

# CTC AppNotes

A series of technical documents written by members of the CTC community

## Proximity Probe Improvements Incorporating Additional Design Enhancements in Proximity Probes to Solve Real Installation and Usage Issues

Many vibration analysts have come to depend on PRO products due to their excellent performance in the harsh conditions encountered in factories and many other industrial applications. Proximity probes have been one of PRO's newer product lines and over the last few years PRO has been engineering improvements in their design and manufacturing to provide additional durability for the probes offered by PRO. These improvements include modifications to the special cables used in proximity probes as well as to the design and manufacturing process of the probe tips.

The improved probe tip design incorporates several individual changes that vastly improve the mechanical strength and sealing properties of PRO probes. The new



Figure 1- CTC's improved PPS molded tip (shown prior to assembly) provides additional water ingress protection and stronger cable/tip connection strength.

process starts by completely over-molding the eddy current generating coil and the end of the probe cable with polyphenylene sulfide, replacing the prior epoxy filled tip design. Over-molding the cable and coil at the same time results in a much stronger cable/tip junction, capable of withstanding significantly higher forces. (See Figure 1) By removing threading on the interior of the probe case and creating an interference fit between the stainless steel case and the molded PPS tip, PRO probes now have an increased internal wall thicknesses. The PRO probe tips are epoxied into place in the cases.



Figure 2— Improved probe tip and case ready for final assembly. Note the o-ring at the back of the molded portion of the probe tip.

After the epoxy cures, this creates a very strong and water resistant mechanical lock for the tip. An o-ring seal is used on the rear of the probe case to seal any fluid migration into the probe from the back of the case. After the o-ring is pressed into the case, sealing between the case and cable, a flexible epoxy is used to further seal the back of the case. (See Figure 2)

One issue revealed from cables used in the field was that the cable's PTFE jacket could be damaged during installation through conduit and expose the cable shield, possibly



Figure 3— CTC's new FEP jacketed proximity probe cable reveals the thicker jacketing on the cables

leading to an increase in noise in the cable or in the worst cases, complete loss of signals. In order to combat this issue PRO's newly improved cable incorporates a thicker FEP jacket for improved abrasion resistance. (See Figure 3)

In summary, PRO's improvements provide a more durable overall probe and cable assembly with stronger probe cases, improved water resistance, more durable probe tips and improved connection strength between cable and coil.

If you have any questions or for further information please feel free to contact CTC directly via Email [techsupport@ctconline.com](mailto:techsupport@ctconline.com) or call 1-800-999-5290 in the US and Canada or +1-585-924-5900 internationally.