

Get a Grip!

By: Carol Everett Oliver, RCDD and Alfred Flores, RCDD
Berk-Tek, a Nexans Company



Figure 1



Figure 2



Figure 3

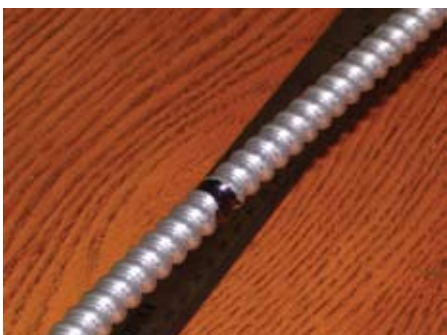


Figure 4

In the February issue of *CBM*, we discussed the benefits of armored fiber optic cable – including space and cost savings. Interlocking armor cable was developed to be installed indoors in both plenum and riser spaces without the use of conduit. Soon after, indoor/outdoor versions became available. Armored cable is robust, but yet special care and consideration must be taken to properly install the cable. Failure to do so may damage the cable or optical fibers.

As with all cable installations, following manufacturers' guidelines will help ensure cable integrity and stated performance. Make sure you are aware of the tensile load, which is usually found on the cable specification document. The tensile load during installation is the maximum pull load that the cable can sustain while using a properly installed pulling grip. The cable diameter also found in the cable specification sheet, will dictate the size of the pulling grip required.

This article will detail the steps for successfully prepping interlocking-armor cable prior to installation. In this scenario, Armor-

Tek™, manufactured by Berk-Tek, is the model. Before starting, make sure all you have all the proper tools (Figure 1):

- Box cutter (with hook blades) and a diagonal cutter
- Flexible metal tubing cutter (Roto-Split tool model number RF-120B recommended)
- Kellem's Grip or equivalent (see Table 1)
- Kevlar shears and a coaxial stripper
- Needle nose pliers
- Friction tape (3M Temflex #1755 or equivalent) and vinyl electrical tape
- Permanent marker
- Workman's gloves

GET A GRIP

Using Table 1, select the proper grip size. Slide the mesh grip over the end of the

TABLE 1. OUTER CABLE DIAMETER - KELLEMS GRIP SELECTION

CABLE DIAMETER		KELLEMS P/N
INCHES	MM	
0.10 - 0.22	2.5 - 5.6	033291193
0.22 - 0.35	5.3 - 9.0	033291194
0.36 - 0.48	9.1 - 12.2	033291195
0.49 - 0.61	12.3 - 15.5	033291196
0.62 - 0.73	15.6 - 18.5	033291197
0.74 - 0.87	18.6 - 22.1	033291198
0.88 - 1.0	22.2 - 25.4	033291199

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TABLE 2. SHEATH REMOVAL, EXPOSED ARMOR, EXPOSED CABLE

Mesh Length		Column 1		Column 2		Column 3	
		Sheath Removal		Exposed Armor		Exposed Cable	
in.	cm	in.	cm	in.	cm	in.	cm
10	25	12	31	6	15	6	15
14	36	16	41	7	18	9	23
19	48	21	53	8	20	13	33
21	53	23	59	10	25	13	33
28	71	30	76	12	30	18	46

cable, leaving at least two feet of exposed cable, which will be used with the grip to make a sufficient pulling mechanism (Figure 2). Your grip will have a mesh length of 10-28 inches.

Match the mesh length to Table 2. Columns 1, 2 and 3 provide the length of exposed sheath, armor and inner sheath/cable in the prepping procedures.

First remove the outer sheath using a box cutter to the specified length (Figure 3). With the permanent marker, measure the distance, as specified in Column 2, on the armoring from the removed jacket and mark it (Figure 4). Line up the holding pin of the Roto-Split tool to that mark and cut the armor (per the tool's instructions). See Figure 5. Remove the armor to expose the inner jacket, also known as the core optical cable.

EXPOSE AND COVER UP

Most cables come with a ripcord to make it easier to pull back and expose the optical cable from the inner sheath. Exposed cable will allow the cable strength yarns (aramid or fiberglass) to be coupled (stuck to) to the pulling grip mechanism and strengthen the operation. Using the box cutter, carefully make a ring cut around the optical cable diameter about one inch from the end of the cable and remove the jacket to locate the ripcord (Figure 6). Wrap the ripcord around needle nose pliers for

a firm grip and pull downward towards the armor, leaving 1/2" exposed jacket beyond the armor. Cut and remove the inner jacket using shears.

If the cable does not have a ripcord, use a coaxial stripper to make ring cuts every six inches and remove each segment until 1/2" from the exposed armor. Secure the end of the Kevlar™, or aramid yarn, at the tip with friction tape (Figure 7).

Starting at the beginning of the exposed armor, overlap layers of friction tape tightly all the way over the length of the exposed armor, fibers, and strength members out to the tip (Figure 8). Tug to make sure that

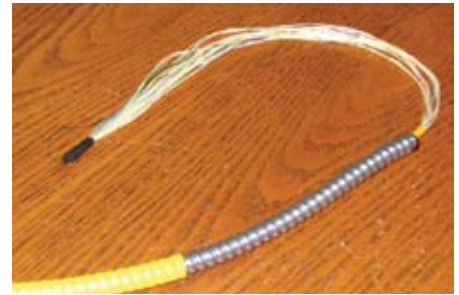


Figure 7



Figure 8



Figure 9



Figure 5



Figure 10



Figure 6



Figure 11



Figure 12

the exposed armor and cable are secure (Figure 9).

LAST ONE FOR THE GRIPPER

Slide the Kellems grip towards the tip of the cable and center the tip of the taped cable within the basket at the tip of the wire mesh – located right before the looping assembly (Figure 10). With a firm hold on both the cable and grip, smooth the mesh towards the outer sheath of the cable.

With vinyl electrical tape start wrapping tightly around the outer sheath, approximately two inches before the coupled friction tape area. (Figure 11) Continue taping securely over the outer cable sheath and continue tightly taping towards the pulling loop mechanism. Properly applied vinyl tape will show the ribbing of the armor and the wire mesh. Stop at basket assembly and securely tape the end (Figure 12). You are now ready to install the cable, easily and confidently. ■

“Reel Time” addresses cable topics including both copper and fiber constructions, applications, installation practices and standards updates. If you have a particular cable issue, please send an E-mail to: carol.oliver@nexans.com and we will feature the solution in an upcoming issue