



Series
301

Top Mount – Float Type

Single Stage for Alarms, Depth to 12 ft. Hermetically Sealed Switches



Level

CHART D
Float Actuation
Switch Level Change – Single Stage Operation

| SPECIFIC GRAVITY | FLOAT C = COPPER SS = STAINLESS STEEL | THE OPERATING DEPTH MUST BE SPECIFIED BETWEEN THESE LIMITS | | FIXED LEVEL CHANGE "D" BETWEEN ON AND OFF | MINIMUM TANK DEPTH REQUIRED BELOW LOW OPERATING POINT "TB" |
|------------------|--|--|---|---|--|
| | | MINIMUM HIGH LEVEL OPERATING POINT (ON RISE) FROM TOP OF FLANGE | MAXIMUM LOW LEVEL OPERATING POINT (ON DROP) FROM TOP OF FLANGE | | |
| 1.0 | 4 1/2" C | 9" 22.9 cm | 96" 2.44 M | 3/4" 19 mm | 5 3/4" 14.6 cm |
| | 4 1/2" SS | 9 3/8" 23.8 cm | 144" 3.66 M | 3/4" 19 mm | 5 3/4" 14.6 cm |
| | 7" SS | 10 3/4" 27.3 cm | 144" 3.66 M | 1/2" 13 mm | 6" 15.2 cm |
| | 3 1/2" x 6" SS | 9 7/8" 25 cm | 144" 3.66 M | 7/8" 22 mm | 7 5/8" 19.4 cm |
| .90 | 4 1/2" C | 8 3/4" 22.2 cm | 84" 2.13 M | 7/8" 22 mm | 6 1/8" 15.6 cm |
| | 4 1/2" SS | 9 1/4" 23.5 cm | 144" 3.66 M | 1" 25 mm | 6 1/8" 15.6 cm |
| | 7" SS | 10 5/8" 27 cm | 144" 3.66 M | 1/2" 13 mm | 6 1/4" 15.9 cm |
| | 3 1/2" x 6" SS | 9 3/8" 23.8 cm | 96" 2.44 M | 1 1/8" 29 mm | 7 7/8" 20.0 cm |
| .82 | 4 1/2" C | 8 1/2" 21.6 cm | 72" 1.83 M | 1" 25 mm | 6 1/4" 15.9 cm |
| | 4 1/2" SS | 8 3/4" 22.9 cm | 108" 2.74 M | 7/8" 22 mm | 6 1/4" 15.9 cm |
| | 7" SS | 10 1/2" 26.7 cm | 144" 3.66 M | 1/2" 13 mm | 6 3/4" 17 cm |
| | 3 1/2" x 6" SS | ~ 1/8" 23.2 cm | 72" 1.83 M | 1 1/4" 32 mm | 8" 20.3 cm |
| .75 | 4 1/2" SS | 8 3/8" 21.3 cm | 72" 1.83 M | 1" 25 mm | 6 1/2" 16.5 cm |
| | 7" SS | 10 3/8" 26.4 cm | 144" 3.66 M | 5/8" 16 mm | 6 7/8" 17.5 cm |
| | 3 1/2" x 6" SS | 8 7/8" 22.5 cm | 48" 1.22 M | 1 1/2" 38 mm | 8" 20.3 cm |
| .50 | 7" SS | 9 3/4" 23.5 cm | 144" 3.66 M | 3/4" 19 mm | 6 3/4" 17 cm |

Repeatability ± 1/4"

NOTE

Float travel is limited by the lower extremity of the armature tube, or when provided, by the end of the support extension. Float rods and extensions may be altered to obtain the minimum and maximum operating levels shown in the tables.

If control has been furnished for specified operating levels, the float rod supplied will provide ±2" adjustment of such levels.

If tank depth is critical a section of float rod below lower clamp (stop) may be cut off.

The reliable 301 Series has proven to be a rugged economical choice for top mounting on tanks where side mounting is not practical, or for use in sumps. These units feature a fixed deadband for high or low alarm or shutdown. This control can be mounted on top of any closed or open tank or sump by use of the 3/4" NPT connection. Flanges are also available in various sizes, pressure rating and material to meet any installation. Several size floats are available to accommodate liquids to a specific gravity of 0.5 and depths to 12 feet.

Electrical switch actions, SPST (SPDT) (DPDT) or (DPST), can be ordered to satisfy most applications. Two-stage operation available, consult factory. Hermetically sealed snap action or mercury contacts provide for high or low current or voltage requirements. Enclosures include general purpose NEMA-1, weatherproof NEMA-4, explosion-proof NEMA-7, 9. The explosion-proof, vapor proof version combines weatherproof, vapor proof, and explosion-proof NEMA-4, 7, 9 construction in one enclosure. The 301 Series can be used on pressurized vessels.

APPLICATIONS

Oil refineries, chemical plants, power generating stations, pumping stations, sanitary/waste water facilities, sumps, open or closed tanks and vessels.

SPECIFICATIONS

Minimum Specific Gravity: Dependent on float size and rod length. See chart A.

Temperature Limits: Ambient Temperature: 212°F (100°C); Process Temperature: up to 500°F (260°C). See model chart.

Switch Type: Snap action or mercury. See charts D and E.

Electrical Rating: See charts D and E.

Wiring Connection: G, WT or E enclosure, terminal board. EV enclosure 18" (460 mm) leads.

Enclosures: G, painted steel and aluminum. WT, painted steel, aluminum and neoprene. E, aluminum. EV, aluminum and neoprene.

Wetted Parts: See model chart.

Approximate Weight: 301G, WT with 4 1/2" SS float, 8 ft. rod, 5" 125# cast iron flange. Approximately 35 lb (16 kg) with E, EV enclosure 39 lb (17.7 kg).

Suggested Specification

Liquid level control shall be top mount, float operated with fixed deadband for alarm service, (insertion depth, float and flange type to be specified). Circuit shall be hermetically sealed (SPST) (SPDT) DPDT snap action (mercury) switch. Enclosure shall be general purpose (weatherproof) (explosion-proof) (explosion-proof - vapor proof).

MODEL CHART – SERIES 301

| | | | | | | | | | | | |
|--|-----|------------------------|--|----|---------------------------------------|----|------|----|--|----------------|-------------------|
| CONSTRUCTION | 301 | WT | 7810 | XX | AS | 24 | 0.75 | 2 | 301-WT-7810-AS-24-0.75-2 Top mounted single stage float operated with fixed deadband. Watertight, NEMA-4X enclosure. SPDT snap action switch rated for 12 amp 120 VAC. 3 1/2" X 6" (89 X 152mm) 304SS float with galvanized support extension. 24" (610mm) operating point. Specific gravity 0.75. 4" 125# cast iron flange. | | |
| ENCLOSURES | | G WT E EV | | | | | | | General purpose NEMA-1 enclosure. Water tight enclosure suitable for NEMA-1, 2, 3, 4, 4X. Explosion proof enclosure, NEMA-7, 9. Class I Group B, C, D. Class II Group E, F, G. Division I and II. (CSA approved Groups C, D, E, F, G only). Explosion proof enclosure. NEMA-7, 9. Class I Group B, C, D. Class II Group E, F, G. Division I and II. (CSA approved groups C, D, E, F, G only). | UL UL UL | CSA CSA CSA |
| CIRCUITS | | | 48XX 78XX 78XXHM 98XX XXXX | | | | | XX | Single stage. Mercury switch. See Chart A. Single stage. Snap switch. See Chart A. Hermetically sealed snap switch. See Chart B. Single stage. High capacity DC snap switch. Use heat fins (HF) if process temperature exceeds 350°F (177°C). Do not exceed 450°F (232°C). See Chart B. Two stage. Consult factory. | | |
| FLOATS | | | | | A AS B CS D DS | | | | 3 1/2" X 6" (89 X 152.4mm) 304SS float, 303SS rod, brass stops, galvanized steel *support extension. 300 psi (21bar) @ 500°F (260°C), 450 psi (31bar) @ 100°F (38°C) (float No. 45-57 SS) 3 1/2" x 6" (89x152.4 mm) 304SS float, 316SS stops, 304SS *support extension. 4 1/2" (114mm) copper float, 303SS rod, brass stops, galvanized steel *support extension. 150 psi (10bar) @ 300°F (149°C) Max., (float No. 45-43-1) 4 1/2" (114 mm) 304SS, 316SS stops, 304SS *support extension. 300 psi (21bar) @ 500°F (260°C) Max. 600 psi (42bar) @ 100°F (38°C) Max. (float No. 45-30) 7" (178mm) 304SS float, 303SS rod, brass stops, galvanized steel *support extension. 450 psi (31bar) @ 100°F (38°C) Max. 425 psi (29bar) @ 200°F (93°C) Max. 300 psi (21bar) @ 500°F (260°C) Max. (float No. 45-50) 7" (178mm) 304SS float, 316SS stops, 304SS *support extension. | UL UL UL | CSA CSA CSA |
| OPERATING POINT | | | | | | 24 | | | Operating point. See Chart D on previous page. | UL | CSA |
| SPEC. GRAVITY | | | | | | | 0.75 | | Specific gravity at which control will operate. See Chart D on previous page for float selection. Indicates flange size, materials and pressure rating. | UL | CSA |
| FLANGES Other materials and pressure ratings available. Consult factory. | | | | | | | | | 0 No flange, 3/4" male NPT 2 4" 125# Cast Iron for 3 1/2" X 6" (89 X 152.4 mm) float 3 5" 125# Cast Iron for 4 1/2" (114 mm) float 4 6" 125# Cast Iron for 4 1/2" (114 mm) float 5 8" 125# Cast Iron for 7" (178 mm) float 7 4" 150# Forged Steel for 3 1/2" X 6" (89 X 152.4 mm) float 8 5" 150# Forged Steel for 4 1/2" (114 mm) float 9 6" 150# Forged Steel for 4 1/2" (114 mm) float 10 8" 150# Forged Steel for 7" (178 mm) float | UL | CSA |

*Not supplied if insertion depth is less than 15".

CHARTS A & B ELECTRICAL CIRCUITS AND RATINGS

| SWITCH TYPE | SWITCH ACTION | ELECTRICAL RATINGS IN AMPS | | | | | | ORDERING CODE | SINGLE STAGE | | |
|----------------------|--|----------------------------|------|------|-----|------------|--------|---------------|--------------|-----|--|
| | | 120V | 240V | 440V | 30V | DC 125V | 250V | | | | |
| CHART A | SP-ST Open on level FALL | 10 | 5 | 3† | | 10 | 5 | -4821 | UL | CSA | |
| | SP-ST Open on level RISE | 10 | 5 | 3† | | 10 | 5 | -4820 | UL | CSA | |
| Mercury Contacts | SP-DT One Switch | 4 | 2 | 1† | | 4 | 2 | -4810 | UL | CSA | |
| | SP-DT Two switches E.I.* | 10 | 5 | 3† | | 10 | 5 | -4815 | UL | CSA | |
| | DP-ST Two switches E.I.* Open on level FALL | 10 | 5 | 3† | | 10 | 5 | -4813 | UL | CSA | |
| | DP-ST Two switches E.I.* Open on level RISE | 10 | 5 | 3† | | 10 | 5 | -4814 | UL | CSA | |
| | DP-DT Two SP-DT switches | 4 | 2 | 1† | | 4 | 2 | -4806 | UL | CSA | |
| CHART B | SP-DT One switch | 12 | 5 | 3† | | 0.5** | 0.25** | -7810 | UL | CSA | |
| Snap Action Contacts | DP-DT Two SP-DT switches | 12 | 5 | 3† | | 0.5** | 0.25** | -7806 | UL | CSA | |
| | SP-DT One hermetically sealed switch | 5 | 5 | | 5** | | | -7810HM | | | |
| | DP-DT Two hermetically sealed SP-DT switches | 5 | 5 | | 5** | | | -7806HM | | | |
| | DP-DT Two SP-DT switches | 10 | 3 | | | 10‡ | 3‡ | -9806 | | | |
| | SP-DT One switch | 10 | 3 | | | 10‡ | 3‡ | -9810 | | | |

*Electrically Independent
‡10 Amp inductive (Polarized) at 125 VDC
†Available on special order. Change 1st digit in Ordering Code from 4 to 5 or 7 to 8 i.e. -4820 becomes -5820, -7810 becomes -8810, etc.
**Resistive