

Warrick® Sensor Fittings and Probes

Warrick Liquid Level Sensors are available in single- and multi-probe models and with a variety of fittings. The versatility of the Warrick design makes these sensors ideal for a diverse range of applications.

Examples include:

- Food and Beverage
- Caustics and Acids
- Sumps
- Reservoirs
- Pharmaceuticals
- Boilers and Steam Generators
- Ponds
- Sewage and Wastewater

Probe Styles

- Metal Rods
- Wire Suspended
- Corrosion Resistant
- Sanitary



Fitting Styles

- 3/8" to 3" Threaded Mount
- Bracket Mount
- Flange Mount
- External Mount
- Sanitary Mount
- Condulet Mount






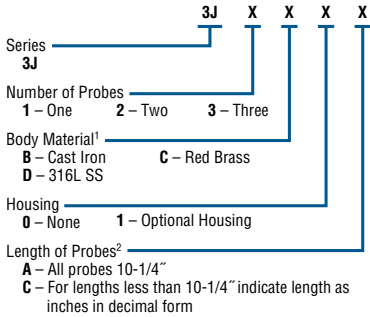
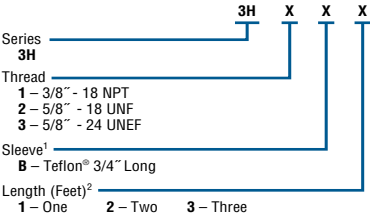
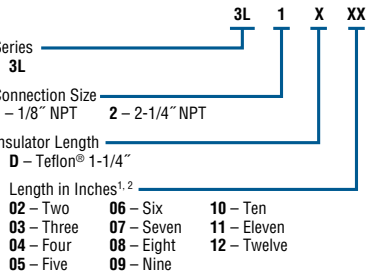
Sensor Selection Chart

SERIES		3E	3N	3F	3G	3C	3K	3J	3L	3M	3MT	3S	3R	3T	3B	3H	3W	3Y
Page Number		E-20	E-20	E-19	E-19	E-23	E-23	E-18	E-18	E-25	E-25	E-24	E-21	E-21	E-20	E-18	E-22	E-22
Body Options	Flange			•	•													
	Pipe Thread	•			•			•										
	Flat Mount		•		•													
	Side Chamber					•	•											
	Non-Contact Electrodes											•						
	Food Grade Connection									•	•							
	Bracket Mount											•						
Fitting Body Material Options	Brass	•	•	•		•		•										
	PVC		•	•	•													
	1018 Carbon Steel			•														
	Stainless Steel	•		•														
	Forged Steel			•														
	Nylon									•	•							
	Cast Iron	•				•	•	•				•						
Housing Material	Coated Aluminum	•	•	•		•	•	•				•						
	Polycarbonate				•													
Number of Probes	1 to 3		•					•										
	1 to 4					•	•			•	•							
	1 to 7	•		•	•							•						
Electrodes	Electrode Only								•				•	•	•	•	•	•

Designed for OEM



- ▶ Compact
- ▶ One-Piece Probe/Body Construction
- ▶ Quick Install & Connect
- ▶ Order Sized to Your Spec

These Warrick fitting are designed for OEM use. They are shipped ready for quick installation. Integrated probes eliminate pre-assembly tasks, and avoid potential vibration-induced loosening when installed with power tools. Choose from single- or multi-electrode probe series. Gems supplies these series with probes pre-cut to lengths you specify.

Series	3J	3H	3L
			
Probe Quantity	1, 2 or 3	1	1
Mounting Size	1" NPT	3/8" NPT or 5/8" NF/NFE	1/8" NPT
Materials			
Body	Case iron or red brass	316 stainless steel	316 stainless steel
Terminal Housing	Diecast aluminum, epoxy coated (optional)	—	—
Probe	316 stainless steel	316 stainless steel	316 stainless steel
Insulation	Teflon®	Teflon®	Teflon®
Probe Diameter	3/16"	1/4"	3/16"
Pressure/Temperature	0 psig @ 500°F	250 psig @ 406°F	150 psig @ 365°F
Approvals	—	U.L. File #MP2489, Vol. 1 Sec. 1; CSA; FM	U.L. File #MP2489
Use the Bold characters from the chart below to construct a product code.	 <p>Series 3J X X X X</p> <p>Number of Probes 1 - One 2 - Two 3 - Three</p> <p>Body Material¹ B - Cast Iron C - Red Brass</p> <p>Housing 0 - None 1 - Optional Housing</p> <p>Length of Probes² A - All probes 10-1/4" C - For lengths less than 10-1/4" indicate length as inches in decimal form</p>	 <p>Series 3H X X X</p> <p>Thread 1 - 3/8" - 18 NPT 2 - 5/8" - 18 UNF 3 - 5/8" - 24 UNEF</p> <p>Sleeve¹ B - Teflon® 3/4" Long</p> <p>Length (Feet)² 1 - One 2 - Two 3 - Three</p>	 <p>Series 3L 1 X XX</p> <p>Connection Size 1 - 1/8" NPT 2 - 2-1/4" NPT</p> <p>Insulator Length D - Teflon® 1-1/4"</p> <p>Length in Inches^{1, 2} 02 - Two 06 - Six 10 - Ten 03 - Three 07 - Seven 11 - Eleven 04 - Four 08 - Eight 12 - Twelve 05 - Five 09 - Nine</p>
Notes	1. Probes are stainless steel. Custom options available. Consult factory.	1. Longer Teflon® sleeves are available. Contact factory or your representative 2. Custom probe and insulation lengths are available. Contact your representative.	1. 12" maximum 2. Indicate fractional inches in decimal form (01.75 = 1-3/4")

WARRICK CONDUCTIVITY SENSORS




Top Mounting Fixtures – General Purpose

Series	3F	3G																									
																											
Mounting Connection	Flange — 4.5" to 7.5" Dia.	NPT, Flange, Bracket (Plate)																									
Probe Quantity	1 thru 7	1 thru 7																									
Description	Designed for general purpose service, Series 3F flanged, pressure-tight fittings can handle up to 7 probes. They mate with standard pipe flanges coupled to the top of the vessel. Available in a variety of materials.	Series 3G fittings are designed for general purpose use, and are made of PVC to withstand corrosive conditions. The flanged assemblies are sized to accommodate up to 7 probes and to mate with standard flanges on the tops of vessels.																									
Materials																											
Terminal Housing	Die-cast aluminum, epoxy coated	Polycarbonate																									
Body	Forged steel, red brass, 316 S.S., 1018 C.S, PVC	PVC																									
Probe Insulation	Teflon®	Teflon®																									
Pressure/Temperature	125 psig @ 323°F (cast iron) 225 psig @ 150°F (brass) 230 psig @ 100°F (316 S.S.) 275 psig @ 100°F (1018 C.S.) PVC – not rated	0 psig @ 150°F (PVC)																									
Approvals	CSA	—																									
Dimensions	<table border="1"> <thead> <tr> <th>No. of Probes</th> <th>Nominal Pipe Flange Size</th> <th>Diameter of Flange</th> <th>Conduit Boss Thread Size</th> <th>Terminal Housing Size (W" x D" x H")</th> </tr> </thead> <tbody> <tr> <td align="center">1</td> <td align="center">1</td> <td align="center">4-1/2"</td> <td align="center">1/2" NPT</td> <td align="center">2-1/4 x 2-1/4 x 2-1/4</td> </tr> <tr> <td align="center">2-3</td> <td align="center">2</td> <td align="center">6"</td> <td align="center">1/2" NPT</td> <td align="center">3-1/4 x 3-1/4 x 2-3/8</td> </tr> <tr> <td align="center">4</td> <td align="center">2-1/2</td> <td align="center">7"</td> <td align="center">1/2" NPT</td> <td align="center">3-1/4 x 3-1/4 x 2-3/8</td> </tr> <tr> <td align="center">5-7</td> <td align="center">3</td> <td align="center">7-1/2"</td> <td align="center">3/4" NPT</td> <td align="center">4 x 4 x 2-1/2</td> </tr> </tbody> </table>	No. of Probes	Nominal Pipe Flange Size	Diameter of Flange	Conduit Boss Thread Size	Terminal Housing Size (W" x D" x H")	1	1	4-1/2"	1/2" NPT	2-1/4 x 2-1/4 x 2-1/4	2-3	2	6"	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8	4	2-1/2	7"	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8	5-7	3	7-1/2"	3/4" NPT	4 x 4 x 2-1/2	
No. of Probes	Nominal Pipe Flange Size	Diameter of Flange	Conduit Boss Thread Size	Terminal Housing Size (W" x D" x H")																							
1	1	4-1/2"	1/2" NPT	2-1/4 x 2-1/4 x 2-1/4																							
2-3	2	6"	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8																							
4	2-1/2	7"	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8																							
5-7	3	7-1/2"	3/4" NPT	4 x 4 x 2-1/2																							
How to Order	<p>Use the Bold characters from the chart at right to construct a product code.</p> <p>Electrode Probes are ordered separately.</p> <p>Series 3F X X</p> <p>Number of Probes 1 thru 7</p> <p>Body Material A – Forged Steel (Raised Face) B – Red Brass (Flat Face) C – 316 S.S. (Raised Face) D – 1018 C.S. (Raised Face) E – PVC (Flat Face)</p>	<p>Series 3G X X X</p> <p>Number of Probes 1 thru 7</p> <p>Base Size and Style A – 2" Flange (6" O.D.)³ E – 2" NPT³ B – 3" Flange (7-1/2" O.D.) H – 3" NPT C – 3-1/4" x 6" x 3/4" PVC Plate</p> <p>Probe Type 1 – 316 S.S. Inserts for Use with 1/4" Rod Extensions⁴ 2 – Tapered Probe Assembly⁵ 3 – Wire-Suspended Probes⁶</p>																									
Compatible Electrode Probes (order separately)	3R, 3W ¹ , 3Y ²	3R, 3T, 3W ¹ , 3Y ²																									

Notes:

- Requires 3Z1B Adapter and 3Z1A Wire.
- Requires 3Z1B Adapter.
- Maximum 4 probes.
- Order 3R rods separately. See page E-21.
- Order 3T rods separately. See page E-21.
- Order 3W/3Y probes separately. See page E-22.

Custom options available. Consult factory.

3E		3N		3B	
					
1" to 3" NPT		#10 Machine Screws from Underside		3/8" - 18NPT, 5/8" - 18UNF, 5/8" - 24UNEF	
1 thru 7		1 thru 3		1	
Series 3E fittings are cast metal, pressure-tight assemblies capable of handling 1-7 probes. Attachment to vessels is accomplished with external pipe threading. 3E Fittings require the use of 3R rigid or 3W wire suspended electrodes.		Series 3N fittings accommodate 1-3 probes operating at atmospheric pressure. The assembly mounts on a flat surface atop open tanks or closed vessels. 3N Fittings require the use of 3R rigid or 3W wire suspended electrodes.		Series 3B fittings are compact pressure tight assemblies that hold a single electrode probe for use in water and chemicals. These fittings incorporate a 1/4-20 female thread that must be combined with a Series 3R (rigid rod electrode) or Series 3W/3Y (wire suspended electrode) to make a complete assembly.	
Die-cast aluminum, epoxy coated		Die-cast aluminum, epoxy coated		—	
Cast iron, red brass, 316 stainless steel		PVC, red brass, 316 stainless steel		316 stainless steel	
Teflon®		Teflon®		Teflon®	
125 psig @ 353°F (cast iron) 250 psig @ 406°F (brass, 316 S.S.)		0 psig @ 150°F (PVC) 0 psig @ 500°F (brass, 316 S.S.)		250 psig @ 406°F 500 psig @ 75°F	
U.L. File #MP2489, Vol. 1 Sec. 1; CSA		CSA File #LR11644		U.L. File #MP2489, Vol. 1 Sec. 1; CSA	
No. of Probes	Attachment to Vessel	Conduit Boss Thread Size	Terminal Housing Size (W" x D" x H")		
3E	1	1" NPT	1/2" NPT	2-1/4 x 2-1/4 x 2-1/4	
	2-3	2" NPT	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8	
	4	2-1/2" NPT	1/2" NPT	3-1/4 x 3-1/4 x 2-3/8	
	5-7	3" NPT	3/4" NPT	4 x 4 x 2-1/2	
3N	1-3	2-1/4" square flat pad, 1-1/2" dia. hole in top of vessel secured with #10 machine screws at the corners of a 1-1/2" square	1/2" NPT	2-1/4 x 2-1/4 x 2-1/4	
<p>Series 3E</p> <p>Number of Probes 1 thru 7</p> <p>Body Material</p> <p>A – Cast Iron</p> <p>B – Red Brass</p> <p>C – 316 Stainless Steel</p>		<p>Series 3N</p> <p>Number of Probes 1 thru 3</p> <p>Body Material</p> <p>A – PVC</p> <p>B – Red Brass</p> <p>C – 316 Stainless Steel</p>		<p>Series 3B</p> <p>Thread</p> <p>1 – 3/8" - 18 NPT</p> <p>2 – 5/8" - 18 UNF</p> <p>3 – 5/8" - 24 UNEF</p> <p>Metal Parts</p> <p>B – 316 Stainless Steel</p>	
3R, 3W ¹		3R, 3W ¹		3R solid rod (up to 4') 3W ¹ or 3Y ² (greater than 4')	

Custom options available. Consult factory.

Series 3R/3T General Purpose Probes

- ▶ Metallic Rods
- ▶ Available in Many Materials for Various Requirements
- ▶ Adaptable for Various Fittings

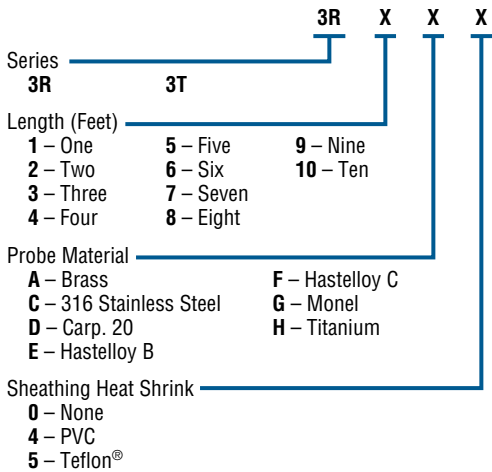
For general purpose use, Series 3R probes are metallic rods with threaded ends that screw into a fitting that extends vertically down into the liquid. Available in a variety of materials for different applications. 3T tapered rods are also available.

Specifications

Style	
Series 3R	1/4" (.64 cm) threaded rod
Series 3T	1/4" (.64 cm) tapered rod
Material	Brass, Hastelloy C, Monel, 316 stainless steel, titanium, Carp. 20
Sheathing (optional)	PVC heat shrink 200°F (93°C), Teflon® heat shrink 350°F (177°C)

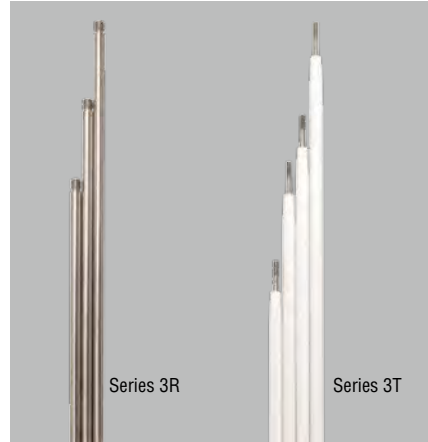
How to Order

Use the **Bold** characters from the chart below to construct a product code.



Contact your representative for custom lengths.

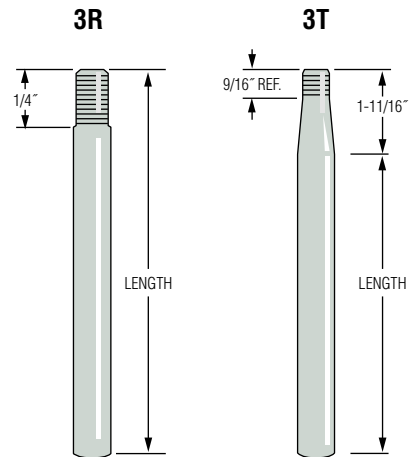
Note: Long lengths can be coupled to facilitate shipping and installation. Consult factory.



Applications

- 3R: For use with Series 3E, 3F, 3G, 3B fittings
- 3T: For use with Series 3G and other custom configurations

Dimensions



Series 3W – Wire Suspended Probes

- ▶ Metallic Bars
- ▶ Plastic Shield Protected
- ▶ Adaptable to Many Fittings
- ▶ Field Assembled

Series 3W probes, consisting of metallic bars within a protective plastic shield, are designed to be suspended in liquid with PVC-insulated wires. They are ideal for applications where rigid electrode rods are impractical or cumbersome, such as:

- Deep Wells
- Pump Control
- Waste Water
- Deep Tanks

7/8" (2.22 cm) diameter x 3-3/4" (9.52 cm) length. 3Z1A wire and 3Z1B adaptor kit required for use with 3E, 3F and 3N fittings.

How to Order

Select a 3W electrode, a 3Z1B adaptor and a length of 3Z1A suspension wire to form a complete suspended probe.

1. 3W Electrodes

Probe Material	Part Number
Brass	3W1
316 Stainless Steel	3W2

2. 3Z1B Adaptor Kit

For use with 3E, 3F and 3N fittings.
Part Number: 3Z1B

3. 3Z1A Suspension Wire

Order in standard or custom length.

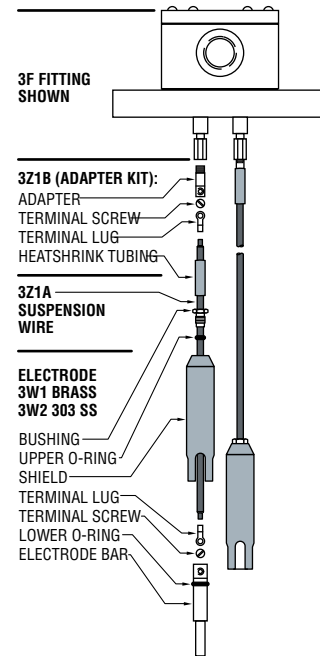
Length (Feet)	Part Number
500	3Z1A-500
1000	3Z1A-1000
5000	3Z1A-5000
Custom	3Z1A-XX

Specify in one foot increments up to 5000 ft.



Series 3W

Components Detail



Series 3Y – Corrosion Resistant Probes

- ▶ Metallic Bars
- ▶ Corrosion Resistant
- ▶ Available in Many Materials for Various Requirements
- ▶ Adaptable for Various Fittings

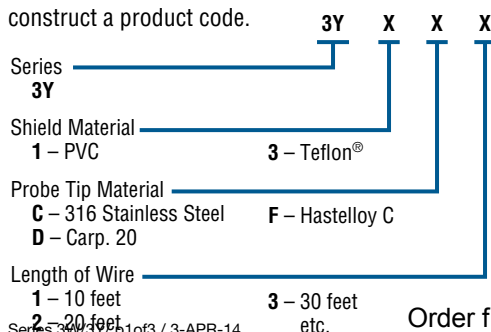
Series 3Y wire suspended probes consist of metallic bars within a protective plastic shield, designed to be suspended in liquid. Series 3Y suspension wires are PVC or Teflon® insulated for use in corrosive liquid applications. 7/8" (2.22 cm) diameter x 3-1/2" (8.90 cm) length.

Specifications

Style	Wire suspended
Tip Material	Carp. 20, Hastelloy C, 316 stainless steel
Shield Material	PVC 150°F (66°C), Teflon®

How to Order

Use the **Bold** characters from the chart below to construct a product code.



Note: 3Z1B Connector is used to connect suspension wire with 3B, 3E, 3F, 3G or 3N fitting.



Series 3Y

Applications

- General Purpose
- Wire Suspended Probes
- Corrosive Liquids, Chemicals

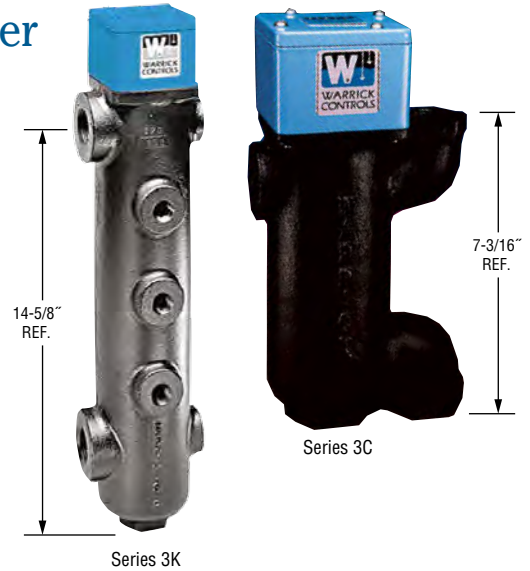
Series 3C – Short External Mount Side Chamber

Series 3K – Long External Mount Side Chamber

- ▶ Side Mounting
- ▶ Gauge Tappings
- ▶ Pressure Tight
- ▶ CSA Approved
- ▶ FM Approved
- ▶ Tricock Tappings
- ▶ 1-4 Probes
- ▶ Cast Iron and Brass
- ▶ U.L. Recognized

Series 3C side chamber fittings are cast iron or brass, pressure-tight chambers containing up to 4 probes from 1-1/2" to 6" in length. Pipe tappings provide connection to the side of boilers and pressure vessels to equalize the level in the chamber with the level in the vessel.

Series 3K fittings contain up to 4 probes and accommodate probes from 1-3/4" to 13" in length. Additional tappings are available for tricocks and gauges.



Specifications

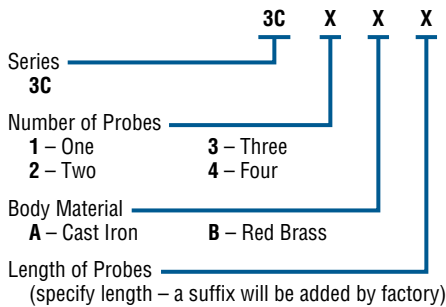
Probes	1 thru 4, with 316 Stainless Steel/Teflon® wetted parts
Body Material	
Series 3C	Cast iron, red brass
Series 3K	Cast iron
Pressure/Temperature	250 psig (17.2 bar) @ 406°F (200°C) (saturated steam)
Probe Length	
Series 3C	1-1/2" to 6" (3.81 cm to 15.24 cm)
Series 3K	1-3/4" to 13" (4.45 cm to 33.02 cm)
Approvals	U.L. File # MP2489, Vol. 1, Sec. 2; CSA; FM

Applications

- Boilers
- Hydropneumatic Tanks
- Steam Generators
- Pressure Vessels
- Pump Operation
- Low Water / High Water Alarm

How to Order Series 3C

Use the **Bold** characters from the chart below to construct a product code.

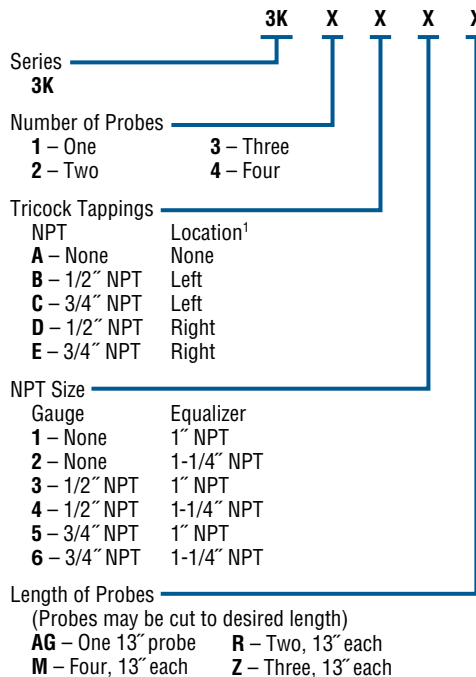


Notes:

1. Contact your representative for more details on this fitting.
2. The 3C attaches to a vessel by two 1" NPT tappings, one 1" NPT blowdown port and one 3/4" NPT side port.

How to Order Series 3K

Use the **Bold** characters from the chart below to construct a product code.



Note:

1. Viewer facing gauge glass

Series 3S Multi-Wire Suspended Fittings

- ▶ Probe Isolation
- ▶ Long Length

The 3S series electrode fitting is designed to provide isolation of electrodes from liquids containing solids, grease, soaps, sludge, rags, paper and other debris commonly found in wastewater and sewage pumping applications.

Isolation is accomplished by enclosing wire suspended electrodes within a 1-1/2" galvanized pipe assembly with a neoprene flexible bulb installed on the lower end of the pipe. The bulb and pipe assemblies contain 3-1/2 quarts clean water with one ounce of sodium bicarbonate (baking soda).

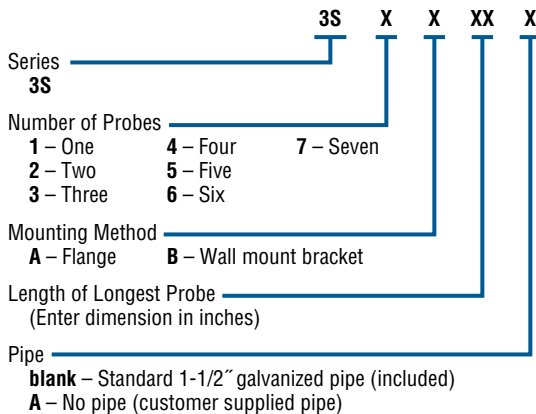
When mounted in a sump, the pipe and bulb assembly is acted on by the hydrostatic pressure exerted by the liquid outside the bulb. Assuming the density of the liquid outside is equal to water, the height of the water inside the bulb will equal the height outside.

Specifications

Probes	1 thru 7
Materials of Construction	Cast iron, galvanized pipe, stainless steel, neoprene
Type of Connection	3" flange (7-1/2" O.D.), or bracket
Terminal Housing	Die-cast aluminum, epoxy coated
Pressure	Atmosphere
Temperature	-40°F to +212°F (-40°C to +100°F)

How to Order

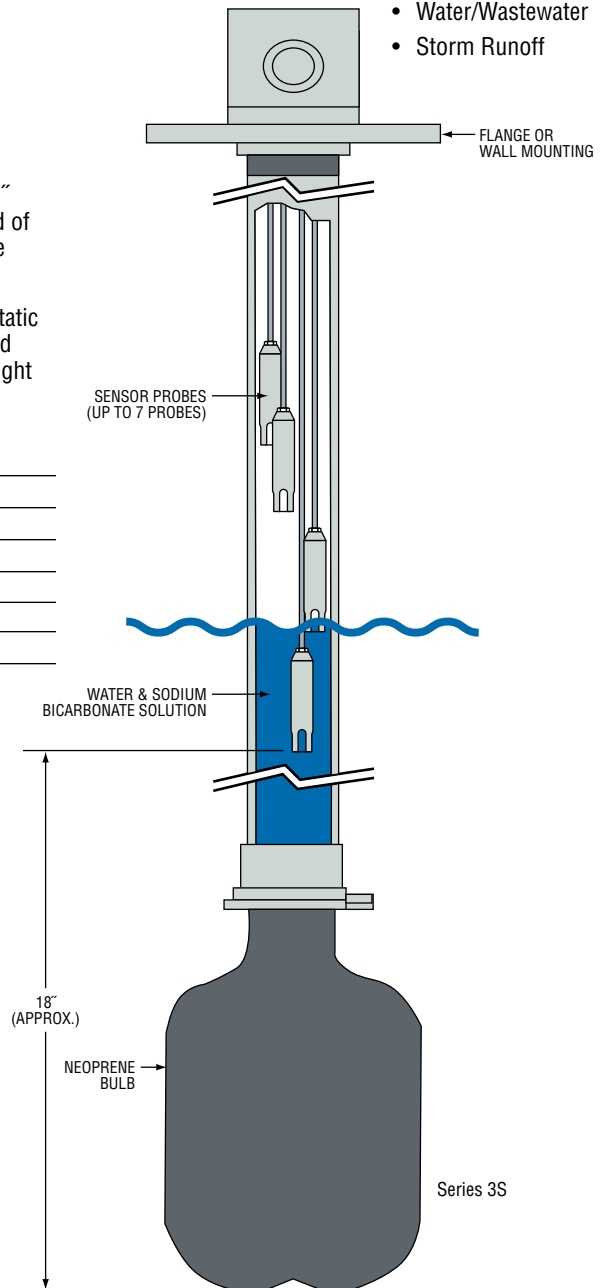
Use the **Bold** characters from the chart below to construct a product code.



Note:
 Overall length is approximately 18" more than distance to longest electrode.
 Probe is adjusted by customer in the field.

Applications

- Sewage
- Water/Wastewater
- Storm Runoff



WARRICK CONDUCTIVITY SENSORS

Series 3M – Food Grade Fitting

Series 3MT – Food Grade Fitting

- ▶ Easy Removal for Cleaning
- ▶ CSA Approved
- ▶ FDA Approved Materials

Designed for use in food, beverage and pharmaceutical applications where cleanliness is vital. Two-piece Series 3M assemblies can handle up to 4 probes. FDA-approved materials. Engineered for fast removal of fitting to facilitate cleaning and sterilization.

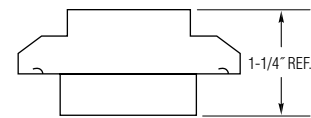
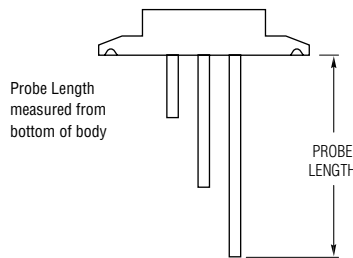
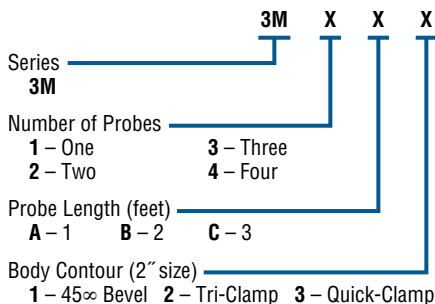
Series 3MT fittings are similar to 3M fittings, except they also feature Teflon®-covered probes with polished tips to meet the most demanding application requirements.

Specifications

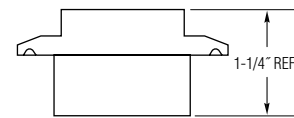
Probes	1 thru 4
Body Contour	45° bevel, Tri-Clamp, Quick Clamp
Body Material	Type 66 Nylon
Probe Material	
Series 3M	316 stainless steel, cut to length by user
Series 3MT	Teflon®-covered 316 stainless steel probes. Tip polished to RA <25 microns max. spec. (factory set lengths)
Pressure/Temperature	150 psig (10.3 bar) @ 150°F (65°C)
Approvals	FDA-approved materials; CSA

How to Order Series 3M

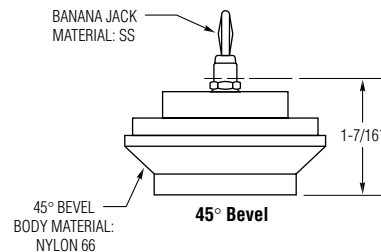
Use the **Bold** characters from the chart below to construct a product code.



Quick-Clamp



Tri-Clamp



How to Order Series 3MT

3MT components must be ordered separately.

Step 1. Upper Assembly*:

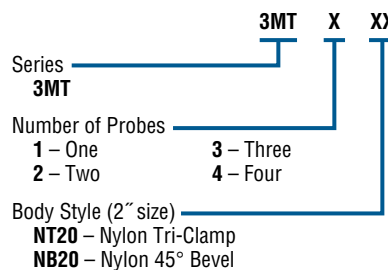
- Select one part number.
- 7790575** – 1 Probe
 - 7790577** – 2 Probes
 - 7790581** – 3 Probes
 - 7790584** – 4 Probes

*10' lead length standard.



Step 2. Lower Assembly:

Complete part number based on Upper Assembly selected and Body Style.

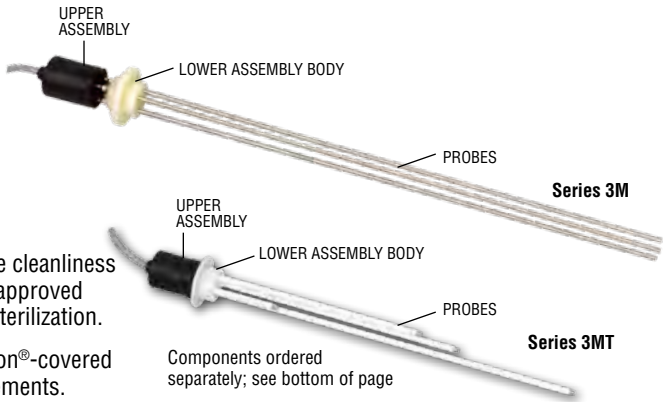


Step 3. Probe Lengths*:

Select a length for each probe to be used; maximum four.

- Probe 1 3MTPRL ___ (inches)
- Probe 2 3MTPRL ___ (inches)
- Probe 3 3MTPRL ___ (inches)
- Probe 4 3MTPRL ___ (inches)

*Probe length must be specified in whole inches, 06" to 36". Length is not field adjustable.



Components ordered separately; see bottom of page

Applications

- Food & Beverage
- Pharmaceutical
- CIP

Body Styles