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# SP-F02-018 LITEPIPE™ Ribbon - Plenum Cable Preparation, Issue 3

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## 1.0 General

This procedure describes the standard techniques for preparing LITEPIPE™ Ribbon - Plenum fiber optic cable for placing and use in high density requirements where conduit space is limited. This cable passes the NFPA 262 burn test as required by the National Electrical Code (NEC) Section 770, and thus carries the Optical Fiber Non-Conductvie Plenum (OFNP) rating. This cable also meets or exceeds the plenum cable requirements of ICEA 596 and Bellcore's GR-4009-CORE, Issue 1. This product utilizes the LITEPIPE™ tube, a single central buffer tube designed to accommodate up to eighteen 24 fiber ribbons. Two layers of dielectric strength elements are stranded around the central tube to provide tensile strength. A flame retardant polyvinyl chloride jacket then covers the cable core.

## 2.0 Safety Precautions

**2.1** The use of safety equipment is strongly recommended during the cable preparation procedure. This includes the use of protective clothing and eyewear.

**2.2** To protect the hands, gloves are recommended when handling the fiberglass strength elements.

## 3.0 Reference Documents

Sumitomo Recommended Procedures:

**SP-F01-002** *Installing Cable Pulling Grip*
**SP-F01-002A** *Grip Addendum for Ribbon Cables*
**SP-F02-007** *Ribbon Access Procedures*

## 4.0 Tools Required

The following tools and materials are required to complete this procedure.

1. Tape Measure
2. Utility Knife
3. Electrician's Scissors
4. Marking Pen
5. Buffer Tube Remover / Coaxial Cutter
6. Pliers
7. Gloves
8. Safety Glasses
9. Buffer Tube Slitter

## 5.0 Sheath Removal

### 5.1 End Access

This procedure involves opening a window in the sheath at the desired distance from the cable end, exposing the central tube, ring cutting the central tube and then sliding the tube, strength elements and jacket off to expose the ribbon fibers. Refer to step by step instructions below.

**5.1.1** Measure and mark the appropriate length of cable to be cleaned back for the particular application (splicing: typically 8 feet).

**5.1.2** With the utility knife, ring cut the jacket once at the mark and again approximately 12 inches towards the cable end.

**5.1.3** Using a sharp utility knife, make two longitudinal cuts along the sheath 180° apart between the two ring cuts. Using pliers, remove the two jacket halves between the ring cuts.

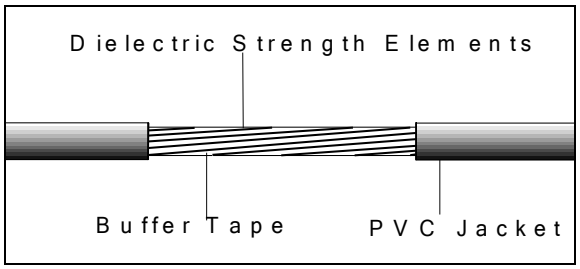


***Figure 1***

**5.1.4** Midway along the exposed area, cut all of the dielectric strength elements with electrician's scissors. If required, be sure to leave enough rigid strength elements on the inside end for fixing in a closure or termination box (refer to appropriate procedures for necessary lengths).

**5.1.5** Cut and remove all material to expose the inner buffer tube. Be careful not to nick the inner tube at this point.

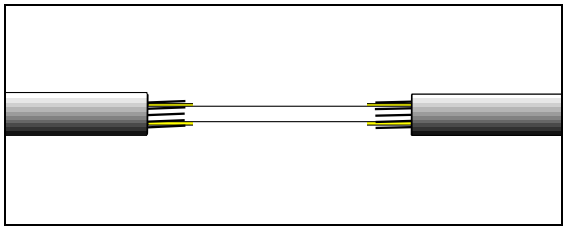

***Figure 2***

**5.1.6** Since this cable construction contains no metallic elements, grounding is not necessary.

**5.1.7** Using a standard buffer tube remover or coaxial cutter, ring cut the central tube leaving the appropriate length at the cable end (typically 2-4 inches). Score the tube, cutting ~3/4 of the way through the plastic. Avoid cutting completely through the plastic as this may damage the ribbon fibers. Bend the tube gently at the score to cleanly separate the tube.

**5.1.8** Carefully slide the tube, strength elements and jacket off to expose the optical ribbon fibers.

**Note:** For short cable spans mark the ribbon stack and note its' position.

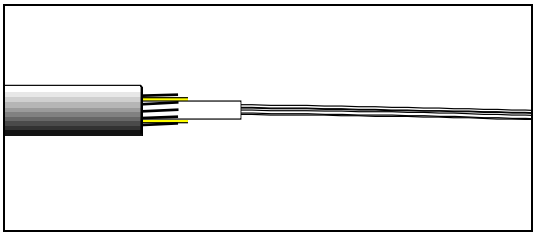

***Figure 3***

## 5.2 Mid-Span Access

**5.2.1** Measure and mark the appropriate length (typically 8 feet) of the window to be opened in the cable for the particular application.

**5.2.2** With the utility knife, ring cut the jacket at both marks and once more approximately 6 inches from one of the marks. Take care in not cutting too deeply for this may damage either the ripcords or central buffer tube below.

**5.2.3** Using a sharp utility knife, make two longitudinal cuts along the sheath 180° apart between the 6 inch cut and the other cut. Using pliers, remove the two jacket halves between these ring cuts.

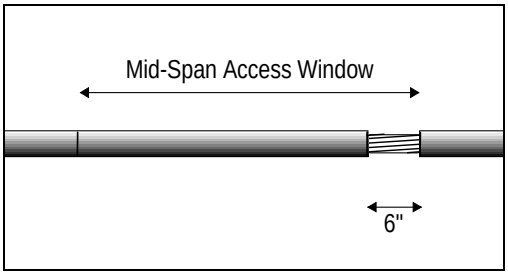


***Figure 4***

**5.2.4** Using a blunt edged object such as the pliers, grab each ripcord located along the strength elements and slit open the remainder of the jacket between the two marks.

**NOTE:** Sometimes providing a notch in the jacket edge with the utility knife will help the ripcord get started. Remove the jacket between the two ring cuts.

**5.2.5** Cut the strength elements at both ends of the window with the electrician's scissors. If necessary, leave enough rigid tape length for anchoring the cable within a splice closure or termination box (typically 6 inches).

**5.2.6** Choose appropriate UCTS-001 blade setting based on tube size below according to Table 1.

| Tube | Typical Usage | ID/OD (mm) | Tube Slitter |
|---|---|---|---|
| **"N"** | Ribbon Fibers 12 - 96 count | 6.4/8.5 | UCTS-001 |
| **"O"** | Ribbon Fibers 108 - 216 count | 8.5/10.6 | UCTS-001 |
| **"P"** | Ribbon Fibers 288 - 432 count | 13.0/15.0 | UCTS-001 |

***Table 1 Central Tube Diameters***

**5.2.7** Adjust slitter's blade depth with supplied instructions. If the blades fully penetrate the tube wall, there is a chance of damaging the ribbon fibers. The correct dial gauge sets the blades' depth for the exact wall thickness.

**NOTE:** Always reset blade depth back to “0” setting when changing tube sizes. Always make a test cut before proceeding.

**5.2.8** Make a longitudinal cut in buffer tube with slitter. Make sure to hold steady pressure on the UCTS tool to ensure that the tube is properly cut.

**5.2.9** Carefully, snip away both tube halves. An additional ring cut with the UCTS tool can be made to obtain a smooth end. The ribbons are now exposed and ready for mass splicing.

## 6.0 Fiber Unit Identification

**6.1** Each ribbon contains individually color coded fibers that are held together by a matrix encapsulant. Multiple ribbons are stacked adjacent to one another within the LITEPIPE™ tube. Individual ribbons can be easily accessed from the stack and handled. Each ribbon has a unique marking code to provide unit identification.

***FIBER COLOR CODE***

| FIBER # | COLOR |
|---|---|
| 1 | Blue |
| 2 | Orange |
| 3 | Green |
| 4 | Brown |
| 5 | Slate |
| 6 | White |
| 7 | Red |
| 8 | Black |
| 9 | Yellow |
| 10 | Violet |
| 11 | Rose |
| 12 | Aqua |

***RIBBON MARKING CODES***

| RIBBON # | CODE | RIBBON # | CODE |
|---|---|---|---|
| 1 | BL 1 | 19 | D-RD 19 |
| 2 | OR 2 | 20 | D-BK 20 |
| 3 | GR 3 | 21 | D-YL 21 |
| 4 | BR 4 | 22 | D-VI 22 |
| 5 | SL 5 | 23 | D-RS 23 |
| 6 | WH 6 | 24 | D-AQ 24 |
| 7 | RD 7 | 25 | DD-BL 25 |
| 8 | BK 8 | 26 | DD-OR 26 |
| 9 | YL 9 | 27 | DD-GR 27 |
| 10 | VI 10 | 28 | DD-BR 28 |
| 11 | RS 11 | 29 | DD-SL 29 |
| 12 | AQ 12 | 30 | DD-WH 30 |
| 13 | D-BL 13 | 31 | DD-RD 31 |
| 14 | D-OR 14 | 32 | DD-BK 32 |
| 15 | D-GR 15 | 33 | DD-YL 33 |
| 16 | D-BR 16 | 34 | DD-VI 34 |
| 17 | D-SL 17 | 35 | DD-RS 35 |
| 18 | D-WH 18 | 36 | DD-AQ 36 |

**6.2** To access individual fibers within a ribbon, please refer to Sumitomo Recommended Procedure SP-F02-007 *Ribbon Access Procedure*.