

## Single Stage Regulators:

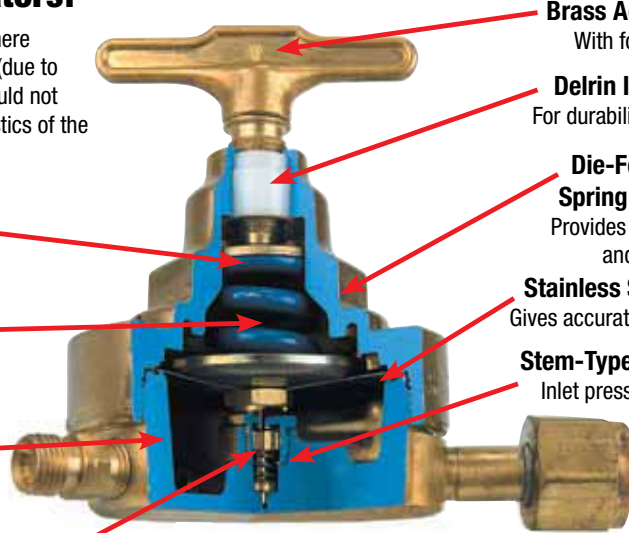
Recommended for applications where slight delivery pressure increases (due to decreasing cylinder pressures) would not affect the performance characteristics of the work or test results.

**Stainless Ball in Key**  
For easy adjustment

**Adjusting Spring**  
Pretested for quality assurance

**Die-Forged Brass Body**  
For extra strength

**Precision Machined Nozzle**  
For optimum flow control



**Brass Adjusting Screw**  
With forged T-handle

**Delrin Insert Bushing**  
For durability, easier adjusting

**Die-Forged Brass Spring Housing Cap**  
Provides greater strength and durability

**Stainless Steel Diaphragm**  
Gives accurate long lasting service

**Stem-Type Seat Mechanism**  
Inlet pressure aids in sealing

Typical Single Stage Design  
SR 450 Series Shown

2.5" (63.5mm) Brass Gauges  
External Relief Valve System

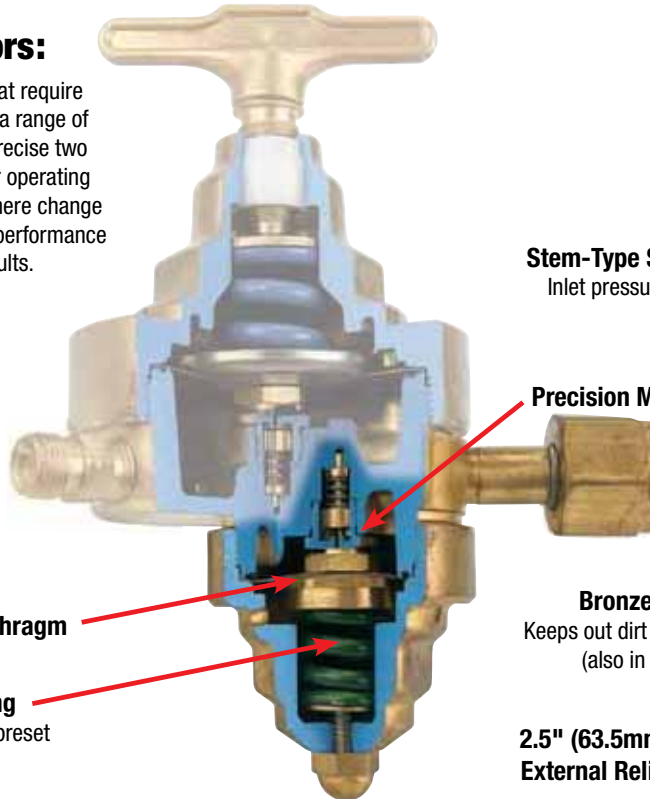
Two stage regulators add the following in addition to the features listed above:

## Two Stage Regulators:

Recommended for applications that require a constant delivery pressure over a range of decreasing inlet pressures. This precise two stage regulation provides superior operating characteristics for applications where change in delivery pressure would affect performance characteristics of work or test results.

**Stainless Steel Diaphragm**

**Adjusting Spring**  
Designed for precise preset



**Stem-Type Seat Mechanism**  
Inlet pressure aids in sealing

**Precision Machined Nozzle**

**Bronze Inlet Filter**  
Keeps out dirt & foreign materials  
(also in single stage)

2.5" (63.5mm) Brass Gauges  
External Relief Valve System

Typical Two Stage Design  
VTS 450 Series Shown

Delivery Pressure LB. per SQ. IN.	Oxygen Flow SCFH	Pressure Drop LB. per SQ. IN.																	
		3/16" Hose				1/4" Hose				5/16" Hose				3/8" Hose					
		Hose Length in Feet																	
		12.5	25	50	100	12.5	25	50	100	12.5	25	50	100	12.5	25	50	100		
<b>OXYGEN HOSE</b>	10	100	5.0	6.3					2.0	3.8	6.0	*	*	*	2.3	*	*	*	2.0
		250						9.4				2.7	4.1	5.9		*	*	3.3	6.4
	25	100	3.6	5.7	8.2	13.4	*	*	2.9	4.3	*	*	*	*	*	*	*	*	*
		250	13.2	18.3			6.3	7.9	11.7	16.8	*	2.4	3.2	6.7	*	*	*	*	3.7
		500					21.5				6.3	8.7	12.1	19.9	2.7	4.6	6.9	11.9	
	50	100	2.0	3.4	5.9	9.3	*	*	2.0	2.7	*	*	*	*	*	*	*	*	*
		250	8.0	12.6	19.4		2.7	5.0	7.9	11.0	*	*	2.2	3.9	*	*	*	*	2.6
		500					14.1	18.2			3.4	5.9	7.7	13.3	*	2.9	4.7	8.0	
		750									8.8	12.3	17.8		3.8	6.0	9.8	10.9	
	75	100	*	2.6	3.8	7.1	*	*	*	2.8	*	*	*	*	*	*	*	*	*
		250	6.0	9.4	13.3	23.1	3.0	3.8	6.0	8.2	*	*	*	2.8	*	*	*	2.0	
		500	19.7				10.7	13.8	19.8		2.5	3.9	6.3	9.4		2.0	3.4	5.9	
		750					22.5				6.6	8.8	13.7	18.8	2.7	4.1	7.0	12.2	
		1000									11.8	14.7	22.6		4.9	6.9	12.0	20.3	
	100	100	*	*	2.7	4	*	*	*	*	*	*	*	*	*	*	*	*	*
		250	4.7	6.7	10.3	16.9	2.2	2.8	4.3	6.0	*	*	*	2.2	*	*	*	*	*
		500	14.1	21.0			8.1	10.8	15.0	21.2	2.0	2.9	4.4	7.1	*	*	2.1	4.6	
		750					17.7	23.0	32.3	42.8	4.7	6.9	10.3	15.4	*	2.9	4.9	8.7	
		1000					31.0	37.0	53.0	68.5	8.6	11.8	17.4		3.1	5.2	8.8	14.4	
		1500					65.5	82.0			19.1				7.7	11.8	19.4		

Delivery Pressure LB. per SQ. IN.	Oxygen Flow SCFH	Pressure Drop LB. per SQ. IN.																
		3/16" Hose				1/4" Hose				5/16" Hose				3/8" Hose				
		Hose Length in Feet																
		12.5	25	50	100	12.5	25	50	100	12.5	25	50	100	12.5	25	50	100	
<b>ACETYLENE HOSE</b>	5	25	0.3	0.5	1.0	1.8	**	**	0.5	0.8	**	**	**	0.3	**	**	**	**
		50	1.2	2.0	3.2		0.5	0.9	1.3	2.4	**	0.3	0.4	0.7	**	**	0.3	0.4
		75	2.6	3.9			1.2	1.8	2.6	4.5	0.4	0.5	0.8	1.4	**	0.3	0.5	0.8
		100	4.3				1.9	2.8	4.4		0.5	0.8	1.3	2.4	0.3	0.4	0.7	1.1
		150					4.0				1.2	1.7	2.7	4.8	0.5	0.8	1.2	2.2
	10	25	0.3	0.5	0.8	1.4	**	**	0.3	0.7	**	**	**	**	**	**	**	**
		50	0.9	1.6	2.5	4.9	0.5	0.7	1.1	2.0	**	**	0.3	0.6	**	**	**	0.3
		75	2.0	3.1	6.3		0.9	1.4	2.2	3.7	0.3	0.4	0.5	0.6	**	**	0.3	0.6
		100	4.5	5.4			1.6	2.0	3.6	6.0	0.4	0.6	0.9	2.2	**	0.3	0.5	1.9
		150	7.0				3.2	4.5	7.3		0.9	1.3	2.1	3.9	0.4	0.6	1.0	2.5
		250					8.1				2.3	3.5	5.2	9.8	0.9	1.4	2.5	4.4
	14	500									8.2				3.3	4.8	8.3	
		25	**	0.4		1.3	**	**	0.3	0.6	**	**	**	**	**	**	**	**
		50	0.8	1.4		4.6	0.4	0.6	0.9	1.6	**	**	**	0.4	**	**	**	0.3
		75	1.9	2.9		10.0	0.8	1.2	1.9	3.0	**	0.3	0.5	1.0	**	**	0.3	0.5
		100	3.5	5.1			1.4	2.0	3.0	4.7	0.3	0.6	0.7	1.7	**	0.3	0.4	0.8
		150	7.9				2.9	4.0	6.0	8.7	0.8	1.2	1.7	3.4	0.3	0.5	0.9	1.6
	250					7.4	9.5				2.0	3.1	4.5	8.1	0.7	1.2	2.3	3.8
		500									8.7	10.5	13.7		2.9	4.0	8.1	11.5

\*Indicates pressure drop of less than 2.0 per sq. in.

\*\*Indicates pressure drop of less than 0.2 per sq. in.

To obtain the recommended inlet pressure at the equipment, add the pressure drop figure (shown above) to the delivery pressure at the regulator. Do not exceed 15 PSIG for acetylene.

## Heavy Duty Regulators

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>SR 700</b>	Single Stage	Extra Heavy Duty	Cylinder	-
<b>VTS 700</b>	Two Stage	Extra Heavy Duty	Cylinder	-
<b>SR 450 CSR 450</b>	Single Stage	Heavy Duty	Cylinder	Journeyman Journeyman "Select" Journeyman II Cutter "Select"
<b>VTS 450</b>	Two Stage	Heavy Duty	Cylinder	-

## Heavy / Medium Duty Regulators

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>VGS 350</b>	Single Stage	Heavy / Medium Duty	Cylinder Gaugeless	-
<b>VGS 450</b>	Single Stage	Heavy / Medium Duty	Cylinder Gaugeless	-
<b>VGT 450</b>	Two Stage	Heavy / Medium Duty	Cylinder Gaugeless	-
<b>SR 350 CSR 350</b>	Single Stage	Heavy / Medium Duty	Cylinder	Super Range II Cutter "Select"

## Medium Duty Regulators

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>SR 250 CSR 250</b>	Single Stage	Medium Duty	Cylinder	Performer
<b>VTS 250</b>	Two Stage	Medium Duty	Cylinder	-

## Light Duty Regulators

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>SR 5</b>	Single Stage	Light Duty	Cylinder	-
<b>SR 150R</b>	Single Stage	Light Duty	Cylinder Rear Entry	Portable Torch

## High Pressure Regulators

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>SR 4</b>	Single Stage	Heavy Duty	*H/P Cylinder	-
<b>SR 600</b>	Single Stage	Heavy Duty	*H/P Cylinder	-

## High Delivery, High Flow, Heavy Duty

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>Manifold Regulators</b>	Single Stage / Two Stage	Heavy Duty	Manifold Use	-

## Flowmeters

Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
<b>HSR</b>	Single Stage	Medium Duty	Cylinder Flowmeter	-
<b>HVTS</b>	Two Stage	Medium Duty	Cylinder Flowmeter	-
<b>HRF 2400</b>	Single Stage	Medium Duty	Cylinder Flowmeter	-

\*H/P Cylinder: High Pressure Cylinder

Flowgauges				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
AF 250 / CF 253	Single Stage	Medium Duty	Cylinder Flowgauge	-
AF 150 / CF 153	Single Stage	Light Duty	Cylinder Flowgauge	-
Flowmeters				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
DFM (Dual)	Single Stage	Medium Duty	Cylinder Flowmeter	-
SR 310/311 SR 312 (High Flow CO <sub>2</sub> )	Single Stage	Medium Duty	Cylinder Flowmeter Cylinder Flowgauge (100SCFH) Pressure Gauges	-
Liquid Cylinder Regulators				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
LC 350	Single Stage	Medium Duty	Liquid Cylinder (Vapor)	-
Pipeline Regulators				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
S 700	-	Extra Heavy Duty	Station Regulator	-
L 700	-	Extra Heavy Duty	Line Regulator	-
S 350	-	Medium/Heavy Duty	Station Regulator	-
L 350	-	Medium/Heavy Duty	Line Regulator	-
S 250	-	Light Duty	Station Regulator	-
L 250	-	Light Duty	Line Regulator	-
Pipeline Regulators Devices				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
Flowmeter (FM)	-	Medium Duty	Pipeline (Station)	-
Pipeline Regulators Devices - Special Application				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
DL 700	-	Heavy Duty	Dome Loaded Line Regulator	-
BSL 700	-	Heavy Duty	Special Appl./Line Regulator	-
Meco Regulators				
Model	Stage	Duty Type	Feature/Type	Kit/Outfit Usage
Type "P"	Single Stage	Heavy Duty	Cylinder Regulator	-
BR3, 5	Single Stage	Medium Duty	Cylinder Regulator	-

## Regulator Model Identification Symbols

### Regulator Model Identification

<b>SR</b> .....	Single Stage
<b>HSR</b> .....	Single Stage with Flowmeter
<b>VTS</b> .....	Two Stage Design
<b>HVTS</b> .....	Two Stage with Flowmeter
<b>AR</b> .....	Air Relieving
<b>S</b> .....	Station
<b>L</b> .....	Line
<b>HRF</b> .....	Single Stage with Internal Flowmeter
<b>AF</b> .....	Argon Flowgauge
<b>CF</b> .....	CO <sub>2</sub> Flowgauge
<b>DL</b> .....	Dome Loaded
<b>BSL</b> .....	Bulk System Line
<b>VGS</b> .....	Gaugeless Regulator Single Stage
<b>DFM</b> .....	Dual Flowmeter
<b>LC</b> .....	Liquid Cylinder
<b>VGT</b> .....	Victor Gaugeless Two Stage

### Regulator Delivery Ranges

<b>A</b> .....	2-15 PSIG
<b>B</b> .....	2-40 PSIG
<b>C</b> .....	4-80 PSIG
<b>D</b> .....	5-125 PSIG
<b>E</b> .....	10-200 PSIG
<b>F</b> .....	50-750 PSIG
<b>G</b> .....	100-1500 PSIG
<b>J</b> .....	200-3000 PSIG
<b>K</b> .....	300-4500 PSIG

Outlet pressure delivery ranges are not minimum or maximum outlet pressure limits. Regulators can be adjusted to zero PSIG outlet pressure and generally, to pressures in excess of those specified. The use of these regulators to control pressures outside of the specified ranges is not recommended.

### Sample Model Number

Single Stage Model	250 Series	5-125 PSIG Delivery Range	For Oxygen Service CGA 540 Inlet	Part No.
<b>SR</b>	<b>250</b>	<b>D</b>	<b>540</b>	<b>0781-0043</b>

Single or Two Stage model designations as well as those identifying delivery range are common to all regulators unless otherwise noted on individual ordering charts. When ordering be certain to specify delivery range, CGA inlet connections, and regulator part number.

### Regulator Gauges

Unless otherwise noted, high pressure gauges for all oxygen, inert gas, CO<sub>2</sub> and N<sub>2</sub>O, and hydrogen models are graduated 200-4000 PSIG. High pressure gauges for fuel gas models are graduated 10-400 PSIG. Low pressure or outlet gauge ranges are determined by the regulator delivery range selected:

<b>A Range</b> .....	2-30 PSIG
<b>B Range</b> .....	2-60 PSIG
<b>C Range</b> .....	4-100 PSIG
<b>D Range</b> .....	5-200 PSIG
<b>E Range</b> .....	10-400 PSIG
<b>F Range</b> .....	50-1000 PSIG
<b>G Range</b> .....	100-2000 PSIG
<b>J Range</b> .....	200-4000 PSIG
<b>K Range</b> .....	200-6000 PSIG

When ordering regulators, specify part numbers. Regulators should not be used as a shut-off valve.

### Commercial Gases & CGA Inlet Connections

Connection	Gases	Connection	Gases
<b>CGA 200</b>	Acetylene (MC)	<b>CGA 660</b>	Corrosive
<b>CGA 240</b>	Ammonia	<b>CGA 677</b>	Nitrogen, Argon & Helium
<b>CGA 300</b>	Acetylene (Commercial)	<b>CGA 680</b>	Nitrogen, Argon
<b>CGA 320</b>	Carbon Dioxide	<b>CGA 701</b>	Oxygen
<b>CGA 326</b>	Nitrous Oxide	<b>CGA 992</b>	British Oxygen & Inert Gas
<b>CGA 346</b>	Air (Formerly 1340)	<b>CGA 993</b>	British Fuel Gas
<b>CGA 347</b>	Air	<b>CGA 996</b>	Manifold Oxygen & Inert Gas
<b>CGA 350</b>	Fuel Gas, Hydrogen	<b>CGA 997</b>	Manifold Fuel Gas
<b>CGA 500</b>	Medical Mixtures	<b>CGA 024</b>	Station Oxygen
<b>CGA 510</b>	Acetylene (POL)	<b>CGA 025</b>	Station Fuel Gas
<b>CGA 520</b>	Acetylene (B)	<b>CGA 034</b>	Station Inert Gas
<b>CGA 540</b>	Oxygen		
<b>CGA 555</b>	Propane, Butane		
<b>CGA 577</b>	Oxygen		
<b>CGA 580</b>	Nitrogen, Argon, Helium		
<b>CGA 590</b>	Air (Industrial)		

## How to read the Flow Data Charts on the following pages:

The regulator flow data is provided to assist in determining the proper regulator for the required application. The data is given for reference purpose only. If additional information is necessary contact your local distributor or the Customer Service Department at:

**Phone: 1-800-426-1888**

The regulator flow data was established by connecting a valve to the regulator outlet. The valve was opened and the flow rates measured. The amount of pressure drop is shown on the curves as the flow increases.

Pressure Range	Static Pressure
A	15 PSIG
B	40 PSIG
C	80 PSIG
D	125 PSIG
E	200 PSIG
F	750 PSIG
G	1500 PSIG
J	3000 PSIG
K	4500 PSIG

### Example

An SR 450D with an inlet of 2000 PSIG and an internal pressure setting of 125 PSIG (no flow) will flow 1000 SCFH, but the delivery pressure will drop to 115 lb. As the flow increased to 2000 SCFH, the pressure will drop to 108 PSIG.

With an inlet pressure of 200 PSIG and an initial setting of 125 PSIG, the regulator will flow 1000 SCFH with a pressure drop to 98 PSIG. At 2000 SCFH flow, the pressure will drop to 78 PSIG. If a delivery pressure other than the ones shown on the flow charts is required, use an average curve rate between the upper and lower pressures shown.

### Cylinder Pressure Rise

Single stage regulators have an increase in delivery pressure as the cylinder pressure decreases. Listed below is the amount of pressure increase per 100 PSIG decrease in cylinder (inlet) pressure.

<b>SR 4 Series</b>	F & G Range 2.4 PSIG
<b>SR 4 Series</b>	J & K Range 4.8 PSIG
<b>SR 5 Series</b>	1.0 PSIG
<b>SR 250 Series</b>	0.5 PSIG
<b>SR 350 Series</b>	0.8 PSIG
<b>SR 450 Series</b>	0.6 PSIG
<b>SR 600 Series</b>	0.58 PSIG
<b>SR 700 Series</b>	1.2 PSIG

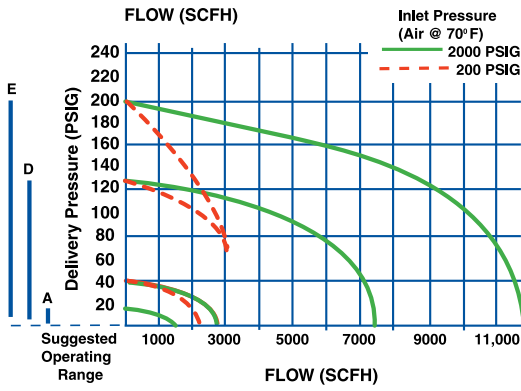
The change in delivery pressure of a TWO Stage regulator from full to empty Cylinder (inlet pressure) is negligible.

## For Conversion to Other Gases

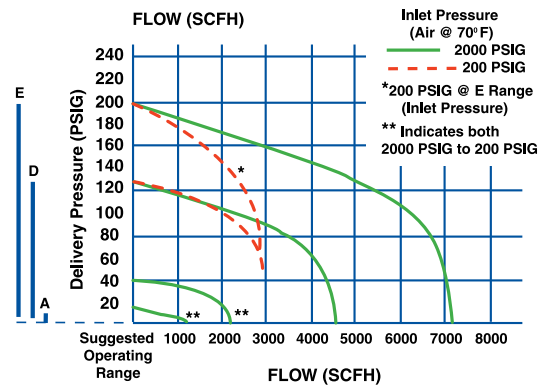
All flow capacity information is given in SCFH of free air (1.00). For conversion to other gases multiply the air flow by the correction factor listed below:

<b>Acetylene</b>	1.05
<b>Argon</b>	0.85
<b>Carbon Dioxide</b>	0.81
<b>Helium</b>	2.69
<b>Hydrogen</b>	3.79
<b>Natural Gas</b>	1.28
<b>Nitrogen</b>	1.02
<b>Oxygen</b>	0.95
<b>Propane</b>	0.80

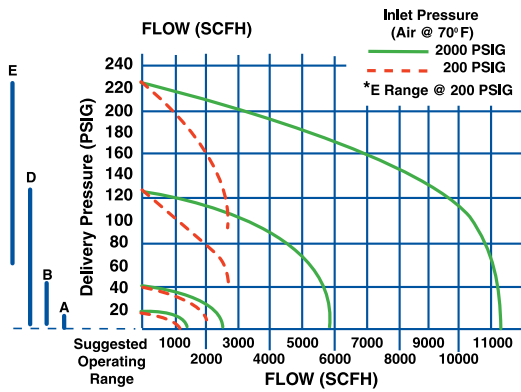
### SR 700/Single Stage - Extra Heavy Duty



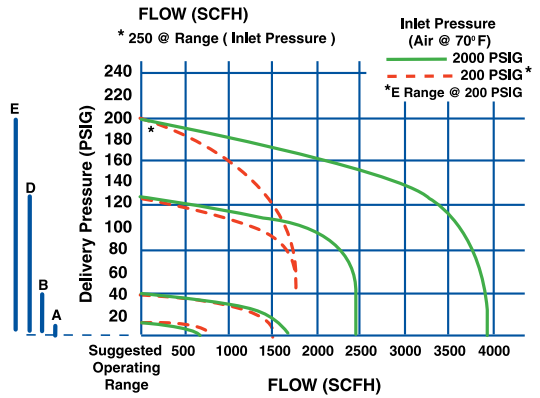
### VTS 700/Two Stage - Extra Heavy Duty



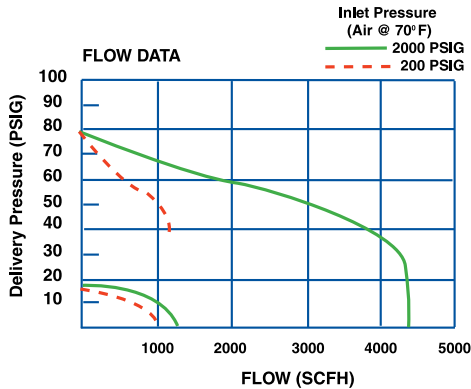
### SR 450/Single Stage - Heavy Duty



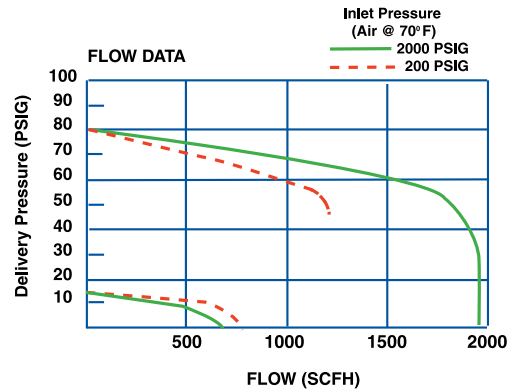
### VTS 450/Two Stage - Heavy Duty



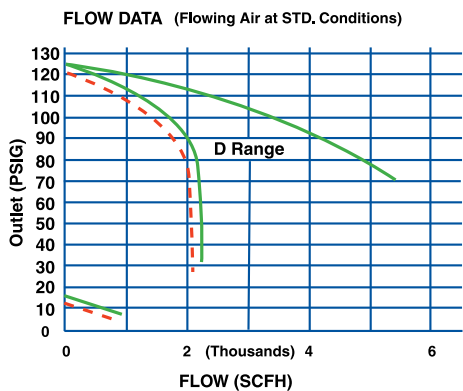
### VGS 450/Gaugeless Regulator Heavy Duty



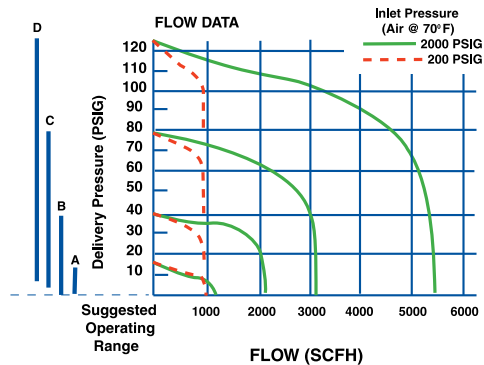
### VGT 450/Gaugeless Two Stage Regulator Heavy Duty



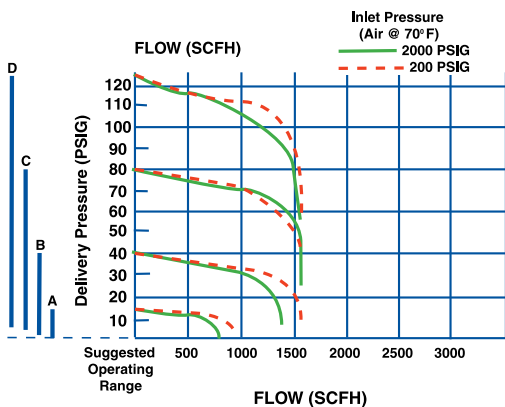
## SR 350/Single Stage - Medium Duty



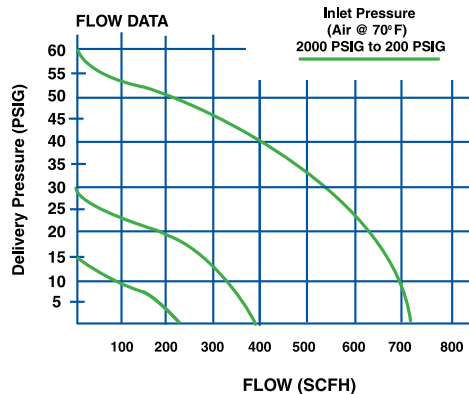
## SR 250/Single Stage - Medium Duty



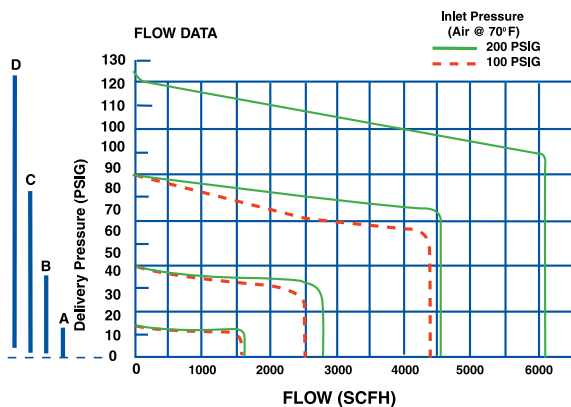
## VTS 250/Two Stage - Medium Duty



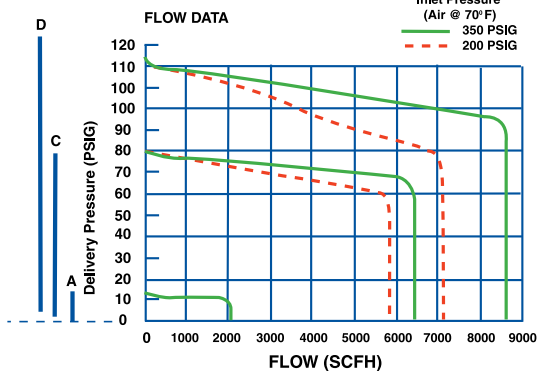
## SR 5/Single Stage - Light Duty



## S 350/Station Reg. - Medium-Heavy Duty

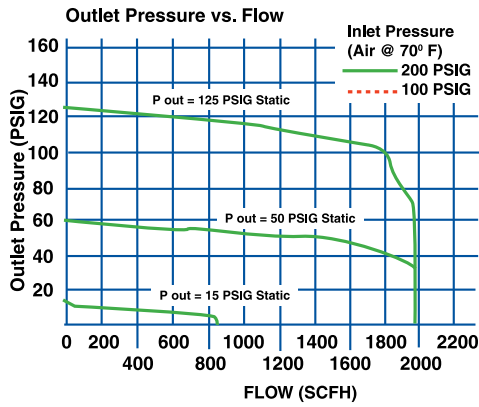


## L 350/Line Regulator - Medium Duty

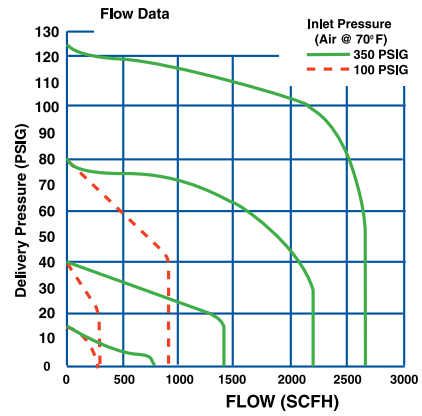


# Regulators

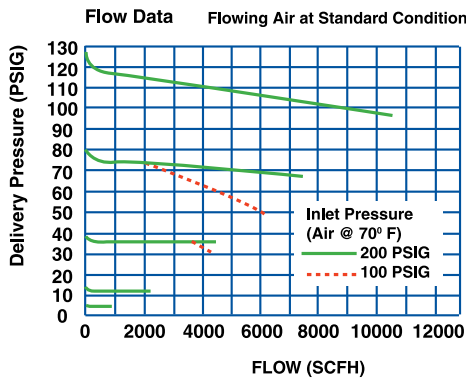
## S 250/Station Regulator - Light Duty



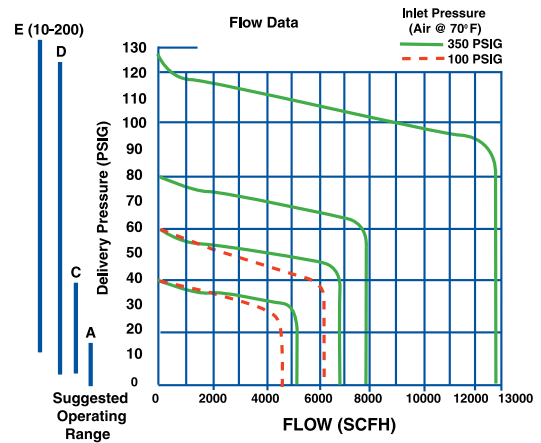
## L 250/Line Regulator - Light Duty



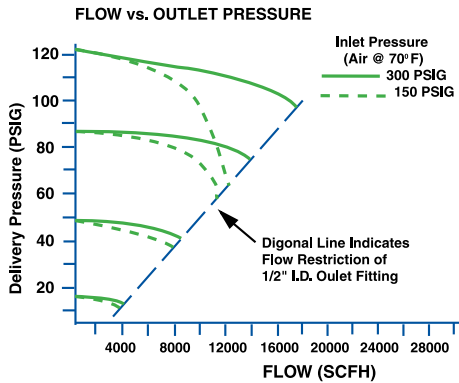
## S 700/Line Regulator - Extra Heavy Duty



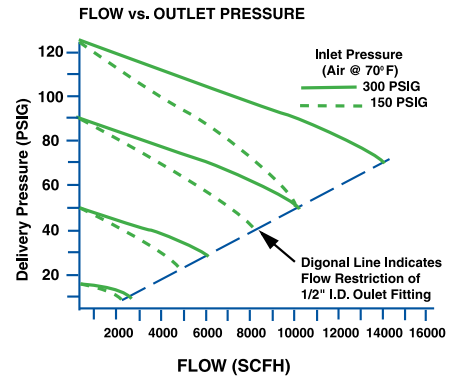
## L 700/Line Regulator - Extra Heavy Duty



## DL 700/Dome Loaded Line Regulator

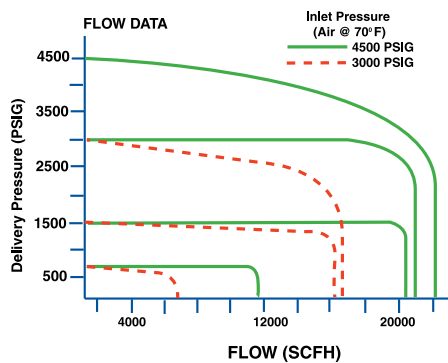


## BSL 700/Line Regulator

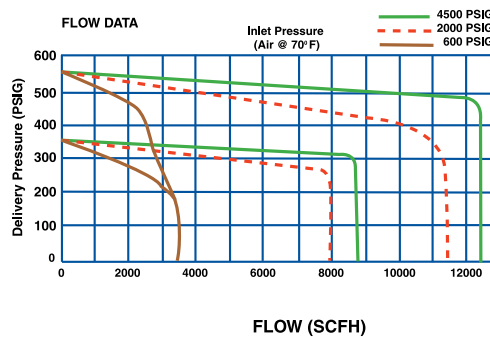


• Tested with an Outlet Fitting of 1/2" I.D. & Outlet Pressure taken at Regulator Outlet Fitting.

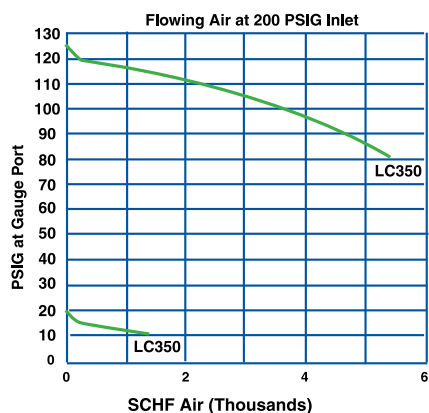
## SR 4 High Pressure Piston Regulator



## SR 600 High Pressure Regulator



## LC 350DR Liquid Cylinder Regulator



## LC 350DR Liquid Cylinder Regulator

