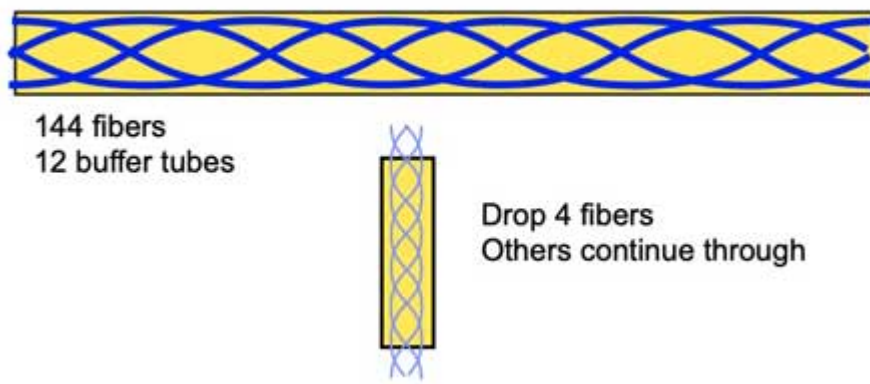


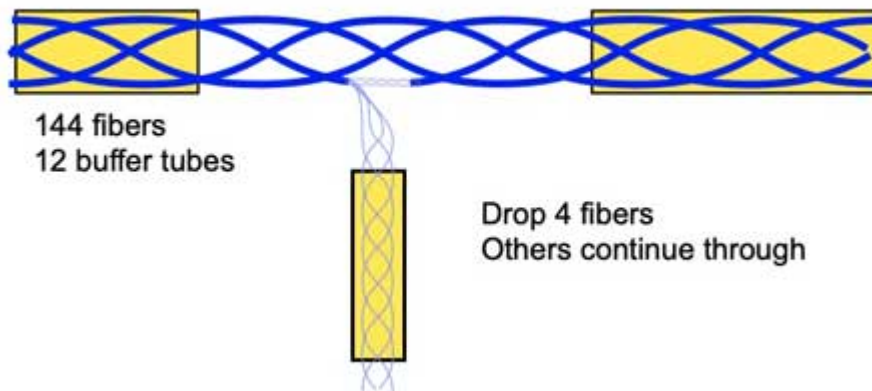
Fiber Optic Cable Installation - Midspan Access

Simplifying Installation Of Drops

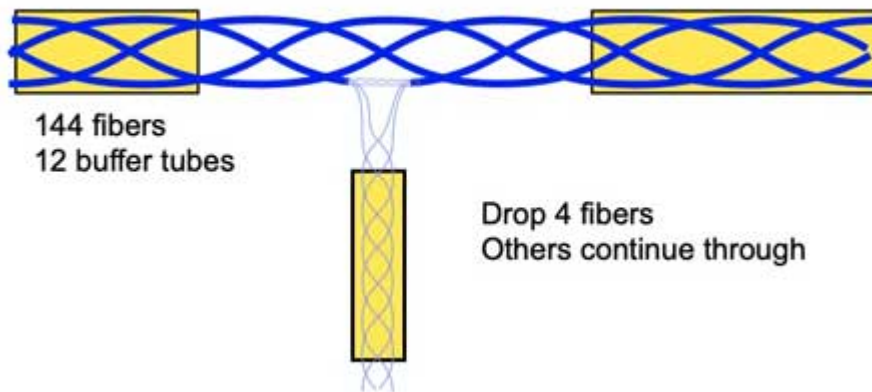
Many installations involve splitting the fibers in a cable or dropping a small fiber count cable from a large backbone cable. Backbone cables of 144-288 fibers are common and larger ones are becoming more common too. Drop cables are often only 2-12 fibers, meaning most fibers are continuing straight through the drop point. Midspan access involves opening the cable by removing the jacket and strength members, opening the buffer tube and splicing only the fibers being dropped at that point. The untouched buffer tubes from the opened cable are carefully rolled up and stored in the same splice closure as the fibers that will be separated and spliced to a drop cable.



If there is a method of splicing only the 4 drop fibers instead of the 144 fibers, we will only have 4 splices instead of 144 or 146 depending on the architecture of our system. The difference is according to how the drop is configured.



If you are building a star network where every drop links back to the origin of the network, you will splice 4 fibers in the cable to the drop cable, leaving 4 splices on 4 fibers (instead of 144 splices if the backbone cable is cut and respliced).

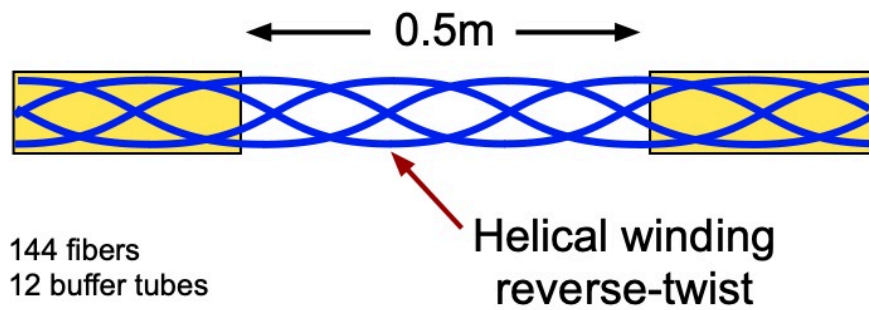


If you are building a ring network, you may only be splicing two fibers going to the drop and two that are continuing along the ring network.

All this may seem obvious but in actual practice requires some knowledge, skills and careful workmanship. To do a proper job. Fortunately, manufacturers of cables and tools have good information available online on how to do it, and FOA Master Instructor Joe Botha has provided FOA with a [application note on how midspan access is done in his classes](#) also.

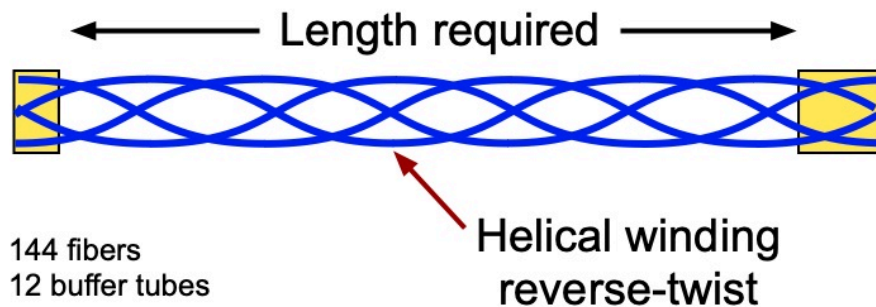
The Process

The basic process is simple. We will look at a loose tube cable but processes exist for ribbon cables also, involving splitting ribbons to access the drop fibers.

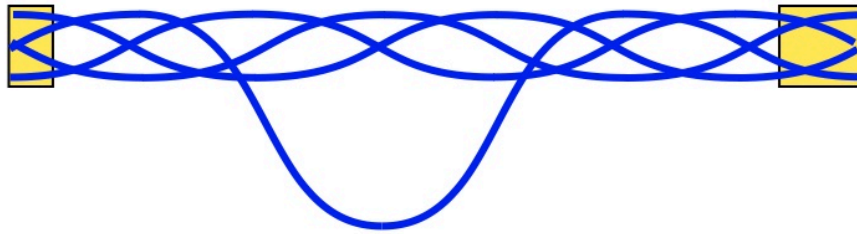


Following the cable manufacturer's directions, remove a short length of cable jacket to find the reversal point for the helical winding of the buffer tubes. The reversal point will be the center of the opening for access to make unwinding tubes neater. Find the ripcords to use for removing a longer length of the jacket.

Note: If you open up on a reverse twist and end on reverse twists, the tubes will enter the closure as straight as an arrow. And where the reverse twist philosophy is ignored, the tubes entering a closure, will need to be forced into position and will be under bending stress. *On some cables, you may be able to find the reversal point by looking at the cable jacket - if the jacket is thin enough that the location of the tubes shows through the cable jacket. Some manufacturers also mark the cable to help locate the reversal point.*



You must remove the jacket of the cable for a specified length according to the cable type and splice closures used. After removing the cable jacket, you remove unnecessary binder tapes and water blocking tapes and strength members, leaving enough of the stiff central member on both ends to attach to the splice closure. Identify the tube with the fibers to be spliced to the drop cable and set aside while carefully coiling the other tubes for storage in the closure.

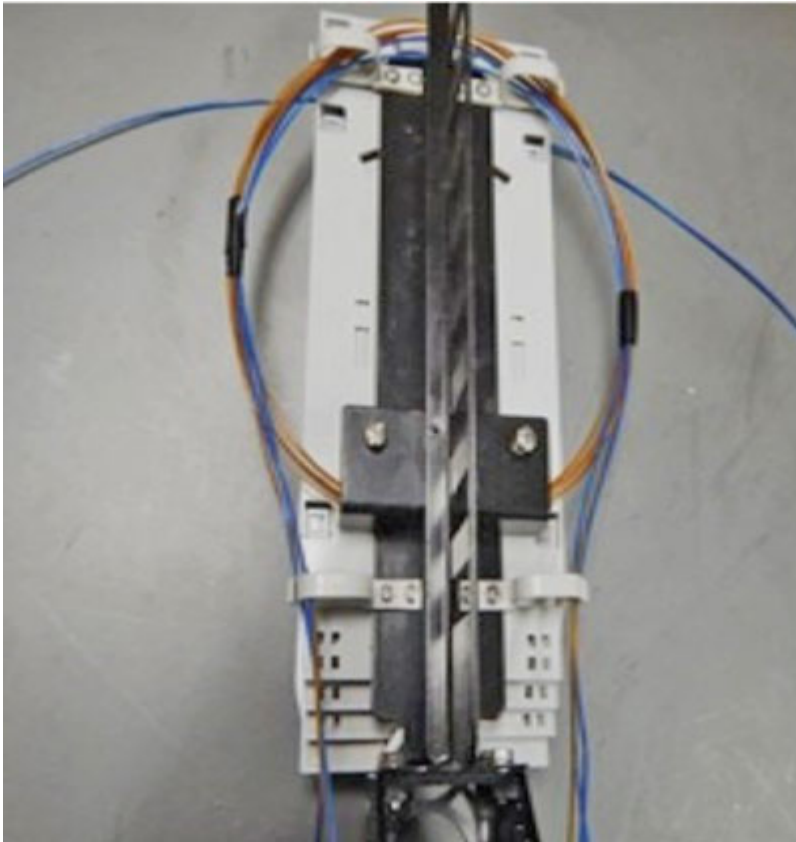


144 fibers

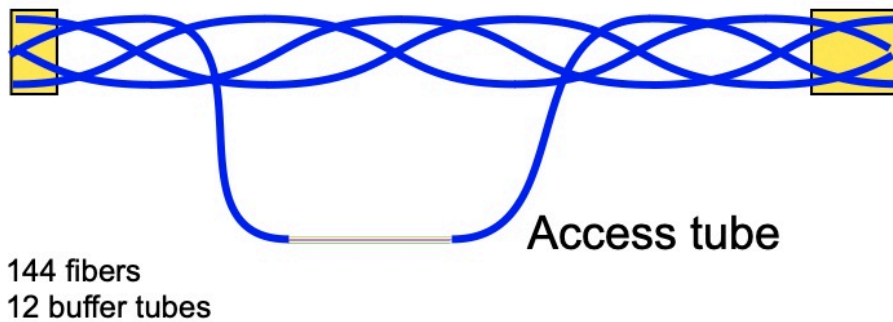
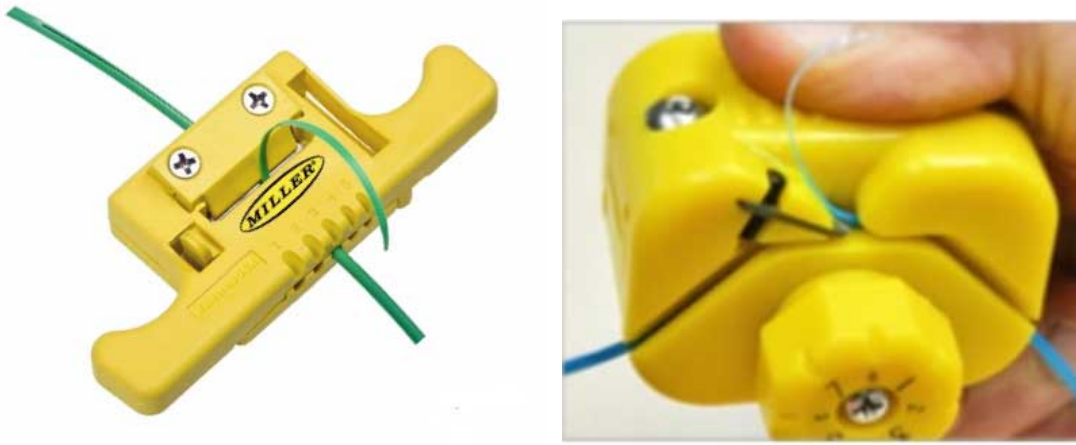
12 buffer tubes

Tube to access

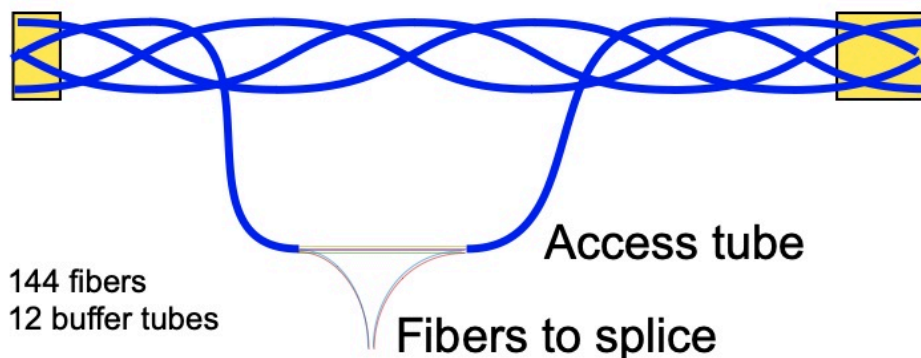
Separate the buffer tube that will be opened from the tubes that will pass through the splice closure. They will be secured in the closure.

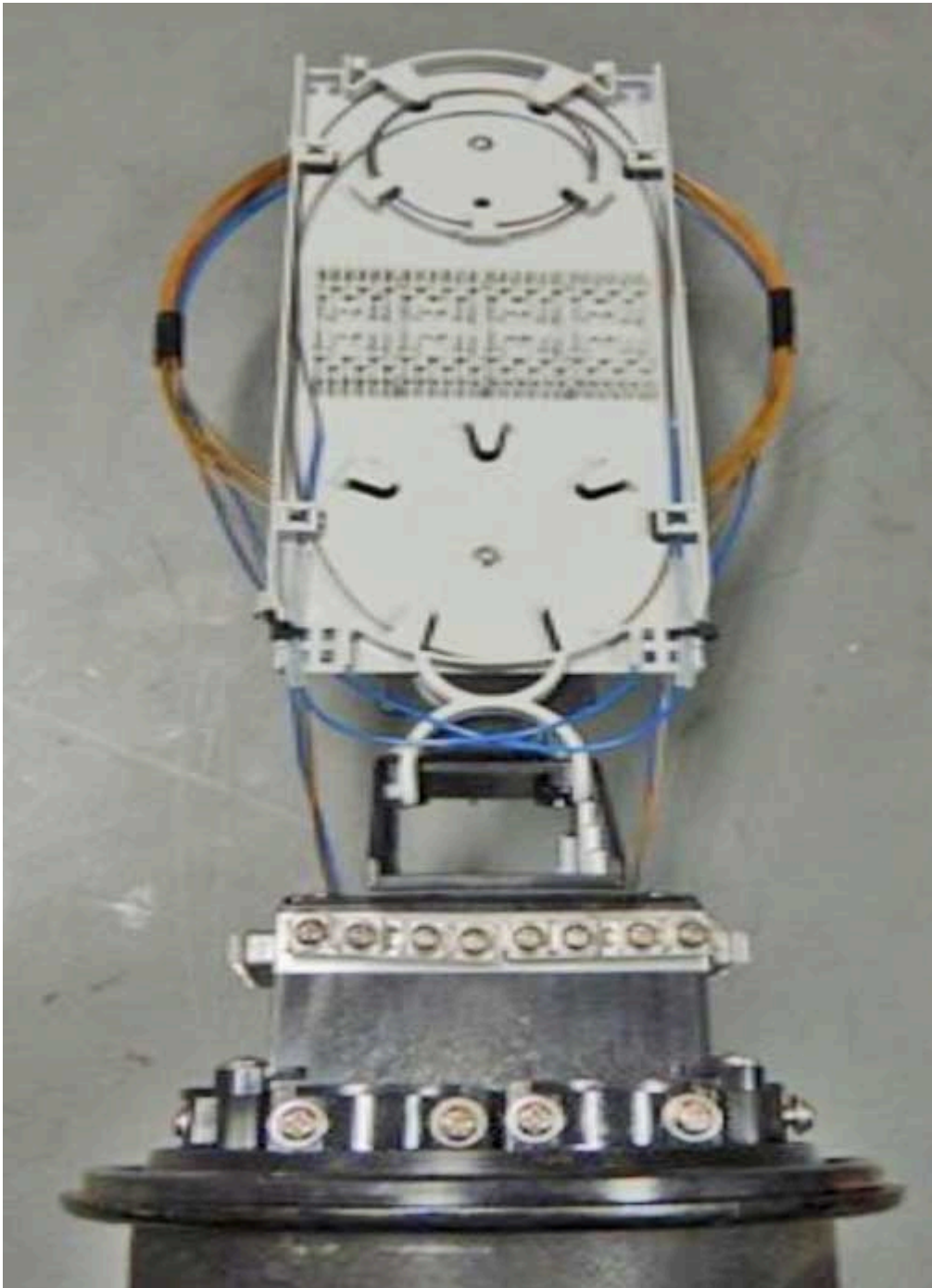


To open the buffer tube, you need a midspan access tube that shaves off a section of the tube to allow removal of the fibers without damaging them. Here two types of Miller tools that shave the tube:



After shaving the tube and removing the fibers - count carefully to ensure you remove all the fibers! - you can cut the tube off to have bare fibers only for the length you need to splice on the drop cable. Secure the tube to the splice tray. All these fibers will be placed in a splice tray for safe storage but only the fibers being dropped will be cut and spliced to the drop cable. This is what the closure will look like, ready for splicing the drop cable.





The closure is ready for the addition of the drop cable and splicing fibers.

Note: The illustration is done with OSP loose-tube cable but the process is similar with ribbon cables except pass-through ribbons need protecting in a splice tray. The same technique can also be used with tight-buffer distribution cable for premises networks.

Search online for "midspan access" to find lots of application notes and videos on the subject. Or talk to your fiber optic cable vendors.

[Application note - hands-on midspan access](#)

[More on Outside Plant Construction and Installation](#)

[Table of Contents: The FOA Reference Guide To Fiber Optics](#)

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