

# MODEL P53 RIGID SENSING PROBE INSERT OR REMOVE WITHOUT DEPRESSURIZING VESSEL

## ADVANTAGES FOR LIQUIDS OR INTERFACES

- Inspect, test, or service the P53 without shutting down or depressurizing the process
- Remove or insert “up-from-the-bottom” or “in-from-the-side” sensor without draining the tank
- Simple direct inserted design is useful for many common applications
- PTFE insulation allows operation on conductive or nonconductive materials
- High pressure PTFE seal is reliable, and essentially corrosion proof
- Open design is easy to clean and resists material collection and deposition
- Easily installed in any orientation; vertically down or up, horizontal, or at an angle

## APPLICATION

The P53 probe is very similar to the Model P51 general purpose probe and is based on that design. It is intended for applications where it would be impractical or impossible to depressurize or drain the process system for inspection and testing of the probe instrument. Such processes include oil refineries, gas cycle plants, large storage tanks, and toxic materials.

The gland body of the P53 is effectively made very long by the addition of a polished seamless tube mounted coaxial over part of the sensing probe. A second sealing gland with PTFE seals is installed on the outside of the tube. A block valve on the vessel shuts off the fluid flow. The second gland is screwed into the block valve and tightened to prevent leaks. The valve is opened and the P53 is pushed in through the valve until the active portion of the sensing rod is inside the vessel. A mechanical clamp locks the probe in position until a need to remove it occurs.

The gland follower seal design has been reliably used for over 30 years. The PTFE insulation jacket is a welded heavy extrusion and not a thin coating or merely glued in place.

## SPECIFICATIONS

### Working Pressure At 100°F (40°C):

-15 to 50 PSIG (-1 to 3 BAR) using manual insertion  
Up to 1500 PSIG (100 BAR) using Delta screw jack

### Working temperature: -460 to +400°F

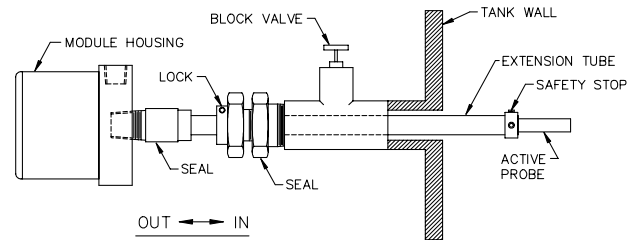
Insertion length: Up to 20 feet (6 meters)

Process connection: 1 ¼" MPT or 1 ½"/150# R.F. flange

Electronics module: Compatible with all models

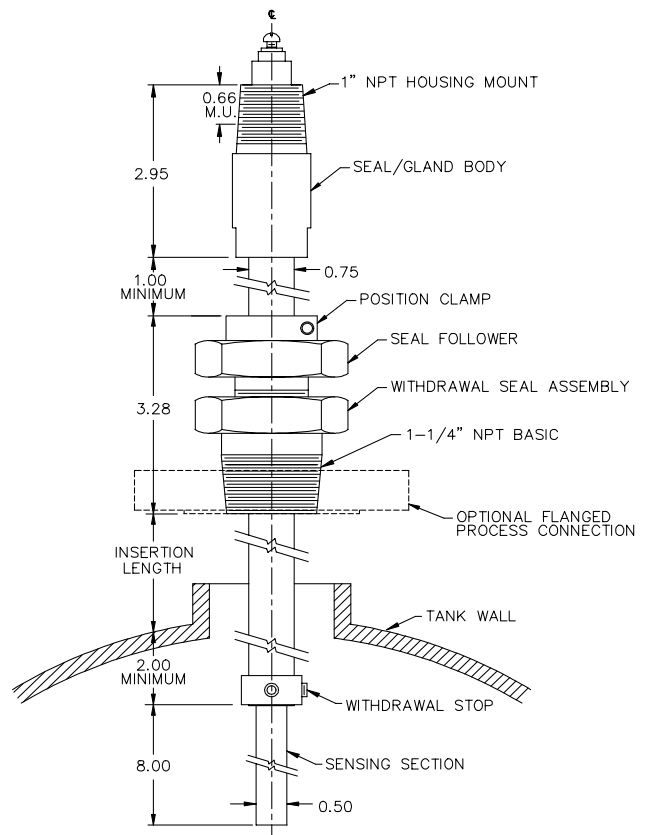
Process temperature sensing: Optional up to 250°F (122°C);  
signal over a second 4-20 mA loop

## INSTALLATION SCHEMATIC



P53 Side Inserted Through A Block Valve  
And Locked Into Place

## OUTLINE DIMENSIONS

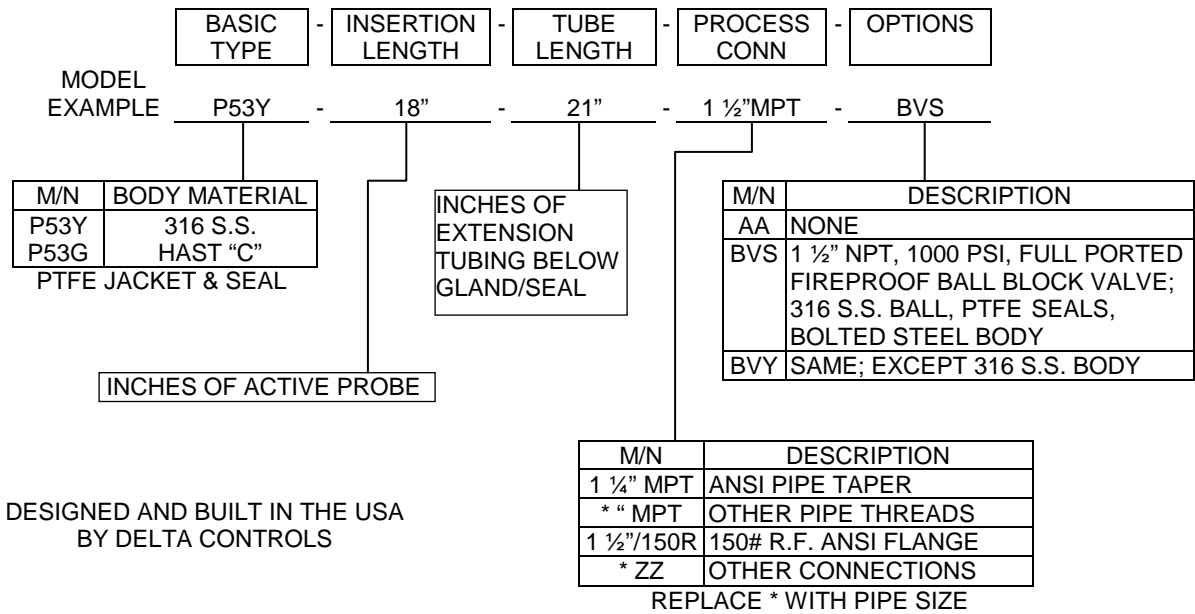


P53 Shown Top Mounted



**DELTA CONTROLS**  
CORPORATION

## MODEL NUMBERING SYSTEM

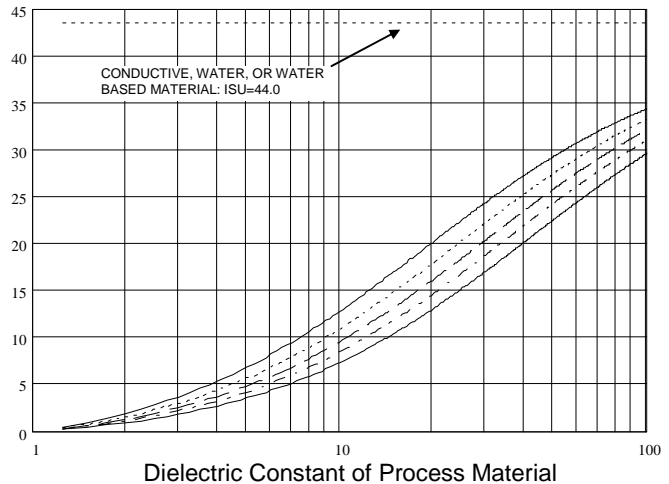
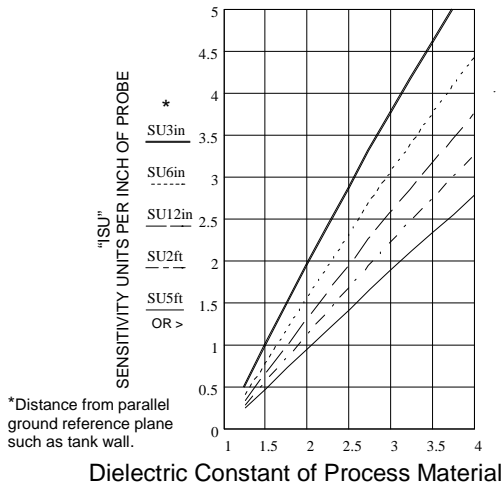


## ESTIMATING PROBE PERFORMANCE

**STEP #1** Determine "BSU", which is the total Sensing Unit equivalent value when no material is covering the sensing probe.

- |   |                |
|---|----------------|
| (A) BASIC S.U. DUE TO SEAL / BODY         | = 307.0        |
| (B) INCHES ACTIVE PROBE INSERTION X 2.0   | = _____        |
| (C) INCHES EXTENSION TUBE X 31.0          | = _____        |
| (D) INCHES CABLE FOR REMOTED MODULE X 4.5 | = _____        |
| <b>"BSU" TOTAL</b>                        | <b>= _____</b> |

**STEP #2** Determine "ISU", which is the quantity of Sensing Unit change caused by a 1 inch change in the elevation of the process material covering the sensing probe. "ISU" = Read from the graph below



**STEP #3** Insert "BSU" AND "ISU" (determined above) into the formulas shown in Application Note # PROB-198; "FORMULAS FOR MODELING AND PERFORMANCE TESTING". Verify that the selected probe and electronics module will meet the needs of the application and provide the expected results.



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