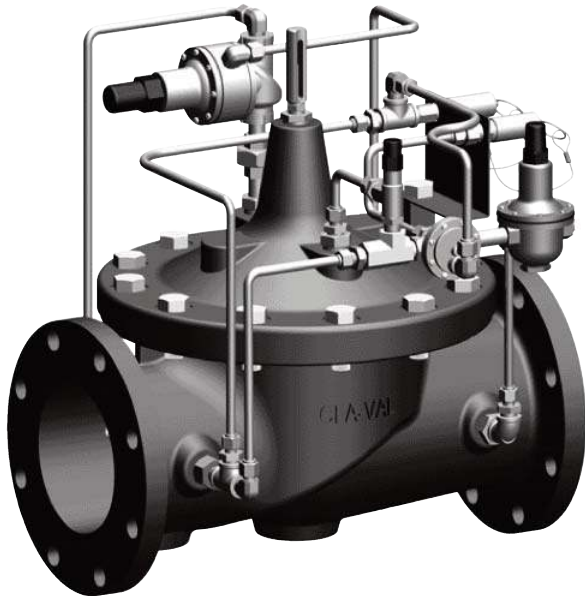




— MODEL — **90AF4A-3**

# Pressure Reducing Valve



- Maintains constant downstream pressure
- Closes quickly to prevent downstream surge when flow is stopped suddenly
- Deadman control
- Surge control prevents damage to refuelers
- Used in conjunction with Cla-Val Bottom-Loading Pantograph
- Fail-safe operation

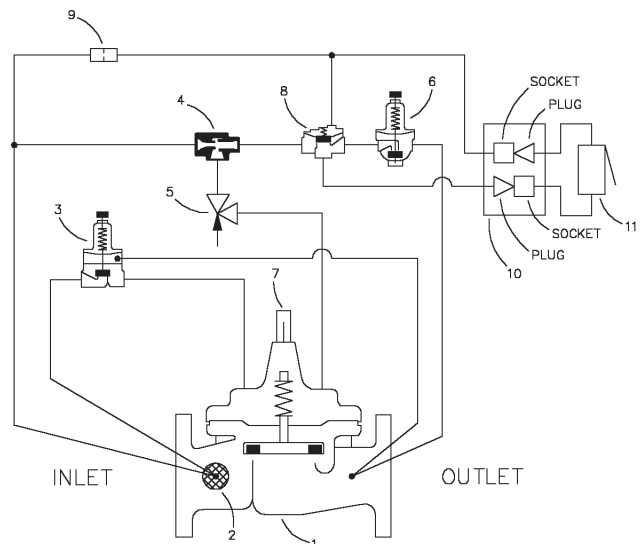
The Cla-Val Model 90AF-4A-3 Hytrol Valve is used as the basic unit in almost all Cla-Val automatic control valves for petroleum applications. The 90AF-4A-3 is a hydraulically operated, diaphragm actuated, globe or angle pattern valve. It is available in various materials and full range of sizes. It consists of three major components: body, diaphragm assembly and cover. The diaphragm assembly is the only moving part. The rugged simplicity of design and packless construction assure a long life dependable, trouble-free operation. Should the diaphragm become damaged the valve will close tight, providing "fail safe" operation. The 90AF-4A-3 Hytrol Valve is used in any type of piping system that requires control, flow regulation, rate of flow control, or check valve operation.

## Schematic Diagram

Item	Description
1	100-34 Hytrol (Reverse Flow)
2	X47A Ejector
3	Bell Reducer
4	CFM2 Float Control
5	X101 Valve Position Indicator X105L Switch Assembly (Optional)

## Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
C	CV Flow Control (Closing)
G	81-01 Check Valve With Cock
Q	Quick Connect Assembly
S	CV Flow Control (Opening)
T	55F Thermal Relief Control



## Specifications

### Sizes

Globe: 1 1/2" - 16" flanged  
Angle: 2" - 16" flanged

### End Details

Flanged:

Cast Aluminum, 150 ANSI B16.1  
Cast Bronze, 150 & 300 ANSI B16.24  
Ductile Iron, 150 & 300 ANSI B16.42  
Cast Steel, 150 & 300 ANSI B16.5

### Temperature Range

Light Petroleum Product -40° to +140°F

### Pressure Ratings

150 class 175-PSI Max.  
150 class 275-PSI Max.  
250 class 300-PSI Max.  
300 class 400-PSI Max.

### Material

Body & cover:  
Cast Aluminum 356-T6  
Cast Bronze ASTM B62  
Ductile Iron ASTM A-536  
Cast Stainless Steel 303  
Cast Steel ASTM A216-WCB

### Valve trim:

Bronze ASTM B61  
Stainless Steel 303

### Rubber parts:

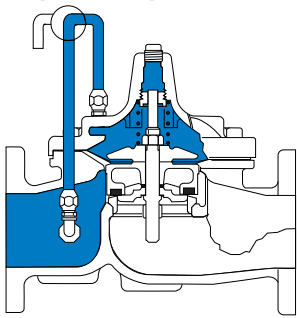
Buna-N® Synthetic Rubber  
Viton

### Other Materials

Available on Special Order

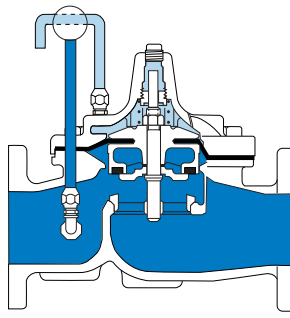


## Principle of Operation



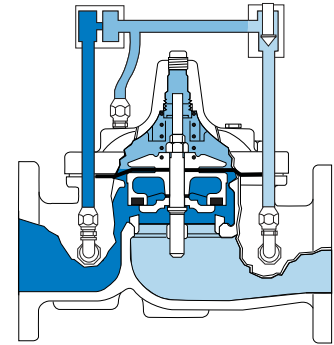
### Tight Closing Operation

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber, the valve closes drip-tight.



### Full Open Operation

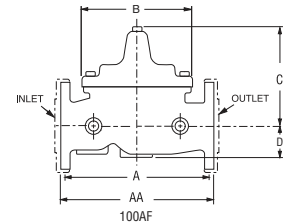
When pressure in the diaphragm chamber is relieved to zone of lower pressure under the valve. Flow in either direction is permitted.



### Modulating Action

The valve modulates when diaphragm chamber pressure is held at an intermediate point between inlet and discharge pressure changes, the pressure above the diaphragm is varied allowing the valve to modulate and compensate for the changes.

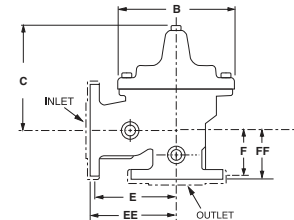
SIZE	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16
A 125 & 150 ANSI	8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38
AA 250 & 300 ANSI	9.00	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50
B DIAMETER	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50
C MAX.	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00
D	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50
E 125 & 150 ANSI		4.75	5.00	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81
EE 250 & 150 ANSI		5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62
F 125 & 150 ANSI		3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69
FF 250 & 300 ANSI		3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50



### C<sub>v</sub> Factor

VALVE SIZE	1 1/2	2	2 1/2	3	4	6	8	10	12
100-34 GLOBE PATTERN	26	49	80	107	200	440	771	1151	1600
100-34 ANGLE PATTERN	30	62	100	137					

C<sub>v</sub> factor is defined as the number of gallons per minute of water at 60°F that will flow with a 1 psi pressure differential across the valve.



## Purchase Specifications

The valve shall be hydraulically-operated, diaphragm-actuated, globe or angle pattern valve. It shall contain a resilient, synthetic rubber disc, having a rectangular cross section, contained on three and on-half sides by a disc retainer and disc guide, forming a tight seal against a single renewable seat. The valve stem shall be guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm consist of nylon fabric bonded with synthetic rubber and shall not be used as a seating surface. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve. All necessary repairs shall be possible without removing the valve from the line. If the diaphragm becomes damaged the valve shall close tight. This valve shall be a Model 100-34 (globe pattern or angle pattern) Hytrol Valve as manufactured by Cla-Val. Newport Beach, California.

## Specify When Ordering

1. Size
2. Model 90AF-4A-3 Globe or Angle
3. Pressure Class
4. Temperature and fluid to be handled
5. Static and flowing line pressure
6. Operating fluid and pressure  
(if other than line pressure)
7. Body and trim materials
8. End details



E-90AF-4A-3 (R-09/2014)

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