HOW TO CHOOSE A REGULATOR

If you already know the product that you want information on, find the product page in the Table of contents. Pages showing popular combinations of Pilot and Regulators are found in the Combination Regulators Chapter. Detailed product information on materials, ratings, dimensions, weights and applications are found in the Products Chapters. All sizing information is contained in the Regulator Sizing Chapter. If you are not sure of what you need, collect all the following information. You will need it to select the right product for your needs.

Inlet Pressure
Flow Rate
Flow Media (i.e.: Steam, water. etc.)
Desired Delivery Pressure
Noise Restrictions, if any
Type of Pilot Control (i.e.: Self Contained, Pneumatic, Electronic, etc.)
Application (i.e.: Temperature Regulation, Single stage Pressure Regulation, etc.)

Application data is listed on each Product Page. If you identify the nature of the installation, it will assist you selecting the proper equipment.

DIRECT ACTING OR PILOT OPERATED REGULATOR?

You may be able to use a Direct Operated Regulator for your application. They are generally less expensive than Pilot Operated Regulators. However, they do not provide the same level of accuracy or rangeability. If a Direct Acting Regulator is an option, consult the Direct Operated Valves Chapter to determine which best fits your specific needs. Then, consult the appropriate pages in the Regulator Sizing Chapter to select the exact size you need.

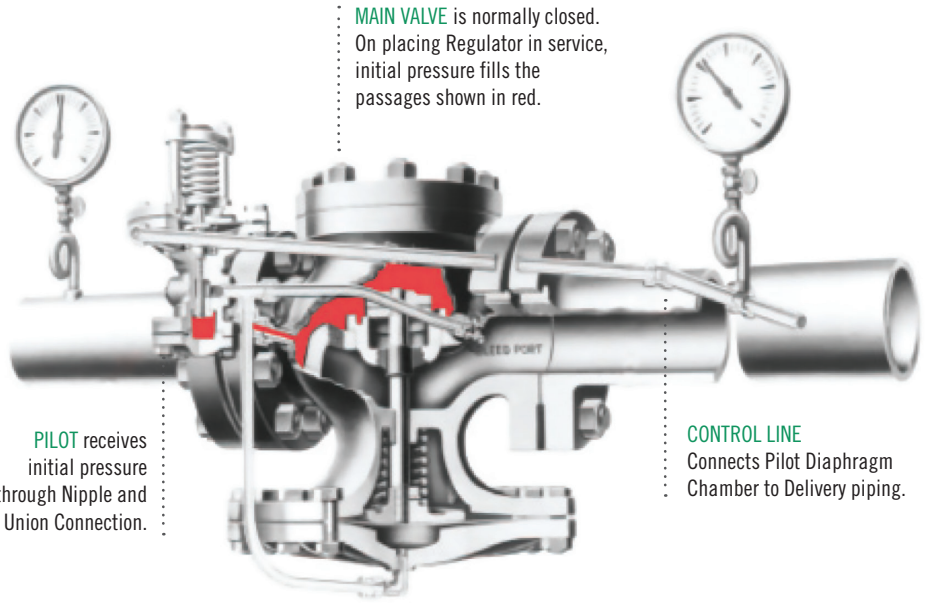
If a Pilot Operated Regulator is required, go to Page 15 (for Pressure Regulators) or Page 16 (for Temperature Regulators). These selection charts will help you to quickly determine the type of product that you need. The Pilot can be self contained, pneumatically or electronically actuated. Consult the appropriate pages in the Regulator Sizing Chapter to select the exact size Regulator and Pilot you need. Overall dimensions of the most popular combinations are provided in the Combination Regulators Chapter.

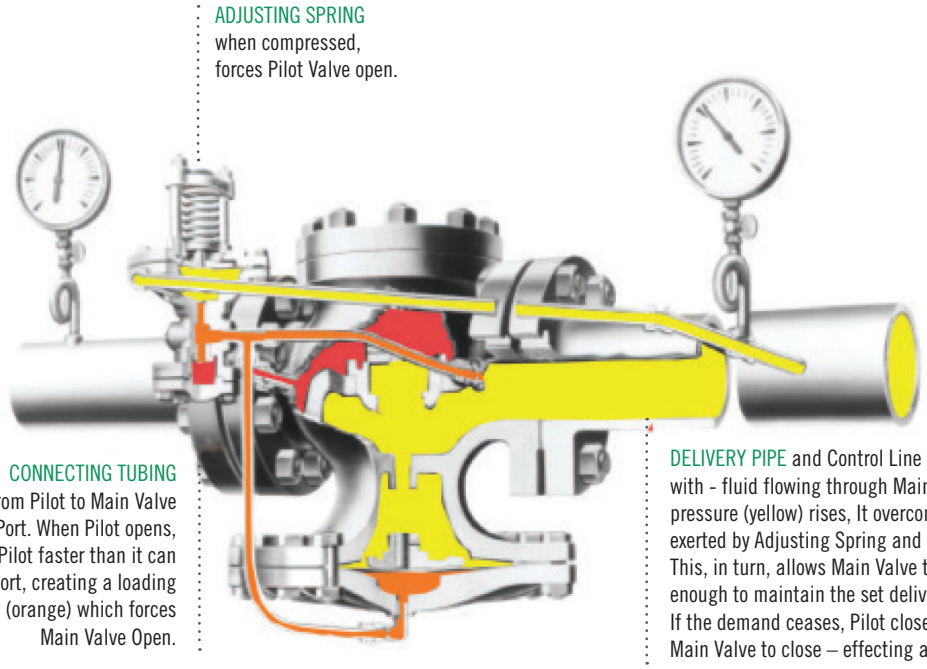
ECONOMICAL, ENGINEERED OR ENGINEERED WITH NOISE SUPPRESSION?

The choice of how to size a regulator for and application is up to you. The most economical choice does not necessarily take into consideration the optimum loading of the Regulator, which could affect it's service life. Properly engineered Spence Regulators have been in continuous service for as much as 50 years. In high pressure reduction stations, noise can be a serious environmental problem. Spence offers a number of Noise Suppression products to reduce this problem. You will find comprehensive noise reduction sizing and selection information in the Noise Reduction Chapter.

THE OPERATING CYCLE OF A SPENCE PRESSURE REGULATOR

The basic Type ED has been selected to illustrate the operation of a SPENCE Pilot Operated Pressure Regulator. This presentation describes the successive steps in the mechanical cycle of the Regulator.

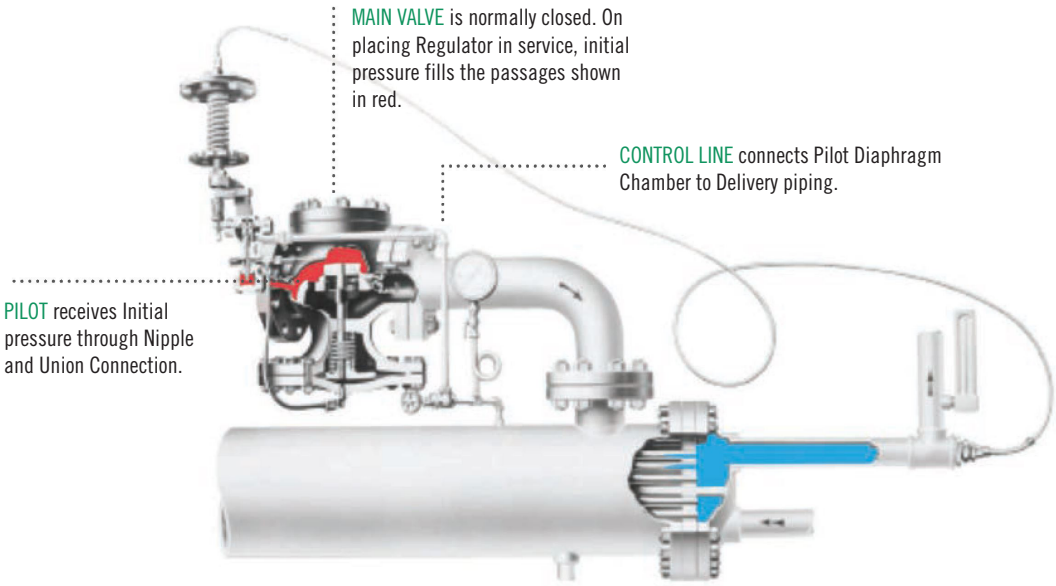




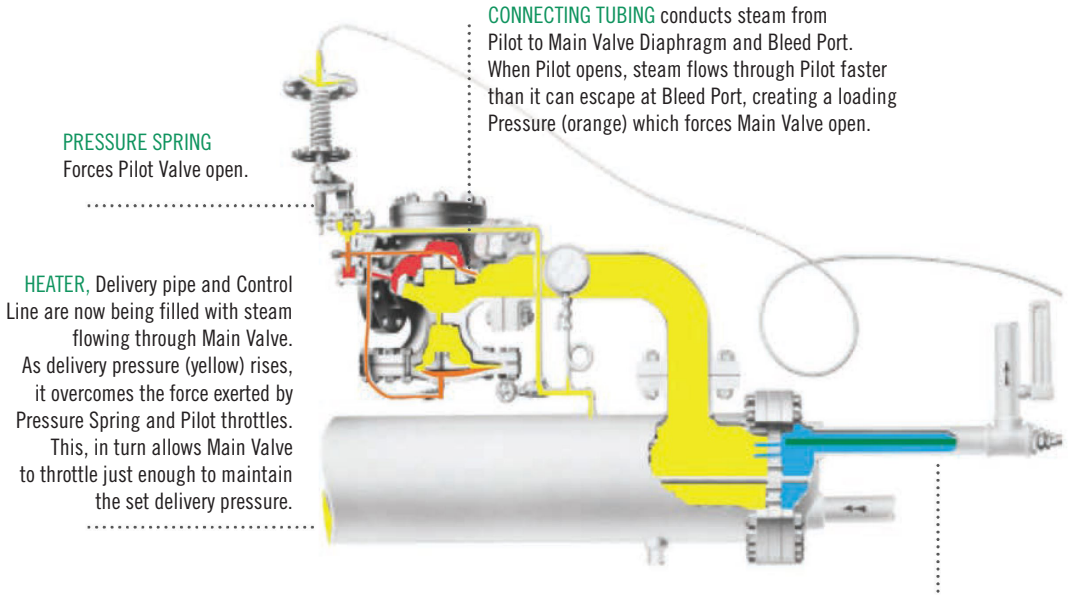
KEY HIGH PRESSURE MEDIUM PRESSURE LOW PRESSURE

THE OPERATING CYCLE OF A SPENCE TEMPERATURE REGULATOR

The Type ET134 has been selected to illustrate the operation of a SPENCE Pilot Operated Temperature Regulator. This presentation describes the successive steps in the mechanical cycle of the Regulator.



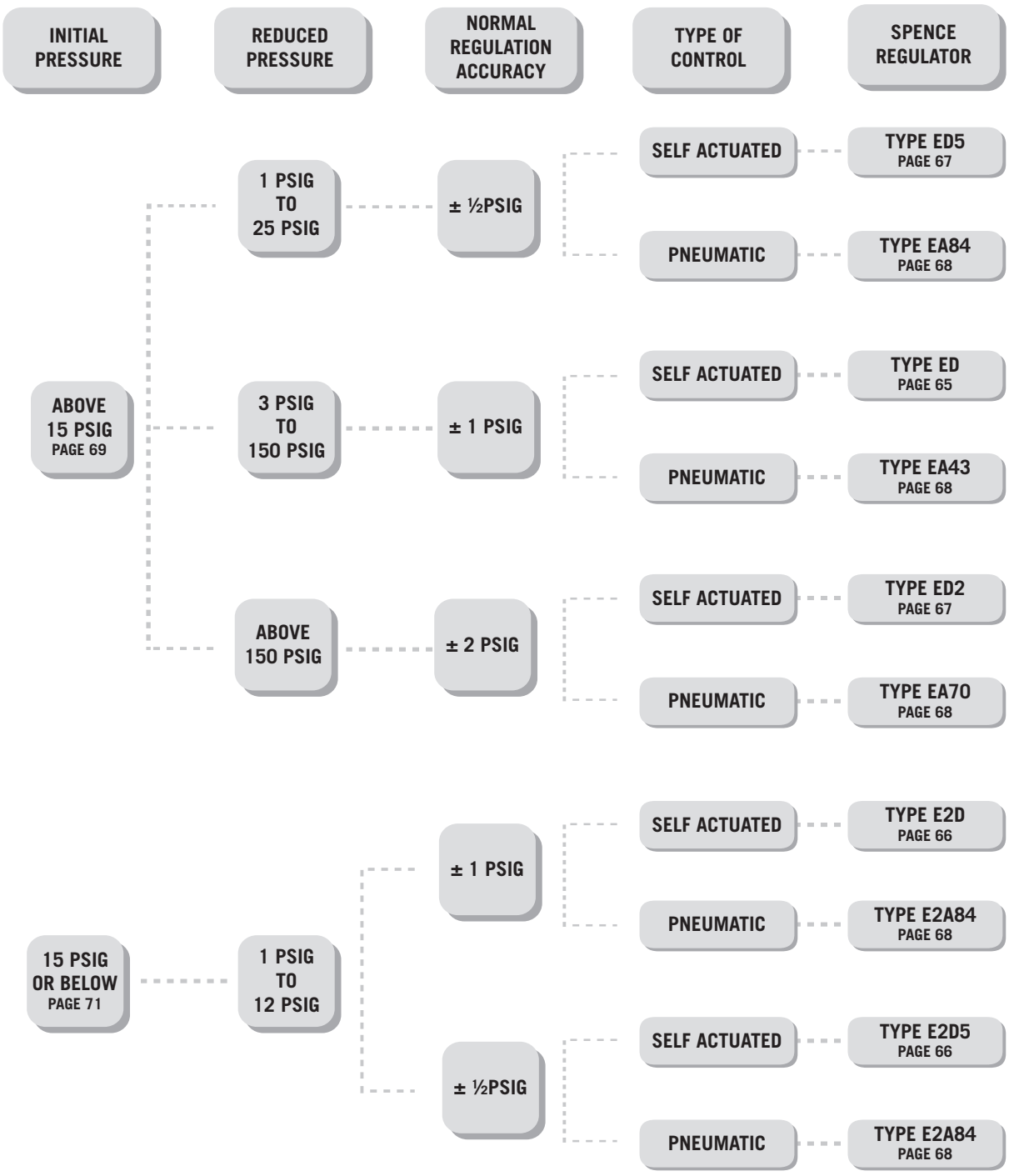
KEY INITIAL STEAM PRESSURE LOADING STEAM PRESSURE DELIVERY STEAM PRESSURE VAPOR PRESSURE FLUID HEATED



THERMOSTAT ELEMENT (vapor tension type) is connected into heater outlet. The rising temperature of the fluid (blue) being heated creates a Vapor pressure (green) on the Temperature Diaphragm. When this pressure has reached a point sufficient to overcome the Temperature Adjusting Spring, it Applies a force on the Lever so as gradually to decrease the spring loading on The Pressure Diaphragm. This produces a stem-by-step reduction in the Delivery pressure as the temperature rises through several degrees. If the desired temperature is exceeded, the vapor pressure on the Pilot Temperature Diaphragm overcomes the forces of the Spring. This allows Pilot and Main Valve to close tight.

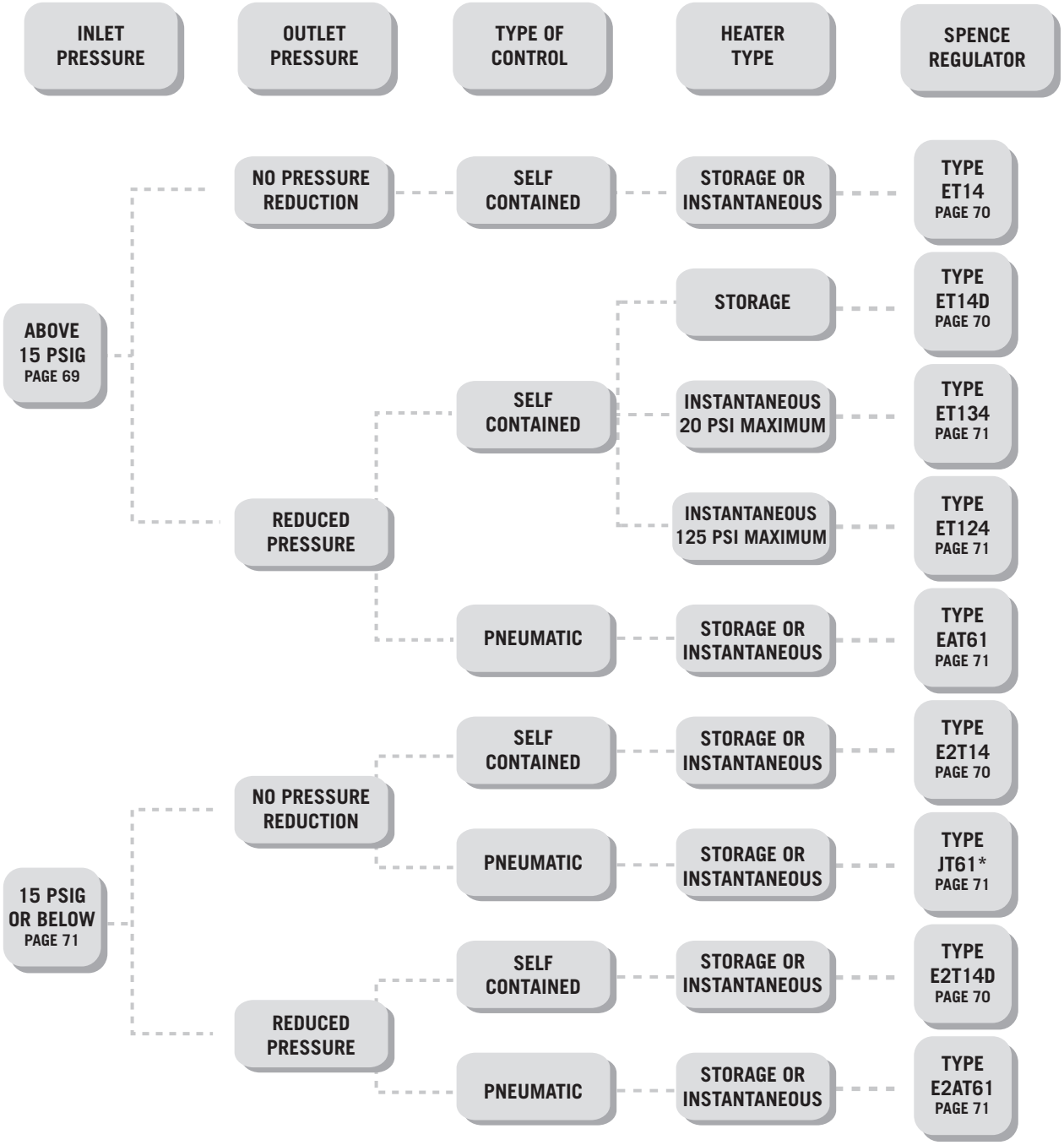
QUICK SELECTION CHART
FOR STEAM PRESSURE REGULATORS

Review the application data that you have collected. Consult the chart, starting with the inlet pressure that matches the inlet pressure you have. Next, select your outlet pressure (reduced or delivery pressure). Then select the type of pilot control that you will be using and, finally, the level of accuracy that your system requires. This will lead you to a recommended regulator. Please bear in mind that these recommendation are general in nature and you should check the Product Pages and Sizing Section to ensure you have selected the correct product. If you need assistance, contact your local Spence Technical Sales Representative.



QUICK SELECTION CHART
FOR TEMPERATURE REGULATORS

Review the application data that you have collected. Consult the chart, starting with the inlet pressure that matches the inlet pressure you have. Next, select your outlet pressure (reduced or delivery pressure). Then select the type of pilot control that you will be using and, finally, the level of accuracy that your system requires. This will lead you to a recommended regulator. Please bear in mind that these recommendations are general in nature and you should check the Product Pages and Sizing Section to ensure you have selected the correct product. If you need assistance, contact your local Spence Technical Sales Representative.



*See Control Valve Section, Page 116

SPENCE MAIN VALVE SPECIFICATION TABLE

TYPES		SIZES, BODY MATERIAL[a] AND FACINGS							OTHER MATERIAL							
		CAST IRON			CAST STEEL					SEAT RINGS		DISCS				
		Screwed Ends	Flanged ANSI 125	Flanged ANSI 250	Screwed Ends	Flanged ANSI 150	Flanged ANSI 300	Flanged ANSI 600	Diaphragm	Steam Service	Water, Oil, Air or Gas Service	Steam Service	Water, Oil, Air or Gas Service	Stem	Main Spring
E	SIZES - INCHES	3/8-2	1-12	1-12	3/4-2	1-12	1-12	1/2-8	Stainless Steel	316/ 420[d]	316/ 420	304/ 420	Hycar	Stainless Steel or 17-4PH[e]	Carbon Steel, Stainless Steel or Inconel
	Max. Initial Pressure - psi	250	125	250	300	150	300	600							
	Max. Initial Temperature - F°	450	450	450	750	500	750	750							
	Min. Differential - psi[h]	10/30/50	10/30/50	10/30/50	10/30/50	10/30/50	10/30/50	10/30/50							
E2	SIZES - INCHES	3/4-2	1-12	—	—	—	—	—	Hycar	316	—	304/ 420	—	Stainless Steel	Carbon Steel
	Max. Initial Pressure - psi	15	15	—	—	—	—	—							
	Max. Initial Temperature - F°	250	250	—	—	—	—	—							
	Min. Differential - psi[h]	3	3	—	—	—	—	—							
E5	SIZES - INCHES	3/4-2	1-12	1-12	3/4-2	1-12	1-12	—	Hycar	316/ 420	316/ 420	304/ 420	304/ 420	Stainless Steel	Carbon Steel
	Max. Initial Pressure - psi	250	125	250	300	150	300	—							
	Max. Initial Temperature - F°	450	450	450	600	600	600	—							
	Min. Differential - psi[h]	5	5	5	5	5	5	—							

A. Main Valves for corrosive fluids or costly gases require special materials.

B. Bronze body and blind flange only.

C. Minimum Differential is the smallest permissible difference between initial pressure (measured at the inlet) and the delivery pressure (measured at the outlet) of the main valve, to achieve full travel..

D. Secoweld seat construction described in options section is regularly furnished for service pressures 400 psi and higher.

E. 17-4 PH stems are furnished for service temperatures exceeding 600°F.

F. Inconel springs are furnished for services pressure exceeding 400 psi and /or temperatures exceeding 600°F

G. Standard spring (HP) requires minimum 30 PSI differential. 50 PSI is recommended minimum differential. Use optional Low ^P (LP) main spring for 15 psi minimum differential.10 psi minimum differential is attainable by adding base bypass, 1/16" bleed port and 5B open elbow.