

## MAGNETIC LEVEL INDICATOR UNITS (BYPASS LEVEL INDICATORS) MODELS C16 THRU C400

### DESCRIPTION

KSR Kuebler magnetic sight glass units, model series "C" provide a safe, economical, and reliable visual display of liquid level in process vessels while eliminating the risks associated with glass sight gauges. Combined with a continuous 4-20mA output type transmitter and independent level switches, the KSR Kuebler Magnetic Sight Glass unit provides unmatched versatility and high performance in critical process level applications.

Model "C" Magnetic Sight Glass units are designed for use in Petroleum, Petrochemical, Solvents, Power, and General Process applications. Model "C" units are externally mounted permitting inspection during vessel operation.

KSR Kuebler Magnetic Sight Glass units offer a tremendous selection of standard options to meet your most demanding process specifications.

Designed for industrial and commercial users, all model "C" units are ASME Section IX welded, and are hydrostatically tested - standard.

### STANDARD FEATURES

Model "C" Magnetic Sight Glass units from KSR Kuebler offer the following standard features:

- ◆ **All Stainless Steel** wetted parts as **standard**.
- ◆ Wide selection of transmitters and switches.
- ◆ Lengths over 240" (6,000+mm).
- ◆ Wide selection of materials of construction, both for wetted and environmental parts.
- ◆ Designed Explosion Proof & Intrinsically Safe for use in hazardous locations.
- ◆ Widest selection of magnetic level indicator options.
- ◆ Complete selection of industrial process connections.
- ◆ Low specific gravities and high pressures services(5000+ PSI)
- ◆ Extreme high and low process temperature capabilities.
- ◆ Choose a magnetic transmitter that meets your exact needs

The above standard features allow you to select a model that best suits your process control needs.



The standard KSR Magnetic Sight Glass unit shown above features the industry exclusive KSR Kuebler Magnetic Indicator. This exclusive design indicates extremely small changes in level. The chamber interior is specially designed for smooth and reliable operation.

KSR Kuebler can be reached toll free. Just dial 1-888-KSR-LEVEL. An application specialist is ready to assist you in selecting the KSR Kuebler level product that is right for your industrial application.

KSR Kuebler series "C" Magnetic Sight Glass units are used where having reliable level indication of process fluids is important. Series "C" products provide the ultimate in safety in the case where using a traditional glass sight gauge is not prudent. Examples would be hot hydrocarbons or highly reactive chemicals, where if a glass would break, persons or property would be in jeopardy.

KSR Kuebler Magnetic Sight Glass products feature the exclusive KSR roller type magnetic indicator. Designed for extreme operating conditions, this smooth operating design provides a continuous level reading without power. Unlike other designs that employ aluminum housings and indicating "flippers", the KSR design has been highly refined to offer options to the user in regard to temperature and environmental concerns. For instance, KSR Kuebler offers a ceramic unit designed for extreme high temperatures, and a stainless steel unit for use in corrosive environments.

**Catalog 1015mini**  
05/08/02 rv C



**TOLL FREE 1-888-577-5385**

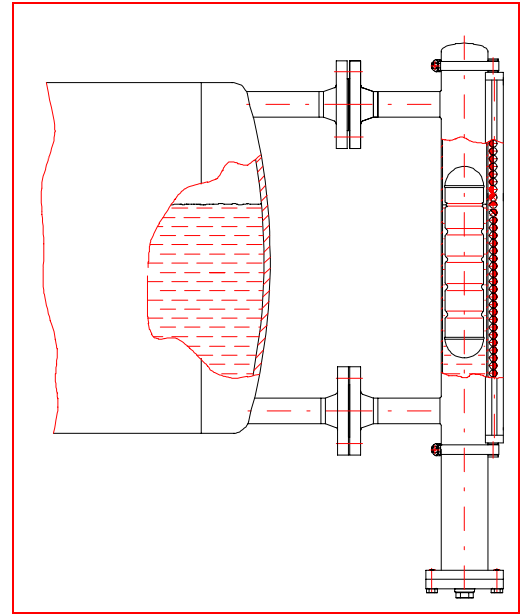
## KSR KUEBLER MODEL "C" BYPASS LEVEL INDICATORS FEATURES AND BENEFITS

### Features

- ◆ Multiple functions from one device. One easy to maintain installation.
- ◆ Simple, Robust, and solid design.
- ◆ High and low temperature capability are no problem
- ◆ Wide selection of process connections available as standard on series "C".
- ◆ Exotic Materials are standard.
- ◆ Wide selection of floats for process compatibility.
- ◆ Unmatched selection of electrical enclosures.

### Benefits

- ◆ Replaces need for multiple instruments for alarm, transmitter, and visual indicator.
- ◆ Easy to install, and built to last.
- ◆ KSR Kuebler transmitters are suitable for services from -200°F to over +500°F.
- ◆ Eliminates potential leak path, and greatly reduces installation labor
- ◆ Hastelloy B and C plus Titanium are standard materials for KSR Kuebler
- ◆ KSR has the float for your pressure and specific gravity.
- ◆ Die cast aluminum or stainless steel housings.



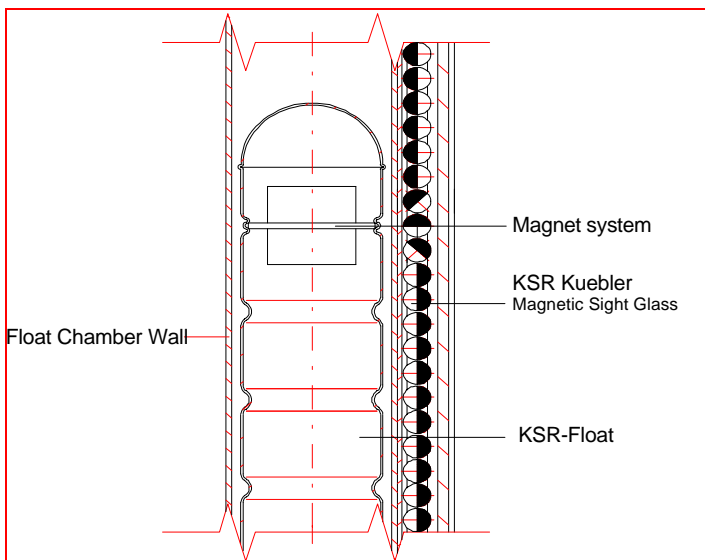
### Typical Installation Shown Above

Model "C" products are mounted external to the process vessel, and provide a reliable indication of liquid level where turbulence or accessibility to the tank interior is a problem. External mounting also provides for ease of maintenance and process calibration verification, as the unit may be taken off line for these purposes without interruption of the process.

KSR Kuebler also has provided a wide range of accessories for the series C such as continuous 4-20mA output transmitters and electrical switches. Also offered are graduated scales constructed from aluminum or stainless steel.

KSR Kuebler series "C" Magnetic Sight Glass units are used where having reliable level indication of process fluids is important. Series "C" products provide the ultimate in safety in the case where using a traditional glass sight gauge is not prudent. Examples would be hot hydrocarbons or highly reactive chemicals, where if a glass would break, persons or property would be in jeopardy.

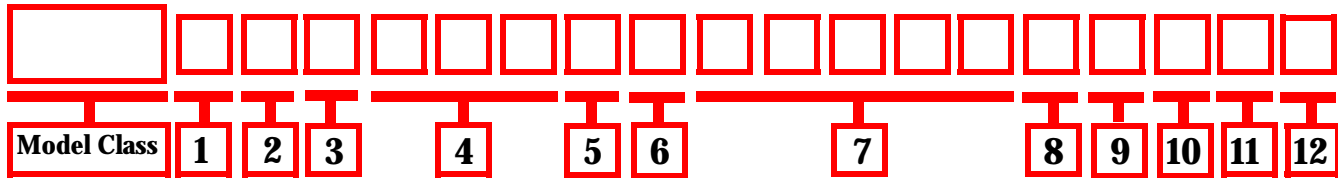
KSR Kuebler Magnetic Sight Glass products feature the exclusive KSR roller type magnetic indicator. Designed for extreme operating conditions, this smooth operating design provides a continuous level reading without power. Unlike other designs that employ aluminum housings and indicating "flippers", the KSR design has been highly refined to offer options to the user in regard to temperature and environmental concerns. For instance, KSR Kuebler offers a ceramic unit designed for extreme high temperatures, and a stainless steel unit for use in corrosive environments.



### Operating Principle (see left)

The float chamber is mounted to the side of a liquid storage vessel, and as the liquid rises and falls, a float with a built in magnetic system inside the external chamber rises and falls with the liquid level. The chamber is completely sealed so that the only moving part of the apparatus is the float.

On the dry side or chamber exterior is the KSR Magnetic Roller Display, a column of magnetic rollers which are white on one side and red on the other side (white and blue for the High Temp design). As the float moves up or down, the concentrated magnetic field of the float magnet pulls the rollers through a rotation of 180 degrees, thus changing their color. As the float rises the color is changed from white to red, and as the float falls they are changed back to white again constantly representing liquid level without any external power supply.



**CHAMBER MODEL CLASS:** See model specification sheet for class code number. Example: Enter C25 for the 25 BAR unit, or C100 for the 100 BAR class unit. **NOTE:** The chamber pressure rating may be lower due to float or process connection selection.

**1. LEVEL TRANSMITTER and RESOLUTION:** 0 = No transmitter required.; A = 0.196" (5mm); B = 0.39" (10mm); C = 0.59" (15mm); D = 0.787" (20mm). All KSR transmitters are 4-20mA output loop powered. Models BTX and BTXI are explosion proof and Intrinsically Safe. See transmitter specs on pages 18, 19, 20, & 25.

**2. TRANSMITTER HOUSING: ELECTRICAL HOUSING:** 3 = Group B explosion proof stainless steel with viewing window for LCD Indicator, dual 3/4" NPT conduit entries, 4 = NEMA 4X die cast aluminum w/ industrial gray epoxy coating & 3/4" NPT conduit entry; 7 = Group B explosion proof & NEMA 4X cast aluminum with KSR blue epoxy coating & dual 3/4" NPT conduit entries; 8 = Explosion proof (Gr B) explosion proof & NEMA 4X stainless steel with dual 3/4" NPT conduit entry. 9 = NEMA 7/9 (Group B) explosion proof cast aluminum with viewing window for LCD Indicator, dual 1/2" NPT conduit entries, KSR blue epoxy finish. LCD local indicator included. See transmitter specs on pages 20 thru 24.

**3. MATERIALS OF CONSTRUCTION FOR CHAMBER (Wetted Parts):** S=316 Ti Stainless steel; L=316L Stainless, C=Hastelloy C276; B=Hastelloy B2; and T=Titanium.

**4. PROCESS CONNECTION SIZE AND TYPE:** F05=1/2" ANSI flange; F75=3/4" ANSI flange; F10=1.0" ANSI flange; F15=1.5" ANSI flange; F20=2.0" ANSI flange; N05=1/2" NPT/SW combination fitting; N75=3/4" NPT/SW combo; N10=1" NPT/SW combo; XXX=for special customer specified connection.

**5. CONNECTION CLASS\*:** A=150# ANSI, B=300# ANSI, C=600# ANSI, D=900#, E=1500#, F=2500#, N=NPT and socket weld fittings equals chamber rating; X=Special. Maximum pressure rating is dependent upon the minimum rating among the process flanges, float or chamber pressure rating.

**6. CONNECTION ORIENTATION:** H = Horizontal (side & side) connections off the float chamber body (this option also comes standard with a 3/4" NPT plugged and safety wired drain at chamber bottom; V= Vertical (side and bottom), upper connection is horizontally oriented and the bottom connection is made from the bottom of the float chamber inspection flange.

**7. MEASURING RANGE:** 1\_ \_ \_ \_ =Length in inches & tenths ( \_ \_ \_ \_ . ) Example: 114- 1/2" ,enter 114.5.  
2\_ \_ \_ \_ =Length in full millimeters ( \_ \_ \_ \_ ) Example: 356 mm, enter 20356.

**8. FLOAT SELECTION (Materials):** S = 316Ti stainless steel float; B = Hastelloy B float; C = Hastelloy C float; T = Titanium float; X = Special material float. Consult KSR for floats selections not listed in this product guide. KSR has a float for most applications.

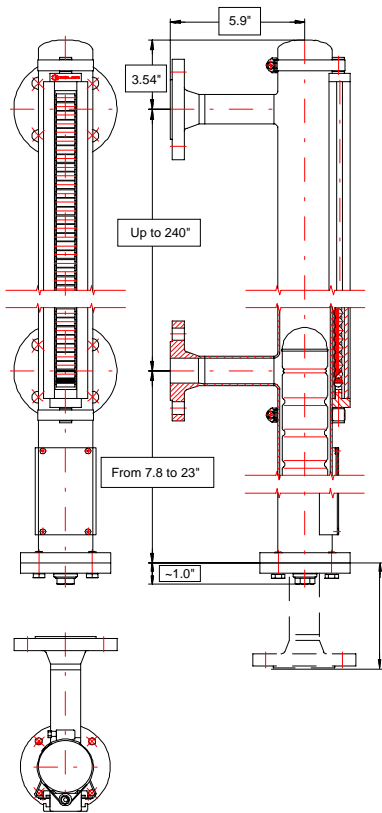
**9. MAGNETIC SIGHT GLASS:** 0 = None required; 1 = Standard, aluminum housing with thermo-plastic indicators(390°F max.); 2 = Stainless steel housing with thermo-plastic indicators (392 °F max. temp.); 3 = High temp ceramic indicators & aluminum housing (840°F max. temp.); 4= High temp. ceramic indicators and stainless steel housing, (840°F max. temp.).

**10. SIGHT GLASS SCALE:** 0=none; 1=Aluminum w/inches; 2=Aluminum w/millimeters; 3=Stainless steel w/inches; 4=Stainless steel w/millimeters. 5=Plastic w/inches; 6=Plastic w/millimeters X= Special Scale, please specify on Application Data Sheet.

**11. ADJUSTABLE LEVEL SWITCHES:** 0 = none; 1=General Purpose (MRS-2-4X) NEMA 4X type with 1/2" conduit entry, 2=Explosion Proof with dual 3/4" NPT conduit entry, (MRS-2-XP); 3=Explosion Proof with dual 3/4" NPT conduit entry, 5 amp dry contact type (MMS-5-XP); 4 = DPDT Explosion Proof with dual 3/4" NPT conduit entry, (MRS-2-XP-DPDT); 5 = DPDT Weather Proof with 1/2" NPT conduit entry, (MRS-2-4X-DPDT); 6=General purpose (MRS-2-SS) stainless housing with 39" silicon lead wire; 8= High temp explosion proof (MRS-2-XP-HT), 9 = DPDT High Temp, Explosion Proof with dual 3/4" NPT conduit entry, (MRS-2-XP-HT-DPDT).

**12. LEVEL SWITCHES-QUANTITY:** 0=none; 1 THRU 9. Allow 4-1/2" minimum dimension between switches. Switches may be mounted closer than 4-1/2" if mounted on opposing sides of the magnetic sight glass housing.

Full Penetration welding (butt welding) is standard on all series "C" Magnetic Level Indicator chambers. The KSR design employs a special machine for creating ASME branch connections, making it possible to perform butt welding of all welds permitting radiography of all chamber welds.



**MODEL "C16" BASIC DIMENSIONS**  
Side & Side flange arrangement shown  
(Side & Bottom shown dotted lines)

**MODEL "C16" GENERAL SPECIFICATIONS**

**Chamber:**  $\varnothing 2.37" \times 0.078"$  or  $\times 2.51" \times 0.102"$  (60.3 x 2mm or  $\varnothing 64 \times 2$ mm)

**Chamber end top:** Welding cap or flat top or flanged ANSI 2" 150 lb  
Options: - Vent plug - Vent valve,- Vent flange

**Chamber end bottom:** ANSI 2" 150 lb with drain plug  $\frac{1}{2}"$  NPT  
Options: - Drain valve,- Drain flange

**Process connections:** side-side, side-bottom, top and side, top & bottom.  
Flanges to 600 lb, ANSI B 16.5 ;  $\frac{1}{2}" - 2"$ , NPT thread or welding stubs

**Distance center-to-center:** min.6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

**Float:** Type Z.SS...Length of float depending on S.G.

**Chamber Material:**Stainless steel 1.4571, 316L, Hastelloy C or B, or Titanium

**Nominal pressure:** max. 230 PSI @ 100°F / 1.6 MPa

**Temperature range:** -128°F (-89C) to +840°F (+450C) (according to design and options)

**Magnetic Roller Display:**Type Red & White thermo-plastic indicators, aluminum housing-max. 390°F (200C) or Blue & White ceramic indicators with stainless steel housing, up to 840°F (450C).

**Further options:** \_\_\_\_\_

**Magnetic switches:** See How to Order Guide  
**Level Transmitters:** See How to Order Guide  
**Electr. or Steam trace heating:** on request  
**Chamber insulation:** Hot or Cold Type on request

**C16 Stainless Steel Floats**

Working Pressure: 290 PSI (2MPa)  
Working Temperature: 480 Deg F (250 C)\*

Part Number	Sp. Gr. for Zero Offset
ZVS150C16	1.42
ZVS200C16	1.08
ZVS250C16	0.88
ZVS300C16	0.78
ZVS350C16	0.72
ZVS400C16	0.68
ZVS450C16	0.63

**C16 Titanium Alloy Floats**

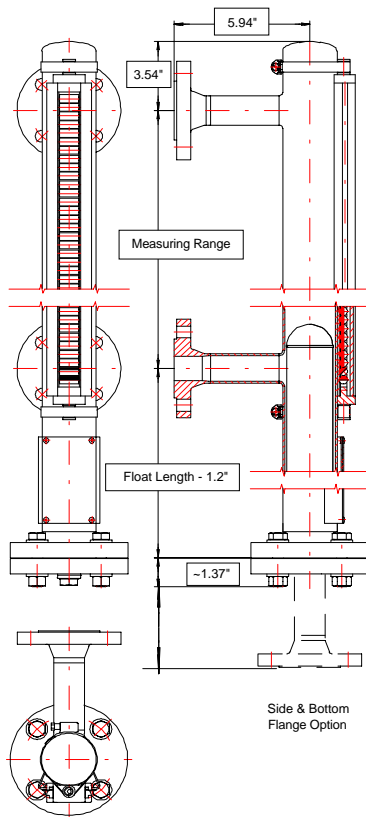
Working Pressure: 230 PSI (1.6MPa)  
Working Temperature: 480 Deg F (250 C)\*

Part Number	Sp. Gr. for Zero Offset
ZTS150C16	0.94
ZTS200C16	0.86
ZTS250C16	0.70
ZTS300C16	0.60
ZTS350C16	0.54
ZTS400C16	0.51
ZTS450C16	0.48

**NOTES:**

\* This pressure rating is for the float chamber only. The float or connections you select may lower the "as installed" pressure rating. KSR also offers floats for interface detection, contact factory for details.

Select the float with a specific gravity that matches your fluid's normal operating density. If no exact match is listed, select the next **LIGHTEST** float. Proper float selection optimizes the accuracy of the magnetic sight glass unit by placing the sensing magnet directly at the liquid level surface. The Zero Offset density number for each float part number allows the float to project from the liquid level 50mm. This 50mm dimension is the magnetic center for the float magnet. **Be sure to allow for variances in your fluid density due to temperature changes.**



**MODEL "C25" BASIC DIMENSIONS**  
Side & Side flange arrangement shown  
(Side & Bottom shown dotted lines)

**MODEL "C25" GENERAL SPECIFICATIONS**

**SPECIFICATIONS** Chamber:  $\varnothing 2.37$  or  $2.51$ " X  $0.078$ " (60.3 x 2mm or  $\varnothing 64$  x 2mm)

**Chamber end top:** Welding cap or flat top or flanged ANSI 2" 150 lb  
Options: - Vent plug - Vent valve, - Vent flange

**Chamber end bottom:** ANSI 2" 300 lb with drain plug  $\frac{1}{2}$ " NPT  
Options: - Drain valve, Drain flange

**Process connections:** side-side, side-bottom, top and side, top & bottom.  
Flanges to 600 lb, ANSI B 16.5 ;  $\frac{1}{2}$ " - 2", Threaded or welding stubs

**Distance center-to-center:** min. 6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

**Float:** Type Z.SS...Length of float depending on S.G. (see below)

**Chamber Material:** Stainless steel 1.4571, 316L, Hastelloy C, B, or Titanium

**Nominal pressure:** max. 362 PSI / 2.5 MPa

**Temperature range:** -128°F (-89C) to +840°F (+450C according to design and options)

**Magnetic Roller Display:** Type Red & White thermo-plastic indicators, aluminum housing-max. 390°F (200C) or Blue & White ceramic indicators with stainless steel housing, up to 840°F (450C).

**Further options:**

**Magnetic switches:** See How to Order Guide  
**Level Transmitters:** See How to Order Guide  
**Electr. or Steam trace heating:** on request  
**Chamber insulation:** Hot or Cold Type on request  
**Magnetic Sight Glass Cold Service Sight Extensions:** on request

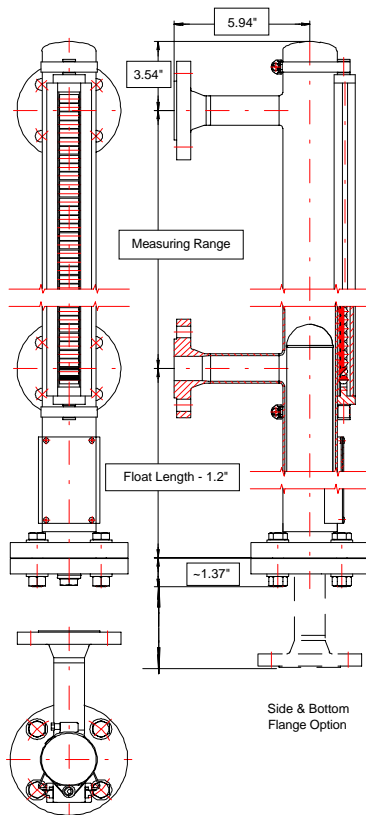
**C25 Stainless Steel Floats**  
Working Pressure: 362 PSI (2.5 MPa)  
Working Temperature: 392 Deg F (200 C)\*

Part Number	Sp. Gr. for Zero Offset
ZVS200C25	1.03
ZVS250C25	0.87
ZVS300C25	0.78
ZVS350C25	0.72
ZVS400C25	0.67
ZVS450C25	0.64

**C25 Titanium Alloy Floats**  
Working Pressure: 362 PSI (2.5 MPa)  
Working Temperature: 392 Deg F (200 C)\*

Part Number	Sp. Gr. for Zero Offset
ZTS150C25	1.14
ZTS200C25	0.85
ZTS250C25	0.71
ZTS300C25	0.64
ZTS350C25	0.58
ZTS400C25	0.54
ZTS450C25	0.51
ZTS500C25	0.48

NOTES:  
\* This pressure rating is for the float chamber only. The float or connections you select may lower the "as installed" pressure rating. KSR also offers floats for interface detection, contact factory for details.



**MODEL "C40" BASIC DIMENSIONS**  
Side & Side flange arrangement shown  
(Side & Bottom shown dotted lines)

**MODEL "C40" GENERAL SPECIFICATIONS**

**SPECIFICATIONS** Chamber:  $\varnothing 2.37$  or  $2.51$ " X  $0.078$ " (60.3 x 2mm or  $\varnothing 64$  x 2mm)

**Chamber end top:** Welding cap or flat top or flanged ANSI 2" 300 lb  
Options: - Vent plug - Vent valve, - Vent flange

**Chamber end bottom:** ANSI 2" 300 lb with drain plug  $1/2$ " NPT  
Options: - Drain valve, Drain flange

**Process connections:** side-side, side-bottom, top and side, top & bottom.  
Flanges to 600 lb, ANSI B 16.5 ;  $1/2$ " - 2", Threaded or welding stubs

**Distance center-to-center:** min. 6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

**Float:** Type Z.SS...Length of float depending on S.G. (see below)

**Chamber Material:** Stainless steel 1.4571, 316L, Hastelloy C, B, or Titanium

**Nominal pressure:** max. 580 PSI / 4 MPa

**Temperature range:** -128°F (-89C) to +840°F (+450C according to design and options)

**Magnetic Roller Display:** Type Red & White thermo-plastic indicators, aluminum housing-max. 390°F (200C) or Blue & White ceramic indicators with stainless steel housing, up to 840°F (450C).

**Further options:**

**Magnetic switches:** See How to Order Guide  
**Level Transmitters:** See How to Order Guide  
**Electr. or Steam trace heating:** on request  
**Chamber insulation:** Hot or Cold Type on request  
**Magnetic Sight Glass Cold Service Sight Extensions:** on request

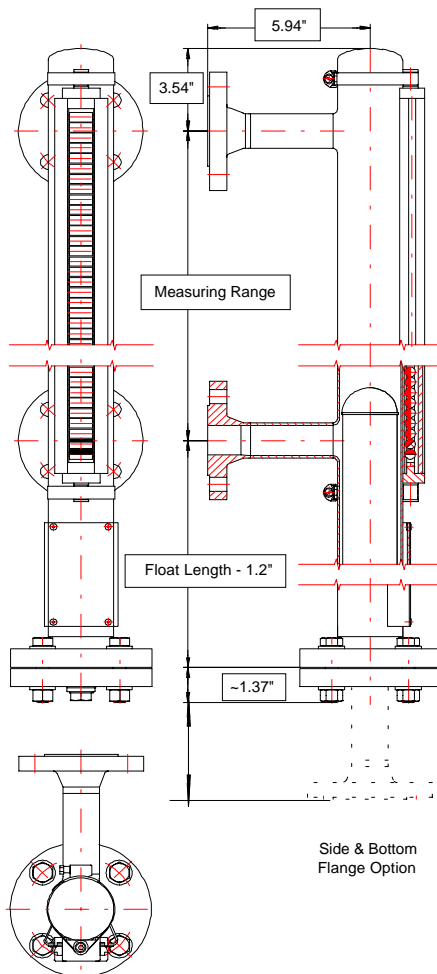
**C40 Stainless Steel Floats**  
Working Pressure: 580 PSI (4 MPa)  
Working Temperature: 392 Deg F (200 C)\*

Part Number	Sp. Gr. for Zero Offset
ZVS200C40	1.04
ZVS250C40	0.88
ZVS300C40	0.79
ZVS350C40	0.73
ZVS400C40	0.69
ZVS450C40	0.66

**C40 Titanium Alloy Floats**  
Working Pressure: 580 PSI (4 MPa)  
Working Temperature: 392 Deg F (200 C)\*

Part Number	Sp. Gr. for Zero Offset
ZTS150C40	1.18
ZTS200C40	0.88
ZTS250C40	0.74
ZTS300C40	0.66
ZTS350C40	0.60
ZTS400C40	0.57
ZTS450C40	0.54
ZTS500C40	0.51

NOTES:  
\* This pressure rating is for the float chamber only. The float or connections you select may lower the "as installed" pressure rating. KSR also offers floats for interface detection, contact factory for details.



MODEL "C64" BASIC DIMENSIONS  
Side & Side flange arrangement shown  
(Side & Bottom shown dotted lines)

**MODEL "C64" GENERAL SPECIFICATIONS**

**Chamber:**  $\varnothing 2.37$  or  $2.51" \times 0.078"$  (60.3 x 2mm or  $\varnothing 64 \times 2$ mm)

**Chamber end top:** Welding cap or flat top or flanged ANSI 2" 300 lb  
Options: - Vent plug - Vent valve, - Vent flange

**Chamber end bottom:** ANSI 2" 300 lb with drain plug  $\frac{1}{2}"$  NPT  
Options: - Drain valve, Drain flange

**Process connections:** side-side, side-bottom, top and side, top & bottom.  
Flanges to 600 lb, ANSI B 16.5 ;  $\frac{1}{2}" - 2"$ , Threaded or welding stubs

**Distance center-to-center:** min. 6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

**Float:** Type Z.SS...Length of float depending on S.G. (see below)

**Chamber Material:** Stainless steel 1.4571, 316L, Hastelloy C, B, or Titanium

**Nominal pressure:** max. 580 PSI / 4 MPa

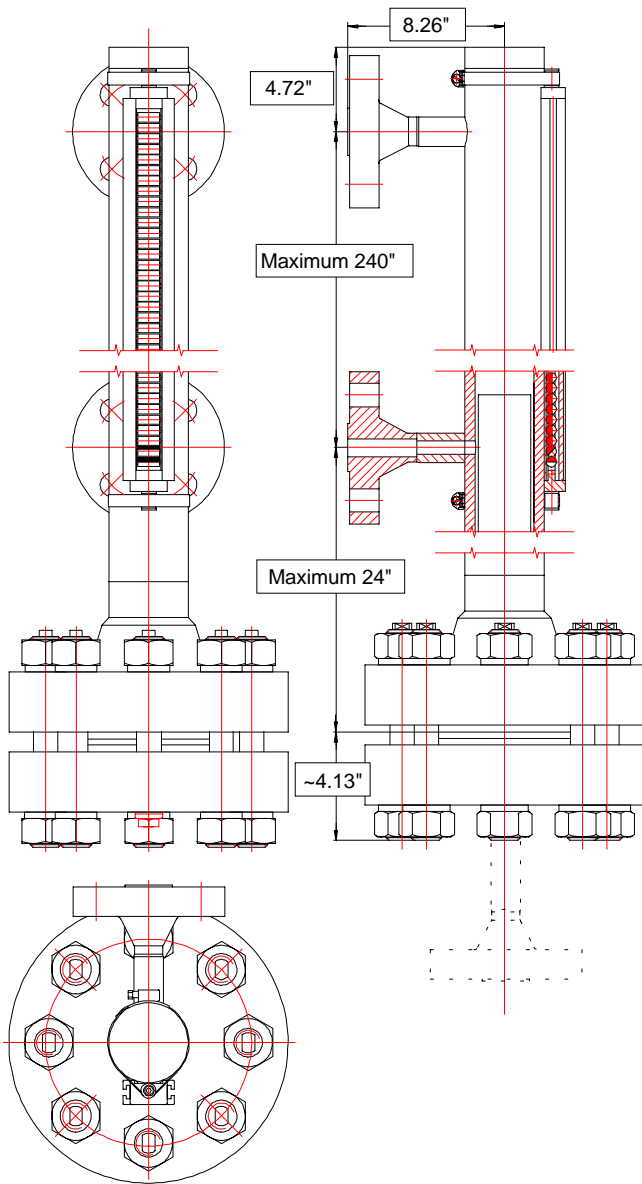
**Temperature range:** -128°F (-89C) to +840°F (+450C according to design and options)

**Magnetic Roller Display:** Type Red & White thermo-plastic indicators, aluminum housing-max. 390°F (200C) or Blue & White ceramic indicators with stainless steel housing, up to 840°F (450C).

**Further options:**

- Magnetic switches:** See How to Order Guide
- Level Transmitters:** See How to Order Guide
- Electr. or Steam trace heating:** on request
- Chamber insulation:** Hot or Cold Type on request
- Magnetic Sight Glass Cold Service Sight Extensions:** on request

KSR Kuebler also offers units in full 900#, 1500#, 2500# construction.  
Please contact KSR about these other models and for special requirements.  
Special designs for Integral Heating Jackets, Teflon Lined, Top Mounted and Liquid Gas Applications can be located in KSR Catalog 1016.



**MODEL "C400" BASIC SPECIFICATIONS**

- Chamber:**  $\varnothing$  2.99" X 0.39" (76.0 x 10mm)
- Chamber end top:** Welding cap or flat top or flanged ANSI 2.5" 2500 lb  
Options: - Vent plug - Vent valve,- Vent flange
- Chamber end bottom:** ANSI 2.5" 2500 lb with drain plug  $\frac{1}{2}$ " NPT  
Options: - Drain valve, Drain flange
- Process connections:** side-side or side/bottom  
Options: Top & Bottom, Top & Side. Flanges to 2500 lb, or ANSI B 16.5 ;  $\frac{1}{2}$ " - 2" NPT Threaded / socket weld; welding stubs
- Distance center-to-center:** min.6" (150mm) to max. 240" (6000mm)
- Float:** Type Z.SI... Length of float depending on S.G. , pressure, and temperature (consult your local sales representative for float selection)
- Chamber Material:**Stainless steel 1.4571, 316L, Hastelloy C, B, or Titanium
- Nominal pressure:** max. 5000 PSI (34.48 MPa) 316L
- Temperature range:** -22°F to + 572°F (-30C to +300C)
- Magnetic Roller Display:**Type Red & White thermo-plastic indicators, aluminum housing-max. 390°F (200C) or Blue & White ceramic indicators with stainless steel housing, up to 840°F (450 C).
- Further options:** ....
- Magnetic switches:** See How to Order Guide
- Level Transmitters:** See How to Order Guide
- Electr. or Steam trace heating:** on request
- Chamber insulation:** Hot or Cold Type on request
- Magnetic Sight Glass Cold Service Sight Extensions:** on request

**KSR Kuebler has  
Special Designs  
For Service  
Pressures to  
12,000 PSI!**

MODEL "C400" BASIC DIMENSIONS  
Side & Side flange arrangement shown  
(Side & Bottom shown dotted lines)

KSR Kuebler also offers units in full 600#, 900#, and 1500# construction. Please contact KSR about these other models and for special requirements. Special designs for Integral Heating Jackets, Teflon Lined, Top Mounted and Liquid Gas Applications can be located in KSR Catalog 1016.

TRANSMITTER MODEL "BT" - HOW IT WORKS

TYPE "BT" MAGNETIC TRANSMITTER

KSR Level Sensors are used to measure and transmit the level of liquids in conjunction with a KSR output control unit. It is based on magnetic interaction in a 3-wire potentiometer circuit.

A float with a built-in magnetic system actuates small reed contacts through the pressure boundary wall of the float chamber. These special KSR Kuebler reed switches form a resistance measuring chain that continuously generates a voltage proportional to the height of the liquid level.

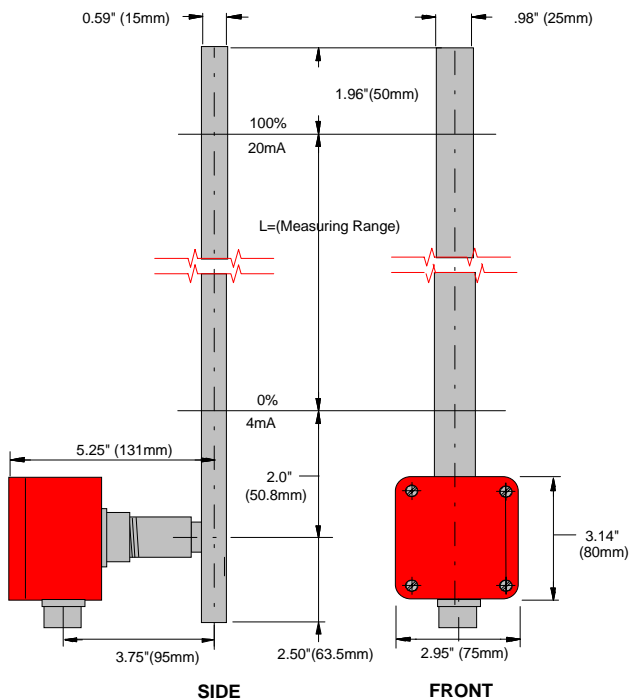
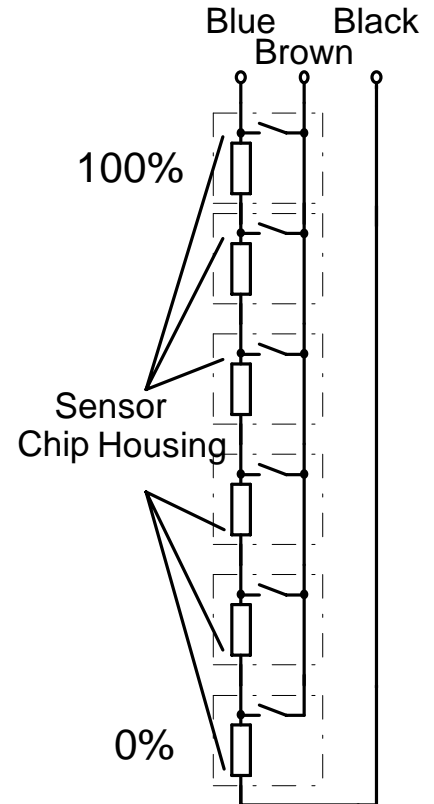
The resistance measuring chain is closely stepped and is made up from special small KSR chips positioned along a PCB. Due to this assembly the generated voltage is approximately continuous. The custom electronics converts the voltage change to a standard 4-20mA output signal.

The drawing at right depicts the internals of a KSR Kuebler transmitter. This design assures that there are always at least two contacts in the magnetic field, giving un-matched reliability.

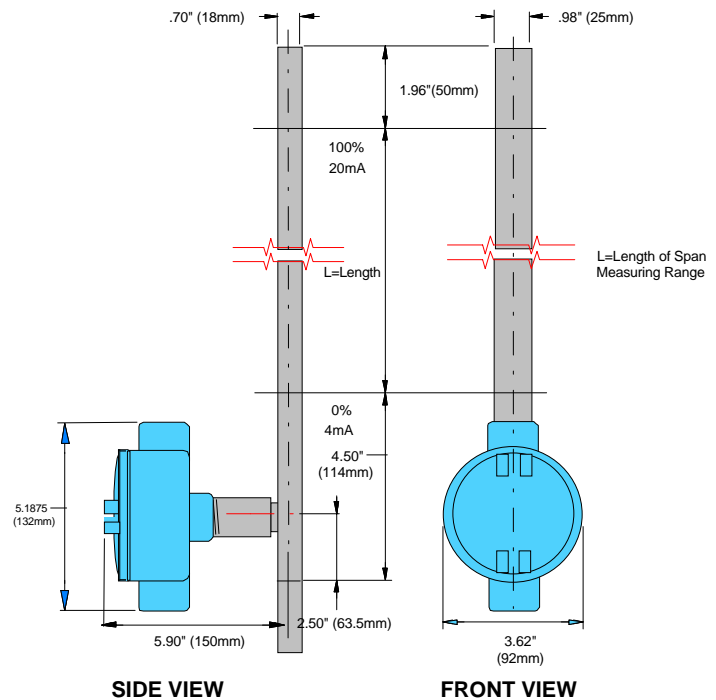
KSR Bypass transmitters are a completely independent system and can be fitted to a KSR Magnetic Gauge at any time. Due to its non-invasive design, the model "BT" may be removed from service without entry into the process, nor does the process need to be disturbed in any way.

Built for rugged industrial applications, the model "BT" transmitter is designed to give years of trouble free operation. Designed to be maintenance free, the KSR model "BT" never requires re-calibration.

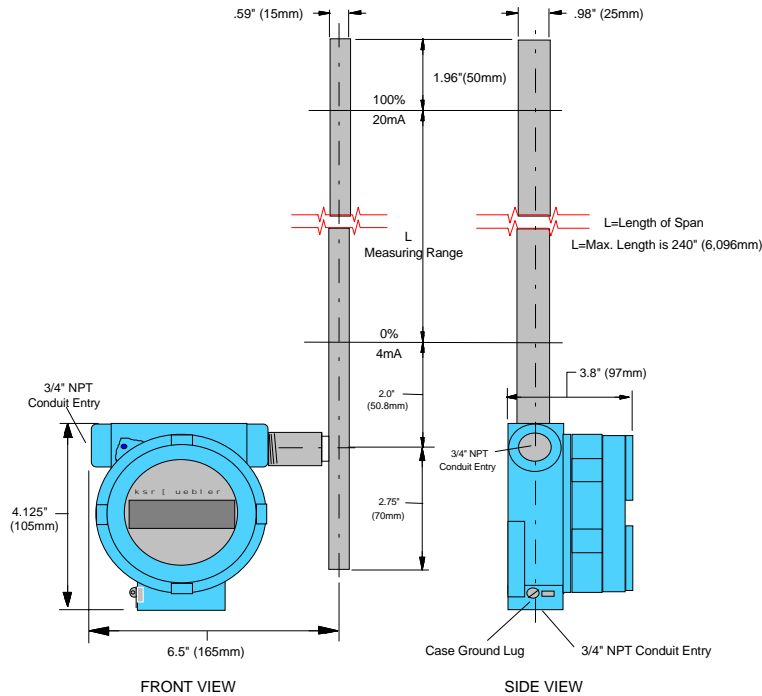
Depending on requirements and design several different contact separations (resolution) are available from KSR USA.



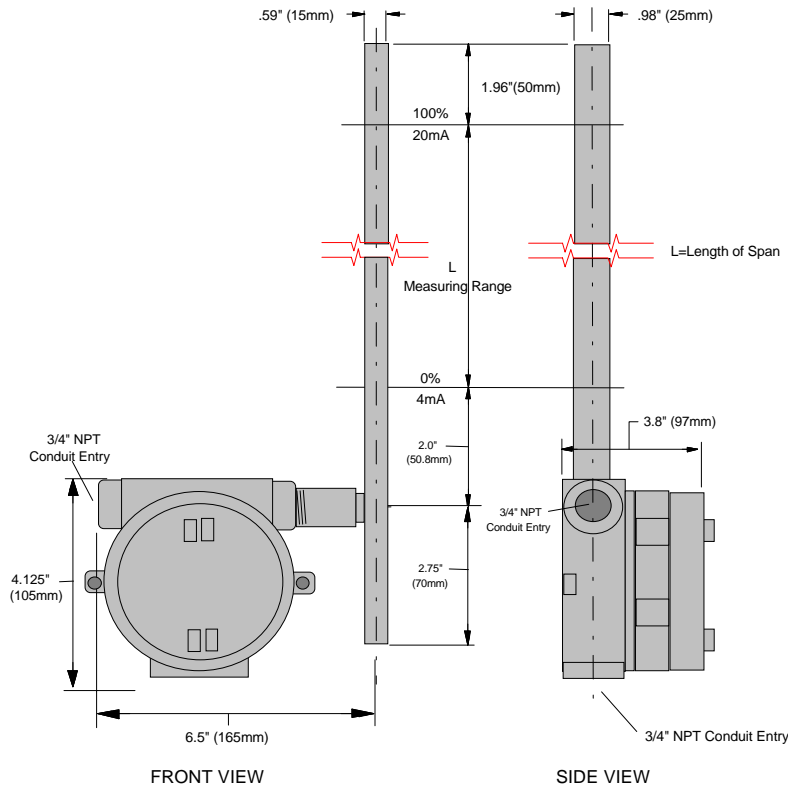
**KSR KUEBLER MODEL BT**  
24VDC LOOP POWERED 4-20mA OUTPUT  
INTRINSICALLY SAFE & NEMA 4 TYPE  
MAGNETIC LEVEL TRANSMITTER



**KSR KUEBLER MODEL BTX**  
24VDC LOOP POWERED  
EXPLOSION PROOF (Gr.B, C & D) & INTRINSICALLY SAFE  
MAGNETIC LEVEL TRANSMITTER



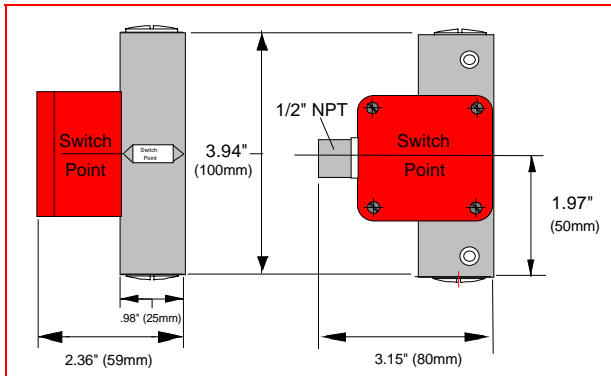
**KSR KUEBLER MODEL BTXI (Cl. 1, Div. 1, Gr B)**  
**24VDC LOOP POWERED SHOWN WITH OPTIONAL INTEGRAL LCD DISPLAY**  
**EXPLOSION PROOF & INTRINSICALLY SAFE MAGNETIC LEVEL TRANSMITTER**



**KSR KUEBLER MODEL BTXSS (Cl. 1, Div. 1, Gr B)**  
**24VDC LOOP POWERED INTEGRAL ELECTRONICS-STAINLESS HOUSING**  
**EXPLOSION PROOF & INTRINSICALLY SAFE MAGNETIC LEVEL TRANSMITTER**

MODEL "BT" TECHNICAL SPECIFICATIONS			
Transmitter Product Specification	BT Intrinsically Safe & Weatherproof Magnetic Level Transmitter	BTX (BTXSS) Explosion Proof & Intrinsically Safe Magnetic Level Transmitter	BTXI (BTXISS) Explosion Proof & Intrinsically Safe Magnetic Level Transmitter
<b>Maximum Length</b>	240" (6096 mm)	240" (6096 mm)	240" (6096 mm)
<b>Maximum Resolution</b>	0.19" (5mm)	0.19" (5mm)	0.19" (5mm)
<b>Maximum Non-Linearity</b>	0.1% of Span	0.1% of Span	0.1% of Span
<b>Hysteresis</b>	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical
<b>Required Power Supply (D.C. Volts)</b>	11 to 30 Volts DC	11 to 30 Volts DC	11 to 30 Volts DC
<b>Maximum Loop Resistance (load) @ VDC</b>	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC
<b>Max. &amp; Min. Process Temperature*</b>	-300°F to + 500°F (-198 C to + 260 C)	-300°F to + 500°F (-198 C to + 260 C)	-300°F to + 500°F (-198 C to + 260 C)
<b>Max/Min. Electronics Ambient Temperature (Housing)</b>	-30°F to + 160°F (-20 C to + 71C)	-30°F to + 160°F (-20 C to + 71C)	-30°F to + 160°F (-20 C to + 71C)
<b>Sensor Tube Diameter</b>	.59" x 1.0" (15 x 25 mm)	.59" x 1.0" (15 x 25 mm)	.59" x 1.0" (15 x 25 mm)
<b>Sensor Tube Wall Thickness</b>	.120" (3 mm)	.120" (3 mm)	.120" (3 mm)
<b>Conduit Entry Size NEMA 4</b>	1/2" NPT	N/A	N/A
<b>Conduit Entry Size NEMA 7 Cast Alum. Hsg Group B</b>	N/A	3/4" (dual is standard) Blind Housing, no LCD	3/4" NPT (dual is standard) Hsg with LCD & Window
<b>Conduit Entry S/Steel Hsg. NEMA 4X &amp; Gr. B</b>	3/4" NPT (single is standard) Intrinsically Safe Only	3/4" (dual is standard)	3/4" (dual is standard)
<b>Hazardous Area Ratings Alum. &amp; S/S Hsg Explosion Proof FACTORY MUTUAL</b>	Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe	Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe	Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe

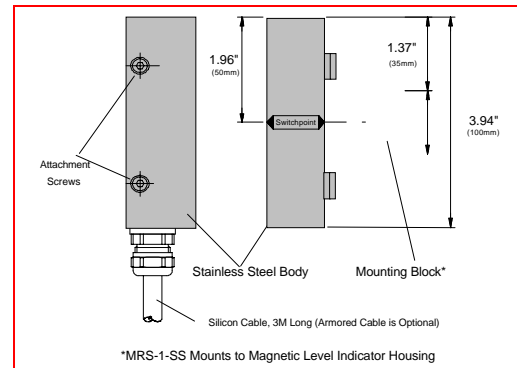
## ANODIZED ALUMINUM HOUSING MAGNETIC LEVEL SWITCH



### Type MRS-2-4X Specifications

Switch Type:	Magnetic Reed Contact
Contact type:	1 SPDT,
Contact behavior:	bistable (magnetically latched)
Switching capacity:	230V AC ; 60VA ; 1A
(non-inductive loads)	230V DC ; 30W ; 0,5A
Switch Type:	Glass Encapsulated (Hermetically Sealed)
Hysteresis:	2-3mm Typical
Max. Amb. Temperature:	302°F (150°C)
Switch Housing:	Aluminum, anodized
Terminal box:	Aluminum/Epoxy Painted
Termination Type:	Terminal Block
Housing protection:	NEMA 4X & IP65
Conduit Entry:	1/2" NPT Female

## STAINLESS STEEL HOUSING MAGNETIC LEVEL SWITCH



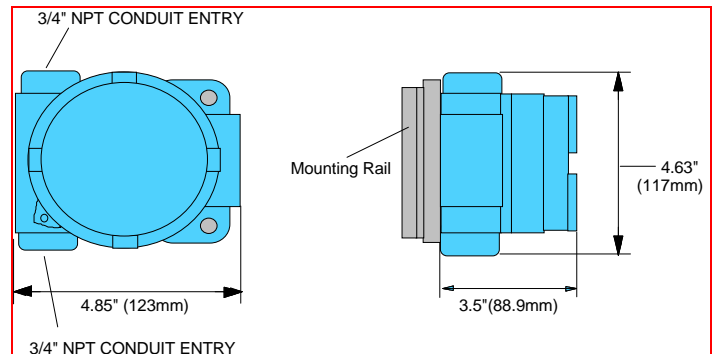
### Type MRS-2-SS Specifications

Switch Type:	Magnetic Reed Contact
Contact type:	1 SPDT,
Contact behavior:	bistable (magnetically latched)
Switching capacity:	230V AC ; 60VA ; 1A
(non-inductive loads)	230V DC ; 30W ; 0,5A
Switch Type:	Glass Encapsulated (Hermetically Sealed)
Hysteresis:	2-3mm Typical
Max. Amb. Temperature:	302°F (150°C)
Switch Housing:	Series 300 Stainless Steel
Termination:	1 M (39") of Silicon Lead Wire
Housing protection:	NEMA 4X & IP65
Connection Type:	39" Silicone Cable

## EXPLOSION PROOF TYPE MAGNETIC LEVEL SWITCHES

### Type MRS-2-XP Specifications Type MRS-2-XP-DPDT Specifications

Switch Type:	Magnetic Reed Contact
Contact type:	1 SPDT, or 2 SPDT's as DPDT
Contact behavior:	bistable (magnetically latched)
Switching capacity:	230V AC ; 60VA ; 1A
(non-inductive loads)	230V DC ; 30W ; 0,5A
Switch Type:	Glass Encapsulated Hermetically Sealed
Hysteresis:	2-3mm Typical
Max. Process Temp.:	302°F (150°C)
Switch Housing:	Cast Aluminum Epoxy Coated (KSR Blue)
Termination Type:	Terminal Block
Housing Ratings:	Factory Mutual, Cl. 1, Div. 1, Gr. B.
Housing protection:	NEMA 7/9 & 4X & IP65
Conduit Entry:	2 ea. 3/4" NPT female



KSR KUEBLER MODEL MRS-2-XP (Cl. 1, Div. 1, Gr B)  
KSR KUEBLER MODEL MRS-2-XP-DPDT (Cl. 1, Div. 1, Gr B)  
KSR KUEBLER MODEL MRS-2-XPHT (Cl. 1, Div. 1, Gr B)  
EXPLOSION PROOF MAGNETIC LEVEL SWITCHES

### Type MRS-2-XP-HT Specs. (High Temp.) Type MRS-2-XP-HT-DPDT Specs. (High Temp.)

Switch Type:	Magnetic Reed Contact
Contact type:	1 SPDT, or 2 SPDT's as DPDT
Contact behavior:	bistable (magnetically latched)
Switching capacity:	230V AC ; 60VA ; 1A
(non-inductive loads)	230V DC ; 30W ; 0,5A
Switch Type:	Glass Encapsulated Hermetically Sealed
Hysteresis:	2-3mm Typical
Max. Process Temp.:	662°F (350°C)
Switch Housing:	Cast Aluminum Epoxy Coated (KSR Blue)
Termination Type:	Hi-Temp Terminal Block
Housing Ratings:	Factory Mutual, Cl. 1, Div. 1, Gr. B.
Housing protection:	NEMA 7/9 & 4X & IP65
Conduit Entry:	2 ea. 3/4" NPT female

### Type MMS-5-XP Specifications

Switch Type:	Dry Contact Snap Action
Contact type:	1 SPDT
Contact behavior:	bistable (magnetically latched)
Switching capacity:	230V AC ; 200VA ; 5A
(non-inductive loads)	230V DC ; 60W ; 2A
Switch Type:	Phenolic Body Dry Contact Switch
Hysteresis:	5-10mm Typical
Max. Process Temp.:	302°F (150°C)
Switch Housing:	Cast Aluminum Epoxy Coated (KSR Blue)
Termination Type:	Terminal Block
Housing Ratings:	Factory Mutual, Cl. 1, Div. 1, Gr. B.
Housing protection:	NEMA 7/9 & 4X & IP65
Conduit Entry:	2 ea. 3/4" NPT female

Customer Name \_\_\_\_\_

Customer Ref.# \_\_\_\_\_

KSR Model # \_\_\_\_\_

Chamber Material \_\_\_\_\_

Connection Centerline \_\_\_\_\_

Connection Orientation \_\_\_\_\_

Connection Type \_\_\_\_\_

Connection Size \_\_\_\_\_

Connection Rating \_\_\_\_\_

Vent Connection \_\_\_\_\_

Drain Connection \_\_\_\_\_

Max. Pressure \_\_\_\_\_

Max. Temp. \_\_\_\_\_

Min. Temp. \_\_\_\_\_

Liquid Name \_\_\_\_\_

Output Type \_\_\_\_\_

Transmitter Resolution \_\_\_\_\_

Housing Ex P Gr. B \_\_\_\_\_ NEMA 4 \_\_\_\_\_

Electrical Enclosure Requirements:

Aluminum \_\_\_\_\_ Stainless Steel \_\_\_\_\_

Conduit Entry: 1/2" \_\_\_\_\_ 3/4" \_\_\_\_\_

Entry Quantity: 1 \_\_\_\_\_ 2 \_\_\_\_\_

Float Material \_\_\_\_\_

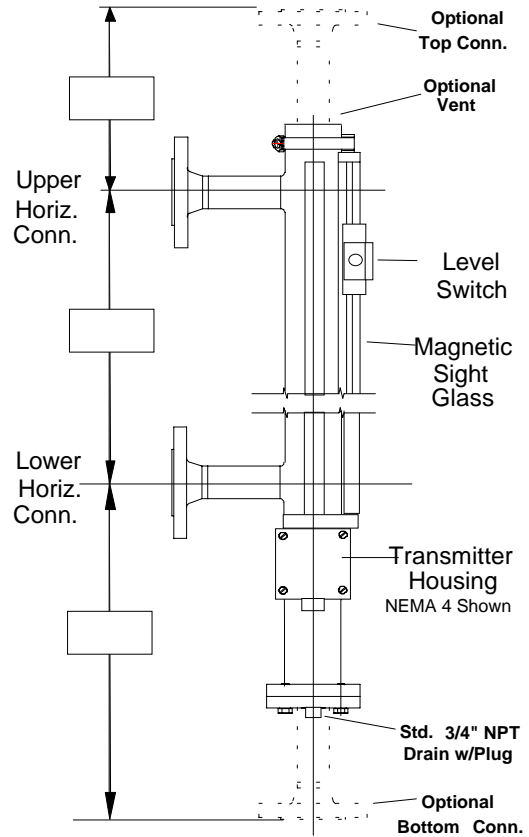
Float part# \_\_\_\_\_

Upper Liq. S.G. \_\_\_\_\_

Lower Liq. S.G. \_\_\_\_\_

By \_\_\_\_\_

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



Chamber Connections can be Flanged,  
NPT, Socket Weld, or Special Types

**Your Fax Number Please**

( ) - - - - -

Electric Limit Switches Req'd: \_\_\_\_\_ Quantity: \_\_\_\_\_

Switch Housing Type: Group B: \_\_\_\_\_ NEMA 4X: \_\_\_\_\_

Magnetic Indicator Housing Type: Aluminum \_\_\_\_\_ S/  
Stl \_\_\_\_\_

Magnetic Indicator Material: Plastic: \_\_\_\_\_ Ceramic: \_\_\_\_\_

Scale Require: \_\_\_\_\_ Units-Inches: \_\_\_\_\_ Millimeters: \_\_\_\_\_



TOLL FREE 1-888-577-5385