

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 $3 / 4^{\prime \prime}$ 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.

CHART D
Float Actuation
Switch Level Change - Single Stage Operation

| $\begin{aligned} & C M=\text { CENTIMETERS } \\ & \text { MM }=\text { MILLIMETERS } \\ & M=\text { METERS } \end{aligned}$ |  | THE OPERATING DEPTH MUST BE SPECIFIED BETWEEN THESE LIMITS |  | FIXED LEVEL CHANGE "D" BETWEEN ON AND OFF | MINIMUMTANK DEPTHREQUIRED BELOWLOW OPERATINGPOINT "TB" |
| :---: | :---: | :---: | :---: | :---: | :---: |
| SPECIFIC GRAVITY | $\begin{gathered} \text { FLOAT } \\ C=\text { COPPER } \\ S S=\text { STAINLESS } \\ \text { STEEL } \end{gathered}$ | MINIMUM HIGH LEVEL OPERATING POINT (ON RISE) FROM TOP OF FLANGE | $\begin{aligned} & \text { MAXIMUM LOW LEVEL } \\ & \text { OPERATING POINT } \\ & \text { (ON DROP) } \\ & \text { FROM TOP OF FLANGE } \end{aligned}$ |  |  |
| 1.0 | $41 / 2^{\prime \prime} \mathrm{C}$ | $\begin{gathered} 9^{\prime \prime} \\ 22.9 \mathrm{~cm} \\ \hline \end{gathered}$ | $\begin{array}{r} 96^{\prime \prime} \\ 2.44 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 3 / 4^{\prime \prime} \\ 19 \mathrm{~mm} \end{gathered}$ | $\begin{gathered} 53 / 4^{\prime \prime} \\ 14.6 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $41 / 2^{\prime \prime}$ SS | $\begin{gathered} 93 / 8^{\prime \prime} \\ 23.8 \mathrm{~cm} \end{gathered}$ | $\begin{gathered} \hline 144^{\prime \prime} \\ 3.66 \mathrm{M} \end{gathered}$ | $\begin{gathered} 3 / 4^{\prime \prime} \\ 19 \mathrm{~mm} \end{gathered}$ | $\begin{gathered} 53 / 4^{\prime \prime} \\ 14.6 \mathrm{~cm} \end{gathered}$ |
|  | $7{ }^{\prime \prime}$ SS | $\begin{aligned} & \hline 103 / 4^{\prime \prime} \\ & 27.3 \mathrm{~cm} \end{aligned}$ | $\begin{gathered} \hline 144^{\prime \prime} \\ 3.66 \mathrm{M} \end{gathered}$ | $\begin{gathered} 1 / 2^{\prime \prime} \\ 13 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 6^{\prime \prime} \\ 15.2 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $31 / 2^{\prime \prime} \times 6^{\prime \prime}$ SS | $\begin{aligned} & 97 / 8^{\prime \prime} \\ & 25 \mathrm{~cm} \\ & \hline \end{aligned}$ | $\begin{array}{r} 144^{\prime \prime} \\ 3.66 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 7 / 8^{\prime \prime} \\ 22 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 75 / 8^{\prime \prime} \\ 19.4 \mathrm{~cm} \\ \hline \end{gathered}$ |
| . 90 | $41 / 2^{\prime \prime} \mathrm{C}$ | $\begin{array}{r} 83 / 4^{\prime \prime} \\ 22.2 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{array}{r} 84^{\prime \prime} \\ 2.13 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 7 / 8^{\prime \prime} \\ 22 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 61 / 8^{\prime \prime} \\ 15.6 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $41 / 2^{\prime \prime}$ SS | $\begin{array}{r} 91 / 4^{\prime \prime} \\ 23.5 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{array}{r} 144^{\prime \prime} \\ 3.66 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 1^{\prime \prime \prime} \\ 25 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 61 / 8^{\prime \prime} \\ 15.6 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $7{ }^{\prime \prime}$ SS | $\begin{aligned} & 105 / 8^{\prime \prime} \\ & 27 \mathrm{~cm} \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline 144^{\prime \prime} \\ 3.66 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 1 / 2^{\prime \prime} \\ 13 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 61 / 4^{\prime \prime} \\ 15.9 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $31 / 2^{\prime \prime} \times 6^{\prime \prime}$ SS | $\begin{array}{r} 93 / 8^{\prime \prime} \\ 23.8 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{array}{r} 96^{\prime \prime} \\ 2.44 \mathrm{M} \\ \hline \end{array}$ | $\begin{array}{r} \hline 11 / 8^{\prime \prime} \\ 29 \mathrm{~mm} \\ \hline \end{array}$ | $\begin{array}{r} \hline 77 / 8^{\prime \prime} \\ 20.0 \mathrm{~cm} \\ \hline \end{array}$ |
| . 82 | $41 / 2^{\prime \prime} \mathrm{C}$ | $\begin{array}{r} 81 / 2^{\prime \prime} \\ 21.6 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{gathered} 72^{\prime \prime} \\ 1.83 \mathrm{M} \\ \hline \end{gathered}$ | $\begin{gathered} 1^{\prime \prime \prime} \\ 25 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 61 / 4^{\prime \prime} \\ 15.9 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $41 / 2^{\prime \prime}$ SS | $\begin{array}{r} 83 / 4^{\prime \prime} \\ 22.9 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{array}{r} \hline 108^{\prime \prime \prime} \\ 2.74 \mathrm{M} \\ \hline \end{array}$ | $\begin{gathered} 7 / 8^{\prime \prime} \\ 22 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 61 / 4^{\prime \prime} \\ 15.9 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $7{ }^{\prime \prime}$ SS | $\begin{aligned} & \hline 101 / 2^{\prime \prime} \\ & 26.7 \mathrm{~cm} \end{aligned}$ | $\begin{gathered} \hline 144^{\prime \prime} \\ 3.66 \mathrm{M} \end{gathered}$ | $\begin{gathered} \hline 1 / 2^{\prime \prime} \\ 13 \mathrm{~mm} \end{gathered}$ | $\begin{aligned} & \hline 63 / 4^{\prime \prime} \\ & 17 \mathrm{~cm} \end{aligned}$ |
|  | $31 / 2^{\prime \prime} \times 6^{\prime \prime}$ SS | $\begin{gathered} 91 / 8^{\prime \prime} \\ 23.2 \mathrm{~cm} \end{gathered}$ | $\begin{gathered} 72^{\prime \prime} \\ 1.83 \mathrm{M} \\ \hline \end{gathered}$ | $\begin{gathered} 11 / 4^{\prime \prime} \\ 32 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{gathered} 8^{\prime \prime} \\ 20.3 \mathrm{~cm} \\ \hline \end{gathered}$ |
| . 75 | $41 / 2^{\prime \prime}$ SS | $\begin{gathered} 83 / 8^{\prime \prime} \\ 21.3 \mathrm{~cm} \end{gathered}$ | $\begin{gathered} 72^{\prime \prime} \\ 1.83 \mathrm{M} \end{gathered}$ | $\begin{array}{r} 1^{1 \prime} \\ 25 \mathrm{~mm} \\ \hline \end{array}$ | $\begin{gathered} 61 / 2^{\prime \prime} \\ 16.5 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $7{ }^{\prime \prime}$ SS | $\begin{aligned} & \hline 103 / 8^{\prime \prime} \\ & 26.4 \mathrm{~cm} \end{aligned}$ | $\begin{gathered} 144^{\prime \prime} \\ 3.66 \mathrm{M} \end{gathered}$ | $\begin{gathered} 5 / 8^{\prime \prime} \\ 16 \mathrm{~mm} \end{gathered}$ | $\begin{gathered} 67 / 8^{\prime \prime} \\ 17.5 \mathrm{~cm} \\ \hline \end{gathered}$ |
|  | $31 / 2^{\prime \prime} \times 6^{\prime \prime}$ SS | $\begin{gathered} 87 / 8^{\prime \prime} \\ 22.5 \mathrm{~cm} \end{gathered}$ | $\begin{gathered} 48^{\prime \prime} \\ 1.22 \mathrm{M} \end{gathered}$ | $\begin{gathered} \hline 11 / 2^{\prime \prime} \\ 38 \mathrm{~mm} \end{gathered}$ | $\begin{gathered} 8^{\prime \prime} \\ 20.3 \mathrm{~cm} \end{gathered}$ |
| . 50 | $7{ }^{\prime \prime}$ SS | $\begin{array}{r} 93 / 4^{\prime \prime} \\ 23.5 \mathrm{~cm} \\ \hline \end{array}$ | $\begin{gathered} 144^{\prime \prime} \\ 3.66 \mathrm{M} \end{gathered}$ | $\begin{gathered} 3 / 4^{\prime \prime} \\ 19 \mathrm{~mm} \\ \hline \end{gathered}$ | $\begin{aligned} & 63 / 4^{\prime \prime} \\ & 17 \mathrm{~cm} \\ & \hline \end{aligned}$ |

## SPECIFICATIONS

Minimum Specific Gravity: Dependent on float size and rod length. See chart A.
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 $18^{\prime \prime}$ (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 $41 / 2^{\prime r}$ SS float, 8 ft . rod, $5^{\prime \prime} 125$ \# cast iron flange. Approximately $35 \mathrm{lb}(16 \mathrm{~kg})$ with E, EV enclosure $39 \mathrm{lb}(17.7 \mathrm{~kg})$.

## 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

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline 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. \(31 / 2^{\prime \prime} \times 6^{\prime \prime}\) \((89 \times 152 \mathrm{~mm})\) 304SS float with galvanized support extension. \(24^{\prime \prime}\) ( 610 mm ) operating point. Specific gravity 0.75 . \(4^{\prime \prime} 125 \#\) cast iron flange. \& \& \\
\hline ENCLOSURES \& \& \[
\begin{array}{|l|}
\hline \text { G } \\
\text { WT } \\
\text { E } \\
\text { EV }
\end{array}
\] \& \& \& \& \& \& \& \begin{tabular}{l}
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).
\end{tabular} \& \[
\begin{aligned}
\& \text { UL } \\
\& \text { UL } \\
\& \text { UL } \\
\& \text { UL }
\end{aligned}
\] \& \[
\begin{gathered}
\mathrm{CSA} \\
\mathrm{CSA} \\
\operatorname{CSA}
\end{gathered}
\] \\
\hline CIRCUITS \& \& \& \[
\begin{array}{|l|}
\hline 48 X X \\
78 X X \\
78 X X H M \\
98 X X \\
\text { XXXX }
\end{array}
\] \& XX \& \& \& \& \& \begin{tabular}{l}
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 \(350^{\circ} \mathrm{F}\left(177^{\circ} \mathrm{C}\right)\). Do not exceed \(450^{\circ} \mathrm{F}\left(232^{\circ} \mathrm{C}\right)\). See Chart B. \\
Two stage. Consult factory.
\end{tabular} \& \& \\
\hline FLOATS \& \& \& \& \& \[
\begin{array}{|l|}
\hline \mathrm{A} \\
\mathrm{AS} \\
\mathrm{~B} \\
\mathrm{CS} \\
\mathrm{D} \\
\\
\mathrm{DS} \\
\hline
\end{array}
\] \& \& \& \&  \& UL \& CSA
CSA

$C S A$ <br>
\hline OPERATING
POINT \& \& \& \& \& \& 24 \& \& \& Operating point. See Chart D on previous page. \& UL \& CSA <br>
\hline SPEC. GRAVITY \& \& \& \& \& \& \& 0.75 \& \& Specific gravity at which control will operate. See Chart D on previos page for float selection. Indicates flange size, materials and pressure rating. \& UL \& CSA <br>

\hline | FLANGES |
| :--- |
| Other materials and pressure ratings available. Consult factory. | \& \& \& \& \& \& \& \& \[

$$
\begin{array}{|l|}
\hline 0 \\
2 \\
3 \\
4 \\
5 \\
7 \\
7 \\
8 \\
9 \\
10
\end{array}
$$
\] \& ```

No flange, $3 / 4^{\prime \prime}$ male NPT
$4^{\prime \prime} 125 \#$ Cast Iron for $31 / 2^{\prime \prime} \times 6^{\prime \prime}(89 \times 152.4 \mathrm{~mm})$ float
$5^{\prime \prime} 125 \#$ Cast Iron for $41 / 2^{\prime \prime}(114 \mathrm{~mm})$ float
$6^{\prime \prime} 125 \#$ Cast Iron for $41 / 2^{\prime \prime}(114 \mathrm{~mm})$ float
8" 125\# Cast Iron for 7" (178 mm) float
$4^{\prime \prime} 150$ \# Forged Steel for $31 / 2^{\prime \prime} \times 6^{\prime \prime}(89 \times 152.4 \mathrm{~mm})$ float
$5^{\prime \prime} 150$ \# Forged Steel for $41 / 2^{\prime \prime}(114 \mathrm{~mm})$ float
$6^{\prime \prime} 150$ \# Forged Steel for $41 / 2^{\prime \prime}(114 \mathrm{~mm}$ ) float
$8^{\prime \prime} 150$ \# Forged Steel for $7^{\prime \prime}(178 \mathrm{~mm})$ float

``` & UL & CSA \\
\hline
\end{tabular}
*Not supplied if insertion depth is less than \(15^{\prime \prime}\).

CHARTS A \& B ELECTRICAL CIRCUITS AND RATINGS
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{3}{*}{SWITCH TYPE} & \multirow{3}{*}{\[
\begin{aligned}
& \text { SWITCH } \\
& \text { ACTION }
\end{aligned}
\]} & \multicolumn{6}{|c|}{ELECTRICAL RATINGS IN AMPS} & \multirow[t]{2}{*}{\[
\begin{aligned}
& \text { ORDERING } \\
& \text { CODE }
\end{aligned}
\]} & & \\
\hline & & \multicolumn{3}{|c|}{AC} & \multicolumn{3}{|c|}{DC} & & & \\
\hline & & 120V & 240V & 440V & 30 V & 125V & 250 V & SINGLE STAGE & & \\
\hline CHART A & SP-ST Open on level FALL & 10 & 5 & \(3 \dagger\) & & 10 & 5 & -4821 & UL & CSA \\
\hline \multirow{6}{*}{Mercury Contacts} & SP-ST Open on level RISE & 10 & 5 & \(3 \dagger\) & & 10 & 5 & -4820 & UL & CSA \\
\hline & SP-DT One Switch & 4 & 2 & \(1 \dagger\) & & 4 & 2 & -4810 & UL & CSA \\
\hline & SP-DT Two switches E.I.* & 10 & 5 & \(3 \dagger\) & & 10 & 5 & -4815 & UL & CSA \\
\hline & DP-ST Two switches E.I.* Open on level FALL & 10 & 5 & \(3 \dagger\) & & 10 & 5 & -4813 & UL & CSA \\
\hline & DP-ST Two switches E.I.* Open on level RISE & 10 & 5 & \(3 \dagger\) & & 10 & 5 & -4814 & UL & CSA \\
\hline & DP-DT Two SP-DT switches & 4 & 2 & \(1 \dagger\) & & 4 & 2 & -4806 & UL & CSA \\
\hline CHART B & SP-DT One switch & 12 & 5 & \(3+\) & & 0.5** & 0.25** & -7810 & UL & CSA \\
\hline \multirow{5}{*}{Snap Action Contacts} & DP-DT Two SP-DT switches & 12 & 5 & \(3 \dagger\) & & 0.5** & 0.25** & -7806 & UL & CSA \\
\hline & SP-DT One hermetically sealed switch & 5 & 5 & & 5** & & & -7810HM & & \\
\hline & DP-DT Two hermetically sealed SP-DT switches & 5 & 5 & & 5** & & & -7806HM & & \\
\hline & DP-DT Two SP-DT switches & 10 & 3 & & & 10キ & 3† & -9806 & & \\
\hline & SP-DT One switch & 10 & 3 & & & 10٪ & \(3 \ddagger\) & -9810 & & \\
\hline \multicolumn{2}{|l|}{\begin{tabular}{l}
*Electrically Independent \\
\(\ddagger 10\) Amp inductive (Polarized) at 125 VDC
\end{tabular}} & n spec come & \[
\begin{aligned}
& \text { rder. Cl } \\
& 20,-78
\end{aligned}
\] & 1st d ecome & \[
\begin{aligned}
& \text { Orde } \\
& 310 \text {, et }
\end{aligned}
\] & Sode fr & \[
4 \text { to } 5 \text { or }
\] & & & \\
\hline
\end{tabular}```

