

TECHNICAL NOTE # 221

Re: MicroPoint Cable Installation, MC115

Date: August 3, 2007

There are three parts to the installation: Checking the Cable, Unreeling the Cable and Attaching the Cable.

!!WARNING!!

MicroPoint is a special transducer cable. It is not a piece of regular coaxial cable. **IT CAN BE EASILY DAMAGED!**

MECHANICAL DAMAGE can occur from over-bending, twisting, or stretching the cable. Be sure to follow the installation instructions carefully. If pulling the sense wires, do not exert more than 3 pounds of pressure on the wires or breakage may occur.

WATER DAMAGE is also a concern. Water entering the keyways (the grooves in the center core of the cable that contain the sense wires) will cause unpredictable results and will require replacing the cable. Keep the rubber end caps on at all times until ready to install. **Once the cable is terminated at the modules and units, the supplied dielectric grease must be applied.**

Checking the Cable

Check the MicroPoint Cable before unreeling it. The MicroPoint Cable comprises four conductors: the outer braid, the center conductor and two Sense Wires. It is normal to have the sense wires either sticking out or sucked in at the end of the cable. Using a MicroPoint stripping tool (the top part of a strain relief block) remove about two inches (51 mm) of jacket from both ends of the cable. Trim back the braid and foil as shown in Figure 1. Carefully remove the Mylar tape and expose the Sense Wires. Strip the core from the end of the center conductor. Separate the conductors so they are not shorted together.

With an ohmmeter, check the resistance between the shield and each of the three remaining conductors. The resistance should be greater than six megohms. A measurement of less than 100 ohms indicates a short between the conductors - check the other end of the Sensor Cable and insure the wires are not shorted. A measurement between 100 ohms and six megohms indicates that water has entered the cable. This **MUST** be replaced with new cable. When the cable has been checked, leave the cable as is and begin to unreel.

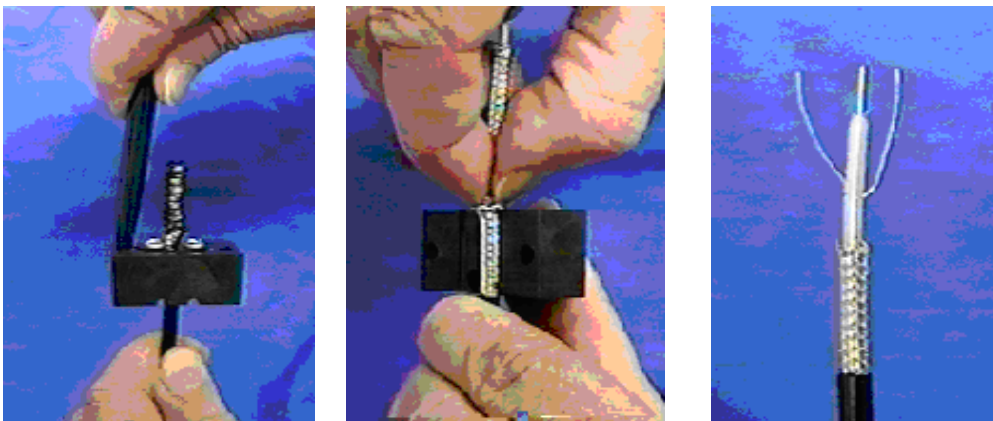


Figure 1: Preparing the MicroPoint Cable Ends

Unreeling the Cable

!!WARNING!!

The cable **MUST** be unreeled as described below.

Remember **the cable should be placed on the protected side of the fence**. If the requirement is to keep people out, then the cable should go on the inside of the perimeter fence. If the requirement is to keep people in, then the cable should be installed on the outside.

Place a four feet section of pipe through the center of the MicroPoint Cable reel. Be sure the ends of the cable, are not in a position where they will be damaged by the pipe.

Locate a position on the fence, where the cable must start. Secure the end of the cable to that point using the tie-wraps or have an assistant hold the cable at that location. Leave six feet (1.8m) of slack cable beyond the starting and ending point for connection to the electronics. **DO NOT** kink the cable by tying a knot in it.

Hold the pipe with one hand on each side of the reel. Walk backward along the fence line, allowing the cable to unreel and drop onto the ground. (The reel will spin on the pipe.) **DO NOT** allow the cable to dispense off the side of the reel! This will put a spiral twist into the sensor cable resulting in damage.

DO NOT put the cable reel on a stand and pull the cable off the reel. This puts unnecessary strain on the cable.

DO NOT allow the ends of the cable to get wet.

THE CABLE MUST be completely unreeled adjacent to the fence prior to mounting it on the fence!

Shaking the Cable while Pulling the Sense Wires

In order to relieve any binding that may have occurred during the reeling of the cable, the following steps must be performed on each end of the cable.

This part of the procedure requires two people.

CAUTION - When pulling the Sense Wires **DO NOT** exceed 3 pounds of pressure or the sense wires may break.

Once the cable is completely unreeled in a straight line on the ground, remove the tie-wraps that secured it to the fence (if used) and remove the end caps temporarily. Have one person hold the jacketed portion of the cable. Slowly pull one of the Sense Wires from the cable until you feel a slight resistance, then release the pressure to allow the Sense Wire to “spring back” into the cable. Repeat for the second Sense Wire. Do not be alarmed if all of the wire you have pulled does not return into the cable, it will be trimmed later. If more than 24 inches of Sense Wire is exposed, and you still haven’t felt resistance, stop pulling on that wire and immediately check the other end of the cable. If either of the sense wires has disappeared back into the cable do not continue pulling on that sense wire.

While still being held in the same manner as above gently reapply pressure to both Sense Wires until you feel a slight resistance on both. Maintain this pressure on the Sense Wires and have the second person begin to gently shake the cable from side to side while walking away from the first person. Be sure the hand holding the jacket, not the Sense Wires, is supporting the weight of the cable while the second person is shaking the cable. Stop shaking the cable when you have reached the mid-point along the length of the cable. Release the pressure on the Sense Wires to allow them to “spring back” into the cable. Do not be alarmed if all of the excess wire you have pulled does not return into the cable.

Repeat the above procedure on the opposite end of the cable. Once these steps have been completed, trim off the stripped ends (including any excess Sense Wire), replace the protective rubber end caps, and attach the MicroPoint cable to the fence.

Attaching the Cable

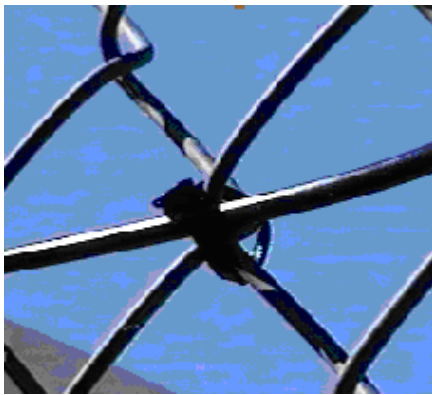
Leave at least six feet (1.8m) of slack on each end of the MicroPoint Cable. This extra cable will be used to make terminations and provide a drip loop. Keep the end caps on the cable ends throughout the cable installation process.

If the fence has a mid-rail, the MicroPoint Cable should be mounted below the mid-rail.

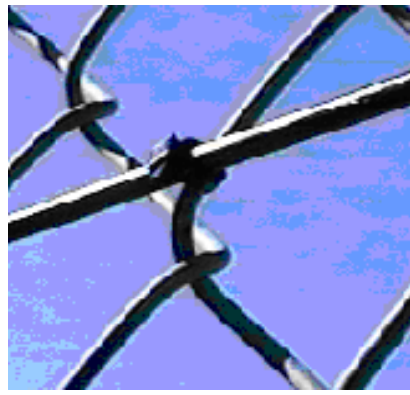
The tie-wraps must be placed through the fence fabric **perpendicular to the MicroPoint Cable**. The tie wrap goes around two (2) fence wires at their intersection. This prevents the tie-wraps from putting small kinks in the sensor cable at each tie point. **Check the fabric intersections for protrusions that may damage the cable.**

The tie-wraps must be placed approximately every nine inches (228mm) along the fence (typically every third fence diamond). Cut off the end of the tie wraps.

Reference the installation manual for additional information.



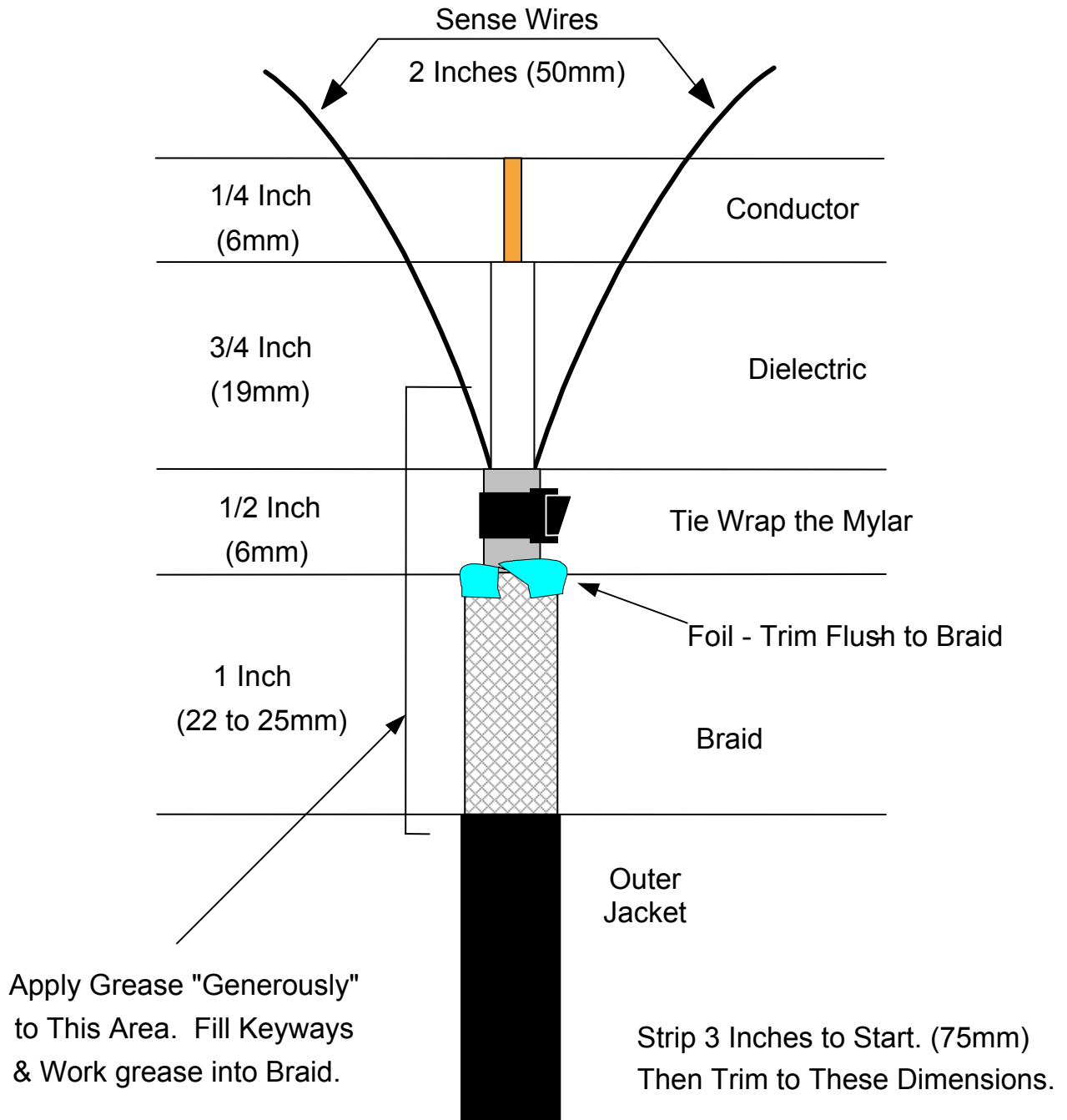
CORRECT



INCORRECT

Figure 2 - Tie Wrap Cable to Fence Fabric

Micropoint Cable Stripping Diagram



Refer to Section 13 of the Manual for Details