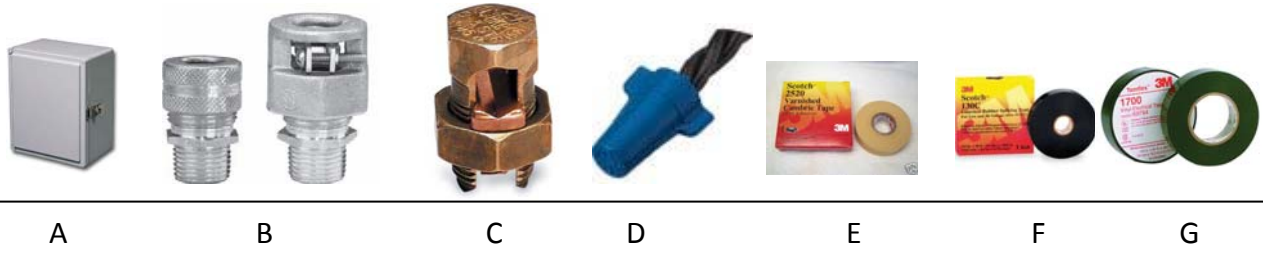


## Connection Box Instructions and Connection Box Supplies List # CB1033 (Bill of Materials)

For use with ZERO GROUND HFES Cable assembly Part # ZH1033  
(3/4" outer component) P07-KA070024-MSHA

<b>Connection Box Supplies List # CB1033 (Bill of Materials)</b>			
<b>Manufacturer Name #</b>	<b>Manufacturer Part</b>	<b>Manufacturer Website</b>	<b>Manufacturer Telephone</b>
<b>Junction Box, NEMA Type 4X, non-metallic (Illustration A)</b>			
Stahlin	CL1311x*	<a href="http://www.stahlin.com">www.stahlin.com</a>	616-794-0700
CL = Classic Series enclosures * x = selected closure configuration			
<b>Industrial Cord Grip, choice of compression or mechanical nut (Illustration B)</b>			
AmphenolPyle	DBZM-4714	<a href="http://www.amphenol-industrial.com">www.amphenol-industrial.com</a>	888-364-9011
AmphenolPyle	or DBZM-4714-M	<a href="http://www.amphenol-industrial.com">www.amphenol-industrial.com</a>	888-364-9011
<b>Split Bolt Connector for conductor and spiral shield connection (Illustration C)</b>			
IlSCO	SK-10	<a href="http://www.ilsco.com">www.ilsco.com</a>	513-533-6200
<b>Wing Nut Wire Connector for braid connection (Illustration D)</b>			
Ideal	454	<a href="http://www.ideal.com">www.ideal.com</a>	800-435-0705
<b>Electrical Tape, Cambric, Inner Layer, see Note 2 (Illustration E)</b>			
3M	2520	<a href="http://www.3m.com">www.3m.com</a>	888-364-3577
<b>Electrical Tape, Rubber, Middle Layer, see Note 2 (Illustration F)</b>			
3M	130C	<a href="http://www.3m.com">www.3m.com</a>	888-364-3577
<b>Electrical Tape, PVC/Vinyl, Outer Layer, see Note 2 (Illustration G)</b>			
3M	1700P	<a href="http://www.3m.com">www.3m.com</a>	888-364-3577



## HFES Connection Box Instructions

### General information:

- The HFES cable assembly is comprised of a cable (inner component) within a flexible metallic tube (outer component), which must be used together.
- P07-KA070024-MSHA approval requires Zero Ground marked cable and flexible metallic tube components. No substitutions allowed.
- The 07-KA070024-MSHA HFES System is not to be used on permissible equipment.
- The Zero Ground HFES System is not to be used where permissible equipment is required.
- The Zero Ground HFES Connection Box is not to be used where permissible equipment is required.

**PAGE 1:** Connection Box Supplies List# CB1033 (Bill of Materials)

(also at [www.zero-ground.com/msha.php](http://www.zero-ground.com/msha.php))

Manufacturers and part numbers given are examples of acceptable parts.

**PAGES 2-4:** Preparation steps for cable connection

**PAGE 5:** Termination drawing P07-KA070024-MSHA

## HFES® Cable Assembly Preparation

The following set of instructions is to be applied to **each end** of the assembly  
Inner Component (Cable) + Outer Component (Flexible Metallic Tube)

1. If repairing a damaged assembly, remove the damaged section using crosswise cuts entirely through both assembly components.
2. Remove 4" of outer tube jacket, being careful to minimize damage to braid between jacket and metallic core. (pipe cutter and utility knife recommended)  
SEE Figure 1 and 2.



Figure 1



Figure 2

3. Pull tube braid back to jacket edge and mark tube core 2" from edge. Using pliers, spiral tube end out until you reach the marked section of tube. SEE Figure 3.



Figure 3



Figure 4

4. Using aviation tin snips, cut and de-burr metal core. See Figure 4.
5. A flexible conduit cord grip is used to secure the tube to the enclosure, and provides strain relief. (See Page 1, Illustration B, and HFES® connection drawing on page 5.)

HFES Assembly part number	Inner Component Cable Conductors	Outer Component Trade Size	Cord Grip HUB size	Panel Hole size	Connection Box Supplies List
<b>ZH1033</b>	<b>10.5 AWG, 3 Conductor</b>	<b>3/4"</b>	<b>1 1/4"</b>	<b>1 3/4"</b>	<b>CB1033</b>

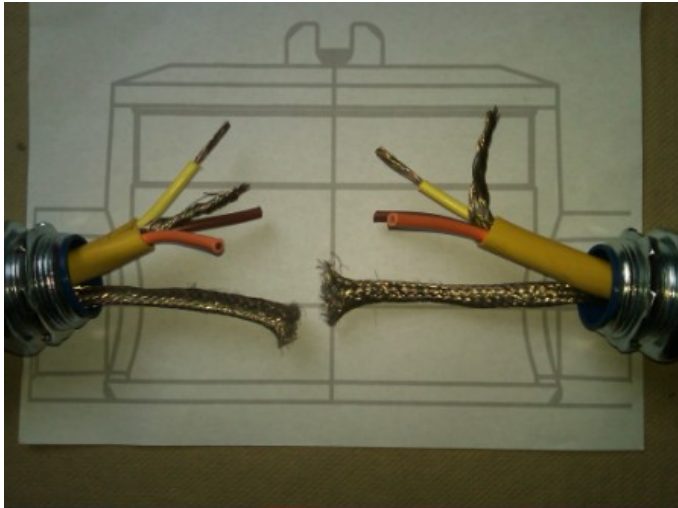
- Consult above chart for cord grip trade size and panel knockout hole dimensions for the HFES part number selected.
- Position the cord grip through a knockout hole in the enclosure.
- Insert the tube through the cord grip so that the prepared end is extending from cord grip inside the enclosure. The cord grip is tightened using torque per manufacturer's data sheet or UL requirements. Tighten the locknut inside the enclosure. Tighten the back compression or mechanical nut, compressing the tapered polymeric gland ring over the jacket and core of the tube.

For use with ZERO GROUND type HFES cable assemblies  
per P07-KA070024-MSHA

Cable Assembly Part # ZH1033      Assembly size: 3/4" (US Trade size)

Connection Box Supplies List# CB1033      Rating: 10 HP @ 33 Amps

6. Prepare the cut cable ends. All LIKE cable elements MUST be spliced together.



Insulated Conductors:     **Match the insulation colors** (color code may differ from illustration)

Spiral strands (uninsulated):  
Gather the segmented spiral shield strands on each cable and twist into a single bundle.  
Connect **spiral shield bundle to spiral shield bundle**

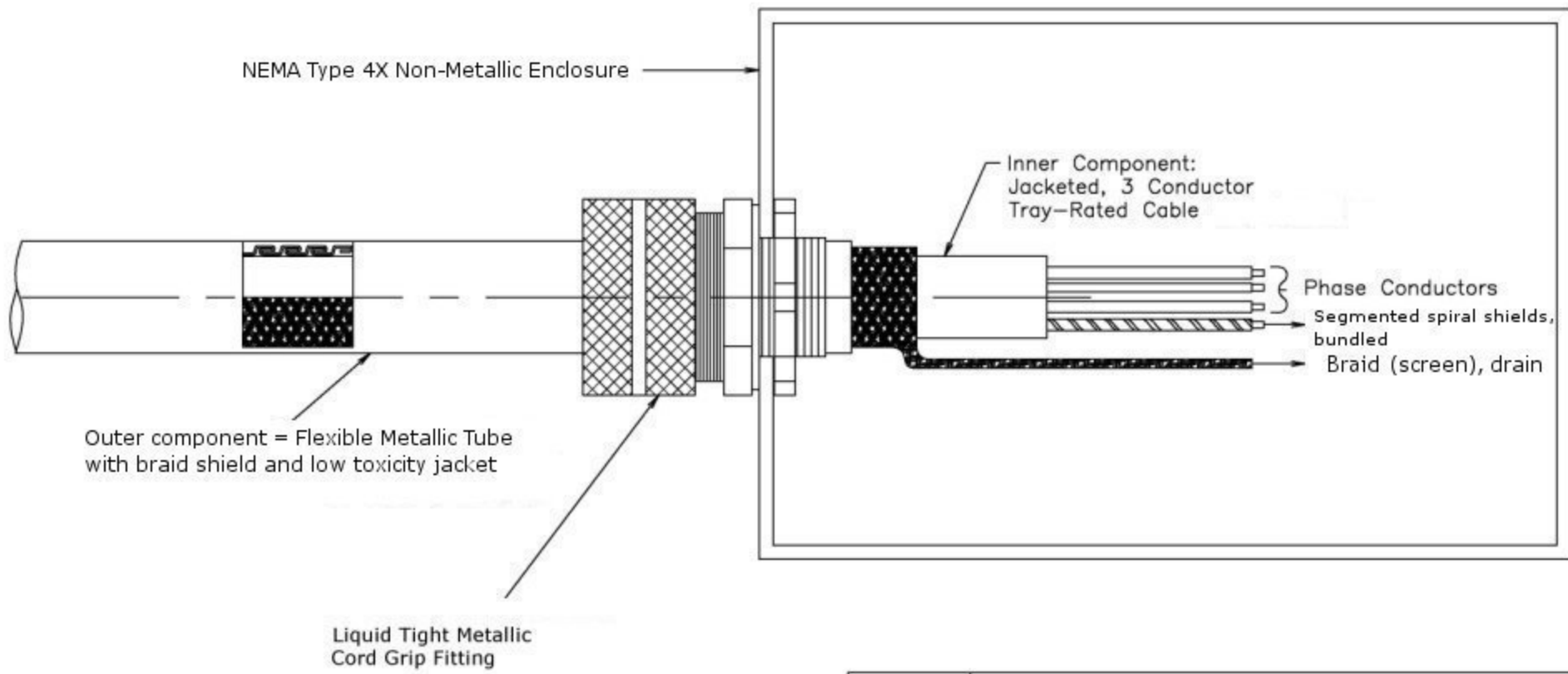
Braid (Screen): Form braid/screen tail on each cut cable.   Connect **braid/screen tail to braid/screen tail**

7. Make each connection using split bolts. (See page 1, Illustration C)  
Wire wing nuts may be used to connect braid/screen tail to braid/screen tail ONLY. (See page 1, Illustration D)
8. Wrap split bolt connections with series of three tapes, in order per connection box supplies list.  
**Cambric first** for dielectric protection (See page 1, Illustration E)  
**Rubber second** for cushioning inside enclosure (See page 1, Illustration F)  
**PVC/Vinyl third** for overwrap (See page 1, Illustration G)

For use with ZERO GROUND type HFES cable assemblies  
per P07-KA070024-MSHA

Cable Assembly Part # ZH1033                      Assembly size: 3/4" (US Trade size)

Connection Box Supplies List# CB1033    Rating: 10 HP @ 33 Amps



Rev 1 Add Enclosure detail 07/11 LS

Rev #	Description	Date	By	App.
1	Add Enclosure detail	07/11	LS	

Tolerance Unless Otherwise Noted	<h1>Zero Ground</h1>		
Fraction: +/- 1/64"	H.F.E.S. Termination Detail		Drawn By: LLD Scale: NONE
			Approved By: MP
Angle: +/- 1°	Drawing Number		Rev Level
	P07-KA070024-MSHA		1 Page 5 of 5
			Date Drawn: 04/06/09