Taylor Valve Technology®

MALLARD CONTROL

A BRAND OF Taylor Valve Technology®

Mallard Model 3200/3201 Liquid Level Controllers

Features

- Pneumatic snap-ECO Pilot and throttling pilot: Pneumatic model 3200/3201 can be fitted with either of these pneumatic pilots. A Snap-ECO pilot for environmentally friendly, non-bleed, and on/off applications or a throttle pilot for modulating service. The controller can be quickly and easily converted from one pilot style to the another.
- Electric pilots: The model 3200 is also available with explosion proof SPDT or DPDT electric switches.
- Weather-proof case: Utilizes a gasket between its cover and case to seal out the effects of outside weathering.
- Liquid-liquid interface control: The model 3200/3201 is well suited for liquid-liquid interface detection.
- **Field reversible action:** The model 3200/3201 design makes reversing the controller action simple. Requires no additional parts or special tools.
- Displacers: Mallard offers a variety of displacer materials and designs for the model 3200/3201 to satisfy your design and application requirements. Standard material offerings are PVC, acrylic and 316 stainless steel.
- Available with wetted materials that meet NACE MR0175 specifications for sour service.

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

The model 3200/3201 liquid level controller is ideal for oilfield scrubber and separator applications. Its rugged and versatile design make it the preferred choice of production operators for reliable service in a wide variety of applications. Model 3200 is available in pneumatic snap and throttling pilots, or electric SPDT and DPDT limit switches; direct or reverse action; with a variety of displacer sizes, materials, and vessel connections.

Specifications

Available end connection sizes
- Threaded: 2"

Pilot
- Pneumatic (standard)
  - Snap (on/off), 0-20/0-30 psig output
  - Throttle (modulating), 3-15/6-30 psig output
- Electric (optional)
  - SPDT (explosion proof switch)
  - DPDT (explosion proof switch)

Supply pressure requirement
- 3-15 or 0-20 psig output
- 20-30 psig min.
- 6-30 or 0-30 psig output
- 35-40 psig min.

Electric switch rating
- SPDT: 15 amps @ 125, 250 or 480 VAC
- DPDT: 10 amps @ 125, 250 or 480 VAC

Supply & output connections
- Pneumatic pilots: 1/4" FNPT
- Electric switches: 1/2" FNPT

Pressure ratings
- 2" threaded: 6000 psig

Materials of Construction

Description	Material
Body	Carbon Steel
Case & Cover	Die Cast Aluminum
Pilots	Aluminum w/SS Internals
Pilot Gaskets / Diaphragm	Buna Viton® (Optional)
Gauges	Brass or Brass LF 316SS or 316SS LF (Optional)
Shaft	303 Stainless Steel 316 SS (Optional)
Bearing Blocks	303 Stainless Steel 316 SS (Optional)

Description	Material
Bearings	440C Stainless Steel
Seals	Buna-N Viton® (Optional)
Displacer	PVC Acrylic or 316SS (Optional)
Displacer Arm	304 Stainless Steel
Vertical Hanger (Swivel)	316 Stainless Steel
Vertical Displacer Ext. Chain	302 Stainless Steel

Taylor Valve Technology • 8300 S.W. 8th Street • Oklahoma City, Oklahoma • 73128

TEL 405.787.0145 FAX 800.805.3401 INFO info@taylorvalve.com

www.taylorvalve.com

Model 3200-01 Liquid Level Controllers

Controller Case
00 • Sealed Case
01 • Standard Case

Arm Length
– • 15" (Std.)	**F** • 8"	**K** • 10"	**P** • 16"	**U** • 20"
B • 7"	**G** • 8.5	**L** • 11"	**Q** • 16.44"	**V** • 21"
C • 7.19"	**H** • 9"	**M** • 12"	**R** • 16.75"	**W** • 22"
D • 7.25"	**I** • 9.25"	**N** • 12.5"	**S** • 17"	**Y** • 24"
E • 7.75"	**J** • 9.5"	**O** • 14"	**T** • 18"	**Z** • 25"

End Connection
20 • 2"

End Connection Type
MS • Threaded MNPT

End Connection Rating
0 • MNPT

Materials of Construction: Body / Shaft & Bearing Block
– • A350 LF2 / 303SS
A • A350 LF2 / 316SS
N • A350 LF2 / 316SS, NACE
S • 316SS / 316SS, NACE

Pilot
S • Snap/ECO Pilot (Non-Bleed Snap)
T • Throttling (Pneumatic Modulating)
E • SPDT, Single Pole Double Throw (Electric On/Off, Exp. Proof Switch)
D • DPDT, Double Pole Double Throw (Elec. On/Off, Exp. Proof Switch)

Mounting / Controller Action
LD • Left Hand / Direct
LR • Left Hand / Reverse
RD • Right Hand / Direct
RR • Right Hand / Reverse

Seal Material
B • Buna **A** • Aflas® **V** • Viton® **C** • Low Temp Viton® **L** • Low Temp Buna

Displacer: Dimensions (in.) / Material
– • 1.88 x 12 / PVC	**L** • 1.88 x 14 / PVC	**Z** • 3.00 x 10 / PVC
B • 1.5 x 10 / PVC	**M** • 1.88 x 18 / PVC	**0** • 1.66 x 12 / 316SS
C • 1.5 x 12 / Acrylic	**P** • 1.88 x 6 / PVC	**1** • 1.66 x 10 / 316SS
D • 1.5 x 12 / PVC	**R** • 2.00 x 12 / Acrylic	**2** • 1.66 x 6 / 316SS
E • 1.5 x 24 / Acrylic	**S** • 2.00 x 12 / PVC	**4** • 1.66 x 10 / 316SS, NACE
F • 1.5 x 6 / PVC	**T** • 2.00 x 14 / Acrylic	**5** • 1.66 x 12 / 316SS, NACE
H • 1.88 x 10 / Acrylic	**U** • 2.00 x 14 / PVC	**6** • 1.66 x 14 / 316SS
I • 1.88 x 10 / PVC	**V** • 2.75 x 12 / PVC	**7** • 1.66 x 18 / 316SS
J • 1.88 x 12 / Acrylic	**W** • 2.75 x 5 / Acrylic	**8** • 1.66 x 24 / 316SS
K • 1.88 x 14 / Acrylic	**Y** • 2.75 x 5 / PVC	**9** • 1.66 x 30 / 316SS

Gauge Type: Pressure Range / Internal Material
S • 0-30 psi / Brass (Standard)
T • 0-60 psi / Brass (Standard)
3 • 0-30 psi / 316SS
6 • 0-60 psi / 316SS
A • 0-30 psi / Brass, Liquid -Filled
B • 0-60 psi / Brass, Liquid -Filled
C • 0-30 psi / 316SS, Liqui d-Filled
D • 0-60 psi / 316SS, Liqui d-Filled
E • Electric (**E & D Pilot Options Only**)

Enclosure
A • Std. Case (3201)
S • Std. Case (3200)

3201-20 MS 0 - S RD B - S A
Example

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

Model 3200-01 Liquid Level Controllers

Operating Temperature Limits

Body Material	Seals	Displacer Material	Temperature Limits °F	°C
Carbon Steel	Buna	PVC	-40 to 140	-40 to 60
		Acrylic	-40 to 180	-40 to 82
		316SS	-40 to 225	-40 to 107
	Viton®	PVC	-20 to 140	-29 to 60
		Acrylic	-20 to 200	-29 to 93
		316SS	-20 to 400	-29 to 204

Displacer Pressure Ratings

Displacer Material	Maximum Pressure (psig)
PVC	6170
Acrylic	6170
316 Stainless Steel	2000 at 180˚F (82˚C) 1595 at 400˚F (204˚C)*

*For applications requiring higher pressure ratings for SS displacers, consult factory or your local Mallard representative.

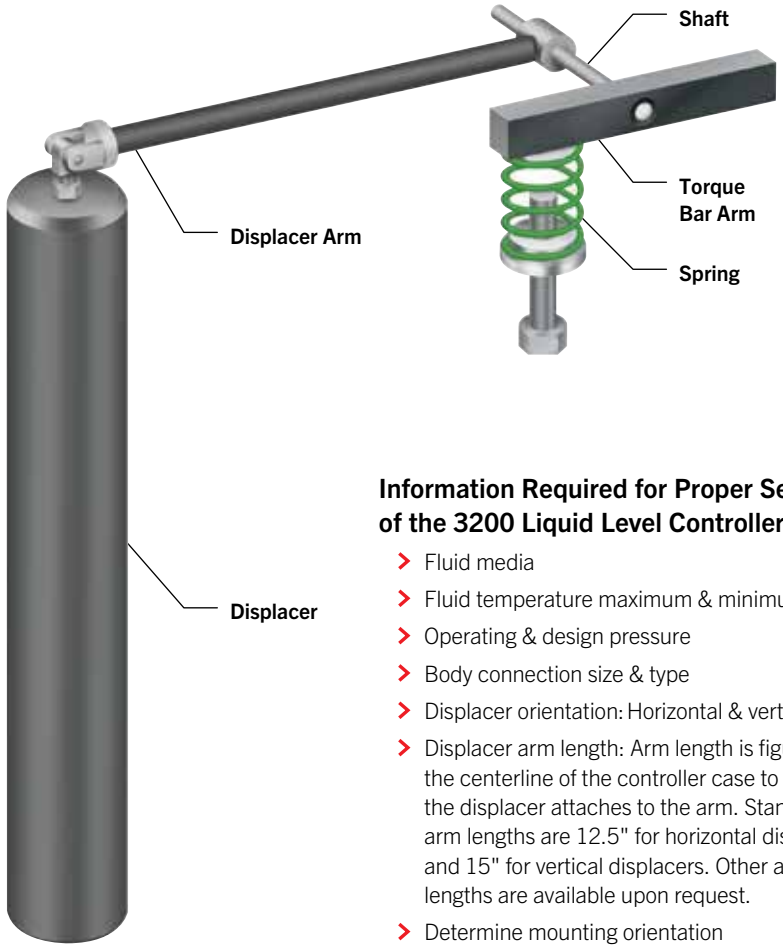
Minimum Allowable Fluid Specific Gravity

Pilot	Top Level Control		Liquid-Liquid Interface Level Control			
	Horizontal Displacer	Vertical Displacer	Horizontal Displacer		Vertical Displacer	
	Standard [1]	Standard [2]	Standard [1]	Special [3]	Standard [2]	Special [3]
Snap	0.28	0.21	0.28	0.030	0.21	0.050
Throttle	0.56	0.42	0.56	0.060	0.42	0.100

1. Based on 1.88" dia. x 12" displacer with 12" displacer arm.
2. Based on 1.88" dia. x 12" displacer with 15" displacer arm.
3. Special displacer and displacer arm configurations required. Consult factory or your local Mallard representative.

Theory of Operation

The operation of the model 3200 Level controller is based upon the "force balance principle". The weight of a displacer-type level sensing element produces a force which is applied to one side of the torque bar through a series of shafts and levers. This force is balanced by the opposing force of a compressed spring on the other side of the torque bar. As the level rises, the increased immersion of the displacer in the liquid causes the relative weight of the displacer to decrease, due to the buoyancy force being produced. This, in turn, results in a decrease in force applied to the torque bar. The torque bar then rotates until the forces are again balanced. Torque bar rotation is detected by the pilot through a fulcrum mounted on a lever (flapper bar) to affect the desired controller output. The output signal can be a pneumatic on/off signal by using the snap pilot, a pneumatic modulating signal by using the throttle pilot, or it can be an electrical SPDT or DPDT output signal by using an electric limit switch.

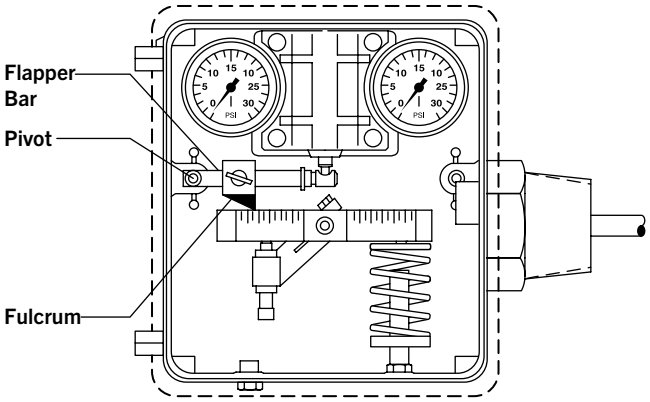


Information Required for Proper Selection of the 3200 Liquid Level Controller

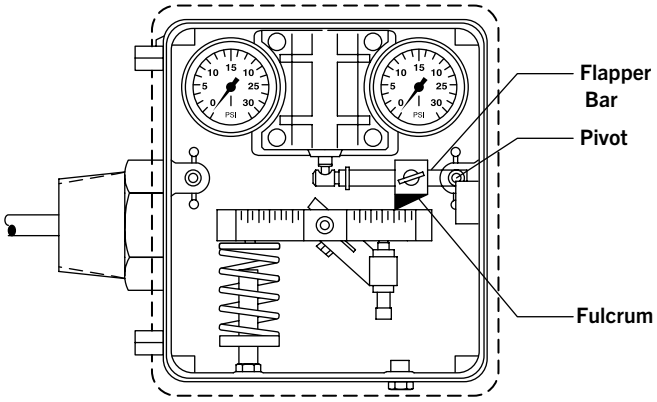
- Fluid media
- Fluid temperature maximum & minimum
- Operating & design pressure
- Body connection size & type
- Displacer orientation: Horizontal & vertical
- Displacer arm length: Arm length is figured from the centerline of the controller case to where the displacer attaches to the arm. Standard arm lengths are 12.5" for horizontal displacers and 15" for vertical displacers. Other arm lengths are available upon request.
- Determine mounting orientation

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

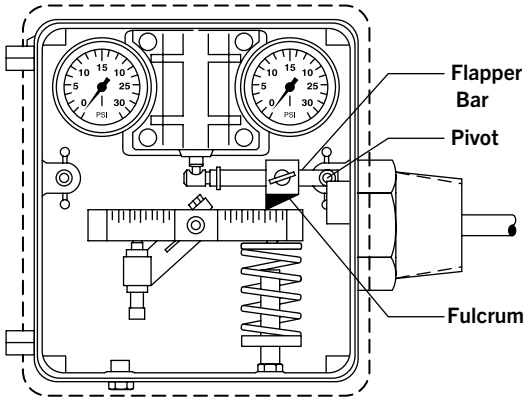
Model 3200-01 Liquid Level Controllers



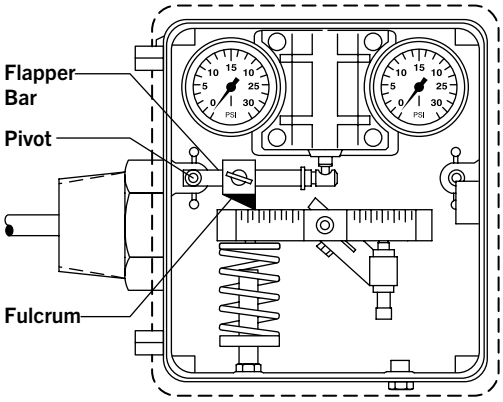
Left-Hand Mount Reverse Acting



Right-Hand Mount Reverse Acting



Left-Hand Mount Direct Acting



Right-Hand Mount Direct Acting

Proportional Band

Proportional band is the ratio of used displacer length versus the total length of the displacer to achieve a desired output signal. Example: If 6 inches of liquid level change will develop the required output signal (such as 3-15 psi) and a long vertical displacer is used, then the level controller is said to have a 50% proportional band over 12". Sliding the fulcrum on the flapper bar away from the pivot pin toward the snap ring decreases proportional band (increases sensitivity), while sliding the fulcrum on the flapper bar away from the snap ring toward the pivot pin increases proportional band (decreases sensitivity). A desired output signal (such as 3-15 psi or 6-30 psi) may be accomplished over any portion of the displacer by adjusting the fulcrum as described above.

Controller Action

Controller action is determined by the installation of the flapper bar, as shown above. Control is considered "Direct-Acting" when the controller output changes in the same direction as the liquid level. For example, the controller output signal will increase when the liquid level the controller is sensing increases, and vice versa. Control is considered "reverse acting" when the controller output changes in the opposite direction as the liquid level. For a direct acting controller, the flapper bar pivot point is on the same side as the spring. For a reverse acting controller, the flapper bar pivot point is on the opposite side as the spring.

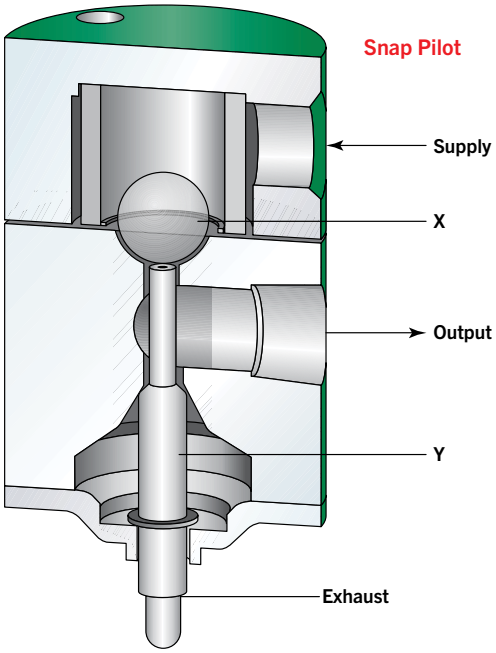
Mounting

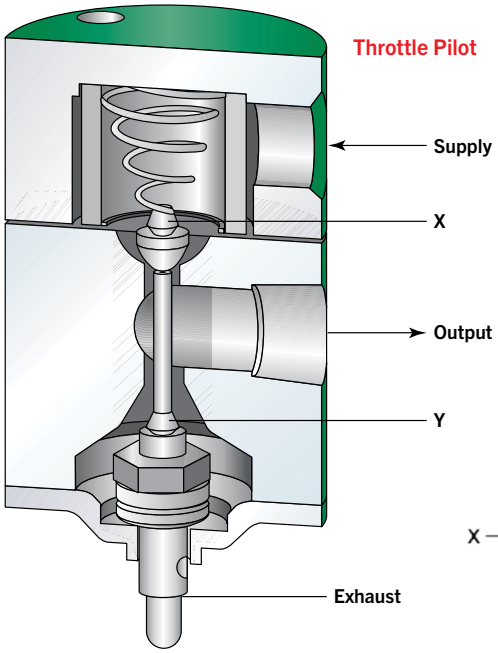
The model 3200 liquid level controller can be set up as right-hand or left-hand mount. The orientation of the level controller mounted to the vessel, while facing the front of the controller, determines the mounting style. If the controller is to be mounted on the right side of the vessel, then it is considered "right-hand". If the controller is to be mounted on the left side of the vessel, then it is considered "left-hand". The mounting orientation can be easily reversed in the field.

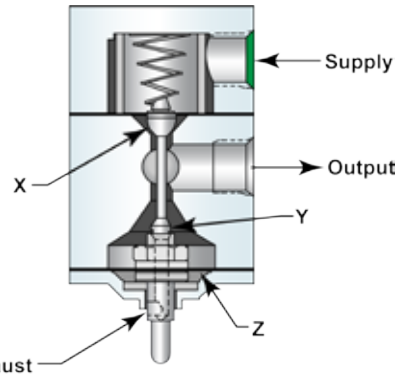
Taylor Valve Technology®

MALLARD CONTROL
A BRAND OF Taylor Valve Technology®

Model 3200-01 Liquid Level Controllers







Snap Pilot Operation

The snap pilot is made up of two valves. One to admit system supply pressure and one to exhaust system pressure. Ball "X" controls the flow of supply gas into the pilot and is held closed on the pilot seat by force exerted by the supply pressure acting upon the seating area of the ball.

When force transmitted from the flapper bar to the thrust pin "Y" becomes sufficient to overcome the force holding ball "X" seated, ball "X" snaps off the pilot seat allowing supply gas to flow past ball "X" and through the output port of the pilot. The spherical seating end of the thrust pin "Y" seats and closes the exhaust port simultaneously when ball "X" snaps open. The seating area of the thrust pin is smaller than the seating area of ball "X"; therefore, the thrust pin must remain seated against the supply pressure until force on the thrust pin from the flapper bar diminishes.

A simultaneous action occurs as force from the flapper bar on the thrust pin "Y" is removed. When this happens, the supply pressure will unseat the thrust pin and open the exhaust port in the pilot and ball "X" will reseat and close off the supply port. The difference in seating areas gives this pilot its "snap" action.

The Mallard ECO Pilot is an easy and affordable solution to convert your existing level controllers to a more efficient non-bleed design. By reducing fugitive emissions into the atmosphere, oil & gas operators regain lost profits while lowering their carbon footprint.

Throttle Pilot Operation

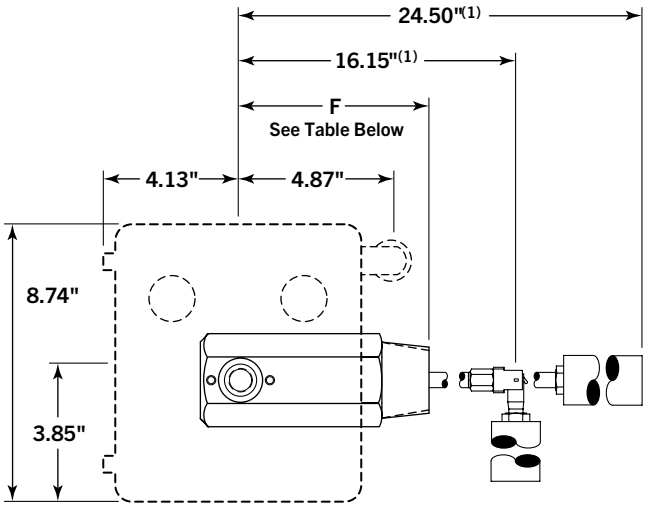
The throttle pilot, like the snap pilot, is also made up of two internal valves. In addition, the throttle pilot utilizes a resilient diaphragm "Z" in conjunction with the valves to create a force balance pilot.

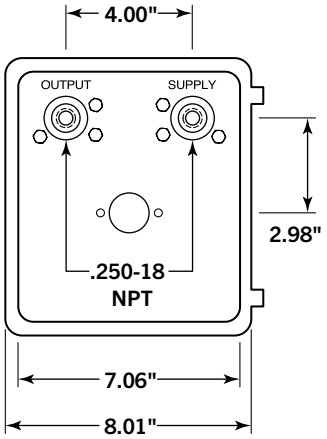
The pilot output supply pressure acts upon the diaphragm "Z" so that the diaphragm pushes back with the same force being applied to the thrust pin by the flapper bar, thus the term force balance.

The throttle pilot functions in a similar manner as the snap pilot except that the output pressure is proportional to the amount of force applied to the lower seat by the flapper bar. An increase in force on the thrust pin produces a proportionate increase in pilot output pressure.

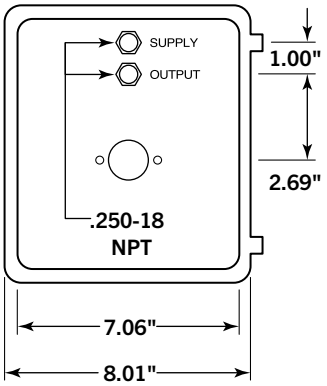
As forces change on the thrust pin, the pilot seeks a new balance point by exhausting the supply output at valve "Y" or unseating valve "X" to increase output pressure. Supply gas does not flow while the pilot is in balance.

Model 3200-01 Liquid Level Controllers

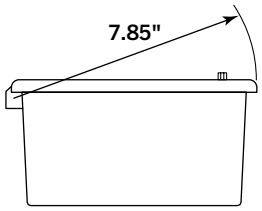




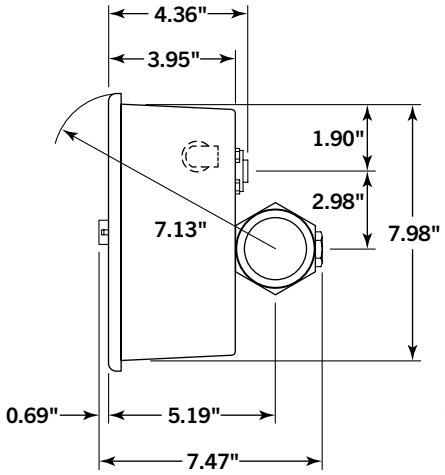
Model 3200 Back View



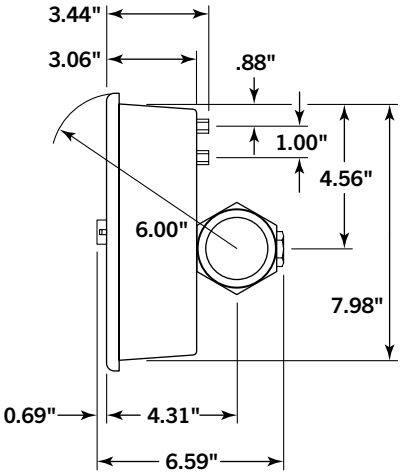
Model 3201 Back View



(1)16.15" dimension based on standard vertical service configuration of arm with a 12" long displacer. 24.50" dimension based on standard horizontal service configuration of 12.50" arm with a 12" long displacer. Other arm lengths and displacer sizes are available on request.



Model 3200



Model 3201

Dimension F Data (in., mm)

Vessel Connection	Size (in., mm) / Dimension F 2.00	
	in.	mm
Screwed Male NPT	6.00	152.4

EMPLOYEE OWNED ★ Since 2020 ★

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

10/14/25