

### VAREC Safety Selector Valve DUAL PRESSURE RELIEF DEVICE SYSTEM

The Safety Selector Valve is designed to function as a switchover device that permits servicing of pressure relief devices with no process interruption.

#### Introduction

Digester and gas holder covers should be equipped with pressure and vacuum relief (PVR) valves for protection against structural damage caused by possible over-and-under-pressure due to the rapid pumping of the sludge into and out of the vessel, or from an excess of gas production. The valves are installed with flame arresters to prevent an external flame from igniting the gas within the digester.

Water Environment Federation, Manual of Practice (MOP) No. 8 recommends that two Pressure and Vacuum Relief Valve with Flame Arrester Assemblies be mounted side-by-side on extending pipe and elbows with a three-way plug valve. The valve provides a means to isolate one set of equipment while safely performing maintenance functions on the other. The Safety Selector Valve provides a superior alternative to this configuration.



#### Design

The Safety Selector Valve is designed specifically to function as an effective 'switch-over' device that permits routine or emergency servicing of redundant pressure relief devices with no process interruption, thus providing continuous system overpressure protection.

Until recently, bulky and expensive piping fabrications or a total shutdown were the only methods for safely servicing the pressure relief devices. These systems required either two separate vessel penetrations with mechanically linked block valves or a 3-way block valve that commonly resulted in high inlet pressure loss, excessive turbulence to the active pressure relief device and multiple leak points.

The Safety Selector Valve solves these problems. It is easy to install, requiring only one vessel penetration in the same size as the pressure relief valve inlet.

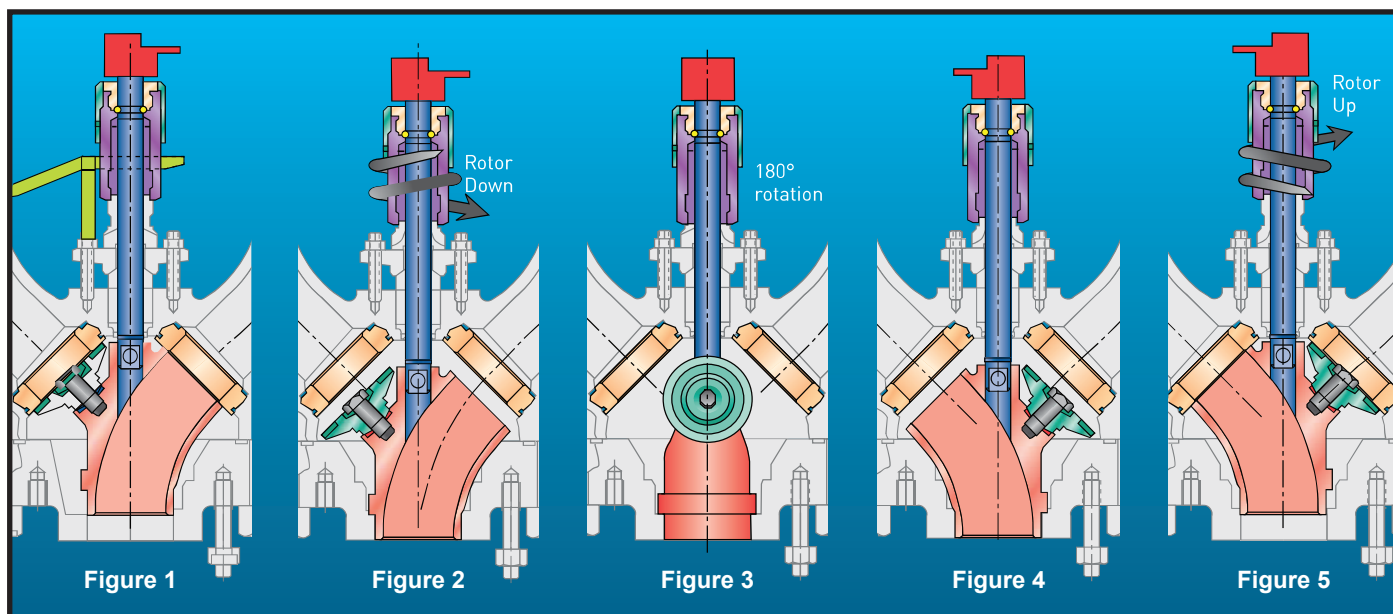
#### Design Features

- Provides a safe, efficient method of switching from an active pressure relief device to a standby, maintaining system overpressure protection regardless of Safety Selector Valve position.
- Provides high Cv values, resulting in less than 3% pressure drop to the active PRV inlet, when used with the largest API orifice available in a given valve size, in accordance with the recommendations of API RP520 Part II and ASME Section VIII, Division 1, Appendix M, thereby greatly reducing the possibility of destructive chatter of the PRV.
- Requires only one minimally sized penetration into the vessel or pipe, reducing costs.

## Design Features (Continued)

- Greatly reduces field installation costs and space requirements through pre-assembled and compact design.
- Provides process isolation of standby pressure relief device and allows pressure relief device maintenance without process shutdown.
- Bright red indicator for positive indication of active pressure relief device.
- A bleed valve is provided on each process side as an effective and safe means of venting entrapped process under an isolated pressure relief valve prior to removal for maintenance. It can also be used for calibration.
- Meets all mandatory requirements of ASME Section VIII, Division 1, UG-135 (b).
- Foolproof provisions for dual padlocking in either pressure relief valve position, in accordance with the recommendations of ASME Section VIII.
- Packing design has been tested to ASTM E427, Method A halogen leak test, reducing probability of fugitive emissions.
- No seat lapping required for maintenance. Only recommended spare parts are soft goods which reduces cost of ownership.
- Provides reduced number of leak points to atmosphere, reducing probability of fugitive emissions.
- Type approval by Det Norske Veritas (DNV).
- Simplicity of operation with built-in seat equalization and no special tools minimizes total time to operate valve.
- Meets standard temperature applications from -40°F to 250°F (-40°C to 121°C).

## Operation



### Safety Selector Valve

The Safety Selector Valve body houses a uniquely designed switching mechanism. The SSV uses a Rotor and Isolation Disc assembly. Referencing the figures shown above, the SSV operates as follows:

#### Figure 1







The red indicator is used to move the retraction bushing. In this figure the process connection on the right is active because the red indicator is pointed on this connection. The process connection on the left is isolated or on stand-by. The available padlock hasp is open to allow rotation of the rotor and disc assembly.

#### Figure 2

Rotating the Retraction Bushing through the red indicator in the clockwise direction until it hits a stop in the SSV body will lower the Rotor and the Isolation Disc away from the Nozzle or seat. In this position, both sides of the SSV are now fully pressurized by the system.

#### Figure 3 and 4:

Rotating the Index Shaft 180° to its stop is preparation for the final step to isolate the right process connection, and activate the left connection for service.

	Retraction Bushing		Red Pointer
	Isolation Disc		Lock Hasp
	Nozzle		Index Shaft

#### Figure 5

Rotating the Retractor Bushing counterclockwise will raise the Rotor and carefully seat the Isolation Disc against the left side Nozzle. Once the disc is properly seated against the nozzle, the operator can activate the lock hasp and can padlock the unit to prevent unwanted access to the PRV valves. The red indicator will now point to the other side as being active.

## Specifications

### Body Base

Aluminum, AL B26 A356.0-T6  
Stainless Steel, SA351-CF8M SS

### Rotor, Indicator, and Seat

316 SS

### Isolation Disk, Index Shaft and Retraction Bushing

17-4 Stainless Steel

### Hardware

Stainless Steel

### Temperature Rating

Standard Rated for a Maximum Temperature of 400° F

Consult Factory

-25°F to 200°F (-31°C to 93.3°C)

### Soft Goods

Teflon

### CV Values

Size	CV
2"	255
3"	612
4"	1061
6"	2713
8"	4512
10"	6930

## Standard Accessories

### BLEED VALVE

The SSV incorporates a stainless steel bleed valve on both process connections to provide a safe and effective means of venting entrapped gas prior to servicing. It also enables field testing on the PRV valve when set pressure adjustments are made.

### ACTIVE/INACTIVE PROCESS INDICATION

A bright red indicator for positive indication of the active process connection is available so there is never any question which process connection is active.

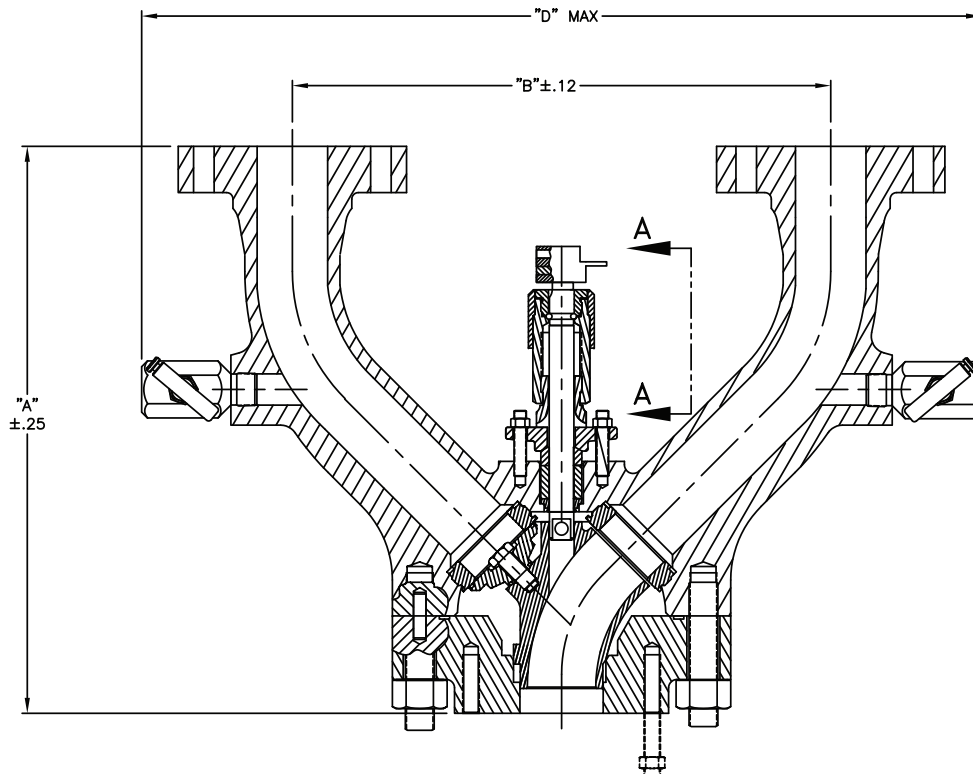
### PADLOCKING

The foolproof provision for dual padlocking will prevent unwanted access to the units.

## Dimensions and Weights, inches [mm] and lbs. (kg)

Size	2	3	4	6	8	10
	[50]	[80]	[100]	[150]	[200]	[254]
<b>A</b>	16.29 [413]	15.83 [402]	20.07 [509]	23.63 [600]	26.15 [664]	24.33 [618]
<b>B</b>	15.50 [394]	15.50 [394]	19.50 [495]	19.50 [495]	23.50 [570]	29 [737]
<b>D Max</b>	25.04 [636]	26.24 [666]	31.36 [796]	33.70 [856]	39.78 [1010]	48.40 [1229]
Shipping Weight	66 (30)	98 (45)	148 (67)	320 (145)	515 (234)	725 (329)

NOTE: 1 - Dimensions shown are for Aluminum Body / Base.



## Ordering Information

Model	Description - Valve Style							
SVR	Safety Selector Valve - Rotary Style Single Active							
	Code	Connection Size						
	08	2 inch						
	12	3 inch						
	16	4 inch						
	24	6 inch						
	32	8 inch						
	40	10 inch						
		Code	Pressure Class					
		05	ANSI 150					
			Code	Connection Type				
			B	Flat Face Flange <sup>1</sup> (Aluminum)				
			F	Raised Face Flange <sup>2</sup>				
				Code	Body Material			
				A	Aluminum			
				S	Stainless Steel			
					Code	Trim Material		
					S	Stainless Steel		
						Code	Soft Goods	
						T	Teflon®	
							Code	Options
							O	Standard (Inlet Valve)

SVR 12 05 B A S T O (Example)  
 Example: Safety Selector Valve, 3 inch, ANSI 150, Flat Face Flange Connection, Aluminum Body, Stainless Steel Trim with Teflon Seals and Standard Inlet Valve.

NOTE: 1 - Aluminum Body comes standard with Flat Face Flange Connections. Use "B" if Aluminum Construction is ordered.

2 - For Stainless Steel or Carbon Steel Body Construction, specify end connections as either ANSI Flat Face or Raised Face Connections.