

Level Transmitters

27 Liquid-Level Controller

Introduction

Features & Benefits

- ▶ Flexible shaft design has no process-wetted pivots or links to foul
- ▶ Actuation motion of 1/32" provides precise measurement
- ▶ Wide variety of flange sizes and materials simplify mounting
- ▶ Standard process wetted parts are 316SS, improving corrosion resistance

Description

The Model 27 Liquid-Level Controller consists of a float mounted on a short float arm connected to the free-end of a packless flexible shaft. The fixed-end of this flexible shaft is attached to a standard flange.

The tubular shaft has a formed center section (similar to a bourdon tube in cross section), which permits only vertical float motion. The rigid float arm extension within the shaft transmits the float motion to the air pilot for operation of a diaphragm-type motor control valve.

The Model 27 Liquid-Level Controller operates on the change in buoyant force of the float-not the motion of the float riding on a changing liquid level. A buoyancy change of less than six ounces will provide full actuation of the pilot valve or contact switch. The Model 27 also has limit stops to maintain the shafts within the elastic limit.

The float has a suitable margin of safety, allowing it to operate in liquids having a minimum specific gravity of 0.50. A wide range of specific gravities and level-change requirements can be accommodated via elliptical, cylindrical, and other special floats.

These units can be mounted on the direct side of a vessel flange or externally mounted in a float chamber. Standard piping connections on the float chamber are 1" NPT.

Specifications

Pressure

Full vacuum to flange rating

Temperature

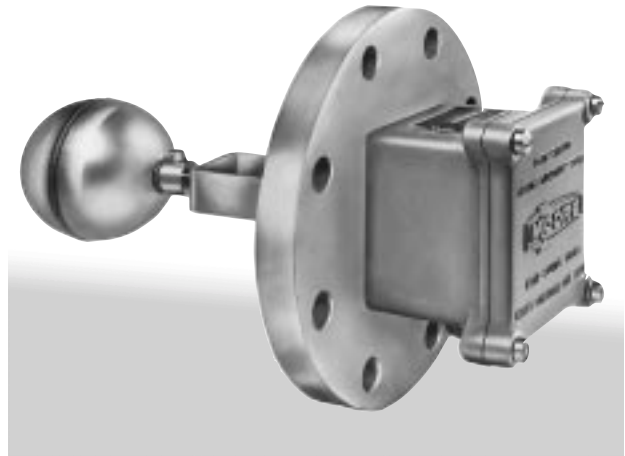
Min. 32° F (0° C), Max. 350° F (177° C)

Specific Gravity

0.50 Min.

Switch Rating

SPDT; 10A contacts; 125, 250, or 480 Vac



Electrical Classification

FM approved as: Explosion-Proof for Class I, Groups C & D, Div. 1 service.

Dust Ignition-Proof for Class II, Groups E, F & G, Div. 1 service. Suitable for Class III, Div. 1 hazardous locations.

Float Size Table

Ball Float Size	Material		Suitable for minimum specific gravity of:
	316 SST	Hastelloy C	
3-1/2" Dia.	X	X	0.5
4" Dia.	X		0.35
5" Dia.	X		0.25

Options

Special Temperature Ranges

Elastomers and enclosure construction optimized for the following temperature ranges:

- 300-700°F (150 to 371°C)
- Below 32°F (0°C)

Elastomer Coatings

Coating of all wetted parts to increase corrosion resistance
Available coatings: Neoprene, TFE/PTFE, Kynar

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Technical data

Float Chamber^{1,2} Part Numbers

Float Chambers	Flange Size		
	4"		6"
	Steel Casting	Type 316 SS Casting	Welded Steel
Pressure Rating	Part No.	Part No.	Part No.
150#	8537-1	8537-201	8537-46
300#	8537-51	8537-224	8537-47

Model Number

Liquid-Level Controller

Flange or Connection Material

- Steel
- Stainless Steel

Flange Size and Rating

- 4" - 150#
- 4" - 300#
- 6" - 150#
- 6" - 300#
- 1-1/2" Threaded Connection

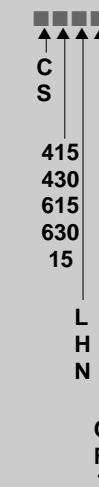
Operating Temperature (Electric Only)

- Low, under 32° F (0°C)
- High, over 350° F (177°C)
- Normal, between 32-350° F (0-177°C)

Options

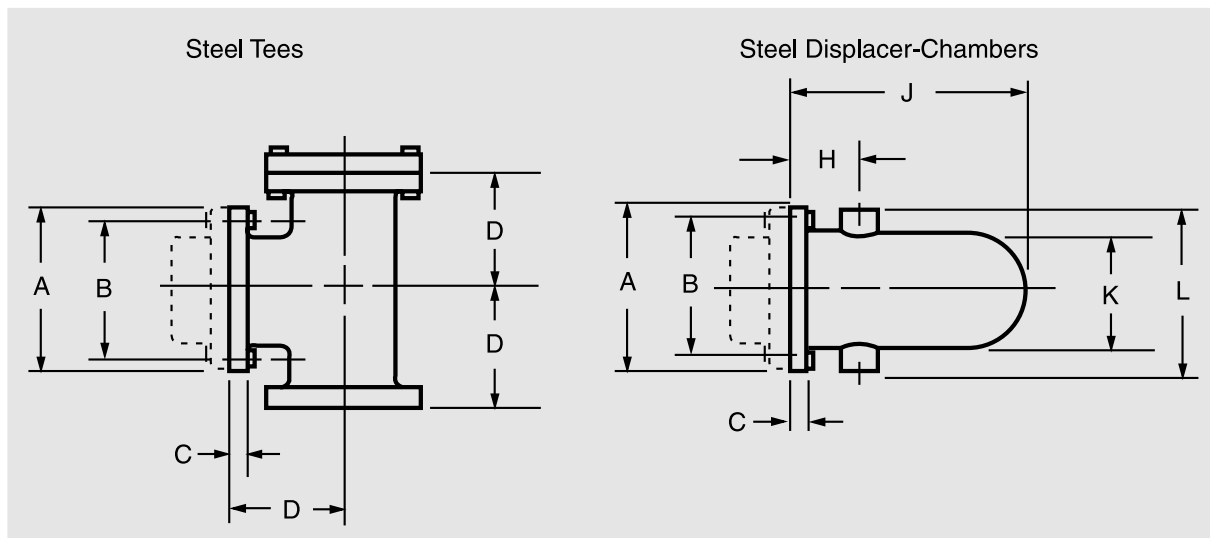
- Float Chamber
- Reverse Acting (Pneumatic Only)
- Tee Assembly (for Top Mounting)

Order No.

27-

 C
 S
 415
 430
 615
 630
 15
 L
 H
 N
 C
 R
 T

Mounting Dimensions

4



Standard Flange Class	Flange Size	A	B	Bolt Flange		C	D	E ³	H	J	K	L
		Flange Dia.	Circle	No.	Size	Tee: Thickness	Face Center to Face	Chamber: to Ball	Chamber: Center to Face	Chamber: Length to Face	Chamber: Body Diameter	Height at Conn.
Steel	4	9	7-1/2	8	5/8	1-5/16	6-1/2	4-3/4	6-1/2	11-3/8	5-3/4	8-1/2
150	6	11	9-1/2	8	3/4	1	8	4-11/16	6-1/2	12-5/8	6-5/8	9-1/2
Steel	4	10	7-7/8	8	3/4	1-1/4	7	4-7/16	6-1/2	11-3/8	5-3/4	8-1/2
300	6	12-1/2	10-5/8	12	3/4	1-7/16	8-1/2	4-1/4	6-1/2	12-5/8	6-5/8	9-1/2
Steel	4	10	7-7/8	8	7/8	1-3/8	8	4-3/4	Standard 4"-150# and 4"-300# cast-steel chambers have 1-1/2" I.P.S. connections. Other chambers can be furnished with 1-1/2" or 2" I.P.S. connections. Data will be furnished on request.			
400	6	12-1/2	10-5/8	12	7/8	1-5/8	9-3/4	4-3/4				
Steel	4	10-3/4	8-1/2	8	7/8	1-1/2	8-1/2	4-3/4				
600	6	14	11-1/2	12	1	1-7/8	11	4-3/4				

1) Chambers are constructed with 1-1/2" female NPT connections, top and bottom.

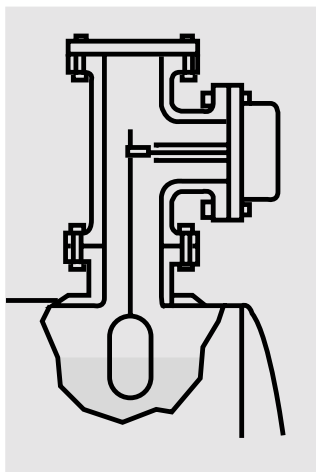
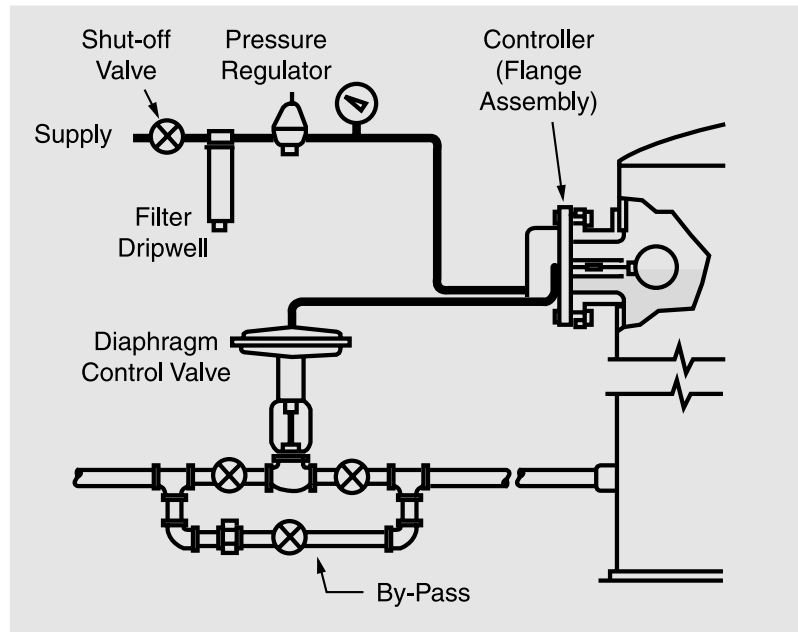
2) Chambers not listed above are considered special and will be priced on application.

3) F = E + diameter of ball.

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Vertical Float

In order to provide for vertical motion of the float, the mounting nozzle should be installed with its flange face vertical and the bolt holes straddling the center line (shown to the left).

Controllers can be furnished for installation in a tee on top of the tank. If the vertical extension is greater than 24", or if the liquid level can be disturbed by surges, a suitable baffle or cage that does not touch the float should be installed.

Displacer Chamber

As shown to the right, a displacer chamber is recommended if the liquid level can be disturbed by surges. Shut-off valves are also advisable to allow the controller to be removed without shut-down. Provisions can be made to periodically flush-out the displacer chamber by connecting a purge line.

