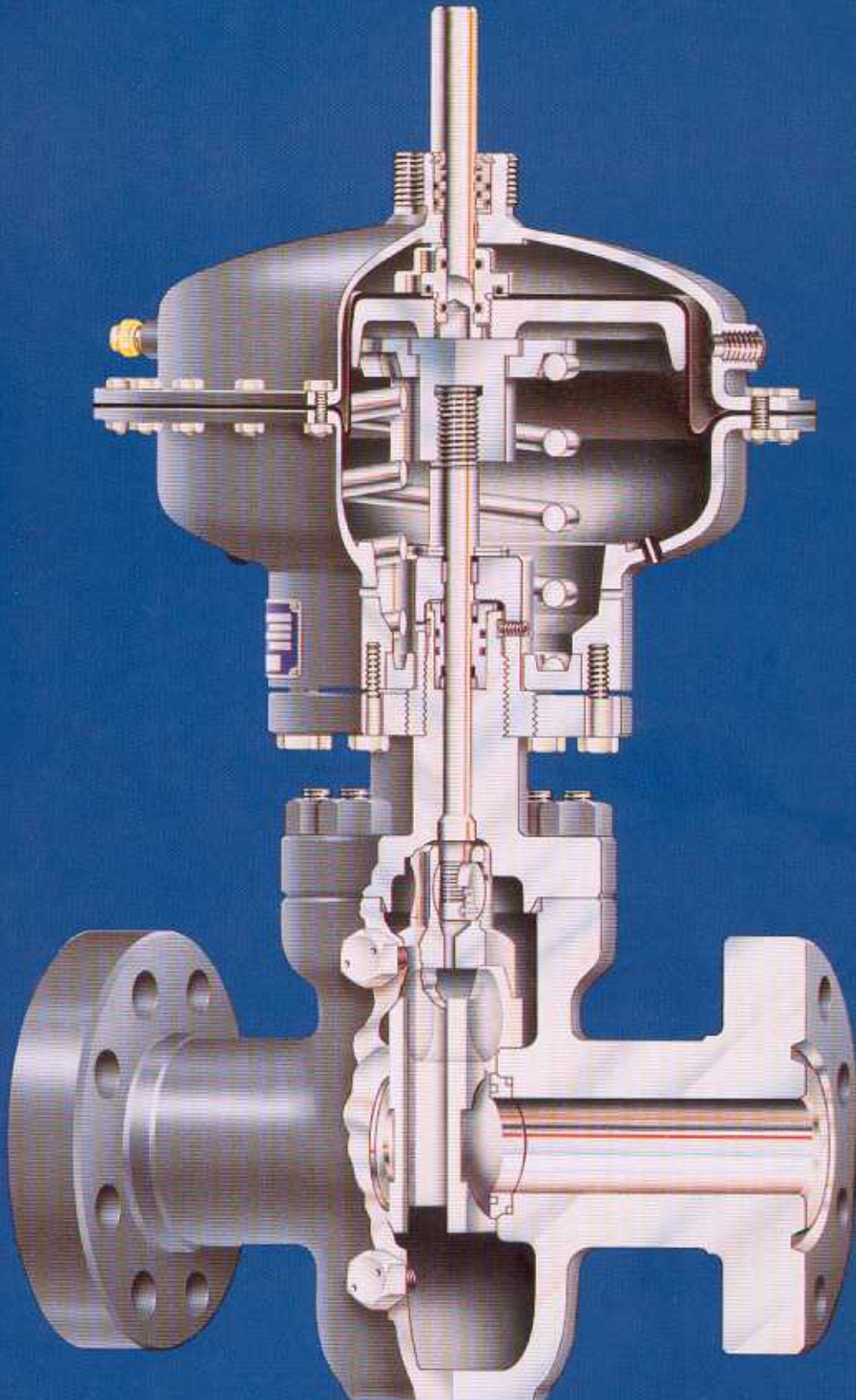




Diaphragm Actuators (SSV)



Diaphragm Actuators (SSV)

DIAPHRAGM-TYPE ACTUATOR ECONOMY WITH TRADITIONAL QUALITY

The SAFOCO Diaphragm Actuator combines simplicity with ease of maintenance to provide an extraordinary value in a SSV actuator.

Its operating principle and rugged design make this actuator inherently trouble-free. This diaphragm actuator design has eliminated the problems of downtime and added safety features vital to today's customer requirements. This actuator is designed for most surface safety applications.

The SAFOCO Actuator utilizes the traditional diaphragm concept by eliminating galling, misalignment, and distortion during operation.

The close tolerance problem has been eliminated by providing wear bearings in the actuator and bonnet to suspend the top shaft and bonnet stem from contacting metal during operation.

SAFOCO has designed into each model, series, and size of diaphragm actuator the industry's strongest compression spring. This is important to ensure gate valve closure. No special tools are required when loading the compression spring.

Ease of repair and service has been provided by designing the top seal cartridge so that it can be removed easily and quickly.

To remove the actuator from the bonnet remove 8 hex head bolts with a crescent wrench, then lift the actuator from the bonnet.

SAFOCOS' actuator philosophy emphasizes safety and reliability, compact and simple design, fast response time, easy maintenance, optional use of control pressure and quality in manufacture and service.

FEATURES

- The top shaft is designed to eliminate the transfer of torque to the gate, seats and bonnet stem when using a manual override. A larger lower shoulder prevents the top shaft from being expelled from actuator. The top shaft indicates the stroke position of the gate in the valve. The top shaft is protected from metal to metal contact by a wear bearing and top seal cartridge.
- All weld formations are full penetration welds under ASME section IX.
- Base plate ring provides for a 360° actuator rotation when exacting plumbing is required for control pressure inlet.
- A permanent drift adjustment is accomplished by use of stainless steel spacers. Actuator removal does not affect drift adjustment.
- Diaphragm incorporates dual layers of nylon which requires no lubrication and will not wear due to friction. The diaphragm has eliminated the problem of damage to seals by twisting or rolling an O-ring. This design ensures product reliability and flexibility for years of service.
- All non-stainless actuator and bonnet components are coated for resistance to marine environment.
- The standard SAFOCO Diaphragm Pneumatic Actuator material meets NACE MR-01-75 requirements.
- Helical compression spring provides maximum closure to valve with 900 to 1,000 lbs. at full closed position.
- Pressure inlet and relief flow passages are .500 NPT. Larger ports are stronger and help eliminate trash buildup.
- Top loaded seal cartridge enables top shaft seal replacement without disassembly of actuator. Top seal cartridge incorporates rod wiper to keep shaft sealing area clean for longer life of seals.
- The base plate ring to lower housing design utilizes the eight bolts to their strength. The bolts are loaded to use the entire length and diameter. This concept is stronger, safer and more reliable.
- All actuator designs have been finite element analyzed (FEA).

CERTIFICATES OF AUTHORIZATION



API 14D Specification
API 6A Specification



API License No. 14D-0033 has been replaced by API License No. 6A-0335

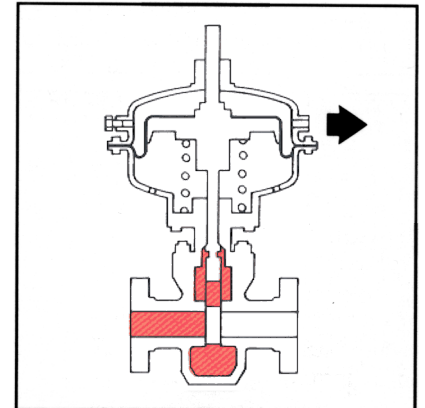
The right to use the official API monogram on Wellhead Equipment (as listed in Spec. 6A) under API Specification 6A for Wellhead Equipment.

FAIL CLOSED OPERATION

The SSV valve with a SAFOCO Actuator is normally supplied in the fail-closed configuration. Pneumatic actuator supply pressure drives the valves reverse ported gate down and holds it in the open position under normal operating conditions. In the event of an abnormal condition, the actuator supply pressure is released or bled off by quick exhaust mechanisms, allowing the valve to close by body pressure acting on the bonnet stem diameter and spring force. Restoring of Pneumatic Actuator supply pressure automatically reopens the valve.

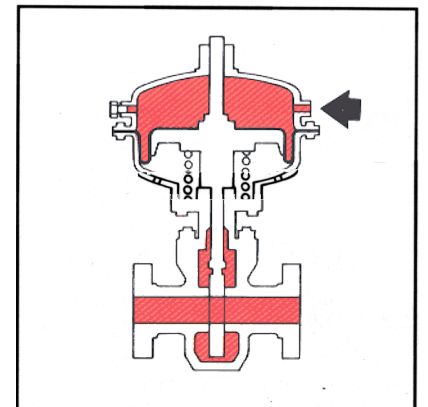
When required, the valve can be configured with a fail open gate design for a vent or blow-down system.

CLOSED

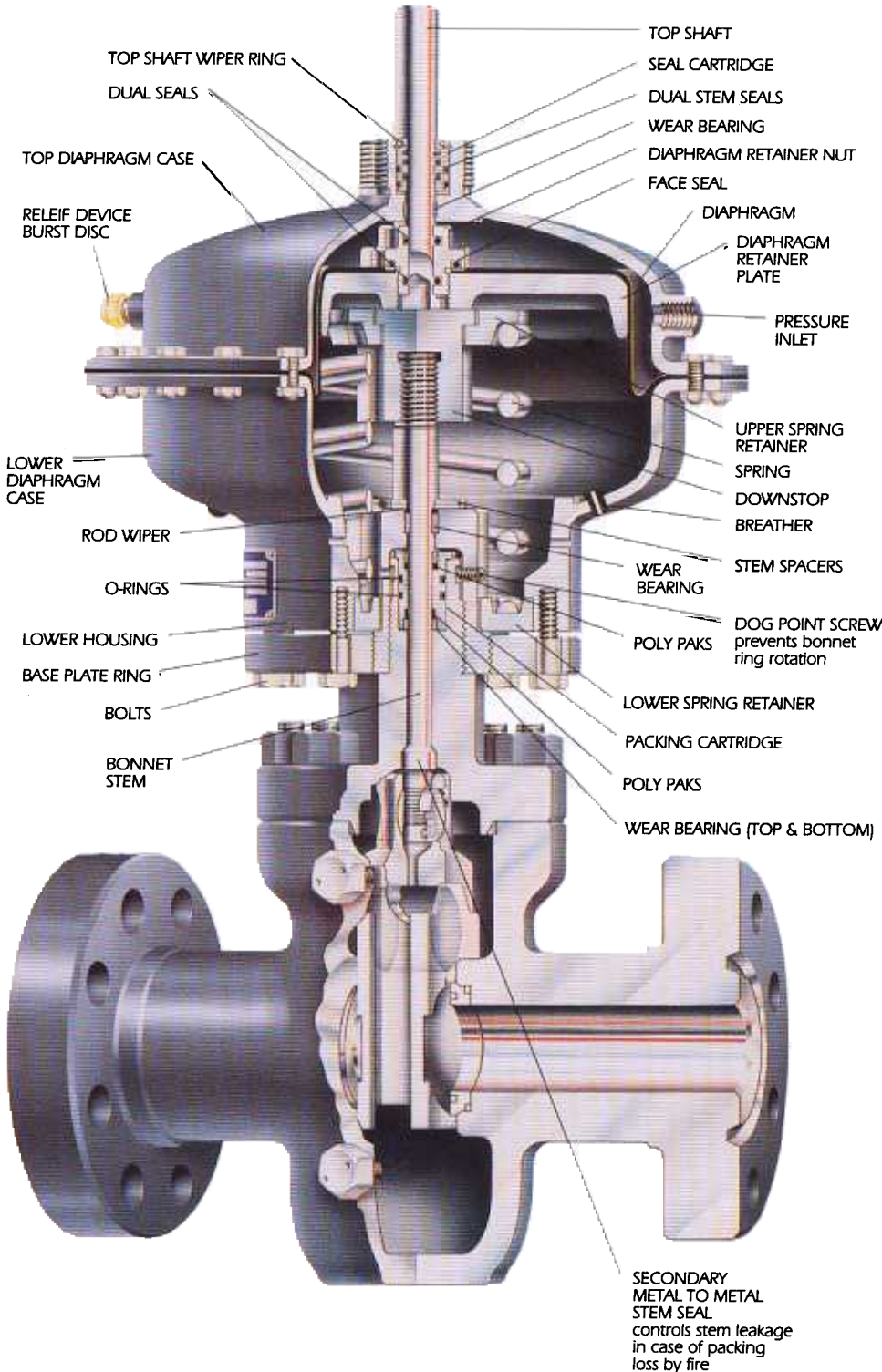


As actuator pressure exhausts from the housing or cylinder, valve body pressure and actuator spring force close the valve.

OPEN



Actuator input pressure drives the reverse ported gate downward into open position.

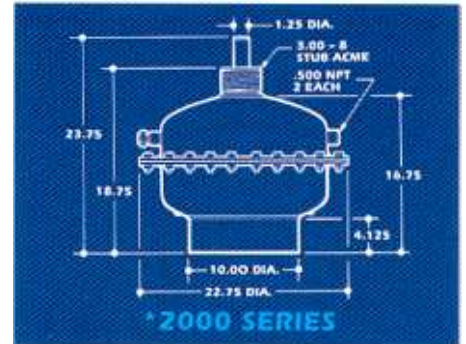
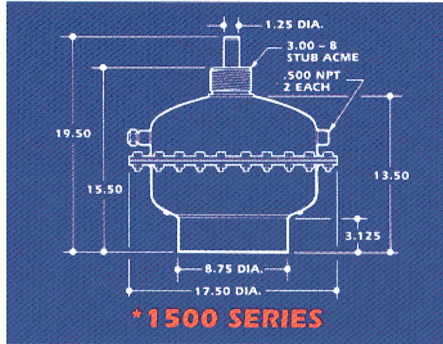
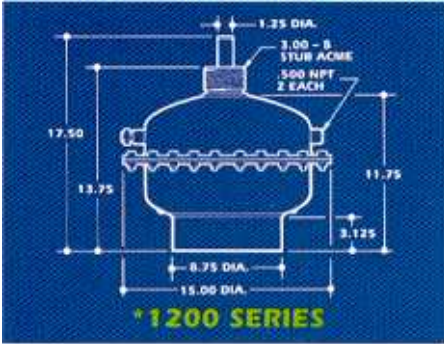


ACCESSORIES

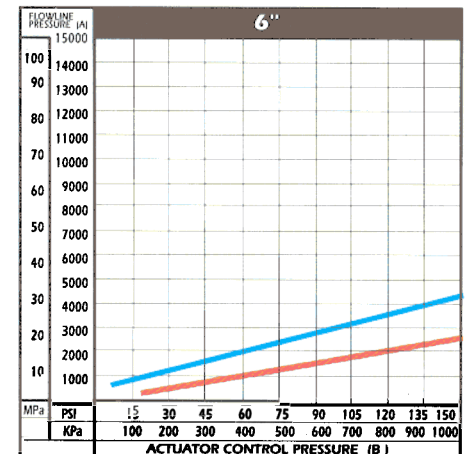
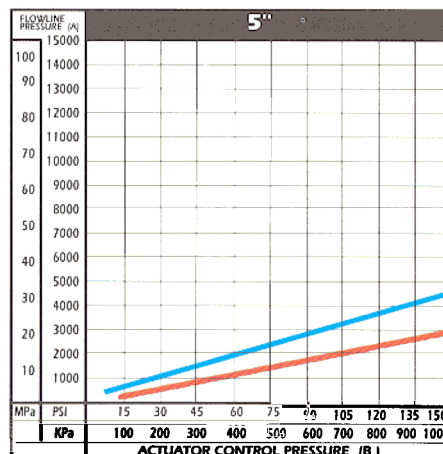
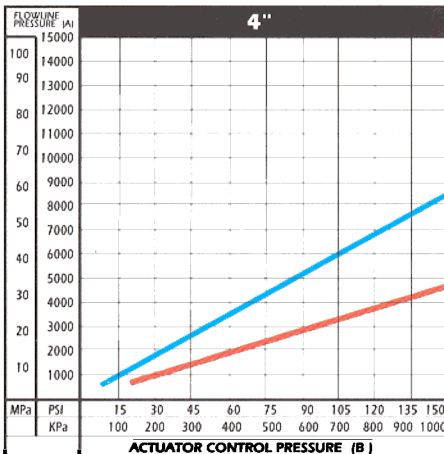
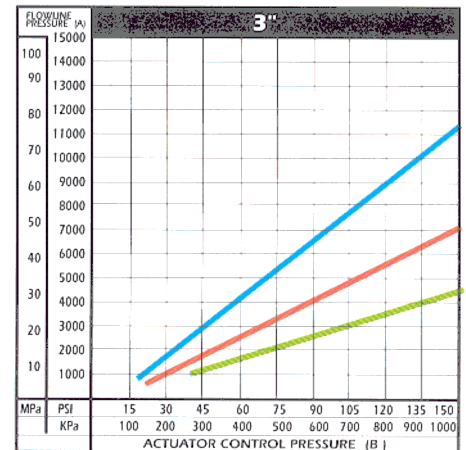
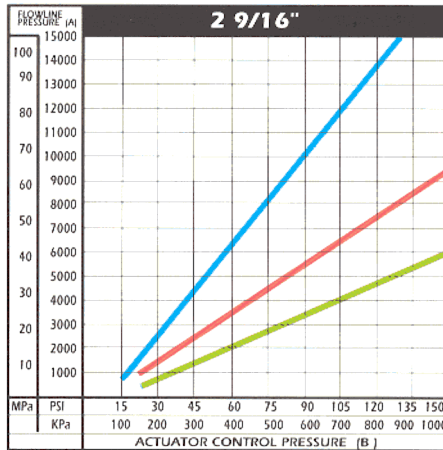
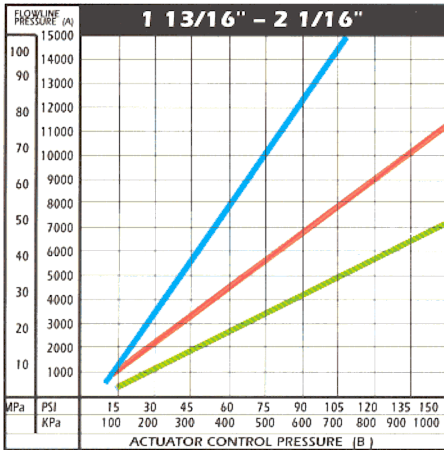
Heat sensitive lock open devices, manual handwheel operators, hydraulic operators, position indicators, remote control devices, actuator quick exhaust devices, stem protector, electromechanical switches, electrical indicating devices.

Diaphragm Actuators (SSV)

ACTUATOR SIZES



ACTUATOR APPLICATION



To determine control pressure consult graphs for nominal valve size. Find maximum expected flowline pressure (A) on left hand ordinate. Find the actuator control pressure (B) of a line drawn vertically from (B). The intersection of the two lines indicates the correct size actuator for the specific application.

The graphs shown above predict control pressures for each series of diaphragm pneumatic actuators in this product line. These graphs are based on worst case assumptions with full line pressure and gate drag friction.

SPECIFICATIONS

Maximum Operating Pressure	150 PSI	10.4 Bars
Production Test Pressure	225 PSI	15.5 Bars
Operating Temperature Range	-20°F to 150° F	-29° C to 65° C
Actuator Weight	1200 Series	89 lbs.
	1500 Series	132 lbs.
	2000 Series	162 lbs.
API 6A	PSL 1, 2, or 3	PR-2
API 14D	Class 1	

CONTROL PRESSURE EQUATION

Actuators Series	1200	1500	2000
1 13/16" - 2 1/16" Valves	.019	.012	.006
2 9/16" Valves	.023	.015	.008
3" Valves	.034	.021	.012
4" Valves	—	.032	.018
5" Valves	—	.058	.032
6" Valves	—	.068	.038

All Equation Nos. x Valve W.P. + 10PSI

* Typical dimensions, for exact dimensions per application contact SAFOCO customer service.

WARRANTY STATEMENT Products illustrated in this booklet are subject to Terms and conditions of Sale including Warranty and Limitations of Liability as shown in our Price List

11421-A Todd Road ■ Houston, Texas USA ■ 77055 ■ Office: 1-713-956-1595 ■ Fax: 1-713-956-2449