

# Modulating Float Valve



- **Accurate Level Control**
- **Completely Automatic Operation**
- **Simple Operation**
- **Drip-Tight Shut-Off**
- **Easy Installation and Maintenance**

The Cla-Val Model 428-01/628-01 Float Valve modulates to maintain a constant liquid level in a storage tank by compensating for variations in supply or demand. It can be installed to control the flow into or out of the tank by either closing on a rising level or opening on a rising level. This valve is a hydraulically-operated, pilot-controlled diaphragm valve.

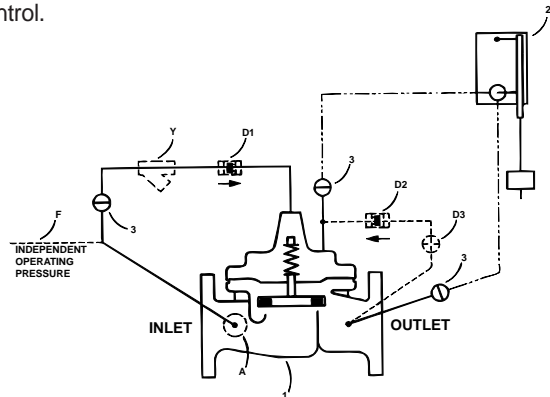
The Pilot Control System consists of an integral variable orifice in the main valve cover and a remotely mounted float control. A slight change in liquid level moves the float control. This action varies the pressure in the valve cover, causing the main valve to seek a new position. The integral variable orifice automatically regulates the flow into the cover chamber until the valve reaches a position that is in direct relation to the position of the float control.

## Schematic Diagram

Item	Description
1	Hytrol Main Valve
2	CFM-9 Float Control
3	CK2 Cock (Isolation Valve)

## Optional Features

Item	Description
A	X46A Flow Clean Strainer
Y	X43 "Y" Strainer
F	Independent Operating Pressure



## Installation Data

The valve may be installed in any position. The Remote Float Control may be mounted at any convenient location above the liquid level. Float rods are available in lengths from 2' to 12' in one-foot increments.

A stilling well (8" min. diameter) should be provided around the float if the liquid surface is subject to turbulence, ripples or wind.

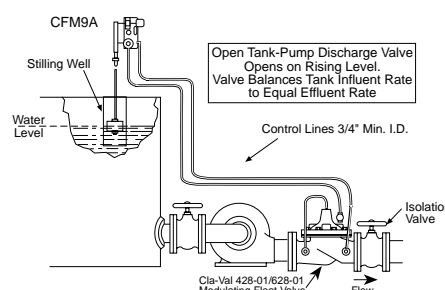
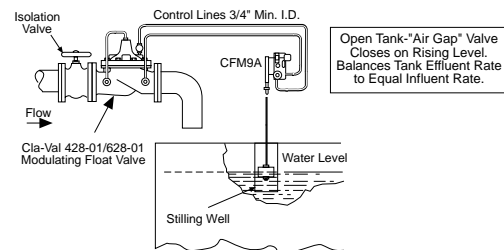
The float control may be installed at any elevation above the valve providing that the amount of flowing line pressure in psi is equal to or greater than the vertical distance in feet between the valve and the float control.

When a separate source of supply pressure (Option F) is used by the pilot control system, that pressure must at all times be constant and equal to or greater than the pressure at the valve inlet.

**DO NOT USE FOR ON-OFF SERVICE.**

Note: We recommend protecting tubing and valve from freezing temperatures.

## Typical Applications



## Model 428-01 (Uses Basic Valve Model 100-32)

### Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
Grade	Material	ANSI Standards*	150 lb.	300 lb.	End** Details
ASTM A-536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
ASTM B62	Bronze	B16.24	225	400	400
Type 304	Stainless Steel	B16.5	285	400	400
356-T6	Aluminum	B16.1	275	—	—

Note: \*ANSI standards are for flange dimensions only.  
 Flanged valves are available faced but not drilled.  
 \*\* End Details machined to ANSI B2.1 specifications.



2" Globe, Screwed



4" Globe, Flanged

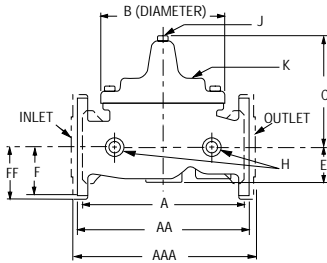


4" Angle, Flanged

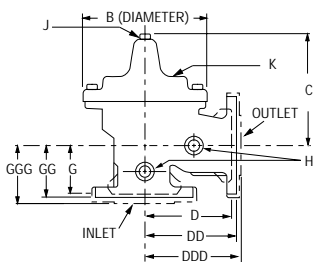
### Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	1 1/4" - 6"	1 1/4" - 6"	1 1/4" - 6"	1 1/4" - 6"	1 1/4" - 6"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				

### Dimensions (In inches)



100-01 (Globe)



100-01 (Angle)

VALVE SIZE (Inches)	1 1/4 - 1 1/2	2	2 1/2	3	4	6
<b>A</b> Screwed	7.25	9.38	11.00	12.50	—	—
<b>AA</b> 150 ANSI	8.50*	9.38	11.00	12.00	15.00	20.00
<b>AAA</b> 300 ANSI	9.00	10.00	11.62	13.25	15.62	21.00
<b>B</b> DIA.	5.62	6.62	8.00	9.12	11.50	15.75
<b>C</b> MAX.	5.50	6.50	7.56	8.19	10.62	13.38
<b>D</b> Screwed	3.25	4.75	5.50	6.25	—	—
<b>DD</b> 150 ANSI	4.00*	4.75	5.50	6.00	7.50	10.00
<b>DDD</b> 300 ANSI	4.25*	5.00	5.88	6.38	7.88	10.50
<b>E</b>	1.12	1.50	1.69	2.06	3.19	4.31
<b>F</b> 150 ANSI	2.50	3.00	3.50	3.75	4.50	5.50
<b>FF</b> 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25
<b>G</b> Screwed	1.88	3.25	4.00	4.50	—	—
<b>GG</b> 150 ANSI	4.00*	3.25	4.00	4.00	5.00	6.00
<b>GGG</b> 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50
<b>H</b> NPT Body Tapping	3/8	3/8	1/2	1/2	3/4	3/4
<b>J</b> NPT Cover Center Plug	1/4	1/2	1/2	1/2	3/4	3/4
<b>K</b> NPT Cover Tapping	3/8	3/8	1/2	1/2	3/4	3/4
Valve Stem Internal Thread UNF	10-32	10-32	10-32	1/4-28	1/4-28	3/8-24
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7
Approx. Ship Wt. Lbs.	15	35	50	70	140	285

## Model 628-01 (Uses Basic Valve Model 100-33)

### Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A-536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
Type 304	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

Note: \*ANSI standards are for flange dimensions only.  
Flanged valves are available faced but not drilled.



3" Globe, Flanged



6" Globe, Flanged

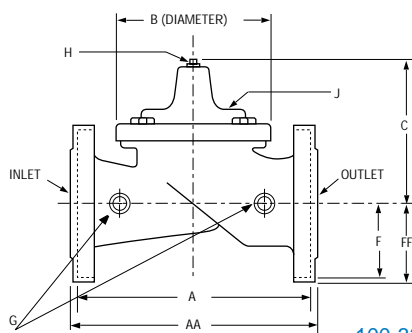


6" Angle, Flanged

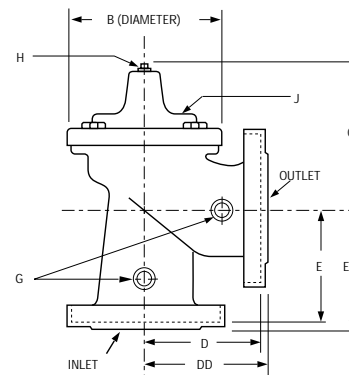
### Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	3"-8"	3"-8"	3"-8"	3"-8"	3"-8"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				

### Dimensions (In inches)





100-33 (Globe)



100-33 (Angle)

VALVE SIZE (Inches)	3	4	6	8
A 150 ANSI	10.25	13.88	17.75	21.38
AA 300 ANSI	11.00	14.50	18.62	22.38
B DIA.	6.62	9.12	11.50	15.75
C MAX.	7.00	8.62	11.62	15.00
D 150 ANSI	—	6.94	8.88	10.69
DD 300 ANSI	—	7.25	9.38	11.19
E 150 ANSI	—	5.50	6.75	7.25
EE 300 ANSI	—	5.81	7.25	7.75
F 150 ANSI	3.75	4.50	5.50	6.75
FF 300 ANSI	4.12	5.00	6.25	7.50
G NPT Body Tapping	3/8	1/2	3/4	3/4
H NPT Cover Center Plug	1/2	1/2	3/4	3/4
J NPT Cover Tapping	3/8	1/2	3/4	3/4
Valve Stem Internal Thread UNF	10-32	1/4-28	1/4-28	3/8-24
Stem Travel	0.6	0.8	1.1	1.7
Approximate Shipping Weight Lbs.	45	85	195	330

## Valve Selection

		These Symbols  and  Indicate Available Sizes								
		Size	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
		End Details	Flanged							
<b>Model 428-01</b>	Basic Valve 100-32	Globe								
		Angle								
	Suggested Flow-GPM	Max. Continuous	93	125	208	300	460	800	1800	
		Max. Intermittent	120	160	260	370	580	990	2250	
<b>Model 628-01</b>	Basic Valve 100-33	Globe								
		Angle								
	Suggested Flow-GPM	Max. Continuous					260	580	1025	2300
		Max. Intermittent								

\*628-01 is the reduced internal port size version of the 428-01.

Refer to the 100-32 or the 100-33 Technical Data Sheet for basic valve options.

Max. Continuous Flow based on 20 fps (100-32), 25 fps (100-33)

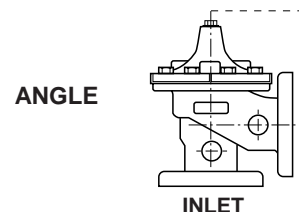
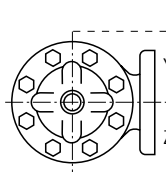
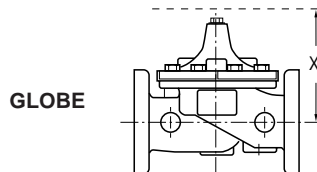
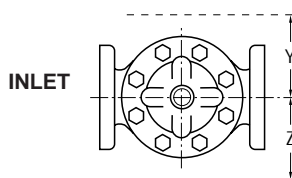
Max. Intermittent Flow based on 25 fps (100-32)

**Important Notice: Do Not Oversize**

## Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

VALVE SIZE	1 1/4" & 1 1/2"	2"	2 1/2"	3"	4"	6"	8"
X Max.	7.28	8.50	9.56	10.18	12.62	14.38	16.50
Y Max.	3.15	4.00	4.50	5.00	6.00	8.00	14.00
Z Max.	3.75	7.00	7.50	8.25	9.25	11.50	13.25



## Pilot System Specifications

### Temperature Range:

Water to 180 F

### Materials:

In contact with operating fluid: Bronze, Stainless Steel, Monel, with Buna-N® Rubber seals. Float linkage: Brass, PVC  
Base plate: Enameled Steel

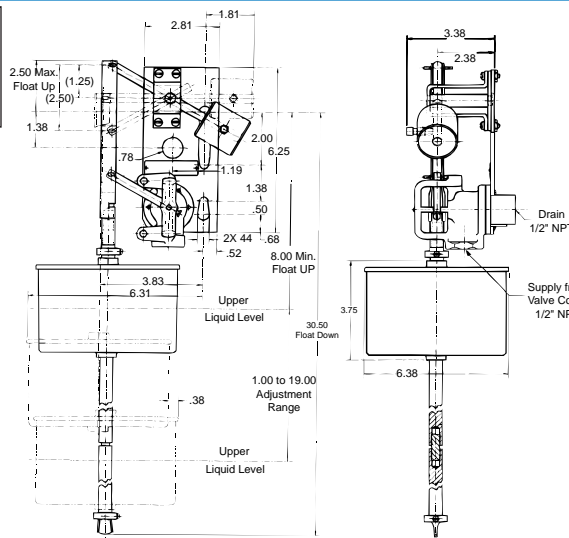
Float: Polypropylene

Float Rod: Standard - Two 12" sections of PVC rod, with 12" extension increments at extra cost.

Float Rod: Optional - 24" stainless steel rod, with 24" extension increments at extra cost.

A larger counterweight is required if float rod length exceeds 4'. Consult factory for details.

### CFM9 Remote Float Control



## When Ordering, Please Specify

1. Catalog No. 428-01 or No. 628-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Materials Desired
6. Screwed or Flanged
7. Valve Closing or Valve Opening on Rising Water Level
8. Desired Options



## CLA-VAL

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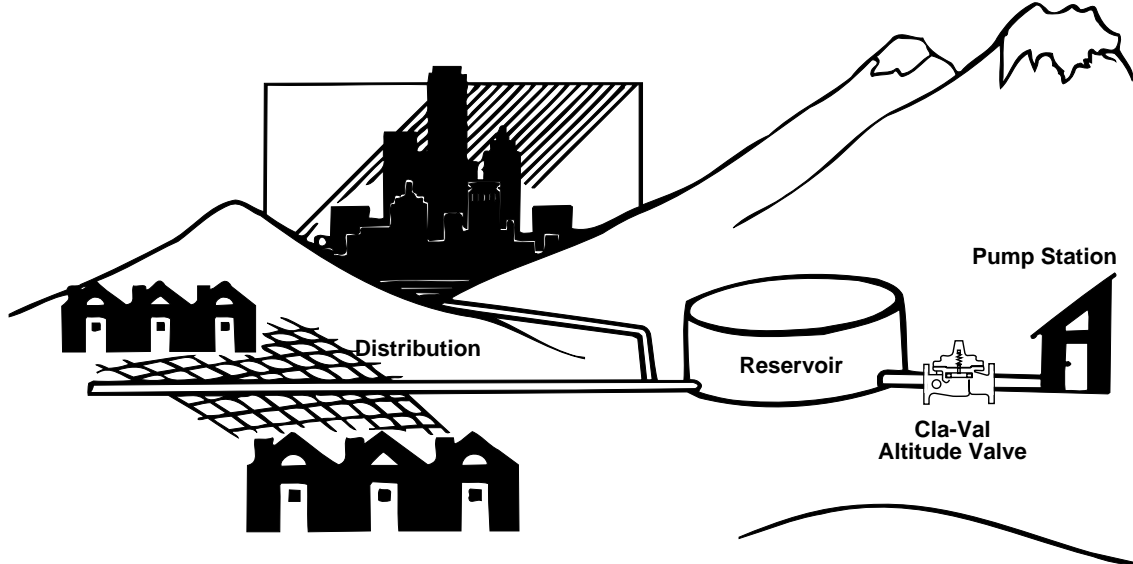
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Represented By:



# CLA-VAL LEVEL CONTROL VALVES

The water level of tanks and reservoirs can be controlled in many ways using automatic control valves. Fundamentally, all level control valves have in common the fact that they close on a high level in a tank or reservoir. To understand the various types of level control valves available, they can be grouped by the type of valve action. They form into two kinds of valve action: on-off or modulating. The on-off group of control valves provide a simple on-off high level shutoff function. The modulating group of control valves provide a variable amount of valve position and flow in relation to the changing water level in the tank. Within these two fundamental groups are combination level control valves, where a virtually unlimited number of other valve functions can be added to any valve, such as: back pressure, two-way flow, delayed opening, rate of flow control, check feature, solenoid override, ect.

## ON-OFF GROUP

A simple, reliable way for smaller tank level control would be using a three-way float actuated pilot valve. The float pilot valve is mounted on the main hytrol valve for filling from the reservoir top, or the float pilot valve can be remotely mounted for reservoir filling from the bottom. (Cla-Val Series 124)

Larger reservoirs due to their size or height often require a "float-less" or altitude valve for level control. The pressure head of the reservoir is sensed through a separate line by the valve mounted pilot control which shifts to close the main hytrol valve when the reservoir is full. (Cla-Val Series 210)

When electricity is available at the reservoir site it can be used for operating a small solenoid pilot valve mounted on the main valve filling the reservoir. When the high level is reached a float switch or level probe signals the main hytrol valve to close by switching power to the solenoid pilot valve. (Cla-Val Series 136)

## MODULATING GROUP

Tanks or reservoirs where the level must be held within closely controlled limits regardless of filling or lowering flow rates normally use a modulating type pilot control system arrangement. Modulating float valves are not normally recommended for straight on-off service. The pilot control senses the water level shift which in turn modulates the main hytrol valve to a new position between fully open and tight closed. (Cla-Val Series 427 and 428)

Reservoirs where the rising level is to match the closing of the valve also use a modulating type float pilot control system arrangement. As the reservoir fills the main hytrol valve is open then as the level approaches the shut off point the float pilot slowly modulates the valve closed. (Cla-Val Series 129)

Please call your Cla-Val regional office or sales agent for complete design assistance. Our goal is to provide the best automatic control valve solution for each application.