SUMITOMO RECOMMENDED PROCEDURE

SRP SP-F02-037

Pliable Ribbon Indoor/Outdoor Riser LSHF Cable Preparation

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1.0 General

This procedure describes the standard techniques for preparing Ribbon – Indoor/Outdoor LSHF Riser fiber optic cable for placing and use in splice or termination shelves. This product utilizes the tube, a single, flame-retardant, Low Smoke Halogen Free central buffer tube designed to accommodate up to 72 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 flame-retardant Low Smoke Halogen Free 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.

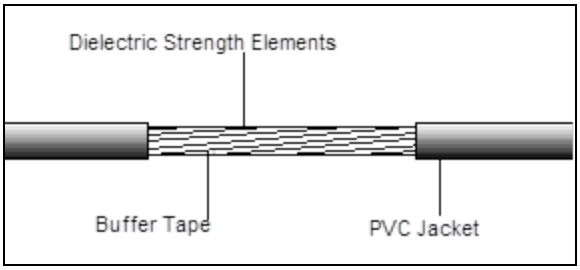

Figure 1

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.

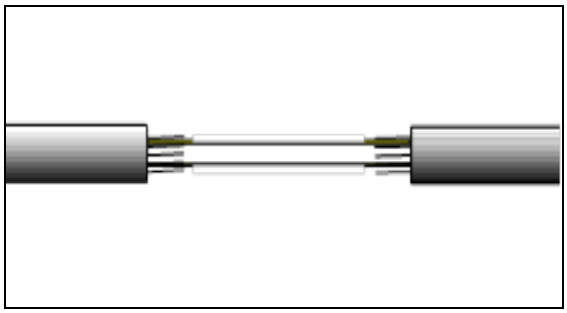

Figure 2

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.

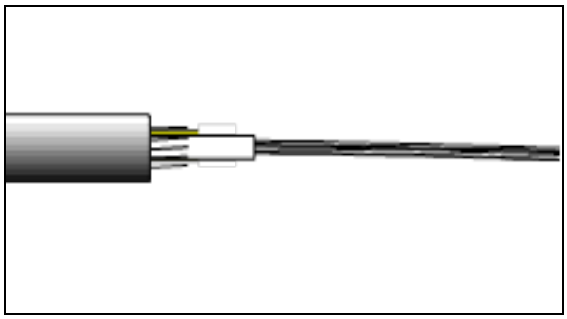

Figure 3

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.

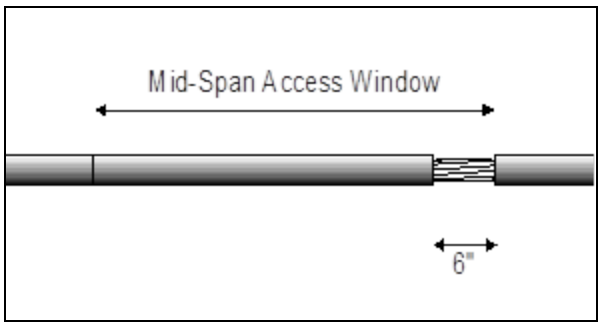

Figure 4

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
864	14.7/15.6	UCTS-001 Dial Setting 0.25 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 matrix encapsulate. Multiple ribbons are stacked adjacent to one another within the tube. Individual ribbons can be easily removed from the stack and handled. Each ribbon has a unique marking code to provide unit identification.

FIBER TYPE MARKING (on ribbons)	
TYPE	CODE
Single Mode	SM

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 **Table 2 - 3** next two pages.

RIBBON MARKING - 72F UNBOUND UNITS

RIB #	BUNDLE	MARKING
1	Without Binder	1 bar
2	Without Binder	2 bars
3	Without Binder	3 bars
4	Without Binder	4 bars
5	Without Binder	1 Short Block
6	Without Binder	1 Short Block + 1 bar
7	Without Binder	1 Short Block + 2 bars
8	Without Binder	1 Short Block + 3 bars
9	Without Binder	1 Short Block + 4 basr
10	Without Binder	1 Long Block
11	Without Binder	1 Long Block + 1 bar
12	Without Binder	1 Long Block + 2 bars
13	Without Binder	1 Long Block + 3 bars
14	Without Binder	1 Long Block + 4 bars
15	Without Binder	1 Long Block + 1 Short Black
16	Without Binder	1 Long Block + 1 Short Block + 1 bar
17	Without Binder	1 Long Block + 1 Short Block + 2 bars
18	Without Binder	1 Long Block + 1 Short Block + 3 bars
19	Without Binder	1 Long Block + 1 Short Block + 4 bars
20	Without Binder	2 Long Blocks
21	Without Binder	2 Long Blocks + 1 bar
22	Without Binder	2 Long Blocks + 2 bars
23	Without Binder	2 Long Blocks + 3 bars
24	Without Binder	2 Long Blocks + 4 bars
25	Without Binder	2 Long Blocks + 1 Short Block
26	Without Binder	2 Long Blocks + 1 Short Block + 1 bar
27	Without Binder	2 Long Blocks + 1 Short Block + 2 bars
28	Without Binder	2 Long Blocks + 1 Short Block + 3 bars
29	Without Binder	2 Long Blocks + 1 Short Block + 4 bars
30	Without Binder	3 Long Blocks
31	Without Binder	3 Long Blocks + 1 bar
32	Without Binder	3 Long Blocks + 2 bars
33	Without Binder	3 Long Blocks + 3 bars
34	Without Binder	3 Long Blocks + 4 bars
35	Without Binder	3 Long Blocks + 1 Short Block
36	Without Binder	3 Long Blocks + 1 Short Block + 1 bar

Table 2

RIBBON MARKING - 72F UNBOUND UNITS		
RIB #	BUNDLE	MARKING
37	Without Binder	3 Long Blocks + 1 Short Block + 2 bars
38	Without Binder	3 Long Blocks + 1 Short Block + 3 bars
39	Without Binder	3 Long Blocks + 1 Short Block + 4 bars
40	Without Binder	4 Long Blocks
41	Without Binder	4 Long Blocks + 1 bar
42	Without Binder	4 Long Blocks + 2 bars
43	Without Binder	4 Long Blocks + 3 bars
44	Without Binder	4 Long Blocks + 4 bars
45	Without Binder	4 Long Blocks + 1 Short Block
46	Without Binder	4 Long Blocks + 1 Short Block + 1 bar
47	Without Binder	4 Long Blocks + 1 Short Block + 2 bars
48	Without Binder	4 Long Blocks + 1 Short Block + 3 bars
49	Without Binder	4 Long Blocks + 1 Short Block + 4 bars
50	Without Binder	1 Double Long Block
51	Without Binder	1 Double Long Block + 1 bar
52	Without Binder	1 Double Long Block + 2 bars
53	Without Binder	1 Double Long Block + 3 bars
54	Without Binder	1 Double Long Block + 4 bars
55	Without Binder	1 Double Long Block + 1 Short Block
56	Without Binder	1 Double Long Block + 1 Short Block + 1 bar
57	Without Binder	1 Double Long Block + 1 Short Block + 2 bars
58	Without Binder	1 Double Long Block + 1 Short Block + 3 bars
59	Without Binder	1 Double Long Block + 1 Short Block + 4 bars
60	Without Binder	1 Double Long Block + 1 Long Block
61	Without Binder	1 Double Long Block + 1 Long Block + 1 bar
62	Without Binder	1 Double Long Block + 1 Long Block + 2 bars
63	Without Binder	1 Double Long Block + 1 Long Block + 3 bars
64	Without Binder	1 Double Long Block + 1 Long Block + 4 bars
65	Without Binder	1 Double Long Block + 1 Long Block + 1 Short Block
66	Without Binder	1 Double Long Block + 1 Long Block + 1 Short Block + 1 bar
67	Without Binder	1 Double Long Block + 1 Long Block + 1 Short Block + 2 bars
68	Without Binder	1 Double Long Block + 1 Long Block + 1 Short Block + 3 bars
69	Without Binder	1 Double Long Block + 1 Long Block + 1 Short Block + 4 bars
70	Without Binder	1 Double Long Block + 2 Long Blocks
71	Without Binder	1 Double Long Block + 2 Long Blocks + 1 bar
72	Without Binder	1 Double Long Block + 2 Long Blocks + 2 bars

Table 3

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)