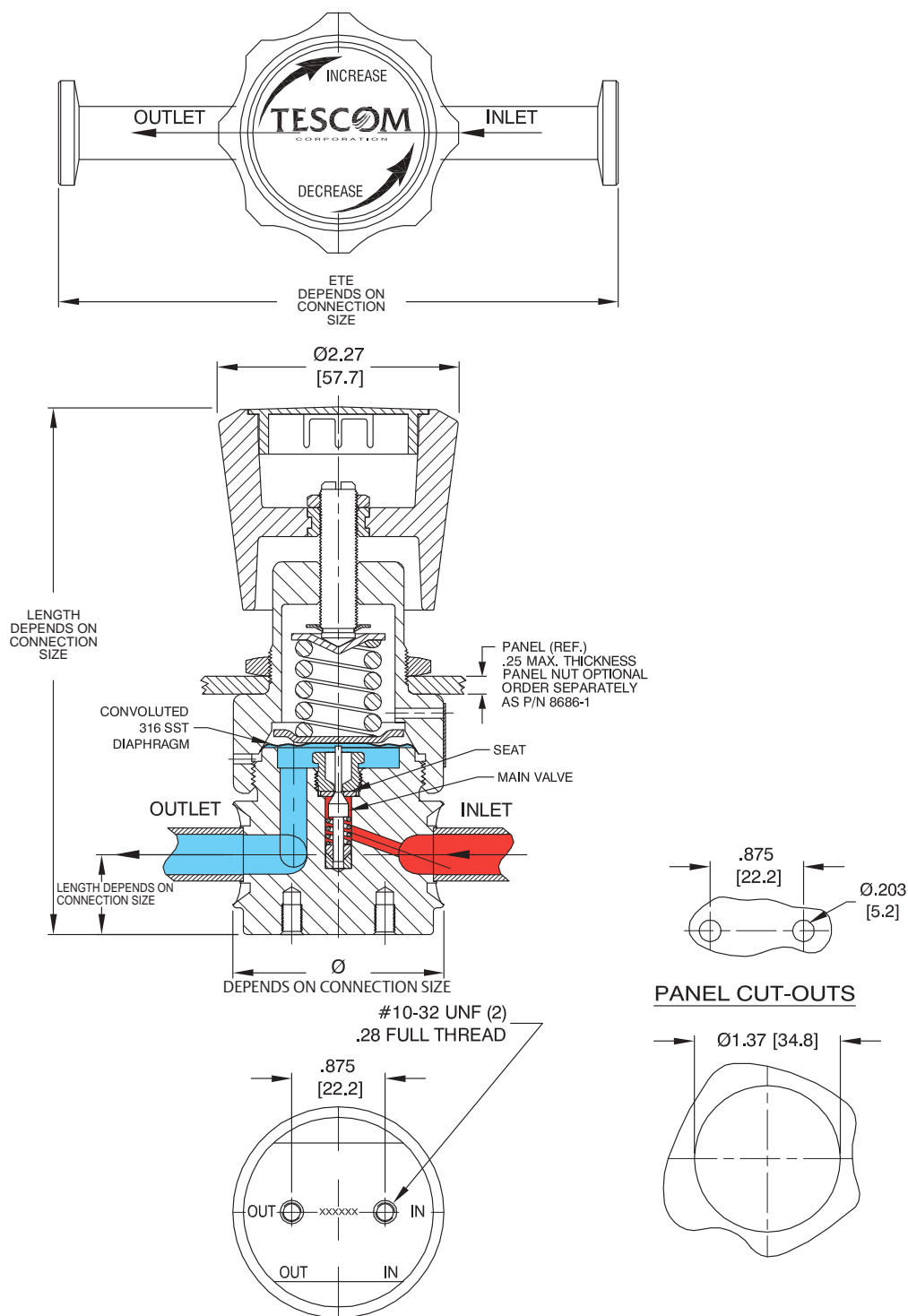
- Sparge gases
- Clean steam for sanitization
- Transfer panels
- Low flow specialty gas

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

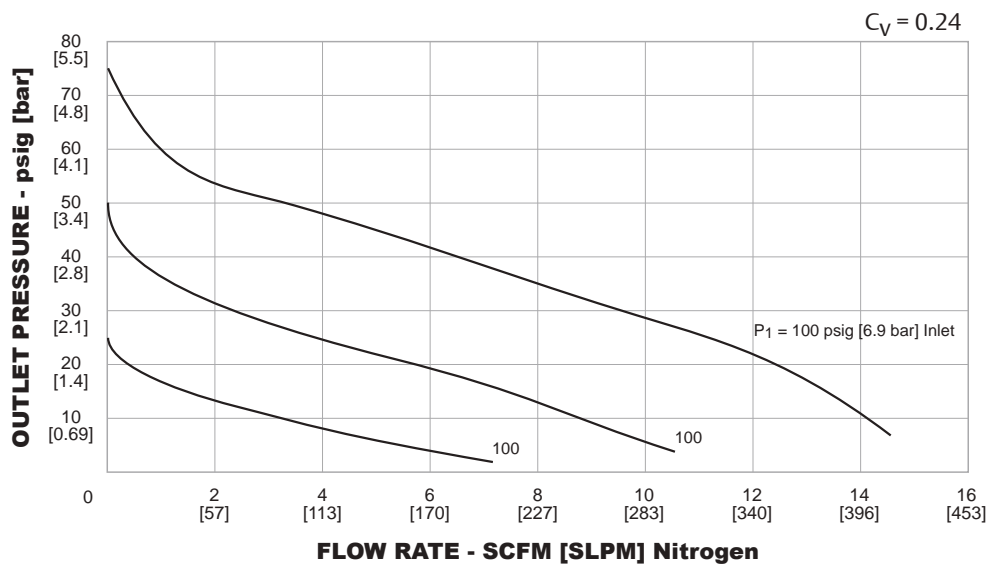
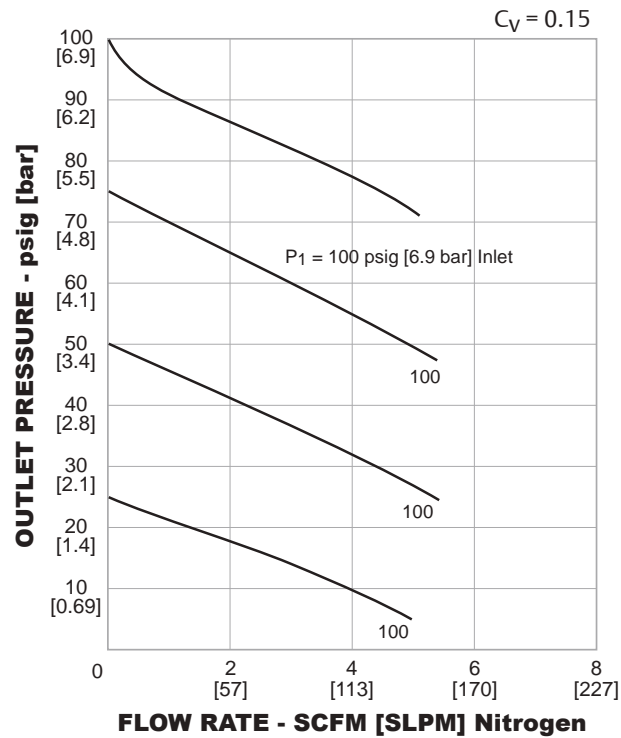
PH-2200 Series Regulator Drawing



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 TESCO catalog or on www.tescom.com.

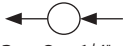



PH-2200 SERIES

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 | 8 – Sanitary | 6 – 3/8" (Tube Only) | 1 – C _v = 0.06 | 0 – No gauge ports | A – None B – Clean Service Certification |
| | | | | | 1 – Spring | 0-0.69 bar | | | | | |
| | B – 316L Stainless Steel | 15 R _a | Arlon® (PEEK) | Cobalt Chrome Nickel Alloy (Elgiloy®) | 2 – Spring | 0-25 psig | 9 – Tube | 0.375" OD x 0.035" wall | 2 – C _v = 0.15 | 2 – One 1/4" HPIC outlet gauge port at 90° | |
| | | | | | 3 – Spring | 0-1.7 bar | | | | | |
| | C – 316L Stainless Steel | 32 R _a | PTFE | 316 Stainless Steel | 0-50 psig | 0-3.4 bar | 8 – 1/2" 0.500" OD x 0.065" wall | 4 – C _v = 0.24 |  | | |
| | | | | | 3 – Spring | 0-100 psig | | | | | |
| | D – 316L Stainless Steel | 32 R _a | Arlon® (PEEK) | Cobalt Chrome Nickel Alloy (Elgiloy®) | 0-6.9 bar | 0-6.9 bar | 5 – Spring Bias | 0-100 psig / 0-6.9 bar |  | | |
| | | | | | 4 – Spring Bias | 0-100 psig | | | | | |
| | | | | | | 0-3.4 bar Spring Bias Pressure | | | | | |
| | | | | | | 5 – Spring Bias | | | | | |
| | | | | | | 0-6.9 bar Spring Bias Pressure | | | | | |
| | | | | | | 6 – Dome | | | | | |
| | | | | | 0-6.9 bar | | | | | | |
| | | | | | | | | | | 0-6.9 bar | |

Specifications

For other materials or modifications, please consult TESCO.™

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 $< 2 \times 10^{-8}$ 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

$C_v = 0.02, 0.06, 0.15, \text{ and } 0.24$

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.

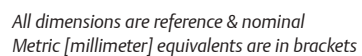
Applications

- Sparge gases
- Clean steam for sanitization
- Transfer panels
- Low flow specialty gas

Features and Benefits

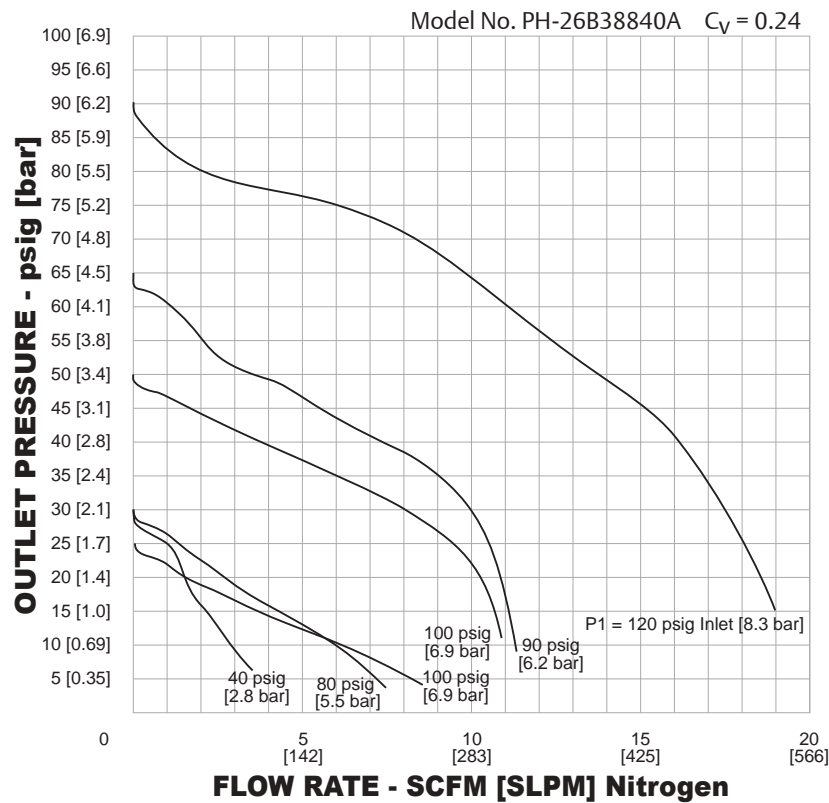
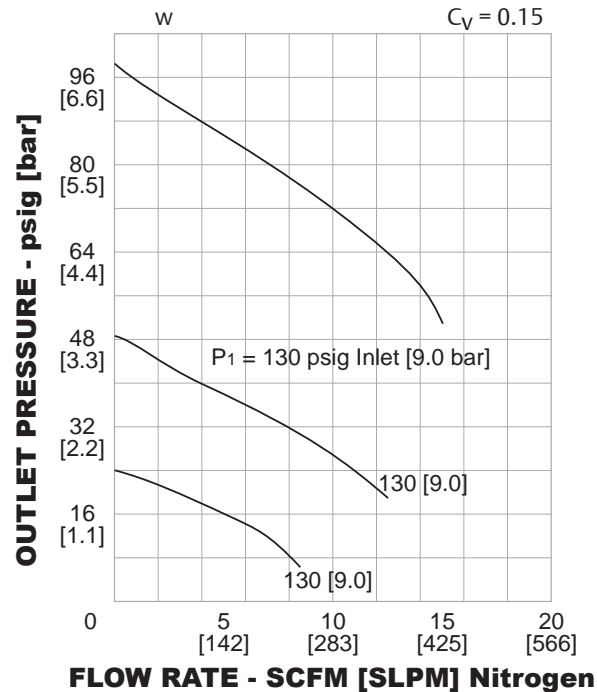
- 316L Stainless Steel barstock regulator body design
- FDA/USP compliant designs are available
- Clean Service Certification of Compliance available: Includes actual material certification, weld records, and bill of materials
- 15 or 32 R_a microinch / 0.38 or 0.81 micrometer body surface finishes are available
- Precise pressure control
- Gauge port is available
- ASME BPE 2009 compliant design

PH-2600 Series Regulator Drawing



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 TESCO catalog or on www.tescom.com.

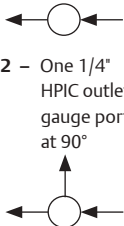


PH-2600 SERIES

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 9 – Tube | 6 – 3/8" (Tube Only) 0.375" OD x 0.035" wall 8 – 1/2" 0.500" OD x 0.065" wall | 0 – C _v = 0.02 1 – C _v = 0.06 2 – C _v = 0.15 4 – C _v = 0.24 |  0 – No gauge ports 2 – One 1/4" HPIC outlet gauge port at 90° | A – None B – Clean Service Certification | | |
| | | | | | 1 – Spring | 0-25 psig 0-1.7 bar | | | | | | | |
| | B – 316L Stainless Steel | 15 R _a | PTFE | Cobalt Chrome Nickel Alloy (Elgiloy®) | 2 – Spring | 0-50 psig 0-3.4 bar | | | | | | | |
| | | | | | 3 – Spring | 0-100 psig 0-6.9 bar | | | | | | | |
| | | | | | 4 – Spring Bias | 0-100 psig 0-50 psig / 0-3.4 bar Spring Bias Pressure | | | | | | | |
| | C – 316L Stainless Steel | 32 R _a | PTFE | 316 Stainless Steel | | | | | | | | | |
| | D – 316L Stainless Steel | 32 R _a | PEEK | Cobalt Chrome Nickel Alloy (Elgiloy®) | 5 – Spring Bias | 0-100 psig 0-100 psig / 0-6.9 bar Spring Bias Pressure | | | | | | | |
| | | | | | 6 – Dome | 0-100 psig 0-6.9 bar | | | | | | | |
| | | | | | | | | | | | | | |

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 $< 2 \times 10^{-8}$ 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

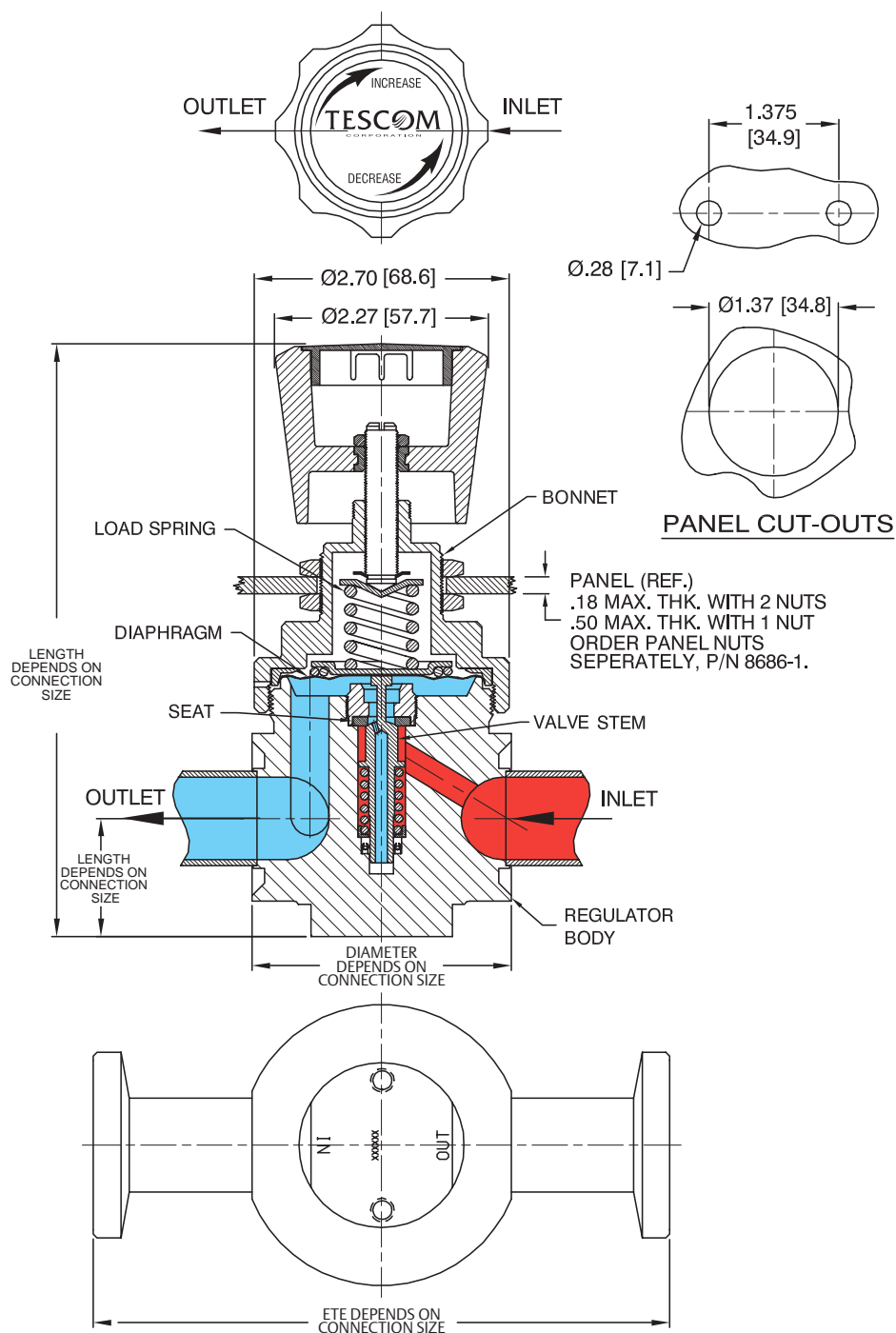
- Sparge gases
- Clean steam for sanitization
- Transfer panels

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

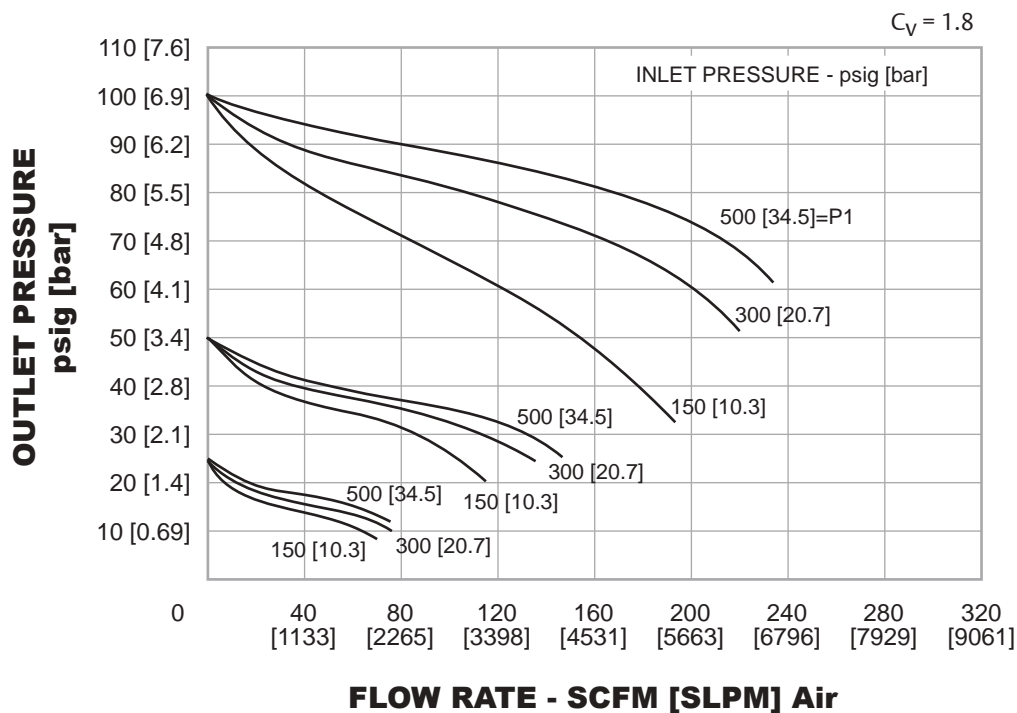
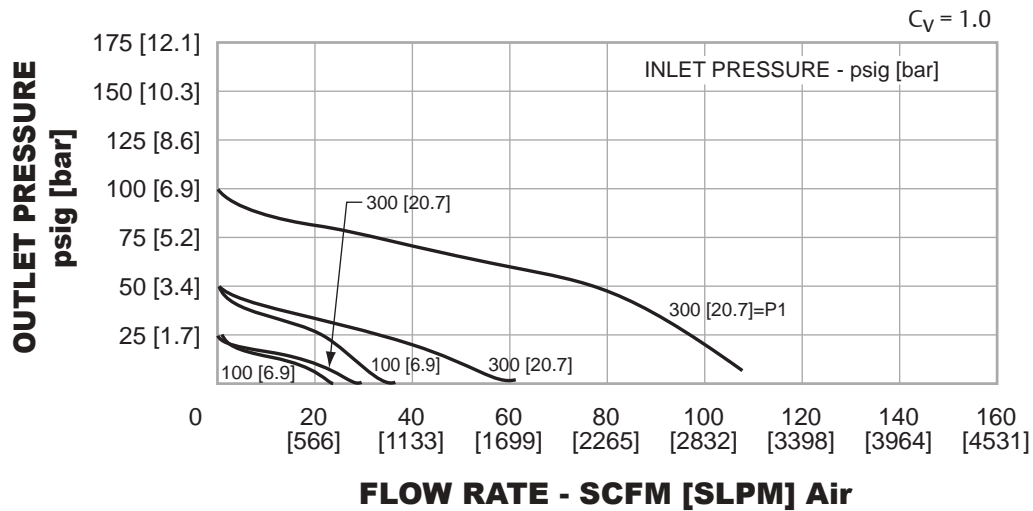
PH-3200 Series Regulator Drawing



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 TESCO 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 9 – Tube | 08 – 1/2" 0.500" OD x 0.065" wall 12 – 3/4" 0.750" OD x 0.065" wall | 2 – C _v = 1.8 3 – C _v = 1.0 | 0 – No gauge ports  | A – None B – Clean Service Certification | |
| | B – 316L Stainless Steel | 15 R _a | PEEK | E.P. O-Ring | 1 – Spring | 0-50 psig 0-3.4 bar | | | | 1 – One 3/4" sanitary outlet gauge port at 90° | | |
| | 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 TESCO pressure reducing 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 TESCO pressure reducing regulators listed in numerical/alphabetical order

| Model | Page | Model | Page | Model | Page |
|-----------------|------|----------------|------|----------------|------|
| | ? | 44-1700 Series | 483 | 54-2100 Series | 507 |
| 26-1700F Series | 463 | 44-2300 Series | 487 | | ? |
| 26-2300 Series | 467 | 44-2500 Series | 491 | 54-2700 Series | 517 |
| 26-2500 Series | 471 | 44-2900 Series | 495 | 54-3500 Series | 521 |
| 26-2700 Series | 475 | 44-4700 Series | 499 | BB-3 Series | 523 |
| 26-2900 Series | 479 | 44-5500 Series | 503 | DV Series | 527 |

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

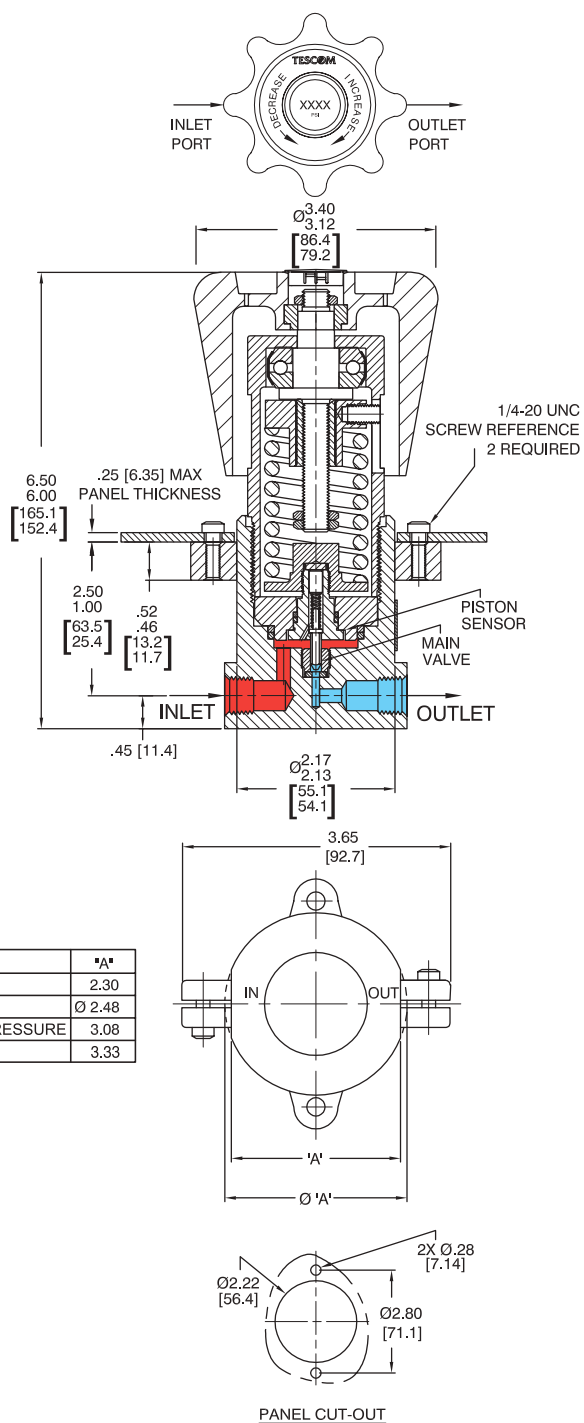
- Pump discharge pressure control
- Reactor pressure control
- Over-pressurization relief

Features and Benefits

- Accuracy: $\pm 1\%$ 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 reseal pressures
- Safe and reliable piston-style sensor
- Panel mounting is standard
- Compatible with TESCOm Air Actuators and ER5000 Electropneumatic Controllers
- Flanged end connections available

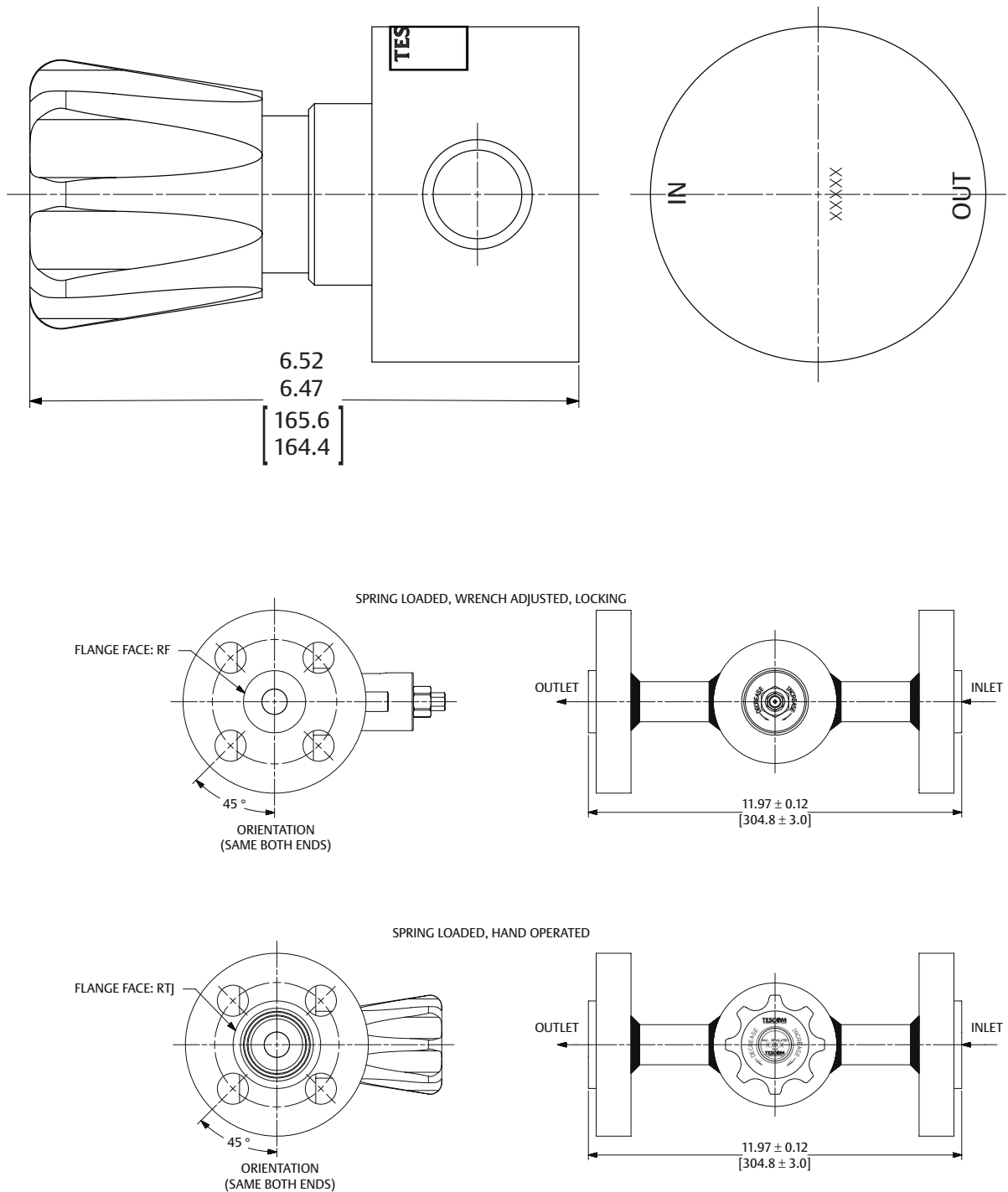
26-1700 SERIES

26-1700 Series Regulator Drawing



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

26-1700 Series Regulator with Flanges Drawing

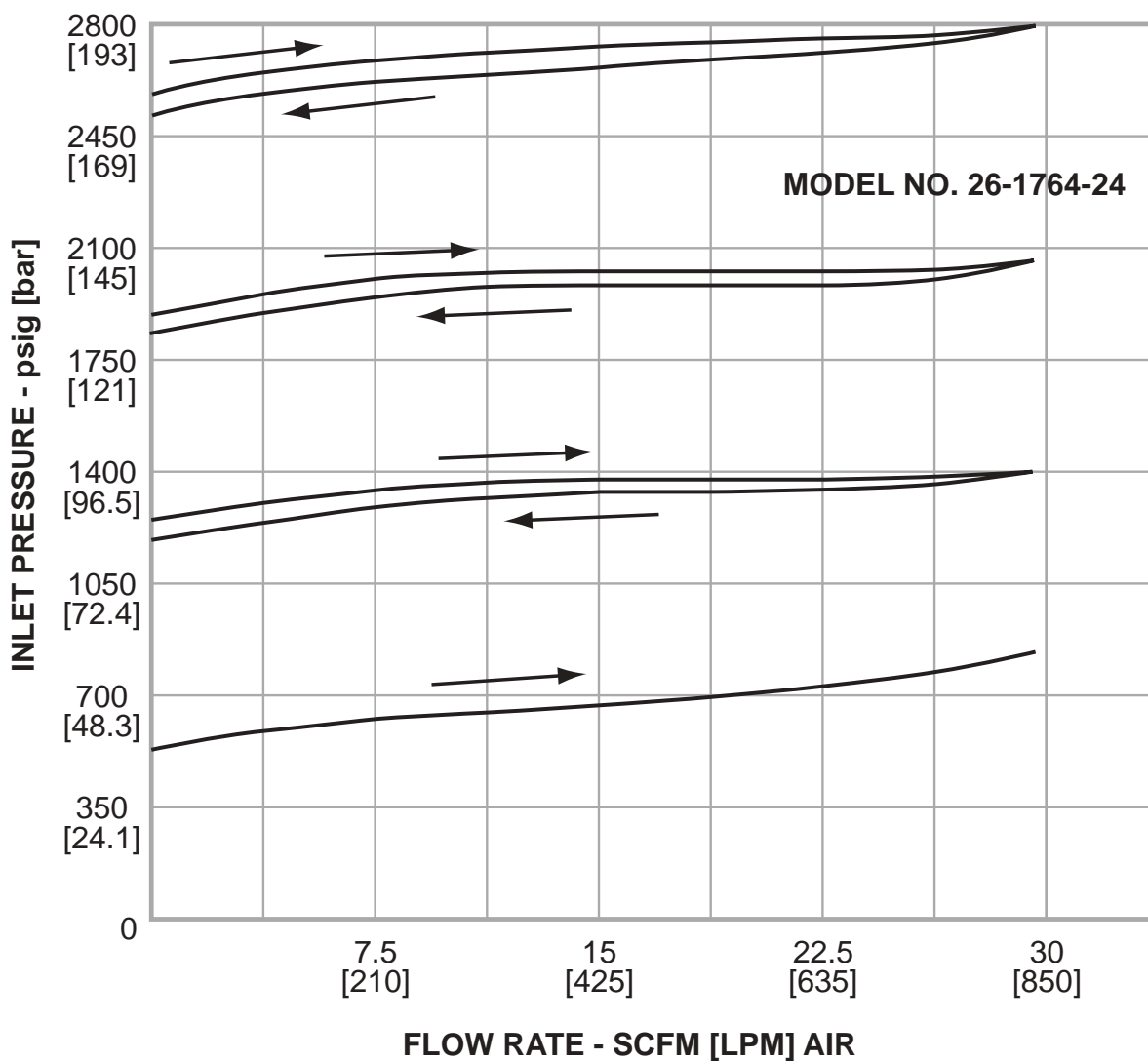


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

26-1700 SERIES

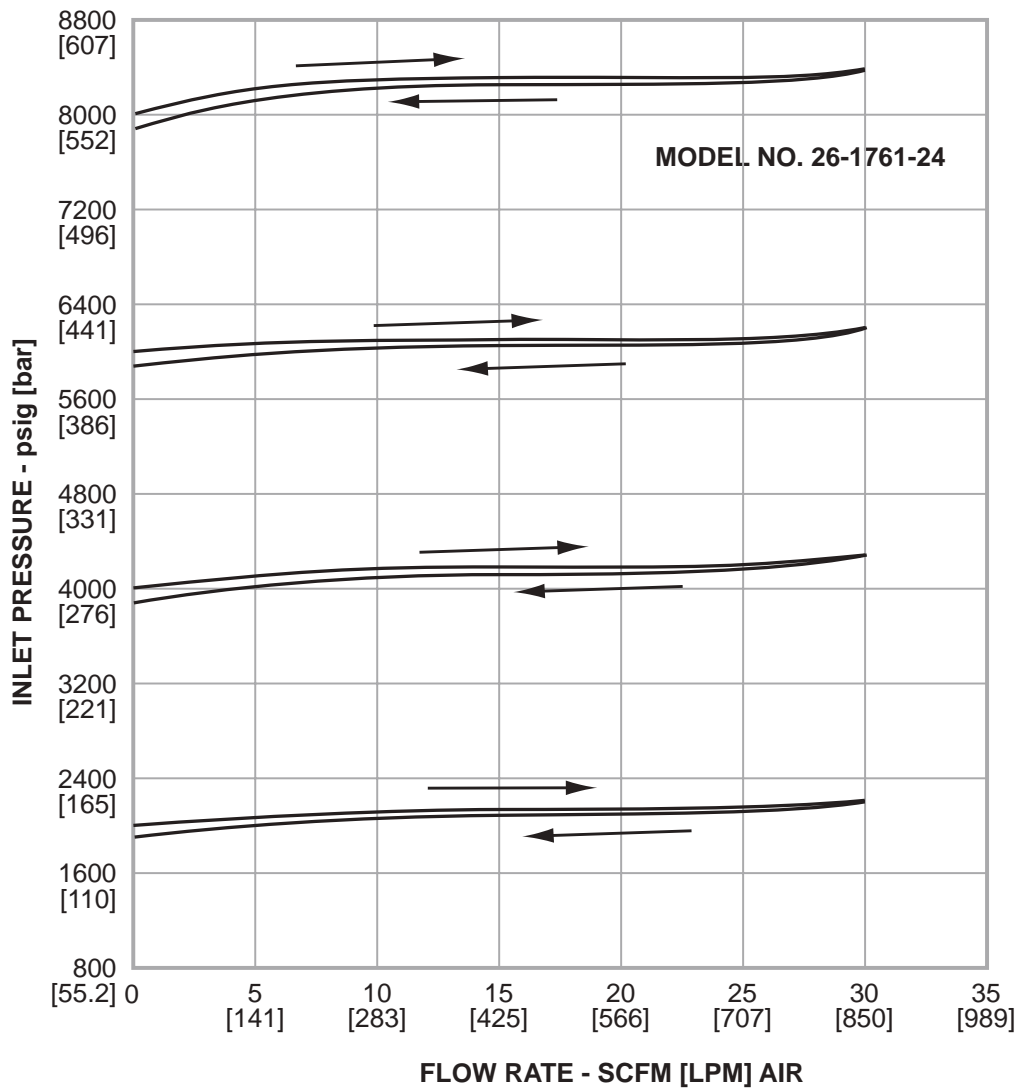
26-1700 Series Regulator Flow Charts

For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO 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 TESCO 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

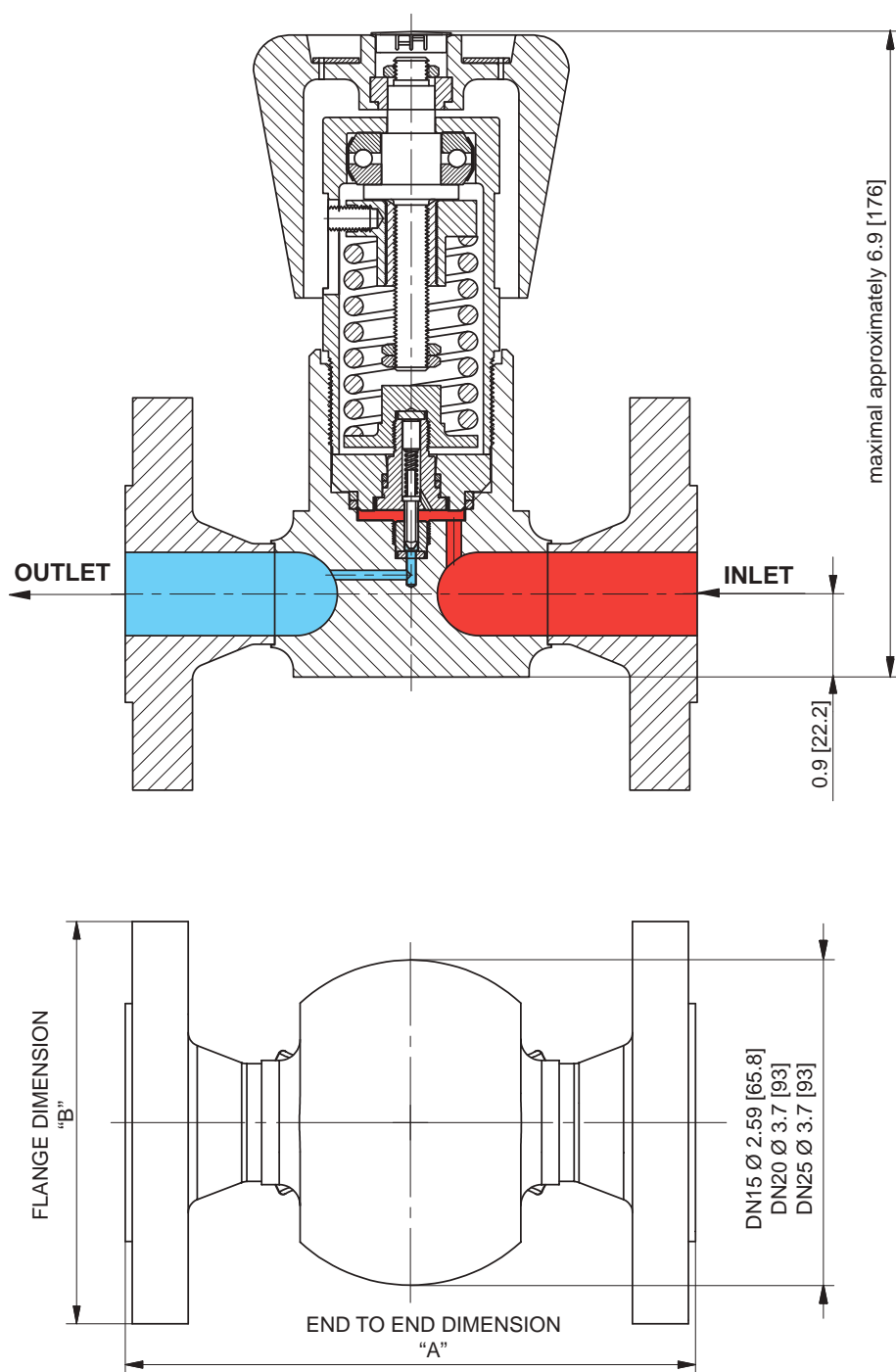
Features and Benefits

- 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 reseal 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

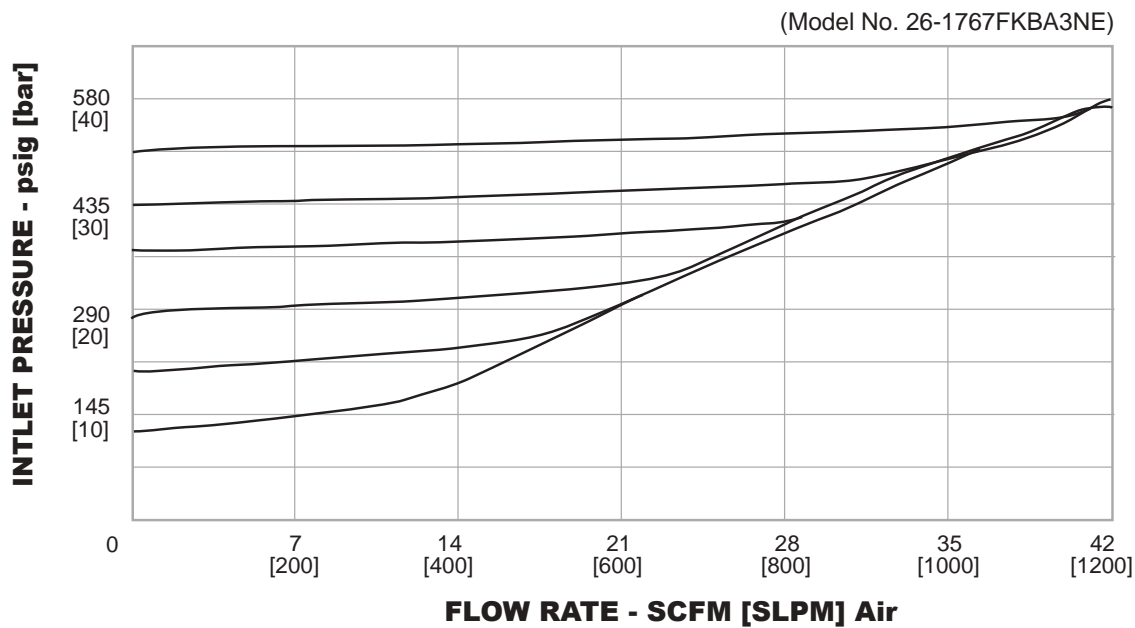
26-1700F Series Regulator Drawing



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 TESCO 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:

| 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 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 F – 1/4" NPTF 1 x in G – 1/4" NPTF 1 x in L – 1/4" NPTF 1 x in, 1 x out | 3 – $C_v = 0.14$ | N – None |

Kits

| | BASIC SERIES | PART NUMBER |
|--------------|----------------|-------------|
| NON METALLIC | 26-17XXFXXXXXX | 389-1268 |
| REPAIR | 26-17XXFXXXXXX | 389-6574 |

Specifications

For other materials or modifications, please consult TESCO.

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 Temperature¹

-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 TESCO.

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 TESCO ER5000 Electropneumatic Controller for automation.

Applications

- Hydraulic or pneumatic testing
- Calibration
- Pump discharge pressure control

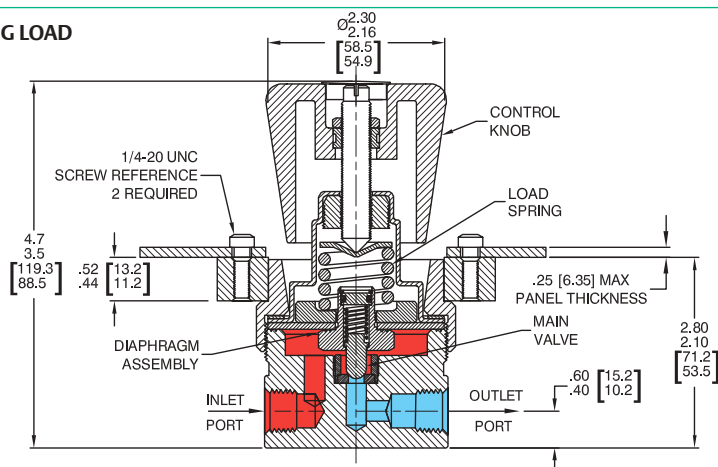
Features and Benefits

- Crack to reseal - 2% of set pressure
- Easily adjusted, low torque handknob control
- Bubble-tight shutoff at all reseal 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 TESCO ER5000 Electropneumatic Controller

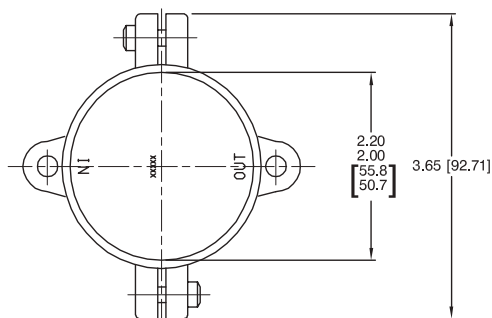
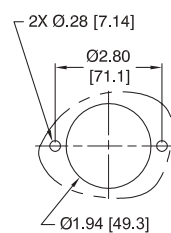
26-2300 SERIES

26-2300 Series Regulator Drawings

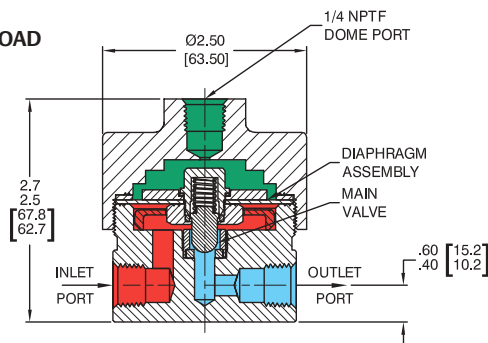
SPRING LOAD



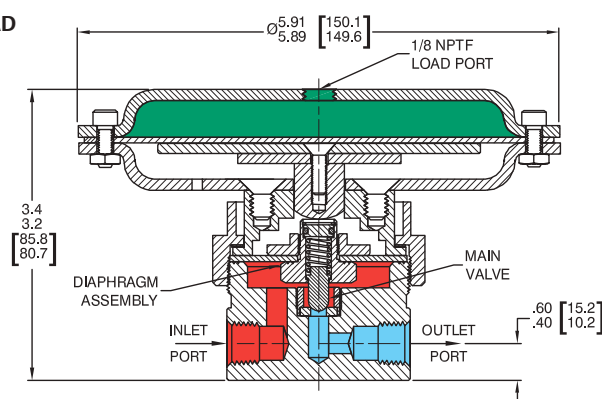
PANEL CUT-OUT



DOMESTIC LOAD



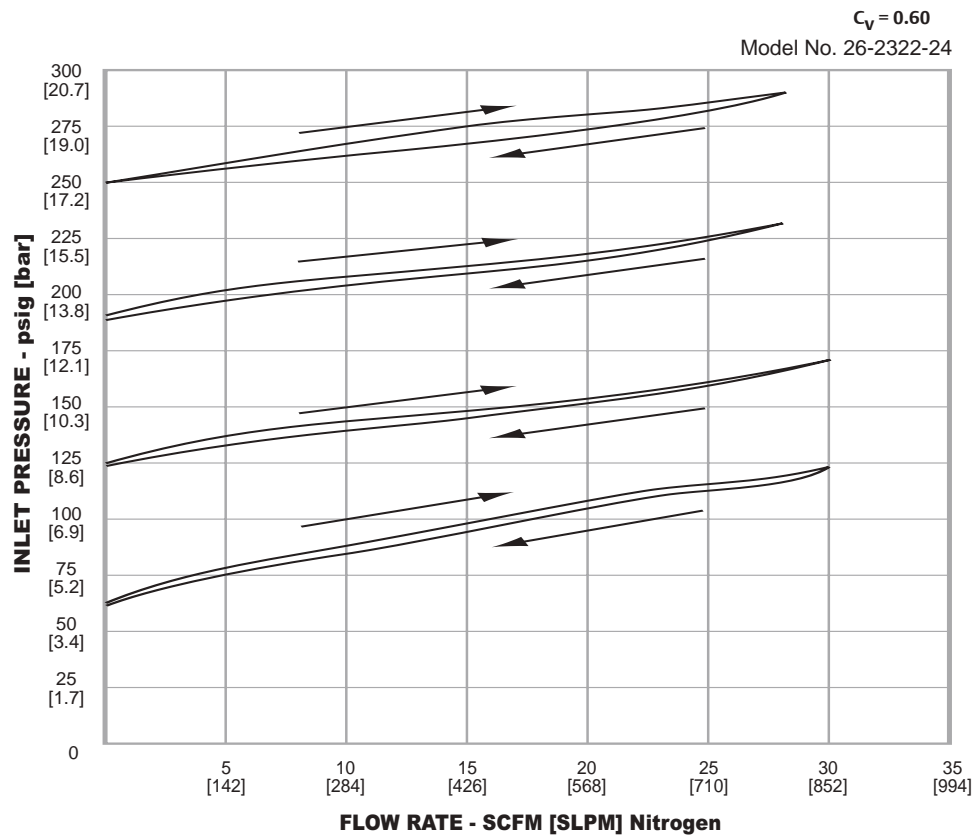
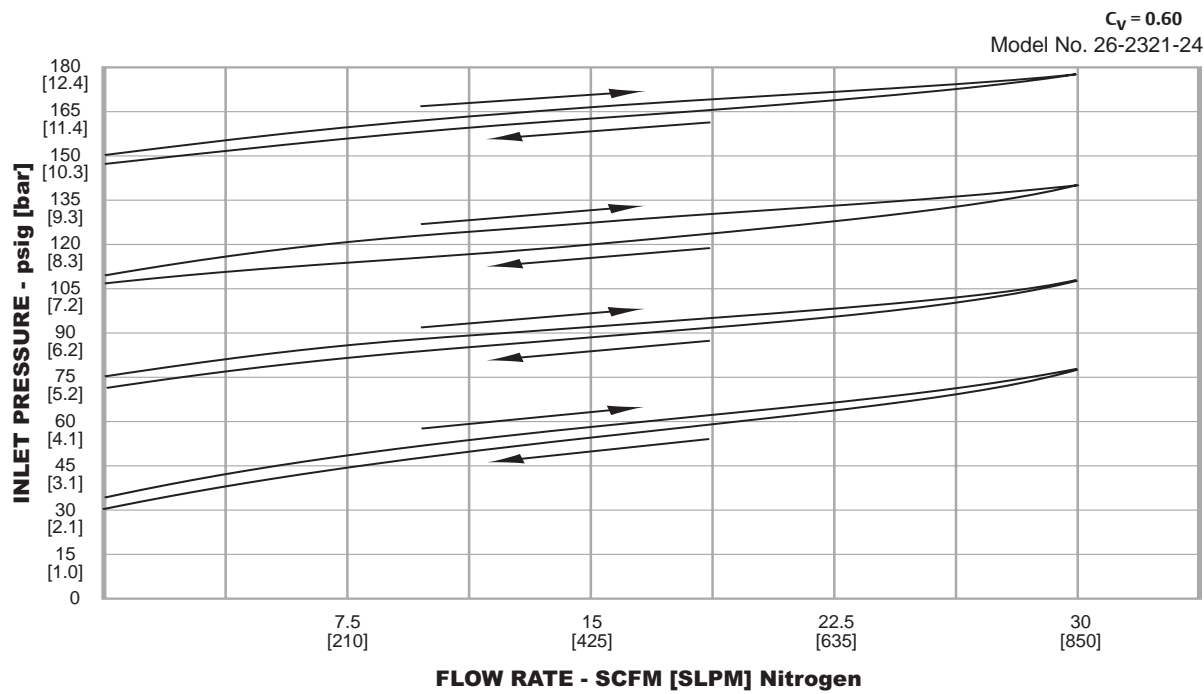
AIR LOAD



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 TESCO catalog or on www.tescom.com.



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" |

Specifications

For other materials or modifications, please consult TESCO.

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.



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

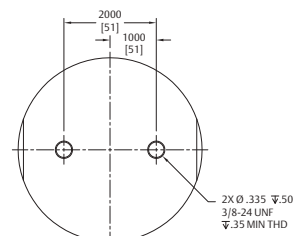
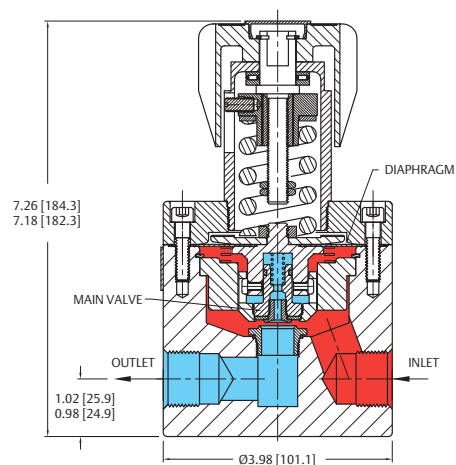
Features and Benefits

- 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

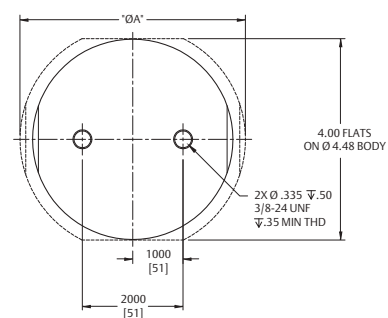
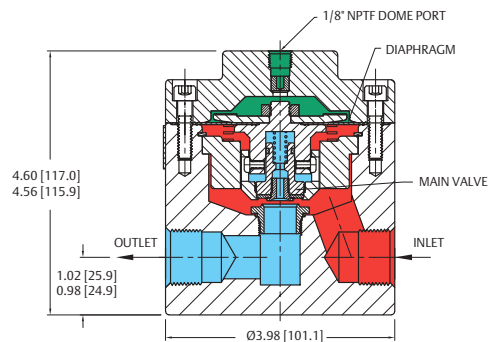
26-2500 SERIES

26-2500 Series Regulator Drawings

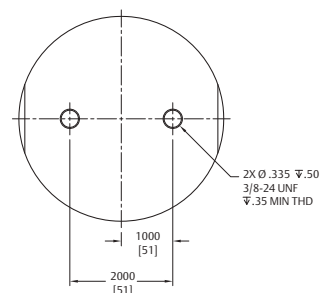
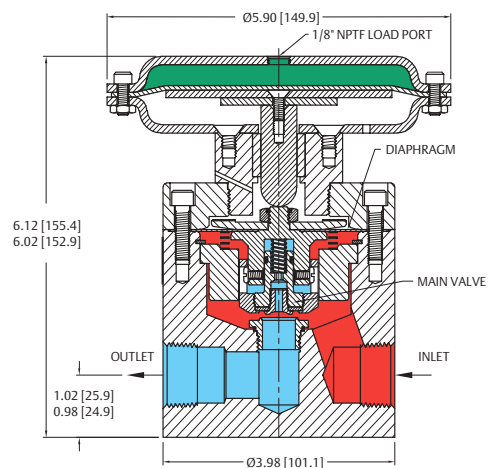
SPRING LOAD



DOMESTIC LOAD



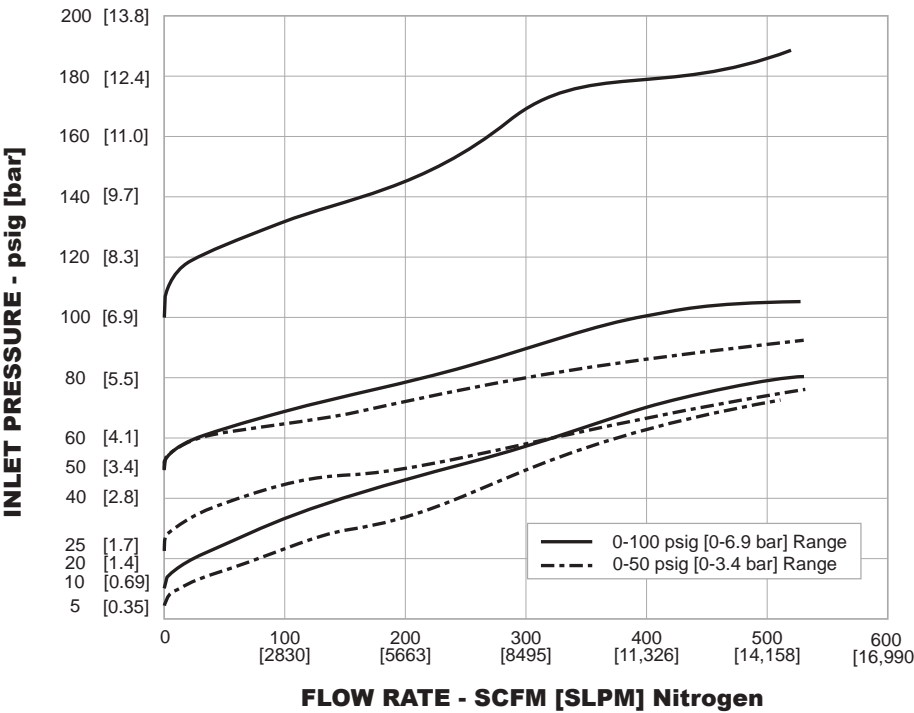
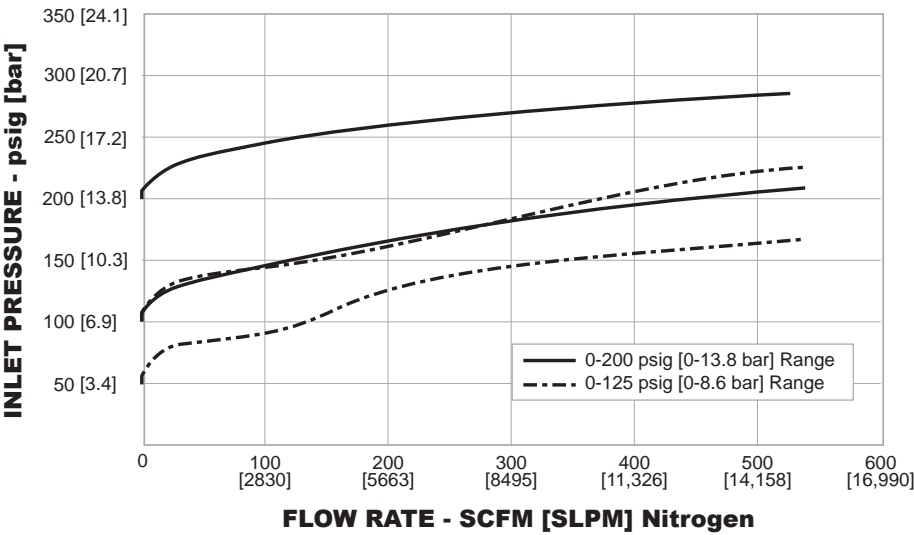
AIR LOAD



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 TESCO 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.

H – SPRING LOAD,
HANDKNOB ADJUST

D – DOME LOAD

A – AIR LOAD

Example for selecting a part number:

| 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 | 0 – 0-20 psig 0-1.4 bar | B – Nitrile, Buna-N | Nitrile, Buna-N 90 Durometer | 1 – SAE | 08 – 1/2" | G – PTFE | A – No gauge ports | |
| | 6 – 316 Stainless Steel | 1 – 0-50 psig 0-3.4 bar | E – Ethylene Propylene | Ethylene Propylene 80 | 2 – NPTF | 12 – 3/4" | V – FKM (Viton®-A) <i>(spring and dome load only)</i> | B – 2 gauge ports at 60° | |
| | | 2 – 0-125 psig 0-8.6 bar | M – Chemraz®** | Chemraz® 75** | 3 – MS33649 | 16 – 1" | | | |
| | | 3 – 0-200 psig 0-13.8 bar | V – FKM (Viton®-A) | FKM (Viton®-A) | | | | F – 1 inlet gauge port at 90° | |
| | | 3 – 0-300 psig 0-20.7 bar <i>(air loaded only)</i> | | | | | | L – 2 gauge ports at 90° | |
| | | D – 0-200 psig 0-13.8 bar <i>(dome loaded only)</i> | | | | | | | |

** FFKM, Perfluoroelastomer (Chemraz®)

Specifications

For other materials or modifications, please consult TESCO.

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.



DOMES



SPRING

TESCO 26-2700 Series is a high flow, low pressure backpressure regulator with spring, dome and air loading options.

Applications

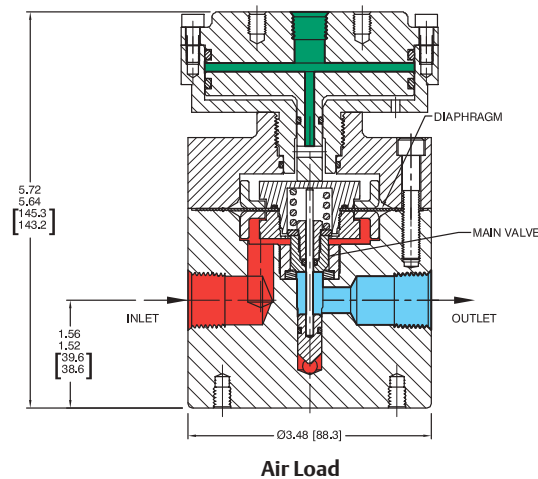
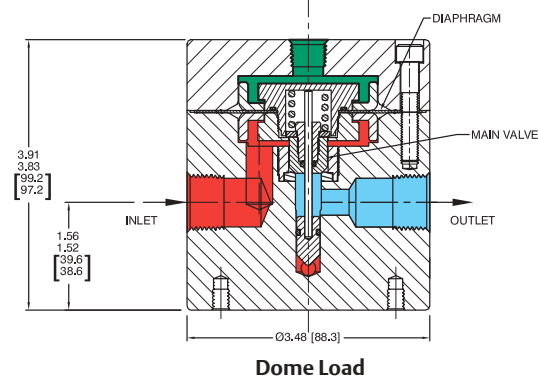
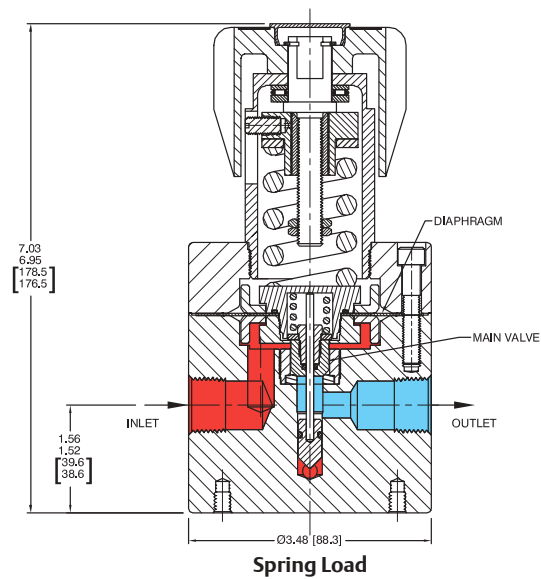
- Pump and compressor control
- Process pressure control
- High flow, low pressure chemical injection

Features and Benefits

- Gas or liquid service
- Dome and air actuated models are available
- Compatible with TESCO ER5000 Electropneumatic Controllers
- High flow capabilities

26-2700 SERIES

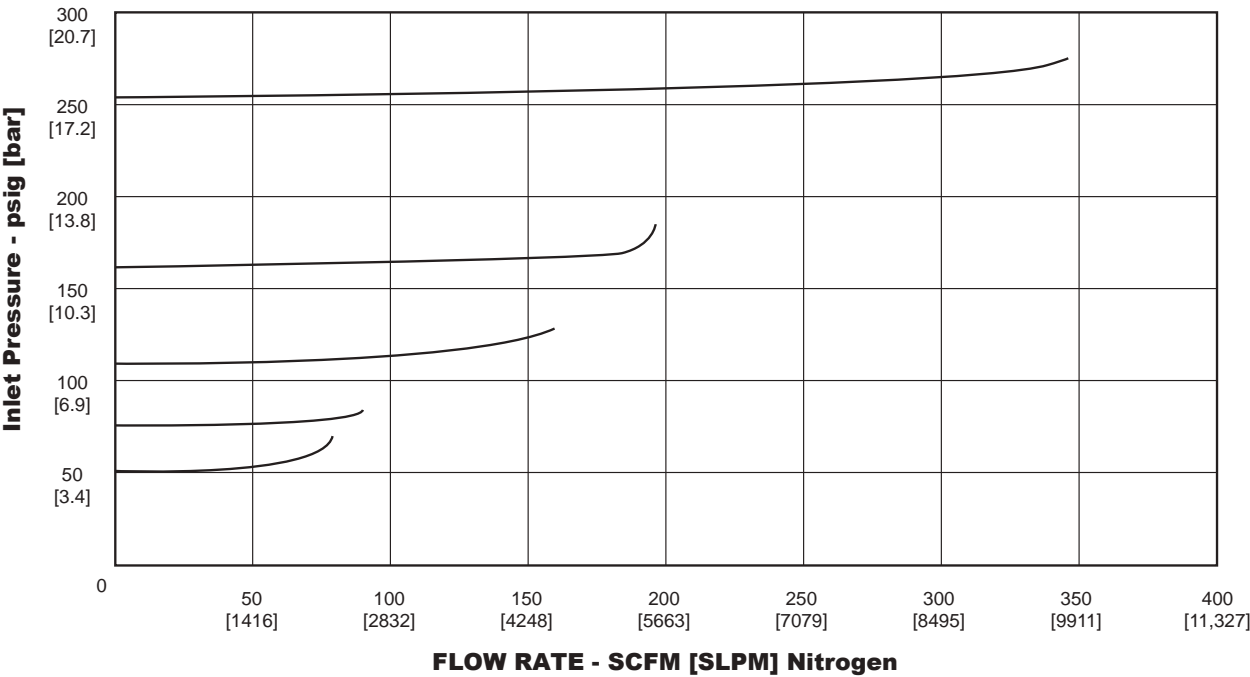
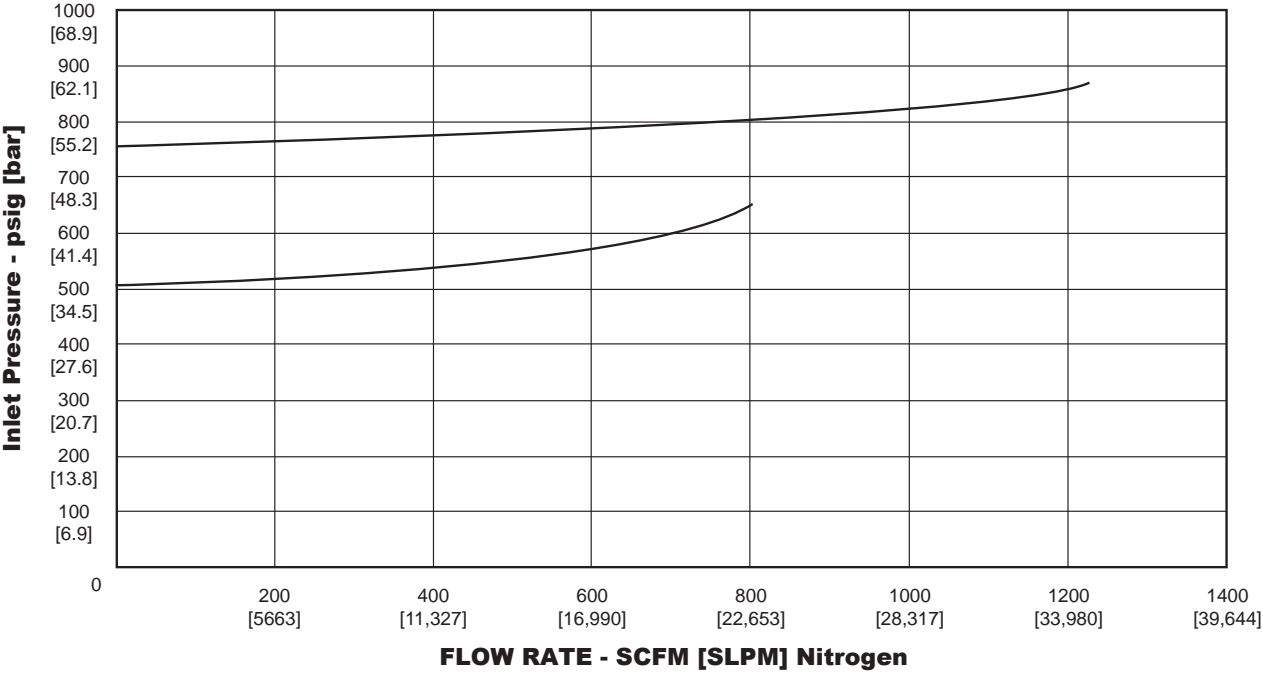
26-2700 Series Regulator Drawing



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 TESCO 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.

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



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.

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.

Applications

Constant bias applications:

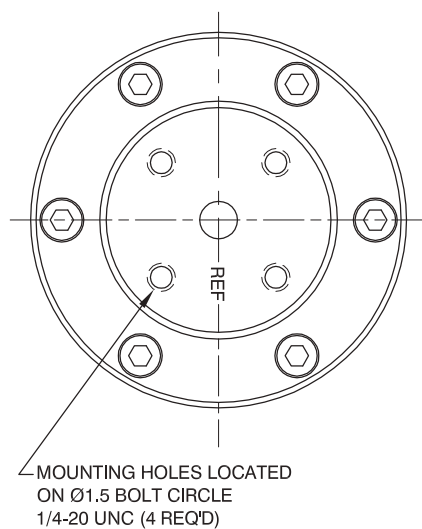
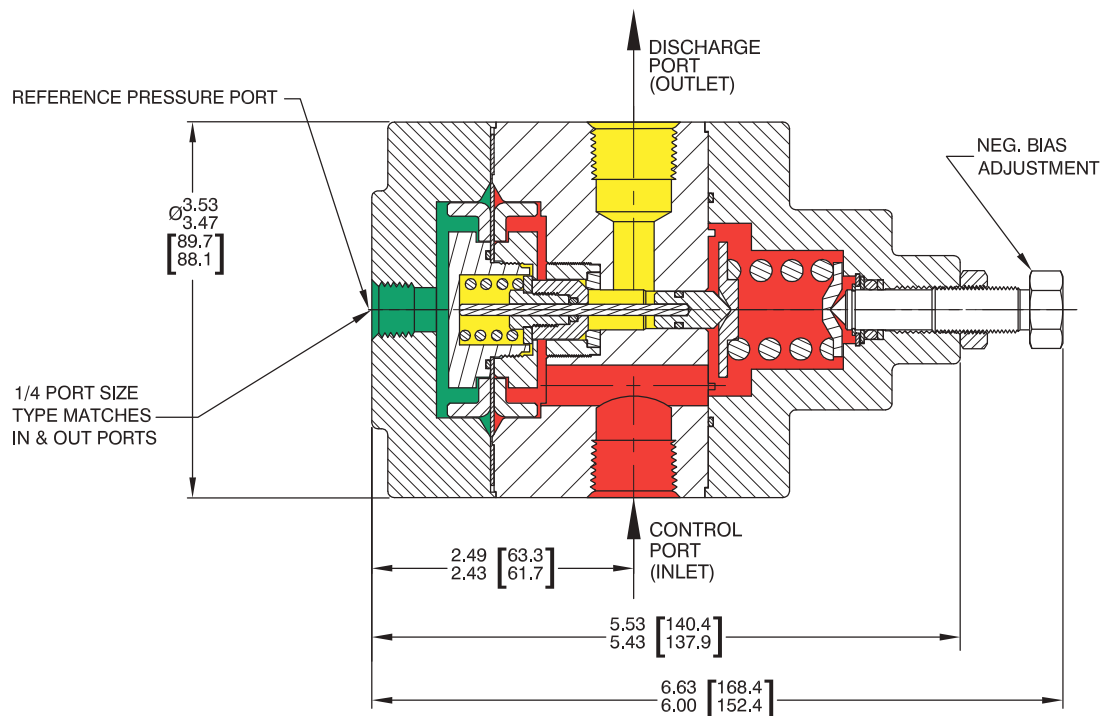
- Offshore diving applications
- Dumping exhaled breath from pressure chamber (BIBS)
- Diving bell

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

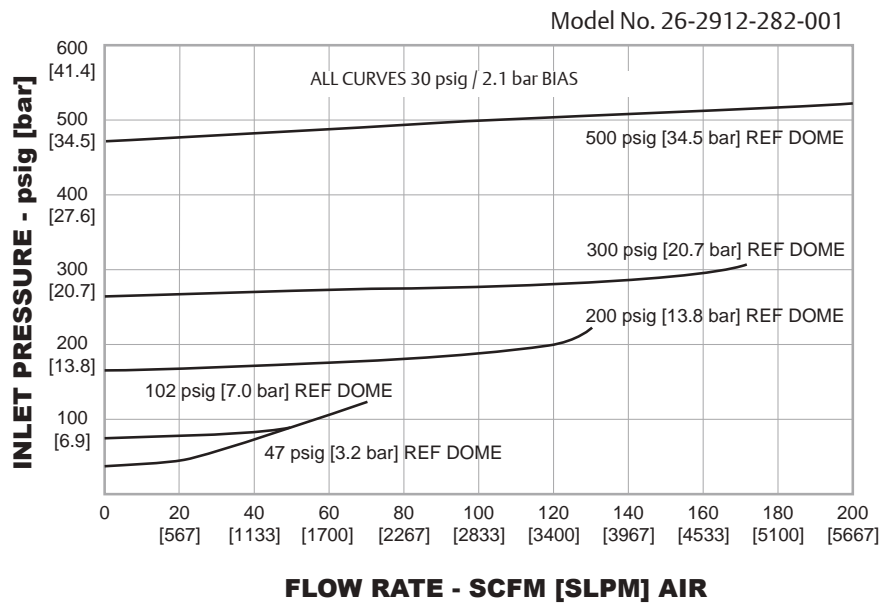
26-2900 Series Regulator Drawing



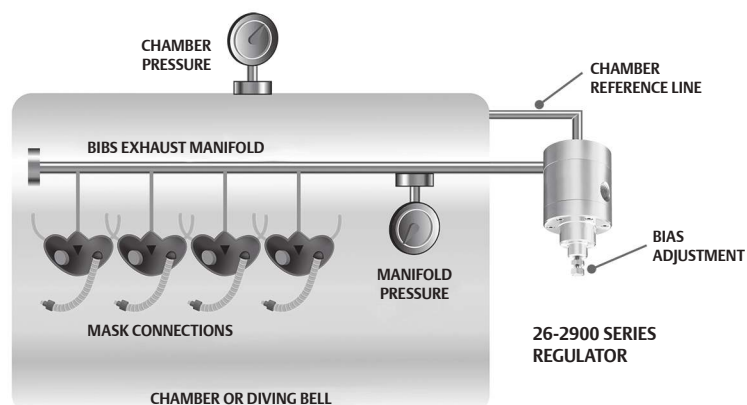
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 | | | | | |

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

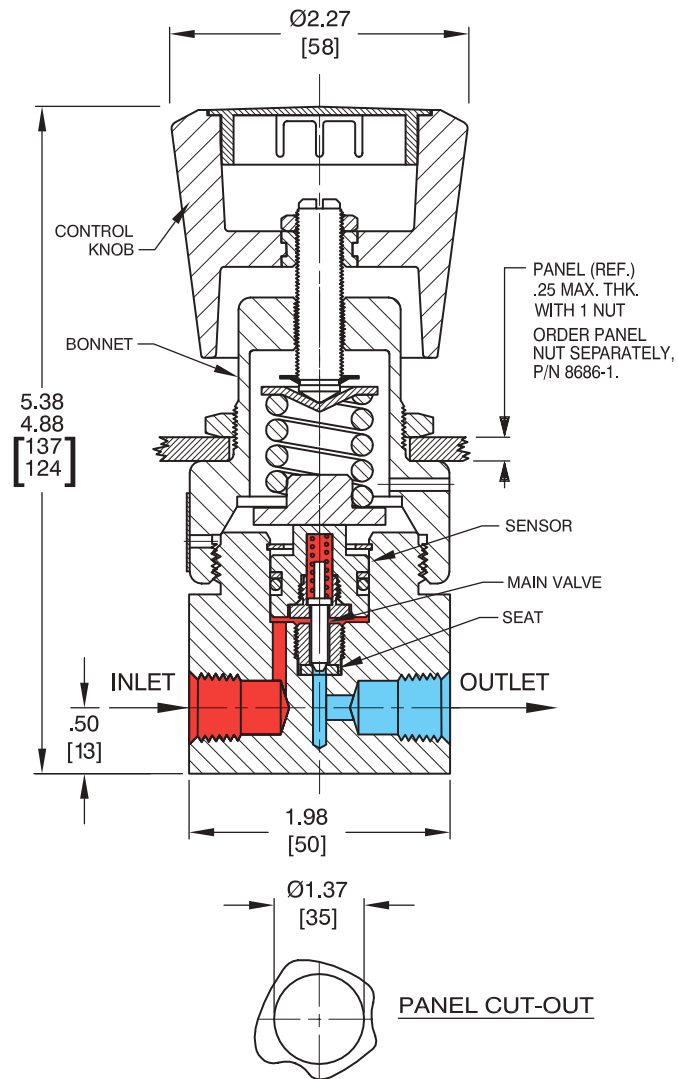
- Industrial equipment for hydraulic or pneumatic service

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

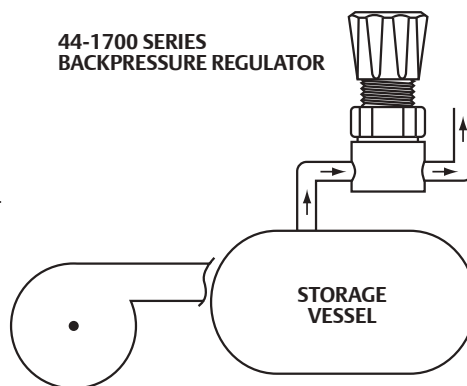
44-1700 SERIES

44-1700 Series Regulator Drawing



**44-1700 SERIES
BACKPRESSURE REGULATOR**

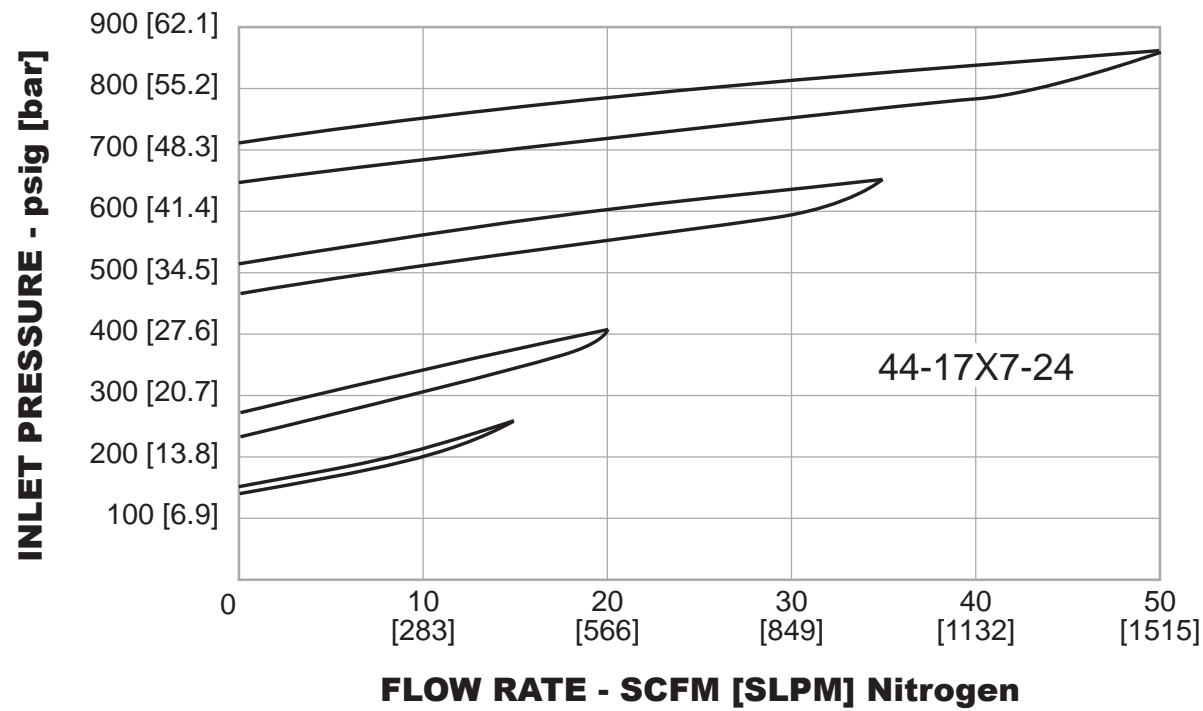
**BACKPRESSURE
CONTROL OF
STORAGE VESSEL**



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

44-1700 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 TESCO catalog or on www.tescom.com.



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" | |

Specifications

For other materials or modifications, please consult TESCO. M.

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 $< 2 \times 10^{-8}$ 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 (Elgiloy®)

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

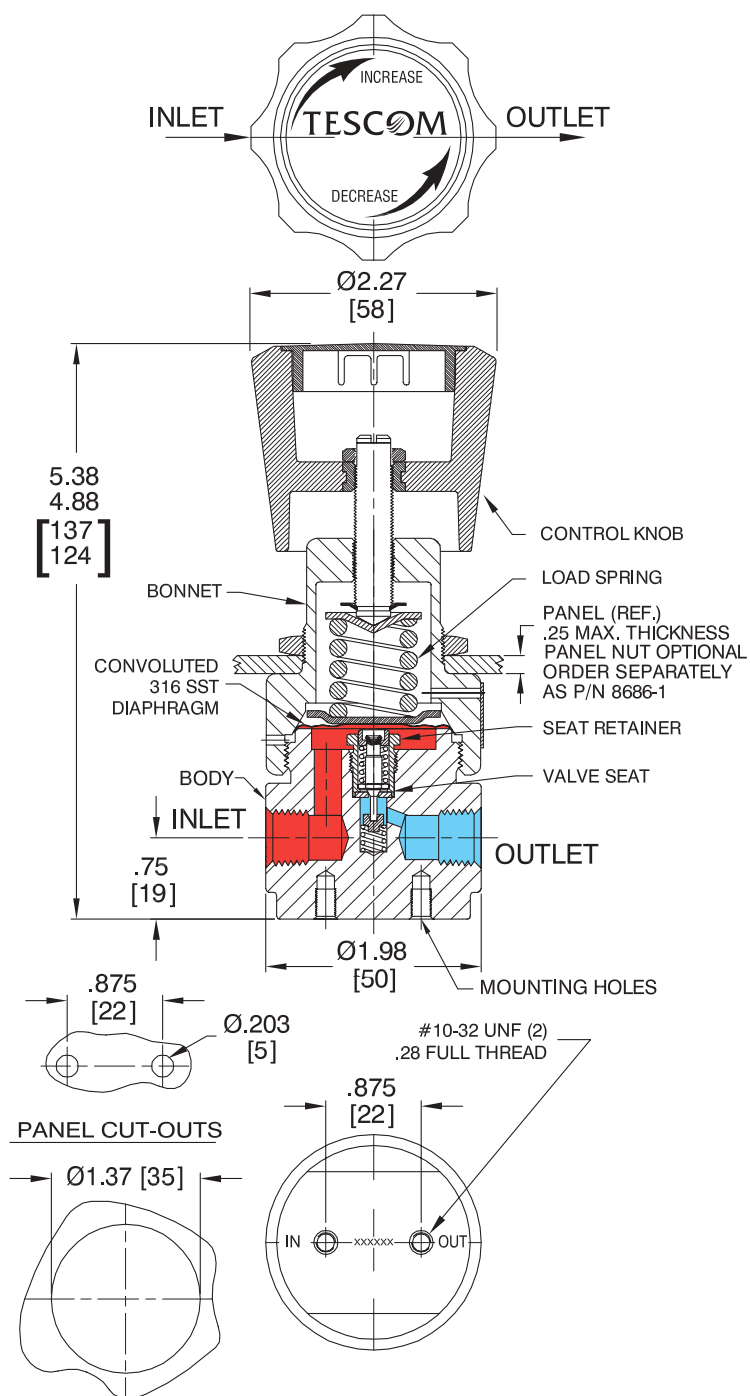
- Analytical systems
- Gas sampling
- Pilot plants
- OEM packages
- R & D laboratories

Features and Benefits

- Reduces contamination and provides accurate regulation of corrosive or non-corrosive gases
- Convuluted metal-to-metal sealed diaphragm
- Close pressure differential between crack and reseal
- Compact and economical
- Dome loading is optional
- Panel mounting is available

44-2300 SERIES

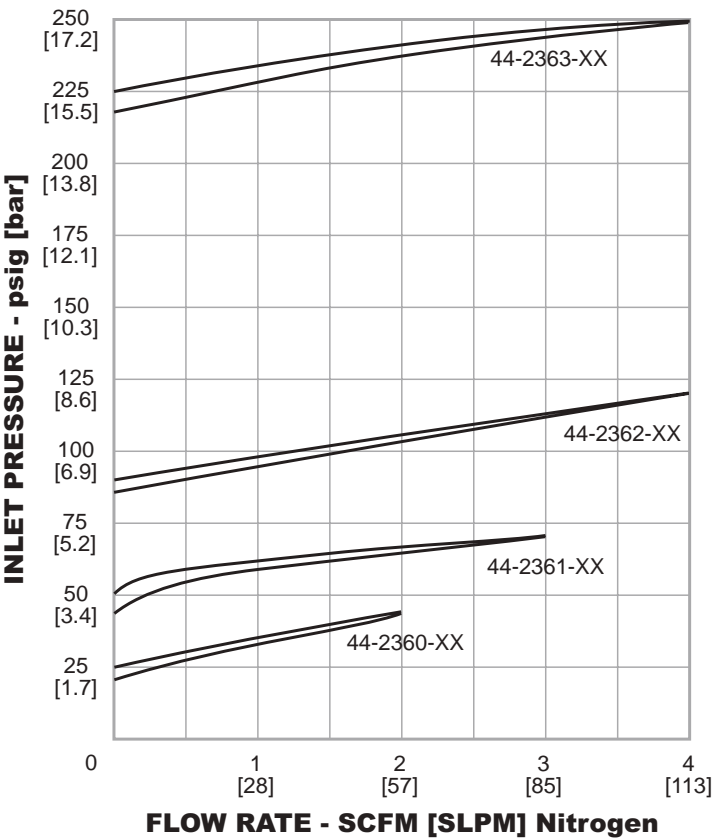
44-2300 Series Regulator Drawing



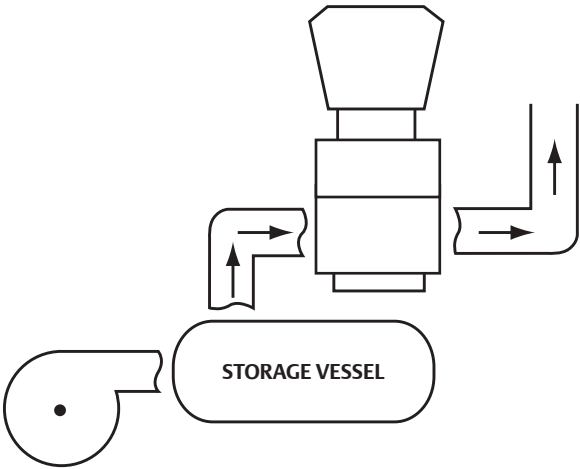
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

44-2300 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.



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 | | |



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 $< 2 \times 10^{-8}$ 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

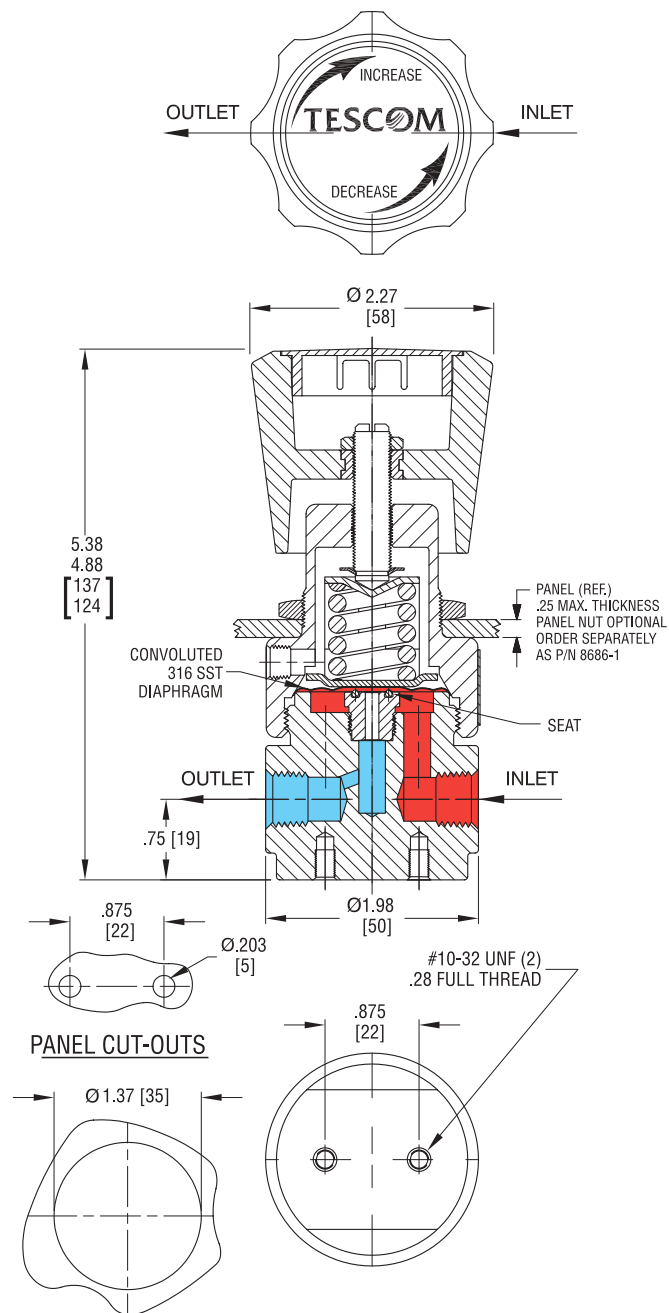
- General purpose

Features and Benefits

- Reduces contamination and provides accurate regulation of non-corrosive and corrosive gases
- Convuluted metal-to-metal sealed diaphragm
- Close pressure differential between crack and reseal
- Economically priced
- Panel mounting is standard
- Bubble-tight shutoff at all reseating pressures
- Flow capacity $C_v = 0.30$

44-2500 SERIES

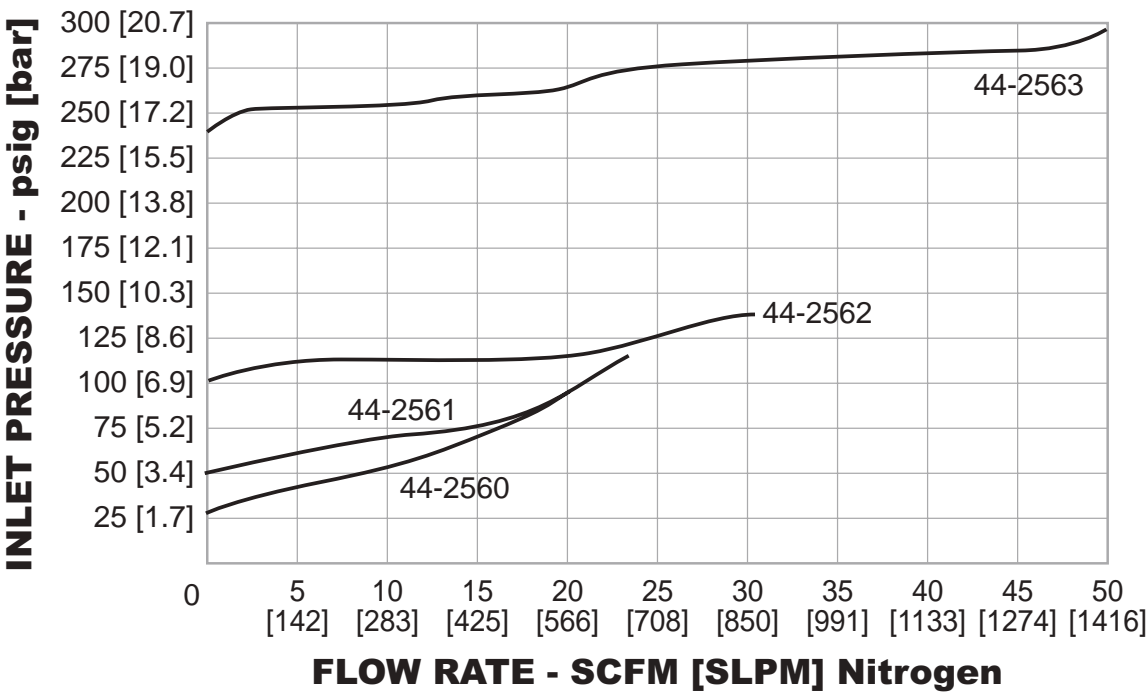
44-2500 Series Regulator Drawing



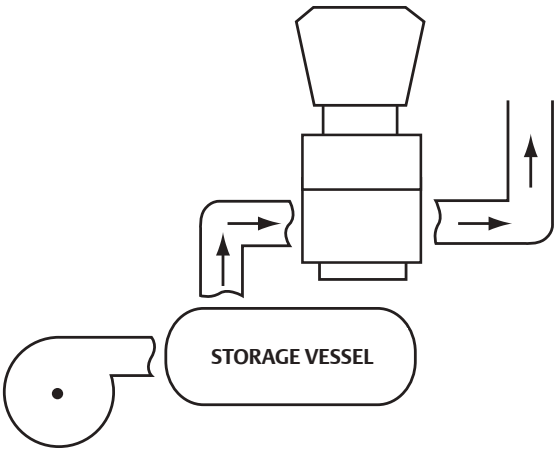
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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


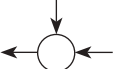


44-2500 SERIES

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°  |

Specifications

For other materials or modifications, please consult TESCO.

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 $< 2 \times 10^{-8}$ 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

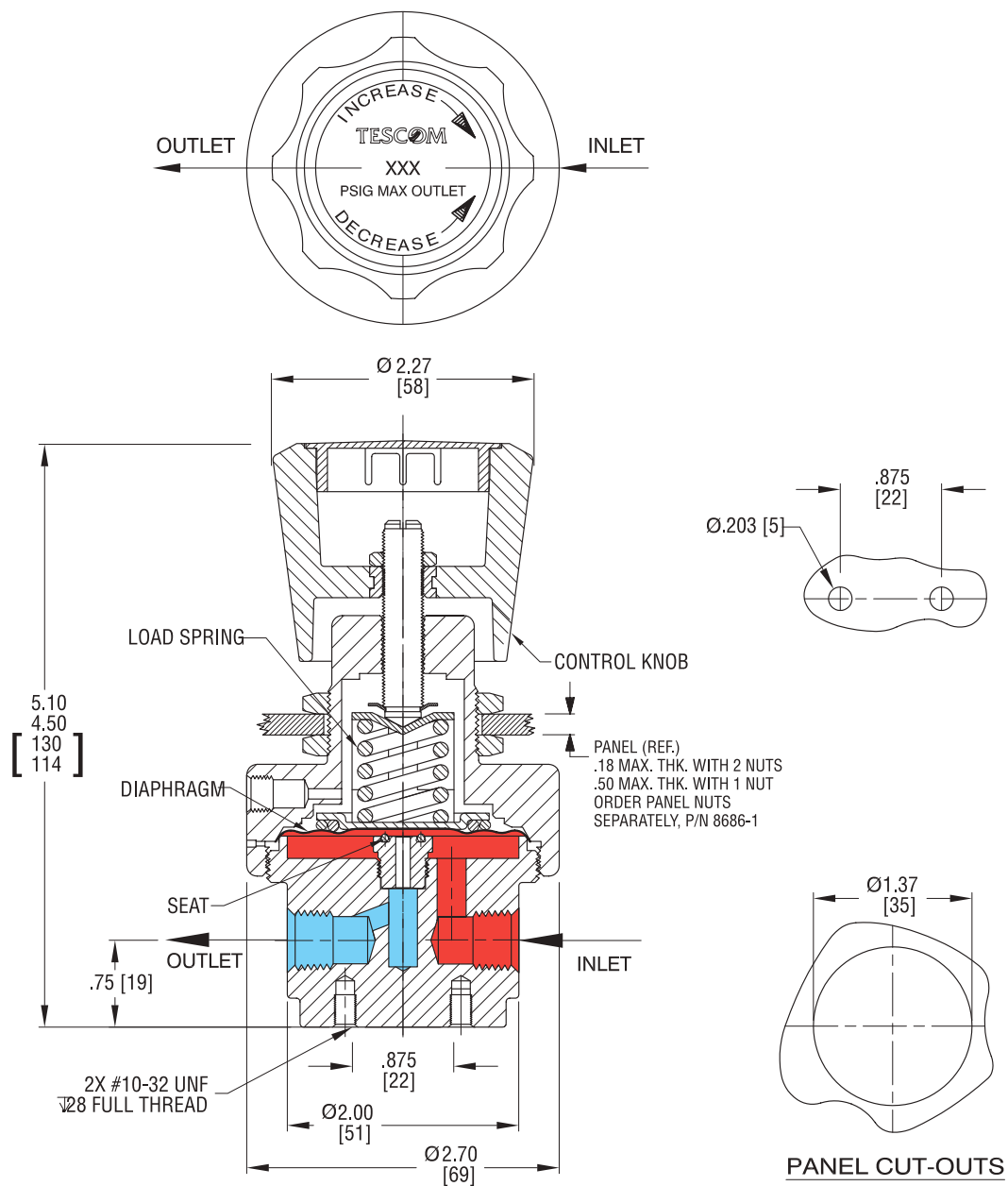
- R&D laboratories
- Process systems
- Pilot plants

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

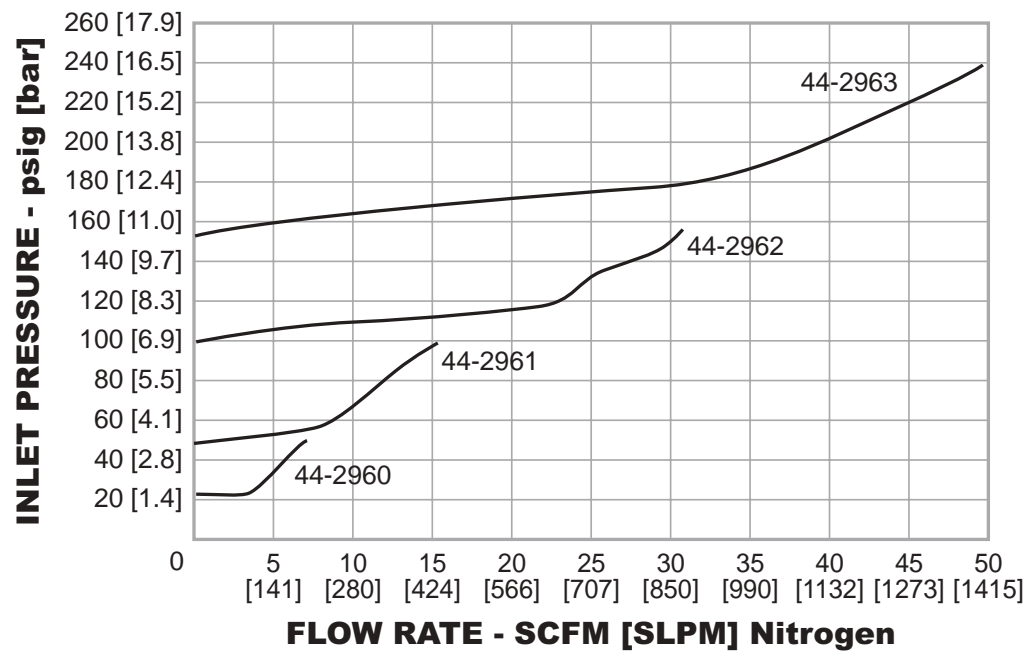
44-2900 Series Regulator Drawing



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°  |

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: $\leq 2 \times 10^{-8}$ 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

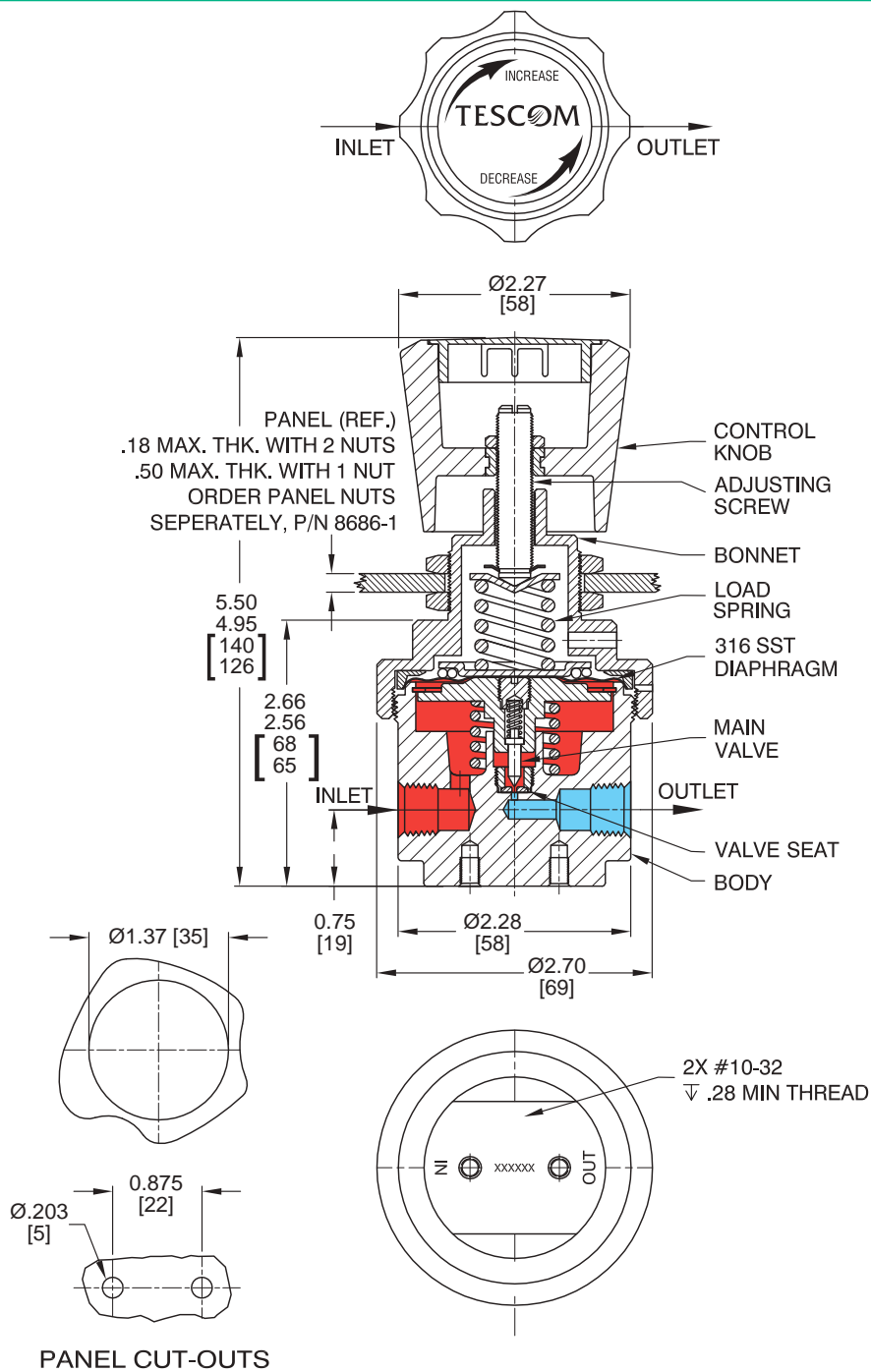
- Analytical systems
- Sample systems
- Pilot plants

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

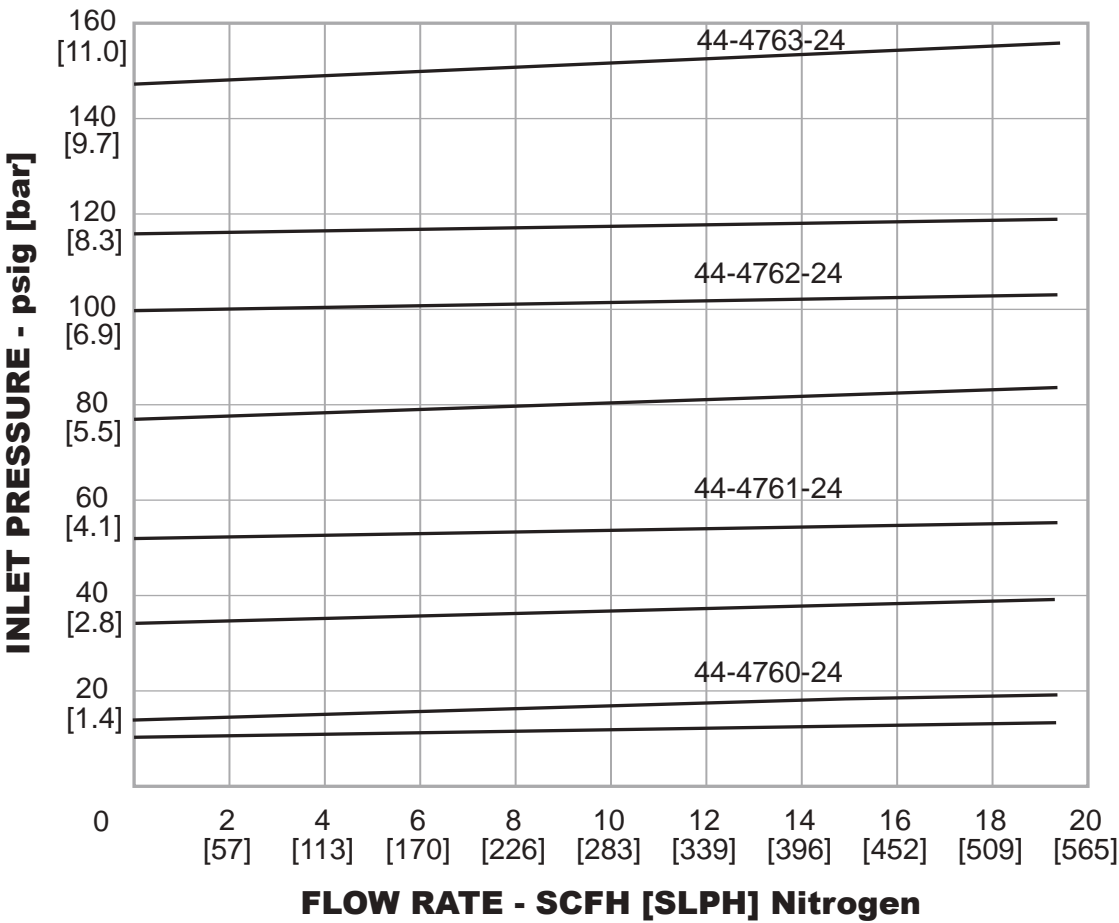
44-4700 Series Regulator Drawing



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 TESCO 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 <div>1. 28" Hg = 50 mm Hg absolute</div> | 1 – SAE 2 – NPTF 3 – MS33649 H – HPIC | 4 – 1/4" 6 – 3/8" | -501 – C _v = 0.30 |

Specifications

For other materials or modifications, please consult TESCO.

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

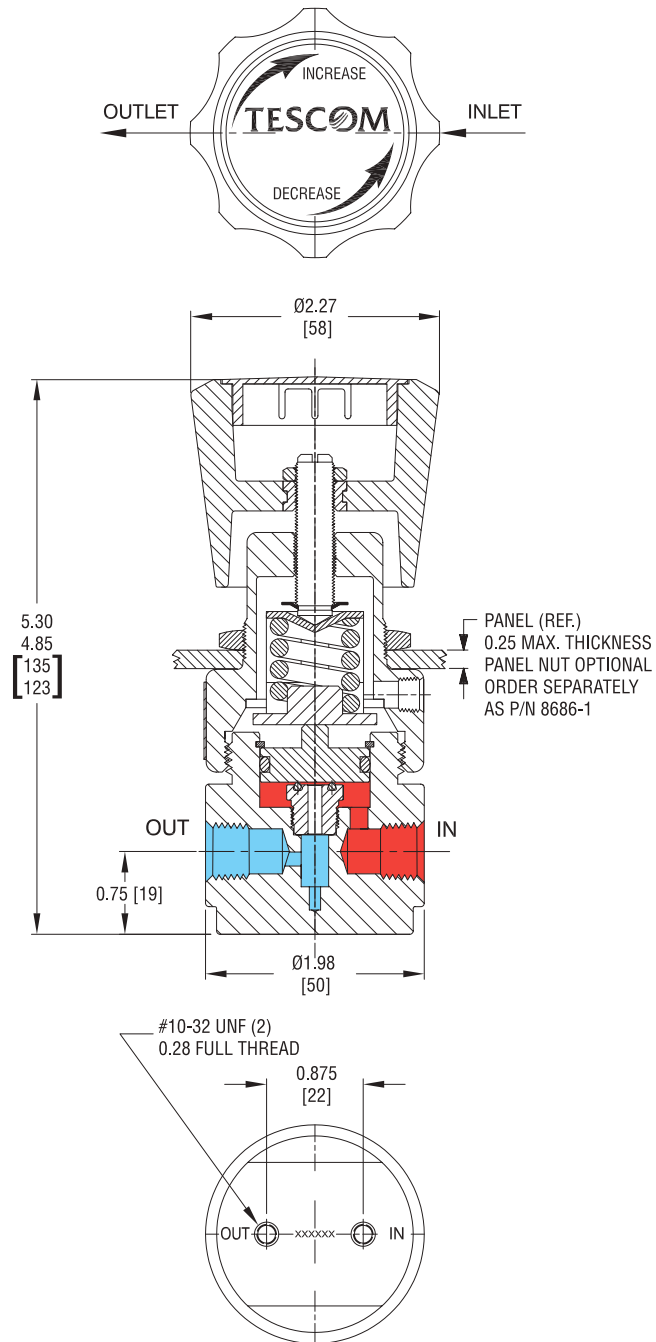
- General purpose
- Industrial equipment for hydraulic or pneumatic service
- Backpressure pump control

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

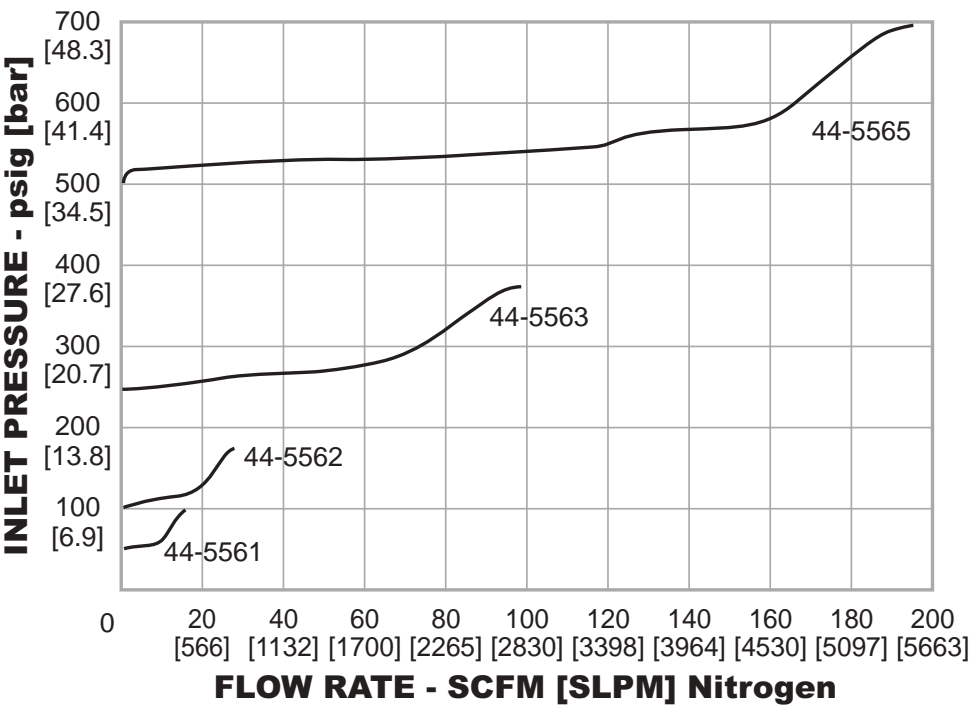
44-5500 Series Regulator Drawing



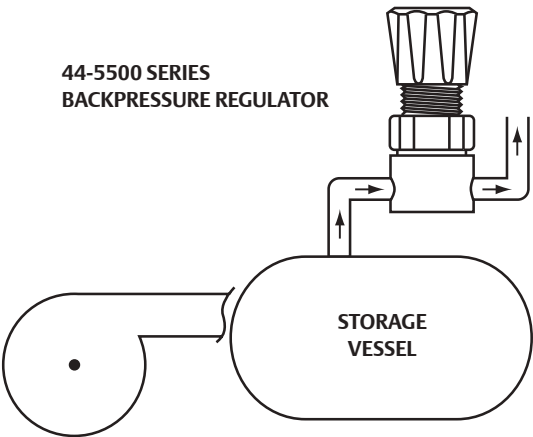
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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


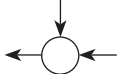


44-5500 SERIES

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°  |

Specifications

For other materials or modifications, please consult TESCO.

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 Temperature¹

-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 TESCO.

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



AIR LOADED



SPRING LOADED



DOMES 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

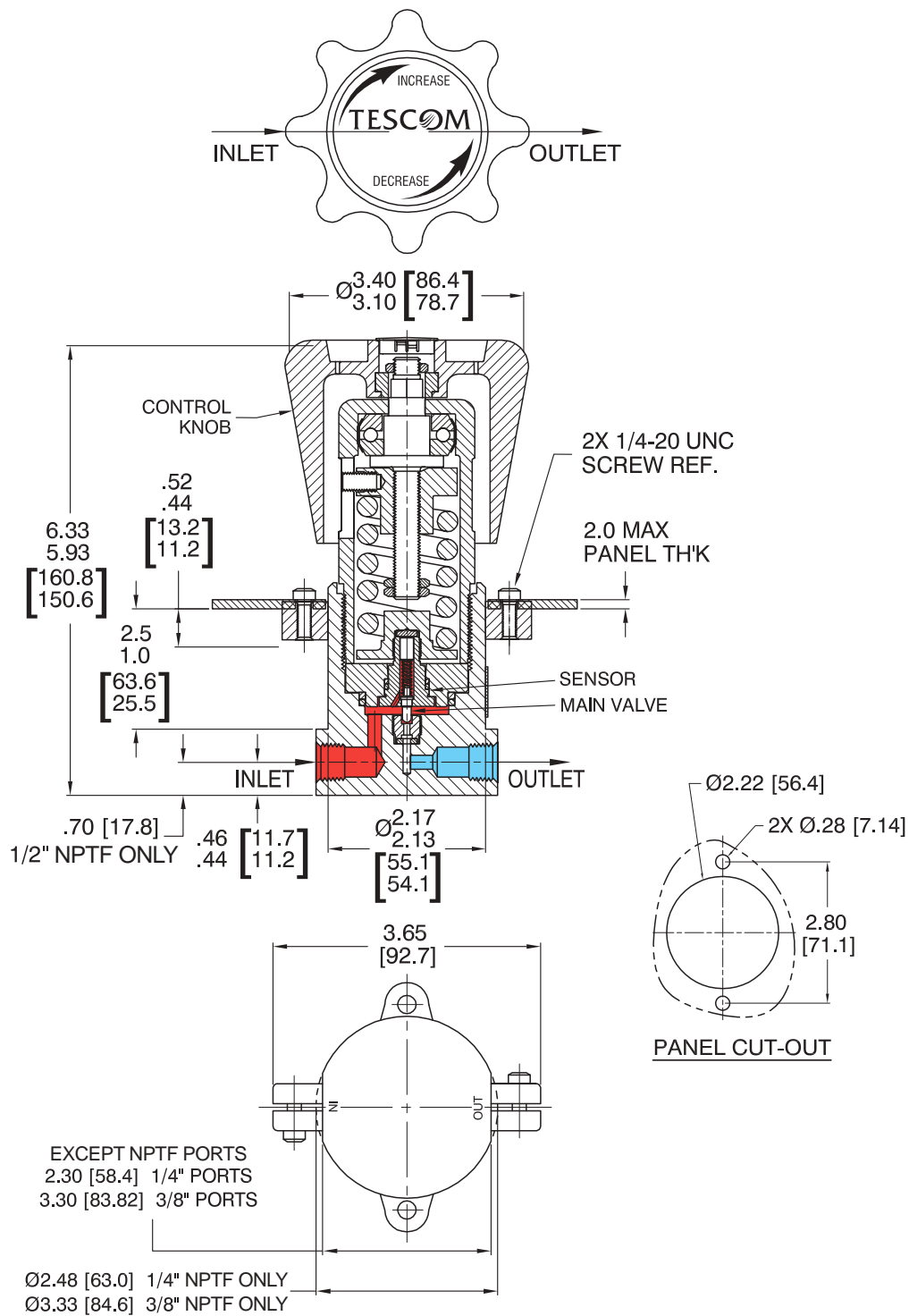
- Pump discharge pressure control
- Chemical injection
- Burst testing

Features and Benefits

- Accuracy $\pm 1\%$ 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 TESCO's air actuator and ER5000 Electropneumatic Controllers

54-2100 SERIES

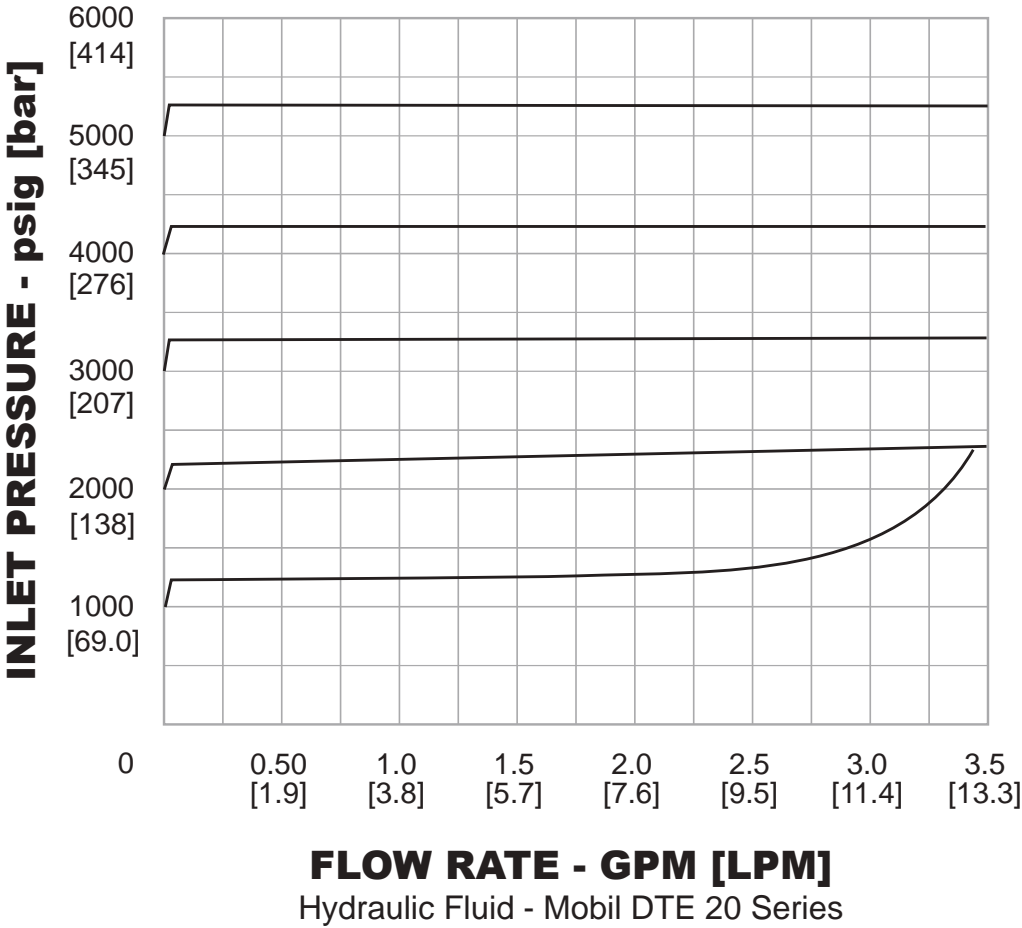
54-2100 Series Regulator Drawing



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 TESCO 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 | | |

Specifications

For other materials or modifications, please consult TESCO. M.

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 TESCO ER5000 Electropneumatic Controller.

Applications

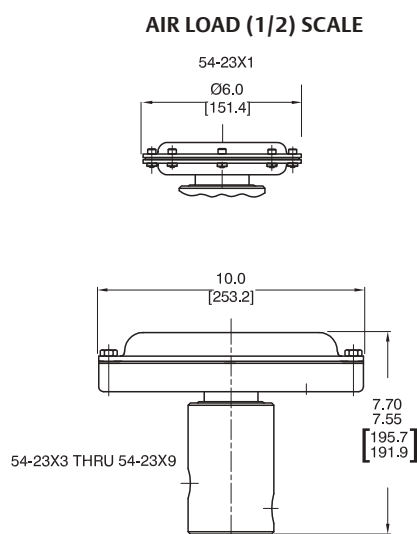
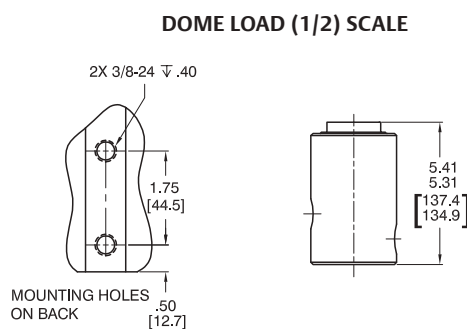
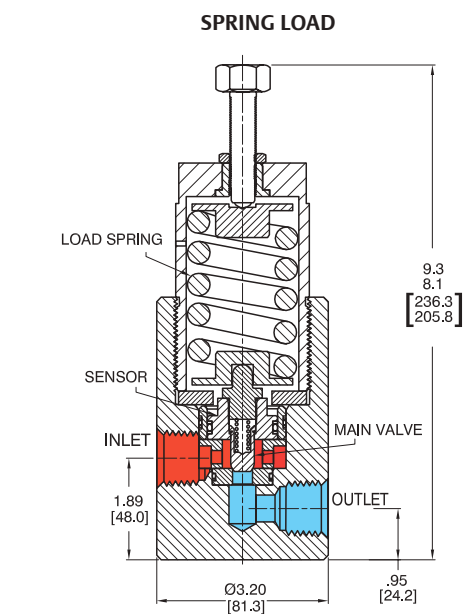
- Hydraulic test stands
- Process control

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

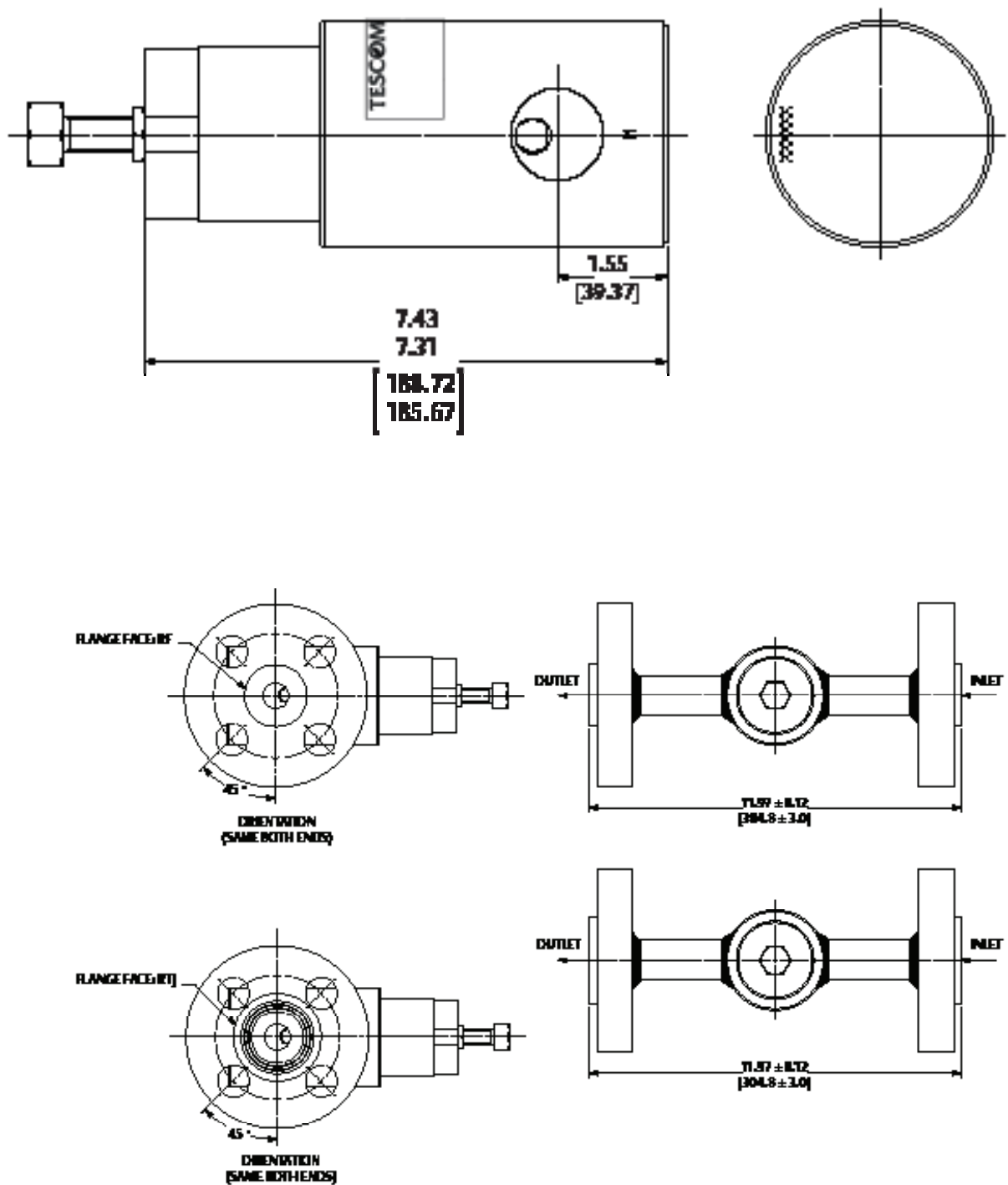
54-2300 SERIES

54-2300 Series Regulator Drawing



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

54-2300 Series Regulator with Flanges Drawing

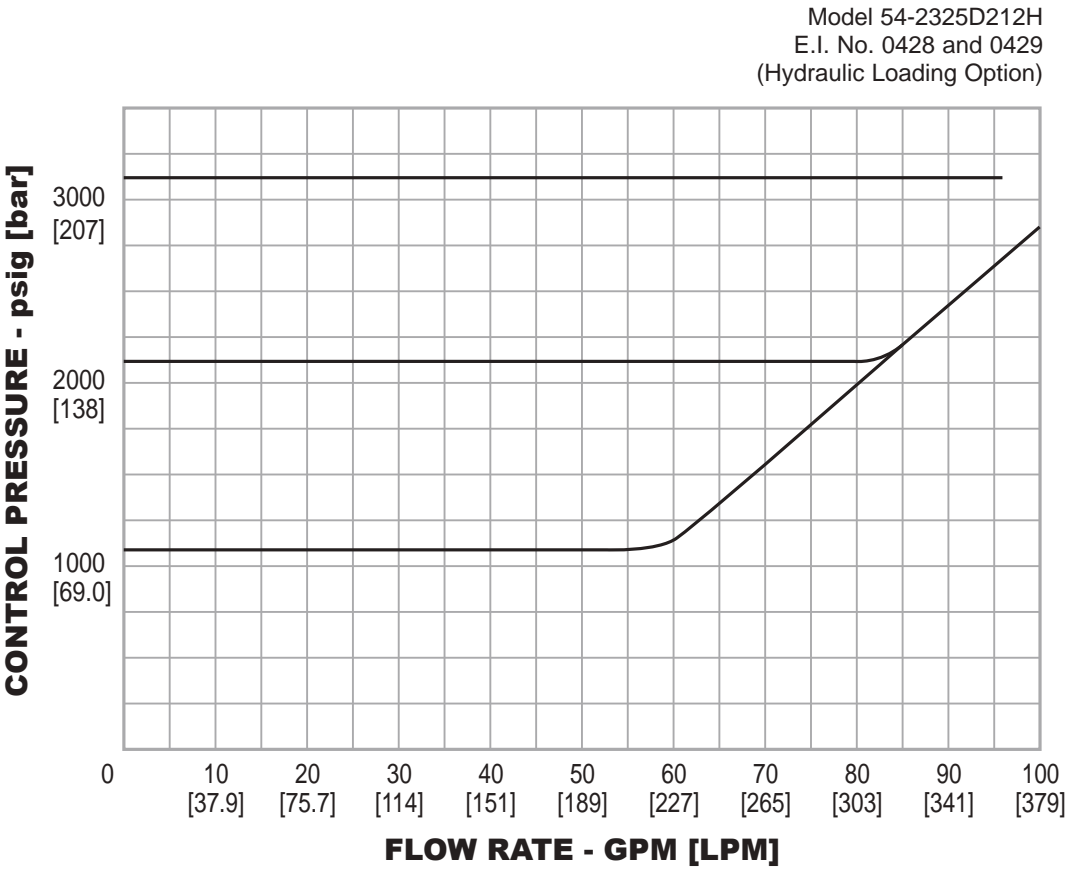


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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 | STATIC | SEAT | TEMPERATURE (MEDIA ONLY) | | | |
| 54-23 | 2 – 303 Stainless Steel | 0 – 20-1000 psig 1.4-69.0 bar (spring only) | 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 |
| | 6 – 316 Stainless Steel | 1 – 20-1500 psig 1.4-103 bar (spring and air only) | T – Viton® | Viton® | 17-4 Stainless Steel | -15°F to 300°F -26°C to 149°C | | | |
| | | 3 – 50-3500 psig 3.4-241 bar (spring only) 50-2500 psig 3.4-172 bar (air only 30:1*) | U – Polyurethane | Polyurethane | 17-4 Stainless Steel | -15°F to 125°F -26°C to 52°C | | | |
| | | 5 – 200-5000 psig 13.8-345 bar (spring and dome 1:1 and air 75:1) | Z – Ethylene Propylene | Ethylene Propylene | 17-4 Stainless Steel | -40°F to 225°F -40°C to 107°C | | | |
| | | 9 – 250-10,000 psig 17.2-690 bar (air only 125:1*) | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | *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 | 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 |
| | | 1 – 20-1000 psig 1.4-69.0 bar | B | | | 17-4 SST | | | | |
| | | 2 – 20-1500 psig 1.4-103.0 bar | C | FKM | FKM | Polyimide (Vespel® SP21) | -10 to 200°F / -23 to 93°C | | | |
| | | 3 – 50-3500 psig 3.4-172.0 bar | D | | | Polyimide (Vespel® SP21) | | | | |
| | | 4 – 200-5000 psig 13.8-344.0 bar | E | EP | EP | 17-4 SST | -20 to 200°F / -29 to 93°C | | | |
| | | | F | | | Polyimide (Vespel® SP21) | | | | |
| | | | G | | | PTFE | | | | |

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 Temperature¹

-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

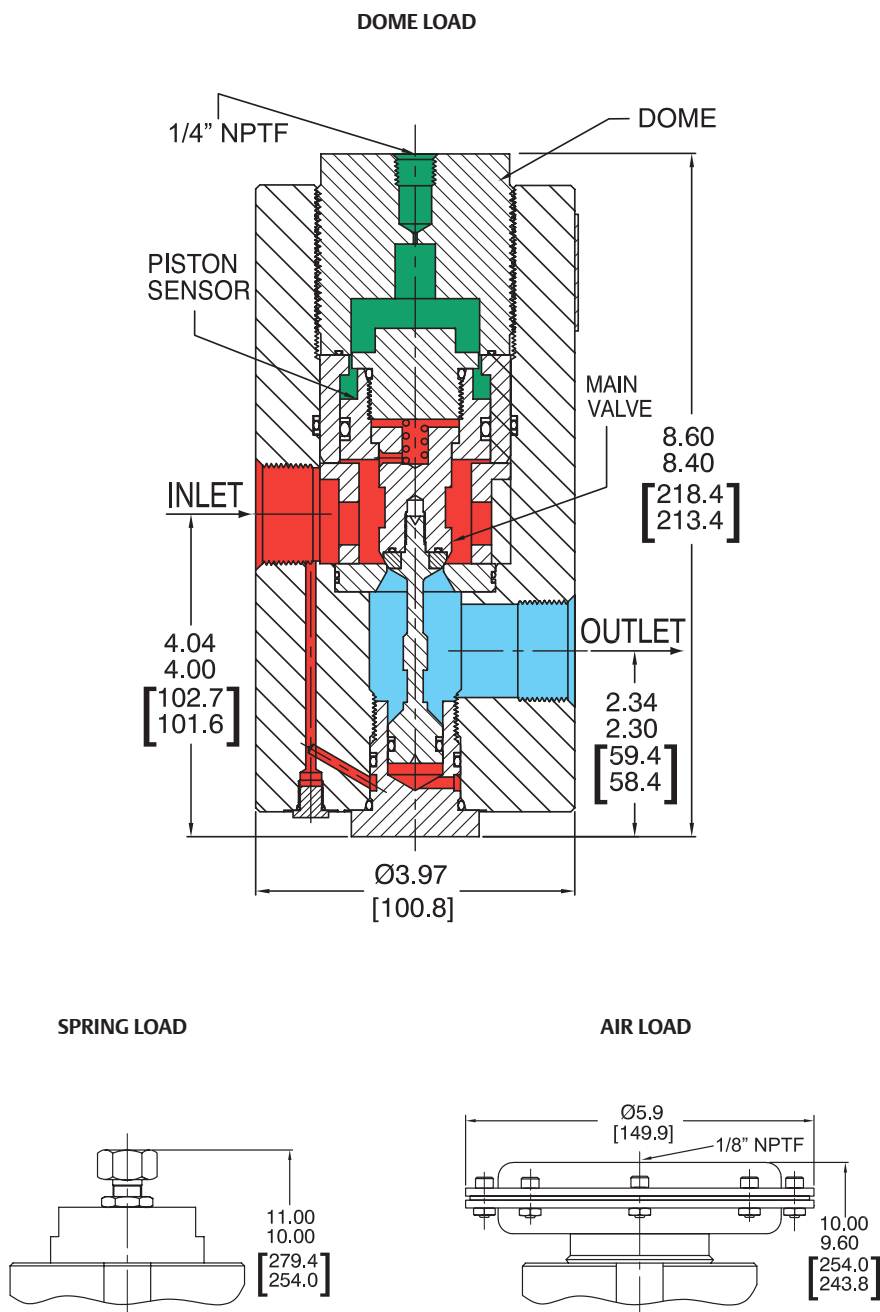
- Process control
- High flow pump discharge control
- Hydraulic test stands

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

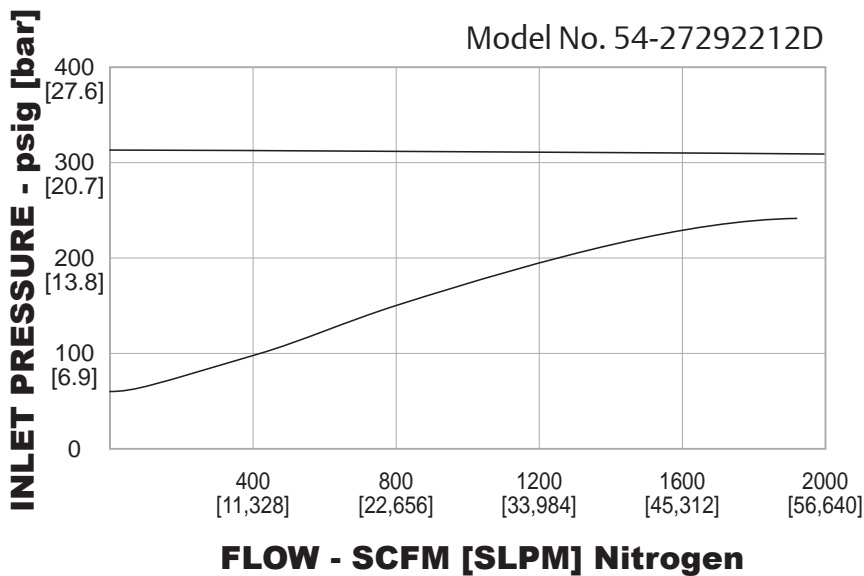
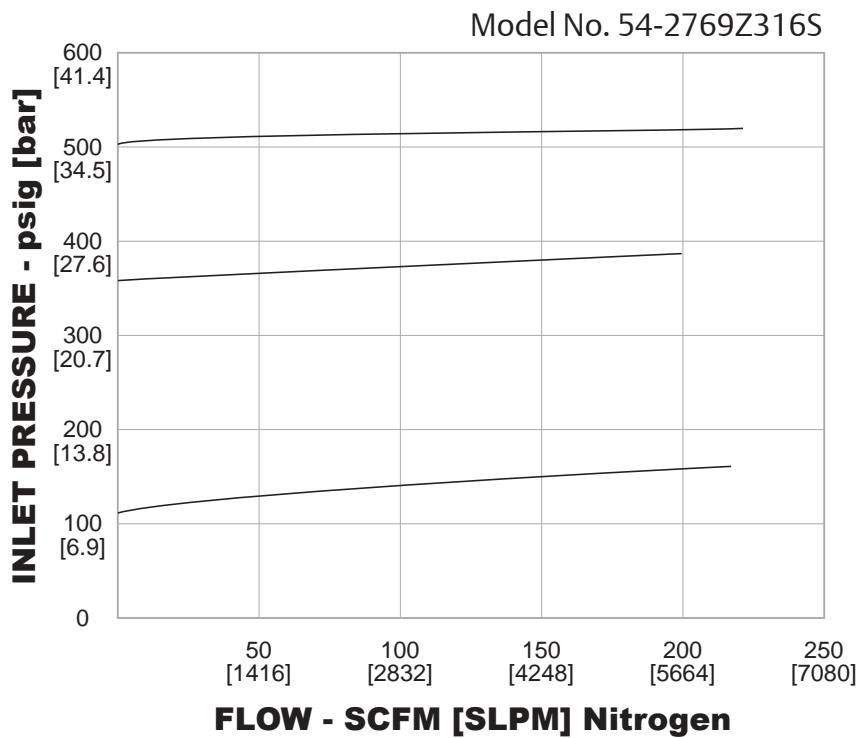
54-2700 Series Regulator Drawing



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 TESCO 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 | 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* 2 – NPTF 3 – MS33649 | 16 – 1" | A – Air D – Dome S – Spring |
| | | | Glass Filled Peek | -40°F to 250°F | | | | |
| | Z – Ethylene Propylene | | Glass Filled Peek | -40°C to 121°C -40°F to 165°F | | | | |
| | D – Nitrile, Buna-N | | Polyimide (Vespel® SP21) | -40°C to 74°C -15°F to 300°F -26°C to 149°C | | | | |
| | V – FKM (Viton®-A) | | | | | | | |
| | | | | *Body diameter is 4.50" | | | | |

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

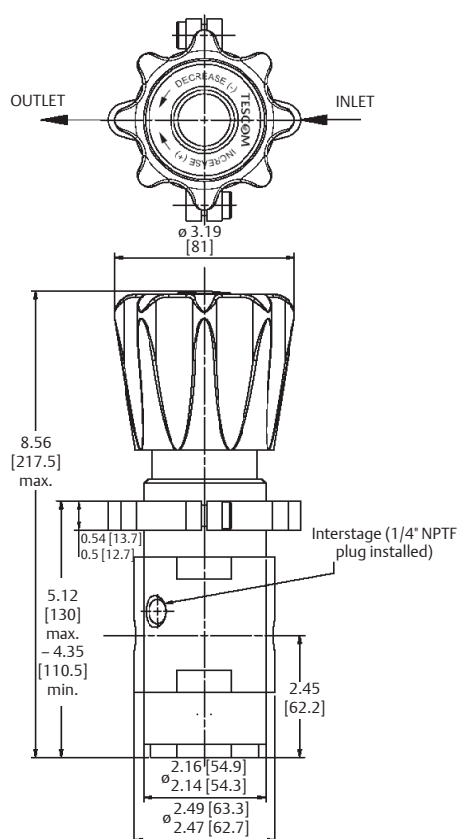
Features and Benefits

- Longer lifetime than single stage solutions by reduced erosion and cavitation
- Lower cost of ownership
- Proven Tescom valve trim modules with many options available

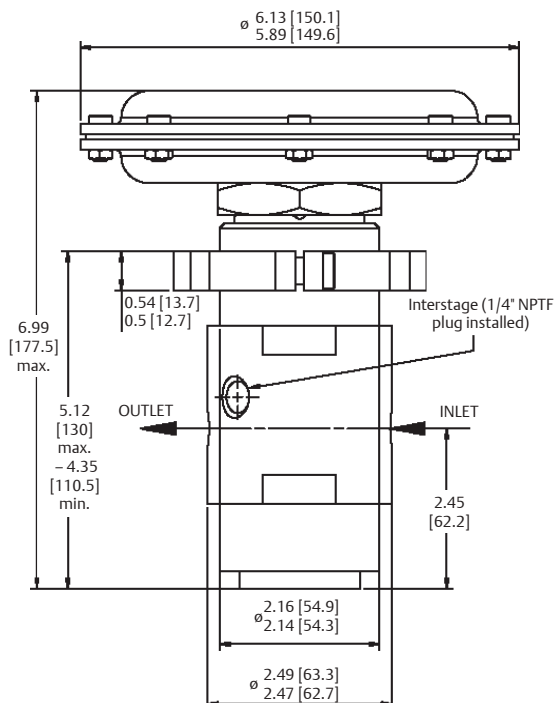
54-3500 SERIES

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 | 2 – NPTF 6 – Medium Pressure | 4 – 1/4" 6 – 3/8" | 1 – Cv = 0.08 | 0 – PCTFE 5 – 17-4 Stainless Steel 7 – Polyimide (Vespel® SP1) 8 – PEEK | 0 – NONE ← ○ → | 001 – Ceramic Stem |

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 Temperature¹

-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

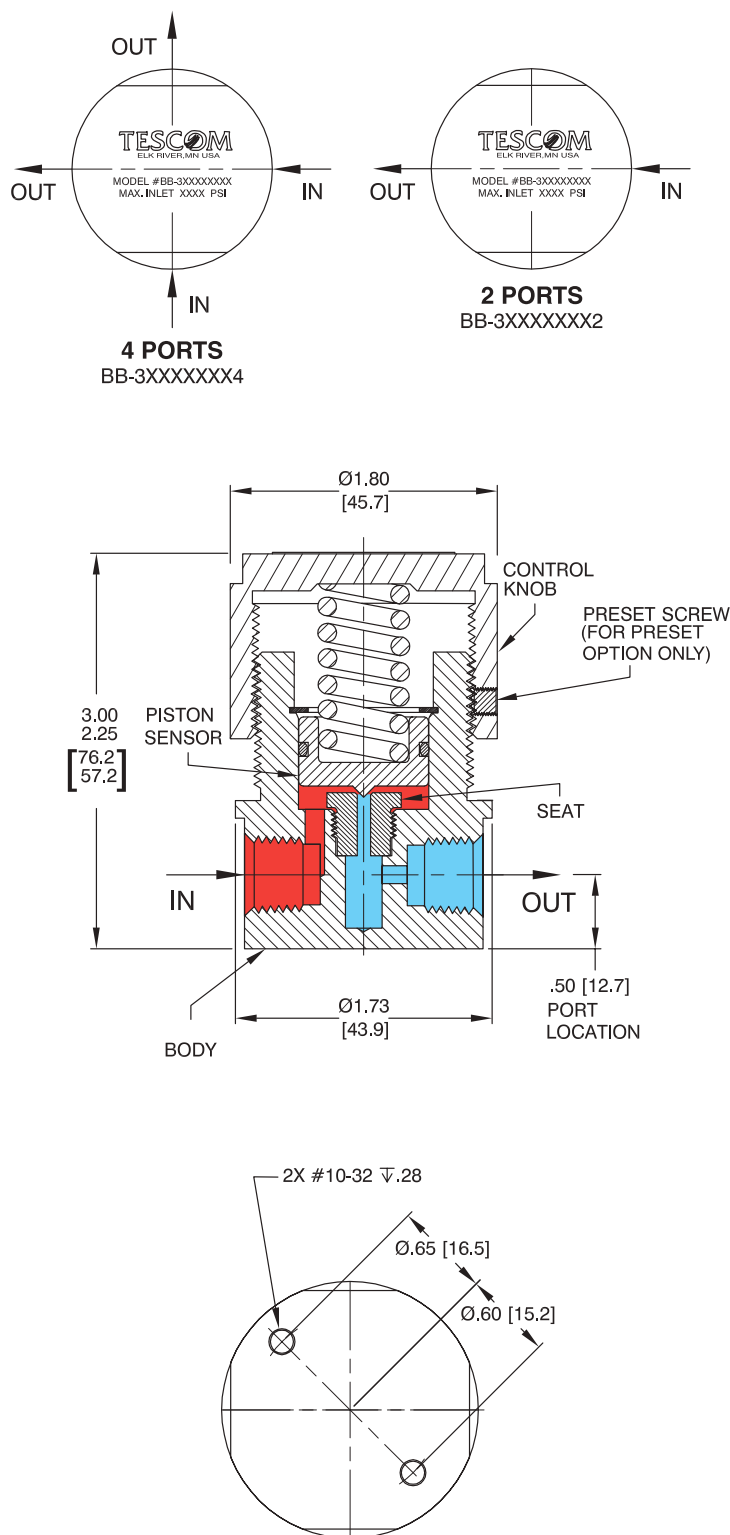
- Portable equipment
- OEM equipment

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 reseal
- Bubble-tight shutoff at all resealing pressures
- Six control pressure ranges

BB-3 SERIES

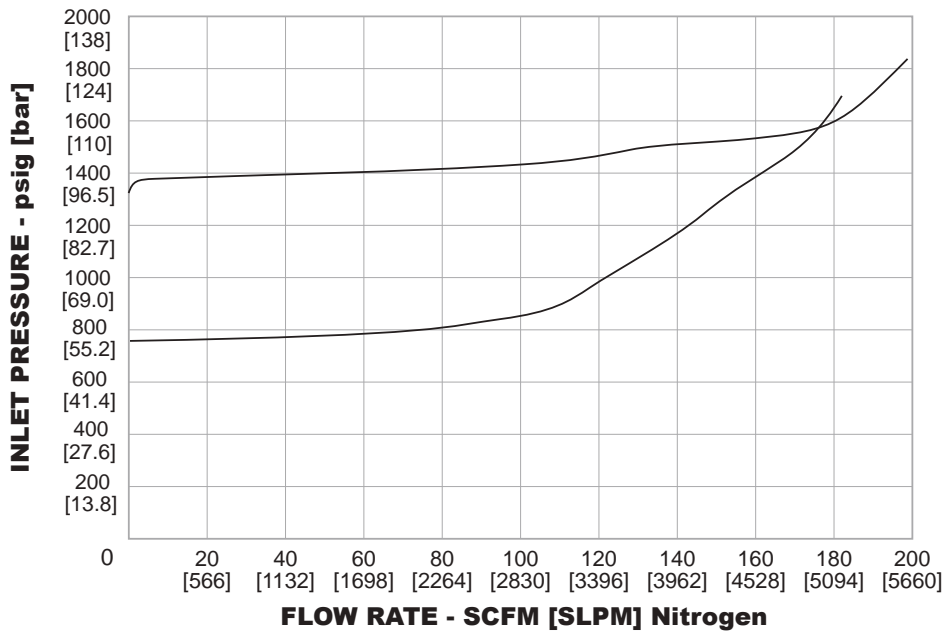
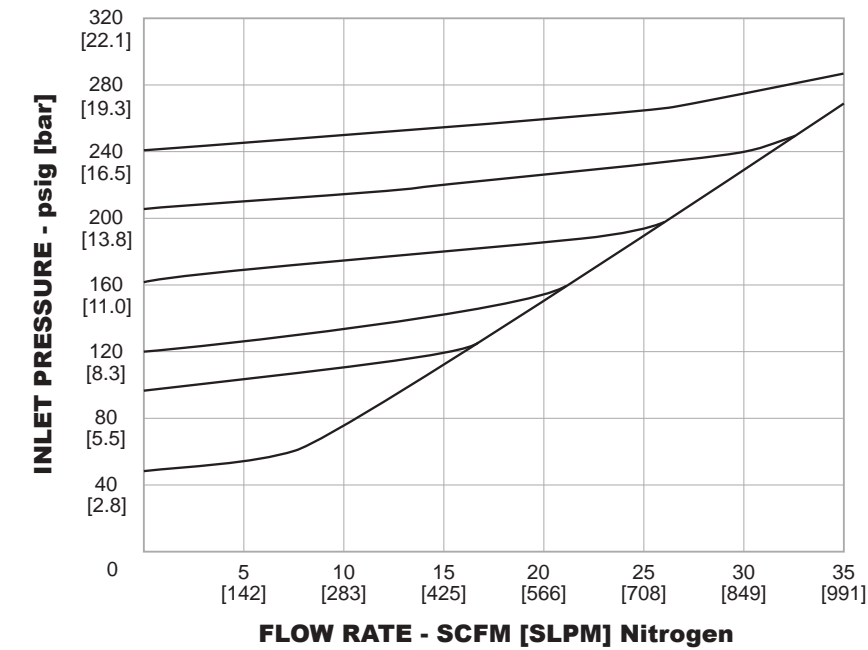
BB-3 Series Regulator Drawing



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 | 0-80 psig | A – ETFE (Tefzel®) | E – Ethylene Propylene | A4 – 1/4" NPTF | 4 |
| | | 6 – 316 Stainless Steel | P – Preset | 0-5.5 bar | 0-5.5 bar | K – PCTFE | N – Nitrile, Buna-N | B4 – 1/4" SAE | 4 |
| | | | D – Dome Load (250 psig / 17.2 bar* maximum reference pressure) | L2 – 0-140 psig | 80-140 psig | V – Polyimide (Vespel®) | S – Special | B2 – 1/4" SAE | 2 |
| | | | | 0-9.7 bar | 5.5-9.7 bar | T – PTFE (250 psig / 17.2 bar maximum inlet pressure) | V – FKM (Viton®-A) | A2 – 1/4" NPTF | 2 |
| | | | | L3 – 0-220 psig | 140-220 psig | | K – FFKM, Perfluoroelastomer (Kalrez®) | | |
| | | | | 0-15.2 bar | 9.7-15.2 bar | | | | |
| | | | | H1 – 0-700 psig | 220-700 psig | | | | |
| | | | | 0-48.3 bar | 15.2-48.3 bar | | | | |
| | | | | H2 – 0-1200 psig | 700-1200 psig | | | | |
| | | | | 0-82.7 bar | 48.3-82.7 bar | | | | |
| | | | | D1 – 0-250 psig | Dome Load Only | | | | |
| | | | | 0-17.2 bar* | | | | | |

*3000 psig / 207 bar available, please consult factory.

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 Temperatures¹

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.

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.

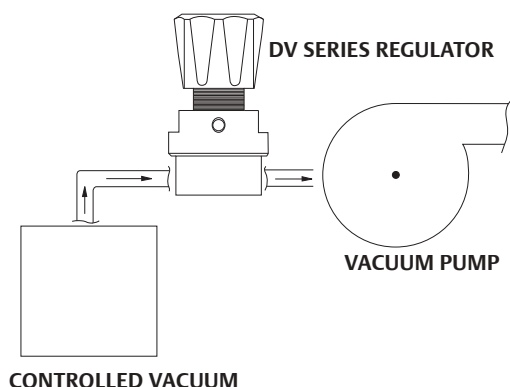
Applications

- Instrumentation testing
- Calibration equipment

Features and Benefits

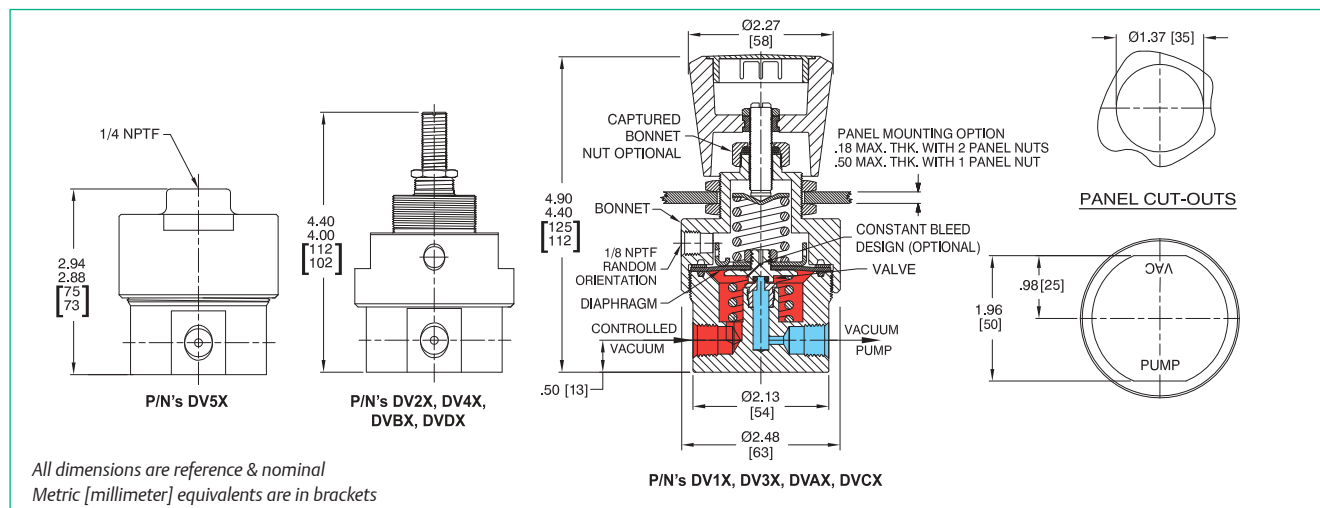
- Controls sub-atmospheric pressure
- Excellent repeatability
- Accurate diaphragm-type regulation $\pm 0.1\%$ full scale accuracy
- High sensitivity of 10 mm Hg absolute achieved with constant bleed option
- Easy maintenance
- Low operating handknob torque
- Captured bonnet and panel mounting options are available

DV Series Typical Application



DV SERIES

DV Series Regulator Drawing



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 | Pneumatic-Standard Solenoid (Pneumatic 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 | Pneumatic-Standard Solenoid (Pneumatic 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 (Pneumatic 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

| Model | Page | Model | Page | Model | Page |
|------------------------------|------|--------------------------------|------|-----------|------|
| 30 Series | 535 | Metal Diaphragm Shut-off Valve | 551 | VM Series | 567 |
| CC Series | 539 | Needle Metering Valve | ? | VN Series | 569 |
| Diaphragm Metering Valve | 543 | VA/VG Series | 557 | VT Series | 571 |
| High Pressure Valve | 547 | VJ Series | 563 | | |
| Metal Bellows Shut-off Valve | 549 | VK Series | 565 | | |

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

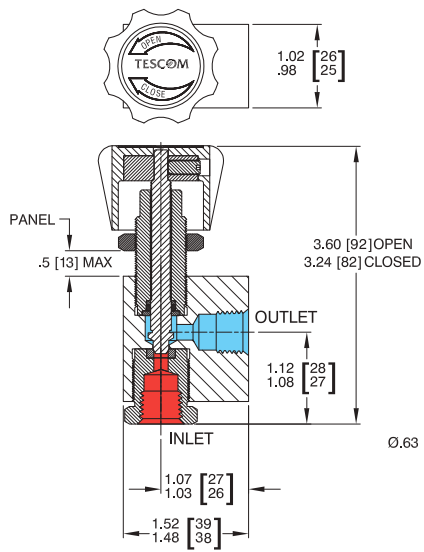
Features and Benefits

- 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

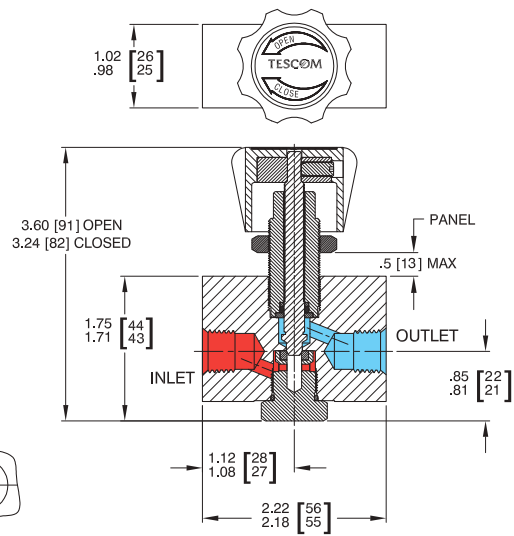
30 SERIES

30 Series Valves Drawing

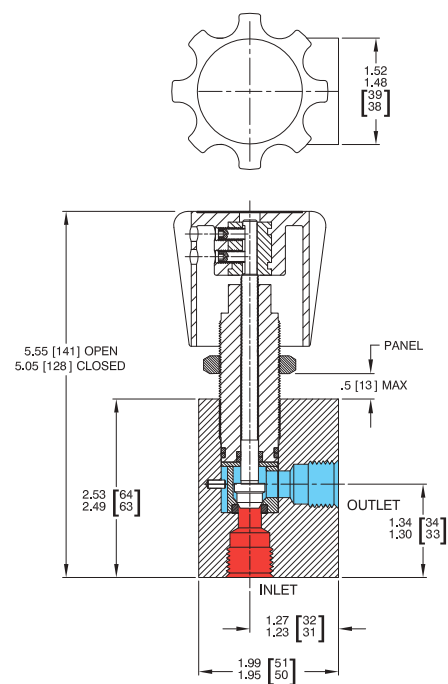
30-1100 ANGLE PATTERN



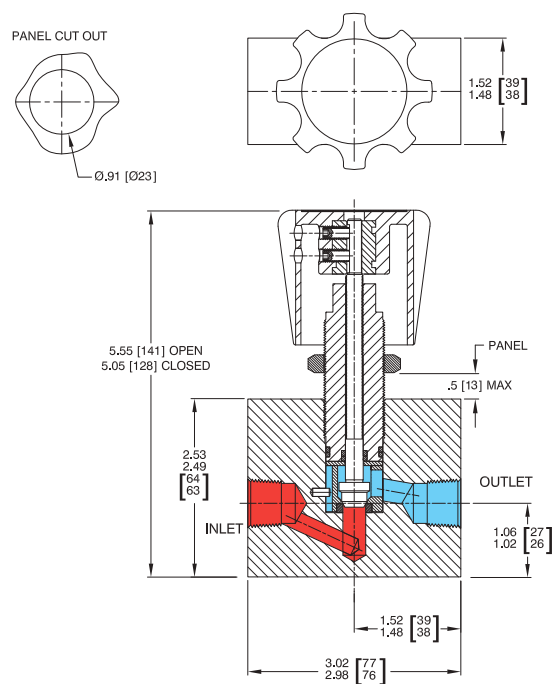
30-1101 GLOBE PATTERN



30-1300 ANGLE PATTERN



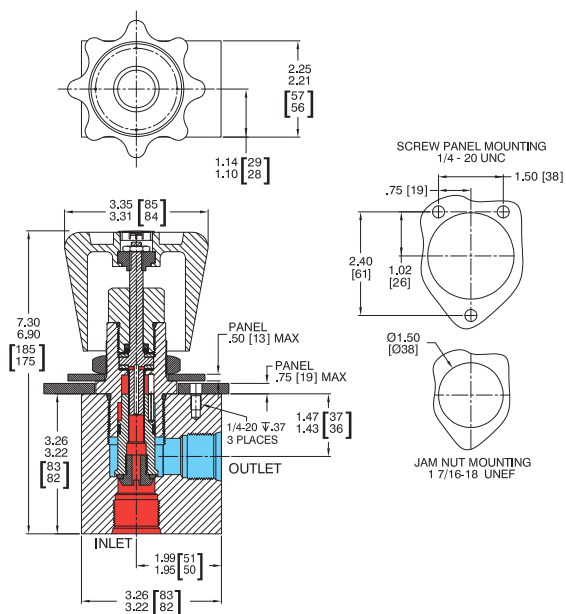
30-1301 GLOBE PATTERN



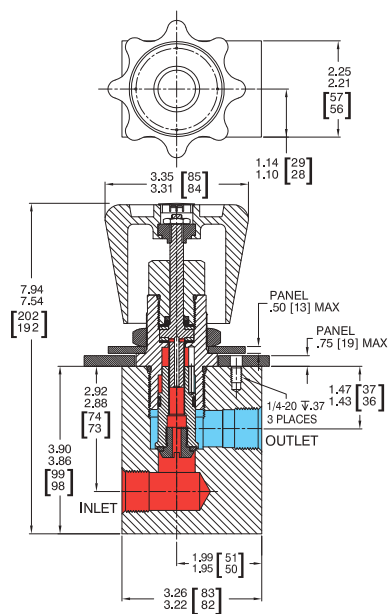
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

30 Series Valves Drawing

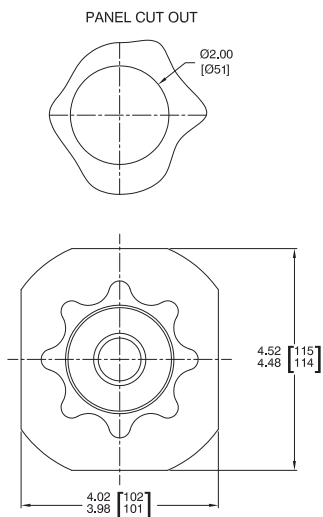
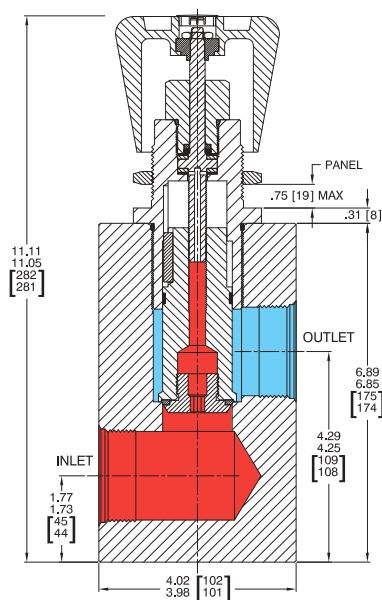
30-1200 ANGLE PATTERN



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) | |
| <div> 1. Available on 30-1100 only 2. Not available on 30-1400 3. Available in Globe Pattern only </div> | | | | | |

| 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 TESCO.

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

$< 4 \times 10^{-8}$ 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 (Vespe[®])

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

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

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

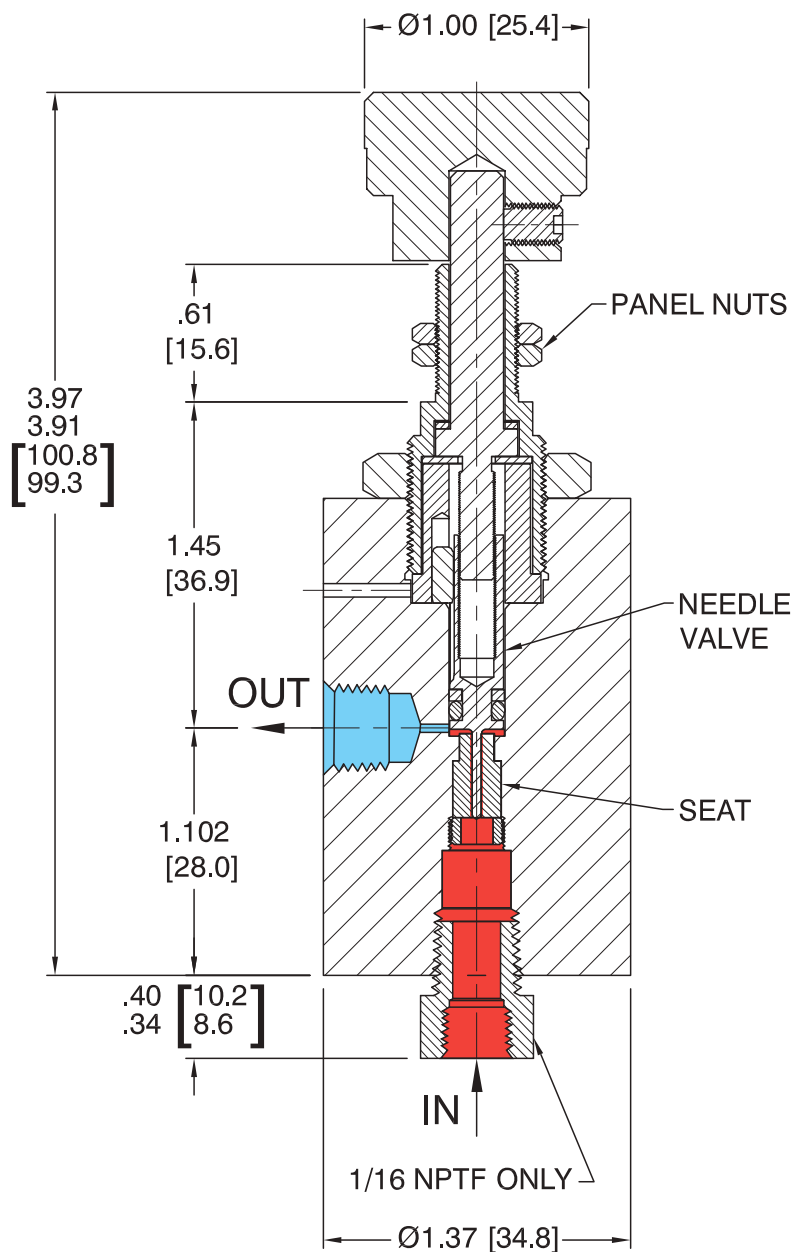
Weight

0.9 lbs / 0.4 kg

Viton[®], Kalrez[®], Vespe[®] and Teflon[®] are registered trademarks of E.I. du Pont de Nemours and Company.
VCR[®] is a registered trademark of Cajon Co.

CC SERIES

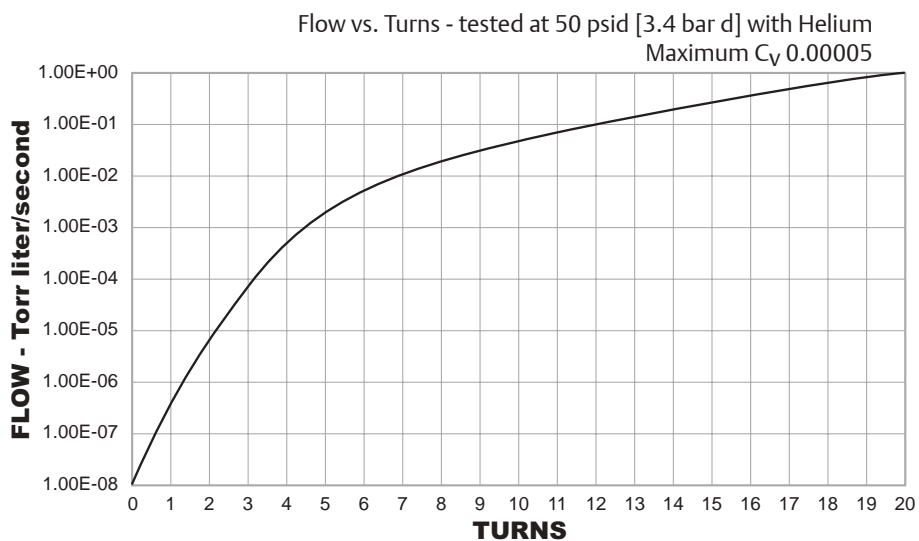
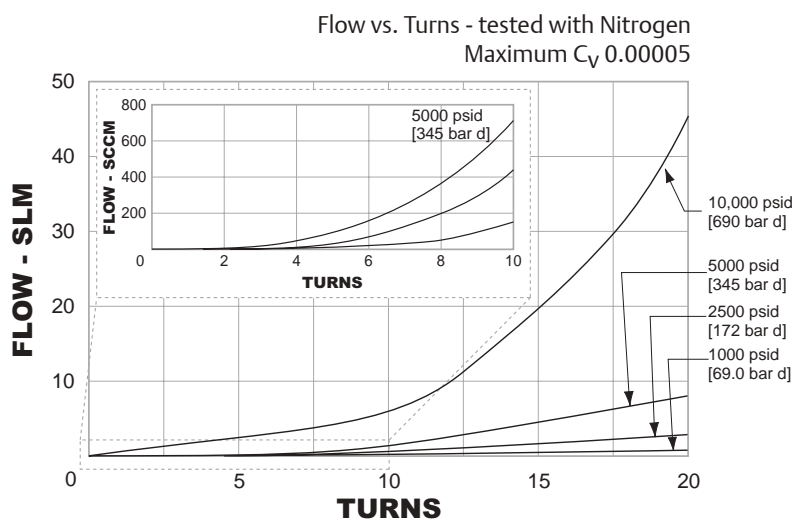
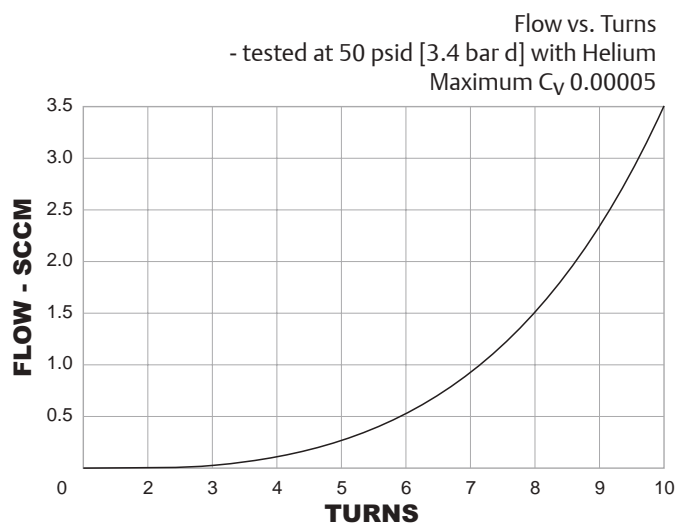
CC Series Metering Valve Drawing



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 TESCO catalog or on www.tescom.com.



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

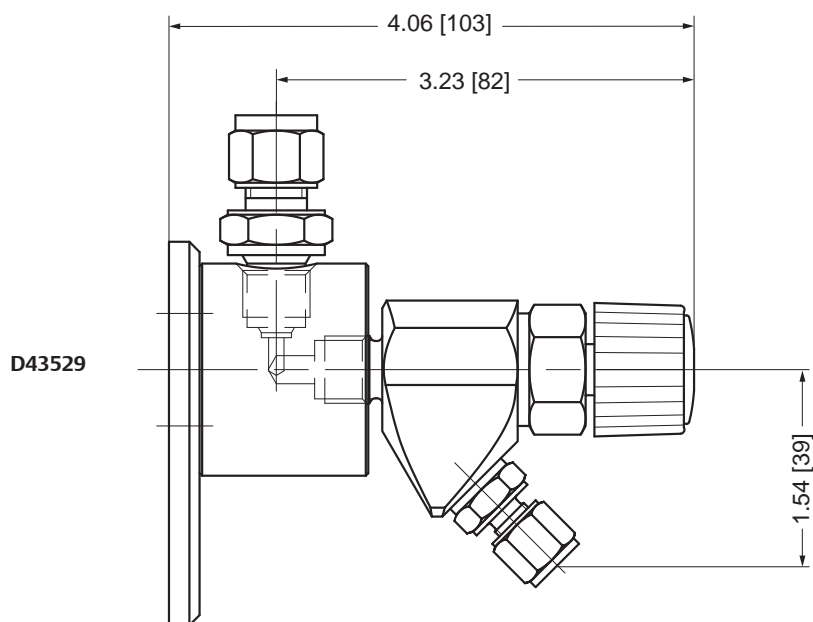
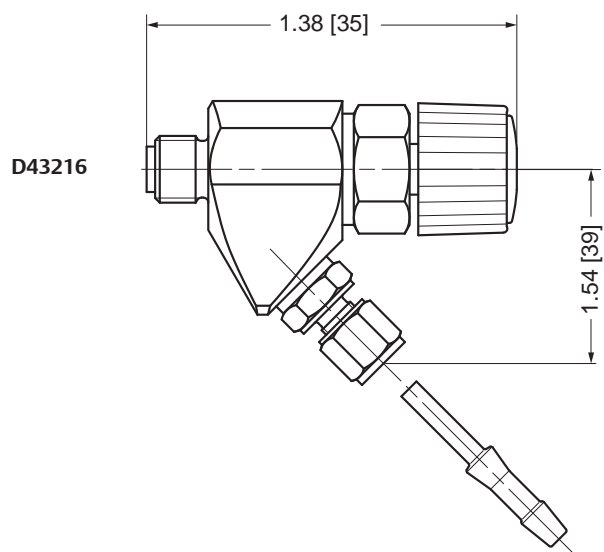
- Controlling the flow of process media with high accuracy
- Laboratory, R&D and analyzer applications
- Suitable for ECD (Electronic Capture Detector) applications

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

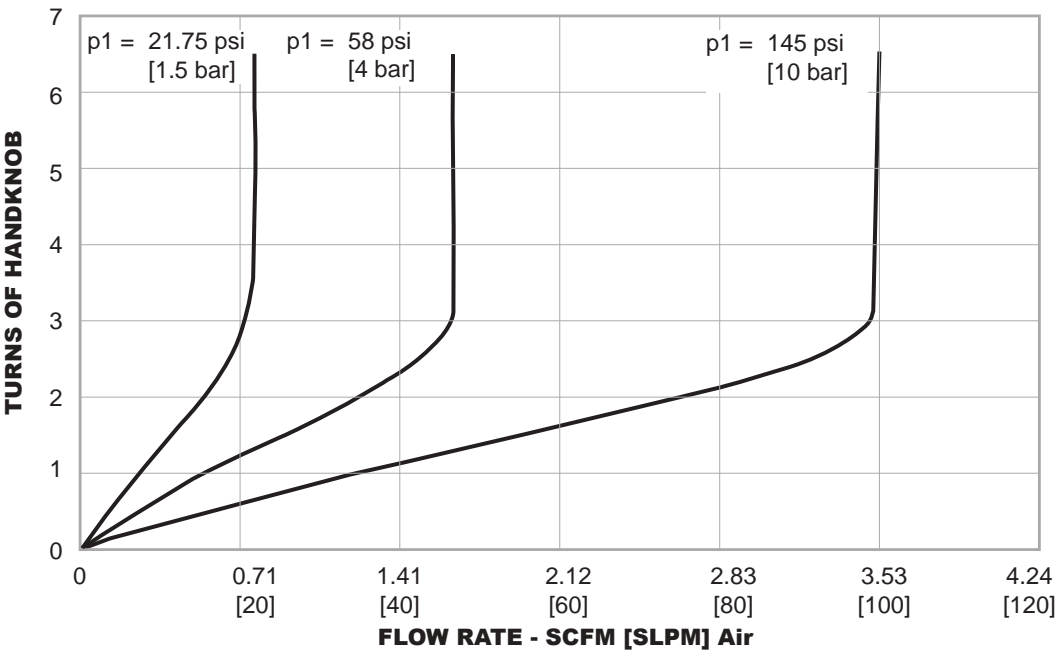
Diaphragm Metering Valve Drawings



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* <div>*Not available for D43216 Stainless Steel</div> |

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 <div>*Not available for D43529 Stainless Steel</div> | E – Without (G 1/8" female) F – Compression fitting ø 8 mm* G – Compression fitting ø 10 mm <div>*Not available for D43528 Brass</div> |

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 TESCO.

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, O₂: 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 Pont de Nemours and Company.



D41935

TESCOM High Pressure Valve for the supply of high purity gases in laboratory gas supply lines.

Applications

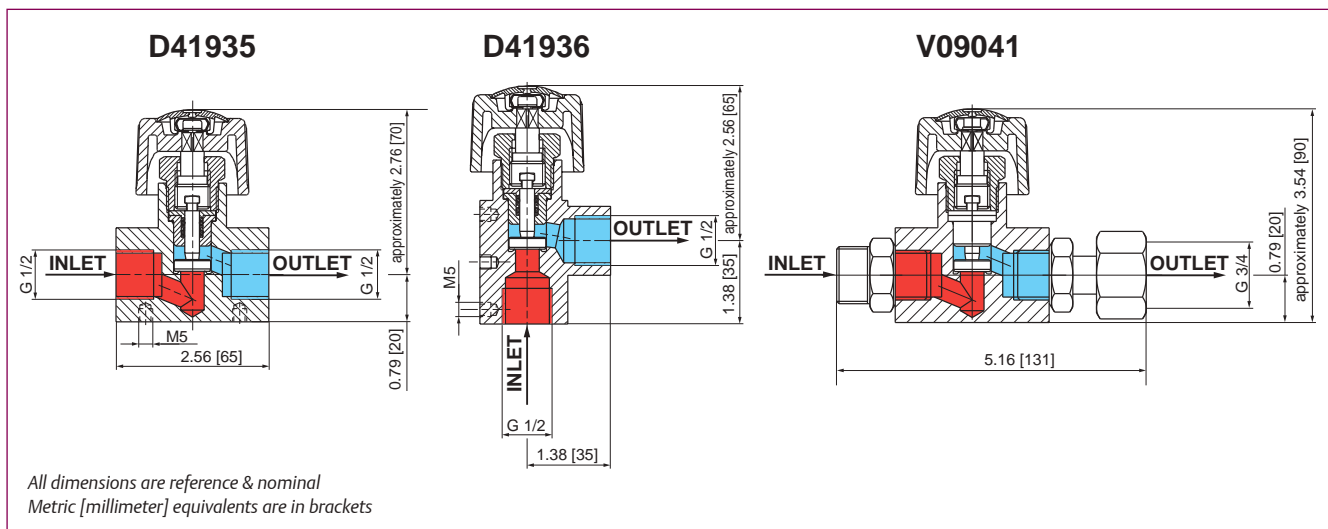
- High pressure systems
- High flow systems
- Suitable for 5.0 purity gas applications
- Used in main lines
- Used in specialty panel solutions

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



High Pressure Valve Part Number Selector

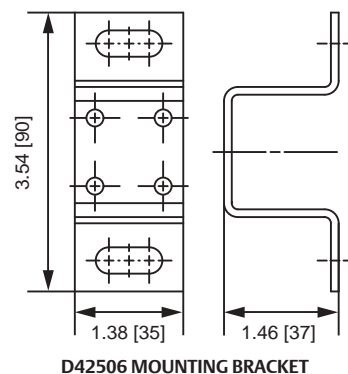
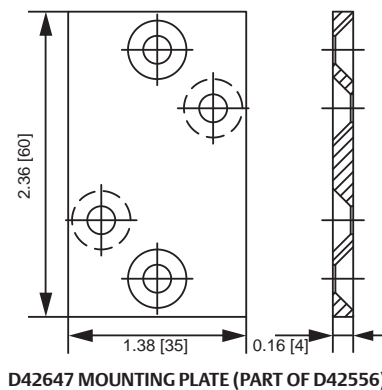
Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.

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 |



Specifications

For other materials or modifications, please consult TESCOm.

FLUID MEDIA

For pure gases up to 6.0 (99,999 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

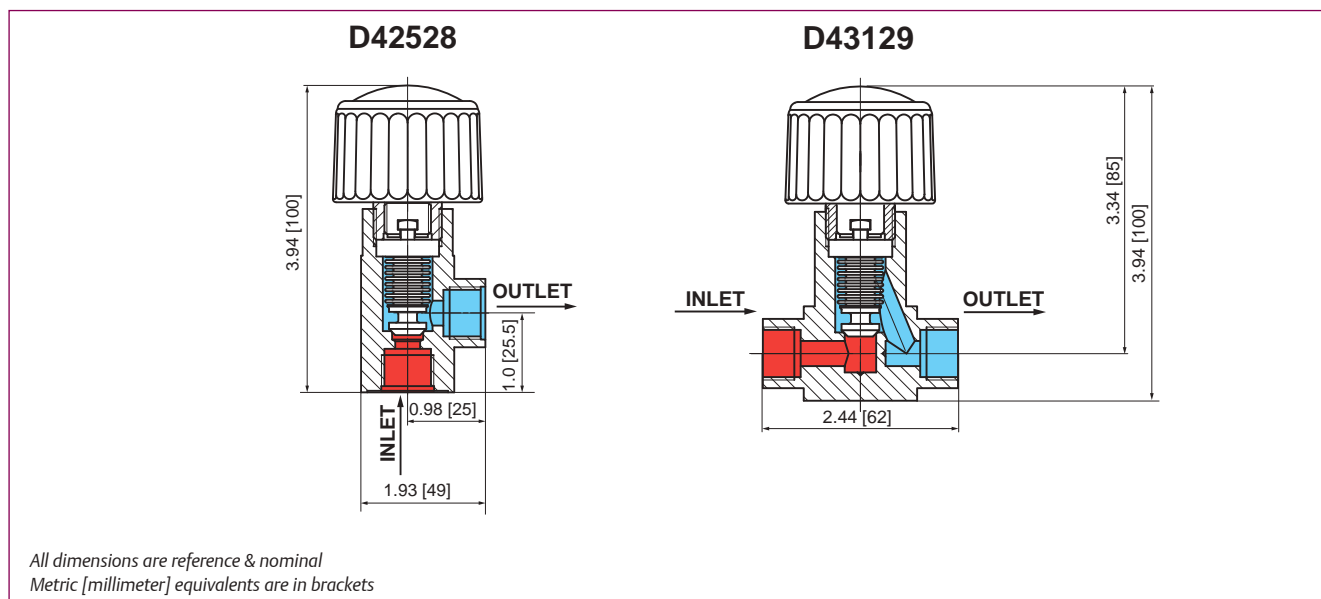
- Purity gas applications
- High flow systems
- Purging process
- Used in main lines

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



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 V01699 D50002 D40582 | Mounting plate Sealing ring Brass for G 3/8 Sealing ring Cu for G 3/8 Sealing ring Stainless Steel for G 3/8 | Wall mounting of D43129 For male swivel G 3/8 Brass For male swivel G 3/8 Brass 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

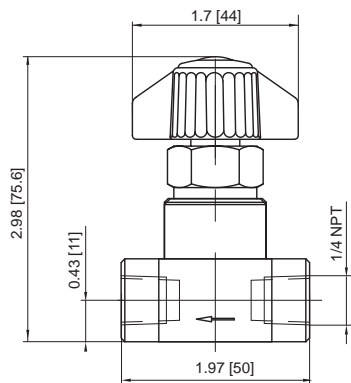
- Laboratories, R&D and analyzer applications
- Line shut-off components in central pure gas supply systems

Features and Benefits

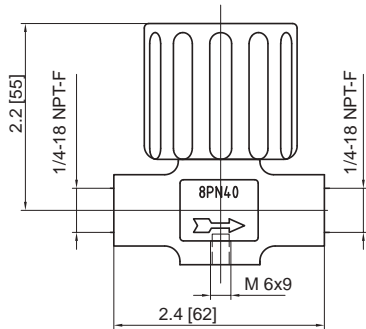
- Short and effective purging due to the metal diaphragm construction
- Clearly visible open or close position
- Leakage rate against atmosphere 10^{-8} mbar l/sec He
- Variability of nominal width and connections

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:

| 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 |

| 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 TESCO.

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



TESCO 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

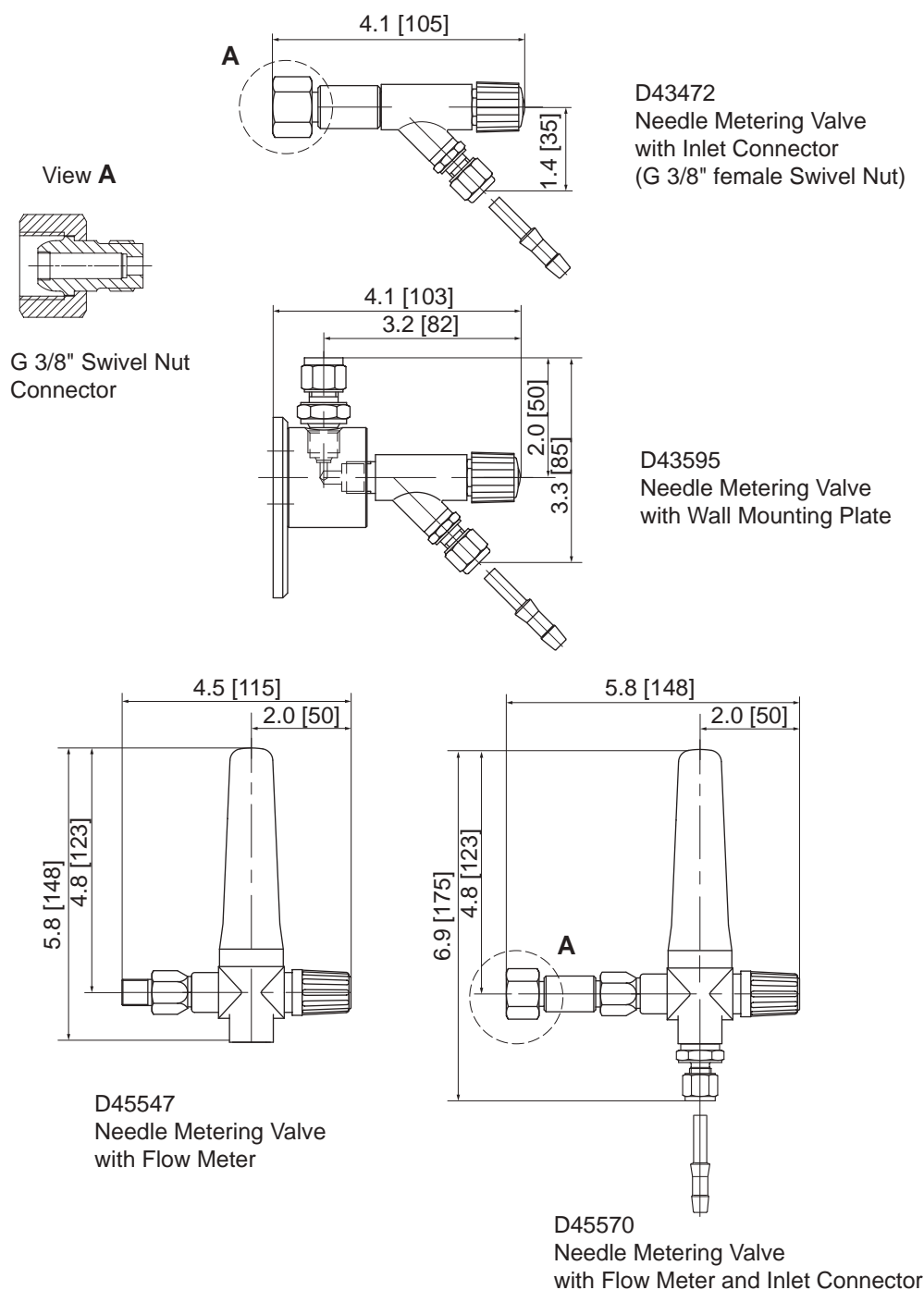
- Laboratory, R&D and analyzer applications
- Low pressure sampling valve applications

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

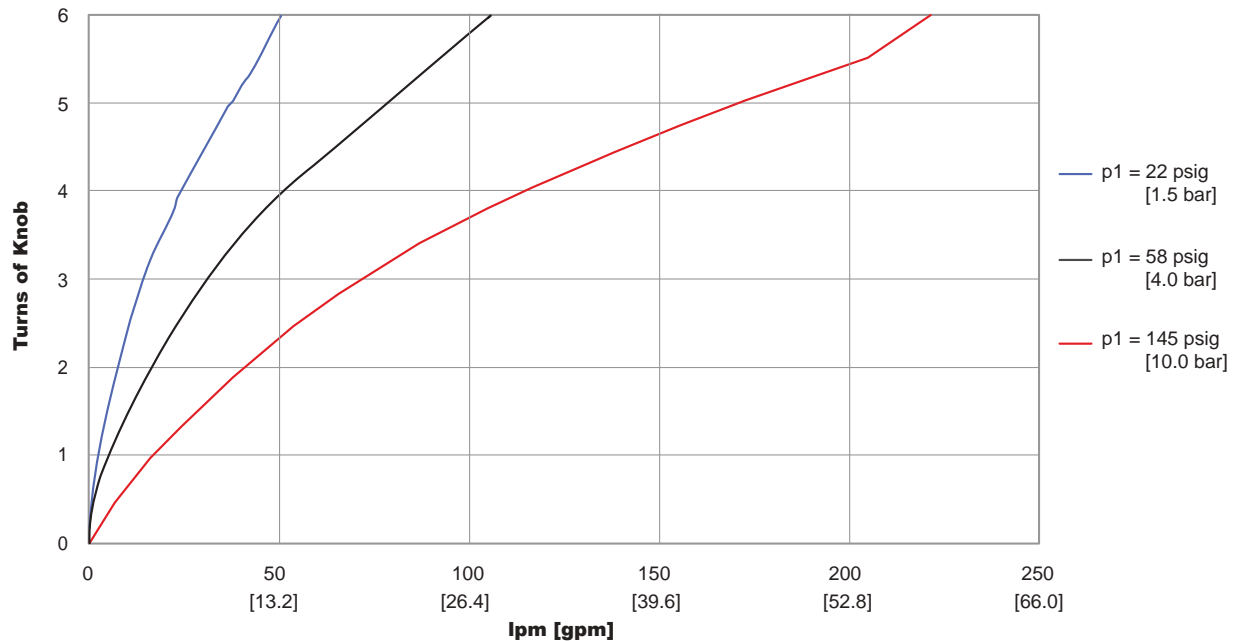
Needle Metering Valve Drawings



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 TESCO catalog or on www.tescom.com.



Needle Metering Valve Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCO 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 |

Specifications

For other materials or modifications, please consult TESCO. M.

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 (Vespe l®)

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 Vespe l® 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

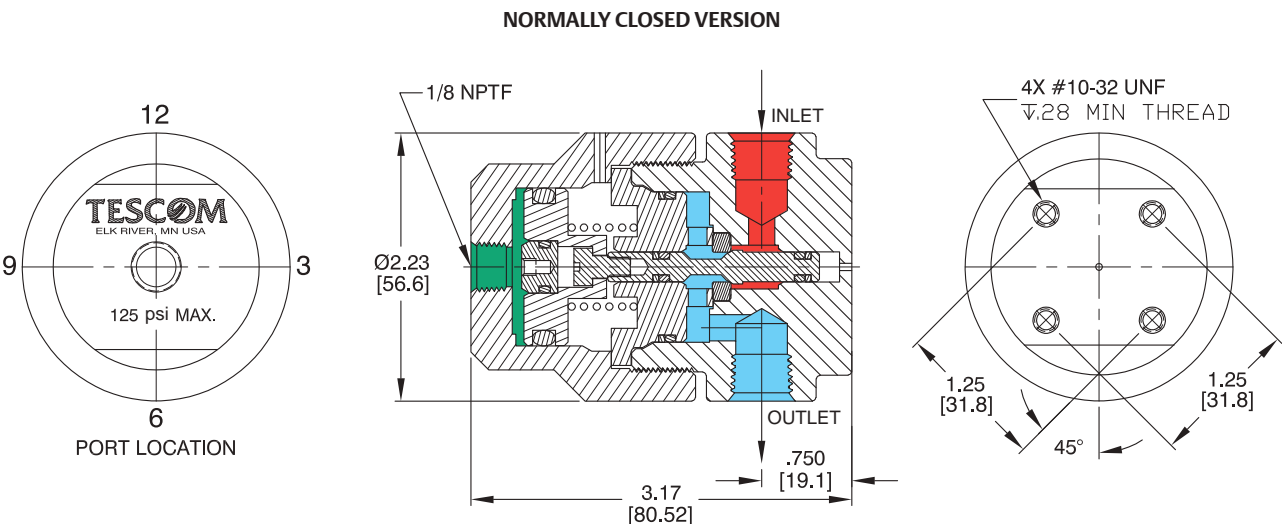
Features and Benefits

- 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

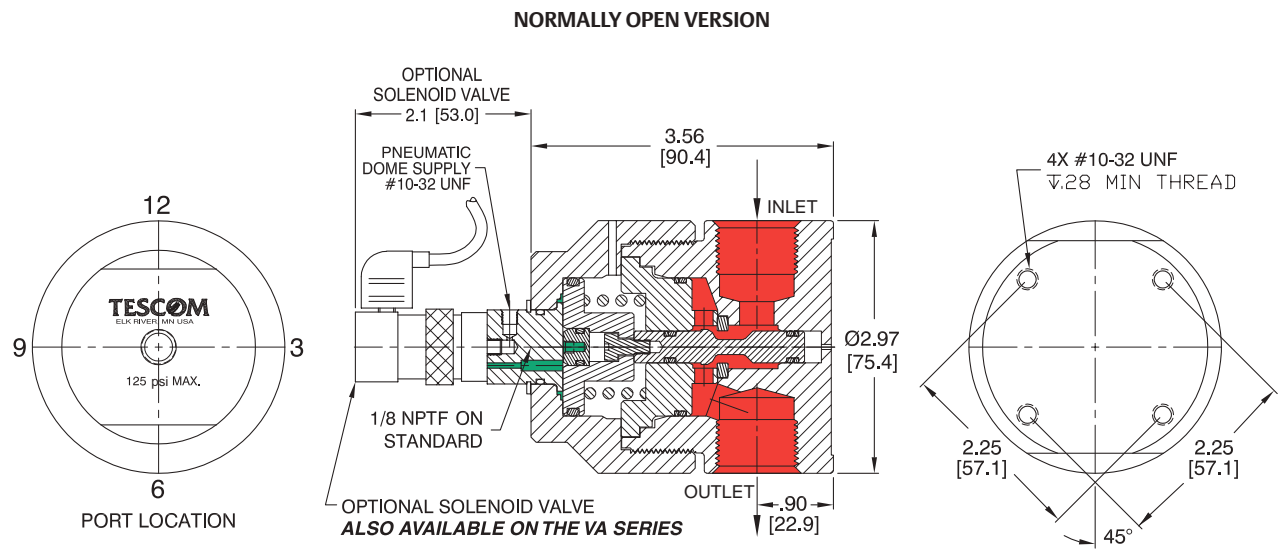
VA SERIES



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



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

100

100

100

100

1. *Journal of the American Medical Association*, 2000; 284: 2689-2695.

100

100

VA/VG SERIES

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

| VG SERIES | | | | | | | For Non-Metallic Kit | | | | | |
|------------------------|--|--|----------------|----------------------|----------------------------|------------------------|---|-------------------------------|-------------------------------|-------------------------------|--------------------------------|--------------------|
| 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 | Nitrile | Brass | -40°F to 165°F | 9 – None C – CCL V – Solenoid Valve (24 volt) W – Solenoid Valve (12 volt) | C – 3/8" NPTF Inlet | C – 3/8" NPTF Inlet | C – 3/8" NPTF Inlet | C – 3/8" NPTF Inlet | |
| | | | | Buna-N | 3500 psig | -40°C to 74°C | | | | | | |
| | | | | | 241 bar | 20°F to 165°F | | | | | | |
| | | | | | | -7°C to 74°C | | | | | | |
| | | | | | Stainless Steel | -15°F to 165°F | | | | | | |
| | | | | | 3500 psig | -26°C to 74°C | | | | | | |
| | | | CK – PCTFE | Kalrez®** | | -40°F to 165°F | | G – 1/2" NPTF Inlet | D – 3/8" NPTF Outlet | D – 3/8" NPTF Outlet | D – 3/8" NPTF Outlet | |
| | | | | | | -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 | | | | | | |
| | | | CV – PCTFE | FKM (Viton®-A) | | -40°F to 165°F | | J – 3/4" NPTF Inlet | G – 1/2" NPTF Inlet | G – 1/2" NPTF Inlet | G – 1/2" NPTF Inlet | |
| | | | | | | -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 | | | | | | |
| CE – PCTFE | Ethylene Propylene | | -40°F to 165°F | L – 3/8" SAE Inlet | H – 1/2" NPTF Outlet | H – 1/2" NPTF Outlet | H – 1/2" NPTF Outlet | | | | | |
| | | | -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 | | | | | | | | | |
| CU – PCTFE | Urethane | | -40°F to 165°F | P – 1/2" SAE Inlet | J – 3/4" NPTF Inlet | J – 3/4" NPTF Inlet | J – 3/4" NPTF Inlet | | | | | |
| | | | -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 | | | | | | | | | |
| PB – PEEK | Nitrile | Brass | -40°F to 165°F | K – 3/4" NPTF Outlet | K – 3/4" NPTF Outlet | K – 3/4" NPTF Outlet | K – 3/4" NPTF Outlet | | | | | |
| | Buna-N | 6000 psig | -40°C to 74°C | | | | | | | | | |
| | | 414 bar | 20°F to 250°F | | | | | | | | | |
| | | | -7°C to 121°C | | | | | | | | | |
| | | Stainless Steel | -15°F to 250°F | | | | | | | | | |
| | | 10,000 psig | -26°C to 121°C | | | | | | | | | |
| | PK – PEEK | Kalrez®** | | | | | | -40°F to 250°F | L – 3/8" SAE Inlet | L – 3/8" SAE Inlet | L – 3/8" SAE Inlet | L – 3/8" SAE Inlet |
| | | | | | | | | -40°C to 121°C | | | | |
| | | | | | | | | -40°F to 250°F | | | | |
| | | | | | | | | -40°C to 121°C | | | | |
| | | | | | | | | -40°F to 165°F | | | | |
| | | | | | | | | -40°C to 74°C | | | | |
| PV – PEEK | FKM (Viton®-A) | | -40°F to 165°F | M – 3/8" SAE Outlet | M – 3/8" SAE Outlet | M – 3/8" SAE Outlet | M – 3/8" SAE Outlet | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 165°F | | | | | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 165°F | | | | | | | | | |
| | | | -40°C to 74°C | | | | | | | | | |
| PE – PEEK | Ethylene Propylene | | -40°F to 165°F | P – 1/2" SAE Inlet | P – 1/2" SAE Inlet | P – 1/2" SAE Inlet | P – 1/2" SAE Inlet | | | | | |
| | | | -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 | | | | | | | | | |
| PU – PEEK | Urethane | | -40°F to 165°F | R – 1/2" SAE Outlet | R – 1/2" SAE Outlet | R – 1/2" SAE Outlet | R – 1/2" SAE Outlet | | | | | |
| | | | -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 | | | | | | | | | |
| VB – Polymide (Vespe®) | Nitrile | Brass | -40°F to 165°F | 9 – None | 9 – None | 9 – None | 9 – None | | | | | |
| | Buna-N | 6000 psig | -40°C to 74°C | | | | | | | | | |
| | | 414 bar | 20°F to 250°F | | | | | | | | | |
| | | | -7°C to 121°C | | | | | | | | | |
| | | Stainless Steel | -15°F to 250°F | | | | | | | | | |
| | | 10,000 psig | -26°C to 121°C | | | | | | | | | |
| VK – Polymide (Vespe®) | Kalrez®** | | -40°F to 250°F | 9 – None | 9 – None | 9 – None | 9 – None | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 250°F | | | | | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 250°F | | | | | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| VV – Polymide (Vespe®) | FKM (Viton®-A) | | -40°F to 165°F | 9 – None | 9 – None | 9 – None | 9 – None | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 165°F | | | | | | | | | |
| | | | -40°C to 121°C | | | | | | | | | |
| | | | -40°F to 165°F | | | | | | | | | |
| | | | -40°C to 74°C | | | | | | | | | |
| VE – Polymide (Vespe®) | Ethylene Propylene | | -40°F to 165°F | 9 – None | 9 – None | 9 – None | 9 – None | | | | | |
| | | | -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 | | | | | | | | | |
| VU – Polymide (Vespe®) | Urethane | | -40°F to 165°F | 9 – None | 9 – None | 9 – None | 9 – None | | | | | |
| | | | -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 | | | | | | | | | |

* 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 | -40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C |
| | | | AK – ETFE (Tefzel®) | PTFE | Kalrez®** | Stainless Steel 3500 psig / 241 bar | -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C |
| | | | AV – ETFE (Tefzel®) | PTFE | FKM (Viton®-A) | | |
| | | | AE – ETFE (Tefzel®) | PTFE | Ethylene Propylene | | |
| | | | AU – ETFE (Tefzel®) | PTFE | Urethane | | |
| | | | | PTFE | Nitrile, Buna-N | | |
| | | | CB – PCTFE | PTFE | Kalrez®** | Brass 3500 psig / 241 bar | -40°F to 165°F / -40°C to 74°C 20°F to 165°F / -7°C to 74°C |
| | | | CK – PCTFE | PTFE | FKM (Viton®-A) | Stainless Steel 500 psig / 241 bar | -15°F to 165°F / -26°C to 74°C -40°F to 165°F / -40°C to 74°C |
| | | | CV – PCTFE | PTFE | Ethylene Propylene | | |
| | | | CE – PCTFE | PTFE | | | |
| | | | CU – PCTFE | PTFE | Urethane | | |
| | | | PB – PEEK | PCTFE | Nitrile, Buna-N | Brass 6000 psig / 414 bar | -40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C |
| | | | PK – PEEK | PCTFE | Kalrez®** | Stainless Steel | -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C |
| | | | PV – PEEK | PCTFE | FKM (Viton®-A) | 10,000 psig / 690 bar | -40°F to 165°F / -40°C to 74°C |
| | | | PE – PEEK | PCTFE | Ethylene Propylene | | |
| | | | PU – PEEK | PCTFE | Urethane | | |
| | | | VB – Polyimide (Vespel®) | PCTFE | Nitrile, Buna-N | Brass 6000 psig / 414 bar | -40°F to 165°F / -40°C to 74°C 20°F to 250°F / -7°C to 121°C |
| | | | VK – Polyimide (Vespel®) | PCTFE | Kalrez®** | Stainless Steel | -15°F to 250°F / -26°C to 121°C -40°F to 250°F / -40°C to 121°C |
| | | | VV – Polyimide (Vespel®) | PCTFE | FKM (Viton®-A) | 10,000 psig / 690 bar | -40°F to 165°F / -40°C to 74°C |
| | | | VE – Polyimide (Vespel®) | PCTFE | Ethylene Propylene | | |
| | | | VU – Polyimide (Vespel®) | PCTFE | Urethane | | |
| | | | VG – Polyimide (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 | PTFE | Nitrile, Buna-N | Brass | -40°F to 165°F / -40°C to 74°C |
| | | | CK – PCTFE | PTFE | Kalrez®** | 3500 psig / 241 bar | 20°F to 165°F / -7°C to 74°C |
| | | | CV – PCTFE | PTFE | FKM (Viton®-A) | | -15°F to 165°F / -26°C to 74°C |
| | | | CE – PCTFE | PTFE | Ethylene Propylene | Stainless Steel | -40°F to 165°F / -40°C to 74°C |
| | | | CU – PCTFE | PTFE | Urethane | 3500 psig / 241 bar | -40°F to 165°F / -40°C to 74°C |
| | | | PB – PEEK | PCTFE | Nitrile, Buna-N | Brass | -40°F to 165°F / -40°C to 74°C |
| | | | PK – PEEK | PCTFE | Kalrez®** | 6000 psig / 414 bar | 20°F to 250°F / -7°C to 121°C |
| | | | PV – PEEK | PCTFE | FKM (Viton®-A) | | -15°F to 250°F / -26°C to 121°C |
| | | | PE – PEEK | PCTFE | Ethylene Propylene | Stainless Steel | -40°F to 250°F / -40°C to 121°C |
| | | | PU – PEEK | PCTFE | Urethane | 10,000 psig / 690 bar | -40°F to 165°F / -40°C to 74°C |
| | | | VB – Polymide (Vespel®) | PCTFE | Nitrile, Buna-N | Brass | -40°F to 165°F / -40°C to 74°C |
| | | | VK – Polymide (Vespel®) | PCTFE | Kalrez®** | 6000 psig / 414 bar | 20°F to 250°F / -7°C to 121°C |
| | | | VV – Polymide (Vespel®) | PCTFE | FKM (Viton®-A) | | -15°F to 250°F / -26°C to 121°C |
| | | | VE – Polymide (Vespel®) | PCTFE | Ethylene Propylene | Stainless Steel | -40°F to 250°F / -40°C to 121°C |
| | | | VU – Polymide (Vespel®) | PCTFE | Urethane | 10,000 psig / 690 bar | -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.

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

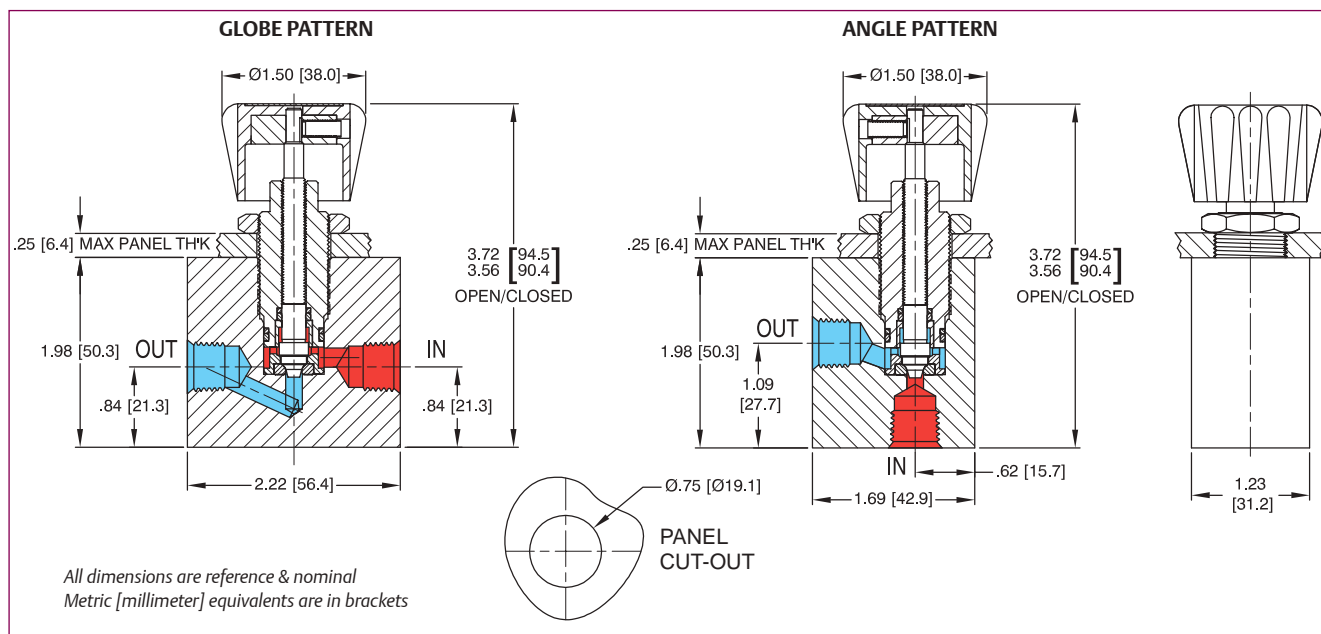
- Pressure control panels
- Ground Support Equipment (GSE)

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 O₂ 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

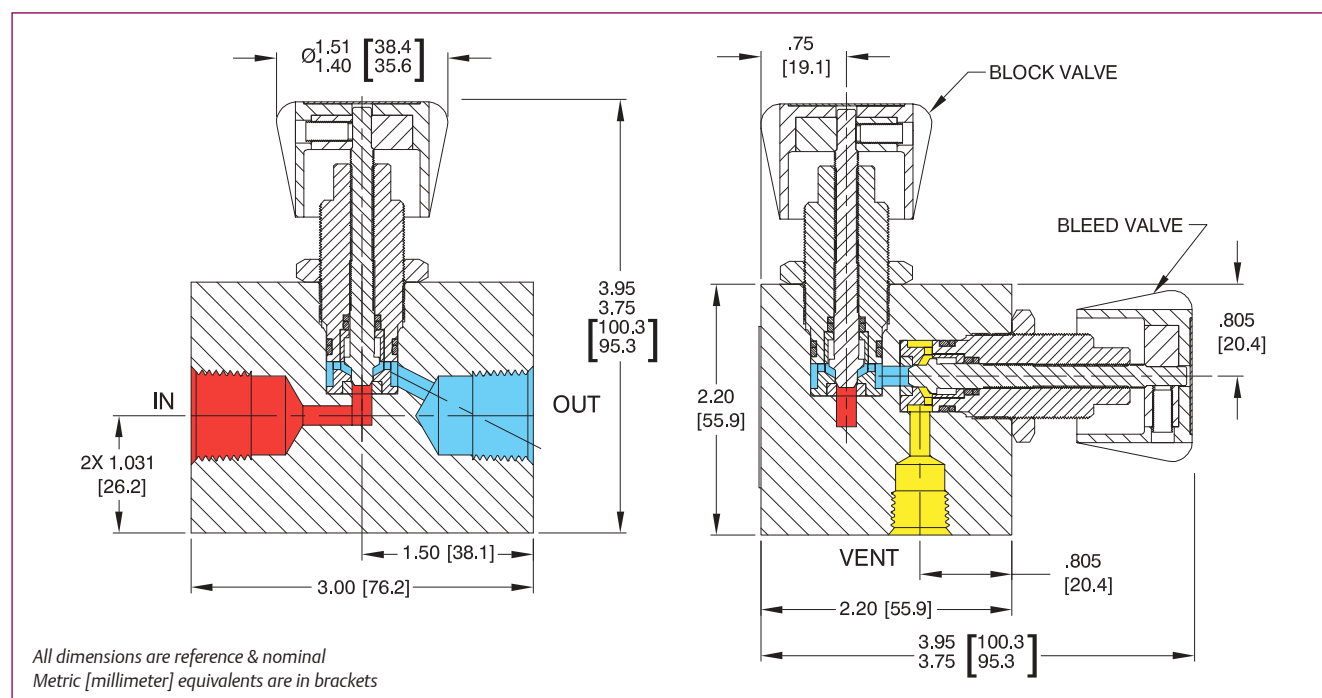
- Purge applications

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



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 TESCO.

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

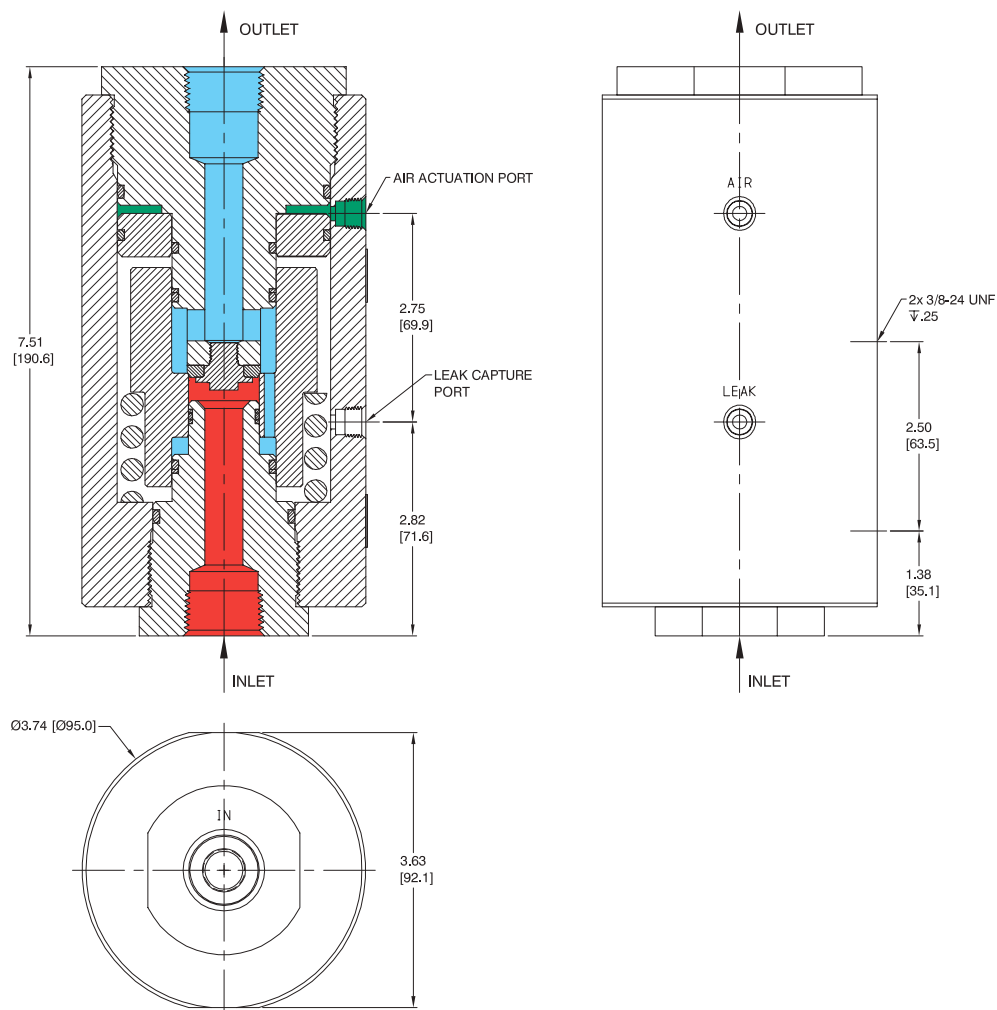
- High pressure gas and liquid
- High flow filling applications
- Testing of high pressure and high flow components

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 TESCO.***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

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

OTHER**Cleaning**

CGA 4.1 AND ASTM G93

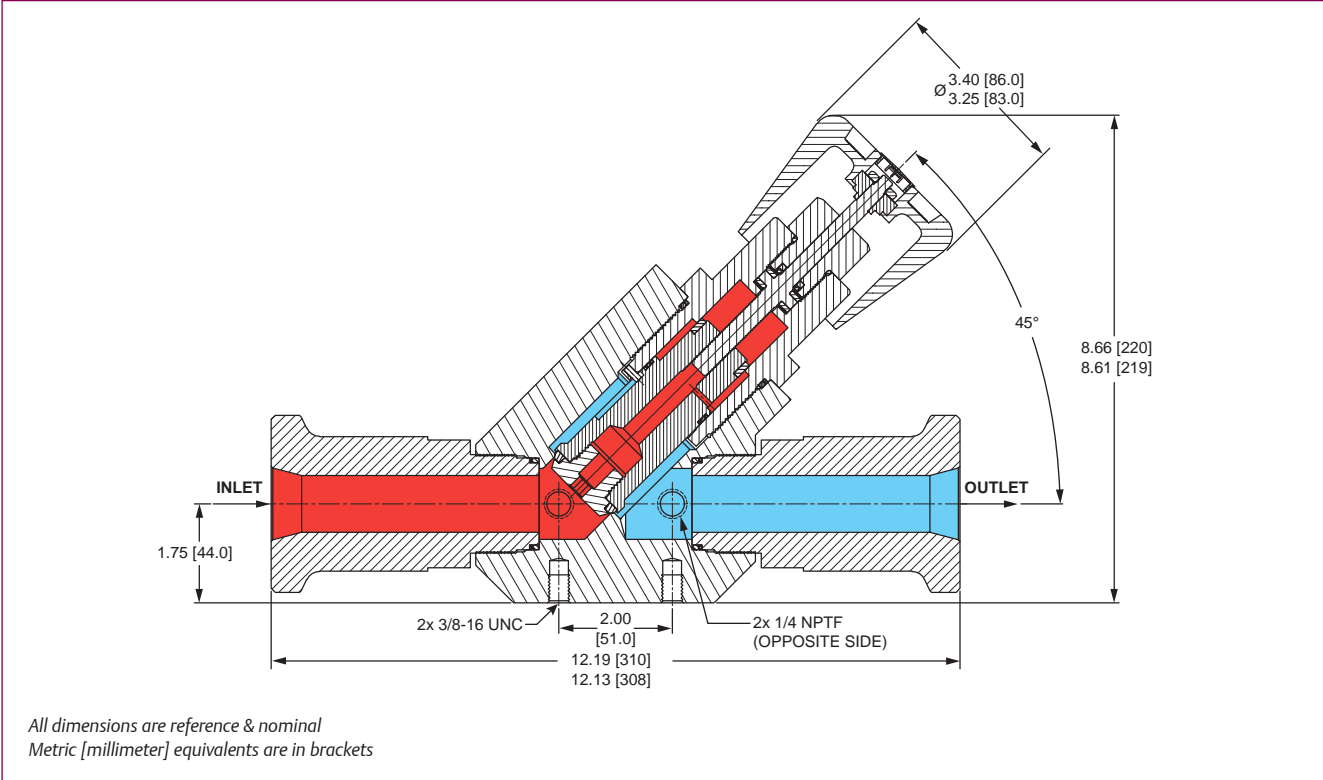
Weight

35 lbs / 15.9 kg

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

VN SERIES

VN Series Valve Drawing



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 TESCO.***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 Trim316 Stainless Steel, 17-4 PH Stainless Steel,
Brass (Brass bodies only)**Seat**

ETFE (Tefzel®), CTFE, PEEK, Polyimide (Vespel®)

O-RingNitrile, 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

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

TESCOM VT Series 3-way air-operated valve provides high cycle life in a compact design.

Applications

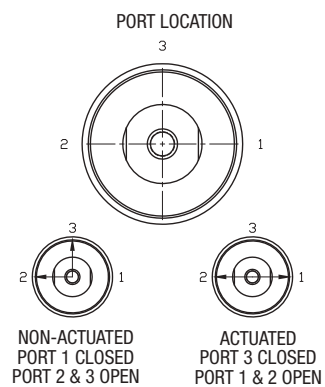
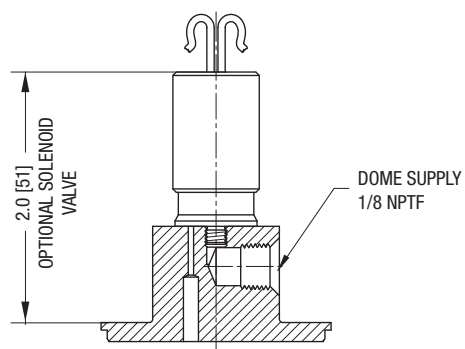
- Component pressure cycle testing
- Two source selector valve
- Fill and dump applications (e.g. airbag canister filling, gas spring filling)
- Emergency shutoff
- Pneumatic and hydraulic applications

Features and Benefits

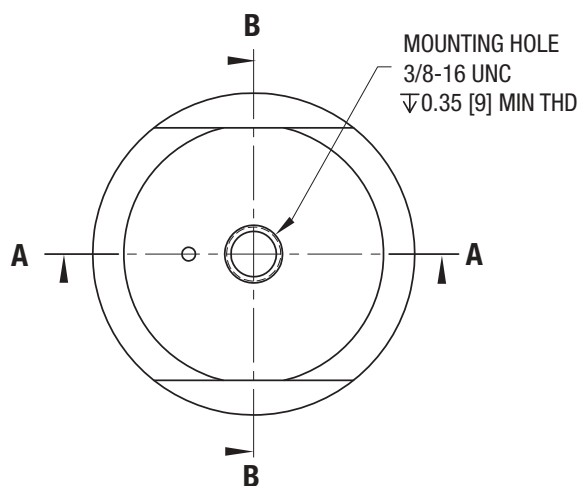
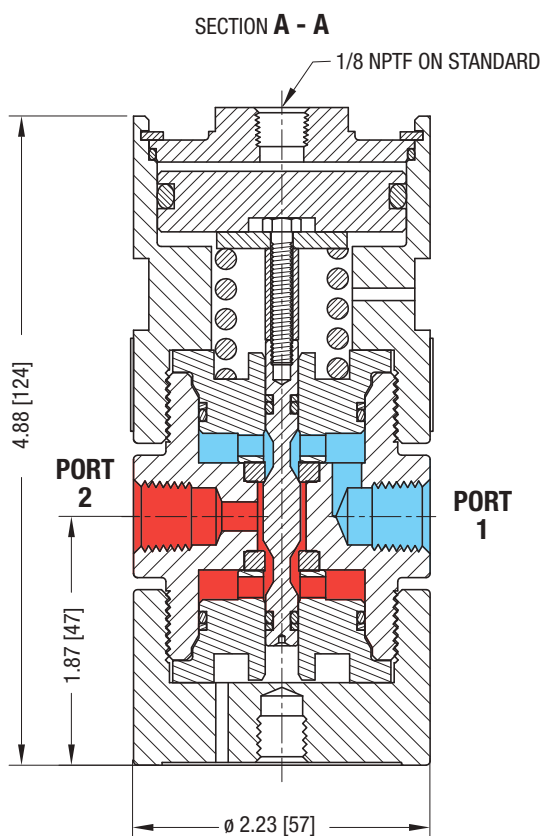
- 1/4" and 3/8" ports
- $C_v = 0.75$
- Balanced main valve
- Solenoid valve is optional
- 2 position, 3-way
- Leak tight integrity - Class VI shutoff (bubble-tight)

VT SERIES

VT Series 3-Way Valve Drawing

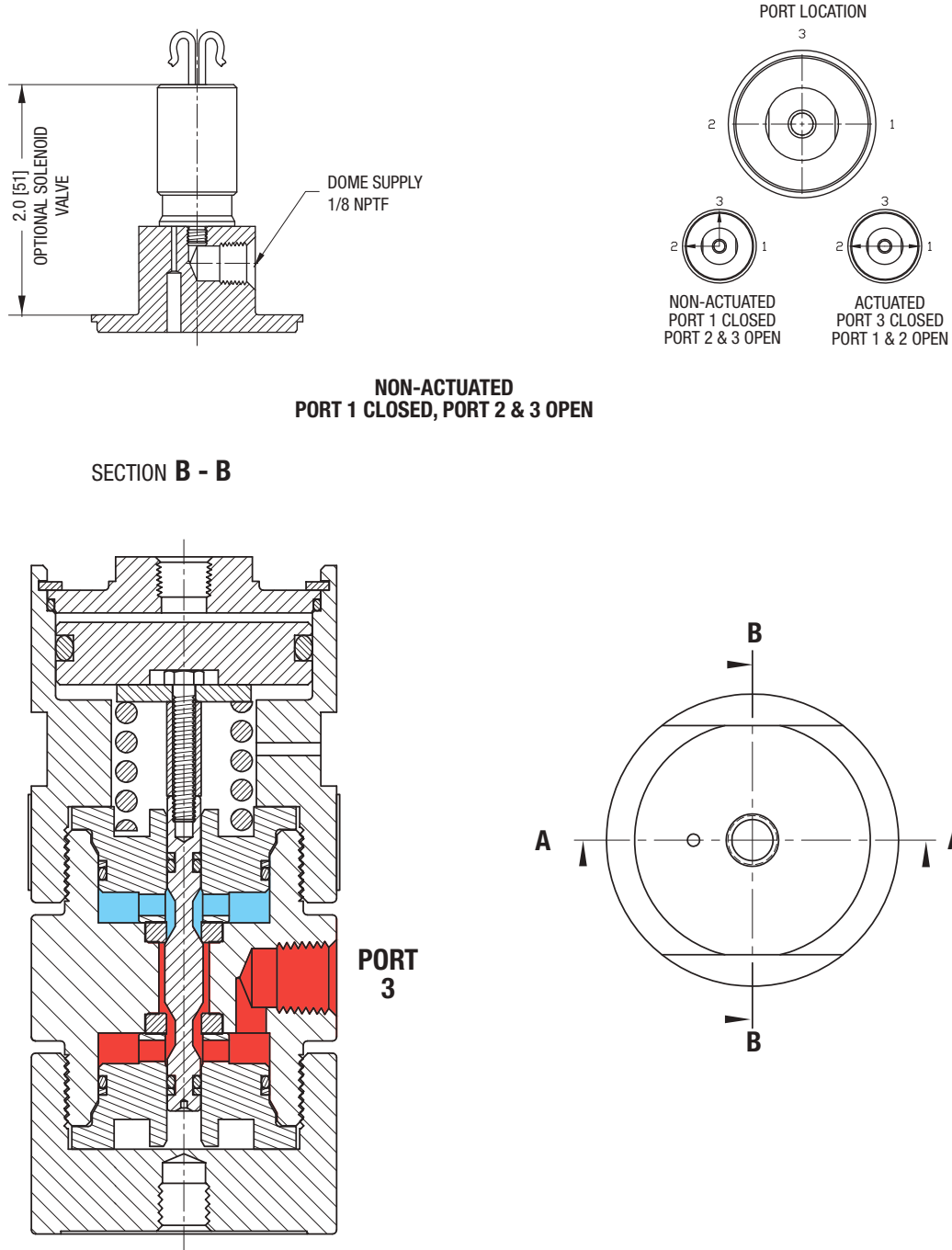


**NON-ACTUATED
PORT 1 CLOSED, PORT 2 & 3 OPEN**



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

VT Series 3-Way Valve Drawing



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®) | Nitrile, Buna-N | Brass body 3500 psig 241 bar | -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 |
| | | AK – ETFE (Tefzel®) | Kalrez®** | | 20°F to 250°F -7°C to 121°C | | | | |
| | | AV – ETFE (Tefzel®) | FKM (Viton®-A) | 316 Stainless Steel body 3500 psig 241 bar | -15°F to 250°F -26°C to 121°C | | | | |
| | | AE – ETFE (Tefzel®) | Ethylene Propylene | | -40°F to 250°F -40°C to 121°C | | | | |
| | | AU – ETFE (Tefzel®) | Urethane | | -40°F to 165°F -40°C to 74°C | | | | |
| | | CB – PCTFE | Nitrile, Buna-N | Brass body 3500 psig 241 bar | -40°F to 165°F -40°C to 74°C | | | | |
| | | CK – PCTFE | Kalrez®** | | 20°F to 165°F -7°C to 74°C | | | | |
| | | CV – PCTFE | FKM (Viton®-A) | 316 Stainless Steel body 3500 psig 241 bar | -15°F to 165°F -26°C to 74°C | | | | |
| | | CE – PCTFE | Ethylene Propylene | | -40°F to 165°F -40°C to 74°C | | | | |
| | | CU – PCTFE | Urethane | | -40°F to 165°F -40°C to 74°C | | | | |
| | | PB – PEEK | Nitrile, Buna-N | Brass body 6000 psig 414 bar | -40°F to 165°F -40°C to 74°C | | | | |
| | | PK – PEEK | Kalrez®** | | 20°F to 250°F -7°C to 121°C | | | | |
| | | PV – PEEK | FKM (Viton®-A) | 316 Stainless Steel body 10,000 psig 690 bar | -15°F to 250°F -26°C to 121°C | | | | |
| | | PE – PEEK | Ethylene Propylene | | -40°F to 250°F -40°C to 121°C | | | | |
| | | PU – PEEK | Urethane | | -40°F to 165°F -40°C to 74°C | | | | |
| | | VB – Polyimide (Vespel®) | Nitrile, Buna-N | Brass body 6000 psig 414 bar | -40°F to 165°F -40°C to 74°C | | | | |
| | | VK – Polyimide (Vespel®) | Kalrez®** | | 20°F to 250°F -7°C to 121°C | | | | |
| | | VV – Polyimide (Vespel®) | FKM (Viton®-A) | 316 Stainless Steel body 10,000 psig 690 bar | -15°F to 250°F -26°C to 121°C | | | | |
| | | VE – Polyimide (Vespel®) | Ethylene Propylene | | -40°F to 250°F -40°C to 121°C | | | | |
| | | VU – Polyimide (Vespel®) | Urethane | | -40°F to 165°F -40°C to 74°C | | | | |

* Brass body is limited to +200 °F (93 °C) maximum.

**FKM, 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

| | |
|--|------------|
| Automatic Changeover Regulator Systems Includes ACS012, ACS3200, CR441800, and CS-2200 Designed for specialty, corrosive, and pyrophoric gases | 577 |
| Compact Panel Central gas supply unit for pressure control of analytical gases in laboratory facilities | 585 |
| Ultra High Purity Compact Panel Central gas supply unit for pressure control of high grade analytical gases in laboratory facilities | 583 |
| System Components for Compact Panels Gas Failure Warning and Emergency Switch-off System for central gas supply systems | 591 |
| High Pressure Panel Central gas supply unit for very high pressure control of analytical gases in laboratory facilities | 595 |
| Accessories for Panels Pigtails, Extension Kits and additional parts for panels | 599 |
| NA4 Series Changeover system designed to ensure a continuous supply of carrier and calibration gases with no interruption due to supply depletion or change out, supports up to 16 total cylinders | 601 |

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

Applications

ACS012



CS-2200



ACS3200



CR441800



- CO₂ 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 TESCO.

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 $\leq 2 \times 10^{-8}$ 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 TESCO.

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 $\leq 2 \times 10^{-8}$ 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.

AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

ACS012 Specifications

For other materials or modifications, please consult TESCO.

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 $\leq 2 \times 10^{-8}$ 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 TESCO.

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

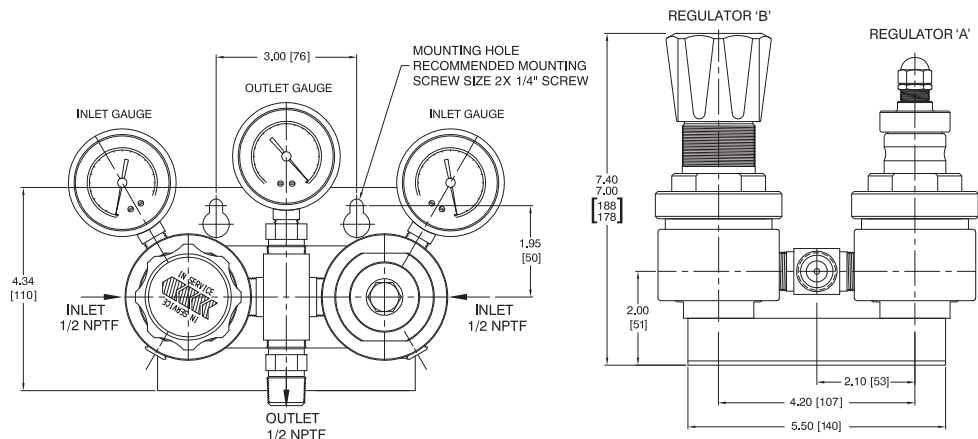
3 lbs / 1.4 kg

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.

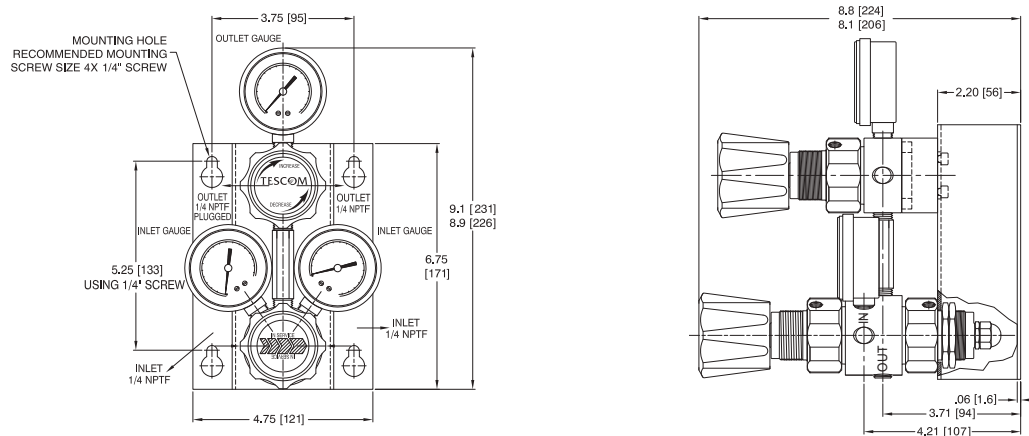
AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

Automatic Changeover Regulators and Systems Drawings

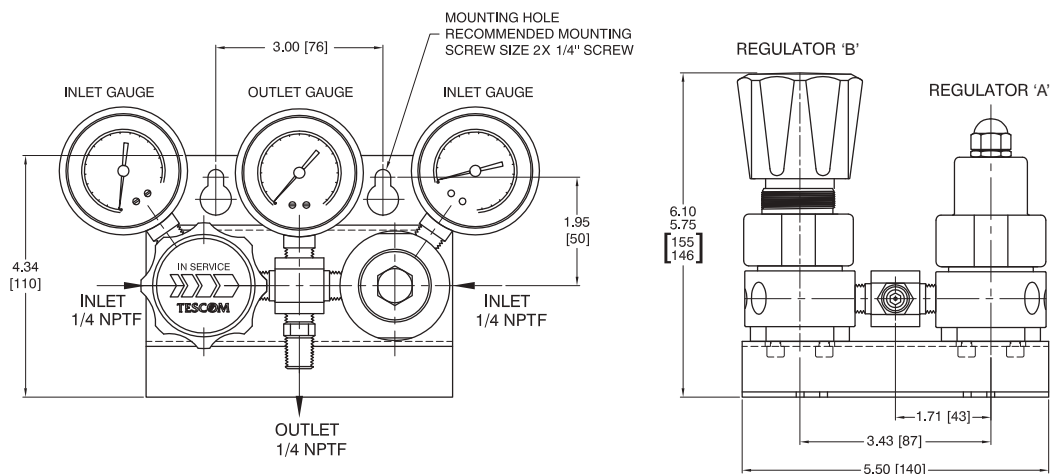
ACS3200 SERIES CHANGEOVER SYSTEMS (HIGH FLOW)



CS2200 SERIES CHANGEOVER SYSTEMS (LOW FLOW)



ACS012 SERIES CHANGEOVER SYSTEMS (LOW FLOW)

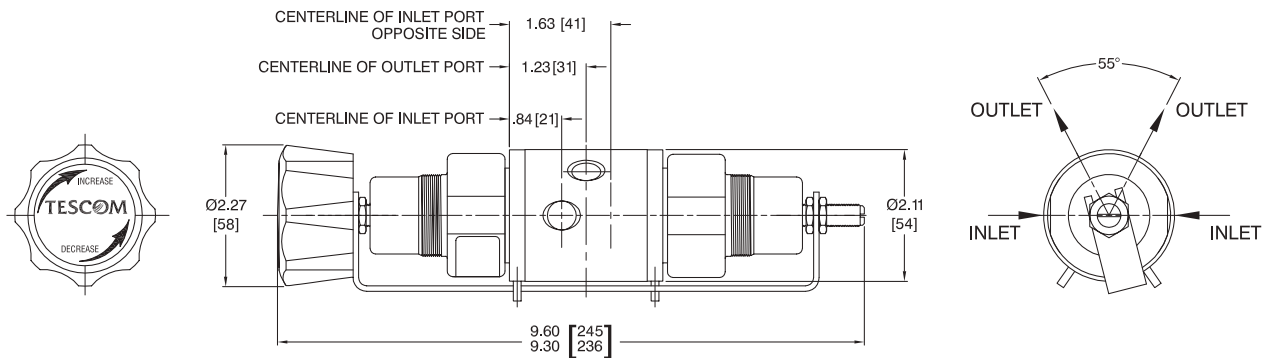


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

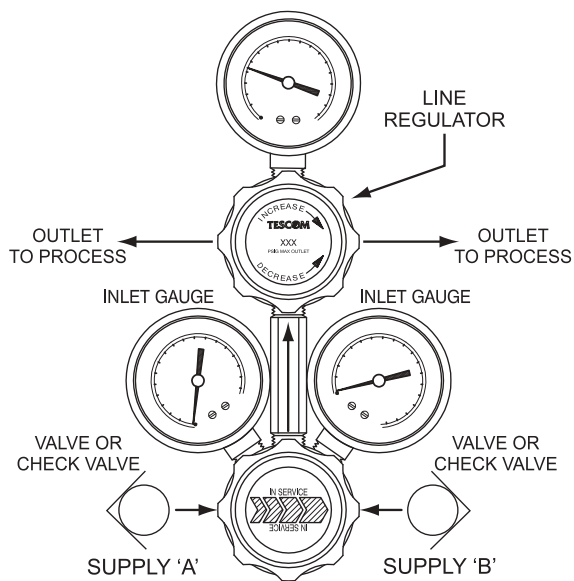
AUTOMATIC CHANGEOVER REGULATORS & SYSTEMS

Automatic Changeover Regulators and Systems Drawings

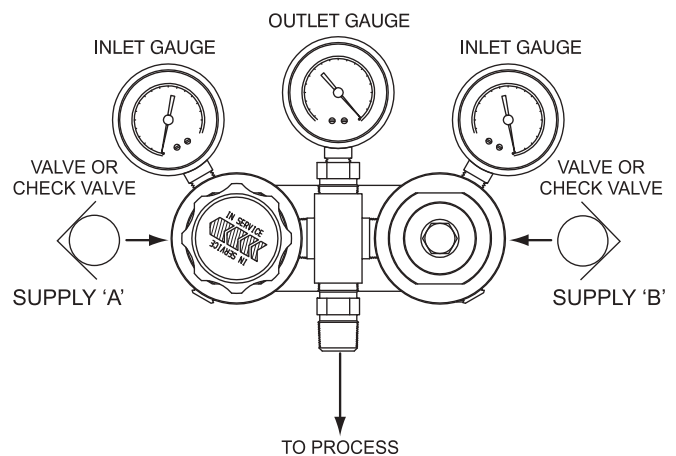
CR441800 SERIES CHANGEOVER SYSTEMS (HIGH PRESSURE)



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 | 200 psig 13.8 bar | 0 – No Gauges | | 1 – 3500 psig 241 bar (optional 4000 psig / 276 bar gauge) | | | |
| | | 1 – 135/165 psig 9.3/11.4 bar | 200 psig 13.8 bar | 1 – With Three Gauges ¹ (installed) | | 2 – 400 psig 27.6 bar (optional 600 psig / 41.4 bar gauge) | | | |
| | | 2 – 185/215 psig 12.8/14.8 bar | 300 psig 20.7 bar | | | | | | |
| | | 3 – 235/265 psig 16.2/18.3 bar | 300 psig 20.7 bar | | | | | | |
| 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 | |

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 Nm³/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

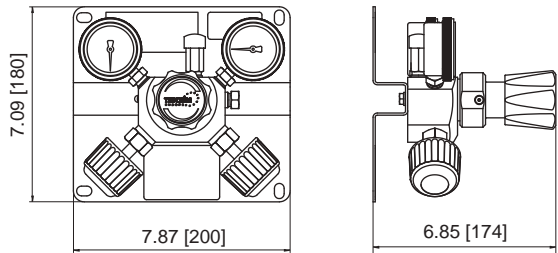
- VCR® technology for high purity application
- Automatic changeover for continuous gas supply
- Integrated purge and shut-off valve for fast purging
- Optional Hastelloy® trim and positive seal for corrosive media
- Field-proven TESCOm 64 Series regulator design

ULTRA HIGH PURITY COMPACT PANEL

Ultra High Purity Compact Panel Drawing

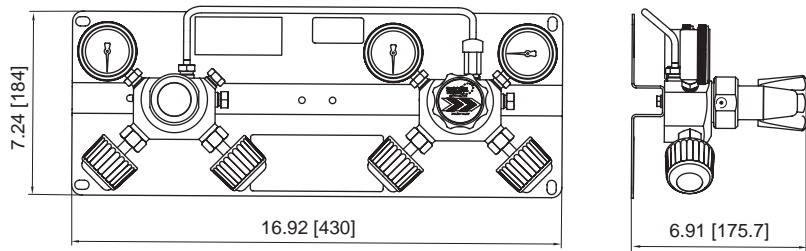
CYLINDER PANEL STAINLESS STEEL AUTOMATIC CHANGEOVER SYSTEM

SINGLE CYLINDER PANEL

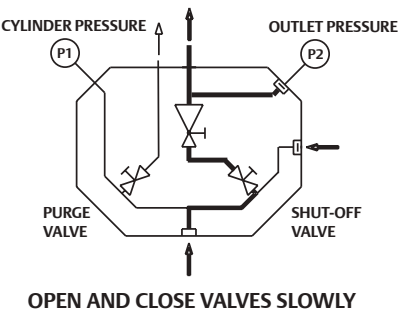


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

AUTOMATIC CHANGEOVER PANEL

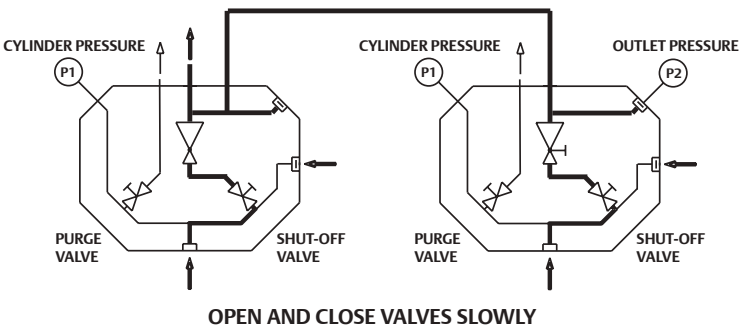


FUNCTIONAL DIAGRAM SINGLE CYLINDER PANEL



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 | SM – Standard gauges KM – Contact gauges | S – Untied P – Positive Seal | 1 – 145 psig / 10.0 bar 2 – 247 psig / 17.0 bar | <ul style="list-style-type: none">• $C_v = 0.15$ or $C_v = 0.24$• Inlet filter• Vespel® regulator seat• Pigtail with cylinder connector |
| D45450 – Automatic Changeover Panel | | | | |

Standard Features:

Stainless Steel mounting plate, regulator with integrated valves, inlet/outlet pressure gauges and relief valve.
All connections 1/4" HPIC.

Specifications

For other materials or modifications, please consult TESCO.

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)

1 Nm³/h [0.6 scfm] reduced version for H₂/He, C_v = 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 TESCO.



PANEL FOR 1 CYLINDER
WITH CONTACT GAUGE



DUAL STAGE COMPACT PANEL
AUTOMATIC CHANGEOVER WITH CONTACT GAUGES

The TESCO 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 continuous gas supply

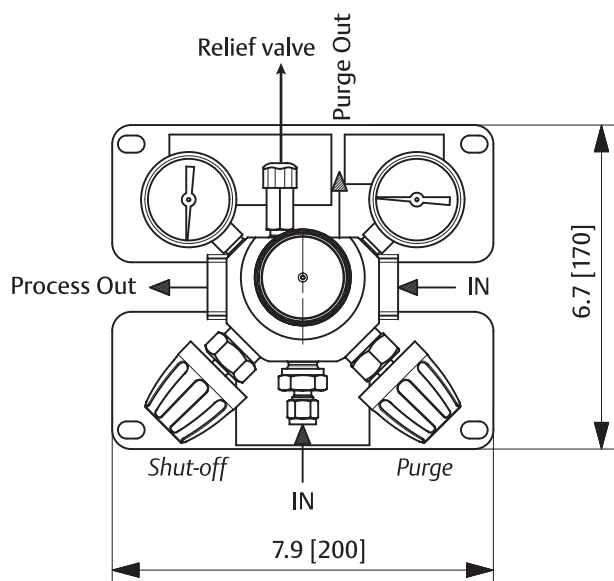
Features and Benefits

- 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)

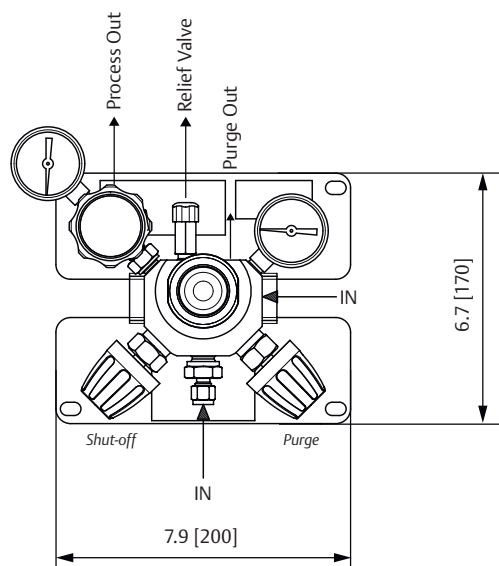
COMPACT PANEL

Compact Panel Drawing

KP1 (Compact panel, 1 cylinder, standard manometer)



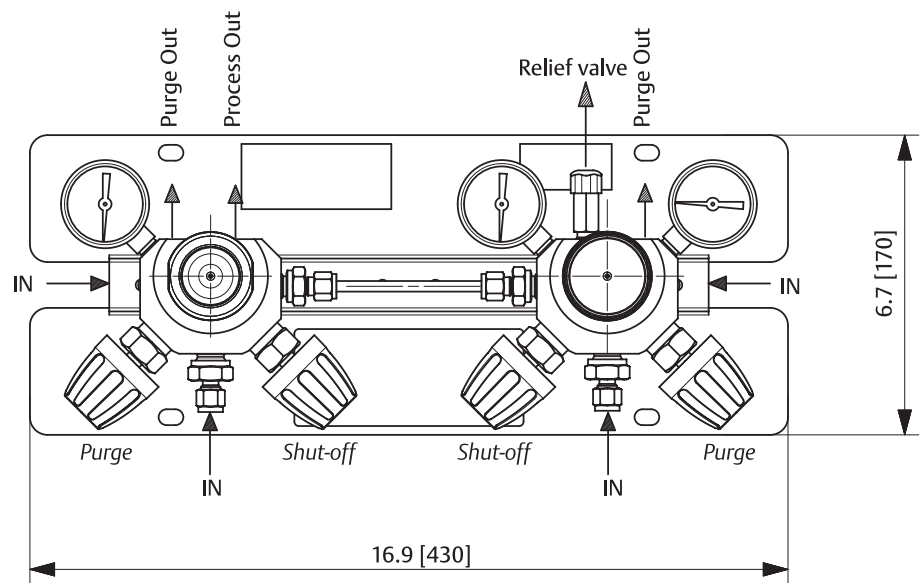
KP12 (Compact panel, 1 cylinder, dual stage)



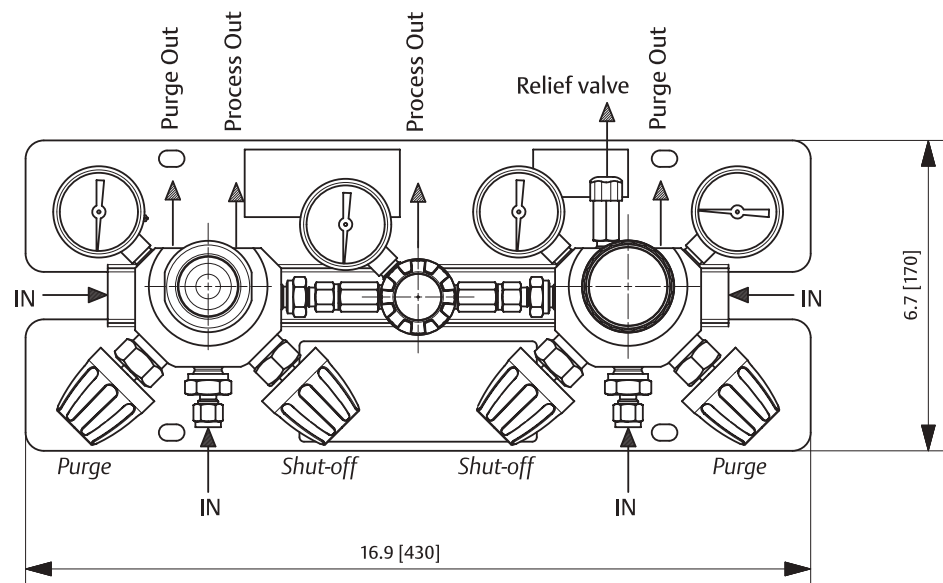
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

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)

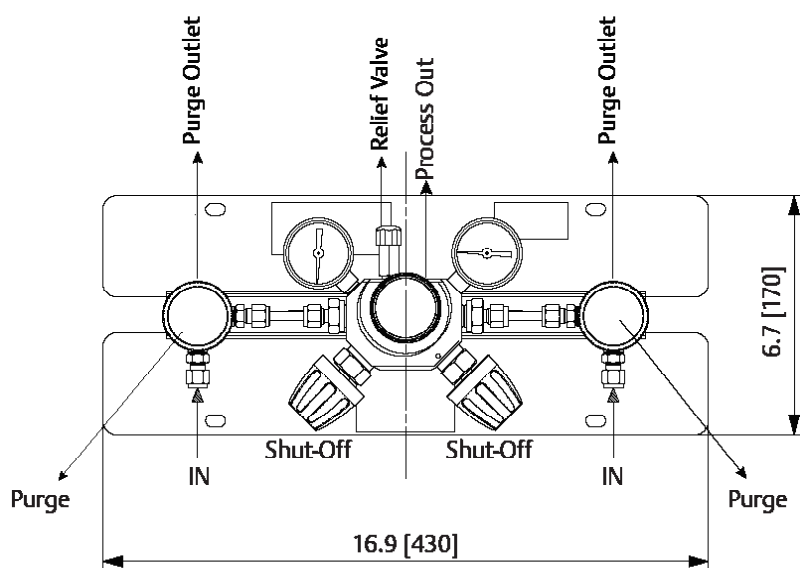


All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

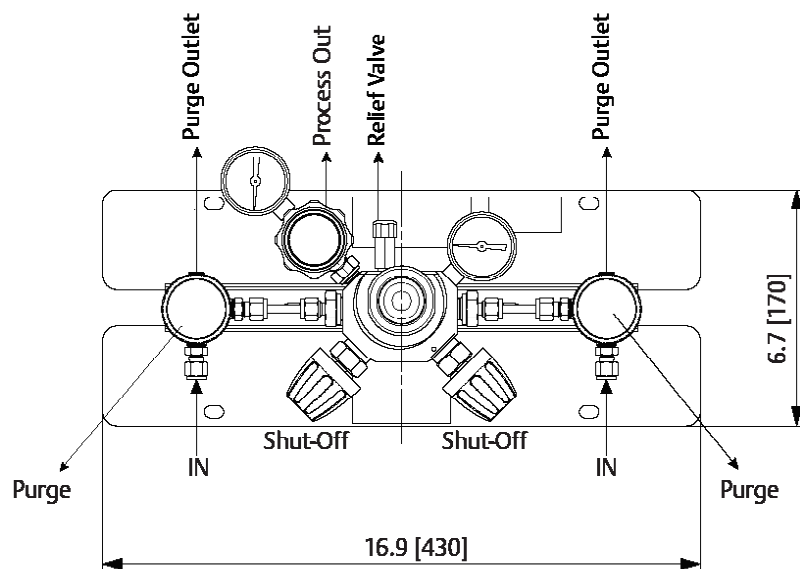
COMPACT PANEL

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 | 1 – Brass 6 – SST | SM – Standard gauge | 1 – 145 / 10 2 – 290 / 20 | blank – Standard 9 Nm³/h [5.3 scfm] Air Cv 0.06 R – reduced 1 Nm³/h [0.6 scfm] Air for H₂ and He Cv 0.06 H – Standard 15 Nm³/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 connection * 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) | Blank – no accessory F – Cylinder rack S – Collector pipe/extension | Blank – 4350 / 300 1 – 1450 / 100 CO₂/Nitrous oxide 6 – 232 / 16 Liquid gas Ammonia **** only SST | | | | | |
| KP12 1 cylinders dual stage | | KM – Contact gauge | 3 – 507 / 35 4 – 870 / 60 | | | | | | | | | | | | |
| KPA 2x1 cylinders, automatic changeover, single stage | | EX – Inductiv contact gauge | 5 – 1450 / 100 6 – 2175 / 150 | | | | | | | | | | | | |
| KPA2 2x1 cylinders, automatic changeover, dual stage | | PS – Standard pressure transducer | 7 – 101 / 7 only KP12 8 – 217 / 15 | | | | | | | | | | | | |
| KPME 2x1 cylin- ders, manual changeover with relief valve | | PT – Explosion tested pressure transducer | 9 – 246 / 17 only KP12 10 – 174 / 12 only KPA2 11 – 725 / 50 only KPA 12 – 50 / 3,5 only KP12 | | | | | | | | | | | | |
| KPME2 2x1 cylin- ders, manual changeover with relief valve dual stage | | | | | | | | | | | | | | | |
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* 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.

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



Annunciator signal box



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 | Nominal Width / Connection DN 10 / G 3/8" internal |
| Operating Pressure 0-260 psig / 0-18 bar | Operating Pressure* 2.9-145 psig / 0.2-10 bar |
| Function 2/2-way powerless closed | Function 2/2-way powerless closed |
| Voltage 230 V AC, 50 Hz | Voltage 230 V AC, 50 Hz |
| Type of Protection IP65 / Ex EEx em II T4 | Type of Protection IP65 / Ex EEx em II T4 |
| Body Material Brass / Stainless Steel | Body Material Brass / Stainless Steel |
| Seats For Ex-Version: FPM For all IP65-Types: EPDM | Seats For Ex-Version: FPM For all IP65-Types: EPDM |

*Do not use for line pressures below 3 psig / 200 mbar.



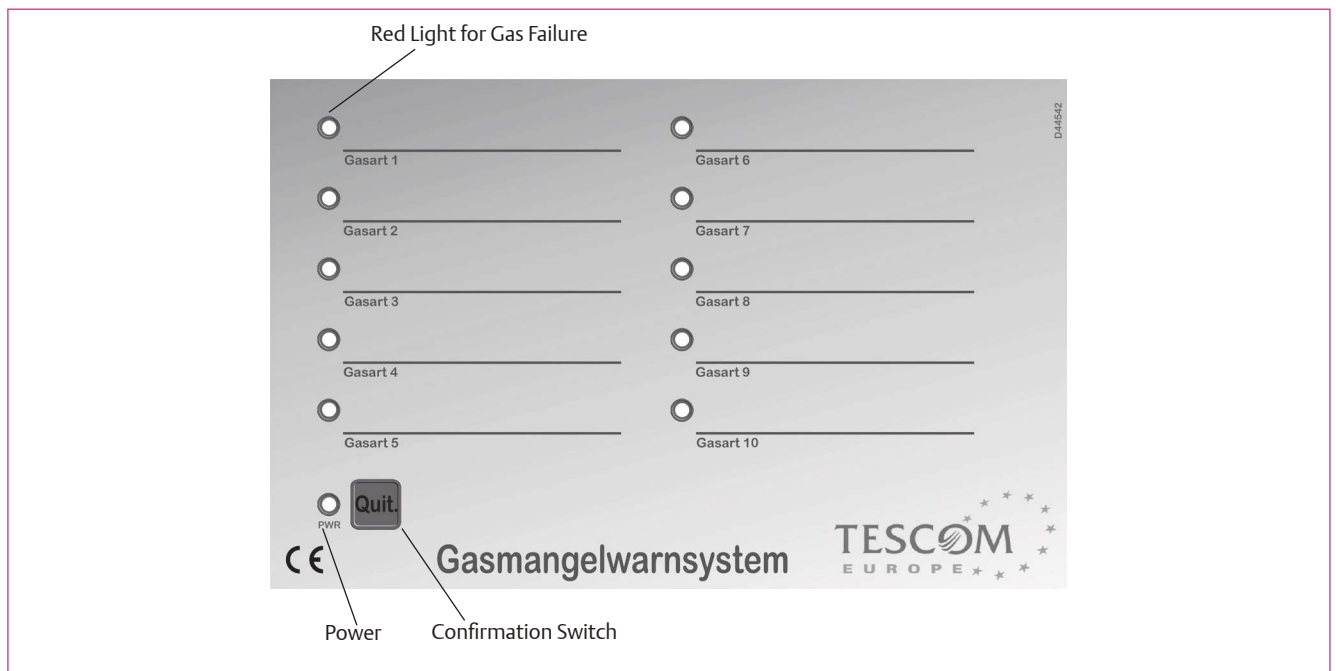
Solenoid Valve Control Box

SOLENOID VALVE CONTROL BOX SPECIFICATIONS

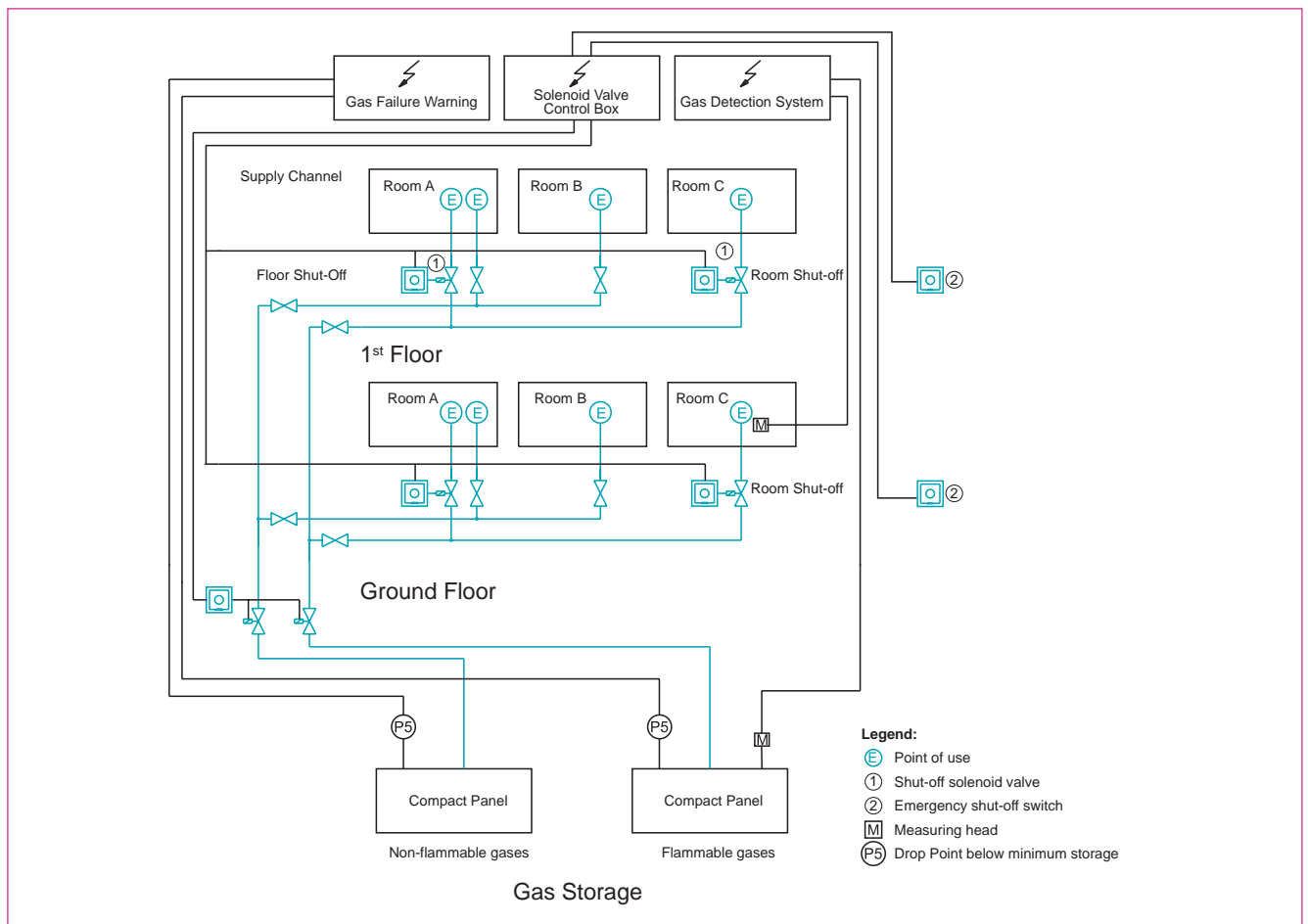
| |
|---|
| Voltage 230 V AC, 50 Hz |
| Input Power < 3 VA |
| Dimensions for Box Width x Height x Depth 200 x 120 x 75 mm |
| Material ABS |
| Protection IP65 |
| Ambient Temperature 32°F to 131°F / 0 °C to 55 °C |

SYSTEM COMPONENTS FOR COMPACT PANEL

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 | 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) |
| Certificate EN 10204-2.2 available - Please, add "Z" at the end when ordering! | | | | |

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 5802 psi / 400 bar 580 psi / 40.0 bar 580 psi / 40.0 bar Acetylene | D44500-00G3156 D44500-00G4006 D44500-00G0406 - - - - | 218 psi / 15.0 bar 290 psi / 20.0 bar 44 psi / 3.0 bar 12 psi / 1.5 bar | D44272-00G3156 D44272-00G4006 D44272-00G0406 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 TESCO.

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 m³/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

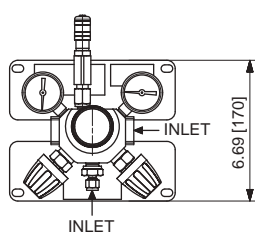
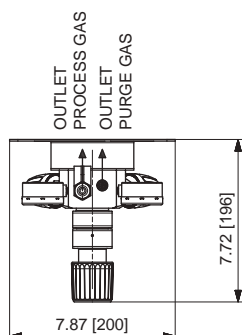
Features and Benefits

- 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

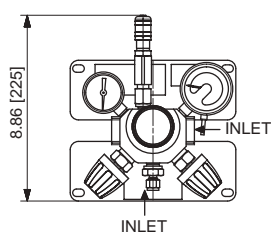
HIGH PRESSURE PANEL

High Pressure Panel Drawing

HIGH PRESSURE PANEL FOR 1 CYLINDER

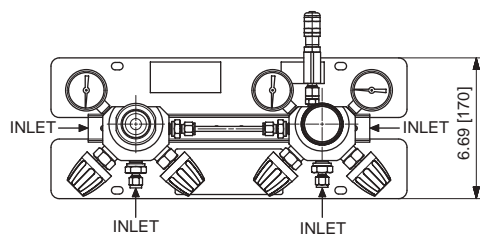
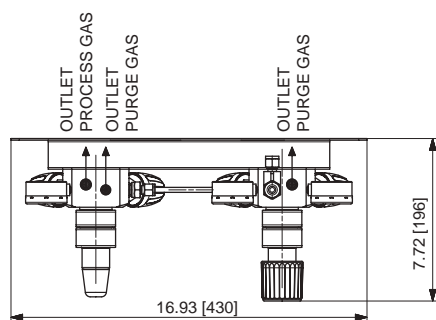


WITH STANDARD GAUGES

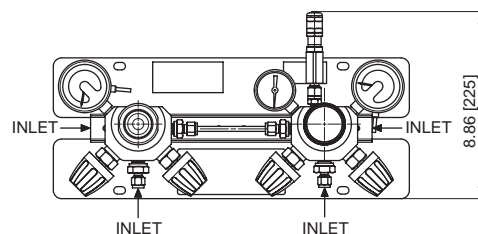


WITH CONTACT GAUGES OR
INDUCTIVE CONTACT GAUGES

HIGH PRESSURE PANEL FOR 2 CYLINDERS WITH AUTOMATIC CHANGEOVER



WITH STANDARD GAUGES

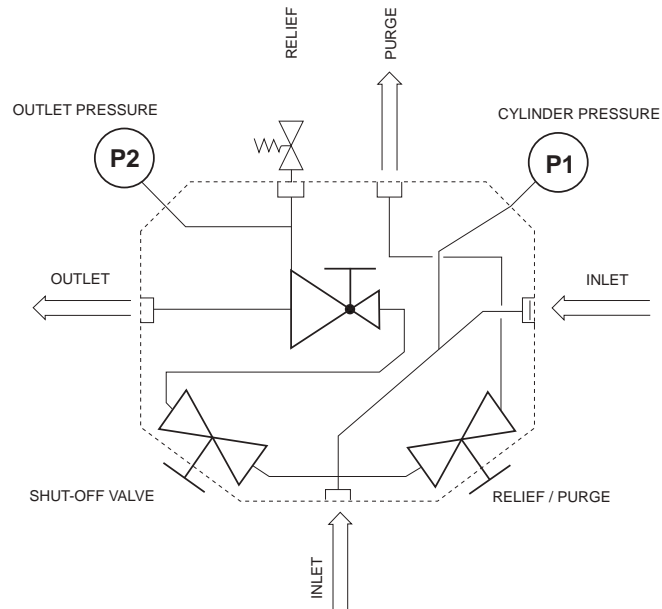


WITH CONTACT GAUGES OR
INDUCTIVE CONTACT GAUGES

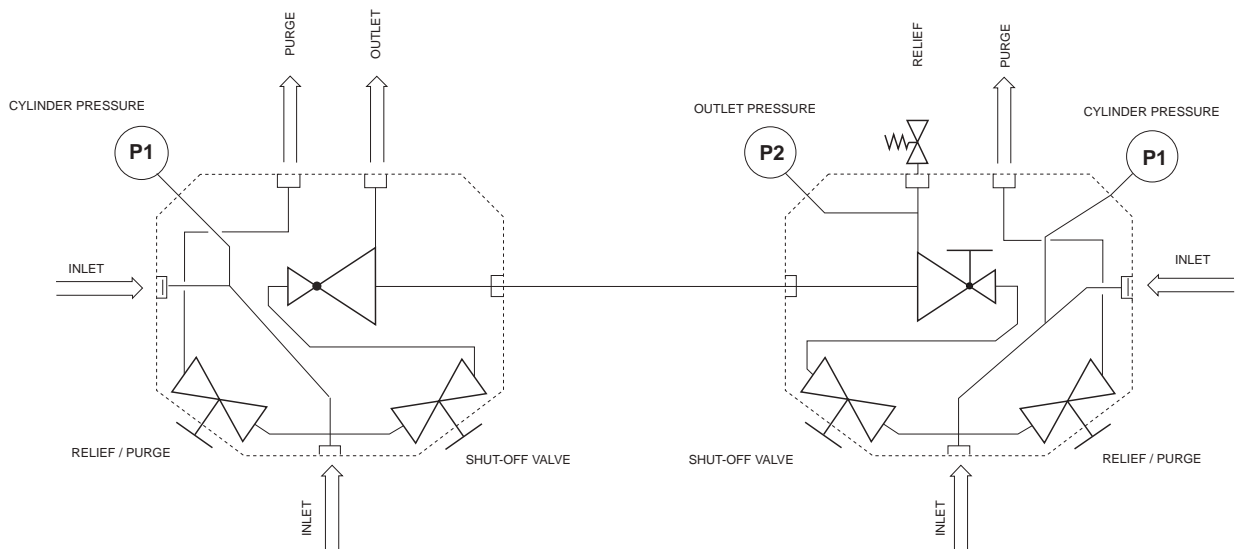
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

High Pressure Panel Functional Diagram

HIGH PRESSURE PANEL FOR 1 CYLINDER



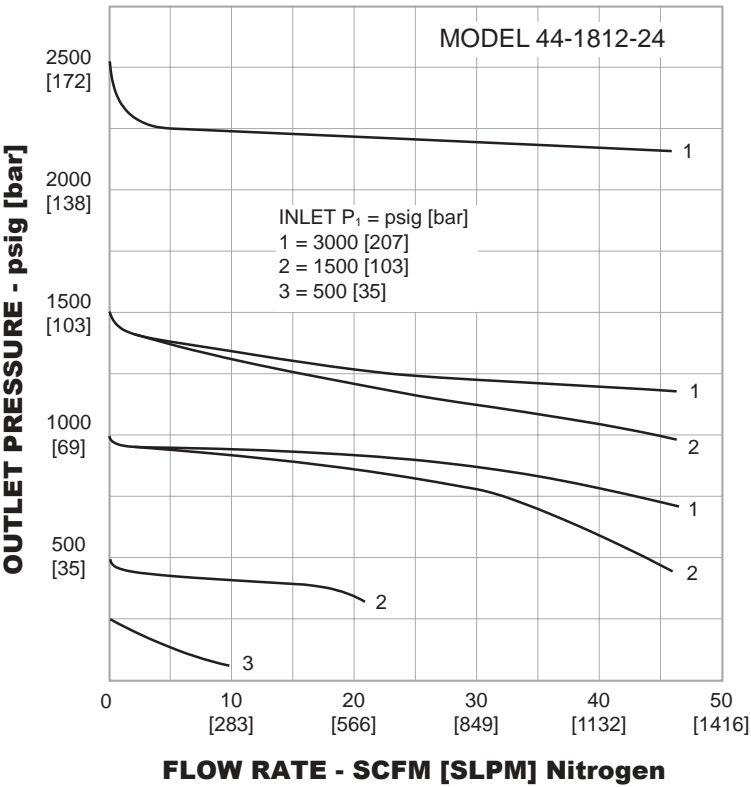
HIGH PRESSURE PANEL FOR 2 CYLINDERS WITH AUTOMATIC CHANGEOVER



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 TESCO catalog or on www.tescom.com.



High Pressure Panel Part Number Selector

Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCO 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:

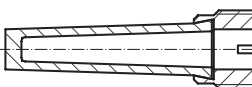
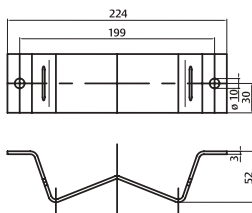
HDS - 9 - 3 - F

| 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 <div>** Other options available on request</div> | |

* 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 | <ul style="list-style-type: none"> 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 |

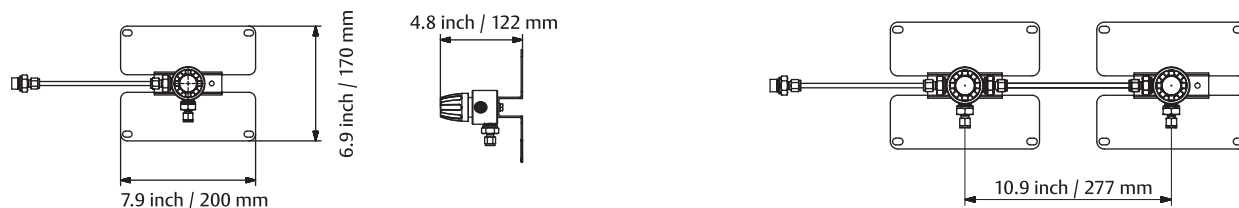
| FITTINGS FOR RELIEF VALVE OUTLET, MATERIAL BRASS | | |
|--|-----------|-------------|
| THREAD | TUBE SIZE | PART NUMBER |
| M12x1 | Ø 8 mm | D51275 |

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:

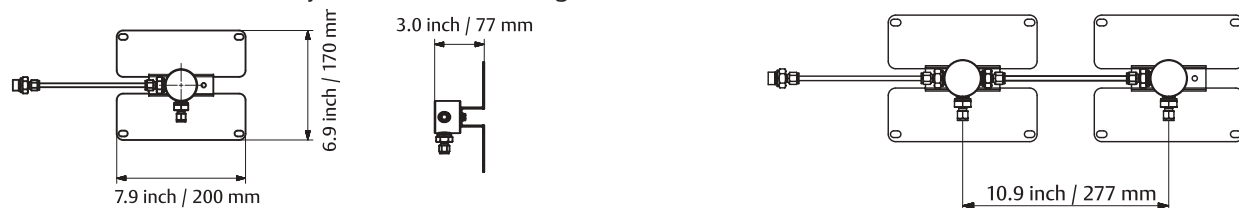
1. Manifold with shut-off valve

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 |

Specifications

For other materials or modifications, please consult TESCO.

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



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.

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.

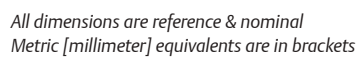
Applications

- Petrochemical analyzer sampling systems
- Gas delivery systems
- Laboratories
- Welding gases

Features and Benefits

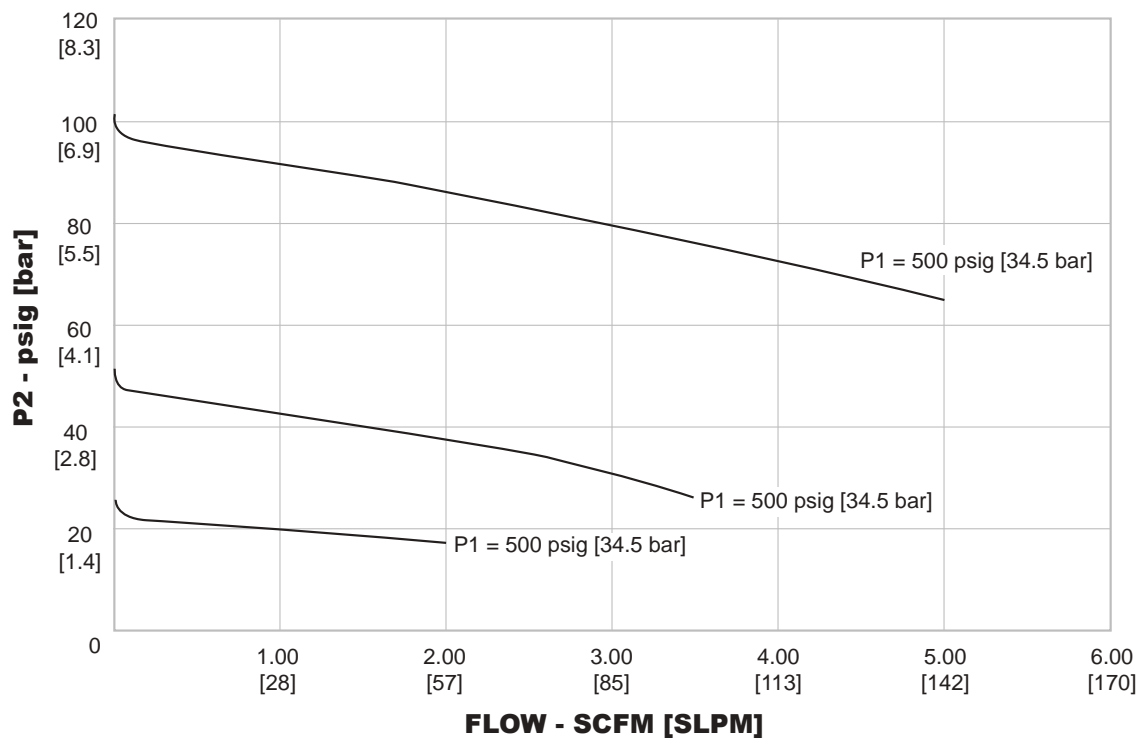
- Supports up to eight cylinders per side - 16 total
- Brass or Stainless Steel regulators and valves
- Flexibility in shut-off valve type and location for increased customizing
- Available with either a low pressure or high pressure line regulator
- Optional remote mount annunciator

NA4 Series Changeover System Drawing

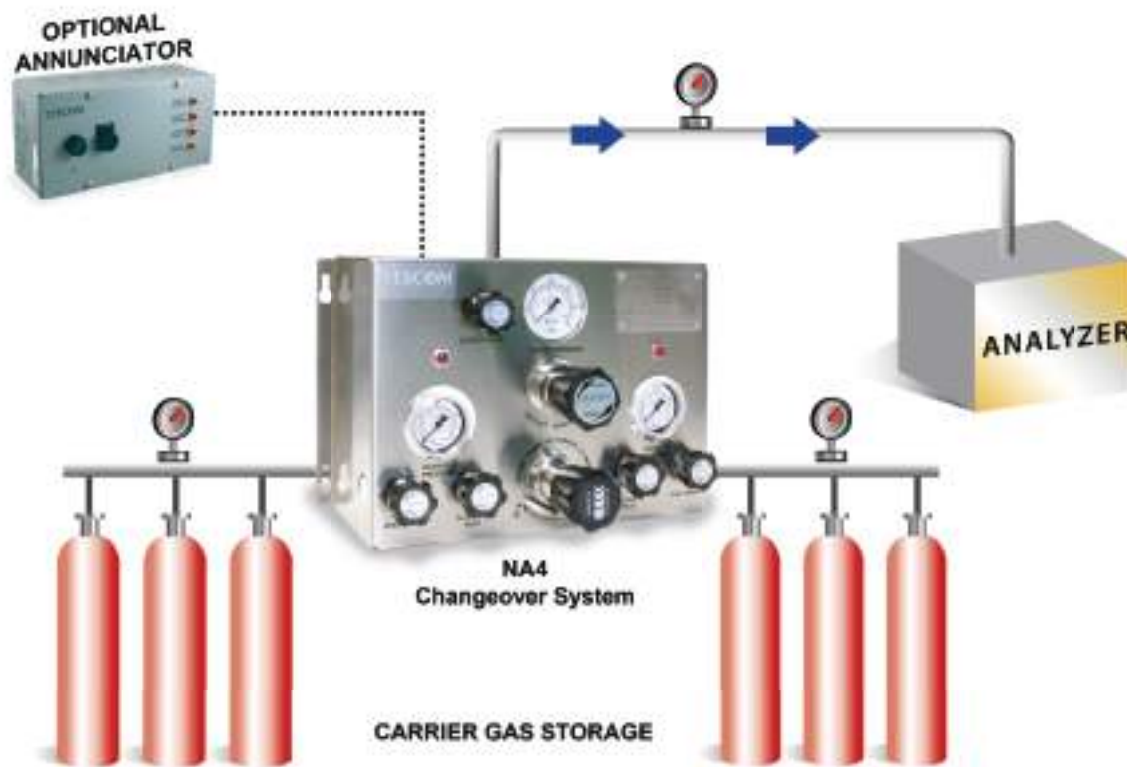


NA4 Series Changeover System Flow Chart

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*

ER5000 FAQs

Frequently asked questions about the TESCO ER5000 Electropneumatic Controller

607

ER5000 Series

The ER5000 electropneumatic controller creates a closed loop pressure control solution that achieves precision pressure control, reduces human fatigue and errors, and allows for remote control and valuable data acquisition. Exclusive ERTune software provides easy setup, tuning and continued operation. Available in 10 configurations to meet different automation levels needs. Coupled with TESCO regulators, the ER5000 will control pressures from vacuum to 30,000 psig / 2068 bar with a Cv of up to 12+.

609

ER5K Kits

Engineered to provide all the equipment needed to get your pneumatic pressure control system up and running with minimum effort on your part. Pressure reducing and backpressure versions are available

622

ERNG-X

The ERNG-X is a steady state no bleed engineered system for accurate and reliable control of Natural Gas.

628

ER5100 and ER5110 Series

ER5000 controller and 44-4400 or 44-5200 Series pressure reducing regulators integrated together

633

70-2000 Series

Motorized actuator designed for any application requiring remotely controlled, electronically operated, pressure reducing/backpressure regulators

635

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: $P_1(\text{max}) = 120 \text{ psig} / 8.2 \text{ bar}$, $P_2(\text{max}) = 100 \text{ psig} / 6.9 \text{ bar}$, $C_v = 0.01$, 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.



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: $\pm 0.05\%$ Full Scale Output (FSO)

Hysteresis: $\pm 0.05\%$ (FSO)

Repeatability: $\pm 0.05\%$ (FSO)

Resolution Sensitivity: $\pm 0.03\%$ (FSO)

Measured Reference Accuracy (total accuracy all effects including zero and span error): $\pm 0.10\%$ (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

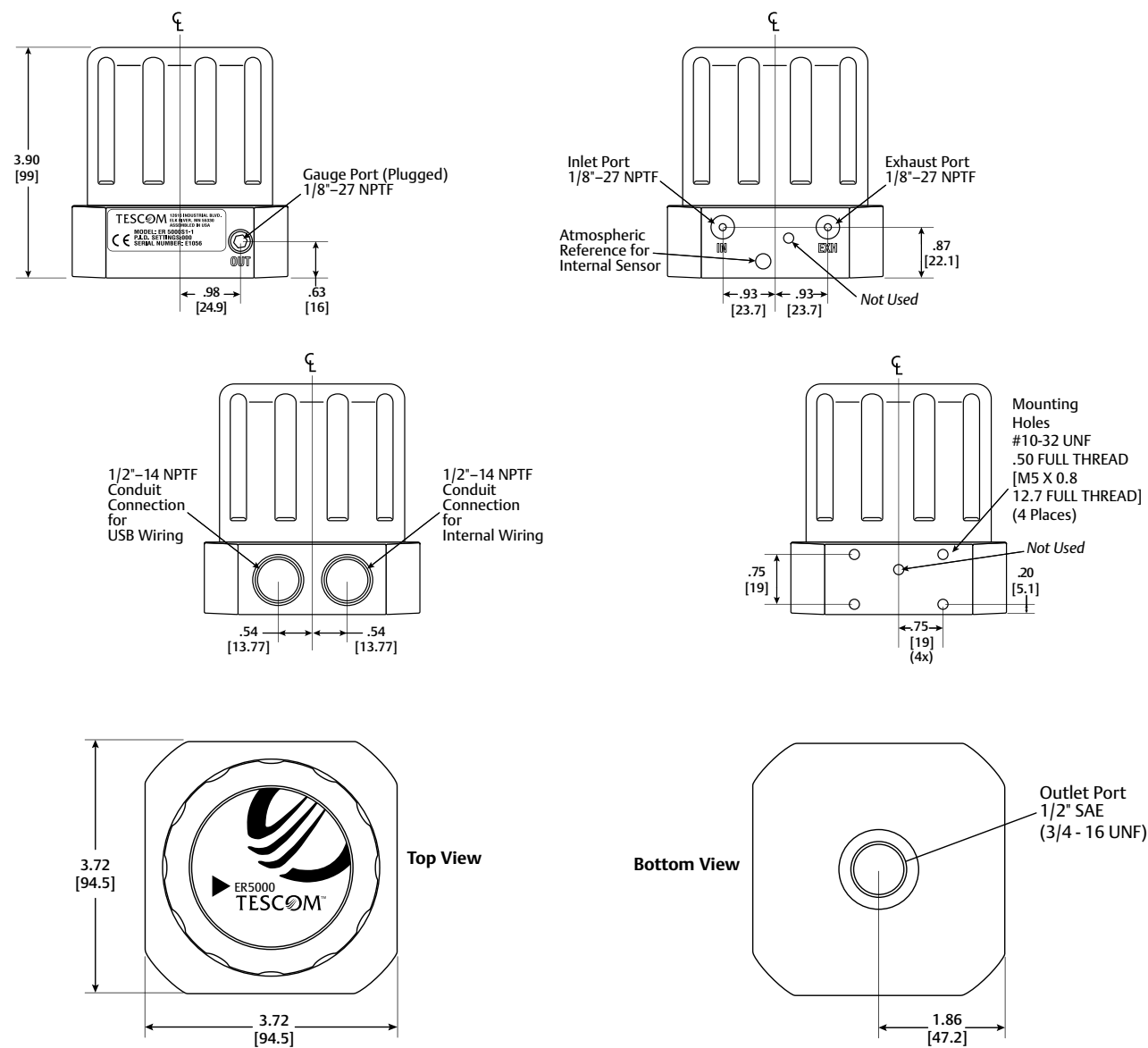
All ER5000 units have CE approval when wired per CE approved wiring instructions in the *ER5000 User Manual*

Hazardous Location Approvals

CSA, IECEx, ATEX

ER5000 Electropneumatic Controller Installation Drawing

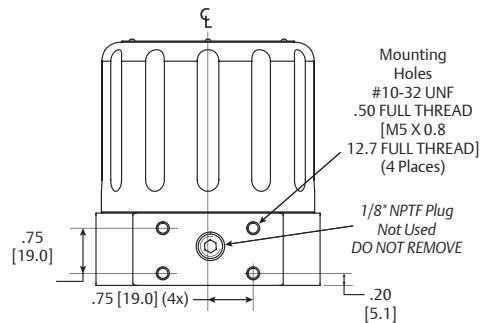
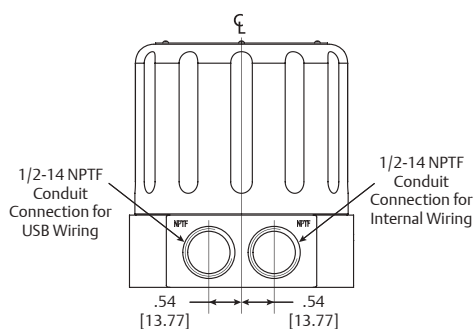
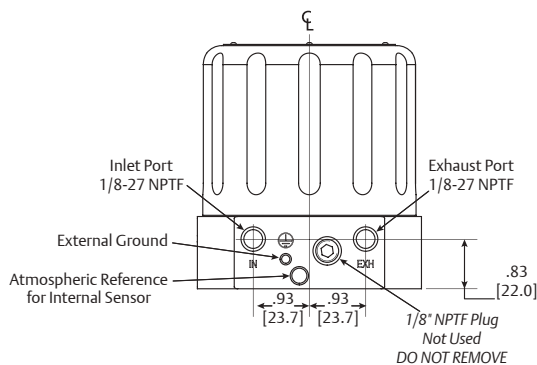
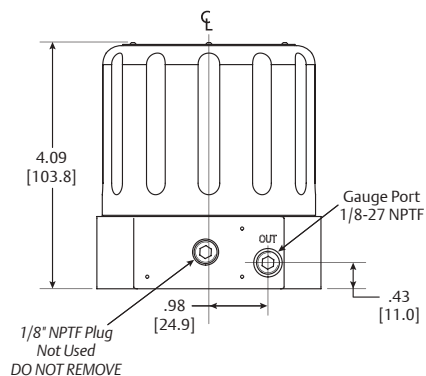
INSTALLATION DIMENSIONS



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

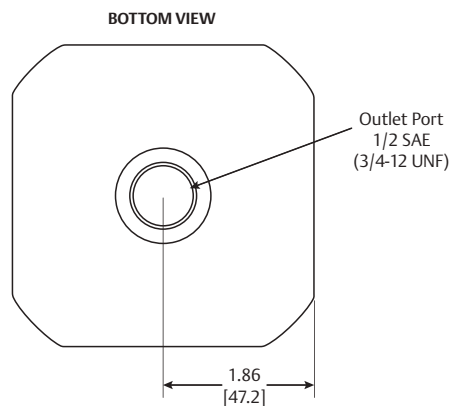
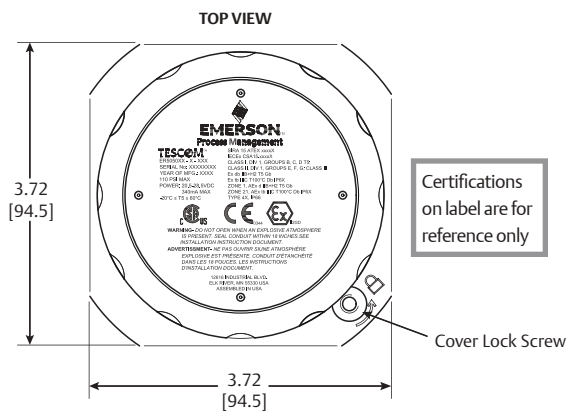
ER 5000 SERIES

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.



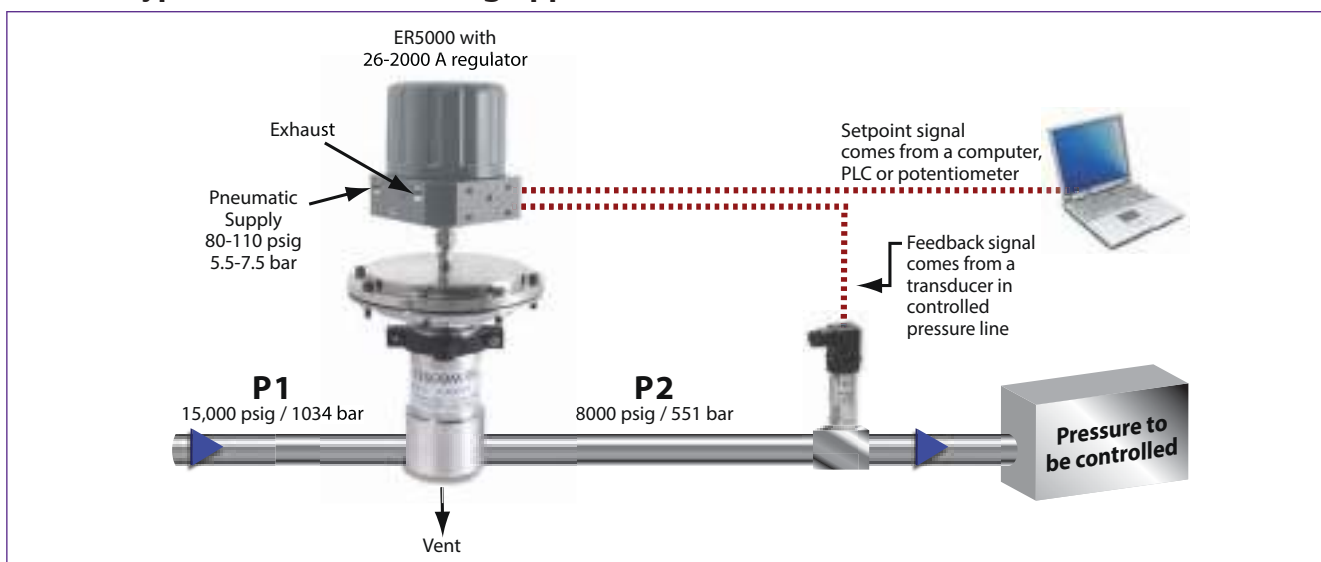
All dimensions are reference & nominal
Metric [millimeter] equivalents are in brackets

ER5000 Typical Applications

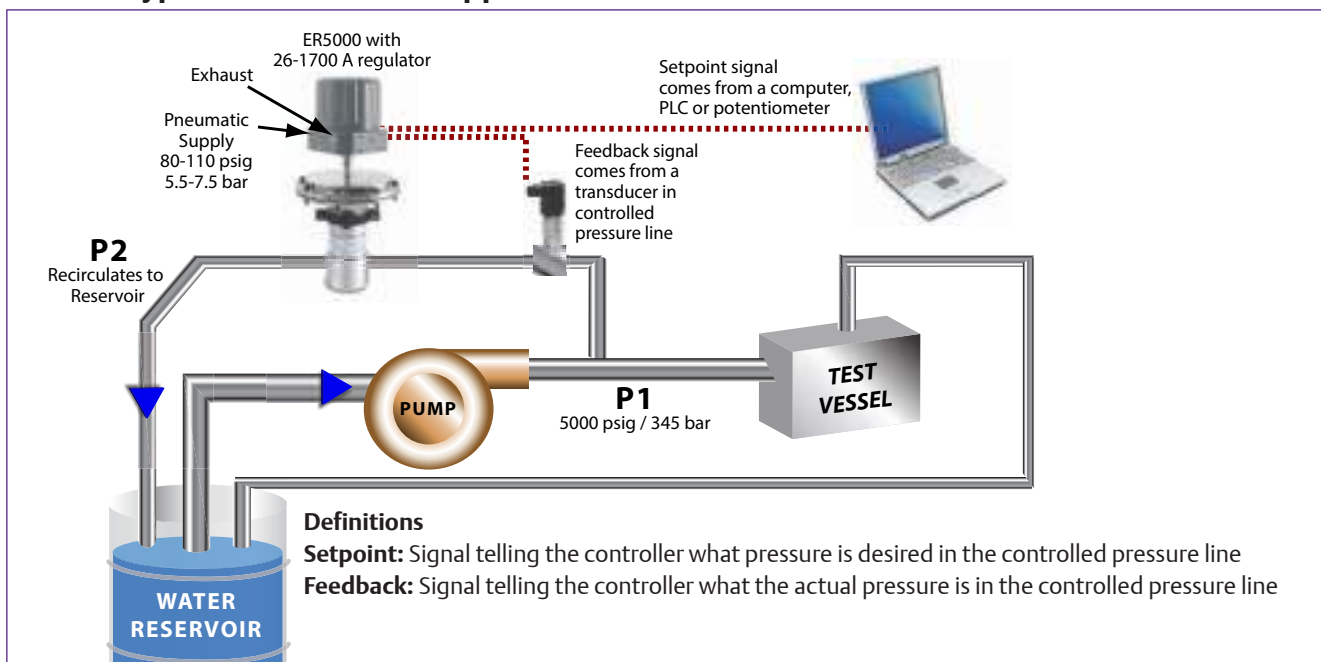
The variety of applications is limitless. Any process variable that can be manipulated using the pneumatic output of the ER5000 can be controlled. Some possibilities include controlling pressure, flow, temperature, position, speed, force, consistency, torque, and acceleration. The ER5000 improves both 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

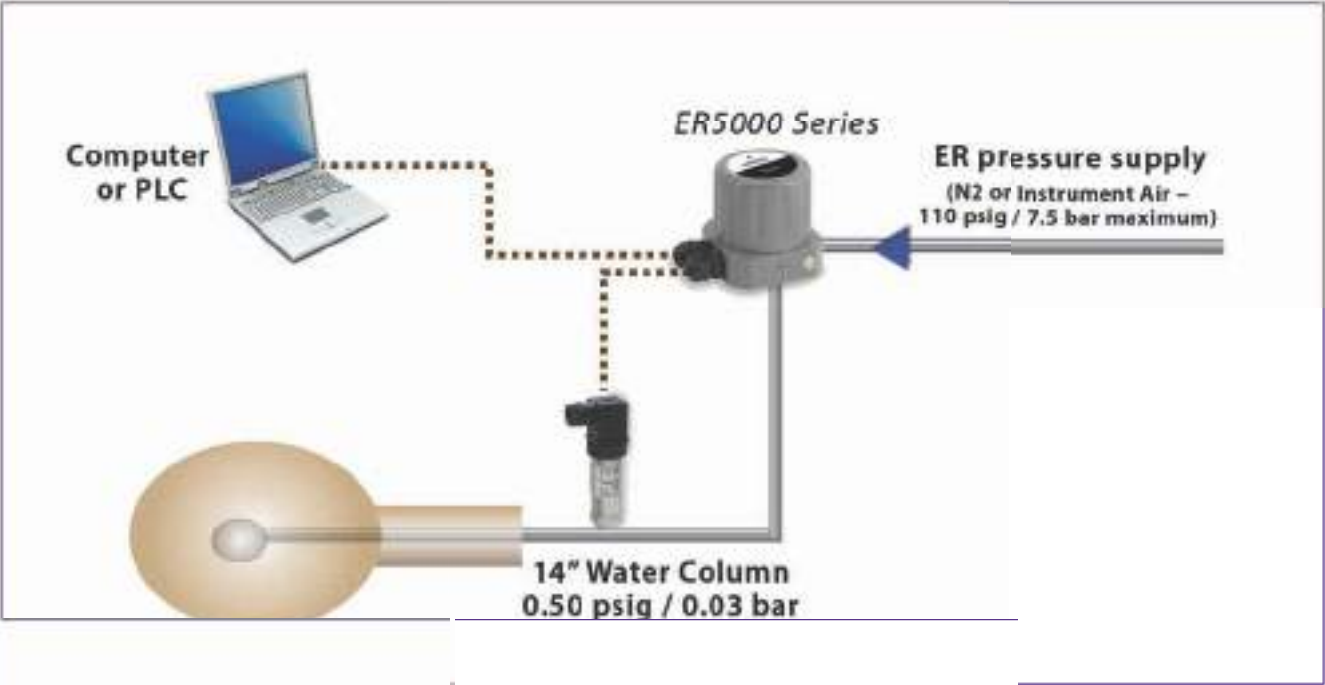
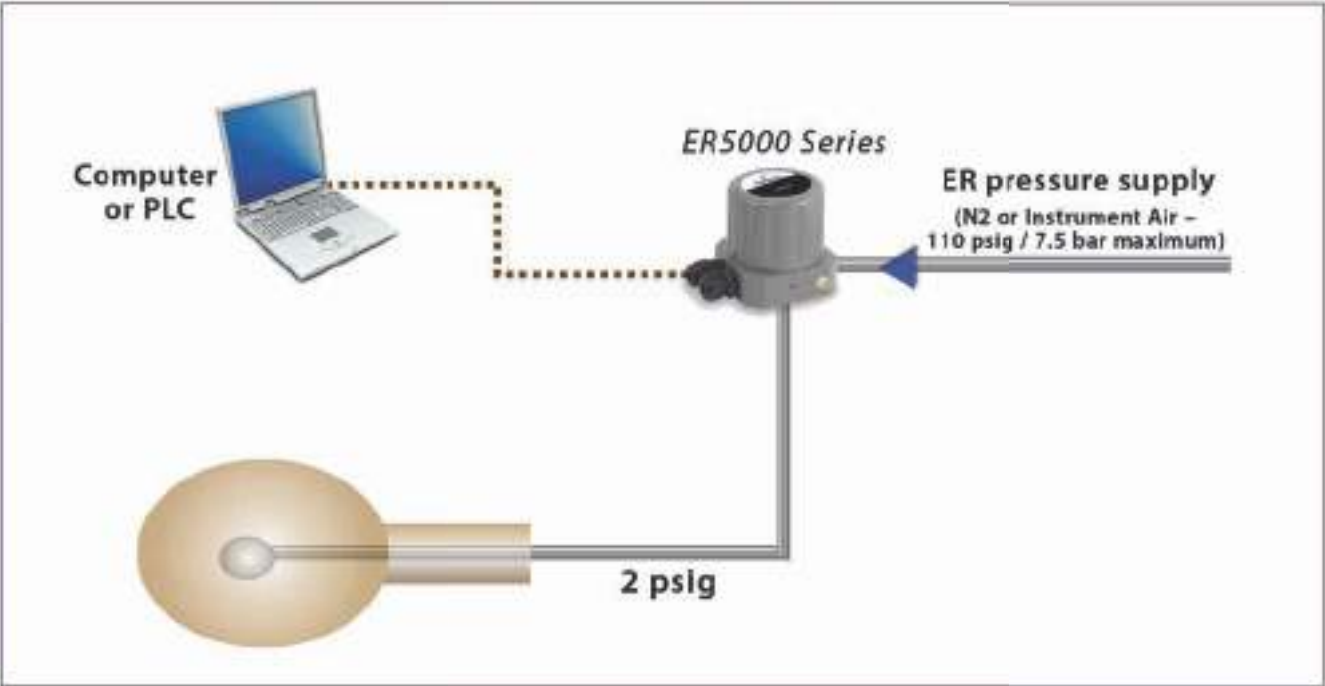


ER5000 Typical Back Pressure Application



ER 5000 SERIES

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:

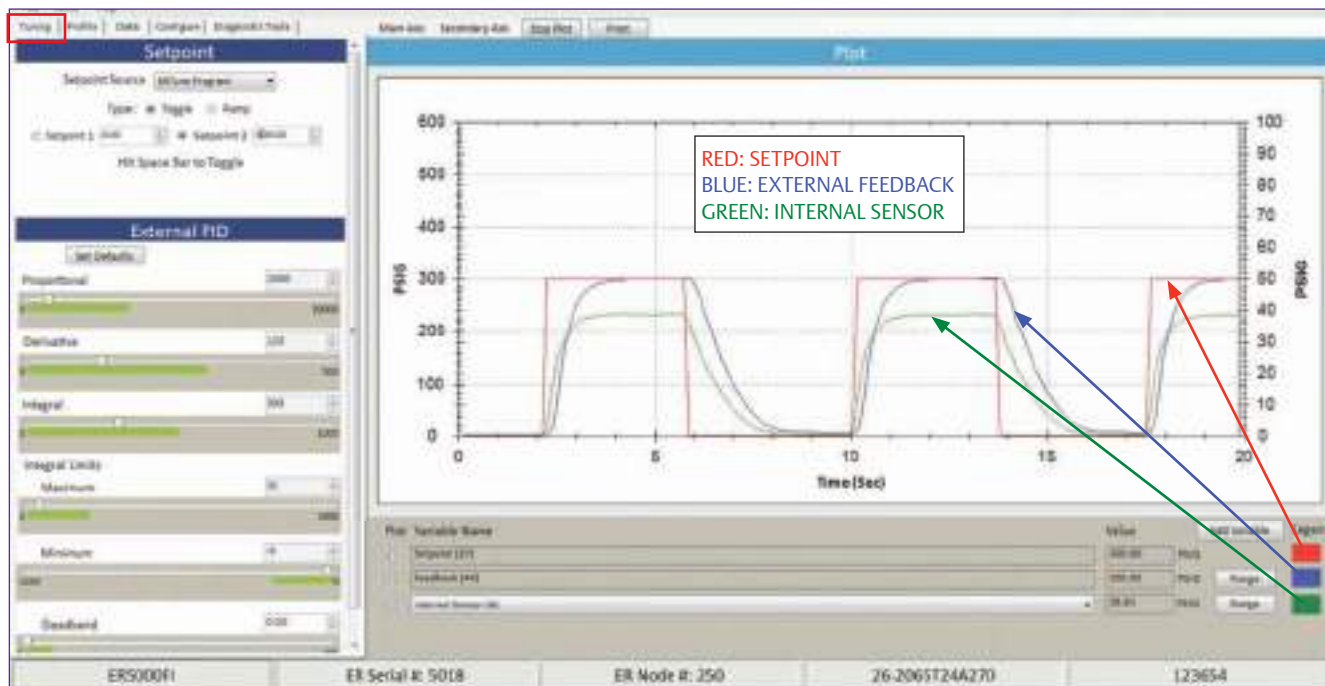
- Achieve the quickest response to a setpoint change without overshoot or oscillation
- Achieve the best performance for a non-changing setpoint
- Optimize performance in the specific application conditions

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LabVIEW™ and LabWindows/CVI™ are trademarks of National Instruments.

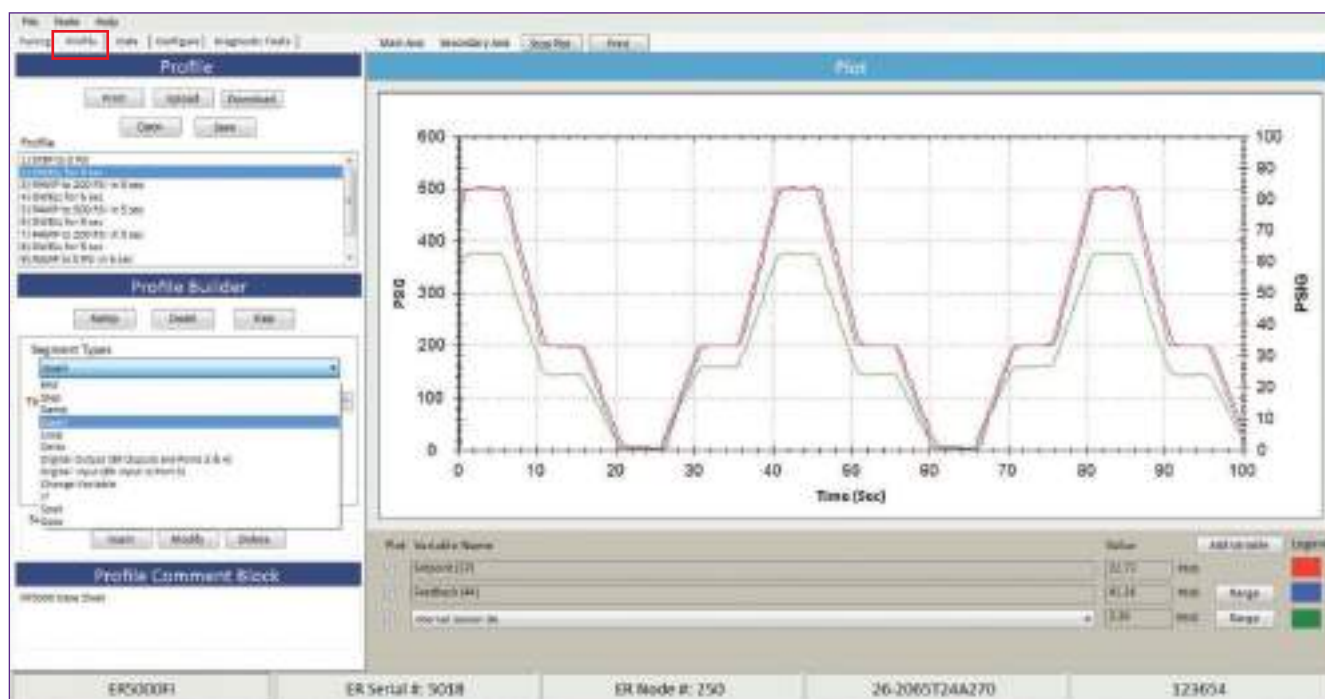
ER 5000 SERIES

ERTune™ Software Screens

Tuning Screen

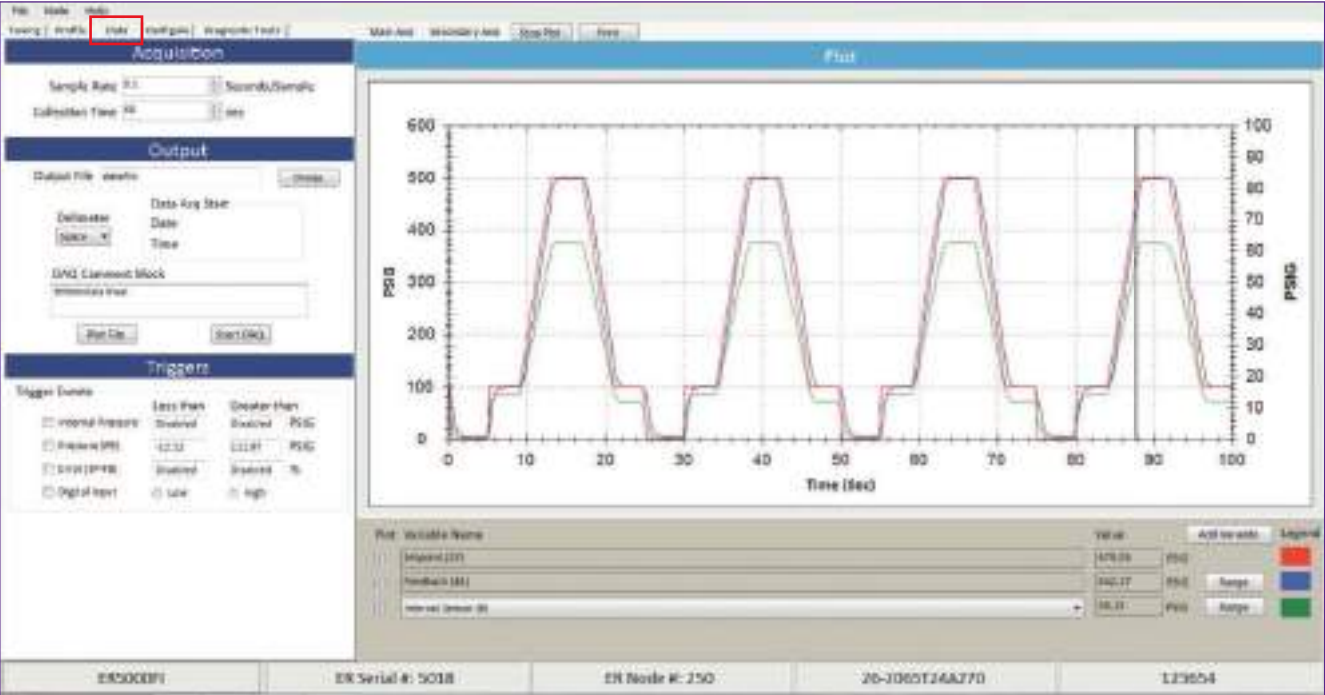


Profile Screen

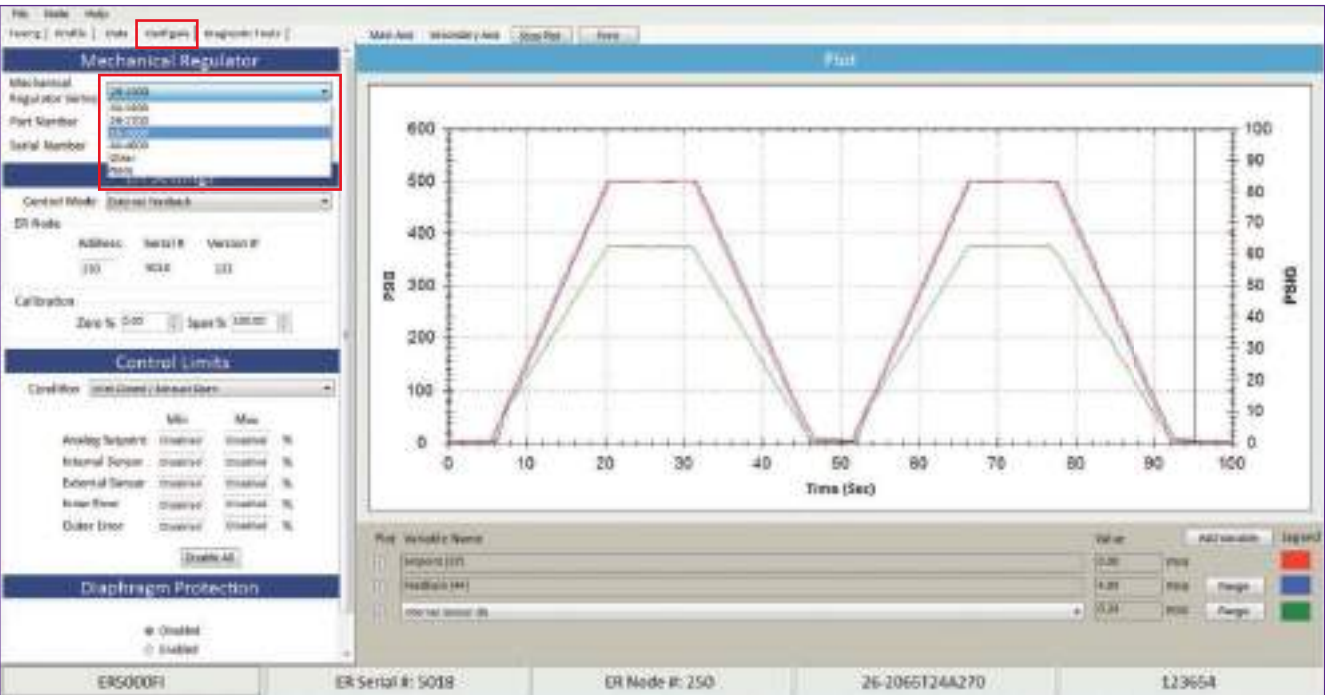


ERTune™ Software Screens

Data Acquisition Screen



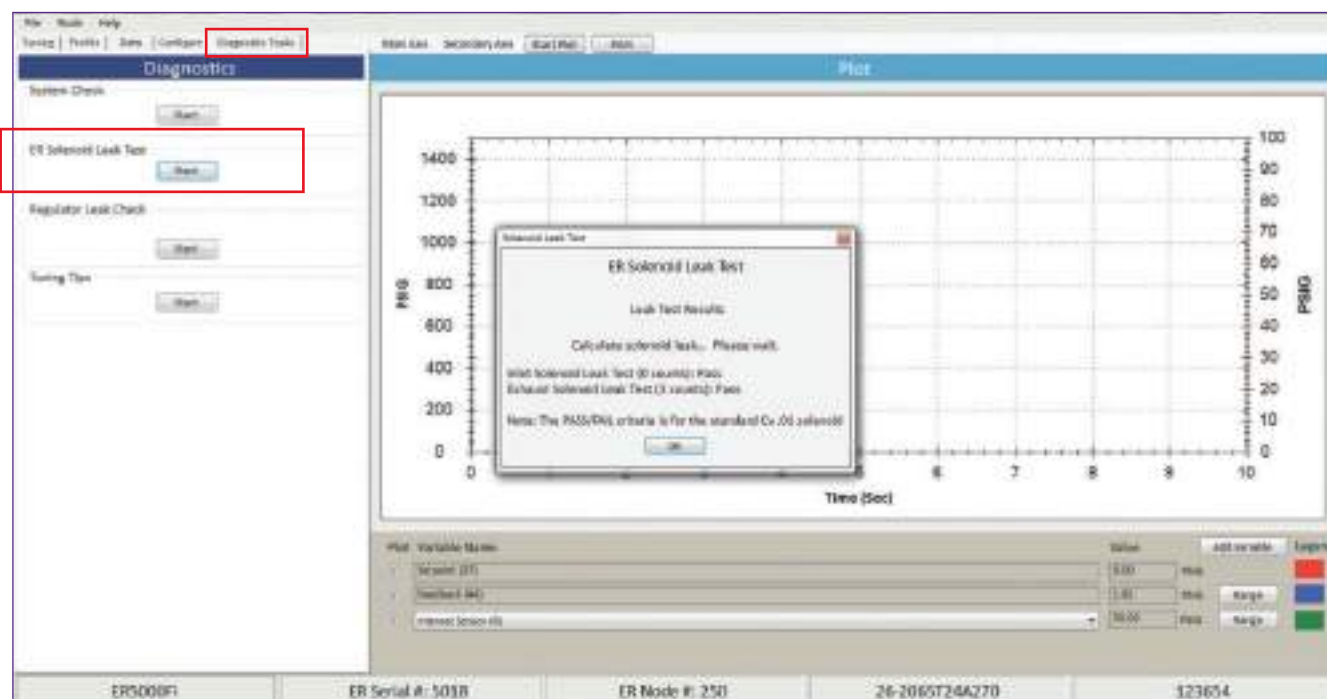
Configure Screen



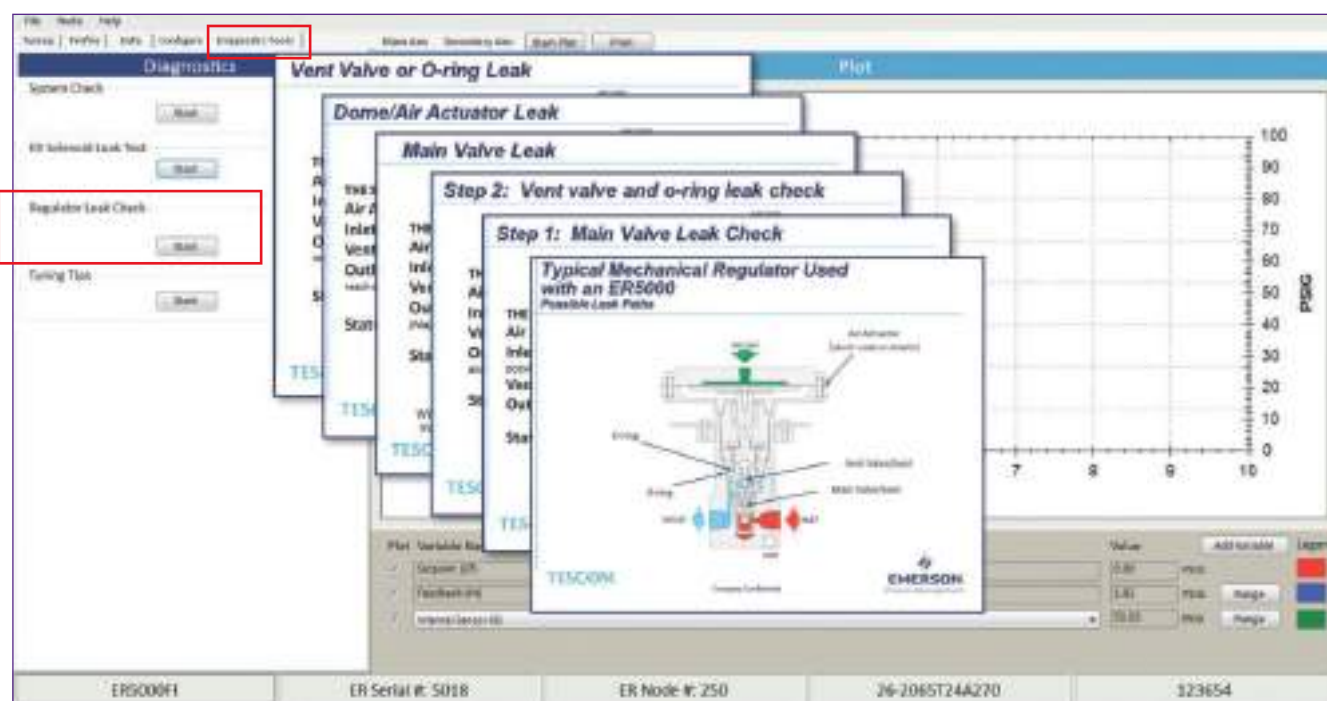
ER 5000 SERIES

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.

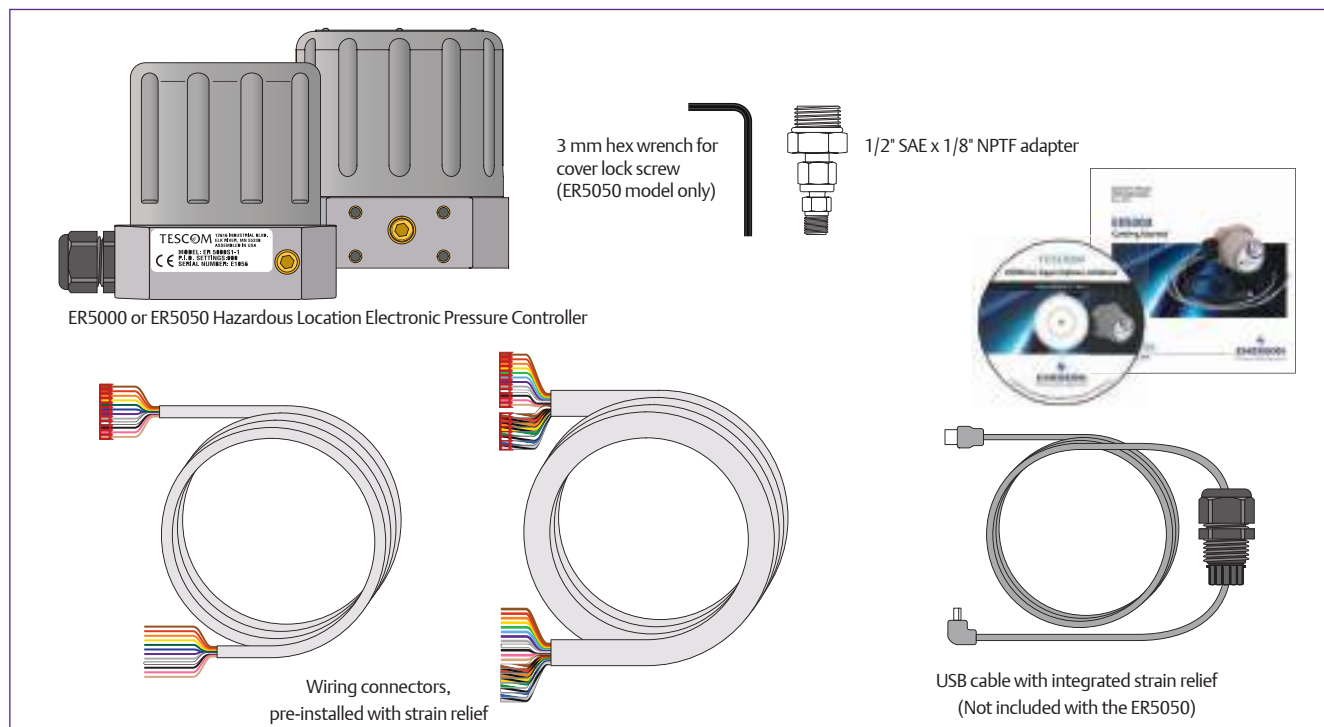
Example for selecting a part number:

| 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 1. For Stainless steel option, please contact TESCOM. | 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 |

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



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 TESCO Representative for assistance in selecting a suitable pressure regulator

Compatible TESCO Pressure Regulators

| REGULATOR SERIES | MAXIMUM INLET PRESSURE | OUTLET PRESSURE RANGES | FLOW CAPACITY C _v |
|---|--------------------------------|------------------------------|---------------------------------|
| Pressure Reducing Regulators | | | |
| C_v = .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

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



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

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

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

Features and Benefits

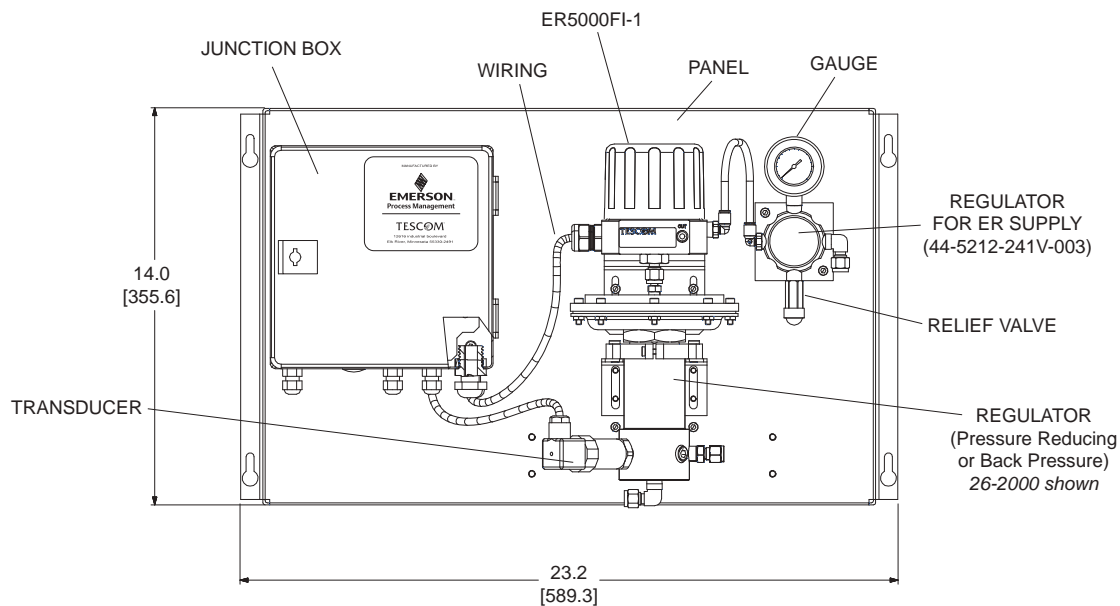
- Complete automated pressure control system, pre-assembled and tested, ready for use
- Closed loop control provides precise accuracy
- TESCOM ERTune™ program included for setup, tuning, and data acquisition
- Set-up Wizard loads PID parameters for quicker start-up
- Captured venting with 26-2000 and DK Series - ideal for liquid applications
- Venting regulator with gauge and relief valve for ER supply

ER 5K SERIES KITS

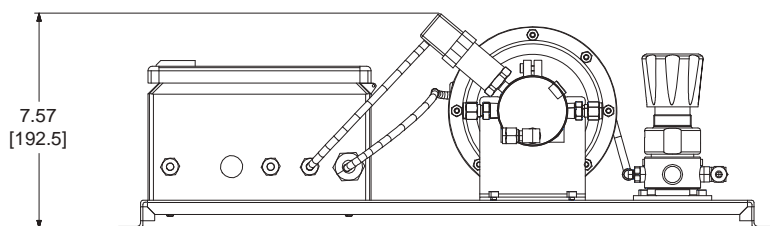
ER5K Series Kit Drawings

ER5K SERIES KIT ASSEMBLED ON PLATE

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

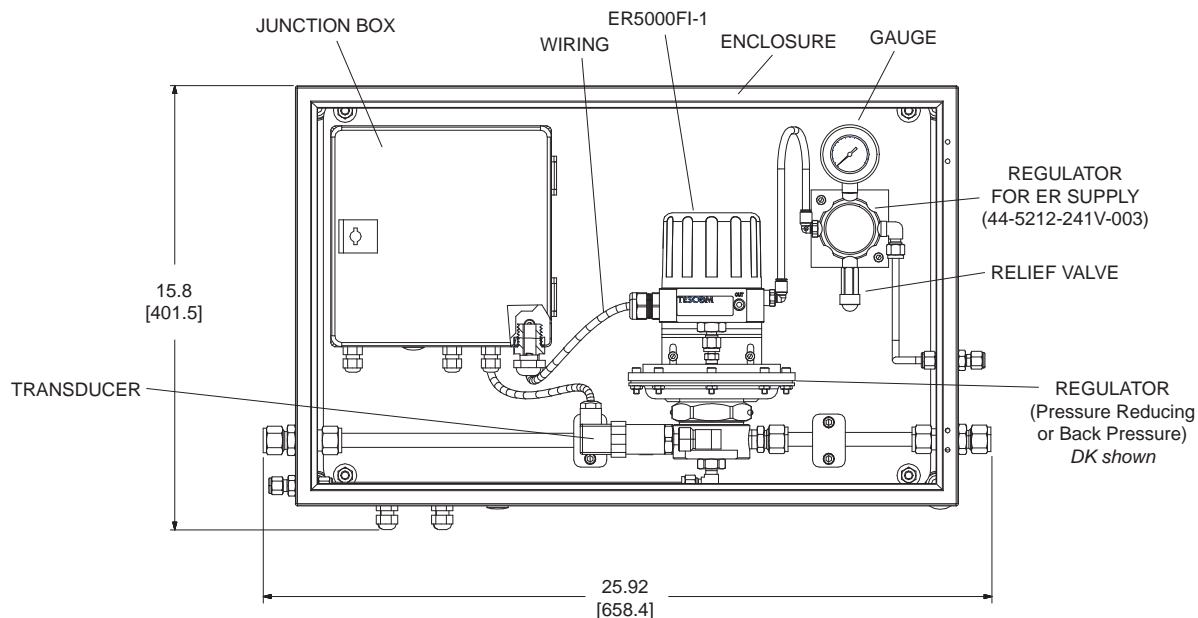


BOTTOM VIEW

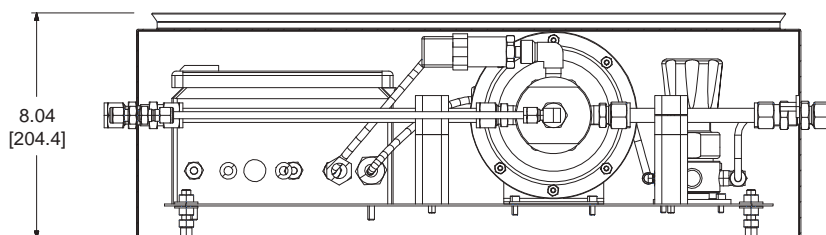


ER5K SERIES KIT IN AN ENCLOSURE (all components included)

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



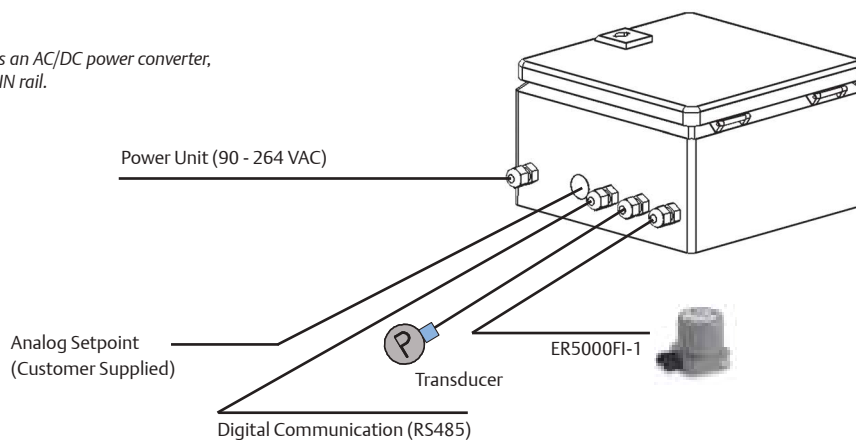
BOTTOM VIEW



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 TESCO.

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 TESCO.

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 | 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" | | |
| | E – Parts assembled in an enclosure | C – DK (Dome-loaded) Pressure reducing | SST | 6 | 100 | PCTFE | 0.35 | 12 mm | 1/2" | D – Nitrile, Buna-N (NBR) | |
| | | D – DK (Air-loaded) Pressure reducing | SST | 40 | 600 | PCTFE | 0.35 | 12 mm | 1/2" | T – FKM (Viton®-A) | |
| | | F – 26-2000 Pressure reducing | SST | 100 | 1500 | Polyimide (Vespel®) | 0.06 | 6 mm | 1/4" | U – Urethane (PUR) | |
| | | G – 26-2000 Pressure reducing | SST | 160 | 3000 | Polyimide (Vespel®) | 0.06 | 6 mm | 1/4" | Z – EP (EPDM) | |
| | | 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.

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: H₂S and other sulfides below 10 ppm

Impurities: CO₂ below 3%; O₂ 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



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 -

1. With clean dry sweet gas.

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)

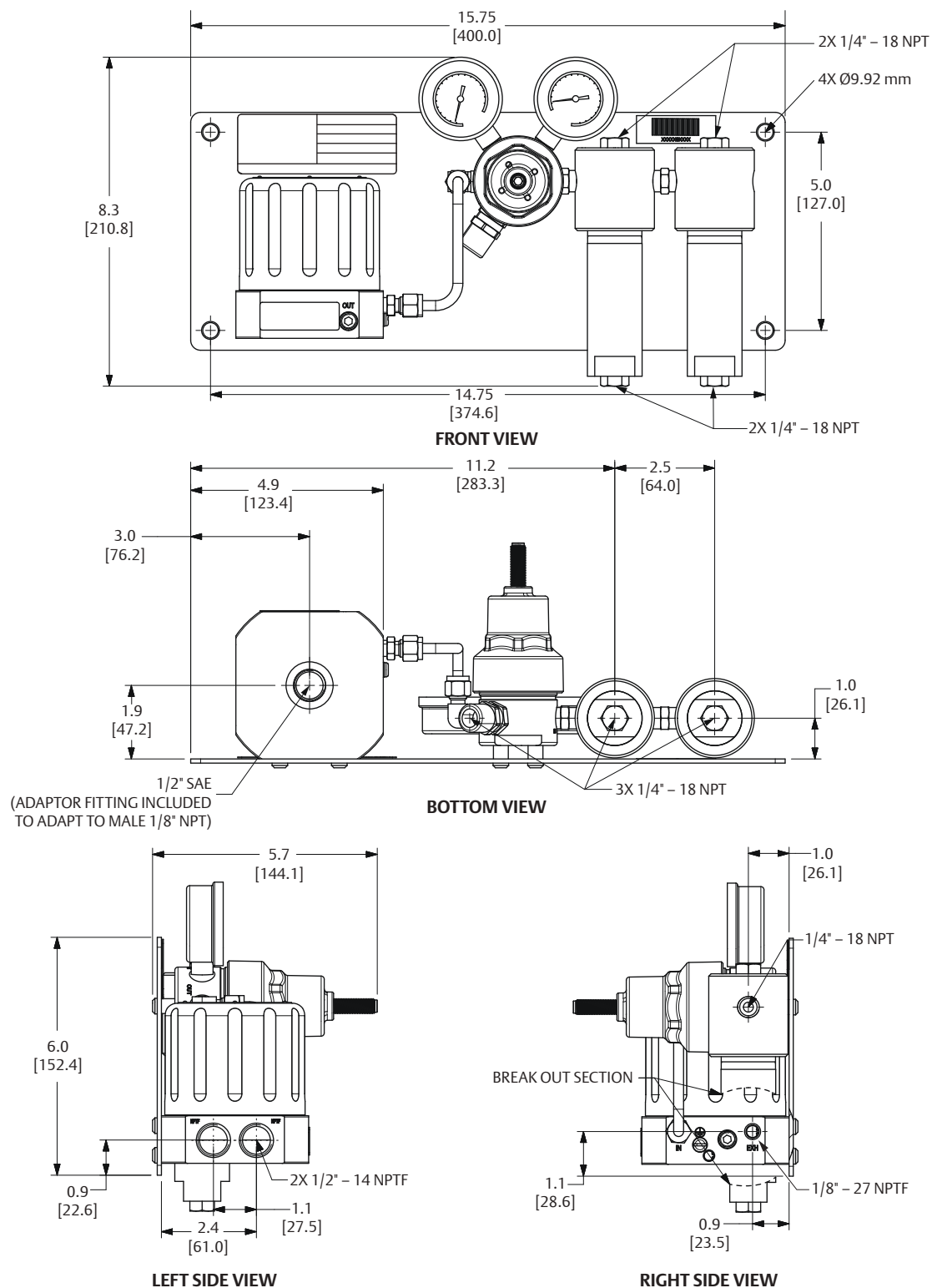
ERNG-V

- 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.

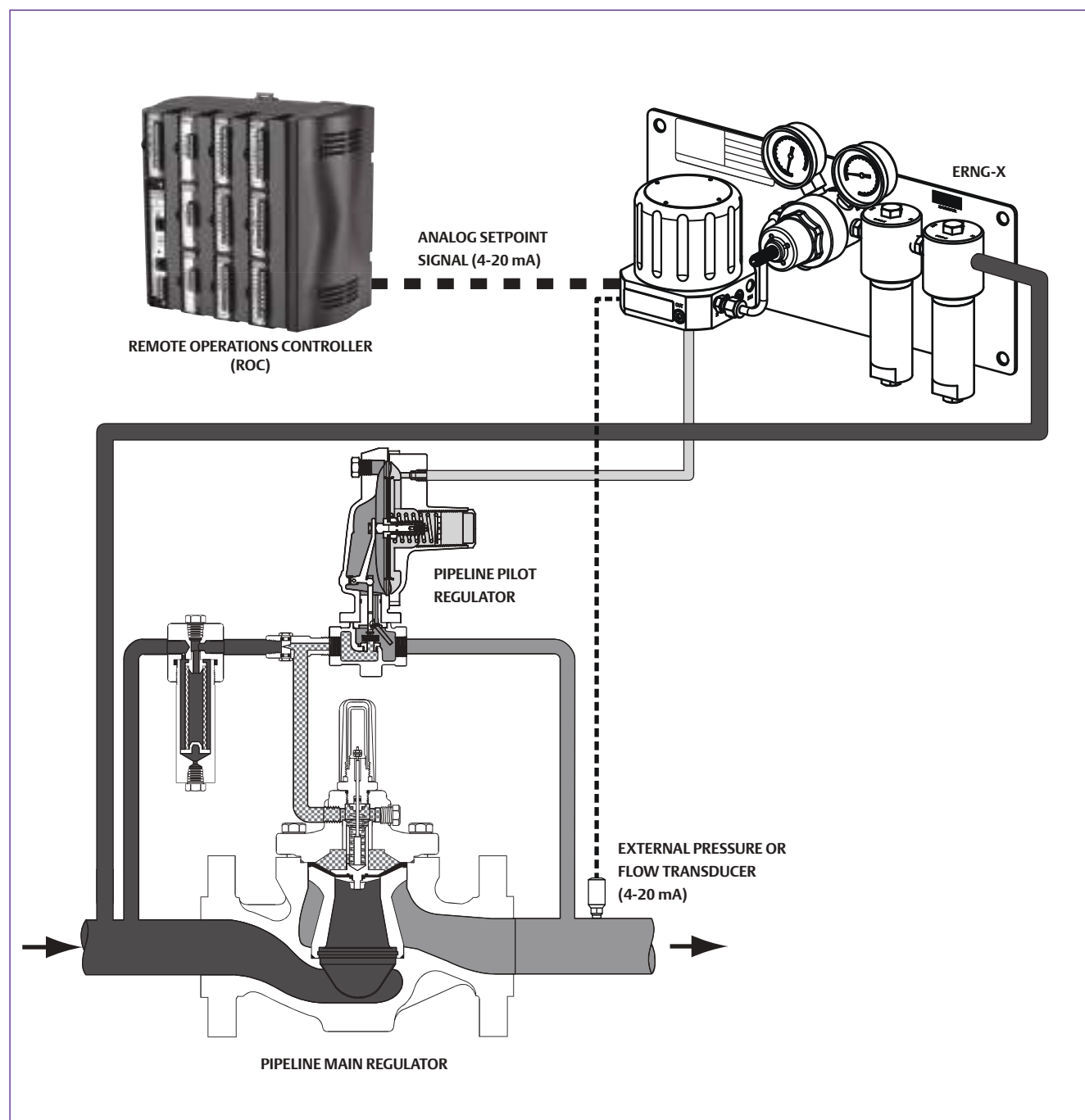


Figure 2. ERNG-X Typical Applications

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.

Windows and Visual Basic are registered trademarks of Microsoft Corporation in the United States and other countries.
LabVIEW™ and LabWindows/CVI™ are trademarks of National Instruments.

ERNG-X

ERNG-X Part Number Selector

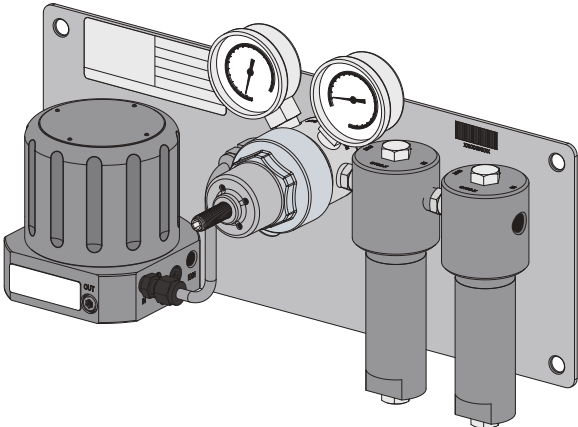
Repair Kits, Accessories & Modifications may be available for this product. Please contact TESCOM for more information.


Example for selecting a part number:

| | | |
|--------------|-------------|-----------|
| ERNG | - | I |
| BASIC SERIES | DASH NUMBER | ER OPTION |
| ERNG | I | Current |
| | V | Voltage |

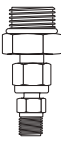
| RECOMMENDED SPARE PARTS | | PART NUMBER |
|-----------------------------|--------|-------------|
| Supply Regulator Repair Kit | | JT389-8927 |
| Filter Elements Kit | C195-1 | ERAA23983-1 |
| | C195-2 | ERAA23983-2 |

What's Included







Wiring connector




1/2" SAE x 1/8" NPTF adapter



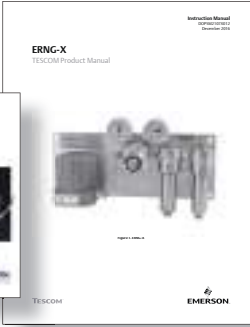
3 mm hex wrench for cover lock screw



ER5000



ER5000
Getting Started Manual



ERNG-X
TESCOM Product Manual

Full ER5000 Manual can be found at www.TESCOM.com

Specifications

For other materials or modifications, please consult TESCO.

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)

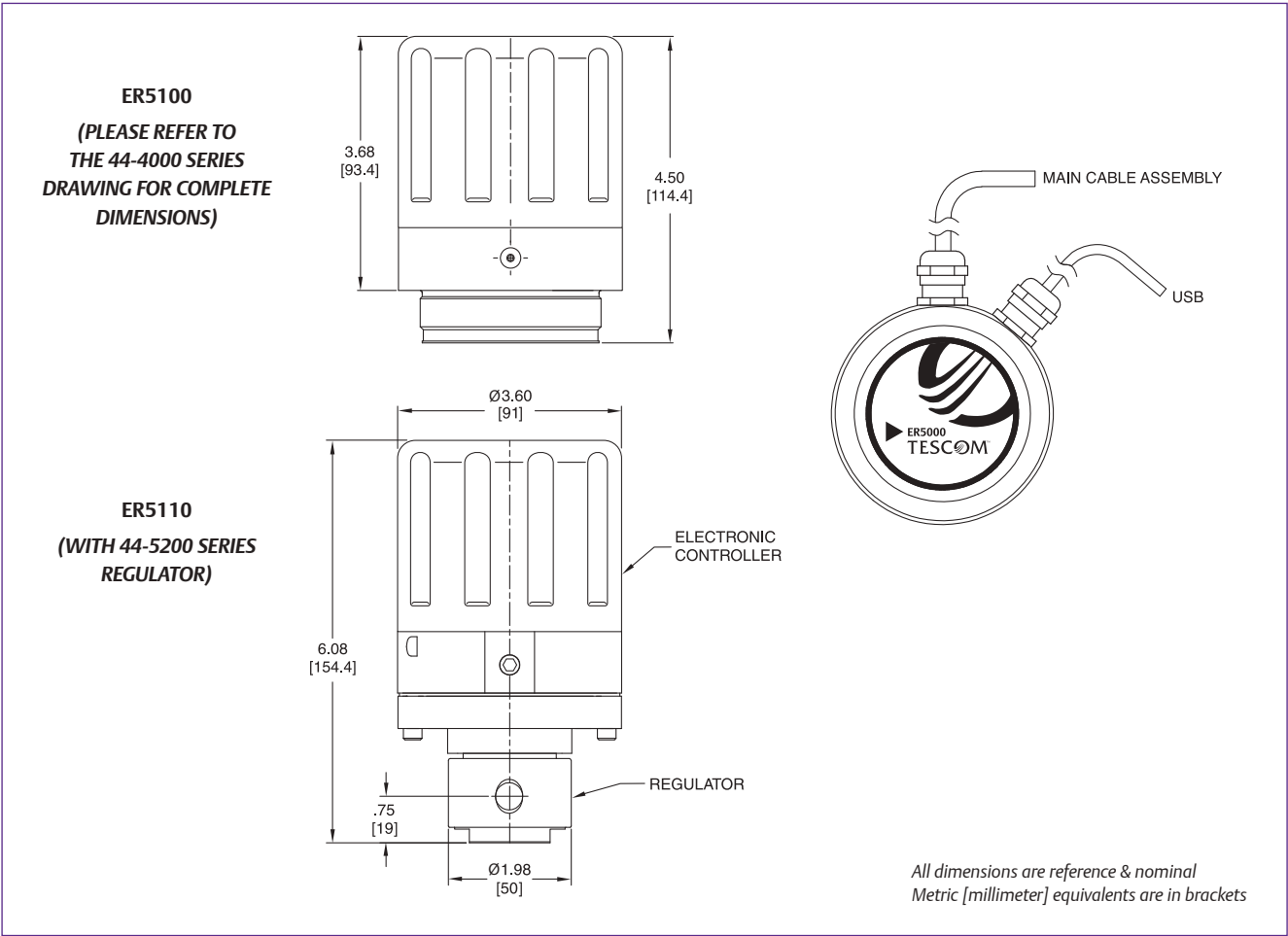
TESCOM ER5100 Series consists of the ER5000 Series controller and a 44-4000 Series pressure reducing regulator integrated together. Inlet pressures are up to 4500 psig / 310 bar with two different outlet ranges of 400 and 900 psig / 27.6 and 62.1 bar. The ER5100 Series may be ordered with a $C_v = 0.7$ 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 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*.

Specifications

For other materials or modifications, please consult TESCO.

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

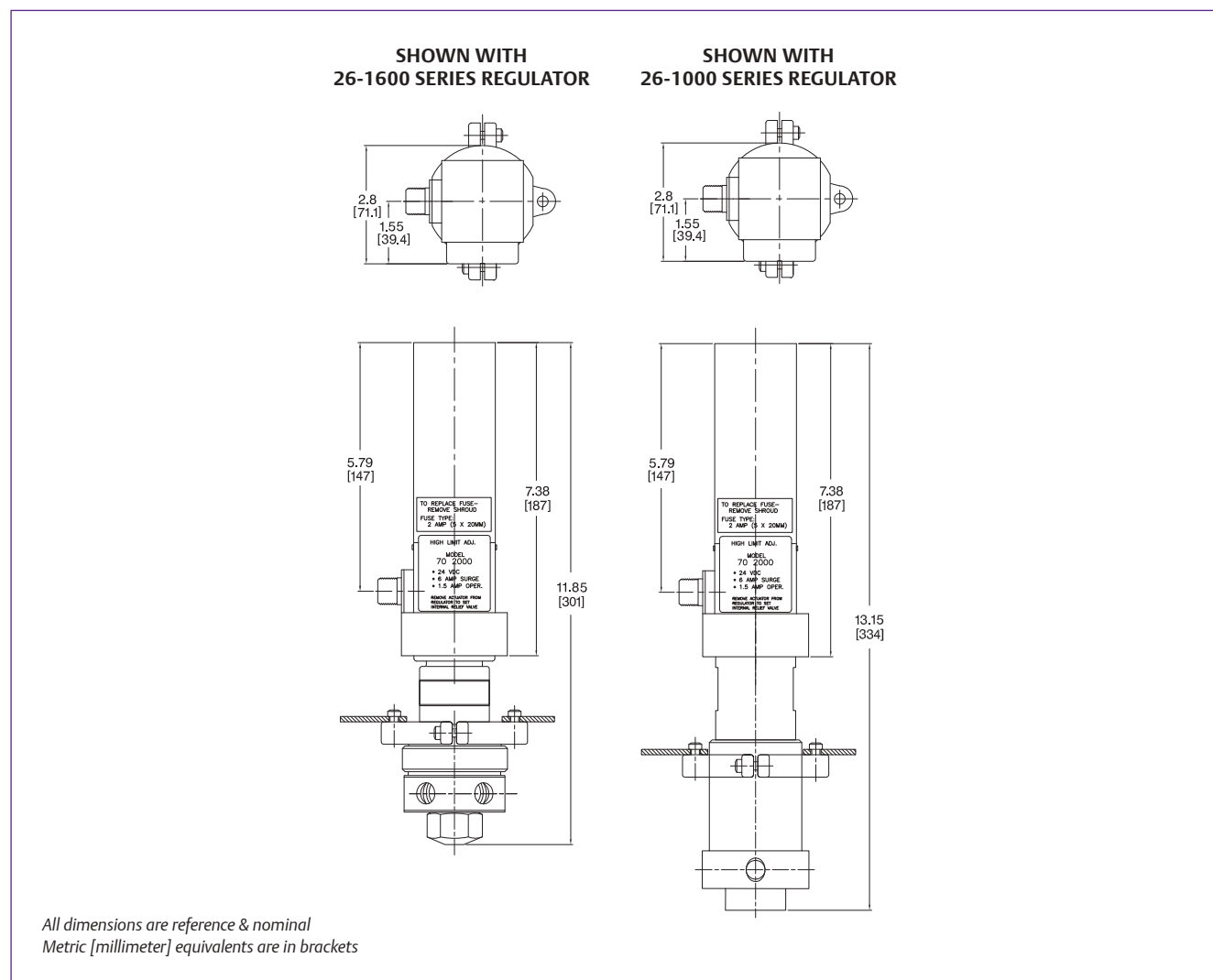
- Test Equipment
- Remote Actuation
- Oil Patch Control

Features and Benefits

- Adjusts regulator to any setpoint by remote control, eliminating the need for an operator in the pressure area
- Compatible with several TESCO 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



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 | Closed Loop Control | Custom Solutions | Automation OR Test Stands? |
|---|--|--|---|
| Manifold Blocks  Compact Panels  | Electronic Control  Configurable Kits  | Assembly  Panels  | Test Stands   |
| <div>ENTRY</div> <div>LEVEL OF INTEGRATION</div> <div>ADVANCED</div> | | | |
| <ul style="list-style-type: none"> • Easy configuration • Mechanical automation • Reduced leak paths • Reduced footprint • Custom designed to application | <ul style="list-style-type: none"> • Electromechanical automation • Software enabled • High accuracy • Eliminate droop • Data acquisition | <ul style="list-style-type: none"> • Integrate third party components • Eases preventative maintenance and troubleshooting • Subsystem for larger projects • Build to print or complete design and build | <ul style="list-style-type: none"> • Complete system hardware and software • Networked or stand alone • Safety interlocks and FMEA • Factory Acceptance Test and documentation packages |
| <p><i>Services provided by TESCO include design and engineering, software design, documentation and assembly/test. TESCO offers Control Implementation (PC Solution, Controller Solution, Hardware Only) and Data Management (Data Storage and Test Reports).</i></p> | | | |

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 CO₂ 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*.

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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

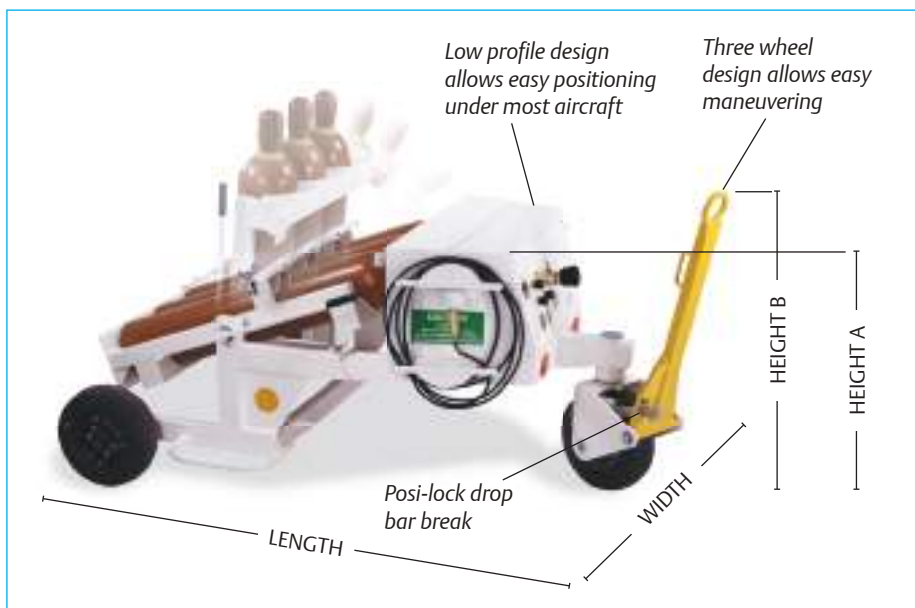
- Pressure control instrumentation shielded from weather
- Full one year replacement warranty for all carts!
- Heavy-duty thick wall steel construction means a long service life
- Durable powder coat paint is standard

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 |



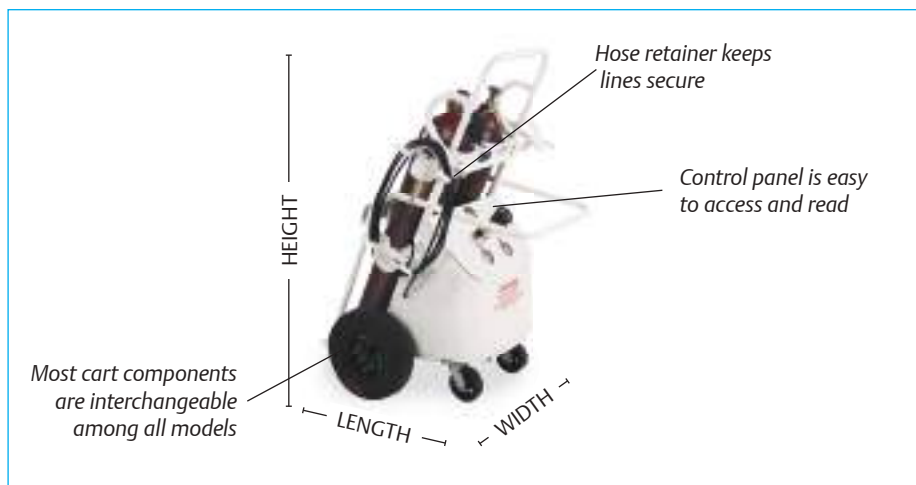
AIRCRAFT CHARGING CARTS

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 |

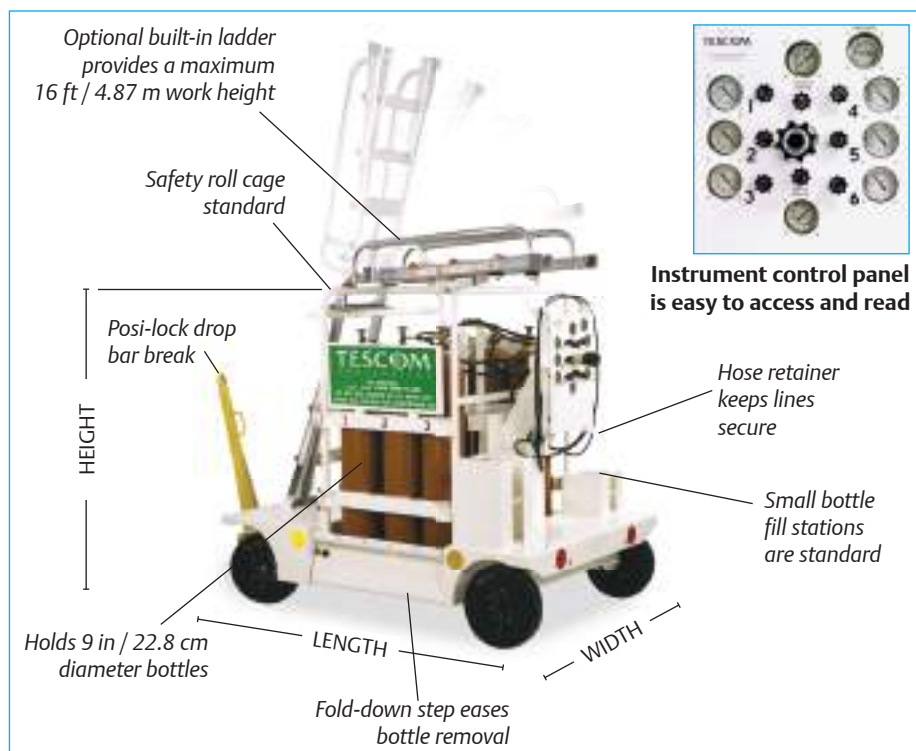
| PART NO. | DESCRIPTION |
|----------|-------------------------------|
| UA-6T | 2 bottle Oxygen Charge Cart |
| UA-4T | 2 bottle Nitrogen Charge Cart |
| UA-5T | 2 bottle Helium Charge Cart |



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

| | |
|--|------------|
| 100-625 Pressure Transducers Used in heavy duty applications requiring high accuracy and durability | 645 |
| 42 MW Series Instrument isolator typically used with TESCO SJS Series pressure tracking regulator Isolates regulator from corrosive and incompatible fluids | 649 |
| Filters (98 Series) For Americas, Asia Pacific, and Middle East/Africa configuration | 651 |
| Filters (TEE Type) For European configuration | 657 |
| Fittings Suitable for all established threads and sizes (for Europe and Middle East only) | 661 |
| Compression Fittings NPT Male Suitable for NPT threads (for Europe and Middle East only) | 664 |
| Mounting Brackets and Screws, Plugs for Gauges Accessories for mounting and plugging for Europe only | 665 |
| Pressure Gauges Bourdon type gauges for all world areas | 667 |
| Point-of-Use Accessories Accessories for MiniLabo 2, Brass, Stainless Steel and VCR® compatible versions | 673 |
| WEGA Accessories Accessories and spare parts for WEGA 1-stage or 2-stage series | 675 |

Specifications

For other materials or modifications, please consult TESCO.

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 TESCO ER5000 Electropneumatic Controller
- Ideal for use in ER5000 applications where an external feedback signal is required

Features and Benefits

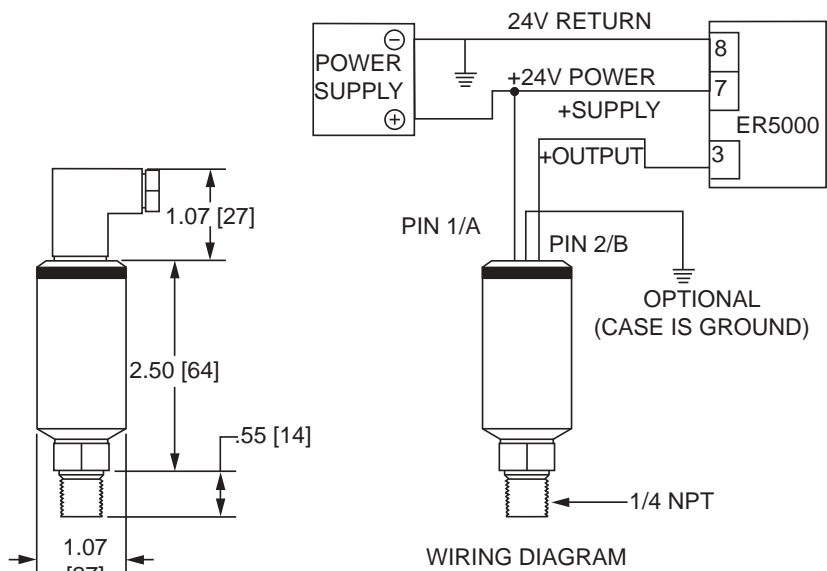
- Provides extremely stable and repeatable hydraulic and pneumatic pressure measurements
- Suitable for a wide variety of industrial, laboratory, and test applications
- Provides significant immunity to noise due to RFI (walkie-talkie), EMC (electrical noise from motors), and ESD (static electricity generated in the application)¹

1. Indicated by The CE marking, a requirement for sale in Europe

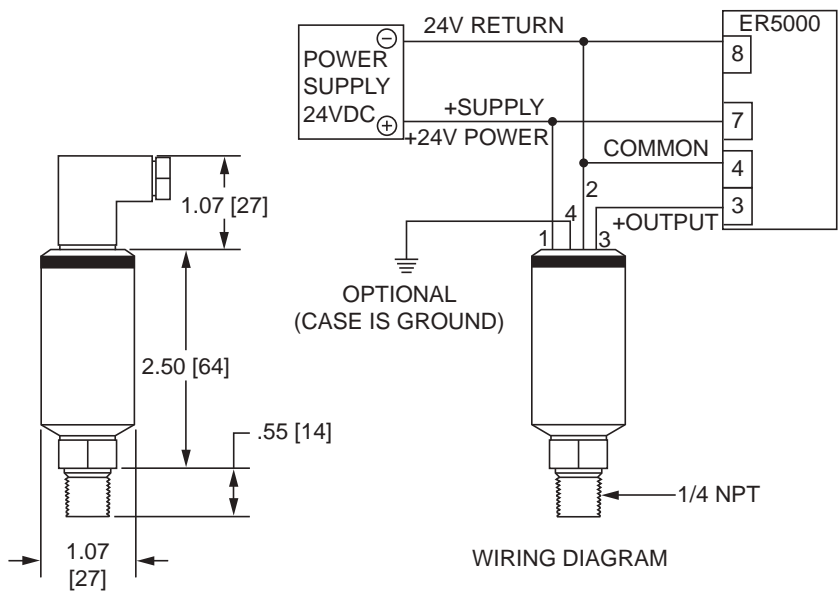
100-625 PRESSURE TRANSDUCERS

100-625 Pressure Transducers Accessories Drawings

100 SERIES



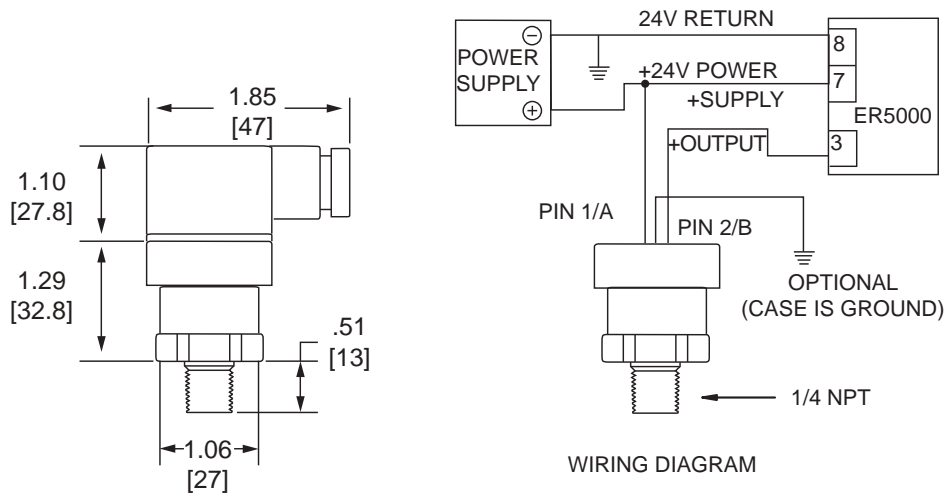
200 SERIES



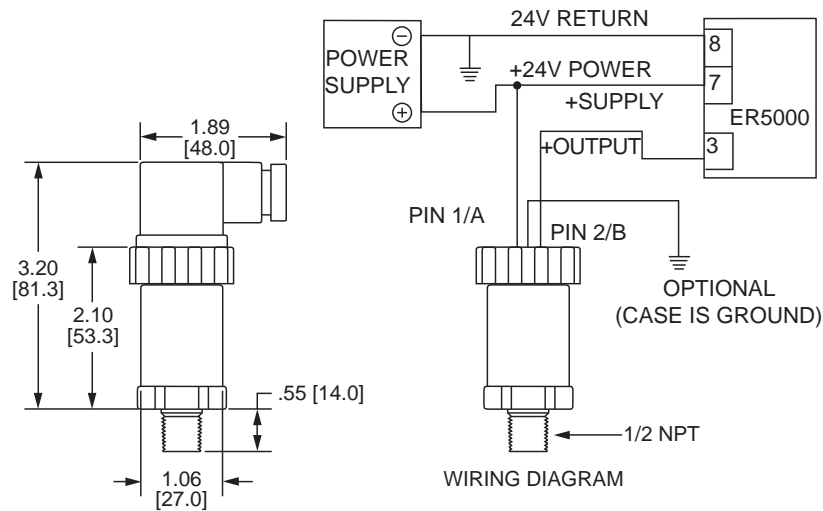
All dimensions are reference and nominal
Metric [millimeter] equivalents are in brackets

100-625 Pressure Transducers Accessories Drawings

300 SERIES



615/625 SERIES



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 | | 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 |
| * 615 Series is available up to 60,000 psig / 4137 bar | | | | | |

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

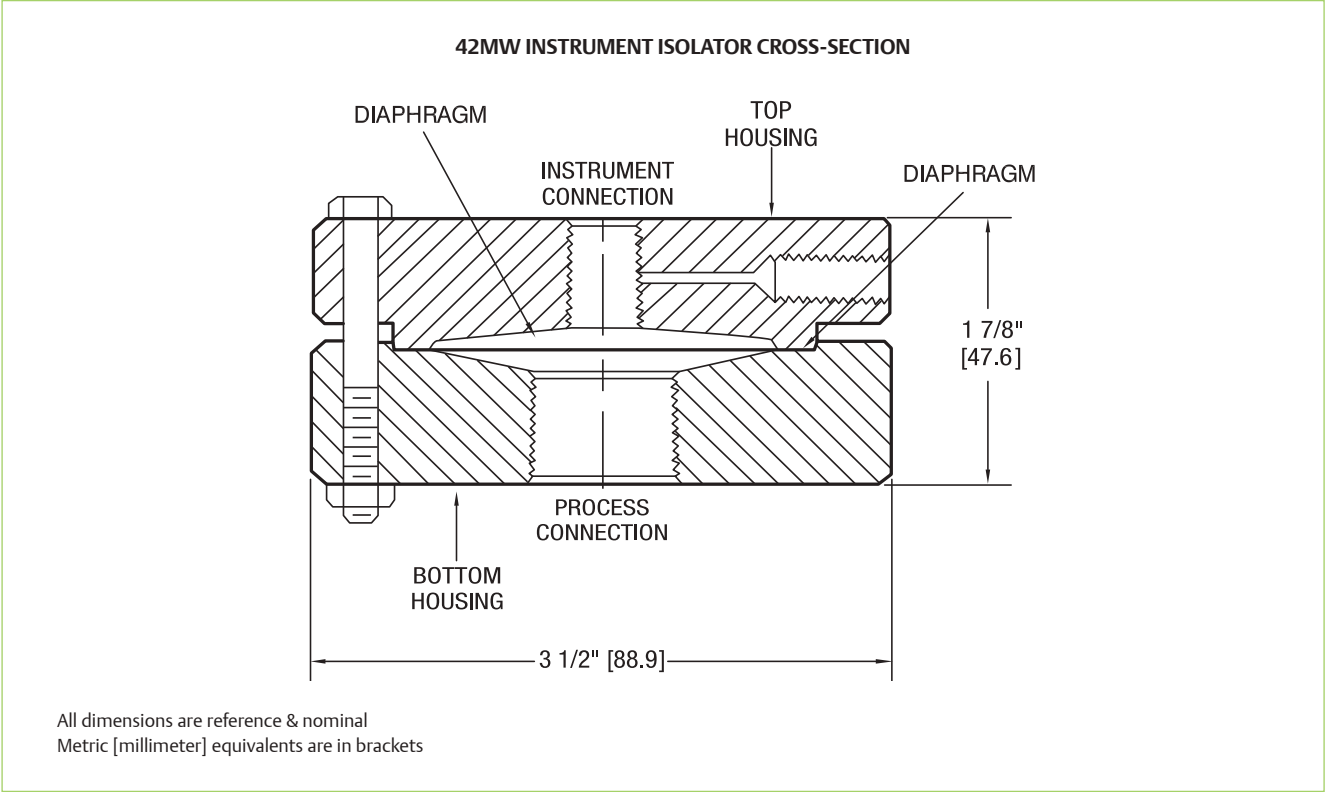
- Dual mechanical seal differential pressure control

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 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 |

Specifications

For other materials or modifications, please consult TESCO. M.

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 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

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.



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

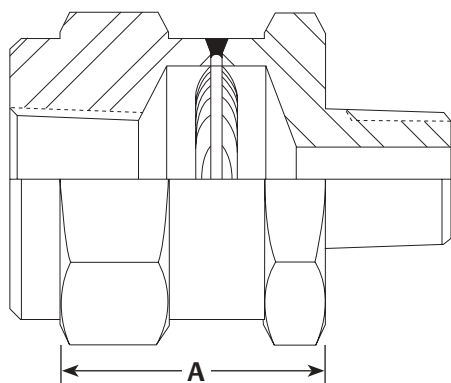
Features and Benefits

- 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

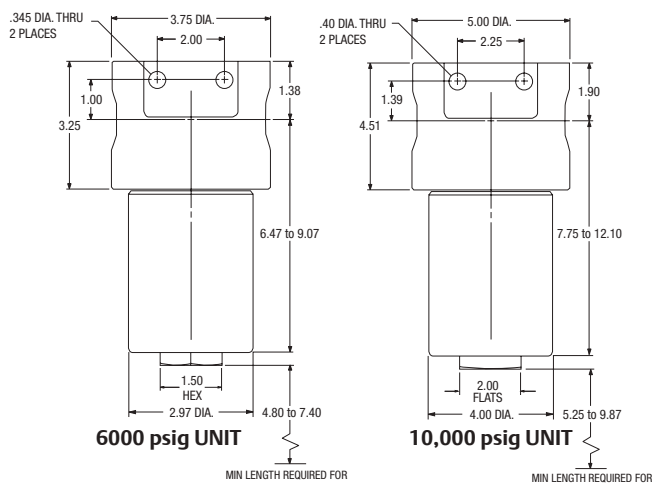
98 Series Drawings

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" |

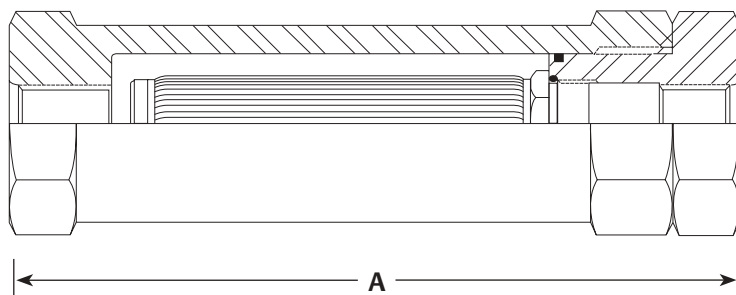
98-1110 SERIES TEE-TYPE



| 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

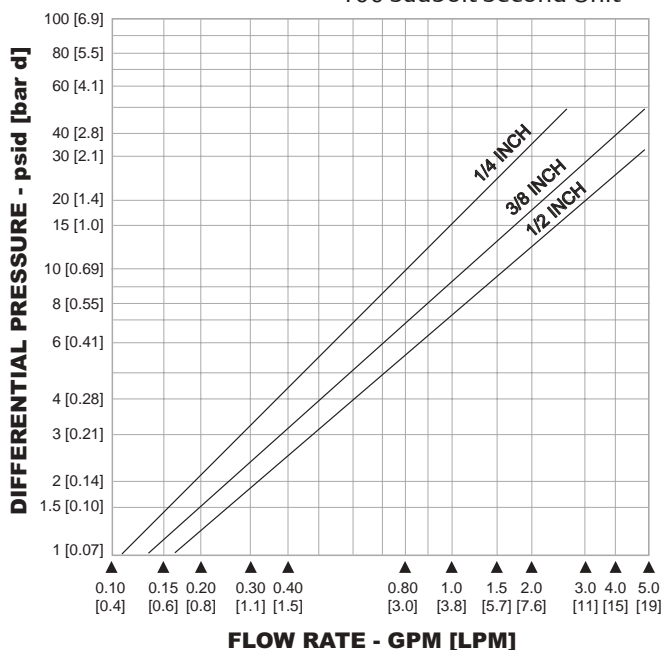
| PART NUMBER | DIMENSION A | ELEMENT REPLACEMENT |
|---------------|-------------|---------------------|
| 98-1210-U-2PP | 6.00" | 61666-413 |
| 98-1210-U-2BB | 4.19" | 61666-411 |
| 98-1210-U-4PP | 7.75" | 61666-415 |
| 98-1210-U-4BB | 6.00" | 61666-413 |
| 98-1210-T-2PP | 6.00" | 61666-413 |
| 98-1210-T-2BB | 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

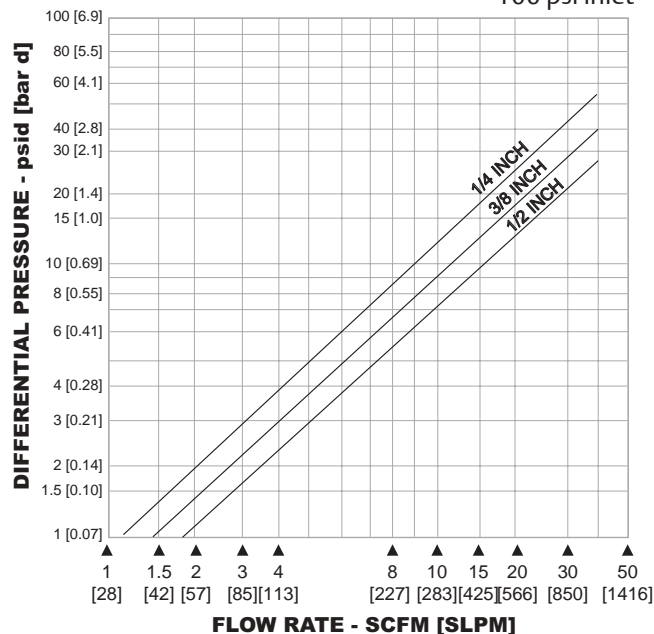
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO catalog or on www.tescom.com.

98-1010 SERIES MINI IN-LINE

Typical Flow Curve - Oil
98-1010 (10 Micron nominal)
100 Saubolt Second Unit

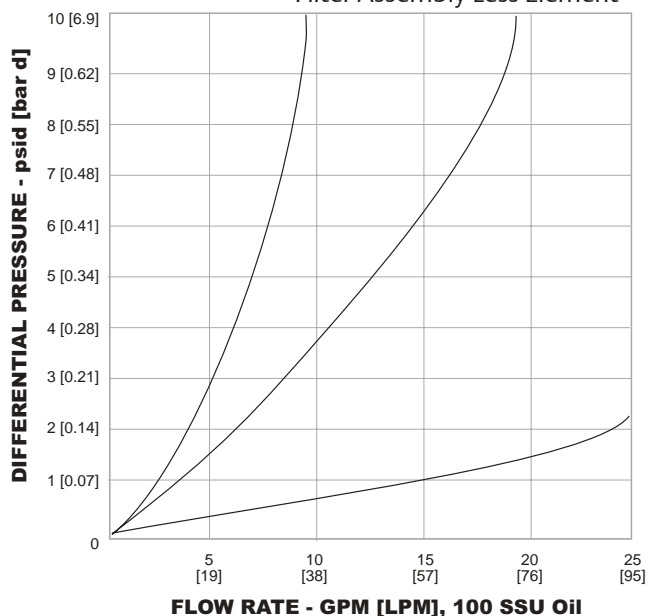


Typical Flow Curve - Air
98-1010 (10 Micron nominal)
100 psi inlet

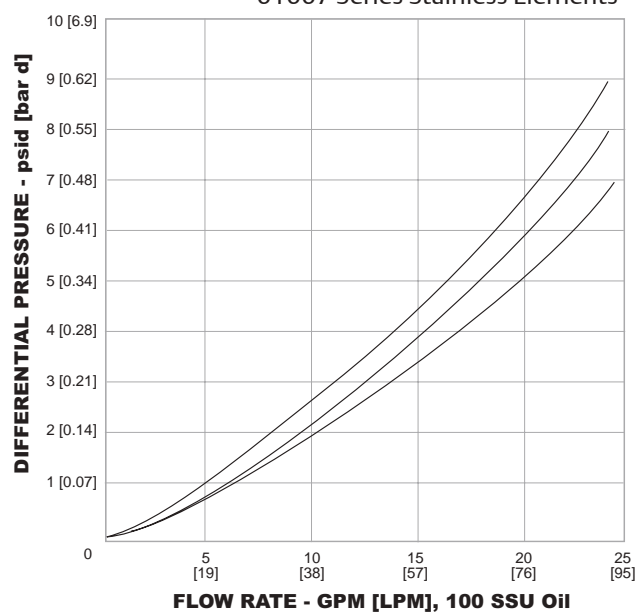


98-1110 SERIES TEE-TYPE

Filter Assembly Less Element



61667 Series Stainless Elements



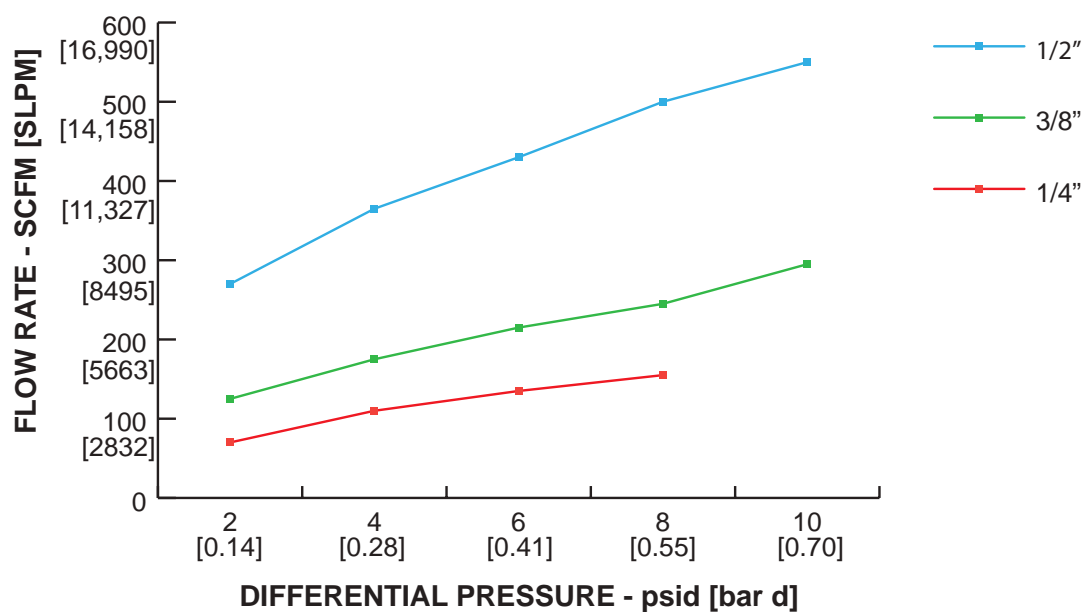
98 SERIES FILTERS

98 Series Flow Charts

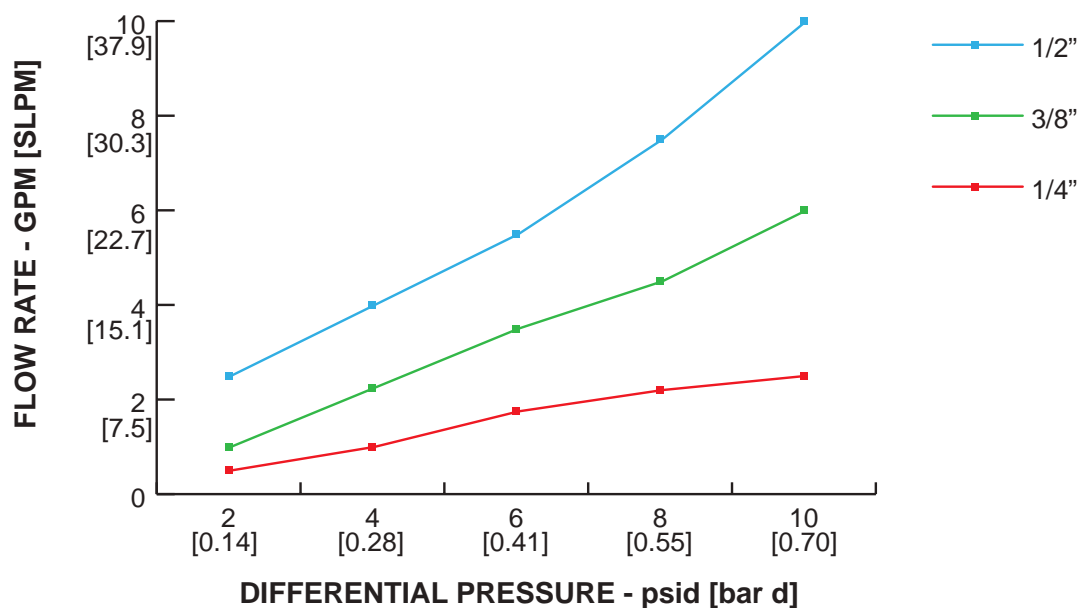
For more information on how to read flow curves, please refer to the Flow Curves and Calculations document (debul2007x012) in the TESCO catalog or on www.tescom.com.

98-1210 SERIES IN-LINE

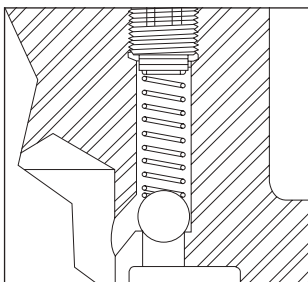
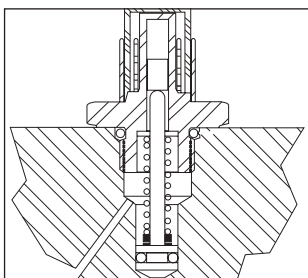
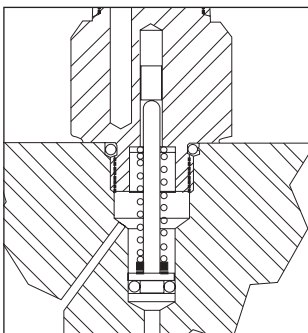
AIR 3000 PSI



OIL 150 SSU



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 - Δ 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 Δ 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 Δ 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 Δ P indicator can operate signal devices. The contacts close when the Δ P increases and automatically resets when Δ 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

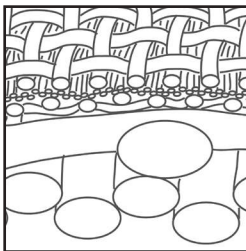
Gaskets

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

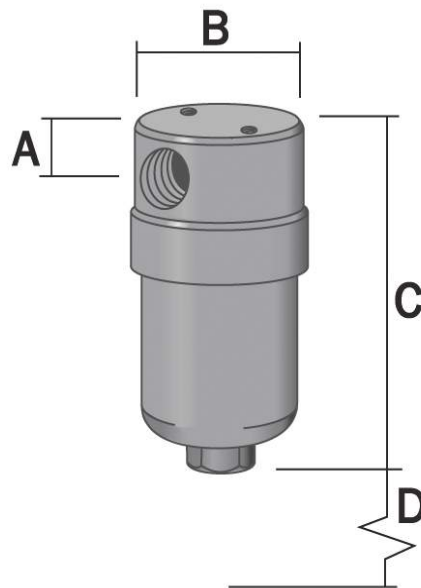
(4) not for 1/4" or 3/8" connection size

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

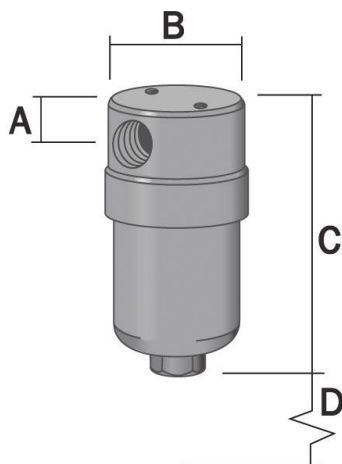


| TESCOM PART NUMBER | FILTER ELEMENT / RATE | MATERIAL | A | B | C | D |
|--------------------|-----------------------|----------|-----------|------------|------------|------------|
| | | | Inch / mm | | | |
| D51170-S690-420 | 12.57 / 20 | 316L | 0.87 / 22 | 2.56 / 65 | 5.32 / 135 | 1.58 / 40 |
| D51170-S690-440 | 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 |

| 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

Europe and Middle East only

Accessories

DMALECO10116XEN2

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 |

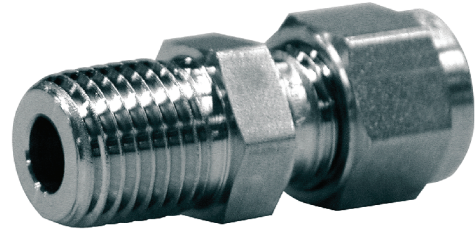
| | | |
|------|----------|----------------|
| 6 mm | 1/8" NPT | D44987-6-1-2-X |
| 6 mm | 1/4" NPT | D44987-6-1-4-X |
| 6 mm | 3/8" NPT | D44987-6-1-6-X |
| 6 mm | 1/2" NPT | D44987-6-1-8-X |

| | | |
|------|----------|----------------|
| 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 NPT 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 |

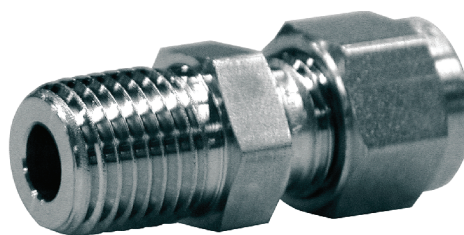
| | | |
|-------|----------|----------------|
| 3/16" | 1/8" NPT | D44986-3-1-2-X |
| 3/16" | 1/4" NPT | D44986-3-1-4-X |

| | | |
|------|----------|-----------------|
| 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 GAUGE PORTS

Accessories

DMOUNTI10119XEN2

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

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

Technical drawing of a 2 inch stainless steel gauge. It includes three views: a front view showing the dial and scale, a side view showing the gauge body and connection, and a rear view showing the mounting flange. Dimensions are provided in inches and millimeters (in brackets). The front view shows a diameter of 2 inches (50.8 mm). The side view shows a height of 1.14 inches (29 mm) and a connection diameter of 0.3 inches (10 mm). The rear view shows a height of 1.94 inches (49.0 mm) for NPT connection and 2.32 inches (58.9 mm) for VCR connection.

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.

PRESSURE GUAGES

Americas and Asia Pacific

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/cm ² | 30/2 |
| 47760-0060M | psi / kg/cm ² | 60/4 |
| 47760-0100M | psi / kg/cm ² | 100/7 |
| 47760-0200M | psi / kg/cm ² | 200/14 |
| 47760-4000M | psi / kg/cm ² | 4000/280 |
| 47760-V030M | psi / kg/cm ² / inches Hg | 30/2/30" |
| 47760-V060M | psi / kg/cm ² / inches Hg | 60/4/30" |
| 47760-V100M | psi / kg/cm ² / 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 \varnothing 2" and \varnothing 2-1/2" Pressure Gauges

Ordering Information

| 1/4" NPT, Stainless Steel | | | <div>Accessory for various TESCOM series</div> <ul style="list-style-type: none">• 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 |
|--|-----------|-------------------------------|--|
| PART NUMBER | SCALE | PRESSURE RANGE | |
| ø 2" Diameter | | | |
| 4802-0300N | psi / bar | 0 to 300 psi / 0 to 20 bar | |
| 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 TESCO 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 | | | | | <ul style="list-style-type: none">• 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 | | | | | <ul style="list-style-type: none">• 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 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 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 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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.

Europe and Middle East only

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, TESCOLOGO, 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 | <ul style="list-style-type: none"> • TESCOLOGO Cylinder Regulator Regulus • TESCOLOGO 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, TESCOLOGO, 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 | TESCOLOGO Regulators for Medical |
| D44274-12G3156 | 315 bar / kPa x 100 | 200 bar / kPa x 100 | 1.6 inches / 40 mm | TESCOLOGO Regulators for Medical |
| D45120-12G0026 | 36 psi / 2.5 bar | 22 psi / 1.5 bar | 1.6 inches / 40 mm | TESCOLOGO Point-of-Use Regulators, MiniLabo 2 |
| D51674-00G3156W | 315 bar | ---- | 1.9 inches / 50 mm | TESCOLOGO 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 |

Accessories

DCATLABO1286XEN2

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



GAUGE D43650-00G0036

*Please consult TESCO for additional pressure ranges or special array of connections (e.g. central connection)

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 |

DIAPHRAGM METERING VALVE
D43216

*Please reference datasheets "Needle Metering Valve" and "Diaphragm Metering Valve" for detailed technical specifications.

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, Acetylene | 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 |



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 |



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 |



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 |



Accessories


DCATLAB012106XEN2

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 |
| Central  | 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 |
| Central  | 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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