KSR KUEBLER®
LEVEL CONTROL PRODUCTS

TOP MOUNTED INDUSTRIAL LIQUID LEVEL SWITCHES
MODELS S8 / S12 / S18 / S48 *FOR HAZARDOUS LOCATIONS*

DESCRIPTION

For over 40 years KSR Kuebler has engineered, designed, and manufactured liquid level sensing products that are the finest obtainable anywhere in the world.

KSR Kuebler Level Switches are float operated units designed for use in Chemicals, Petroleums, Solvents, and General Process applications. Series "S" are top mounted units that install through the top of the process vessel via ANSI flange or NPT connection.

All Series "S" units utilize the KSR Kuebler Magnetic Float design. This standard design incorporates hermetically sealed magnetic reed switches that are located in the guide tube. These heavy duty switches are actuated by the magnetic field of a magnet located inside the float. The standard switches are SPDT types, with a wide selection of operating temperatures and pressures.

The only moving part of a KSR magnetic float switch is the float.

⇒ Direct level sensing.

⇒ Simple and extremely reliable.

STANDARD FEATURES

All model "S" switches from KSR Kuebler offer the following standard features:

- Lengths to 480" (12000+mm).
- Wide selection of materials of construction.
- All Stainless Steel wetted parts as standard.
- Factory Mutual Approved Explosion Proof for use in hazardous locations.
- Widest selection of electrical enclosures.
- Up to 6 switching points in a single unit.
- Wide selection of industrial process connections.
- Extreme High and Low process temperature capabilities.
- Unmatched selection of floats.

The above standard features allow you to select a model that best suits your process control needs, directly from this order guide.

Built rugged for industrial service, KSR Kuebler series "S" level switches are the highest quality and cost efficient solution to industrial liquid point level sensing.

Factory Mutual Approved

Two Standard KSR Units

KSR Kuebler switch model **"S12"** shown with a *standard* type NEMA 4X type enclosure (left) and a *standard* welded ANSI flange.

A model **"S18"** with an explosion proof type enclosure and a *standard* 3/4" welded NPT connection is on the right.

Catalog 1003mini
05/08/02 rv C

All KSR Kuebler series "S" level switches feature hermetically sealed switch contacts. Glass sealed reed switches are designed for millions of operations. The operating characteristics of KSR switches are low bounce and fast contact change-over making them ideal for use with modern control systems such as programmable logic controllers (PLC's) and distributed control systems (DCS's).

To optimize the life of the switch contacts, KSR Kuebler recommends employing arc suppression for ***any*** inductive load. Remember that inductive loads typically generate a high energy surge when switching off. This surge can be suppressed with a simple R/C network in Alternating Current loads, or with a blocking diode in Direct Current applications. Consult the KSR Kuebler Accessories Guide #1011 for contact protection units. Units are available with special features such as latching relays for pump control circuits.

S8 □□□□□□□□□□□

Industrial Switch Model **S8**

1 2 3 4 5 6 7

S12 □□□□□□□□□□□

Industrial Switch Model **S12**

1 2 3 4 5 6 7

Model **S8** features an 8 mm (.31") diameter X 1mm (.040") wall thickness sensor tube.

1. NUMBER OF SWITCHES: 1. 1 SPDT switch is available in model S8.

2. MATERIALS OF CONSTRUCTION (Wetted Parts)**: S**=316 Ti Stainless steel; **L**=316L Stainless steel.

3. SENSOR LENGTH: In whole inches, up to a maximum of **36"**. (As measured from face of the process connection to the tip of the float guide tube.) EXAMPLE: A 30" sensor would be entered as "030". When you determine the location of the last (bottom) switch, add to the sensor length 1/2 of the float height plus 1/2" minimum; then round up to the nearest whole inch, and enter this number as "Sensor Length".

4. CONNECTION SIZE AND TYPE: F10=1.0" ANSI flange; **F15**=1.5" ANSI flange; **F20**=2.0" ANSI flange; **N05**=1/2" NPT; **N75**=3/4" NPT; **N10**=1" NPT; **N15**=1-1/2" NPT; **N20**=2" NPT; **NAD**=1/2" NPT adjustable fitting.

5. CONNECTION RATING*: A=150# ANSI, **B**=300# ANSI, **C**=600# ANSI, **D**=NPT & Adjustable Fitting =1,000 PSI.

6. ELECTRICAL HOUSING: 4=NEMA 4X die cast aluminum with industrial gray epoxy coating & 1/2" NPT conduit entry; **7**=NEMA 7 explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries.

7. SWITCH TEMPERATURE RATING: S=Standard switch only on model S8. Rated -20 ºF to +212 ºF.

Model S12 features a 12 mm (.47") diameter X 1mm (.040") wall thickness sensor tube.

1. NUMBER OF SWITCHES: 1 through 4. Up to 4 SPDT switches are available in model S12.

2. MATERIALS OF CONSTRUCTION (Wetted Parts)**: S**=316 Ti Stainless steel; **L**=316L Stainless steel; **C**=Hastelloy C; **B**=Hastelloy B; or **T**=Titanium.

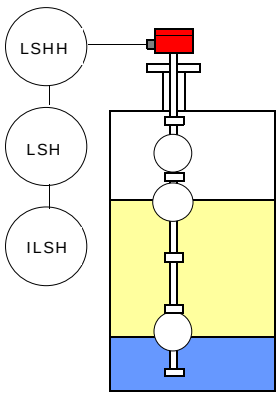
3. SENSOR LENGTH: In whole inches, up to a maximum of **120"**. (As measured from face of process connection to the tip of the float guide tube.) EXAMPLE: A 69" sensor would be entered as "069". When you determine the location of the last (bottom) switch, add to the sensor length 1/2 of the float height plus 1/2" minimum.

4. CONNECTION SIZE AND TYPE: F10=1.0" ANSI flange; **F15**=1.5" ANSI flange; **F20**=2.0" ANSI flange; **F25**=2.5" ANSI flange; **F30**=3.0" ANSI flange; **F40**=4.0" ANSI flange; **F50**=5.0" ANSI flange; **F60**=6.0" ANSI flange; **N05**=1/2" NPT; **N75**=3/4" NPT; **N10**=1" NPT; **N15**=1-1/2" NPT; **N20**=2" NPT; **NAD**=1/2" NPT adjustable fitting.

5. CONNECTION RATING*: A=150# ANSI; **B**=300# ANSI; **C**=600# ANSI; **D**=NPT and Adjustable Fitting=1,000 PSI.

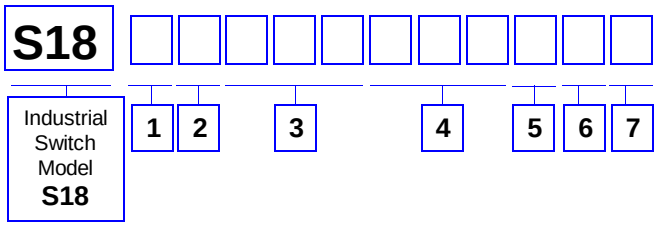
6. ELECTRICAL HOUSING: 4=NEMA 4X die cast aluminum with industrial gray epoxy coating & 1/2" NPT conduit entry; **7**=NEMA 7 explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries; **8**=Group B explosion proof stainless steel with a dual 3/4" NPT conduit entries.

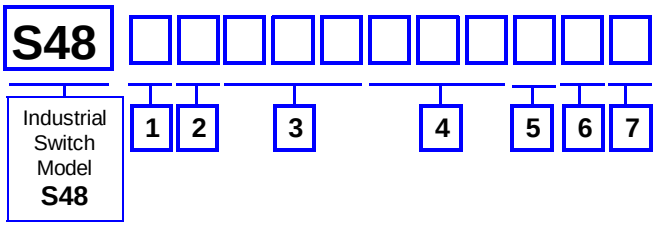
7. SWITCH TEMPERATURE RATING: S=Standard -40ºF to +300ºF; **L=**Low Temp -300ºF to +300F; **H=**High Temperature -40ºF to +650ºF.



A KSR Kuebler model S12 is shown at left in a typical installation to perform three functions; high-high product level, high product level, and high interface or bottom water level.

Engineered for a fast & economical installation and reliable operation, KSR Kuebler series "S" level switches are practical solutions to difficult level sensing problems.





Model S18 features a 18 mm (.70") diameter X 3mm (.120 ") wall thickness sensor tube.

1. NUMBER OF SWITCHES: 1 through 6. Up to 6 SPDT switches are available in model S18.
Note: If you select five or six switch points, you must select electrical enclosure option #9 in field 6.

2. MATERIALS OF CONSTRUCTION (Wetted Parts)**: S**=316 Ti Stainless steel; **L**=316L Stainless steel; **C**=Hastelloy C; **B**=Hastelloy B; or **T**=Titanium.

3. SENSOR LENGTH: In whole inches, up to a maximum of **240".** (Measured from face of the process connection to the tip of the float guide tube.) EXAMPLE: A 160" sensor would be entered as "160". When you determine the location of the last (bottom) switch, add to the sensor length 1/2 of the float height plus 1/2" minimum.

4. CONNECTION SIZE AND TYPE: F10=1.0" ANSI flange; **F15**=1.5" ANSI flange; **F20**=2.0" ANSI flange; **F25**=2.5" ANSI flange; **F30**=3.0" ANSI flange; **F40**=4.0" ANSI flange; **F50**=5.0" ANSI flange; **F60**=6.0" ANSI flange; **N75**=3/4" NPT; **N10**=1" NPT; **N15**=1-1/2" NPT; **N20**=2" NPT; **NAD**=3/4" NPT adjustable fitting.

5. CONNECTION RATING*: A=150# ANSI; **B**=300# ANSI; **C**=600# ANSI; **D**=NPT and Adjustable Fitting=1,000 PSI.

6. ELECTRICAL HOUSING: 4=NEMA 4X aluminum with 3/4" NPT conduit entry; **7**=Explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries; **8**=Explosion proof Gr B & NEMA 4X, stainless steel with a dual 3/4" NPT conduit entries; **9**=Large explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries.

NOTE: If you require **more than** 4 switch points, due to the quantity of terminal blocks you must select electrical housing options 8 or 9 only on model S18 and S48.

7. SWITCH TEMPERATURE RATING: S=Standard -40ºF to +300ºF; **L**=Low Temp -300ºF to +300ºF; **H=**High Temperature -40ºF to +650ºF.

Model S48 features a 48 mm (1.88") diameter X .120 " (3mm) wall thickness sensor tube.

1. NUMBER OF SWITCHES: 1 through 6. Up to 6 SPDT switches are available in model S48.
Note: If you select five or six switch points, you must select electrical enclosure option #8 or #9 in field 6.

2. MATERIALS OF CONSTRUCTION (Wetted Parts)**: S**=316 Ti Stainless steel; **L**=316L Stainless steel; **C**=Hastelloy C; **B**=Hastelloy B; or **T**=Titanium.

3. SENSOR LENGTH : In whole inches, up to 480"**. (As measured from face of process connection to the tip of the float guide tube.) EXAMPLE: A 370" sensor would be entered as "370". When you determine the location of the last (bottom) switch, add to the sensor length 1/2 of the float height plus 1" minimum.

4. CONNECTION SIZE AND TYPE: F20=2.0" ANSI flange; **F25**=2.5" ANSI flange; **F30**=3.0" ANSI flange; **F40**=4.0" ANSI flange; **F50**=5.0" ANSI flange; **F60**=6.0" ANSI flange; **N20**=2" NPT; **NAD**=2" NPT adjustable fitting.

5. CONNECTION RATING*: A=150# ANSI, **B**=300# ANSI, **C**=600# ANSI, **D**=NPT and Adjustable Fitting =1,000 PSI.

6. ELECTRICAL HOUSING: 4=NEMA 4X aluminum with 3/4" NPT conduit entry; **7**=Explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries; **8**=Explosion proof Gr B & NEMA 4X, stainless steel with a dual 3/4" NPT conduit entries; **9**=Large explosion proof & 4X, (Group B) cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries.

NOTE: If you require **more than** 4 switch points, due to the quantity of terminal blocks you must select electrical housing options 8 or 9 only on models S18 and S48.

7. SWITCH TEMPERATURE RATING: S=Standard -40ºF to +300ºF; **L**=Low Temp -300ºF to +300ºF; **H**=High Temperature -40ºF to +650ºF.

Float Part #	Float Mat'l	Float Form	Float Dia.	Float Ht.	Inner Dia.	Min. Float S.G.	Max. Press.	Max. Temp.
SVK-S	316Ti S/S	Cylinder	1.73" (44mm)	2.05" (52mm)	.59" (15mm.)	.70 (0.7 g/cm3)	362.5 PSI (25 Bar)	482ºF (250C)
SV29-S	316Ti S/S	Ball	1.14" (29mm)	1.14" (29mm)	.37" (9.4mm)	.80 (0.8g/cm3)	217PSI (15 Bars)	212ºF (100C)
SV44-S	316Ti S/S	Ball	1.73" (44mm)	1.65" (42mm)	.37" (9.4mm)	.70 (0.7g/cm3)	217PSI (15 Bars)	212ºF (100C)
SV-S	316Ti S/S	Ball	2.04" (52mm)	2.04" (52mm)	.59" (15mm)	.73 (0.73g/cm3)	580PSI (40Bars)	644ºF (340C)
SVA-S	316Ti S/S	Ball	2.44" (62mm)	2.36" (60mm)	.59" (15mm)	.57 (0.57g/cm3)	464PSI (32Bars)	482ºF (250C)
SVB-S	316Ti S/S	Ball	3.22" (82mm)	3.14" (80mm)	.59" (15mm)	.39 (0.5g/cm2)	464PSI (32Bars)	482ºF (250C)
SVB23-S	316Ti S/S	Ball	3.22" (82mm)	3.07" (78mm)	.90" (23mm)	.71 (0.71g/cm3)	246PSI (17Bars)	482ºF (250C)
SVC-S	316Ti S/S	Ball	3.85" (98mm)	3.70" (94mm)	.90" (23mm)	.70 (07g/cm3)	362PSI (25Bars)	482ºF (250C)
SVD-S	316Ti S/S	Ball	4.13" (105mm)	3.93" (100mm)	.90" (23mm)	.54 (0.54g/cm3)	391PSI (27Bars)	482ºF (250C)
SV200-S	316Ti S/S	Ball	7.87" (200mm)	7.55" (192mm)	2.20" (56mm.)	.52 (0.52 g/cm3)	232 PSI (16 Bar)	482ºF (250C)
SV300-S	316Ti S/S	Ball	11.81" (300mm)	11.57" (294mm)	2.20" (56mm.)	.34 (0.34 g/cm3)	232 PSI (16 Bar)	482ºF (250C)
STi-S	Titanium	Ball	2.04" (52mm)	2.04" (52mm)	.59" (15mm)	.70 (0.7g/cm3)	319PSI (27Bars)	482ºF (250C)
STA-S	Titanium	Ball	2.44" (62mm)	2.36" (60mm)	.59" (15mm)	.60 (0.6g/cm3)	290PSI (20Bars)	482ºF (250C)
STB-S	Titanium	Ball	3.22" (82mm)	3.14" (80mm)	.59" (15mm)	.40 (0.4g/gm3)	217PSI (15Bars)	482ºF (250C)
STE/23S	Titanium	Ball	3.22" (82mm)	3.14" (80mm)	.90" (23mm)	.40 (0.4g/gm3)	217PSI (15Bars)	482ºF (250C)
SHCK-S	Hastelloy C	Cylinder	1.73" (44mm)	2.05" (52mm)	.59" (15mm.)	.72 (0.72 g/cm3)	362.5 PSI (25 Bar)	482ºF (250C)
SHBK-S	Hastelloy B	Cylinder	1.73" (44mm)	2.05" (52mm)	.59" (15mm.)	.72 (0.72 g/cm3)	362.5 PSI (25 Bar)	482ºF (250C)
SHC-S	Hastelloy C	Ball	2.04" (52mm)	2.04" (52mm)	.59" (15mm)	.72 (0.72g/cm3)	580PSI (40Bars)	644ºF (340C)
SHB-S	Hastelloy B	Ball	2.04" (52mm)	2.04" (52mm)	.59" (15mm)	.72 (0.72g/cm3)	580PSI (40Bars)	644ºF (340C)
SHCB-S	Hastelloy C	Ball	3.22" (82mm)	3.14" (80mm)	.59" (15mm)	.55 (0.55g/cm2)	464PSI (32Bars)	600ºF (315C)
SHBB-S	Hastelloy B	Ball	3.22" (82mm)	3.14" (80mm)	.59" (15mm)	.55 (0.55g/cm2)	464PSI (32Bars)	600ºF (315C)

Select the float that is right for your application. KSR makes this easy with a large selection to choose from.

1. Maximum Pressure of your process? Select a float with at least as high a pressure rating.

2. Minimum Specific Gravity (S.G.) of your process fluid? Select a float that meets your minimum specific gravity. The float guide lists floats by their minimum application density.

3. Materials of construction? Generally, most users match the float and sensor guide tube material with the material of their vessel or tank. What materials work well with your process fluids?

4. Minimum tank opening size? Can the float be installed from inside the tank? Are there potentially any alternate tank entries? (inspection ports or man-ways?)

5. Is your fluid viscous? If so, choose a float that is larger than required to overcome any hysteresis or "sticktion" that can occur in viscous fluids. Liquid over 60 centipoise viscosity? Consider using a larger float.

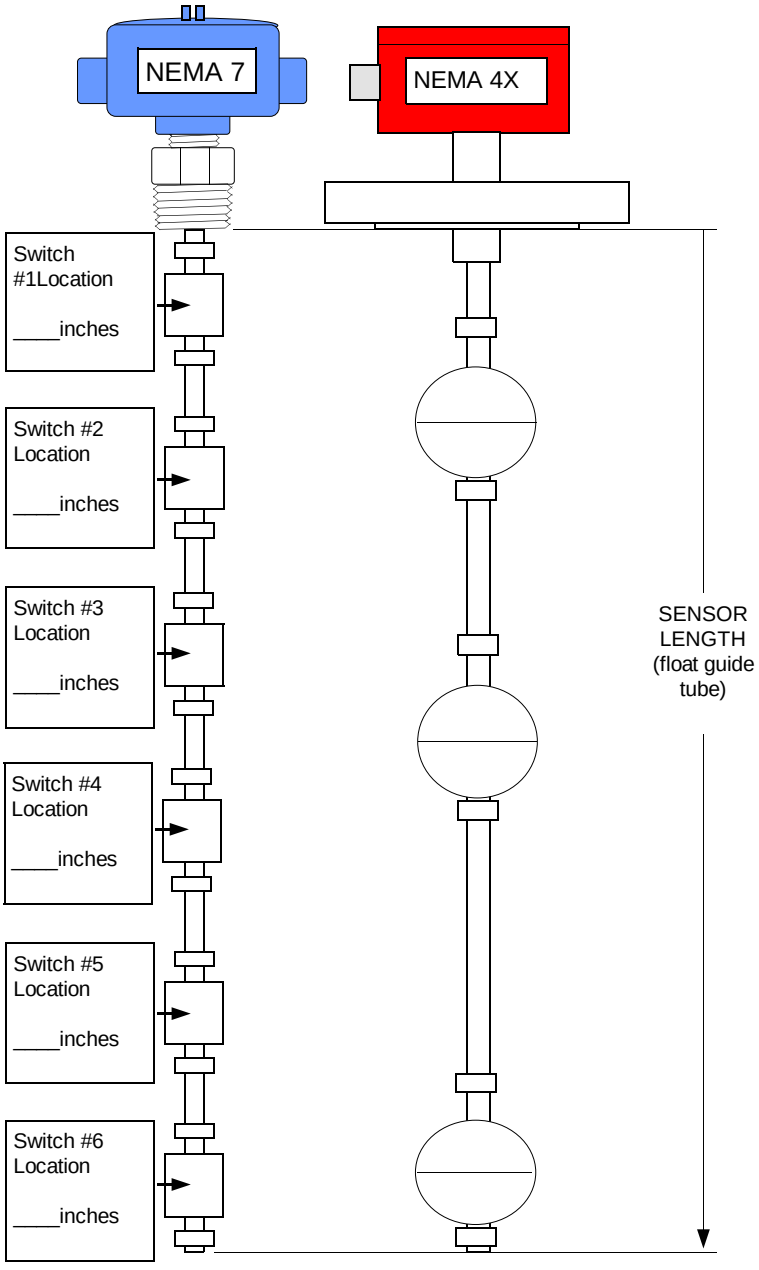
6. Maximum temperature of your process? See float specifications for a float that meets your maximum process temperature requirements.

Product Series S Specification	S8	S12	S18	S48
Maximum Quantity of Switches	2 1 @ SPDT or 2 @ SPST	4 SPDT	6 SPDT	6 SPDT
Switch Current Rating A.C. / D.C. Volts	1 AMP @ 240 VAC 1 AMP @ 125 VDC (non-inductive)	1 AMP @ 240 VAC 1 AMP @ 125 VDC (non-inductive)	1 AMP @ 240 VAC 1 AMP @ 125 VDC (non-inductive)	1 AMP @ 240 VAC 1 AMP @ 125 VDC (non-inductive)
Maximum Length	36" (914 mm)	120" (3048 mm)	240" (6096 mm)	480" (12192 mm)
Maximum Process Pressure*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*
Maximum Process Temperature* (switch type)	+212 F type S	+650 F type H +300 F type S +300 F type L	+650 F type H +300 F type S +300 F type L	+650 F type H +300 F type S +300 F type L
Minimum Process Temperature (switch type)	-20 F type S	-40 F type H -40 F type S -250 F type L	-40 F type H -40 F type S -250 F type L	-40 F type H -40 F type S -250 F type L
Sensor Tube Diameter	.31" (8 mm)	.47" (12 mm)	.71" (18 mm)	1.89"" (48 mm)
Sensor Tube Wall Thickness	.040" (1 mm)	.040" (1 mm)	.120" (3 mm)	.120" (3 mm)
Conduit Entry Size NEMA 4X	3/4" NPT	3/4" NPT	3/4" NPT (dual is optional)	3/4" NPT (dual is optional)
Conduit Entry Size Group B (Small Housing)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)
Conduit Entry Size Group B (Large Housing)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)
Conduit Entry NEMA 4X	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)
Switch Hysteresis	2-3mm (.078"-.118") typical	2-3mm (.078"-.118") typical	2-3mm (.078"-.118") typical	2-3mm (.078"-.118") typical
Factory Mutual Hazrdous Area Approvals	Explosion Proof Class 1, Division 1, Groups B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D

All units above are Approved by Factory Mutual for hazardous area applications.

Fill in this form and Fax it to 1-434-374-9522 for assistance in model selection.

Your Return Fax Number Please
(_ _ _) _ _ _ - _ _ _ _



Enter the desired switch location as measured from the face of the process connection. Determine the location of the last (bottom) switch, add to the sensor length 1/2 of the float height plus 1/2" minimum (add 1" for S48), then round up to the next whole inch. Example: 69 - 3/4" becomes 70".

Customer Name_____

Customer Ref.#_____

KSR Model # _____

Sensor Information

Sensor Length_____

Sensor Material_____

Connection Type_____

Connection Size_____

Connection Rating_____

Max. Pressure_____

Max. Temp._____

Min. Temp._____

Liquid Name_____

Electrical Information

Number of Switches _____

Housing NEMA 7__ NEMA 4__ Gr. B___

Electrical Enclosure Material: Aluminum_____ Stainless Steel_____

Conduit Entry: 1/2" _____ 3/4"_____

Entry Quantity: 1 _____ 2 _____

Float Information

Float Material_____

Product Float #1 part#_____

Interface Float part#_____

Upper Liq. S.G._____

Lower Liq. S.G._____

By_____

Date_____