



Heavy Duty Rigid Probe Model 728B

General Description

The Model 728B probes are designed for heavy duty service where a ruggedized probe is required. The probe has a 15/32 O.D. stainless steel probe rod to give it extra strength for use in applications where side loading is a factor. The probe rod is available bare or Teflon insulated, which allows "tailoring" the probe for special applications. They are available in lengths up to 20 feet. The vessel entrance gland is fitted with 1 inch NPT; standard 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.

These probes are available for use with any Robertshaw level control instrument, including the Level-Lance series, the Level-Tel and the Level-Tek units.

Typical applications of the Series 728B probes are in granular materials or highly viscous liquids that may be expected to exert significant bending forces on the probe rod.

PRINCIPLE OF OPERATION

The probe of a Robertshaw level control 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. Insulated probes must be used when measuring or detecting conductive solutions or materials.

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 (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.



Features and Benefits:

- **Rugged, Heavy Duty Service**
- **Many Options Available to Tailor Probe to Customer's Needs**
- **Lengths up to 20 Feet**
- **No Moving Parts**
- **Flanged or Screwed Construction**

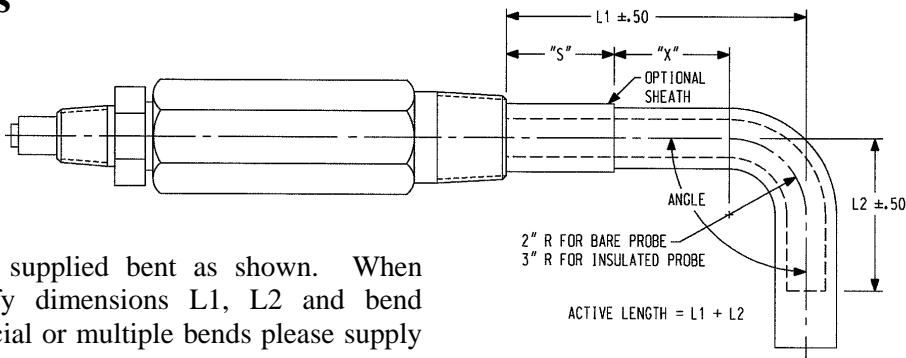
Application Data

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 or on an application with a differential (such as Pump On/Pump Off), then it must be installed into the vessel in a vertical position. Bent probes are available to allow the active length of the probe to be different from the installation direction. See "Bending Specifications."

When the process is a conductive liquid (such as water or sulfuric acid) and the vessel is non-metallic or non-metallic lined, a probe with a ground wire may be employed to provide a ground path to the liquid (second plate). The liquid must be clean and free of foreign materials and be no more viscous than water.

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 with a coaxial cable to the instrument. The 6-32 threaded fitting in the end of the probe rod accepts either a contact pin or a machine screw as required.

Bent Probes



Probes can be supplied bent as shown. When ordering specify dimensions $L1$, $L2$ and bend angle. For special or multiple bends please supply a sketch.

For bent probes with a sheath, the sheath must terminate 2" or more before the start of the bend (as shown by dimension 'X').

If Teflon insulated for part of the length the Teflon must terminate at least 1" before the start of the bend or at least 1" after the end of the bend.

Specifications

Gland Capacitance 40 pF

Sheath Capacitance 60 pF/ft.

Probe Gain 60 pF/ft.
(insulated probe in conductive liquid)

Temperature/Pressure Rating:

-30 Hg to 1000 PSI @ 100 F

Derated to 0 PSI @ 350° F

(-762 mm Hg to 6.89 mPa @ 38° C

Derated to 0 Pa @ 177° C)

Engineering Data

Probe Rod Material 316 stainless steel

Probe Gland Material:

Standard 316 stainless steel

Optional Monel, Hastelloy C

Sheath Material 316 stainless steel

Probe length: 20 ft (6.1 m) maximum

Gland Connection Size 1" NPT

Probe Rod Diameter:

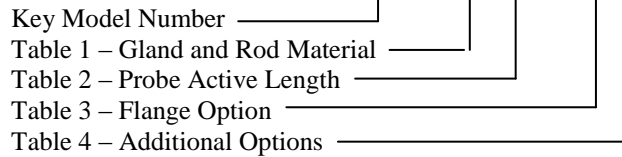
Bare 15/32" OD (11.9 mm)

Insulated 3/4" OD (19.1 mm)

MINIMUM VALUES			
PROBE TYPE	L1	L2	X
WITHOUT SHEATH	BARE	3-1/2"	4"
	BARE WITH WELDED FLANGE	5"	4"
	INSULATED	5"	5"
WITH SHEATH	BARE	"S" + 3-1/2"	4"
	INSULATED	"S" + 5"	5"

Ordering Information

728B - A xxx - N 0



Key Model Number

Designation	Description
728B	A heavy duty rigid rod type probe. Rugged 15/32" diameter 316 SST rod for use in applications where standard probes will bend or flex. The Teflon insulated version has 3/4" OD Teflon. The two-piece gland is made of 316 SST as standard with other materials optional. 1" NPT mounting thread size.

Table 1 - Gland and Rod Material

Designation	Description
A	316 SST gland and bare rod.
B	316 SST gland and Teflon insulated rod.
C	Monel gland with Teflon insulated 316 SST rod.
D	Hastelloy C gland with Teflon insulated 316 SST rod.

Table 2 - Probe Active Length

Designation	Description
xxx	Specify active length in inches. Maximum length is 240". On Teflon insulated probes the insertion length is 1" longer than the active length due to the Teflon plug seal at the probe tip.

Table 3 - Flange Options

Designation	Description
N	No flange
A	*Flange screwed onto probe gland
B	*Flange welded to probe gland

* Specify size, class and material

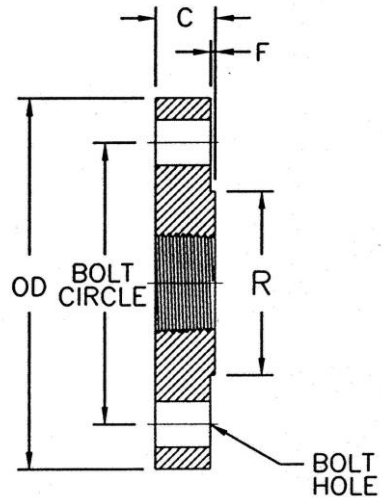
Table 4 - Additional Options

Designation	Description
0	None
1	Bent probe. Specify bending dimensions, see page 2
2	*Sheath. Specify sheath length
3	Combination of 1 & 2 above
4	Ground wire. Specify material. Available only with Designations B, C & D in Table 1

* Sheath not available when specifying Monel or Hastelloy C gland.

Standard Flanges

CLASS	SIZE	OD	C	F	R	BOLT CIRCLE	BOLT HOLES
150	1"	4.25	.56	.06	2.00	3.12	4X Ø.62
150	1-1/2"	5.00	.69	.06	2.88	3.88	4X Ø.62
150	2"	6.00	.75	.06	3.62	4.75	4X Ø.75
150	3"	7.50	.94	.06	5.00	6.00	4X Ø.75
150	4"	9.00	.94	.06	6.19	7.50	8X Ø.75
300	1"	4.88	.69	.06	2.00	3.50	4X Ø.75
300	1-1/2"	6.12	.81	.06	2.88	4.50	4X Ø.88
300	2"	6.50	.88	.06	3.62	5.00	8X Ø.75
300	3"	8.25	1.12	.06	5.00	6.62	8X Ø.88
300	4"	10.00	1.25	.06	6.19	7.88	8X Ø.88



Standard Flange Materials

Carbon Steel
316 Stainless Steel

NOTES:

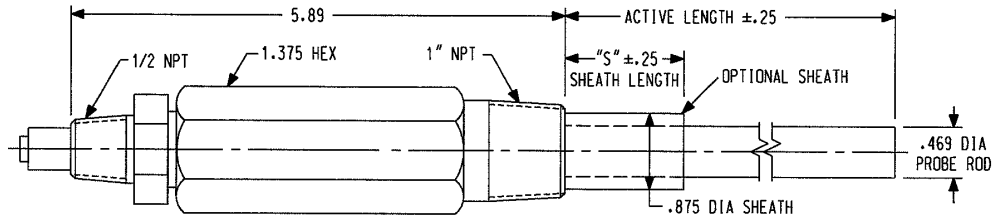
- Probes may be supplied with flanges of different sizes, styles and materials than listed above by special order. Consult factory.
- Flanges conform to ANSI B16.5.
- The pressure/temperature ratings of probes supplied with a flange shall be that of the flange or as specified on page 2 for the probe, whichever is less.

Ground Wire Materials

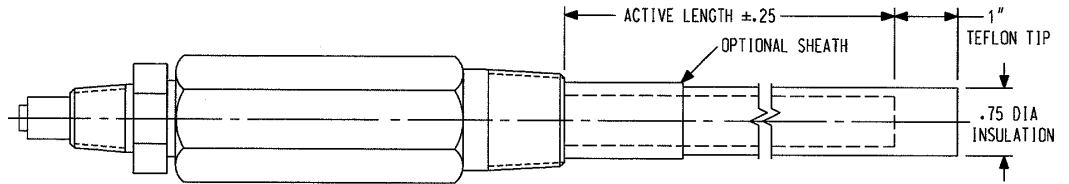
316 Stainless Steel
Monel
Hastelloy B
Hastelloy C
Tantalum

Dimensions

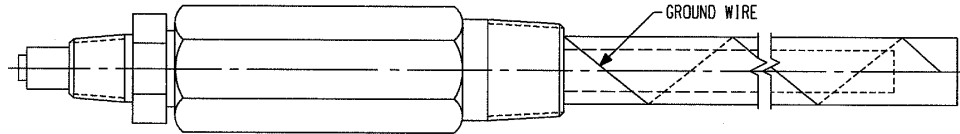
Bare Probe



Insulated Probe



Insulated Probe With Ground Wire



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