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ISO 9001 CERTIFIED

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Sealing Zippertubing Extruded Tracks

(ZT93-98-003)

All Zippertubing products that utilize the Z, R, S or M extruded closure tracks (except type FEP) can be permanently sealed after closure using the following methods. Under normal circumstances a properly closed Zippertubing track does not require post closure sealing. However, in some applications where an environmental or tamper proof seal is desired or extreme abuse is anticipated the post sealing process can insure that the track does not re-open inadvertently.

Method 1: ZT-TAPE (Preferred)

This method involves placing a 1-inch wide strip of Zippertubing's ZT-Tape-8235 down the center of the inter-locking track split line after the track has been closed. The ZT-Tape-8235 is a UL-510 recognized, fire retarded, Polyurethane film tape with an Acrylic adhesive backing. The adhesive is compatible with both PVC and PFR track materials and is easily applied. The tape sealing method provides additional closure strength, improves environmental tightness and is an environmentally friendly process. See Figure 1.

CAUTION

The ZT-Tape-8235 is highly elastic and must be applied to the track in a relaxed condition. Stretching the tape during installation can result in disbonding of the film from the adhesive if the assembly is stored or shipped in a coiled or tightly bent condition. See Figure 2.

Method 2: ZTQ Sealer (Obsolete Process! Not Recommended)

The ZTQ sealing process became obsolete in 1980's due to safety and environmental protection concerns. Many older military drawings still specify the use of the ZTQ Sealer procedure. If a drawing specifies the use of ZTQ Sealer, notify the responsible engineering authority and make them aware of this document and the recommendation to replace the ZTQ process with Method 1 prior to beginning any fabrication.

Background

The obsolete ZTQ Sealer process consists of applying a highly volatile solvent into the closed track inter-lock mechanism. The solvent causes the surface of the plastic track halves to melt. As the volatile solvent flashes off into the

atmosphere the soft, semi-molten plastic re-solidifies and becomes fused together. Because the word “sealer” was used to describe this material and process, many engineers incorrectly assumed that the process made the track environmentally tight or waterproof. This is not the case! The sealer (solvent) simply spot bonded the track together chemically so that it could not be re-opened. When using this process there is no way to verify that the entire track length is 100 percent fused. As a result, there is no way to assure that a ZTQ sealed track is 100 percent environmentally tight.

Risk Issues:

The chemical solvents required to perform this sealing process are currently available from commercial chemical supply houses and the procedure can still be performed at the customer’s own risk. It is extremely important to fully understand these risks prior to utilizing this obsolete process.

#1: The solvent is an extremely low viscosity liquid that makes determining how much is applied to the track very difficult to control. It is very important not to apply too much of the solvent to the track. Too much solvent will cause migration through the track inter-lock mechanism and direct contact with the primary wiring insulation. The solvent can melt many primary wire insulation types and thus create the potential for a short-circuit condition or a degraded insulation which may cause reduced service life. Since the wiring cannot be examined once the sealing process has been performed, there is no way to know if any damage has occurred. On the other hand, if too little solvent is applied not enough track will sufficiently fuse together to provide a significant improvement in closure strength. Process control is very marginal when using this method.

#2: The solvent materials used to melt the track material are extremely flammable in there liquid state. This is can be a potentially dangerous situation in wire harness fabrication areas. Many of the standard wire harnessing tools are electrically powered and many generate heat. Soldering irons, hot air heat guns and power tools all provide potential ignition sources. In addition, special storage containers and lockers within the facility will be required to safely handle these materials.

#3: The solvent materials work by evaporating away into the atmosphere relatively quickly. This can be a potential problem in regions that have strict environmental rules and regulations against the amounts of materials allowed to escape into the atmosphere. Customer’s considering using this process should verify the local restrictions and confirm that they are in compliance with all environmental and safety regulations.

The following procedure describes the historic method of performing the ZTQ Sealer process. The Zippertubing Company does not recommend or encourage the use of the ZTQ Sealer procedure and anyone performing this technique does so at there own risk!

Material:

There are two solvent materials that were used to chemically weld (seal) Zippertubing tracks together. Both of these materials are still available from commercial chemical supply houses by their chemical names. Always follow the material suppliers handling, safety precautions and shelf life recommendations. These products are:

1) Tetrahydrofuran (THF) – 1 to 3 minute cure time

2) Cyclohexanone - 4 to 6 hour cure time

The solvent material must be transferred into small (6 oz. typical) metal containers prior to attempting to seal the Zippertubing jackets. The small containers should have a screw on metal cap and a screw on applicator tip. The applicator tip shall accept a screw on, hollow needle tip (#18 gage) to restrict the flow of the solvent. The applicator tip should have a screw on cap capable of replacing the needle and resealing the container when not in use. See Figure 3.

Procedure:

1) Close the Zippertubing jacket using any ZT tooling required.

2) Install the applicator tip and needle on dispensing container.

3) Lift one end of the installed Zippertubing assembly about 10-15 degrees.

4) Rotate the jacket so the track inter-lock joint faces up and the separation crack is slightly off the 12 o'clock position. This will allow gravity to cause the solvent to flow down into the joint. (See Figure 4.).

5) Position the applicator needle near the crack at the elevated end. Do not push the needle into the crack!

6) Begin application of the solvent by tipping the container up and allowing the solvent it to flow out the needle (do not squeeze the container). Move the needle down the track providing a smooth even flow.

   Note: Polyurethane (type PFR) jackets will not fuse as quickly as do PVC material tracks. It is recommended that the process be repeated (steps 3 to 6) when using the PFR material.

7) Continue the process over the entire assembly length.

8) Allow finished assemblies to cure for the minimum time period specified for the specific solvent type used. Do not bend or flex the assembly until it sealed joint is fully cured.

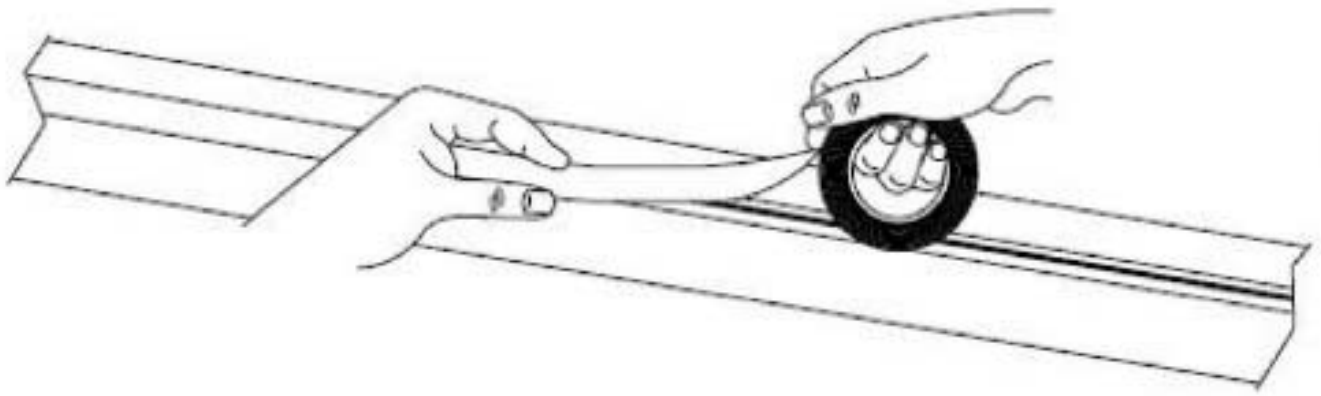

FIGURE 1. TAPE SEALING OF TRACK

Figure 2. Stretched Tape Delaminating

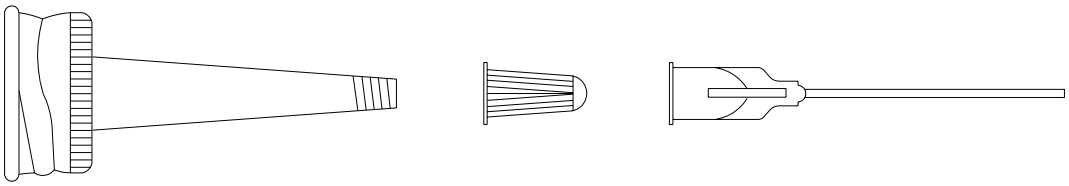

FIGURE 3. APPLICATOR, CAP & NEEDLE

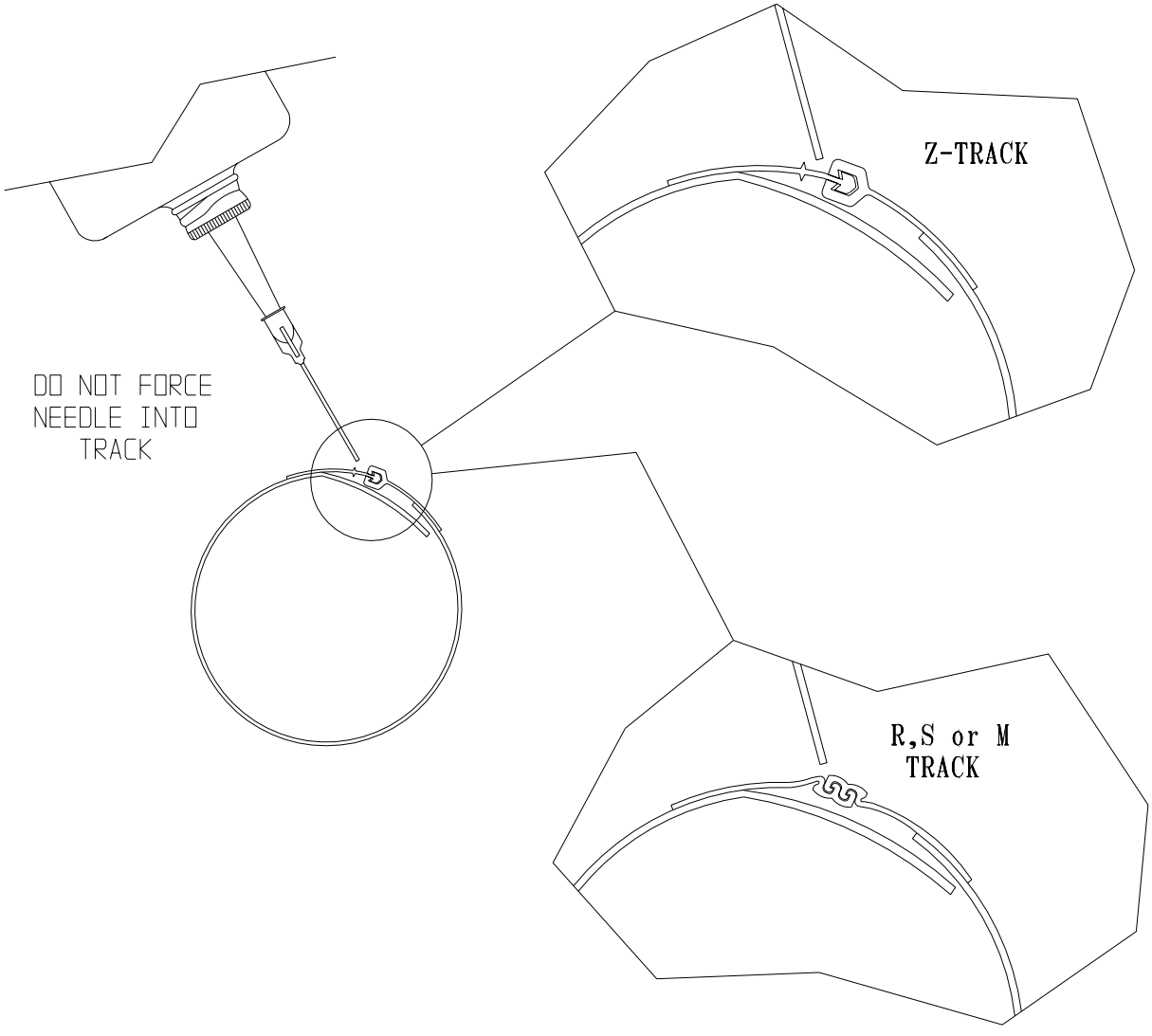

FIGURE 4. SOLVENT APPLICATION LOCATION