

Fiber Optic Cable Furcation Guide

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A cable furcation protects and organizes optical fibers after a cable has been accessed. The furcation kit and process is specific to the cable and the termination method. This document identifies the different cable types, termination methods, and the Corning furcation kits required for installation.

The Need for Furcation

When optical cables are to be field terminated, whether by direct termination or splicing to another cable, requirements for cable furcation must be considered.

Cable furcation serves multiple purposes, primarily related to fiber protection and fiber organization. Optical fiber ribbon cables typically consist of a central tube design with a single stack of optical fiber ribbons or a loose tube ribbon design with multiple tubes stranded together, each with a single smaller stack of ribbons. For ribbon-based cables, the ribbons must be both organized into groups for splicing or termination, as well as protected as the ribbons transition from the end of the cable to either a splice tray or the back of the patch panel.

Another type of cable construction is loose tube. In loose tube cable, the fibers are not ribbonized; the fibers float freely inside a gel-filled or gel-free tube. These tubes are referred to as buffer tubes. This cable construction only needs furcation kits for direct termination at the back of the patch panel. For splicing applications, the buffer tubes provide the required protection to the fibers going into the splice tray. Corning offers furcation solutions for loose tube construction as well.

Which Furcation Kit To Use

Ribbon Cables Furcation Kits

Once a ribbon cable type has been chosen, the appropriate furcation kit must be selected. For splicing applications, only base furcation kits are required. For terminating with splice-on connectors, in addition to the base kit, supplemental kits are required. Table 1 outlines Corning's five base ribbon furcation kits as well as the two supplemental kits needed when MTP splice-on connectors or EDGE™ Splice Cassettes will be installed. Ribbon cable furcation kit selection guidance is provided in Table 2 based on the ribbon cable type and fiber count, including the required quantities needed of each kit for splicing bulk cable, terminating with MTP splice-on connectors, or EDGE™ Splice Cassettes.

Table 1. Ribbon Cable Furcation Kits

Part Number	Description
HFC-FURC-KIT-A	Furcation for Gel-Filled/ Gel-Free UltraRibbon™ Cables 288-864F (1 kit per cable end) (Uses epoxy)

Part Number	Description
HFC-FURC-KIT-B	Furcation for Gel-Free UltraRibbon Cables 288-432F (1 kit per cable end) (Does not use epoxy)
HFC-FURC-KIT-C	Furcation for Gel-Filled/Gel-Free Corning Central Tube Ribbon Cables 12-216F (1 kit per cable end)
HFC-FURC-KIT-D	Furcation for Gel-Free RocketRibbon™ Cables 1728/3456F (1 kit for 1728F/2 kits for 3456F)
HFC-FURC-KIT-E	Furcation for Gel-Filled/Gel-Free ALTOS® Ribbon Cables 288-1728F Furcation for Gel-Free RocketRibbon™ Cables 1728/3456F (1 kit for 1728F/2 kits for 3456F)
HFC-FURC-KIT-SUP-1	Supplemental for Field Installed MTP® Splice-On Connector Applications or EDGE™ Splice Cassettes on Ribbon Cable (1 kit per 24 MTP connector terminations)
HFC-FURC-KIT-SUP-2	Supplemental for Field Installed MTP Splice-On Connector Applications or EDGE™ Splice Cassettes on Loose Tube Cable (1 kit for <= 288F)

Table 2. Ribbon Central Tube Cable Furcation Applications

Cable Type	Cable Core Construction	Fiber Count	(Quantity) Base Furcation Kit for Bulk Splicing	(Quantity) Supplemental Furcation Kit Required for Field Termination
Ribbon Plenum	Gel-Free Air Core	12 - 216	(1) HFC-FURC-KIT-C	(1) HFC-FURC-KIT-SUP-1
UltraRibbon™ Plenum	Gel-Free Foam Tape	288	(1) HFC-FURC-KIT-B	(1) HFC-FURC-KIT-SUP-1
UltraRibbon™ Plenum	Gel-Free Foam Tape	360-432	(1) HFC-FURC-KIT-B	(2) HFC-FURC-KIT-SUP-1
UltraRibbon™ Plenum	Gel-Free Foam Tape	504-576	(1) HFC-FURC-KIT-A	(2) HFC-FURC-KIT-SUP-1
Ribbon Riser	Gel-Free	12 - 216	(1) HFC-FURC-KIT-C	(1) HFC-FURC-KIT-SUP-1
UltraRibbon™ Riser	Gel-Free Foam Tape	288	(1) HFC-FURC-KIT-B	(1) HFC-FURC-KIT-SUP-1
UltraRibbon™ Riser	Gel-Free Foam Tape	360 - 432	(1) HFC-FURC-KIT-B	(2) HFC-FURC-KIT-SUP-1

Cable Type	Cable Core Construction	Fiber Count	(Quantity) Base Furcation Kit for Bulk Splicing	(Quantity) Supplemental Furcation Kit Required for Field Termination
FREEDM® Ribbon	Gel Filled	12 - 216	(1) HFC-FURC-KIT-C	(1) HFC-FURC-KIT-SUP-1
FREEDM® UltraRibbon™	Gel-Free Foam Tape	288	(1) HFC-FURC-KIT-B	(1) HFC-FURC-KIT-SUP-1
FREEDM® UltraRibbon™	Gel-Free Foam Tape	360 - 432	(1) HFC-FURC-KIT-B	(2) HFC-FURC-KIT-SUP-1
FREEDM® UltraRibbon™	Gel-Filled Foam Tape	504 - 576	(1) HFC-FURC-KIT-A	(2) HFC-FURC-KIT-SUP-1
FREEDM® UltraRibbon™	Gel-Free Foam Tape	648 - 864	(1) HFC-FURC-KIT-A	(3) HFC-FURC-KIT-SUP-1
SST-Ribbon™	Gel Filled	12 - 216	(1) HFC-FURC-KIT-C	(1) HFC-FURC-KIT-SUP-1
SST-UltraRibbon™	Gel-Free Foam Tape	240 - 288	(1) HFC-FURC-KIT-B	(1) HFC-FURC-KIT-SUP-1
SST-UltraRibbon™	Gel-Free Foam Tape	312 - 432	(1) HFC-FURC-KIT-B	(2) HFC-FURC-KIT-SUP-1
SST-UltraRibbon™	Gel-Free Foam Tape	576	(1) HFC-FURC-KIT-A	(2) HFC-FURC-KIT-SUP-1
SST-UltraRibbon™	Gel Filled	720 - 864	(1) HFC-FURC-KIT-A	(3) HFC-FURC-KIT-SUP-1

Kits HFC-FURC-KIT-A , HFC-FURC-KIT-B, HFC-FURC-KIT-C, HFC-FURC-KIT-D, and, HFC-FURC-KIT-E are the base ribbon furcation kits.

When furcating Central Tube or Loose Tube Ribbon cables for the purpose of splicing, the number of ribbons in a bundle will be determined by the hardware used, with 6 ribbons per bundle being the maximum. If furcating to install MTP Splice-On Connectors or EDGE™ Splice Cassettes, typically 4 ribbons per bundle should be used to ensure compatibility with the HFC-FURC-KIT-SUP-1 kit.

The base ribbon furcation kits are applicable for fiber counts listed for Indoor, Indoor/Outdoor & Outside Plant, as well as Armored & Non-Armored options.

Loose Tube Ribbon Cable Furcation Kits

The process for furcating loose tube ribbon cables focuses on furcating each large buffer tube or subunit separately. In other words, each ribbon filled buffer tube or subunit is treated like a cable. Loose tube ribbon cable furcation kit selection guidance is provided in Table 3 based on cable type and fiber count, including the required quantities needed of each kit for splicing bulk cable, terminating with MTP splice-on connectors, or EDGE™ Splice Cassettes.

Table 3. Ribbon Loose Tube Cable Furcation Applications

Cable Type	Cable Core Construction	Fiber Count	(Quantity) Base Furcation Kit for Bulk Splicing	(Quantity) Supplemental Furcation Kit Required for Field Termination
ALTOS® Ribbon Riser	Gel-Free Air Core 72F/Tube	288	(1) HFC-FURC-KIT-E	(1) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon Riser	Gel-Free Air Core 72F/Tube	360	(1) HFC-FURC-KIT-E	(2) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon Riser	Gel-Free Air Core 72F/Tube	432	(1) HFC-FURC-KIT-E	(2) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel-Free Gel Filled 72F/Tube	288	(1) HFC-FURC-KIT-E	(1) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel-Free Gel Filled 72F/Tube	360	(1) HFC-FURC-KIT-E	(2) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel-Free Gel Filled 72F/Tube	432	(1) HFC-FURC-KIT-E	(2) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel Filled 144F/Tube	576	(1) HFC-FURC-KIT-E	(2) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel Filled 144F/Tube	720	(1) HFC-FURC-KIT-E	(3) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel Filled 144F/Tube	864	(1) HFC-FURC-KIT-E	(3) HFC-FURC-KIT-SUP-1
ALTOS® Ribbon	Gel Filled 288F/Tube	1728	(1) HFC-FURC-KIT-E	(6) HFC-FURC-KIT-SUP-1
RocketRibbon™	Gel-Free 288F/Subunit	1728	(1) HFC-FURC-KIT-E	(6) HFC-FURC-KIT-SUP-1
RocketRibbon™	Gel-Free 288F/Subunit	3456	(1) HFC-FURC-KIT-E	(12) HFC-FURC-KIT-SUP-1

HFC-FURC-KIT-E is the base ribbon furcation kit used on each of the ALTOS® Ribbon buffer tubes and the RocketRibbon™ subunits. When furcating these cables for the purpose of splicing, the number of ribbons in a bundle will be determined by the hardware used, with 6 ribbons per bundle being the maximum. If furcating to install MTP Splice-On Connectors or EDGE™ Splice Cassettes, typically 4 ribbons per bundle should be used to ensure compatibility with the HFC-FURC-KIT-SUP-1 kit.

The base ribbon furcation kits are applicable for fiber counts listed for Indoor, Indoor/Outdoor & Outside Plant, as well as Armored & Non-Armored options.

Loose Tube Cable Furcation Kits

Loose tube cable furcation kit selection guidance is provided in Table 4 based upon fiber count, including the required quantities needed of each kit for splicing bulk cable or terminating with MTP splice-on connectors.

Table 4. Loose Tube Cable Furcation Kits for Splice on Connectors

Cable Type	Cable Core Construction	Fiber Count	(Quantity) Base Furcation Kit for Bulk Splicing	(Quantity) Supplemental Furcation Kit Required for Field Termination
ALTOS® Loose Tube	Gel-Free Gel-Filled 12F/Tube	12-288	N/A	(1) HFC-FURC-KIT-SUP-2

Buffer Tube Fan-Out Kits

Buffer tube fan-out kits are used to provide individual fiber protection for each fiber in a 900um tube for 6 to 12 fibers. The type of buffer tube fan-out kit selected depends upon the installation environment. Indoor buffer tube fan-out kits should be utilized when the cable is terminated in a temperature-controlled environment. Outdoor buffer tube fan-out kits should be utilized when the cable is terminated in a non-temperature controlled environment. These kits are specifically designed to operate in widely varying temperatures and provide the additional protection needed. Buffer tube fan-out kit selection guidance is provided in Table 5.

Table 5. Loose Tube Buffer Tube Fan-Out Kit Applications

Type	Buffer Tube Fiber Count	Leg Length (inches)	Part Number	Temperature Range °C (°F)	Description
Indoor	6	25	FAN-BT25-06	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored
Indoor	6	36	FAN-BT36-06	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored

Type	Buffer Tube Fiber Count	Leg Length (inches)	Part Number	Temperature Range °C (°F)	Description
Indoor	6	47	FAN-BT47-06	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored
Indoor	12	25	FAN-BT25-12	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored
Indoor	12	36	FAN-BT36-12	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored
Indoor	12	47	FAN-BT47-12	0 °C to 70 °C (32 °F to 158 °F)	Multi-Colored
Outdoor	6	25	FAN-OD25-06	-40 °C to 70 °C (-40 °F to 158 °F)	Multi-Colored
Outdoor	6	47	FAN-OD47-06	-40 °C to 70 °C (-40 °F to 158 °F)	Multi-Colored
Outdoor	12	25	FAN-OD25-12	-40 °C to 70 °C (-40 °F to 158 °F)	Multi-Colored
Outdoor	12	47	FAN-OD47-12	-40 °C to 70 °C (-40 °F to 158 °F)	Multi-Colored

Ribbon Fan-Out Kits

The ribbon fan-out kit allows a single 12-fiber ribbon to be separated into individual fibers. Each 250um fiber is provided with its own 900um transport tube extending from the furcation body for mechanical protection. Ribbon fan-out kit selection guidance is provided in Table 6.

Octal Fan-Out Kits

An octal fan-out kit is used for the same purpose as the ribbon fan-out kit. The buffering tubes contain a 900um inner tube and have a larger 2.0 mm jacket that contains aramid yarns for strength and added protection. These kits come with several color options. Octal fan-out kit selection guidance is also provided in Table 6.

Table 6. Ribbon Fan-Out Kit Applications

Type	Buffer Tube Fiber Count	Leg Length	Part Number	Description
Ribbon Fan-Out Kit	12	25 in	RIB-FAN-12	Multi-Colored
Ribbon Fan-Out Kit	12	36 in	RIB-FAN-12-36	Multi-Colored
Octal Fan-Out Kit	12	1 m	OFK-P2-12-250-M	Orange legs
Octal Fan-Out Kit	12	1 m	OFK-P2-12-250-S	Yellow legs
Octal Fan Out Kit	12	1 m	OFK-P2-12-250-A	Aqua legs
	12	1 m	OFK-P2-12-250-MC	Multi-Colored

Spider Fan-Out Kits

Spider fan-out kits are designed to receive an entire cable end into a furcation housing and protect the fibers in separate buffering tubes that contain an inner tube. This inner tube is also protected by an outer 2.0 mm or 2.9 mm jacket. The furcation housing is designed to hold two or four furcation inserts. Each insert then provides six protective tubes. This kit will provide protection for up to 24 fibers. A variant of the spider fan-out kit is the **Ribbon Cable Spider Fan-Out Kit**. This kit uses the same housing, but the legs are flat and designed for ribbons. Each insert has two flat buffer tubes. A maximum of 96 fibers can be protected with this kit. Both kits have aramid yarns for strength and added protection. Both kits also offer color options of orange, yellow or aqua. Spider fan-out kit selection guidance is provided in Table 7, Table 8, and Table 9.

Table 7. Spider Fan-Out Kit Base Housing Selection

Part Number	Number of Insert Slots	Single Fiber Capacity*	Ribbon Fiber Capacity†	Cable Diameter (mm)
SFK-BASE-2SLOT	2 slots	12	48	4.6 to 7.1
SFK-BASE-4SLOT	4 slots	24	96	8.6 to 15.7
* 6F/insert				
† 2 ribbons/insert				

Part Number	Number of Insert Slots	Single Fiber Capacity*	Ribbon Fiber Capacity†	Cable Diameter (mm)
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Note: Spider fan-out kits are not compatible with Corning LST Cable

Table 8. Single Fiber Spider Fan-Out Kit Insert Selection

Cable Fiber Type	Jacket Outside Diameter (mm)	Tube Color	Part Number
Loose Tube	2	Aqua	INS-06F-250-2-A
Loose Tube	2	Orange	INS-06F-250-2-O
Loose Tube	2	Yellow	INS-06F-250-2-Y
Loose Tube	3	Aqua	INS-06F-250-3-A
Loose Tube	3	Orange	INS-06F-250-3-O
Loose Tube	3	Yellow	INS-06F-250-3-Y
Tight Buffered	3	Aqua	INS-06F-900-3-A
Tight Buffered	3	Orange	INS-06F-900-3-O
Tight Buffered	3	Yellow	INS-06F-900-3-Y

Note: These single fiber inserts are meant to be ordered separately and in conjunction with the base in Table 7.

Table 9. Ribbon Spider Fan-Out Kit Insert Selection

Orientation of Ribbon Insert	Color of Tubing	Part Number
Horizontal	Aqua	INS-24F-RIB-H-A
Horizontal	Orange	INS-24F-RIB-H-O
Horizontal	Yellow	INS-24F-RIB-H-Y
Vertical	Aqua	INS-24F-RIB-V-A

Orientation of Ribbon Insert	Color of Tubing	Part Number
Vertical	Orange	INS-24F-RIB-V-O
Vertical	Yellow	INS-24F-RIB-V-Y
Note: These ribbon fiber inserts are meant to be ordered separately and in conjunction with the base in Table 7.		

Standard Recommended Procedures

Installation instructions for furcation kits A, B, C, D, E and the supplemental kits are available through the Corning Optical Communications Technical Support line. Send answers to the following questions in an email to DutyEng@corning.com or call 1-800-743-2671.

1. How is the cable being installed?
 - a. Optical Splice Enclosure
 - b. MTP Splice on Connectors
 - i. Pinned
 1. SM
 2. MM
 - ii. Non Pinned
 1. SM
 2. MM
 - c. EDGE Splice Cassettes
 - i. SM
 1. LC UPC
 2. LC APC
 - ii. MM
 1. LC PC
2. Gel Filled or Gel Free?
 - a. Gel Filled
 - b. Gel Free
3. Is the cable armored or non-armored?
 - a. Armored
 - b. Non-armored
4. What is the total fiber count of the cable? _____
5. Is the cable Altos Ribbon or Central Tube Ribbon?
 - a. ALTOS® Ribbon
 - b. Central Tube Ribbon
 - c. RocketRibbon™

For additional questions or guidance on which cable furcation kit to use; contact Corning Optical Communications' Technical Support Line at 800-743-2671 or dutyeng@corning.com.

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