



CONCOA[®] CAPSULE[®] Technology

PRECISION GAS CONTROLS

To meet the rigorous requirements of end-users in the analytical, scientific, and electronics markets, CONCOA has developed a unique regulator seat assembly that incorporates the numerous individual parts of a standard regulator seat into a single component. This design allows the CAPSULE[®] to be tested as a separate component prior to assembly into the regulator. The complete regulators are also 100% tested, giving the seat, or "heart" of the device, a double test. The result is longer life and reliable performance.

1. Lateral Flow Passages

Instead of impinging directly on the diaphragm, the gas enters the low pressure chamber through a side orifice of the CAPSULE[®]. This smooth transition from high pressure to low pressure reduces the effects of gas surge on the diaphragm and minimizes regulator hum. In addition, the lateral flow passages induce a swirling effect which yields a completely swept internal cavity for complete purging.

2. Multiple Orifice Sizes

Each regulator has a specially designed CAPSULE[®] to optimize regulator characteristics over a broad range of applications. However, there are applications requiring higher or lower flows than the standard CAPSULE[®] can offer. By substituting a CAPSULE[®] with a larger or smaller orifice, CONCOA can tailor the regulator to meet a specific requirement.

3. PTFE Seat

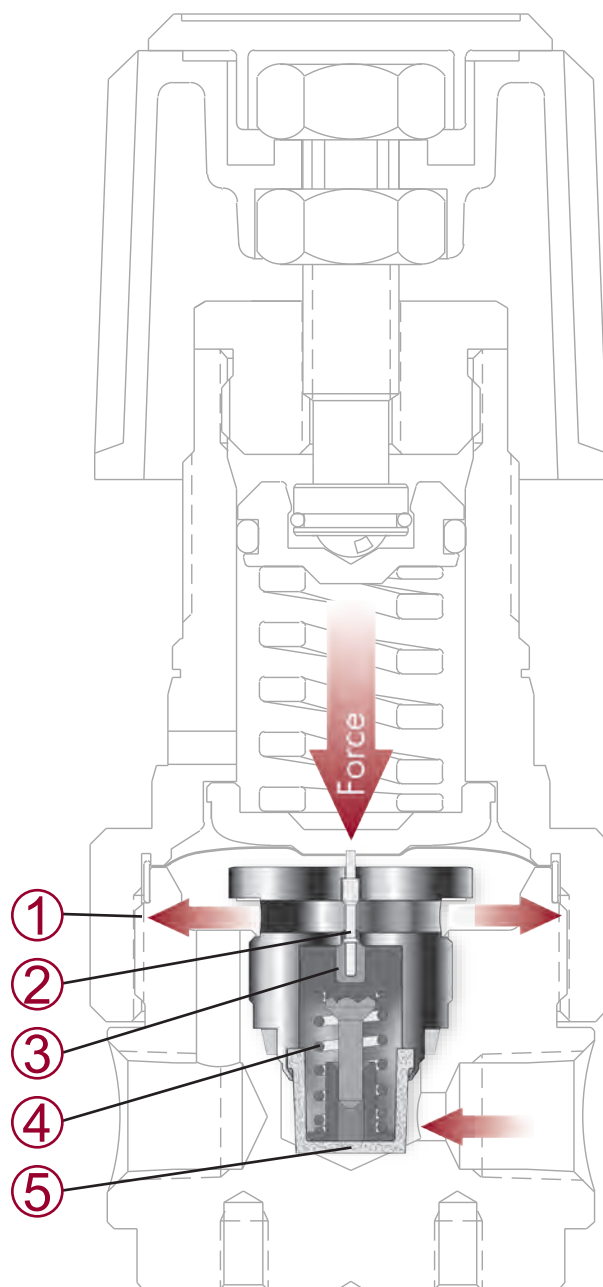
The standard seat material is high density PTFE. PTFE is an inert material which will not react with or contaminate any high purity gas. In addition, PTFE retains its sealing properties over a wider temperature range than other seat materials. The inlet pressure rating of all CONCOA regulators with a PTFE seat is 3000 PSIG (210 BAR). With the optional PCTFE-seated CAPSULE[®], the pressure rating increases to 4500 PSIG (310 BAR).

4. High Load Marginal Spring

The purpose of the marginal spring is to close the seat independently of gas pressures. The innovative CONCOA CAPSULE[®] utilizes a high force spring that assures a gas-tight seal under all conditions.

5. 10 Micron Filter

Particles trapped between the seat and orifice prevent proper seat closure, causing the regulator to fail. The CAPSULE[®] incorporates a 10 micron filter which completely surrounds the seat components to prevent the entrance of these damaging particles, virtually eliminating the cause of such seat failures. In addition, this filter is very fine, and its large surface area is resistant to clogging which allows unrestricted flow. The 10 micron filter is a key factor in the long life and reliable performance of all CONCOA regulators. The stainless steel 10 micron mesh CAPSULE[®] is patented CONCOA technology.



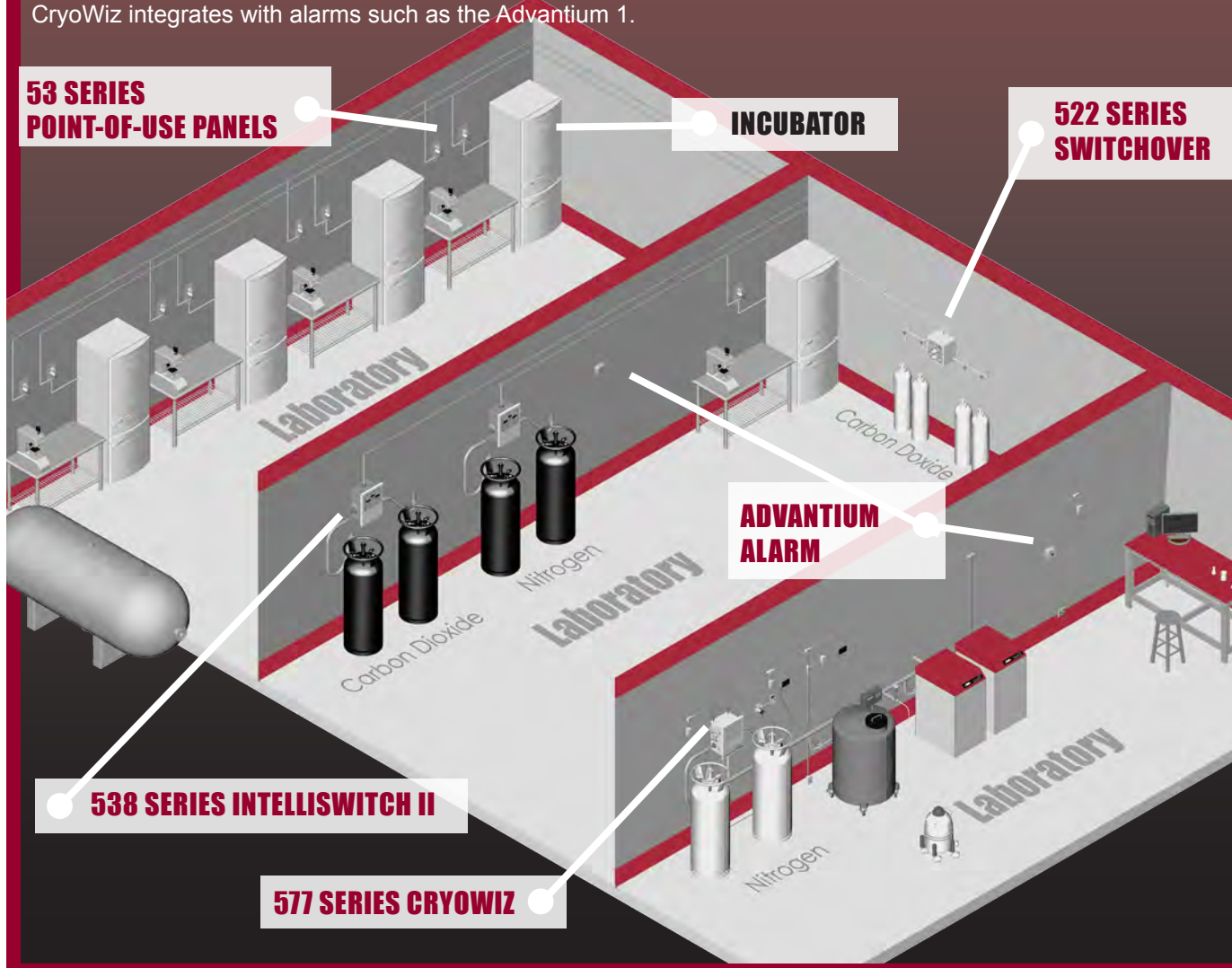


LAB SYSTEMS

CRYOGENIC AND INCUBATOR LABS

Technologies for growth and preservation are the foundation of modern life science research and production. For smaller incubator installations, a pressure differential switchover such as the 522 Series AutoSwitch ensures an adequate supply of carbon dioxide or nitrogen from high pressure cylinders without interruption. For larger installations, the 538 Series IntelliSwitch II optimizes supply from liquid sources while offering real-time monitoring through an on-board webserver with e-mail notifications. 53 Series Point-of-Use Panels provide final line regulation at the instrument.

The 577 Series CryoWiz safely delivers a seamless supply of cryogenic liquid nitrogen to freezers with minimal temperature change. When used with 57V Series vacuum-jacketed headers and hoses, the CryoWiz significantly reduces flash loss even in on-demand applications. In addition to an on-board webserver with e-mail alerts, the CryoWiz integrates with alarms such as the Advantium 1.



CONCOA Laboratory Systems



577 Series CryoWiz 20

The 577 Series CryoWiz delivers a continuous supply of liquid nitrogen by switching between a primary and secondary source automatically with minimal temperature change. The CryoWiz is ideal for applications such as cryopreservation, environmental chambers, and cryogenic research.



538 Series IntelliSwitch II 24

The IntelliSwitch II offers continuous pressure and flow control from liquid or high pressure cylinders. The 538 Series also features proprietary onboard web server technology for remote monitoring.



522 Series AutoSwitch 34

The 522 Series AutoSwitch is a continuous gas delivery system for high purity gas service that automatically changes cylinder or bank priority from the primary source to a reserve supply without transmitting pressure fluctuations to the use line.



53 Series Point-of-Use Panels 50

The 53 Series Point-of-Use Panels provide a modular design to mount and locate 300 Series regulators at the point of use for high purity instrumentation or process gases.



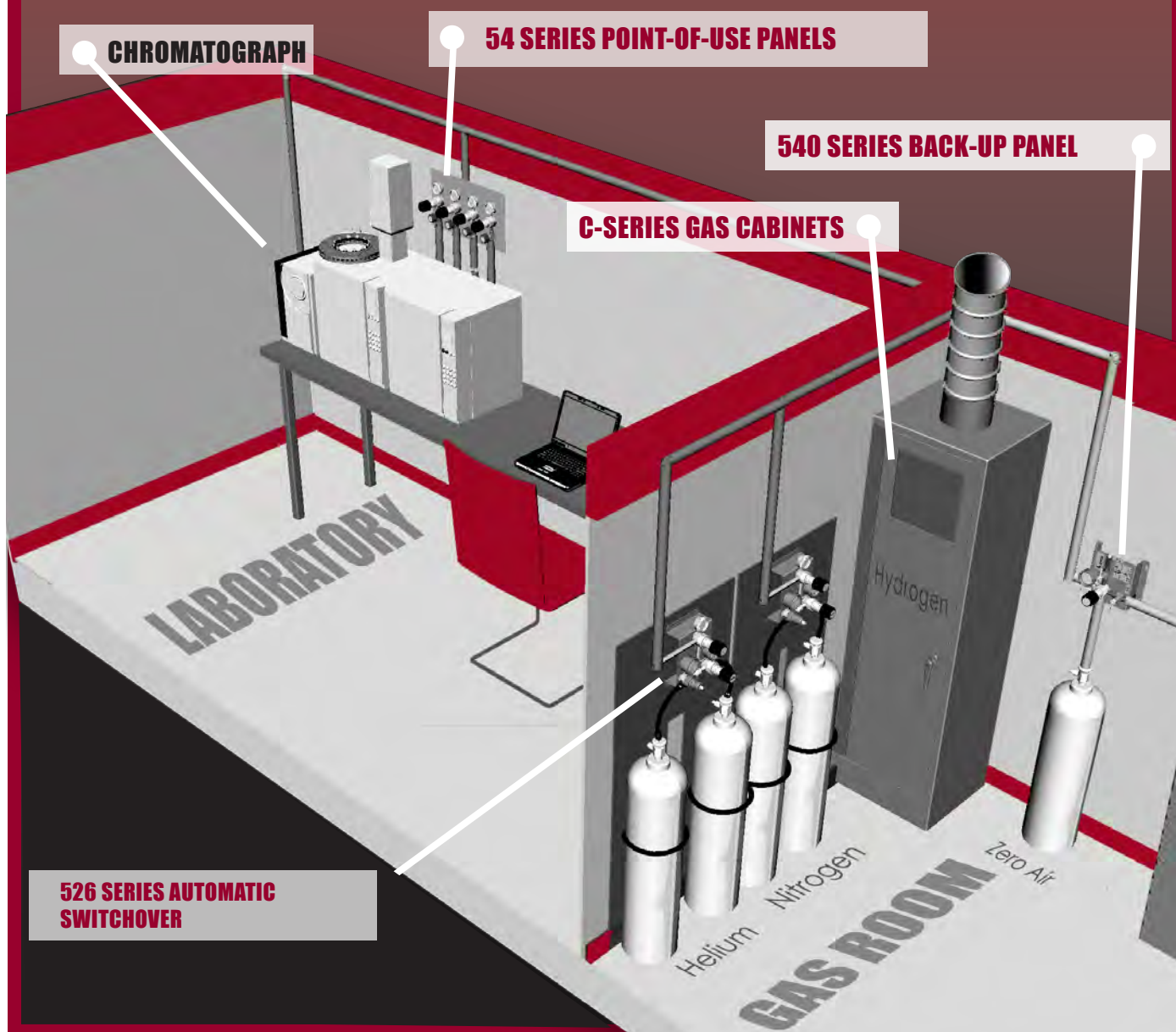
Advantium Alarms 68

The Advantium Series remote alarms are compatible with all CONCOA automatic switchover systems. The Advantium Series offers superior protection and integration by allowing end-users to monitor contact devices with a single switch.

LAB SYSTEMS

CHROMATOGRAPHY

Modern chemical and forensic research relies on gas chromatography to separate compounds for further analysis. The 526 and 527 Series Switchovers provide an uninterrupted supply of traditional inert carrier gases such as nitrogen or helium. C-Series gas cabinets allow safe and compliant use hydrogen in the laboratory. If the carrier gas is generated on site, a 540 Series Back-Up Panel can prevent supply interruption from planned or unplanned generator maintenance. 54 Series Point of Use Panels, optionally including gas filters or flashback arrestors, offer high purity final line regulation in the laboratory.





C-Series Gas Cabinets

18

The C-Series Gas Cabinets are designed to provide unparalleled protection to both the mounted gas supply systems and their attached gas cylinders.



526 Series Automatic Switchover

38

The 526 Series Automatic Switchover, available with or without Advantium 2 plus remote alarms, continuously supplies high purity gas from a primary and reserve bank of high pressure cylinders.



540 Series Back-Up Panel

48

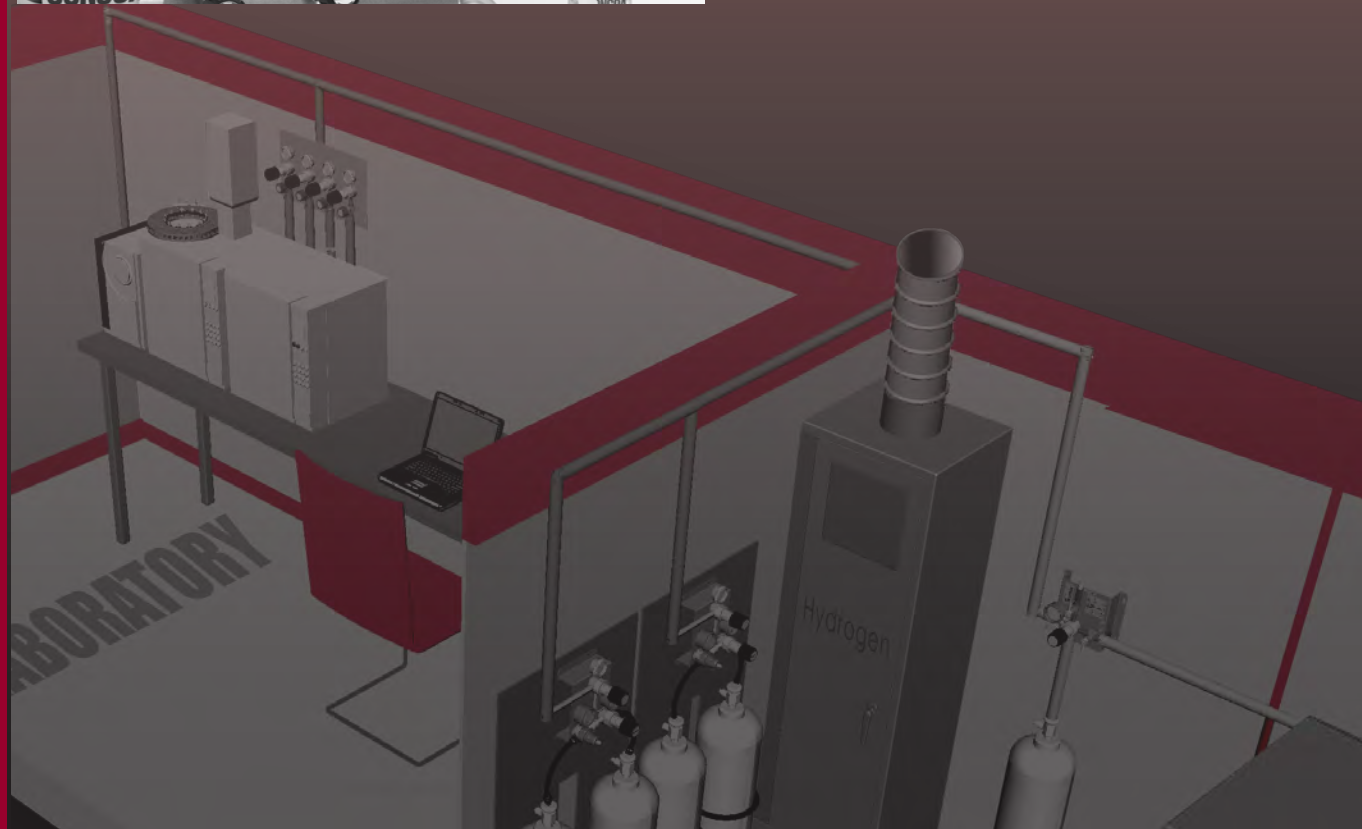
The 540 Series Back-Up Panel automatically switches from a primary to a reserve supply without interrupting the flow of gas.



54 Series Point-of-Use Panels

52

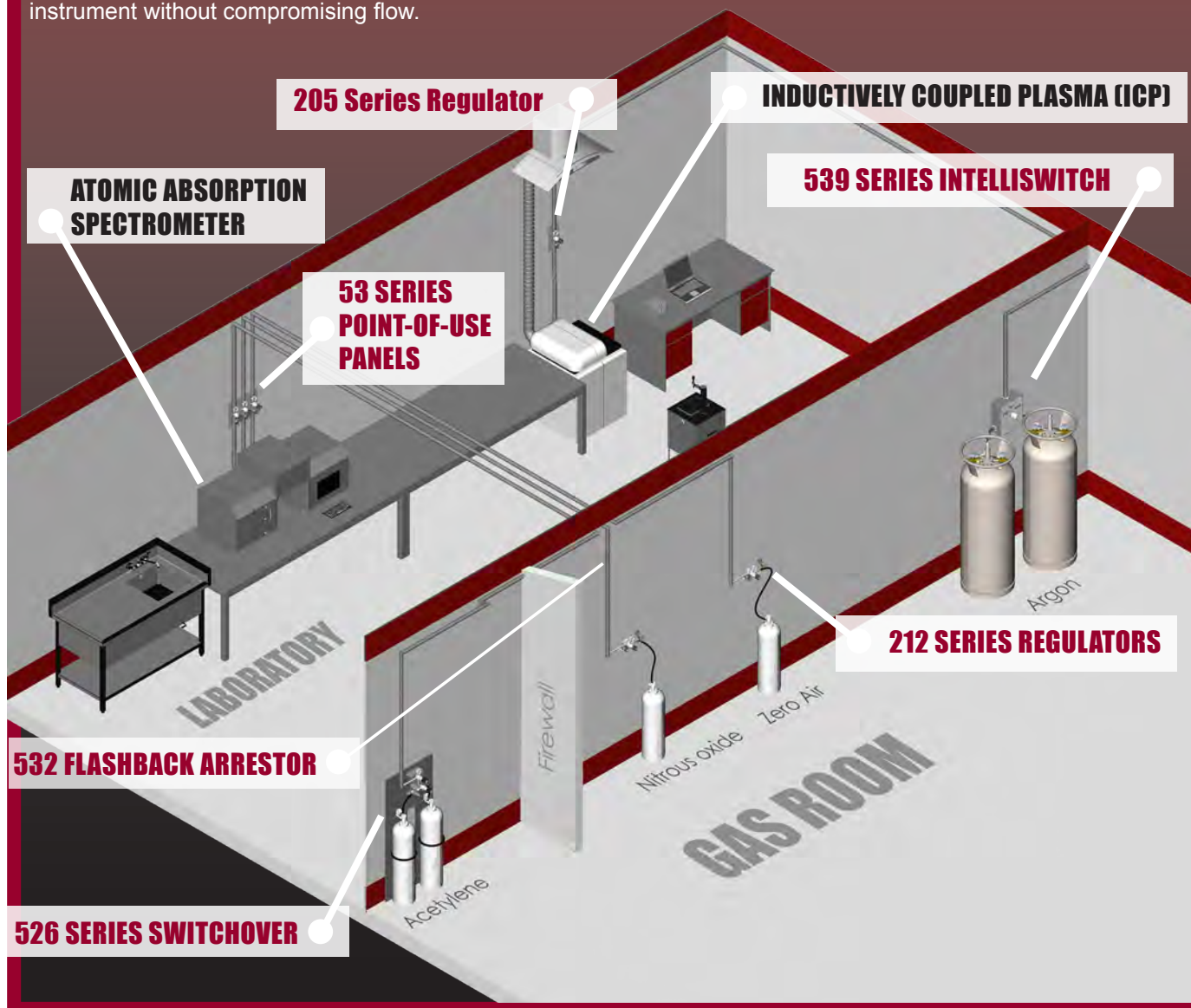
The 54 Series Point-of-Use Panels provide a modular design to mount and locate 400 Series regulators at the point of use for the most demanding gas applications.



LAB SYSTEMS

Spectral and Materials Analysis & INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY

Methods for identification constitute the basis of chemical analysis. Installed in a safe area or outside, 526 Series Switchovers or 200 Series Regulators with Protocol Stations can supply Acetylene, Nitrous Oxide, Argon, or Zero Air for Atomic Absorption Spectroscopy (AAS). 53 Series Point-of-Use Panels with 532 Series Flashback Arrestors allow safe use at the instrument itself. Inductively Coupled Plasma Mass Spectrometry (ICP-Mass Spec) requires a continuous, uninterrupted flow of Argon. A 205 Series Regulator provides precise pressure regulation at the instrument without compromising flow.



CONCOA Laboratory Systems



539 Series IntelliSwitch 26

The 539 Series IntelliSwitch is a fully-automatic computer controlled Universal Gas Management System typically used for several applications including ICP/ICP-Mass Spec carrier and support gases.



526 Series Automatic Switchover 38

The 526 Series Automatic Switchover, with or without Advantium 2 Plus remote alarms, continuously supply high purity gas from a primary and reserve bank of high pressure cylinders.



53 Series Point-of-Use Panels 50

The 53 Series Point-of-Use Panels provide a modular design to mount and locate 300 Series regulators at the point of use for high purity instrumentation or process gases.



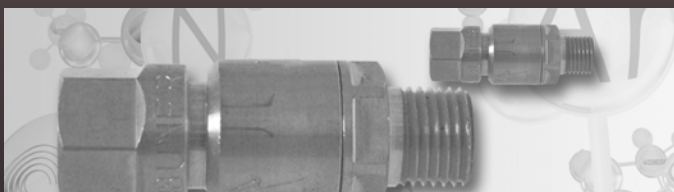
205 Series Regulator 148

The 205 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases (up to grade 4.5) or as point of use pressure control in high purity gas distribution systems.



212 Series Regulator 152

The 212 Series Regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases.



Flashback Arrestors 176

The 532 Series Flashback Arrestors prevent the transmission of flame in the supply line and equipment of high purity gas systems.

Table of Contents

CAPSULE technology	1
Lab Systems	2
Table of contents	8
CONCOA custom assembly program	11
CONCOA I-link web server technology	12
Ordering CONCOA regulators	14
How to choose a regulator	15
Ordering CONCOA flowmeters	16
Ordering CONCOA Gas Cabinet Systems	17

Distribution Systems

Cabinets

 C-Series Gas Cabinets - 1,2,3,4-cylinder models	18
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Cryogenic Systems

 577 Series CryoWiz - Electronic continuous liquid nitrogen delivery system	20
 57V Cryogenic Headers and Hose - Vacuum-jacketed components for cryogenic installations	22

IntelliSwitch Systems

538 Series IntelliSwitch II - High flow electronic switchover with CONCOA web server technology	24
539 Series IntelliSwitch - High flow electronic switchover system	26
542 Series High Flow Back-up Panel - Electronic gas generator or bulk supply reserve system	28
 544 Series IntelliSwitch IIv - High flow electronic switchover with CONCOA web server technology	30

Pressure Differential Switchovers

515 Series SilcoNert™ 1020 Switchover - automatic switchover system	32
522 Series AutoSwitch - Brass component continuous automatic gas delivery system	34
523 Series AutoSwitch - 316L stainless steel component continuous automatic gas delivery system	36
526 Series Switchover - Brass component automatic switchover system	38
 526LC Series Switchover - Brass component automatic switchover system	40
527 Series Switchover - 316L stainless steel component automatic switchover system	42
530 Series Switchover - High pressure automatic switchover system	44
537 Series AutoSwitch GL - 316L stainless steel component continuous automatic gas delivery system	46
540 Series Back-Up Panel - Single or multiple cylinder reserve	48

Panels

53 Series Point-of-Use Panels (53C, 53S) - Chrome-plated brass 307 Series regulators or stainless steel 327 Series regulators	50
54 Series Point-of-Use Panels (54C, 54S) - Brass 435 Series regulators or stainless steel 445 Series regulators	52

Manifolds

52 Series Maniflex (52B, 52C, and 52S) - Brass or stainless steel modular distribution systems	54
52L Series MicroManifold - Flexible non-corrosive gas distribution system	56
529 Series Protocol Purge Station - Brass, chrome-plated brass, or 316 stainless steel barstock	58
529 Series Protocol Standard Station - Brass, chrome-plated brass, or 316 stainless steel barstock	60
529 Series Protocol Switchover Station - Brass, chrome-plated brass, or 316 stainless steel barstock	62
529 Series Protocol Alarm Stations - Brass, chrome-plated brass, or 316 stainless steel barstock	64
529 Series Protocol Switchover Alarm Station - Brass, chrome-plated brass, or 316 stainless steel barstock	66

Alarms

Advantium 8 multi-station alarm	68
Advantium 1 & 2 PLUS single and dual channel alarms	70

400 Series Regulators

 401 Series - Single stage, chrome-plated brass barstock body, 6 ports	72
402 Series - Single stage, brass barstock body, 6 ports	74
 403 Series - Single stage, chrome-plated brass barstock body, 4 ports	76

405 Series - Single stage, 316L stainless steel brass barstock body, 4 ports	78
408 Series - Single stage, anodized aluminum barstock body, 6 ports	80
NEW 411 Series - Dual stage, chrome-plated brass barstock body, 6 ports	82
412 Series - Dual stage, brass barstock body, 6 ports	84
420 Series - Single stage, SilcoNert 1020, 6 ports	86
422 Series - Single stage, 316L stainless steel barstock body, 6 ports	88
425 Series - Single stage, 316L stainless steel barstock body, 4 ports	90
426 Series - Single stage, 316L stainless steel barstock body, 2 ports	92
427 Series - Single stage, 316L stainless steel barstock body, 2 ports, VCR® connections	94
428 Series - Single stage, 316L stainless steel barstock body, 3 ports, VCR® connections	96
429 Series - Single stage, 316L stainless steel barstock body, 4 ports, VCR® connections	98
430 Series - Dual stage, SilcoNert 1020, 6 ports	100
432 Series - Dual stage, 316L stainless steel barstock body, 6 ports	102
435 Series - Single stage, brass barstock, 5 ports, rear inlet	104
445 Series - Single stage, 316L stainless steel, 5 ports, rear inlet	106
455 Series - Electroless nickel-plated forged brass body, 4 ports, corrosive service	108
483 Series - Single stage, brass barstock body, 4 ports, ultra-high flow	110
484 Series - Single stage, 316L stainless steel barstock body, 4 ports, ultra-high flow	112
485 Series - Single stage, brass barstock body, 6 ports, ultra-high flow	114
486 Series - Single stage, 316L stainless steel barstock body, 6 ports, ultra-high flow	116
492 Series - Piston-sensed, chrome-plated brass barstock body, 6 ports, ultra-high pressure	118
493 Series - Piston-sensed, stainless steel barstock body, 6 ports, ultra-high pressure	120

300 Series Regulators

302 Series - Single stage, chrome-plated brass barstock body, 4 ports	122
304 Series - Single stage, chrome-plated brass barstock body, 3 ports	124
305 Series - Single stage, chrome-plated brass barstock body, 4 ports, flowgauge	126
307 Series - Single stage, chrome-plated brass barstock body, 4 ports, rear inlet	128
308 Series - Single stage, chrome-plated brass barstock body, 4 ports, electrically heated	130
312 Series - Dual stage, chrome-plated brass barstock body, 4 ports	132
315 Series - Dual stage, chrome-plated brass barstock body, 4 ports, flowgauge	134
322 Series - Single stage, 316L stainless steel barstock body, 4 ports	136
324 Series - Single stage, 316L stainless steel barstock body, 3 ports	138
325 Series - Single stage, chrome-plated brass barstock body, 5 ports, lecture bottle	140
327 Series - Single stage, 316L stainless steel barstock body, 4 ports, rear inlet	142
332 Series - Dual stage, 316L stainless steel barstock body, 4 ports	144

200 Series Regulators

202 Series - Single stage, chrome-plated forged brass body, 5 ports	146
205 Series - Single stage, chrome-plated forged brass body, 4 ports	148
206 Series - Single stage, chrome-plated forged brass body, 4 ports, liquid cylinder	150
212 Series - Dual stage, chrome-plated forged brass body, 5 ports	152
NEW 213 Series - Dual stage, low delivery pressure, chrome-plated forged brass body, 5 ports	154

100 Series Regulators

109 Series - Single stage, forged brass body, 5 ports	156
109 Series - Dual stage, forged brass body, 5 ports	158

Flow Control

MFM Series mass flowmeter	160
MFC Series mass flow controller	160
CCD Series controller display	162
560 Series 150mm flowmeter	164

565 Series 65mm flowmeter	166
566 Series purge meter	168
567 Series high flow flowmeter	168
Deep purges	169
Tee purges	169
Straight purges	170
 High flow diaphragm valves	170
Manual control valves	171
Needle valves	171
Muli-turn diaphragm valves	172
 Quarter-turn diaphragm valves	173
Adjustable relief valves	174
Check valves	174
Flashback arrestors	175

Accessories

 Oxygen Deficiency Monitor	176
Switchover stations	177
Manifold floor stands	177
Flexible and cryogenic hoses	178
Universal regulator mounting brackets	179
Cylinder brackets and chains	179
Leak detector	180
400 Series demo kit	180
Traps (moisture, hydrocarbon, oxygen & indicating oxygen)	181
Regulator gauges (400, 300, 200 Series)	182
Fittings & adapters	183

Appendix A - Reference Tables

CGA selection charts	184
Mixed Gas Compatibility Chart	185
Pure Gas Compatibility Chart	186

Appendix B - Regulator Flow Curves

Flow Curves for 302, 304, 305, 307, 322, 324, 327, 401, 402, 408, 420, 422, 426, 427, 428, 429 Series	188
Flow Curves for 312, 315, 332, 411, 412, 430, 432 Series	188
Flow Curves for 403, 405, 425, 435, 445 Series	189
Flow Curves for 455 Series	189
Flow Curves for 483, 484, 485, 486 Series	190
Flow Curves for 492, 493 Series	190
Flow Curves for 325 Series	191
Flow Curves for 308 Series	191
Flow Curves for 212 Series	192
Flow Curves for 205, 206 Series	192
Flow Curves for 109 and 202 Series Single Stage	193
Flow Curves for 109 Series Dual Stage	193
Flow Curves for 213 Series	194

Appendix C - Conversion Tables and Factors

Length, flow, pressure weight	195
Volume, temperature, density, concentration, scientific notation, physical constants	196

CONCOA Custom Assembly Program



CONCOA's Custom Assembly Program has been designed to meet customer needs through the design, development, and manufacture of unique products. The program is designed to provide a time-sensitive response while maintaining the high quality for which CONCOA is well known.

Using the components contained within this catalog, CONCOA can design and produce a fully-assembled solution to a variety of applications. For more information, contact CONCOA directly at 1.800.225.0473 or at info@CONCOA.com.

- Step One** Contact a CONCOA applications engineer to discuss your specific need. The engineer will then prepare and fax a drawing and quotation including lead time for review and approval.
- Step Two** Sign and return to CONCOA both the drawing and quotation. The custom assembly may be ordered, using the quotation number as the part number, at any time during the quote.
- Step Three** Once all of the documents and an order have been received, CONCOA builds the assembly to the specification, testing each product as a component and each completed custom assembly from end to end.
- Step Four** CONCOA ships the fully assembled and tested product with appropriate materials and specially-created instructions describing the intended application and gas service.

Lead times vary depending on the complexity of the design and the availability of components. For more details, contact CONCOA directly.

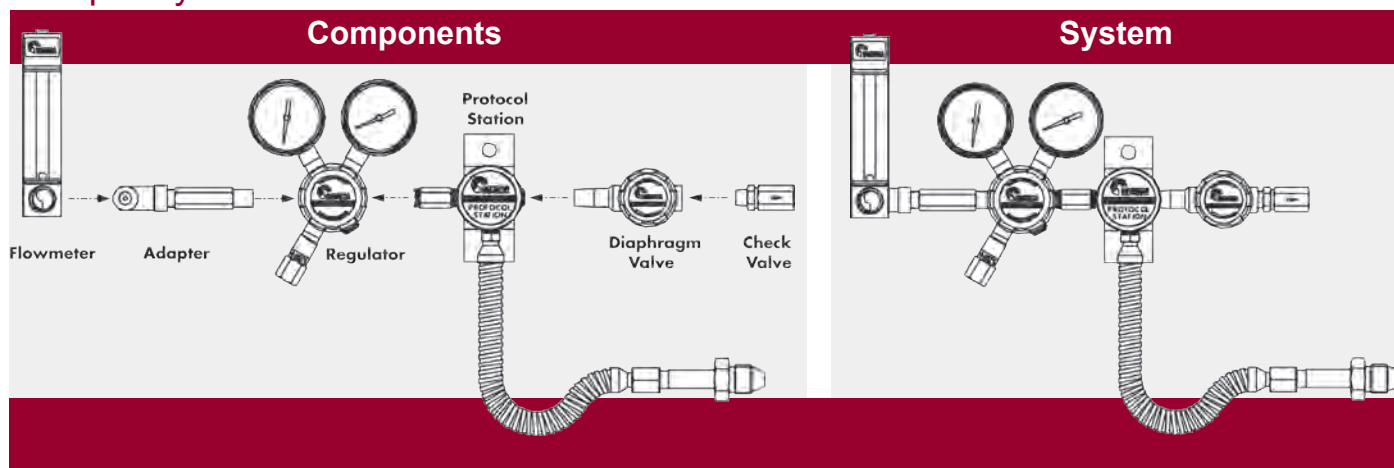
Features and Benefits

- Quick, simplified quotation process
- Rapid manufacture and assembly
- Fully-tested for leak integrity and functionality
- Quality assured through an ISO 9001-certified process
- Specific solution for gas service and application
- Complete flexibility in equipment configuration
- Customer submittal drawing and documentation
- Experienced engineers available for design consultation

Example Custom Assembly Components

- Regulators
- Flowmeters
- Check valves and relief valves
- Diaphragm valves and needle valves
- Traps and filters
- Purges and purge assemblies
- Hoses and adapters
- Protocol stations

Sample System



CONCOA's revolutionary I-Link™ Web Server technology and proprietary embedded software is available with the 577 CryoWiz, 538 Series IntelliSwitch II, 544 Series IntelliSwitch IIv, and the 542 Series High Flow Backup. This new technology allows users to remotely monitor and configure the functions and operation of the systems by configuring the built-in application software via a web browser. This system can be configured to send e-mail notifications to alert the administrator of any interactions with the unit, such as unauthorized changes to settings directly on the unit or upon alarm activation.

538 Series IntelliSwitch II

DELIVERY
PSI OXYGEN

75

LEFT
PSI OXYGEN

355

STATUS
☒ READY ☐ REPLACE ☐ IN-USE

CYLINDER SELECTION
☐ 230 PSI ☐ 350 PSI ☒ 500 PSI ☐ H. P.

RIGHT
PSI OXYGEN

2185

STATUS
☒ READY ☐ REPLACE ☐ IN-USE

CYLINDER SELECTION
☐ 230 PSI ☐ 350 PSI ☐ 500 PSI ☒ H. P.

SWITCHOVER PRESSURE

135

HYSTERESIS

10

LOOK BACK

30

SWITCH BACK

10

VERSION

3.00

SYSTEM I.D.

1



REFRESH
EDIT

EVENT LOG

CLEAR
PRINT

Left Side U/P Alarm - 120
Delivery Regulator U/P - 120
Error - Calibration Incomplete
Cylinder Selection Changed - LF-ON, RT-OFF
Alarm Clear - Left Side U/P

R.72

The web server STATUS screen depicted above first appears when the IntelliSwitch II is accessed through the web server.

This screen has real time display of critical readings and settings such as:

- Inlet and delivery pressures
- Bank status
- Selected gas source
- Alarm status
- Switchover set point
- Gas type and system I.D.
- Status log

CONCOA Web Server Technology



538 Series IntelliSwitch II

SWITCHOVER PRESSURE: 135

LOOK BACK: 30

SWITCH BACK: 10

HYSTERESIS: 10

LEFT CYLINDER: 230 PSI, 350 PSI, 500 PSI, H.P.

RIGHT CYLINDER: 230 PSI, 350 PSI, 500 PSI, H.P.

UNITS OF MEASURE: PSI, BAR, MPA

GAS SOURCE: LEFT, RIGHT

LEFT OFFSET: -20

RIGHT OFFSET: 0

SYSTEM I.D.: 1

GAS TYPE: 1

KEYPAD: LOCK, UNLOCK

CANCEL, SET, UNDO, ZERO SET, RESTORE DEFAULTS, EMAIL 1, EMAIL 2

The web server EDIT screen depicted above is password protected and allows the user to access the operating parameters of the 538 Series IntelliSwitch II.

From this secure screen, the user can change functions such as:

Switchover pressure

Look back and switchback times

Keypad lockout

Gas type and system ID

Transducer calibration

Units of measure

This hi-tech system will also remotely change the gas source from side to side. E-mail alerts are configured on this screen to enable the unit to communicate alarms and/or any event, making it ideal for managing critical gas supply.

GEN: 69 PSI Oxygen

INLET: 1510 PSI Oxygen

REPLACE PRESSURE: 500

INLET HYSTERESIS: 10

SYSTEM I.D.: 1

VERSION: 1.01

PRINT LOG, CLEAR LOG, CLEAR ALARMS, REFRESH, EDIT

542 Series High Flow Backup

The web server STATUS screen depicted on the left is what appears first when the 542 Series High Flow Backup is accessed through the web server.

This screen has real time display of critical readings and settings such as

Primary pipeline or primary supply pressure

Reserve or backup supply pressure

Alarm status

Reserve or backup low replace alarm

Reserve or backup alarm set point

Gas type and system I.D.

Status log

Ordering CONCOA Regulators

In accordance with our philosophy of flexible design, CONCOA has developed a versatile modular manufacturing system to accommodate any individual requirement. With all the options CONCOA offers, listing part numbers for each regulator series would be impossible. Therefore, we have created a Part Number Matrix which allows you to design a regulator to meet the needs of any application.

Step One

The first choice in completing the Part Number Matrix is selecting a particular regulator series. Determine which regulator series are compatible with the gases involved in the application by consulting the table which starts on page 185. For further criteria, examine page 15 entitled "How to Choose a Regulator, or view the description of each regulator series in this catalog. If you are having difficulty choosing, feel free to call CONCOA for a recommendation. The regulator series number then becomes the first three digits of the part number.

Step Two

Select the desired outlet pressure range from those available in the **A** column. The selection of an outlet pressure range automatically specifies the outlet pressure gauge which appears in the adjacent column. For example, a regulator with a 0-250 PSIG (17 BAR) outlet pressure range will have a 0-400 PSIG (0-27 BAR) pressure gauge installed.

Step Three

Choose the inlet pressure gauge from those available in the **B** column. While the most common cylinder pressure is between 2200 PSIG (150 BAR) and 2400 PSIG (165 BAR), several gases are stored in cylinders at other pressures. Choosing the inlet gauge with a range that most closely approximates the actual pressure range of the cylinder allows easy readability of cylinder contents. Please note that by indicating the 0-6000 PSIG (0-405 BAR) inlet gauge, you are also selecting a special PCTFE CAPSULE® with a maximum inlet pressure of 4500 PSIG (310 BAR).

Step Four

Indicate the outlet assembly desired from those available in the **C** column. Since there are a wide variety of tubing and piping systems in use, the matrix accommodates virtually any style of connection, eliminating the need for adapters and reducing potential leak paths. CONCOA also offers a choice of valve options for gas flow control.

Step Five

Select an assembly option from those available in the **D** column. A bare body regulator is shipped without peripherals, with all ports open and unplugged. A standard assembly regulator comes completely assembled with all selected peripherals, ready for use; a cleanroom regulator is completely assembled in a Class 10 environment.

Step Six

Specify an inlet connection. On all regulator series, CONCOA will provide any CGA, DIN 477, BS 341, or other standard connection provided it is recognized as safe for the materials of construction and pressure rating of the regulator. Consult your gas supplier for proper selection of the inlet connection. A "-000" at the end of the part number indicates no inlet connection (1/4" female NPT for most regulators).

Step Seven

Choose an installed option from a range of protocol stations and purges. By ordering these options as a component of the part number, CONCOA can assure the materials, maximum pressure, and connections of the option chosen are appropriate. See information on Protocol Stations and purges.

422	A		B	C	D	-CON	Options
Series 422	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting	6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT	7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	8: 0-6000 PSIG/ 0-405 BAR	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
	*Not available with 4500 PSIG (310 BAR) maximum inlet pressure **Standard assembly does not include relief valve	*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®	6: 1/8" tube fitting				R: SilcoNert™ 1020
			7: 3/8" tube fitting				S: Stainless steel bonnet
			8: Diaphragm valve 1/8" tube fitting				*Not available with 4500 PSIG (310 BAR) max inlet pressure
			9: Diaphragm valve 1/4" FPT				
			M: 6mm tube fitting				

How to Choose a Regulator

While all regulators can reduce pressure in a gas system, CONCOA high purity regulators conform to very exacting standards of pressure control. Below, we discuss some basis of comparison that can help you navigate this catalog and choose a regulator that best suits your needs. Of course, our Customer Service representatives would be happy to answer any further questions you may have about regulator design and operation.

Single Stage vs. Dual Stage

Single stage regulators reduce pressure in a single step to deliver a pressure within a specific range. Regulators designed in this way will show a slight variation in delivery pressure as the cylinder pressure falls during use. For this reason, single stage regulators are best suited for applications where a constant outlet pressure is not critical, where an operator can monitor and readjust pressure, or where inlet pressure is constant. Dual stage regulators perform the same function as single stage regulators. However, delivery pressure remains constant as cylinder pressure decreases, and greater accuracy in pressure control is maintained because the pressure reduction is performed in two steps. Dual stage regulators are recommended for applications requiring a constant outlet pressure over the life of a gas cylinder.

Helium Leak Integrity

Helium Leak integrity is a measurement of how well a regulator prevents gases from leaking into or out of a regulator body. The measured quantity is expressed as a flow rate such as 1×10^{-9} cc/sec He (1 billionth of a cc/sec). In this case, a Helium Leak integrity rating of 1×10^{-9} would indicate that the regulator would leak enough gas to fill one cubic centimeter every 33 years. If the rating were 1×10^{-3} , the regulator would leak enough gas to fill one cubic centimeter in just 17 minutes. Helium is used as the test gas because it is chemically inert, it is easy to detect, and it is an extremely small molecule with the ability to pass through the smallest leak. The lower the Helium Leak specification, the better the regulator will be at preventing leaks into the atmosphere and at minimizing contamination from gases outside the body.

Materials of Construction

The materials of construction for a regulator should be selected based on the properties and purity of the gas being used. CONCOA manufactures regulators from brass, aluminum, and 316L stainless steel. Brass is compatible with most of the non-reactive gases. A choice of forged body or barstock construction is available. Forged body regulators are economical; however, their internal surface finishes are relatively rough as compared to barstock body regulators. Barstock body regulators have all wetted surfaces machined to a smooth finish, which reduces the possibility of contamination. 316L stainless steel is highly corrosion resistant and is suitable for use with many of the highly corrosive gases in their anhydrous form. Aluminum is an economical lightweight alternative to stainless steel for many of the mildly corrosive gases. Refer to the compatibility charts on pages 185-186 or consult your gas supplier to determine suitable materials of construction.

Cylinder Connections

CONCOA manufactures cylinder connections which conform to all worldwide standards. In the US, the Compressed Gas Association (CGA) has designated specific cylinder connections for each gas service and pressure rating. Refer to CGA publication V-1 for more information. A few of the international standards CONCOA provides include DIN 477, BS 341, JIS (Japan), and AS (Australia). Please note that a CGA connection limits the temperature range of a regulator to the guidelines of the connection.

Flow Charts

The flow charts found on pages 188-194 are a graphical representation of test results which show the change in outlet pressure. To use the chart, determine the maximum no-flow pressure permitted by your system. Locate this pressure on the vertical axis of the chart. If there is no curve for your specific condition, interpolate a curve. Follow the curve to the desired flow rate on the horizontal scale. Read horizontally to the left to determine the corresponding pressure drop. Because flow rate is dependent upon inlet pressure, data is presented at full cylinder pressure 2000 PSIG (137 BAR), partially full 500 PSIG (34 BAR), and nearly empty 200 PSIG (14 BAR).

Diaphragms

The diaphragm is a sensing element crucial to the function of the regulator and the purity of gas delivery. Stainless steel diaphragms are corrosion resistant and have low leakage rate characteristics. Neoprene diaphragms may offer more sensitive pressure control but do not offer the gas purity of stainless steel. Coating a neoprene diaphragm with PCTFE enhances gas purity greatly.

Specific Applications

While a single or dual stage regulator of the appropriate material will suffice in most gas services, some applications require specially designed regulators. For example, within the 400 Series, the 455 Series regulators are specifically designed for use with highly corrosive gases, while the 492 Series regulators can safely deliver gas at extremely high pressures. Regulators with SilcoNert™ 1020 such as the 420 Series, 430 Series and the 515 Series are ideal for low sulfur application standards and calibration. If you are unsure about your requirements, please contact CONCOA for assistance.

Ordering CONCOA Flowmeters

Step One

The first choice in completing the Part Number Matrix is selecting a particular flowmeter series, depending on size and features desired. The flowmeter series number then becomes the first three digits of the part number.

Step Two

The tube size from the **A** column and the float material from the **B** column are predicated entirely on flow conditions. The selection chart that accompanies the ordering information gives the flow rates of air at standard conditions (14.7 PSIA and 70°F). To determine flow rates for gases other than air at standard conditions, first decide the flow conditions including the specific gravity of the gas (see table), pressure, and temperature of the gas. Next, use the equations below to convert the flow rate of the gas desired in either SCFH or ml/min (see pages 195-196 for conversion information) to the equivalent flow capacity of air at standard conditions.

$$Q_{\text{air}} = K_{\text{gas}} \times Q_{\text{gas}}$$

$$K_{\text{gas}} = \sqrt{G \times \frac{T}{530} \times \frac{14.7}{P}}$$

Q_{air} = Equivalent flow capacity of air at standard conditions

Q_{gas} = Maximum flow of metered gas (in SCFH or ml/min)

G = Specific gravity of metered gas (see table)

T = Absolute temperature (°F + 460) of metered gas at flow conditions

P = Absolute pressure (PSIG + 14.7) of metered gas at flow conditions

Using the equivalent air flow, select a tube size and float material from the selection. These two numbers, representing choices from the **A** column and the **B** column become the next two digits of the part number.

Gas	Specific Gravity
Acetylene	0.9073
Air	1.0000
Ammonia	0.5963
Argon	1.3796
Butane	2.0854
Carbon Dioxide	1.5290
Chlorine	2.4860
Ethane	1.0493
Ethylene	0.9749
Helium	0.1380
Hydrogen	0.0659
Methane	0.5544
Nitrogen	0.9672
Nitrous Oxide	1.5297
Oxygen	1.1053
Propane	1.5620
Sulphur Dioxide	2.2638

Step Three

Choose the material from the options in the **C** column. Refer to the chart beginning on page 185 for material compatibility. A "0" indicates a tube and float without a frame, either as a replacement for the appropriate size frame or as a component of a multi-tube flowmeter.

Step Four

Select a valve option from those available in the **D** column. A high accuracy valve provides better resolution than a standard valve. Finally, specify an end connection from those available in the **XX** column. These three digits, preceded by a dash, become the final digits in the part number.

For example, using the table below to order a 2.55" (65mm) flowmeter with a maximum flow capacity equivalent to air at standard conditions of 280 ml/min (0.59 SCFH), a 316 stainless steel frame, a standard valve, and a 1/4" compression tube fitting connection, the part number would be 565 1421-TF4.

565	A	B	C	D	-CON(X)
Series	Tube Size*	Float Material*	Material	Valve	End Connection*
565	1: 1	1: Glass	0: No frame* (fitting and float only)	0: No valve	000: 1/8" FPT
	2: 2	2: Sapphire	1: Black anodized aluminum†	1: Standard valve	TF2: 1/8" tube
	3: 3	3: 316L stainless steel	2: 316L stainless steel†	2: High-accuracy valve	TF4: 1/4" tube
	4: 4	4: Carbolloy			HB4: 1/4" hose barb
	5: 5				*For epdm/epi seals, add "E" after the end connection. For kalrez® seals, add "K" after end connection.
	6: 6				
	7: 7				
	8: 8				
	9: 9				

Ordering CONCOA Gas Cabinet Systems



Ordering Instructions

CONCOA C-Series Gas Cabinets are available with a variety of CONCOA gas equipment configurations. For example, to order a single-cylinder cabinet system with a 422 Series regulator with an outlet pressure range of 0-50 PSIG (0-3.5 BAR), a 0-4000 PSIG (0-275 BAR) inlet pressure gauge, a diaphragm valve with a 1/4" compression tube fitting, PSIG/kPa pressure gauges, and a CGA 580 connection for Nitrogen service with Protocol Station, the part number would be:

C1-422 2331-350M

If ordering a 2-cylinder cabinet with 527 Series switchover with 200/170 PSIG (13.5/11.5 BAR) switching pressure with a 0-150 PSIG (0-8 BAR) line regulator for Hydrogen use with 36" (900mm) hoses, the part number would be:

C2-527 4171-350

Standard regulator
part number selection

C1-XXX XXX-XXX One cylinder cabinet system for 400, 300, and 200 Series regulators with 529 Protocol Station systems.

Standard regulator/switchover
part number selection

C2-XXX XXX-XXX Two cylinder cabinet system for use with 526, 527, 515, 530, 540 and 542 Series system, 529 Series Protocol Station systems, and with all 400, 300, and 200 Series regulators.

C3-XXX XXX-XXX Three cylinder cabinet system for use with 526, 527, 515, 530, 540 and 542 Series systems, 529 Series Protocol Station systems, and with all 400, 300, and 200 Series

C4-XXX XXX-XXX Four cylinder cabinet system for use with 526, 527, 515, 530, 540 and 542 Series systems, 529 Series Protocol Station systems and with all 400, 300, and 200 Series regulators.



C Series Gas Cabinets

CABINETS

The CONCOA C-Series Gas Cabinet Systems are designed to provide unparalleled protection to both the mounted gas supply system and their attached gas cylinders. Constructed with sturdy 11-gauge thick steel, the cabinets are built to meet international fire codes. Cabinets come pre-installed with a 165°F (73.8°C) sprinkler head near the exhaust vent. Cabinet doors and windows are made to close and latch automatically. The welded unibody construction and rigid cylinder brackets increase sturdiness of the cabinet in the event of fires or earthquakes.



Cabinets come in one-, two-, three-, and four-cylinder models and can be assembled with the following:

- Manifolds and Switchovers (C2, C3 and C4 series only) :
- 515 Series SilcoNert™ 1020 Switchover
- 526 Series Switchover
- 527 Series Switchover
- 530 Series Switchover
- 540 Series Generator Back-Up Panel
- Protocol Stations (All C-Series):
- 529 Series Protocol Stations (purge, switchover and alarm series)
- Regulators (All C-Series):
- All 400, 300, and 200 Series regulators

Features

All Welded 11-Gauge Steel Construction

Protects cylinders and valves from damage

Epoxy Painted

Tough, protective coating

Sprinkler Head

Isolated fire protection

Removable White Back Panel

Facilitates ease of maintenance

Adjustable Brackets

Allow for precise hose alignment

Automatic Closing Door and Window

Prevent unwanted access to cylinder and gas system

Ventilation Louvers

Provide cabinet interior with adequate air flow circulation

Materials

Enclosure

11-gauge, .119" (3.02mm) thick steel
Epoxy paint, smooth inside, textured exterior
Fire-rated window

Fasteners

Stainless steel

Specifications

Exhaust Duct

6" (152.4mm) diameter
3" (76.2mm) high

Sprinkler Head

165°F (73.8°C) activation point
Beeswax coated

Adjustable Cylinder Brackets

Accommodates 7" (177.8mm) to
9" (228.6mm) diameter cylinders.
Chain and strap included.

Window

1/4" thick clear wire glass

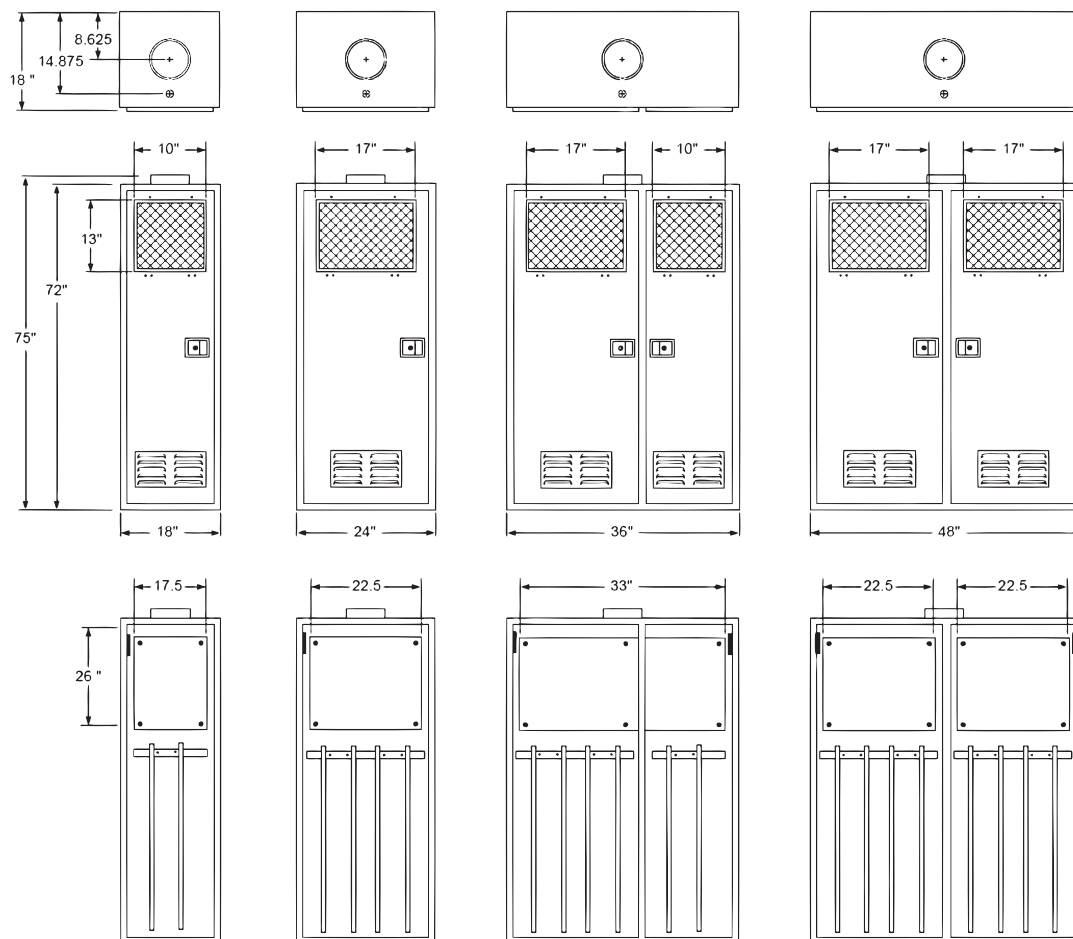
Empty Weight

C1: 250 lbs (113 kg)
C2: 275 lbs (125 kg)
C3: 375 lbs (170 kg)
C4: 470 lbs (213 kg)

C Series Gas Cabinets



C Series Cabinet Installation Information



Order Information

Cabinet	Cylinders	Regulator/Switchover Part Number	Description
C	1: One	XXX XXXX-XXX	One cylinder cabinet system for 400, 300, and 200 Series regulators with 529 Protocol Station Systems.
	2: Two		Two cylinder cabinet system for use with 515, 526, 527, 530, and 540 Series systems, 529 Series Protocol Station systems, and with all 400, 300, and 200 Series regulators.
	3: Three		Three cylinder cabinet system for use with 515, 526, 527, 530, 540 and 542 Series systems, 529 Series Protocol Station systems, and with all 400, 300, and 200 Series regulators.
	4: Four		Four cylinder cabinet system for use with 515, 526, 527, 530, 540 and 542 Series systems, 529 Series Protocol Station systems and with all 400, 300, and 200 Series regulators.

For example, to order a single-cylinder cabinet system with a 422 Series regulator with an outlet pressure range of 0-50 PSIG (0-3.5 BAR), a 0-4000 PSIG (0-275 BAR) inlet pressure gauge, a diaphragm valve with a 1/4" compression tube fitting, PSIG/kPa pressure gauges, and a CGA 350 connection for hydrogen service with Protocol Station, the part number would be: **C1-4222331-350M**. If ordering a 2-cylinder cabinet with a 527 Series switchover for hydrogen use, the part number would be: **C2-5274171-350**.

Cabinets Installed Distribution Equipment

Option	Order Number	Description
C1	518 2001	One cylinder cabinet
C2	518 2002	Two cylinder cabinet
C3	518 2003	Three cylinder cabinet
C4	518 2004	Four cylinder cabinet

577 SERIES

CryoWiz™

The CONCOA CryoWiz delivers a continuous supply of liquid nitrogen from a primary and secondary source automatically with no temperature change. The CryoWiz uses a proprietary algorithm and precise pressure and temperature sensors to monitor the demand for and supply of the liquid nitrogen. With a unique insulated switching mechanism, high flow pneumatic control valves, and hot gas bypass programming, the CryoWiz automatically switches sources with virtually no change in delivered cryogenic temperature. Ensuring both consistent temperature and continuous supply, the CryoWiz is ideal for critical cryogenic applications such as cryopreservation and environmental chambers.

Typical Applications

Cryopreservation
Control Rate Freezers
Environmental Chambers
Subambient Gas Chromatography
Cryogenic Research



Features

Automatic Proprietary Control Algorithm

Ensures continuous efficient supply

Insulated Switching Mechanism

Minimizes flash loss of liquid

High Flow Pneumatic Control Valves

Supplies multiple freezers

Hot Gas Bypass

Eliminates flash loss

Single Compact NEMA 12 Enclosure

Occupies less space easy to install

Remote Monitoring

USB and ethernet communication
24,000 event date and time log

Oxygen Deficiency Relay Contact

Ensures OSHA safe use

Local Audible and Visual Alarm

On-board emergency monitoring

Optional Remote Alarm

Advantium 1 PLUS
Advantium 2 PLUS
Advantium 8

Materials

Enclosure

Powder coated NEMA 12

Internals

Brass barstock

Cryogenic Relief Valves

35 PSIG (2.4 BAR)
50 PSIG (3.5 BAR) optional
1/2" FPT

Hot Gas Bypass

1/2" FPT

Maximum Inlet Pressure

22 PSIG (1.5 BAR)
35 PSIG (2.4 BAR) optional

Inlet Connection

1/2" FPT

Outlet Connection

1/2" FPT

Drain

1/2" PVC

Specifications

Alarm Output

1 or 5 dry contact NC

Alarm Inputs

O₂ deficiency relay

Dry Nitrogen (Gaseous)*

100 PSIG (7 BAR) max
75 PSIG (5 BAR) min
Inlet: 1/8" FNPT

* Required for pneumatics

Communication Ports

USB (maintenance only)
Ethernet (optional)

Power

120 VAC or 220 VAC

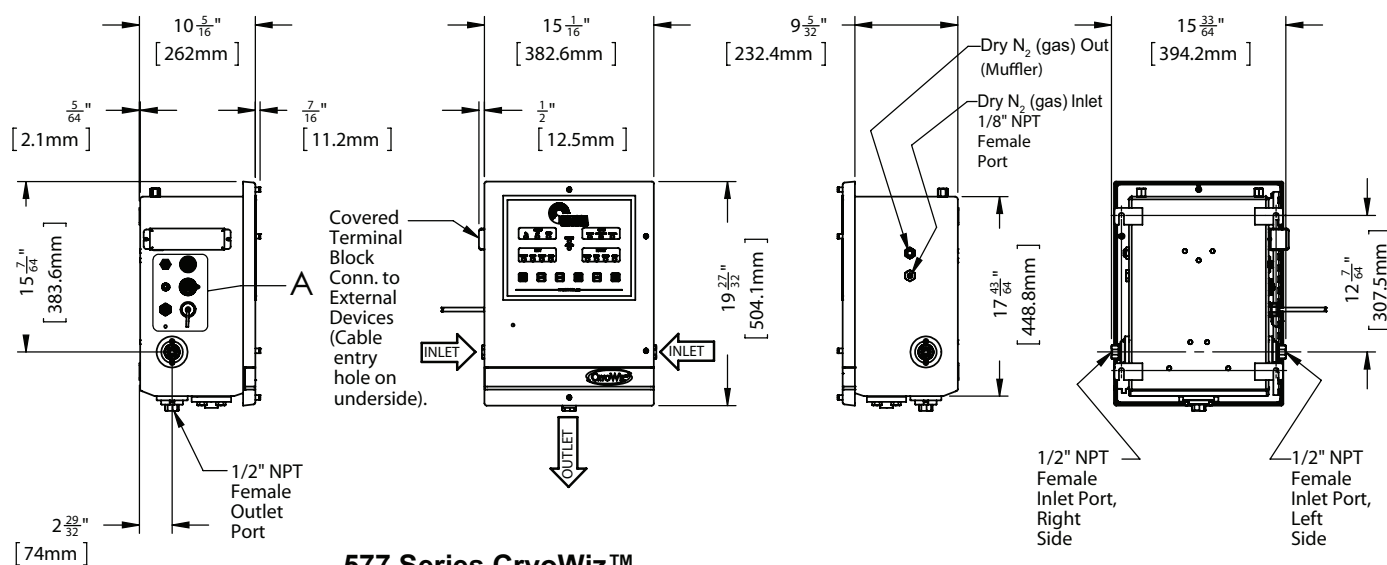
Weight

40 lbs (18 kg)

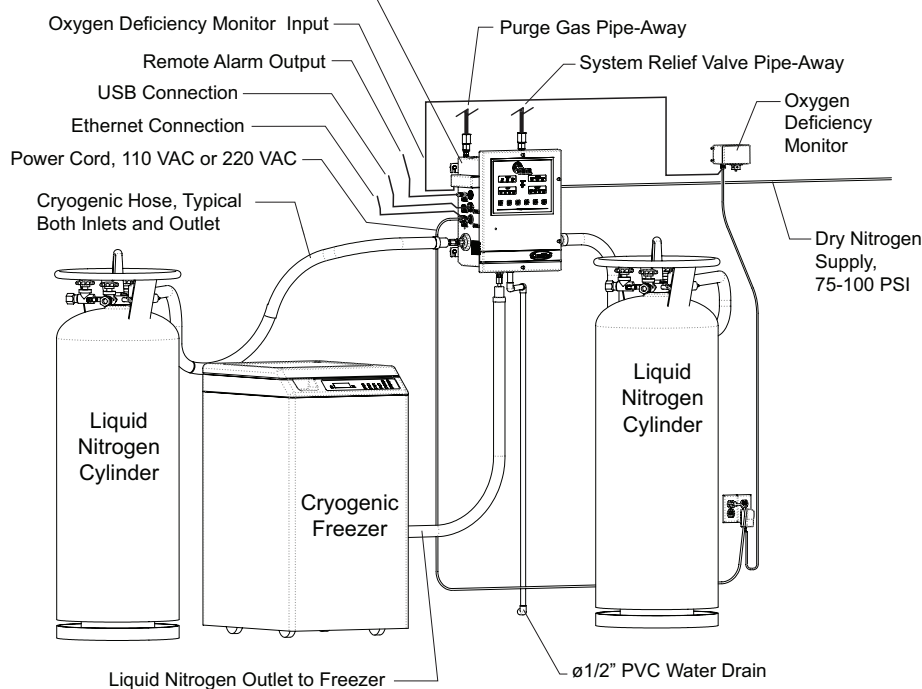
Cryogenic Systems



Installation Information



577 Series CryoWiz™



Ordering Information

577	A	B	C	D	-E	FG
Series 577	Cryogen	Outlet Connection	Relief Valve	Assembly	Inlet	Web Server
	1: Nitrogen	0: 1/2" FPT	0: 35 PSIG (2.4 BAR)	2: 120 VAC	0: 1/2" FPT	00: With Web Server
		1: CGA 295	1: 50 PSIG (3.5 BAR)	3: 220 VAC	1: CGA 295	01: Without Web Server

Related Option

Order No.	Description
57V series	Vacuum-jacketed hoses and headers
580 3004	Oxygen Deficiency Monitor

57V

Cryogenic Headers and Hoses

The CONCOA 57V cryogenic headers and hoses are designed to work with the CONCOA 577 CryoWiz cryogenic switchover system to provide a complete cryogenic solution for continuous liquid nitrogen supply. The 57V cryogenic headers are constructed from vacuum-insulated rigid pipe. Multi-layer insulation and getter materials are employed to maintain a high thermal efficiency for low heat leak. The annular space is evacuated at a pressure of 1×10^{-6} mm Hg under 250°F (121.1°C) heat and is tested with a helium mass spectrometer with 1×10^{-9} cc/sec sensitivity. The headers come as simplex for one side or duplex for both sides in either standard 18" (458mm) or compact 10" (254mm) on center spacing. Custom designs and custom downstream vacuum-jacketed pipelines are also available. The 57V series uses vacuum-jacketed flexible hoses with CGA 295 swivel end connections for easy installation and leak tight seals.

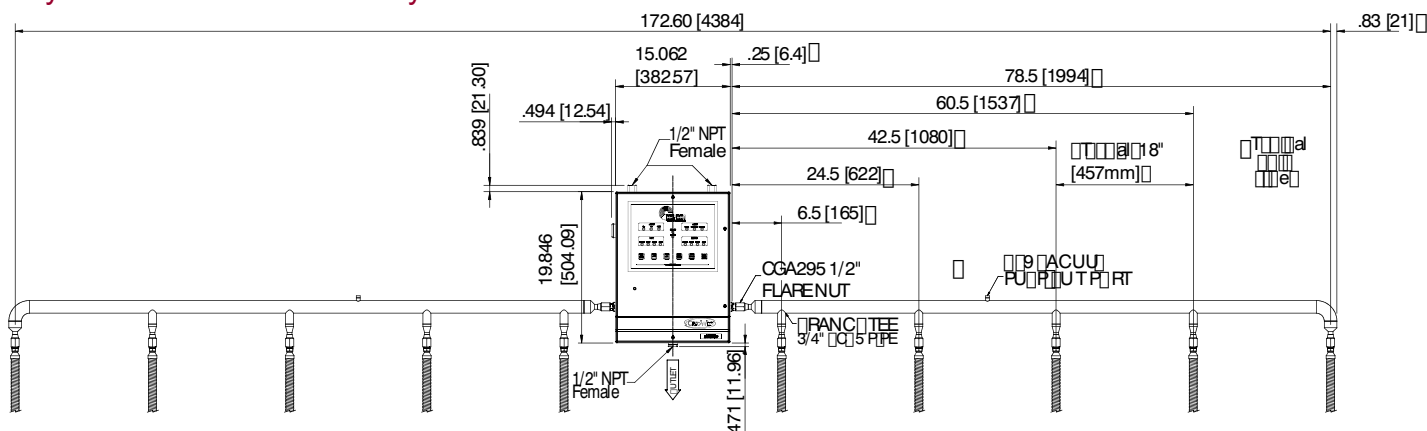


Cross section of vacuum-jacketed hose shown

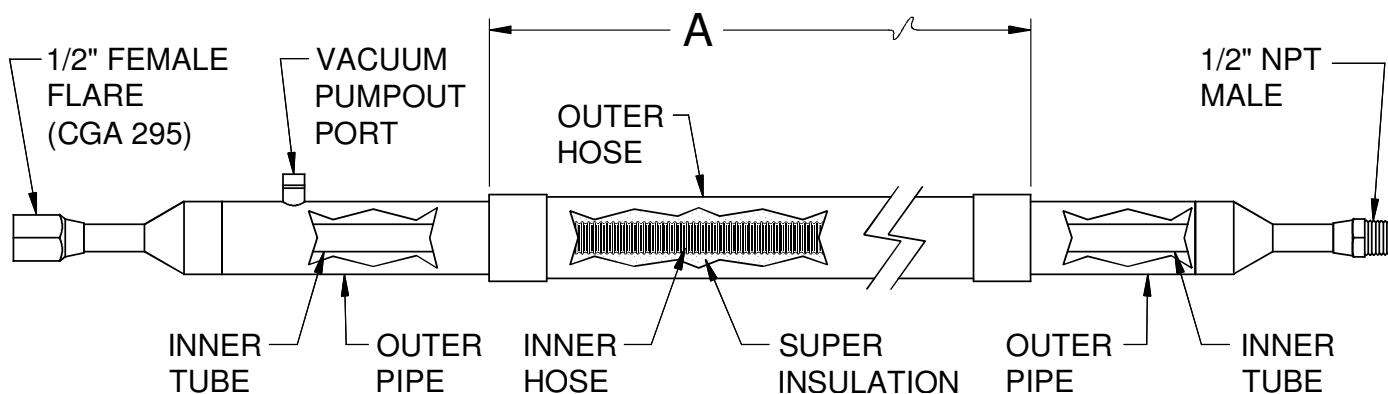
Features	Materials	Specifications
1x10⁻⁶ mm Hg Annular Vacuum Low heat transfer Multi-layer Insulation Prevents radiant and convective heat transfer 1x10⁻⁹ cc/sec Helium Leak Tested Guaranteed performance Rigid 304 Stainless Steel Pipe Rugged construction Active Getters Extended service life SV-9 Pump Out Port Continued serviceability	Header Outer Pipe 1 1/4" (37.75mm) 304 stainless steel Inner Tubing 1/2" (12.7mm) .035 wall 304 stainless steel Fittings 316L stainless steel barstock Hose Outer Braid 304 stainless steel Inner Braid 316L stainless steel Inner Core 304 stainless steel	MAWP (Header) 150 PSIG (10 BAR) MAWP (Hoses) 115 PSIG (7.9 BAR) standard Heat Leak 0.89 BTU per hour per foot (3.1 J per hour per mm)

Installation Dimensions

CryoWiz with 57V Header System



57V Cryogenic Hose



Ordering Information

57V		A	B	C	D
Series 57V	Orientation		Stations	Hose Style	Outlet Connection
	1: Standard single row (right or left) 18" (457mm) spacing		2: 2 Stations	1: No hose (1/2" FPT port on header)	1: CGA 295 female
	2: Standard single row duplex (right and left) 18" (457mm) spacing		3: 3 Stations	2: No hose (CGA 295 male port on header)	
	3: Compact single row (right or left) 10" (254mm) spacing		4: 4 Stations	3: 36" (900mm) vacuum jacket	
	4: Compact single duplex (right and left) 10" (254mm) spacing		5: 5 Stations	4: 48" (1200mm) vacuum jacket	
				5: 72" (1800mm) vacuum jacket	

Options and Hoses

Option	Order Number	Description
Vent Manifold Kit	52L series	Wall-mounted manifold designed to equalize liquid cylinder head pressure
Vacuum-Jacketed Hoses	551-2000	36" (900mm) Vacuum-jacketed cryogenic hose
	551-2001	48" (1200mm) Vacuum-jacketed cryogenic hose
	551-2002	75" (1900mm) Vacuum-jacketed cryogenic hose



538 SERIES

IntelliSwitch II

The fully-automatic 538 Series IntelliSwitch II™ gas switchover is CONCOA's revolutionary new generation of gas management systems. The IntelliSwitch II features an proprietary onboard I-Link web server technology allowing remote monitoring, secure system configuration, and e-mail notification of real-time system status and events. It is ideally suited to interchangeable service/continuous supply in analytical laboratory, chemical process, instrumentation, and critical gas supply applications. The IntelliSwitch II offers continuous gas pressure and flow control from liquid or high pressure cylinder sources. The end-user selects the mode of supply by the simple push of a button. Proprietary software logic lowers yearly gas costs by eliminating liquid cylinder vent loss and excess residual return.



Typical Applications

High purity non-corrosive non-flammable gas supply
Gas chromatograph and mass spec carrier and support gases
Inductively coupled plasma (ICP) and ICP-mass spec continuous gas supply
Incubator CO ₂ and Nitrogen gas supply
Biotech, pharmaceutical and forensic gas systems
Microbulk changeover supply
Central gas supply system for laboratory, research or process plants

Features

Micro-Processor Control Fully automatic priority assignment
Remote and Field-Adjustable Software Enables process flexibility and remote monitoring
On-Site or Remote Source Selection Liquid cylinder or high-pressure service
On Board Web Server and Remote Software Enables monitoring and control functions
Low Loss Technology Reduces residual return
Electronic Economizer Eliminates liquid cylinder vent loss
Process Gas Pilot Valve Simple installation
RS 232 Communication Provides remote monitoring of supply
NEMA 4 Enclosure Standard Install anywhere

Materials

Regulator and Valve Bodies Brass barstock
Valve Stems 316L stainless steel
Valve Seats PCTFE
Seals PTFE, PCTFE and Viton®
Enclosure NEMA 4 powder-coated steel

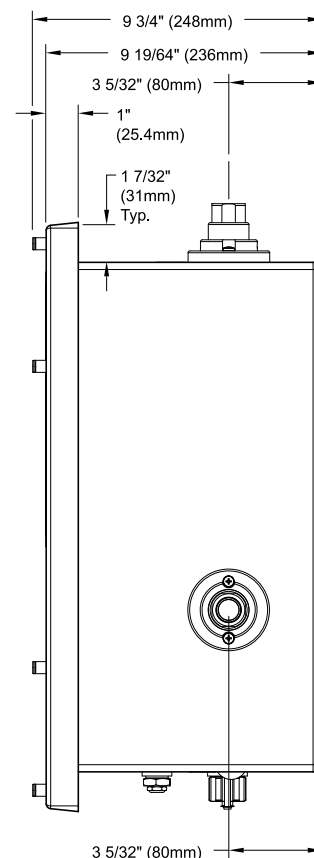
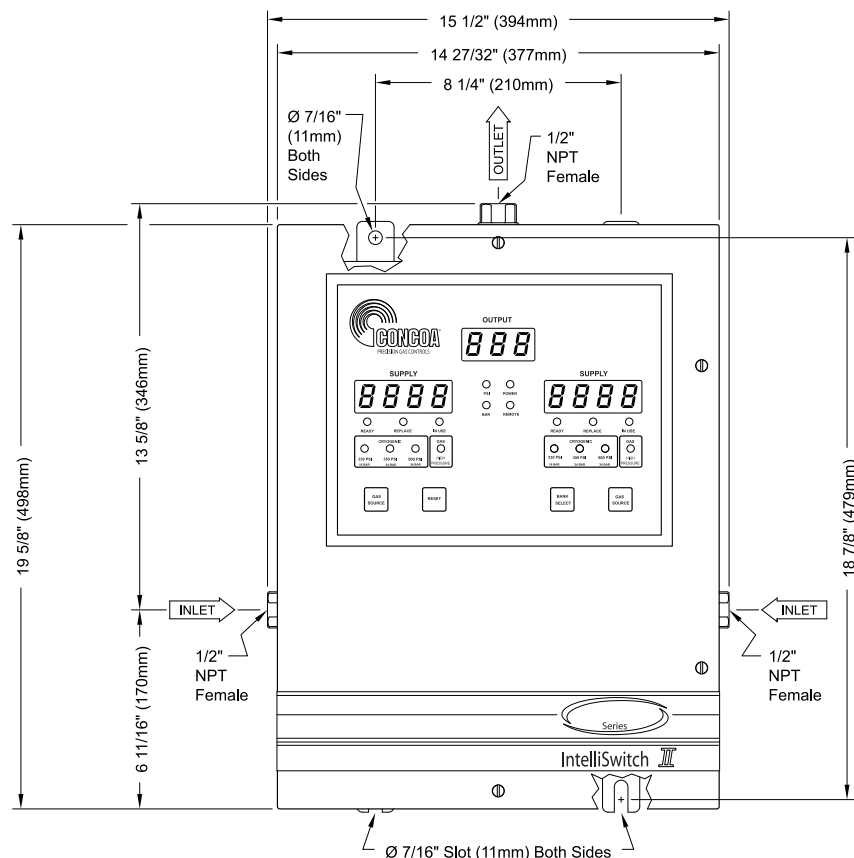
Specifications

Power Requirements 110 or 220 VAC (terminal block provided with 1/2" conduit hole)
Maximum Inlet Pressure 3000 PSIG (210 BAR)
Temperature Range 0°F to 140°F (-18°C to 60°C)
Flow Capacity Cv = 1.0
Filter 40 micron
Inlet Connection 1/2" FPT
Outlet Connection 1/2" FPT
Weight 67 lbs. (30.4 kg)

IntelliSwitch Systems



Installation Dimensions



Ordering Information

538	A	B	C	D	-CON
Series 538	Delivery Pressure	Right Side Connection	Left Side Connection	Assembly	Hose
	C: 100 PSIG (7 BAR)	0: 1/2" FPT port	0: 1/2" FPT port	6: 120 VAC	Please specify inlet connection (if applicable)
	D: 150 PSIG (10 BAR)	1: Diaphragm valves with 36" (900mm) stainless flexible hose	1: Diaphragm valves with 36" (900mm) stainless flexible hose	7: 240 VAC	
	E: 200 PSIG (14 BAR)	2: Diaphragm valves with 72" (1800mm) stainless flexible hose	2: Diaphragm valves with 72" (1800mm) stainless flexible hose		CGA DIN 477 BS 341 and others available.
		3: Manifold connector*	3: Manifold connector*		
		*See pages 54-55 for manifold ordering information			

Related Options

Option	Order Number	Description
Remote Alarm	Advantium Series	Provides audible and visible notification of a depleted supply bank to a remote location (See pgs. 68-71)
Vent Manifold Kit	52L Series	Wall-mounted manifold designed to equalize liquid cylinder head pressure
Switchover Station	518 1625	Safely mount and secure any switchover and two cylinders
AutoSwitch Floor Stand	830 7439	Support IntelliSwitch enclosure
Manifold Floor Stand	830 7437	Supports two standard length 12" (304.8mm) manifold extensions installed consecutively



IntelliSwitch Systems

539 SERIES

IntelliSwitch

The 539 Series IntelliSwitch™ is CONCOA's original fully-automatic computer controlled Universal Gas Management System that can provide continuous supply of gas from either cryogenic liquid cylinders or high pressure gas cylinders, or any combination of both. These systems are ideal for use with high purity and ultra high purity gases for laboratory gas chromatograph, gas chromatograph mass spectrometer, inductively coupled plasma or inductively coupled plasma mass spectrometer support gases as well as for use with CO₂ or Nitrogen for cell culture incubators. The proprietary software ensures optimal use and savings especially from cryogenic cylinders sources and can greatly reduce or eliminate venting and residual gas return.

Typical Applications

High purity non-corrosive non-flammable gas supply
Gas chromatograph and mass spec carrier and support gases
Inductively coupled plasma mass spectrometer (ICP-mass spec) continuous gas supply
Incubator CO ₂ and Nitrogen gas supply
Biotech, pharmaceutical and forensic gas systems
Microbulk changeover supply
Central gas supply system for laboratory, research or process plants



Features

Microprocessor Control Fully automatic priority assignment
Field Adjustable Parameters Enables process flexibility
On-Site Source Selection Liquid cylinder or high-pressure service
Low Loss Technology Reduces residual return
Electronic Economizer Eliminates vent loss from 230 PSIG (15 BAR), 350 PSIG (24 BAR), or 500 PSIG (34 BAR) liquid cylinders
Process Gas or Air Actuated Pilot Valves Simple installation
RS 232 Communications Provides remote monitoring of supply
NEMA 12 Enclosure Powder coated for indoor use only

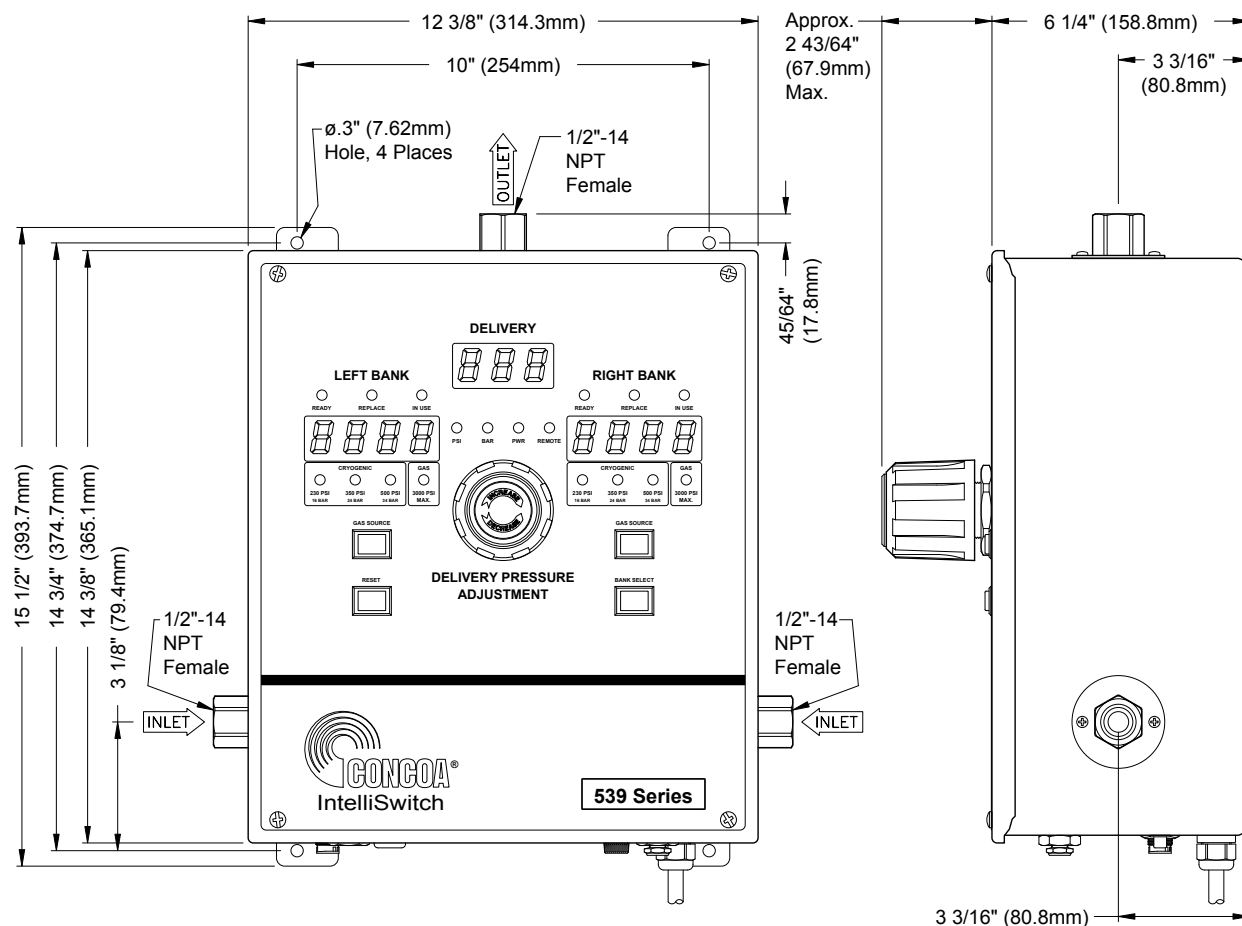
Materials

Regulator and Valve Bodies Brass barstock
Valve Stems 316L stainless steel
Valve Seats PCTFE
Seals PTFE, PCTFE and Viton®
Enclosure NEMA 12 powder-coated steel

Specifications

Power Requirements 110 or 220 VAC
Maximum Inlet Pressure 3000 PSIG (210 BAR)
Temperature Range 0°F to 140°F (-18°C to 60°C)
Flow Capacity Cv = 1.0
Filter 40 micron
Inlet Connection 1/2" FPT
Outlet Connection 1/2" FPT
Weight 67 lbs. (30.4 kg)

Installation Dimensions



Ordering Information

539	A	B	C	D	-XX	-CON
Series 539	Outlet Pressure	Right Side Connection	Left Side Connection	Assembly	Assembly	Hose
	2: 0-50 PSIG (0-1 BAR)	0: 1/2" FPT	0: 1/2" FPT	2: 110 VAC	-01: Standard	Please specify inlet connection (if applicable)
	3: 0-100 PSIG (0-7 BAR)	1: Diaphragm valve with 36" (900mm) stainless flexible hose	1: Diaphragm valve with 36" (900mm) stainless flexible hose	3: 220 VAC	-0A: Tamper resistant option	CGA
	4: 0-150 PSIG (0-10 BAR)	2: Diaphragm valve with 72" (1800mm) stainless flexible hose	2: Diaphragm valve with 72" (1800mm) stainless flexible hose			DIN 477
	5: 0-200 PSIG (0-14 BAR)	3: Manifold connector*	3: Manifold connector*			BS 341 and others available.
		*See pages 54-55 for manifold ordering information				

Related Options

Option	Order Number	Description
Remote alarm	Advantium Series	Provides audible and visible notification of a depleted supply bank to a remote location (See pgs. 68-71)
Vent manifold kit	52L Series	Wall-mounted manifold designed to equalize liquid cylinder head pressure
Switchover station	518 1625	Safely mount and secure any switchover and 2 cylinders
AutoSwitch floor stand	830 7439	Support IntelliSwitch enclosure
Manifold floor stand	830 7437	Supports two standard length 12”(304.8mm) manifold extensions installed consecutively



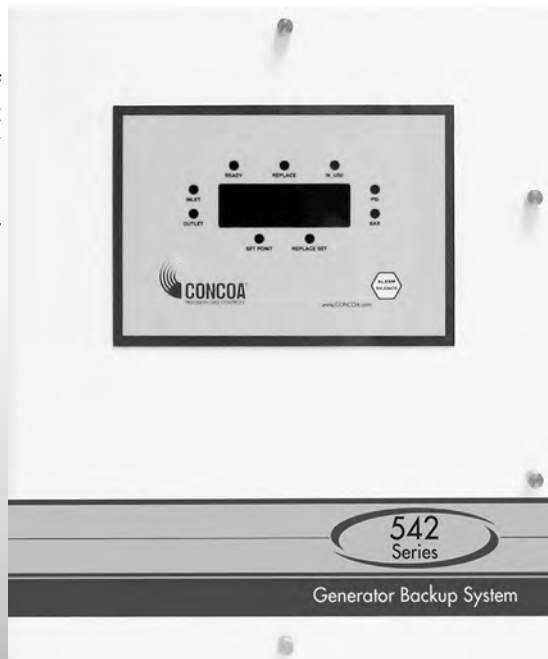
542 SERIES

High Flow Backup

The 542 Series High Flow Back-Up is designed to provide a “smart” reserve supply to high flow gas generators or bulk supply systems. If there is a loss of power, or if the gas generator or bulk supply system cannot provide sufficient gas, the 542 Series will automatically activate the reserve supply to supply gas without interruption. The unique feature of the 542 is that these functions are controlled by an on board micro-processor. In addition to the on board systems, the 542 is equipped with CONCOA's new I-Link™ Web server technology allowing for remote monitoring and control functions. Together, these advanced systems continually monitor pipeline pressure and reserves and can be programmed to engage at a specific pressure. The 542 is available for nitrogen, air, helium, carbon dioxide, nitrous oxide, oxygen, or argon in high purity barstock brass construction.

Typical Applications

Bulk or microbulk backup supply
Air, Nitrogen, or Oxygen generator backup
Gas chromatograph, flame ionization detector, and mass spectrometer backup
Critical laboratory gas reserve
Incubator CO ₂ backup supply



Features

Programmable Reserve Activation Pressure

User sets the pressure at which the backup engages

Programmable Reserve Low Alarm Pressure

User sets the low reserve alarm point

On Board I-Link™ Web Server and Remote Monitoring Software

Enables for real-time online system monitoring

High Purity Components

Use in high purity systems

High Flow Capacity

High flow building or facility systems

Check Valves on Both Generator and Reserve

Prevents back flow to the generator or reserve cylinder

Materials

Regulator Body

Brass barstock

Bonnet

Chrome-plated die-cast zinc

Seat

PCTFE

Filter

Patented 40 micron 316 mesh

Diaphragms and Pigtails

316L stainless steel

CGA Connections

Brass with check valve

Check Valve Seat

PTFE or Viton®

Enclosure

NEMA 12 Powder coated steel

Specifications

Maximum Primary Inlet Pressure

0-120 PSIG (0-8 BAR)

0-250 PSIG (0-17 BAR)

Temperature Range

0°F to 140°F (-18°C to 60°C)

Pressure Display

Large digital display

Status Display

Multi-color LEDs

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Adjustable Pressure Range

50-250 PSIG (3.5-17 BAR)

Cv

1.0

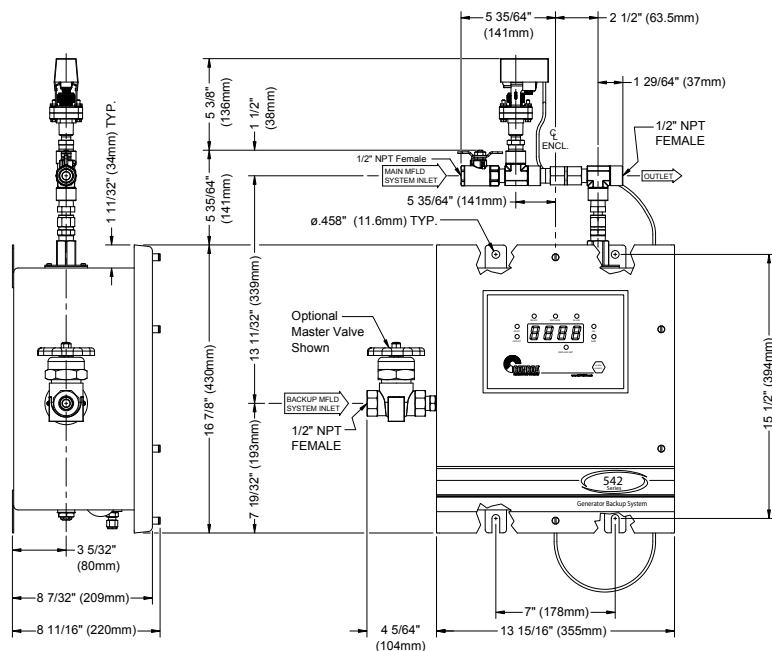
Weight

45 lbs. (20.45 kg)

IntelliSwitch Systems



Installation Dimensions



Ordering Information

542	A	B	C	D	-CON	Stations
Series 542	Delivery Pressure	Inlet Options	Internal Buzzer Audible Alarm	Voltage/Web Server Assembly Options	Gas Service Cylinder Connections	
	3: 0-120 PSIG (0-8 BAR)	0: 1/2" FPT	0: Without alarm	2: 120 VAC / without web server	-000: No cylinder connection	0: No hoses
	5: 0-250 PSIG (0-17 BAR)	1: Master valve 1/2" FPT	1: With alarm	3: 240 VAC / without web server	-296: Oxygen mixture >23.5%	1: 1 station
		2: Micromanifold without hoses		4: 120 VAC / with web server	-320: CO ₂	2: 2 stations
		3: Micromanifold with 36" (900mm) stainless flexible hoses		5: 240 VAC / with web server	-326: N ₂ O	3: 3 stations
		4: Micromanifold with 72" (1800mm) stainless flexible hoses			-346: Breathable air	4: 4 stations
		5: Master valve with micromanifold without hoses			-540: Oxygen	5: 5 stations
		6: Master valve with micromanifold with 36" (900mm) stainless flexible hoses			-580: Inert (Argon, Helium, Nitrogen)	6: 6 stations
		7: Master valve with micromanifold with 72" (1800mm) stainless flexible hoses			-590: Synthetic air (dry, zero grade, ultra zero grade)	7: 7 stations
		C: High flow manifold, single row, without hoses			DIN 477 BS 341 and others available	8: 8 stations
		D: High flow manifold, single row, with 36" (900mm) stainless flexible hoses				
		E: High flow manifold, single row, with 72" (1800mm) stainless flexible hoses				
		F: High flow manifold, dual row, without hoses				
		G: High flow manifold, dual row, with 36" (900mm) stainless flexible hoses				
		H: High flow manifold, dual row, with 72" (1800mm) stainless flexible hoses				



IntelliSwitch Systems

544 SERIES

IntelliSwitch IIv

The fully automatic 544 IntelliSwitch IIv switches between two gas sources based on a user settable pressure up to 2000 PSIG (137 BAR). The IntelliSwitch IIv features a proprietary onboard I-link webserver technology allowing remote monitoring and secure system configuration and email notification of real time system status and events. It is ideally suited for high delivery pressure requirements over 400 PSIG (27 BAR) or where the pressure control is separate from the switchover system. The 544 series offers full source pressure from the side selected down to whatever switching pressure is desired from 2000 PSIG (137 BAR) down to 100 PSIG (7 BAR), where the system will automatically switch to the reserve supply and supply that inlet pressure to the outlet requirement. The user can select from any model of delivery liquid cylinders to high pressure cylinders. The end user selects the ideal mode of supply by the simple push of a button. Where pressure is controlled by other devices or where pressure control is not required, the 544 provides a reliable and continuous gas supply.

Typical Applications

High delivery pressure gas systems

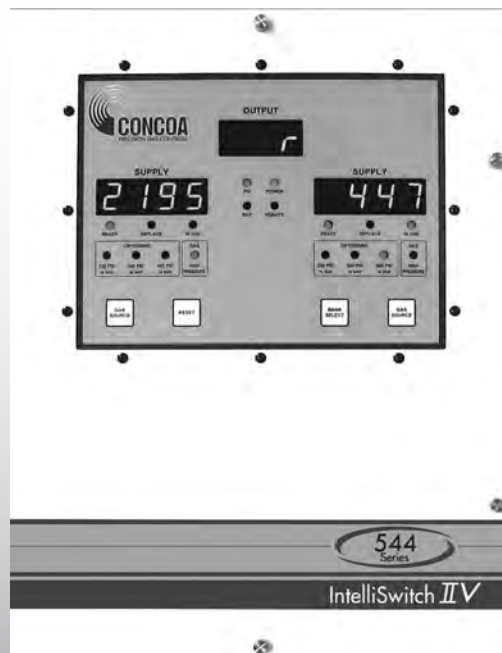
Aerospace cycle testing

Component Helium Leak testing

Synthetic fuel research and process plants

High pressure air systems

Plant pneumatic valve supply



Features

Micro-Processor Control

Fully automatic priority assignment

Remote and Field-Adjustable Software

Enables process flexibility and remote monitoring

On-Site or Remote Source Selection

Liquid cylinder or high-pressure service

On Board Web Server and Remote Software

Enables monitoring and control functions

Low Loss Technology

Reduces residual return

Electronic Economizer

Eliminates liquid cylinder vent loss

Process Gas Pilot Valve

Simple installation

NEMA 4 Enclosure Standard

Install anywhere

Materials

Regulator and Valve Bodies

Brass barstock

Valve Stems

316L stainless steel

Valve Seats

PCTFE

Seals

PTFE, PCTFE and Viton®

Enclosure

NEMA 4 powder-coated steel

Specifications

Power Requirements

110 or 220 VAC (terminal block provided with 1/2" conduit hole)

Maximum Inlet Pressure

3000 PSIG (210 BAR)
4500 PSIG (310 BAR)*

Temperature Range

0°F to 140°F (-18°C to 60°C)

Flow Capacity

Cv = 1.0

Filter

40 micron

Inlet Connection

1/2" FPT

Outlet Connection

1/2" FPT

Weight

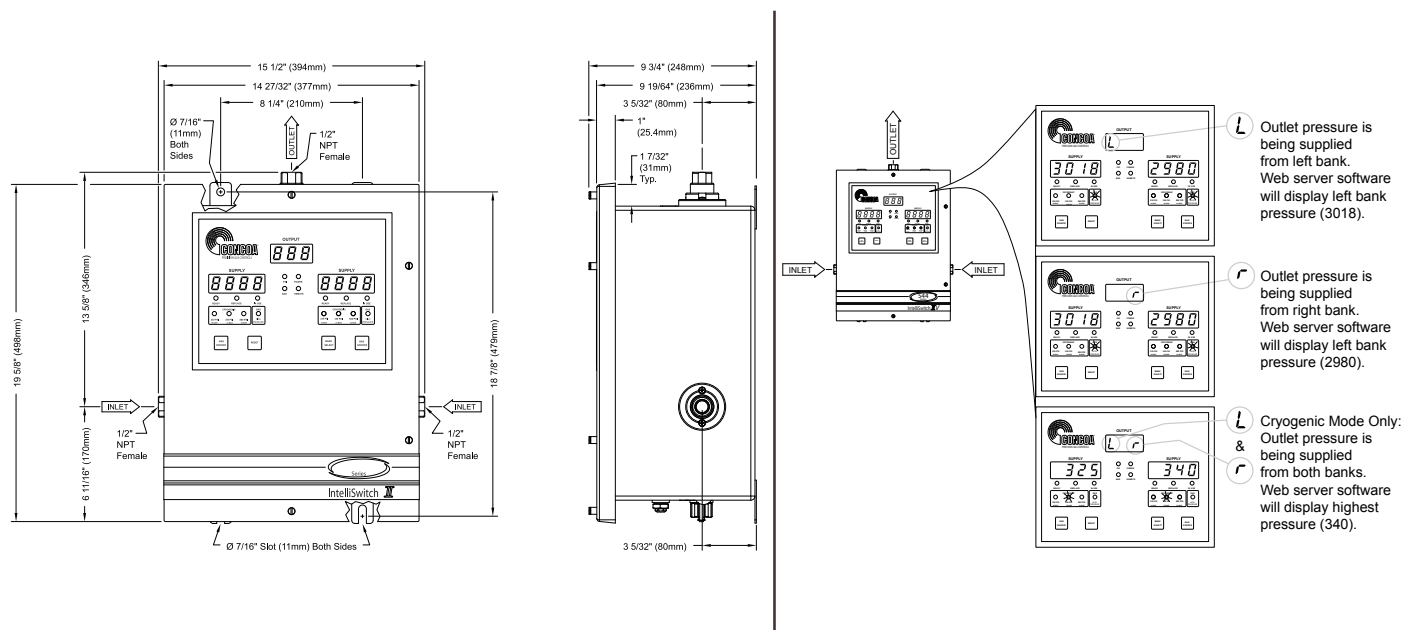
67 lbs. (30.4 kg)

*Requires external pilot gas

IntelliSwitch Systems



Installation Dimensions



Ordering Information

544	A	B	C	D	-CON
Series 544	Maximum Inlet Pressure/ Assembly	Right Side Connection	Left Side Connection	Factory Preset Switchover Pressure (field adjustable)	Hose
	A: 3000 PSIG (210 BAR)/ 120 VAC	0: 1/2" FPT port	0: 1/2" FPT port	1: 100 PSIG (7 BAR) B: 1100 PSIG (75 BAR)	Please specify inlet connection (if applicable)
	B: 3000 PSIG (210 BAR)/ 240 VAC	1: Diaphragm valves with 36" (900mm) stainless flexible hose	1: Diaphragm valves with 36" (900mm) stainless flexible hose	2: 200 PSIG (14 BAR) C: 1200 PSIG (82 BAR)	CGA DIN 477 BS 341 and others available.
	H: 4500 PSIG (310 BAR)/ 120 VAC	2: Diaphragm valves with 72" (1800mm) stainless flexible hose	2: Diaphragm valves with 72" (1800mm) stainless flexible hose	3: 300 PSIG (21 BAR) D: 1300 PSIG (89 BAR)	
	J: 4500 PSIG (310 BAR)/ 240 VAC	3: Manifold connector*	3: Manifold connector*	4: 400 PSIG (27 BAR) E: 1400 PSIG (96 BAR)	
		*See pages 54-55 for manifold ordering information		5: 500 PSIG (34 BAR) F: 1500 PSIG (100 BAR)	
				6: 600 PSIG (42 BAR) G: 1600 PSIG (110 BAR)	
				7: 700 PSIG (48 BAR) H: 1700 PSIG (117 BAR)	
				8: 800 PSIG (55 BAR) J: 1800 PSIG (124 BAR)	
				9: 900 PSIG (62 BAR) K: 1900 PSIG (131 BAR)	

Related Options

Option	Order Number	Description
Remote Alarm	Advantium Series	Provides audible and visible notification of a depleted supply bank to a remote location (See pgs. 68-71)
Vent Manifold Kit	52L series	Wall-mounted manifold designed to equalize liquid cylinder head pressure
Switchover Station	518 1625	Safely mount and secure any switchover and two cylinders
AutoSwitch Floor Stand	830 7439	Support IntelliSwitch enclosure
Manifold Floor Stand	830 7437	Supports two standard length 12" (304.8mm) manifold extensions installed consecutively



Pressure Differential Switchovers

515 SERIES

SilcoNert™ 1020 Swichover

The 515 Series SilcoNert 1020 is an automatic swichover system designed to deliver a continuous supply of reactive, corrosive, or high purity gases for calibration, instrument support, or process, control. The proprietary amorphous Silicon surface finish provides extreme inertness and corrosion resistance over 316L stainless steel. To maintain constant downstream pressure, an integral line regulator option is available.



515 4111 shown with attached flexible hoses. Available with optional remote alarm.

Typical Applications

Reactive calibration standard
Emissions monitoring
H ₂ S and reduced sulfur calibration standards
Mercury calibration standards
Low level sulfur in hydrocarbon gas control
Corrosive gases
Ultra high purity instrument pure gases

Features

- 400 Series Stainless Steel Regulators**
CAPSULE® seat
- Metal-to-Metal Diaphragm Seal**
No possibility of gas contamination
- User-Friendly Priority Valve**
One knob switches cylinder priority
- Check Valves in Inlet Gland**
Prevents contamination and back flow.
- Optional Line Regulator**
Stable line pressure during change over
- Optional Remote Alarm**
Easy integration with Advantium system

Materials

- Bodies**
SilcoNert 1020
- Bonnet**
Chrome-plated brass barstock
- Diaphragms**
SilcoNert 1020
- Seats**
PTFE
PCTFE with 4500 PSIG (310 BAR) inlet
- Filters**
< 10 micron SilcoNert 1020 mesh
- Internal Seals**
PTFE

Specifications

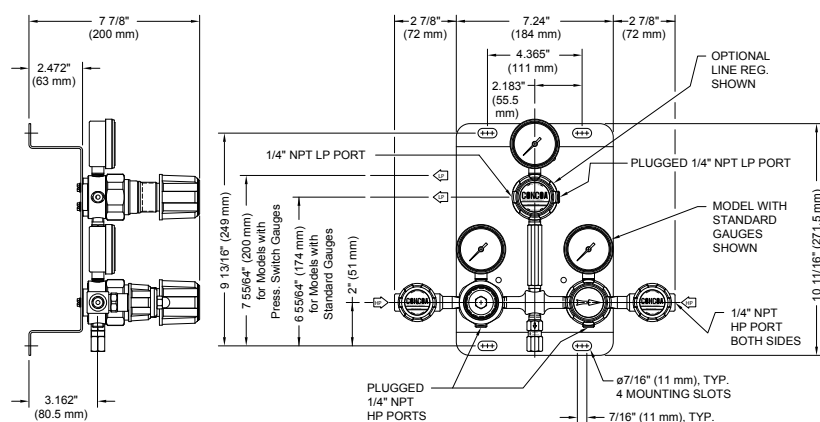
- Maximum Inlet Pressure**
3000 PSIG (210 BAR)
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2" (53mm) diameter stainless steel (bourdon tube not treated)
- Outlet Connection**
1/4" MPT (without line regulator)
1/4" FPT (with line regulator)
- Helium Leak Integrity**
1 x 10⁻⁸ scc/sec
- Cv**
0.1
- Weight**
8.25 lbs. (3.71 kg)

Pressure Differential Switchovers

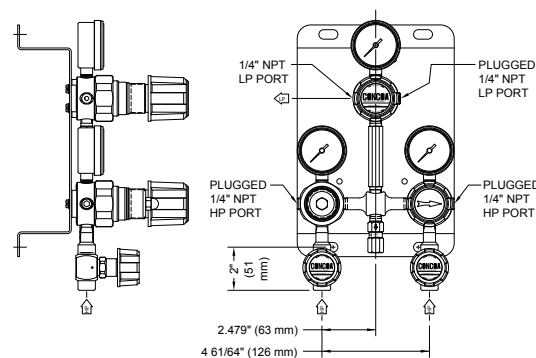


Installation Information

Diaphragm Valves on Side Ports



Diaphragm Valves on Bottom Ports



Ordering Information

515	A	B	C	D	-CON
Series 515	Switching Pressure (Priority R/L)	Inlet Connection	Line Regulator	Assembly	Installed Options
	4: 200/170 PSIG (13.5/11.5 BAR)	0: 1/4" FPT ports	0: None	1: 0-4000 PSIG/0-28,000 kPa gauges no alarm capability	Please specify inlet connection (if applicable)
	5: 500/470 PSIG (33.8/31.8 BAR)	1: 36" (900mm) stainless steel flexible hoses	1: 0-15 PSIG (0-1 BAR)	2: 0-280 BAR/4000 PSIG gauges no alarm capability	
	8: 300/270 PSIG (21/18 BAR)	3: 24" (600mm) stainless steel flexible hoses	2: 0-50 PSIG (0-3.5 BAR)	4: 0-280 BAR/4000 PSIG gauges with pressure switches†and remote alarm (110/220 VAC)	CGA DIN 477 BS 341 and others available
		4: Diaphragm valves with 1/4" FPT port	3: 0-100 PSIG (0-7 BAR)	8: 0-280 BAR/4000 PSIG gauges with pressure switches† and without remote alarm	
		5: Diaphragm valves with 36" (900mm) hoses	4: 0-250 PSIG (0-17 BAR)	†Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.	
		7: Diaphragm valves with 24" (600mm) hoses	5: 0-400 PSIG (0-27 BAR)		
		A: 24" (600mm) stainless steel flexible hoses with diaphragm valve	7: 0-150 PSIG (0-10 BAR)		



Pressure Differential Switchovers

522 SERIES

AutoSwitch

The 522 Series AutoSwitch is a continuous gas delivery system for high purity gas service, typically in the laboratory or process plant, that automatically changes cylinder or bank priority from the primary source to a reserve supply without transmitting pressure fluctuations to the use line. Optional internal pressure switches, warning lights, and separate remote alarm indicate low bank pressure and the need to change depleted cylinders.

Typical Applications

High purity non-corrosive gas supply
Gas chromatograph carrier and support gases
Hydrogen and other flammable gases
Pure or mix process gas supply
Biotech, pharmaceutical gas systems
Central gas supply system for laboratory, research or process plants



522 3004 shown

Features

400 Series Brass Components
CAPSULE® seat

Metal to Metal Seals
No possibility of gas contamination

Integral Line Regulator
Stable line pressure during change over

Variable Line Pressure
Line pressure changeable on site

User-Friendly Priority Valve
One knob switches cylinder priority

Integral Manifold System
Easy installation

Optional Alarms
Advantium 8 monitors up to 4 systems
Advantium 2 PLUS monitors 1 system

Intrinsic Safety Barriers
For use with flammable gases or in hazardous areas
Class 1, Div. 1, Group A, B, C, or D

Materials

Priority Valve
Brass barstock

Line Regulator
Brass barstock

Diaphragms
316L stainless steel

Enclosure
Acrylic powder-coated steel

Tubing and Fittings
316L stainless steel

Internal Seats and Seals
PTFE

Pressure Gauges
Brass, bronze and stainless steel

Pressure Switches (optional)
Field-settable on inlet gauge, dry contact (opens below set point)

Check Valves
Brass with Viton® seals

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Maximum Flow at 100 PSIG (7 BAR)
600 SCFH (283 LPM)

Cv
0.1

Inlet Connection
1/2" FPT

Outlet Connection
1/4" stainless steel compression tube

Relief Valve Outlet
1/2" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

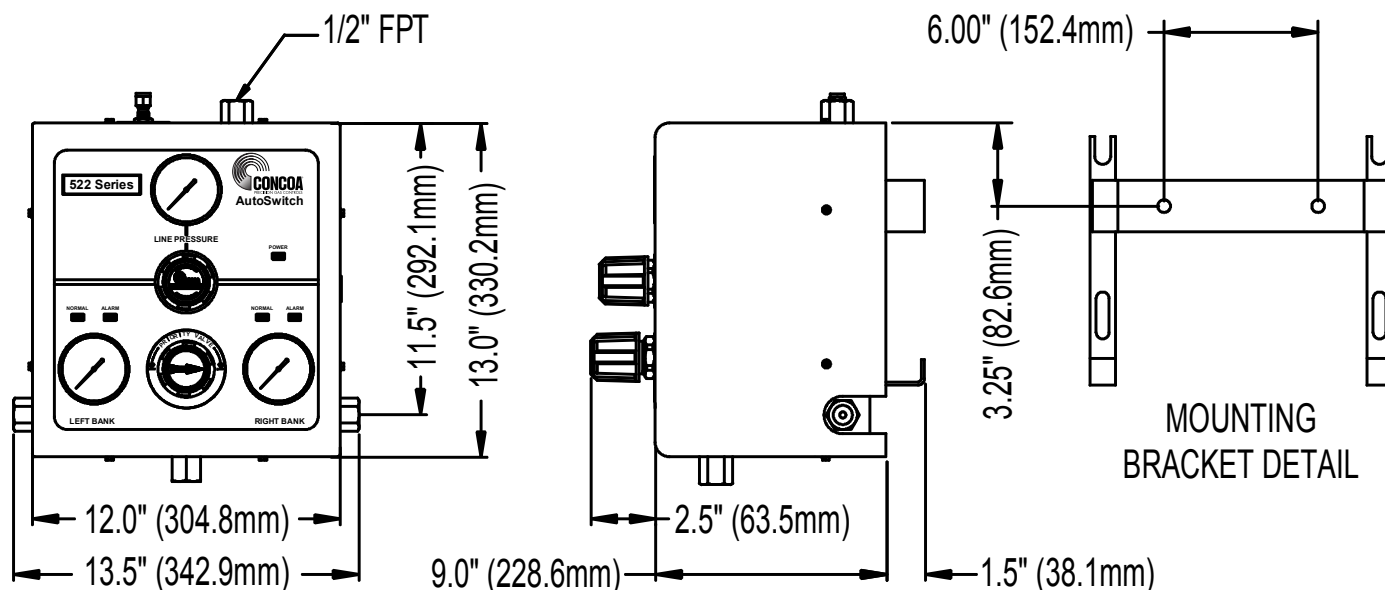
Weight
40 lbs. (18 kg)

See pages 54-55 for manifold specifications

Pressure Differential Switchovers



Installation Information



Ordering Information

522	A	B	C	D	-CON	Options
Series 522	Outlet Pressure	Inlet Connection	Cylinders/Side	Assembly	Hose	
	2: 0-50 PSIG (0-3.5 BAR)	0: 1/2" FPT	0: No inlet connection**	1: Without alarm capability	Please specify inlet connection (if applicable)	C: Compact manifold extensions
	3: 0-100 PSIG (0-7 BAR)	1: Brass manifolds with 36" (900mm) stainless steel flexible hoses at each station	1: One cylinder	4: With alarm capability* (alarm sold separately)	CGA DIN 477 BS 341 and others available	
	4: 0-200 PSIG (0-14 BAR)	3: Diaphragm valves with 36" (900mm) stainless steel flexible hoses*	2: Two cylinders	<i>*Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.</i>		
	5: 0-350 PSIG (0-24 BAR)	4: Brass manifolds with 24" (600mm) stainless steel flexible hoses at each station	3: Three cylinders			
	7: 0-150 PSIG (0-10 BAR)	5: Chrome-plated brass manifolds with 36" (900mm) stainless steel flexible hoses at each station	4: Four cylinders			
		6: 1/2" FPT with captured vent	5: Five cylinders			
		7: Chrome-plated brass manifolds with 24" (600mm) stainless steel flexible hoses at each station	6: Six cylinders			
		9: Diaphragm valves with 72" (1800mm) stainless steel hoses*	7: Seven cylinders			
		<i>*One cylinder/side only</i>	8: Eight cylinders			
			9: Nine cylinders			
			0: Ten cylinders**			
			A: Eleven cylinders			
			B: Twelve cylinders			
			C: Thirteen cylinders			
			D: Fourteen cylinders			
			E: Fifteen cylinders			
			<i>** If manifold option is selected in B, 0 = ten cylinders</i>			



Pressure Differential Switchovers

523 SERIES

AutoSwitch

The 523 Series AutoSwitch is a continuous gas delivery system for ultra-high purity or corrosive gas service, typically in the laboratory or process plant, that automatically changes cylinder or bank priority from primary source to a reserve supply without transmitting pressure fluctuations to the use line. Optional internal pressure switches, warning lights, and separate remote alarm indicate low bank pressure and the need to change depleted cylinders.

Typical Applications

- Research purity or corrosive gas supply
- Gas chromatograph carrier and support gases
- Hydrogen and other flammable gases
- Pure or mix process gas supply
- Biotech, pharmaceutical gas systems
- Central gas supply system for laboratory, research or process plants



523 3004 shown

Features

400 Series Stainless Steel Components
CAPSULE® seat

Metal to Metal Seals
No possibility of gas contamination

Integral Line Regulator
Stable line pressure during change over

Variable Line Pressure
Line pressure changeable on site

User-Friendly Priority Valve
One knob switches cylinder priority

Integral Manifold System
Easy installation

Optional Alarms
Advantium 8 monitors up to 4 systems
Advantium 2 PLUS monitors 1 system

Intrinsic Safety Barriers
For use with flammable gases or in hazardous areas
Class 1, Div. 1, Group A, B, C, or D

Materials

Priority Valve
316L stainless steel

Line Regulator
316L stainless steel

Diaphragms
316L stainless steel

Enclosure
Acrylic powder-coated steel

Tubing and Fittings
316L stainless steel

Internal Seats and Seals
PTFE

Pressure Gauges
316L stainless steel

Pressure Switches (optional)
Field-settable on inlet gauge, dry contact (opens below set point)

Check Valves
Brass with Viton® seals

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Maximum Flow at 100 PSIG (7 BAR)
600 SCFH (283 LPM)

Cv
0.1

Inlet Connection
1/2" FPT

Outlet Connection
1/4" stainless steel compression tube

Relief Valve Outlet
1/2" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

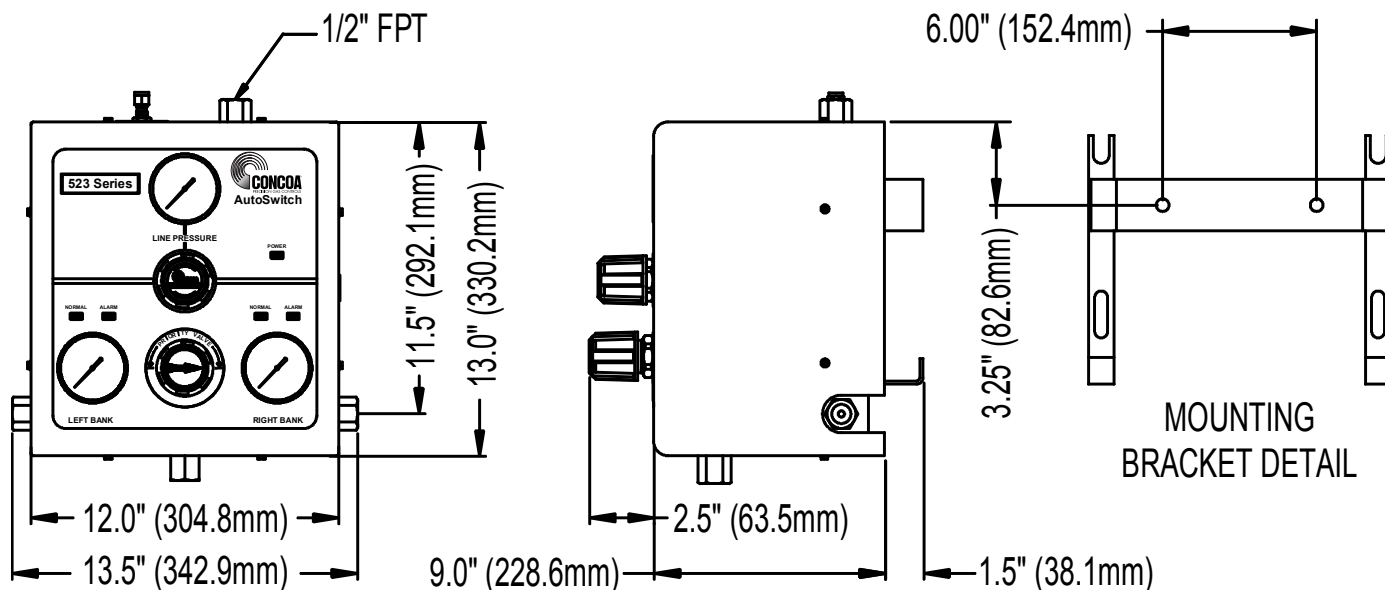
Weight
40 lbs. (18 kg)

See pages 54-55 for manifold specifications

Pressure Differential Switchovers



Installation Information



Ordering Information

523	A	B	C	D	-CON	Options
Series 523	Outlet Pressure	Inlet Connection	Cylinders/Side	Assembly	Hose	
	2: 0-50 PSIG (0-3.5 BAR)	0: 1/2" FPT for non-toxic gases	0: No inlet connection**	1: Without alarm capability	Please specify inlet connection (if applicable)	C: Compact manifold extensions
	3: 0-100 PSIG (0-7 BAR)	1: Stainless steel manifolds for non-toxic gases with 36" (900mm) flexible hoses at each station	1: One cylinder	4: With alarm capability* (alarm sold separately)	CGA DIN 477 BS 341 And others Available	
	4: 0-200 PSIG (0-14 BAR)	3: Diaphragm valves for non-toxic gases with Two 36" (900mm) flexible hoses*	2: Two cylinders	<i>*Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.</i>		
	5: 0-350 PSIG (0-24 BAR)	4: Stainless steel manifolds for non-toxic gases with 24" (600mm) flexible hoses at each station	3: Three cylinders			
	7: 0-150 PSIG (0-10 BAR)	5: Stainless steel manifolds for toxic gases with 36" (900mm) stainless steel flexible hoses at each station†	4: Four cylinders			
		6: 1/2" FPT with captured vent	5: Five cylinders			
		7: Stainless steel manifolds for toxic gases with 24" (600mm) flexible hoses at each station†	6: Six cylinders			
		8: Diaphragm valves for toxic gases with 36" (900mm) flexible hoses**†	7: Seven cylinders			
		9: Diaphragm valves with 72" (1800mm) stainless steel hoses*	8: Eight cylinders			
		<i>*One cylinder/side only †Includes captured vent</i>	9: Nine cylinders			
			0: Ten cylinders**			
			A: Eleven cylinders			
			B: Twelve cylinders			
			C: Thirteen cylinders			
			D: Fourteen cylinders			
			E: Fifteen cylinders			
			<i>** If manifold option is selected in B, 0 = ten cylinders</i>			



Pressure Differential Switchovers

526 SERIES

Switchover

The 526 Series Switchover is an automatic switchover system designed to supply a continuous supply of high purity, non-corrosive gas. The system comes with either flexible hoses for use with two cylinders or manifold connectors for use with the Maniflex Modular Manifold System. Due to pressure differential considerations, an integral line regulator is available to maintain constant downstream pressure.

Typical Applications

Ultra high purity gases
Gas chromatograph carrier and support gases
AA grade acetylene
Cell culture incubator CO ₂ and N ₂
Pure and mixed process gases
Central gas supply system for laboratory, research or process plants



526 4111 shown with attached flexible hoses. Available with optional remote alarm.

Features

- 400 Series Brass Barstock Regulators**
CAPSULE® seat
- Metal-to-Metal Diaphragm Seal**
No possibility of gas contamination
- User-Friendly**
One knob switches cylinder priority
- Check Valves in Hose Inlet Glands**
Prevents contamination and back flow
- Compatible with Maniflex Manifolds**
Multiple cylinders per side
- Optional Line Regulator**
Stable line pressure during change over
- Optional Remote Alarm**
Easy integration with Advantium system
CE marked 220 volt alarm
- Optional Purge Valves**
Allows purging after cylinder change over
- Optional Outlet Valve**
Allows isolation of pipeline

Materials

- Bodies**
Brass barstock
- Diaphragms**
316L stainless steel
- Seats**
PTFE
PCTFE with 4500 PSIG (310 BAR) inlet
- Filters**
10 micron sintered bronze
- Internal Seals**
PTFE

Specifications

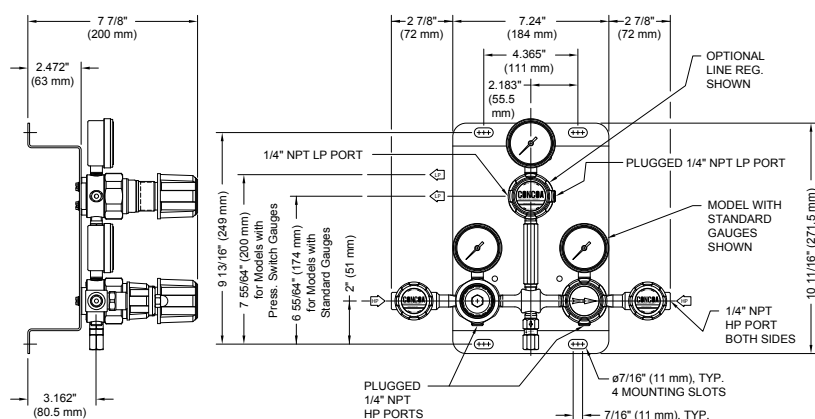
- Maximum Inlet Pressure**
3000 PSIG (210 BAR)
4500 PSIG (310 BAR) optional
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2" (53mm) diameter brass
- Outlet Connection**
1/4" MPT (without line regulator)
1/4" FPT (with line regulator)
- Helium Leak Integrity**
1 x 10⁻⁸ scc/sec
- Cv**
0.1
- Weight**
8.25 lbs. (3.71 kg)

Pressure Differential Switchovers

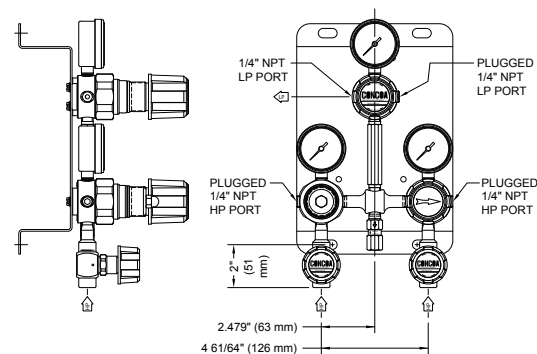


Installation Information

Diaphragm Valves on Side Ports



Diaphragm Valves on Bottom Ports



Ordering Information

526	A	B	C	D	-CON	Optional
Series 526	Switching Pressure (Priority R/L)	Inlet Connection	Line Regulator	Assembly	Hose	
	1: 125/105 PSIG* (8.4/7.1 BAR)	0: 1/4" FPT ports	0: None	1: 0-4000 PSIG/0-28,000 kPa gauges no alarm capability*	Please specify inlet connection (if applicable)	A: Outlet valve
	2: 70/50 PSIG* (4.8/3.5 BAR)	1: 36" (900mm) stainless steel flexible hoses	1: 0-15 PSIG (0-1 BAR)	2: 0-275 BAR/0-4000 PSIG gauges no alarm capability*		B: Outlet valve and purge valve
	3: 100/75 PSIG (6.8/5.1 BAR)	2: Manifold connectors*	2: 0-50 PSIG (0-3.5 BAR)	4: 0-275 BAR/0-4000 PSIG with pressure switches and remote alarm (110/220 VAC)*†	CGA DIN 477 BS 341 and others available	V: Purge valves
	4: 200/170 PSIG (13.5/11.5 BAR)	3: 24" (600mm) stainless steel flexible hoses	3: 0-100 PSIG (0-7 BAR)	5: 0-40 BAR/0-600 PSIG gauges no alarm capability		
	5: 500/470 PSIG (33.8/31.8 BAR)	4: Diaphragm valves with 1/4" FPT port	4: 0-250 PSIG (0-17 BAR)	7: 0-40 BAR/0-600 PSIG with pressure switches and remote alarm (110/220 VAC)†		
	7: 150/130 PSIG (10.1/8.8 BAR)	5: Diaphragm valves with 36" (900mm) hoses	5: 0-400 PSIG (0-27 BAR)	8: 0-275 BAR/0-4000 PSIG* with pressure switches and without remote alarm†		
	8: 300/270 PSIG (20.3/22.3 BAR)	6: Diaphragm valves with manifold connectors*	7: 0-150 PSIG (0-10 BAR)	9: 0-40 BAR/0-600 PSIG with pressure switches and without remote alarm		
	<i>*Not available with 4500 PSIG (310 BAR) inlet</i>	7: Diaphragm valves with 24" (600mm) hoses	A: 0-15 PSIG (0-1 BAR) redline for acetylene	<i>*0-6000 PSIG/405 BAR gauges with 4500 PSIG (310 BAR) maximum inlet option</i>		
	<i>Note: switching pressure must be higher than line regulator pressure selected in column C.</i>	8: 36" (900mm) stainless steel flexible hoses and 4500 PSIG (310 BAR) maximum inlet pressure		<i>†Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.</i>		
		9: 1/4" FPT ports and 4500 PSIG (310 BAR) maximum inlet pressure				
		A: 36" (900mm) stainless steel flexible hoses with flashback arrestor for acetylene				
		B: 36" (900mm) stainless steel flexible hoses with flashback arrestor for acetylene and with diaphragm valve				
		C: Compact manifold connector*				
		D: Diaphragm valves with compact manifold connectors*				
		<i>*See pages 54-55 for manifold ordering information</i>				



Pressure Differential Switchovers

526 LC SERIES Switchover

The 526 LC Series is an automatic switchover system designed to continuous supply high purity gas from a primary cryogenic source and backup high pressure cylinders. The system comes with options for flexible hoses or manifold connectors for the high pressure side for multiple cylinders. Due to flow and pressure limitations from a cryogenic sources the system has only three switching options that are matched to the three relief valve settings for cryogenic liquid cylinders.

Typical Applications

Low flow purging

Single inductively coupled plasma mass spectrometer (ICP-mass spec) argon installation

Cell culture incubators



526 C03B shown with attached flexible hoses. Available with optional remote alarm.

Features

Three Matched Switching Pressures

120 PSIG (8 BAR) for 230, 350, or 500 PSIG (15, 24, or 34 BAR) relief liquid cylinders

200 PSIG (14 BAR) for 350 or 500 PSIG (24 or 34 BAR) relief liquid cylinders

300 PSIG (21 BAR) for 500 PSIG (34 BAR) relief liquid cylinders

400 Series Brass Barstock Regulators

CAPSULE® seat

Metal-to-Metal Diaphragm Seal

No possibility of gas contamination

Check Valves in Hose Inlet Glands

Prevents contamination and back flow

Optional Line Regulator

Stable line pressure during change over

Optional Remote Alarm

Easy integration with Advantium system

Optional Purge Valves

Allows purging after cylinder change over

Materials

Bodies

Brass barstock

Diaphragms

316L stainless steel

Seats

PTFE

PCTFE with 4500 PSIG (310 BAR) inlet

Filters

10 micron sintered bronze

Internal Seals

PTFE

Specifications

Right Side Liquid Cylinder

500 PSIG (34.5 BAR) maximum inlet pressure

Left Side High Pressure Cylinder

3000 PSIG (210 BAR) maximum inlet pressure

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter brass

Outlet Connection

1/4" MPT (without line regulator)

1/4" FPT (with line regulator)

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.1

Weight

8.25 lbs. (3.71 kg)

Maximum Flow (Single Cryogenic Liquid Nitrogen Cylinder)

250 SCFH (118 SLPM) at 120 PSIG (8 BAR) inlet

300 SCFH (141 SLPM) at 200 PSIG (14 BAR) inlet

300 SCFH (141 SLPM) at 300 PSIG (21 BAR) inlet

Flow can be significantly less depending on liquid cylinder condition and duty cycle.

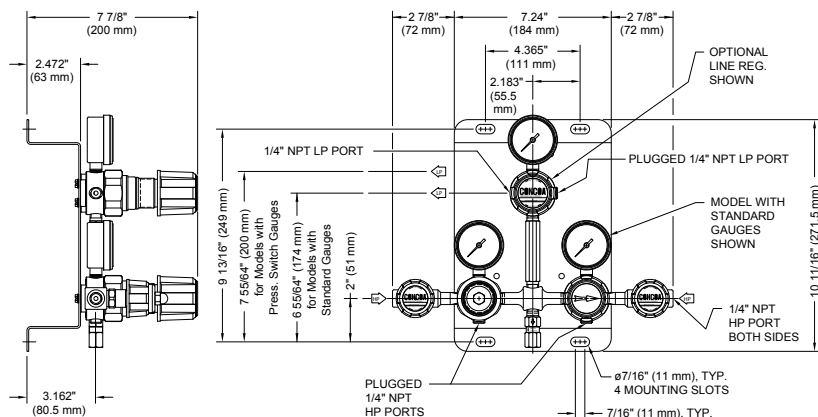
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Pressure Differential Switchovers

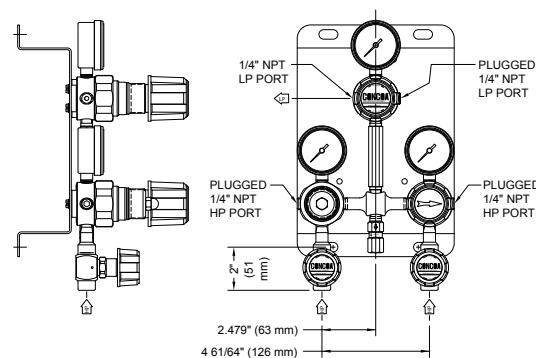


Installation Information

Diaphragm Valves on Side Ports



Diaphragm Valves on Bottom Ports



Ordering Information

526	A	B	C	D	-CON	Options
Series 526 LC	Switching Pressure	Inlet Connection	Line Regulator	Assembly	Hose	
	A: 120 PSIG (8 BAR)	0: 1/4" FPT ports	0: None	A: 0-600 PSIG/0-4200 kPa right side gauge 0-4000 PSI/0-28,000 kPa left side gauge No alarm capability	Please specify inlet connection (if applicable)	A: Outlet valve
	B: 200 PSIG (14 BAR)	1: 36" (900mm) stainless steel flexible hoses	1: 0-15 PSIG (0-1 BAR)	B: 0-42 BAR/0-600 PSIG right side pressure switch gauge 0-275 BAR/0-4000 PSIG left side pressure switch gauge and remote alarm (110/220 VAC)	CGA DIN 477 BS 341 and others available	B: Outlet valve and purge valve
	C: 300 PSIG (21 BAR)	2: Manifold connectors*	2: 0-50 PSIG (0-3.5 BAR)	C: 0-42 BAR/0-600 PSIG right side pressure switch gauge 0-275 BAR/0-4000 PSIG left side pressure switch gauge and no alarm		V: Purge valves
	<i>Note: switching pressure must be higher than line regulator pressure selected in column C.</i>	3: 24" (600mm) stainless steel flexible hoses	3: 0-100 PSIG (0-7 BAR)			
		4: Diaphragm valves with 1/4" FPT port	4: 0-250 PSIG (0-17 BAR)			
		5: Diaphragm valves with 36" (900mm) hoses	7: 0-150 PSIG (0-10 BAR)			
		6: Diaphragm valves with manifold connectors*				
		7: Diaphragm valves with 24" (600mm) hoses				
		C: Compact manifold connectors*				
		D: Diaphragm valves with compact manifold connectors*				
		*See pages 54-55 for manifold ordering information				



Pressure Differential Switchovers

527 SERIES

Switchover

The 527 Series Switchover is an automatic switchover system designed to supply a continuous supply of high purity or corrosive gas. The system comes with either flexible hoses for use with two cylinders or manifold connectors for use with the Maniflex Modular Manifold System. Due to pressure differential considerations, an integral line regulator is available to maintain constant downstream pressure.

Typical Applications

Ultra high purity gases
Research grade pure gases
Gas chromatograph carrier and support gases
Pure and mixed process gases
Corrosive gases
Ammonia
Hydrogen Sulfide



527 4111 shown with attached flexible hoses. Available with optional remote alarm.

Features

- 400 Series Stainless Steel Regulators**
CAPSULE® seat
- Metal-to-Metal Diaphragm Seal**
No possibility of gas contamination
- User-Friendly Priority Valve**
One knob switches cylinder priority
- Check Valves in Inlet Gland**
Prevents contamination and back flow
- Compatible with Maniflex Manifolds**
Multiple cylinders per side
- Optional Line Regulator**
Stable line pressure during change over
- Optional Remote Alarm**
Easy integration with Advantium system
- Optional Purge Valves**
Allows purging after cylinder change over
- Optional Outlet Valve**
Allows isolation of pipeline

Materials

- Bodies**
316L stainless steel barstock
- Diaphragms**
316L stainless steel
- Seats**
PTFE
PCTFE with 4500 PSIG (310 BAR) inlet
- Filters**
Patented 10 micron 316 mesh
- Internal Seals**
PTFE

Specifications

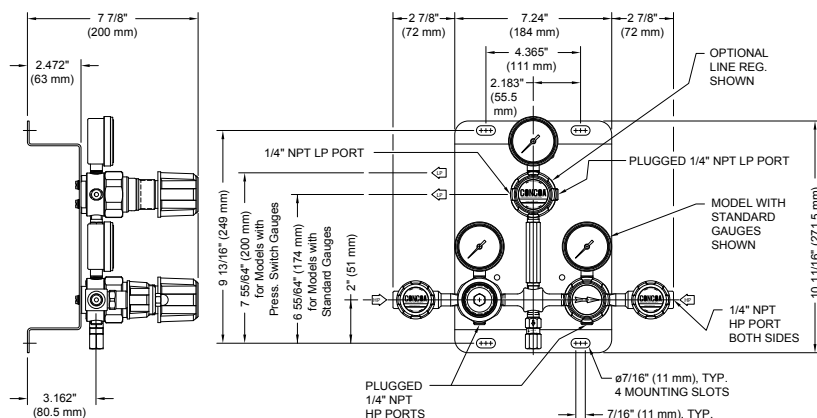
- Maximum Inlet Pressure**
3000 PSIG (210 BAR)
4500 PSIG (310 BAR) optional
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2" (53mm) diameter stainless steel
- Outlet Connection**
1/4" MPT (without line regulator)
1/4" FPT (with line regulator)
- Helium Leak Integrity**
1 x 10⁻⁸ scc/sec
- Cv**
0.1
- Weight**
8.25 lbs. (3.71 kg)

Pressure Differential Switchovers

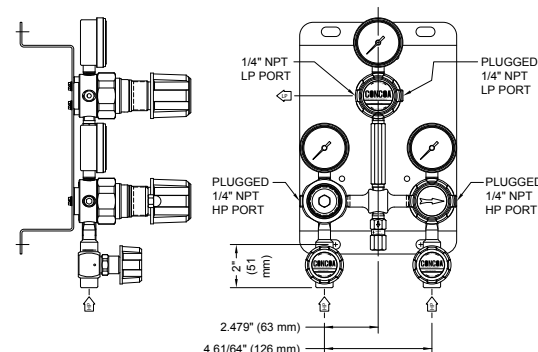


Installation Information

Diaphragm Valves on Side Ports



Diaphragm Valves on Bottom Ports



Ordering Information

527	A	B	C	D	-CON	Options
Series 527	Switching Pressure (Priority R/L)	Inlet Connection	Line Regulator	Assembly	Hose	
	1: 125/105 PSIG (8.4/7.1 BAR)*	0: 1/4" FPT ports	0: None	1: 0-4000 PSIG/0-28,000 kPa gauges* no alarm capability	Please specify inlet connection (if applicable)	A: Outlet valve
	2: 70/50 PSIG (4.8/3.5 BAR)*	1: 36" (900mm) stainless steel flexible hoses	1: 0-15 PSIG (01 BAR)	2: 0-275 BAR/0-4000 PSIG gauges* no alarm capability	CGA DIN 477 BS 341 and others available	B: Outlet valve and purge valve
	3: 100/75 PSIG (6.8/5.1 BAR)	2: Manifold connectors*	2: 0-50 PSIG (0-3.5 BAR)	4: 0-275 BAR/0-4000 PSIG* with pressure switches† and remote alarm (110/220 VAC)		C: Outlet valve and stainless steel bonnets
	4: 200/170 PSIG (13.5/11.5 BAR)	3: 24" (600mm) stainless steel flexible hoses	3: 0-100 PSIG (0-7 BAR)	5: 0-42 BAR/0-600 PSIG gauges no alarm capability		D: Outlet valve purge valve and stainless steel bonnets
	5: 500/470 PSIG (33.8/31.8 BAR)	4: Diaphragm valves with 1/4" FPT port	4: 0-250 PSIG (0-17 BAR)	7: 0-42 BAR/0-600 PSIG with pressure switches† and remote alarm (110/220 VAC)		S: Stainless steel bonnets
	7: 150/130 PSIG (10.1/130 BAR)	5: Diaphragm valves with 36" (900mm) hoses	5: 0-400 PSIG (0-27 BAR)	8: 0-275 BAR/0-4000 PSIG* with pressure switches† and without remote alarm		V: Purge valves
	8: 300/270 PSIG (20.3/22.3 BAR)	6: Diaphragm valves with manifold connectors*	7: 0-150 PSIG (0-10 BAR)	9: 0-42 BAR/0-4000 PSIG with pressure switches and without remote alarm		W: Stainless steel bonnets and purge valve
	Not available with 4500 PSIG (310 BAR) inlet NOTE: Switching pressure must be higher than line regulator pressure selected in column C.	7: Diaphragm valves with 24" (600mm) hoses 8: 36" (900mm) stainless steel flexible hoses and 4500 PSIG (310 BAR) maximum inlet pressure 9: 1/4" FPT ports and 4500 PSIG (310 BAR) maximum inlet pressure C: Compact manifold connectors D: Diaphragm valves with compact manifold connectors* *See pages 54-55 for manifold ordering information		*0-6000 PSIG/405 BAR gauges with 4500 PSIG (310 BAR) maximum inlet option †Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.		



Pressure Differential Switchovers

530 SERIES Switchover

The 530 Series Switchover is an automatic switchover system ideal for use in aerospace, parts cycle testing, or process and pilot plant pneumatic control where an uninterrupted supply of non-corrosive, non-oxidizing gas is required at high pressure. The system comes with options for multiple inlet configurations and can deliver substantial flow with stable line pressure up to 3500 PSIG (240 BAR). It is ideal for use with Nitrogen, Helium, Argon, or Hydrogen where cylinder fill pressures can be as high as 6000 PSIG (405 BAR).

Typical Applications

- High delivery pressure gas systems
- Aerospace cycle testing
- Component Helium Leak testing
- Combustion research laboratories
- Synthetic fuel research and process plants
- High pressure Hydrogen
- High pressure air systems
- Plant pneumatic valve supply



530 1112 shown

Features

492 Series Brass Barstock Regulators

Safely controls inlet pressures to 6000 PSIG (405 BAR)

User-Friendly

One knob switches cylinder priority

Check Valves in Hose Inlet Glands

Prevents contamination and back flow

Line Regulator

Stable line pressure up to 3500 PSIG (240 BAR) during change over

CAPSULE® Seat

Increased serviceability and life

Optional Remote Alarm

Easy integration with Advantium system
CE marked 220 volt alarm

Materials

Bodies

Chrome-plated brass barstock

Cartridges

Brass barstock

Seats

Arlon® (PEEK) switchover regulator
PCTFE line regulator

Filters

10 micron sintered bronze

Internal Seals

Viton®

Weight

22.5 lbs. (10.2 kg)

Not for O₂

Specifications

Inlet Pressures Available

3000 PSIG (207 BAR)
4500 PSIG (310 BAR)
6000 PSIG (414 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2 1/2" (68mm) diameter chrome-plated brass (non-pressure switch models)
2 1/2" (68mm) diameter stainless steel (pressure switch models)

Outlet Connection

1/4" compression tube fitting

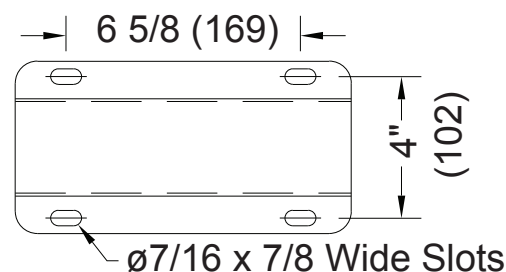
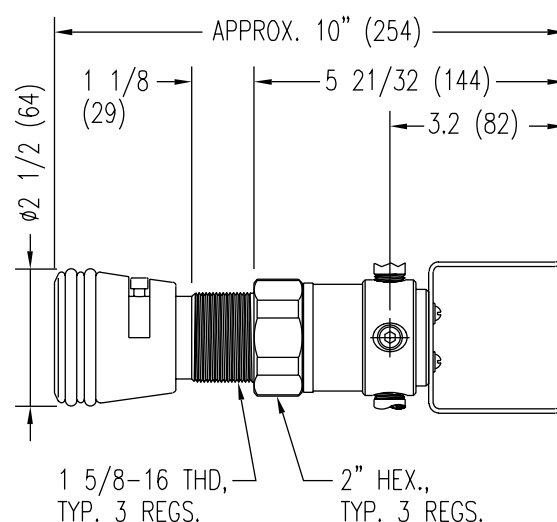
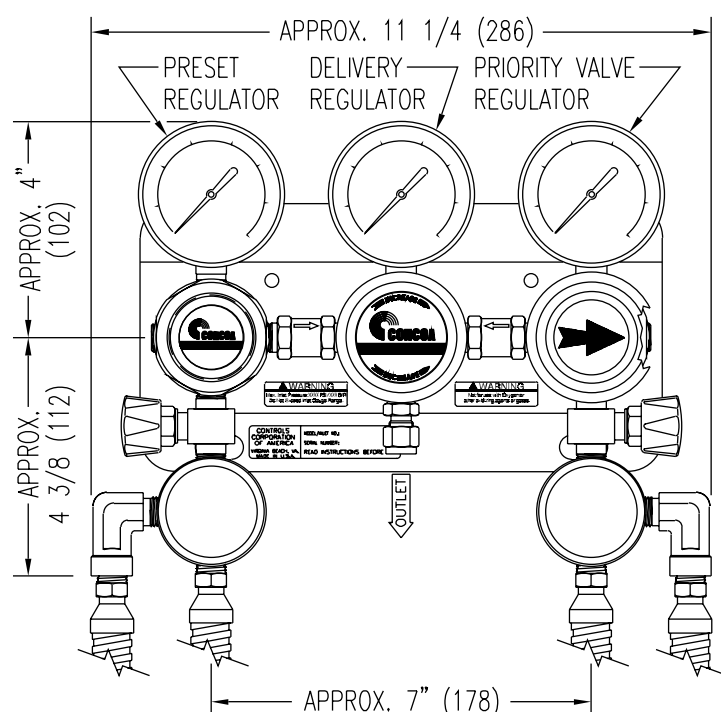
Cv

0.1

Pressure Differential Switchovers



Installation Information



Ordering Information

530	A	B	C	D	-CON	
Series 530	Delivery Pressure	Max Inlet Pressure	Inlet Gauges	Inlet Connection	Assembly/Gauges	Hose
	1: 1000 PSIG (70 BAR)	1: 3000 PSIG (210 BAR)	4000 PSIG/275 BAR	0: 1/4" FPT port	2: PSIG/BAR gauges with no alarm capability	Please specify inlet connection (if applicable)
	2: 1500 PSIG (100 BAR)	2: 4500 PSIG (310 BAR)	6000 PSIG/414 BAR	1: Two needle valves with two 36" (900mm) flexible hoses (one station per side)	4: PSIG/BAR gauges with pressure switches† and remote alarm (110/220 VAC)	
	3: 2500 PSIG (170 BAR)	3: 6000 PSIG (405 BAR)	10,000 PSIG/700 BAR	2: Two needle valves with four 36" (900mm) flexible hoses (two stations per side)	†Intrinsic safety barriers are required for flammable gas service or for use in hazardous environments.	CGA DIN 477 BS 341 and others available
	4: 3500 PSIG (240 BAR)			3: Manifold connectors 3000 PSIG (210 BAR) inlet only*		
				*See pages 54-55 for manifold ordering information		



Pressure Differential Switchovers

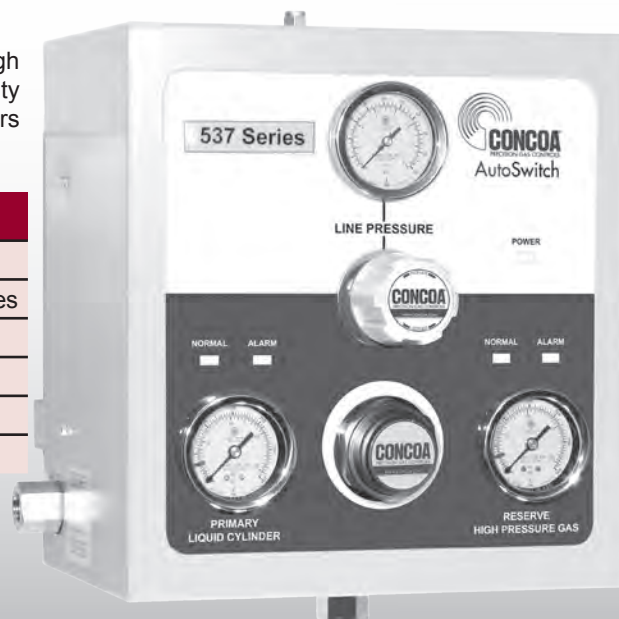
537 SERIES

AutoSwitch GL

The 537 AutoSwitch GL is a continuous gas delivery system for high purity gas service that automatically changes cylinder or bank priority from a cryogenic sources to a reserve bank of high pressure cylinders without transmitting pressure fluctuations to the use line.

Typical Applications

Primary cryogenic high purity gas supply
Inductively Coupled Plasma (ICP) and ICP mass spec support gases
Incubator Carbon Dioxide and Nitrogen central supply system
Pure cryogenic process gas supply
Modified Atmosphere Packaging (MAP)
Pharmaceutical gas supply



537 3000 shown

Features

400 Series 316L Stainless Components
CAPSULE® seat

Metal to Metal Seals

No possibility of gas contamination

Integral Line Regulator

Stable line pressure during change over

Variable Line Pressure

Line pressure changeable on site

Preset Switching Pressure

Prevents tampering or adjustment

Integral Manifold System

Easy installation

Optional Alarms

Advantium 8 Monitors Up to 4 Systems
Advantium 2 PLUS Monitors 1 System

Intrinsic Safety Barriers

For use in Hazardous Areas
Class 1, Div. 1, Group A, B, C, or D

Materials

Priority Valve

316L stainless steel barstock

Line Regulator

316L stainless steel barstock

Diaphragms

316L stainless steel

Enclosure

Acrylic powder-coated steel

Tubing and Fittings

316L stainless steel

Internal Seats and Seals

PTFE

Pressure Gauges and Switches

316L stainless steel

Check Valves

316L stainless steel with Viton® seal

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Maximum Flow at 100 PSIG (7 BAR)

400 SCFH (190 LPM)

Cv

0.1

Inlet Connection

1/2" FPT

Outlet Connection

1/4" stainless steel compression tube

Relief Valve Outlet

1/2" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

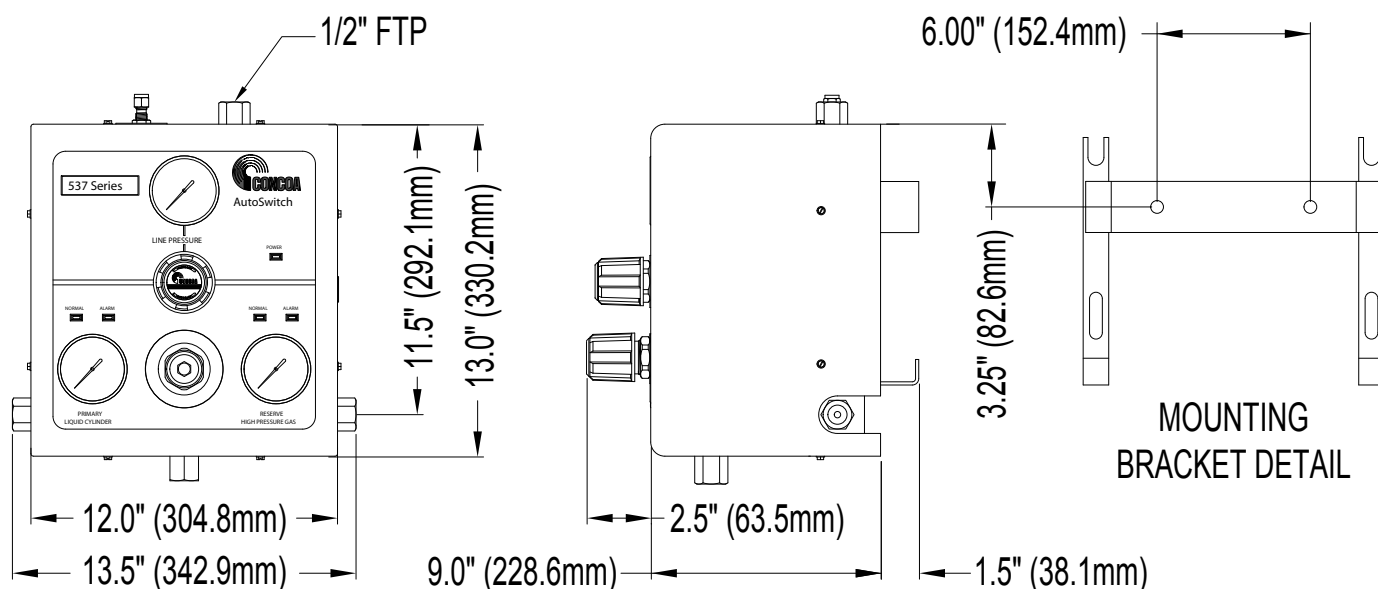
Weight

40 lbs. (18 kg)

Pressure Differential Switchovers



Installation Information



Ordering Information

537	A	B	C	D	-CON
Series 537	Outlet Pressure	Liquid Cylinders (Primary)	High Pressure (Reserve)	Assembly	Hose
	2: 0-50 PSIG (0-3.5 BAR)	0: No inlet connection	0: No inlet connection	1: Without alarm capability	Please specify inlet connection (if applicable)
	3: 0-100 PSIG (0-7 BAR)	1: One cylinder*	1: One cylinder*	4: With alarm capability* (alarm sold separately)	CGA DIN 477 BS 341 and others available
	7: 0-150 PSIG (0-10 BAR)	2: Two cylinders†	2: Two cylinders†	<i>*Intrinsic safety barriers are required for use in hazardous environments.</i>	
		3: Three cylinders†	3: Three cylinders†		
		4: Four cylinders†	4: Four cylinders†		
		<i>*Includes 36" (900mm) flexible hose and diaphragm valve</i>	5: Five cylinders†		
		<i>†Each manifold header includes 36" (900mm) flexible hose, manifold extensions and mounting hardware</i>	6: Six cylinders†		
			<i>*Includes 36" (900mm) flexible hose and diaphragm valve</i>		
			<i>†Each manifold header includes 24" (600mm) flexible hose, manifold extensions and mounting hardware</i>		

Related Options

Option	Order Number	Description
Remote Alarm	Advantium Series	Provides audible and visible notification of a depleted supply bank to a remote location



Pressure Differential Switchovers

540 SERIES

Back-Up Panel

The 540 Series Back-Up Panel is designed to provide a reserve supply to any continuous supply system such as a generator, switchover, or bulk source if supply is interrupted for any reason, the reserve supply will automatically activate and supply gas without interruption. When the primary source is capable of supplying the system, the reserve shuts down. Back-up panels are available in brass or 316 stainless steel construction. With the available remote alarm package, the system can signal when the reserve supply is active or running low.

Typical Applications

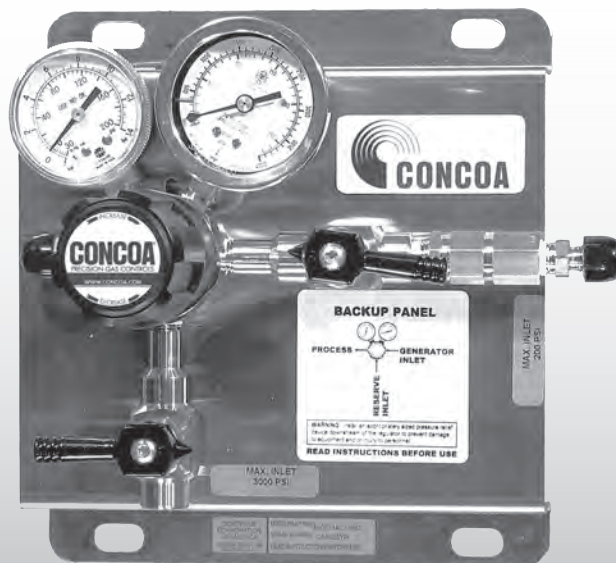
Generator backup supply

Gas chromatograph, flame ionization detector, and mass spec backup

Microbulk and bulk backup or reserve

Critical laboratory gas reserve

Incubator CO₂ backup supply



540 2134 shown

Features

Adjustable Pressure

User determines the pressure at which the backup engages

Check Valves on Both Generator and Reserve

Prevents back flow to the generator or reserve cylinder

Shut-Off Valves on Both Generator and Reserve

Allows isolation and disconnection of either line

Materials

Regulator Body

Brass or 316L stainless steel barstock

Bonnet

Brass or chrome-plated brass barstock

Seat

PTFE (3000 PSIG/210 BAR)

Filter

10 micron sintered bronze mesh or 316L patented stainless steel mesh

Diaphragm and Hose

316L stainless steel

CGA Connections

Brass or 316L stainless steel with check valve

Check Valve Seat

Viton®

Panel

304 stainless steel

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter brass or 316L stainless steel

Helium Leak Integrity

1 x 10⁻⁹ scc/sec

Two Adjustable Pressure Ranges

0-150 PSIG (0-10 BAR)
150-500 PSIG (10-34 BAR)

Cv

0.1

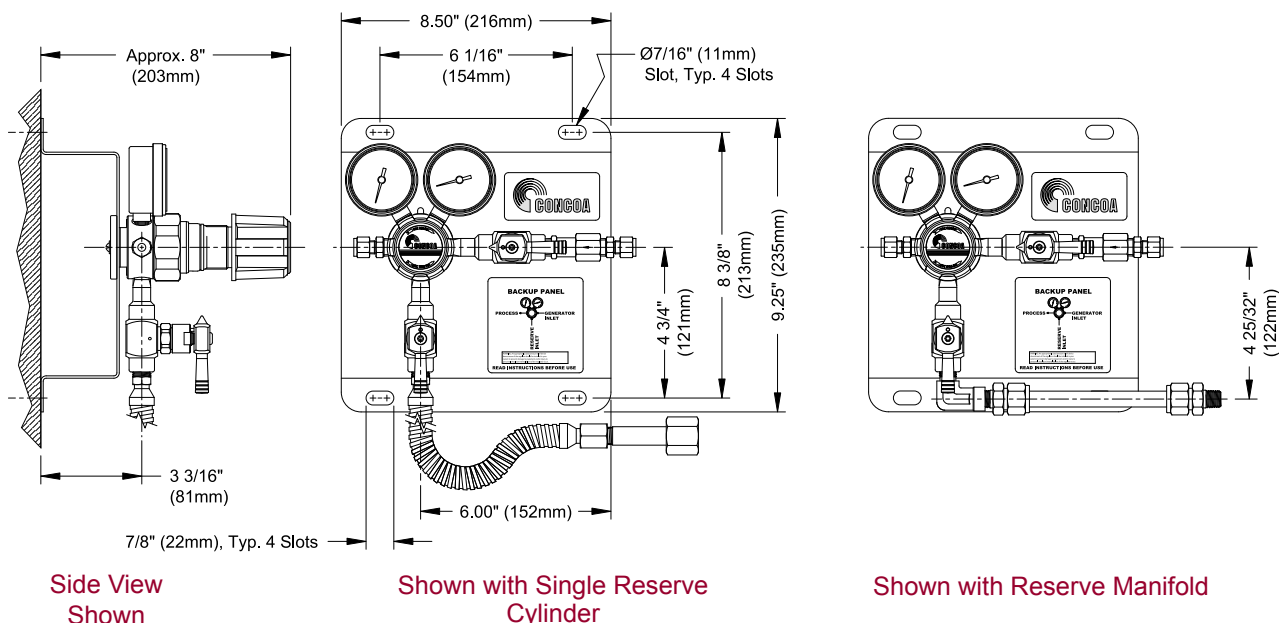
Weight

Brass - 6.5 lbs. (2.95 kg)
Stainless steel - 7.25 lbs (3.29 kg)

Pressure Differential Switchovers



Installation Dimensions



Ordering Information

540	A	B	C	D	-CON
Series 540	Material	Number of Reserve Cylinders	Hose Style	Assembly/Gauges	Hose
	1: Brass 150 PSIG (10 BAR) maximum outlet	1: 1 cylinder with diaphragm valve	0: No hoses	1: 0-4000 PSIG/28,000 kPa gauge, no alarm capability	CGA DIN 477 BS 341 and others available
	2: 316L stainless steel 150 PSIG (10 BAR) maximum outlet	2: 2 cylinder manifold	2: 24" (600mm) flexible 316 stainless steel with check valve	2: 0-275 BAR/0-4000 PSIG gauge, no alarm capability	
	3: Brass 500 PSIG (34 BAR) maximum outlet	3: 3 cylinder manifold	3: 36" (900mm) flexible 316 stainless steel with check valve	4: 0-275 BAR/0-4000 PSIG gauge with pressure switch and 110/220 VAC remote alarm	
	4: 316L stainless steel 500 PSIG (34 BAR) maximum outlet	4: 4 cylinder manifold	6: 72" (1800mm) flexible 316 stainless steel with check valve	9: 0-275 BAR/0-4000 PSIG gauge with pressure switch without remote alarm	
		5: 5 cylinder manifold			
		6: 6 cylinder manifold			
		7: 7 cylinder manifold			
		8: 8 cylinder manifold			
		9: 9 cylinder manifold			
		0: 10 cylinder manifold			
		A: 11 cylinder manifold			
		B: 12 cylinder manifold			
		C: 13 cylinder manifold			
		D: 14 cylinder manifold			
		E: 15 cylinder manifold			
		W: Diaphragm valve with 1/4" FPT port			
		Y: Diaphragm valve with manifold connection			

53 SERIES

Point-of-Use Panels

The 53 Series Point-of-Use Panels provide a modular design to mount and locate 300 Series regulators at the point of use for high purity instrumentation or process gases. They are intended to provide final pressure control in gas distribution systems and are ideal for laboratory applications. The 53 Series are supplied with up to four high-purity regulators with rear entry inlet ports and diaphragm outlet valves. Five standard delivery pressure ranges can be individually selected for each regulator station 0-15 PSIG (0-1 BAR) to 0-200 PSIG (0-14 BAR).

Typical Applications

Bulk gas distribution systems

Gas and liquid chromatography

High purity carrier gases

Zero, span, and calibration gases

High purity chamber pressurization

Liquefied hydrocarbon gas control

Control of cryogenic gases

EPA protocol standards



53S-5000-001 Shown



53C-3330-001 Shown

Features

307 or 327 Series Regulators

High gas purity

Modular Design

Flexible installation

Rear Entry Regulator Inlet Ports

Piping behind panel

Five Individually Selectable Pressure Ranges

0-15 to 0-200 PSIG (0-1 to 0-14 BAR)

14 Gauge Stainless Steel Panel

Clean corrosion resistant installation

Stainless Steel Diaphragm

No inboard diffusion

High-Purity Diaphragm Outlet Valve

Gas flow control and positive shut-off

Materials

Regulator and Valve Body

316L stainless steel or
chrome-plated brass barstock

Bonnet

Chrome-plated brass barstock

Seats

PTFE on regulator
PCTFE on valve

Filter

Patented 10 micron 316 mesh or
sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (207 bar)

Operating Temp. Range

-40°F to 140°F (-40°C to 60°C)

Cv

0.1

Inlet/Outlet Connection

1/4" NPT female

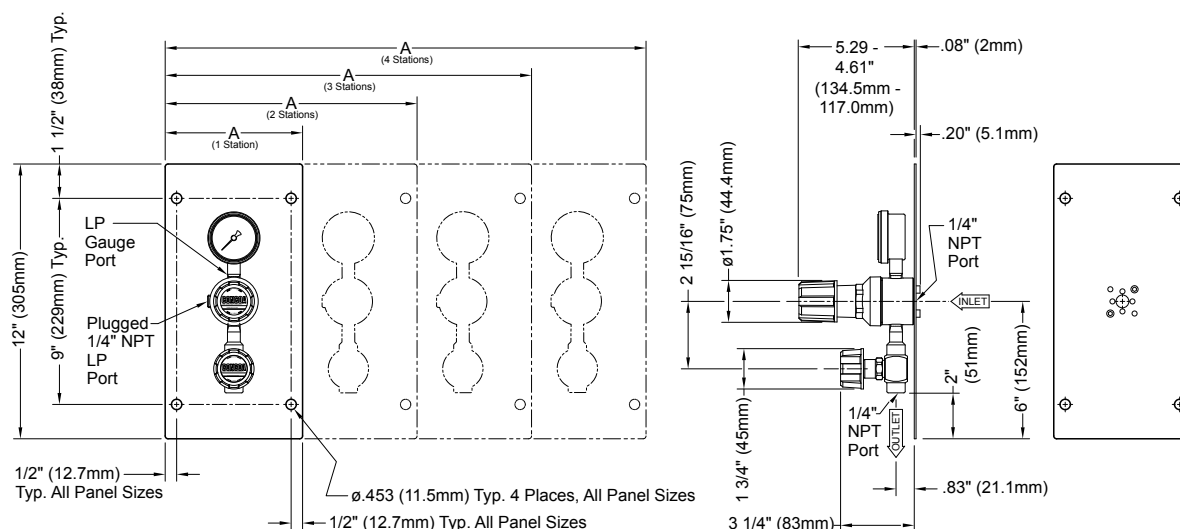
Gauges

2" (53mm) brass or stainless steel case
53C chrome-plated stem/phosphor
bronze tube
53S stainless steel stem and tube

Panel

14-gauge 304 stainless steel

Installation Dimensions



Number of Stations	Length “Dim A”
1	6” (152.4mm)
2	11” (279.4mm)
3	16” (406.4mm)
4	21” (533.4mm)

Ordering Information

53	Material	Station 1		Station 2		Station 3		Station 4	
Series 53		Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge
	C: Chrome-plated brass barstock 307 Series regulators	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-200 kPa	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-200 kPa	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-200 kPa	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-200 kPa
	S: 316L stainless steel 327 Series regulators	A: 0-15 PSIG (0-1 BAR)	0-2 BAR/ 0-30 PSIG	A: 0-15 PSIG (0-1 BAR)	0-2 BAR/ 0-30 PSIG	A: 0-15 PzSIG (0-1 BAR)	0-2 BAR/ 0-30 PSIG	A: 0-15 PSIG (0-1 BAR)	0-2 BAR/ 0-30 PSIG
		2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-400 kPa	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-400 kPa	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-400 kPa	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-400 kPa
		B: 0-30 PSIG (0-2 BAR)	0-4 BAR/ 0-60 PSIG	B: 0-30 PSIG (0-2 BAR)	0-4 BAR/ 0-60 PSIG	B: 0-30 PSIG (0-2 BAR)	0-4 BAR/ 0-60 PSIG	B: 0-30 PSIG (0-2 BAR)	0-4 BAR/ 0-60 PSIG
		3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-700 kPa	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-700 kPa	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-700 kPa	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-700 kPa
		C: 0-50 PSIG (0-3.5 BAR)	0-7 BAR/ 0-100 PSIG	C: 0-50 PSIG (0-3.5 BAR)	0-7 BAR/ 0-100 PSIG	C: 0-50 PSIG (0-3.5 BAR)	0-7 BAR/ 0-100 PSIG	C: 0-50 PSIG (0-3.5 BAR)	0-7 BAR/ 0-100 PSIG
		4: 0-150 PSIG (0-10 BAR)*	0-200 PSIG/ 0-1400 kPa	4: 0-150 PSIG (0-10 BAR)*	0-200 PSIG/ 0-1400 kPa	4: 0-150 PSIG (0-10 BAR)*	0-200 PSIG/ 0-1400 kPa	4: 0-150 PSIG (0-10 BAR)*	0-200 PSIG/ 0-1400 kPa
		D: 0-150 PSIG (0-10 BAR)*	0-14 BAR/ 0-200 PSIG	D: 0-150 PSIG (0-10 BAR)*	0-14 BAR/ 0-200 PSIG	D: 0-150 PSIG (0-10 BAR)*	0-14 BAR/ 0-200 PSIG	D: 0-150 PSIG (0-10 BAR)*	0-14 BAR/ 0-200 PSIG
		5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-1400 kPa	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-1400 kPa	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-1400 kPa	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-1400 kPa
		E: 0-100 PSIG (7 BAR)	0-14 BAR/ 0-200 PSIG	E: 0-100 PSIG (7 BAR)	0-14 BAR/ 0-200 PSIG	E: 0-100 PSIG (7 BAR)	0-14 BAR/ 0-200 PSIG	E: 0-100 PSIG (7 BAR)	0-14 BAR/ 0-200 PSIG
		6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-2800 kPa	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-2800 kPa	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-2800 kPa	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-2800 kPa
		F: 0-200 PSIG (0-14 BAR)	0-28 BAR/ 0-400 PSIG	F: 0-200 PSIG (0-14 BAR)	0-28 BAR/ 0-400 PSIG	F: 0-200 PSIG (0-14 BAR)	0-28 BAR/ 0-400 PSIG	F: 0-200 PSIG (0-14 BAR)	0-28 BAR/ 0-400 PSIG
* Only available on the 53C panels.									

54 SERIES

Point-of-Use Panels

The 54 Series Point of Use Panels provide a modular design to mount and locate 400 Series regulators at the point of use for the most demanding gas applications. They are intended to provide final pressure control for research and ultra high purity gases or, in the case of the 54S, even corrosive service gases or mixtures. The high leak integrity of 1×10^{-9} cc/sec ensures delivery of those gases in an unaltered state to the most sensitive process or instrumentation applications. Supplied with up to four regulators per panel they are ideal permanent fixtures for point of use pressure control.

Typical Applications

Research grade gas systems
Ultra high purity gas control
Gas chromatograph mass spectrometer support gases
Environmental calibration
Liquefied hydrocarbon gas control
Corrosive process gases
Zero, span and support gases
Hydrocarbon research and standards



54S-3000-001 Shown

54C-3330-001 Shown

Features

- 435 or 445 Series Regulators**
Ultra high gas purity
- Modular Design**
Flexible installation
- Rear Entry Regulator Inlet Ports**
Piping behind panel
- Five Individually Selectable Pressure Ranges**
0-15 to 0-500 PSIG (0-1 to 0-34 BAR)
- 14 Gauge Stainless Steel Panel**
Clean corrosion resistant installation
- Stainless Steel Diaphragm**
No inboard diffusion
- High-Purity Diaphragm Outlet Valve**
For flow control and positive shut-off

Materials

- Regulator and Valve Body**
316L stainless steel or brass barstock
- Bonnet**
Chrome-plated brass barstock
- Seats**
PTFE on regulator
PCTFE on valve
- Filter**
10 micron patented stainless steel mesh or sintered bronze
- Diaphragm**
316L stainless steel
- Internal Seals**
PTFE

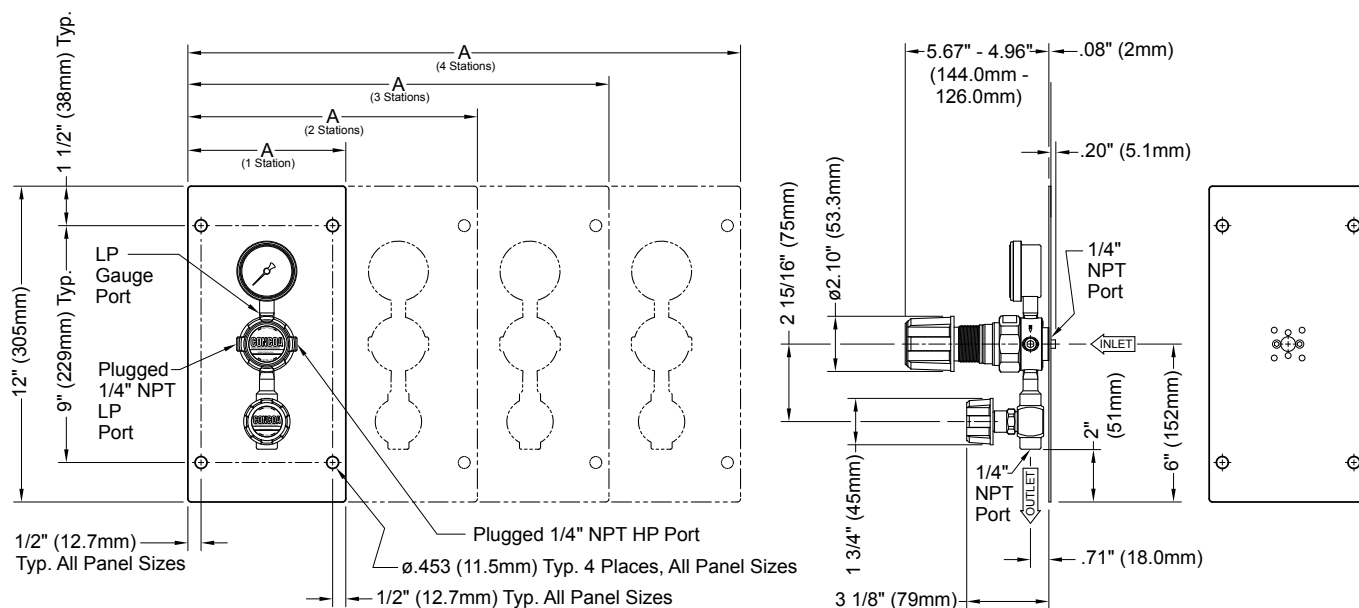
Specifications

- Maximum Inlet Pressure**
3000 PSIG (207 BAR)
- Operating Temp. Range**
-40°F to 140°F (-40°C to 60°C)
- Cv**
0.1 (Max outlet 50 PSIG/3.5 BAR or below)
0.2 (Max outlet above 50 PSIG/3.5 BAR)
- Inlet/Outlet Connection:**
1/4" NPT female
- Gauges**
2" (53mm) brass or stainless steel case
54B brass stem/phosphor bronze tube
54S stainless steel stem and tube
- Panel**
14-gauge 304 stainless steel

Panels



Installation Dimensions



Number of Stations	Length "Dim A"
1	6" (152.4mm)
2	11" (279.4mm)
3	16" (406.4mm)
4	21" (533.4mm)

Ordering Information

54	Material	Station 1		Station 2		Station 3		Station 4	
Series 54		Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge	Outlet Pressure	Outlet Gauge
B: Brass 435 Series regulators		1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ 100-0-200 kPa	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ 100-0-200 kPa	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ 100-0-200 kPa	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ 100-0-200 kPa
	S: 316L stainless steel 445 Series regulators	A: 0-15 PSIG (0-1 BAR)	-1-0-2 BAR/ 30"-0-30 PSIG	A: 0-15 PSIG (0-1 BAR)	-1-0-2 BAR/ 30"-0-30 PSIG	A: 0-15 PSIG (0-1 BAR)	-1-0-2 BAR/ 30"-0-30 PSIG	A: 0-15 PSIG (0-1 BAR)	-1-0-2 BAR/ 30"-0-30 PSIG
		2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -100-0-700 kPa	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -100-0-700 kPa	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -100-0-700 kPa	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -100-0-700 kPa
		B: 0-50 PSIG (0-3.5 BAR)	-1-0-7 BAR/ 30"-0-100 PSIG	B: 0-50 PSIG (0-3.5 BAR)	-1-0-7 BAR/ 30"-0-100 PSIG	B: 0-50 PSIG (0-3.5 BAR)	-1-0-7 BAR/ 30"-0-100 PSIG	B: 0-50 PSIG (0-3.5 BAR)	-1-0-7 BAR/ 30"-0-100 PSIG
		3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa
		C: 0-100 PSIG (0-7 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	C: 0-100 PSIG (0-7 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	C: 0-100 PSIG (0-7 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	C: 0-100 PSIG (0-7 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG
		4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-2800 kPa	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-2800 kPa	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-2800 kPa	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-2800 kPa
		D: 0-250 PSIG (0-17 BAR)	0-27 BAR/ 0-400 PSIG	D: 0-250 PSIG (0-17 BAR)	0-27 BAR/ 0-400 PSIG	D: 0-250 PSIG (0-17 BAR)	0-27 BAR/ 0-400 PSIG	D: 0-250 PSIG (0-17 BAR)	0-27 BAR/ 0-400 PSIG
		5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-7000 kPa	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-7000 kPa	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-7000 kPa	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-7000 kPa
E: 0-500 PSIG (0-34 BAR)		0-70 BAR/ 1000 PSIG		0-70 BAR/ 1000 PSIG		0-70 BAR/ 1000 PSIG		0-70 BAR/ 1000 PSIG	
		7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -100-0-1400 kPa
		G: 0-150 PSIG (0-10 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	G: 0-150 PSIG (0-10 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	G: 0-150 PSIG (0-10 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG	G: 0-150 PSIG (0-10 BAR)	-1-0-14 BAR/ 30"-0-200 PSIG



52 SERIES

Maniflex™

The 52B, 52C and 52S Series Maniflex are modular gas distribution systems that may be connected to regulators, dual regulator switchovers, IntelliSwitch and AutoSwitch systems. A modular gas distribution system allows the user to size the inlet capacity of a system so that cylinder changes will not be as frequent. The Maniflex system provides the user with the capability of purchasing an unlimited number of manifold stations connected to a single header. The Maniflex headers themselves may be purchased as a complete system (unassembled) or as individual components.



52B 1232 shown

Features	Materials	Specifications
Modular Design Flexible field installation Integral Diaphragm Valves Leak-tight integrity Independent shut-off capability Expandable System Future growth capability Brass, Chrome-Plated Brass or Stainless Steel No possibility of gas contamination Metal to Metal Field-Assembled Joints Easy leak-tight field assembly Ease of transportation Silver-Brazed or TIG-Welded Connectors Contamination-free installation	Diaphragm Valve Body: Brass or stainless steel barstock Seat: PCTFE Stems: 303/304 stainless steel Diaphragms: Elgiloy® Flexible Hoses 316L stainless steel Monel® inner core for oxygen service	Maximum Inlet Pressure 3500 PSIG (240 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Header 0.625 OD x 0.188 wall (brass) 0.625 OD x 0.095 wall (stainless steel)

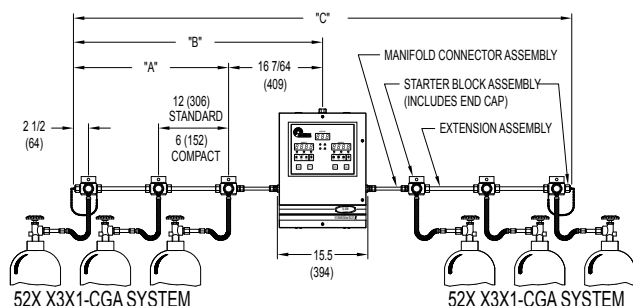
Valves: CRN OH 5216.5R1/Extensions: CRN OH 5806.5

Manifolds

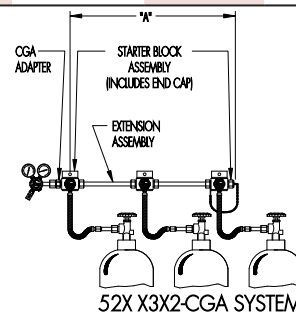


Dimensions ("A", "B", and "C" refer to the lengths specified on the diagram below.)

Cylinders per Side	1	2	3	4	5	6	7	8	9	10
"A" standard (single row)	2.5" (68mm)	14.5" (368.3mm)	26.5" (673.1mm)	38.5" (977.9mm)	50.5" (1282.7mm)	62.5" (1587.5mm)	74.5" (1892.3mm)	86.5" (2197.1mm)	98.5" (2501.9mm)	110.5" (2806.7mm)
"B" standard (single row)	18.6" (472.44mm)	29.6" (751.84mm)	42.6" (1082.04mm)	54.6" (1386.84mm)	66.6" (1691.64mm)	78.6" (1996.44mm)	90.6" (2301.24mm)	102.6" (2606.04mm)	114.6" (2910.84mm)	126.6" (3215.64mm)
"C" standard (single row)	37.3" (947.42mm)	59.3" (1506.22mm)	85.3" (2166.62mm)	109.3" (2776.22mm)	133.3" (3385.82mm)	157.3" (3995.42mm)	181.3" (4605.02mm)	205.3" (5214.62mm)	229.3" (5824.22mm)	253.3" (6433.82mm)
Weight standard (brass single row)	3.45 lbs (1.56 kg)	7.07 lbs (3.21 kg)	10.69 lbs (4.85 kg)	14.31 lbs (6.49 kg)	17.93 lbs (8.13 kg)	21.55 lbs (9.77 kg)	25.17 lbs (11.42 kg)	28.79 lbs (13.05 kg)	32.41 lbs (14.7 kg)	36.03 lbs (16.34 kg)
Weight standard (ss single row)	3.33 lbs (1.51 kg)	6.45 lbs (2.92 kg)	9.57 lbs (4.34 kg)	12.69 lbs (5.76 kg)	15.81 lbs (7.17 kg)	18.93 lbs (8.59 kg)	22.05 lbs (10 kg)	25.17 lbs (11.4 kg)	28.29 lbs (12.83 kg)	31.41 lbs (14.25 kg)
"A" compact (single row)	2.5" (68mm)	8.5" (215.9mm)	14.5" (368.3mm)	20.5" (520.7mm)	26.5" (673.1mm)	32.5" (825.5mm)	38.5" (977.9mm)	44.5" (1130.3mm)	50.5" (1282.7mm)	56.5" (1435.1mm)
"B" compact (single row)	18.6" (472.44mm)	24.6" (624.84mm)	29.6" (751.84mm)	36.6" (929.64mm)	42.6" (1082.04mm)	48.6" (1234.44mm)	54.6" (1371.6mm)	60.6" (1539.24mm)	66.6" (1691.64mm)	72.6" (1844.04mm)
"C" compact (single row)	37.3" (947.42mm)	49.3" (1252.22mm)	59.3" (1506.22mm)	73.3" (1861.82mm)	85.3" (2166.62mm)	97.3" (2471.42mm)	109.3" (2776.22mm)	121.3" (3081.02mm)	133.3" (3385.82mm)	145.3" (3690.62mm)
Weight compact (brass single row)	3.45 lbs (1.56 kg)	6.62 lbs (3.00 kg)	9.79 lbs (4.44 kg)	12.96 lbs (5.88 kg)	16.13 lbs (7.32 kg)	19.3 lbs (8.75 kg)	22.47 lbs (10.19 kg)	25.64 lbs (11.63 kg)	28.81 lbs (13.07 kg)	31.98 lbs (14.50 kg)
Weight compact (ss single row)	3.33 lbs (1.51 kg)	6.27 lbs (2.84 kg)	9.21 lbs (4.18 kg)	12.15 lbs (5.51 kg)	15.09 lbs (6.84 kg)	18.03 lbs (8.18 kg)	20.97 lbs (9.51 kg)	23.91 lbs (10.84 kg)	26.85 lbs (12.18 kg)	29.79 lbs (13.51 kg)



Switchover System



Regulator System

Ordering Information

52X	A	B	C	D	-CON
Series	Orientation	Stations	Hose Style	Outlet Connection	Hose Connection
52B Brass	1: Standard single row (right or left) (one cylinder/station)	0: 10 stations	0: None	1: 1/4" FPT connection	CGA DIN 477 BS 341 and others available
52C Chrome-plated brass	2: Standard double row (right or left) (two cylinders/station)	1: 1 station	2: 24" (600mm) flexible 316 stainless steel with check valve	2: Cylinder connection adapter	
52S Stainless steel	3: Standard single duplex (right and left) (one cylinder/station)	2: 2 stations	3: 36" (900mm) flexible 316 stainless steel with check valve		
	4: Compact single row (right or left) (One cylinder/station)	3: 3 stations	6: 72" (1800mm) flexible 316 stainless steel with check valve		
	5: Compact double row (right or left) (two cylinders/station)	4: 4 stations			
	6: Compact single duplex (right and left) (one cylinder/station)	5: 5 stations			
		6: 6 stations			
		7: 7 Stations			
		8: 8 Stations			
		9: 9 Stations			
		A: 11 stations			
		B: 12 stations			
		C: 13 stations			
		D: 14 stations			
		E: 15 stations			

52L SERIES

MicroManifold

The 52L Series MicroManifold is a flexible non-corrosive gas distribution system that can be configured as a gas or vent manifold. Configured as a gas manifold, the 52L offers excellent gaseous flow capacity from either liquid cans or high-pressure cylinders to a CONCOA pressure control device. Configured as a vent manifold, the 52L equalizes the head space pressure of each liquid cylinder manifolded together. This allows each cylinder to withdraw equally and operate at maximum flow capacity with minimal losses.

Advanced Features

- Vent manifold excess flow orifices prevent hoses from whipping
- Safety disk protects manifold from over-pressurization
- Compact modular design provides simple field expandability
- Multiple cylinder hose options with universal gas compatibility
- Integrated 1/2" MPT connector that reduces potential leak sites
- A flexible design that can be used with a 538, 539, 542, and 544 series switchovers or as a vent kit for 577 cryogenic system.



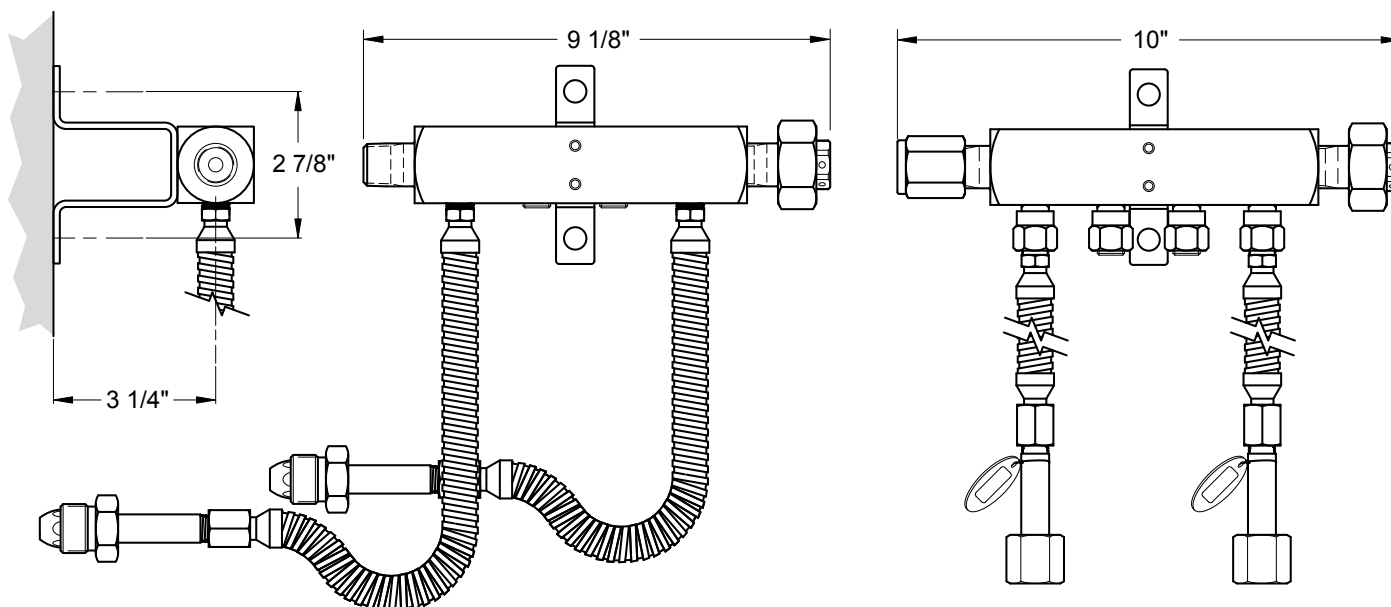
52L 1053-580 Shown

Features	Materials	Specifications
Gas Delivery and Vent Manifold from Liquid Cylinder Supply Argon, Carbon Dioxide, Nitrogen, and Oxygen Gas Delivery from High Pressure Cylinder Supply Air, Argon, Carbon Dioxide, Helium, and Oxygen Expandable System Future growth capability High Flow Gas Installations Laboratory building main supply Large incubator installations High flow purge gas supply Bioreactor supply	Body Brass barstock body Flexible Hoses 316L stainless steel Monel® inner core for oxygen service	Maximum Inlet Pressure 4500 PSIG (310 BAR) Temperature Range 0°F to 140°F (-18°C to 60°C) Inlet Connection Four 1/4" FPT One 1/2" FPT Outlet Connection 1/2" MPT Weight (manifold and mounting bracket) 4.20 lbs. (1.91 kg)

Manifolds



Dimensions



52L-1152-580 MicroManifold

52L-21A2-295 Vent MicroManifold

Ordering Information

52L	A	B	C	D	Inlet
Series 52L	Manifold Type	Orientation	Hoses Style	Cylinder side	Connection
	1: MicroManifold (No Gauges)	0: Simplex right bank	0: No hose	1: One	Please specify inlet connection Use -001 for hose option 0.
	2: Vent MicroManifold (No Gauges)	1: Simplex left bank	3: 72" (1800mm) flexible stainless steel core and armor cased**	2: Two	
	3: MicroManifold 0-400 PSIG/0-2500 kPa gauges	2: Duplex right and left bank	5: 36" (900mm) flexible stainless steel core and armor cased**	3: Three	Use CGA 295 or 622 for hose option A
	4: MicroManifold 0-600 PSIG/0-40 BAR gauges	3: Simplex right bank with pressure switch gauge*	7: 24" (600mm) flexible stainless steel core and armor cased**	4: Four	CGA DIN 477 BS 341 and others available
	5: MicroManifold 0-4000 PSIG/0-2500 kPa gauges	4: Simplex left bank with pressure switch gauge	A: 72" (1800mm) flexible stainless steel-braided with PTFE lining inert or Carbon Dioxide†	5: Five	
	6: MicroManifold 0-4000 PSIG/0-280 BAR gauges	5: Duplex right and left bank with pressure switch gauge*	B: 72" (1800mm) flexible stainless steel-braided with PTFE lining for Oxygen†	6: Six	Use CGA 440 for hose option B
	7: MicroManifold 0-6000 PSIG/0-40,000 kPa gauges	*Valid with A= 4, 6, and 8	K: 72" (1800mm) stainless steel core and armor cased 4500 PSIG (310 BAR)††	7: Seven	
	8: MicroManifold 0-6000 PSIG/0-420 BAR		L: 36" (900mm) stainless steel core and armor cased 4500 PSIG (310 BAR)††	8: Eight	
			**Valid with A= 1, 3, 5, and 6	0: Zero	
			†Valid with A= 2		
			††Valid with A= 1, 7, or 8		

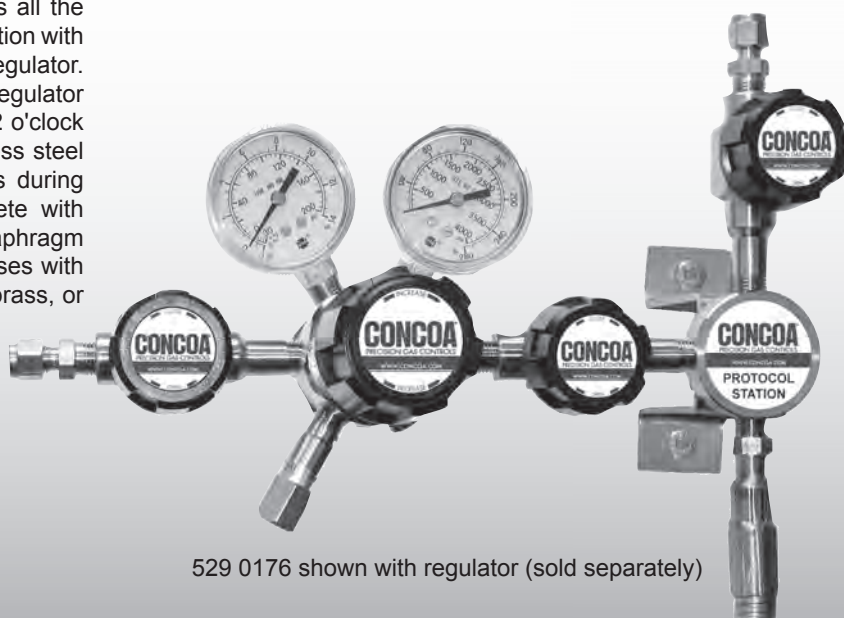
Options and Hoses

Option	Order Number	Description
Burst Disk Kit	829-9960	1/2" MPT replacement burst disk kit
Floor Stand	830-7437	Single manifold floor stand provides support for up to two consecutive manifold extensions
Vacuum Jacketed Hoses	551-2000	36" (900mm) Vacuum-jacketed cryogenic hose
	551-2001	48" (1200mm) Vacuum-jacketed cryogenic hose
	551-2002	75" (1900mm) Vacuum-jacketed cryogenic hose

529 SERIES

Protocol Purge Station

The 529 Series Protocol Purge Station combines all the safety and convenience of a standard Protocol Station with a feature to purge the hose and inlet side of the regulator. The Protocol Purge Station allows isolation of the regulator inlet and is equipped with a purge valve at the 12 o'clock position on the mounting block with a 1/4" stainless steel tube fitting to safely pipe away the process gas during purging, if required. This station comes complete with mounting block and bracket, two 533 Series diaphragm valves and 3-foot (900 mm) all stainless steel hoses with armor casing. Available in brass, chrome-plated brass, or 316L stainless steel.



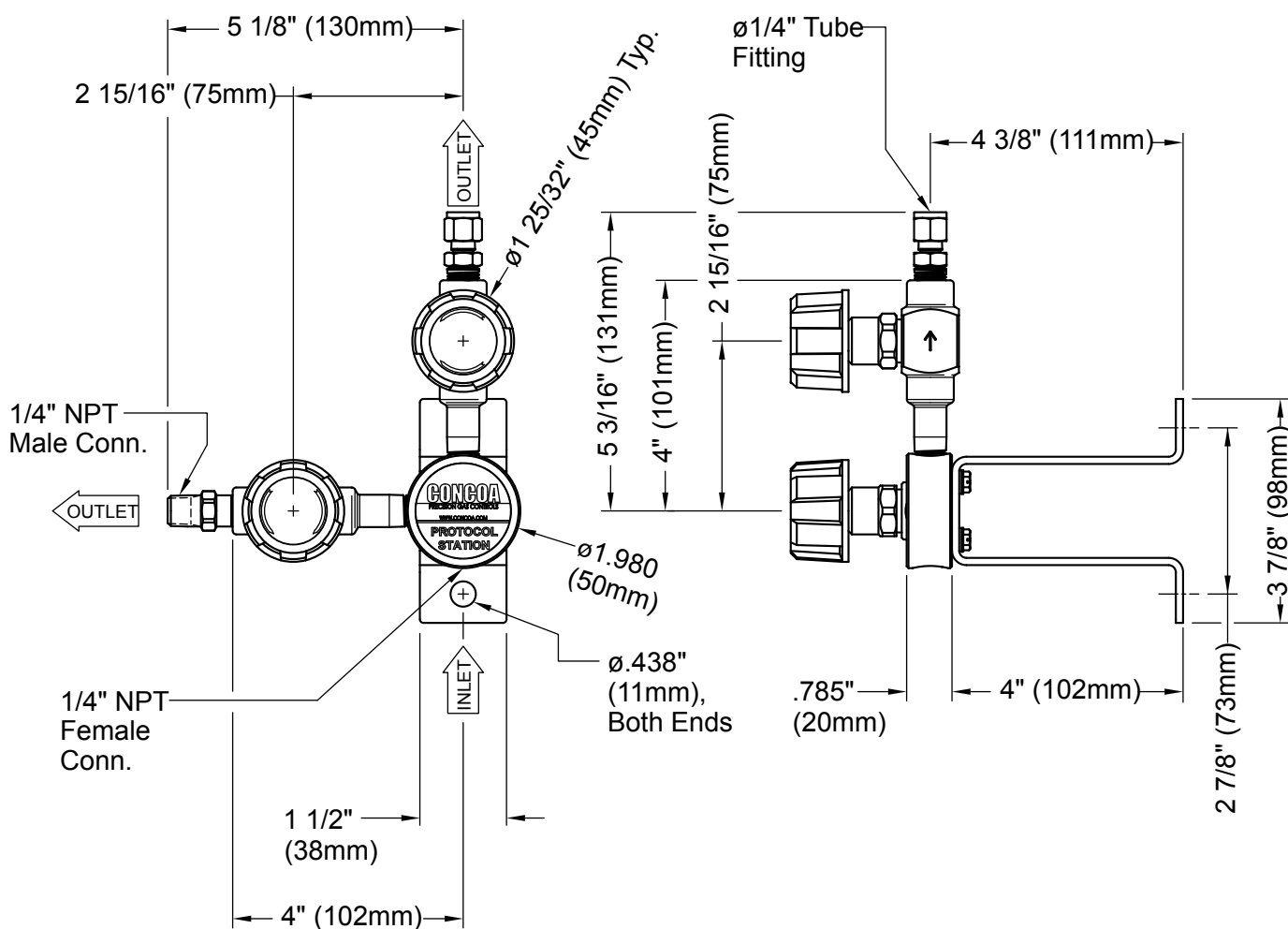
529 0176 shown with regulator (sold separately)

Features	Materials	Specifications
Regulator Isolation Valve Isolates regulator inlet during purging process Purge Valve with 1/4" Compression Tube Fitting Allows complete and safe purging of the inlet Integral Check Valve at Inlet of Hose Minimizes purging during cylinder change Bracket Mounts Attaches conveniently to any surface Connections CGA, DIN 477, BS 341 and others available	Protocol Tee Brass, chrome-plated brass or 316L stainless steel barstock Flexible Hoses 316L stainless steel inner core Monel® inner core for oxygen service Inlet Connection 316L stainless steel or brass barstock Check Valve "O" Ring Viton® (or neoprene for ammonia) Bracket 304 stainless steel	Maximum Inlet Pressure 3500 PSIG (240 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Weight (Single Stage) 3.6 lbs. (1.4 kg) Weight (Dual Stage) 4.0 lbs. (1.6 kg)

Manifolds



Installation Dimensions



529 0174 Dimensions Shown

Ordering Information

Order Number	Description	Max Inlet
Add letter "Q" after any regulator order number.		
For example, to order a 422 1331-580 with a protocol purge station, the order number would be 422 1331-580Q		
To order separately:		
529 0171-CON	Protocol purge station for single stage brass regulators	3500 PSIG (240 BAR)
529 0172-CON	Protocol purge station for single stage chrome-plated brass regulator	3500 PSIG (240 BAR)
529 0173-CON	Protocol purge station for single stage 316L stainless steel regulators	3500 PSIG (240 BAR)
529 0174-CON	Protocol purge station for dual stage brass regulators	3500 PSIG (240 BAR)
529 0175-CON	Protocol purge station for dual stage chrome-plated brass regulators	3500 PSIG (240 BAR)
529 0176-CON	Protocol purge station for dual stage 316L stainless steel regulators	3500 PSIG (240 BAR)

529 SERIES

Protocol Station

The 529 Series Protocol Station is designed for the convenient wall mounting of any CONCOA high purity regulator. Wall mounting of a regulator provides ease of use, prevents regulator damage, and improves safety. The 529 Series Protocol Station is available in either chrome-plated brass or 316 stainless steel construction, as specified by the regulator series. This option comes complete with a 3 ft (900mm) stainless steel flexible hose with armor casing.



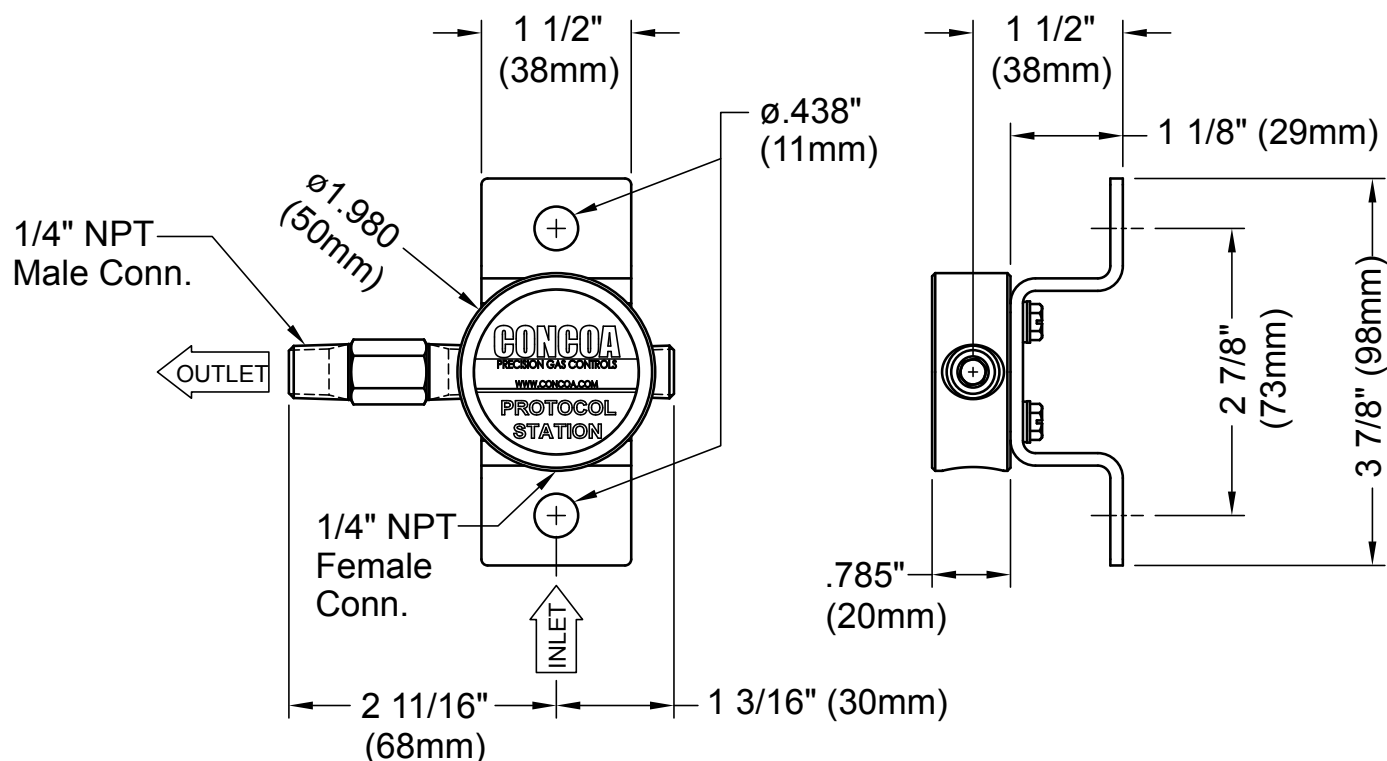
529 0126 shown with regulator (sold separately)

Features	Materials	Specifications
Plugged Port in Gas Block Facilitates purging Integral Check Valve at Inlet No internal contamination during cylinder change Bracket Mounts Attaches conveniently to any surface Connections CGA, DIN 477, BS 341 and others available	Protocol Tee Brass, chrome-plated brass or 316L stainless steel barstock Flexible Hoses 316L stainless steel inner core Monel® inner core for oxygen service PTFE inner core for 6000 PSIG (405 BAR) Inlet Connection 316L stainless steel or brass barstock Check Valve 'O' Ring Viton® (or neoprene for ammonia) Bracket 304 stainless steel	Maximum Inlet Pressure 3500 PSIG (240 BAR) 4500 PSIG (310 BAR) optional 6000 PSIG (415 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Weight (Single Stage) 3.1 lbs. (1.4 kg) Weight (Dual Stage) 3.5 lbs. (1.6 kg)

Manifolds



Installation Dimensions



529 0101 Dimensions Shown

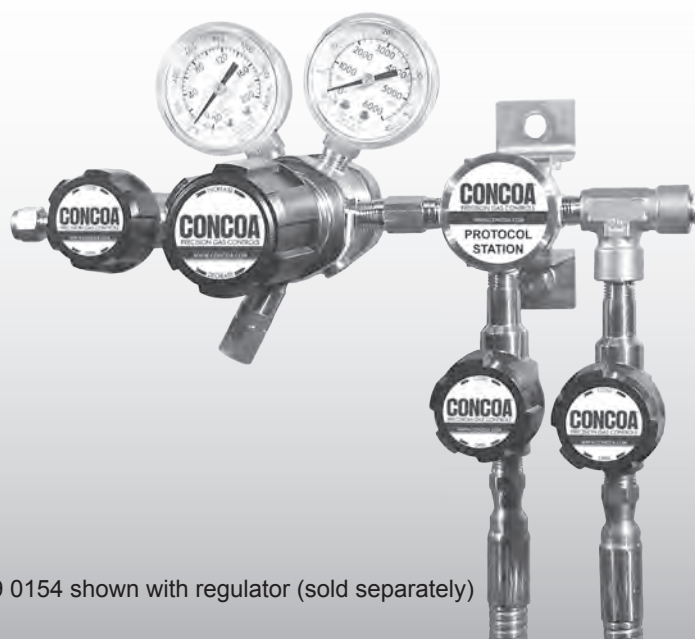
Ordering Information

Order Number	Description
Add letter "M" after any regulator order number.	For example, 422 1331-580 with a protocol station wall mount, the order number would be 422 1331-580M
To order separately:	
529 0101-CON	Protocol station for single stage brass regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0102-CON	Protocol station for single stage chrome-plated brass regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0103-CON	Protocol station for single stage 316L stainless steel regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0104-CON	Protocol station for dual stage brass regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0105-CON	Protocol station for dual stage chrome-plated brass regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0106-CON	Protocol station for dual stage 316L stainless steel regulators with 3500 PSIG (240 BAR) max inlet pressure
529 0121-CON	Protocol station for single stage brass regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0122-CON	Protocol station for single stage chrome-plated brass regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0123-CON	Protocol station for single stage 316L stainless steel regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0124-CON	Protocol station for dual stage brass regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0125-CON	Protocol station for dual stage chrome-plated regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0126-CON	Protocol station for dual stage 316L stainless steel regulators with 4500 PSIG (310 BAR) max inlet pressure
529 0133-CON	Protocol station for single stage regulators with 6000 PSIG (405 BAR) max inlet pressure

529 SERIES

Protocol Switchover Station

The 529 Series Protocol Switchover Station combines all of the safety and convenience features of a standard Protocol Station with the added efficiency of having a reserve cylinder connected to the system. The Protocol Switchover Station valving allows manual switching and isolation of the depleted cylinder for safe change-out. The system comes complete with Protocol Station, two 3 ft (900mm) all stainless steel hoses with armor casing, and two valves (diaphragm for 3500 PSIG/240 BAR or needle for 4500 or 6000 PSIG/310 or 405 BAR).



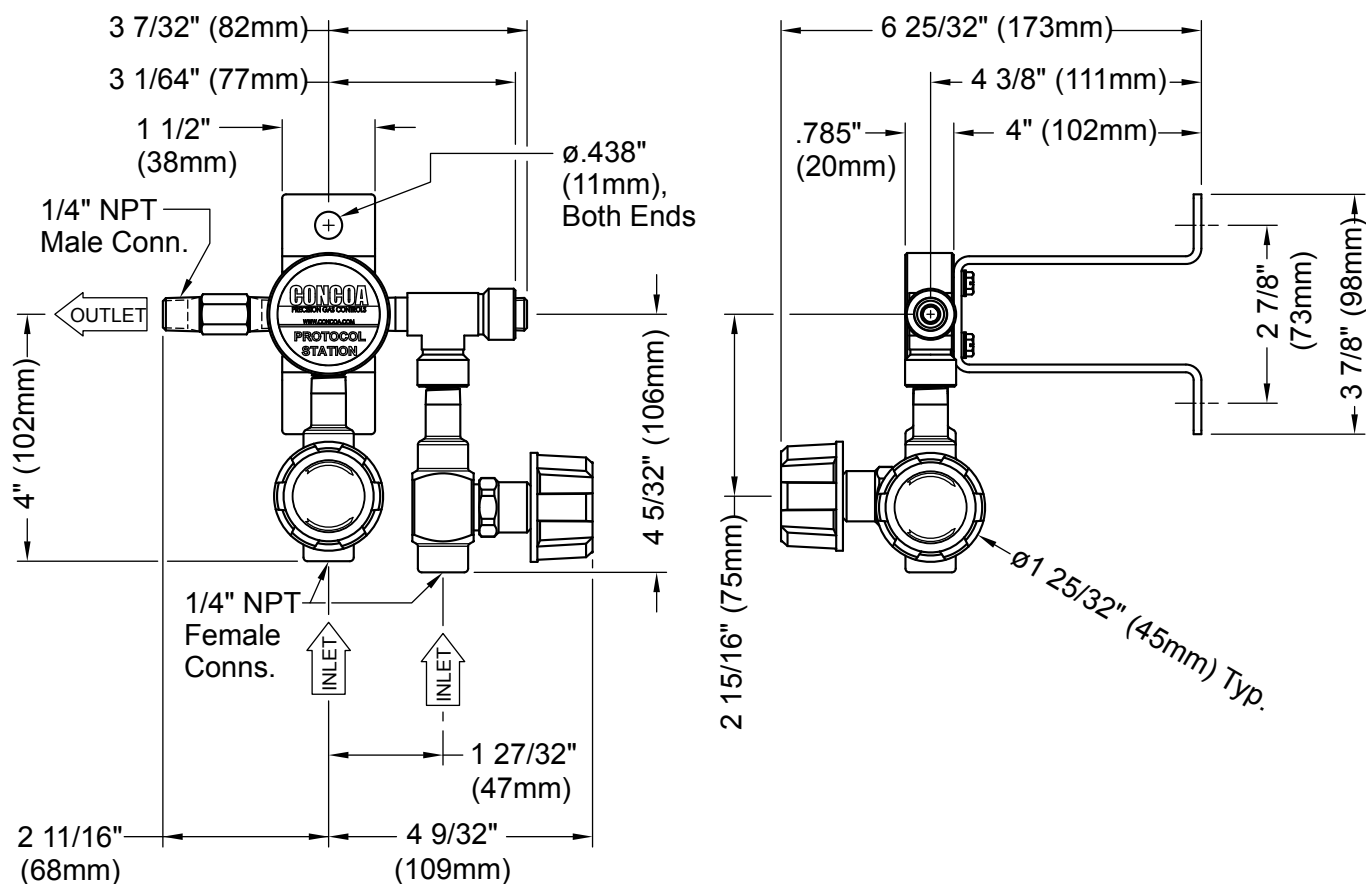
529 0154 shown with regulator (sold separately)

Features	Materials	Specifications
Plugged Port in Gas Block Facilitates purging Integral Check Valve at Inlet No internal contamination during cylinder change Bracket Mounts Attaches conveniently to any surface Connections CGA, DIN 477, BS 341 and others available	Protocol Tee Brass, chrome-plated brass or 316L stainless steel barstock Flexible Hoses 316L stainless steel inner core Monel® inner core for oxygen service PTFE inner core for 6000 PSIG (405 BAR) Inlet Connection 316L stainless steel or brass barstock Check Valve 'O' Ring Viton® (or neoprene for ammonia) Bracket 304 stainless steel	Maximum Inlet Pressure 3500 PSIG (240 BAR) 4500 PSIG (310 BAR) optional 6000 PSIG (415 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Weight (Single Stage) 3.6 lbs. (1.4 kg) Weight (Dual Stage) 4.0 lbs. (1.6 kg)

Manifolds



Installation Dimensions



529 0154 Dimensions Shown

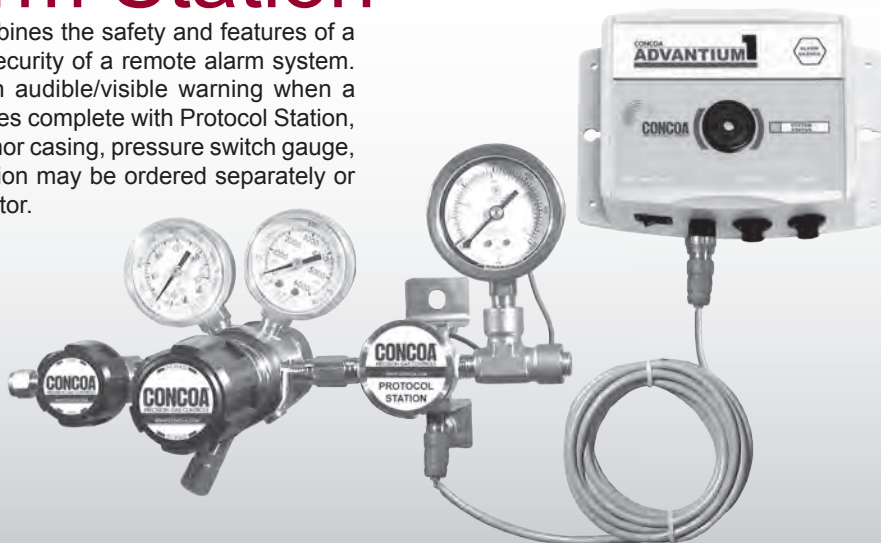
Ordering Information

Order Number	Description	Max Inlet
Add letter "C" after any regulator order number.	For example, to order a 422 1331-580 with a protocol switchover, the order number would be 422 1331-580C	
To order separately:		
529 0154-CON	Protocol switchover station for brass regulators	3500 PSIG (240 BAR)
529 0155-CON	Protocol switchover station for chrome-plated brass regulators	3500 PSIG (240 BAR)
529 0156-CON	Protocol switchover station for 316L stainless steel regulators	3500 PSIG (240 BAR)
529 0157-CON	Protocol switchover station for brass regulators	4500 PSIG (310 BAR)
529 0158-CON	Protocol switchover station for chrome-plated brass regulators	4500 PSIG (310 BAR)
529 0159-CON	Protocol switchover station for 316L stainless steel regulators	4500 PSIG (310 BAR)
529 0160-CON	Protocol switchover station for 316L stainless steel regulators	6000 PSIG (405 BAR)

529 SERIES

Protocol Alarm Station

The 529 Series Protocol Alarm Station combines the safety and features of a standard Protocol Station with the added security of a remote alarm system. The Protocol Alarm Station will provide an audible/visible warning when a cylinder is nearly depleted. The system comes complete with Protocol Station, 3 ft (900mm) all stainless steel hose with armor casing, pressure switch gauge, and remote alarm. The Protocol Alarm Station may be ordered separately or attached to any CONCOA high purity regulator.



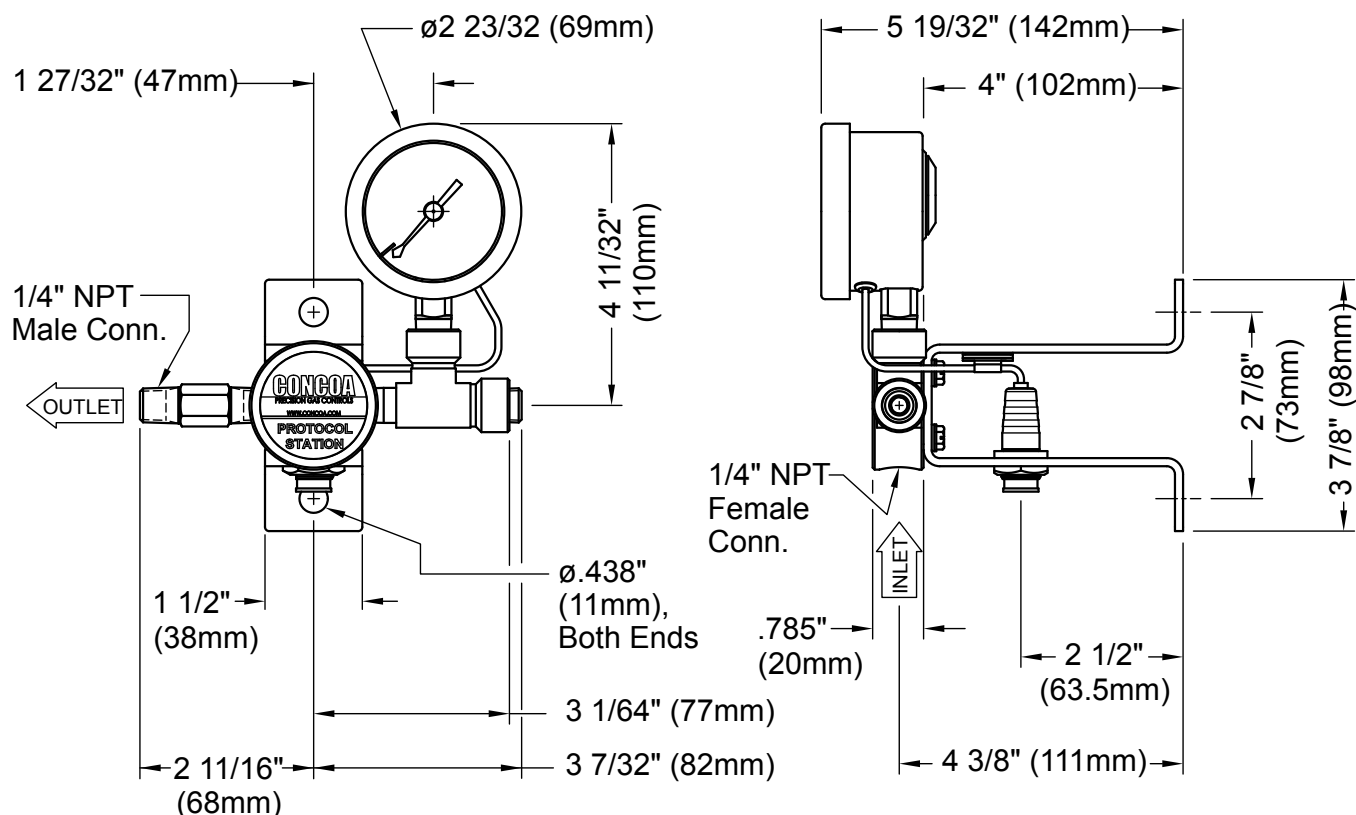
529 1103 shown with regulator (sold separately)

Features	Materials	Specifications
Plugged Port in Gas Block Facilitates purging Integral Check Valve at Inlet No internal contamination during cylinder change Bracket Mounts Attaches conveniently to any surface Pressure Switch Gauge Provides visible warning of cylinder depletion Remote Alarm Provides audible and visible warning of cylinder depletion Connections CGA, DIN 477, BS 341 and others available	Protocol Tee Brass, chrome-plated brass or 316L stainless steel barstock Flexible Hoses 316L stainless steel inner core Monel® inner core for oxygen service PTFE inner core for 6000 PSIG (405 BAR) Inlet Connection 316L stainless steel or brass barstock Check Valve "O" Ring Viton® (or neoprene for ammonia) Bracket 304 stainless steel	Maximum Inlet Pressure 3500 PSIG (240 BAR) 4500 PSIG (310 BAR) optional 6000 PSIG (415 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Weight (Single Stage) 3.6 lbs. (1.6 kg) Weight (Dual Stage) 4.0 lbs. (1.8 kg) Intrinsic Safety Barriers Required for flammable gas service or for use in hazardous environments

Manifolds



Installation Dimensions



529 1095 Dimensions Shown

Ordering Information

Order Number	Description	Max Inlet	Inlet Gauge
Add letter "B" after any regulator order number For example, to order a 422 1331-580 with protocol alarm station, the order number would be 422 1331-580B			
To order separately:			
529 1095-CON	Protocol alarm station for brass regulators (110/220 VAC)	400 PSIG (27 BAR)	600 PSIG/42 BAR
529 1096-CON	Protocol alarm station for chrome-plated brass regulators (110/220 VAC)	400 PSIG (27 BAR)	600 PSIG/42 BAR
529 1097-CON	Protocol alarm station for 316L stainless steel regulators (110/220 VAC)	400 PSIG (27 BAR)	600 PSIG/42 BAR
529 1101-CON	Protocol alarm station for brass regulators (110/220 VAC)	3500 PSIG (240 BAR)	4000 PSIG/275 BAR
529 1102-CON	Protocol alarm station for chrome-plated brass regulators (110/220 VAC)	3500 PSIG (240 BAR)	4000 PSIG/275 BAR
529 1103-CON	Protocol alarm station for 316L stainless steel regulators (110/220 VAC)	3500 PSIG (240 BAR)	4000 PSIG/275 BAR
529 1121-CON	Protocol alarm station for brass regulators (110/220 VAC)	4500 PSIG (310 BAR)	6000 PSIG/405 BAR
529 1122-CON	Protocol alarm station for chrome-plated brass regulators (110/220 VAC)	4500 PSIG (310 BAR)	6000 PSIG/405 BAR
529 1123-CON	Protocol alarm station for 316L stainless steel regulators (110/220 VAC)	4500 PSIG (310 BAR)	6000 PSIG/405 BAR
529 1133-CON	Protocol alarm station for 316L stainless steel regulators (110/220 VAC)	6000 PSIG (405 BAR)	10,000 PSIG/700 BAR



Manifolds

529 SERIES

Protocol Switchover Alarm

The 529 Series Protocol Switchover Alarm combines all of the features of the Protocol Switchover Station with the added security of a remote alarm system. The Protocol Switchover Alarm will provide an audible/visible warning when a cylinder is nearly depleted. The system comes complete with Protocol Switchover Station, two 3 ft (900mm) all stainless steel hoses with armor casing, two valves, and remote alarm.



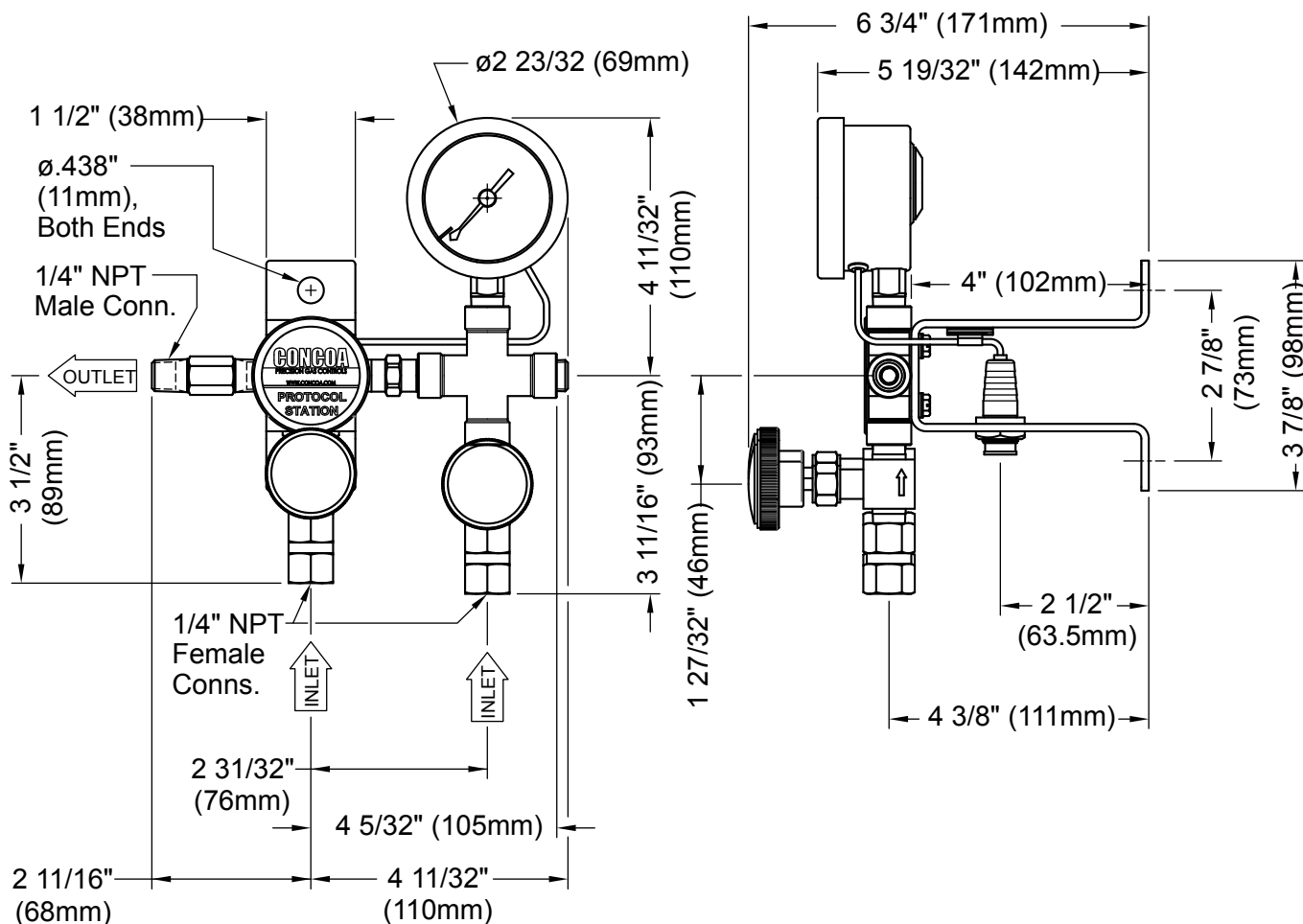
529 0156-660 shown with regulator (sold separately)

Features	Materials	Specifications
Plugged Port in Gas Block Facilitates purging Integral Check Valve at Inlet No internal contamination during cylinder change Bracket Mounts Attaches conveniently to any surface Pressure Switch Gauge Provides visible warning of cylinder depletion Remote Alarm Provides audible and visible warning of cylinder depletion Connections CGA, DIN 477, BS 341 and others available	Protocol Tee Brass, chrome-plated brass or 316L stainless steel barstock Flexible Hoses 316L stainless steel inner core Monel® inner core for oxygen service PTFE inner core for 6000 PSIG (405 BAR) Inlet Connection 316L stainless steel or brass barstock Check Valve "O" Ring Viton® (or neoprene for ammonia) Bracket 304 stainless steel	Maximum Inlet Pressure 3500 PSIG (240 BAR) 4500 PSIG (310 BAR) optional 6000 PSIG (415 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Weight (Single Stage) 4.4 lbs. (2 kg) Weight (Dual Stage) 4.8 lbs. (2.2 kg) Intrinsic Safety Barriers Required for flammable gas service or for use in hazardous environments

Manifolds



Installation Dimensions



529 0157 Dimensions Shown

Ordering Information

Order Number	Description	Inlet Gauge
Add letter "H" after any regulator order number	For example, to order a 422 1331-580 with a protocol switchover alarm (110/220 VAC), the order number would be 422 1331-580H	
To order separately:		
529 0151-CONH	Protocol switchover alarm for brass regulators (110/220 VAC)	600 PSIG (42 BAR)
529 0152-CONH	Protocol switchover alarm for chrome-plated brass regulators (110/220 VAC)	600 PSIG (42 BAR)
529 0153-CONH	Protocol switchover alarm for 316L stainless steel regulators (110/220 VAC)	600 PSIG (42 BAR)
529 0154-CONH	Protocol switchover alarm for brass regulators (110/220 VAC)	3500 PSIG (240 BAR)
529 0155-CONH	Protocol switchover alarm for chrome-plated brass regulators (110/220 VAC)	3500 PSIG (240 BAR)
529 0156-CONH	Protocol switchover alarm for 316L stainless steel regulators (110/220 VAC)	3500 PSIG (240 BAR)
529 0157-CONH	Protocol switchover alarm for brass regulators (110/220 VAC)	4500 PSIG (310 BAR)
529 0158-CONH	Protocol switchover alarm for chrome-plated brass regulators (110/220 VAC)	4500 PSIG (310 BAR)
529 0159-CONH	Protocol switchover alarm for 316L stainless steel regulators (110/220 VAC)	4500 PSIG (310 BAR)
529 0160-CONH	Protocol switchover alarm for 316L stainless steel regulators (110/220 VAC)	6000 PSIG (405 BAR)

ALARMS

Advantium 8

Designed for use with all CONCOA automatic switchover systems, the new Advantium Series offers superior integration, protection, and convenience by allowing end-users to monitor normally open or closed contact devices with a single flip of a switch. Systems can be configured for inert or flammable gases utilizing CONCOA's innovative intrinsic safety barriers, allowing end-users to safely monitor flammable gas cylinder contents via a remote alarm on a CONCOA switchover.



529 5310 shown

Features

High Profile Visible and Audible Notification

Brightly lit LEDs and 93 dB alarm

Audible Alarm Silence Function

Flexibility between audio or visual notification

Thirteen Channels

Eight input and five output

Dry Contact Relay Output

Four discrete or one general

RS232 Data Interface Capability

Computer monitoring programs

NO or NC Switch Compatibility

Customize system signals

Auto-reset on Cylinder Replenishment

No button to push

Custom Configure One to Four Systems

Economical and expandable

Materials

Enclosure

Cast aluminum

Specifications

Sound

93 dB audible alarm

Power

120 VAC or 220 VAC

Relay Contact

Single pole, double throw (SPDT)

Relay Contact Rating

.5 A@24 VDC

RS232 Serial Port

No parity, 9600 baud rate

Dimensions

9.59" x 5.48" x 2.95"
(24.39mm x 139.19mm x 74.93mm)

Power Fuses

.5A normal blow, type 3AG, 120 VAC
.25A normal blow, type 3AG, 220 VAC

System Fuses

Internal resettable poly-fuse

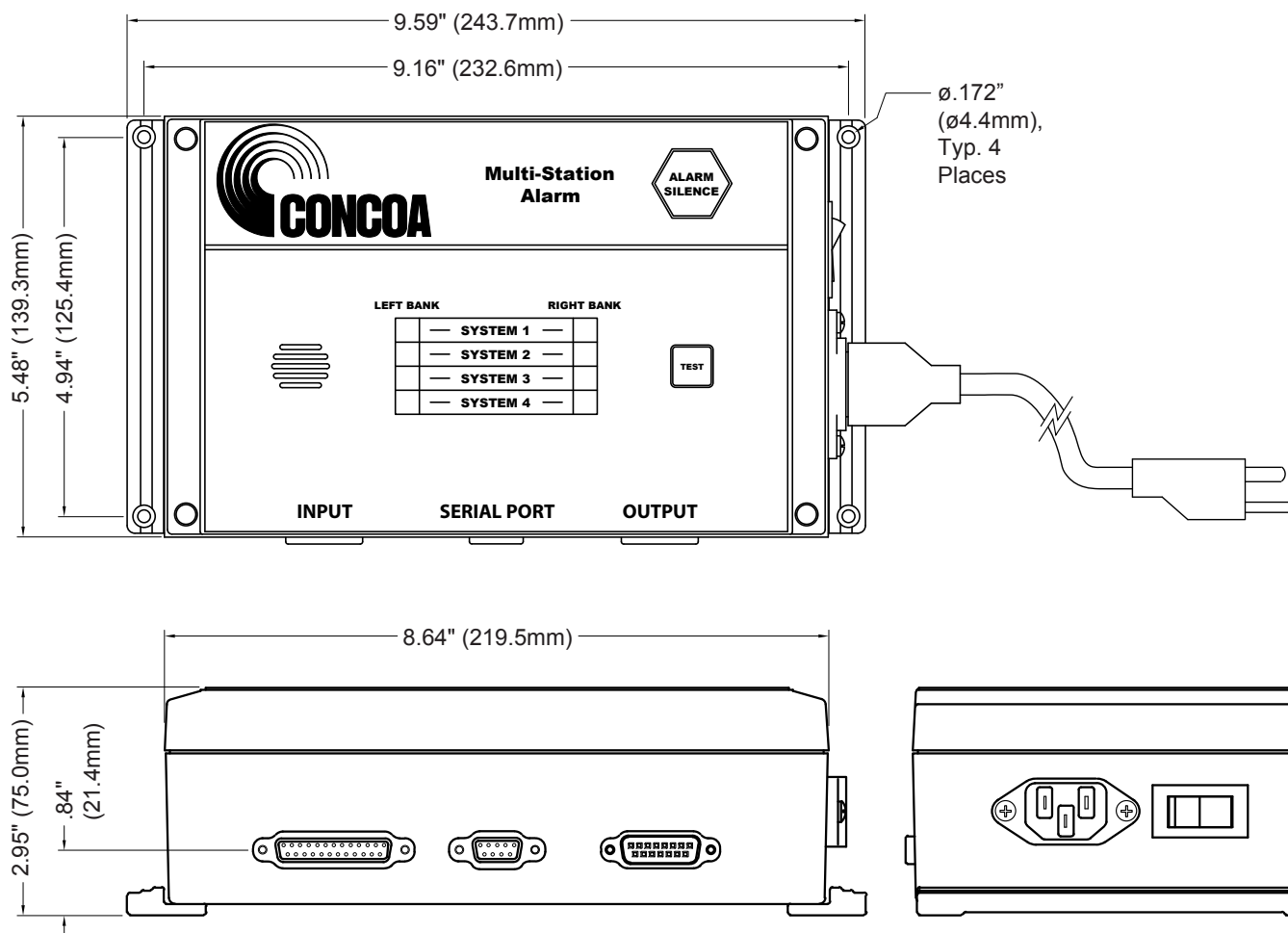
Connections

Input connector (D25)
Relay output connector (D15)
RS232 serial output connector (D9)

Alarms



Installation Dimensions



Ordering Information

Order No.	Description
529 5310	Multi-station remote alarm (120V)
529 5311	Multi-station remote alarm (220V)
529 5312	Intrinsic safety barriers for 515, 526, 527 Series switchover systems (required for flammable gas or hazardous environments)
529 5296	Intrinsic safety barriers for 522, 523 537 Series AutoSwitch systems (required for flammable gas or hazardous environments)
529 5316-XX	Cable available in 3', 10', 25', 50' and 100' lengths. "XX" in order number specifies length.
529 5314	Advantium 8 D25 x four 6-pin male adapter cable
529 5315	Advantium 8 D25 x one 6-pin male adapter cable

ALARMS

Advantium PLUS

Designed for use with all CONCOA automatic switchover systems, the new Advantium Series offers superior integration, protection, and convenience by allowing end-users to monitor normally open or closed contact devices with a single flip of a switch. Systems can be configured for inert or flammable gases utilizing CONCOA's innovative intrinsic safety barriers, allowing end-users to safely monitor flammable gas cylinder contents via a remote alarm on a CONCOA switchover.



Features

Two Input Channels (Advantium 2 PLUS)

Monitors both primary and reserve banks

One Input Channel (Advantium 1 PLUS)

Monitors one source

Dry Contact Relay Outputs

Connects to building or auxiliary systems

NO or NC Switch Compatibility

Customize system signals

Highly Visible Lighted Status Notification

Easy to tell status from a distance

Auto-reset on Cylinder Replenishment

No button to push

Ability to "Daisy Chain" Multiple Alarms

Notify multiple users of alarm

Switch Selectable 40-Minute Alarm Delay

Allow for transient events

CE marked

Conforms to EU directives

Materials

Enclosure

Polycarbonate injection molding

Flame retardant

UV stabilized with mold release

RoHS compliant

Specifications

Audio

93db audible alarm

Power Input

90~264 VAC, 47~63 Hz (US, UK, European, Australian, and Chinese adapters included)

Outputs

2 channels (Advantium 2 PLUS)

1 channel (Advantium 1 PLUS)

Dry contacts

Normally open/normally closed (selectable)

Contact rating .5A 24V

Inputs

2 channels

Accepts normally open/normally closed contact closure (selectable)

Resettable fuse protection

Connectors

Input: 6 pin circular

Output: 4 pin circular

Dimensions

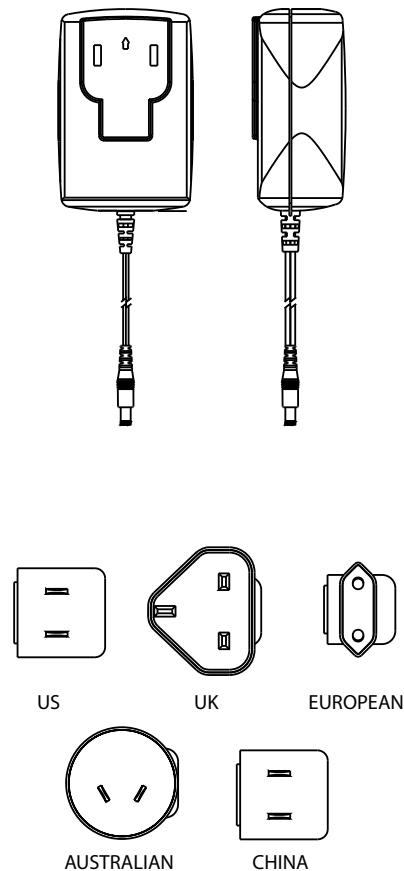
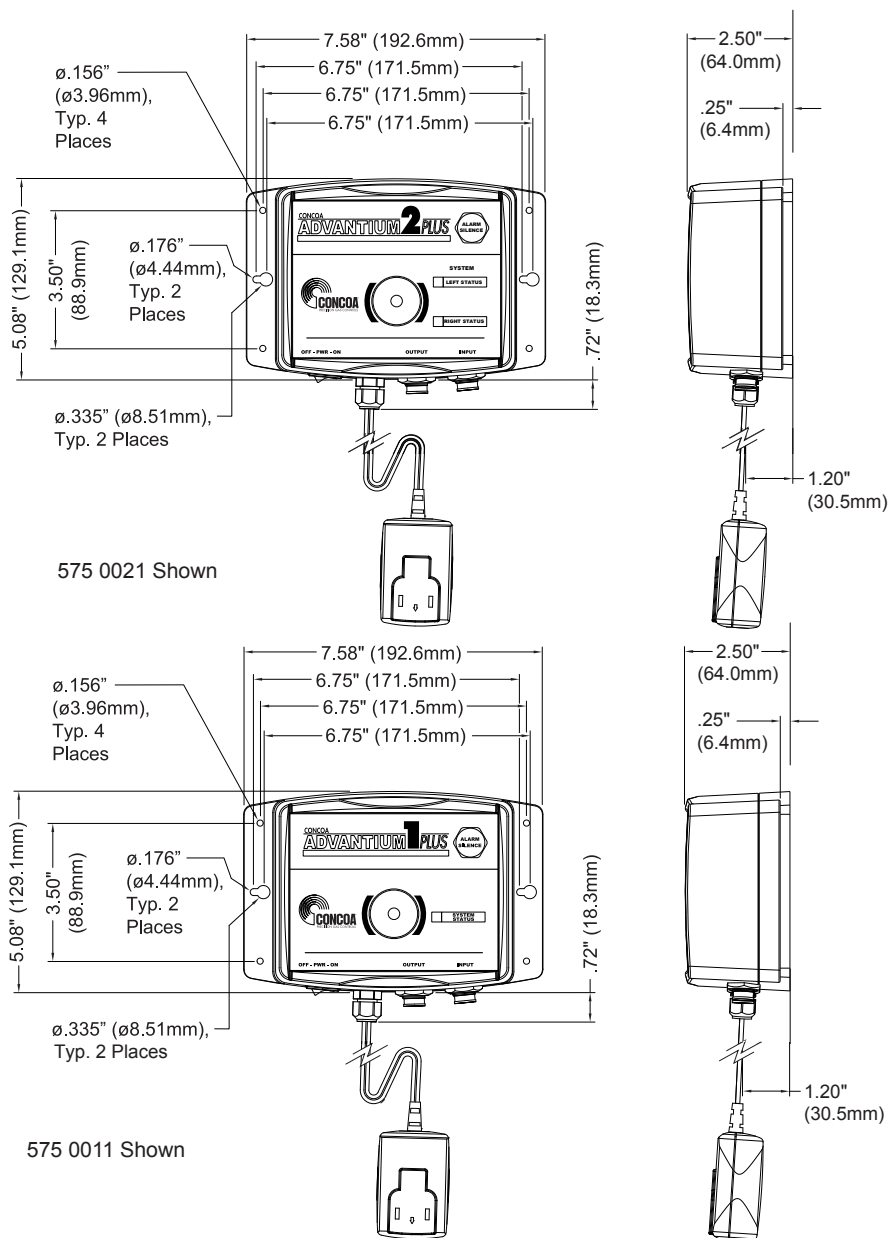
4.75 x 7.5" x 2.625"

(120.65mm x 190.5mm x 66.675mm)

Alarms



Installation Dimensions



Power supply and blade adapters included with 575 0013 and 575 0023

Ordering Information

Order No.	Description
575 0023-01-000	Advantium 2 PLUS remote alarm (universal input)
575 0013-01-000	Advantium 1 PLUS remote alarm (universal input)
529 5316-XX	Input Cable Assembly available in 3', 10', 25', 50' and 100' lengths. "XX" in order number denotes length.
529 5329-XX	Interconnect Cable Assembly available in 3', 10', 25', 50' and 100' lengths. "XX" in order number denotes length.
529 5312	Intrinsic safety barriers for 515, 526 and 527 Series switchover systems and 529 protocol alarm station
529 5296	Intrinsic safety barriers for 522, 523, 537 Series switchover systems
529 5319-XX	Cables for intrinsic safety barriers (two required)



400 Series Regulators

401 SERIES

The 401 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases, or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

- Single Stage
- Chrome-Plated Brass Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems

Gas and liquid chromatography

High purity carrier gases

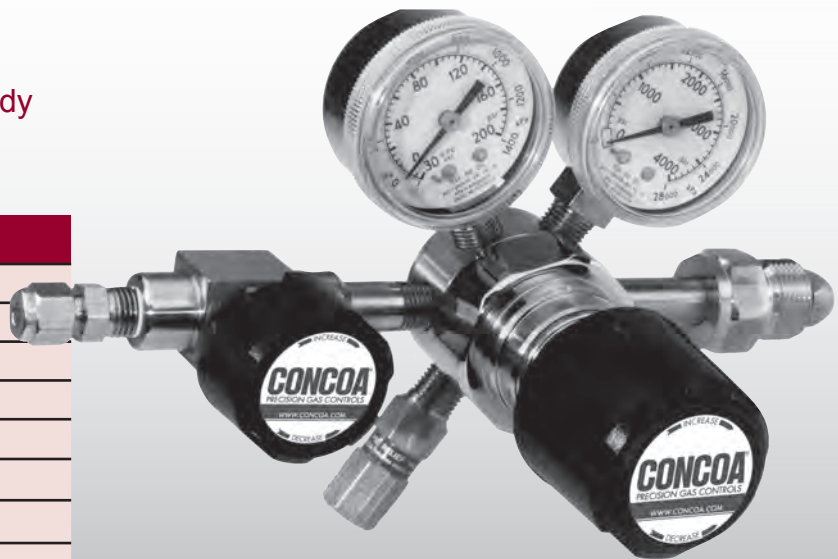
Zero, span, and calibration gases

High purity chamber pressurization

Liquefied hydrocarbon gas control

Control of cryogenic gases

EPA protocol standards



401 7331-580 shown

Features

Metal-to-Metal Diaphragm Seal

No possibility of gas contamination

CAPSULE® Seat

Increased serviceability and life

Chrome-plated Brass Barstock Body

Smooth surface finish

Front Panel-Mountable

Easy installation

10 Micron Filtration in Both Stages

Fail-safe seat performance

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)

Broad range of applications

Pipe Away Relief Valve

Safely vents exhaust gases

Materials

Body

Chrome-plated brass barstock

Bonnet

Chrome-plated brass barstock

Seat

PTFE

PCTFE with 3500 PSIG (240 BAR)
or 4500 PSIG (310 BAR) inlet option

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter chrome-plated

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁹ scc/sec

Cv

0.1

See page 188 for flow curves

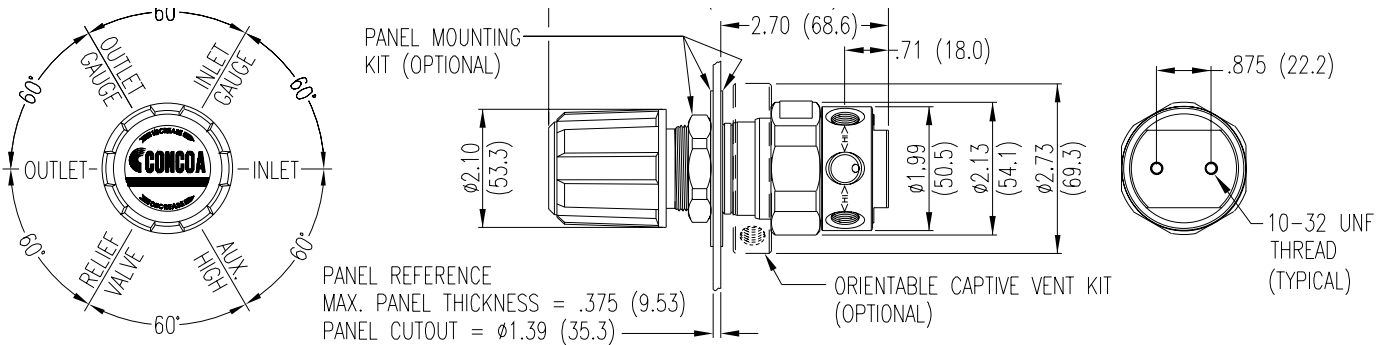
Weight (401 7331-580)

3.99 lbs. (1.81 kg)

400 Series Regulators



Installation Dimensions



Ordering Information

401	A	B	C	D	-CON	Options	
Series 401	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG / 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting	6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG / 0-70 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT	7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	8: 0-6000 PSIG/ 0-400 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
	A: 0-15 (0-1 BAR)*	0-30 PSIG / 0-2 BAR***	G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i> <i>**Standard assembly does not include relief valve</i> <i>*** With redline for acetylene use.</i>		<i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i>	7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" fitting			
				C: 3/8" BSP LH fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
G: 1/8" stainless steel tube fitting							
H: 1/4" stainless steel tube fitting							
M: 6mm tube fitting							
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

402 SERIES

The 402 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases, or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

- Single Stage
- Brass Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems

Gas and liquid chromatography

High purity carrier gases

Zero, span, and calibration gases

High purity chamber pressurization

Liquefied hydrocarbon gas control

Control of cryogenic gases

EPA protocol standards



402 1331-580 shown

Features

Metal-to-Metal Diaphragm Seal

No possibility of gas contamination

CAPSULE® Seat

Increased serviceability and life

Brass Barstock Body

Smooth surface finish

Front Panel-Mountable

Easy installation

10 Micron Filtration in Both Stages

Fail-safe seat performance

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)

Broad range of applications

Pipe Away Relief Valve

Safely vents exhaust gases

Materials

Body

Brass barstock

Bonnet

Brass barstock

Seat

PTFE

PCTFE with 3500 PSIG (240 BAR)
or 4500 PSIG (310 BAR) inlet option

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁹ scc/sec

Cv

0.1

See page 188 for flow curves

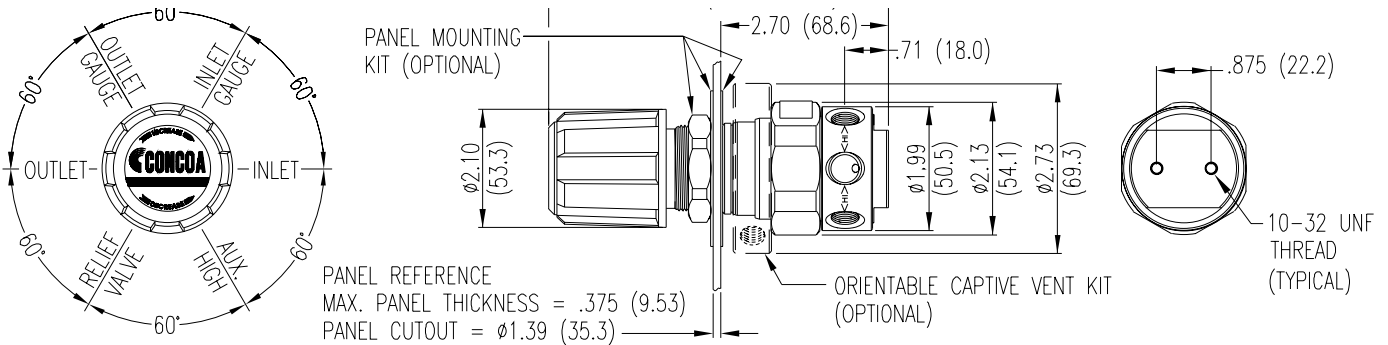
Weight (402 1331-580)

3.99 lbs. (1.81 kg)

400 Series Regulators



Installation Dimensions



Ordering Information

402	A	B	C	D	-CON	Options	
Series 402	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting	6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT	7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	8: 0-6000 PSIG/ 0-400 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
	A: 0-15 (0-1 BAR)*	0-30 PSIG / 0-2 BAR***	G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i> <i>**Standard assembly does not include relief valve</i> <i>*** With redline for acetylene use.</i>		<i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i> <i>†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®</i>	7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" fitting			
				C: 3/8" BSP LH fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
G: 1/8" stainless steel tube fitting							
H: 1/4" stainless steel tube fitting							
M: 6mm tube fitting							
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

403 SERIES

The 403 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Chrome-plated Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases



403 2021-000 shown

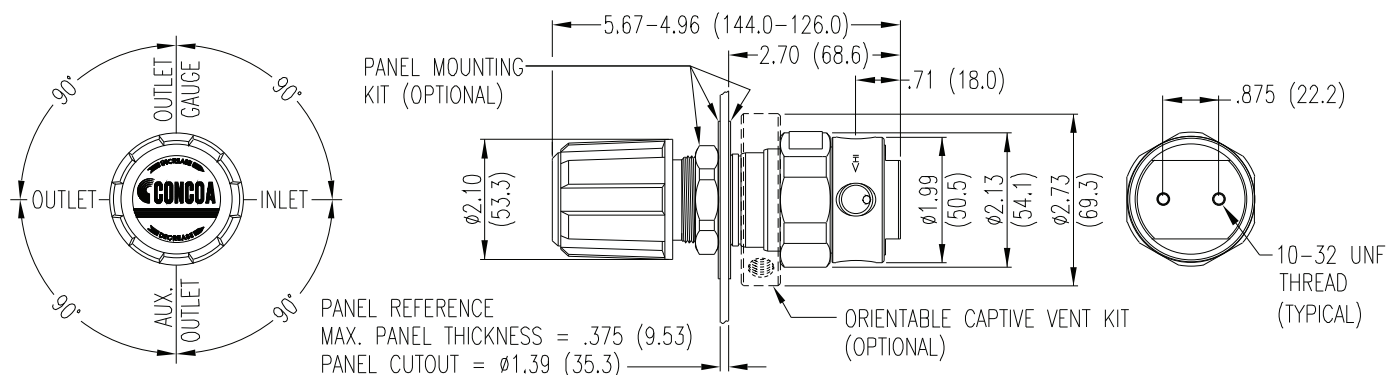
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Chrome-plated Brass Barstock Body Smooth surface finish Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders Pipe Away Relief Valve Safely vents exhaust gases	Body Chrome-plated brass barstock Bonnet Chrome-plated brass barstock Seat PTFE Filter 10 micron sintered bronze Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter chrome-plated Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 Max outlet 50 PSIG (3.5 BAR) or below 0.2 Max outlet above 50 PSIG (3.5 BAR) <i>See page 189 for flow curves</i> Weight (403 2021-000) 2.71 lbs. (1.23 kg)

CRN OH 5216.5R1

400 Series Regulators



Installation Dimensions



Ordering Information

403	A		B	C		D	-CON	Options
Series 403	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies		Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port		0: Bare body	000: 1/4" FPT	D: Deep purge
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR		1: 1/4" MPT		1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	M: Protocol station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		2: 1/4" tube fitting		2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	Q: Protocol purge station
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting		6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR		4: Diaphragm valve 1/4" MPT		7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	
	7: 0-150 (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		5: Needle valve 1/4" MPT				
	**Standard assembly does not include relief valve			6: 1/8" tube fitting				
7: 3/8" tube fitting								
8: Diaphragm valve 1/8" fitting								
9: Diaphragm valve 1/4" FPT								
A: 3/8" BSP RH fitting								
B: Diaphragm valve 3/8" tube fitting								
C: 3/8" BSP LH fitting								
D: 6mm brass hose barb (Not available if A=4 or 5)								
G: 1/8" stainless steel tube fitting								
H: 1/4" stainless steel tube fitting								
			M: 6mm tube fitting					
			S: Diaphragm valve 6mm tube fitting					

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

405 SERIES

The 405 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems

Gas and liquid chromatography

High purity carrier gases

Zero, span, and calibration gases

High purity chamber pressurization

Liquefied hydrocarbon gas control

Control of cryogenic gases



405 2021-000 shown

Features

Metal-to-Metal Diaphragm Seal

No possibility of gas contamination

CAPSULE® Seat

Increased serviceability and life

Brass Barstock Body

Smooth surface finish

Front and Rear Panel-Mountable

Versatile system configuration

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)

Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating

Safe use with high pressure cylinders

Pipe Away Relief Valve

Safely vents exhaust gases

Materials

Body

Brass barstock

Bonnet

Brass barstock

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauge

2" (53mm) diameter brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁹ scc/sec

Cv

0.1 Max outlet 50 PSIG (3.5 BAR) or below

0.2 Max outlet above 50 PSIG (3.5 BAR)

See page 189 for flow curves

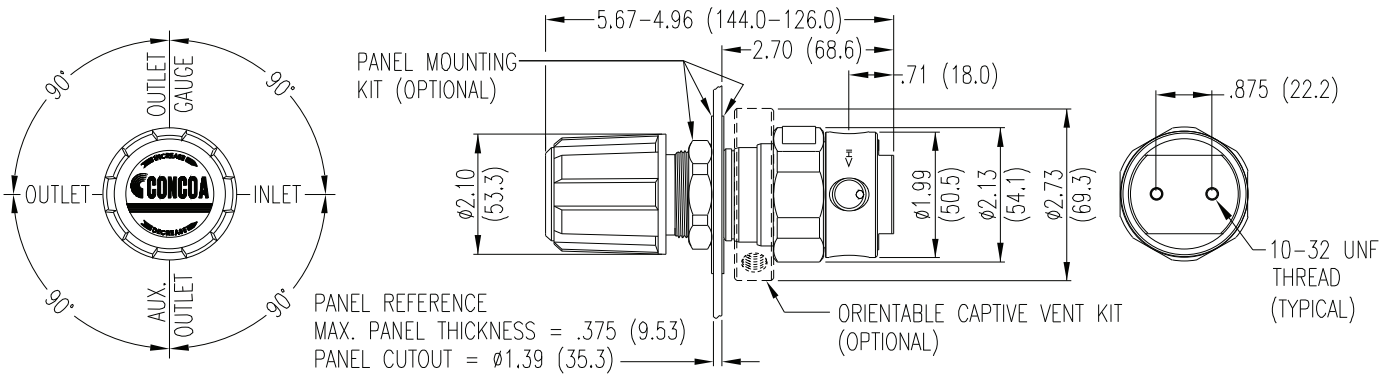
Weight (405 2021-000)

2.71 lbs. (1.23 kg)

400 Series Regulators



Installation Dimensions



Ordering Information

405	A		B	C	D	-CON	Options
Series 405	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	D: Deep purge
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR		1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	M: Protocol station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	Q: Protocol purge station
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting	6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR		4: Diaphragm valve 1/4" MPT	7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	
	7: 0-150 (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		5: Needle valve 1/4" MPT			
	**Standard assembly does not include relief valve	6: 1/8" tube fitting					
		7: 3/8" tube fitting					
		8: Diaphragm valve 1/8" fitting					
		9: Diaphragm valve 1/4" FPT					
		A: 3/8" BSP RH fitting					
		B: Diaphragm valve 3/8" tube fitting					
		C: 3/8" BSP LH fitting					
		D: 6mm brass hose barb (Not available if A=4 or 5)					
		G: 1/8" stainless steel tube fitting					
H: 1/4" stainless steel tube fitting							
M: 6mm tube fitting							
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

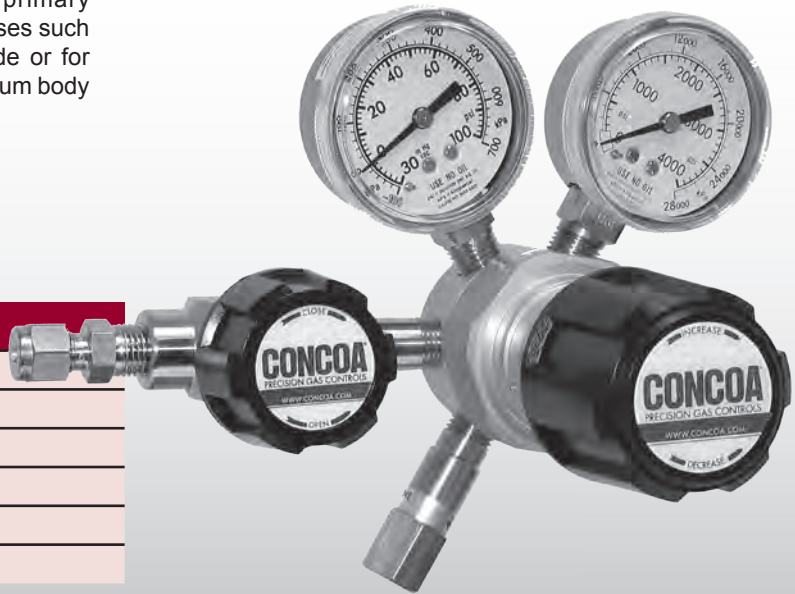
408 SERIES

The 408 Series regulators are intended for primary pressure control of mildly corrosive high purity gases such as ammonia, hydrogen sulfide, and sulfur dioxide or for applications requiring the light weight of an aluminum body regulator.

- Single Stage
- Anodized Aluminum Barstock Body
- 316L Stainless Steel Diaphragm

Typical Applications

Semi-corrosive gases and mixtures
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Mildly corrosive gases



408 2331-000 shown

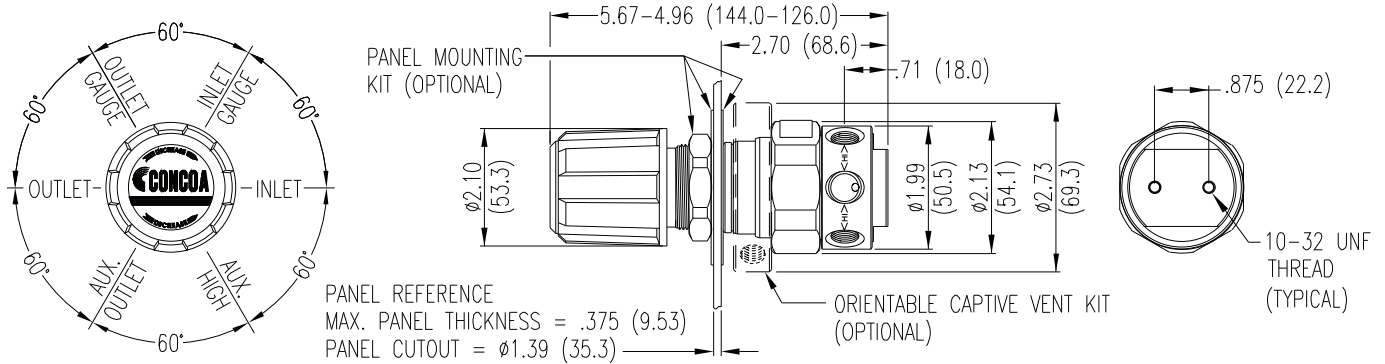
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Anodized Aluminum Body Cost-effective corrosion resistance Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications Pipe Away Relief Valve Safely vents exhaust gases	Body Anodized aluminum barstock Bonnet Anodized aluminum barstock Seat PTFE Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauges 2" (53mm) diameter stainless steel Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (408 2331-000) 2.7 lbs. (1.24 kg)

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

408	A	B	C	D	-CON	Options	
Series 408	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	M: Protocol station
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR	3: 0-4000 PSIG/0-310 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	D: Deep purge
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR	5: 0-1000 PSIG/0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	Q: Protocol purge station
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR	6: 0-300 PSIG/0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-500 (0-34 BAR)**	0-1000 PSIG/0-70 BAR	7: 0-400 PSIG/0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR		5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
	**No relief valve			6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
			9: Diaphragm valve 1/4" FPT				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				

Related Options

Options	Order No.	Description
Panel mount kit	550 0002	To mount the regulator using bonnet threads. Material: Nickel-plated brass
Captured vent kit	550 0001	360° Orientation pipes vented gases to safe location in the event of diaphragm failure. Material: Nickel-plated brass
Helium Leak certification 476 0002		Inboard Helium Leak certification to less than 1 x 10 ⁻⁹ cc/sec



400 Series Regulators

411 SERIES

The 411 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- Chrome-plated Brass Barstock
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

EPA Protocol gases
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization



411 2331-580 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Chrome-plated Brass Barstock Body Smooth surface finish Front Panel-Mountable Easy installation 10 Micron Filtration in Both Stages Fail-safe seat performance Pressure Ranges 0-15 to 0-350 PSIG (0-1 to 0-24 BAR) Broad range of applications Pipe Away Relief Valve Safely vents exhaust gases	Body Chrome-plated brass barstock Bonnet Chrome-plated brass barstock Seat PTFE PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option Filter 10 micron sintered bronze Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) 3500 PSIG (240 BAR) optional 4500 PSIG (310 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Gauges 2" (53mm) diameter chrome-plated Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 See page 188 for flow curves Weight (411 2331-580) 5.3 lbs. (2.40 kg)

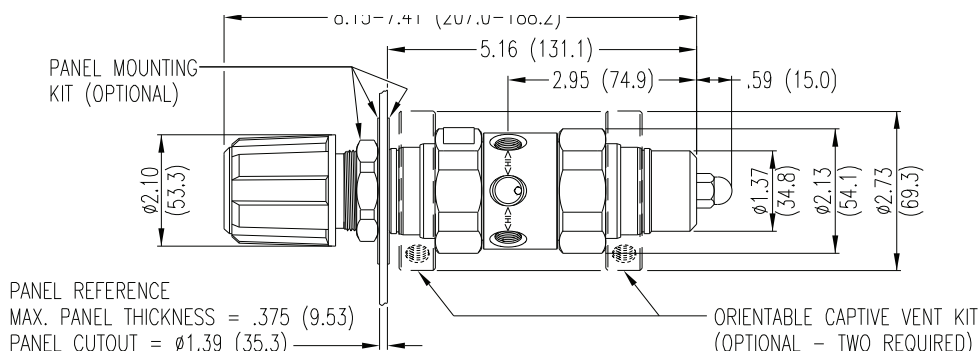
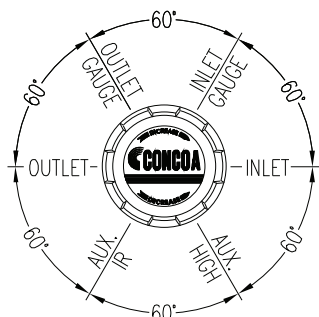
CRN OH 5216.5R1

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

411	A	B	C	D	-CON	Options	
Series 411	Max Outlet Pressure	Max Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	M: Protocol station
	E: 0-350 PSIG (0-24 BAR)	0-400 PSIG/ 0-27 BAR	8: 0-6000 PSIG/ 0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
		G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting				*Not available with 4500 PSIG (310 BAR) max inlet pressure
		*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®	7: 3/8" tube fitting				
			8: Diaphragm valve 1/8" tube fitting				
			9: Diaphragm valve 1/4" FPT				
			A: 3/8" BSP RH fitting				
			B: Diaphragm valve 3/8" tube fitting				
			C: 3/8" BSP LH fitting				
			D: 6mm brass hose barb (not available if A=4 or 5)				
			G: 1/8" stainless steel tube fitting				
			H: 1/4" stainless steel tube fitting				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

412 SERIES

The 412 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- Brass Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

EPA Protocol gases
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization



412 2331-580 shown

Features

Metal-to-Metal Diaphragm Seal
No possibility of gas contamination

CAPSULE® Seat
Increased serviceability and life

Brass Barstock Body
Smooth surface finish

Front Panel-Mountable
Easy installation

10 Micron Filtration in Both Stages
Fail-safe seat performance

Pressure Ranges 0-15 to 0-350 PSIG (0-1 to 0-24 BAR)
Broad range of applications

Pipe Away Relief Valve
Safely vents exhaust gases

Materials

Body
Brass barstock

Bonnet
Brass barstock

Seat
PTFE
PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁹ scc/sec

Cv
0.1
See page 188 for flow curves

Weight (412 2331-580)
5.3 lbs. (2.40 kg)

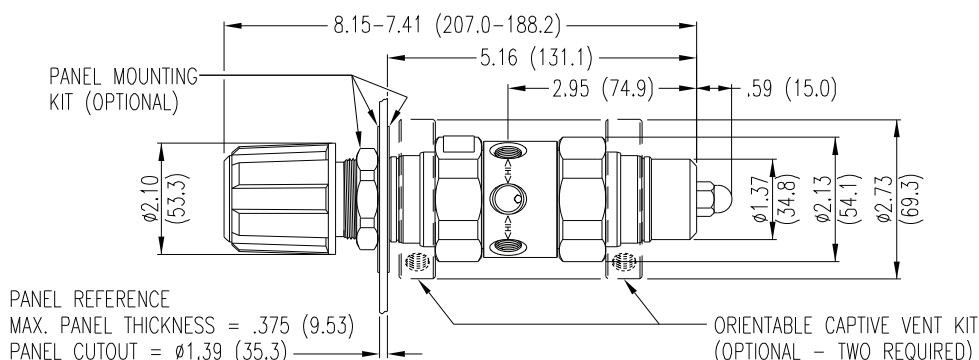
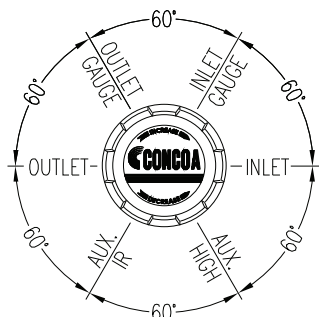
CRN OH 5216.5R1

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

412	A	B	C	D	-CON	Options	
Series 412	Max Outlet Pressure	Max Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	M: Protocol station
	E: 0-350 PSIG (0-24 BAR)	0-400 PSIG/ 0-27 BAR	8: 0-6000 PSIG/ 0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
		G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting				*Not available with 4500 PSIG (310 BAR) max inlet pressure
		*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®	7: 3/8" tube fitting				
			8: Diaphragm valve 1/8" tube fitting				
			9: Diaphragm valve 1/4" FPT				
			A: 3/8" BSP RH fitting				
			B: Diaphragm valve 3/8" tube fitting				
			C: 3/8" BSP LH fitting				
			D: 6mm brass hose barb (not available if A=4 or 5)				
			G: 1/8" stainless steel tube fitting				
			H: 1/4" stainless steel tube fitting				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

420 SERIES

The 420 Series SilcoNert regulators are intended for primary pressure control of reactive or corrosive calibration mixtures or pure gases in applications where an extremely inert wetted finish is required. The proprietary non-reactive amorphous silicon finish is significantly more inert than 316L stainless steel and ideally suited for Hydrogen Sulfide, reduced Sulfur, Mercury and PPM to PPB calibration mixtures.

- Single Stage
- SilcoNert™ 1020 Barstock Body, Diaphragm, and Internals
- Six Port Configuration or Four Port Configuration
- Inert Surface Finish and Corrosion Resistance

Typical Applications

Reactive calibration standard
Emissions monitoring
Hydrogen sulfide PPM to PPB standards
Mercury standards
Sulfur mixtures
Corrosive service



420 3331-330 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life SilcoNert 1020 Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications	Body SilcoNert 1020 Bonnet SilcoNert 1020 Seat PTFE Filter SilcoNert 1020 10 micron mesh Diaphragm SilcoNert 1020 Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) 4500 PSIG (310 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter stainless steel (bourdon tube not SilcoNert 1020) Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 (Max outlet 50 PSIG/3.5 BAR or below) 0.2 (Max outlet above 50 PSIG/3.5 BAR) See page 188 for flow curves Weight (420 3331-330) 3.8 lbs. (1.73 kg)

CRN OH 5216.5R1

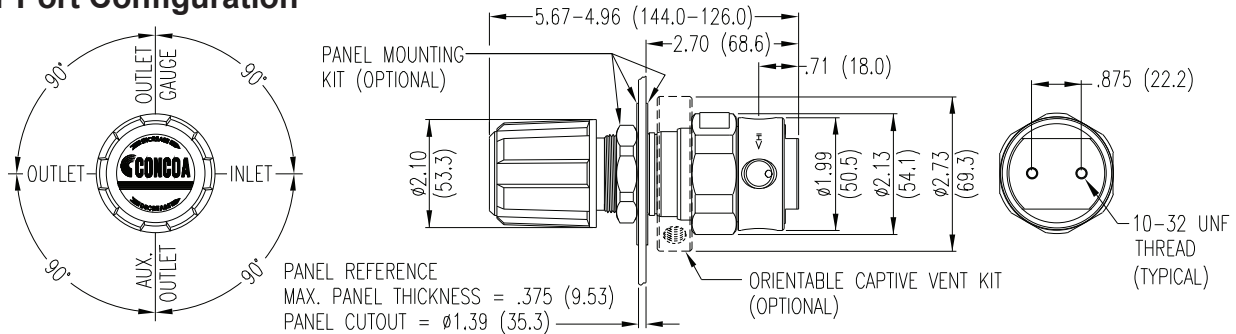
400 Series Regulators



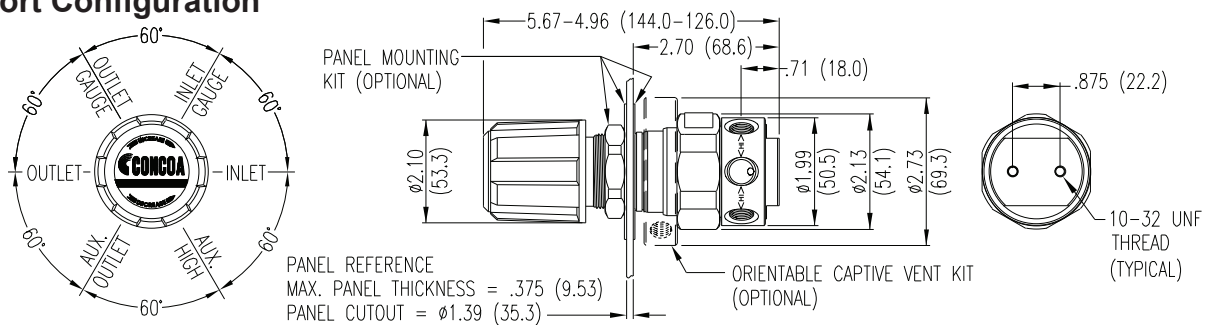
400 SERIES

Installation Dimensions

Four Port Configuration



Six Port Configuration



Ordering Information

420	A	B	C	D	-CON	Options	
Series 420	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/-1-0-2 BAR)	0: None	0: 1/4" FPT port	0: Six-port bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR)	3: 0-4000 PSIG/0-275 BAR	2: 1/4" tube fitting	1: Six-port cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station*
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR)	5: 0-1000 PSIG/0-70 BAR	3: Diaphragm valve 1/4" tube fitting	2: Six-port cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSI/0-27 BAR)	6: 0-300 PSIG/0-21 BAR	6: 1/8" tube fitting	6: Six-port mirror image (PSIG/kPa gauges)	M06: 6mm tube	M: Protocol station
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/0-70 BAR	7: 0-400 PSIG/0-27 BAR	8: Diaphragm valve 1/8" tube fitting	7: Six-port mirror image (BAR/PSIG gauges)	CGA DIN 477 BS 341 and others available upon request	Q: Protocol purge station*
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR)	8: 0-6000 PSIG/0-405 BAR*	9: Diaphragm valve 1/4" FPT	A: Four-port bare body		<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i>	<i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i>	M: 6mm tube fitting	B: Four-port cleanroom assembly (PSIG/kPa gauges)			
			S: Diaphragm valve 6mm tube fitting	C: Four-port cleanroom assembly (BAR/PSIG)			
			D: Four-port mirror image (PSIG/kPa gauges)				
			E: Four-port mirror image (BAR/PSIG gauges)				

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

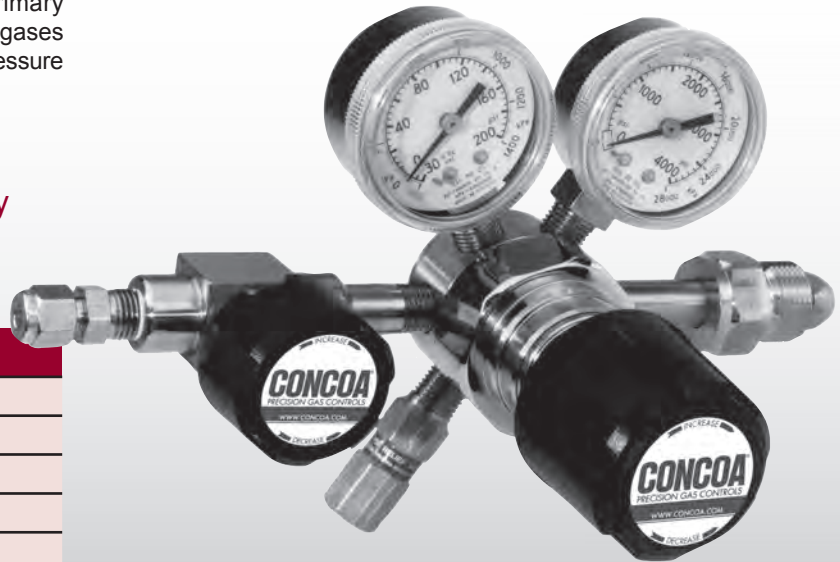
422 SERIES

The 422 Series regulators are intended for primary pressure control of ultra-high purity and corrosive gases in applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

- Single Stage
- 316L Stainless Steel Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases
Corrosive gases



422 3331-580 shown

Features

- Metal-to-Metal Diaphragm Seal**
No possibility of gas contamination
- CAPSULE® Seat**
Increased serviceability and life
- 316L Stainless Steel Barstock Body**
Increased corrosion resistance
- Front and Rear Panel-Mountable**
Versatile system configuration
- Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)**
Broad range of applications
- Pipe Away Relief Valve**
Safely vents exhaust gases

Materials

- Body**
316L stainless steel barstock
- Bonnet**
Chrome-plated brass barstock
- Seat**
PTFE
PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option
- Filter**
Patented 10 micron 316 mesh
- Diaphragm**
316L stainless steel
- Internal Seals**
PTFE

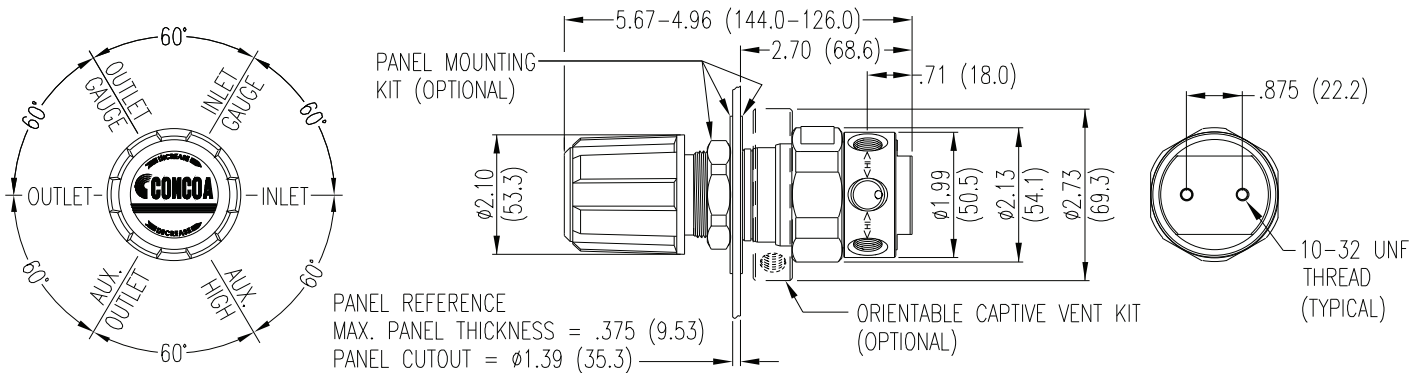
Specifications

- Maximum Inlet Pressure**
3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2" (53mm) diameter stainless steel
- Ports**
1/4" FPT
- Helium Leak Integrity**
1 x 10⁻⁹ scc/sec
- Cv**
0.1
See page 188 for flow curves
- Weight (422 3331-580)**
3.8 lbs. (1.73 kg)

400 Series Regulators



Installation Dimensions



400 SERIES

Ordering Information

422	A		B	C	D	-CON	Options
Series 422	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting	6: Mirror image (PSIG/kPa gauges)	TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT	7: Mirror image (BAR/PSIG gauges)	M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	8: 0-6000 PSIG* 0-400 BAR	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i>	G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting	7: 3/8" tube fitting			S: Stainless steel bonnet
			8: Diaphragm valve 1/8" tube fitting				
			9: Diaphragm valve 1/4" FPT				
M: 6mm tube fitting							
<i>**Standard assembly does not include relief valve</i>		‡Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®	S: Diaphragm valve 6mm tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>	

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

425 SERIES

The 425 Series regulators are intended for secondary pressure control of ultra-high purity and corrosive gases or as point-of-use pressure control in ultra-high purity gas distribution systems.

- Single Stage
- 316L Stainless Steel Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases
Corrosive gases



425 2021-000 shown

Features

- Metal-to-Metal Diaphragm Seal**
No possibility of gas contamination
- CAPSULE® Seat**
Increased serviceability and life
- 316L Stainless Steel Barstock Body**
Increased corrosion resistance
- Front and Rear Panel-Mountable**
Versatile system configuration
- Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)**
Broad range of applications
- 3000 PSIG (210 BAR) Inlet Pressure Rating**
Safe use with high pressure cylinders
- Pipe Away Relief Valve**
Safely vents exhaust gases

Materials

- Body**
316L stainless steel barstock
- Bonnet**
Chrome-plated brass barstock
- Seat**
PTFE
- Filter**
Patented 10 micron 316 mesh
- Diaphragm**
316L stainless steel
- Internal Seals**
PTFE

Specifications

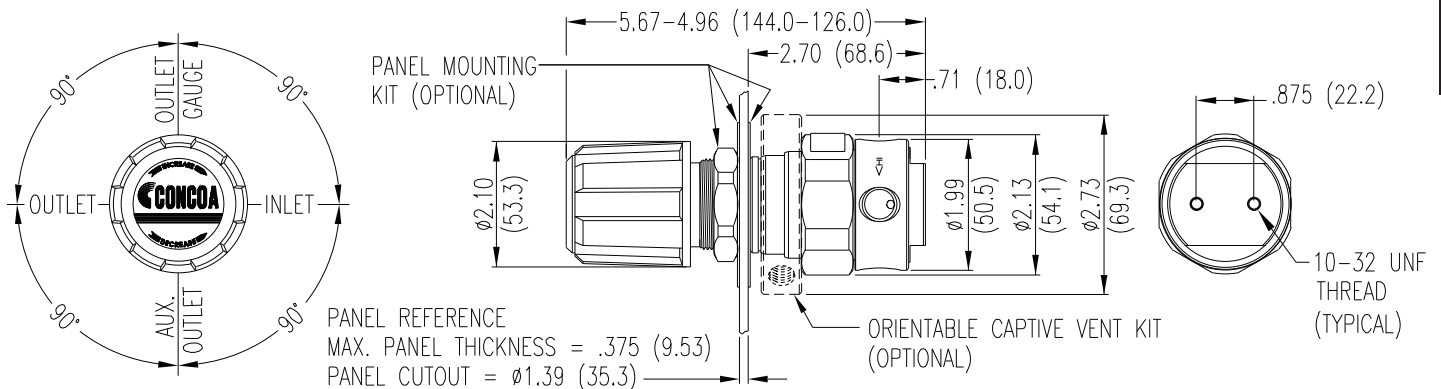
- Maximum Inlet Pressure**
3000 PSIG (210 BAR)
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2" (53mm) diameter stainless steel
- Ports**
1/4" FPT
- Helium Leak Integrity**
1 x 10⁻⁹ scc/sec
- Cv**
0.1 (Max outlet 50 PSIG/1 BAR or below)
0.2 (Max outlet above 50 PSIG/3.5 BAR)
See page 189 for flow curves
- Weight (425 2021-TF4)**
2.58 lbs. (1.17 kg)

CRN OH 5216.5R1

400 Series Regulators



Installation Dimensions



400 SERIES

Ordering Information

425	A		B	C	D	-CON	Options
Series 425	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT Port	0: Bare body	000: 1/4" FPT	M: Protocol station
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR		1: 1/4" MPT	1: Cleanroom Assembly (PSIG/kPa Gauges)	TF2: 1/8" tube	Q: Protocol purge station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		2: 1/4" tube fitting	2: Cleanroom Assembly (BAR/PSIG Gauges)	TF4: 1/4" tube	S: Stainless steel bonnet
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting	6: Mirror Image (PSIG/kPa Gauges)	TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR		4: Diaphragm valve 1/4" MPT	7: Mirror Image (BAR/PSIG Gauges)	M06: 6mm tube	
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		5: Needle valve 1/4" MPT			
	**Standard assembly does not include relief valve	6: 1/8" tube fitting					
		7: 3/8" tube fitting					
		8: Diaphragm valve 1/8" tube fitting					
		9: Diaphragm valve 1/4" FPT					
		M: 6mm tube fitting					
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

426 SERIES

The 426 Series regulators are intended for secondary pressure control of ultra-high purity and corrosive gases or as point-of-use pressure control in ultra-high purity gas distribution systems.

- Low Dead Volume
- 316L Stainless Steel Barstock Body
- Two Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases
Corrosive gases



426 3001-000 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life 316L Stainless Steel Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications 4500 PSIG (310 BAR) Inlet Pressure Rating Safe use with high pressure cylinders	Body 316L stainless steel barstock Bonnet Chrome-plated brass barstock Seat PCTFE Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 4500 PSIG (310 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (426 3801-000) 2.2 lbs (1.01 kg)

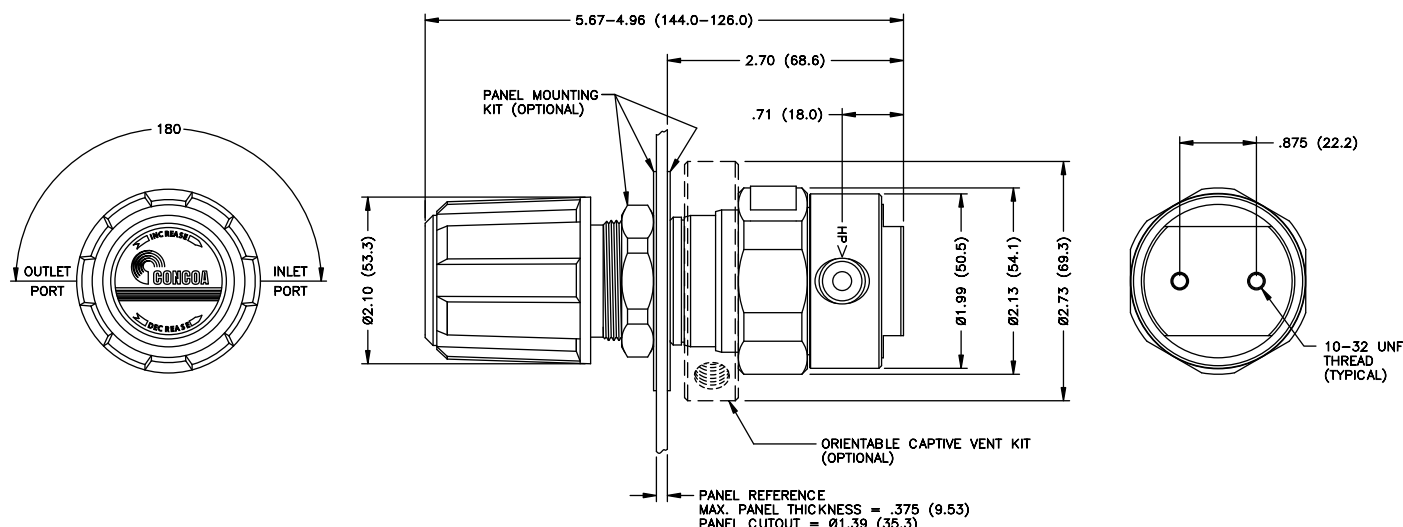
CRN OH 5216.5R1

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

426	A	B	C	D	-CON	Options
Series 426	Outlet Pressure	Inlet Pressure	Outlet Assemblies	Assembly	Inlet Connections	Installed Options
	2: 0-50 PSIG (0-3.5 BAR)	8: 4500 PSIG (310 BAR)	0: 1/4" FPT port	1: Cleanroom assembly	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	3: 0-100 PSIG (0-7 BAR)		1: 1/4" MPT		TF2: 1/8" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)		2: 1/4" tube fitting		TF4: 1/4" tube	M: Protocol station
	5: 0-500 PSIG (0-34 BAR)		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	<i>*Only valid with 3000 PSIG cylinder inlet connections</i>
	7: 0-150 PSIG (0-10 BAR)		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
			5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
			6: 1/8" tube fitting			
			7: 3/8" tube fitting			
			8: Diaphragm valve 1/8" tube fitting			
			9: Diaphragm valve 1/4" FPT			
			M: 6mm tube fitting			
		S: Diaphragm valve 6mm tube fitting				

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

427 SERIES

The 427 Series regulators are intended for secondary pressure control of the highest purity gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- 316L Stainless Steel Barstock Body
- Two Port Configuration
- Face Seal Connections

Typical Applications

Semiconductor process gases
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



427 4004-001 shown

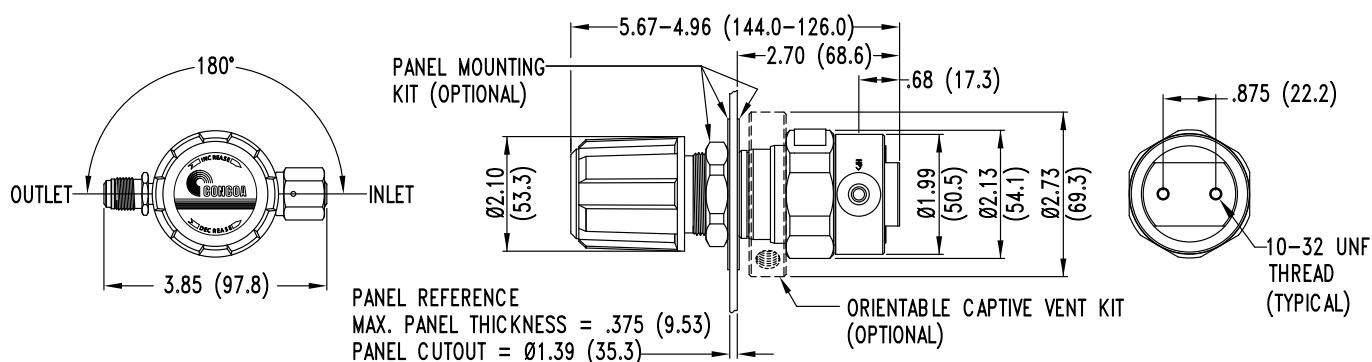
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Butt-Welded Face Seal connections Highest leak integrity available 316L Stainless Steel Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications	Body 316L stainless steel barstock Bonnet Chrome-plated brass barstock Seat PTFE Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Ports 1/4" face seal connection Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (427 4004-001) 2.24 lbs. (1.02 kg)

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

427	A	B	C	D
Series 427	Outlet Pressure	Outlet Gauge	Inlet Gauge	Connections - inlet/outlet
	1: 0-15 PSIG (0-1 BAR)	0: None	0: None	1: Female face seal/male face seal
	2: 0-30 PSIG (0-2 BAR)			2: Male face seal/male face seal
	3: 0-50 PSIG (0-3.5 BAR)			3: Male face seal/female face seal
	4: 0-100 PSIG (0-7 BAR)			4: Female face seal/female face seal
	5: 0-250 PSIG (0-17 BAR)			
	6: 0-500 PSIG (0-34 BAR)			
	7: 0-150 PSIG (0-10 BAR)			

Related Options

Options	Order No.	Description
Panel mount kit	550 0002	To mount the regulator using bonnet threads. Material: Nickel-plated brass
Captured vent kit	550 0001	360° Orientation pipes vented gases to safe location in the event of diaphragm failure. Material: Nickel-plated brass
Helium Leak certification	476 0002	Inboard Helium Leak certification to less than 1 x 10 ⁻⁹ cc/sec



400 Series Regulators

428 SERIES

The 428 Series regulators are intended for secondary pressure control of the highest purity gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- 316L Stainless Steel Barstock Body
- Three Port Configuration
- Face Seal Connections

Typical Applications

Semiconductor process gases
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



428 3302-001 shown

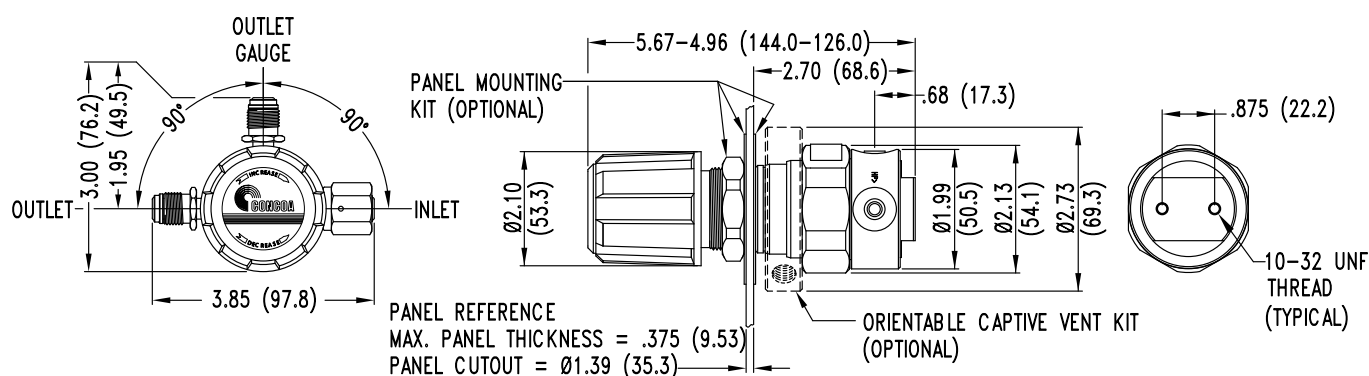
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Butt-Welded Face Seal Connections Highest leak integrity available 316L Stainless Steel Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration 3000 PSIG Inlet Pressure Rating Safe use with high pressure cylinders Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications	Body 316L stainless steel barstock Bonnet Chrome-plated brass barstock Seat PTFE Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter stainless steel Ports 1/4" face seal connection Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (428 3302-001) 2.46 lbs. (1.12 kg)

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

428	A	B	C	D
Series 428	Outlet Pressure	Outlet Gauge	Inlet Gauge	Connections - inlet/outlet
	1: 0-15 PSIG (0-1 BAR)	0: None	0: None	1: Female face seal/male face seal
	2: 0-30 PSIG (0-2 BAR)	1: 30"-0-30 PSIG/-1-0-2 BAR		2: Male face seal/male face seal
	3: 0-50 PSIG (0-3.5 BAR)	2: 30"-0-60 PSIG/-1-0-4 BAR		3: Male face seal/female face seal
	4: 0-100 PSIG (0-7 BAR)	3: 30"-0-100 PSIG/-1-0-7 BAR		4: Female face seal/female face seal
	5: 0-250 PSIG (0-17 BAR)	4: 30"-0-200 PSIG/-1-0-14 BAR		
	6: 0-500 PSIG (0-34 BAR)	5: 0-400 PSIG/0-27 BAR		
	7: 0-150 PSIG (0-10 BAR)	6: 0-1000 PSIG/0-70 BAR		

Related Options

Options	Order No.	Description
Panel mount kit	550 0002	To mount the regulator using bonnet threads. Material: Nickel-plated brass
Captured vent kit	550 0001	360° Orientation pipes vented gases to safe location in the event of diaphragm failure. Material: Nickel-plated brass
Helium Leak certification	476 0002	Inboard Helium Leak certification to less than 1×10^{-9} cc/sec



400 Series Regulators

429 SERIES

The 429 Series regulators are intended for primary pressure control of the highest purity gases or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply pressure can be tolerated.

- Single Stage
- 316L Stainless Steel Barstock Body
- Four Port Configuration
- Face Seal Connections

Typical Applications

Semiconductor process gases
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



429 2241-001 shown

Features

Metal-to-Metal Diaphragm Seal
No possibility of gas contamination

CAPSULE® Seat
Increased serviceability and life

Butt-Welded Face Seal Connections
Highest leak integrity available

316L Stainless Steel Barstock Body
Increased corrosion resistance

Front and Rear Panel-Mountable
Versatile system configuration

3000 PSIG (210 BAR) Inlet Pressure Rating
Safe use with high pressure cylinders

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)
Broad range of applications

Materials

Body
316L stainless steel barstock

Bonnet
Chrome-plated brass barstock

Seat
PTFE

Filter
Patented 10 micron 316 mesh

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter stainless steel

Ports
1/4" face seal connection

Helium Leak Integrity
1 x 10⁻⁹ scc/sec

Cv
0.1
See page 188 for flow curves

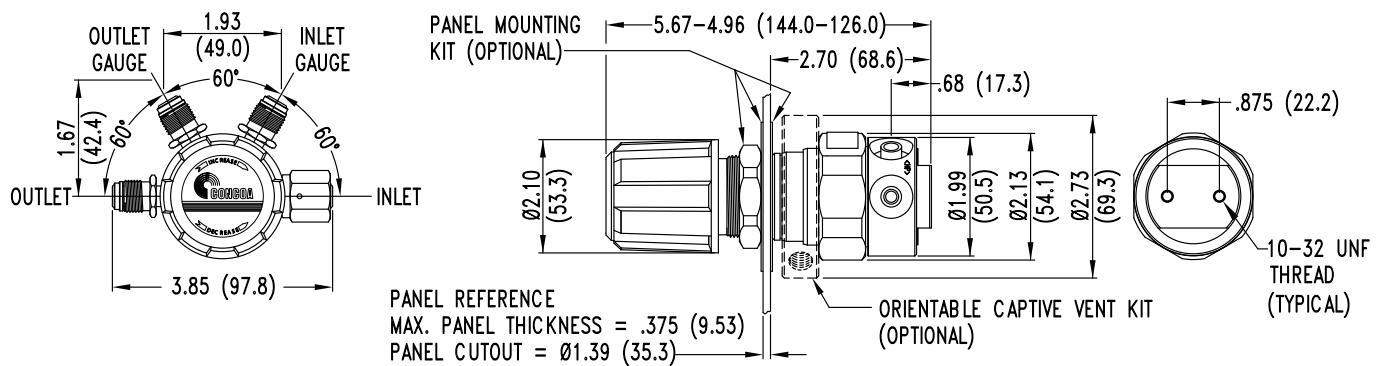
Weight (429 2241-001)
2.73 lbs. (1.24 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

429	A	B	C	D
Series 429	Outlet Pressure	Outlet Gauge	Inlet Gauge	Connections - inlet/outlet
	1: 0-15 PSIG (0-1 BAR)	0: None	0: None	1: Female face seal/male face seal
	2: 0-30 PSIG (0-2 BAR)	1: 30"-0-30 PSIG/-1-0-2 BAR	1: 0-4000 PSIG/0-275 BAR	2: Male face seal/male face seal
	3: 0-50 PSIG (0-3.5 BAR)	2: 30"-0-60 PSIG/-1-0-4 BAR	2: 0-400 PSIG/0-27 BAR	3: Male face seal/female face seal
	4: 0-100 PSIG (0-7 BAR)	3: 30"-0-100 PSIG/-1-0-7 BAR	3: 0-1000 PSIG/0-70 BAR	4: Female face seal/female face seal
	5: 0-250 PSIG (0-17 BAR)	4: 30"-0-200 PSIG/-1-0-14 BAR	4: 0-3000 PSIG/0-210 BAR	
	6: 0-500 PSIG (0-34 BAR)	5: 0-400 PSIG/0-27 BAR	5: 30"-0-200 PSIG/-1-0-14 BAR	
	7: 0-150 PSIG (0-10 BAR)	6: 0-1000 PSIG/0-70 BAR	6: 30"-0-100 PSIG/-1-0-7 BAR	
			7: 30"-0-60 PSIG/-1-0-4 BAR	
			8: 30"-0-30 PSIG/-1-0-2 BAR	

Related Options

Options	Order No.	Description
Panel mount kit	550 0002	To mount the regulator using bonnet threads. Material: Nickel-plated brass
Captured vent kit	550 0001	360° Orientation pipes vented gases to safe location in the event of diaphragm failure. Material: Nickel-plated brass
Helium Leak certification	476 0002	Inboard Helium Leak certification to less than 1 x 10 ⁻⁹ cc/sec
0.01 Micron filter	580 2001	Attached at outlet for low particle count gases (with 1/4" connections only)



400 Series Regulators

430 SERIES

The 430 Series SilcoNert™ 1020 coated regulators are intended for pressure control of reactive or corrosive calibration mixtures or pure gases in applications where an extremely inert wetted finish is required along with stable delivery pressure regardless of inlet pressure. The proprietary non-reactive amorphous Silicon finish is desired over standard 316L stainless steel and ideally suited for Hydrogen Sulfide, reduced Sulfur, Mercury and PPM to PPB calibration mixtures.

- Dual Stage
- SilcoNert™ 1020 Barstock Body, Diaphragm, and Internals
- Six Port Configuration
- Inert Surface Finish and Corrosion Resistance

Typical Applications

Reactive calibration standard
Emissions monitoring
Hydrogen sulfide PPM to PPB standards
Mercury standards
Sulfur mixtures
Corrosive service



430 3331-330 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life SilcoNert 1020 Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications	Body SilcoNert 1020 Bonnet SilcoNert 1020 Seat PTFE PCTFE with 4500 PSIG (310 BAR) inlet option Filter SilcoNert 1020 10 micron Diaphragm SilcoNert 1020 Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) 4500 PSIG (310 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Gauges 2" (53mm) diameter stainless steel (bourdon tube not SilcoNert 1020) Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (430 3331-330) 5.09 lbs. (2.31 kg)

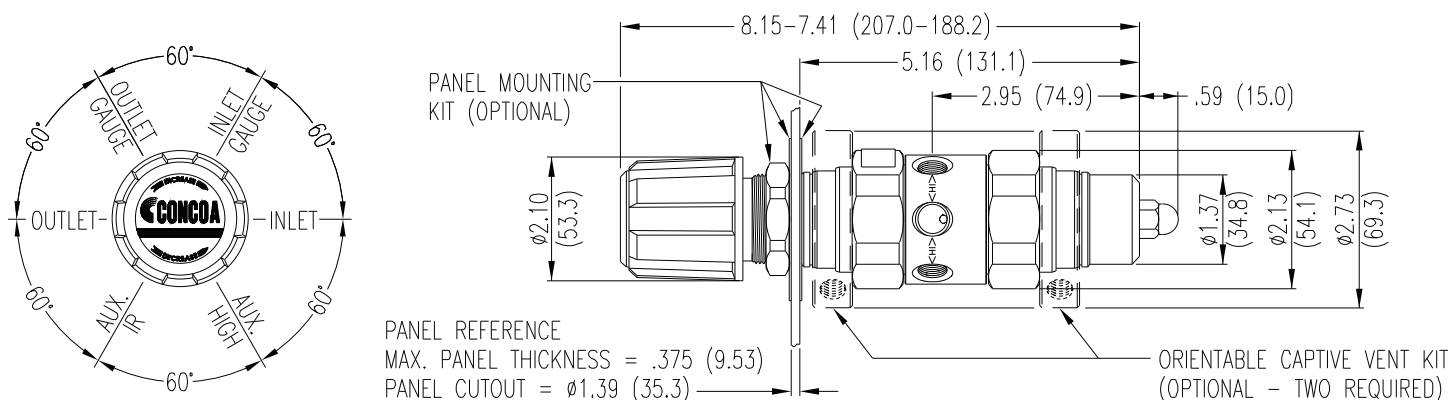
CRN OH 5216.5R1

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

430	A	B	C	D	-CON	Options	
Series 430	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR	3: 0-4000 PSIG/0-275 BAR	2: 1/4" tube fitting	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station*
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR	5: 0-1000 PSIG/0-70 BAR	3: Diaphragm valve 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR	6: 0-300 PSIG/0-21 BAR	6: 1/8" tube fitting		M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR	7: 0-400 PSIG/0-27 BAR	8: Diaphragm valve 1/8" tube fitting		CGA DIN 477 BS 341 and others available upon request	Q: Protocol purge station*
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i>		8: 0-6000 PSIG/0-405 BAR*	9: Diaphragm valve 1/4" FPT			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
				M: 6mm tube fitting			
					S: Diaphragm valve 6mm tube fitting		

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit (2 required)
476 0002	Helium Leak certification



400 Series Regulators

432 SERIES

The 432 Series regulators are intended for primary pressure control of ultra-high purity or corrosive gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- 316L Stainless Steel Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

EPA protocol gases
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
Ultra-high purity chamber pressurization
Liquefied hydrocarbon gas control
Corrosive gases



432 3331-580 shown

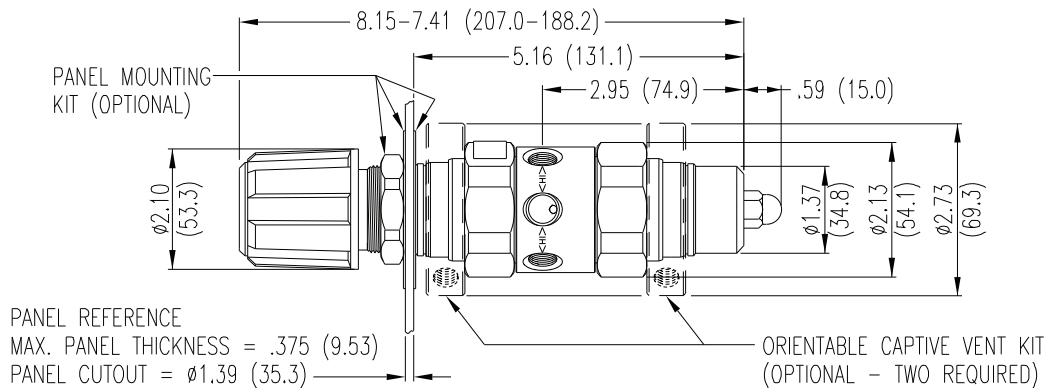
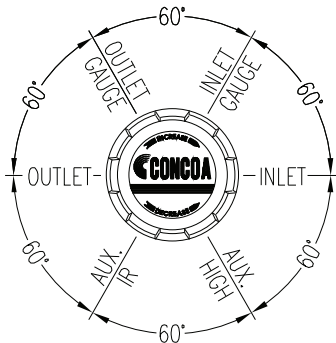
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life 316L Stainless Steel Barstock Body Increased corrosion resistance Front Panel-Mountable Easy installation 10 Micron Filtration in Both Stages Fail-safe seat performance Pressure Ranges 0-15 to 0-350 PSIG (0-1 BAR to 0-24 BAR) Broad range of applications Pipe Away Relief Valve Safely vents exhaust gases	Body 316L stainless steel barstock Bonnet Chrome-plated brass barstock Seat PTFE PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) 3500 PSIG (240 BAR) optional 4500 PSIG (310 BAR) optional Temperature Range -40°F to 140°F (-40°C to 60°C) Gauges 2" (53mm) diameter stainless steel Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 <i>See page 188 for flow curves</i> Weight (432 3331-580) 5.09 lbs. (2.31 kg)

CRN OH 5216.5R1

400 Series Regulators



Installation Dimensions



400 SERIES

Ordering Information

432	A		B	C	D	-CON	Options
Series 432	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR)	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	D: Deep purge*
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	M: Protocol station
	E: 0-350 PSIG (0-24 BAR)	0-400 PSIG/ 0-27 BAR	8: 0-6000 PSIG/ 0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
			G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting			S: Stainless steel bonnets
			*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®	7: 3/8" tube fitting			*Not available with 4500 PSIG (310 BAR) max inlet pressure
			†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®	8: Diaphragm valve 1/8" tube fitting			
			9: Diaphragm valve 1/4" FPT				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit (2 required)
476 0002	Helium Leak certification



400 Series Regulators

435 SERIES

The 435 Series regulators are intended for secondary pressure control of non-corrosive, high purity, or liquefied gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



435 2021-000 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Brass Barstock Body Smooth surface finish Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders Pipe Away Relief Valve Safely vents exhaust gases	Body Brass barstock Bonnet Brass barstock Seat PTFE Filter 10 micron sintered bronze Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter brass Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 (Max outlet 50 PSIG/3.5 BAR or below) 0.2 (Max outlet above 50 PSIG/3.5 BAR) <i>See page 189 for flow curves</i> Weight (435 2021-000) 2.70 lbs. (1.22 kg)

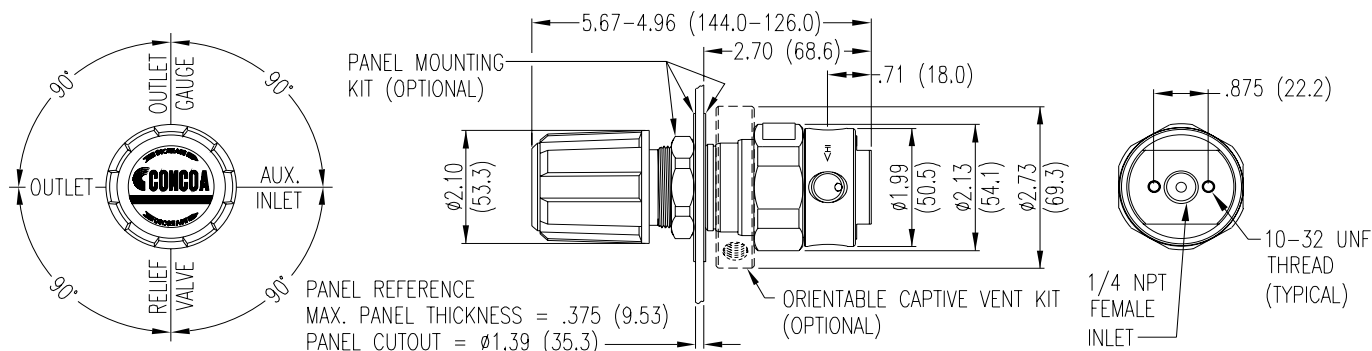
CRN OH 5216.5R1

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

435	A		B	C		D	-CON	Options
Series 435	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options	
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	None	
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR		1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube		
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube		
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting	TF6: 3/8" tube			
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/ 0-70 BAR		4: Diaphragm valve 1/4" MPT	M06: 6mm tube			
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		5: Needle valve 1/4" MPT				
	**Standard assembly does not include relief valve	6: 1/8" tube fitting						
		7: 3/8" tube fitting						
		8: Diaphragm valve 1/8" tube fitting						
		9: Diaphragm valve 1/4" FPT						
		A: 3/8" BSP RH fitting						
		B: Diaphragm Valve 3/8" tube fitting						
		C: 3/8" BSP LH fitting						
		D: 6mm brass hose barb (not available if A=4 or 5)						
		G: 1/8" stainless steel tube fitting						
		H: 1/4" stainless steel tube fitting						
M: 6mm tube fitting								
S: Diaphragm valve 6mm tube fitting								

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

445 SERIES

The 445 Series regulators are intended for secondary pressure control of ultra-high purity and corrosive gases or as point-of-use pressure control in high purity gas distribution systems.

- Single Stage
- Rear Entry
- 316L Stainless Steel Barstock Body
- Five Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases
Corrosive service



445 2021-000 shown

Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination CAPSULE® Seat Increased serviceability and life Stainless Steel Barstock Body Increased corrosion resistance Front and Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR) Broad range of applications 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders	Body 316L stainless steel barstock Bonnet Chrome-plated brass barstock Seat PTFE Filter Patented 10 micron 316 mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter stainless steel Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁹ scc/sec Cv 0.1 (Max outlet 50 PSIG/3.5 BAR or below) 0.2 (Max outlet above 50 PSIG/3.5 BAR) See page 189 for flow curves Weight (445 2021-000) 2.57 lbs. (1.17 kg)

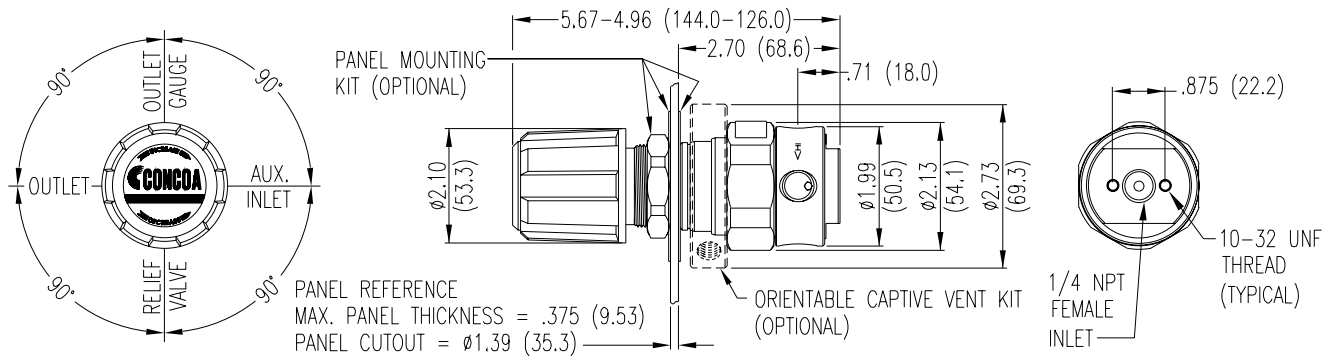
CRN OH 5216.5R1

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

445	A		B	C	D	-CON	Options
Series 445	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	None
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR		1: 1/4" MPT	1: Cleanroom assembly (PSIG/kPa gauges)	TF2: 1/8" tube	
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR		2: 1/4" tube fitting	2: Cleanroom assembly (BAR/PSIG gauges)	TF4: 1/4" tube	
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)**	0-1000 PSIG/0-70 BAR		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR		5: Needle valve 1/4" MPT			
	**Standard assembly does not include relief valve	6: 1/8" tube fitting					
	7: 3/8" tube fitting						
	8: Diaphragm valve 1/8" tube fitting						
	9: Diaphragm valve 1/4" FPT						
	M: 6mm tube fitting						
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
550 0002	Panel mount kit
550 0001	Captured vent kit
476 0002	Helium Leak certification



400 Series Regulators

455 SERIES

The 455 Series regulators are intended for primary pressure control of highly corrosive gases such as chlorides, sulfides, and other acid-forming gases.

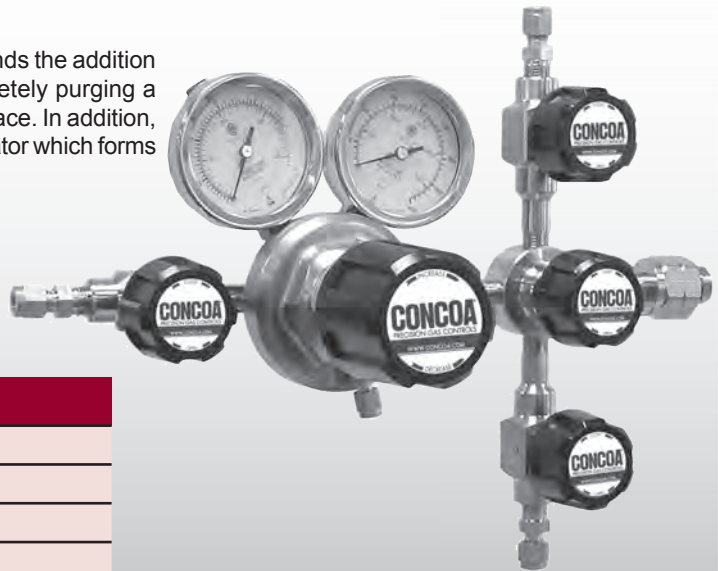
Deep Purge

For safety and corrosion prevention, CONCOA highly recommends the addition of a Deep Purge assembly to the 455 Series regulator. Completely purging a system prevents the release of hazardous gases into the work place. In addition, the Deep Purge prevents the introduction of moisture to the regulator which forms acids in the body and results in corrosion.

- Single Stage
- Electroless Nickel-Plated Forged Brass Body
- Corrosive Service

Typical Applications

Hydrogen chloride
Chlorine
Boron trichloride
Hydrogen sulfide
Dichlorosilane



455 2332-330 shown

Features

Nickel-Plated Forged Brass Body

Durable, long lasting construction

Convoluted 316L Stainless Steel Diaphragm

Sensitive to downstream changes

CAPSULE® Seat

Serviceability and long life

Captured Vent Standard

Safely vent exhaust gases

Hastelloy® Seat Assembly

Superior corrosion resistance

High Load Marginal Spring

Positive seat closure

Materials

Body

Electroless nickel-plated forged brass

Bonnet

Electroless nickel-plated forged brass

Seat

PTFE

Nozzle

Hastelloy®

Diaphragm

316L stainless steel

Diaphragm Seal

PTFE

Filter

10 micron Hastelloy®

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2 1/2" (53mm) diameter Monel®

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.2

See page 189 for flow curves

Weight (455 2332-660)

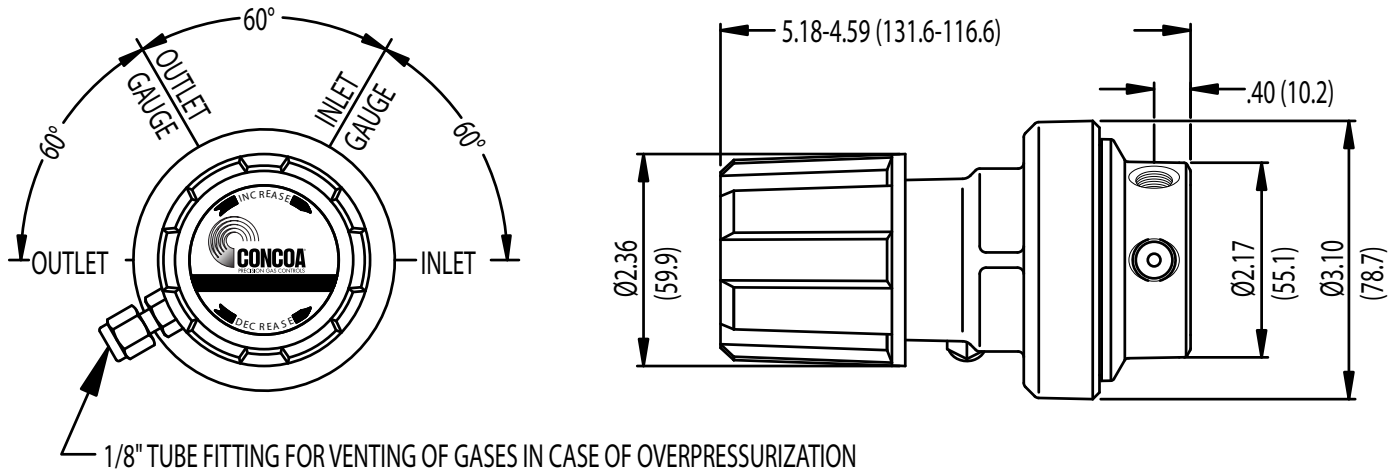
7.23 lbs. (3.28 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

455	A		B	C	D	-CON	Options
Series 455	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/ Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	None
	2: 0-40 PSIG (0-3 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly without deep purge (PSIG/kPa gauges)	TF2: 1/8" tube	
	3: 0-120 PSIG (0-8 BAR)	0-200 PSIG/ 0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Standard assembly with deep purge (PSIG/kPa gauges)	TF4: 1/4" tube	
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting	4: Standard assembly without deep purge (BAR/PSIG gauges)	TF6: 3/8" tube	
	5: 0-250 (0-17 BAR)	0-400 PSIG/ 0-27 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT	5: Standard assembly with deep purge (BAR/PSIG gauges)	M06: 6mm tube	
			8: 0-200 PSIG/ 0-14 BAR	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
				6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
			9: Diaphragm valve 1/4" FPT				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				



400 Series Regulators

483 SERIES

The 483 Series regulator applications are wide and varied including high flow purging, non-corrosive process gas control, manifold and line regulation.

- Single Stage
- Ultra-High Flow
- Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases



483 3001-000 shown

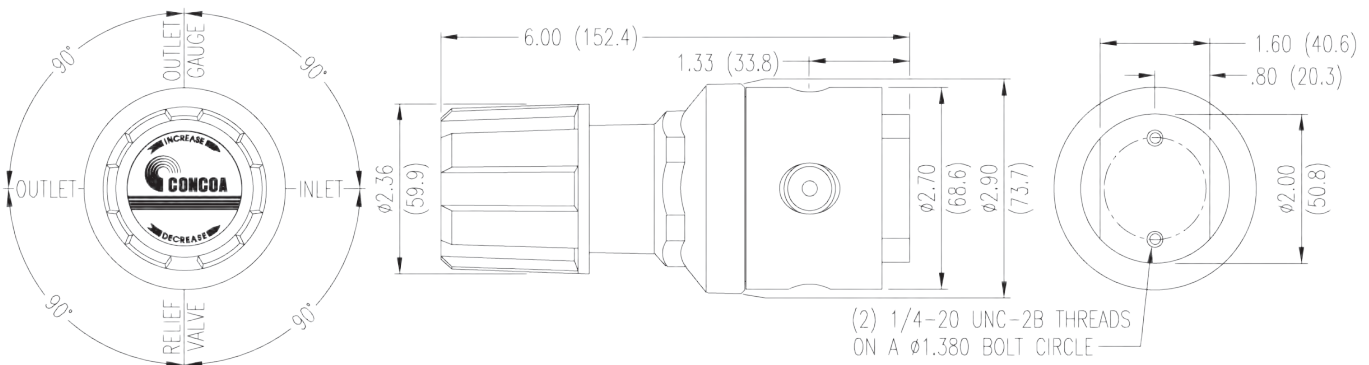
Features	Materials	Specifications
Metal-to-Metal Diaphragm Seal No possibility of gas contamination ISOFLOW Technology Internal equalization provides constant delivery pressure at high flows Brass Barstock Body Smooth surface finish Rear Panel-Mountable Versatile system configuration Pressure Ranges 0-15 to 0-250 PSIG (0-1 to 0-17 BAR) Broad range of applications 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders Pipe Away Relief Valve Safely vents exhaust gases	Body Brass barstock Bonnet Chrome-plated die-cast zinc Seat PCTFE Filter 40 micron 316L stainless steel mesh Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2" (53mm) diameter brass Ports 1/2" FPT (inlet/outlet) 1/4" FPT (gauge/relief valve) Helium Leak Integrity 1 x 10 ⁻⁸ scc/sec Cv 1.0 <i>See page 190 for flow curves</i> Weight (483 3001-000) 4.79 lbs. (2.17 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

483	A	B	C	D	-CON	Installed Options	
Series 483	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	None
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/2" FPT port	0: Bare body	000: 1/2" FPT	
	2: 0-40 PSIG (0-3 BAR)	30"-0-60 PSIG/-1-0-4 BAR		1: 1/2" tube fitting	1: Standard assembly (PSIG/kPa gauges)	TF8: 1/2" tube	
	3: 0-120 PSIG (0-8 BAR)	30"-0-200 PSIG/-1-0-14 BAR		5: Needle valve 1/4" MPT	2: Standard assembly (BAR/PSIG gauges)	M12: 12mm tube	
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR		P: 12mm tube fitting	6: Mirror image assembly (PSIG/kPa gauges)		
	5: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR			7: Mirror image assembly (BAR/PSIG gauges)		

Related Options

Options	Order No.	Description
Panel mount kit	835 0204	To mount the regulator from the rear



400 Series Regulators

484 SERIES

The 484 Series regulator applications are wide and varied including high flow purging, semiconductor CDA and bulk gas supply, modified atmosphere packaging, pharmaceutical processing, manifold and line regulation.

- Single Stage
- Ultra-High Flow
- Stainless Steel Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases
Corrosive gas service



484 3001-000 shown

Features

PTFE Diaphragm Seal

No possibility of gas contamination

ISOFLOW Technology

Internal equalization provides constant delivery pressure at high flows

316L Stainless Steel Barstock Body

Corrosion resistance for smooth surface finish

Rear Panel-Mountable

Versatile system configuration

Pressure Ranges 0-15 to 0-250 PSIG (0-1 to 0-17 BAR)

Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating

Safe use with high pressure cylinders

Pipe Away Relief Valve

Safely vents exhaust gases

Materials

Body

316L stainless steel barstock

Bonnet

Chrome-plated die-cast zinc

Seat

PCTFE

Filter

40 micron 316L stainless steel

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauge

2" (53mm) diameter stainless steel

Ports

1/2" FPT (inlet/outlet)
1/4" FPT (gauge/relief valve)

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

1.0

See page 190 for flow curves

Weight (484 3001-000)

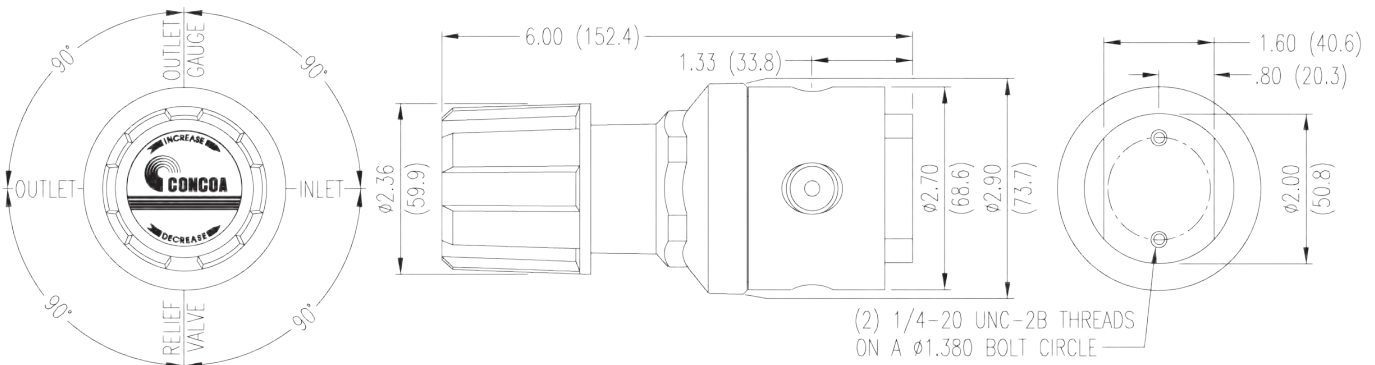
4.52 lbs. (2.05 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

484	A	B	C	D	-CON	Installed Options	
Series 484	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	None
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/2" FPT port	0: Bare body	000: 1/2" FPT	
	2: 0-40 PSIG (0-3 BAR)	30"-0-60 PSIG/-1-0-4 BAR		1: 1/2" tube fitting	1: Standard assembly (PSIG/kPa gauges)	TF8: 1/2" tube	
	3: 0-120 PSIG (0-8 BAR)	30"-0-200 PSIG/-1-0-14 BAR		5: Needle valve 1/4" MPT	2: Standard assembly (BAR/PSIG gauges)	M12: 12mm tube	
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR		P: 12mm tube fitting	6: Mirror image assembly (PSIG/kPa gauges)		
	5: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR			7: Mirror image assembly (BAR/PSIG gauges)		

Related Options

Options	Order No.	Description
Panel mount kit	835 0204	To mount the regulator from the rear



400 Series Regulators

485 SERIES

The 485 Series regulator applications are wide and varied including high flow purging, non-corrosive process gas control, manifold and line regulation.

- Single Stage
- Ultra-High Flow
- Brass Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases



485 3301-000 shown

Features

PTFE Diaphragm Seal
No possibility of gas contamination

ISOFLOW Technology
Internal equalization provides constant delivery pressure at high flows

Brass Barstock Body
Smooth surface finish

Rear Panel-Mountable
Versatile system configuration

Pressure Ranges 0-15 To 0-250 PSIG (0-1 to 0-17 BAR)
Broad range of applications

Pipe Away Relief Valve
Safely vents exhaust gases

Materials

Body
Brass barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PCTFE

Filter
40 micron 316L stainless steel

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter brass

Ports
1/2" FPT (inlet/outlet)
1/4" FPT (gauge/relief valve)

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
1.0
See page 190 for flow curves

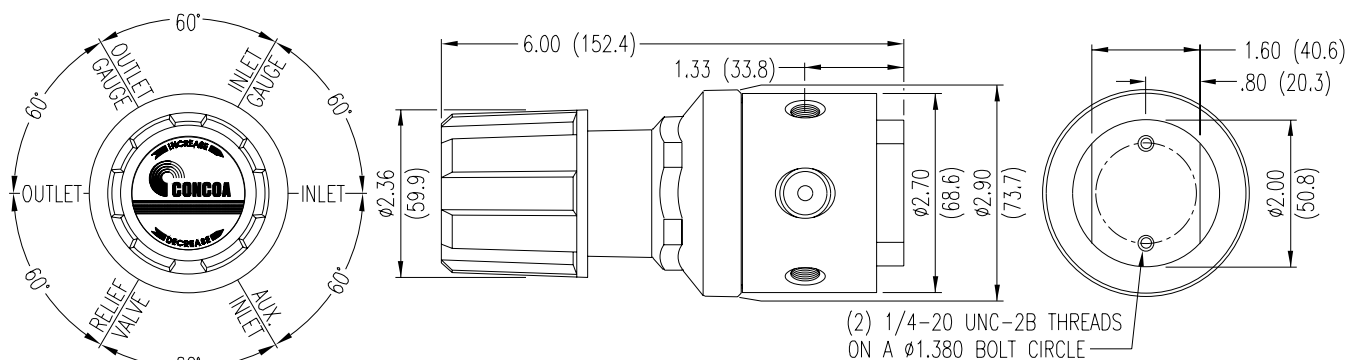
Weight (485 3301-000)
5.85 lbs. (2.65 kg)

400 Series Regulators



400 SERIES

Installation Dimensions



Ordering Information

485	A		B	C	D	-CON	Options
Series 485	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/2" FPT port	0: Bare body	000: 1/2" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-40 PSIG (0-3 BAR)	30"-0-60 PSIG/-1-0-4 BAR	3: 0-4000 PSIG/0-275 BAR	1: 1/2" tube fitting	1: Standard assembly (PSIG/kPa gauges)	TF8: 1/2" tube	C: Protocol switchover station
	3: 0-120 PSIG (0-8 BAR)	30"-0-200 PSIG/-1-0-14 BAR	5: 0-1000 PSIG/0-70 BAR	5: Needle valve 1/4" MPT	2: Standard assembly (BAR/PSIG gauges)	M12: 12mm tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR	6: 0-300 PSIG/0-21 BAR	P: 12mm tube fitting	6: Mirror image (PSIG/kPa gauges)	CGA DIN 477 BS 341 and others available	M: Protocol station
	5: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR	7: 0-200 PSIG/0-17 BAR		7: Mirror image (BAR/PSIG gauges)		
		9: 0-600 PSIG/0-42 BAR					



400 Series Regulators

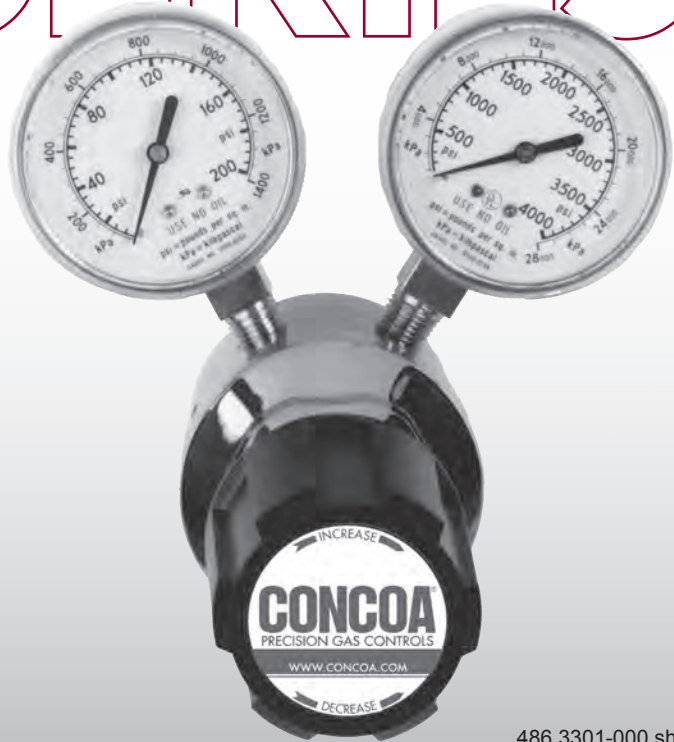
486 SERIES

The 486 Series regulator applications are wide and varied including high flow purging, semiconductor CDA and bulk gas supply, modified atmosphere packaging, pharmaceutical processing, manifold and line regulation.

- Single Stage
- Ultra-High Flow
- 316L Stainless Steel Barstock Body
- Six Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gases



486 3301-000 shown

Features

PTFE Diaphragm Seal
No possibility of gas contamination

ISOFLOW Technology
Internal equalization provides constant delivery pressure at high flows

316L Stainless Steel Barstock Body
Smooth surface finish

Rear Panel-Mountable
Versatile system configuration

Pressure Ranges 0-15 To 0-250 PSIG (0-1 to 0-17 BAR)
Broad range of applications

Pipe Away Relief Valve
Safely vents exhaust gases

Materials

Body
316L stainless steel barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PCTFE

Filter
40 micron 316L stainless steel

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter stainless steel

Ports
1/2" FPT (inlet/outlet)
1/4" FPT (gauges/relief valve)

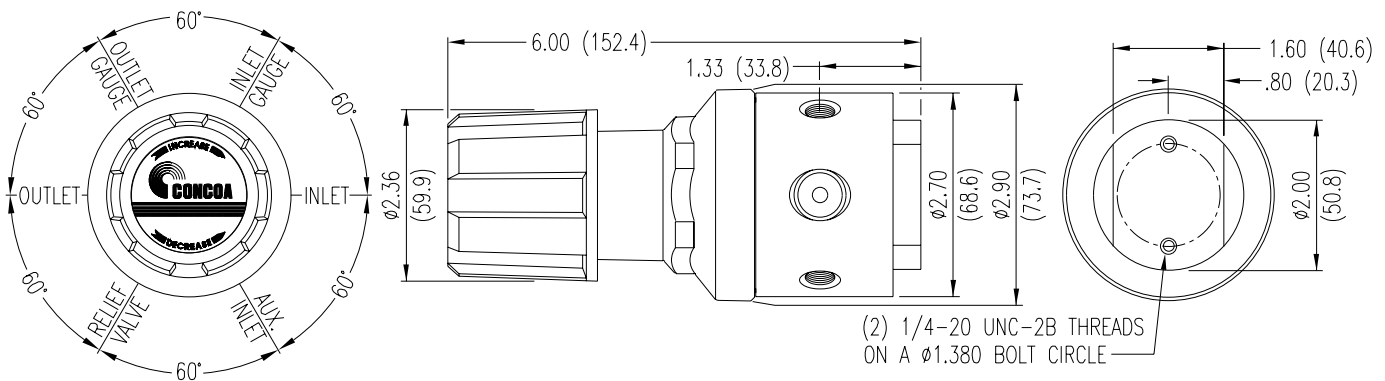
Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
1.0
See page 190 for flow curves

Weight (486 3301-000)
5.06 lbs. (2.30 kg)

CONCOA®
PRECISION GAS CONTROLS

400 SERIES



Ordering Information						
486	A	B	C	D	-CON	Options

Series 486	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly/Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/2" FPT Port	0: Bare body	000: 1/2" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-40 PSIG (0-3 BAR)	30"-0-60 PSIG/ -1-0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/2" tube fitting	1: Standard assembly (PSIG/kPa gauges)	TF8: 1/2" tube	C: Protocol switchover station
	3: 0-120 PSIG (0-8 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	5: Needle valve 1/4" MPT	2: Standard assembly (BAR/PSIG gauges)	M12: 12mm tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/0-210 BAR	P: 12mm tube fitting	6: Mirror image (PSIG/kPa gauges)	CGA DIN 477 BS 341 and others available	M: Protocol station
	5: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	7: 0-200 PSIG (0-14 BAR)		7: Mirror image (BAR/PSIG gauges)		
			9: 0-600 PSIG (0-42 BAR)				



400 Series Regulators

492 SERIES

The 492 Series regulators are intended for primary pressure control of non-corrosive gases at a maximum inlet pressure of 6000 PSIG (405 BAR).

- Single Stage
- Piston-Sensed
- Ultra-High Pressure
- Chrome-Plated Brass Barstock Body

Typical Applications

Airplane strut charging
Research and development laboratories
Chemical manufacturing
Aerospace hydraulic systems
Pharmaceutical manufacturing
Gauge calibration



492 5952-677 shown

Features

- Large Piston Sensor**
Safely control pressures to 6000 PSIG (405 BAR)
- CAPSULE® Seat**
Increased serviceability and life
- Low Wetted Surface Area**
Minimal purge requirements
- Field-Adjustable Pressure Limit**
Safeguard downstream equipment
- Chrome-Plated Brass Barstock Body**
Smooth surface finish
- Front and Rear Panel-Mountable**
Versatile system configuration
- Pressure Ranges 0-750 to 0-6000 PSIG (0-50 to 0-405 BAR)**
Broad range of applications
- Six Port Design**
Flexible installation alternatives

Materials

- Body**
Chrome-plated brass barstock
- Bonnet**
Chrome-plated brass barstock
- Seat**
PCTFE 3000 and 4500 PSIG (210 and 310 BAR) inlet
Arlon® (PEEK) (6000 PSIG inlet)
- Piston**
Brass barstock
- Filter**
10 micron sintered bronze
- Internal Seals**
Viton® (encapsulated)

Specifications

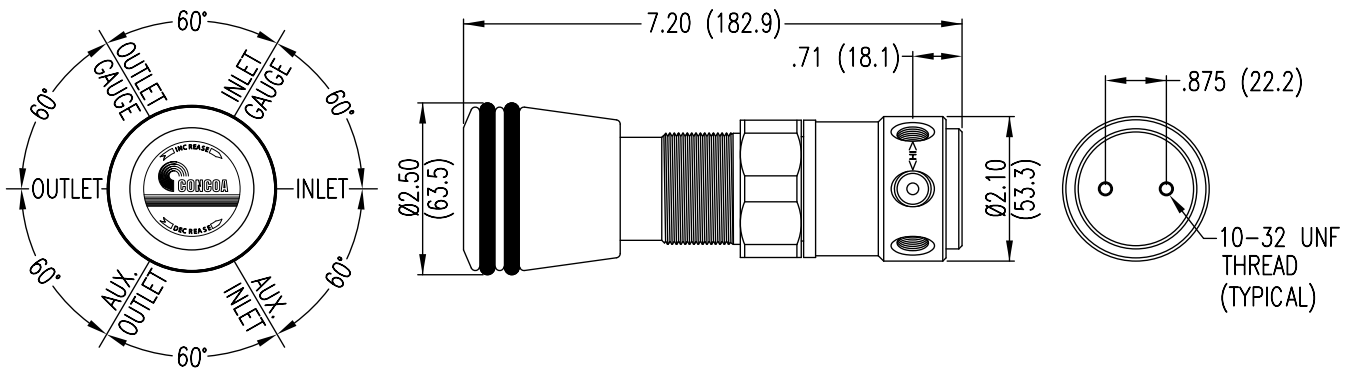
- Maximum Inlet Pressure**
6000 PSIG (405 BAR)
- Temperature Range**
-40°F to 140°F (-40°C to 60°C)
- Gauges**
2 1/2" (53mm) diameter chrome-plated brass
- Ports**
1/4" FPT
- Cv**
0.1
See page 190 for flow curves
- Weight (492 4952-677)**
5.59 lbs. (2.54 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

492	A		B		C	D	-CON	Options
Series 492	Outlet Pressure	Outlet Gauge	Inlet Maximum	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections CGA DIN 477 BS 341 and others available	Installed Options
	1: 0-750 PSIG (50 BAR)	0-1000 PSIG/ 0-70 BAR	0: 6000 PSIG (405 BAR)*	None	0: 1/4" FPT	0: Bare body†		B: Protocol alarm station (110/220 VAC)
	2: 0-1500 PSIG (0-100 BAR)	0-4000 PSIG/ 0-275 BAR	3: 3000 PSIG (210 BAR)	0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)		C: Protocol switchover station
	3: 0-2500 PSIG (0-170 BAR)	0-4000 PSIG/ 0-275 BAR	8: 5500 PSIG (380 BAR)	0-6000 PSIG/ 0-405 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)		H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-4500 PSIG (0-310 BAR)*	0-6000 PSIG/ 0-405 BAR	9: 6000 PSIG (405 BAR)	0-10,000 PSIG/ 0-700 BAR	5: Needle valve 1/4" MPT	6: Mirror image (BAR/kPa gauges)		M: Protocol station
	5: 0-6000 PSIG (0-405 BAR)†	0-10,000 PSIG/ 0-700 BAR	<i>*Only valid if D = 1 or 2 (outlet gauge specified)</i>		6: 1/8" tube fitting	7: Mirror image (BAR/PSIG gauges)		Q: Protocol purge station*
	6: 0-3500 PSIG (0-240 BAR)*	0-6000 PSIG/ 0-405 BAR			7: 3/8" tube fitting	<i>†B must be 3, 8 or 9 (maximum pressure specified)</i>		<i>*3000 PSIG (210 BAR) maximum inlet only valid if B=3</i>
	<i>*Not available with 3000 PSIG (210 BAR) maximum inlet pressure</i>				F: Needle valve 1/4" tube fitting			
					M: 6mm tube fitting			
			<i>†Only available with 6000 PSIG (405 BAR) maximum inlet pressure</i>		<i>Note: Outlet fittings and outlet valves are 316 stainless steel</i>			

Related Options

Options	Order No.	Description
Panel mount kit	830 6483	To mount the regulator using bonnet threads. Material: Chrome-plated brass



400 Series Regulators

493 SERIES

The 493 Series regulator applications are wide and varied including high flow purging, pressure testing, manifold and line regulation.

- Single Stage
- Piston-Sensed
- Ultra-High Pressure
- 316L Stainless Steel Barstock Body

Typical Applications

Airplane strut charging
Research and development laboratories
Chemical manufacturing
Aerospace hydraulic systems
Pharmaceutical manufacturing
Gauge calibration



493 5952-677 shown

Features

Large Piston Sensor
Safely control pressures to 6000 PSIG (405 BAR)

CAPSULE® Seat
Increased serviceability and life

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

316 Stainless Steel Barstock Body
Smooth surface finish

Front and Rear Panel-Mountable
Versatile system configuration

Pressure Ranges 0-750 to 0-6000 PSIG (0-50 to 0-405 BAR)
Broad range of applications

Six Port Design
Flexible installation alternatives

Materials

Body
316L stainless steel barstock

Bonnet
304 stainless steel

Seat
PCTFE 3000 and 4500 PSIG (210 and 310 BAR) inlet
Arlon® (PEEK) 6000 PSIG (405 BAR) inlet

Piston
316L stainless steel

Filter
Patented 10 micron 316 mesh

Internal Seals
Viton®

Not for N₂O or CO₂

Specifications

Maximum Inlet Pressure
6000 PSIG (405 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2 1/2" (53mm) diameter stainless steel

Ports
1/4" FPT

Cv
0.1
See page 190 for flow curves

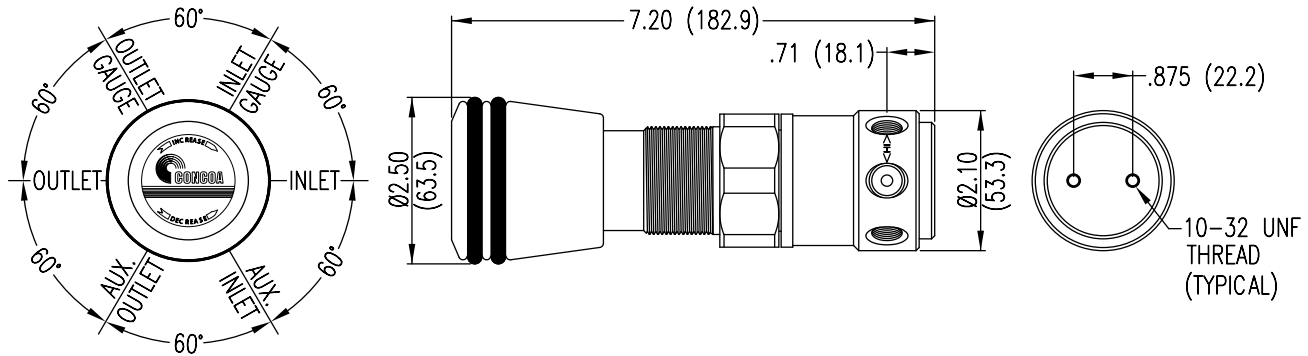
Weight (493 5952-677)
4.64 lbs. (2.10 kg)

400 Series Regulators



Installation Dimensions

400 SERIES



Ordering Information

493	A		B		C	D	-CON	Options
Series 493	Outlet Pressure	Outlet Gauge	Inlet Maximum	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-750 PSIG (0-50 BAR)	0-1000 PSIG/ 0-70 BAR	0: 6000 PSIG (0-405 BAR)*	None	0: 1/4" FPT	0: Bare body†	CGA DIN 477 BS 341 and others available	B: Protocol alarm station (110/220 VAC)
	2: 0-1500 PSIG (0-100 BAR)	0-4000 PSIG/ 0-275 BAR	3: 3000 PSIG (210 BAR)	0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)		C: Protocol switchover station
	3: 0-2500 PSIG (0-170 BAR)	0-4000 PSIG/ 0-275 BAR	8: 5500 PSIG (379 BAR)	0-6000 PSIG/ 0-405 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	Not for N ₂ O or CO ₂	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-4500 (0-310 BAR)*	0-6000 PSIG/ 0-405 BAR	9: 6000 PSIG (405 BAR)	0-10,000 PSIG/ 0-700 BAR	5: Needle valve 1/4" MPT	6: Mirror image (BAR/kPa gauges)		M: Protocol station
	5: 0-6000 PSIG (0-405 BAR)†	0-10,000 PSIG/ 0-700 BAR	<i>* Only valid if D=1 or 2 (outlet gauge specified)</i>		6: 1/8" tube fitting	7: Mirror image (BAR/PSIG gauges)		Q: Protocol purge station*
	6: 0-3500 (241 BAR)*	0-6000 PSIG/ 405 BAR			7: 3/8" tube fitting	<i>†B must be 3, 8 or 9 (maximum pressure specified)</i>		<i>*3000 PSIG (210 BAR) maximum inlet only valid if B=3</i>
	<i>*Not available with 3000 PSIG (210 BAR) maximum inlet pressure</i>				F: Needle valve 1/4" tube fitting			
					M: 6mm tube fitting			
	<i>†Only available with 6000 PSIG (405 BAR) maximum inlet pressure</i>		<i>Note: Outlet fittings and outlet valves are 316 stainless steel</i>					

Related Options

Options	Order No.	Description
Panel Mount Kit	830 6483	To mount the regulator using bonnet threads. Material: Chrome-plated brass



300 Series Regulators

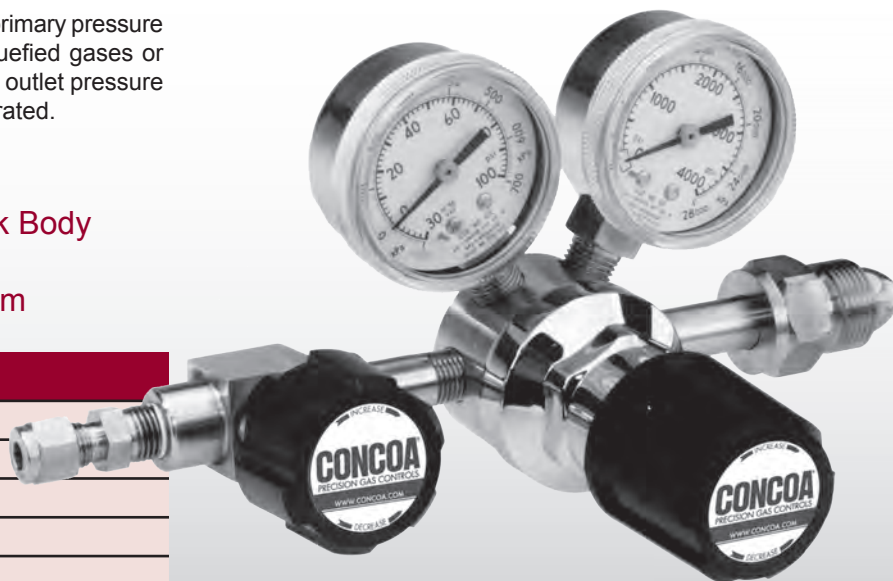
302 SERIES

The 302 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases or for applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

- Single Stage
- Chrome-Plated Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Gas and liquid chromatography
 High purity carrier gases
 Zero, span, and calibration gases
 High purity chamber pressurization
 Liquefied hydrocarbon gas control
 Control of cryogenic gases



302 2331-580 shown

Features

CAPSULE® Seat
 Increased serviceability and life

316L Stainless Steel Diaphragm
 No inboard diffusion

Low Wetted Surface Area
 Minimal purge requirements

Field-Adjustable Pressure Limit
 Safeguard downstream equipment

Convolutd Diaphragm
 Smooth pressure changes

Compact Design
 Easily transported and integrated into systems

Chrome-Plated Brass Barstock Body
 Smooth surface finish

Rear Panel-Mountable
 Easy installation

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)
 Broad range of applications

Materials

Body
 Chrome-plated brass barstock

Bonnet
 Chrome-plated die-cast zinc

Seat
 PTFE
 PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option

Filter
 10 micron sintered bronze

Diaphragm
 316L stainless steel

Internal Seals
 PTFE

Specifications

Maximum Inlet Pressure
 3000 PSIG (210 BAR)
 3500 PSIG (240 BAR) optional
 4500 PSIG (310 BAR) optional

Temperature Range
 -40°F to 140°F (-40°C to 60°C)

Gauges
 2" (53mm) diameter chrome-plated brass

Ports
 1/4" FPT

Helium Leak Integrity
 1 x 10⁻⁸ scc/sec

Cv
 0.1
See page 188 for flow curves

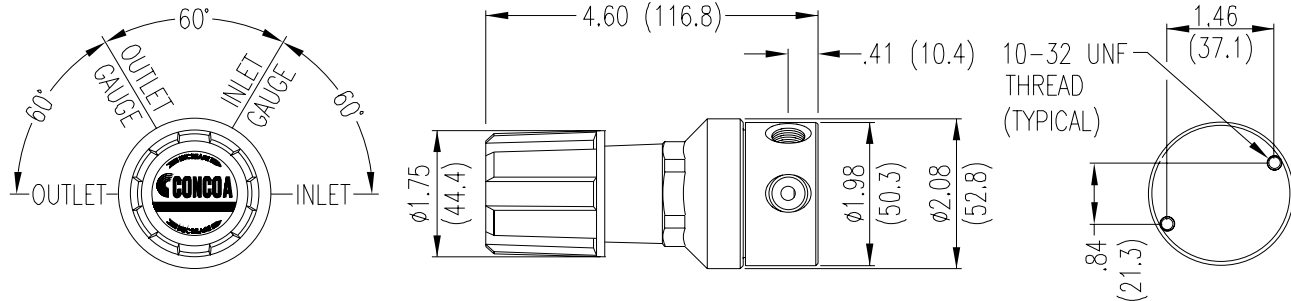
Weight (302 2331-580)
 3.1 lbs. (1.40 kg)

CRN OH 5216.5R1

300 Series Regulators



Installation Dimensions



Ordering Information

302	A	B	C	D	-CON	Options	
Series 302	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-300 PSIG/ 0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-70 BAR	7: 0-400 PSIG/ 0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	Q: Protocol purge station*
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR	8: 0-6000 PSIG/ 0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	T: Tee purge*
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i>	G: 0-4000 PSIG/ 0-275 BAR† <i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i> <i>†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®</i>	6: 1/8" tube fitting				<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
			7: 3/8" tube fitting				
			8: Diaphragm valve 1/8" tube fitting				
			9: Diaphragm valve 1/4" FPT				
			A: 3/8" BSP RH fitting				
			B: Diaphragm valve 3/8" tube fitting				
			C: 3/8" BSP LH fitting				
			D: 6mm brass hose barb (not available if A=4 or 5)				
G: 1/8" stainless steel tube fitting							
H: 1/4" stainless steel tube fitting							
M: 6mm tube fitting							
S: Diaphragm valve 6mm tube fitting							

Related Options

Order No.	Description
835 0204	Rear Panel mount kit



300 Series Regulators

304 SERIES

The 304 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Chrome-Plated Brass Barstock Body
- Three Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



304 3021-000 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convolutd Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Chrome-Plated Brass Barstock Body
Smooth surface finish

Rear Panel-Mountable
Easy installation

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)
Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating
Safe use with high pressure cylinders

Materials

Body
Chrome-plated brass barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter chrome-plated brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

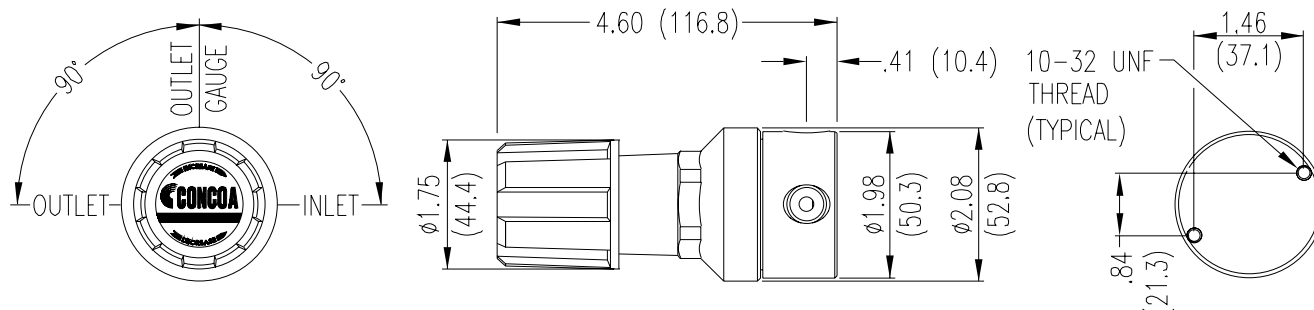
Cv
0.1
See page 188 for flow curves

Weight (304 2021-000)
1.7 lbs. (0.78 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

304	A		B	C	D	-CON	Options
Series 304	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/ -1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	M: Protocol station
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/ -1-0-7 BAR		1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	Q: Protocol purge station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-70 BAR		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/ -1-0-14 BAR		5: Needle valve 1/4" MPT			
				6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" tube fitting			
				C: 3/8" BSP LH fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
				G: 1/8" stainless steel tube fitting			
				H: 1/4" stainless steel tube fitting			
		M: 6mm tube fitting					
		S: Diaphragm valve 6mm tube fitting					

Related Options

Order No.	Description
835 0204	Rear Panel mount kit



300 Series Regulators

305 SERIES

The 305 Series regulators are specifically designed for use in the medical laboratory for blood gases, laser gases, and other clinical gas applications where minor fluctuations in outlet pressure due to diminishing inlet supply pressure can be tolerated.

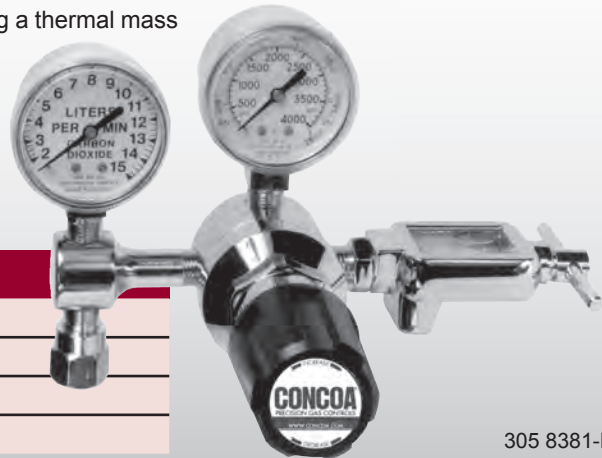
Custom Calibration

In addition to a standard 2-15 LPM flowgauge for CO₂ in laser applications, CONCOA also offers a custom 2-15 LPM calibration for any non-corrosive gas or mixture. The outlet orifice is sized to the flow requirement for a specific gas using a thermal mass flowmeter.

- Single Stage
- Chrome-Plated Brass Barstock Body
- 316L Stainless Steel Diaphragm
- Custom Calibration

Typical Applications

Blood gases
Laser gases
Medical research
University laboratories



305 8381-M2D

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convuluted Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Materials

Body
Chrome-plated brass barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter chrome-plated brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
0.1
See page 188 for flow curves

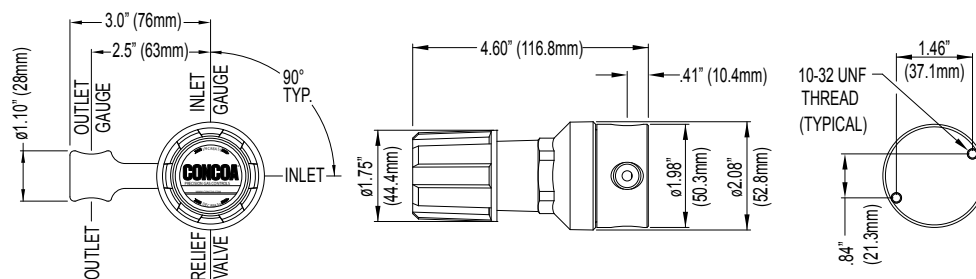
Weight (305 8381-M2D)
2.8 lbs. (1.29 kg)

CRN OH 5216.5R1

300 Series Regulators



Installation Dimensions



Ordering Information

305	A	B	C	D	-CON	Options	
Series 305	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	See inlet selection chart for limited CGA connections. DIN 477, BS 341 and others available.	B: Protocol alarm station (110/220 VAC)
	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)		C: Protocol switchover station
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)		H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-14 BAR		3: Diaphragm valve 1/4" tube fitting			M: Protocol station
	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		4: Diaphragm valve 1/4" MPT			Q: Protocol purge station
	7: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-70 BAR		5: Needle valve 1/4" MPT			
	8: 2-15 LPM CO ₂	2-15 LPM flowgauge		6: 1/8" tube fitting			
	9: Custom calibration	Custom flowgauge		7: 3/8" tube fitting			
				8: Medical DISS outlet			
			9: 1/4" hose barb				
			A: 3/8" BSP RH fitting				

Gas Service	Inlet (CGA)		Outlet (Medical DISS)			
	Threaded	Yoke	Primary	DISS Part No.	Optional	DISS Part No.
Air	CGA 346	CGA 950	1160	830 5686	N/A	
Argon, Neon, Krypton, Xenon	CGA 580	CGA 985	N/A		N/A	
Carbon dioxide	CGA 320	CGA 940	1080	830 6042	N/A	
Carbon dioxide < 7% and oxygen	CGA 280	CGA 880	1200	830 6043	1020	830 6047
Carbon dioxide > 7% and oxygen	CGA 500	CGA 940	1080	830 6042	1020	830 6047
Clinical blood gas mixtures	CGA 500	CGA 973	1020	830 6046	1080	830 6042
Ethylene	CGA 350	CGA 900	1140	830 6049	N/A	
Helium	CGA 580	CGA 930	1060	830 6048	N/A	
Helium < 80% and oxygen	CGA 280	CGA 890	1180	830 6045	1020	830 6047
Helium > 80% and oxygen	CGA 500	CGA 930	1060	830 6048	1020	830 6047
Nitrogen	CGA 580	CGA 960	1120	830 6044	N/A	
Nitrogen and oxygen > 23.5%	CGA 280	CGA 890	2040		N/A	
Nitrous oxide	CGA 326	CGA 910	1040	830 4264	N/A	
Nitrous oxide 47.5% - 52.5% And oxygen	CGA 280	CGA 965	2020	830 6046	N/A	
Oxygen	CGA 540	CGA 870	1240	803 0051	N/A	
Xenon and oxygen > 20%	CGA 280	CGA 890	1020	830 6047	1180	
Non-flammable, noncorrosive gas mixtures labeled as drugs or medical devices without another connection assignment	CGA 500	CGA 973	1020	830 6047	N/A	



300 Series Regulators

307 SERIES

The 307 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Chrome-Plated Brass Barstock Body
- Four Port Configuration
- Real Inlet

Typical Applications

Bulk gas distribution systems

Gas and liquid chromatography

High purity carrier gases

Zero, span, and calibration gases

High purity chamber pressurization

Liquefied hydrocarbon gas control

Control of cryogenic gas



307 2031-580 shown

Features

CAPSULE® Seat

Increased serviceability and life

316L Stainless Steel Diaphragm

No inboard diffusion

Low Wetted Surface Area

Minimal purge requirements

Field-Adjustable Pressure Limit

Safeguard downstream equipment

Convolute Diaphragm

Smooth pressure changes

Compact Design

Easily transported and integrated into systems

Chrome-Plated Brass Barstock Body

Smooth surface finish

Rear Panel-Mountable

Easy installation

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR)

Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating

Safe use with high pressure cylinders

Materials

Body

Chrome-plated brass barstock

Bonnet

Chrome-plated die-cast zinc

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter chrome-plated brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.1

See page 188 for flow curves

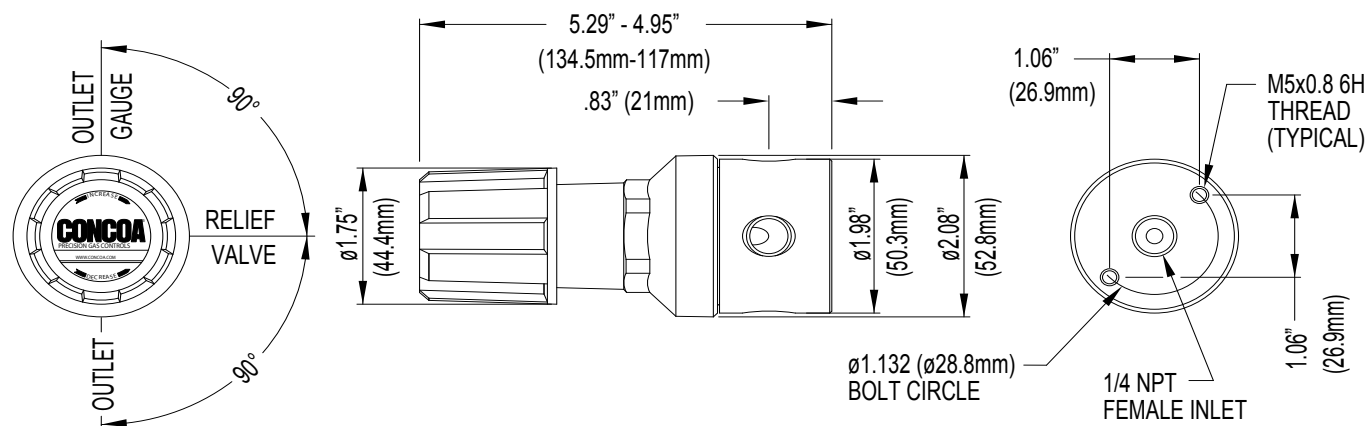
Weight (307 2031-580)

2.9 lbs. (1.29 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

307	A	B	C	D	-CON	Options	
Series 307	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	M00: 1/4" FPT	None
	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-4 BAR		1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	
	4: 0-150 PSIG (0-10 BAR)	0-200 PSIG/ 0-14 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-14 BAR		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
	8: 2-15 LPM CO ₂	2-15 LPM flowgauge		6: 1/8" tube fitting			
	9: Custom calibration	Custom flowgauge		7: 3/8" tube fitting			
				8: DISS outlet			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 1/8" tube fitting			
				M: 6mm tube fitting			
				S: Diaphragm valve 6mm tube fitting			

Related Options

Order No.	Description
835 0204	Rear Panel mount kit
476 0002	Helium Leak certification



300 Series Regulators

308 SERIES

The 308 Series regulators are specifically designed to prevent freeze-up problems associated with high flows of carbon dioxide and nitrous oxide. As CO₂ or N₂O passes through a regulator seat, dry ice can form if the flow is too high, causing the regulator to freeze up.

- Single Stage
- Chrome-Plated Brass Barstock Body
- 316L Stainless Steel Diaphragm
- Electrically Heated
- NEMA 4

Typical Applications

Chemical storage blanketing
Anaerobic chambers
Inert gas purging
Atomic absorption oxidizer gas
Semiconductor reactor furnace
Inductively coupled plasma systems
pH control



308 3301-330 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convuluted Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Three 50-Watt Heaters
Maintain gas flow up to 350 SCFH (165 LPM)

316L Stainless Steel Diaphragm
Unaffected by low temperatures

NEMA 4 Housing
For either indoor or outdoor use

Materials

Body
Chrome-plated brass barstock

Bonnet
Chrome-plated brass barstock

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Electrical Housing
NEMA 4

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range (Thermostat)
95°F to 120°F (35°C to 49°C)

Heaters
3 @ 50 watts each (110 or 220 VAC)

Gauges
2" (53mm) diameter chrome-plated brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

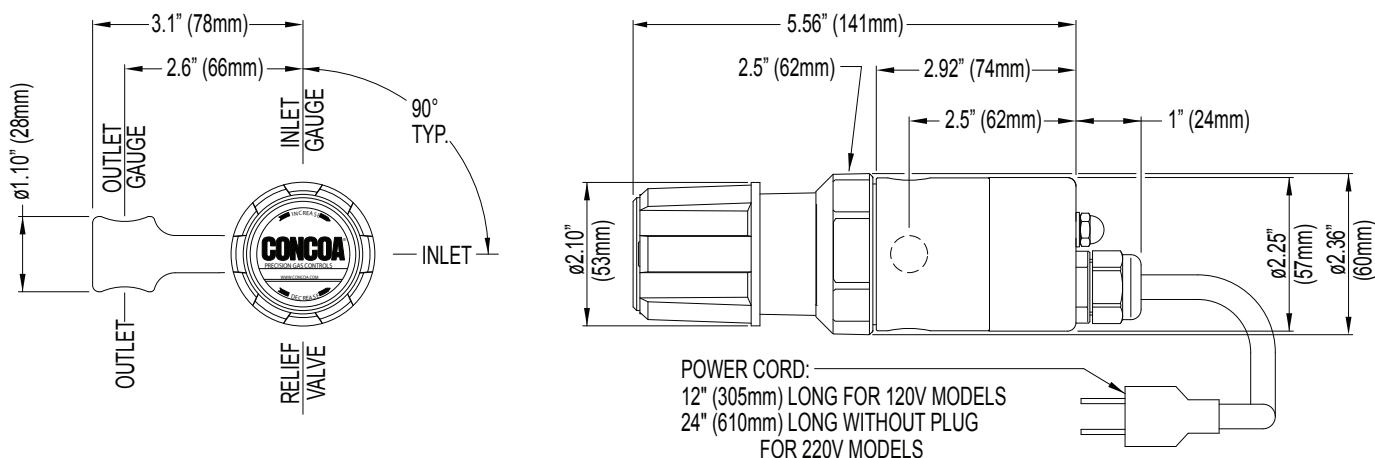
Cv
0.1
See page 191 for flow curves

Weight (308 3301-330)
5.4 lbs. (2.45 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

308	A	B	C	D	-CON	Options	
Series 308	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body 110 VAC	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly 110 VAC (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR		2: 1/4" tube fitting	2: Bare body 220 VAC*	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-14 BAR		3: Diaphragm valve 1/4" tube fitting	3: Standard assembly 220 VAC* (PSIG/kPa gauges)	TF6: 3/8" tube	M: Protocol station
	7: 0-175 PSIG (0-12 BAR)	0-400 PSIG/ 0-27 BAR		4: Diaphragm valve 1/4" MPT	4: Standard assembly 110 VAC (BAR/PSIG gauges)	M06: 6mm tube	Q: Protocol purge station
				5: Needle valve 1/4" MPT	5: Standard assembly 220 VAC (BAR/PSIG gauges)*	CGA DIN 477 BS 341 and others available	
				6: 1/8" tube fitting	<i>*220 volt models are CE marked</i>		
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
		M: 6mm tube fitting					
		S: Diaphragm valve 6mm tube fitting					



300 Series Regulators

312 SERIES

The 312 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- Chrome-Plated Brass Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

EPA Protocol gases
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization



312 2331-580 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convolutd Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Chrome-Plated Brass Barstock Body
Smooth surface finish

10 Micron Filtration in Both Stages
Fail-safe seat performance

Pressure Ranges 0-15 to 0-250 PSIG (0-1 to 0-17 BAR)
Broad range of applications

Materials

Body
Chrome-plated brass barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE
PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter chrome-plated brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
0.1
See page 188 for flow curves

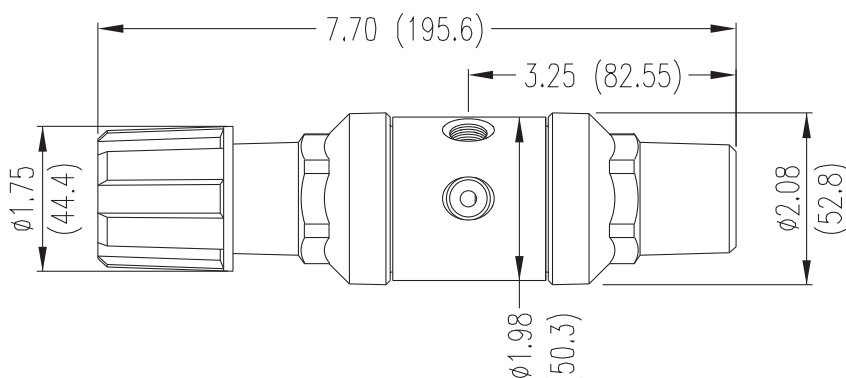
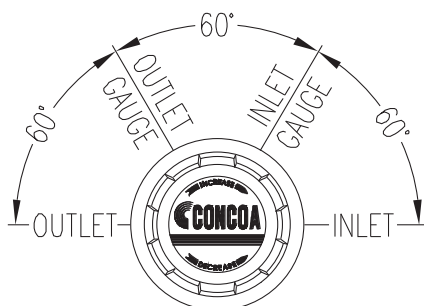
Weight (312 2331-580)
4.4 lbs. (1.98 kg)

Conforms to CGA E-4 Standard for Pressure Regulators
CRN OH 5216.5R1

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

312	A	B	C	D	-CON	Options	
Series 312	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR	3: 0-4000 PSIG/0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR	5: 0-1000 PSIG/0-70 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR	6: 0-300 PSIG/0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR	7: 0-400 PSIG/0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	Q: Protocol purge station*
			8: 0-6000 PSIG/0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	T: Tee purge*
			G: 0-4000 PSIG/0-275 BAR†	6: 1/8" tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
			<i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i>	7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
			<i>†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®</i>	A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" tube fitting			
				C: 3/8" BSP LH fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
			G: 1/8" stainless steel tube fitting				
			H: 1/4" stainless steel tube fitting				
			M: 6mm tube fitting				
			S: Diaphragm valve 6mm tube fitting				

*Not available with 4500 PSIG (310 BAR) max inlet pressure



300 Series Regulators

315 SERIES

The 315 Series regulators are specifically designed for use in the medical laboratory for blood gases, laser gases, and other clinical gas applications requiring constant pressure control and delivery regardless of supply pressure variations.

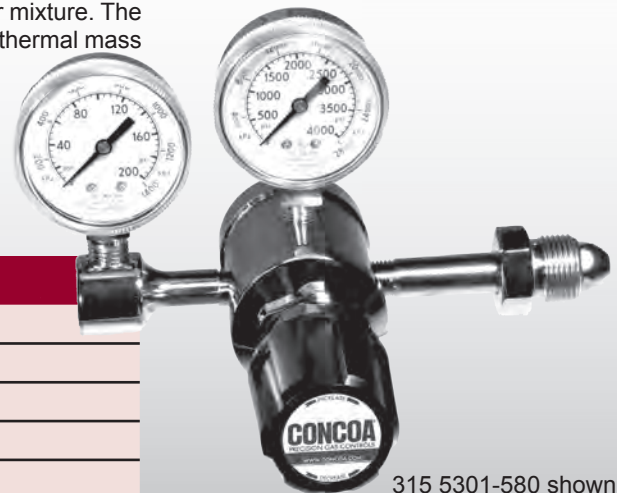
Custom Calibration

In addition to a standard 2-15 LPM flowgauge for CO₂ in laser applications, CONCOA also offers a custom 2-15 LPM calibration for any non-corrosive gas or mixture. The outlet orifice is sized to the flow requirement for a specific gas using a thermal mass flowmeter.

- Dual Stage
- Chrome-Plated Brass Barstock Body
- 316L Stainless Steel Diaphragm
- Custom Calibration

Typical Applications

Blood gases
Laser gases
Medical research
Pharmaceutical manufacturing
University laboratories



315 5301-580 shown

Features

CAPSULE® Seat

Increased serviceability and life

316L Stainless Steel Diaphragm

No inboard diffusion

Low Wetted Surface Area

Minimal purge requirements

Field-Adjustable Pressure Limit

Safeguard downstream equipment

Convolute Diaphragm

Smooth pressure changes

Compact Design

Easily transported and integrated into systems

Materials

Body

Chrome-plated brass barstock

Bonnet

Chrome-plated die-cast zinc

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2" (53mm) diameter chrome-plated brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.1

See page 188 for flow curves

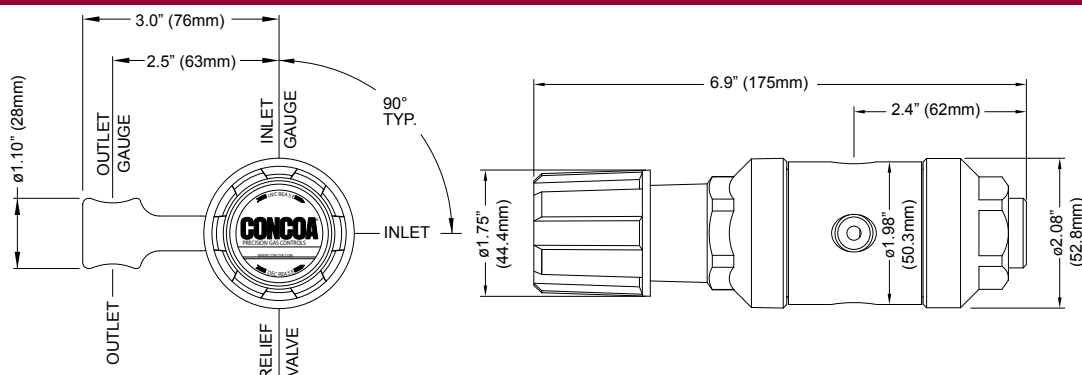
Weight (315 5301-580)

4.2 lbs. (1.90 kg)

300 Series Regulators



Installation Dimensions



Ordering Information

315	A	B	C	D	-CON	Options	
Series 315	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	See inlet selection chart for limited CGA connections. DIN 477, BS 341 and others available.	B: Protocol alarm station (110/220 VAC)
	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)		C: Protocol switchover station
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)		H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-14 BAR		3: Diaphragm valve 1/4" tube fitting			M: Protocol station
	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		4: Diaphragm valve 1/4" MPT			Q: Protocol purge station
	7: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/ 0-70 BAR		5: Needle valve 1/4" MPT			
	8: 2-15 LPM CO ₂	2-15 LPM flowgauge		6: 1/8" tube fitting			
	9: Custom calibration	Custom flowgauge		7: 3/8" tube fitting			
				8: Medical DISS outlet			
			9: 1/4" hose barb				
			A: 3/8" BSP RH fitting				

Gas Service	Inlet (Threaded)	Inlet (Yoke)	Outlet (Medical DISS)			
			Primary	DISS Part No.	Optional	DISS Part No.
Air	CGA 346	CGA 950	1160	830 5686	N/A	
Argon, Neon, Krypton, Xenon	CGA 580	CGA 985	N/A		N/A	
Carbon dioxide	CGA 320	CGA 940	1080	830 6042	N/A	
Carbon dioxide < 7% and oxygen	CGA 280	CGA 880	1200	830 6043	1020	830 6047
Carbon dioxide > 7% and oxygen	CGA 500	CGA 940	1080	830 6042	1020	830 6047
Clinical blood gas mixtures	CGA 500	CGA 973	1020	830 6046	1080	830 6042
Ethylene	CGA 350	CGA 900	1140	830 6049	N/A	
Helium	CGA 580	CGA 930	1060	830 6048	N/A	
Helium < 80% and oxygen	CGA 280	CGA 890	1180	830 6045	1020	830 6047
Helium > 80% and oxygen	CGA 500	CGA 930	1060	830 6048	1020	830 6047
Nitrogen	CGA 580	CGA 960	1120	830 6044	N/A	
Nitrogen and oxygen > 23.5%	CGA 280	CGA 890	2040		N/A	
Nitrous oxide	CGA 326	CGA 910	1040	830 4264	N/A	
Nitrous oxide 47.5% - 52.5% and oxygen	CGA 280	CGA 965	2020	830 6046	N/A	
Oxygen	CGA 540	CGA 870	1240	803 0051	N/A	
Xenon and oxygen > 20%	CGA 280	CGA 890	1020	830 6047	1180	
Non-flammable, noncorrosive gas mixtures labeled as drugs or medical devices without another connection assignment	CGA 500	CGA 973	1020	830 6047	N/A	



300 Series Regulators

322 SERIES

The 322 Series regulators are intended for primary pressure control of ultrahigh purity and corrosive gases in applications where minor fluctuations in outlet pressure due to diminishing inlet supply can be tolerated.

- Single Stage
- 316L Stainless Steel Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Gas and liquid chromatography
 High purity carrier gases
 Zero, span, and calibration gases
 High purity chamber pressurization
 Liquefied hydrocarbon gas control
 Control of cryogenic gases



322 2331-580 shown

Features

CAPSULE® Seat
 Increased serviceability and life

316L Stainless Steel Diaphragm
 No inboard diffusion

Low Wetted Surface Area
 Minimal purge requirements

Field-Adjustable Pressure Limit
 Safeguard downstream equipment

Convolutd Diaphragm
 Smooth pressure changes

Compact Design
 Easily transported and integrated into systems

316L Stainless Steel Barstock Body
 Increased corrosion resistance

Rear Panel-Mountable
 Easy installation

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-35 BAR)
 Broad range of applications

Materials

Body
 316L stainless steel barstock

Bonnet
 Chrome-plated die-cast zinc

Seat
 PTFE
 PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option

Filter
 Patented 10 micron 316 mesh

Diaphragm
 316L stainless steel

Internal Seals
 PTFE

Specifications

Maximum Inlet Pressure
 3000 PSIG (210 BAR)
 3500 PSIG (240 BAR) optional
 4500 PSIG (310 BAR) optional

Temperature Range
 -40°F to 140°F (-40°C to 60°C)

Gauges
 2" (53mm) diameter
 Chrome-plated brass case
 Stainless steel internals

Ports
 1/4" FPT

Helium Leak Integrity
 1 x 10⁻⁸ scc/sec

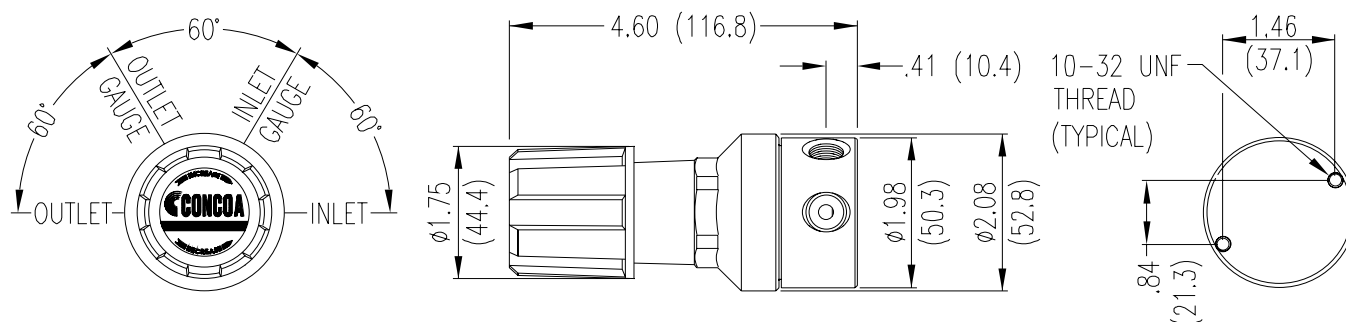
Cv
 0.1
 See page 188 for flow curves

Weight (322 2331-580)
 3.0 lbs. (1.34 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

322	A		B	C	D	-CON	Options
Series 322	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)*	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR	3: 0-4000 PSIG/0-310 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-14 BAR	6: 0-300 PSIG/0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	H: Protocol switchover station with alarm (110/220 VAC)
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/0-70 BAR	7: 0-400 PSIG/0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	M: Protocol station
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR	8: 0-6000 PSIG/0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station*
	<i>*Not available with 4500 PSIG (310 BAR) maximum inlet pressure</i>		G: 0-4000 PSIG/0-275 BAR [†]	6: 1/8" tube fitting			T: Tee purge*
			<i>*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®</i>	7: 3/8" tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
<i>†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®</i>	M: 6mm tube fitting						
	S: Diaphragm valve 6mm tube fitting						

Related Options

Order No.	Description
835 0204	Rear Panel mount kit

324 SERIES

The 324 Series regulators are intended for secondary pressure control of ultra high purity and corrosive gases or as point of use pressure control in ultrahigh purity gas distribution systems.

- Single Stage
- 316L Stainless Steel Barstock Body
- Three Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
Ultra-high purity carrier gases
Zero, span, and calibration gases
Liquefied hydrocarbon gas control
Control of cryogenic gases



324 3021-000 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convuluted Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

316L Stainless Steel Barstock Body
Increased corrosion resistance

Rear Panel-Mountable
Easy installation

Pressure Ranges 0-15 to 0-500 PSIG (0-1 to 0-34 BAR)
Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating
Safe use with high pressure cylinders

Materials

Body
316L stainless steel barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
Patented 10 micron 316 mesh

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauge
2" (53mm) diameter
Chrome-plated case
Stainless steel internals

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

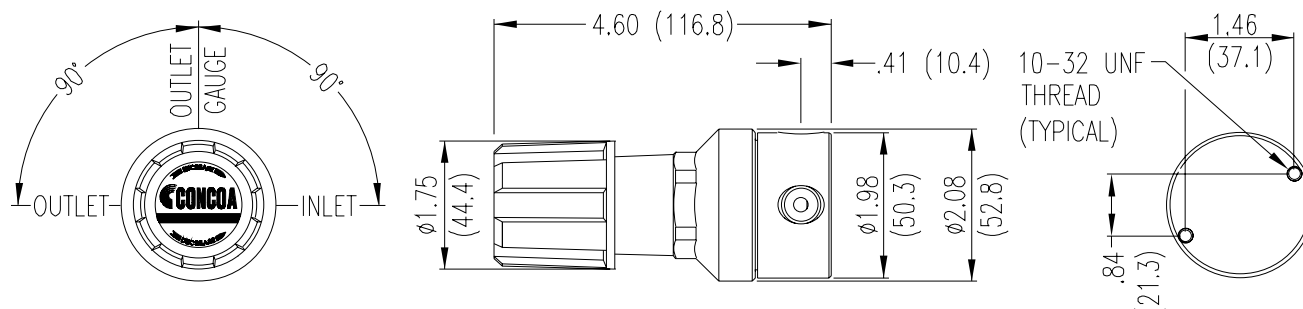
Cv
0.1
See page 188 for flow curves

Weight (324 2021-000)
2.4 lbs. (1.09 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

324	A	B	C	D	-CON	Options	
Series 324	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	M: Protocol station
	2: 0-50 PSIG (0-3.5 BAR)	30"-0-100 PSIG/-1-0-7 BAR		1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	Q: Protocol purge station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/0-70 BAR		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR		5: Needle valve 1/4" MPT			
				6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				M: 6mm tube fitting			
				S: Diaphragm valve 6mm tube fitting			

Related Options

Order No.	Description
835 0204	Rear Panel mount kit



300 Series Regulators

325 SERIES

The 325 Series regulators are specifically designed for use with non-corrosive gases in lecture bottles. The incorporation of our smallest CAPSULE® allows excellent pressure regulation over the useful pressure range of a lecture bottle.

- Single Stage
- Chrome-Plated Brass Barstock Body
- 316L Stainless Steel Diaphragm
- Lecture Bottle Regulator

Typical Applications

University classrooms
University laboratories
Chemical research
Pharmaceutical manufacturing



325 3351-170 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convolutd Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Chrome-Plated Brass Barstock Body
Smooth surface finish

Low Droop
Stable outlet pressure

1 1/2" (38.1mm) Pressure Gauges
Small envelope

Materials

Body
Chrome-plated brass barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
1 1/2" (38.1mm) diameter
chrome-plated brass

Ports
1/8" FPT (1/4" FPT relief valve)

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

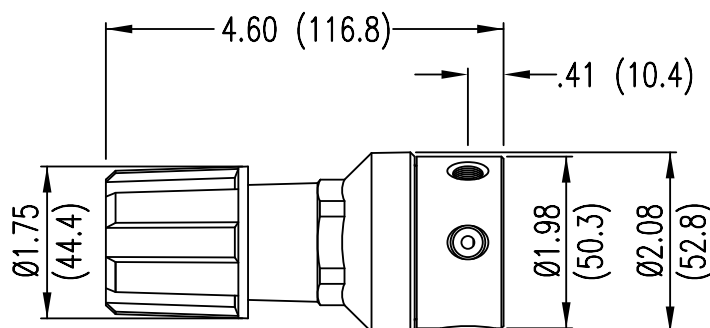
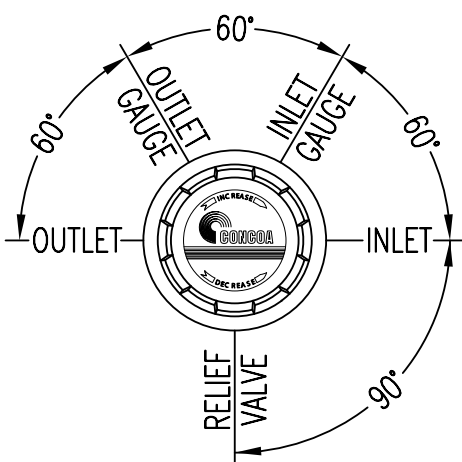
Cv
0.02
See page 191 for flow curves

Weight (325 3351-170)
2.0 lbs. (0.89 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

325	A		B	C	D	-CON	Options
Series 325	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/8" FPT port	0: Bare body	-000: 1/8" FPT	None
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSI/kPa gauges)	-110: CGA 110	
				5: Needle valve 1/8" MPT		-170: CGA 170	
						-180: CGA 180	



300 Series Regulators

327 SERIES

The 327 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases or as a point of use pressure control in high purity gas distribution systems.

- Single Stage
- 316L Stainless Steel Barstock Body
- Four Port Configuration
- Real Inlet

Typical Applications

Bulk gas distribution systems
Gas and liquid chromatography
High purity carrier gases
Zero, span, and calibration gases
High purity chamber pressurization
Liquefied hydrocarbon gas control
Control of cryogenic gas



327 1032-M1L shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convolutd Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

Stainless Steel Barstock Body
Increased corrosion resistance

Rear Panel-Mountable
Easy installation

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR)
Broad range of applications

3000 PSIG (210 BAR) Inlet Pressure Rating
Safe use with high pressure cylinders

Materials

Body
316L stainless steel barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
Patented 10 micron stainless steel mesh

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter
Chrome-plated brass case
Stainless steel internals

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

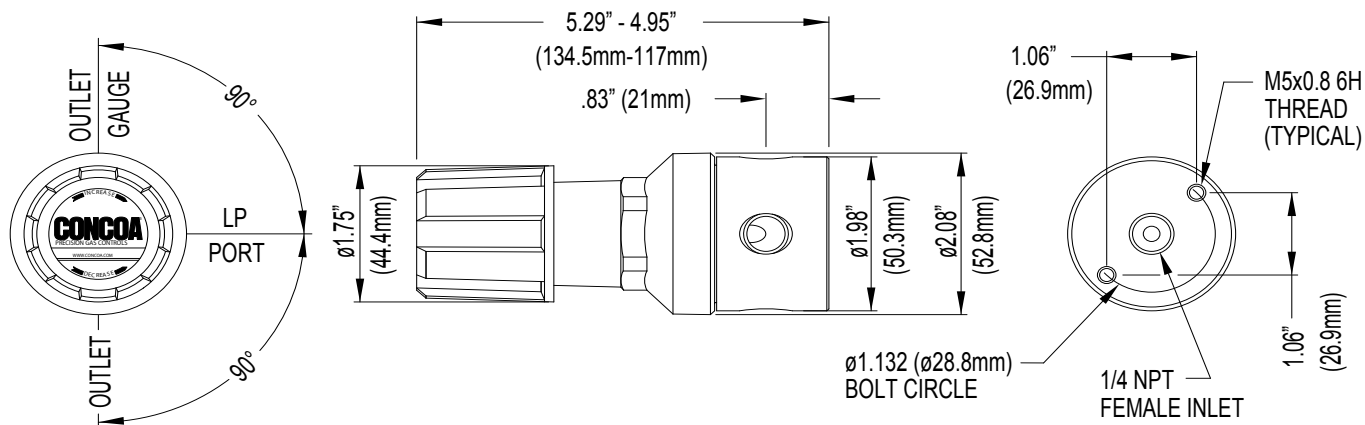
Cv
0.1
See page 188 for flow curves

Weight (327 1031-M1L)
2.9 lbs. (1.29 kg)

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

327	A		B	C	D	-CON	Options
Series 327	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	None
	2: 0-30 PSIG (0-2 BAR)	0-60 PSIG/ 0-4 BAR		1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	
	3: 0-50 PSIG (0-3.5 BAR)	0-100 PSIG/ 0-7 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	
	4: 0-150 PSIG (0-10 BAR)	0-200 PSIG/ 0-14 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	
	5: 0-100 PSIG (0-7 BAR)	0-200 PSIG/ 0-14 BAR		4: Diaphragm valve 1/4" MPT		M06: 6mm tube	
	6: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
				6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				M: 6mm tube fitting			
			S: Diaphragm valve 6mm tube fitting				

Related Options

Order No.	Description
835 0204	Rear Panel mount kit
476 0002	Helium Leak certification



300 Series Regulators

332 SERIES

The 332 Series regulators are intended for primary pressure control of ultra high purity or corrosive gases for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- 316L Stainless Steel Barstock Body
- Four Port Configuration
- 316L Stainless Steel Diaphragm

Typical Applications

EPA Protocol gases
Gas and liquid chromatography
High purity carrier and gases
Zero, span, and calibration gases
High purity chamber pressurization



332 2331-580 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Low Wetted Surface Area
Minimal purge requirements

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Convuluted Diaphragm
Smooth pressure changes

Compact Design
Easily transported and integrated into systems

316L Stainless Steel Barstock Body
Increased corrosion resistance

10 Micron Filtration in Both Stages
Fail-safe seat performance

Pressure Ranges 0-15 to 0-250 PSIG (0-1 to 0-17 BAR)
Broad range of applications

Materials

Body
316L stainless steel barstock

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE
PCTFE with 3500 PSIG (240 BAR) or 4500 PSIG (310 BAR) inlet option

Filter
Patented 10 micron 316 mesh

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)
4500 PSIG (310 BAR) optional

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2" (53mm) diameter
Chrome-plated case
Stainless steel internals

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
0.1
See page 188 for flow curves

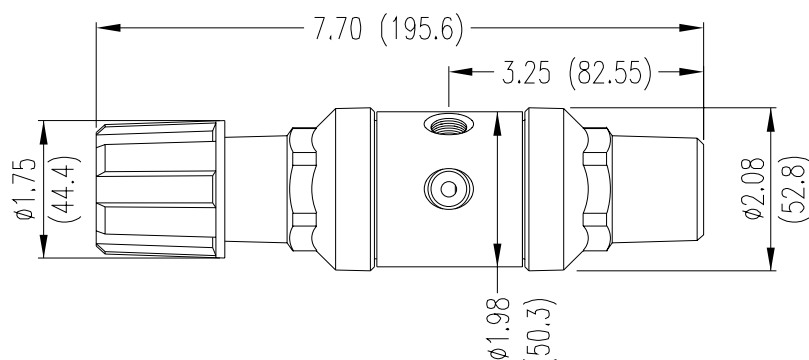
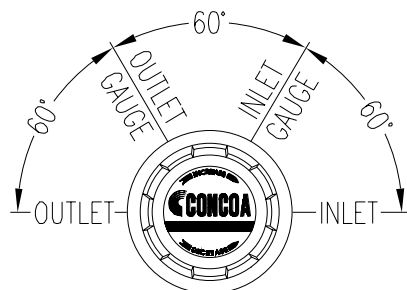
Weight (332 2331-580)
4.2 lbs. (1.91 kg)

Conforms to CGA E-4 Standard for Pressure Regulators
CRN OH 5216.5R1

300 Series Regulators



Installation Dimensions



300 SERIES

Ordering Information

332	A	B	C	D	-CON	Options	
Series 332	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	30"-0-30 PSIG/-1-0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-50 PSIG (0-2 BAR)	30"-0-100 PSIG/-1-0-7 BAR	3: 0-4000 PSIG/0-278 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-100 PSIG (0-7 BAR)	30"-0-200 PSIG/-1-0-14 BAR	5: 0-1000 PSIG/0-70 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-250 PSIG (0-17 BAR)	0-400 PSIG/0-27 BAR	6: 0-300 PSIG/0-21 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station
	5: 0-500 PSIG (0-34 BAR)	0-1000 PSIG/0-70 BAR	7: 0-400 PSIG/0-27 BAR	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	Q: Protocol purge station*
	7: 0-150 PSIG (0-10 BAR)	30"-0-200 PSIG/-1-0-14 BAR	8: 0-6000 PSIG/0-405 BAR*	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	T: Tee purge*
			G: 0-4000 PSIG/0-275 BAR†	6: 1/8" tube fitting			<i>*Not available with 4500 PSIG (310 BAR) max inlet pressure</i>
			*Maximum inlet pressure 4500 PSIG (310 BAR) with PCTFE Seat CAPSULE®	7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				M: 6mm tube fitting			
		†Maximum inlet pressure 3500 PSIG (240 BAR) with PCTFE seat CAPSULE®	S: Diaphragm valve 6mm tube fitting				



200 Series Regulators

202 SERIES

The 202 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases (up to grade 4.5) in applications where minor fluctuations in outlet pressure due to diminishing inlet supply pressure can be tolerated.

- Single Stage
- Chrome-Plated Forged Brass Body
- 316L Stainless Steel Diaphragm
- Five Port Configuration

Typical Applications

Gas supply purging
Gas system charging
Fuel gas supply control
Atomic absorption acetylene



202 1331-580 shown

Features

CAPSULE® Seat
Increased serviceability and life

316L Stainless Steel Diaphragm
No inboard diffusion

Forged Body
Durable, long-lasting construction

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Large Convolute Diaphragm
Smooth pressure changes

Standard Relief Valve
Diaphragm and gauge protection

Chrome-Plated Forged Brass Body
Economical high purity design

High Flow Capacity
Supply multiple user locations

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-34 BAR)
Broad range of applications

Materials

Body
Chrome-plated forged brass

Bonnet
Chrome-plated die-cast zinc

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
316L stainless steel

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2 1/2" (68mm) diameter chrome-plated brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

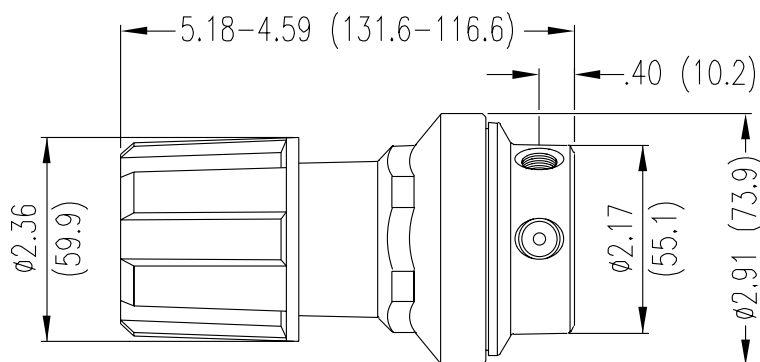
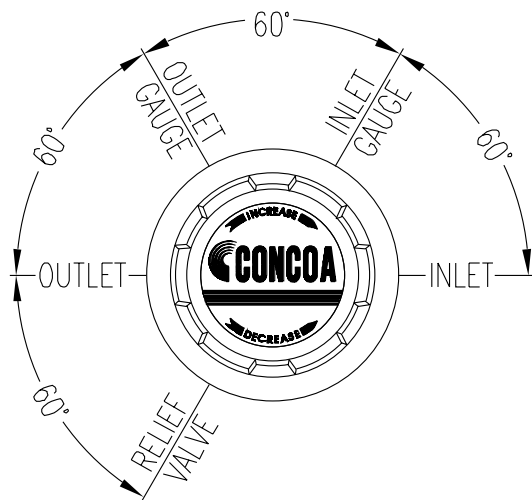
Cv
0.2
See page 193 for flow curves

Weight (202 1331-580)
3.8 lbs. (1.74 kg)

200 Series Regulators



Installation Dimensions



Ordering Information

202	A		B	C		D	-CON	Options
Series 202	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies		Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port		0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-40 PSIG (0-3 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT		1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-120 PSIG (0-8 BAR)	0-200 PSIG/ 0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting		2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-400 PSIG/ 0-27 BAR	3: Diaphragm valve 1/4" tube fitting			TF6: 3/8" tube	M: Protocol station
	5: 0-15 (0-1 BAR)*	0-30 PSIG/ 0-2 BAR	9: 0-600 PSIG/ 0-42 BAR	4: Diaphragm valve 1/4" MPT			M06: 6mm tube	Q: Protocol purge station
	<i>*With redline for acetylene use</i>			5: Needle valve 1/4" MPT			CGA DIN 477 BS 341 and others available	
				6: 1/8" tube fitting				
				7: 3/8" tube fitting				
				8: Diaphragm valve 1/8" tube fitting				
				9: Diaphragm valve 1/4" FPT				
				A: 3/8" BSP RH fitting				
				B: Diaphragm valve 3/8" tube fitting				
				C: 3/8" BSP LH fitting				
				D: 6mm brass hose barb (Not available if A=4 or 5)				
				G: 1/8" stainless steel tube fitting				
	H: 1/4" stainless steel tube fitting							
M: 6mm tube fitting								
S: Diaphragm valve 6mm tube fitting								



200 Series Regulators

205 SERIES

The 205 Series regulators are intended for secondary pressure control of non-corrosive, high purity or liquefied gases (up to grade 4.5) or as point of use pressure control in high purity gas distribution systems.

- Single Stage
- Chrome-Plated Forged Brass Body
- 316L Stainless Steel Diaphragm
- Four Port Configuration

Typical Applications

Point-of-use laboratory systems
Gas supply purging
Liquefied hydrocarbon gas control
Control of cryogenic gases
Bulk gas distribution systems



205 3021-000 shown

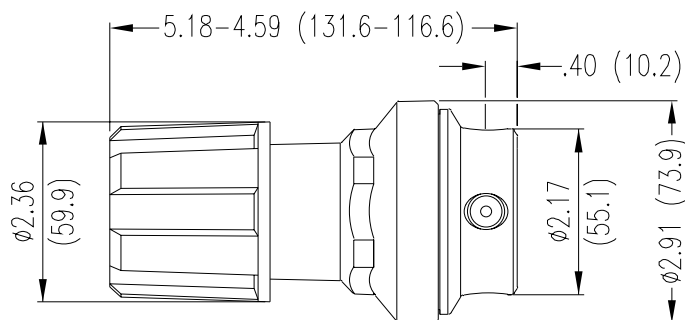
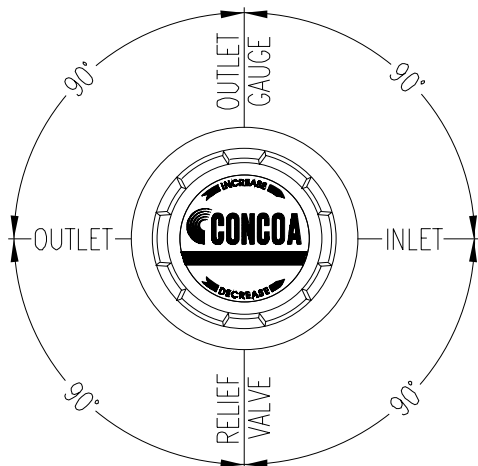
Features	Materials	Specifications
CAPSULE® Seat Increased serviceability and life 316L Stainless Steel Diaphragm No inboard diffusion Forged Body Durable, long-lasting construction Field-Adjustable Pressure Limit Safeguard downstream equipment Large Convoluted Diaphragm Smooth pressure changes Standard Relief Valve Diaphragm and gauge protection Chrome-Plated Forged Brass Body Economical high purity design High Flow Capacity Supply multiple user locations Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR) Broad range of applications 3000 PSIG (210 BAR) Inlet Pressure Rating Safe use with high pressure cylinders	Body Chrome-plated forged brass Bonnet Chrome-plated die-cast zinc Seat PTFE Filter 10 micron sintered bronze Diaphragm 316L stainless steel Internal Seals PTFE	Maximum Inlet Pressure 3000 PSIG (210 BAR) Temperature Range -40°F to 140°F (-40°C to 60°C) Gauge 2 1/2" (68mm) diameter chrome-plated brass Ports 1/4" FPT Helium Leak Integrity 1 x 10 ⁻⁸ scc/sec Cv 0.28 <i>See page 192 for flow curves</i> Weight (205 3021-000) 3.2 lbs. (1.44 kg)

CRN OH 5216.5R1

200 Series Regulators



Installation Dimensions



200 SERIES

Ordering Information

205	A		B	C		D	-CON	Options		
Series 205	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies		Assembly Gauges		Inlet Connections	Installed Options	
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port		0: Bare body		000: 1/4" FPT	M: Protocol station	
	2: 0-40 PSIG (0-3 BAR)	0-60 PSIG/ 0-4 BAR		1: 1/4" MPT		1: Standard assembly (PSIG/kPa gauges)		TF2: 1/8" tube	Q: Protocol purge station	
	3: 0-120 PSIG (0-8 BAR)	0-200 PSIG/ 0-14 BAR		2: 1/4" tube fitting		2: Standard assembly (BAR/PSIG gauges)		TF4: 1/4" tube		
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting		6: Mirror image assembly (PSIG/kPa gauges)		TF6: 3/8" tube		
	5: 0-15 PSIG (0-1 BAR)*	0-30 PSIG/ 0-2 BAR		4: Diaphragm valve 1/4" MPT		7: Mirror image assembly (BAR/PSIG gauges)		M06: 6mm tube		
	*With redline for acetylene use			5: Needle valve 1/4" MPT						
				6: 1/8" tube fitting						
				7: 3/8" tube fitting						
				8: Diaphragm valve 1/8" tube fitting						
				9: Diaphragm valve 1/4" FPT						
				A: 3/8" BSP RH fitting						
				B: Diaphragm valve 3/8" tube fitting						
				C: 3/8" BSP LH fitting						
				D: 6mm brass hose barb (Not available if A=4 or 5)						
				G: 1/8" stainless steel tube fitting						
	H: 1/4" stainless steel tube fitting									
M: 6mm tube fitting										
S: Diaphragm valve 6mm tube fitting										



200 Series Regulators

206 SERIES

The 206 Series regulators are intended for primary pressure control of gases supplied from cryogenic liquid cylinders.

- Single Stage
- Chrome-Plated Forged Brass Body
- 316L Stainless Steel Diaphragm
- Liquid Cylinder Regulator
- Four Port Configuration

Typical Applications

Argon
Nitrogen
Oxygen
Carbon dioxide
Certain freons



206 3021-580 shown

Features

CAPSULE® Seat

Increased serviceability and life

316L Stainless Steel Diaphragm

No inboard diffusion

Forged Body

Durable, long-lasting construction

Field-Adjustable Pressure Limit

Safeguard downstream equipment

Large Convoluted Diaphragm

Smooth pressure changes

Standard Relief Valve

Diaphragm and gauge protection

Designed for Low Inlet Pressures

Optimized flow with liquid cylinders

Large CAPSULE® Seat

Permits flow rates unobtainable with conventional regulators

3000 PSIG (210 BAR) Inlet Pressure Rating

Safe use on high pressure cylinders

Materials

Body

Chrome-plated forged brass

Bonnet

Chrome-plated die-cast zinc

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauge

2 1/2" (68mm) diameter chrome-plated brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.28

See page 192 for flow curves

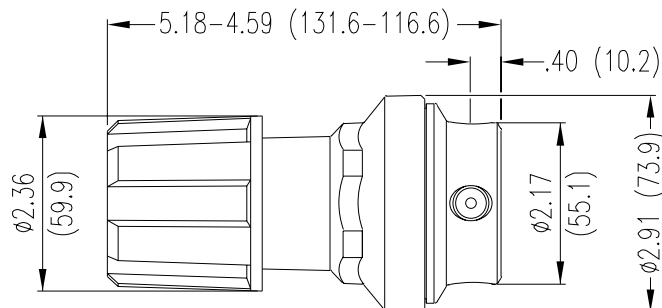
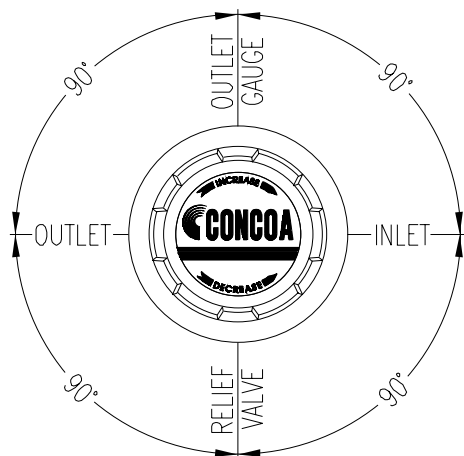
Weight (206 3021-580)

3.5 lbs. (1.59 kg)

200 Series Regulators



Installation Dimensions



200 SERIES

Ordering Information

206	A		B	C	D	-CON	Options
Series 206	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-40 PSIG (0-3 BAR)	0-60 PSIG/ 0-4 BAR		1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
	3: 0-120 PSIG (0-8 BAR)	0-200 PSIG/ 0-14 BAR		2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR		3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station
				4: Diaphragm valve 1/4" MPT		M06: 6mm tube	Q: Protocol purge station
				5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	
				6: 1/8" tube fitting			
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" tube fitting			
				C: 3/8" BSP LH fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
				G: 1/8" stainless steel tube fitting			
				H: 1/4" stainless steel tube fitting			
				M: 6mm tube fitting			
				S: Diaphragm valve 6mm tube fitting			



200 Series Regulators

212 SERIES

The 212 Series regulators are intended for primary pressure control of non-corrosive, high purity or liquefied gases (up to grade 4.5) for applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- Chrome-Plated Forged Brass Body
- 316L Stainless Steel Diaphragm
- Five Port Configuration

Typical Applications

Argon

Nitrogen

Oxygen

Carbon dioxide

Certain freons



212 2331-580 shown

Features

CAPSULE® Seat

Increased serviceability and life

316L Stainless Steel Diaphragm

No inboard diffusion

Forged Body

Durable, long-lasting construction

Field-Adjustable Pressure Limit

Safeguard downstream equipment

Large Convoluted Diaphragm

Smooth pressure changes

Standard Relief Valve

Diaphragm and gauge protection

Chrome-Plated Forged Brass Body

Economical high purity design

High Flow Capacity

Supply multiple user locations

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR)

Broad range of applications

Materials

Body

Chrome-plated forged brass

Bonnet

Chrome-plated die-cast zinc

Seat

PTFE

PTFE with 3500 PSIG (240 BAR) or
4500 PSIG (310 BAR)

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)
3500 PSIG (240 BAR) optional
4500 PSIG (310 BAR) optional

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2 1/2" (68mm) diameter chrome-plated
brass

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.28

See page 192 for flow curves

Weight (212 2331-580)

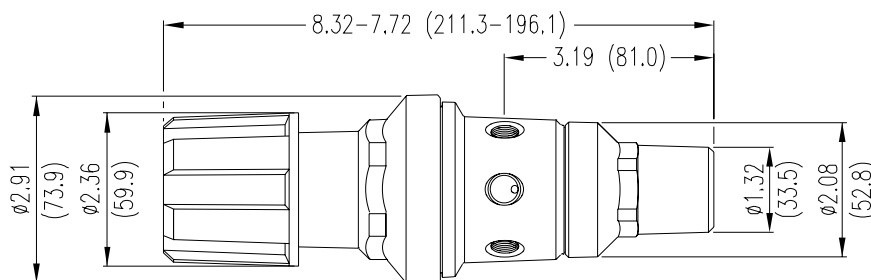
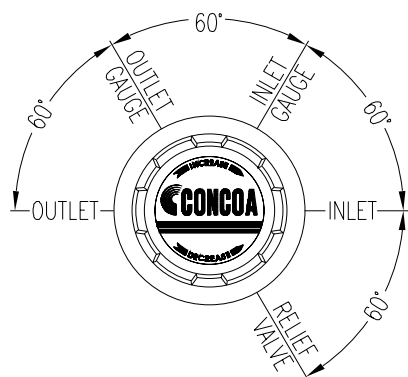
5.1 lbs. (2.3 kg)

CRN OH 5216.5R1

200 Series Regulators



Installation Dimensions



Ordering Information

212	A	B	C	D	-CON	Options		
Series 212	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options	
	1: 0-15 PSIG (0-1 BAR)	0-30 PSIG/ 0-2 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)	
	2: 0-40 PSIG (0-3 BAR)	0-60 PSIG/ 0-4 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station	
	3: 0-120 PSIG (0-8 BAR)	0-200 PSIG/ 0-14 BAR	5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)	
	4: 0-200 PSIG (0-14 BAR)	0-400 PSIG/ 0-27 BAR	6: 0-400 PSIG/ 0-27 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station	
	5: 0-15 PSIG (0-1 BAR)*	0-30 PSIG/ 0-2 BAR with redline for acetylene use	8: 0-6000 PSIG/ 0-405 BAR*	4: Diaphragm valve 1/4" MPT		M06: 6mm tube	Q: Protocol purge station	
	<i>* Not available with 4500 PSIG (310 BAR) Max Inlet</i>		9: 0-600 PSIG/ 0-42 BAR	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	T: Tee purge	
			G: 0-4000 PSIG/ 0-275 BAR†	6: 1/8" tube fitting				
			<i>* Max inlet 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®</i>	7: 3/8" tube fitting				
				8: Diaphragm valve 1/8" tube fitting				
				9: Diaphragm valve 1/4" FPT				
				A: 3/8" BSP RH fitting				
				B: Diaphragm valve 3/8" tube fitting				
				C: 3/8" BSP LG fitting				
				D: 6mm brass hose barb (not available if A=4 or 5)				
G: 1/8" stainless steel tube fitting								
H: 1/4" stainless steel tube fitting								
M: 6mm tube fitting								
S: Diaphragm valve 6mm tube fitting								



200 Series Regulators

213 SERIES

The 213 Series regulators deliver non-corrosive, high purity or liquefied gases (up to grade 4.5) for applications requiring constant low pressure control and delivery regardless of supply pressure variations. With delivery pressures as low as 0.1 PSIG (7 mBAR) that can be adjusted in 0.05 to 0.1 PSIG (4 to 7 mBAR) increments in two delivery pressure ranges, the 213 satisfies any high purity application requiring atmospheric pressures below 5 PSIG (350 mBAR).

- Dual Stage
- Chrome-Plated Forged Brass Body
- 316L Stainless Steel Diaphragm
- Five Port Configuration

Typical Applications

Low pressure inert blanketing of chemicals and fuel tanks

Gas supply purging

Gas system charging

Fuel gas supply control

Calibration gas control



213 1331-580 shown

Features

CAPSULE® Seat

Increased serviceability and life

316L Stainless Steel Diaphragm

No inboard diffusion

Forged Body

Durable, long-lasting construction

Large Convoluted Diaphragm

Stable pressure control

Standard Relief Valve

Diaphragm and gauge protection

Chrome-Plated Forged Brass Body

High purity design

Substantial Flow Capacity at Low Outlet Pressure

Supply multiple user locations

Pressure Ranges 0.05-2.0 to 0.1-5.0 PSIG (4-140 mBAR to 7-350 mBAR)

Excellent pressure control in 0.05 to 0.1 PSIG (4 to 7 mBAR) increments

3000 and 4500 PSIG (210 and 405 BAR) Inlet Pressure Rating

Safe use with high pressure cylinders

Materials

Body

Chrome-plated forged brass

Bonnet

Chrome-plated die-cast zinc

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

316L stainless steel

Internal Seals

PTFE

PCTFE with 4500 PSIG (310 BAR) inlet

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)
4500 PSIG (310 BAR) Optional

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

Inlet: 2 1/2" (68mm) diameter
chrome-plated brass

Outlet: 2 1/2" (68mm) diameter steel case
with brass connection

Ports

1/4" FPT

Helium Leak Integrity

1 x 10⁻⁸ scc/sec

Cv

0.1

See page 194 for flow curves

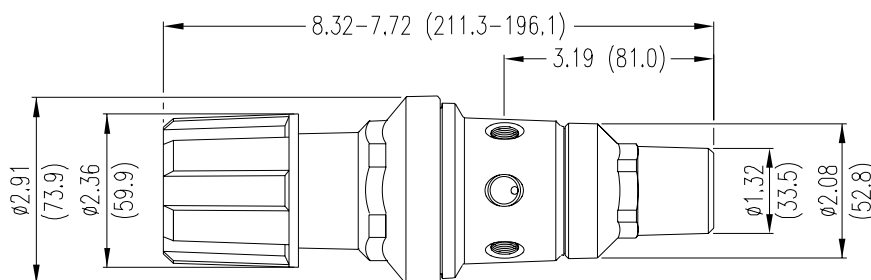
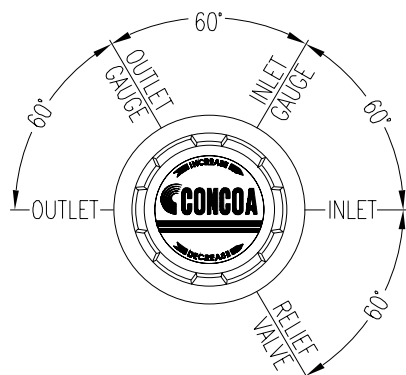
Weight (213 1331-580)

5.1 lbs. (2.3 kg)

200 Series Regulators



Installation Dimensions



Ordering Information

213	A	B	C	D	-CON	Options	
Series 213	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assemblies	Assembly Gauges	Inlet Connections	Installed Options
	1: 0-2 PSIG (0-0.1 BAR)	0-5 PSIG/ 0-0.3 BAR	0: None	0: 1/4" FPT port	0: Bare body	000: 1/4" FPT	B: Protocol alarm station (110/220 VAC)
	2: 0-5 PSIG (0-0.3 BAR)	0-10 PSIG/ 0-0.6 BAR	3: 0-4000 PSIG/ 0-275 BAR	1: 1/4" MPT	1: Standard assembly (PSIG/kPa gauges)	TF2: 1/8" tube	C: Protocol switchover station
			5: 0-1000 PSIG/ 0-70 BAR	2: 1/4" tube fitting	2: Standard assembly (BAR/PSIG gauges)	TF4: 1/4" tube	H: Protocol switchover station with alarm (110/220 VAC)
			6: 0-400 PSIG/ 0-27 BAR	3: Diaphragm valve 1/4" tube fitting		TF6: 3/8" tube	M: Protocol station
			9: 0-600 PSIG/ 0-42 BAR	5: Needle valve 1/4" MPT		CGA DIN 477 BS 341 and others available	Q: Protocol purge station
			<i>* Max inlet 4500 PSIG (310 BAR) with PCTFE seat CAPSULE®</i>	6: 1/8" tube fitting			T: Tee purge
				7: 3/8" tube fitting			
				8: Diaphragm valve 1/8" tube fitting			
				9: Diaphragm valve 1/4" FPT			
				A: 3/8" BSP RH fitting			
				B: Diaphragm valve 3/8" tube fitting			
				C: 3/8" BSP LG fitting			
				D: 6mm brass hose barb (not available if A=4 or 5)			
			G: 1/8" stainless steel tube fitting				
		H: 1/4" stainless steel tube fitting					
		M: 6mm tube fitting					
		S: Diaphragm valve 6mm tube fitting					



100 Series Regulators

109 SERIES

The 109 Series regulators are intended for pressure control of general purpose laboratory gases where minor fluctuations in outlet pressure due to diminishing inlet supply pressure can be tolerated.

- Single Stage
- Forged Brass Body
- PTFE-Lined Diaphragm
- Five Port Configuration

Typical Applications

Purging
Pressure testing
Blanketing
Chamber pressurization



109 6504-580 shown

Features

CAPSULE® Seat
Increased serviceability and life

PCTFE-Lined Neoprene Diaphragm
Sensitive to downstream conditions

Forged Body
Durable, long-lasting construction

Field-Adjustable Pressure Limit
Safeguard downstream equipment

Integral Relief Valve
Diaphragm and gauge protection

High Flow Capacity
Supply multiple user locations

Forged Brass Body
Economical high purity design

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR)
Broad range of applications

Materials

Body
Forged brass

Bonnet
Brass-plated die-cast zinc

Seat
PTFE

Filter
10 micron sintered bronze

Diaphragm
PTFE-lined Neoprene

Internal Seals
PTFE

Specifications

Maximum Inlet Pressure
3000 PSIG (210 BAR)

Temperature Range
-40°F to 140°F (-40°C to 60°C)

Gauges
2 1/2" (68mm) diameter brass

Ports
1/4" FPT

Helium Leak Integrity
1 x 10⁻⁸ scc/sec

Cv
0.28
See page 193 for flow curves

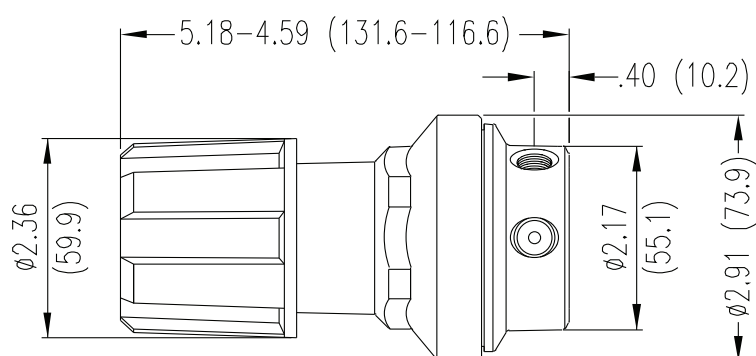
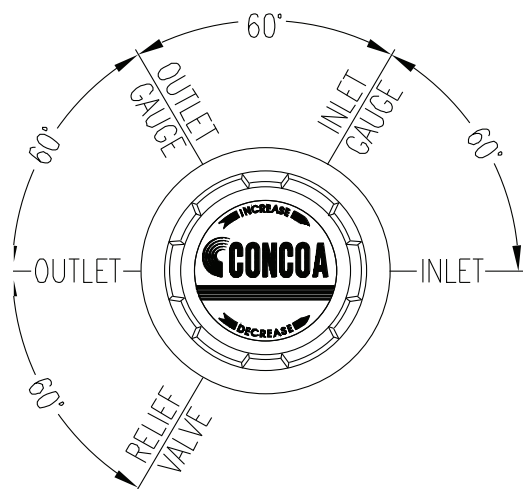
Weight (109 6504-580)
3.3 lbs. (1.5 kg)

CRN OH 5216.5R1

100 Series Regulators



Installation Dimensions



100 SERIES

Ordering Information

Order No. (109 Series Single Stage)	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assembly
109 6501-CGA	0-15 PSIG (0-1 BAR)	0-30 PSIG/0-2 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 6502-CGA	0-15 PSIG (0-1 BAR)	0-30 PSIG/0-2 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 6504-CGA	0-40 PSIG (0-3 BAR)	0-60 PSIG/0-4 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 6505-CGA	0-40 PSIG (0-3 BAR)	0-60 PSIG/0-4 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 6512-CGA	0-120 PSIG (0-8 BAR)	0-200 PSIG/0-14 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 6513-CGA	0-120 PSIG (0-8 BAR)	0-200 PSIG/0-14 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 6520-CGA	0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 6521-CGA	0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT

Related Options

Options	Order No.	Description
Protocol station	Add letter "M" after inlet	Convenient regulator wall mount, including tee, bracket, and stainless steel flexible hose with check valve in the inlet gland
Protocol purge station	Add letter "Q" after inlet	Convenient regulator wall mount with purge



100 Series Regulators

109 SERIES

The 109 Series regulators are intended for pressure control of general purpose laboratory gases with applications requiring constant pressure control and delivery regardless of supply pressure variations.

- Dual Stage
- Forged Brass Body
- PTFE-Lined Diaphragm
- Five Port Configuration

Typical Applications

Purging
Pressure testing
Blanketing
Chamber pressurization



109 7505-580
shown

Features

CAPSULE® Seat

Increased serviceability and life

PCTFE-Lined Neoprene Diaphragm

Sensitive to downstream conditions

Forged Body

Durable, long-lasting construction

Field-Adjustable Pressure Limit

Safeguard downstream equipment

Integral Relief Valve

Diaphragm and gauge protection

High Flow Capacity

Supply multiple user locations

Forged Brass Body

Economical high purity design

Pressure Ranges 0-15 to 0-200 PSIG (0-1 to 0-14 BAR)

Broad range of applications

10 Micron Filtration in Both Stages

Fail-safe seat performance

Materials

Body

Forged brass

Bonnet

Brass-plated die-cast zinc

Seat

PTFE

Filter

10 micron sintered bronze

Diaphragm

PTFE-lined neoprene

Internal Seals

PTFE

Specifications

Maximum Inlet Pressure

3000 PSIG (210 BAR)

Temperature Range

-40°F to 140°F (-40°C to 60°C)

Gauges

2 1/2" (68mm) diameter brass

Ports

1/4" FPT

Cv

0.28

See page 193 for flow curves

Weight (109 7505-580)

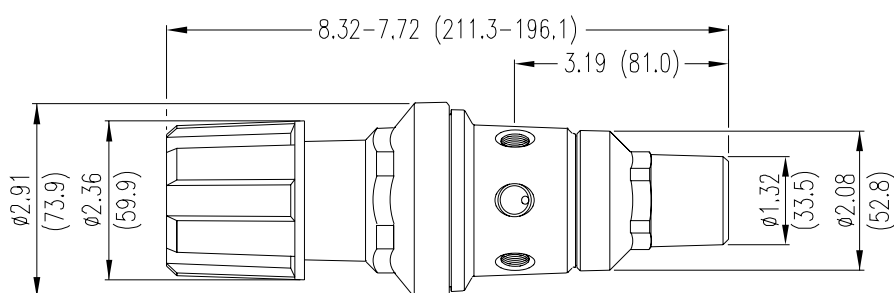
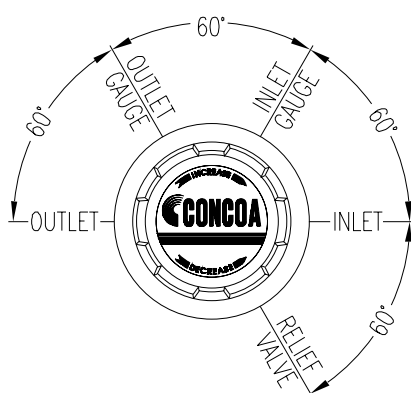
4.69 lbs. (2.13 kg)

CRN OH 5216.5R1

100 Series Regulators



Installation Dimensions



100 SERIES

Ordering Information

Order No. (109 Series Dual Stage)	Outlet Pressure	Outlet Gauge	Inlet Gauge	Outlet Assembly
109 7501-CGA	0-15 PSIG (0-1 BAR)	0-30 PSIG/0-2 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 7502-CGA	0-15 PSIG (0-1 BAR)	0-30 PSIG/0-2 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 7504-CGA	0-40 PSIG (0-3 BAR)	0-60 PSIG/0-3 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 7505-CGA	0-40 PSIG (0-3 BAR)	0-60 PSIG/0-3 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 7512-CGA	0-120 PSIG (0-8 BAR)	0-200 PSIG/0-14 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 7513-CGA	0-120 PSIG (0-8 BAR)	0-200 PSIG/0-14 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT
109 7520-CGA	0-200 PSIG (0-14 BAR)	0-400 PSIG/0-27 BAR	0-4000 PSIG/0-275 BAR	1/4" tube fitting
109 7521-CGA	0-200 PSIG (0-14 BAR)	0-400 PSIG/0-400 BAR	0-4000 PSIG/0-275 BAR	Needle valve 1/4" MPT

Related Options

Options	Order No.	Description
Protocol station	Add letter "M" after inlet	Convenient regulator wall mount, including tee, bracket, and stainless steel flexible hose with check valve in the inlet gland
Protocol purge station	Add letter "Q" after inlet	Convenient regulator wall mount with purge



Mass Flowmeters and Controllers

The CONCOA Mass Flowmeter (MFM) and Mass Flow Controller (MFC) Series are based on a modular design. At the heart of each instrument is an insulated thermal transfer sensor which provides enhanced zero stability. This sensor is designed to virtually eliminate long downtime due to clogging. Additionally, the MFM/MFC design features an integral filter and an easily replaceable closed loop electronics card.



MFC 202 Shown

Features	Applications
±1% Of full-scale accuracy ¹	Leak testing
Proven reliability	Medical research
Range—20,000 SCCM (N ₂ equivalent)	Vapor deposition
NIST traceable calibration	R&D and process flows
	Semiconductor processes
	Pollution monitoring
	Gas blending
	Chromatography

Specifications

MFM 200	
Accuracy ¹ and Linearity	±1% F.S.
Repeatability	±0.05% F.S.
Standard Pressure Rating	500 PSIG (34 BAR)
Pressure Coefficient	-0.0067%/PSI (0-1000 PSIG/0-70 BAR N ₂) typical
Leak Integrity	<1x10 ⁻⁹ SCCS
Temperature Coefficient ³	Zero ±0.035% FS/°C (0-60°C) Span ±0.05% RDG/°C (0-60°C)
STP	0°C and 760 TORR
Power	±15 VDC @ ±25 mA
Flow Signal	(Inherently linear) 0-5.00 VDC
Wetted Material	316 stainless steel, Viton®, 82/18 Au/Ni braze, trace silver solder
Connector	15-pin subminiature D
Weight	1.8 lb (0.82 kg)

MFC 202	
Accuracy ¹ and Linearity	±1% F.S.
Repeatability	±0.05% F.S.
Standard Pressure Rating	500 PSIG (34 BAR)
Pressure Coefficient	-0.0067%/PSI 0-1000 PSIG (0-70 BAR) N ₂ typical
Control Valve DP ²	15-65 PSIG (1-4.5 BAR)
Leak Integrity	<1x10 ⁻⁹ sccs
Temperature Coefficient ³	Zero ±0.035% FS/°C 0-60°C (0-140°F) Span ±0.05% RDG/°C (0-60°C)
STP	0°C and 760 TORR
Power	±15 VDC @ ±60 mA/-185 mA
Flow Signal	(Inherently linear) 0-5.00 VDC
Command Signal	0-500 VDC or 4-20 mA
Wetted Material	316 stainless steel, 302 stainless steel, nickel, Viton®, 82/18 Au/Ni braze, trace silver solder, Kalrez®
Connector	15-pin subminiature D
Weight	1.8 lb (0.82 kg)

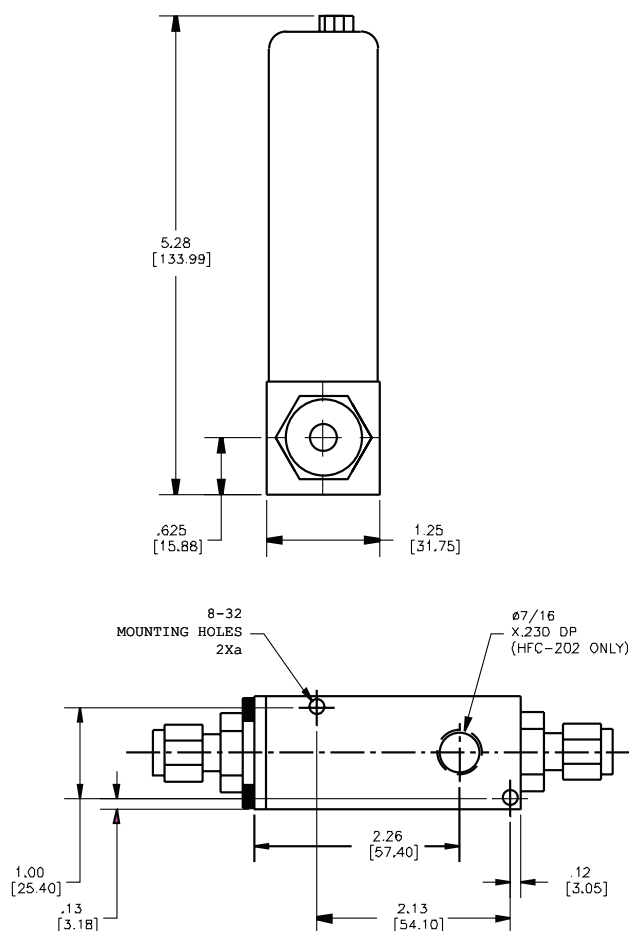
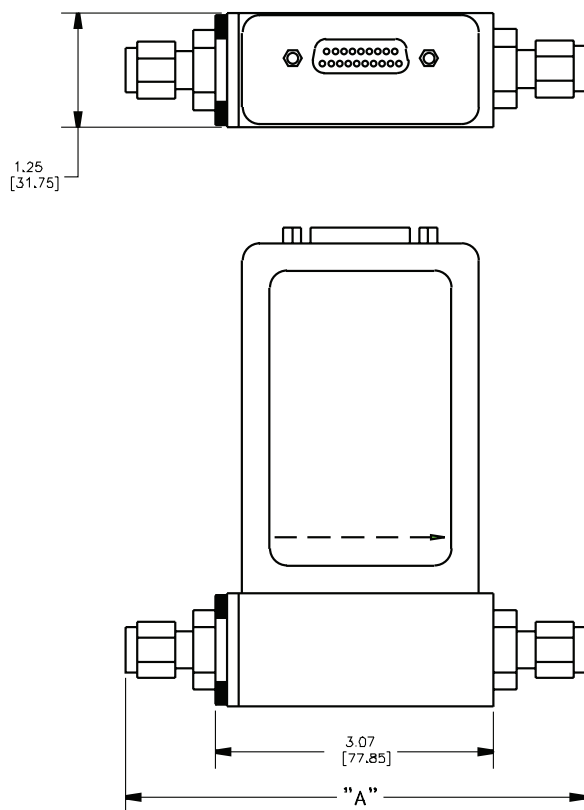
¹ See product manual for critical information on instrument accuracy and the use of GCFs (gas conversion factors). Stated accuracy is for nitrogen or other gas specific calibration and use with this gas only.

² Consult CONCOA for other pressures.

³ Specifications listed are for Revision G electronics (81-275).

MFM & MFC Fitting Type	Dim "A"
1/8" tube fitting with nut	4.84 (122.94)
1/4" tube fitting with nut	5.02 (127.51)

Installation Dimensions



Mass Flow Meter Ordering Information

Part Number	Range NEFR	Fitting
MFM 200-2-10	0-10 SCCM	1/8"
MFM 200-2-100	0-100 SCCM	1/8"
MFM 200-2-500	0-500 SCCM	1/8"
MFM 200-2-1000	0-1000 SCCM	1/8"
MFM 200-4-3L	0-3 SLM	1/4"
MFM 200-4-5L	0-5 SLM	1/4"
MFM 200-4-10L	0-10 SLM	1/4"
MFM 200-4-20L	0-20 SLM	1/4"

Mass Flow Controller Ordering Information

Part Number	Range NEFR	Fitting
MFC 202-2-10	0-10 SCCM	1/8"
MFC 202-2-100	0-100 SCCM	1/8"
MFC 202-2-500	0-500 SCCM	1/8"
MFC 202-2-1000	0-1000 SCCM	1/8"
MFC 202-4-3L	0-3 SLM	1/4"
MFC 202-4-5L	0-5 SLM	1/4"
MFC 202-4-10L	0-10 SLM	1/4"
MFC 202-4-20L	0-20 SLM	1/4"

CCD100 Controller Display

CONCOA's CCD100 Controller Display features a graphical VFD display which displays the relevant units and generates ease of use menu structures. The Controller Display contains digital comms, alarm outputs, configurable units and multiple transducer supplies as well. The unit's firmware can also be customized for specific applications.

The CCD100 not only contains internal setpoint functions but also features external inputs which can be used to generate slaved setpoint from another processor/transducer. The unit can also be programmed for tamper-resistant functionality by hard wiring the interface connector. The user can lock out the menu command and/or zero out the command button.

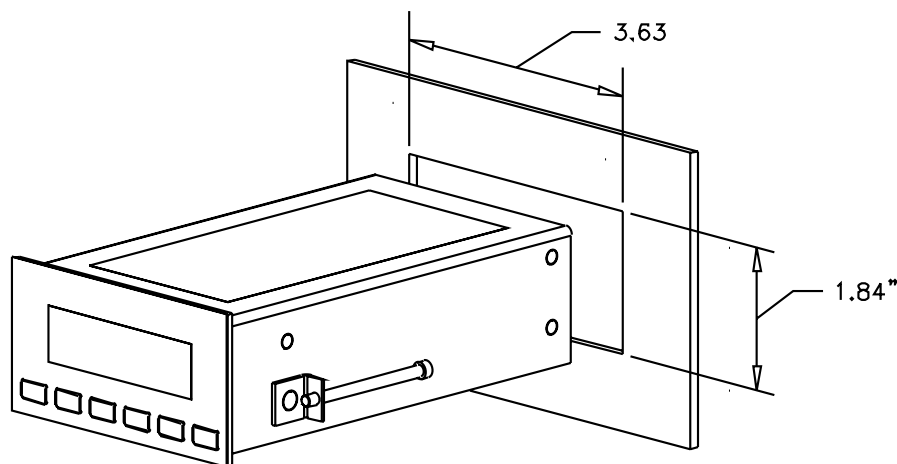
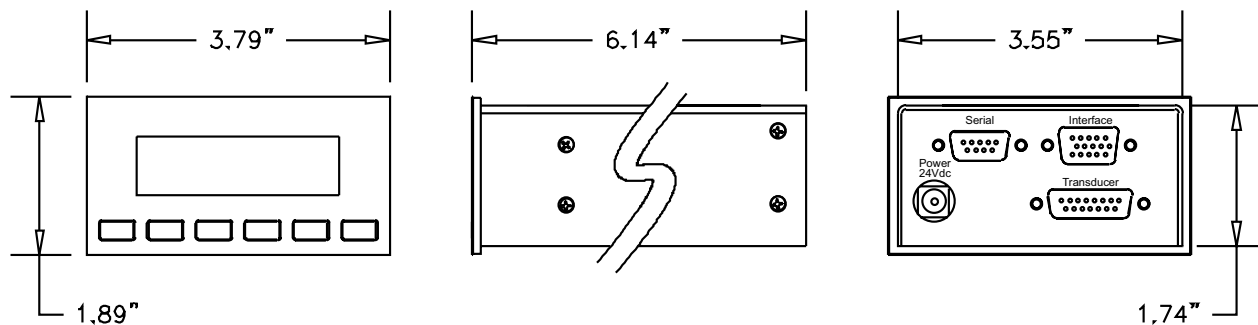
The user-friendly menu structure allows the CCD100 to be programmed easily. All menus feature backwards and forwards options as well as up and down numeric inputs.



CCD100 Shown

Feature	Specification
Full scale input	0-5 volt or 0-10 volt
Input impedance	>100Kohm
Measurement resolution	16 bit
Command output	0-5 volt operator selectable
Error	0.02% of reading plus 1 digit
Display type	VFD graphical display
Display range	-9.999 to +99.999
Transducer power supply	+/- 15 volts at 250mA, 24 volts DC at 300mA
Operating temperature range	+5 to +50°C (41 to 122°F)
Storage temperature range	-20 to +70°C (-4 to 158°F)
Maximum relative humidity	95% at 50°C (122°F)
Warm up time	20 mins
Decimal point selection	Operator selectable from front panel
Power supply	110/115/230 VAC 50/60 Hz or 24VDC
Dimensions	92mm x 45mm x 141mm (3.62" x 1.77" x 5.67")
Weight	350g (.77lbs)
Panel cut out	Standard 1/8 DIN
Main connector	IEC 320 on in-line PSU
Alarm output	2 mechanical changeover relays (max 50VDC)
Digital Communications	
Serial	RS232 or RS485
Baud	19200 57600, 8 data bits, no parity, 1 stop bit
Addressing	A to H
Ethernet (TCP/IP)	Configurable IP address and subnet mask. Single host stack.

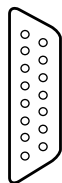
Installation Information



Connections

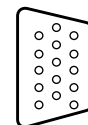
Transducer 15 Way D (Female)

- 2 - Signal+
- 5 - Power ground
- 6 - -15 VDC
- 7 - +15 VDC
- 8 - Set point output
- 11 - Signal return
- 12 - Signal return
- 13 - +24 VDC
- 15 - Case GND



Interface 15 Way High Density D (Female)

- 1 - Analogue output
- 2 - Relay 2 Com*
- 3 - Relay 2 NO*
- 4 - Relay 2 NC*
- 5 - 0v (signal ground)
- 6 - External setpoint return
- 8 - External setpoint
- 10 - 0v (signal ground)
- 11 - TTL input-Disable menu
- 12 - TTL input-Disable zero
- 13 - Relay 1 Com
- 14 - Relay 1 NO
- 15 - Relay 1 NC



* factory fit option

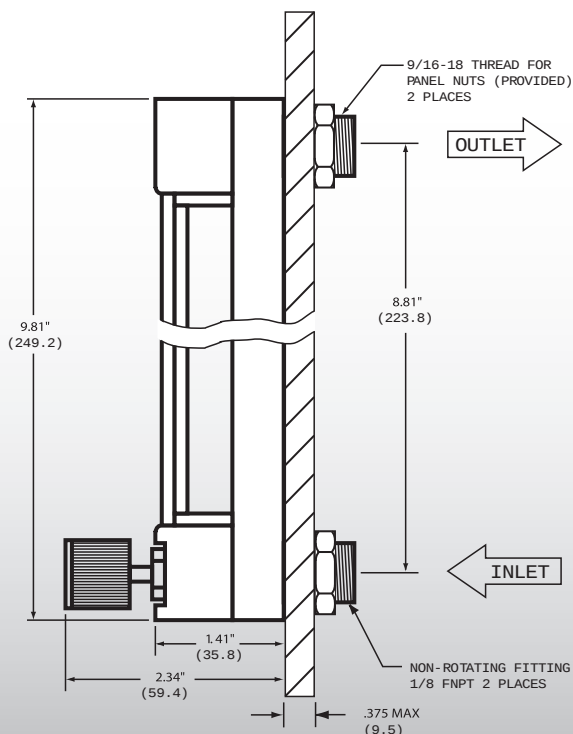
Ordering Information

Description	Order Number
Transducer and controller display	CCD100

560 Series 150mm Flowmeter

The 560 Series 150mm (6") variable area flowmeters offer inherent simplicity, versatility, and economy in a precision flow instrument. The 150mm scale (6") is particularly suited for metering critical flows in laboratories, pilot plants or process applications as well as controlling carrier gases used in chromatography.

Flow readings from the millimeter scale are converted to actual flow using the calibration chart provided with the flowtube. CONCOA offers a wide variety of flowtube and float combinations to provide the optimum flow range for each application.



Features

Rib-Guided Tube Internals

Precise stable flow readings

Rotating Magnifier Lens

Enhances reading resolution

Two Panel Mount Retaining Nuts

Easy industrial panel mounting

Flowtubes Easily Interchangeable

One flowmeter frame accommodates a wide range of flow requirements

Materials

Flowtube

Heavy-walled borosilicate glass

Front Shield

Lexan polycarbonate

End Fitting

Brass or 316L stainless steel

Seals

Buna-N (aluminum)
Viton® (316L stainless steel)
EPDM (optional)
Kalrez® (optional)

Specifications

Accuracy

±3% full scale

Repeatability

±.25% full scale

Maximum Pressure

200 PSIG (14 BAR)

Maximum Temperature

200°F (93°C)

Useful Flow Range

10:1

Flow Control



Ordering Information

560	A	B	C	D	-CON(X)
Series 560	Tube Size*	Float Material*	Material	Valve	End Connection*
	1: 1	1: Glass	0: No frame* (fitting and float only)	0: Tube and float only	000:1/8" FPT
	2: 2	2: Sapphire	1: Black anodized aluminum†	1: Standard valve	TF2: 1/8" tube
	3: 3	3: 316L stainless steel	2: 316L stainless steel†	2: High-accuracy valve*	TF4: 1/4" tube
	4: 4	4: Carbolloy	*Not available with a valve †not available without a valve	* Not available with tube size 8 (a=8)	HB4:1/4" hose barb *For EPDM/EPR seals, add "E" after the end connection. For Kalrez® seals, add "K" after end connection.
	5: 5	*Please see selection chart below for air flow information			
	6: 6				
	7: 7				
	8: 8				
*Please see selection chart below for air flow information					

Selection Chart

Air Flow (14.7 PSIA @ 70° F)					Air Flow (14.7 PSIA @ 70° F)				
Tube Size	Float Material	ml/min	SCFH	LPM	Tube Size	Float Material	ml/min	SCFH	LPM
1	1 (Glass)	50	0.11	0.05	5	1 (Glass)	2300	4.88	2.30
1	2 (Sapphire)	78	0.17	0.08	5	2 (Sapphire)	2950	6.25	2.95
1	3 (Stainless Steel)	152	0.32	0.15	5	3 (Stainless Steel)	4450	9.43	4.45
1	4 (Carbolloy)	281	0.60	0.28	5	4 (Carbolloy)	6375	13.5	6.37
2	1 (Glass)	100	0.21	0.10	6	1 (Glass)	3500	7.42	3.50
2	2 (Sapphire)	155	0.33	0.15	6	2 (Sapphire)	4550	9.65	4.55
2	3 (Stainless Steel)	295	0.63	0.30	6	3 (Stainless Steel)	6800	14.4	6.80
2	4 (Carbolloy)	490	1.04	0.49	6	4 (Carbolloy)	9730	20.6	9.72
3	1 (Glass)	400	0.85	0.40	7	1 (Glass)	10200	21.6	10.19
3	2 (Sapphire)	550	1.17	0.55	7	2 (Sapphire)	13025	27.6	13.02
3	3 (Stainless Steel)	850	1.80	0.85	7	3 (Stainless Steel)	19050	40.4	19.07
3	4 (Carbolloy)	1275	2.70	1.27	7	4 (Carbolloy)	27000	57.2	27.00
4	1 (Glass)	850	1.80	0.85	8	1 (Glass)	25000	53	25.01
4	2 (Sapphire)	1150	2.44	1.15	8	2 (Sapphire)	32500	68.9	32.52
4	3 (Stainless Steel)	1750	3.71	1.75	8	3 (Stainless Steel)	46200	97.9	46.20
4	4 (Carbolloy)	2480	5.26	2.48	8	4 (Carbolloy)	65,700	139.3	65.74

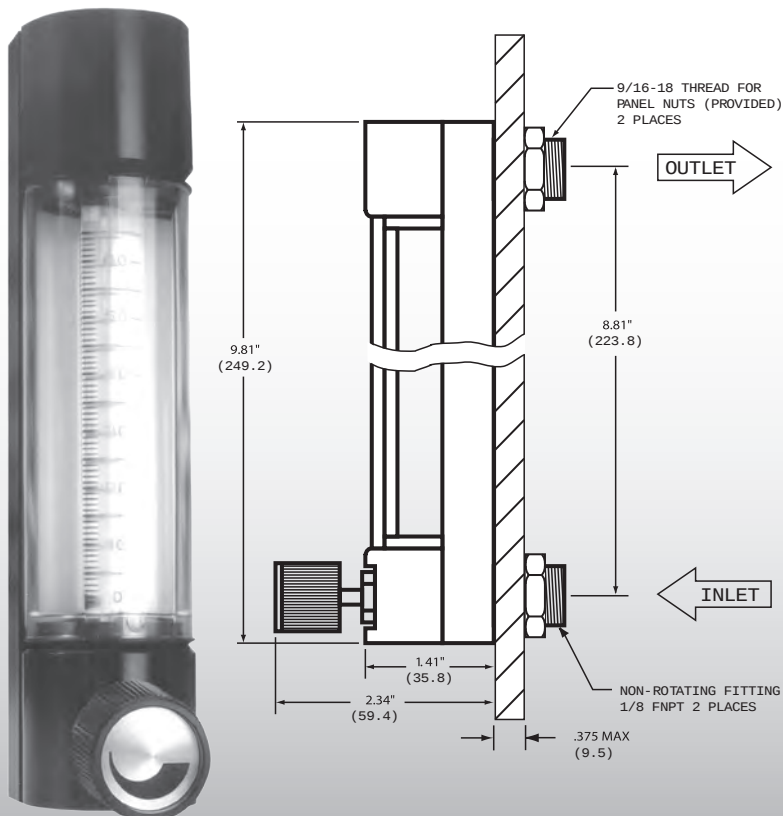
Related Options

Order No.	Description
560 0001	Tripod base
565 0001	Brass regulator adapter kit
565 0002	316L stainless steel regulator adapter kit

565 Series 65mm Flowmeter

The 565 Series 65mm (2.6") variable area flowmeters offer inherent simplicity, versatility and economy in a precision flow instrument. The compact size of the 65mm (2.6") scale is preferred in industrial panel-mounting applications and for direct mounting to a pressure regulator.

Flow readings from the millimeter scale are converted to actual flow using the calibration chart provided with the flowtube. CONCOA offers a wide variety of flowtube and float combinations to provide the optimum flow range for your application.



Features

Rib-Guided Tube Internals

Precise stable flow readings

Rotating Magnifier Lens

Enhances reading resolution

Two Panel Mount Retaining Nuts

Easy industrial panel mounting

Flowtubes Easily Interchangeable

One flowmeter frame accommodates a wide range of flow requirements

Materials

Flowtube

Heavy-walled borosilicate glass

Front Shield

Lexan polycarbonate

End Fitting

Brass or 316L stainless steel

Seals

Buna-N (aluminum)
Viton® (316L stainless steel)
EPDM (optional)
Kalrez® (optional)

Specifications

Accuracy

±5% full scale

Repeatability

±.25% full scale

Maximum Pressure

200 PSIG (14 BAR)

Maximum Temperature

200°F (93°C)

Useful Flow Range

10:1

Flow Control



Ordering Information

565	A	B	C	D	- X(X)
Series 565	Tube Size*	Float Material*	Material	Valve	End Connection*
	1: 1	1: Glass	0: No frame* (fitting and float only)	0: Tube and float only	000:1/8" FPT
	2: 2	2: Sapphire	1: Black anodized aluminum†	1: Standard valve	TF2: 1/8" tube
	3: 3	3: 316L stainless steel	2: 316L stainless steel†	2: High-accuracy valve*	TF4: 1/4" tube
	4: 4	4: Carbolloy	*Not available with a valve †Not available without a valve	* Not available with tube size 8 (A=8)	HB4:1/4" hose barb
	5: 5	*Please see selection chart below for air flow information			
	6: 6				
	7: 7				
	8: 8				
	9: 9				
*Please see selection chart below for air flow information					

Selection Chart

Air Flow (14.7 PSIA @ 70° F)					Air Flow (14.7 PSIA @ 70° F)				
Tube Size	Float Material	ml/min	SCFH	LPM	Tube Size	Float Material	ml/min	SCFH	LPM
1	1 (Glass)	51	0.11	0.05	5	3 (Stainless Steel)	5000	10.6	5.00
1	2 (Sapphire)	78	0.17	0.08	5	4 (Carbolloy)	7200	15.30	7.22
1	3 (Stainless Steel)	156	0.33	0.15	6	1 (Glass)	4000	8.48	4.00
1	4 (Carbolloy)	280	0.59	0.59	6	2 (Sapphire)	5200	11.00	5.20
2	1 (Glass)	100	0.21	0.21	6	3 (Stainless Steel)	7650	16.20	7.64
2	2 (Sapphire)	150	0.32	0.15	6	4 (Carbolloy)	11000	23.30	11.00
2	3 (Stainless Steel)	255	0.54	0.25	7	1 (Glass)	6000	12.70	6.00
2	4 (Carbolloy)	475	1.01	0.48	7	2 (Sapphire)	7240	15.30	7.22
3	1 (Glass)	400	0.85	0.40	7	3 (Stainless Steel)	11420	24.20	11.42
3	2 (Sapphire)	545	1.16	0.55	7	4 (Carbolloy)	16275	34.50	16.28
3	3 (Stainless Steel)	845	1.79	0.84	8	1 (Glass)	10000	21.20	10.00
3	4 (Carbolloy)	1275	2.70	1.27	8	2 (Sapphire)	12970	27.50	12.98
4	1 (Glass)	900	1.91	0.90	8	3 (Stainless Steel)	18800	39.86	18.81
4	2 (Sapphire)	1175	2.49	1.17	8	4 (Carbolloy)	26665	56.53	26.68
4	3 (Stainless Steel)	1780	3.77	1.78	9	1 (Glass)	24500	51.94	24.51
4	4 (Carbolloy)	2600	5.51	2.60	9	2 (Sapphire)	31900	67.63	31.92
5	1 (Glass)	2500	5.30	2.50	9	3 (Stainless Steel)	44425	94.18	44.45
5	2 (Sapphire)	3360	7.12	3.36	9	4 (Carbolloy)	63600	134.83	63.63

Related Options

Order No.	Description
560 0001	Tripod base
565 0001	Brass regulator adapter kit
565 0002	316L stainless steel regulator adapter kit

566 Series Purge Meter

The 566 Series purge meter is an economical flowmeter for noncorrosive gas service. The 2" (53mm) direct-reading scale is calibrated in SCFH, air. The 566 Series Purge Meter is available with either brass or 316L stainless steel end fittings and a standard cartridge-style needle valve for accurate flow control.



Materials and Specifications

Accuracy	±5%
Maximum Pressure	100 PSIG (7 BAR)
Maximum Temperature	(65°C)
Fittings	1/8" FPT
"O" Rings and Packing	Buna-N (brass model) Viton® (316L stainless steel model)
Body	Clear acrylic

Ordering Information

566	A	B	C	D
Series 566	Material	0: N/A	0: N/A	Flow Rate
	1: Brass			1: 0.1 to 1 SCFH (2.8 to 28.3 LPM)
	2: 316L stainless steel			2: 0.5 to 5 SCFH (14.1 to 141.6 LPM)
				3: 1 to 10 SCFH (28.3 to 283.7 LPM)
				4: 5 to 50 SCFH (141.6 to 1415.8 LPM)
				5: 10 to 100 SCFH (283.2 to 2831.7 LPM)

567 Series High Flow Flowmeter

The 567 Series flowmeter offers excellent accuracy at high flows. The 4" (101.6mm) or 5" (127mm) direct-reading dual scale (SCFM/SCFH) is calibrated in SCFM, air. The 567 Series Purge Meter is available with either brass or stainless steel end fittings on 4" (101.6mm) scale models, or PVC fittings on 5" (127mm) scale models. Additionally, a standard cartridge-style needle valve 4" (101.6mm) scale models or plastic in-line gate on 5" (127mm) scale models for accurate flow control.



Materials and Specifications

Accuracy	±3% on 4" (101.6mm) ±5% on 5" (127mm)
Maximum Pressure	100 PSIG (7 BAR)
Fittings	150°F (65°C)
"O" Rings and Packing	Buna-N (brass model) Viton® (316L stainless steel fittings)
Body	Clear acrylic

Ordering Information

567	A	B	C	D
Series 567	Fittings	0: N/A	Valve	Flow Range
	1: Brass* (1/4" FPT)		0: No valve*	1: 0.5 to 5 SCFM (14.1 to 141.6 LPM) - 4" (101.6mm) scale
	2: Stainless steel* (1/4" FPT)		1: Standard valve†	2: 1 to 10 SCFM (28.3 to 283.7 LPM) - 4" (101.6mm) scale
	3: PVC† (1" FPT)		*Not available with brass or stainless steel fittings	3: 4 to 20 SCFM* (113.3 to 566.3 LPM) - 4" (101.6mm) scale
	Available with 4" (101.6mm) scale only †Available with 5" (127mm) scale only		†Not available with pvc fittings	4: 3 to 25 SCFM (84.9 to 707.9 LPM) - 5" (127mm) scale
				5: 4 to 50 SCFM* (113.3 to 1415.8 LPM) - 5" (127mm) scale
				6: 10 to 100 SCFM* (283.7 to 2831.7 LPM) - 5" (127mm) scale
				*Not available with valve

Deep Purges

The 502 Series Deep Purge is CONCOA's most effective purge device. It incorporates a unique snorkel tube design which forces the purge gas all the way back through the inlet connection to the cylinder valve cavity assuring virtual zero dead space purging. The Deep Purge may be used to purge the entire regulator body or just the cylinder connection at the time of cylinder change. The Deep Purge performs a positive displacement purge of the system.



Materials and Specifications

Seat	PCTFE
Diaphragm (Purge Valves)	Elgiloy®
Diaphragm (Center Valves)	Elgiloy®
Seals	Metal to Metal
Cv	0.17
Maximum Pressure	3500 PSIG (240 BAR)

Ordering Information

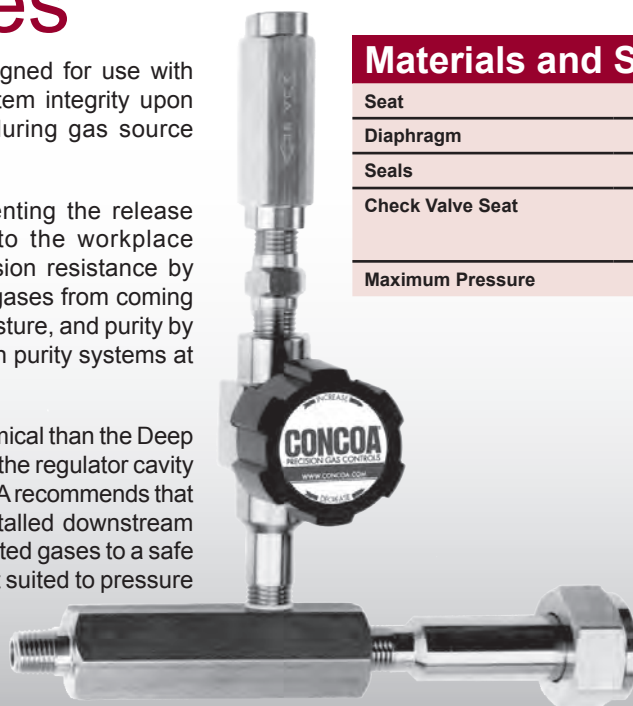
Order No.	Body Material	Purge Type	Weight
502 3009-CON	316L stainless steel	Deep Purge	3.0 lbs. (1.35 kg)

Tee Purges

The 502 Series purges are designed for use with high purity gases to ensure system integrity upon breakdown of components or during gas source changes.

Purges provide safety by preventing the release of toxic or corrosive gases into the workplace when changing cylinders, corrosion resistance by preventing corrosive or halogen gases from coming into contact with atmospheric moisture, and purity by preventing air from infiltrating high purity systems at the time of cylinder change.

The Tee Purge, while more economical than the Deep Purge, is quite effective in purging the regulator cavity and downstream system. CONCOA recommends that a block and bleed system be installed downstream from the regulator to direct the vented gases to a safe location. This type of purge is best suited to pressure cycle or dilution purging.



Materials and Specifications

Seat	PCTFE
Diaphragm	Elgiloy®
Seals	Metal to Metal
Check Valve Seat	Viton® for brass Ethylene propylene for stainless steel
Maximum Pressure	3000 PSIG (210 BAR)

CRN OH 5216.5R1

Ordering Information

Order No.	Body Material	Purge Type	Weight
502 2003-CON	Brass	Tee purge	2.5 lbs. (1.12 kg)
502 2005-CON	316L stainless steel	Tee purge	2.5 lbs. (1.12 kg)
502 2010	Brass	Right inlet process purge	2.5 lbs. (1.12 kg)
502 2011	Brass	Left inlet process purge	2.5 lbs. (1.12 kg)
502 2015	316L stainless steel	Right inlet process purge	2.5 lbs. (1.12 kg)
502 2016	316L stainless steel	Left inlet process purge	2.5 lbs. (1.12 kg)

Straight Purges

The 502 Series purges are designed for use with high purity gases to ensure system integrity during breakdown of components or during gas source changes.

Purges provide safety by preventing the release of toxic or corrosive gases into the workplace when changing cylinders, corrosion resistance by preventing corrosive or halogen gases from coming into contact with atmospheric moisture, and purity by preventing air from infiltrating high purity systems at the time of cylinder change.



Materials and Specifications

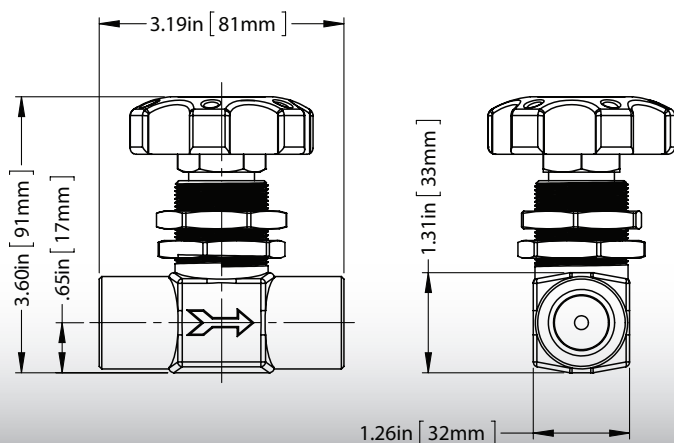
Seat	PCTFE
Diaphragm	Elgiloy®
Seals	Metal to Metal
Check Valve Seat	Viton®
Cv	0.17
Maximum Pressure	3000 PSIG (210 BAR)

Ordering Information

Order No.	Body Material	Purge Type	Weight
502 1002	Brass	Straight purge	1.2 lbs. (0.54 kg)
502 1005	316L stainless steel	Straight purge	1.2 lbs. (0.54 kg)

High Flow Diaphragm Valves

The 533 Series high flow diaphragm valves are ideal for primary or pipe line control in high purity or corrosive gas services. The forged 316L stainless steel body and metal-to-metal diaphragm seal ensure leak tight integrity at higher pressures. The ergonomic round knob, special diaphragm material and spring design ensure easy operation at high pressure and a high cycle life over a broad temperature range. With a positive seat shutoff, panel mount as standard and a directional flow arrow signifying recommended primary flow, the 533 Series is ideal for integrating into high flow systems.



Materials and Specifications

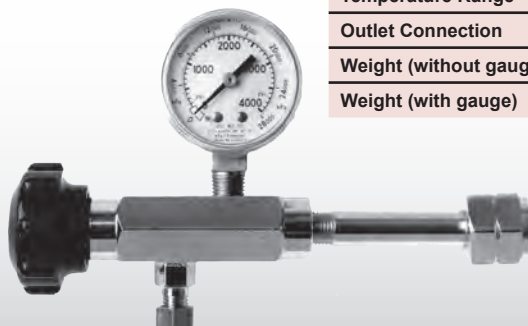
Maximum Inlet Pressure	3500 PSIG (240 BAR) @70°F
Maximum Differential Back Pressure	3000 PSIG (210 BAR)
Temperature Range	-65°F to 150°F (-54°C to 65°C)
Helium Leak Integrity	2x10 ⁻⁸ scc/sec
Body	Forge 316L stainless steel
Diaphragms	Elgiloy®
Seats	PCTFE
Seals	Metal to metal
Cv	0.30
Panel Mount Hole	1.25" (31.75 mm)

Ordering Information

Order No.	Inlet Connection	Outlet Connection	Body
533 8002	1/2" MPT	1/2" FPT	316L stainless steel
533 8008	1/2" FPT	1/2" FPT	316L stainless steel

Manual Control Valves

The 535 Series manual control valves provide an economical means of controlling gas flow directly from a cylinder. These valves do not control pressure or back pressure in a system. If greater flow accuracy or pressure control is required, CONCOA recommends the use of an appropriate regulator (see pages 14-15 for more information). The 535 Series manual control valves are available with a variety of connections, with or without a pressure gauge.



Materials and Specifications

Maximum Inlet Pressure	3000 PSIG (210 BAR)
Temperature Range	-64°F to 250°F (-54°C to 120°C)
Outlet Connection	1/4" compression tube fitting
Weight (without gauge)	1.0 lbs. (0.45 kg)
Weight (with gauge)	1.1 lbs. (0.5 kg)

Ordering Information

Order No.	Body	Gauge
535 2030-CGA	Forged chrome-plated brass	Without pressure gauge
535 2031-CGA	Forged chrome-plated brass	With pressure gauge (0-4000 PSIG/0-28,000 kPa)
535 2032-CGA	Forged 303 stainless steel	Without pressure gauge
535 2033-CGA	Forged 303 stainless steel	With pressure gauge (0-4000 PSIG/0-28,000 kPa)

Needle Valves

The 500 Series miniature needle valves are forged from brass or 316L stainless steel. They are designed for fine flow control in a variety of applications in the chemical process and petroleum industries as well as laboratories and hospitals. The ground and polished stem and PTFE packing make them suitable for controlling the flow of liquids or gases from vacuum to 3000 PSIG.

Materials and Specifications

Temperature Range	-65°F to 450°F (-54°C to 232°C)
Weight	0.7 lbs. (0.3 kg)



Ordering Information

Order No.	End Fittings	Body	Stem	Packing	Maximum Inlet Pressure
550 0067	1/8" MPT x 1/8" MPT	Forged chrome-plated brass	303 stainless steel	PTFE/Chrome-plated brass	3000 PSIG (210 BAR)
533 9002	1/4" MPT x 1/4" MPT	Forged brass	303 stainless steel	PTFE/Brass	3500 PSIG (240 BAR)
555 3225	1/4" MPT x 1/4" MPT	Forged chrome-plated brass	303 stainless steel	PTFE/Chrome-plated brass	3000 PSIG (210 BAR)
533 9304	1/4" MPT x 1/4" MPT	Forged 316L stainless steel	316L stainless steel	PTFE/316L stainless steel	5000 PSIG (340 BAR)
830 8607	1/4" MPT x 1/4" MPT	Forged 316L stainless steel	316L stainless steel	PTFE/316 stainless steel	6000 PSIG (405 BAR)

Multi Turn Diaphragm Valves

The 533 Series diaphragm valves are ideal for use as the primary flow control in high purity or corrosive gas systems. Springless design and low wetted surface area combine to minimize particle generation and the completely swept path minimizes entrapment.

The unique design of the 533 Series allows low torque operation with gas flow in either direction. Directional arrows are provided to indicate suggested flow direction.



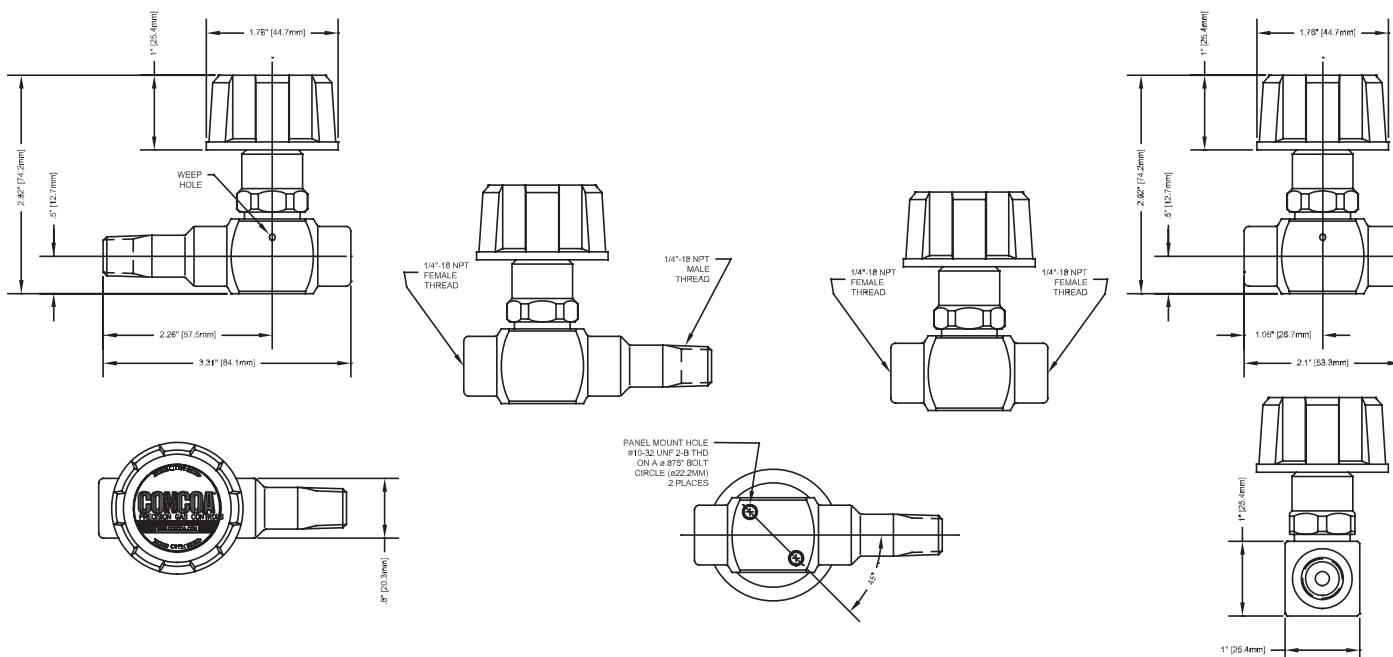
533 3043 Shown

CRN OH 5216.5R1

Materials and Specifications

Maximum Inlet Pressure	3500 PSIG (240 BAR)
Temperature Range	-40°F to 140°F (-40°C to 60°C)
Helium Leak Integrity	1 x 10 ⁻⁹ scc/sec
Bodies and Fittings	Brass barstock, 316L stainless steel or chrome-plated brass
Diaphragms	Elgiloy®
Seats	PCTFE
Seals	Metal to metal
Cv	0.17
Weight	0.66 lbs. (0.3 kg)

Installation Dimensions



Ordering Information

Series	B	C	D
Series 533-3	Flow Direction	Material	Connection
	0: Multi-turn right to left	2: Brass	0: 1/4" FPT x 1/4" FPT
	2: Multi-turn left to right*	4: 316L stainless steel	1: 6mm tube fitting x 6mm tube fitting
	*Only for D=3, 7, 8, & 9	9: Chrome-plated brass	2: 1/4" tube fitting x 1/4" tube fitting
			3: 1/4" MPT (extended leg) x 1/4" tube fitting
			4: 1/4" MPT x 1/4" MPT
			7: 1/4" MPT x 6mm tube fitting
			8: 1/4" MPT (extended leg) x 1/8" tube fitting
			9: 1/4" MPT (extended leg) x 1/4" FPT

For example, a 533 3040 is a bare body, 316L stainless steel diaphragm valve controlled by a multi turn handle.

Quarter Turn Diaphragm Valves

The 533 Series quarter turn diaphragm valves are ideal for use as the primary flow control in high purity or corrosive gas systems. The 0°-90° shaft turn and low wetted surface area combine to minimize particle generation and the completely swept path minimizes entrapment.

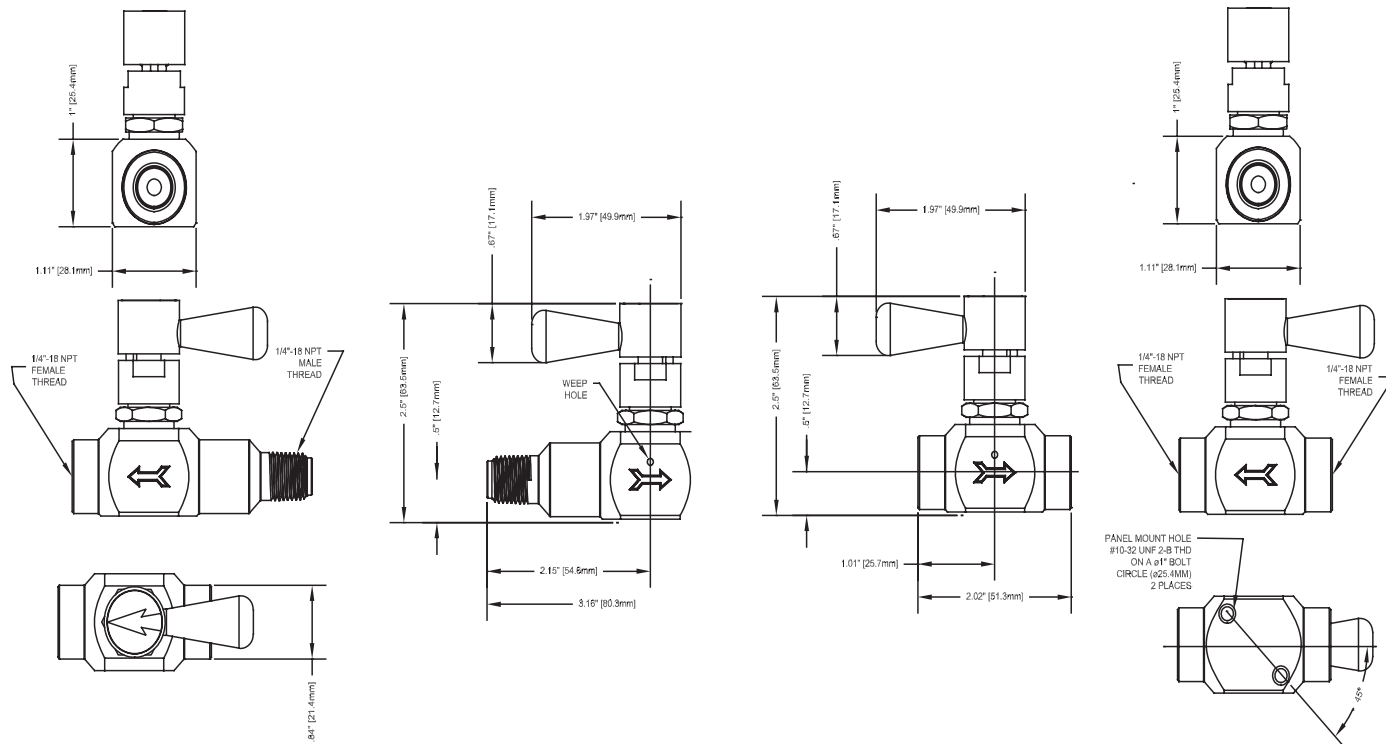
Flow control is accomplished due to the quarter turn model's quick acting and indication of on/off positions. The quarter turn is quick acting and the handle position is an indication of the valve position. In the on position it is parallel to the flow direction and in the off position it is perpendicular or at right angles to the flow path.



Materials and Specifications

Maximum Inlet Pressure	3500 PSIG (240 BAR)
Temperature Range	65°F to 150°F (18°C to 65°C)
Bodies and Fittings	Brass barstock, 316L Stainless steel or chrome-plated brass
Seats	PCTFE
Cv	0.13
Weight	0.66 lbs. (0.3 kg)

Installation Dimensions



Ordering Information

Series	B	C	D
Series 533-4	Flow Direction	Material	Connection
	1: Quarter turn right to left	2: Brass	0: 1/4" FPT x 1/4" FPT
	3: Quarter turn left to right*	4: 316L stainless steel	1: 6mm tube fitting x 6mm tube fitting
	*Only for D=3, 7, 8, & 9	9: Chrome-plated brass	2: 1/4" tube fitting x 1/4" tube fitting
			3: 1/4" MPT (extended leg) x 1/4" tube fitting
			4: 1/4" MPT x 1/4" MPT
			7: 1/4" MPT x 6mm tube fitting
			8: 1/4" MPT (extended leg) x 1/8" tube fitting
			9: 1/4" MPT (extended leg) x 1/4" FPT

Adjustable Relief Valves

The 534 Series adjustable relief valves are designed for use with high purity gas systems as protection for low pressure components of systems sensitive to over pressurization. Most commonly, these controls are found as relief valves for regulators, relief valves for line systems, and relief valves for distribution systems.

A variety of adjustable ranges affords a wide selection of applications in several different services. Adjustments to the factory-set relief pressure can be made easily using a 1/8" Allen wrench.

Materials and Specifications

Spring	302 stainless steel
Poppet	304 stainless steel
Cv	0.37
Inlet Connection	1/4" MPT
Outlet Connection	1/4" FPT
Weight	0.1 lbs. (0.05 kg)



Ordering Information

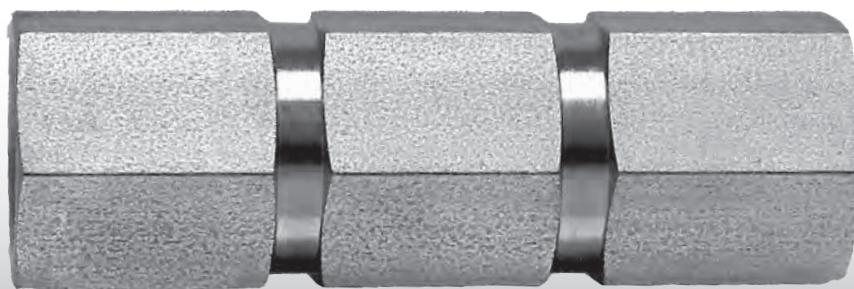
534	A	9	2	D	-PSIG
Series 534	Material	9: N/A	2: N/A	Pressure Range	Please specify factory set pressure
	2: Brass barstock body and fittings (Viton® seals)			1: 10 to 20 PSIG (0.7 to 1.4 BAR)	
	4: 316L stainless steel barstock body and fittings (Viton® seals)			2: 20 to 100 PSIG (1.4 to 7 BAR)	
	5: 316L stainless steel barstock body and fittings (Kalrez® seals)			3: 100 to 250 PSIG (7 to 17 BAR)	
				4: 250 to 500 PSIG (17 to 34 BAR)	

Check Valves

The 532 Series check valves are designed for use in high purity gas systems as protection against reverse flow in sensitive operations. Most commonly, these controls are found in services associated with cylinder gases, low pressure gases, in switchover systems, and in manifold systems. The brass and stainless steel models have a cracking pressure of 1 PSIG (0.07 BAR).

Materials and Specifications

Maximum Pressure	3000 PSIG (200 BAR)
Flow Rate @ 10 PSIG (0.7 BAR)	47 LPM (99.6 SCFH) air
Spring	302 stainless steel
Poppet	304 stainless steel



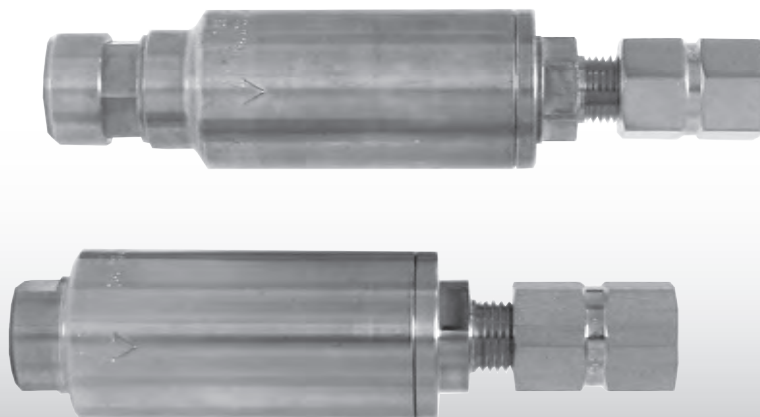
Ordering Information

Order No.	End Fittings	Body	Fittings	Seals
532 3922	1/4" FPT x 1/4" FPT	Brass barstock	Brass barstock	Viton®
532 3924	1/4" FPT x 1/4" FPT	316L stainless steel barstock	316L stainless steel barstock	Ethylene propylene
532 3824	1/4" FPT x 1/4" FPT	316L stainless steel barstock	316L stainless steel barstock	Viton®
532 3842	1/4" MPT x 1/4" FPT	Brass barstock	Brass barstock	Viton®
532 3834	1/4" MPT x 1/4" FPT	316L stainless steel barstock	316L stainless steel barstock	Ethylene propylene
532 3844	1/4" MPT x 1/4" FPT	316L stainless steel barstock	316L stainless steel barstock	Viton®

Flashback Arrestors

CONCOA's 532 Series of stainless steel and brass flashback arrestors prevent the transmission of flame in the supply line and equipment of high purity gas systems. An automatic valve in the 532 Series flashback arrestor cuts off gas supply in the event of flame stabilization inside the body of the arrestor.

The arrestors incorporate a non-return valve to prevent reverse flow of gases. With the brass arrestors, a positive shut off of reverse flow permits resetting and reuse after flashback has occurred. 532 Series Flashback Arrestors meet the safety requirements of BS6158, EN 730 (BAM/DIN), ISO 5175, AS 4603 and are UL Listed 23Y5.

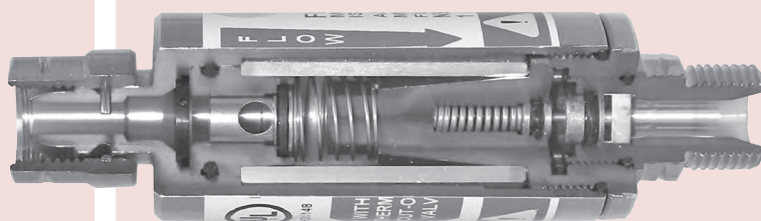


Stainless Steel Model Materials and Specifications

Body and Internals	316L stainless steel
Elastomers	Viton®
Temperature Sensor	Polyethylene
Valve Spring	316 stainless steel
Weight	1.4 lbs. (0.64 kg)
Connections	1/4" NPT Female
UL Approved Maximum Pressure (UL 23Y5)	Acetylene 15 PSIG (1 BAR) Hydrogen 50 PSIG (3.5 BAR) Natural Gas 50 PSIG (3.5 BAR) Propane 50 PSIG (3.5 BAR) Air/Oxygen 143 PSIG (10 BAR)

Brass Model Materials and Specifications

Body and Internals	Brass with brass internals
Elastomers	Neoprene
Temperature Sensor	Polyethylene
Valve Spring	316 stainless steel
Weight	1.5 lbs. (0.68 kg)
Connections	1/4" NPT Female
UL Approved Maximum Pressure (UL 23Y5)	Acetylene 15 PSIG (1 BAR) Hydrogen 50 PSIG (3.5 BAR) Natural Gas 50 PSIG (3.5 BAR) Propane 50 PSIG (3.5 BAR) Air/Oxygen 143 PSIG (10 BAR)



Ordering Information

Order No.	Body	Description	Size/Dimensions
532 7000	316L stainless steel	Fuel gas flash arrestor (with check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7001	316L stainless steel	Oxygen flash arrestor (with check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7002	316L stainless steel	Hydrogen flash arrestor (with high flow check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7003	Brass	Fuel gas flash arrestor (with check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7004	Brass	Oxygen flash arrestor (with check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7005	Brass	Fuel gas flash arrestor (with high flow check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7006	Brass	Oxygen flash arrestor (with high flow check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)
532 7007	Brass	Hydrogen flash arrestor (with high flow check valve)	1 1/4" x 4 3/4" (0.57mm x 2.15mm)

Oxygen Deficiency Monitor

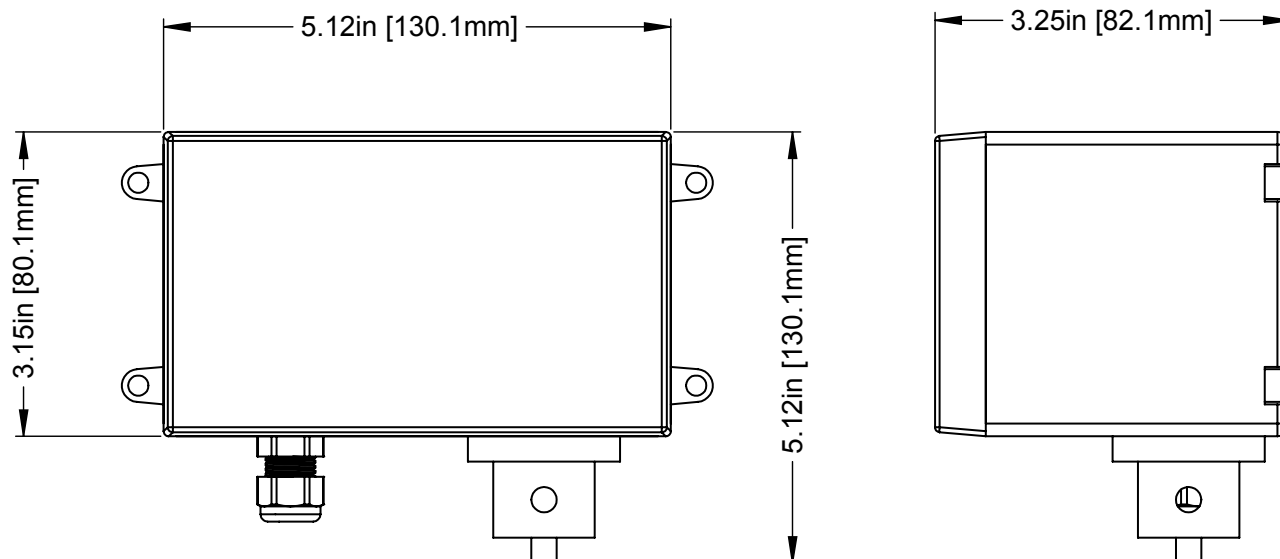
The 3004 Series Oxygen Deficiency Monitor is a compact system that is ideal for the continuous monitoring oxygen levels in any area where inert gases or confined space may produce a hazardous reduction in the oxygen content of the air. This system should be installed in gas storage and use areas, cryogenic freezer rooms, laboratory or industrial locations where liquefied or compressed gases may accumulate and pose a hazard of asphyxiation as required by OSHA 29 CFR 1910. The monitor features two set points with independent relays to accommodate multiple threat level notification. The unique long lasting zirconium sensor provides accurate and rapid response to changes in oxygen concentration over a wide range of temperature and humidity conditions and does not drift due to weather or temperature.



Specifications

Gases Detected	Oxygen	Width	5.5 in (140 mm)
Range	0-25%	Height	3.5 in (89 mm)
Accuracy	±1% of full scale	Depth	3.25 in (83 mm)
Operating Temperature	-40 to 55°C	Weight	1.6 lb (0.8 kg)
Display	3/4" LCD digital display, back lit	Enclosure	NEMA 4x (electronics and sensor)
Sensor Type	Long life zirconium oxide sensor cell	Required Calibration	None
Sensor Life	10 years under normal conditions		
Signal Outputs	4-20 mA analog output		
Power Requirements	100 mA without relays - 500 mA with relays		

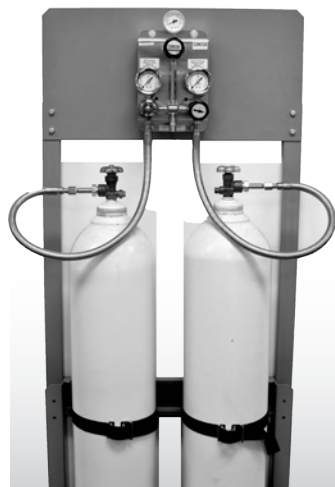
Installation Dimensions



Ordering Information

Order No.	Description	Housing	Weight
580 3004	Oxygen Deficiency Monitor with 120VAC/24 VDC power supply	NEMA 4x (electronics and sensor)	1.6 lbs (0.8 kg)
580 3005	Remote Display 4-20 mA	NEMA 4x	0.5 lbs (0.23 kg)
580 3006	Horn and Strobe Red 80-100 dB	NEMA 4x	1.0 lbs (0.45 kg)

Switchover Stations



The Switchover Station is designed to mount a 526 or 527 Series switchover system and two cylinders in areas where wall mounting is inconvenient. The Switchover Station has holes pre-drilled for easy mounting as well as cylinder brackets with straps to secure the cylinders in place. For safety, the Switchover Station must be secured to a floor or pad.

Materials and Specifications

Bracket Material	11 gauge hot rolled steel
Strap Material	Polypropylene with steel cinch buckle
Cylinder Diameter	Up to 12"

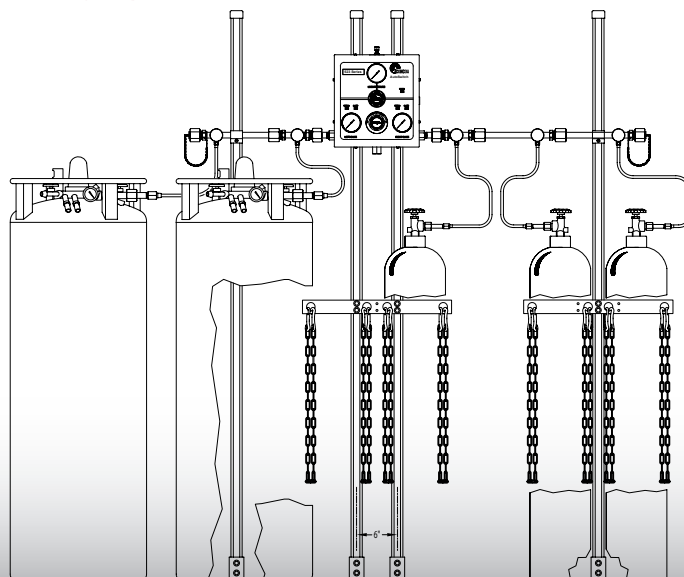
Shown with 526 Switchover (sold separately)

Ordering Information

Order No.	Dimensions (Length x Width x Height)	Weight
518 1625	28" x 12" x 72" (711.2mm x 304.8mm x 1828.8mm)	56 lbs. (25.4 kg)

Manifold Floor Stands

CONCOA floor stands provide a convenient method to mount switchovers and manifolds where a permanent structure is unavailable. Made from durable plated steel, each model comes with the necessary hardware to safely secure cylinders that otherwise are unable to support themselves. Models 518 1625 and 518 1725 offer a unique header plate to mount single cylinder per side switchover configurations.



Ordering Information

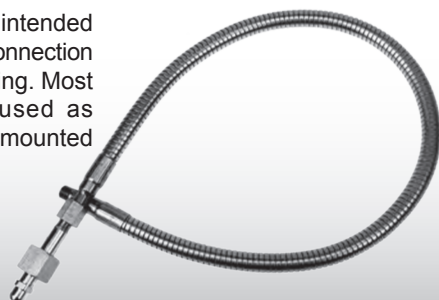
Order No.	Description	Dimensions (L x W x H)
518 1625	Single switchover floor stand with storage for two 12" cylinders	28" x 12" x 72" (711.2mm x 304.8mm x 1828.8mm)
518 1725	Multiple switchover floor stand with storage for six 12" cylinders	24" x 48" x 72" (609.6mm x 1219.2mm x 1828.8mm)
830 7437	Manifold extension floor stand designed to provide support every 24" (609.6mm) from a pressure control device	6" x 6" x 84" (152.4mm x 152.4mm x 2133.6mm)
830 7439	Switchover floor stand designed to provide support with dual vertical posts	12" x 12" x 84" (304.8mm x 304.8mm x 2133.6mm)



Accessories

Flexible Hoses

The 529 Series flexible hoses are intended for use in systems where a flexible connection is preferable to the use of rigid tubing. Most commonly, flexible hoses are used as hoses to connect cylinders to wall-mounted regulators or manifold headers.



Materials and Specifications

Minimum Bend Radius	4.0" (101.6mm)
Temperature Range	-450°F to 1500°F (-265°C to 815°C)
Oxygen Service	Cleaned to CGA G4.1 specifications

Ordering Information

Order No.	Inner Core	Connection	Max Pressure	Length
529 0029-CGA*	316L stainless steel	1/4" MPT x 316L stainless steel CON (with check valve)	3850 PSIG (265 BAR)	3 ft (900 mm)
529 0031-CGA*	316L stainless steel	1/4" MPT x brass CON (with check valve)	3850 PSIG (265 BAR)	3 ft (900 mm)
529 0055-CGA*	316L stainless steel	1/4" MPT x brass CON (with check valve)	3850 PSIG (265 BAR)	6 ft (1800 mm)
529 0056-CGA*	316L stainless steel	1/4" MPT x 316L stainless steel CON (with check valve)	3850 PSIG (265 BAR)	6 ft (1800 mm)
529 0071-CGA*	316L stainless steel	1/4" MPT x brass CON (with check valve)	3850 PSIG (265 BAR)	2 ft (600 mm)
529 0070-CGA*	316L stainless steel	1/4" MPT x 316L stainless steel CON (with check valve)	3850 PSIG (265 BAR)	2 ft (600 mm)
529 0058-CGA	316L stainless steel	1/4" MPT x brass CON (with check valve)	4500 PSIG (300 BAR)	3 ft (900 mm)
529 0059-CGA	316L stainless steel	1/4" MPT x 316L stainless steel CON (with check valve)	4500 PSIG (300 BAR)	3 ft (900 mm)
529 0064-CGA	PTFE	1/4" MPT x 316L stainless steel CON (with check valve)	6000 PSIG (415 BAR)	3 ft (900 mm)

*Inner core Monel® with CGA 540, 280, 296

Transfer Hoses

Specifically designed for the transfer of cryogenic gases, these all stainless hoses offer complete flexibility, durability and fast cool-down. Machined end connections and a long collar extend the hose life, and low profile corrugations provide faster filling, lower pressure drop and less product loss. Full armor casing protects the hose from abrasion and damage.



Materials and Specifications

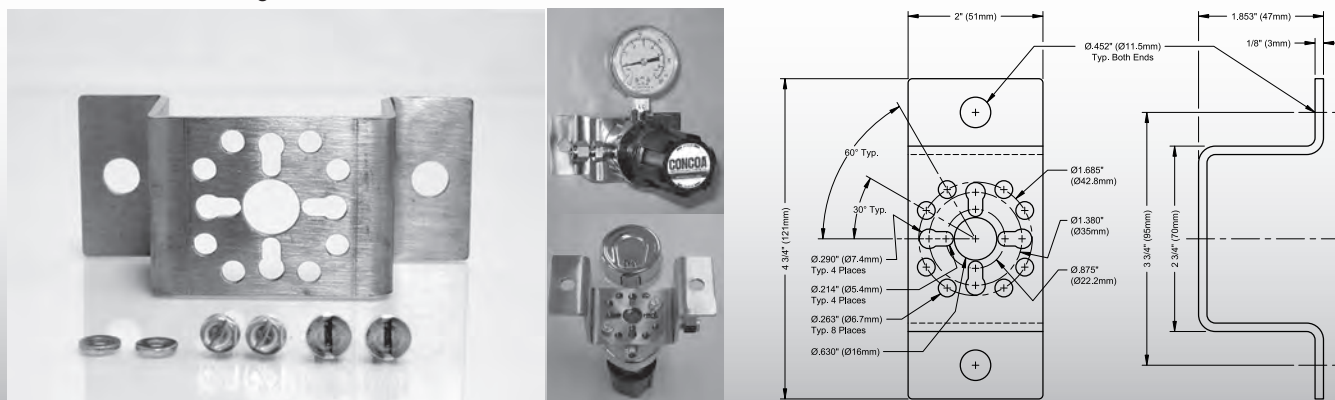
Minimum Bend Radius	6" (152.4mm)
Temperature Range	-450°F to 1500°F (-265°C to 815°C)
Oxygen Service	Cleaned to CGA G4.1 specifications

Ordering Information

Order No.	Inner Core	Connection	Max Pressure	Length
529 0245	316L stainless steel	316L stainless steel CGA 440	1000 PSIG (70 BAR)	4 ft (1200 mm)
529 0246	316L stainless steel	316L stainless steel CGA 440	1000 PSIG (70 BAR)	5 ft (1500 mm)
529 0247	316L stainless steel	316L stainless steel CGA 440	1000 PSIG (70 BAR)	6 ft (1800 mm)
529 0250	316L stainless steel	316L stainless steel CGA 295	1000 PSIG (70 BAR)	4 ft (1200 mm)
529 0251	316L stainless steel	316L stainless steel CGA 295	1000 PSIG (70 BAR)	5 ft (1500 mm)
529 0252	316L stainless steel	316L stainless steel CGA 295	1000 PSIG (70 BAR)	6 ft (1800 mm)

Regulator Mounting Bracket

The Universal Regulator Mounting Kit 835 0204 provides an easy and secure option to mount any of CONCOA's single stage 400 or 300 Series regulators. The kit comes with a sturdy 1/8" thick brushed stainless 'U' bracket, bolts, and washers to fit both 10-32 UNF and 1/4- 20 UNC-2B mounting holes. Multiple hole patterns accommodate any orientation and the 16mm center hole allows for use with rear inlet regulators.



Ordering Information

Order No.	Description
835 0204	Universal 400 & 300 Series regulator mounting kit

Cylinder Brackets and Chains

Cylinder brackets are designed to secure up to three cylinders of normal or smaller size. The chain set assists in securing the cylinders and can be installed without removing the bracket from the wall or structure.



Materials and Specifications

Bracket Material	11 gauge hot rolled steel
Strap Material	Polypropylene with steel cinch buckle
Cylinder Diameter	Up to 14" (355.6mm) - 518 1611 Up to 12" (304.8mm) - 518 1612 4" to 14" (101.6 to 355.6mm) - 518 1614
Mounting Dimensions (518 1614)	Maximum bench thickness 1 3/4" (44.45mm)



Ordering Information

Order No.	Description	Dimensions (L x W x H)	Weight
518 1611	Single cylinder	8" x 2.25" x 4.25" (200mm x 57.15mm x 107mm)	3 lbs. (1.36 kg)
518 1612	Two cylinder	24" x 2.25" x 4.25" (600mm x 57.15mm x 107mm)	8 lbs. (3.63 kg)
518 1613	Three cylinder	36" x 2.25" x 4.25" (900mm x 57.15mm x 107mm)	10.7 lbs. (4.85 kg)
518 1614	Single cylinder bench	8" x 4.25" x 4.25" (200mm x 57.15mm x 107mm)	4.5 lbs. (2.04 kg)
518 1615	Long chain set	41" (1041.4mm)	1 lb. (0.45 kg)



Accessories

Leak Detector

CONCOA's new leak detector by Restek is designed to detect helium, nitrogen, argon, carbon dioxide, and hydrogen. Backed by a one year manufacturer's warranty, the leak detector sets the industry standard for performance and affordability in a hand-held leak detector.



Includes:

- He detection limit to 1×10^{-5} cc/sec
- A sleek, new ergonomic, hand-held design
- Rugged side grips for added durability
- Handy probe storage for cleanliness
- Longer lasting battery, up to 6 hours of continuous uses
- Automatic shut-off capabilities
- A convenient carrying and storage case
- A universal charger set (US, European, UK and Australian plugs included)
- Certifications: CE, Japan

Ordering Information

Order No.	Description
580 3003	3003 Series Restek leak detector



400 Series Demo Kit

Create a sales presentation that will work every time with the CONCOA 400 Series Demo Kit. Let an easily customizable script guide you through a detailed presentation. Demonstrate the Inside Story of the 400 Series with a loosely assembled 400 Series stainless steel regulator, and explain the features and benefits of the unique CONCOA CAPSULE® technology with a full-size cutaway. Complete with a specially designed carrying case, the CONCOA 400 Series Demo Kit provides all the tools needed to make an effective sales presentation in or out of the office.

Includes:

- Durable plastic case
- Cutaway of the CONCOA CAPSULE®
- Loosely assembled stainless steel 400 Series regulator
- Power Point presentation with script on CD
- CONCOA catalog on CD
- Print literature to complement your presentation

* Comes with one (1) Specialty and Scientific Research Apparatus Brochure (SPF-400) and one (1) Specialty Gas and Custom Assembly Brochure (SPF-100). Additional literature, including hard copies of the Research and Specialty Gas Catalog (ADC 3010), may be ordered by contacting CONCOA directly.

Ordering Information

Order No.	Description
422 0000	400 Series demo kit with CAPSULE, regulator, presentation material, and other literature

Traps



Moisture

The 580 1800 Series traps are designed for use in high purity gas systems to prevent the possible introduction of moisture into the instrumentation carrier gases. The trap has a maximum flow rate of 70 LPM air at 100 PSIG.



Hydrocarbon

The 580 1900 Series hydrocarbon traps are designed to remove organic compounds from carrier gases, air and hydrogen. These high capacity traps contain 200cc of carbon impregnated filter media. Excellent efficiencies are achieved for the removal of the following; Acetone, any Acetate dissolved in oil, Isopropyl Alcohol, Mercaptans and organic acids, as some examples.



Oxygen

The 580 1600 Series oxygen traps contain highly active, metal containing inert reagents capable of reducing the oxygen content in a gas stream to less than 15 ppb. These traps can remove up to 2 grams of moisture with no effect on oxygen capacity. Typical applications involve, but are not exclusive to, Nitrogen, Helium, Argon, Carbon Dioxide, and low boiling point aromatics such as Benzene, Toluene and Alkyl Benzene's for oxygen cleaner gases.



Indicating O₂

The 580 1600 Series indicating oxygen traps contain highly active, metal containing inert reagents capable of reducing the oxygen content in a gas stream to less than 2 ppb. As the metal is oxidized, it changes color indicating the presence of Oxygen. Typical applications involve, but are not exclusive to, Nitrogen, Helium, Argon, Carbon Dioxide, and low boiling point aromatics such as Benzene, Toluene and Alkyl Benzene's for oxygen cleaner gases.

Materials and Specifications

Tube	Polycarbonate
Seals	Buna-N
Filters	316L Stainless steel
Max Operating Pressure	125 PSIG (8.62 BAR)

Materials and Specifications

Tube	Polycarbonate
Seals	Buna-N
Filters	316L Stainless steel
Max Operating Pressure	125 PSIG (8.62 BAR)

Materials and Specifications

Tube	Aluminum
Seals	Buna-N
Filters	316L Stainless steel
Max Operating Pressure	125 PSIG (8.62 BAR)

Materials and Specifications

Tube	Glass
Seals	Buna-N
Filters	316L Stainless steel
Max Operating Pressure	100 PSIG (7 BAR)

Ordering Information

Moisture Traps	End Fittings	Removal Capacity (H ₂ O)	Catalyst
580 1805	1/8" Brass tube fitting	36.0 grams (H ₂ O < 18 ppb)	13X mole sieve
580 1806	1/4" Brass tube fitting	36.0 grams (H ₂ O < 18 ppb)	13X mole sieve
580 1807	1/8" Brass tube fitting	72.0 grams (H ₂ O < 14 ppb)	13X mole sieve
580 1808	1/4" Brass tube fitting	72.0 grams (H ₂ O < 14 ppb)	13X mole sieve
580 1800	Refill (1) 580 1807/1808	N/A	13X mole sieve
Hydrocarbon Traps	End Fittings	Removal Capacity (C ₄)	Catalyst
580 1903	1/8" Brass tube fitting	30 grams (C ₄ Hydrocarbons < 15 ppb)	Activated carbon
580 1904	1/4" Brass tube fitting	30 grams (C ₄ Hydrocarbons < 15 ppb)	Activated carbon
580 1900	Refill (2) 580 1903/1904	N/A	Activated carbon
Oxygen Traps	End Fittings	Removal Capacity (O ₂)	Catalyst
580 1602	1/8" Brass tube fitting	600 mg (O ₂ < 15 ppb)	Activated metal
580 1604	1/4" Brass tube fitting	600 mg (O ₂ < 15 ppb)	Activated metal
Indicating Oxygen Traps	End Fittings	Removal Capacity (O ₂)	Catalyst
580 1608	1/8" Brass tube fitting	30 mg (O ₂ < 2 ppb)	Activated metal
580 1609	1/4" Brass tube fitting	30 mg (O ₂ < 2 ppb)	Activated metal

400 Series Regulator Gauges

These 550 Series gauges allow the user to monitor pressure in systems. They are available in 2" (53mm) diameter brass or 316L stainless steel for use especially on regulators such as the 400 series brass and 316L stainless steel regulators. For convenient mounting, all 550 Series gauges are 1/4" MPT bottom mount. Cleaned for oxygen service, ASME B40.1.



2" Brass

Part Number	Pressure Range	Part Number	Pressure Range
550 0201	30"-0-30 PSIG/-100-0-200 kPa	550 0300	30"-0-30 PSIG/-1-0-2 BAR
550 0202	30"-0-100 PSIG/-100-0-700 kPa	550 0302	30"-0-100 PSIG/-1-0-7 BAR
550 0203	30"-0-200 PSIG/-100-0-1400 kPa	550 0303	30"-0-200 PSIG/-1-0-14 BAR
550 0204	0-300 PSIG/0-2000 kPa	550 0304	0-300 PSIG/0-21 BAR
550 0205	0-400 PSIG/0-2800 kPa	550 0305	0-400 PSIG/0-27 BAR
550 0206	0-1000 PSIG/0-7000 kPa	550 0306	0-1000 PSIG/0-70 BAR
550 0208	0-4000 PSIG/0-28,000 kPa	550 0308	0-4000 PSIG/0-275 BAR
550 0209	0-6000 PSIG/0-40,000 kPa	550 0309	0-6000 PSIG/0-400 BAR

2" 316 Stainless Steel

Part Number	Pressure Range	Part Number	Pressure Range
550 0221	30"-0-30 PSIG/-100-0-200 kPa	550 0320	30"-0-30 PSIG/-1-0-2 BAR
550 0222	30"-0-100 PSIG/-100-0-700 kPa	550 0322	30"-0-100 PSIG/-1-0-7 BAR
550 0223	30"-0-200 PSIG/-100-0-1400 kPa	550 0323	30"-0-200 PSIG/-1-0-14 BAR
550 0224	0-300 PSIG/0-2000 kPa	550 0324	0-300 PSIG/0-21 BAR
550 0225	0-400 PSIG/0-2800 kPa	550 0325	0-400 PSIG/0-27 BAR
550 0226	0-1000 PSIG/0-7000 kPa	550 0326	0-1000 PSIG/0-70 BAR
550 0228	0-4000 PSIG/0-28,000 kPa	550 0328	0-4000 PSIG/0-275 BAR
550 0229	0-6000 PSIG/0-40,000 kPa	550 0329	0-6000 PSIG/0-400 BAR

300 Series Regulator Gauges

These 550 Series gauges allow the user to monitor pressure in systems. They are available in 2" (53mm) diameter chrome-plated brass or chrome-plated steel with 316 stainless steel wetted parts for use especially on regulators such as the 300 Series chrome-plated brass and 316L stainless steel regulators. For convenient mounting, all 550 Series gauges are 1/4" MPT bottom mount. Cleaned for oxygen service, ASME B40.1.



2" Brass (with chrome-plated case)

Part Number	Pressure Range	Part Number	Pressure Range
550 0267	30"-0-30 PSIG/-100-0-200 kPa	550 0367	30"-0-30 PSIG/-1-0-2 BAR
550 0268	30"-0-100 PSIG/-100-0-700 kPa	550 0368	30"-0-100 PSIG/-1-0-7 BAR
550 0269	30"-0-200 PSIG/-100-0-1400 kPa	550 0369	30"-0-200 PSIG/-1-0-14 BAR
550 0273	0-300 PSIG/0-2000 kPa	550 0373	0-300 PSIG/0-20 BAR
550 0270	0-400 PSIG/0-2800 kPa	841 0545	0-400 PSIG/0-28 BAR
550 0271	0-1000 PSIG/0-7000 kPa	550 0371	0-1000 PSIG/0-70 BAR
550 0263	0-4000 PSIG/0-28,000 kPa	841 0546	0-4000 PSIG/0-280 BAR
550 0272	0-6000 PSIG/0-40,000 kPa	550 0372	0-6000 PSIG/0-400 BAR

2" 316 Stainless Steel (with chrome-plated case)

Part Number	Pressure Range	Part Number	Pressure Range
550 0621	30"-0-30 PSIG/-100-0-200 kPa	550 0720	30"-0-30 PSIG/-1-0-2 BAR
550 0622	30"-0-100 PSIG/-100-0-680 kPa	550 0722	30"-0-100 PSIG/-1-0-7 BAR
550 0623	30"-0-200 PSIG/-100-0-1360 kPa	550 0723	30"-0-200 PSIG/-1-0-14 BAR
550 0624	0-300 PSIG/0-2050 kPa	550 0724	0-300 PSIG/0-20 BAR
550 0625	0-400 PSIG/0-2750 kPa	550 0725	0-400 PSIG/0-28 BAR
550 0626	0-1000 PSIG/0-6800 kPa	550 0726	0-1000 PSIG/0-68 BAR
550 0628	0-4000 PSIG/0-27000 kPa	550 0728	0-4000 PSIG/0-275 BAR
550 0629	0-6000 PSIG/0-41000 kPa	550 0729	0-6000 PSIG/0-415 BAR

200 Series Regulator Gauges

These 550 Series gauges allow the user to monitor pressure in systems. They are available in 2 1/2" (68mm) diameter chrome-plated brass for use especially on regulators such as the 200 Series chrome-plated brass regulators, and the 483, 485 and 492 Series brass ultra high flow regulators. For convenient mounting, all 550 Series gauges are 1/4" MPT bottom mount. UL listed, cleaned for oxygen service, ASME B40.1.



2 1/2" Brass (with chrome-plated case and stem)

Part Number	Pressure Range	Part Number	Pressure Range	Part Number	Pressure Range	Part Number	Pressure Range
550 0241	0-30 PSIG/0-210 kPa	550 0291	0-30 PSI/0-2.1 BAR	550 0246	0-1000 PSIG/0-7000 kPa	550 0296	0-1000 PSIG/0-70 BAR
550 0242	0-60 PSIG/0-400 kPa	550 0292	0-60 PSI/0-4 BAR	550 0248	0-4000 PSIG/0-28,000 kPa	550 0298	0-4000 PSIG/0-280 BAR
550 0243	0-200 PSIG/0-1400 kPa	550 0293	0-200 PSI/0-14 BAR	550 0249	0-6000 PSIG/0-40,000 kPa	550 0297	0-6000 PSIG/0-420 BAR
550 0245	0-400 PSIG/0-2800 kPa	550 0295	0-400 PSI/0-28 BAR	550 0240	0-30 PSIG/0-200 kPa (Redline)	550 0290	0-30 PSIG/0-2.0 BAR (Redline)
550 0250	0-600 PSIG/0-4200 kPa	550 0299	0-600 PSI/0-40 BAR				

Fittings and Adapters

Ordering Information

Part No.	Description	Connections	Body Material
529 0019	1/2" x 1/2" manifold connector	1/2" MPT x 1/2" MPT 4500 PSIG (310 BAR) max	Stainless steel
529 0024	1/2" x 1/4" manifold connector	1/2" MPT x 1/4" MPT 4500 PSIG (310 BAR) max	Stainless steel
529 0224	1/4" x 1/4" manifold connector	1/2" MPT x 1/4" MPT 4500 PSIG (310 BAR) max	Stainless steel
550 0760	Inert liquid withdrawal	1/2" MPT x CGA 295 (liquid nitrogen and argon)	Brass
550 0761	Oxygen liquid withdrawal	3/8" MPT x CGA 440 (liquid oxygen)	Brass
550 0762	90° Elbow extension	CGA 440 x CGA 440 (liquid oxygen)	304 stainless steel
550 0764	90° Elbow extension	CGA 295 x CGA 295 (liquid nitrogen and argon)	304 stainless steel
829 1839	Union gland	1/2" MPT 3000 PSIG (210 BAR) max	Brass
829 1840	Union nut	1" 3000 PSIG (210 BAR) max	Brass
830 6498	Union connector	1/2" MPT 3000 PSIG (210 BAR) max	Brass
830 6163	Reducing adapter	1/2" MPT x 1/4" FPT 3000 PSIG (210 BAR) max	Brass
830 6164	Reducing adapter	1/2" MPT x 1/4" FPT 6000 PSIG (405 BAR) max	Stainless steel
830 9805	Reducing adapter	1/2" MPT x 3/8" FPT 2600 PSIG (180 BAR) max	Brass
830 6155	1/2" tee	1/2" FPT 3000 PSIG (210 BAR) max	Brass
830 6499	1/2" male nipple	1/2" MPT x 3/8" 3000 PSIG (210 BAR) max	Brass
555 0221	1/4" tube fitting	1/4" tube x 1/4" MPT	Brass
554 0121	1/8" tube fitting	1/8" tube x 1/4" MPT	Brass
550 0167	6mm tube fitting	6mm tube x 1/4" MPT	Brass
830 5371	1/2" tube fitting	1/2" tube x 1/2" MPT	Brass
550 0035	1/4" male nipple	1/4" MPT 3000 PSIG (210 BAR) max	Chrome-plated brass
550 0031	1/4" tube fitting	1/4" tube x 1/4" MPT	Chrome-plated brass
550 0032	1/8" tube fitting	1/8" tube x 1/4" MPT	Chrome-plated brass
550 0142	6mm tube fitting	6mm tube x 1/4" MPT	Chrome-plated brass
553 4104	1/4" male nipple	1/4" MPT 6000 PSIG (405 BAR) max	316L stainless steel
555 0220	1/4" tube fitting	1/4" tube x 1/4" MPT	316L stainless steel
554 0120	1/8" tube fitting	1/8" tube x 1/4" MPT	316L stainless steel
550 0165	6mm tube fitting	6mm tube x 1/4" MPT	316L stainless steel
830 6149	1/2" tube fitting	1/2" tube x 1/2" MPT	316L stainless steel
550 1002-CGA	CGA Cylinder connection	1/4" MPT x CGA	Brass
550 1004-CGA	CGA Cylinder connection	1/4" MPT x CGA	Stainless steel
550 1009-CGA	CGA Cylinder connection	1/4" MPT x CGA	Chrome-plated brass
529 0004-CGA	CGA Cylinder adapter	1/4" MPT x CGA	Brass
529 0003-CGA	CGA Cylinder adapter	1/4" MPT x CGA	Stainless steel
830 8385	Coupling	1/2" FPT x 1/2" FPT 2400 PSIG (160 BAR) max	Brass
830 9891	Coupling	1/2" FPT x 1/2" FPT 4900 PSIG (310 BAR) max	Stainless steel
830 6195	Street elbow	1/4" MPT x 1/4" FPT 3000 PSIG (210 BAR) max	Brass
830 5395	Street tee	1/4" MPT x 1/4" FPT 6000 PSIG (400 BAR) max	Brass
830 5396	Street tee	1/4" MPT x 1/4" FPT 4500 PSIG (310 BAR) max	Stainless steel
830 8551	Street tee	1/4" FPT x 1/4" MPT 3000 PSIG (210 BAR) max	Chrome-plated brass
830 8609	Coupling	1/4" FPT x 1/4" FPT 6000 PSIG (400 BAR) max	Stainless steel
803 4250	1/4" male nipple	1/4" MPT x 1/4" MPT 3000 PSIG (210 BAR) max	Brass

CGA Selection Charts

Pure Gases CGA Selection Chart for Fittings

CGA Fittings Required	Pure Gases
510/300	Acetylene
590/346/347/702	Air
240/660/705	Ammonia
580/680/677	Argon
350	Arsine*
320	Carbon dioxide
350	Carbon monoxide
660	Chlorine
510	Cyclopropane
350	Deuterium
350	Ethane
350	Ethylene
510	Ethylene oxide
580/680/677	Helium
350/695/703	Hydrogen
330	Hydrogen chloride
330	Hydrogen sulfide
580	Krypton, kr-85
350/695/703	Methane
510	Methyl chloride
580/680/677	Neon
580/680/677	Nitrogen
326	Nitrous oxide
540/577/701	Oxygen*
350	Phosphine
510	Propane
350	Silane*
668/660	Sulfur dioxide
590	Sulfur hexafluoride
580/680/677	Xenon

Mixed Gases CGA Selection Chart for Fittings

CGA Fittings Required	Mixed Gases	
	Minor Component	Major Component
240/660/705	Ammonia	Nitrogen
350	Butane	Nitrogen
296	Carbon Dioxide	Oxygen
580	Carbon Dioxide	Helium or nitrogen
580	Carbon Dioxide and/or Nitrogen	Helium
330	Chlorine	Nitrogen
350	Diborane	Argon, helium, Hydrogen, nitrogen
580	Freon-12	Nitrogen
296	Helium	Oxygen
350	Hexane	Nitrogen
350	Isobutane	Nitrogen
350	Krypton-85	Carbon monoxide, Hydrogen or methane
330	Krypton-85	Chlorine
540	Krypton-85	Oxygen
580	Moisture	Argon, helium or Nitrogen
660	Nitric Oxide	Nitrogen
660	Nitrogen Dioxide	Air or nitrogen
590	Nitrous Oxide	Nitrogen
590	Oxygen	Nitrogen or helium
350	Propane*	Nitrogen or helium
660	Sulfur Dioxide	Air or nitrogen
590	Sulfur Hexafluoride	Argon, helium or Nitrogen
350	Sulfur Hexafluoride	Hydrogen
350	Tritium	Argon, carbon dioxide, hydrogen, methane, neon, nitrogen, krypton, or xenon

It is recommended that the user thoroughly familiarize himself with the specific properties of these gases.

The Compressed Gas Association (CGA) has selected and standardized the valve outlet to be used on each gas cylinder. These standards, contained in the document "CGA STANDARD V-1, Compressed Gas Cylinder Valve Outlet Connections", have been adopted to prevent the inadvertent mixing of gases which could be reactive and to avoid other possible misuse hazards.

The above chart may be used for guide purposes only. Consult your gas supplier to determine the actual CGA connection required when ordering a regulator.

*Exceptions: Flammables in Air or Oxidizers

*Propane in air, methane in air, carbon monoxide in air: CGA 590

Since the combined characteristics of a mixture of gases often differ from the properties of the separate components, different CGA connections are often required. The chart above can be used as a reference for the CGA connections.

Mixtures which use the same CGA connection as if the minor component were in its pure gas form have not been included for the sake of brevity. The proper fitting for these mixtures can be determined by looking up the minor component on the chart for pure gases.

Mixed Gas Compatibility Chart

Mixed Gases	Regulators							Flowmeters	
	100 Series	200 Series	300 Series		400 Series			500 Series	
	Brass	Plated brass	Plated brass	Stainless steel	Aluminum	Brass	Stainless steel	Plated brass	Stainless steel
Ammonia									
in Argon				•			•		•
in Helium				•			•		•
in Hydrogen				•			•		•
in Nitrogen				•			•		•
Argon									
in Helium		•	•	•		•	•	•	•
in Hydrogen		•	•	•		•	•	•	•
in Nitrogen		•	•	•		•	•	•	•
in Oxygen		•	•	•		•	•	•	•
Carbon Dioxide									
in Air		•	•	•	•	•	•	•	•
in Argon		•	•	•	•	•	•	•	•
in Helium		•	•	•	•	•	•	•	•
in Hydrogen		•	•	•	•	•	•	•	•
in Nitrogen		•	•	•	•	•	•	•	•
in Oxygen		•	•	•	•	•	•	•	•
Chlorine									
in Argon				•			•		•
in Helium				•			•		•
in Nitrogen				•			•		•
Helium									
in Argon		•	•	•	•	•	•	•	•
in Hydrogen		•	•	•	•	•	•	•	•
in Nitrogen		•	•	•	•	•	•	•	•
in Oxygen		•	•	•	•	•	•	•	•
Hydrogen									
in Argon		•	•	•	•	•	•	•	•
in Carbon Monoxide		•	•	•	•	•	•	•	•
in Helium		•	•	•	•	•	•	•	•
in Nitrogen		•	•	•	•	•	•	•	•
Hydrogen Chloride									
in Argon							•		•
in Helium							•		•
in Nitrogen							•		•
in Oxygen							•		•
Methane									
in Air (Any Grade)		•	•	•	•	•	•	•	•
in Argon		•	•	•	•	•	•	•	•
in Helium		•	•	•	•	•	•	•	•
in Hydrogen		•	•	•	•	•	•	•	•
in Nitrogen		•	•	•	•	•	•	•	•
Nitric Oxide									
in Argon				•			•		•
in Helium				•			•		•
in Nitrogen				•			•		•
Nitrogen									
in Argon		•	•	•	•	•	•	•	•
in Helium		•	•	•	•	•	•	•	•
in Hydrogen		•	•	•	•	•	•	•	•
in Oxygen		•	•	•	•	•	•	•	•
Oxygen									
in Argon		•	•	•	•	•	•	•	•
in Helium		•	•	•	•	•	•	•	•
in Nitrogen		•	•	•	•	•	•	•	•

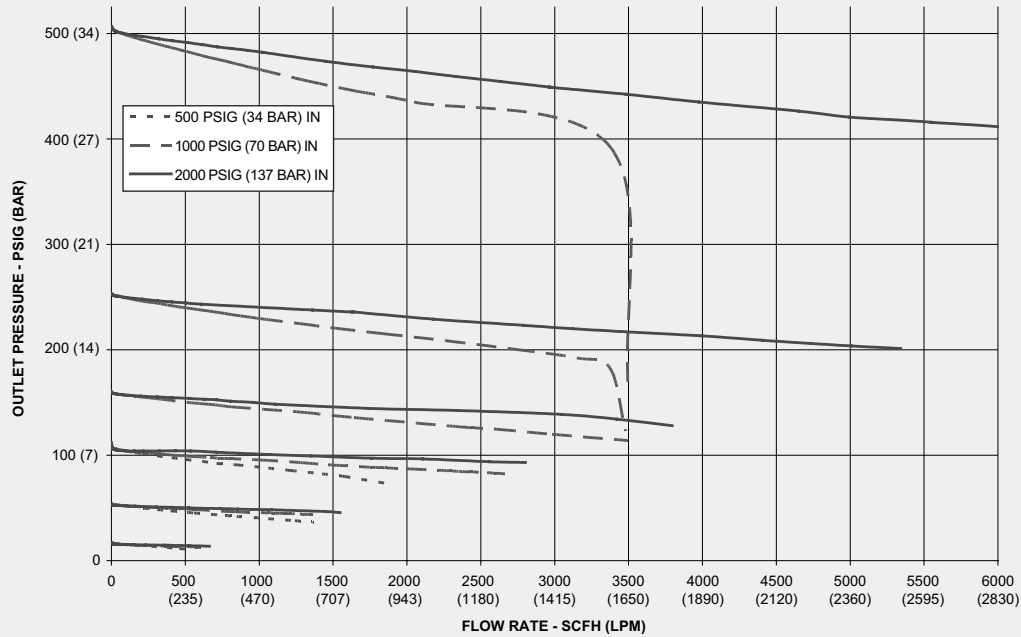
Pure Gas Compatibility Chart

Pure Gases		Regulators							Flowmeters	
		100 Series	200 Series	300 Series		400 Series			500 Series	
		Brass	Chrome-plated brass	Chrome-plated brass	Stainless steel	Aluminum	Brass	Stainless steel	Chrome-plated brass	Stainless steel
Acetylene										
Purified, 99.6%	C ₂ H ₂									
Air										
Zero/Ultra Zero										
Dry										
Ammonia										
Electronic, 99.999%	NH ₃									
Anhydrous, 99.99%										
Argon										
Research, 99.9995%	Ar									
Ultra High Purity, 99.999%										
Pre-purified, 99.998%										
High Purity, 99.99%										
n-Butane										
Research, 99.9% & CP 99.9%	C ₄ H ₁₀									
Carbon Dioxide										
Research, 99.998%	CO ₂									
Instrument, 99.99%										
Bone Dry, 99.9%										
Carbon Monoxide										
Research, 99.99%	CO									
CP, 99.5%										
Technical, 98.5%										
Chlorine										
High Purity, 99.5% & CP, 99.7%	Cl ₂									
Ethane										
Research, 99.96% & CP, 99.7%	C ₂ H ₆									
Ethylene										
Research, 9.98%	C ₂ H ₄									
CP, 99.5%										
Helium										
Research, 99.9999%	He									
Ultra High Purity, 99.999%										
Hydrogen										
Research, 99.9999%	H ₂									
Ultra High Purity, 99.999%										
Pre-purified, 99.99%										
Extra Dry, 99.95%										
Hydrogen Chloride										
Electronic, 99.99% & Technical, 99%	HCl									
Hydrogen Sulfide										
CP, 99.5%	H ₂ S									

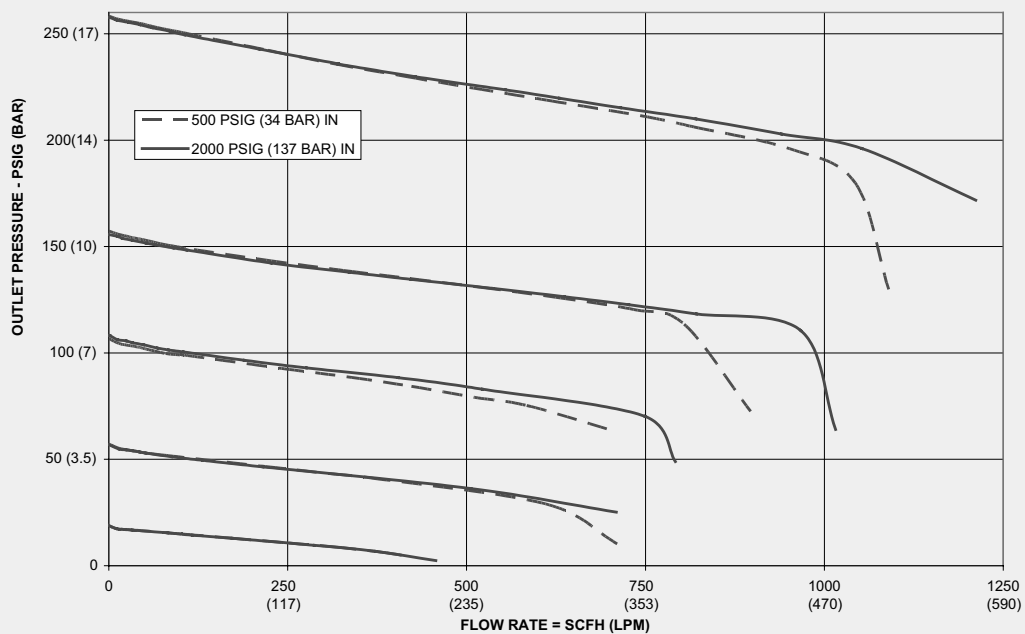
Pure Gas Compatibility Chart

Pure Gases		Regulators							Flowmeters	
		100 Series	200 Series	300 Series		400 Series			500 Series	
		Brass	Chrome-plated brass	Chrome-plated brass	Stainless steel	Aluminum	Brass	Stainless steel	Chrome-plated brass	Stainless steel
Isobutane	C ₄ H ₁₀									
Research, 99.96% & CP, 99%										
Krypton	Kr									
Research, 99.995%										
Methane	CH ₄									
Research, 99.99%										
Ultra High Purity, 99.97%										
CP, 99%										
Technical, 98%										
Methyl Chloride	CH ₃ Cl									
CP, 99.5%										
Neon	Ne									
Research, 99.999%										
Nitric Oxide	NO ₂									
CP, 99%										
Nitrogen	N ₂									
Research, 99.9995%										
Ultra High Purity, 99.999%										
Pre-purified, 99.998%										
High Purity, 99.99%										
Nitrous Oxide	N ₂ O									
Electronic, 99.99%										
CP, 99%										
Oxygen	O ₂									
Research, 99.995%										
Ultra High Purity, 99.993%										
Zero, 99.6%										
Extra Dry, 99.6%										
Phosphine	PH ₃									
Electronic, 99.995%										
Propane	C ₃ H ₈									
Research, 99.99%										
Instrument, 99.5% & CP, 99%										
Silane	SiH ₄									
VLSI										
Semiconductor										
Sulfur Hexafluoride	SF ₆									
CP, 99.8%										
Xenon	Xe									
Research, 99.995%										

Flow Curves for 302, 304, 305, 307, 322, 324, 327, 401, 402, 408, 420, 422, 426, 427, 428, 429 Series



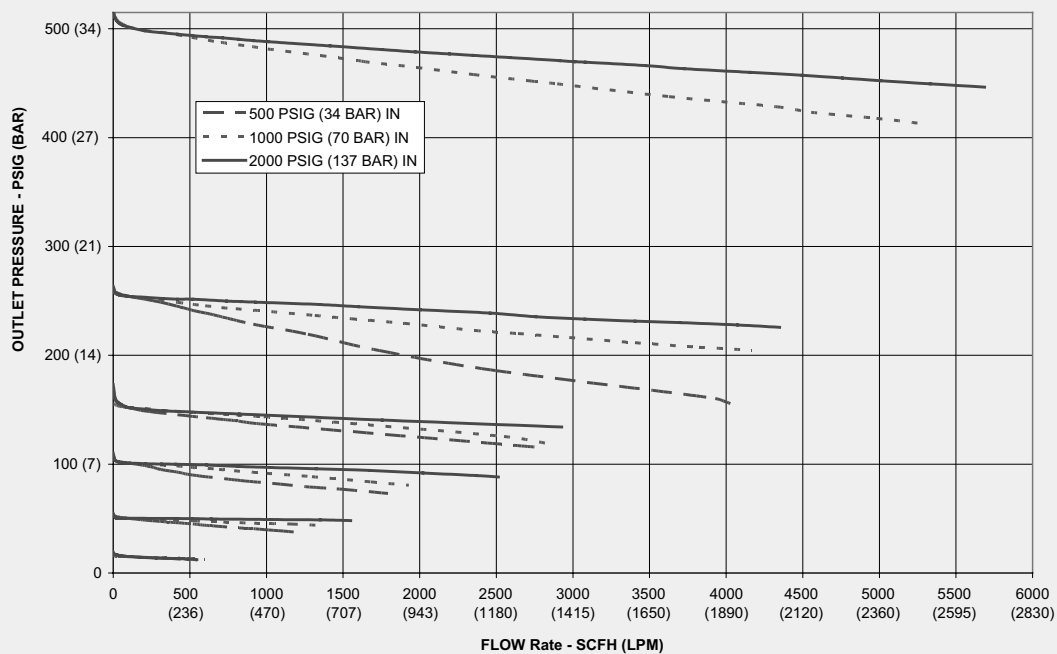
Flow Curves for 312, 315, 332, 411, 412, 430, 432 Series



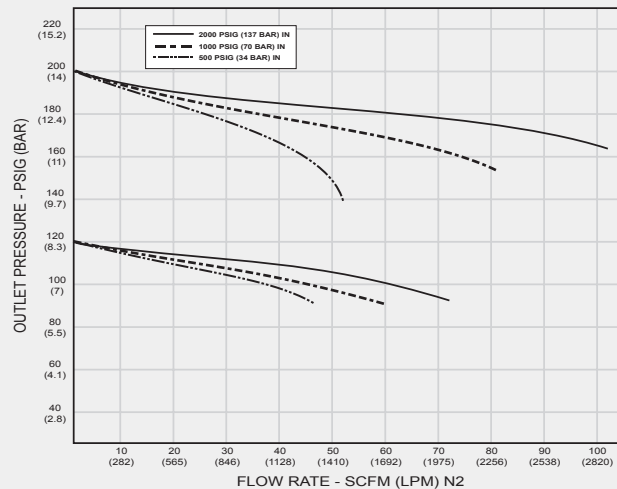
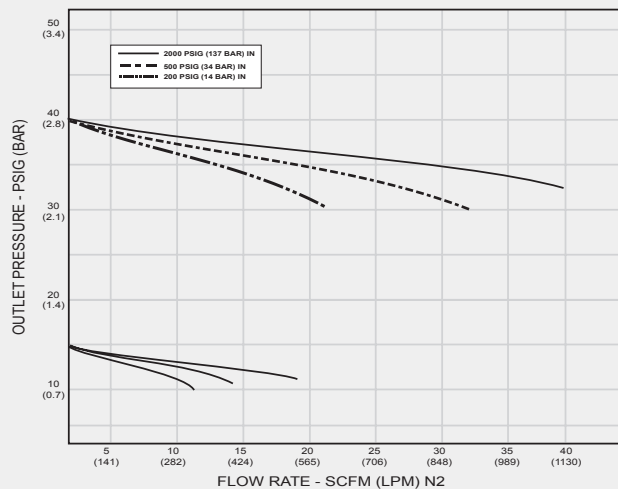
Regulator Flow Curves



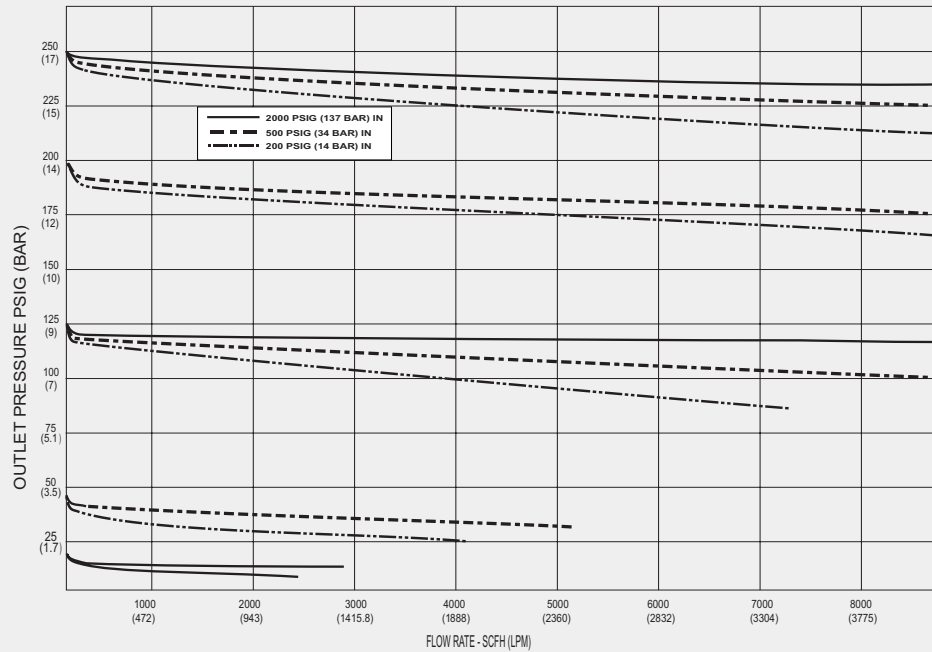
Flow Curves for 403, 405, 425, 435, 445 Series



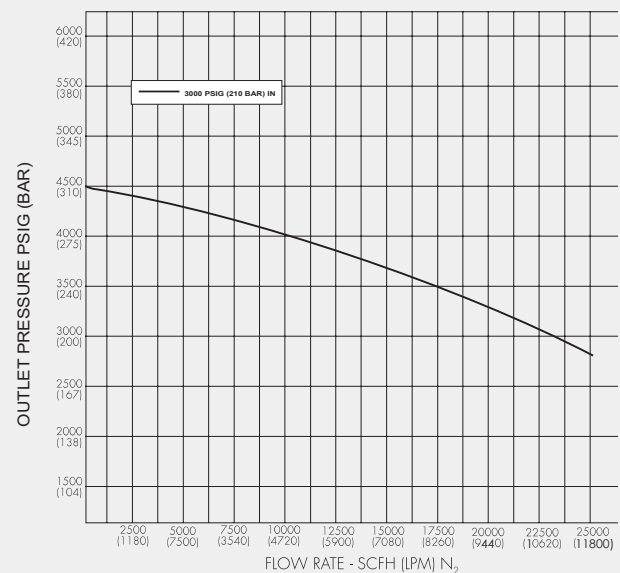
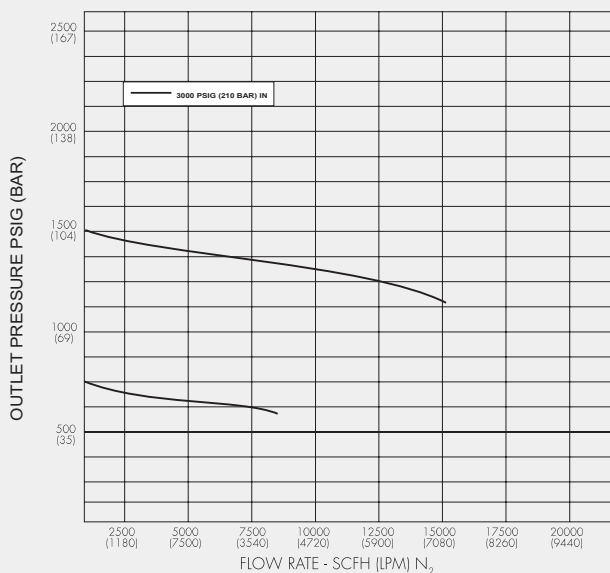
Flow Curves for 455 Series



Flow Curves for 483, 484, 485, 486 Series



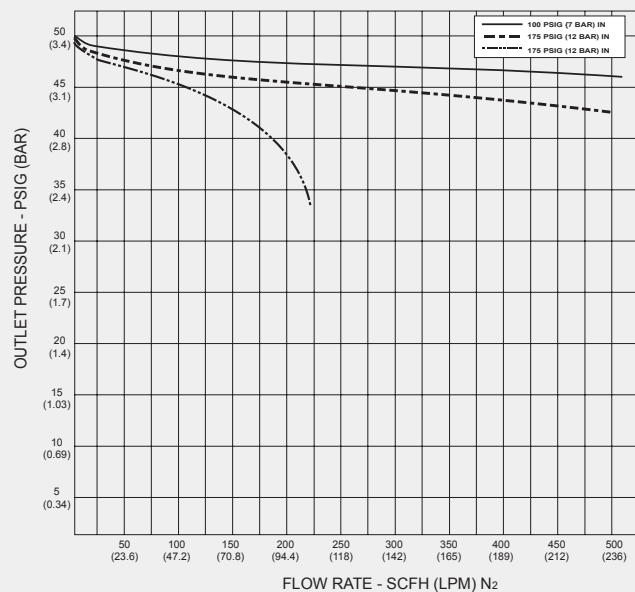
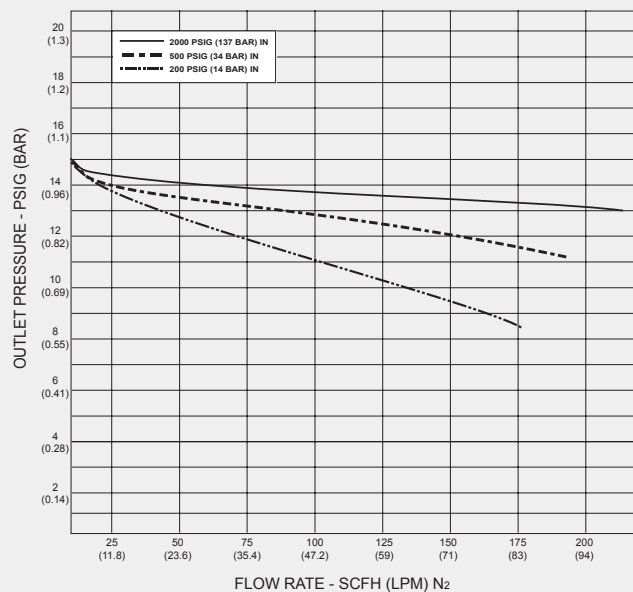
Flow Curves for 492, 493 Series



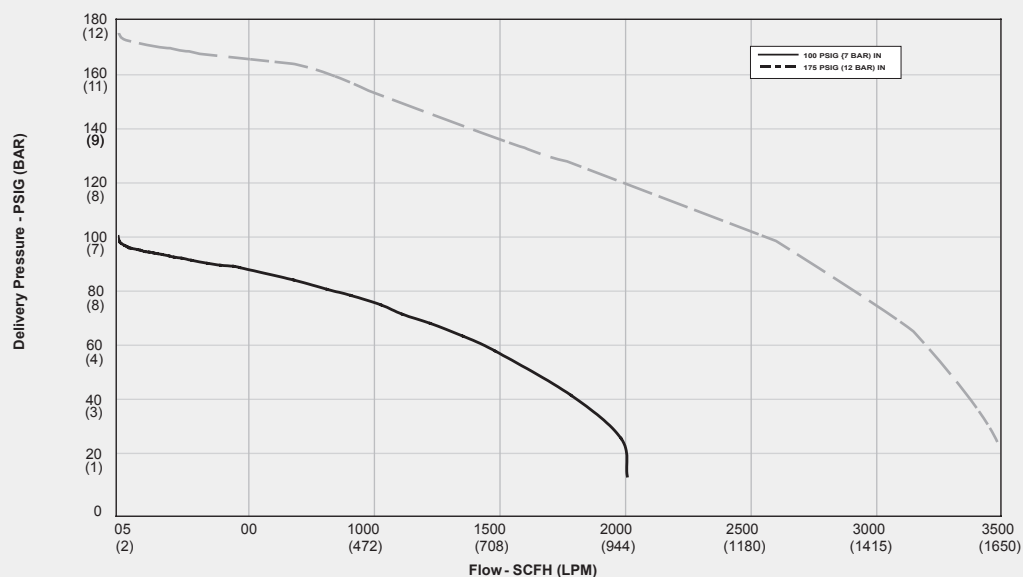
Regulator Flow Curves



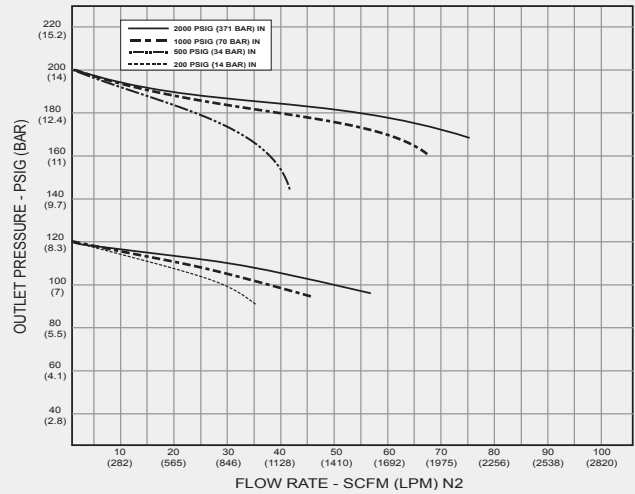
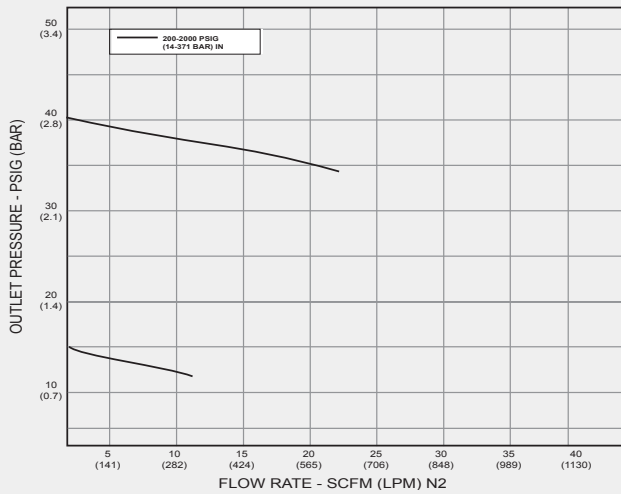
Flow Curves for 325 Series



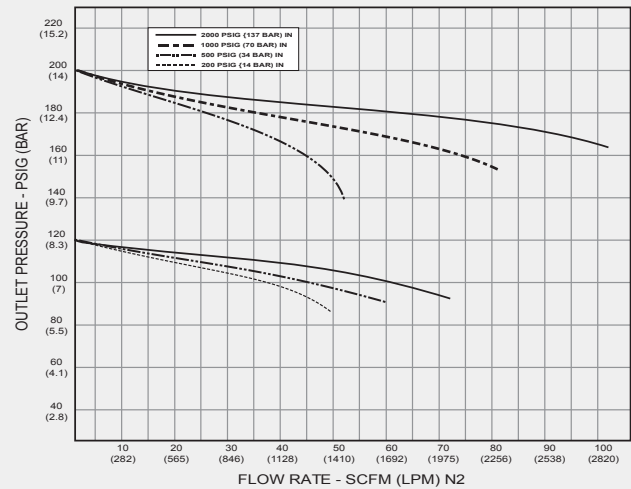
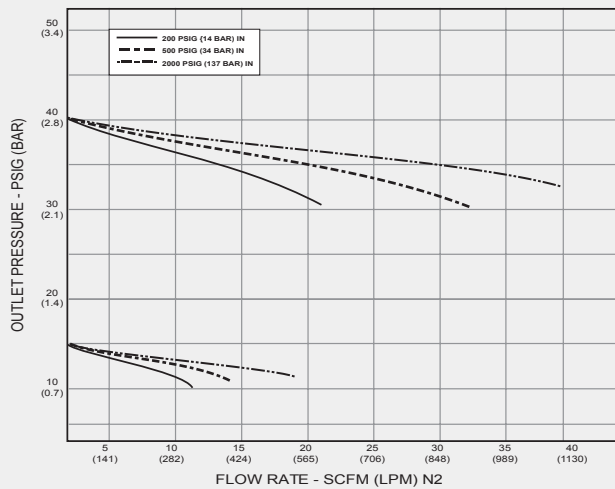
Flow Curves for 308 Series



Flow Curves for 212 Series



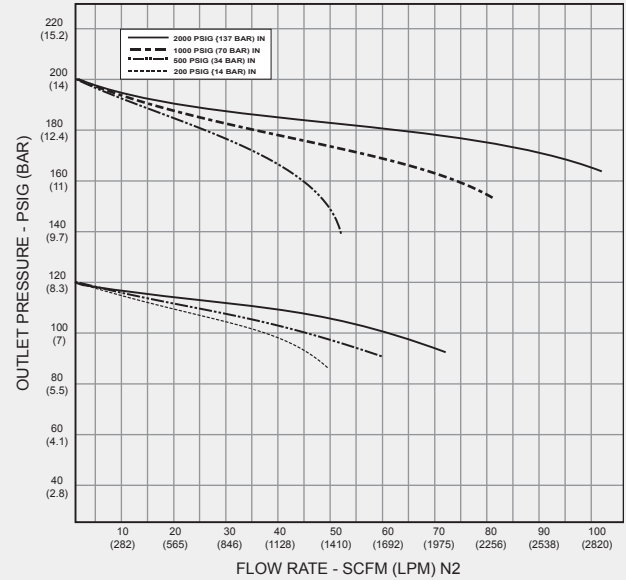
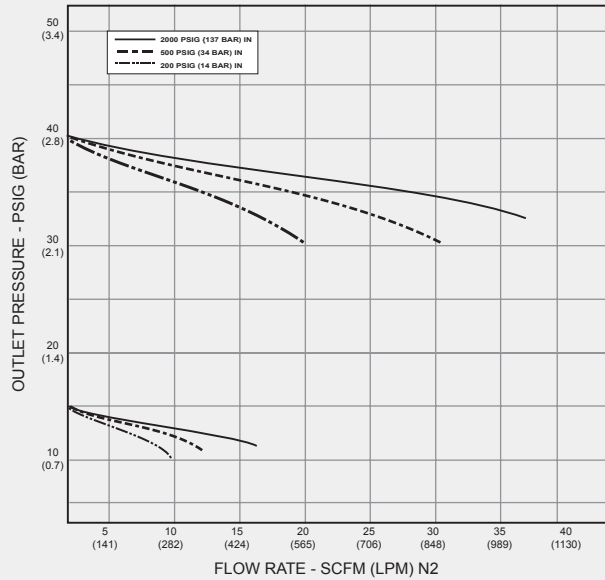
Flow Curves for 205, 206 Series



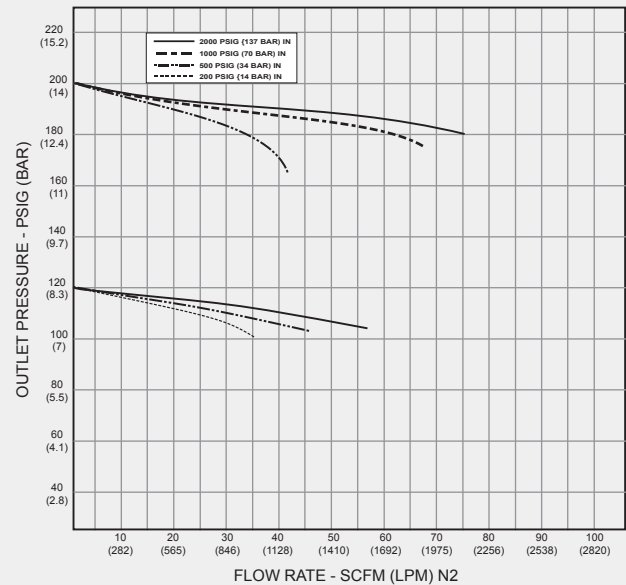
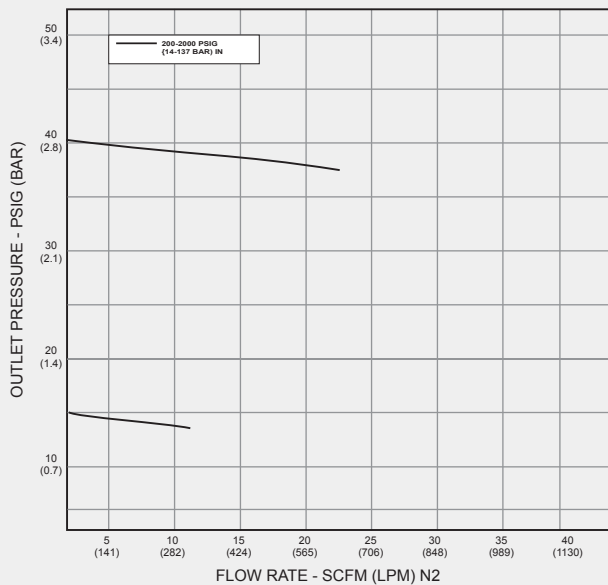
Regulator Flow Curves



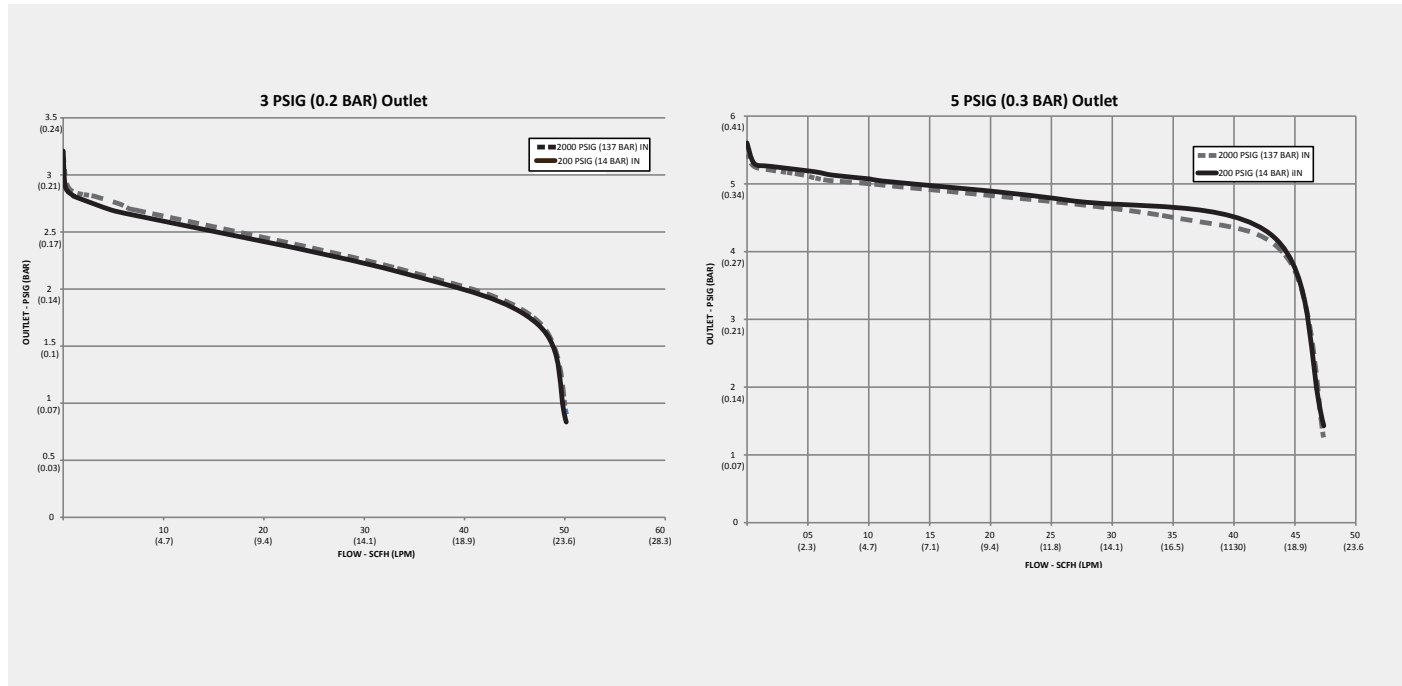
Flow Curves for 109 and 202 Series Single Stage



Flow Curves for 109 Series Dual Stage



Flow Curves for 213



Appendix C: Conversion Charts and Tables



Conversion Tables and Factors

Length	A	CM	FT	IN	M	MICRON	mm	YD
Multiply By								
A	-----	1×10^{-8}	3.28×10^{-9}	3.93×10^{-9}	1×10^{-10}	1×10^{-4}	1×10^{-7}	1.09×10^{-10}
CM	1×10^8	-----	3.28×10^{-2}	3.94×10^{-1}	1×10^{-2}	1×10^4	10	1.09×10^{-2}
FT	3.04×10^9	3.048×10^1	-----	1.2×10^1	3.04×10^{-1}	3.04×10^5	3.04×10^2	3.33×10^{-1}
IN	2.54×10^8	2.54×10^0	8.33×10^{-2}	-----	2.54×10^2	2.54×10^4	2.54×10^1	2.77×10^2
M	1×10^{10}	1×10^2	3.281×10^0	3.93×10^1	-----	1×10^6	1×10^3	1.09×10^0
MICRON	1×10^4	1×10^{-4}	3.28×10^{-6}	3.93×10^{-5}	1×10^{-6}	-----	1×10^{-3}	1.09×10^{-6}
mm	1×10^7	1×10^{-3}	3.28×10^{-3}	3.93×10^{-2}	1×10^{-2}	1×10^3	-----	1.09×10^{-3}
YD	9.14×10^9	9.14×10^1	3×10^0	3.6×10^1	9.14×10^{-1}	9.14×10^5	9.14×10^2	-----

Flow	CM3/MIN	CM3/SEC	FT3/HR	FT3/MIN	M3/HR	M3/MIN	L/HR	L/MIN
Multiply By								
CM3/MIN	-----	1.66×10^{-2}	2.12×10^{-3}	3.53×10^{-5}	6×10^{-5}	1×10^{-6}	6.0×10^{-2}	1×10^{-3}
CM3/SEC	6×10^1	-----	1.27×10^{-1}	2.12×10^{-3}	3.6×10^{-3}	6×10^{-5}	3.6×10^0	6×10^{-2}
FT3/HR	4.72×10^2	7.87×10^1	-----	1.67×10^{-2}	2.83×10^{-2}	4.72×10^{-4}	2.83×10^1	4.72×10^{-1}
FT3/MIN	2.83×10^4	4.72×10^2	6.0×10^1	-----	1.7×10^1	2.83×10^{-2}	1.7×10^{-2}	2.83×10^1
M3/HR	1.67×10^4	2.78×10^2	3.53×10^1	5.89×10^{-2}	-----	1.67×10^{-2}	1×10^3	1.67×10^1
M3/MIN	1×10^6	1.67×10^4	2.12×10^3	3.53×10^1	6.0×10^1	-----	6.0×10^4	1×10^3
L/HR	1.67×10^1	2.78×10^{-1}	3.53×10^{-2}	5.89×10^{-4}	1×10^{-3}	1.67×10^{-5}	-----	1.67×10^{-2}
L/MIN	1×10^3	1.67×10^1	2.12×10^0	3.53×10^{-2}	6.0×10^{-2}	1×10^{-3}	6.0×10^1	-----

Pressure	ATM	BAR	FT OF H2O	IN OF HG	IN OF H2O	KG/CM2	kPa	mm OF HG	PSI
Multiply By									
ATM	-----	1.013	33.932	29.921	407.183	1.033	101.317	760	14.696
BAR	0.987	-----	33.488	29.53	401.859	1.019	100	750.062	14.504
FT. OF H2O	0.029	0.029	-----	0.883	12	0.03	2.989	22.419	0.433
IN OF HG	0.033	0.034	1.134	-----	13.6	0.035	3.377	25.4	0.491
IN OF H2O	0.002	0.002	0.083	0.074	-----	0.003	0.025	1.868	0.036
KG/CM2	0.968	0.981	32.808	28.959	393.701	-----	98.039	735.559	14.223
kPa	0.009	0.01	0.335	0.296	4.015	0.01	-----	7.501	0.145
mm OF HG	0.001	0.001	0.045	0.039	0.535	0.001	0.133	-----	0.019
PSI	0.06805	0.06895	2.3089	2.036	27.7085	0.07031	6.89465	51.175	-----

Weight	GM	KG	MG	OZ	LBS	TON
Multiply By						
GM	-----	0.001	1000	0.035	0.002	1.1×10^{-6}
KG	1000	-----	1×10^6	3.53×10^1	2.205	0.001
MG	0.001	1×10^{-6}	-----	3.53×10^{-4}	2.205×10^{-6}	1.1×10^{-9}
OZ	2.83×10^1	2.83×10^{-2}	2.83×10^4	-----	6.25×10^{-2}	3.13×10^{-5}
LBS	4.54×10^2	4.54×10^1	4.54×10^5	16	-----	5.0×10^{-4}
TON	9.07×10^5	9.07×10^2	9.07×10^8	3.2×10^4	2.0×10^3	-----

Appendix C: Conversion Charts and Tables

Volume	CM3 (ML)	FT3	IN3	M3	US GAL.	L
Multiply By						
CM3 (ML)	-----	3.53×10^{-5}	6.10×10^{-2}	1×10^{-6}	2.56×10^{-3}	1×10^{-3}
FT3	2.83×10^{-4}	-----	1.73×10^{-3}	2.83×10^{-2}	7.48	28.32
IN3	1.64	5.79×10^{-6}	-----	1.64×10^{-5}	4.33×10^{-3}	1.64×10^{-2}
M3	1×10^{-6}	3.53	6.10×10^{-4}	-----	2.64×10^{-2}	1×10^{-3}
US GAL.	3.79×10^{-3}	1.34×10^{-1}	2.31×10^{-2}	3.79×10^{-3}	-----	3.79
L	1×10^{-3}	3.54×10^{-2}	6.10×10^{-1}	1×10^{-3}	2.64×10^{-1}	-----

Temperature	°C	°F	°K	°R
Multiply By				
°C + 17.78	-----	1.8	-----	-----
°C + 273.16	-----	-----	1	-----
°F - 32	0.55556	-----	-----	-----
°F + 459.72	-----	-----	-----	1
°K + 273.16	1	-----	-----	-----
°R - 459.72	-----	1	-----	-----

Density	GMS/CM ³	KG/CM ³	LBS/FT ³	LBS/IN ³	LBS/US GAL.
Multiply By					
GMS/CM ³	-----	1000	6.24×10^{-1}	3.61×10^{-2}	8.35
KG/CM ³	1×10^{-3}	-----	6.24×10^{-2}	3.61×10^{-3}	8.35×10^{-3}
LBS/FT ³	1.60×10^{-2}	1.60×10^{-1}	-----	3.61×10^{-5}	1.33×10^{-1}
LBS/IN ³	2.77×10^{-1}	2.77×10^{-4}	1.73×10^{-3}	-----	2.31×10^{-2}
LBS/US GAL.	1.2×10^{-1}	1.2×10^{-2}	7.48	4.33×10^{-3}	-----

Concentration	
Concentration	Equivalent
1,000,000 ppm	100%
100,000 ppm	10%
10,000 ppm	1%
1,000 ppm	0.10%
100 ppm	0.01%
10 ppm	0.00%
1 ppm	0.00%
1,000 ppb	1 ppm
100 ppb	0.1 ppm
10 ppb	0.001 ppm

Scientific Notation			
Notation	Equivalent	Notation	Equivalent
1×10^{10}	10,000,000,000	1×10^{-1}	0.1
1×10^9	1,000,000,000	1×10^{-2}	0.01
1×10^8	100,000,000	1×10^{-3}	0.001
1×10^7	10,000,000	1×10^{-4}	0.0001
1×10^6	1,000,000	1×10^{-5}	0.00001
1×10^5	100,000	1×10^{-6}	0.000001
1×10^4	10,000	1×10^{-7}	0.000 0001
1×10^3	1,000	1×10^{-8}	0.000 00001
1×10^2	100	1×10^{-9}	0.000 000001
1×10^1	10	1×10^{-10}	0.000 0000001

Physical Constants		
	Value	Units-
Avagadro's Number	6.022×10^{23}	molecules/gm-mole
Gas Law Constant	1.98719	cal/(gm-mol)(°K)
	1.98719	Btu/(lbs-mole)(°R)
	82.0568	(cm ³)(atm)/(gm-mole)(°K)
	0.082 0568	(L)(atm)/(gm-mole)(°K)
	10.7314	(ft ³)(lb)/(in ²)(lbs-mole)(°R)
	0.730228	(ft ³)(atm)/(lbs-mole)(°R)