

# Fiber Cable Preparation, Splicing, and Termination Instructions

## (CFDP210-EL24 Charles® Fiber CFDP2 Pedlock® OSP Pedestal)

### 1. GENERAL

**1.1 Document Purpose.** This document provides instructions for the fiber cable technician to properly perform fiber cable preparations, routings, splicing, terminations and connections within a Charles Industries' Fiber Distribution Point (CFDP2) EL24 Pedlock® pedestal with a 10" dome. This model, shown in Figure 1, offers an interior fiber organizer for use in point-to-point applications where preconnectorized SC/UPC connections are desired, such as at cell sites to service multiple wireless operators. Call Charles Industries (see Part 3) to request more information or literature on this or other models.

- NOTE -

Hereafter the CFDP210-EL24 also may be referred to as the "CFDP2" or "pedestal."

**1.2 Document Status.** Whenever this document is updated, the update reason will be stated in this paragraph. Print 2 updates Table 3.

**1.3 Product Purpose and Description.** Charles' CFDP2 pedestals are designed to be installed in new or replacement installations, to accommodate various soil and mounting applications as well as various cable types and applications, to accommodate certain fiber slack situations, and to exceed Telcordia GR-13-CORE and GR-771-CORE specifications. The CFDP2 is an above-grade pedestal that offers excellent OSP

protection against floods, fire, dirt, weather, insects, and impact for fiber-optic cable splices and customer service drops in FTTP deployments. This protection is achieved with a weather-resistant yet free-breathing interior enclosure that is within the confines of a protective, exterior, buried-distribution-cable pedestal. The bottom of the pedestal is a square-shaped, expanded-capacity, non-metallic, locking, 2-piece, split base designed to open and easily install around conduit-fed cable bundles or to accept less flexible cables. The non-metallic outer dome (top section) covers and protects an inner double-door enclosure, which in turn protects the heart of the pedestal: the exclusive, versatile, and interchangeably designed, metallic, interior fiber organizer. Two locking doors are provided, one on each side (CO-side vs. drop or customer side), to separate the drop connections from the CO feed connections. Connections are made with pre-terminated cables at the fiber organizer via SC adapters in the Interconnect bulkhead. Feed side cables may be either a pre-terminated type connected directly to the CO side bulkhead, or a loop-through or stub-end cable requiring splicing in the provided splice tray (pigtailed are spliced to the CO fibers and terminated at the bulkhead). Charles offers pigtail fanouts for feed cable connections (see Table 3). Model CFDP210-EL24F is equipped with two ribbon fiber fanouts. Other fiber Fanout kits are available, including a loose-tube type. Customer drop cables are typically pre-terminated at both ends with 4 SC/UPC connectors; at the pedestal, the connectors are routed to the assigned adapters for each customer. Labels are provided on the inside of the Drop-side door and near the

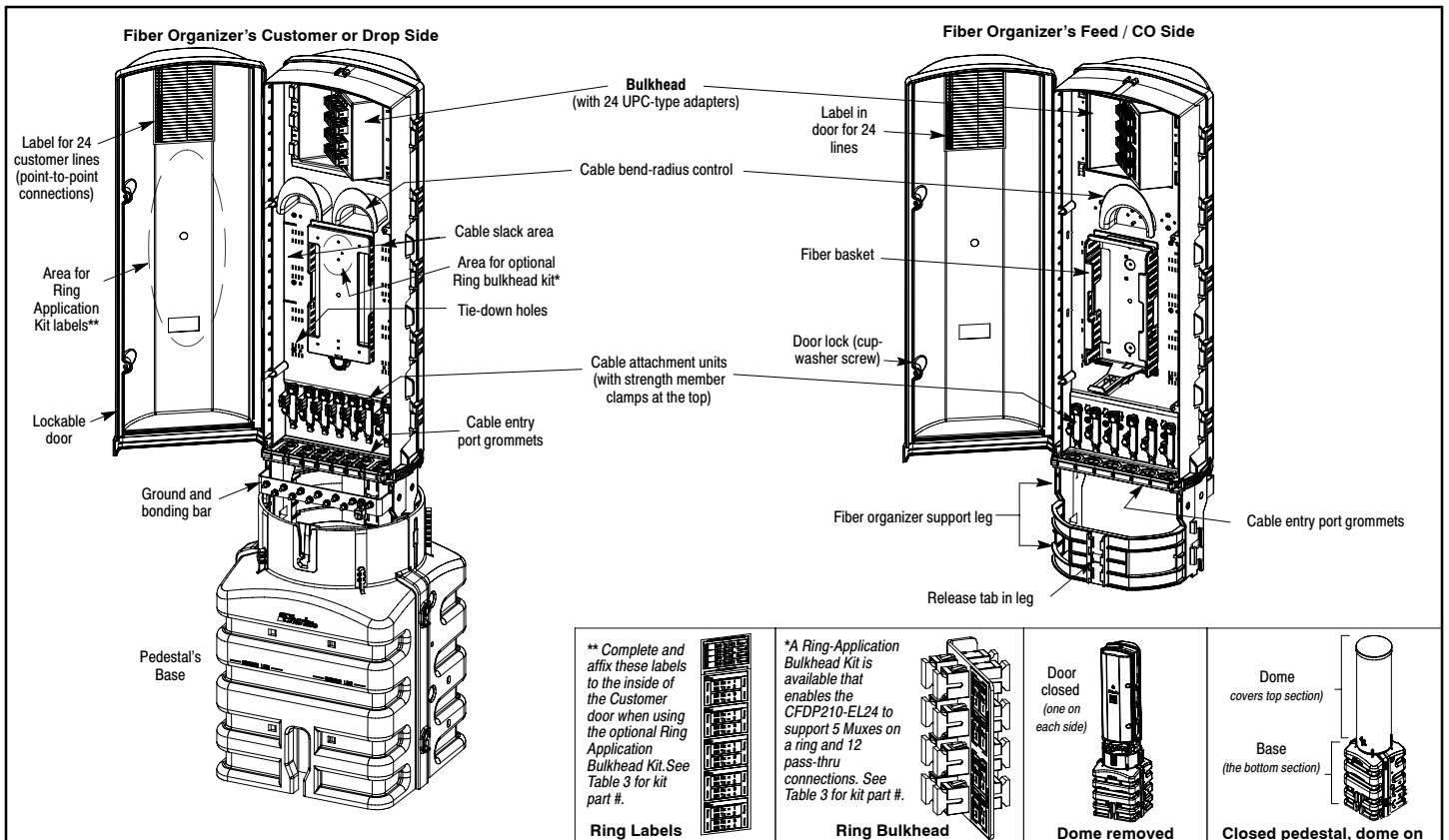


Figure 1. Interior Views of the CFDP210-EL24

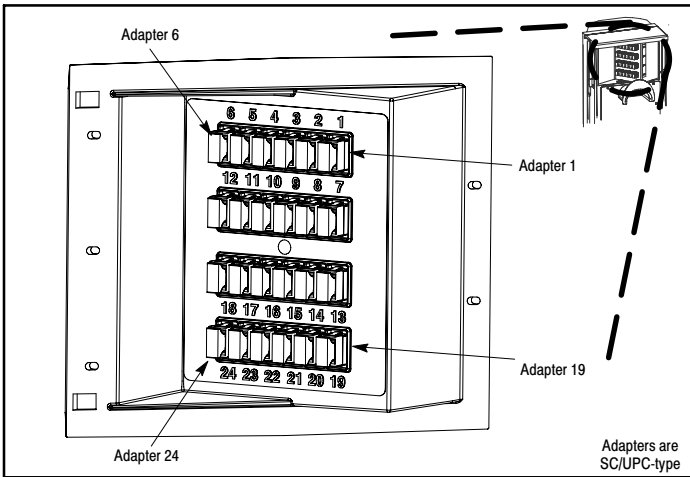


Figure 2. CO/Feed Side 24-Adapter Bulkhead

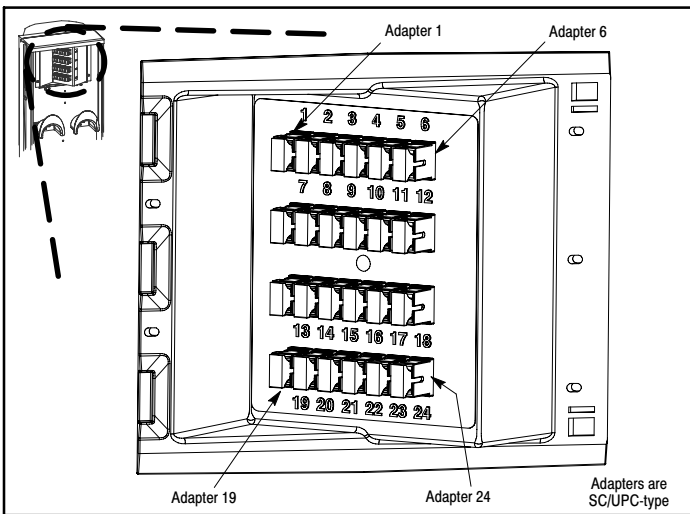


Figure 3. Customer/Drop Side 24-Adapter Bulkhead

bulkheads for connector to adapter matching. Grounding and bonding connections are made to an external bonding bar just below the fiber organizer for line maintenance and testing.

**1.4 Applications.** The CFDP2 Interconnect Pedestal serves up to 24 individual or 12 point-to-point customers (2 fibers each). It is ideal for multi-tenant cell site, campus, or strip mall environments where the customer requires high-capacity fiber bandwidth for wireless backhaul, private networks or data and video broadband services. With the two built-in adapter bulkheads, the Interconnect pedestal facilitates efficient provisioning of fiber services to the end customer's equipment. Fiber drops can be easily turned up, moved, or disconnected on an "as needed" basis, giving telecom service providers added flexibility in their efforts to provide broadband voice, data, and video services to customers whose bandwidth requirements may change seasonally or due to major events. An additional eight connector bulkhead for a ring configuration with a "Service" circuit and a "Protect" circuit, which offers continuous service, even during times of repair or maintenance, can be configured by ordering and installing an optional Charles *Ring Application Bulkhead Kit* (Part #80-002665-F, see Table 3).

**1.5 Product Mounting.** The CFDP2 pedestal base is typically installed at the cell site or FTTP distribution point in a trench with the base ground

line indicator at grade level. The pedestal fiber organizer mounts to the base. Once all cable connections are complete, the inner doors are secured to protect all cabling and connections, then the outer dome is placed over and attached to the base for further protection. The base contains holes or knockouts at the rear and both sides that accept an optional, metallic, mounting stake or a pole-mount stake. Call Charles for ordering information (Part 3).

**2. CABLE INSTALLATION AND SPLICING**

Use and follow the steps in Table 1 to perform all fiber feed and drop cable preparations, routings, attachments, splicing, and connections. The following conditions are presumed:

- **Cable Architecture/Deployment** - The feed (CO) cable is deployed in a stub-end configuration or a loop-through application. *Though not described in these instructions, this pedestal supports pre-terminated feed cable applications, as well.*
- **Equipment Installation** - A CFDP2 base has been properly installed at the desired field site (base installation instructions are provided with the base).
- **Trench Setup** - The trench is either dug and open, or backfilled with the feed cable already placed and brought into the base bottom.
- **Feed Cable Type** - The CO or feed cable may be a loose tube or ribbon type cable (or pre-terminated), but these instructions mainly describe a loose tube type. A few ribbon cable instructions are given.
- **Drop Cable Type** - Customer drop cables are SC/UPC-type pre-connectorized cables with four connectors at each end (other types can be used).
- **Transportation Tubing** - Protective, flexible, transportation tubing is provided for the feed cable pigtailed (two 3-foot long pieces).

Consult the product labels as needed during the cable installation. For information regarding other pedestal installation types or applications, or cable deployment types, contact Charles Industries at the phone number provided in Part 3.

⚠ - WARNING - ⚠

**Cable and fiber cleaning solvents may contain hazardous materials or harmful ingredients. Always read and follow the manufacturer's precautions, warnings, and instructions when working with cleaning solvents or products.**

**Shards and cleaved glass fibers are very sharp and can easily pierce the skin. Use tweezers to pick up cut glass fibers and place them on a loop of tape or in a container specifically meant for this purpose. Good housekeeping is important.**

**Corrugated metal or armor that may be present in feed cables is very sharp when cut or exposed. Exercise extreme caution to prevent personal injury. Use protective work gloves when handling armored cable.**

⚠ - FIBER OR CABLE DAMAGE CAUTION - ⚠

**Buffer tubes and fibers are sensitive to bending, pulling, and crushing forces. Avoid buffer tube kinking and fiber damage: use care when working with fiber and do not violate fiber, buffer tube, and cable minimum bend-radius requirements.**

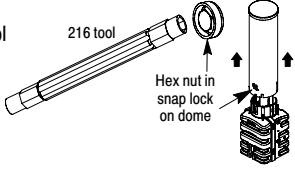
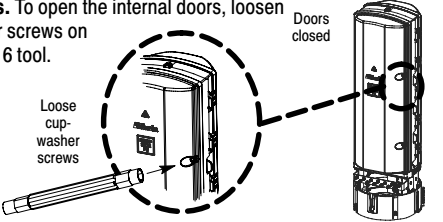
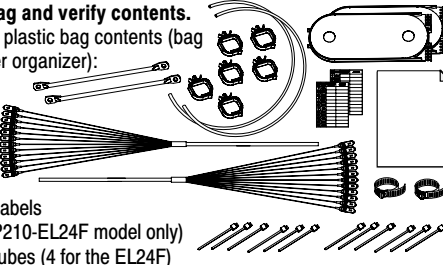
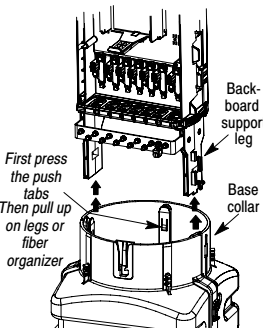
**In cold environments, some loose tube cable designs may exhibit low temperature induced signal attenuation when long lengths of buffer tubes have been exposed and then stored. Contact the cable manufacturer concerning recommended exposed buffer tube lengths in your installation area.**


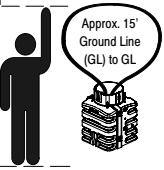
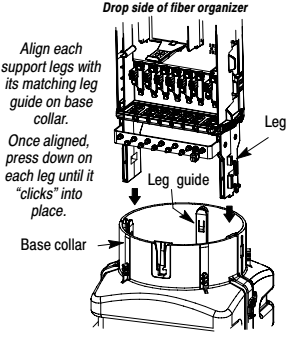
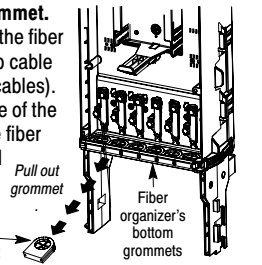
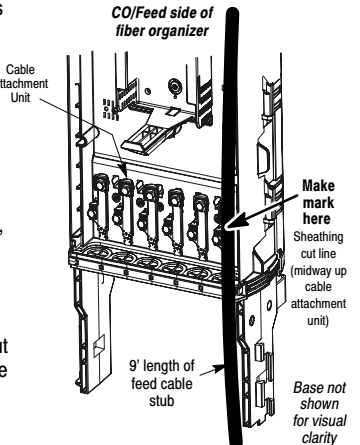
⚡ - CAUTION - ⚡

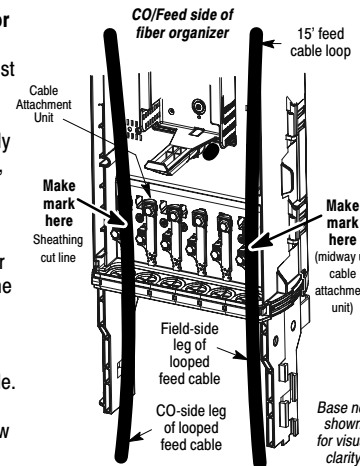
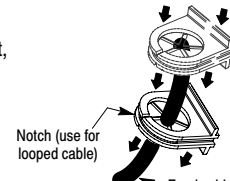
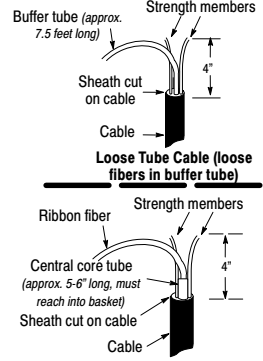
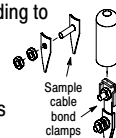
**Perform all bonding and grounding prior to making any electrical and communications connections.**

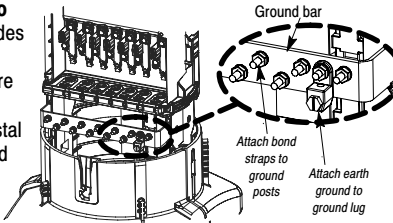

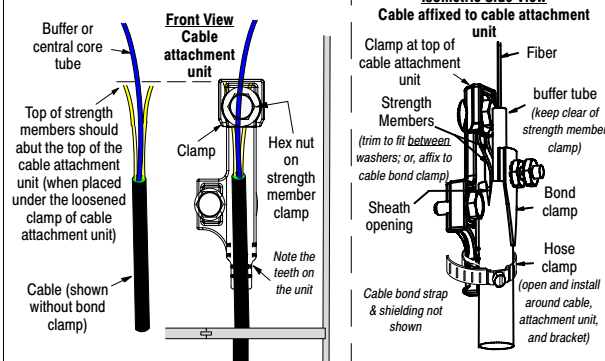
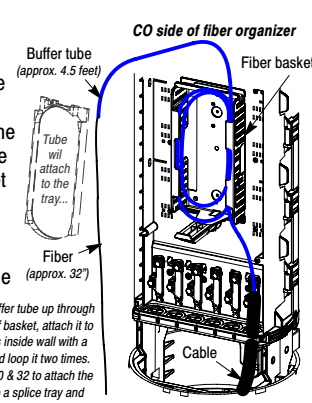
- EYE DAMAGE WARNING -

**Risk of serious eye damage! Never look into the end of a fiber optic line nor use a magnifier in the presence of laser light or radiation. Always exercise caution when installing, testing, or performing maintenance on live circuits. If eye exposure to laser light or radiation has occurred or is suspected, immediately seek medical treatment by a professional eye care physician.**

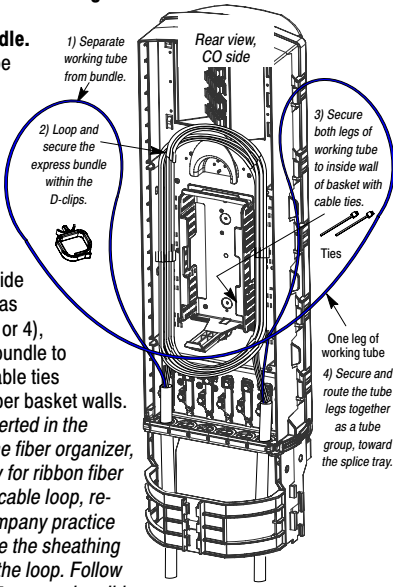
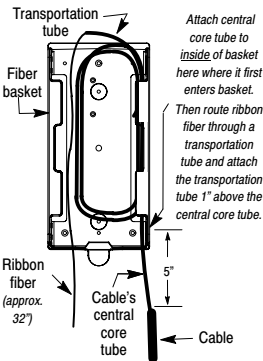
| Table 1 – CO and Drop Cable Installation   |   |  |  |
|--|---|--|--|
| Step #   | Instruction   |  |  |
| 1.   | <p> <input type="checkbox"/> <b>Obtain tools, materials and equipment.</b> Assemble the following tools and equipment to perform fiber feed/drop cable connections in the installed CFDP2 pedestal.                             <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> 216 tool/can wrench<br/> <input type="checkbox"/> Tape measure<br/> <input type="checkbox"/> Grounding equipment &amp; tools<br/> <input type="checkbox"/> Labels for cables (optional)<br/> <input type="checkbox"/> Cable bond clamps (optional)<br/> <input type="checkbox"/> Proper length drop cables<br/> <input type="checkbox"/> Wrenches or socket set                                 </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> Extra splice trays/labels (2 provided w/parts bag)<br/> <input type="checkbox"/> Dome and fiber organizer (provided)<br/> <input type="checkbox"/> Bag of parts (provided with the pedestal)<br/> <input type="checkbox"/> Fiber splicing tools and equipment<br/> <input type="checkbox"/> Cable-entry tools<br/> <input type="checkbox"/> Buffer tube stripper tool<br/> <input type="checkbox"/> Safety glasses &amp; work gloves (optional)                                 </td> </tr> </table> </p> | <input type="checkbox"/> 216 tool/can wrench<br><input type="checkbox"/> Tape measure<br><input type="checkbox"/> Grounding equipment & tools<br><input type="checkbox"/> Labels for cables (optional)<br><input type="checkbox"/> Cable bond clamps (optional)<br><input type="checkbox"/> Proper length drop cables<br><input type="checkbox"/> Wrenches or socket set | <input type="checkbox"/> Extra splice trays/labels (2 provided w/parts bag)<br><input type="checkbox"/> Dome and fiber organizer (provided)<br><input type="checkbox"/> Bag of parts (provided with the pedestal)<br><input type="checkbox"/> Fiber splicing tools and equipment<br><input type="checkbox"/> Cable-entry tools<br><input type="checkbox"/> Buffer tube stripper tool<br><input type="checkbox"/> Safety glasses & work gloves (optional) |
| <input type="checkbox"/> 216 tool/can wrench<br><input type="checkbox"/> Tape measure<br><input type="checkbox"/> Grounding equipment & tools<br><input type="checkbox"/> Labels for cables (optional)<br><input type="checkbox"/> Cable bond clamps (optional)<br><input type="checkbox"/> Proper length drop cables<br><input type="checkbox"/> Wrenches or socket set | <input type="checkbox"/> Extra splice trays/labels (2 provided w/parts bag)<br><input type="checkbox"/> Dome and fiber organizer (provided)<br><input type="checkbox"/> Bag of parts (provided with the pedestal)<br><input type="checkbox"/> Fiber splicing tools and equipment<br><input type="checkbox"/> Cable-entry tools<br><input type="checkbox"/> Buffer tube stripper tool<br><input type="checkbox"/> Safety glasses & work gloves (optional)  |  |  |
| <b>Preparing and Opening the Pre-Installed CFDP2 Pedestal</b>  |   |  |  |
| 2.   | <p> <input type="checkbox"/> <b>Verify pedestal is installed and inspect.</b> Find the CFDP2 pedestal installation site, inspect it, and verify the pedestal is properly installed in the ground. New pedestals should be inspected thoroughly upon delivery. If the equipment was damaged in transit, immediately report the damage to the transportation company.                 </p>  |  |  |
| 3.   | <p> <input type="checkbox"/> <b>Remove outer dome from base.</b> To remove the outer dome, use a 216 tool or can wrench to turn the snap lock's hex nut 1/4-turn counter-clockwise. Hold the can wrench in that position and lift the dome. Set the dome aside until needed.                 </p>   |  |  |
| 4.   | <p> <input type="checkbox"/> <b>Open inside doors.</b> To open the internal doors, loosen the two cup-washer screws on each door with a 216 tool.                 </p>   |  |  |
| 5.   | <p> <input type="checkbox"/> <b>Remove plastic bag and verify contents.</b> Verify the following plastic bag contents (bag attached to the fiber organizer):                             <ul style="list-style-type: none"> <li><input type="checkbox"/> 12 cable ties</li> <li><input type="checkbox"/> 2 bond straps</li> <li><input type="checkbox"/> 2 hose clamps</li> <li><input type="checkbox"/> document</li> <li><input type="checkbox"/> 6 ribbon D-clips</li> <li><input type="checkbox"/> 2 splice trays &amp; labels</li> <li><input type="checkbox"/> 2 fanouts (CFDP210-EL24F model only)</li> <li><input type="checkbox"/> 2 transportation tubes (4 for the EL24F)</li> </ul> </p>   |  |  |
| 6.   | <p> <input type="checkbox"/> <b>Remove fiber organizer (optional, to facilitate earth ground installation).</b> Remove the fiber organizer, if needed or desired, to facilitate the earth ground installation, per local company practice. Remove the fiber organizer by first pressing one finger push tab (located inside the base collar at the support leg), pulling up on the support leg, and then secondly, pressing the other legs' push tabs and pulling up on the other support legs. When the tabs are disengaged or released, pull the fiber organizer out of the base and temporarily set it aside.                 </p>    |  |  |

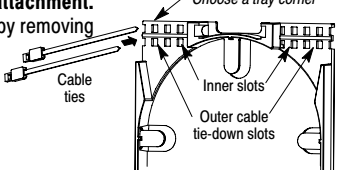
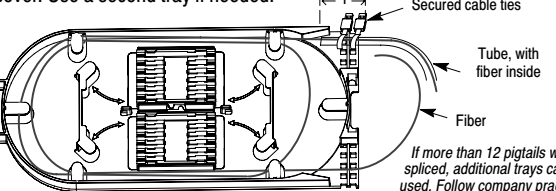
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| 7.  | <p> <input type="checkbox"/> <b>Verify/prepare earth ground. Always follow local codes and company practice when grounding cables/equipment.</b> If an earth ground is not present at the pedestal site and local practice requires an earth ground, prepare one at this time. Do not connect earth ground until the fiber organizer is re-attached to the base.                 </p>   |
| <b>Preparing the Feed or Branch Stub Cable (From Pedestal Base to Splice Tray on Fiber Organizer)</b> |   |
| 8a.   | <p> <input type="checkbox"/> <b>For stubbed cable applications: Verify sufficient feed cable length.</b> Verify 9 feet (approx.) of cable, from the ground line to the cable's stub-end, extends up through the pedestal base. Position the cable toward the rear, or CO side, of the base (the CO side of the fiber organizer has fewer but larger grommets). See the base installation document for instructions on installing the base and routing cables into the base.                 </p>   |
| 8b.   | <p> <input type="checkbox"/> <b>For looped cable applications: Verify sufficient feed cable length.</b> Verify approximately 15 feet of looped feed cable, ground line to ground line, is available at the pedestal base, and bring it up and out of the base. Position the cable toward the rear of the base (the Charles logo is on the front side of the base). See the base installation document for base installation instructions and routing cables into the base.                 </p>    |
| 9.  | <p> <input type="checkbox"/> <b>Attach fiber organizer.</b> (Skip this step if the fiber organizer is already installed.) First, position the feed cable so it will be at the CO or feed side of the fiber organizer (see Figure 1). Then install the fiber organizer to facilitate marking the cable for the proper cable sheath removal length. Align the fiber organizer legs with the leg guides in the collar of the base. Once aligned, press down on the fiber organizer until the tab locks are engaged (audible clicks indicate proper leg insertion).                 </p>    |
| 10.   | <p> <input type="checkbox"/> <b>Locate and remove single-port feed grommet.</b> Grommets on the CO or feed cable side of the fiber organizer accept one feed cable each (drop cable grommets can accept one or two flat drop cables). For stubbed cable applications, remove one of the feed-side grommets from the bottom of the fiber organizer. With a pointed tool, poke a small hole in the center of the grommet. For looped cable applications, remove the two outermost grommets.                 </p>   |
| 11a.  | <p> <input type="checkbox"/> <b>For stubbed cable applications: Mark cable for sheathing removal.</b> Cable sheathing must be removed to expose the buffer tubes or fiber for splicing. Sufficient sheathing is retained to attach the cable to the fiber organizer. Before marking the location of the sheathing cut, first push or backfeed the cable into the conduit or trench (to provide slack for any additional or future sheathing cuts). On the feed side of the fiber organizer, locate the cable attachment unit located directly above the chosen grommet, press the cable up against the cable attachment unit, and mark a cut line on the cable midway up the cable attachment unit, approximately 7 inches above the top of the base collar.                 </p>  |

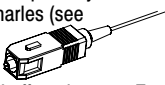
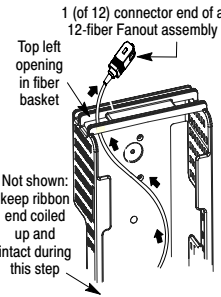
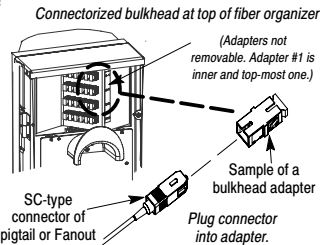
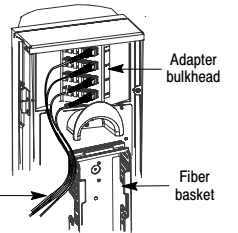
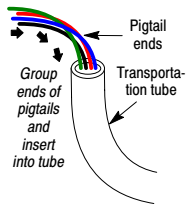
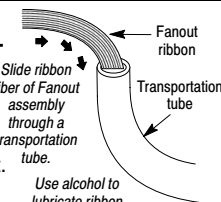
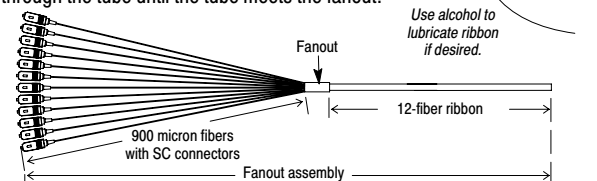
|        |  |
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| 11b. □ | <p><b>For looped cable applications: Mark cable for sheathing removal.</b> Press and hold one cable leg against the lower part of the fiber organizer. At the outermost cable attachment unit, directly above the selected grommet, make a mark on the cable halfway up the 3" high cable attachment unit (approx. 2.5" above the grommet). Repeat for the cable loop's other leg. The outer cable sheathing will be removed between these two marks, to access the buffer tube and fiber inside the cable. The cable will be secured to the attachment unit just below the outer sheathing cut.</p>  |
| 12a. □ | <p><b>Prepare grommet (stuffed cable).</b> Before opening the cable to remove the sheathing, push the cable stub end through the grommet, then slide the grommet down the cable until the grommet is below the sheathing cut line on the cable or below the grommet plate.</p>    |
| 12b. □ | <p><b>Prepare grommets (for looped cable).</b> As shown in Step 12a, each grommet has a notch at the rounded end (tip). With the tool of choice, slice into the grommet (to the center of the port's star shape) at the notch. A looped cable has two "legs"; a feed-side leg from the CO, and a field-side leg to the customer. At a point below the grommet plate, and prior to installing the hose clamp (shown in Step 20), press the cable into the sliced grommet until it is centered in the round port area of the grommet.</p>  |
| 13. □  | <p><b>Remove fiber organizer, for sheathing removal (optional).</b> If desired, remove the fiber organizer to facilitate the sheathing removal and bond clamp installation procedures. See Step 6 to remove fiber organizer.</p>   |
| 14. □  | <p><b>Remove cable sheathing and cut strength members.</b> Remove the sheathing, per manufacturer's instructions or local practice, from the mark to the cable end. (approx. 7.5 feet) to expose the buffer tube and strength members (for Loose Tube Cable) or the central core tube, ribbon fibers, and strength members (for Central Core Cable). Trim the strength members to 4" (they can be trimmed further in a later step, Step 21). Do not cut the buffer tube.</p>                                 |
| 15. □  | <p><b>Clean buffer tube.</b> Per company practice and cable type, find, unwrap, expose, and clean the buffer tube, as needed.</p>  |
| 16. □  | <p><b>Attach bond clamp to cable.</b> To prepare the cable for bonding to the pedestal ground bar, attach a company-approved cable bond clamp to the cable/shield at the sheath cut. Always follow clamp manufacturer instructions or company practice to attach cable bond clamps, as clamps used to bond cables may vary per location, application, and cable type and size.</p>    |
| 17. □  | <p><b>Attach fiber organizer and grommet(s).</b> If not yet installed, (re)attach the fiber organizer (see Step 9). Re-install the grommet (with the cable running through it). Rotate the grommet so the round end faces the center of the fiber organizer, slide it up or down as needed and press it into its slot on the grommet plate. Make sure the sheathing cut is aligned properly with the cable attachment unit. For looped cable, repeat for the other cable leg.</p>  |

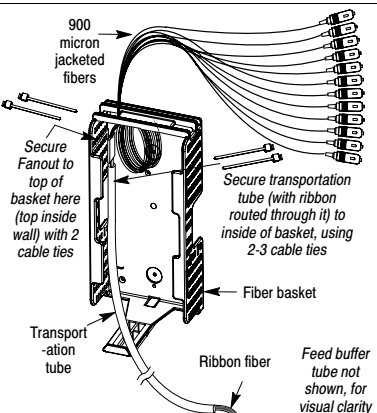
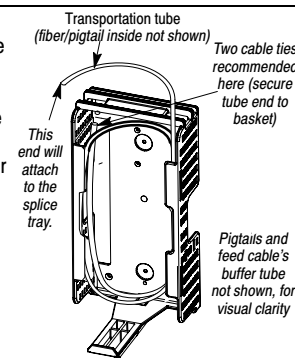
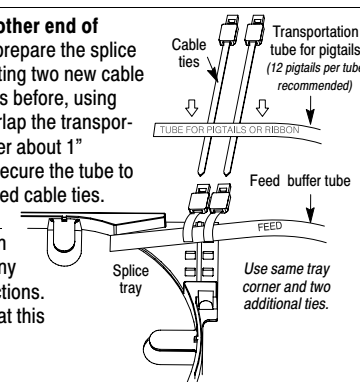
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| 18. □ | <p><b>Connect earth ground to ground lug.</b> Per local codes and/or company practice, install an earth ground wire of proper gauge from the earth ground to the pedestal at the ground bar's ground lug. Always perform grounding prior to cable attachment.</p>    |
| 19. □ | <p><b>Bond cable to ground bar.</b> Attach a bond strap (provided) from the cable bond clamp (shown in Step 16) to one of the bond posts (see Step 18 for bond post locations).</p>    |
| 20. □ | <p><b>Secure cable to the cable attachment unit.</b> First, if the cable has strength members (and they were not terminated in an optional cable bond clamp), loosen the hex nut in the strength member clamp (at the top of the cable attachment unit) and slide the strength members between the two washers and under the clamp. Trim the strength members if they are cut too long. Press the cable against the attachment unit, making sure enough cable sheath remains for good cable contact with the teeth at the bottom of the cable attachment unit. Firmly affix a hose clamp around both the cable and the cable attachment unit.</p>  |
| 21. □ | <p><b>Tighten strength member clamp (if used).</b> If the strength members were placed under the strength member clamp in Step 20, secure them by tightening the hex nut of the strength member clamp.</p>  |
| 22. □ | <p><b>For stubbed cables (loose fiber buffer tube type): Route the tube/fiber into fiber basket.</b> Route the buffer tube up through the bottom opening of the fiber basket, and wrap the length of tube inside the basket (about 2-3 loops). Secure the tube to the inside walls of the basket with cable ties, especially where it first enters the basket, but do not secure the last 3 feet (minimum) of tube. After the tube is attached to the splice tray in Step 30, this 3' length allows the technician sufficient tube slack when the splice tray is accessed for fiber splicing.</p>    |

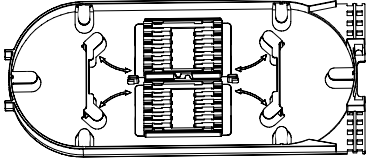
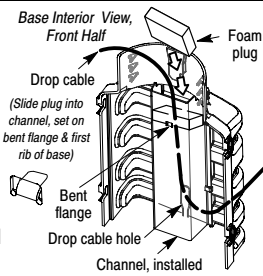


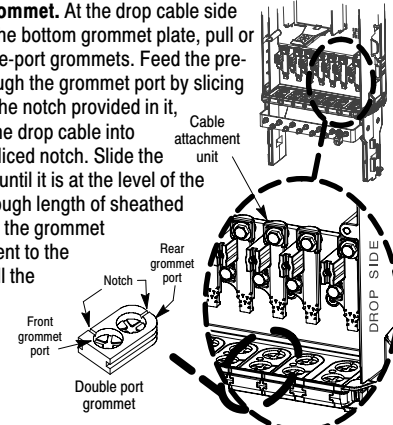
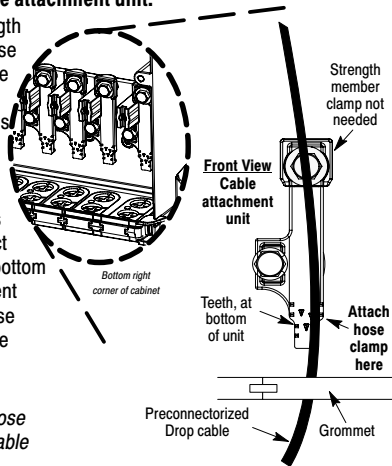
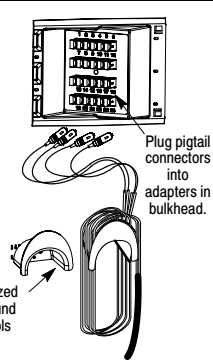
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| 23. □ | <p><b>For looped cable: Separate working fiber tube from the tube bundle, and secure bundle.</b> Find and separate the tube containing the specific fibers to be spliced ("working tube") from the loop-through tubes ("express bundle"). Loop and wrap the express bundle around the outside perimeter of the fiber basket, on the rear side of the backboard. Create as many loops as needed (3 or 4), then secure the express bundle to the fiber organizer with cable ties secured via slots in the fiber basket walls. <i>(Note that the D-clips, inserted in the counter-bored holes on the fiber organizer, are to be used exclusively for ribbon fiber management. For ribbon cable loop, remove central tube per company practice and leave 3" of tube above the sheathing opening on both sides of the loop. Follow the instructions in Step 25 concerning ribbon fiber routing inside the basket.)</i></p>  <p>1) Separate working tube from bundle.<br/>2) Loop and secure the express working bundle within the D-clips.<br/>3) Secure both legs of working tube to inside wall of basket with cable ties.<br/>4) Secure and route the working tube here where it first enters basket.<br/>Then route ribbon fiber through a transportation tube and attach the transportation tube 1" above the central core tube.</p> <p>Labels: Rear view, CO side, Ties, One leg of working tube, Transportation tube, Fiber basket, Ribbon fiber (approx. 32"), Cable's central core tube, Cable.</p> |
| 24. □ | <p><b>Stub in ribbon fiber central core tube cable only:</b> Measure, mark, cut, and attach central core tube and transportation tube to fiber basket. Route the cable's central core tube up into the bottom opening of the fiber basket. Mark the tube 2 inches above the bottom of the basket, then score and remove the central tube. There should be approximately 8" of central tube above the sheathing opening. The central tube can be secured with two cable ties where it enters the basket.</p>  <p>Labels: Transportation tube, Fiber basket, Ribbon fiber (approx. 32"), Cable's central core tube, Cable.</p>   |
| 25. □ | <p><b>Looped cable: Secure then route tubes.</b> If the tubes come out of the bundle at the sheathing opening, secure each side to the lower inside wall of the basket (see item #3 in Step 23). Route one tube across the basket to join the second tube. Otherwise, route both tubes of the loop to the top of the basket and dogleg one side to join the other tube. The tubes then can be joined with cable ties at regular intervals (every 5-6") and routed as one tube. Do not join the last couple feet of tube. Ribbon fiber can be attached to the basket and tray with short pieces of slit-type transportation tubing.</p>   |

|       |   |
|-------|---|
| 26. □ | <p><b>Marking and cutting the buffer or central core tube(s).</b> Note that 1-2 buffer tube loops can be stored in the basket as fiber slack to the tray. The excess fiber can be trimmed as the fiber is being placed in the tray.</p> <p><b>Loose buffer tube, stubbed cable:</b> Determine how much length of fiber will be placed inside the splice tray. This same length should be trimmed off the end of the buffer tube to expose the fiber: measure up from the cut end of the buffer tube and make a mark on the buffer tube at the desired length. Using local company procedures and tools, score the tube at the mark and discard the length of surplus tube.</p> <p><b>Central core tube, stubbed cable:</b> Cut to length then remove excess central core tube. Measure then make a mark on the central core tube approximately 7.5-8" from the cable sheath cut line. This will insure that fiber is not exposed until it is within the basket. Using local company procedures and tools, score the tube at the mark and remove the length of surplus tube and discard it.</p> <p><b>Loose buffer tube, looped cable working tubes:</b> Per company practice, prior to cutting the working tube, first determine how long the tube legs should be to provide adequate looped slack storage in the fiber basket before being routed and attached to the splice tray (in its final secured position). Wrap or loop the tube 1-2 times inside the basket, route the last loop to the opposite side of the basket, and make a mark on both tube legs where they overlap the splice tray (when the tray is secured with Velcro straps). Leave or measure enough tube slack length to enable easy future splice tray access, and remove enough tube to expose the proper amount of exposed fiber for splicing and storage purposes inside the splice tray. Hold the tubes against the splice tray overlapping the tray corner, and mark them at the desired tray entrance point. After marking the tube cut line(s), use company procedures/tools to mark, score, slit and remove the tube.</p> |
| 27. □ | <p><b>Clean and/or cut fibers.</b> Per company practice, carefully clean the exposed fibers. In looped applications, cut only the desired working fibers midway between the tube ends. Do not cut any express fibers.</p>   |
| 28. □ | <p><b>Ribbon fiber only:</b> Insert the cable's ribbon fiber end into and through one of the provided transportation tubes and position it at the open end of the central tube. While positioning the transportation tube as close to the central tube as possible for best ribbon fiber protection, attach it to the basket using 2-3 cable ties.</p>  |
| 29. □ | <p><b>Prepare a splice tray for tube attachment.</b> Prepare a splice tray (provided) by removing the cover and placing two cable ties at a top tray corner, using the inner tie-down slots.</p>  <p>Labels: Choose a tray corner, Cable ties, Inner slots, Outer cable tie-down slots.</p>  |
| 30. □ | <p><b>Stubbed cable: Attach tube to tray.</b> Overlap the buffer tube onto the tray corner about 1" (see Step 32), then secure the tube to the tray with the two cable ties.</p> <p><b>Looped cable: Attach tubes to tray, store fibers.</b> To best manage the buffer tubes, attach both sides of the feed/express tube to the same corner of the tray. Coil all fiber in tray per Step 32. Manage/label dead fibers per company practice. Store uncut express fibers in the splice tray.</p>  |
| 31. □ | <p><b>Label the tube.</b> Label all tube ends, per company practice.</p>  |
| 32. □ | <p><b>Store fibers in splice tray.</b> Per company practice, carefully wrap and store the fibers in the splice tray for later splicing, then attach the tray cover. Use a second tray if needed.</p>  <p>Labels: Secured cable ties, Tube, with fiber inside, Fiber.</p> <p><i>If more than 12 pigtailed will be spliced, additional trays can be used. Follow company practice.</i></p>  |
| 33. □ | <p><b>Determine next step.</b> Perform Steps 34-44 to install Feed pigtailed or fan-outs. After feed pigtailed/fanouts are installed, if splicing or drop cable installation will be performed later, do Steps 52-53 and 65-66 now to secure the splice tray(s) and to close the pedestal. Go to Step 46 to perform splicing. Go to Step 54 to install drop cables.</p>   |

| <b>Installing Feed Pigtails or Ribbon Fanout Assembly (Between Splice Tray and 24-Adapter Feed Bulkhead)</b> |   |
|--|---|
| 34. □  | <p><b>Locate optional SC-type pigtails or ribbon Fanout.</b> Separately-ordered SC/UPC-type pigtail kits are available from Charles (see Table 3). Obtain the correct type of pigtails or Fanout assemblies for the pedestal used in this installation.</p>  <p><b>Note:</b> Fanouts may be either a ribbon type or a loose buffer tube type. For these instructions, both types can be used interchangeably wherever the term "Fanout" or "ribbon" is mentioned, with one exception: <b>the loose buffer tube type Fanout does not require the use of an additional (provided) transportation tube</b> to transport the fiber from the Fanout to the splice tray (steps 39-43).</p>                                     |
| 35. □  | <p><b>Ribbon Fanouts only: Feed connectors up through the top left opening of the fiber basket.</b> To minimize ribbon handling (and minimize chances of fiber damage), keep the Fanout's 2-meter ribbon end wrapped or coiled up until ready for insertion into a transportation tube for safe routing to the splice tray. From inside the fiber basket, feed all connectors of the Fanout assembly up through the top left opening of the basket, allowing the coiled ribbon end to remain wrapped/coiled intact in the basket area.</p>  <p>1 (of 12) connector end of a 12-fiber Fanout assembly</p> <p>Top left opening in fiber basket</p> <p>Not shown: keep ribbon end coiled up and intact during this step</p> |
| 36. □  | <p><b>Attach all SC-type connectors of Fanout/pigtails to bulkhead.</b> Attach the connector end of the SC-type pigtails (or Fanout) to the SC-type bulkhead adapters at the top of the fiber organizer. Follow company practice for correct cable color-coding, and consult the label on the front side of the bulkhead to locate the proper fiber numbers.</p>  <p>Connectorized bulkhead at top of fiber organizer (Adapters not removable. Adapter #1 is inner and top-most one.)</p> <p>Sample of a bulkhead adapter</p> <p>SC-type connector of pigtail or Fanout</p> <p>Plug connector into adapter.</p>   |
| 37. □  | <p><b>Loose pigtails only: route pigtails down toward the fiber basket.</b> Once all pigtail connectors are attached to the bulkhead, route the bare ends down into the fiber basket through the opening in top basket corner.</p>  <p>Adapter bulkhead</p> <p>Fiber basket</p> <p>Free ends of pigtails</p>   |
| 38. □  | <p><b>Loose pigtails only: route bare ends of pigtails through transportation tube.</b> The 3-foot lengths of plastic 1/4" tubing protect the jacketed pigtail fibers. Slide the bare ends of the pigtails through the transportation tubes as a group. Grouping the bare ends aids in pushing the ends through the tube to the opposite end. The transportation tubes can be trimmed to optimum lengths so that the fiber storage basket can remain uncluttered.</p>  <p>Pigtail ends</p> <p>Transportation tube</p> <p>Group ends of pigtails and insert into tube</p>   |
| 39. □  | <p><b>Ribbon fiber fanouts only: Route the Fanout assembly's ribbon fiber through a transportation tube.</b> 3-foot lengths of plastic transportation tubing are provided to protect the ribbon fiber as it transitions from the fiber basket to the splice tray. Slide the ribbon through the tube until the tube meets the fanout.</p>  <p>Fanout ribbon</p> <p>Transportation tube</p> <p>Slide ribbon fiber of Fanout assembly through a transportation tube.</p> <p>Use alcohol to lubricate ribbon if desired.</p>  <p>900 micron fibers with SC connectors</p> <p>Fanout assembly</p> <p>12-fiber ribbon</p>                 |

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| 40. □ | <p><b>Fanout assemblies only: Secure Fanout to basket.</b> As shown in Step 41, secure the Fanout to the left, upper, inside wall of the basket, approximately 2 inches from the top of the basket. When positioning the Fanout, verify that the 900-micron jacketed fibers above it (between the bulkhead and basket) are not taut and that the slack length is properly stored and coiled at the rear of the basket. Avoid damaging the ribbon fiber while securing the Fanout with cable ties.</p>  |
| 41. □ | <p><b>Attach one end of the transportation tube to the basket.</b> After routing the 900 micron jacketed fibers, attach the top end of the transportation tube (with the fiber inside) to the top of the left basket wall. <b>Note: If fanouts are used, slide the transportation tube up to the Fanout so that the ribbon is completely protected.</b> Secure the tube to the basket with 2-3 cable ties.</p>  <p>900 micron jacketed fibers</p> <p>Secure Fanout to top of basket here (top inside wall) with 2 cable ties</p> <p>Secure transportation tube (with ribbon routed through it) to inside of basket, using 2-3 cable ties</p> <p>Fiber basket</p> <p>Transportation tube</p> <p>Ribbon fiber</p> <p>Feed buffer tube not shown, for visual clarity</p>   |
| 42. □ | <p><b>Route tube around inside of fiber basket.</b> After attaching one end of the transportation tube to the top left inside wall of the fiber basket, coil the transportation tube counter-clockwise inside the basket so that the opposite end terminates at the upper left corner of the basket.</p> <p>For best fiber/tube management, starting at the splice tray, attach the length of transportation tube to the feed buffer tube with cable ties at short intervals. Store the tubes inside the fiber basket; the attached tray will rotate freely as the tubes are coiled inside the basket. This will help prevent kinking of the tubes.</p>  <p>Transportation tube (fiber/pigtail inside not shown)</p> <p>Two cable ties recommended here (secure tube end to basket)</p> <p>This end will attach to the splice tray.</p> <p>Pigtails and feed cable's buffer tube not shown, for visual clarity</p> |
| 43. □ | <p><b>Prepare splice tray, attach other end of transportation tube.</b> Again prepare the splice tray for tube attachment, starting two new cable ties at the same tray corner as before, using the <i>outer</i> tie-down slots. Overlap the transportation tube onto the tray corner about 1" (alongside the feed tube), then secure the tube to the tray with the two, positioned cable ties.</p> <p><b>If splicing is not performed at this time, wrap the 900 micron pigtails in the tray per company and tray manufacturer instructions. If splicing is to be performed at this time, proceed to Step 46.</b></p>  <p>Cable ties</p> <p>Transportation tube for pigtails (12 pigtails per tube recommended)</p> <p>TUBE FOR PIGTAILS OR RIBBON</p> <p>Feed buffer tube</p> <p>FEED</p> <p>Splice tray</p> <p>Use same tray corner and two additional ties.</p>   |
| 44. □ | <p><b>Perform tube management.</b> For best fiber/tube management, starting at the splice tray, attach the length of transportation tube to the feed buffer tube with cable ties at short intervals. Store the tubes inside the fiber basket; the attached tray will rotate freely as the tubes are coiled inside the basket. This will help prevent kinking of the tubes.</p>   |
| 45. □ | <p><b>Close the pedestal (optional).</b> If splicing or drop cable installation will be performed at a later time, do Steps 52-53 and 65-66 now to secure the splice tray(s) and to close the pedestal. Go to Step 46 to perform splicing. Go to Step 54 to install drop cables.</p>   |

| <b>Splicing Fibers at the CFDP2 Pedestal</b> |  |
|--|--|
| 46. □  | <b>Obtain tools.</b> Prepare the area for splicing, and assemble and prepare any equipment and tools needed to splice fibers. Review all the cautions and warnings herein.   |
| 47. □  | <b>Open pedestal.</b> Remove the dome and open the CO side door, per Steps 3 and 4.  |
| 48. □  | <b>Remove the splice tray(s) from the fiber organizer.</b> Loosen the VELCRO® straps that secure the splice tray(s) and pull out the tray(s), unwinding and rotating it and the tubes attached to it. Detach the clear plastic cover from the splice tray(s) by lifting up on the two holes in the cover.  |
| 49. □  | <b>Perform splicing.</b> Unwrap the working fibers to be spliced, perform all fiber splicing at this time, and when complete, wrap the fibers into the splice tray(s), all per local/company practice and product manufacturer's instructions.    |
| 50. □  | <b>Label and identify splices/tray.</b> Per company practice, label/identify the splices.  |
| 51. □  | <b>Cover splice tray(s).</b> Re-attach the cover(s) to the splice tray(s).   |
| 52. □  | <b>Secure tray.</b> Secure the splice tray(s) to the fiber organizer. To do this, coil the tubes counterclockwise inside the basket, allowing the tray to rotate freely as needed. Manage the last tube loop within the basket such that the attached splice tray may easily rest on and be secured to the tabs at the front of the fiber basket using the provided VELCRO® straps.  |
| 53. □  | <b>Re-check foam plug placement and cable management, and close the pedestal.</b> Perform Steps 64 through 66 to carefully close up the pedestal.  |
| <b>Installing Fiber Drop Cables</b>          |  |
| 54. □  | <b>Dig trench from premises to pedestal.</b> Per company practice, prepare a trench to run the drop cable to the pedestal. Clear the soil from the bottom front of the base, where the cable enters at the drop cable access hole.   |
| 55. □  | <b>Run the drop cable.</b> Route the preconnectorized drop cable through the trench to the pedestal base. For preconnectorized cables, verify 5 feet of cable will be available above the ground line. For stub-ended cables, verify 9 feet of cable will be available above the ground line (extra length required for splicing).   |
| 56. □  | <b>Bring cable into base through drop cable channel, innerduct, or conduit.</b> <p><i>NOTE: the channel can be removed if innerduct or conduit is used.</i> Per company practice, route the drop cable up into the base through the innerduct, conduit, or drop cable channel via the drop cable hole. If the drop channel is used, remove the foam plug (rodent and insect deterrent) at the top of the channel and replace it after all drop cables are secured to the fiber organizer. To re-install the foam plug at the top of the channel, insert the plug so it is in front of the cables (cables at the back of the channel), rest/press the plug's front edge on top of the base's first rib, then press down on the plug's back edge until it rests on the bent flange at the rear of the channel. If the cables prevent plug installation, the plug may be cut/slit to accommodate the cables.</p> <p><i>BASE NOTE: Order model CFDP210EVL24F, a handhole-mount base, if a drop channel is not desired or needed.</i></p>  |

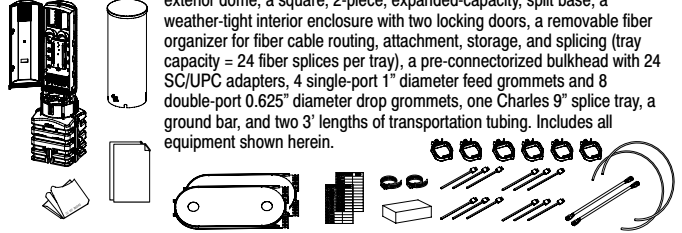
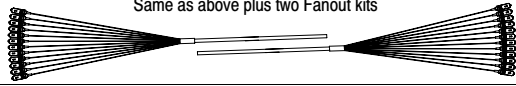


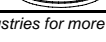
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| 57. □ | <b>Route cable through grommet.</b> At the drop cable side of the fiber organizer, at the bottom grommet plate, pull or slide out one of the double-port grommets. Feed the pre-connectorized cable through the grommet port by slicing into the grommet port at the notch provided in it, then pressing or sliding the drop cable into the grommet port at the sliced notch. Slide the grommet down the cable until it is at the level of the grommet plate (verify enough length of sheathed cable extends up through the grommet for secure cable attachment to the fiber organizer). Re-install the grommet in the grommet plate. Always populate or use the rear-most ports first, for best access.  |
| 58. □ | <b>Secure cable to fiber organizer.</b> Secure the cable to its appropriate cable attachment unit (see the drawing in Step 57) with a hose clamp. If cable ties are used, per company practice, double-wrap the cable tie over the cable and cable attachment unit. <i>NOTE: Avoid using hose clamps on flat drop cable or on cables without strength member(s).</i>   |
| 59. □ | <b>Label drop cable.</b> Label the drop cable(s) with a cable marker per company practice. This facilitates cable identification for future troubleshooting, splicing, or rework.  |
| 60. □ | <b>Attach cable to cable attachment unit.</b> <p>For cables with strength members, place a hose clamp around both the cable and the cable attachment unit. Press the cable against the attachment unit, making sure enough cable sheath remains for good cable contact with the teeth at the bottom of the cable attachment unit. Firmly affix a hose clamp around both the cable and the cable attachment unit.</p> <p><i>NOTE: Avoid using hose clamps on flat drop cable or on cables without strength member(s).</i></p>   |
| 61. □ | <b>Route, secure, and connect drop pigtail.</b> Route and loop the drop cable's pigtail around the inside perimeter of the drop side of the fiber organizer and hang the last slack loop from a bend-radius control. Size the loops so that the pigtail connector will easily (without tension) reach the appropriate bulkhead adapter. Secure the pigtail to the fiber organizer tie-down slots with cable ties at regular intervals. Plug the first connector into Adapter #1 at the top left corner. Adapter 2 is directly to the right in the same row (see Figure 3).    |

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| 62. | □ | <b>Label the drop connection.</b> If not already labelled, label the terminated pigtails and also identify the connection and line in the appropriate row of the label located on the inside of the drop side door, per company practice.  |
| 63. | □ | <b>Repeat for all remaining drop cable pigtails.</b> Repeat Steps 54-62 for each drop cable entering the pedestal and for each cables' pigtails.   |
| 64. | □ | <b>(Re)Place foam plug.</b> After all drop cable pigtails are properly terminated, either re-install the foam plug in the drop channel of the pedestal base, or if it was not moved, verify the foam plug is still properly installed in the drop channel (see Step 56). If it was removed or dislodged, re-install it at this time.             |
| 65. | □ | <b>Re-check cable management &amp; lock inner door(s).</b> Verify all tubing is neat and not kinked, and that no cables, ties, wires or tubes protrude beyond the fiber organizer walls. Close and lock the inner doors and tighten all cup-washer screws.   |
| 66. | □ | <b>Close the pedestal.</b> Locate the outer dome and orient it so the snap lock faces the front (the Charles logo is on the base front). Slide the dome down over the fiber organizer, align the dome's snap lock with the base's latch, and allow the self-locking dome to drop down in place. An audible "click" indicates the dome is locked. |

**Table 1. CO and Drop Cable Installation**

| Table 2. Physical Specifications                     |                |          |
|--|----------------|----------|
| Feature  | 10" dome model |          |
| Height, overall                                      | 45 in.         | 114.3 cm |
| Height, base only, incl. collar (stake only for IPS) | 18 in.         | 45.7 cm  |
| Height, dome only                                    | 34 in.         | 86.4 cm  |
| Height, base bottom to ground line                   | 8.5 in.        | 21.6 cm  |
| Height, dome top to ground line                      | 40.5 in.       | 102.9 cm |
| Depth, base (front to back)                          | 12.75 in.      | 32.4 cm  |
| Width, base (side to side)                           | 12.75 in.      | 32.4 cm  |
| Diameter, base collar, O.D.                          | 10.75 in.      | 27.3 cm  |
| Diameter, base collar, I.D.                          | 10.3 in.       | 26.2 cm  |
| Diameter, dome, O.D. (not the cap)                   | 11.25 in.      | 28.6 cm  |
| Diameter, dome, I.D.                                 | 10.85 in.      | 27.6 cm  |
| Weight   | 32 lbs.        | 14.5 Kg  |

NOTE: All dimensions and weights are approximate.

| Table 3. Model Numbers and Ordering Information |   |
|---|---|
| Model #   | CFDP2 Description   |
| CFDP210-EL24                                    | CFDP2 Interconnect Pedlock® OSP Pedestal, with a 10" diameter, locking, exterior dome, a square, 2-piece, expanded-capacity, split base, a weather-tight interior enclosure with two locking doors, a removable fiber organizer for fiber cable routing, attachment, storage, and splicing (tray capacity = 24 fiber splices per tray), a pre-connectorized bulkhead with 24 SC/UPC adapters, 4 single-port 1" diameter feed grommets and 8 double-port 0.625" diameter drop grommets, one Charles 9" splice tray, a ground bar, and two 3' lengths of transportation tubing. Includes all equipment shown herein.  |
| CFDP210-EL24F                                   | Same as above plus two Fanout kits   |
| CFDP210EVL24                                    | Vault mount base version  |
| CFDP210EVL24F                                   | Vault mount base version, with 2 Fanout kits  |
| Optional Equipment for Use with this CFDP2      |   |
| 97-CFDP210-BSKT                                 | CFDP210 Drop Side Cell Basket Add-on Kit  |
| 97-SCU12RF3M:                                   | Ribbon fiber Fanout with 12 SC/UPC connectors, 3 meters long  |
| 97-SCU12LF3M:                                   | Loose tube fiber Fanout with 12 SC/UPC connectors, 3 meters long  |
| 80-002665-F                                     | Ring Application Kit, includes a bulkhead plate with 8 adapters and labels, used to interface/connect up to 5 MUXes in Ring applications, field-installs into a CFDP210-EL24/EL24F.   |
| 97-FIBR24TRAY                                   | Splice tray kit, with one 12/24F tray   |
| 97-001911-A                                     | Grommets, feed-side type, one 1" port per grommet, 50-piece kit →    |
| 97-001753-A                                     | Grommets, drop side, middle type, two 0.625" ports per grommet, 50-piece kit →    |
| 97-PKOR010A                                     | Dome cap, high visibility, orange, 10" →   |

Various replacement parts are available. Contact Charles Industries for more information.

### 3. CUSTOMER TECHNICAL SERVICE

If technical assistance or customer service is required, contact Charles Industries by calling or using one of the following options:

|                                      |                                   |
|--------------------------------------|-----------------------------------|
| 847-806-8500 (Tech. Serv. local)     | 847-806-6300 (Customer Service)   |
| 800-607-8500 (Tech. Serv. toll-free) | 847-806-6653 (Customer Serv. FAX) |
| 847-806-8556 (Tech. Serv. FAX)       | mktsserv@charlesindustries.com    |
| techserv@charlesindustries.com       | www.charlesindustries.com         |