

## Model 702A Probes

### GENERAL DESCRIPTION

The Model 702A probes are general purpose rigid rod electrodes available in lengths up to 20 feet. They are available with Teflon insulation or bare (uninsulated) rods in both the standard and high gain versions. The vessel entrance gland is fitted with 3/4 inch NPT; material is 316 stainless steel. ANSI raised face flanges are optionally available in either carbon steel or 316 stainless steel and rated either Class 150 or Class 300.

The Teflon electrode insulation has a wall thickness of 1/16" on the 3/8" O.D. probe (Designation B, Table 1). This probe is recommended for use on low viscosity liquids and low to medium density granular materials. For the high gain version the Teflon insulation has a wall thickness of 1/32" on the 1/2" diameter probe (Designation D, Table 1). This probe is recommended for use only on liquids or light, fluffy (low density) non-abrasive granular materials.

The Robertshaw Level Measuring instruments have been designed so that they attach directly to the 1/2" NPT fitting on the top of the probe. Typically, these are either the complete transmitter housing or a conduit outlet box. The 6-32 threaded fitting in the end of the probe rod accepts either a contact pin or a machine screw as required.

### PRINCIPLE OF OPERATION

The probe of a Robertshaw instrument serves as one plate of a capacitor. In non-conductive materials, the wall of the tank or vessel serves as the second plate; while in conductive materials (such as water) the material surrounding the insulated probe serves as the second plate.

Low values of DC voltage are impressed on the probe by a capacitance sensitive circuit in the detector unit. Whenever the material in the vessel immerses the probe, the capacitance existing between the probe and the second capacitance plate (i.e., whether the vessel wall or the conductive material) changes value. This change in capacitance is sensed by the instrument. Instruments are available for both ON-OFF level control or continuously proportional outputs for recording and control of level.

### APPLICATION DATA

Typically these probes are used with Robertshaw RF and microprocessor based ON/OFF or continuous level controls for measuring applications involving liquids or granular materials. When the probe is used with an ON/OFF (fixed level point) type, it may be installed in the vessel in either a vertical or horizontal position. If, however, the probe is to be used on a continuous level measuring application, then it must be installed into the vessel in a vertical position. Bent probes are also available. See "Bending Specifications."



- **Extra Tight Fitting Teflon Insulation**
- **Many Options Available to Tailor Probe to Customer's Needs**
- **Lengths up to 20 Feet**
- **No Moving Parts**

### SPECIFICATIONS

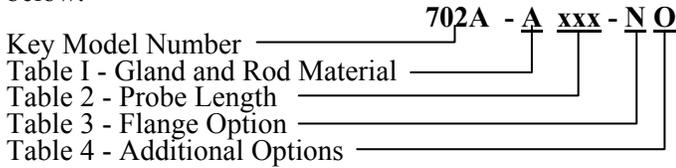
Gland Capacitance.....	12 pf
Sheath Capacitance	
<b>Standard Version (-A, -B)</b> .....	60 pf/ft
<b>High Gain Version (-C, -D)</b> .....	250 pf/ft
Probe Gain (insulated probe in conductive liquid)	
<b>Standard Version (-B)</b> .....	60 pf/ft
<b>High Gain Version (-D)</b> .....	250 pf/ft
Temperature/Pressure Rating- 30 Hg to 1000 PSI @ 120°F	
Derated to 100 PSI @ 350°F	

### ENGINEERING DATA

Probe Rod Material.....	316 stainless steel
Probe Gland Material.....	316 stainless steel
Sheath Material.....	316 stainless steel
Probe Length (maximum)	
<b>Rigid Rod</b> .....	20 ft.
<b>Knife Blade</b> .....	24 inches
Probe Rod Diameter, <i>Non-Insulated</i> ....	7/32 or 7/16" O.D.
Teflon Insulated.....	3/8 or 1/2" O.D.
Gland Connection Size.....	3/4" NPT

# ORDERING INFORMATION

Specify complete model number according to the tables below.



### KEY MODEL NUMBER

MODEL NO.	DESCRIPTION
702A	A rigid rod type probe, bare or Teflon insulated with two-piece gland. The two-piece gland assembly allows alignment of the bent robe or knife-blade probe within the vessel.

Table 1 - GLAND AND ROD MATERIAL

DESIGNATION	DESCRIPTION
A	316 St. St. gland and bare rod, 7/32" diameter
B	316 St. St. gland and Teflon ins. rod; 3/8" O.D.
C	316 St. St. gland and rod, bare, 7/16" diameter
D	316 St. St. gland with Teflon ins. rod, 1/2" O.D.
E	316 St. St. gland with knife-blade assembly Specify insertion length - max 24"

Table 2 - PROBE ACTIVE LENGTH

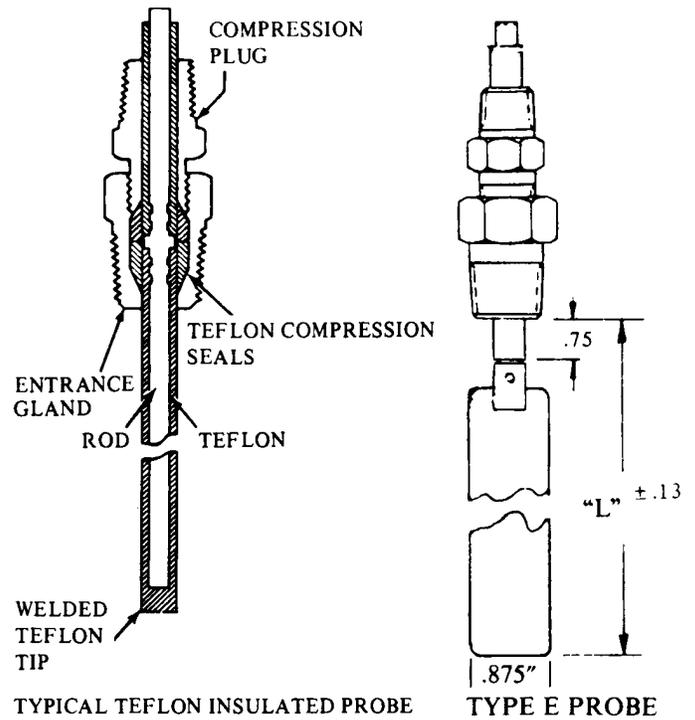
DESIGNATION	DESCRIPTION
xxx	Specify active length in inches. Max length (except for knife-blade probe) is 240". On Teflon insulated probes, the insertion length is 1" longer than active length due to the probe Teflon plug seal at the lower end.

Table 3 - FLANGE OPTION

DESIGNATION	DESCRIPTION
N	None
A	Flange screwed onto probe gland.
B	Flange welded to probe gland
Select flange from PL-FL.	

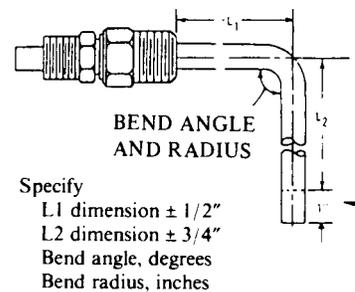
Table 4 - ADDITIONAL OPTIONS

DESIGNATION	DESCRIPTION
0	None
1	Bent Probe. SPECIFY BENDING DIMENSIONS. SEE TABLE.
2	316 St. St. sheath. SPECIFY SHEATH LENGTH.
3	Combination of 1 & 2 above.
4	Ground Wire Probe. See PL-GW.



TYPICAL TEFLON INSULATED PROBE TYPE E PROBE

### BENT PROBES



NOTE: If dimensions are critical, supply detailed sketch of probe required at time of order.

### Limitations:

Minimum L1 dimension, 2" types A & B, 3-1/2" types C & D  
 Minimum L2 dimension, 2" types A & B, 3-1/2" types C & D  
 Minimum bend radius, 1-1/8" types A & B, 2" types C & D

# Robertshaw

U.S.A. and CANADA

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