



INSTALLATION INSTRUCTIONS

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⚠ WARNING:

Cancer and Reproductive Harm | www.P65Warnings.ca.gov

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Z-Shield® User Guide

ABOUT ZIPPERTUBING®

Since 1957, Zippertubing® has been solving every type of cable bundling, heat-shielding, EMI-shielding, specialized heat shrink and marine fairing component challenge. From under the sea to outer space, we have prototyped, manufactured, and shipped custom-engineered solutions for every type of industry. We specialize in creating unique custom solutions in-house from beginning to end, so you feel confident you will receive the perfect product every time.

No matter the size, shape, standards, or specifications, Zippertubing® will abide by any requirements to create a custom solution. If the project has material restrictions or weight limitations, we will create a solution to fit your unique application needs, rather than make your application fit the product. We will draw up, prototype, and refine to ensure the solution is exceeding your expectations.



TABLE OF CONTENTS

INTRODUCTION	2
INSTALLATION	2
TERMINATION GUIDE	4

INTRODUCTION

Z-Shield® is a wrap-around, EMI-shielded jacket made of fire-retardant polyurethane film, any of our EMI shielding cloths or foils and an adhesive closure. This combination provides excellent electromagnetic shielding of wires and cables in applications requiring outstanding flexibility, flame retardancy and good dielectric strength.

Extremely useful in electronics applications where space limitations may require a thin and flexible shielding. Z-Shield® can be configured to fit most round, flat or rectangular cable configurations and is available with or without a drain wire installed.

INSTALLATION

The following procedure is recommended when installing Zippertubing's Z-Shield® products around cable assemblies.

Note: Prior to closing this product around any cable assembly, a means of providing an electrical ground termination to the shield shall be determined by in-house engineering. A ground termination methodology must be defined and installed prior to closing the shielding around a cable.

STEP 01

Personnel handling the Z-Shield® product should wear gloves or finger cots to avoid contaminating the bonding surfaces with body oils. Gloves will also eliminate any potential skin irritation from the nickel-plated polyester fabric in standard Z-Shield®.

STEP 02

The outer polyurethane jacket material should be cleaned prior to installation using a rag and isopropyl alcohol (IPA). Follow safety and process procedures for handling solvents. Ensure that the jacket surface is clean and dry prior to closing.

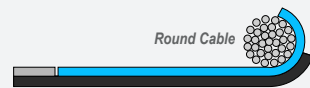
STEP 03

Lay the Z-Shield® jacket on a smooth, flat surface with the shield surface facing up. Lay the cable assembly on top of the shielding material. Position the cable on the jacket material as shown in the examples.

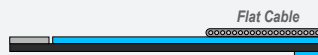
Z-Shield® (Cloths)



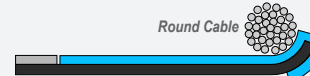
Round Cable



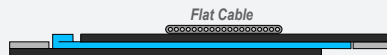
Z-Shield® (Foil)



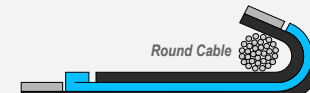
Round Cable



Z-Shield® (2L)



Round Cable



STEP 04

Hold the cable and the jacket together and wrap the jacket around the cable assembly. It may be advantageous to have an assistant help hold and pre-position the materials while the operator seals it during actual installation.

Verify that the exposed adhesive will land on the polyurethane film jacket and not the shield material. If the adhesive aligns with the shield material, the cable diameter is too large for the jacket. Verify that the correct jacket size was selected and the cable bundle size has not increased since the jacket was ordered.

STEP 05

Prior to removing the adhesive release liner, be sure that the jacket is positioned so that the adhesive seam line will be parallel to the cable.

Peel back the paper release liner a few inches only, pull the jacket so that it is slightly snug on the cable and press the exposed adhesive surface to the clean jacket surface.

Note: Adhesive should never contact the shielding material.



STEP 06

Continue to work down the cable assembly, closing only short sections at a time. Your assistant should ensure that the jacket and cable assembly are aligned properly. Trying to close too large a length of jacket at one time will result in wrinkles appearing along the seam line.

Once the seam has been closed completely, use a smooth roller or mandrel to apply uniform pressure to the seam line and work out any wrinkles.

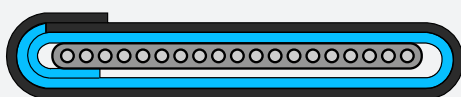
STEP 07

Verify the installation is completed:

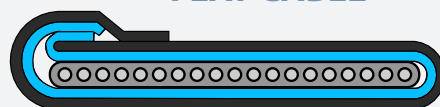
1. The smooth polyurethane film is on the outside
2. The shielding material is facing the cable insulation (except Z-Shield® (2L) where a jacket is on both sides)
3. The shield material is overlapped and contacts itself
4. The adhesive mass landed on the smooth jacket material

Below are cross sectional views of properly configured closures

FLAT CABLE



Z-Shield® (Cloths)



Z-Shield® (Foil)



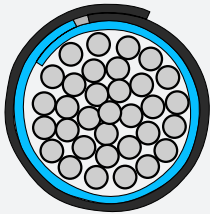
Z-Shield® (2L)

STEP

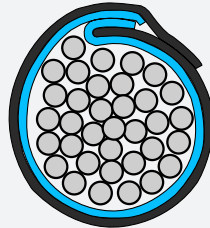
07
(cont.)

Below are cross sectional views of properly configured closures

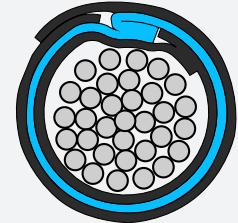
ROUND CABLE



Z-Shield® (Cloths)



Z-Shield® (Foils)



Z-Shield® (2L)

TERMINATION GUIDE

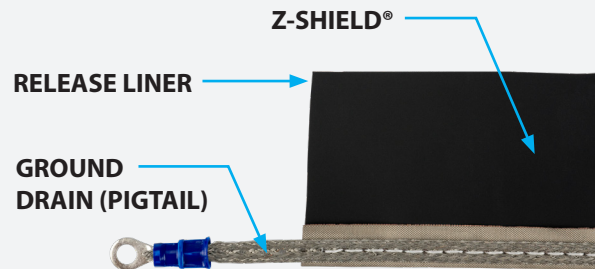
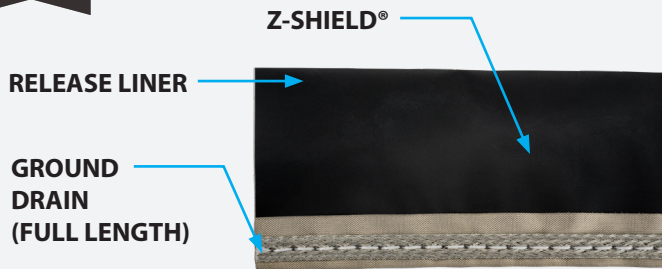
This procedure describes generic methods for electrically terminating Zippertubing's Z-Shield® products which utilize metal-plated woven and non-woven fabrics, such as the EMI shield. The following methods illustrate common termination methods which have been used with success. All in-house engineering requirements should be reviewed prior to making any installation. All methods described have been found to provide good electrical performance; however, Zippertubing's engineering department is available to offer guidance and recommendations for shield termination for specific applications.

STEP

01

Sewn-In Ground Lead (Recommended)

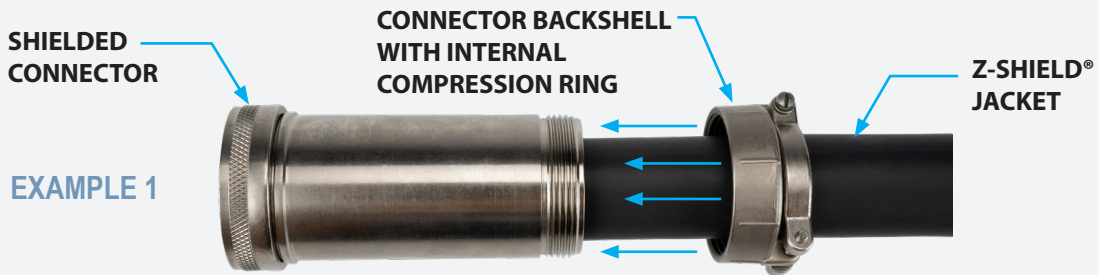
Z-Shield® products can be ordered with a 15 AWG, flat ground strap sewn to the shield along the jackets entire length or short pigtails can be attached at the ends per customer specifications. Terminal hardware and ground-strap insulation can also be supplied upon request.



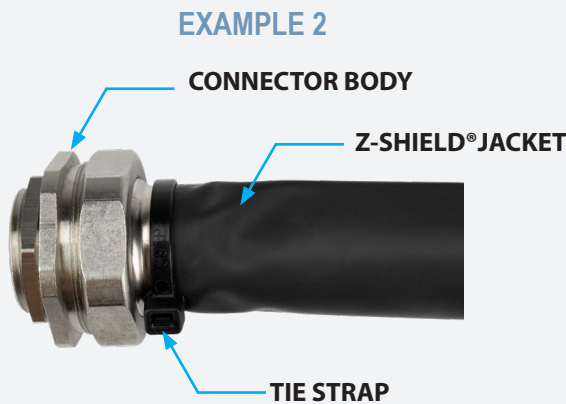
STEP
02

Connector Termination

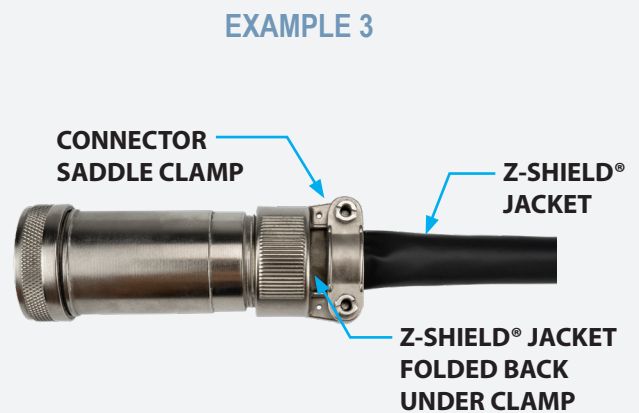
There are too many connector and backshell hardware variations to give specific details as to exactly how Z-Shield® should be terminated to a particular connector. The following is a general description of how the shield might be terminated given the proper hardware size. **Example 1** shows the Z-Shield® closed and compressed under the shield compression ring of an EMI shielded connector. In **Example 2**, the Z-Shield® is simply wrapped around the back of the connector body and held in place using a band clamp or cable tie. In **Example 3**, the Z-Shield® has been folded back onto itself and compressed in a saddle clamp.



EXAMPLE 1



EXAMPLE 2



EXAMPLE 3

Connector Termination (continued)

When folding back the Z-Shield® jacket, it is possible to slit the material using scissors to create two flat tongues which will ease the installation.

Note: Ensure that any connector bonding surfaces are free of non-conductive finishes that might create a high resistance joint.



CAUTION: Under extremely high-compression forces, the adhesive backing on the polyurethane insulating film could be driven through the conductive shield material. This could result in a high-resistance electrical bond joint. To ensure that the bond joint does not change under this condition, it is recommended that the bonding surfaces of the Z-Shield® conductive cloth be coated with a thin coat of electrically conductive epoxy. This material will block any non-conductive adhesive from bleeding through during compression.

STEP
03

Conductive Epoxy Bonded Ground Lead

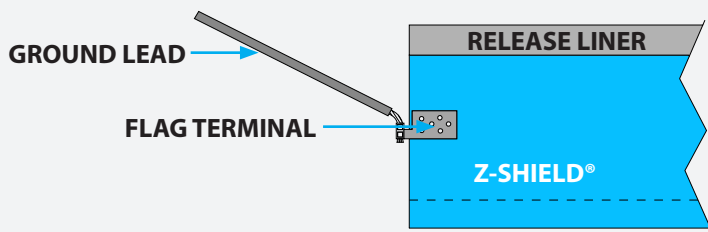
It is possible to bond a ground lead to the nickel-plated Z-Shield® fabrics. Use a nickel or silver loaded epoxy. A woven, tin-plated copper ground strap is best since it provides good bonding surface area and is porous like the Z-Shield® fabric. Follow the manufacturer's storage, mixing and curing instructions. If heat curing is required do not exceed 100 °C.

STEP
04

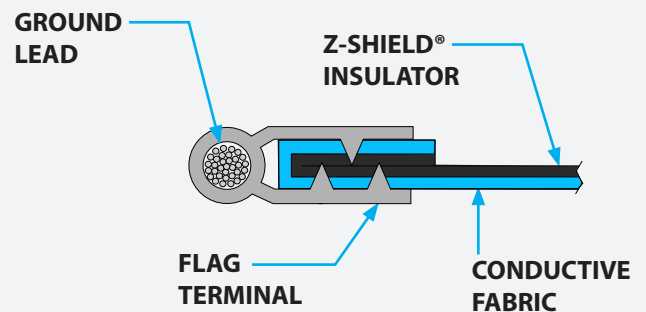
Crimped Flag Terminal Lead

Ground termination can be made using crimped flag terminals which have serrated teeth and pre-installed ground lead wire. These terminals are designed for terminating foil type EMI shields but work equally well with Z-Shield® products. One example of this type of terminal are "Termini-Foil" brand terminals from AMP Corporation. The Z-Shield® jacket should be folded back onto itself so as to create a metallic surface contact with both sides of the flag terminal. It also fills the terminal jaws better when doubled. Care should be taken to ensure that no strain is placed on the terminal lead which might cause the Z-Shield® jacket to tear.

TERMINAL INSTALLATION



SHIELD/TERMINAL X.S. VIEW




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