# SUMITOMO RECOMMENDED PROCEDURE

## SRP SP-F02-035

## Pliable Ribbon Indoor Riser Cable Preparation


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## 1.0 General

This procedure describes the standard techniques for preparing Pliable Ribbon - Indoor Riser fiber optic cable for placing and use in splice or termination shelves. This product utilizes the tube, a single central polyvinyl chloride buffer tube designed to accommodate up to 144 pliable 12 fiber ribbons. Two layers of dielectric strength elements are stranded around the central tube to provide tensile strength. All of this is covered by a polyvinyl chloride jacket.

## 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

**SP-F01-002** Installing Cable Pulling Grip
**SP-F01-002A** Grip Addendum for Ribbon Cables
**SP-F02-045** FreeForm Ribbon Matrix Removal Procedure

## 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. Pliers
6. Gloves
7. Safety Glasses
8. UCTS-001 Universal Central Tube Slitter
9. Ripley's RCS-114 or RCS-158 Cable Stripper

## 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 optical fiber ribbons. 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 Using the Ripley's RCS-114 or RCS-158 Cable Stripper, ring cut the jacket once at the mark and again approximately 12 inches towards the cable end.

5.1.3 Using the Ripley's RCS-114 or RCS-158 Cable Stripper, 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.

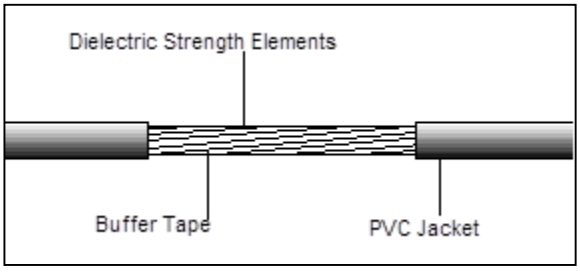



**Figure 1**

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 FRP tape length on the inside end for fixing in a closure or termination box (refer to appropriate procedures for necessary lengths).

5.1.5 Cut the buffer tape layer at both ends of the opened window and remove it to expose the tube underneath.

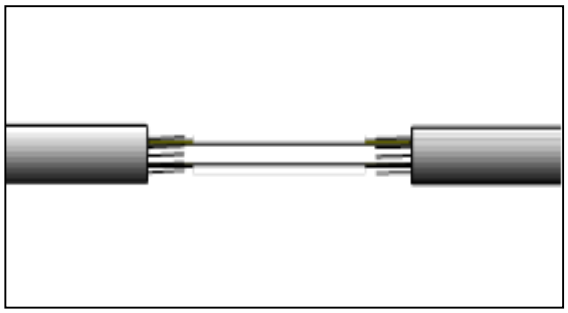


**Figure 2**

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

5.1.7 Using a standard buffer tube remover, coaxial cutter or UCTS-001 tool, 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 optical fiber ribbons. 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 fiber ribbons.

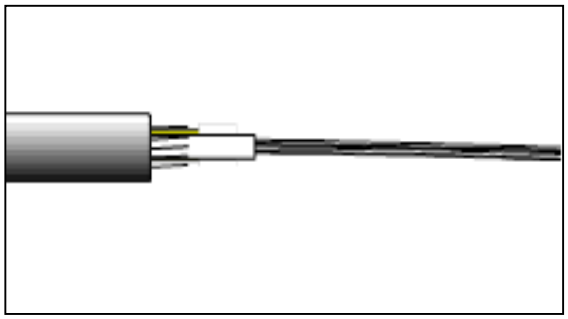


**Figure 3**

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 Using the Ripley's RCS-114 or RCS-158 Cable Stripper, 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 the Ripley's RCS-114 or RCS-158 Cable Stripper, 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.

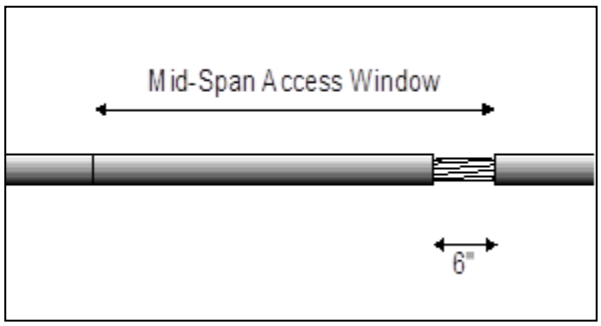



**Figure 4**

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 FRP tape length for anchoring the cable within a splice closure or termination box (typically 6 inches).

5.2.6 Cut the buffer tape layer at both ends of the opened window and remove it to expose the tube underneath.

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

| Fiber Count | ID/OD (mm) | Tube Slitter |
|---|---|---|
| 288 | 8.5/10.3 | UCTS-001 Dial Setting 2.25 Small Slitting Channel |
| 576 | 12.8/14.8 | UCTS-001 Dial Setting 0.25 Large Slitting Channel |
| 1728 | 16.6/18.6 | UCTS-001 Dial Setting 1.25 Large Slitting Channel |

**Table 1**

5.2. 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.

5.2.9 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.

5.2.10 Carefully snip away both tube halves. An additional ring cut with the buffer tube remover can be made to obtain a smoother end.

5.2.11 The 12 fiber 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 pliable matrix encapsulate. 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 |

6.2 To access individual fibers within a ribbon, please refer to Sumitomo Recommended Procedure SP-F02-045 FreeForm Ribbon Matrix Removal Procedure

See ribbon marking codes in **Tables 2 - 5** on pages 5 – 9.

| UNIT # | RIB # | BUNDLE | MARKING |
|---|---|---|---|
| | | ***RIBBON MARKING - 72F BOUND UNITS*** | |
| 1 | 1 | Blue Binder | 1 bar |
| | 2 | Blue Binder | 2 bars |
| | 3 | Blue Binder | 3 bars |
| | 4 | Blue Binder | 4 bars |
| | 5 | Blue Binder | 1 Short Block |
| | 6 | Blue Binder | 1 Short Block + 1 bar |
| 2 | 7 | Blue Binder | 1 Short Block + 2 bars |
| | 8 | Blue Binder | 1 Short Block + 3 bars |
| | 9 | Blue Binder | 1 Short Block + 4 bars |
| | 10 | Blue Binder | 1 Long Block |
| | 11 | Blue Binder | 1 Long Block + 1 bar |
| | 12 | Blue Binder | 1 Long Block + 2 bars |
| 3 | 13 | Blue Binder | 1 Long Block + 3 bars |
| | 14 | Blue Binder | 1 Long Block + 4 bars |
| | 15 | Blue Binder | 1 Long Block + 1 Short Black |
| | 16 | Blue Binder | 1 Long Block + 1 Short Block + 1 bar |
| | 17 | Blue Binder | 1 Long Block + 1 Short Block + 2 bars |
| | 18 | Blue Binder | 1 Long Block + 1 Short Block + 3 bars |
| 4 | 19 | Blue Binder | 1 Long Block + 1 Short Block + 4 bars |
| | 20 | Blue Binder | 2 Long Blocks |
| | 21 | Blue Binder | 2 Long Blocks + 1 bar |
| | 22 | Blue Binder | 2 Long Blocks + 2 bars |
| | 23 | Blue Binder | 2 Long Blocks + 3 bars |
| | 24 | Blue Binder | 2 Long Blocks + 4 bars |
| 5 | 25 | Blue Binder | 2 Long Blocks + 1 Short Block |
| | 26 | Blue Binder | 2 Long Blocks + 1 Short Block + 1 bar |
| | 27 | Blue Binder | 2 Long Blocks + 1 Short Block + 2 bars |
| | 28 | Blue Binder | 2 Long Blocks + 1 Short Block + 3 bars |
| | 29 | Blue Binder | 2 Long Blocks + 1 Short Block + 4 bars |
| | 30 | Blue Binder | 3 Long Blocks |
| 6 | 31 | Blue Binder | 3 Long Blocks + 1 bar |
| | 32 | Blue Binder | 3 Long Blocks + 2 bars |
| | 33 | Blue Binder | 3 Long Blocks + 3 bars |
| | 34 | Blue Binder | 3 Long Blocks + 4 bars |
| | 35 | Blue Binder | 3 Long Blocks + 1 Short Block |
| | 36 | Blue Binder | 3 Long Blocks + 1 Short Block + 1 bar |

**Table 2**

| UNIT # | RIB # | BUNDLE | MARKING |
|---|---|---|---|
| | | | ***RIBBON MARKING - 72F BOUND UNITS*** |
| | 37 | Blue Binder | 3 Long Blocks + 1 Short Block + 2 bars |
| | 38 | Blue Binder | 3 Long Blocks + 1 Short Block + 3 bars |
| 7 | 39 | Blue Binder | 3 Long Blocks + 1 Short Block + 4 bars |
| | 40 | Blue Binder | 4 Long Blocks |
| | 41 | Blue Binder | 4 Long Blocks + 1 bar |
| | 42 | Blue Binder | 4 Long Blocks + 2 bars |
| | 43 | Blue Binder | 4 Long Blocks + 3 bars |
| | 44 | Blue Binder | 4 Long Blocks + 4 bars |
| 8 | 45 | Blue Binder | 4 Long Blocks + 1 Short Block |
| | 46 | Blue Binder | 4 Long Blocks + 1 Short Block + 1 bar |
| | 47 | Blue Binder | 4 Long Blocks + 1 Short Block + 2 bars |
| | 48 | Blue Binder | 4 Long Blocks + 1 Short Block + 3 bars |
| | 49 | Blue Binder | 4 Long Blocks + 1 Short Block + 4 bars |
| | 50 | Blue Binder | 1 Double Long Block |
| 9 | 51 | Blue Binder | 1 Double Long Block + 1 bar |
| | 52 | Blue Binder | 1 Double Long Block + 2 bars |
| | 53 | Blue Binder | 1 Double Long Block + 3 bars |
| | 54 | Blue Binder | 1 Double Long Block + 4 bars |
| | 55 | Blue Binder | 1 Double Long Block + 1 Short Block |
| | 56 | Blue Binder | 1 Double Long Block + 1 Short Block + 1 bar |
| 10 | 57 | Blue Binder | 1 Double Long Block + 1 Short Block + 2 bars |
| | 58 | Blue Binder | 1 Double Long Block + 1 Short Block + 3 bars |
| | 59 | Blue Binder | 1 Double Long Block + 1 Short Block + 4 bars |
| | 60 | Blue Binder | 1 Double Long Block + 1 Long Block |
| | 61 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 bar |
| | 62 | Blue Binder | 1 Double Long Block + 1 Long Block + 2 bars |
| 11 | 63 | Blue Binder | 1 Double Long Block + 1 Long Block + 3 bars |
| | 64 | Blue Binder | 1 Double Long Block + 1 Long Block + 4 bars |
| | 65 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 Short Block |
| | 66 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 1 bar |
| | 67 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 2 bars |
| | 68 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 3 bars |
| 12 | 69 | Blue Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 4 bars |
| | 70 | Blue Binder | 1 Double Long Block + 2 Long Blocks |
| | 71 | Blue Binder | 1 Double Long Block + 2 Long Blocks + 1 bar |
| | 72 | Blue Binder | 1 Double Long Block + 2 Long Blocks + 2 bars |

**Table 3**

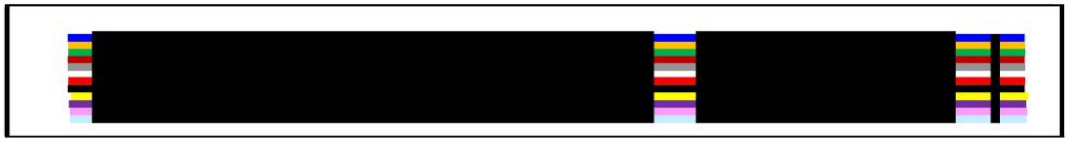
| UNIT # | RIB # | BUNDLE | MARKING |
|---|---|---|---|
| | | ***RIBBON MARKING - 72F BOUND UNITS*** | |
| 13 | 73 | Red Binder | 1 bar |
| | 74 | Red Binder | 2 bars |
| | 75 | Red Binder | 3 bars |
| | 76 | Red Binder | 4 bars |
| | 77 | Red Binder | 1 Short Block |
| | 78 | Red Binder | 1 Short Block + 1 bar |
| 14 | 79 | Red Binder | 1 Short Block + 2 bars |
| | 80 | Red Binder | 1 Short Block + 3 bars |
| | 81 | Red Binder | 1 Short Block + 4 bars |
| | 82 | Red Binder | 1 Long Block |
| | 83 | Red Binder | 1 Long Block + 1 bar |
| | 84 | Red Binder | 1 Long Block + 2 bars |
| 15 | 85 | Red Binder | 1 Long Block + 3 bars |
| | 86 | Red Binder | 1 Long Block + 4 bars |
| | 87 | Red Binder | 1 Long Block + 1 Short Black |
| | 88 | Red Binder | 1 Long Block + 1 Short Block + 1 bar |
| | 89 | Red Binder | 1 Long Block + 1 Short Block + 2 bars |
| | 90 | Red Binder | 1 Long Block + 1 Short Block + 3 bars |
| 16 | 91 | Red Binder | 1 Long Block + 1 Short Block + 4 bars |
| | 92 | Red Binder | 2 Long Blocks |
| | 93 | Red Binder | 2 Long Blocks + 1 bar |
| | 94 | Red Binder | 2 Long Blocks + 2 bars |
| | 95 | Red Binder | 2 Long Blocks + 3 bars |
| | 96 | Red Binder | 2 Long Blocks + 4 bars |
| 17 | 97 | Red Binder | 2 Long Blocks + 1 Short Block |
| | 98 | Red Binder | 2 Long Blocks + 1 Short Block + 1 bar |
| | 99 | Red Binder | 2 Long Blocks + 1 Short Block + 2 bars |
| | 100 | Red Binder | 2 Long Blocks + 1 Short Block + 3 bars |
| | 101 | Red Binder | 2 Long Blocks + 1 Short Block + 4 bars |
| | 102 | Red Binder | 3 Long Blocks |
| 18 | 103 | Red Binder | 3 Long Blocks + 1 bar |
| | 104 | Red Binder | 3 Long Blocks + 2 bars |
| | 105 | Red Binder | 3 Long Blocks + 3 bars |
| | 106 | Red Binder | 3 Long Blocks + 4 bars |
| | 107 | Red Binder | 3 Long Blocks + 1 Short Block |
| | 108 | Red Binder | 3 Long Blocks + 1 Short Block + 1 bar |

**Table 4**

| UNIT # | RIB # | BUNDLE | MARKING |
|---|---|---|---|
| | | | ***RIBBON MARKING - 72F BOUND UNITS*** |
| | 109 | Red Binder | 3 Long Blocks + 1 Short Block + 2 bars |
| | 110 | Red Binder | 3 Long Blocks + 1 Short Block + 3 bars |
| 19 | 111 | Red Binder | 3 Long Blocks + 1 Short Block + 4 bars |
| | 112 | Red Binder | 4 Long Blocks |
| | 113 | Red Binder | 4 Long Blocks + 1 bar |
| | 114 | Red Binder | 4 Long Blocks + 2 bars |
| | 115 | Red Binder | 4 Long Blocks + 3 bars |
| | 116 | Red Binder | 4 Long Blocks + 4 bars |
| 20 | 117 | Red Binder | 4 Long Blocks + 1 Short Block |
| | 118 | Red Binder | 4 Long Blocks + 1 Short Block + 1 bar |
| | 119 | Red Binder | 4 Long Blocks + 1 Short Block + 2 bars |
| | 120 | Red Binder | 4 Long Blocks + 1 Short Block + 3 bars |
| | 121 | Red Binder | 4 Long Blocks + 1 Short Block + 4 bars |
| | 122 | Red Binder | 1 Double Long Block |
| 21 | 123 | Red Binder | 1 Double Long Block + 1 bar |
| | 124 | Red Binder | 1 Double Long Block + 2 bars |
| | 125 | Red Binder | 1 Double Long Block + 3 bars |
| | 126 | Red Binder | 1 Double Long Block + 4 bars |
| | 127 | Red Binder | 1 Double Long Block + 1 Short Block |
| | 128 | Red Binder | 1 Double Long Block + 1 Short Block + 1 bar |
| 22 | 129 | Red Binder | 1 Double Long Block + 1 Short Block + 2 bars |
| | 130 | Red Binder | 1 Double Long Block + 1 Short Block + 3 bars |
| | 131 | Red Binder | 1 Double Long Block + 1 Short Block + 4 bars |
| | 132 | Red Binder | 1 Double Long Block + 1 Long Block |
| | 133 | Red Binder | 1 Double Long Block + 1 Long Block + 1 bar |
| | 134 | Red Binder | 1 Double Long Block + 1 Long Block + 2 bars |
| 23 | 135 | Red Binder | 1 Double Long Block + 1 Long Block + 3 bars |
| | 136 | Red Binder | 1 Double Long Block + 1 Long Block + 4 bars |
| | 137 | Red Binder | 1 Double Long Block + 1 Long Block + 1 Short Block |
| | 138 | Red Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 1 bar |
| | 139 | Red Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 2 bars |
| | 140 | Red Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 3 bars |
| 24 | 141 | Red Binder | 1 Double Long Block + 1 Long Block + 1 Short Block + 4 bars |
| | 142 | Red Binder | 1 Double Long Block + 2 Long Blocks |
| | 143 | Red Binder | 1 Double Long Block + 2 Long Blocks + 1 bar |
| | 144 | Red Binder | 1 Double Long Block + 2 Long Blocks + 2 bars |

**Table 5**

| *Marking Pattern* | | | |
|---|---|---|---|
| *1* | *5* | *10* | *50* |
| *Bar* | *"Short" Block* | *"Long Block"* | *"Double Long Block"* |



**The Above Designates Ribbon #61 (1 Double Long Block, 1 Long Block, 1 Bar)**