

Ribbon Breakout Kits

The Do's and Don'ts of Ribbon Fiber Protection

Increasing fiber density in today's networks requires service providers to find new ways to future-proof their networks, while ensuring that splicing operations are easy to perform.

To address these issues, ribbon cables are becoming an integral part of next generation networks, paying for themselves many times over by maintaining the ongoing integrity of the network.

ADC's Solution to an Ongoing Problem

While ribbon cables offer many benefits in terms of density and efficiency, typical solutions also have one drawback—once the ribbons are broken out of the cable jacketing for splicing preparations, they are essentially unprotected and vulnerable to breakage

ADC Ribbon Breakout Kits address this by providing self-contained protection for bare ribbon fibers while allowing the network provider to maximize the space in their splice closure.

Applications

There are three main types of ribbon cables used in the building entrance vault where inside plant fibers are fused to outside plant fibers:

- Ribbon in loose buffer tube (RLBT) outside plant (OSP) – see Figure 1
- Ribbon in central tube (RCT) outside plant (OSP) – see Figure 3
- Ribbon in central tube IFC

Benefits

- Reduces the opportunity for damage by minimizing ribbon exposure during handling and within the splice enclosure.
- Allows service providers to connect OSP networks to the fibers within serving offices

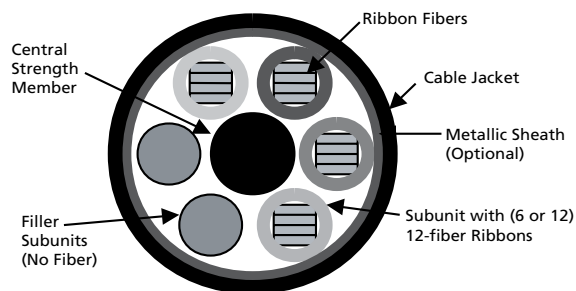


Figure 1
Ribbon buffer tube (RLBT) OSP cable

APPLICATION NOTE





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What is the application?

Ribbon splicing application in controlled environments ("controlled" meaning not an outside plant environment) – Splicing in cabinets, frames, and panels

What does the breakout kit do?

Protects bare ribbons between cable breakout point and entrance to splice tray – Bare ribbon fiber is fragile and vulnerable to breakage during initial installation and re-entry to cabinet, frame, and panel. Fiber ribbons are matrices of either 12 or 24 fibers. Breaking one fiber in a ribbon can be problematic...breaking multiple fibers in a ribbon can be devastating.

Provides location at which moisture blocking compound can be installed to block the moisture blocking gel that is common in Outside Plant cables.

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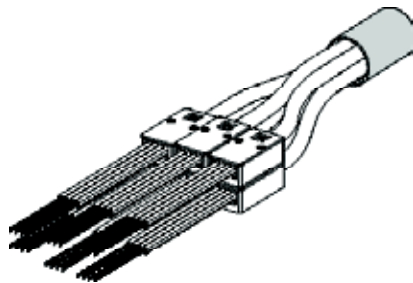


Figure 2
Breakout kit for RLBT OSP Cable

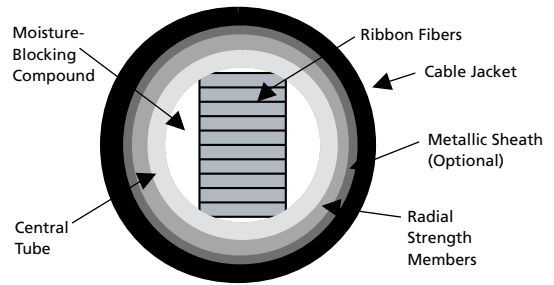


Figure 3
Ribbon central tube (RCT) OSP cable

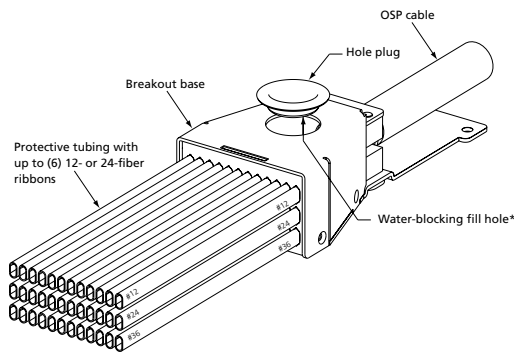


Figure 4
Breakout kit for RCT cable

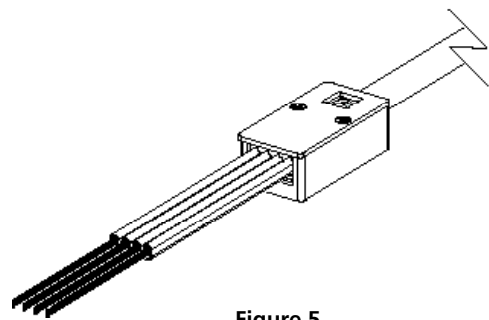


Figure 5
Breakout Kit for IFC Ribbon Cables



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Features

Breakout base

Transparent protective oval tubing

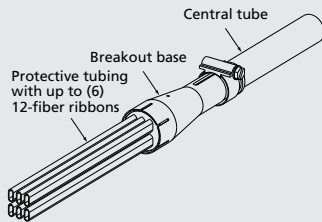


Figure 6
Breakout kit for RCT cable

Benefits

Provides physical protection for ribbons as they exit the cable sheath and enter the protective tubes. Bare ribbons are fragile and vulnerable to breakage.

Provides location at which blocking compound can be injected to prevent the cable's water blocking gel from seeping onto bare ribbons.

Securely holds protective oval tubes in place to prevent damage to ribbons.

Provides physical protection of up to six 12-fiber or 24-fiber ribbons

Allows splicers to increase capacity of splice drawers and trays without compromising protection of ribbons. One alternative to our solution would be to upjacket each ribbon individually (one tube per ribbon). Because space is limited in splice closures and fiber counts are increasing, a solution that reduces the amount of upjacketed ribbons is sorely needed. The ability to consolidate up to six ribbons within a single tube fulfills the need to optimize space in the splice closure.

Because our tubes are transparent, troubleshooting with a visual fault locator is (VFL) very easy. If the splice technician inadvertently damages a fiber when preparing and handling the cable, he or she will be able to locate the break or macrobend through the oval tube.

Ribbons are flat and therefore have a preferential bend – meaning that because of their shape, they cannot be bent in just any direction. The oval shape of our protective tubes has the same preferential bend, making it virtually impossible to bend the ribbons in ways that could damage them.

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The Do's and Don'ts of Ribbon Fiber Protection

Don't: Leave ribbons exposed as they transition from the cable breakout to the splice trays

Do: Protect ribbons as they re broken out of the cable jacket.

Ribbons are vulnerable to breakage and must be protected. ADC does not recommend leaving ribbons exposed outside of the protection of the splice trays. Our breakout kits provide protection all the way from the cable breakout to the inside of the splice tray.

Don't: Leave ribbons exposed as they transition from the cable breakout to the splice trays

Do: Do use appropriately flexible tube to surround the ribbons.

Ribbons are protected very well inside the cable's round buffer tubes. However, care must be taken in choosing the conduit or tube that protects ribbons once they break out of the cable. A protective conduit or tube must be flexible enough to be routed inside a splice cabinet or panel, yet not so flexible that it could kink. A kink could cause the ribbons inside to form a macrobend or even break. ADC's oval tubes are stiff enough to resist kinking yet flexible enough to allow easy routing within the splice closure.

Do: Choose a tube that appropriately matches the size of the ribbons.

A round tube or conduit must not be so large that the individual ribbons could separate from each other and become twisted inside while feeding into the tube. If the tube or conduit is not transparent, twists or macrobends might not be found until the fibers are spliced and then tested for insertion loss. Breaking the splice and re-feeding the ribbons through the tube nullifies a lot of work that should have and could have

been done right the first time. The result is wasted effort, time, and money. ADC's oval tubes are spacious enough to hold up to six 12-fiber or 24-fiber ribbons, but form-fitting so that the ribbons do not have excess space in which to become twisted or bent.

Another drawback of some of the round tubes available on the market is their size. Space is limited inside splice closures. Therefore, the size of the protective tube must be optimized to allow service providers to maximize the capacity of their splice closure. Round tubes, by the nature of their shape, are not a good match for flat ribbons. Using a round tube guarantees that space will be wasted in the splice closure. Again, ADC's oval tubes mimic the shape of the ribbons. Thus, no space is wasted and the service provider can maximize the density in the splice cabinet or panel.

Do: Use a transparent tube to protect the ribbons.

As previously mentioned, twists cannot be visually found in a non-transparent tube. Nor can a splice technician locate a macrobend or break in a fiber when shooting a visible light through a suspect fiber. ADC's transparent oval tubes provide the ability to notice any issues with the ribbon fibers in the event that a fiber was inadvertently damaged during handling.

Do: Secure the protective tube to the cable.

To provide the best possible protection of the bare ribbons, a protective tube must be anchored firmly to the cable jacket or the cable's central tube. Round tubes or conduits on the market today may not be optimized to fit tightly and securely onto the cable jacket or central tube. ADC has designed several breakout kit sizes to accommodate the multitude of cable sizes on the market. Therefore, we have the perfect fit for every cable, making a firm fit possible every time.

APPLICATION NOTE

For ordering information see ADC literature number 103742AE



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