VICTOR®
AN ESAB® BRAND

SPECIALTY GAS CONTROL
CATALOG

esab.com

A COMMITMENT TO QUALITY

Victor is a global manufacturer dedicated to developing innovative solutions for cutting, gas control and specialty welding applications. We are committed to providing branded solutions to our customers through the use of our Quality Management System and by sustaining continuous improvement practices throughout our business.

Victor® – A Heritage of Innovation

Since its beginning, the Victor brand has represented authenticity, innovation and a deep connection with the end user. These values have contributed to the long and successful history of Victor gas equipment, and to our solutions in the specialty gas control industry.

When you choose Victor products, expect them to offer unparalleled performance, superior productivity and built-to-last dependability.

Victor Specialty Gas Control – Pure Performance

With solutions specifically designed for the high purity, laboratory and technical gas regulation segments, Victor® provides a broad portfolio backed by Victor engineering expertise. With a dedicated assembly and testing facility, we offer:

- Guaranteed product quality and reliability
- Expanded global product offering
- Assistance with complex gas control installation and performance
- Global sales support
- Superior quality engineering and manufacturing
- Service excellence

Dedicated to Exceeding Industry Standards

Victor meets or exceeds industry standards through ongoing industrial and laboratory updates and certifications, including:

- ISO9001 Registered

The ISO 9001 standards focus on the major processes and place great emphasis on making quality management systems closer to the processes and on continual improvement, including the satisfaction of customers and quality manufacturing.

- Helium Leak Rate Certification

Helium leak testing is performed by conducting an outboard test immediately after the unit is assembled. The unit is then attached to a Mass Spectrometer, calibrated quarterly, where an inboard test is performed to ensure compliance with the minimum standard

- Compressed Gas Association (CGA) Compliance CGA compliant with all CGA E-4 testing,
- ISO2503 Compliance

Int'l Customer Care: 1-940-381-1212 / FAX 1-940-483-8178
VictorTechnologies.com

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Shut-Off Valves 2 & 4 Port

Hastelloy diaphragm shut-off valve is used in supply systems for pure, inert, flammable, oxidizing, corrosive, toxic gases and gas mixtures. Maximum gas purity is 6.0.

Available in Brass and Stainless Steel.

LGL 500

Non-corrosive and inert gases with Purity Grade up to 5.

Pressure Regulator recommended for applications where gas is supplied through a pipeline distribution system.

Typical Applications

- Final pressure control in gas systems
- Purging systems
- Process analyzers
- Up to 4.0 Grade

HPL 600

Non-corrosive and inert gases with Purity Grade up to 6.0

Pressure Regulator recommended for applications where gas is supplied through a pipeline distribution system.

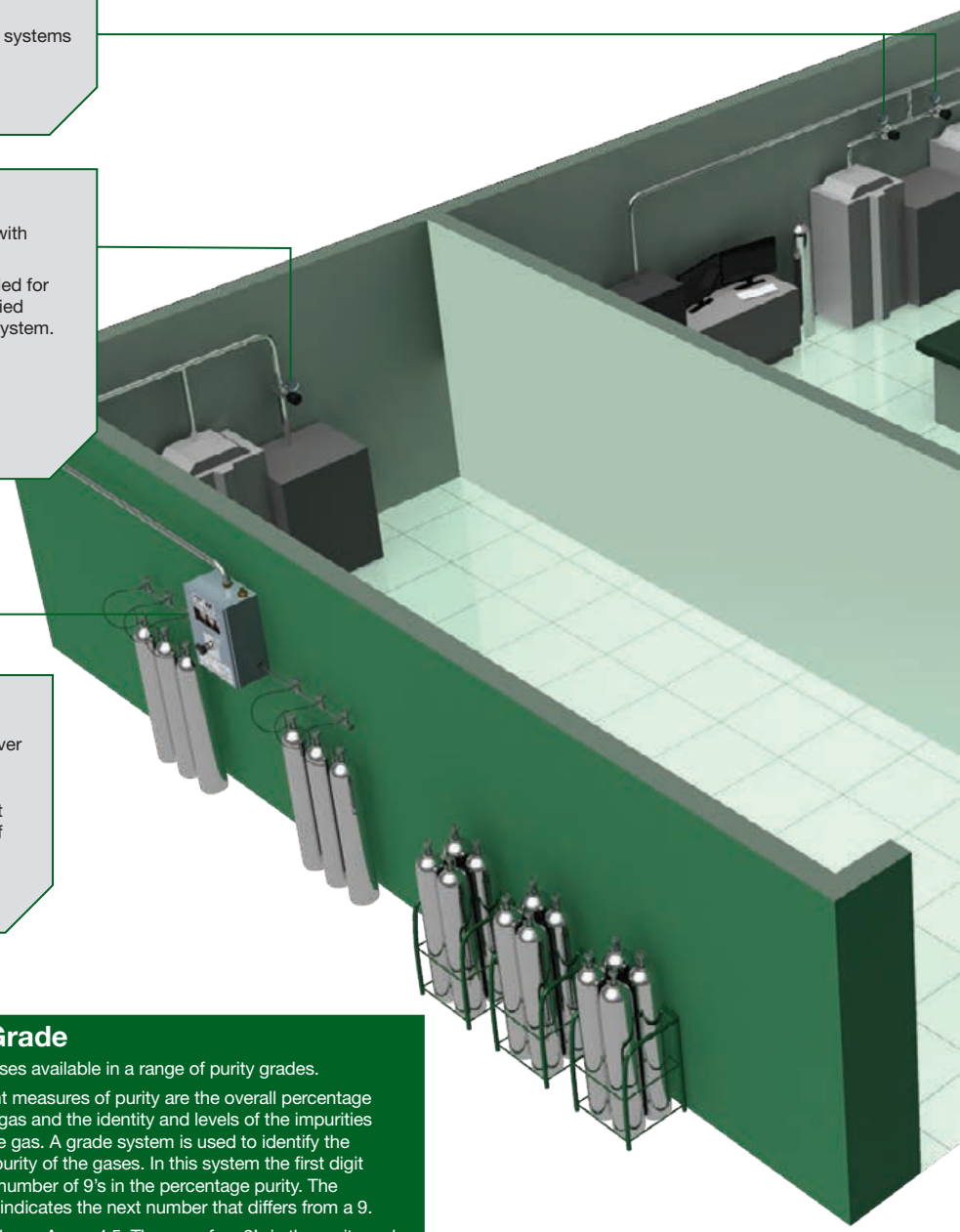
Typical Applications

- Laser gas systems
- Research sampling systems
- Gas chromatography
- Up to 6.0 Grade

VHP 2100

High Purity Automatic Switchover Manifold System designed to provide continuous gas supply to laboratory and process plant applications where depletion of gas supply is unacceptable.

- Up to 6.0 Grade



PERCENTAGE PURITY	PURITY GRADE	TOTAL IMPURITIES
99.99%	4.0	100 ppm
99.995%	4.5	50 ppm
99.999%	5.0	10 ppm
99.9995%	5.5	5 ppm
99.9999%	6.0	1 ppm
99.99999%	7.0	100 ppb

Purity Grade

Specialty Gases available in a range of purity grades.

The important measures of purity are the overall percentage purity of the gas and the identity and levels of the impurities present in the gas. A grade system is used to identify the percentage purity of the gases. In this system the first digit signifies the number of 9's in the percentage purity. The second digit indicates the next number that differs from a 9.

As an example, an Argon 4.5; There are four 9's in the purity and the next digit is a 5 - 99995, purity percentage is 99.995%.

VM 1100

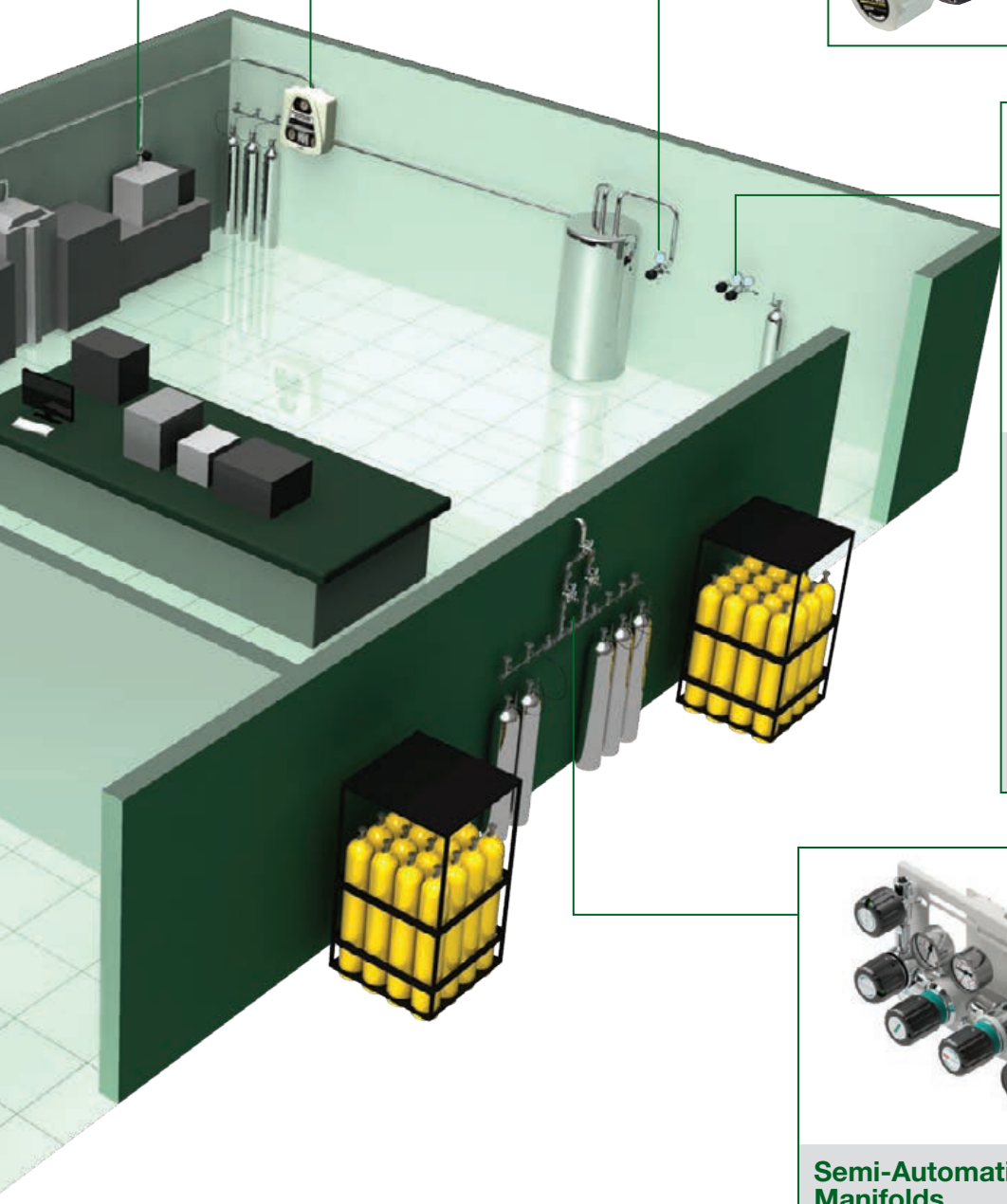
Fully Automatic Manifold System designed to be used with liquid cylinders.

The manifold gives an uninterrupted supply of gas and eliminates the need for the operator to change switches or pressure upon cylinder depletion. No power is required to change over.

ELC4

EDGE™ Liquid cylinder pressure regulator, designed to work with the vaporized gas from liquid vessel.

Typical Application
- Bulk gas distribution
- Laboratories



Single Source Gas Panel (Protocol Station)

Protocol Station
Wall mounting improves safety and provides easy of use.

Available in brass and stainless steel construction. The system comes complete with a flexible hose and check valves.

Typical Applications
- EPA protocol standards
- Gas chromatography
- Diffusion furnaces
- Up to 6.0 Grade

Semi-Automatic Changeover Manifolds

Manifold System designed to provide an uninterrupted supply of gas to any application requiring no down-time. Through pressure differential the switchover takes place without interruption of service.

INTRODUCING THE **ALL NEW LINE OF SPECIALTY GAS CONTROL EQUIPMENT**

Why Choose Victor

End-user/application driven design

- Aesthetic, compact, ergonomic designs
- Machine Barstock body reduces wetted surface thereby saving gas
- Designed for quick configurations to meet customer needs
- Panel mount incorporated into all models
- Variable porting arrangements

Breadth of line

- Corrosive, toxic gasses up to 6.0 purity grade

Global Requirements

- Engineered to meet more stringent bar inlet pressure requirements
- ISO 2503, CGA E-4

Improved Gauge Design

- Snap-on tamper proof lens
- Bar/psi units most accepted worldwide

Superior Quality Manufacturing

- ISO class 7 cleanroom, ISO 8.5 assembly area
- Automated assembly and testing
- Precision optical (non-contact) inspection

Comprehensive Product Offering

- Chem Master 6.0
- Spec Master 6.0
- Lab Master 5.0
- Tech Master 4.5

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HOW TO CHOOSE **A REGULATOR**

Questions & Answers to Consider when selecting a Specialty Gas Regulator

Q. What gas will you be regulating?
A. This determines what type of regulator is best.

Q. What purity is that gas?
A. This determines the materials of construction of the regulator.

Q. Do you want constant delivery pressure?
A. This determines single or dual stage regulation

Q. What outlet pressure does your application require?
A. This determines the delivery range of the regulator as shown on page 5.

Q. What type of outlet connection do you need?
A. Connection is based on application and downstream apparatus.

Q. What additional options would you like installed?
A. All options are listed in the 'options' section of the "how to order" portion.

How To Order

Step 1. Refer to the Regulator Selection Guide beginning on page 67 to identify the type Series of regulator that is best suited for your requirements (Example SGS600 Series)
Step 2. Locate the specifications page for the series of regulator and use the Model Number System to select the Model desired (Example SGS600)
Step 3. Select the inlet pressure that is being supplied to the regulator (Example SGS600-03 which is 3000psi)
Step 4. Select the regulator delivery pressure that is required (example SGS600-03-04 which is 0-90 psi)
Step 5. Select the inlet pressure gauge that is required (Example SGS600-03-04-05 which is stainless steel bar/psi)
Step 6. Select the delivery pressure gauge that is required (Example SGS600-03-04-05-05 which is stainless steel bar/psi)
Step 7. Select the inlet connection that is required (Example SGS600-03-04-05-05-150 which is a CGA 540 Stainless fitting)
Step 8. Select the outlet connection and options that are required (Example SGS600-03-04-05-05-150-48-G which is DRK valve with 1/4" NPT female and Helium Leak Test Certification

MODEL NO. SELECTOR GUIDE

SGS600-03-05-05-05-150-48-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
SGS600	02 870 psi	02 0-22 psi	00 No Gauge	00 No Gauge	000 No Inlet Fittings	00 No Outlet Fittings	A No Options
SGS620	03 3000 psi	03 0-50 psi	05 Bar/PSI	05 Bar/PSI	002 1/8" Compression Tube Stainless Steel	02 1/8" Compression Tube Stainless Steel	F Bonnet Captured Vent Kit
	04 4350 psi	04 0-90 psi	Stainless Steel	Stainless Steel	004 1/4" Compression Tube Stainless Steel	04 1/4" Compression Tube Stainless Steel	G Helium Leak Test Certification
		05 0-150 psi			009 1/4" NPT Male Stainless Steel	09 1/4" NPT Male Stainless Steel	L Compliance Certificate
		07 0-300 psi			137 CGA 170 Stainless Steel	48 DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Stainless Steel	M Panel Mount Locking Nuts (2 units)
		10 0-725 psi			139 CGA 240 Stainless Steel	49 DRK Diffusion resistant Shut-Off Valve 1/8" Tube Stainless Steel	N With Out Relief Valve
					141 CGA 296 Stainless Steel	50 DRK Diffusion resistant Shut-Off Valve 1/4" Tube Stainless Steel	* 300 & 725 psi delivery ranges are not fitted with Relief Valve
					143 CGA 320 Stainless Steel	52 DRK Diffusion resistant Shut-Off Valve 1/4"NPT Male Stainless Steel	
					144 CGA 326 Stainless Steel	53 Control Valve 1/4"NPT Male Stainless Steel	
					145 CGA 330 Stainless Steel		
					146 CGA 346 Stainless Steel		
					147 CGA 350 Stainless Steel		
					150 CGA 540 Stainless Steel		
					152 CGA 580 Stainless Steel		
					153 CGA 590 Stainless Steel		
					154 CGA 660 Stainless Steel		
					157 CGA 705 Stainless Steel		
					158 CGA 992 Stainless Steel		

Rules: **SGL600** 1) Model number for delivery pressures up to 150 psi
SGL620 1) Model number for 300 and 725 psi delivery pressure

MODEL & **ORDERING INFORMATION**

Regulator and Manifold Model Identification Symbols

SERIES	TYPE OF REGULATOR	SERIES	TYPE OF REGULATOR	LSERIES	TYPE OF REGULATOR
GPS400	4.5 Brass Barstock Single Stage	LGS500	5.0 Brass Barstock Single Stage	HPS600	6.0 Brass Barstock Single Stage
GPT400	4.5 Brass Barstock Two Stage	LGT500	5.0 Brass Barstock Two Stage	HPT600	6.0 Brass Barstock Two Stage
GPL400	4.5 Brass Barstock Line	LGL500	5.0 Brass Barstock Line	HPL600	6.0 Brass Barstock Line
SGS600	6.0 Stainless Steel Single Stage	DRK	6.0 Stainless Steel Diffusion Valve	LB150	4.5 Brass Barstock Lecture
SGT600	6.0 Stainless Steel Two Stage	DRL	6.0 Stainless Steel 1/4 Valve with Lever	PR150	5.0 Brass Barstock Calibration
SGL600	6.0 Stainless Steel Line	CRS100	Highly Corrosive Resistant	PR160	5.0 Brass Barstock Calibration
PSS	Stainless Steel Protocol Station	PSB	Brass Protocol Station	SR300	High Flow Carbon Dioxide

Regulator Delivery Ranges

REGULATOR DELIVERY RANGE		GAUGE RANGES
15	0-15 PSIG	-1 to 2.1 bar / -30" Hg to +30 psi
22	0-22 PSIG	-1 to 3 bar / -30" Hg to +43 psi
50	0-50 PSIG	-1 to 5 bar / -30" Hg to + 72 psi
90	0-90 PSIG	-1 to 9 bar / -30" Hg to + 130 psi
150	0-150 PSIG	-1 to 15 bar / -30" Hg to + 220 psi
300	0-300 PSIG	-1 to 30 bar / -30" Hg to + 440 psi
725	0-725 PSIG	-1 to 70 bar / 30" Hg to + 1000 psi

GAUGE RANGES

Regulator Gauges: Unless otherwise noted, high pressure gauges for all oxygen, inert gas, CO_2, N_2O, and hydrogen models are graduated 0-6000 psig. High pressure gauges for fuel gas models are graduated 0-870 psig and 0-600 psig for Acetylene. Low pressure or outlet gauge ranges are determined by the regulator delivery range selected.

Regulator Quick Reference Chart

	MATERIAL OF CONSTRUCTION						STAGE / TYPE			GENERAL APPLICATION
MODEL	STAINLESS STEEL	NICKEL PLATED BRASS BARSTOCK	BRASS BARSTOCK	FORGED BRASS	ELECTROLESS NICKEL PLATED BRASS	ALUMINIUM	SINGLE STAGE	TWO STAGE	LINE	TYPE OF USE
SGS600	●						●			High purity (critical) 6.0 purity grade
SGT600	●							●		High purity (critical) 6.0 purity grade
SGL600	●								●	High purity (critical) 6.0 purity grade
HPS600		●					●			High purity (critical) 6.0 purity grade
HPT600		●						●		High purity (critical) 6.0 purity grade
HPL600		●							●	High purity (critical) 6.0 purity grade
LGS500		●					●			High purity 5.0 purity grade
LGT500		●						●		High purity 5.0 purity grade
LGL500		●							●	High purity 5.0 purity grade
GPS400			●				●			General purpose, non-corrosive 4.5 purity grade
GPT400			●					●		General purpose, non-corrosive 4.5 purity grade
GPL400			●						●	General purpose, non-corrosive 4.5 purity grade
HPS 4			●				●			High pressure
HPL700				●					●	High flow
D-1 (Dome)			●						Dome Regulator	Assist gas
CRS100					●		●			Corrosion resistant
PR150			●				●			Calibration gas
PR160		●					●			Calibration gas
LB150		●					●			Lecture Bottle
SR310/311/312						●	●			Carbon Dioxide

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CHEM MASTER SG600 SERIES
6.0 STAINLESS STEEL BARSTOCK REGULATOR

Chem Master SG600 Series regulators are intended for primary pressure gas control of:

- **Corrosive**
- **Toxic**
- **High Purity gases** (up to 6.0 Grade)

SGS600 SERIES

The Chem Master SG600 series regulators are intended for primary pressure gas control of corrosive, toxic, high purity gases, up to 6.0 purity grade.

SGS600 Series
Stainless Steel Single Stage Regulator for applications where slight pressure variance in delivery pressure is acceptable (as cylinder pressure decreases)

SGT600 Series
Stainless Steel Two Stage Regulator for applications where constant pressure is required (as cylinder pressure decreases)

SGL600 Series
Stainless Steel Line Regulator for gas applications, for distribution systems (pipelines)

SGT600 SERIES

SGL600 SERIES

CHEM MASTER SG600 SERIES
6.0 STAINLESS STEEL BARSTOCK REGULATOR
SGL600 SERIES

TYPICAL APPLICATIONS
Gas chromatography
High purity carrier gases
Zero, span and calibration gases
Toxic and corrosive gases
High purity chamber pressurization

MATERIALS	
Body	316L Stainless Steel Barstock
Bonnet	Nickel Plated Brass Barstock
Seat	PCTFE
Diaphragm (regulator)	316L Stainless Steel
Piston (regulator)	316L Stainless Steel
Seals	PTFE
Filter	10 Micron sintered 316L Stainless Steel

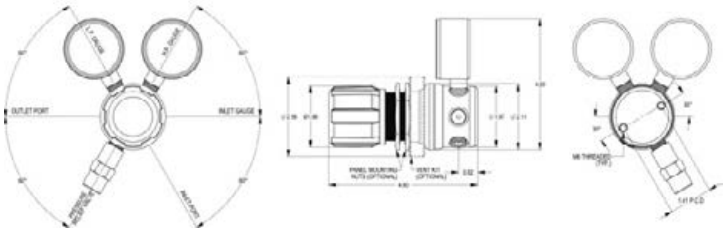
FEATURES
Six port configuration
Front and rear panel mounting capabilities
Encapsulated seat design
Low wetted surface area
Full range of inlet and outlet fittings
Fitted pressure relief valve (Single and Two stage regulators)
Optional captured bonnet vent kit

SPECIFICATION			
Maximum Inlet Pressure	60 bar (870 psig), 207 bar (3000 psig), 300 bar (4350 psig)*		
Delivery Pressure Range psig	0-22 psig, 0-50 psig, 0-90 psig, 0-150 psig, 0-300 psig, 0-725 psig		
Delivery Pressure Range bar	0-1.5 bar, 0-3.5 bar, 0-6 bar, 0-10 bar, 0-20 bar, 0-50 bar		
Gauges	50 mm (2") diameter stainless steel, snap-on tamper proof lens		
Ports	1/4" NPT Female		
Temperature Range	-40º C to +60º C (-40 F to 140º F)		
Helium Leak Integrity	1 X 10^{-8} scc/sec		
Flow Coefficient	SGS / SGL	SGT	
	C_v=0.094	C_v=0.078	(diaphragm regulator)
	C_v=0.088	C_v=0.072	(piston regulator)
Ports	1/4" NPT Female		
Weight	SGL600 1.0 kg (2.2 lb) / SGS600 1.1 kg (2.5 lb) / SGT600 1.5kg (3.5lb)		
	SGL620 1.2 kg (2.7 lb) / SGS620 1.3 kg (2.8 lb) / SGT620 1.8kg (4.0lb)		

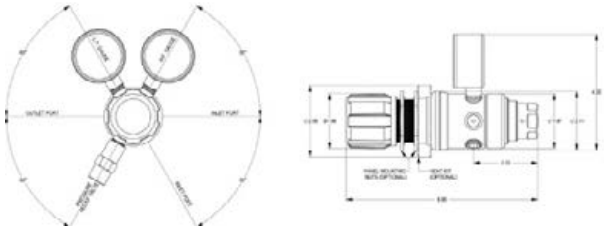
*Single and Two Stage regulators with no fitting fitted in to the regulator

DIMENSIONS

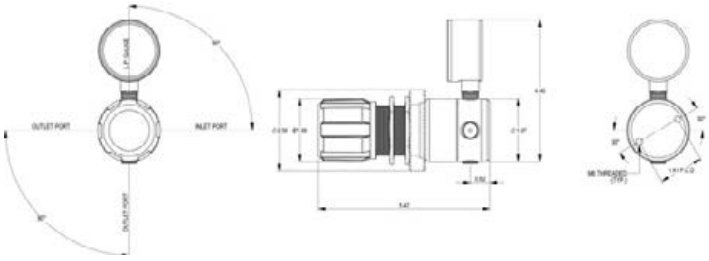
SINGLE STAGE REGULATOR
SG600 Series – Single Stage diaphragm regulator with relief valve



TWO STAGE REGULATOR
SG600 Series – Two Stage diaphragm regulator with relief valve



LINE REGULATOR
SG600 Series – Line regulator with no relief valve



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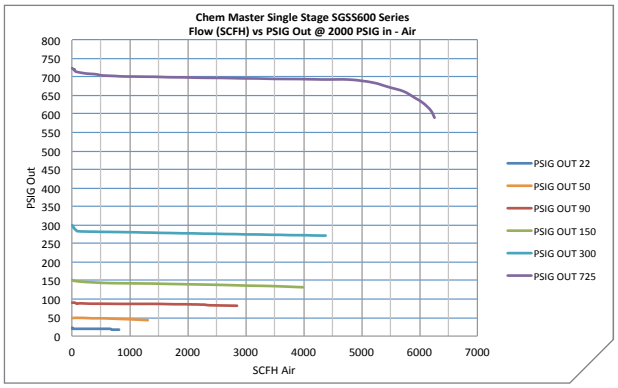
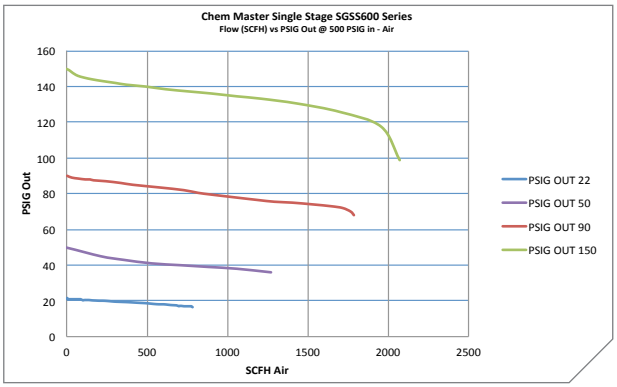
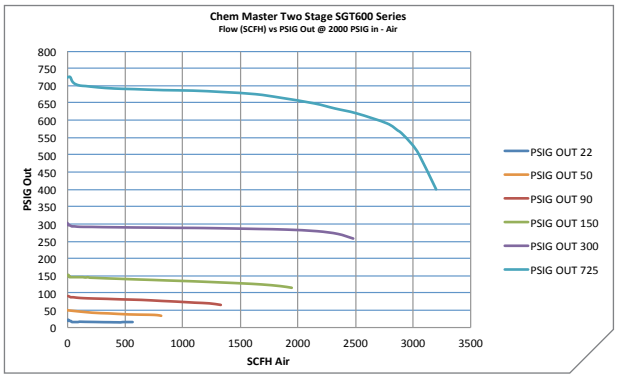
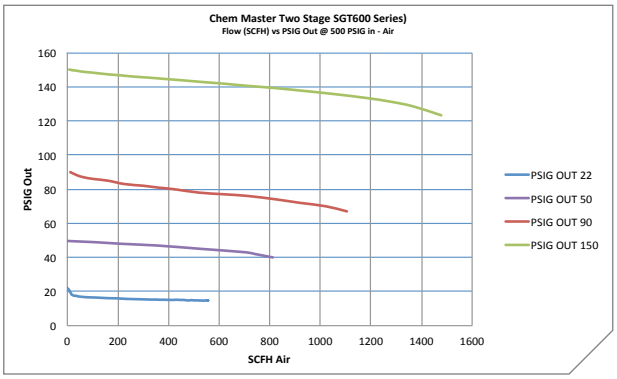
CHEM MASTER SG600 SERIES
6.0 STAINLESS STEEL BARSTOCK REGULATOR

FLOW PERFORMANCE









MODEL NO. SELECTOR GUIDE

SGS600-03-05-05-05-150-48-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
SGS600	**02** 870 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
SGS620	**03** 3000 psi	**03** 0-50 psi	**05** Bar/PSI	**05** Bar/PSI	**002** 1/8" Compression Tube Stainless Steel	**02** 1/8" Compression Tube Stainless Steel	**F** Bonnet Captured Vent Kit
	04 4350 psi	**04** 0-90 psi	Stainless Steel	Stainless Steel	**004** 1/4" Compression Tube Stainless Steel	**04** 1/4" Compression Tube Stainless Steel	**G** Helium Leak Test Certification
		05 0-150 psi			**009** 1/4" NPT Male Stainless Steel	**09** 1/4" NPT Male Stainless Steel	**L** Compliance Certificate
		07 0-300 psi			**137** CGA 170 Stainless Steel	**48** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Stainless Steel	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**139** CGA 240 Stainless Steel	**49** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Stainless Steel	**N** With Out Relief Valve
					141 CGA 296 Stainless Steel	**50** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Stainless Steel	* 300 & 725 psi delivery ranges are not fitted with Relief Valve
					143 CGA 320 Stainless Steel	**52** DRK Diffusion resistant Shut-Off Valve 1/4"NPT Male Stainless Steel	
					144 CGA 326 Stainless Steel	**53** Control Valve 1/4"NPT Male Stainless Steel	
					145 CGA 330 Stainless Steel		
					146 CGA 346 Stainless Steel		
					147 CGA 350 Stainless Steel		
					150 CGA 540 Stainless Steel		
					152 CGA 580 Stainless Steel		
					153 CGA 590 Stainless Steel		
					154 CGA 660 Stainless Steel		
					157 CGA 705 Stainless Steel		
					158 CGA 992 Stainless Steel		

Rules: **SGL600** 1) Model number for delivery pressures up to 150 psi
SGL620 1) Model number for 300 and 725 psi delivery pressure
SGS600 & SGS620 1) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available

CHEM MASTER SG600 SERIES
6.0 STAINLESS STEEL BARSTOCK REGULATOR

MODEL NO. SELECTOR GUIDE

SGT600-03-05-05-05-150-48-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
SGT600	**02** 870 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
SGT620	**03** 3000 psi	**03** 0-50 psi	**05** Bar/PSI	**05** Bar/PSI	**002** 1/8" Compression Tube Stainless Steel	**02** 1/8" Compression Tube Stainless Steel	**F** Bonnet Captured Vent Kit
	04 4350 psi	**04** 0-90 psi	Stainless Steel	Stainless Steel	**004** 1/4" Compression Tube Stainless Steel	**04** 1/4" Compression Tube Stainless Steel	**G** Helium Leak Test Certification
		05 0-150 psi			**009** 1/4" NPT Male Stainless Steel	**09** 1/4" NPT Male Stainless Steel	**L** Compliance Certificate
		07 0-300 psi			**139** CGA 240 Stainless Steel	**48** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Stainless Steel	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**141** CGA 296 Stainless Steel	**49** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Stainless Steel	**N** With Out Relief Valve
					143 CGA 320 Stainless Steel	**50** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Stainless Steel	* 300 & 725 psi delivery ranges are not fitted with Relief Valve
					144 CGA 326 Stainless Steel	**52** DRK Diffusion resistant Shut-Off Valve 1/4"NPT Male Stainless Steel	
					145 CGA 330 Stainless Steel	**53** Control Valve 1/4"NPT Male Stainless Steel	
					146 CGA 346 Stainless Steel		
					147 CGA 350 Stainless Steel		
					150 CGA 540 Stainless Steel		
					152 CGA 580 Stainless Steel		
					153 CGA 590 Stainless Steel		
					154 CGA 660 Stainless Steel		
					157 CGA 705 Stainless Steel		
					158 CGA 992 Stainless Steel		

Rules: **SGT600** 1) Model number for delivery pressures up to 150 psi
SGT620 1) Model number for 300 and 725 psi delivery pressure
SGT600 & SGT620 1) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available

MODEL NO. SELECTOR GUIDE

SGL600-03-05-00-05-000-02-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
SGL600	**03** 3000 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
SGL620		**03** 0-50 psi		**05** Bar/PSI	**002** 1/8" Compression Tube Stainless Steel	**02** 1/8" Compression Tube Stainless Steel	**F** Bonnet Captured Vent Kit
		04 0-90 psi		Stainless Steel	**004** 1/4" Compression Tube Stainless Steel	**04** 1/4" Compression Tube Stainless Steel	**G** Helium Leak Test Certification
		05 0-150 psi			**009** 1/4" NPT Male Stainless Steel	**09** 1/4" NPT Male Stainless Steel	**L** Compliance Certificate
		07 0-300 psi			**139** CGA 240 Stainless Steel	**48** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Stainless Steel	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**141** CGA 296 Stainless Steel	**49** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Stainless Steel	* All line regulators are supplied with no relief valve fitted
					143 CGA 320 Stainless Steel	**50** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Stainless Steel	
					144 CGA 326 Stainless Steel	**52** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Stainless Steel	
					145 CGA 330 Stainless Steel	**53** Control Valve 1/4" NPT Male Stainless Steel	
					146 CGA 346 Stainless Steel		
					147 CGA 350 Stainless Steel		
					150 CGA 540 Stainless Steel		
					152 CGA 580 Stainless Steel		
					153 CGA 590 Stainless Steel		
					154 CGA 660 Stainless Steel		
					157 CGA 705 Stainless Steel		
					158 CGA 992 Stainless Steel		

Rules: **SGL600** 1) Model number for delivery pressures up to 150 psi
SGL620 1) Model number for 300 and 725 psi delivery pressure

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SPEC MASTER HP600 SERIES
6.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

Spec Master HP600 Series regulators are intended for primary pressure gas control of:

- **Non-Corrosive**
- **High Purity gases** (up to 6.0 Grade)

HPS600 SERIES

The Spec Master HP600 series regulators are intended for primary pressure gas control of non corrosive, high purity gases, up to 6.0 purity grade.

HPS600 Series
Nickel Plated Brass Single Stage Regulator for applications where slight pressure variance in delivery pressure is acceptable (as cylinder pressure decreases)

HPT600 Series
Nickel Plated Brass Two Stage Regulator for applications where constant pressure is required (as cylinder pressure decreases)

HPL600 Series
Nickel Plated Brass Line Regulator for gas applications, for distribution systems (pipelines)

HPT600 SERIES

HPL600 SERIES

SPEC MASTER HP600 SERIES
6.0 NICKEL PLATED BRASS BARSTOCK REGULATOR
HP600 SERIES

TYPICAL APPLICATIONS
Gas chromatography
High purity carrier gases
Zero, span and calibration gases
Toxic and corrosive gases
High purity chamber pressurization

MATERIALS	
Body	Nickel Plated Brass Barstock
Bonnet	Nickel Plated Brass Barstock
Seat	PCTFE
Diaphragm (regulator)	316L Stainless Steel
Piston (regulator)	Nickel Plated Brass
Seals	PTFE
Filter	10 Micron sintered 316L Stainless Steel

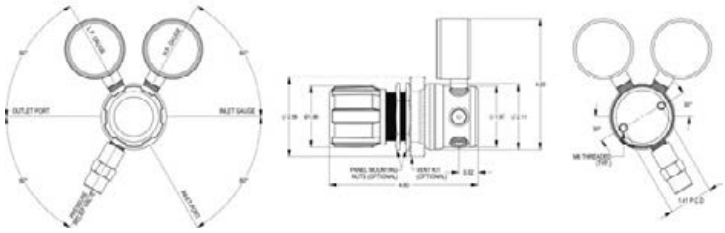
FEATURES
Six port configuration
Front and rear panel mounting capabilities
Encapsulated seat design
Low wetted surface area
Full range of inlet and outlet fittings
Fitted pressure relief valve (Single and Two stage regulators)
Optional captured bonnet vent kit

SPECIFICATION			
Maximum Inlet Pressure	60 bar (870 psig), 207 bar (3000 psig), 300 bar (4350 psig)*		
Delivery Pressure Range psig	0-22 psig, 0-50 psig, 0-90 psig, 0-150 psig, 0-300 psig, 0-725 psig		
Delivery Pressure Range bar	0-1.5 bar, 0-3.5 bar, 0-6 bar, 0-10 bar, 0-20 bar, 0-50 bar		
Gauges	50 mm (2") diameter stainless steel, snap-on tamper proof lens		
Ports	1/4" NPT Female		
Temperature Range	-40º C to +60º C (-40 F to 140º F)		
Helium Leak Integrity	1 X 10^{-8} scc/sec		
Flow Coefficient	SGS / SGL	SGT	
	C_v=0.094	C_v=0.078	(diaphragm regulator)
	C_v=0.088	C_v=0.072	(piston regulator)
Ports	1/4" NPT Female		
Weight	HPL600 1.0 kg (2.2 lb) / SGS600 1.1 kg (2.5 lb) / SGT600 1.5 kg (3.5 lb)		
	HPL620 1.2 kg (2.7 lb) / SGS620 1.3 kg (2.8 lb) / SGT620 1.8 kg (4.0 lb)		

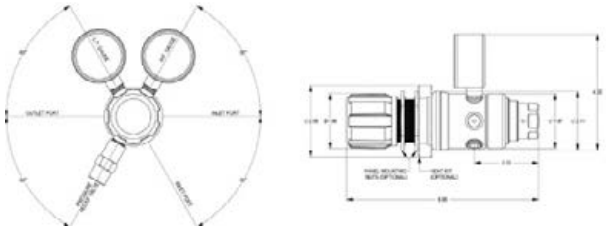
*Single and Two Stage regulators with no fitting fitted in to the regulator

DIMENSIONS

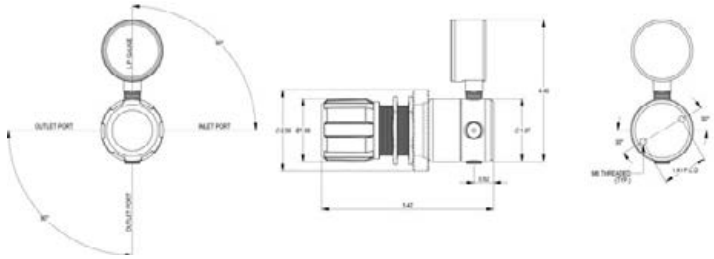
SINGLE STAGE REGULATOR
HP600 Series – Single Stage diaphragm regulator with relief valve



TWO STAGE REGULATOR
HP600 Series – Two Stage diaphragm regulator with relief valve



LINE REGULATOR
HP600 Series – Line regulator with no relief valve



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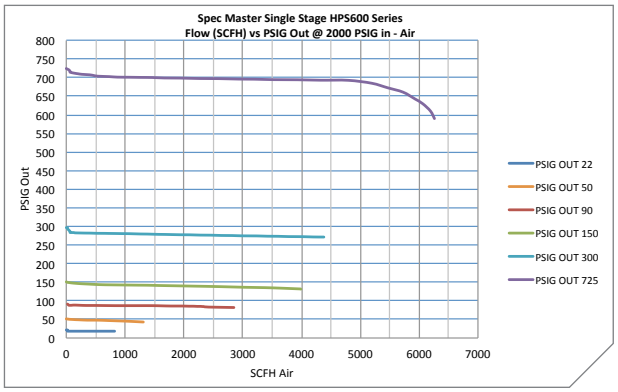
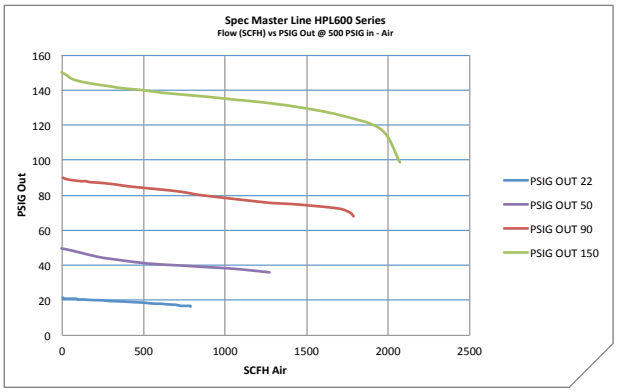
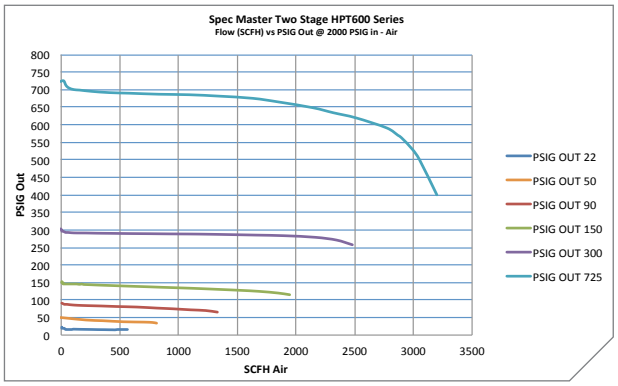
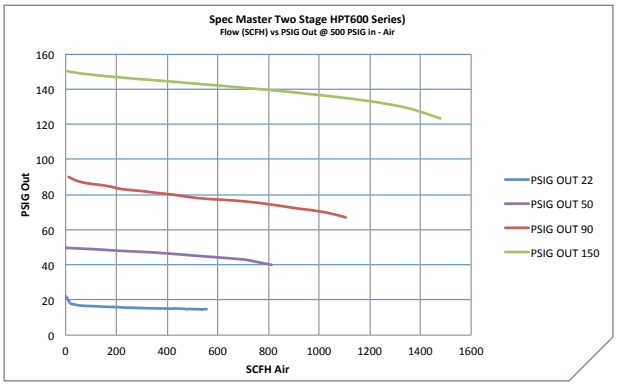
SPEC MASTER HP600 SERIES
6.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

FLOW PERFORMANCE









MODEL NO. SELECTOR GUIDE

HPS600-03-05-03-03-102-01-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
HPS600	**02** 870 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
HPS620	**03** 3000 psi	**03** 0-50 psi	**05** Bar/PSI	**05** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**F** Bonnet Captured Vent Kit
	04 4350 psi	**04** 0-90 psi	Plated Brass	Plated Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	**G** Helium Leak Test Certification
		05 0-150 psi			**008** 1/4" NPT Male Brass Chrome Plated	**08** 1/4" NPT Male Brass Chrome Plated	**L** Compliance Certificate
		07 0-300 psi			**089** CGA 170 Brass Chrome Plated	**32** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass Chrome Plated	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**093** CGA 296 Brass Chrome Plated	**33** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass Chrome Plated	**N** With Out Relief Valve
					095 CGA 320 Brass Chrome Plated	**34** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass Chrome Plated	* 300 & 725 psi delivery ranges are not fitted with Relief Valve
					096 CGA 326 Brass Chrome Plated	**36** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass Chrome Plated	
					097 CGA 330 Brass Chrome Plated	**39** Control Valve 1/4" NPT Brass Chrome Plated	
					098 CGA 346 Brass Chrome Plated		
					099 CGA 350 Brass Chrome Plated		
					100 CGA 500 Brass Chrome Plated		
					101 CGA 510 Brass Chrome Plated		
					102 CGA 540 Brass Chrome Plated		
					103 CGA 555 Brass Chrome Plated		
					104 CGA 580 Brass Chrome Plated		
					105 CGA 590 Brass Chrome Plated		
					109 CGA 992 Brass Chrome Plated		

Rules: **HPS600** 1) Model number for delivery pressures up to 150 psi
HPS620 1) Model number for 300 and 725 psi delivery pressure
HPS600 & HPS620 1) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available

SPEC MASTER HP600 SERIES
6.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

MODEL NO. SELECTOR GUIDE

HPT600-03-05-03-03-102-01-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
HPT500	**02** 870 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
HPT620	**03** 3000 psi	**03** 0-50 psi	**05** Bar/PSI	**05** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**F** Bonnet Captured Vent Kit
	04 4350 psi	**04** 0-90 psi	Plated Brass	Plated Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	**G** Helium Leak Test Certification
		05 0-150 psi			**008** 1/4" NPT Male Brass	**08** 1/4" NPT Male Brass Chrome Plated	**L** Compliance Certificate
		07 0-300 psi			**092** CGA 280 Brass Chrome Plated	**32** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass Chrome Plated	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**093** CGA 296 Brass Chrome Plated	**33** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass Chrome Plated	**N** With Out Relief Valve
					095 CGA 320 Brass Chrome Plated	**34** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass Chrome Plated	* 300 & 725 psi delivery ranges are not fitted with Relief Valve
					096 CGA 326 Brass Chrome Plated	**36** DRK Diffusion resistant Shut-Off Valve 1/4"NPT Male Brass Chrome Plated	
					098 CGA 346 Brass Chrome Plated	**39** Control Valve 1/4"NPT Brass Chrome Plated	
					099 CGA 350 Brass Chrome Plated		
					100 CGA 500 Brass Chrome Plated		
					102 CGA 540 Brass Chrome Plated		
					103 CGA 555 Brass Chrome Plated		
					104 CGA 580 Brass Chrome Plated		
					105 CGA 590 Brass Chrome Plated		
					109 CGA 992 Brass Chrome Plated		

Rules: **HPT600** 1) Model number for delivery pressures up to 150 psi
HPT620 1) Model number for 300 and 725 psi delivery pressure
HPT600 & HPT620 1) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available

MODEL NO. SELECTOR GUIDE

HPL600-03-02-00-03-000-01-FG

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
HPL600	**03** 3000 psi	**02** 0-22 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
HPL620		**03** 0-50 psi		**05** Bar/PSI	**002** 1/8" Compression Tube Stainless Steel	**02** 1/8" Compression Tube Stainless Steel	**F** Bonnet Captured Vent Kit
		04 0-90 psi		Stainless Steel	**004** 1/4" Compression Tube Stainless Steel	**04** 1/4" Compression Tube Stainless Steel	**G** Helium Leak Test Certification
		05 0-150 psi			**009** 1/4" NPT Male Stainless Steel	**09** 1/4" NPT Male Stainless Steel	**L** Compliance Certificate
		07 0-300 psi			**139** CGA 240 Stainless Steel	**48** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Stainless Steel	**M** Panel Mount Locking Nuts (2 units)
		10 0-725 psi			**141** CGA 296 Stainless Steel	**49** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Stainless Steel	* All line regulators are supplied with no relief valve fitted
					143 CGA 320 Stainless Steel	**50** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Stainless Steel	
					144 CGA 326 Stainless Steel	**52** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Stainless Steel	
					145 CGA 330 Stainless Steel	**53** Control Valve 1/4" NPT Male Stainless Steel	
					146 CGA 346 Stainless Steel		
					147 CGA 350 Stainless Steel		
					150 CGA 540 Stainless Steel		
					152 CGA 580 Stainless Steel		
					153 CGA 590 Stainless Steel		
					154 CGA 660 Stainless Steel		
					157 CGA 705 Stainless Steel		
					158 CGA 992 Stainless Steel		

Rules: **SGL600** 1) Model number for delivery pressures up to 150 psi
SGL620 1) Model number for 300 and 725 psi delivery pressure

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LAB MASTER LG500 SERIES
5.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

Lab Master LG500 Series regulators are intended for primary pressure gas control of:

- **Non-Corrosive**
- **High Purity gases** (up to 5.0 Grade)

LGS500 SERIES

The Lab Master LG500 series regulators are intended for primary pressure gas control of non corrosive, high purity gases, up to 5.0 purity grade.

LGS500 Series
Nickel Plated Brass Single Stage Regulator for applications where slight pressure variance in delivery pressure is acceptable (as cylinder pressure decreases)

LGT500 Series
Nickel Plated Brass Two Stage Regulator for applications where constant pressure is required (as cylinder pressure decreases)

LGL500 Series
Nickel Plated Brass Line Regulator for gas applications, for distribution systems (pipelines)

LGT500 SERIES

LGL500 SERIES

LAB MASTER LG500 SERIES
5.0 NICKEL PLATED BRASS BARSTOCK REGULATOR
LG500 SERIES

TYPICAL APPLICATIONS
Laboratory research
Analytical process
Process analysers
Gas chromatography
High purity cgas handling

MATERIALS	
Body	Nickel Plated Brass Barstock
Bonnet	High Strength Alloy
Seat	Nylon
Diaphragm (regulator)	316L Stainless Steel
Seals	PTFE
Filter	10 Micron sintered 316L Stainless Steel

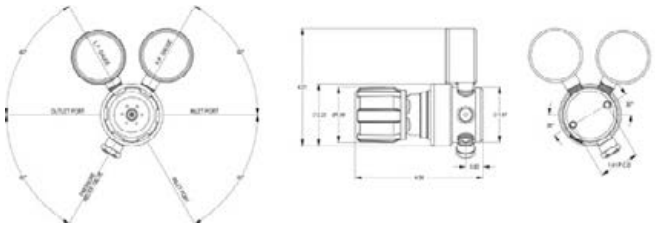
FEATURES
Six port configuration
Rear panel mounting capabilities (Line and single stage regulators)
Encapsulated seat design
Low wetted surface area
Full range of inlet and outlet fittings
Fitted pressure relief valve (Single and Two stage regulators)

SPECIFICATION		
Maximum Inlet Pressure	25 bar (360 psig), 60 bar (870 psig), 207 bar (3000 psig), 300 bar (4350 psig)*	
Delivery Pressure Range psig	0-15 psig, 0-22 psig, 0-50 psig, 0-90 psig, 0-150 psig	
Delivery Pressure Range bar	0-1 bar, 0-1.5 bar, 0-3.5 bar, 0-6 bar, 0-10 bar	
Gauges	50 mm (2") diameter snap-on tamper proof lens	
Ports	1/4" NPT Female	
Temperature Range	-40° C to +60° C (60° F to 140° F)	
Flow Coefficient	LGS / LGL	LGT
	C_V=0.094	C_V=0.078
Ports	1/4" NPT Female	
Weight	LGL500 / 510 0.95 kg (2.1 lb)	
	LGS500 / 510 1.05 kg (2.3 lb)	
	LGT500 / 510 1.5 kg (3.5 lb)	

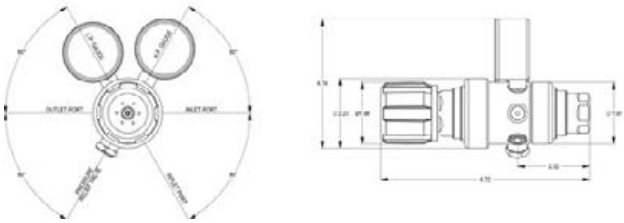
*Single and Two Stage regulators with no fitting fitted in to the regulator

DIMENSIONS

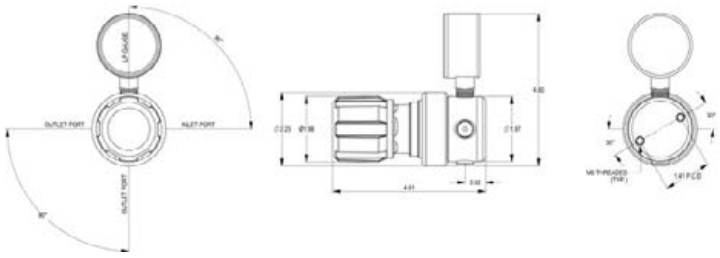
SINGLE STAGE REGULATOR
LG500 Series – Single Stage diaphragm regulator with relief valve



TWO STAGE REGULATOR
LG500 Series – Two Stage diaphragm regulator with relief valve



LINE REGULATOR
LG500 Series – Line regulator with no relief valve



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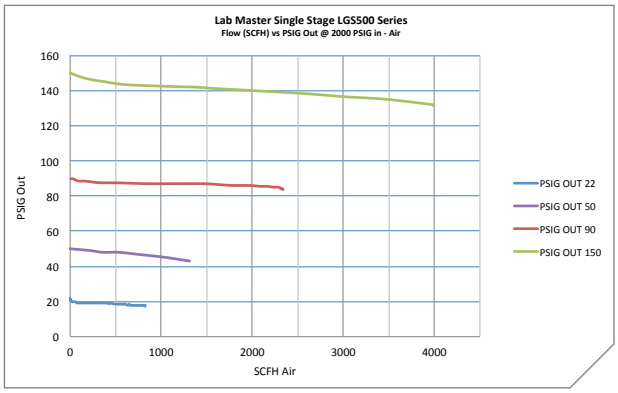
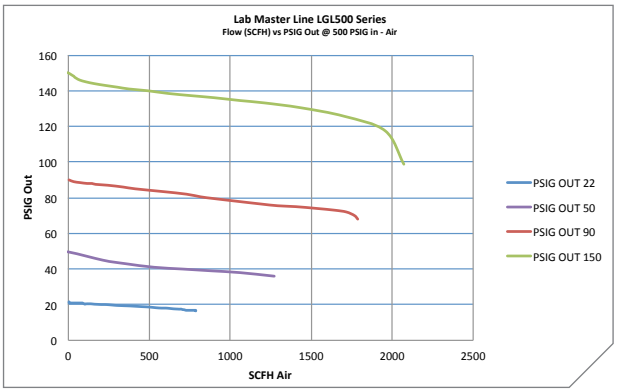
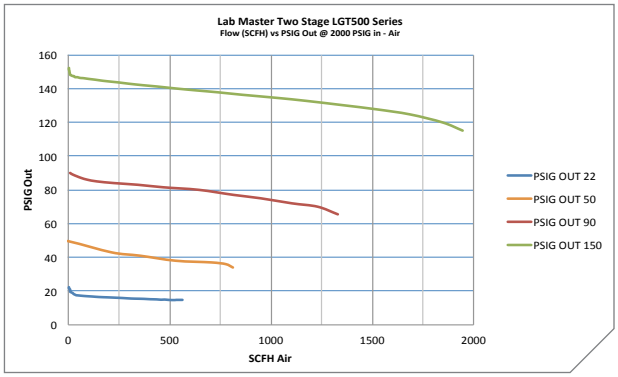
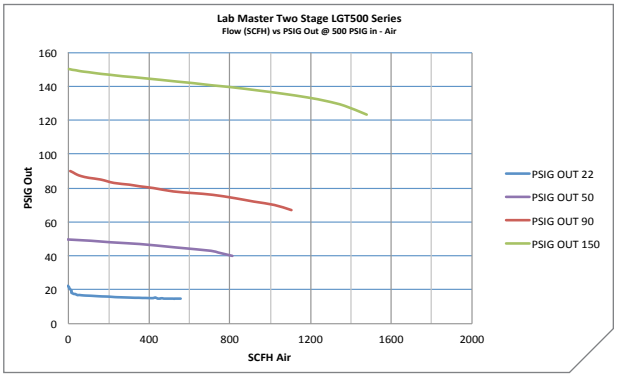
LAB MASTER LG500 SERIES
5.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

FLOW PERFORMANCE









MODEL NO. SELECTOR GUIDE

LGS500-03-05-03-03-102-39-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
LGS500	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
LGS510	**03** 3000 psi	**02** 0-22 psi	**03** Bar/PSI	**03** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acelytene	**04** 4350 psi	**03** 0-50 psi	Plated Brass	Plated Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	**N** With Out Relief Valve
		04 0-90 psi			**008** 1/4" NPT Male Brass Chrome Plated	**08** 1/4" NPT Male Brass Chrome Plated	
		05 0-150 psi			**093** CGA 296 Brass Chrome Plated	**32** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass Chrome Plated	
					094 CGA 300 Brass Chrome Plated	**33** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass Chrome Plated	
					095 CGA 320 Brass Chrome Plated	**34** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass Chrome Plated	
					096 CGA 326 Brass Chrome Plated	**36** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass Chrome Plated	
					098 CGA 346 Brass Chrome Plated	**39** Control Valve 1/4" NPT Brass Chrome Plated	
					099 CGA 350 Brass Chrome Plated	**40** Control Valve 1/8" Compression Brass Chrome Plated	
					100 CGA 500 Brass Chrome Plated	**41** Control Valve 1/4" Compression Brass Chrome Plated	
					101 CGA 510 Brass Chrome Plated		
					102 CGA 540 Brass Chrome Plated		
					104 CGA 580 Brass Chrome Plated		
					105 CGA 590 Brass Chrome Plated		
					109 CGA 992 Brass Chrome Plated		
					110 CGA 993 Brass Chrome Plated		

Rules: **LGS500** 1) Model number for delivery pressures from 22 up to 150 psi
2) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available
LGS510 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

LAB MASTER LG500 SERIES
5.0 NICKEL PLATED BRASS BARSTOCK REGULATOR

MODEL NO. SELECTOR GUIDE

LGT500-03-05-03-03-102-32-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
LGT500	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
LGT510	**03** 3000 psi	**02** 0-22 psi	**03** Bar/PSI	**03** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acetylene	**04** 4350 psi	**03** 0-50 psi	Plated Brass	Plated Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	**N** With Out Relief Valve
		04 0-90 psi			**008** 1/4" NPT Male Brass Chrome Plated	**08** 1/4" NPT Male Brass Chrome Plated	
		05 0-150 psi			**092** CGA 280 Brass Chrome Plated	**32** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass Chrome Plated	
					093 CGA 296 Brass Chrome Plated	**33** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass Chrome Plated	
					094 CGA 300 Brass Chrome Plated	**34** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass Chrome Plated	
					095 CGA 320 Brass Chrome Plated	**36** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass Chrome Plated	
					096 CGA 326 Brass Chrome Plated	**39** Control Valve 1/4" NPT Male Brass Chrome Plated	
					098 CGA 346 Brass Chrome Plated	**40** Control Valve 1/8" Compression Tube Brass Chrome Plated	
					099 CGA 350 Brass Chrome Plated	**41** Control Valve 1/4" Compression Tube Brass Chrome Plated	
					100 CGA 500 Brass Chrome Plated		
					101 CGA 510 Brass Chrome Plated		
					102 CGA 540 Brass Chrome Plated		
					104 CGA 580 Brass Chrome Plated		
					105 CGA 590 Brass Chrome Plated		
					109 CGA 992 Brass Chrome Plated		
					110 CGA 993 Brass Chrome Plated		

Rules: **LGT500** 1) Model number for delivery pressures from 22 up to 150 psi
2) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings) and option N (with out relief valve - options) not available
LGT510 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

MODEL NO. SELECTOR GUIDE

LGL500-02-05-00-03-000-39-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
LGL500	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
LGL510	**02** 870 psi	**02** 0-22 psi		**03** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acetylene		**03** 0-50 psi		Plated Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	* Line regulators are supplied with no Relief
		04 0-90 psi			**008** 1/4" NPT Male Brass Chrome Plated	**08** 1/4" NPT Male Brass Chrome Plated	
		05 0-150 psi				**32** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass Chrome Plated	
						33 DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass Chrome Plated	
						34 DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass Chrome Plated	
						36 DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass Chrome Plated	
						39 Control Valve 1/4" NPT Male Brass Chrome Plated	
						40 Control Valve 1/8" Compression Tube Brass Chrome Plated	
						41 Control Valve 1/4" Compression Tube Brass Chrome Plated	

Rules: **LGL500** 1) Model number for delivery pressures 22 up to 150 psi
LGL510 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

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TECH MASTER GP400 SERIES
4.5 BRASS BARSTOCK REGULATOR

Tech Master GP400 Series regulators are intended for primary pressure gas control of:

- **Non-Corrosive**
- **High Purity gases** (up to 4.5 Grade)

GPS400 SERIES

The Tech Master GP400 series regulators are intended for primary pressure gas control of non corrosive, high purity gases, up to 4.5 purity grade.

GPS400 Series
Brass Barstock Single Stage Regulator for applications where slight pressure variance in delivery pressure is acceptable (as cylinder pressure decreases)

GPT400 Series
Brass Barstock Two Stage Regulator for applications where constant pressure is required (as cylinder pressure decreases)

GPL400 Series
Brass Barstock Line Regulator for gas applications, for distribution systems (pipelines

GPT400 SERIES

GPL400 SERIES

TECH MASTER GP400 SERIES
4.5 BRASS BARSTOCK REGULATOR
GP400 SERIES

TYPICAL APPLICATIONS
Purging
Pressure testing
Gas shielding
Hydrocarbon service

MATERIALS	
Body	Brass Barstock
Bonnet	High strength alloy
Seat	Nylon
Diaphragm (regulator)	Neoprene
Seals	Viton
Filter	10 Micron sintered 316L Stainless Steel

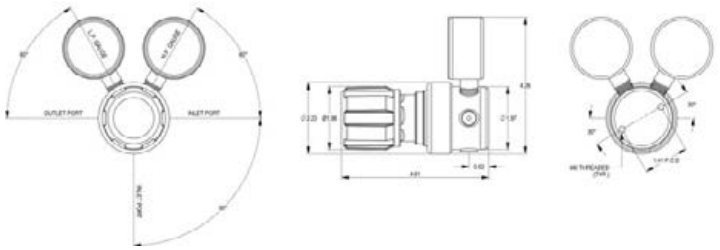
FEATURES
Six port configuration
Rear panel mounting capabilities (Line and single stage regulators)
Encapsulated seat design
Low wetted surface area
Full range of inlet and outlet fittings
Fitted pressure relief valve (Single and Two stage regulators)

SPECIFICATION			
Maximum Inlet Pressure	25 bar (360 psig), 60 bar (870 psig), 207 bar (3000 psig), 300 bar (4350 psig)*		
Delivery Pressure Range psig	0-15 psig, 0-22 psig, 0-50 psig, 0-90 psig, 0-150 psig.		
Delivery Pressure Range bar	0-1 bar, 0-1.5 bar, 0-3 bar, 0-6 bar, 0-10 bar		
Gauges	50 mm (2") diameter snap-on tamper proof lens		
Ports	1/4" NPT Female		
Temperature Range	-40° C to +60° C (60° F to 140° F)		
Flow Coefficient	GPS / LGL	GPT	
	C_v=0.1	C_v=0.07	
Ports	1/4" NPT Female		
Weight	GPL400 / 410 0.9 kg (2.1 lb)		
	GPS400 / 410 1.05 kg (2.3 lb)		
	GPT400 / 410 1.5 kg (3.5 lb)		

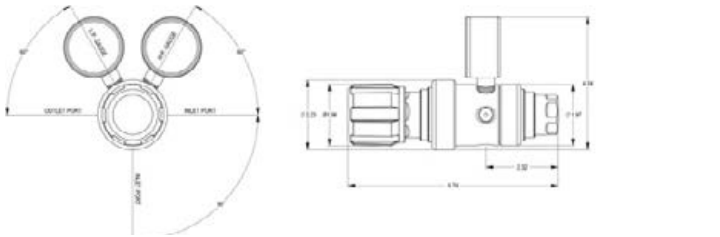
*Single and Two Stage regulators with no fitting fitted in to the regulator

DIMENSIONS

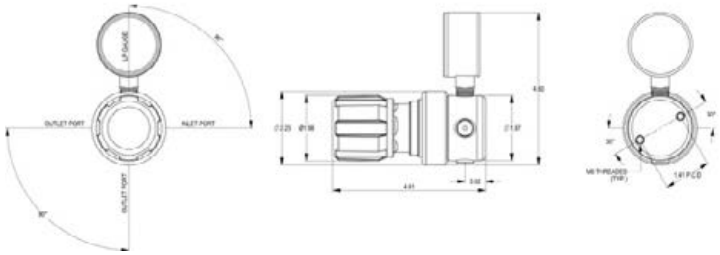
SINGLE STAGE REGULATOR
GP400 Series – Single Stage diaphragm regulator with relief valve



TWO STAGE REGULATOR
GP400 Series – Two Stage diaphragm regulator with relief valve



LINE REGULATOR
GP400 Series – Line regulator with no relief valve



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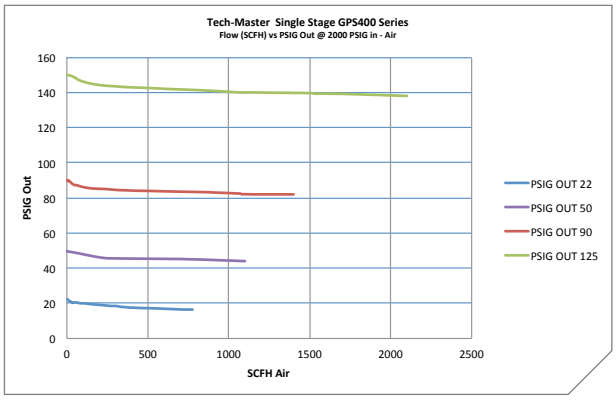
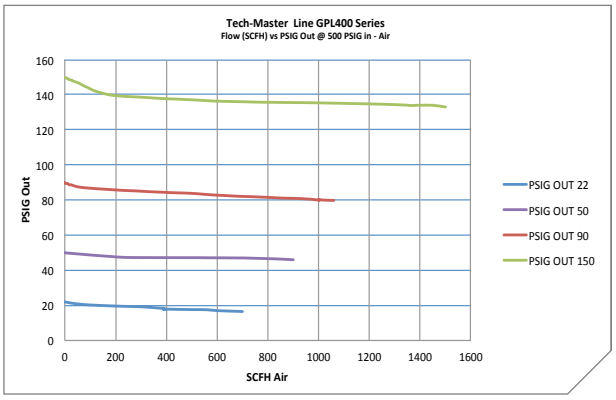
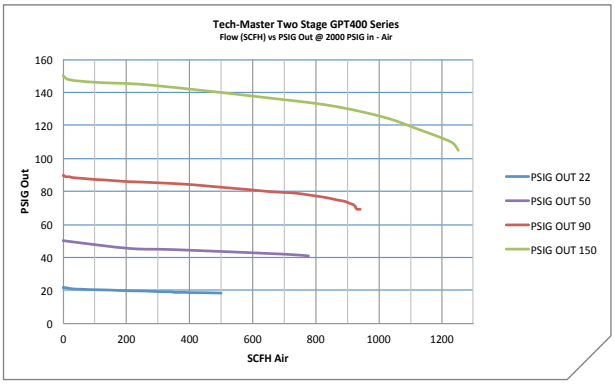
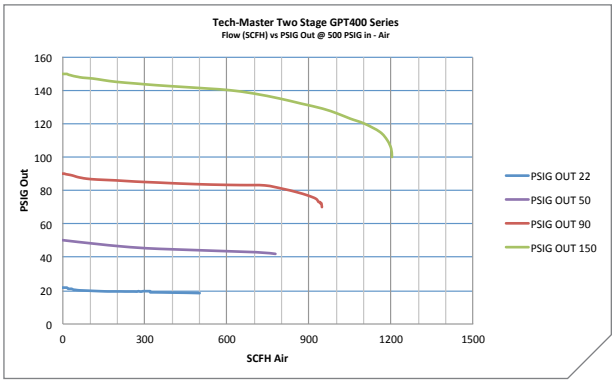
TECH MASTER GP400 SERIES
4.5 BRASS BARSTOCK REGULATOR

FLOW PERFORMANCE









MODEL NO. SELECTOR GUIDE

GPS400-03-05-01-01-054-21-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
GPS400	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
GPS410	**03** 3000 psi	**02** 0-22 psi	**01** Bar/PSI	**01** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acelytene	**04** 4350 psi	**03** 0-50 psi	Brass	Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	* All GPS400 & 410 series are supplied without relief valve
		04 0-90 psi			**007** 1/4" NPT Male Brass	**07** 1/4" NPT Male Brass	
		05 0-150 psi			**045** CGA 296 Brass	**21** Control Valve 1/4" NPT Brass	
					046 CGA 300 Brass	**22** Valve 1/8" Compression Tube Brass	
					047 CGA 320 Brass	**23** Valve 1/4" Compression Tube Brass	
					048 CGA 326 Brass	**57** DRK Diffusion Resistant Shut-Off Valve 1/4" NPT Female Brass	
					050 CGA 346 Brass	**58** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass	
					051 CGA 350 Brass	**59** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass	
					053 CGA 510 Brass	**60** DRK Diffusion resistant Shut-Off Valve 1/4"NPT Male Brass	
					054 CGA 540 Brass		
					056 CGA 580 Brass		
					057 CGA 590 Brass		
					061 CGA 992 Brass		
					062 CGA 993 Brass		

Rules: **GPS400** 1) Model number for delivery pressures from 22 up to 150 psi
2) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings)
GPS410 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

TECH MASTER GP400 SERIES
4.5 BRASS BARSTOCK REGULATOR

MODEL NO. SELECTOR GUIDE

GPT400-03-05-01-01-054-21-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
GPT400	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
GPT410	**03** 3000 psi	**02** 0-22 psi	**01** Bar/PSI	**01** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acetylene	**04** 4350 psi	**03** 0-50 psi	Brass	Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	**N** All GPT400 & 410 series are supplied without relief valve
		04 0-90 psi			**007** 1/4" NPT Male Brass	**07** 1/4" NPT Male Brass	
		05 0-150 psi			**044** CGA 280 Brass	**21** Control Valve 1/4" NPT Male Brass	
					045 CGA 296 Brass	**22** Control Valve 1/8" Compression Tube Brass	
					046 CGA 300 Brass	**23** Control Valve 1/4" Compression Tube Brass	
					047 CGA 320 Brass	**57** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Female Brass	
					048 CGA 326 Brass	**58** DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass	
					050 CGA 346 Brass	**59** DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass	
					051 CGA 350 Brass	**60** DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass	
					053 CGA 510 Brass		
					054 CGA 540 Brass		
					056 CGA 580 Brass		
					057 CGA 590 Brass		
					061 CGA 992 Brass		
					062 CGA 993 Brass		

Rules: **GPT400** 1) Model number for delivery pressures from 22 up to 150 psi
2) Inlet Pressure of 4350 psi (option 4) only available with no inlet fitting (option 00 - inlet fittings)
GPT510 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

MODEL NO. SELECTOR GUIDE

GPL400-02-05-00-01-000-21-L

PRODUCT MODEL	INLET PRESSURE	DELIVERY PRESSURE	INLET PRESSURE GAUGE UNIT	DELIVERY PRESSURE GAUGE UNIT	INLET FITTINGS	OUTLET FITTINGS	OPTIONS
GPL400	**01** 360 psi	**01** 0-15 psi	**00** No Gauge	**00** No Gauge	**000** No Inlet Fittings	**00** No Outlet Fittings	**A** No Options
GPL410	**02** 870 psi	**02** 0-22 psi		**01** Bar/PSI	**001** 1/8" Compression Tube Brass	**01** 1/8" Compression Tube Brass	**L** Compliance Certificate
Acetylene		**03** 0-50 psi		Brass	**003** 1/4" Compression Tube Brass	**03** 1/4" Compression Tube Brass	* Line regulators are supplied with no Relief
		04 0-90 psi			**007** 1/4" NPT Male Brass	**07** 1/4" NPT Male Brass	
		05 0-150 psi				**21** Control Valve 1/4" NPT Male Brass	
						22 Control Valve 1/8" Compression Tube Brass	
						23 Control Valve 1/4" Compression Tube Brass	
						57 DRK Diffusion resistant Shut-Off Valve 1/4" NPT Female Brass	
						58 DRK Diffusion resistant Shut-Off Valve 1/8" Tube Brass	
						59 DRK Diffusion resistant Shut-Off Valve 1/4" Tube Brass	
						60 DRK Diffusion resistant Shut-Off Valve 1/4" NPT Male Brass	

Rules: **LGL500** 1) Model number for delivery pressures 22 up to 150 psi
GPL410 Acetylene 1) Model number for 15 psi delivery pressure only (Acetylene regulator) Inlet Fitting CGA 510 only and 360 psi inlet pressure

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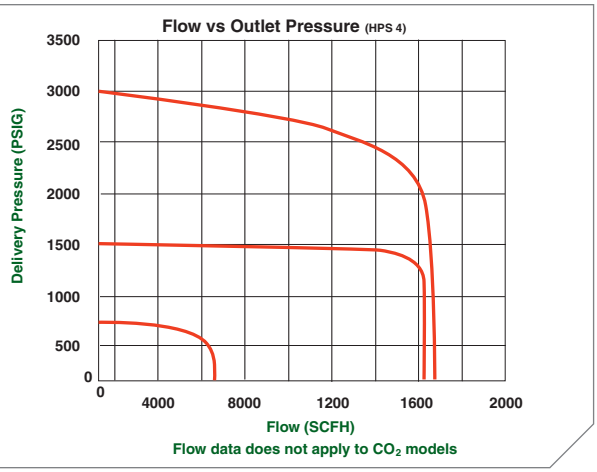
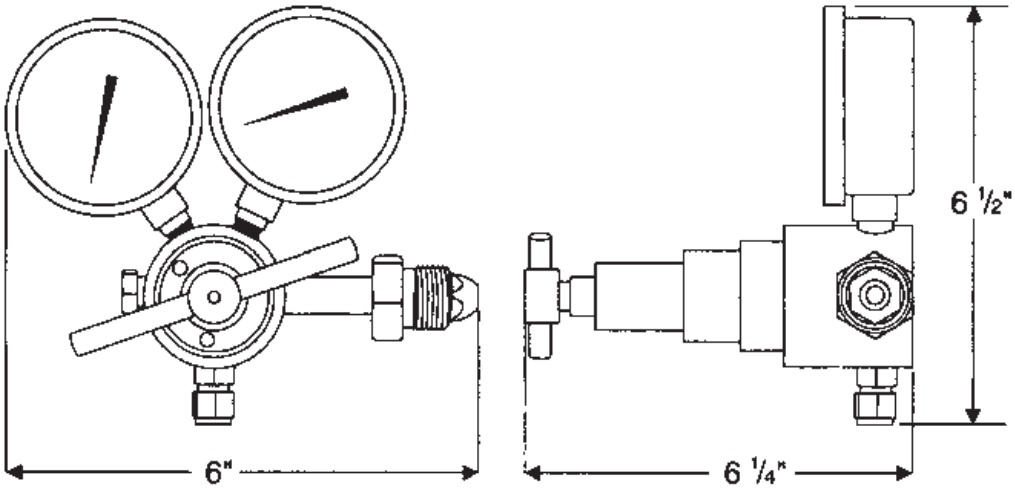
HPS4 SERIES
HIGH PRESSURE PISTON MACHINED BRASS REGULATOR

HPS4
HPS4 regulators are recommended for high purity, non-corrosive gas applications where precise control of higher delivery pressures is required.





HPS4 SERIES
HIGH PRESSURE PISTON MACHINED BRASS REGULATOR

TYPICAL APPLICATIONS
High-purity gas handling
Research sampling systems
High pressure testing
High pressure purging
Accelerated aging

MATERIALS	
Body	Machined brass
Housing cap	Machined brass
Piston	Brass
Seat	PCTFE
Seals	Viton
Inlet Filter	316 Stainless Steel
Pressure adjusting spring	Heat Treated Spring Steel

FEATURES
Piston type actuation
Delrin bushing for smooth adjustment
Optional relief valve
2.5" gauges
Designed for panel mounting
Encapsulated seat

SPECIFICATION	
Maximum Inlet Pressure	6000 psig without inlet fitting 5500 psig with CGA 680, 347 3000 psig with CGA 580, 346, 350
Delivery Pressure Range	750/1500 range < 2.4 psig/100 psig inlet decay 3000 range < 4.8 psig/100 psig inlet decay
Temperature Range	-40° C to +66° C (-40 F to 150 F)
Flow Coefficient	C_v= 0.103
Outlet	1/4" Swagelok® fitting
Outlet pressure ranges	750 (50-750 psig) 1500 (100-1500 psig) 3000 (200-3000 psig)
Weight	4 lbs. (1.8kg)

HPS4 SERIES MODEL NUMBER SYSTEM AND SELECTOR GUIDE

HPS4 - XXX - XXX - XXXX - XXXX

SINGLE STAGE BRASS BARSTOCK HIGH PRESSURE REGULATOR	OUTLET PRESSURE	INLET CONNECTION	OUTLET CONNECTION	OPTIONS
HPS4 Inlet Pressure Gauge dependent on CGA Connection	**750** (25-750 psig) **1500** (50-1500 psig) **3000** (100-3000 psig) **4500** (100-4500 psig)	**CGA** 296, 320, 326, 346, 347, 350, 540, 580, 590, 677, 680 4F 1/4" Female NPT 4M 1/4" Male NPT 4S 1/4" Tube Fitting 2S 1/8" Tube Fitting	**4F** 1/4" Female NPT **4M** 1/4" Male NPT **4S** 1/4" Tube Fitting **2S** 1/8" Tube Fitting **BV4M**Needle Valve 1/4" Male NPT* **DK4F**Diaphragm Valve 1/4" Female NPT* **DK4M** Diaphragm Valve 1/4" Male NPT* **DK4S** Diaphragm Valve 1/4" Tube Fitting* **DK2S** Diaphragm Valve 1/8" Tube Fitting* * BV and DK Valves not available with 4500 psig outlet pressure	**00** Bare Body **03** Compliance Certificate **05** Panel Mount Nut **07** With Relief Valve

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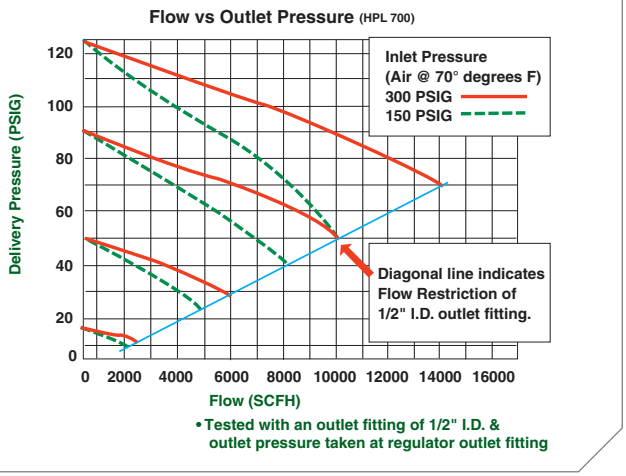
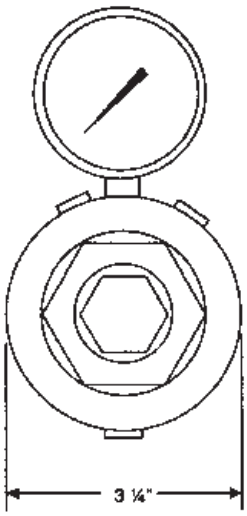
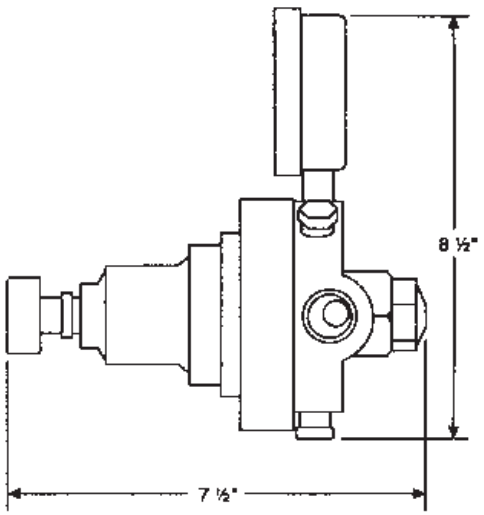
HPL700 SERIES
LINE FORGED BRASS HIGH FLOW REGULATOR

HPL700 Series
HPL700 regulators are recommended for high purity, inert and non-corrosive gas applications where gas is supplied through a distribution system (pipeline) and high flow is required.







HPL700 SERIES
LINE FORGED BRASS HIGH FLOW REGULATOR

TYPICAL APPLICATIONS
Laser gas systems
High-purity gas handling
High flow non-corrosive gases

MATERIALS	
Body	Forged brass
Housing cap	Forged brass
Diaphragm	301 Stainless Steel
Seat	Viton
Seals	Nylon & Viton
Pressure adjusting spring	316 Stainless Steel
Filter	Nickel

FEATURES
3.25" stainless steel diaphragm
Delrin bushing for smooth adjustment
Helium leak rate tested at 1 x 10^{-6} scc/sec.
2.5" dual brass gauges
Resistant to inboard diffusion of atmospheric

SPECIFICATION	
Inlet	1/2" NPT(F)
Outlet	1/2" NPT(F)
Temperature operating range:	0 to 140°F (-17 to 60°C)
Delivery pressure rise:	< 4.9 psig/100 psig inlet decay
Helium leak integrity	1 x 10^{-6} scc/sec
Flow coefficient	C_v= 1.67
Weight	5.5 lbs (2.5kg)
Outlet pressure ranges	0-125 psig 0-200 psig 0-400 psig

HPL700 SERIES MODEL NUMBER SYSTEM AND SELECTOR GUIDE

HPL700 - XXX - XXX - XXXX - XXXX

LINE REGULATOR FORGED BRASS	OUTLET PRESSURE	INLET CONNECTION	OUTLET CONNECTION	OPTIONS
HPL700 No inlet gauge	**125** (5-125 psig) **200** (10-200 psig) **400** (5-125 psig)	**8F** 1/2" Female NPT	**8F** 1/2" Female NPT	**00** Bare Body **03** Compliance Certificate

Int'l Customer Care: 1-940-381-1212 / FAX 1-940-483-8178
VictorTechnologies.com

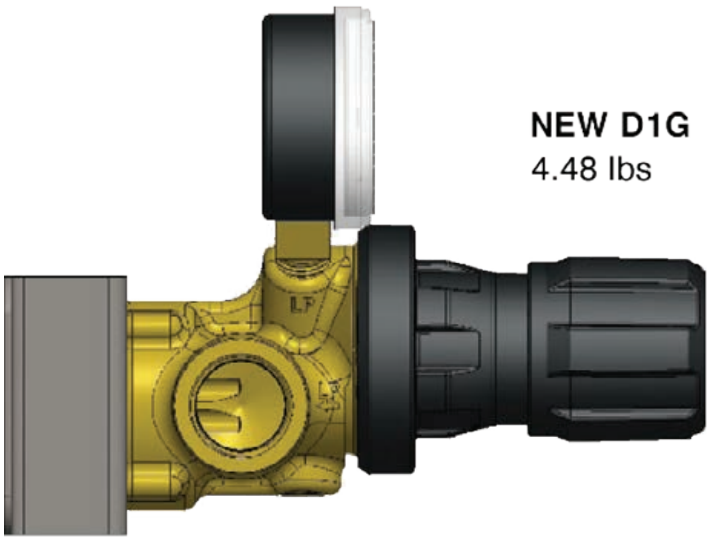
D1G DOME SERIES
DOMELOAD HYBRID REGULATOR

D1G Series

The D1G Pilot-Domeload Hybrid Regulator is the second generation of the D1 Regulator, which combined both the dome and pilot regulator into a single unit. The new D1G offers an updated look, improved performance and new features in a lighter, more compact package.

Engineered to deliver constant output pressure supporting very high flow demand.

- Larger 3/4" NPT Inlet and Outlet ports
- Lighter, more compact design for maximum versatility
- Large, replaceable 50 micron inlet filter for enhanced protection of internal components
- 30,000+ SCFH flow capacity
- Includes mounting bracket



D1G DOME SERIES
DOMELOAD HYBRID REGULATOR

TYPICAL APPLICATIONS
Laser
Industrial applications requiring large gas supplies such as cylinder bundles, tube trailors and gas transports

MATERIALS	
Body	Brass UNS 37700 (CDA377) per ASTM B-124 (Ref. HPb59-1 per GB/T 4423)
Bonnet	Die Casting Alloy No. 5, Conforming to ISO 301:1981 ZnAl4Cu1
Dome Cap	Brass CDA 360 (UNS C36000)
Pilot Diaphragm	Neoprene w/Nylon Fabric Reinforcement
Dome Piston	Brass CDA 360 (UNS C36000)
Nozzles/Seat Holders (Pilot & Dome)	Brass CDA 360 (UNS C36000)
Seat Stems (Pilot & Dome)	Stainless Steel Type 303
Seats	Dome Seat Viton®, Pilot Seat Urethane
Seals/Piston O-Ring	Viton®
Dome Seat Backup Ring	Teflon®
Inlet Filter	50 Micron Sintered Bronze, ElectrolessNickel Plated
Seat Return Springs	Stainless Steel Type 302
Pressure Adjusting Spring	Music Wire per ASTM A228
Adjusting Knob	High Impact ABS (Acrylonitrile Butadiene Styrene)
Mounting Bracket	Stainless Steel Type 304

FEATURES
Larger ¾” NPT Inlet and Outlet ports
Lighter, more compact design for maximum versatility
Large, replaceable 50 micron inlet filter for enhanced protection of internal components
30,000+ SCFH flow capacity
Resistant to inboard diffusion of atmospheric

SPECIFICATION	
Maximum Inlet	3000 psig
Outlet pressure	50 – 550 psig
Inlet & Outlet Connection	3/4" - 14 NPT (F)
Standards Compliance	CGA E-4
Operating Temperature	0° F to 140° F
Outlet Pressure Rise	1.0 psig per 100 psig Decay
Flow Cooefficient (Cv)	1.02

D1G Domeload Regulator Ordering Information

Part No.	Description
0782-4420	D1G-550-12F-12F
0782-4421	D1G-550-580-12F withCGA 580 (inert gas) inlet
0782-4422	D1G-550-540-12F with CGA 540(oxygen) inlet
0782-4423	D1G-550-590-12F withCGA 590 (industrial air) inlet

Int'l Customer Care: 1-940-381-1212 / FAX 1-940-483-8178
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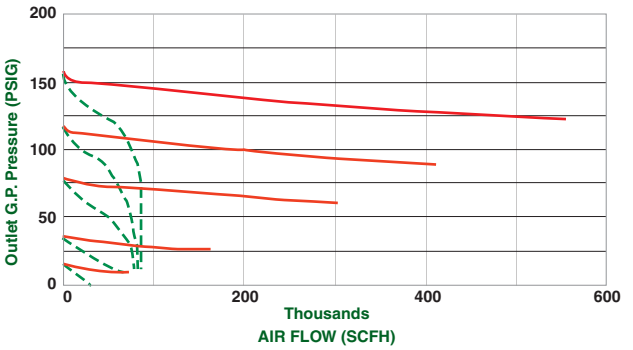
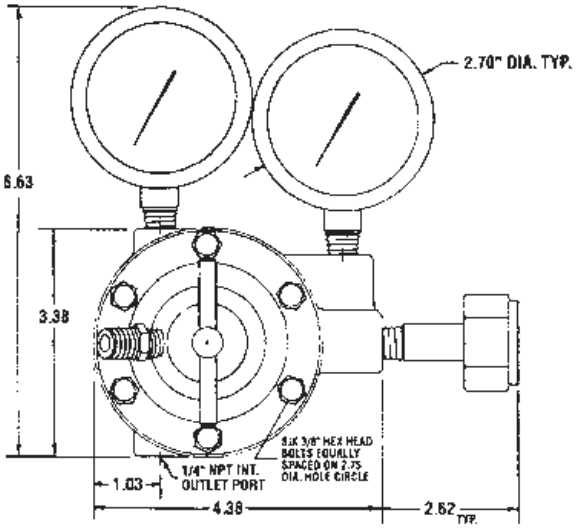
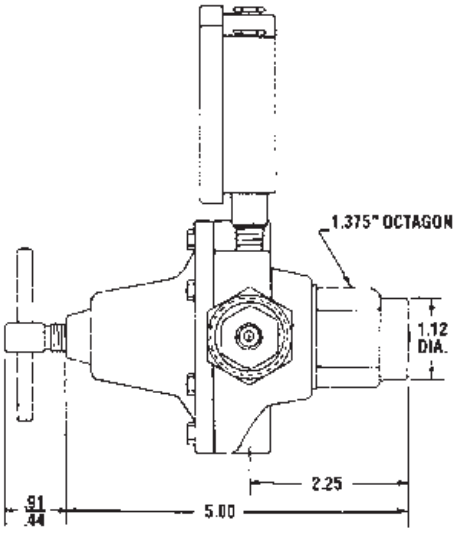
CRS100
CORROSION RESISTANT ELECTROLESS NICKEL PLATED BRASS REGULATOR

CRS100 Series
CRS100 regulators are recommended for high purity, highly corrosive gas applications with restricted space requirements.



Tested with outlet valve full open and outlet pressure taken at regulator L.P. gauge port.





CRS100
CORROSION RESISTANT ELECTROLESS NICKEL PLATED BRASS REGULATOR

FEATURES
Durable for Corrosive Gas
Captured vent allows for remote venting of gas
Electroless nickel-plated brass body and sintered bronze filter
Teflon lined stainless steel diaphragm
Monel nozzle
Precision High Purity Performance
Yoke connects diaphragm and seat block for instant response
Quality Components
2.5" Stainless steel / Monel gauge
Installation Flexibility
Multi-seat design with rotatable seat block
Small size to meet space requirements
Options
Diffusion resistant, packless diaphragm shut-off valve
Outlet valve with Monel body, stem, tip and Teflon packing

MATERIALS	
Body	Electroless Nickel-Plated Brass
Spring housing cap	Electroless Nickel-Plated Brass
Diaphragm	Teflon lined 316L Stainless Steel
Nozzle	Monel
Seat	PCTFE
Seals	Viton
Filter	Electroless Nickel-Plated Sintered Bronze

SPECIFICATION	
Maximum inlet pressure	3000 psig (crs100) 1000 psig (crs110)
Valve outlet	1/4" MNPT
Temperature operating range	-20 to 160°F (-28 to 60°C)
Helium leak integrity	1 x 10^{-6} scc/sec
Outlet pressure ranges	0-80 psig 0-160 psig

TYPICAL APPLICATIONS
High-purity, corrosive gas handling including
Boron trichloride/boron trifluoride
Carbonyl fluoride
Chlorine/chlorine trifluoride
Hydrogen bromide/hydrogen chloride/hydrogen fluoride
Nitrosyl chloride
Phosphorous pentafluoride
Silicon tetrafluoride
Sulfur tersfluoride

CRS 100 SERIES MODEL NUMBER SYSTEM AND SELECTOR GUIDE

CRS100 - XXX - XXX - XXXX - XXXX

LINE FORGED BRASS	OUTLET PRESSURE	INLET CONNECTION	OUTLET CONNECTION	OPTIONS
CRS100 0-4000 psig inlet gauge **CRS110** 0-1000 psig inlet gauge	**80** (2-160 psig) **160** (10-160 psig)	**CGA** 330, 346, 350, 660, 705 **4F** 1/4" Female NPT **4M** 1/4" Male NPT **4S** 1/4" Tube Fitting	**4F** 1/4" Female NPT **4M** 1/4" Male NPT **4S** 1/4" Tube Fitting **2S** 1/8" Tube Fitting **BV4M** Needle Valve 1/4" Male NPT **DK4F** Diaphragm Valve 1/4" Female NPT **DK4M** Diaphragm Valve 1/4" Male NPT **DK4S** Diaphragm Valve 1/4" Tube Fitting **DK2S** Diaphragm Valve 1/8" Tube Fitting	**00** Bare Body **03** Compliance Certificate

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PR150
CALIBRATION GAS REGULATORS

PR150
PR150 regulators are recommended for non-corrosive gas applications with disposable cylinders using a CGA 600 valve.

TYPICAL APPLICATIONS

Disposable cylinders of non-corrosive gases

FEATURES

Durable for Corrosive Gas

CGA 600 valve

User Friendly

Control valve permits constant flow and easy on/off

Quality Components

1.5" gauges

Options

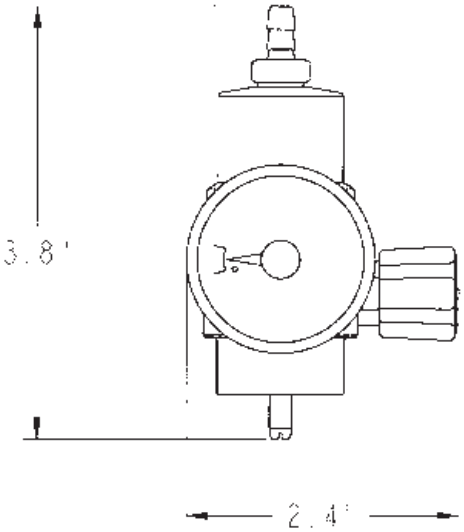
Preset flows: 0.25 lpm, 0.5 lpm, 1.0 lpm

MATERIALS

Body	Brass Barstock
Spring housing cap	Chrome-Plated Brass Barstock
Diaphragm	Teflon lined 316L Stainless Steel
Seat	PCTFE
Piston	Brass
Piston "O" rings	Buna-N

SPECIFICATION

Maximum inlet pressure	500 psig
Temperature operating range:	0 to 40°F (-17 to 60°C)
Outlet fitting	3/16" Hose barb
Inlet fitting	CGA 600



Model PR150 Ordering Information

Part No.	Model Number	Flow Rate
0781-1170	PR150-025-600	0.25 LPM Air
0781-1171	PR150-05-600	0.5 LPM Air
0781-1172	PR150-1-600	1.0 LPM Air

PR160
CALIBRATION GAS REGULATORS

PR160
PR160 regulators are recommended for non-corrosive gas applications with disposable cylinders using a 5/8" - 18 UNF valve.

TYPICAL APPLICATIONS

Disposable cylinders of non-corrosive gases

FEATURES

Durable for Corrosive Gas

5/8" - 18

User Friendly

Control valve permits constant flow and easy on/off

Quality Components

1.5" gauges

Options

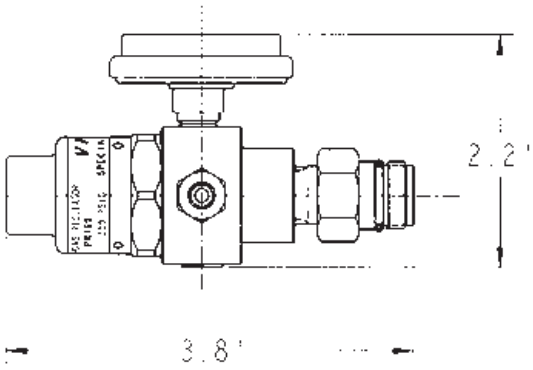
Preset flows: 0.25 lpm, 0.3 lpm, 0.5 lpm, 1.0 lpm, 5 lpm, 6 lpm

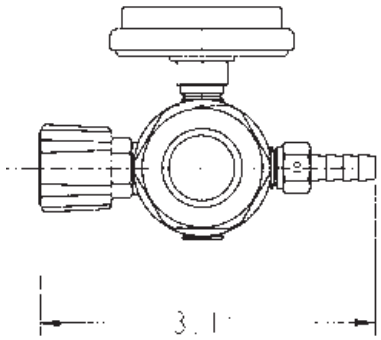
MATERIALS

Body	Brass Barstock
Spring housing cap	Chrome-Plated Brass Barstock
Diaphragm	Teflon lined 316L Stainless Steel
Seat	PCTFE
Piston	Brass
Piston "O" rings	Buna-N

SPECIFICATION

Maximum inlet pressure	1000 psig
Temperature operating range:	0 to 40°F (-17 to 60°C)
Outlet fitting	5/8" - 18 UNF (C-10)
Inlet fitting	3/16" Hose barb





Model PR160 Ordering Information

Part No.	Model Number	Flow Rate
0781-1080	PR160-025	0.25 LPM Air
0781-1087	PR160-03	0.3 LPM Air
0781-1081	PR160-05	0.5 LPM Air
0781-1082	PR160-1	1.0 LPM Air
0781-1085	PR160-5	5 LPM Air
0781-1086	PR160-6	6 LPM Air

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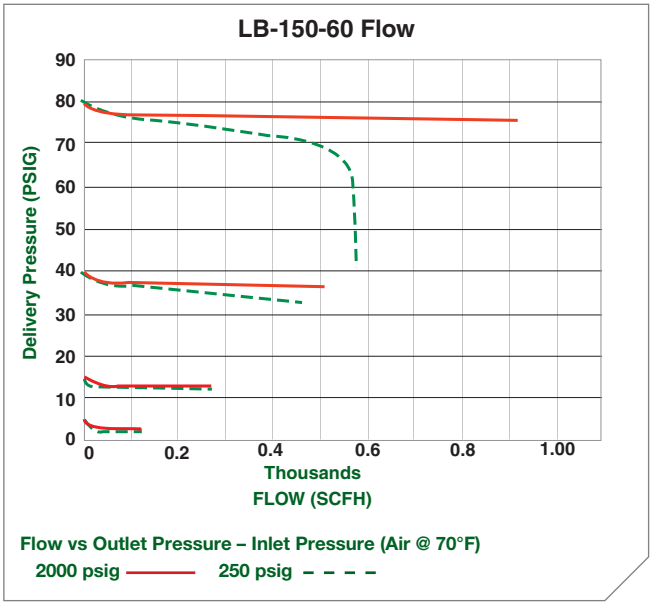
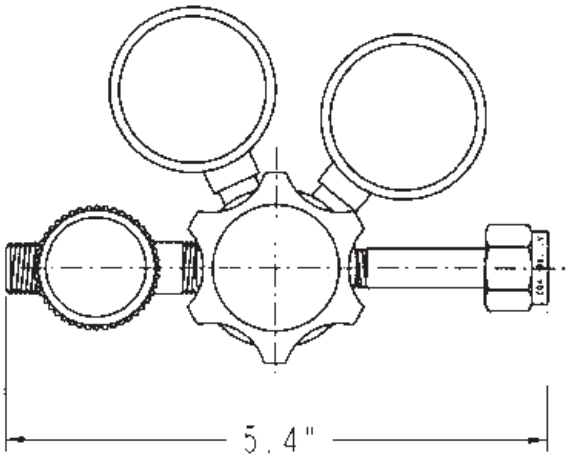
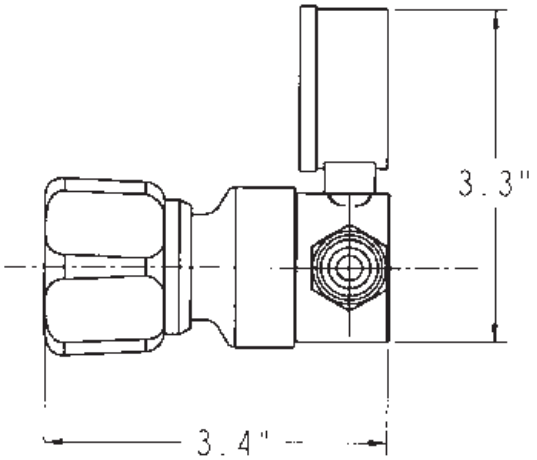
LB150
LECTURE BOTTLE CHROME PLATED BRASS REGULATORS

LB150
LB150 regulators are recommended for non-corrosive gas applications with lecture bottles.







LB150
LECTURE BOTTLE CHROME PLATED BRASS REGULATORS

TYPICAL APPLICATIONS
Lecture bottles of non-corrosive gas
EPA protocol
Calibration
Sampling

MATERIALS	
Body	Chrome-Plated Brass
Spring housing cap	Chrome-Plated Brass
Diaphragm	Neoprene
Seat	Polyurethane
Seals	Nylon
Filter	50 Micron Sintered Bronze

FEATURES
Precision Performance
1.25" neoprene diaphragm provides greater sensitivity
Quality Components
1.5" chrome-plated gauges
Self seating type relief valve. Not designed to protect downstream apparatus
Options
Outlet valve

SPECIFICATION	
Maximum inlet pressure	3000 psig
Temperature operating range:	0 to 1140°F (-17 to 60°C)
Delivery pressure rise:	<0.3 psig/100 psig inlet decay
Outlet pressure ranges	15 (2-15 psig) 60 (4-60 psig)
Outlet pressure rise	1.04 psig per 100 psig

LB150 SERIES MODEL NUMBER SYSTEM AND SELECTOR GUIDE

LB150 - XXX - XXX - XXXX - XXXX

CHROME BRASS BARSTOCK	OUTLET PRESSURE	INLET CONNECTION	OUTLET CONNECTION	OPTIONS
LB150 0-4000 psig inlet gauge	**15** (2-15 psig) **60** (2-60 psig)	**CGA** 170, 180, 350, 580, 590 **2F** 1/8" Female NPT **4F** 1/4" Female NPT	**4F** 1/4" Female NPT **4M** 1/4" Male NPT **4S** 1/4" Tube Fitting **2S** 1/8" Tube Fitting **BV4M** Needle Valve 1/4" Male NPT **DK4F** Diaphragm Valve 1/4" Female NPT **DK4M** Diaphragm Valve 1/4" Male NPT **DK4S** Diaphragm Valve 1/4" Tube Fitting **DK2S** Diaphragm Valve 1/8" Tube Fitting	**00** Bare Body **03** Compliance certificate

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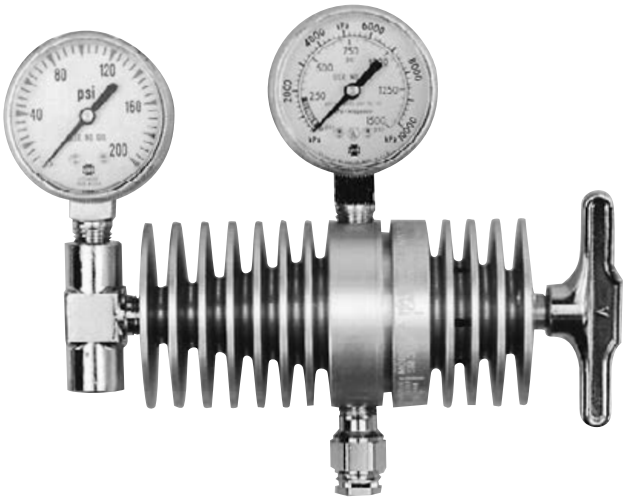
SR300
ALUMINUM REGULATORS SR310, SR311, SR312 HIGH FLOW CO_2

SR300 Series
SR300 regulators are designed for use with standard (non-siphoned) carbon dioxide cylinders.



TYPICAL APPLICATIONS

Carbon dioxide flow/pressure monitoring

FEATURES

Designed for Carbon Dioxide

Aluminum heat sink fins permit consistent high flow without freeze-up

Quality Components

Fabric reinforced neoprene diaphragms

2" gauges, high pressure dual scale, low pressure single scale

Aluminum body and housing cap

Self reseating relief valve. Not designed to protect downstream equipment

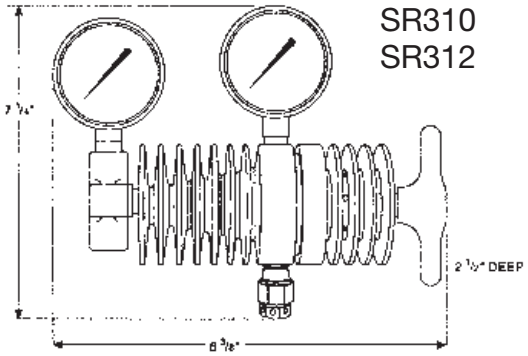
MATERIALS

Body	Aluminum
Spring housing cap	Aluminum
Diaphragm	Fabric reinforced neoprene
Inlet Filter	Bronze

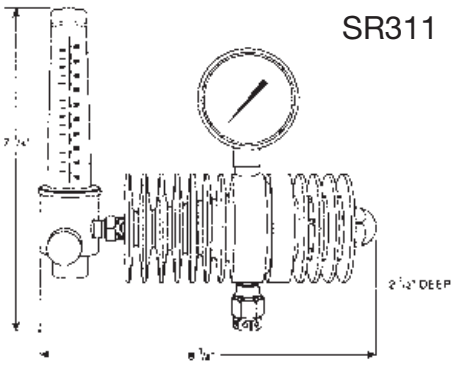
SPECIFICATION

Maximum inlet pressure	1500 psig	
Weights: SR310	2.3 lbs (1.0kg)	
SR311	2.9 lbs (1.3kg)	
SR312	2.9 lbs (1.3kg)	
Outlet range: SR 310	10-150 psig	
Maximum outlet ranges:	SR 310	200 SCFH
	SR 311	100 SCFH
	SR 312	100 SCFH
Outlet connection	5/8-18" (F) RH	
Optional 1/4" NPT (M) connection available. Order part no. 0950-0163 if required		

SR310
SR312



SR311



Model SR300 Ordering Information

Part No.	Model Number	Delivery Range	Max SCFH	CGA
0781-0355	SR310-320 Adjustable flowgauge	0-150psig	200	CGA 320
0781-0353	SR311-320 Flow meter	Preset@80 psig	100	CGA 320
0781-0354	SR312-320 Flow meter	100 psig@ 100 SCFH	100	CGS 320

DRUVA PUR MANIFOLDS

SemiAutomatic Changeover Systems/
Manual Changeover Systems/
Single Source Gas Panels

- Technical Specifications:
  - Maintain 99.9999% Gas Purity (6.0)
  - Chrome Plated Brass and Stainless Steel Versions
  - ¼" NPT Female inlet/outlet
  - Regulators and Valves – Hastelloy/ Elgiloy diaphragm tightening systems
  - Relief Valve on Delivery Pressure side
  - All designs provide both process-gas tee purge and inert-gas cross purge options
  - Wall Mount Panels – "two-piece" panel for ease of installation
  - Flow: Nominal 720 scfh
  - Max Inlet pressures: 4350 psi
  - Delivery Pressure Ranges: 15psi-1450psi (inquire for other options)
  - Leakage Rate: 1x10-9 cc He/sec
  - Filter: 100 micron SS mesh, 1 each on regulator inlet and outlet
  - Materials, Gas Wetted Parts
    - Body-Machined Barstock; Chrome Plated Brass and 316L Stainless Steel
    - Diaphragms: Hastelloy
    - Gauges: 2"

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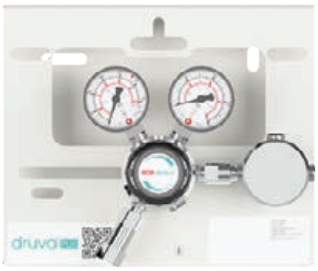
SINGLE STAGE GAS PANEL MANIFOLD
(PROTOCOL STATION)

Example P/N: MPLXS0S0CXBTBT58

Standard Options

- Maximum inlet pressure = 2900psi, inquire for other options
- Remote Alarm Boxes sold separately
- Inlet Connection hoses (if selected) are 36" SS inner/outer with specified CGA and Check Valve, 1 per panel, inquire for other options



000
No Shut-offs

S00
Inlet Shut-off

0S0
Outlet Shut-off

SS0
Inlet & Outlet Shut-off

P00
Inlet Tee Purge

PS0
Inlet Tee Purge & Outlet Shut-off

CATEGORY	MATERIAL	VALVE OPTIONS	DELIVERY PRESSURE	ALARM OPTION	INLET CONNECTION
M Manifold	**PLXS** Chrome Plated Brass **SLXS** Stainless Steel	**000** No shutoff valves **0S0** Low Pressure Shutoff **S00** High Pressure Shut-off **SS0** High Pressure Shut-off, Low Pressure Shutoff **P00** High Pressure Tee Purge **PS0** High Pressure Tee Purge, Low Pressure Shutoff **E00** (not shown above) High Pressure Inert Cross Purge (SS only) **ES0** (not shown above) High Pressure Inert Cross Purge, Low Pressure Shutoff (SS only)	**BX** 45 psig **CX** 90 psig **D2** 145 psig **DX** 200 psig **EY** 405 psig **EX** 730 psig **F2** 1450 psig	**BTBT** No alarm being used **I1BT** Alarm being used (sold separately, inquire) Note: Alarms used with flammable gases should utilize intrinsic safety barriers, inquire	**N** = 1/4" Female NPT ports, no pigtail **24** = CGA 240 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **32** = CGA320 Flexible 36" Pigtail and Check Valve **33** = CGA330 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **34** = CGA346 Flexible 36" Pigtail and Check Valve **35** = CGA350 Flexible 36" Pigtail and Check Valve **51** = CGA510 Flexible 36" Pigtail and Check Valve **54** = CGA540 Flexible 36" Pigtail and Check Valve **58** = CGA580 Flexible 36" Pigtail and Check Valve **59** = CGA590 Flexible 36" Pigtail and Check Valve **66** = CGA660 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **70** = CGA705 Flexible 36" Pigtail and Check Valve

DUAL STAGE GAS PANEL MANIFOLD
(PROTOCOL STATION)

Example P/N: MSLXDSS0AXBTBT66

Standard Options

- Maximum inlet pressure = 2900psi, inquire for other options
- Remote Alarm Boxes sold separately
- Inlet Connection hoses (if selected) are 36" SS inner/outer with specified CGA and Check Valve, 1 per panel, inquire for other options

000
No Shut-offs

S00
Inlet Shut-off

0S0
Outlet Shut-off

SS0
Inlet & Outlet Shut-off

P00
Inlet Tee Purge

PS0
Inlet Tee Purge & Outlet Shut-off

CATEGORY	MATERIAL	VALVE OPTIONS	DELIVERY PRESSURE	ALARM OPTION	INLET CONNECTION
M Manifold	**PLXD** Chrome Plated Brass **SLXD** Stainless Steel	**000** No shutoff valves **0S0** Outlet shutoff **S00** Inlet shut-off **SS0** Inlet shut-off, Outlet shutoff **P00** Inlet Tee Purge **PS0** Inlet Tee Purge, Outlet shutoff **E00** (not shown above) Inlet Inert Cross Purge (SS only) **ES0** (not shown above) Inlet Inert Cross Purge, Outlet shutoff (SS only)	**AY** 15 psig **AX** 30 psig **BX** 45 psig **CX** 90 psig **D2** 145 psig **DX** 200 psig	**BTBT** No alarm being used **I1BT** Alarm being used (sold separately, see page ##) Note: Alarms used with flammable gases should utilize intrinsic safety barriers, see page ##	**N** = 1/4" Female NPT ports, no pigtails **24** = CGA 240 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **32** = CGA320 Flexible 36" Pigtail and Check Valve **33** = CGA330 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **34** = CGA346 Flexible 36" Pigtail and Check Valve **35** = CGA350 Flexible 36" Pigtail and Check Valve **51** = CGA510 Flexible 36" Pigtail and Check Valve **54** = CGA540 Flexible 36" Pigtail and Check Valve **58** = CGA580 Flexible 36" Pigtail and Check Valve **59** = CGA290 Flexible 36" Pigtail and Check Valve **66** = CGA660 Flexible 36" Pigtail and Check Valve (SS Manifold Only) **70** = CGA705 Flexible 36" Pigtail and Check Valve (SS Manifold Only)

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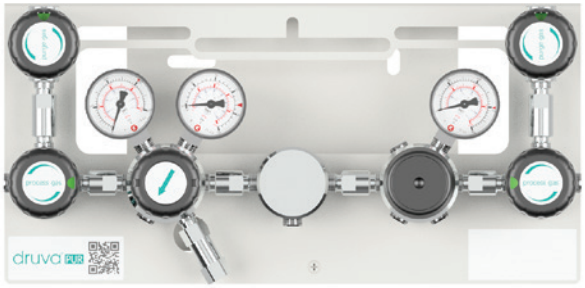
SINGLE STAGE
SEMI AUTOMATIC CHANGEOVER MANIFOLD

Example P/N: MPLSSP00DXBTBT32

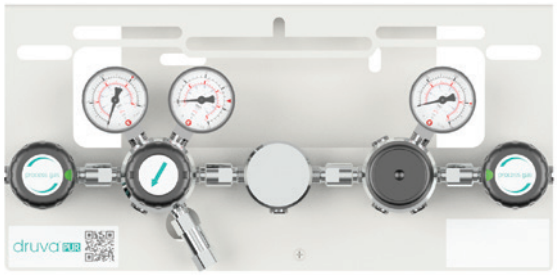
Standard Options

- Maximum inlet pressure = 2900psi, inquire for other options
- Switchover Outlet Pressure = 203psi (single stage version)
- Remote Alarm Boxes sold separately
- Inlet Connection hoses (if selected) are 36" SS inner/outer with specified CGA and Check Valve, 1 per side, inquire for other options

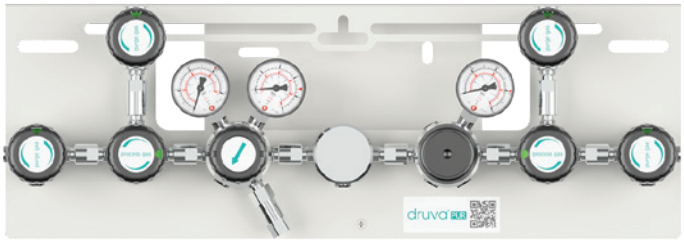
PS0DX
Inlet Tee Purge-Outlet Shut-off



P00DX
Inlet Tee Purge



S00DX
Inlet Shut-off



E00DX
Inlet Inert Cross Purge

CATEGORY	MATERIAL	VALVE OPTIONS	ALARM OPTION	INLET CONNECTION
M Manifold	**PLSS** Chrome Plated Brass **SLSS** Stainless Steel	**S00DX** High Pressure Shutoff **SS0DX** (not shown above) High Pressure Shutoff, Low Pressure Shutoff **P00DX** High Pressure Tee Purge **PS0DX** High Pressure Tee Purge, Low Pressure Shutoff **E00DX** High Pressure Inert Cross Purge (SS only) **ES0DX** (not shown above) High Pressure Inert Cross Purge, Low Pressure Shutoff (SS only)	**BTBT** No alarm being used **I1BT** Alarm being used (sold separately, Inquire) Note: Alarms used with flammable gases should utilize intrinsic safety barriers, inquire	**N** = 1/4" Female NPT ports **24** = CGA 240 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **32** = CGA320 Flexible 36" Pigtails and Check Valve **33** = CGA330 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **34** = CGA346 Flexible 36" Pigtails and Check Valve **35** = CGA350 Flexible 36" Pigtails and Check Valve **51** = CGA510 Flexible 36" Pigtails and Check Valve **54** = CGA540 Flexible 36" Pigtails and Check Valve **58** = CGA580 Flexible 36" Pigtails and Check Valve **59** = CGA590 Flexible 36" Pigtails and Check Valve **66** = CGA660 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **70** = CGA705 Flexible 36" Pigtails and Check Valve (SS Manifold Only)

DUAL STAGE
SEMI AUTOMATIC CHANGEOVER MANIFOLD

Example P/N: MPLSDP00AYBTBT59

Standard Options

- Maximum inlet pressure = 2900psi, inquire for other options
- Remote Alarm Boxes sold separately
- Inlet Connection hoses (if selected) are 36" SS inner/outer with specified CGA and Check Valve, 1 per side, inquire for other options

PS0
Inlet Tee Purge - Outlet Shut-off

S00
Inlet Shut-off

P00
Inlet Tee Purge

E00
Inlet Inert Cross Purge

CATEGORY	MATERIAL	VALVE OPTIONS	DELIVERY PRESSURE	ALARM OPTION	INLET CONNECTION
M Manifold	**PLSD** Chrome Plated Brass **SLSD** Stainless Steel	**S00** High Pressure Shutoff **SS0** (not shown above) High Pressure Shutoff, Low Pressure Shutoff **P00** High Pressure Tee Purge **PS0** High Pressure Tee Purge, Low Pressure Shutoff **E00** High Pressure Inert Cross Purge (SS only) **ES0** (not shown above) High Pressure Inert Cross Purge, Low Pressure Shutoff (SS only)	**AY** 15 psig **AX** 30 psig **BX** 45 psig **CX** 90 psig **D2** 145 psig **DX** 200 psig	**BTBT** No alarm being used **I1BT** Alarm being used (sold separately, inquire) Note: Alarms used with flammable gases should utilize intrinsic safety barriers, inquire	**N** = 1/4" Female NPT ports **24** = CGA 240 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **32** = CGA320 Flexible 36" Pigtails and Check Valve **33** = CGA330 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **34** = CGA346 Flexible 36" Pigtails and Check Valve **35** = CGA350 Flexible 36" Pigtails and Check Valve **51** = CGA510 Flexible 36" Pigtails and Check Valve **54** = CGA540 Flexible 36" Pigtails and Check Valve **58** = CGA580 Flexible 36" Pigtails and Check Valve **59** = CGA590 Flexible 36" Pigtails and Check Valve **66** = CGA660 Flexible 36" Pigtails and Check Valve (SS Manifold Only) **70** = CGA705 Flexible 36" Pigtails and Check Valve (SS Manifold Only)

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ALARM PANEL

All of the GCE druvaPUR panel are available with the alarm options. Selecting the I1BT alarm option in the applicable configuration tables outfits the manifold with inductive contact gauges to be monitored by the GCE DGM Alarm box. Multiple channel options are available which allow for one alarm box to monitor up to 5 change over manifolds or 10 single panel systems in a single location. This provides a significant cost savings over individual alarm boxes. When manifolds are used for flammable gas service and intrinsic barrier kit is required to ensure area electrical classification requirements.

Signal box

Intrinsically safe barriers

SPECIAL FEATURES

- Optional Fax-/SMS alarm
- Low supply pressure monitoring with contact gauges
- Collective alarm for control room
- Fast system overview
- Installation outside the Ex-Zone

ACCESSORIES

Solenoid valve control and regulator DGM-MV, relay box DGM-IT, contact gauges and operation terminal DGM-AX for gas management system, mass flow controller, cylinder scales, rupture disks, floater, flow switch and cable monitoring.

INSTALLATION

The housing is designed for wall mounting outside of an Ex-area. Four mounting holes are provided in the back of the housing for this purpose. These can be accessed by unscrewing the cover.

TECHNICAL DATA - CONNECTION LOAD	
Power supply:	220- 250 V AC; 50-60 Hz; 110 V AC, 60 Hz
Fuse:	3.15 mA slow-blow
Note:	defective fuses may only be replaced by the manufacturer

TECHNICAL DATA - INLETS	
Signal transmitter:	zero potential, mechanical contacts, initiators comply with DIN 19234 (NAMUR)
Effective direction:	NC (normally closed)
Connection system:	2 wires
Signal transmitter supply:	10 V max. throughout the instrument, 10 mA max. (short circuit proof)
Max. load/circiut:	330 mH/ 4.0 µF (EEx ib IIC); 1000 mH/ 30.0 µF (EEx ib IIB)
Cabel monitoring (optional):	Short circuit I> 6 mA, cable break I<80 µA
Connection cross section:	2.5 mm² max.

TECHNICAL DATA - OUTLETS (COLLECTIVE ALARM)	
Alarm output:	2* relay output (1 change over contact)
Contact load:	max. 220- 250 AC, 50- 60 Hz; 100 VA max. 48 V, 1A

TECHNICAL DATA - INTERNAL ALARM EQUIPMENT	
Signal lamp:	LED green 5 mm
Acoustic alarm:	Piezo buzzer, f = 3.3 kHz
Collective alarm:	via zero potential break contact

TECHNICAL DATA - AMBIENT CONDITIONS	
Ambient temperature:	0 – 40 °C
Humidity:	0 – 95 % rel. humidity, not condensing

TECHNICAL DATA - DESIGN	
Housing:	Polystyrene colour similar to RAL 7035 (light grey)
Protection category:	IP 54
Dimensions (w×h×d):	200×160×60 mm
Installation position:	upright
Cable glands:	blue: 1 ea. of PG 9 and PG 11; grey: 1 ea. of PG 11 and PG 13.5

ORDER CODE

TYPE	SIGNALS	EX-PROTECTION	POWER SUPPLY
DGM-SK	**02N**	**Ex**	230
DGM-SK	02N = 2 channels	0 = without	230 = 220- 250 V, 50- 60 Hz
DGM-SK	04N = 4 channels	EX = with	110 = 110V 60 Hz
DGM-SK	06N = 6 channels		
	10N = 10 channels		

WHAT ARE THE ADVANTAGES OF THE NEW DRUVA® PUR SERIES?

A consistent compliance with current international standards

- Type test of our brass pressure regulators in accordance with ISO 7291 including the corresponding O_2 ignition test
- Type test of our stainless-steel pressure regulators for manifolds in accordance with ISO 7291. The corresponding O_2 ignition test will soon be carried out.
- Type test of our brass shut-off valves in accordance with ISO 10297 including the corresponding O_2 ignition test for main shut-off valves.
- Type test of our stainless-steel shut-off valves in accordance with ISO 10297. The corresponding O_2 ignition test will soon be carried out.
- Electrostatic chargeability test of plastic parts according to EN 13463-1

Special design for optimal control characteristics and long life cycle of our regulators

- Spring dampening system
- Encapsulated valve design of our pressure regulators

Easy fix, 2-piece installation plate

- Separate mounting of ground plate (Without weight of the manifold)
- Easy mounting of manifold to ground plate and fixing with one screw only
- Replacement of pressure gauges without dismantling of the entire manifold
- Grounding screw on the plates
- Spring hook on our plates for cylinder connection hoses

2-Piece Installation Plate

DRUVA® PUR - WHAT WE OFFER

- Focus on quality, durability, ease of use & safety
- High end materials 316L, Hastelloy, Elgiloy
- Specially cleaned and assembled pressure gauges (ECD quality)
- Single source supply–concept, system design, products, installation, after sales service
- Highly experienced application specialists for best of class support
- Complete & fully certified product portfolio
- For inert, reactive, flammable, oxidizing gases and gas mixtures, purity max 6.0
- Design & manufacturing in Europe

NEW PRODUCT CONFIGURATOR

Just a few clicks to configure your product!

https://configurator.druva.de/

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VHP MANIFOLDS

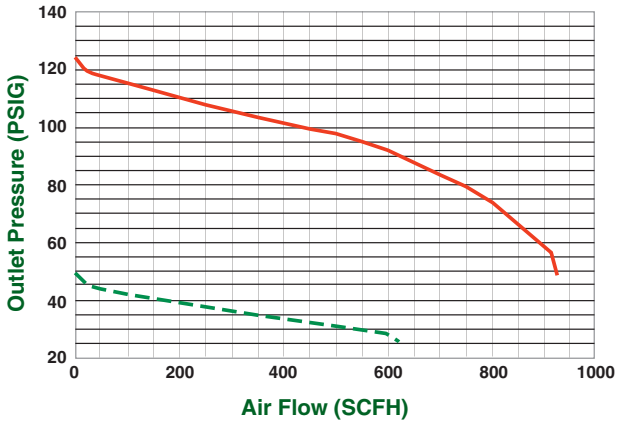
HIGH PURITY SWITCHOVER MANIFOLDS VHP2100 & VHP2000 MANIFOLD SYSTEMS

VHP Manifolds

The VHP2100 is a deluxe manifold system for high purity gases. The system is highly recommended for laboratory and process plant applications where depletion of gas supply is unacceptable.

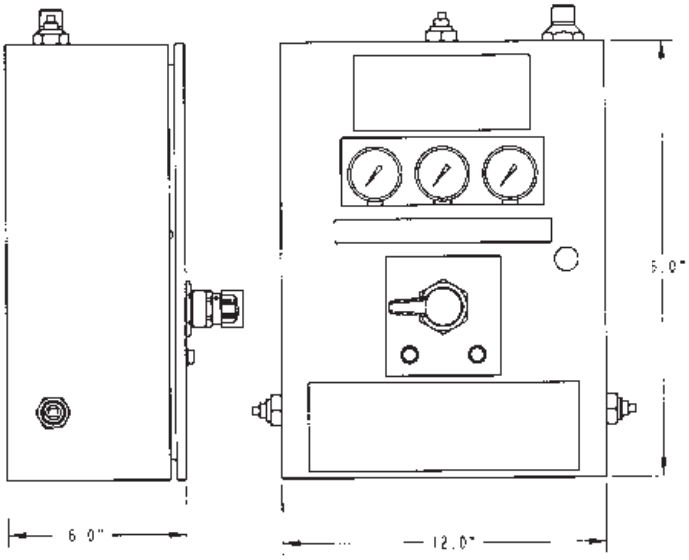
The VHP2100 is designed with an outlet regulator to maintain a constant downstream pressure. The system is available in brass or 316L stainless steel. In-service and reserve indicator lights are standard on the VHP2100 manifold.

The VHP2000 manifold is the same manifold without the in-service and reserve indicator lights.



Flow vs Outlet Pressure – Inlet Pressure (Nitrogen @ 70°F)

2000 psig ——— 250 psig – – – –



VHP MANIFOLDS
HIGH PURITY SWITCHOVER MANIFOLDS

FEATURES
500 Series Barstock regulators - High Purity for critical applications
In-service and reserve indicator lights standard †
Metal-to-metal seals for high helium leak integrity
Adjustable line regulator for constant delivery
Line regulator enclosed in box for tamper - resistant protection
Easy 180° lever to select primary gas source
VHP2100 Model incorporates pressure switches for remote alarm activation to indicate gas depletion†
† VHP2100 model only

SPECIFICATION	
Maximum inlet pressure	3000 psig
Outlet pressure ranges	15 (2-15 psig), 40 (2-40 psig) 80 (4-80 psig), 125 (5-125 psig)
Switchover Pressures	Right to Left Bank: 200 psig Left to Right Bank: 165 psig
Inlet & outlet ports	1/4" NPT (F)
Temperature operating range	-40 to 140°F (-40 to 60°C)
Outlet pressure rise	None
Flow coefficient	C_V= 0.05
Weight	30 lbs

BRASS MODEL MATERIALS	
Body	Brass Barstock
Spring housing cap	Nickel-Plated Brass
Diaphragm	316L Stainless Steel
Nozzle	Brass
Seat	PCTFE
Seals	Teflon
Poppet	Brass Barstock
Inboard filter	10 Micron Sintered Stainless Steel
Seat return spring	316L Stainless Steel
Pressure adjusting spring	Heat-Treated Spring Steel
Adjusting knob	Polypropylene
Enclosure	16 Gauge Powder Coated
Tubing	1/4" Copper
Fittings	Brass

STAINLESS MODEL MATERIALS	
Body	316L Stainless Steel Barstock
Spring housing cap	Nickel-Plated Brass
Diaphragm	316L Stainless Steel
Nozzle	316L Stainless Steel
Seat	PCTFE
Seals	Teflon
Poppet	316L Stainless Steel
Inboard filter	10 Micron Sintered Stainless Steel
Seat return spring	316L Stainless Steel
Pressure adjusting spring	Heat-Treated Spring Steel
Adjusting knob	Polypropylene
Enclosure	16 Gauge Powder Coated
Tubing	1/4" Stainless Steel
Fittings	Stainless Steel Tube

VHP MANIFOLD NUMBER SYSTEM AND SELECTOR GUIDE

XXX - PDS500 - XXX - XXX - XXX - XX

CGA INLET	CENTRE POSITION	DELIVERY PRESSURE	HEADER RIGHT	HEADER LEFT	STAINLESS STEEL PIGTAIL
Brass 320, 346, 350, 540, 58, 590 **Stainless Steel** 240, 330, 660, 705	**VHP2000B** Brass **VHP2000S** Stainless Steel **VHP2100B** Brass **VHP2100S** Stainless Steel	**15** **40** **80** **125** **300**	**1 RW** **2 RW** **3 RW** **4 RW** **6 RW** See note*	**1 LW** **2 LW** **3 LW** **4 LW** **6 LW** See note*	**24"** Flex **36"** Flex See note †

* Optional header configurations are available.
† Standard pigtails are stainless steel lined and include a check valve.

Int'l Customer Care: 1-940-381-1212 / FAX 1-940-483-8178
VictorTechnologies.com

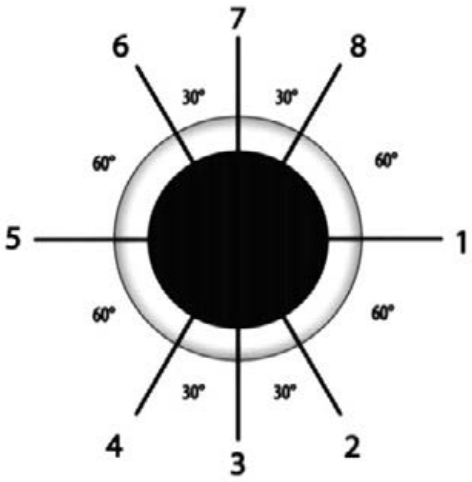
DRUVA PUR SHUT-OFF & METERING VALVES

- Technical Specifications:
  - Maintain 99.9999% Gas Purity (6.0)
  - Chrome Plated Brass & Stainless Steel Versions
  - ¼" NPT Female inlet/outlet
  - Shut-off valve: 2 port and 4 port versions
  - Metering/Regulating valve: 2 port option
  - Hastelloy/Elgiloy diaphragm tightening systems
  - Flow: Nominal 720 scfh
  - Max Inlet pressures: Shut-off valve=4350 psi; Metering valve=725psi
  - Leakage Rate: 1x10-9 cc He/sec
  - Filter: 100 micron SS mesh, 1 each on valve inlet and outlet
  - Materials, Gas Wetted Parts
    - Body-Machined Barstock; Chrome Plated Brass and 316L Stainless Steel
    - Diaphragms: Hastelloy

DIAPHRAGM VALVES SHUT-OFF AND REGULATING BRASS CHROME PLATED & STAINLESS STEEL

Standard Options
Maximum inlet pressure = 2900psi, inquire for other options

PORTING



PART NUMBER	TYPE	PORTS	MATERIAL	CONNECTIONS
VPLDSMAR001	Shut-off	2	Chrome Plated Brass	1/4" FNPT
VSLDSMAR001	Shut-off	2	Stainless Steel	1/4" FNPT
VPLDSMFR001	Shut-off	4	Chrome Plated Brass	1/4" FNPT
VSLDSMFR001	Shut-off	4	Stainless Steel	1/4" FNPT
VPLDRMAR001	*Metering	2	Chrome Plated Brass	1/4" FNPT
VSLDRMAR001	*Metering	2	Stainless Steel	1/4" FNPT
VPLDCMAR001	**Combi-Shutoff/Metering	2	Chrome Plated Brass	1/4" FNPT
VSLDCMAR001	**Combi-Shutoff/Metering	2	Stainless Steel	1/4" FNPT

* Seat design intended for metering only, and we recommend additional isolation valve if required
**Seat design provides positive gas isolation in conjunction with metering capabilty

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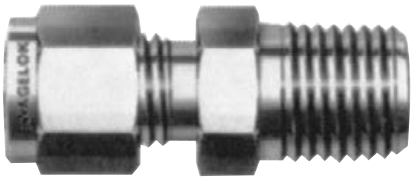
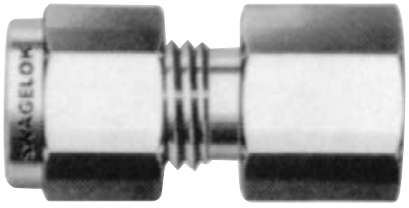
SWAGELOK®
BRASS TUBE FITTINGS/COMPRESSION TYPE

Swagelok
Brass Swagelok® tube fittings provide a leak resistant seal for copper or brass tubing connections. Swagelok® fittings come completely assembled and finger-tight. Installation is made easy by inserting the tube until tubing rests firmly against the shoulder and the nut is finger-tight. Hold the fitting body with a back-up wrench and tighten the nut one-and-one quarter turns.

Swagelok Ordering Information

Part No.	Material	Tube O.D.	Pipe Size
0910-0062	Brass	1/4"	1/4" NPT (M) x 1/4" Tube
0910-0092	Brass	1/8"	1/4" NPT (M) x 1/8" Tube
0910-0079	Stainless Steel	1/4"	1/4" NPT (M) x 1/4" Tube
0910-0095	Stainless Steel	1/8"	1/4" NPT (M) x 1/8" Tube





Compression Type Fitting

GAUGES

GAUGES FOR TECH MASTER GP400 SERIES

Description	Diameter	Pressure Range	Part Number
Tech Master GP400 22 PSIG Gauge	2" (50 mm)	-1 to +3 bar / -30 "Hg to +43 psi	1435-0184RP
Tech Master GP410 15 PSIG Acetylene Gauge	2" (50 mm)	-1 to +2.1 bar / -30 "Hg to +30 psi	1435-0185RP
Tech Master GP400 50 PSIG Gauge	2" (50 mm)	-1 to +5 bar / -30 "Hg to +72 psi	1435-0186RP
Tech Master GP400 90 PSIG Gauge	2" (50 mm)	-1 to +9 bar / -30 "Hg to +130 psi	1435-0187RP
Tech Master GP400 150 PSIG Gauge	2" (50 mm)	-1 to +15 bar / -30 "Hg to +220 psi	1435-0188RP
Tech Master GP400 High Pressure Inlet Gauge	2" (50 mm)	0 to +400 bar / 0 to +6000 psi	1435-0189RP
Tech Master GP410 Acetylene Inlet Gauge	2" (50 mm)	0 to +40 bar / 0 to +600 psi	1435-0190RP

All gauges listed above have gold painted case, snap-on tamper proof lens and 1/4" NPT male inlet connection

GAUGES FOR LAB MASTER GP400 SERIES and SPEC MASTER HP600 SERIES

Description	Diameter	Pressure Range	Part Number
Lab/Spec MasterR LG500/HP600 22 PSIG Gauge	2" (50 mm)	-1 to +3 bar / -30 "Hg to +43 psi	1435-0191RP
Lab Master LG500 15 PSIG Acetylene Gauge	2" (50 mm)	-1 to +2.1 bar / -30 "Hg to +30 psi	1435-0192RP
Lab/Spec Master LG500/HP600 50 PSIG Gauge	2" (50 mm)	-1 to +5 bar / -30 "Hg to +72 psi	1435-0193RP
Lab/Spec Master LG500/HP600 90 PSIG Gauge	2" (50 mm)	-1 to +9 bar / -30 "Hg to +130 psi	1435-0194RP
Lab/Spec Master LG500/HP600 150 PSIG Gauge	2" (50 mm)	-1 to +15 bar / -30 "Hg to +220 psi	1435-0195RP
Lab/Spec Master LG500/HP600 High Pressure Inlet Gauge	2" (50 mm)	0 to +400 bar / 0 to +6000 psi	1435-0196RP
Lab Master LG510 Acetylene Inlet Gauge	2" (50 mm)	0 to +40 bar / 0 to +600 psi	1435-0197RP
Spec Master HP600 300 PSIG Gauge	2" (50 mm)	-1 to +30 bar / -30 "Hg to +440 psi	1435-0198RP
Spec Master HP600 725 PSIG Gauge	2" (50 mm)	-1 to +70 bar / -30 "Hg to +1000 psi	1435-0199RP
Spec Master HP600 Low Pressure Inlet Gauge	2" (50 mm)	0 to +60 bar / 0 to +870 psi	1435-0200RP

All gauges listed above have chrome plated case, snap-on tamper proof lens and 1/4" NPT male inlet connection

GAUGES FOR CHEM MASTER SG600 SERIES

Description	Diameter	Pressure Range	Part Number
Chem Master SG600 22 PSIG Gauge	2" (50 mm)	-1 to +3 bar / -30 "Hg to +43 psi	1435-0201RP
Chem Master SG600 50 PSIG Gauge	2" (50 mm)	-1 to +5 bar / -30 "Hg to +72 psi	1435-0202RP
Chem Master SG600 90 PSIG Gauge	2" (50 mm)	-1 to +9 bar / -30 "Hg to +130 psi	1435-0203RP
Chem Master SG600 150 PSIG Gauge	2" (50 mm)	-1 to +15 bar / -30 "Hg to +220 psi	1435-0204RP
Chem Master SG600 300 PSIG Gauge	2" (50 mm)	-1 to +30 bar / -30 "Hg to +440 psi	1435-0205RP
Chem Master SG600 725 PSIG Gauge	2" (50 mm)	-1 to +70 bar / -30 "Hg to +1000 psi	1435-0206RP
Spec Master HP600 High Pressure Inlet Gauge	2" (50 mm)	0 to +400 bar / 0 to +6000 psi	1435-0207RP
Spec Master HP600 Low Pressure Inlet Gauge	2" (50 mm)	0 to +60 bar / 0 to +870 psi	1435-0208RP

All gauges listed above have stainless steel case, snap-on tamper proof lens and 1/4" NPT male inlet connection

OTHER REPAIR PARTS

Description	Part Number
Captured Vent Kit	0790-0220RP
Panel Mount Nuts (set of 2 nuts)	0790-0221RP
Knob with Tech Master Decal	0790-0222RP
Knob with Lab Master Decal	0790-0223RP
Knob with Spec Master Decal	0790-0224RP
Knob with Chem Master Decal	0790-0225RP

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CYLINDER VALVE OUTLETS AND CONNECTIONS

GAS	CGA VALVE OUTLET & CONN.
Acetylene	510
Air (Industrial)	590
Air (Breathing Air)	346
Allene	510
Ammonia 705	240
Argon	580
Arsine	350
Boron Trichloride	660
Boron Trifluoride	330
Bromine Pentafluoride	670
Bromine Trifluoride	670
Bromotrifluoroethylene	510
1-3 Butadiene	510
Butane	510
Butenes	510
Carbon Dioxide	320
Carbon Monoxide	350
Carbonyl Fluoride	750
Carbonyl Sulfide	330
Chlorine	660
Chlorine Trifluoride	670
Chlorotrifluoroethylene	510
Cyanogen	750
Cyanogen Chloride	750
Cyclopropane	510
Deuterium	350
Diborane	350
1,2-Dibromodifluoromethane	668
Dimethylamine	705
Dimethyl Ether	510
2-2 Dimethyl Propane	510
Ethane	350
Ethyl Acetylene	510
Ethyl Chloride	510
Ethylene	350
Ethylene Oxide	510
Fluorine	679
“Freon 12" (Dichlorodifluoromethane)	660
“Freon 13" (Chlorotrifluoromethane)	660
“Freon 13B1" (Bromotrifluoromethane)	660
“ Freon 14" (Tetrafluoromethane)	580
“Freon 22" (Chlorodifluoromethane)	660
“Freon 114" (1, 2 Dichlorotetrafluoroethane)	660
“Freon 116" (Hexafluoroethane)	660
“Freon RC318" (Octafluorocyclobutane)	660
“Genetron 21" (Dichlorofluoromethane)	660
“Genetron 23" (Fluoroform)	660
“Genetron 115" (Mono-chloropentafluoroethane)	660
“Genetron 152A" (1, 1-Difluoroethane)	510
“Genetron 1132A" (1, 1-Difluoroethylene)	350
Germane	350
Helium	580
Hexafluoroacetone	330
Hexafluoropropylene	660
Hydrogen	350
Hydrogen Bromide	330
Hydrogen Chloride	330
Hydrogen Fluoride	670
Hydrogen Selenide	350
Hydrogen Sulfide	330
Iodine Pentafluoride	670
Isobutane	510
Isobutylene	510
Krypton	580
Methane	350
Methyl Acetylene	510
Methyl Bromide	330
3-Methyl Butene-1	510
Methyl Chloride	510
Methyl Mercaptan	330
Monoethylamine	705
Monomethylamine	705
Natural Gas	350
Neon	580
Nickel Carbonyl	660
Nitric Oxide	660
Nitrogen	580
Nitrogen Dioxide	660
Nitrogen Trioxide	660
Nitrosyl Chloride	330
Nitrous Oxide (Formerly 1320)	326
Oxygen	540
Perfluoro-2-Butene	660
Perfluoropropane	660
Phosgene	660
Phosphine	350
Phosphorous Pentafluoride	330
Propane	510
Propylene	510
Silane	350
Silicon Tetrafluoride	330
Sulfur Dioxide	660
Sulfur Hexafluoride	590
Sulfur Tetrafluoride	330
Sulfuryl Fluoride	660
Tetrafluoroethylene	350
Trimethylamine	705
Vinyl Bomide	510
Vinyl Chloride	510
Vinyl Fluoride	350
Vinyl Methyl Ether	510
Xenon	580

NOTE: The above are standard CGA connections and are designated by Compressed Gas Association, Standard V-1. For alternate and latest standards and connections, contact Compressed Gas Association, 1235 Jefferson Davis Hwy., Arlington, VA 22202.

CYLINDER VALVE OUTLETS AND CONNECTIONS

These dimensional drawings illustrate cylinder valve outlet and connections. The drawing at the left side illustrates the cylinder valve outlet. The one at right illustrates its mating regulator or valve connection.

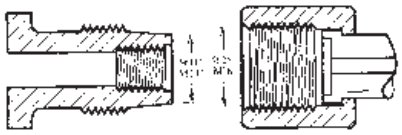
CGA No. 170

Order No.'s
Nut
0980-0000
0980-0004*

Washer
1408-0071

Swivel
0980-0003
0980-0005*

9/16 - 18



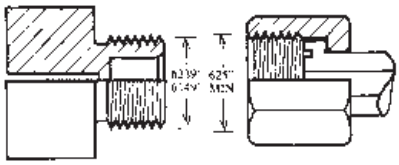
CGA No. 180

Order No.'s
Nut
0981-0002
0981-0006**
0981-0004*

Washer
1408-0070

Swivel
0981-0000
0981-0005**
0981-0003*

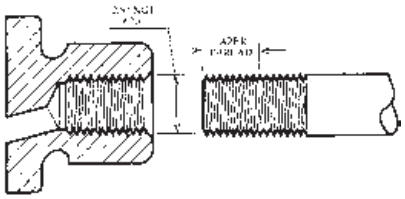
5/8 - 18



CGA No. 240

Order No.'s
Swivel
0998-0003**

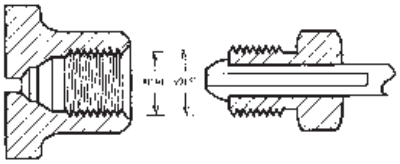
3/8 NGT



CGA No. 269

Order No.'s
Nut
0976-0003

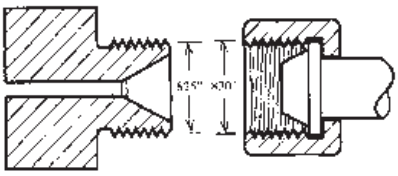
Swivel
0976-0002



CGA No. 300

Order No.'s
Nut
0968-0003
0968-0006*

Swivel
0968-0014
0968-0051*

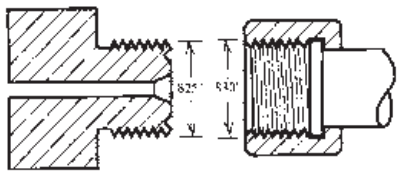


CGA No. 320

Order No.'s
Nut
0985-0030
0985-0031*

Washer
1408-0065

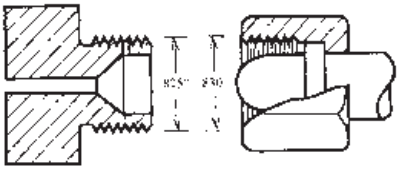
Swivel
0985-0004



CGA No. 326

Order No.'s
Nut
0963-0015
0963-0016*

Swivel
0963-0004*
0963-0010

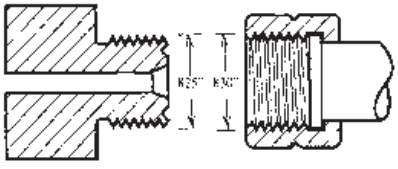


CGA No. 330

Order No.'s
Nut
0986-0007*
0986-0008**

Washer
1408-0023

Swivel
0985-0006**



** Chrome
** Stainless Steel

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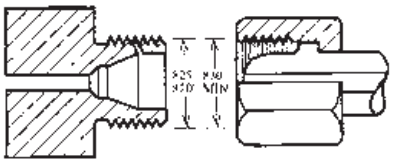
CYLINDER VALVE OUTLETS AND CONNECTIONS

CGA No. 346

Order No.'s
Nut
0972-0015
0972-0016*
0972-0036**

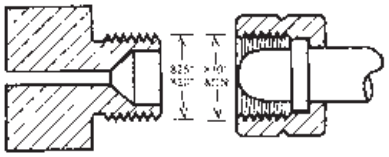
Swivel
0972-0010
0972-0017*
0972-0035**



CGA No. 350

Order No.'s
Nut
0983-0003
0983-0039*
0983-0013**

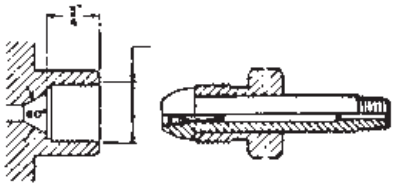
Swivel
0983-0008
0983-0040*
0983-0014**



CGA No. 500

Order No.'s
Nut
0976-0000

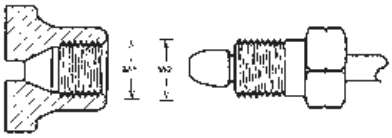
Swivel
0970-0017*



CGA No. 510

Order No.'s
Nut
0970-0003
0970-0011*
0970-0006**

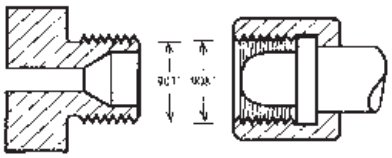
Swivel
0970-0005
0970-0017*
0970-0051**



CGA No. 540

Order No.'s
Nut
0967-0044
0967-0045*
0967-0052**

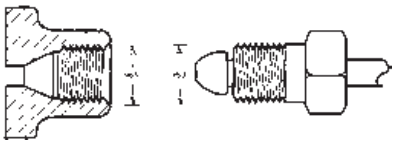
Swivel
0967-0034
0967-0042*
0967-0022**



CGA No. 580

Order No.'s
Nut
0973-0003
0973-0005*
0973-0004**

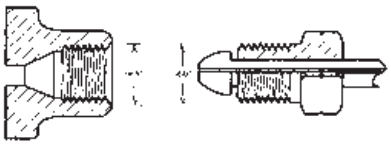
Swivel
0970-0005
0970-0017*
0970-0051**



CGA No. 590

Order No.'s
Nut
0974-0003
0974-0010*
0974-0004**

Swivel
0970-0005
0970-0017*

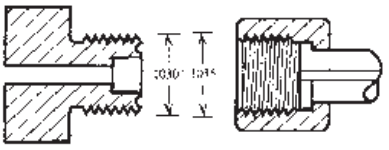


CGA No. 660

Order No.'s
Nut
0995-0016*
0995-0003
0995-0007**

Washer
1408-0024

Swivel
0995-0017**
0995-0018*

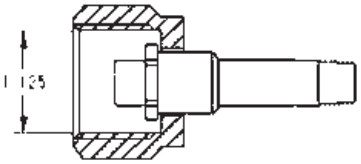


CGA No. 705

Order No.'s
Nut
0998-0012**

Washer
1408-0032

Nipple
0998-0011**



* Chrome
** Stainless Steel

GLOSSARY OF TERMS

Absolute Zero - The lowest temperature attainable. All molecular activity is considered ceased. It's value is -459.7 degrees F or -273.15 degrees C.

Aerobic Mixture - Gas mixture containing oxygen. A control atmosphere for the growth of biological cultures.

AIT (Auto Ignition Temperature) - The lowest temperature at which a material will ignite and sustain combustion in the absence of a spark or flame.

Anaerobic Mixture - Oxygen free gas mixture with carbon dioxide used as an atmosphere for the growth of biological cultures.

Anhydrous - Describes a material that contains no water.

Annealing Gas - A hydrogen-nitrogen mixture used to provide a reducing atmosphere during heating of metals to render them less brittle on cooling.

Asphyxiant Gas - A gas which has little or no positive toxic effect but which can bring about unconsciousness and death by replacing the air and thus depriving an organism of oxygen.

Atomic Absorption Spectrophotometer - Instrument for measuring energy distribution from light sources. Uses purified acetylene and nitrous oxide.

Blood Gas - A mixture of Carbon Dioxide in Oxygen for calibration of Blood Gas Analyzers.

Boiling Point - The temperature at which the pressure of the vapor is equal to the pressure exerted on the liquid. The normal boiling point is the temperature at which the vapor pressure of the liquid is 14.7 psia (1 atmosphere).

Calibration Gas - A gas or gas mixture of accurately known composition used as a comparative standard in analytical instrumentation.

Carrier Gas - High purity gases, primarily Helium, Hydrogen, Nitrogen and Argon for carrying either samples for analytical instrumentation (such as gas chromatography) or for carrying small quantities of reactive components into reaction area (such as doping gas mixtures for manufacturing semiconductor devices).

Chromatography - A method of separation of gaseous or chemical mixtures bases on selective absorption. Used widely in analytical technology.

Corrosive - A substance that erodes and deteriorates materials with which it comes in contact, such as metals, fabrics and human tissue.

Creep - The increase in outlet pressure of a pressure regulator. Gas from the high pressure side of the regulator is leaking into the low pressure side causing the delivery set pressure to increase. Usually this malfunction is more detectable when the regulator is in a static (no flow) or low flow condition.

Critical Pressure - The vapor of a liquid at the critical temperature.

Critical Temperature - The highest temperature at which a distinct liquid phase exists. When the temperature of a substance is below its critical temperature, its vapor can be liquefied by raising the pressure. Above the critical temperature, however, it can't be liquefied thus it behaves as a gas no matter what the pressure is because only one phase can exist.

Density - The ratio of a substances mass to its volume or the mass of a substance to unit volume.

Droop - The decrease in outlet set pressure of a pressure regulator as the flow rate increases.

Flammable Gas - Any gas that will ignite easily and burn rapidly.

Flow Coefficient (C V) - The flow in gallons of water per minute at 60 degrees F when the inlet is 1 psig and the outlet pressure is atmospheric (14.7 psia).

Forming Gas - Usually mixtures of Hydrogen or Carbon Monoxide with Nitrogen. The mixtures are used as furnace atmospheres to prevent oxidation and are commonly called reducing gases.

Inert Gas - Gases which do not react with other materials at ordinary temperature and pressure. These gases are also sometimes called the noble gases.

Inlet Pressure - The upstream or supply pressure to a device.

Ion - An electrically charged atom or group of atoms; electrically charged molecules in gases. Usually an atom or molecule that has lost one or more of its electrons is left with a positive electrical charge. Those that have gained one or more extra electrons are left with a negative charge.

Lockup - The increase in outlet set pressure of a pressure regulator when the flow is stopped.

Lecture Bottle - Small steel cylinder 2" in diameter and 15" long.

Lung Diffusion Gas - Mixtures of either Carbon Monoxide and Air or Carbon Monoxide, Helium, Oxygen and Nitrogen to test the efficiency of lungs.

NTP (Normal Temperature and Pressure) - A gas industry reference set of conditions of temperature and pressure. Normal temperature is 70 degrees F and 14.7 psia (1 atmosphere).

Outlet Pressure - The delivery pressure of a device.

Oxidizer - Gases which do not burn, but which support combustion.

psia - Abbreviation for pounds per square inch absolute. One atmosphere equals 14.7 psia = psig plus 14.7.

psig - Abbreviation for pounds per square inch gauge. Gauge pressure always ignores the first atmosphere absolute (14.7).

Pyrophoric - The ability of a chemical to ignite in air at temperatures below 130 degrees F.

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GLOSSARY OF TERMS

Rare Gas - Refers to those constituents of air which comprise less than 1% of air and are generally considered inert such as argon, helium, krypton, neon, and xenon.

Rise - The increase in delivery pressure as the cylinder pressure decreases. Rise is sometimes stated as the amount of psig increase in delivery pressure per 100 psig decrease in cylinder pressure.

Span Gas - Usually a gas mixture used to span or calibrate a process or analyzer at intermediate points to full scale after a zero base line has been established.

Specific Gravity - The ratio of a given volume of a substance to the weight of an equal volume of a reference material. Usually gases are compared to air (air = 1) while liquids are compared to water (water = 1).

STP (Standard Temperature and Pressure) - An internationally accepted reference set of conditions of temperature and pressure. Standard temperature is 0 degrees C and 14.7 psia (1 atmosphere).

THC (Total Hydrocarbon Content) - THC is used to describe the quantity of hydrocarbon impurities present, expressed a methane equivalents.

Toxic Gas - Poisonous gas or gas that can cause physical harm in relatively small concentrations.

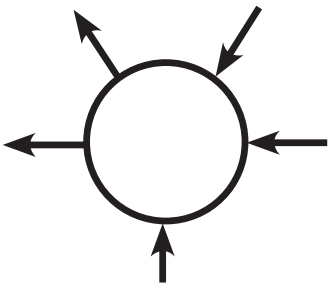
Triple Point - The temperature at the liquid, solid and vapor phase are in equilibrium.

Vapor Pressure - The pressure exerted by the vapor above a pure liquid when the two phases are in equilibrium. The value depends on the temperature of the system, but at any temperature it is independent of the amount of liquid present.

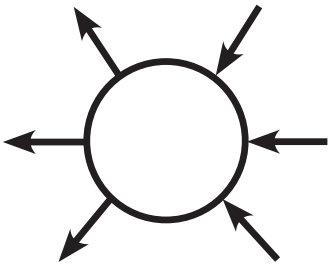
Zero Gas - Gases which have low THC and are used as reference point to “zero" a THC analyzer.

PORT CONFIGURATION DATA

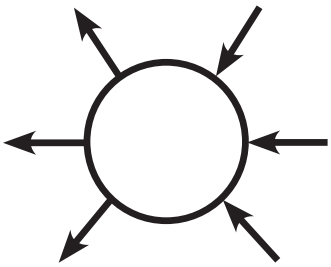
The following port configurations are used in high purity regulators.



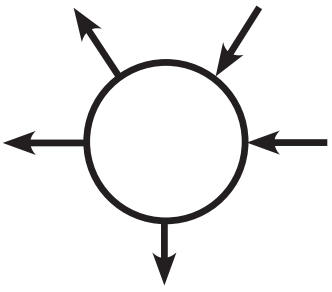
GPS400, GPT400



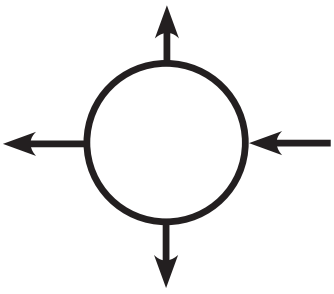
SGS600, HPS600, LGS500



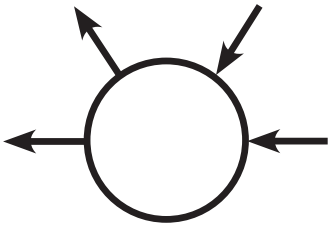
SGT600, HPT600, LGT500



HPS4



HPL700, GPL400, LGL500. HPL600, SGL600



LB 150

CONVERSION FACTORS

FLOW CONVERSIONS

If pressure is given in	Multiply by	To obtain
ml/min.	1.0 x 10-3	L.P.M.
ml/min.	3.5316 x 10-5	S.C.F.M.
ml/min.	2.1189 x 10-3	S.C.F.H.
ml/min.	2.6418 x 10-4	G.P.M.
ml/min.	1.5852 x 10-2	G.P.H.
L.P.M.	1.0 x 103	cc/min.
L.P.M.	3.5316 x 10-2	S.C.F.M.
L.P.M.	2.11896	S.C.F.H.
L.P.M.	2.6418 x 10-1	G.P.M.
L.P.M.	1.58508 x 101	G.P.H.
S.C.F.H.	.47192	L.P.M.

PRESSURE CONVERSIONS

If pressure is given in	Multiply by	To obtain
Inches of Mercury at 70ºF	4.912 x 10-1	PSIA
Inches of Water at 4ºC	3.613 x 10-2	PSIA
PSIA	2.036	Inches of Mercury
PSIA	27.73	Inches of Water at 70ºF
PSIA	6.804 x 10-2	Atmospheres
Atmosphere	1.47 x 101	PSIA
BarsÂ14.29	1.45 x 101	PSIA
Inches of Mercury at 70ºF	13.57	Inches of Water at 70ºF
Millimeters of Water at 70ºF	3.937 x 10-2	Inches of Water at 70ºF
Millimeters of Mercury at 70ºF	5.343 x 101	Inches of Water at 70ºF
Atmospheres (PSIG)	407.631	Inches of Water at 70ºF

TEMPERATURE CONVERSIONS

If temperature is given in	Multiply by	To obtain
Degrees Centigrade	(ºC + 17.78) x 1.8	Fahrenheit
Degrees Centigrade	(ºC + 273.16) x 1.8	Rankine
Degrees Fahrenheit	(ºF - 32.0) x 5.56 x 10-1	Centigrade
Degrees Fahrenheit	(ºF x 1.0) + 459.70	Rankine
Degrees Rankine	(ºR x 1.0) - 459.70	Fahrenheit
Degrees Rankine	(ºR x 5.56 x 101) - 273.16	Centigrade

FLOW CONVERSIONS

If pressure is given in	Multiply by	To obtain
Pounds / ft^3	5.787 x 10-4	Pounds / in^3
Pounds / ft^3	1.602 x 10-2	Grams / cm^3
Pounds / in^3	1.728 x 103	Pounds / ft^3
Pounds / in^3	2.768 x 101	Grams /cm^3
Grams / cm^3	3.613 x 10-2	Pounds / in^3
Grams / cm^3	6.243 x 101	Pounds / ft^3

How to estimate the flow of gases other than air based on air flow data and gas temperature.

Calculate Using Formula: $Q_2 = \frac{Q_1 \ (f_1)}{f_2}$

Where: Q_2 = Flow (SCFH) of gas being estimated
Flow (SCFH) of air from flow curves
f_1 = Temperature correction factor (See Table 1)
f_2 = Specific gravity correction factor (See Table 2)

Table 1. Temperature Correction Factors (f_1)

OPERATING TEMPERATURE - DEGREES F												
0	10	20	30	40	50	60	70	80	90	100	110	0120
0.932	0.942	0.952	0.962	0.971	0.981	0.991	1.000	1.009	1.018	1.028	1.037	1.046

OPERATING TEMPERATURE - DEGREES F												
130	140	150	160	170	180	190	200	210	220	230	240	250
1.055	1.064	1.072	1.081	1.090	1.099	1.107	1.116	1.124	1.133	1.141	1.149	1.157

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GASES DATA

GASES DATA

Gas Name	Symbol	Specific Gravity @14.7 psi & 70° F	f_2 $(f_2)_2$ =SP.GR.	Full Cylinder pressure @ 70°F (psig)	Hazards in Handling	Auto-Ignition Temp (°F)
Acetylene	C_2H_4	0.907	0.952	205 2 ②	Highly Flammable	635°
Air	--	1.000	1.000	1775-2200	--	--
Ammonia	NH_3	0.596	0.772	114.1 ③	Highly Irritant & Toxic	1204°
Argon	Ar	1.380	1.175	1775-2490	Asphyxiant	--
Boron Trifluoride	BF_3	2.217	1.489	1600-1800	Highly Irritant & Toxic	--
Butane	C_4H_{10}	2.071	1.439	16.3 ③	Highly Flammable	761°
Carbon Dioxide	CO_2	1.529	1.236	830 ③	Solid Form May Severely Burn	--
Carbon Monoxide	CO	.0967	0.983	1650	Highly Toxic & Flammable	1128° liq
Cyclopropane	C_3H6	1.354	1.164	75 ③	Highly Flammable/Moderately Toxic	928°
Dimethyl Ether	$(CH_3)_2O$	1.484	1.218	62.3 ③	Highly Flammable	662°
Ethane	C_2H_6	1.049	1.024	543 ③	Flammable	959°
Helium	HE	0.138	0.372	2490	Asphyxiant	--
Hydrogen	H_2	0.0695	0.624	2200	Highly Flammable & Explosive	1075°
Hydrogen Bromide	BHr	2.575	1.605	320 ③	Highly Irritant & Toxic	--
Hydrogen Sulfide	H_2S	1.087	1.043	252 ③	Highly Irritant & Toxic	500°
Methane	CH_4	0.554	0.744	2265	Severe Fire Hazard & Explosive	1000°
Methylacetylene	C_3H_4	1.292	1.137	60 ③	Flammable & Moderately Toxic	--
Natural Gas	--	0.610 ④	0.781	1775-2665	Flammable & Explosive	900-1100°
Neon	Ne	0.638	0.799	225-1800	Asphyxiant	--
Nitric Oxide	NO	0.950	0.974	500	Highly Irritant & Toxic	--
Nitrogen	N_2	0.967	0.983	2000-2490	--	--
Nitrous Oxide	N_2O	1.530	1.236	745 ③	Supports Combustion/Anesthetic	--
Oxygen	O_2	1.105	1.051	2200	Accelerates Combustion/Fire Hazard	--
Propane	C_3H8	1.554	1.246	109 ③	Flammable	874°
Propylene	C_3H_6	1.381	1.175	136.5 ③	Highly Flammable & Explosive	874°
Sulfur Tetrafluoride	SF_4	3.525	1.878	140 ③	Highly Flammable & Explosive	927°
Xenon	Xe	4.169	2.042	800	Asphyxiant	--

① Referred to air at 14.7 psia and 70°F
② Cylinder pressure of the dissolved gas (in acetone)
③ Vapor pressure of the liquefied gas
④ This number is an average of a variance specific gravity

WARRANTY

LIMITED WARRANTY: ESAB warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the ESAB products as stated below, ESAB shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with ESAB's specifications, instructions, recommendations and recognized standard industry practice, and not subject to abuse, misuse, neglect, alteration, accident, improper care and/or maintenance including lack of lubrication and protection from the elements, use of non ESAB genuine parts including consumables; will correct such defects by suitable repair or replacement, at ESAB's sole option, of any components or parts of the product determined by ESAB to be defective.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: ESAB shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption.

The remedies of the Purchaser set forth herein are exclusive and the liability of ESAB with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by ESAB whether arising
out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based.

**THIS WARRANTY BECOMES INVALID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH MAY IMPAIR THE SAFETY OR PERFORMANCE
OF ANY ESAB PRODUCT.**

THIS WARRANTY IS INVALID IF THE PRODUCT IS SOLD BY NON-AUTHORIZED PERSONS.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus 1 year from the date ESAB delivered the product to the authorized distributor.

5 YEARS PARTS / NO LABOR
Victor® (Exceptions noted below)
Victor® Slimlite Medical

2 YEARS PARTS / NO LABOR
CutSkill®, Oxygen Conservers, Victor® VSP,
HP&I Brass Regulators/Manifolds
All other Victor® Medical product

1 YEARS PARTS / NO LABOR
Steel Cylinders, Cutting Machine Motors (i.e. VCM 200)
HP&I Stainless Regulators/Manifolds (non corrosive gas)
Parts in Rental Applications (from the date sold
by seller to authorized distributor)

90 DAYS PARTS / NO LABOR
HP&I Corrosive Gas Regulators/Manifolds

ESAB limited warranty shall not apply to: Consumable Parts for MIG, TIG, Plasma welding, Plasma cutting and Oxyfuel torches, O-rings, fuses, filters or other parts that fail due to normal wear.

* Warranty repairs or replacement claims under this limited warranty must be submitted by an authorized ESAB repair facility within thirty (30) days of the repair.
* No employee, agent, or representative of ESAB is authorized to change this warranty in any way or grant any other warranty, and ESAB shall not be bound by any such attempt. Correction of non-conformities, in the manner and time provided herein, constitutes fulfillment of ESAB's obligations to purchaser with respect to the product.
* This warranty is void, and seller bears no liability hereunder, if purchaser used replacement parts or accessories which, in ESAB's sole judgment, impaired the safety or performance of any ESAB product. Purchaser's rights under this warranty are void if the product is sold to purchaser by unauthorized persons.* This warranty is void, and seller bears no liability hereunder, if purchaser used replacement parts or accessories which, in VICTOR TECHNOLOGIES's sole judgment, impaired the safety or performance of any VICTOR TECHNOLOGIES product. Purchaser's rights under this warranty are void if the product is sold to purchaser by unauthorized persons.

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5-YEAR WARRANTY.

With Victor's dedicated service and support, you'll be protected by the most comprehensive warranty in the business.

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