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Sapphire™ Dome Splice Closure, M2 & L2 Series Installation Instructions



Region
North America

Sapphire™ Dome Splice Closure, M2 & L2 Series
Installation Instructions

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GENERAL INFORMATION

Intended Use

The Sapphire™ Dome Splice Closure is a protective housing for outdoor fiber management. It's designed to provide environmental and mechanical protection for single- or multiple-fiber splices between fiber optic cables in an uncontrolled environment, including aerial and underground or direct buried of up to 16 ft depth of fiber cable deployment. The dome splice closure should only be installed with its intended use or outside the recommendations of this document. Be sure to check for, and conform to, any local or company requirements for the area where the closure will be installed.

Tool Requirements

There are no specialty tools needed for installation of the Sapphire Dome Splice Closure. All the standard installation tools used by a fiber optic splicer technician should be sufficient for cable installation. Be sure to refer to the cable manufacturer's recommendations for any additional steps or specialty tools that may be required.

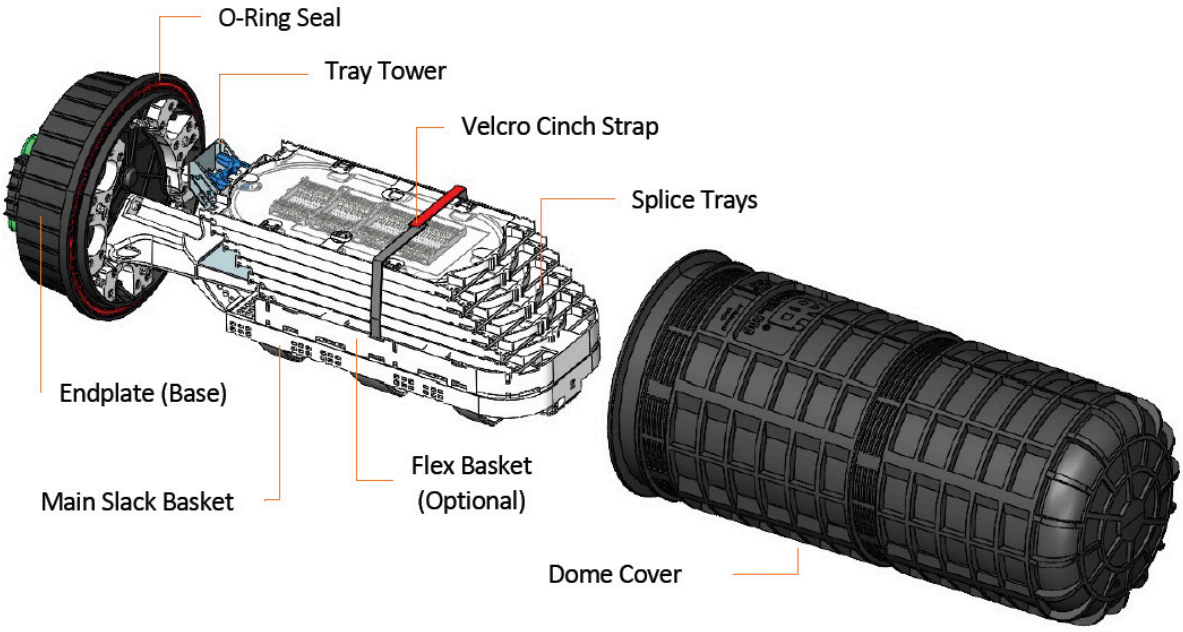
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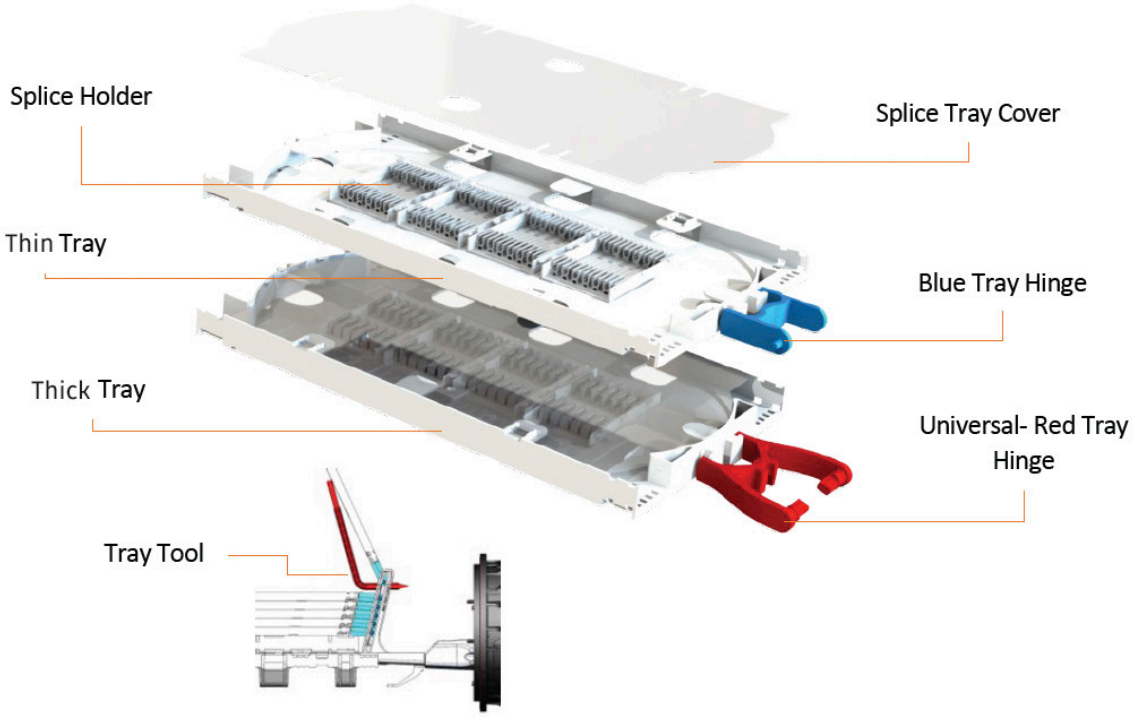
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SAPPHIRE™ DOME SPLICE CLOSURE COMPONENTS





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SAPPHIRE™ DOME SPLICE CLOSURE COMPONENTS (cont.)

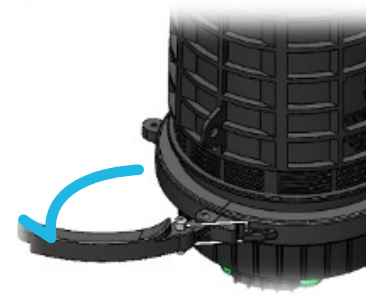


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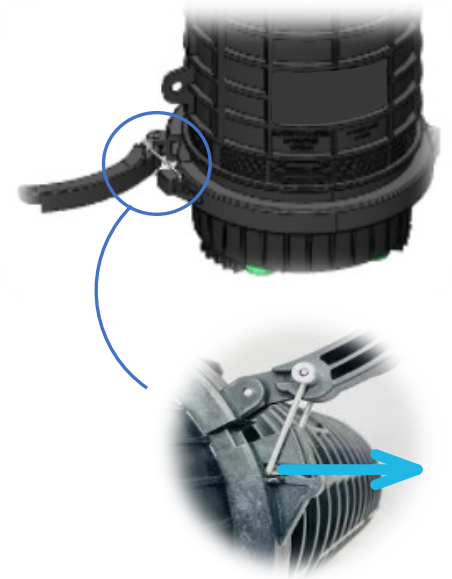
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DOME COVER REMOVAL

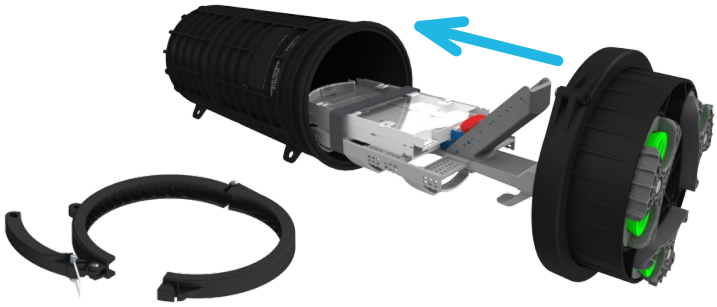
Step 1
Open the clamp using the handle.



Step 2
Release the clasp and finish the clamp removal.



Step 3
Slide the dome cover away from the closure base to fully open the closure.



CABLE PREP LENGTH CHART

Tray Config.	Loose Buffer Tube Cable & Rollable Ribbon Applications	Slack in Basket	Fiber in Tray (Doubled for Mid Span)	Total Opening
S1 & R3	Cut End or Reel End	31" - 41"	30” - 37”	61” - 78”
	Mid Span Opening	62” - 82”	60” - 74”	122” - 156”

Tray Config.	Central Tube & Traditional Ribbon Applications	Slack in Basket	Fiber in Tray (Doubled for Mid Span)	Total Opening
R1	Cut End or Reel End	56" - 68"	5" - 10"	61" - 78"
	Mid Span Opening	112" -136"	10" - 20"	122" - 156"
R2	Cut End or Reel End	36" - 46"	18" - 20"	54" - 66"
	Mid Span Opening	72" - 92"	36" - 40"	108" - 132"

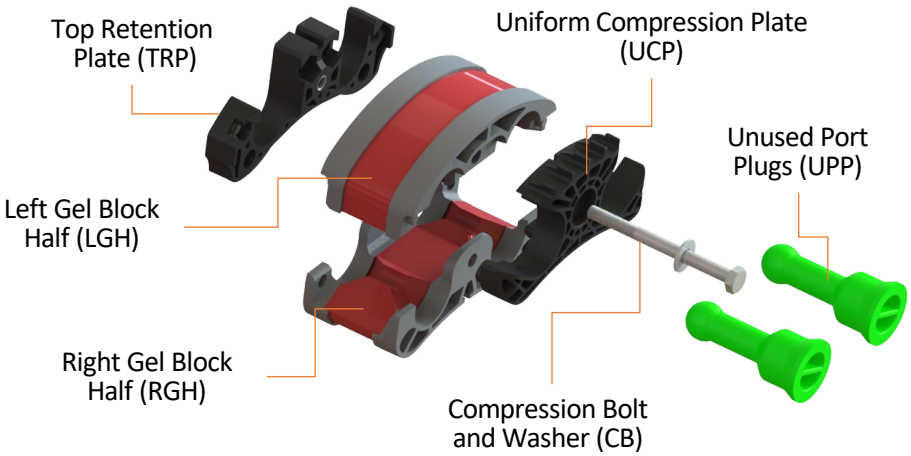
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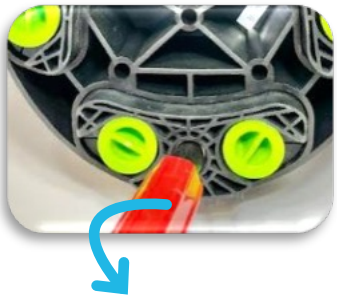
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CABLE INSTALLATION

- Gel Block Assembly -

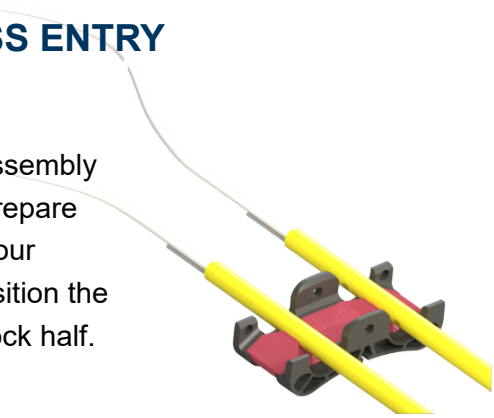




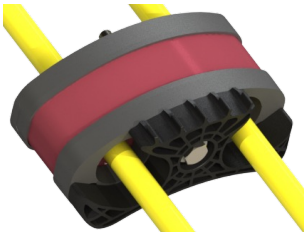
Loosen the compression bolt using a 7/16” can wrench until the bolt clears the top retention plate.

MID-SPAN ACCESS ENTRY

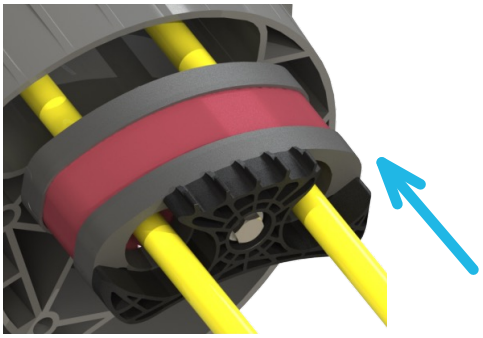
Step 1
Remove the gel block assembly from the endplate and prepare the cable according to your company standards. Position the cable on the right gel block half.



Step 2
Snap the right gel block half over the cable, onto the left gel block half. Align and insert the uniform compression plate and compression bolt.



Step 3
Insert the gel block and cable assembly into the endplate assembly pocket.





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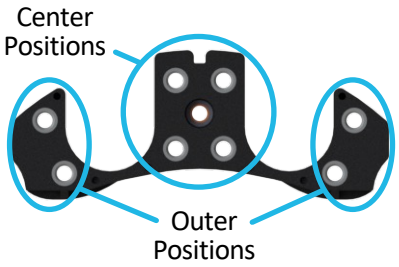
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MID-SPAN ACCESS ENTRY (cont.)

Step 4

Attach the provided strength member bracket to one of the desired positions.

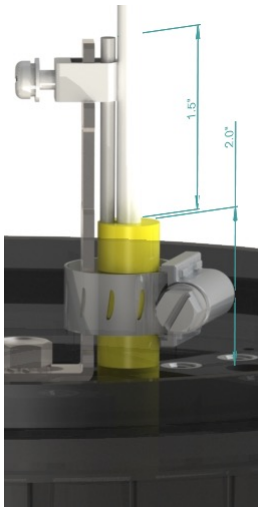
Note: Use the four center positions for large diameter cables (>0.3”). Use the four outer positions for smaller diameter cables.





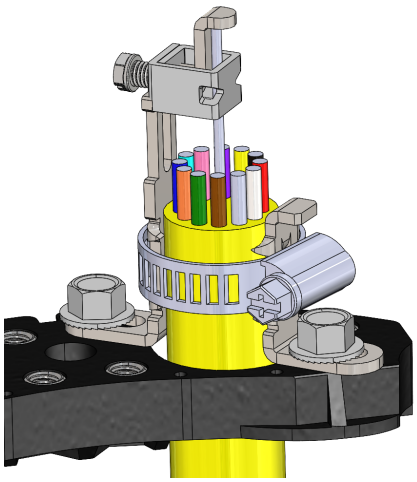
Step 5

Cut the strength member to 1.5” length above the cable jacket and position the cable about 2” above the gel block’s top surface. Insert the strength member into the bracket and secure the cable using the provided hose clamp. Tighten the bracket bolt into its final position.



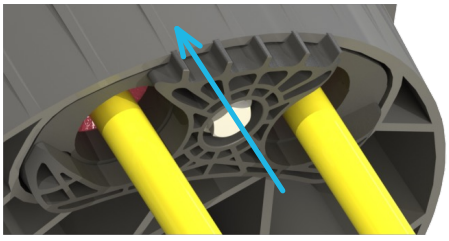
Step 5b

If the cable has a central strength member, utilize a large strength member bracket with the accompanying mini bracket as shown.



Step 6

Tighten the compression bolt until the uniform compression plate is fully seated onto the endplate’s bottom surface (15-20 in-lbs). All 3 compression bolts must always be tightened to the recommended torque, regardless of the presence of cable- domes are **NOT** sealed as shipped. **Note:** For larger diameter cables and port plugs, the teeth of compression plate may not contact the endplate surface. The gel block will seal, provided the proper torque has been achieved.



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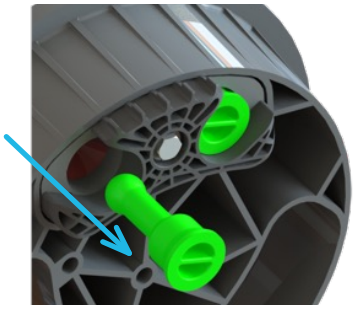
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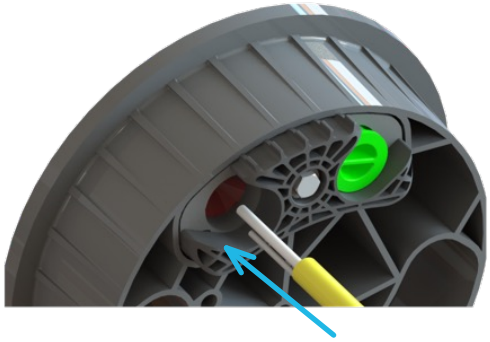
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REEL/CUT-END AND DROP CABLES

Step 1
Loosen the gel block compression plate and remove the unused port plugs.



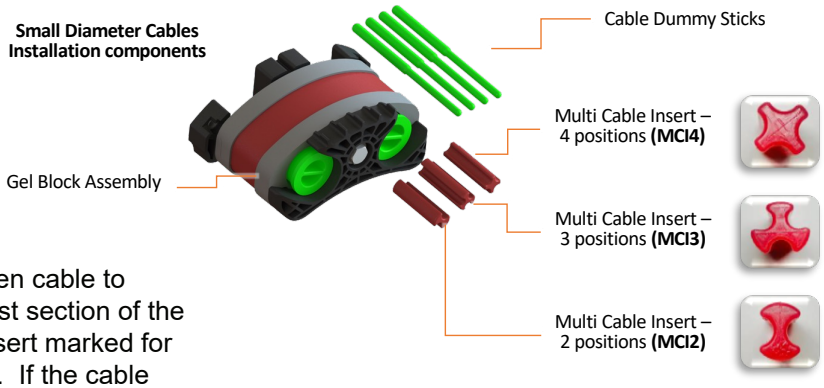
Step 2
Prepare the reel/cut-end cable (according to company standards) and insert into the gel block assembly.



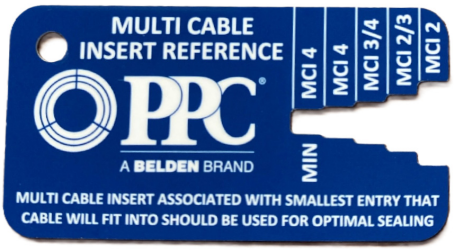
To finish the installation, follow Steps 4-6 from the Mid-Span Access Entry section above.
Insert the unused port plugs into all unused ports before tightening the compression bolt.

MULTI CABLE INSERT USAGE

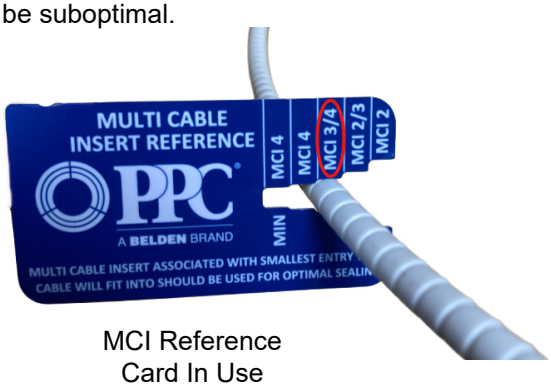
MCI 2		MCI 3		MCI 4	
Min	Max	Min	Max	Min	Max
0.2"	0.4"	0.15"	0.27"	0.12"	0.21"
5.5mm	10.2mm	3.8mm	6.9mm	3mm	5.3mm



To determine which multi cable insert to use with a given cable to provide optimal sealing, insert the cable into the furthest section of the reference card that it will freely enter. Then use the insert marked for that section- if there are two noted, either can be used. If the cable does not fit into the largest section, no MCI should be used. If the cable is too loose in the smallest section, sealing may be suboptimal.



MCI Reference Card



MCI Reference Card In Use

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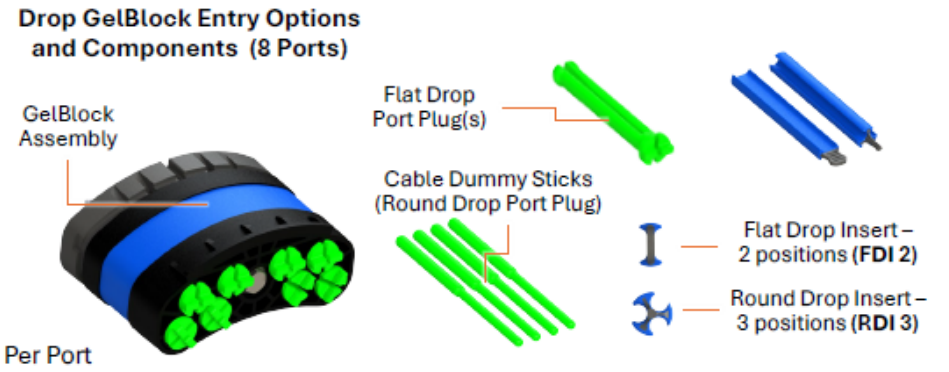
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DROP GEL BLOCK ENTRY OPTIONS

When sharing an entry port, flat drop cables should be taped together just outside of the closure using UV rated electrical tape. This helps the seal to perform best when multiple cables are installed.

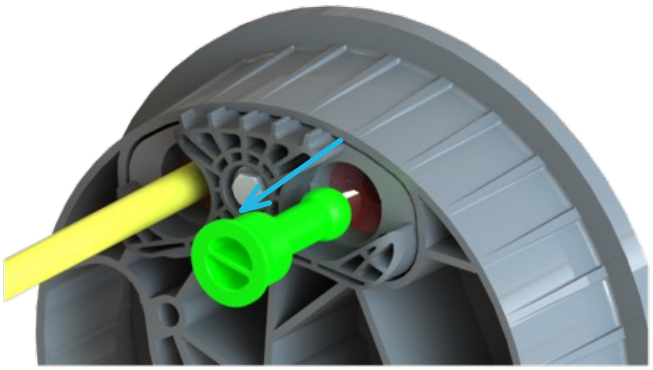


Cable Config.	Insert	Cable Count	Min Dia. in (mm)	Max Dia. in (mm)
Single	N/A	1	0.3 (7.6)	0.5 (12.8)
Multi Flat	FDI 2	1-2	0.12x0.22 (3.0x5.5)	0.2x0.32 (5.1x8.1)
Multi Round	RDI 3	1-3	0.12 (3.0)	0.21 (5.5)

SMALL DIAMETER AND DROP CABLES INSTALLATION

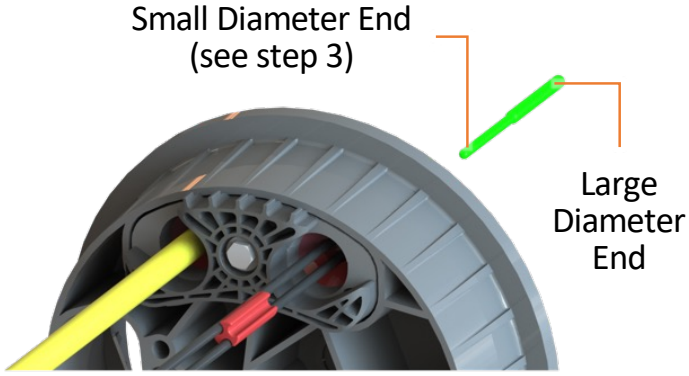
Step 1

Loosen the compression bolt and remove the unused port plugs.



Step 2

Prepare cable(s) according to company standards. Insert cable(s) with multi-cable inserts into the gel block assembly.

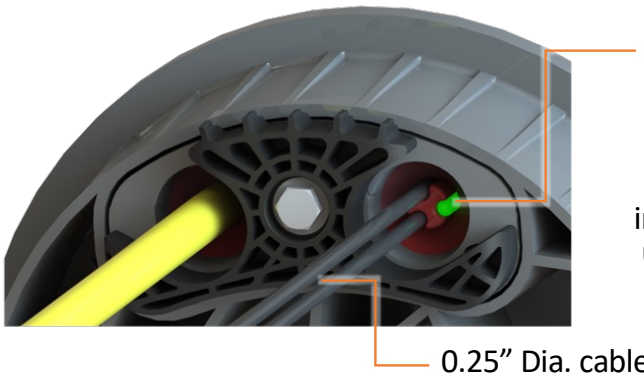


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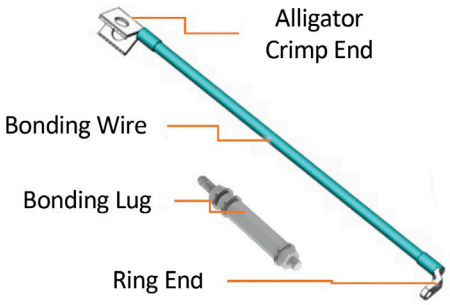
SMALL DIAMETER AND DROP CABLES INSTALLATION (cont.)

Step 3
Insert the provided cable dummy sticks into the unused ports of the MCIs from the inside, as follows: Use the large diameter end on MCI2, either end on MCI3, and small diameter end on MCI4.

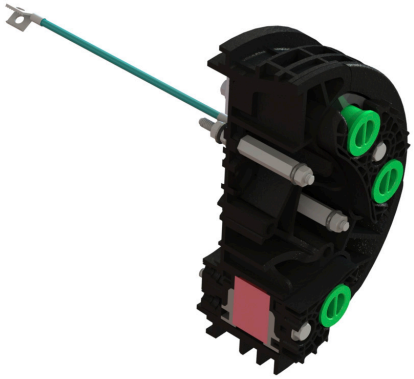


To finish the installation, follow Steps 4-6 from the Mid-Span Access Entry section.
Insert the unused port plugs or dummy sticks into all unused ports before tightening the compression bolt.

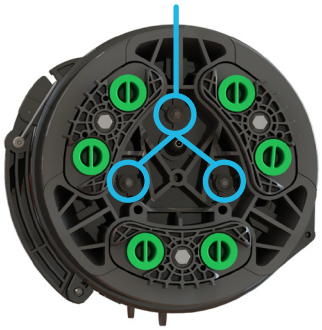
CABLE BONDING



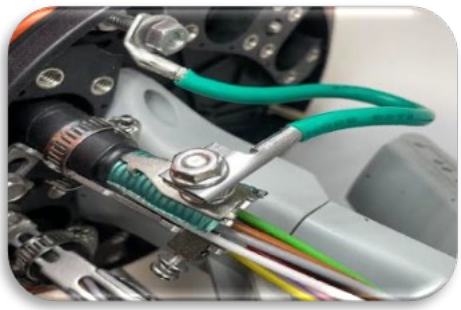
Bonding Lug Installed



3x Grounding Lug Locations



The grounding/bonding wires are designed to work with a shield bond connector or standalone. Use the method that best fits local grounding/bonding codes or company polices.



Using a Shield Bond Connector (NOT INCLUDED):
Expose approximately 1”-1.5” of armer on the cable. Place the bolt side of the bond connector under the armer. Place the remaining side of the bond connector over the bolt, above the armer. Install and tighten the provided nut. Using pliers, squeeze and flatten the alligator crimp end of the bonding wire. Place the flattened crimp end over the bolt and tighten the nut. Install the ring end of the wire to the appropriate bonding lug.

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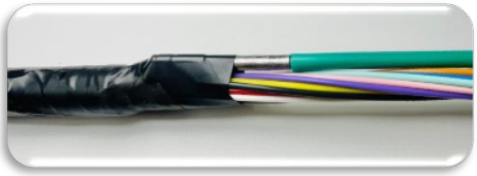
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CABLE BONDINGN (cont.)

Using Bonding Wire as Standalone:
Expose approximately 1” of the armer on the cable. Place the alligator crimp end over the cable armer. Using pliers, squeeze and compress the alligator crimp end of the bonding wire over a portion of the armer. Install the ring end of the wire to the appropriate bonding lug.

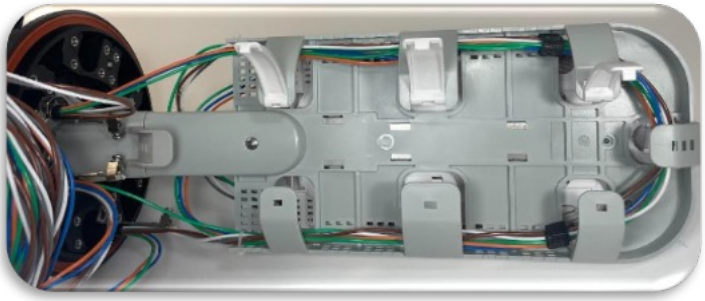




Note: For both methods, ensure the buffer tubes are properly protected by applying tape over the buffer tubes and over the bond connector when bonding cables.

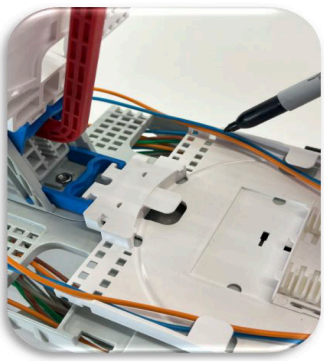
BUFFER ROUTING

Step 1
Separate buffer tubes to be spliced from those that will remain unaltered. Best practice is to first place slack from the buffer tubes being spliced, then place the remaining unaltered buffer tubes on top for future use. Alternatively, use the optional flex basket to demarcate the buffer tubes. See the Flex Basket Usage section for more information.

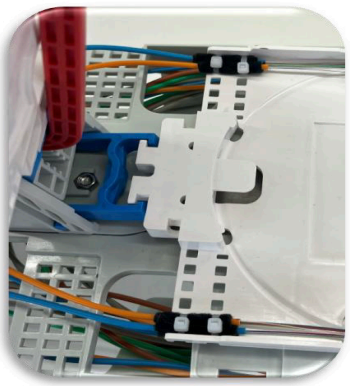


Step 2
Ensure the buffer tubes are routed behind the tray tower and have plenty of flexibility for trays to open and close. Mark the buffer tubes 1” from the edge of tray entry. Cut the buffer tube at the mark and remove the fibers from the buffer cuttings.





Step 3
Secure the buffer tubes to the tray using the provided felt and tie wraps. Clean the fibers before splicing.



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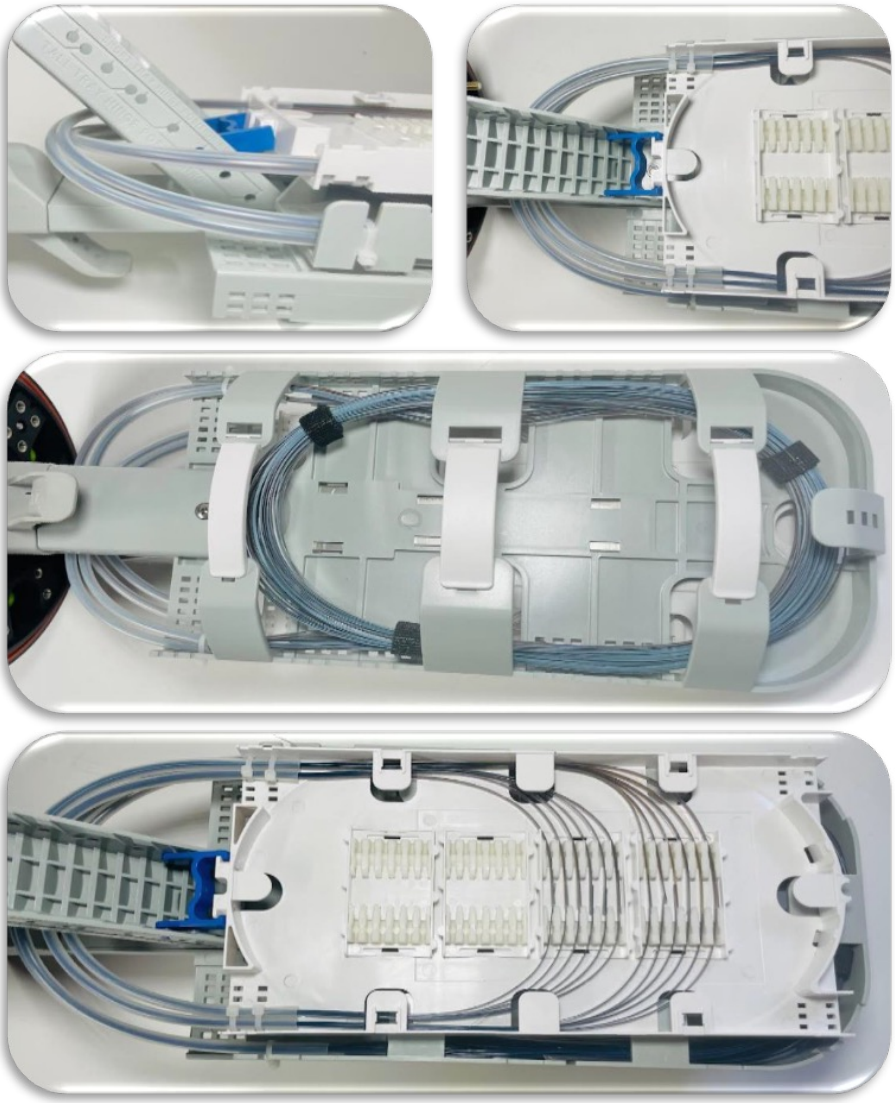
Step 4
After all fibers are spliced and secured in the tray(s), rotate the closure and secure it. Adjust all the buffers tubes as needed.



RIBBON ROUTING

Place the transfer tube slack basket (or flex basket) to the tray selected for splicing. Secure the transfer tubes at each side with Zip Ties. Feeding from the slack basket side, push the ribbon fiber up through the transfer tubes into the tray. As needed, adjust the slack in the slack basket when the splicing is complete.

Note: 144 to 216 mass fusion splice is the maximum recommendation per medium tray. 288 to 432 mass fusion splice is the maximum recommendation per large tray. Max recommendation depends on the type of ribbon being used and the individual company's policy.



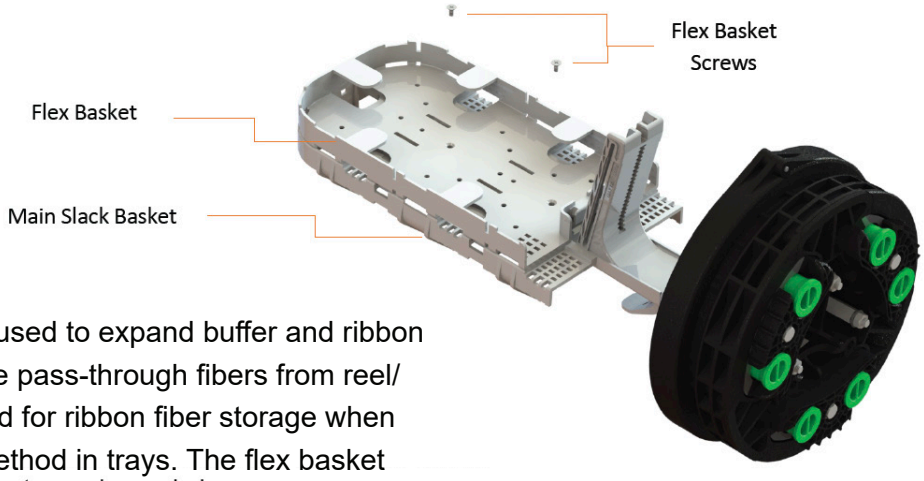
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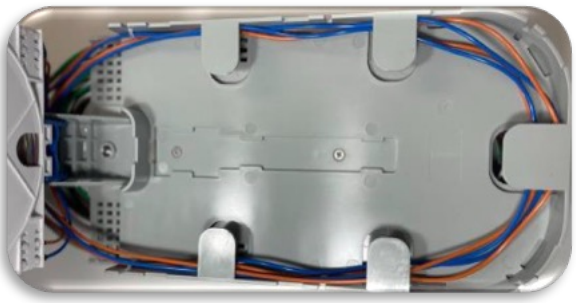
FLEX BASKET USAGE



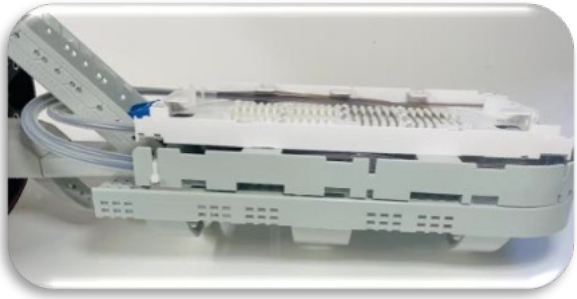
The flex basket can be used to expand buffer and ribbon fiber storage, demarcate pass-through fibers from reel/cut-end and laterals, and for ribbon fiber storage when splicing in a waterfall method in trays. The flex basket can be removed and replaced with two short trays if more splicing than storage is needed.

Examples of buffer tube separation and demarcation.





Examples of use for ribbon fiber slack storage using transfer tubes.





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Sapphire™ Dome Splice Closure, M2 & L2 Series
Installation Instructions

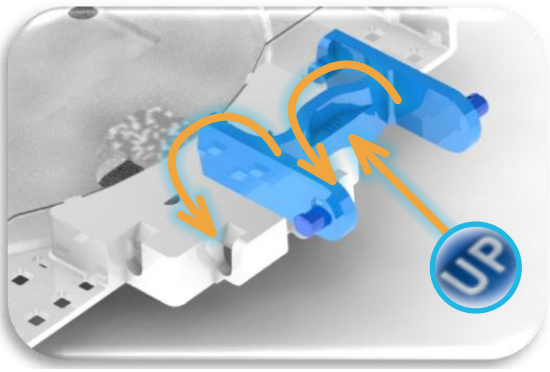
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SPLICE TRAY(S)

Attaching Hinges and Trays

Installing the Hinge to the tray

To attach the hinge to the splice tray, align hinge over the tray and press down firmly. Be sure to use the side that says **UP** for applicable hinge types.



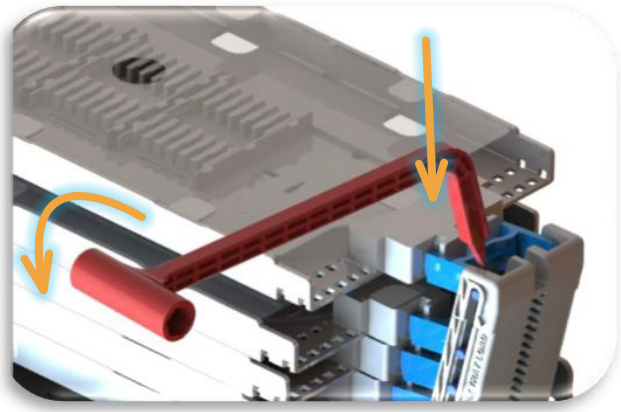
Installing Trays

With the hinge attached to the tray, load the hinge into the tray tower by pushing it down from the top.



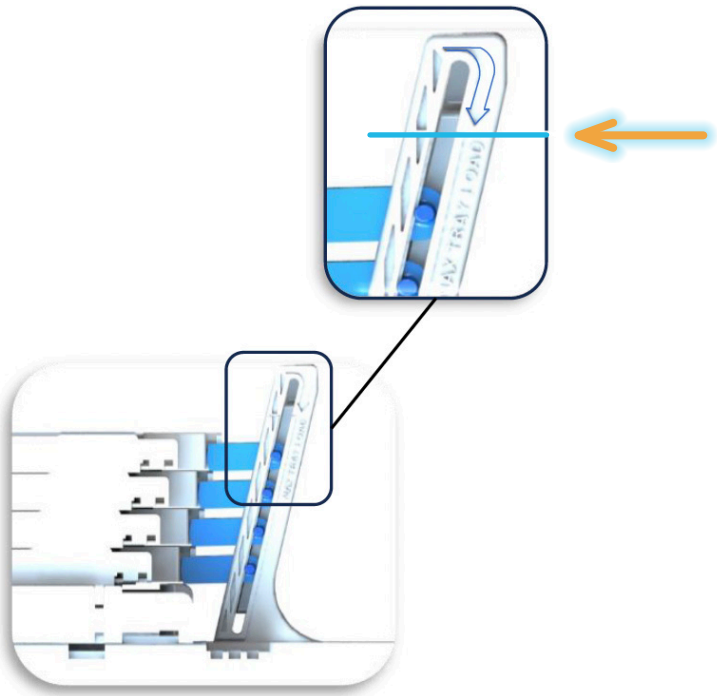
Removing trays

Push the Tray Tool down between the hinge and the Tray Tower and pry the hinge out.



Max Tray Load:

Do not Load Trays beyond the Max Tray Load Line.



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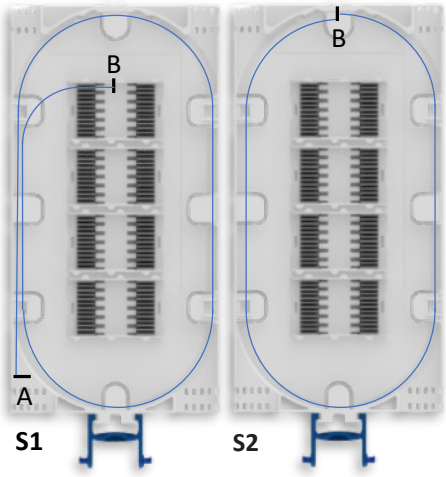
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SPLICE TRAY(S) (cont.)

Tray Routing Options

Note: Options are for cut-end applications unless otherwise specified. For mid-tube applications, double the length of the selection.

For **Single Fiber Splicing,** prep 30” to 37” (Figure S1: A-B) in the tray. For less fiber length, reduce as desired and use crossovers between splice holders. For an additional tray wrap, add 20” to 27” (Figure S2: B-B).

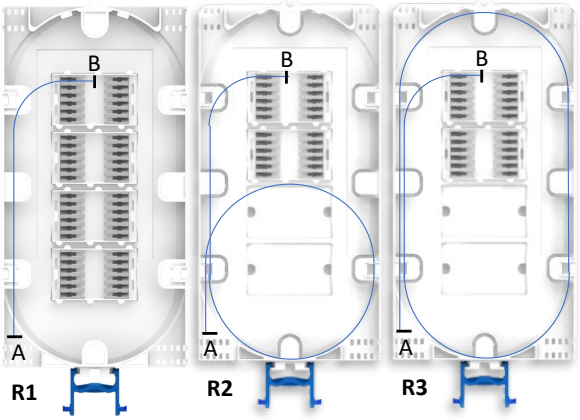


For **Ribbon Fiber (Mass Fusion)** Splicing, use one of the options below depending on the application.

Option 1: Prep 7” to 9” (Figure R1: A-B) in the tray and store the remaining slack (20” to 28”) in the basket.

Option 2: Prep 18” to 20” (Figure R2: A-B) in the tray. This option will reduce the total cable opening prep length. See more in Cable Prep Length Chart section.

Option 3: Prep 30” to 37” (Figure R3: A-B) in the tray. This option is not ideal for flat ribbon fiber cables. It’s best suited for rollable-type ribbon cables applications.



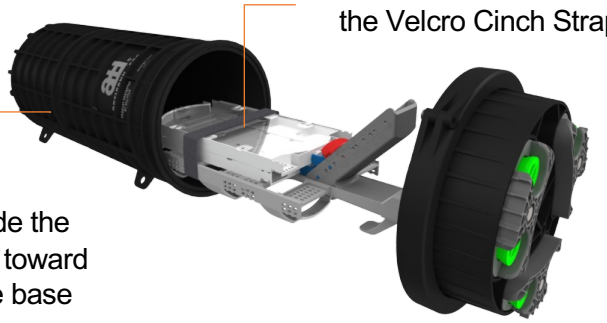
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CLOSING AND SECURING CLOSURE

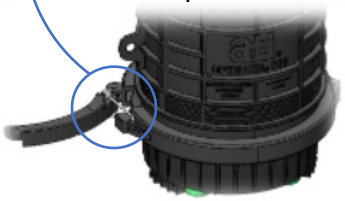
Step 1 Secure trays using the Velcro Cinch Strap



Step 2 Slide the dome cover toward the closure base



Step 3
Place clamp over dome and end plate grooves. Slide the clasp into the groove on clamp



Step 4
Close the clamp using the handle



Step 5
Install Phillips screw into clamp assembly to lock handle



Step 6
Flash test the closure by applying 5 psi using the pressure valve. Use soapy water to coat the seals (gel block assemblies and o-ring). Check for any leaks indicated by the presence of soapy bubbles. If bubbles appear, ensure the gel blocks are properly secured (see Cable Installation section) and repeat all steps in the Closing and Securing Closure section. If no bubbles appear, the closure is sealed and the installation is complete.

Pressure Valve Location



Note: Do not over-pressurize the closure. Do not leave the closure without depressurizing. Closure damage or injury could occur.

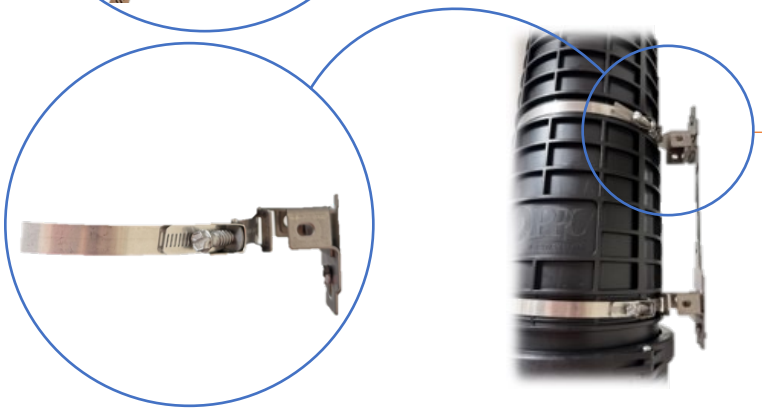
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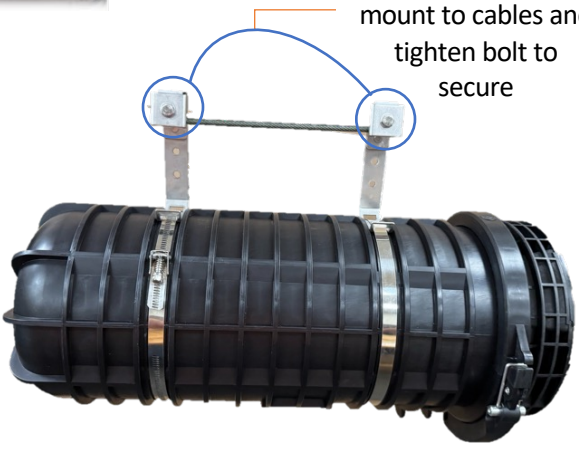
MOUNTING CLOSURE



Step 1 Feed the hose clamps through slots on mounting bracket to secure to closure



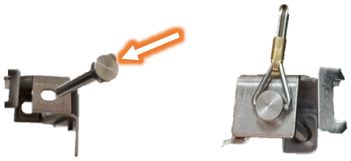
Cable Mount Step 2 Attach bracket mount to cables and tighten bolt to secure



Pole Mount Step 2 Slide the bracket into the mount attached to the pole



Pole Mount Step 3 Install pins to lock bracket and mount together

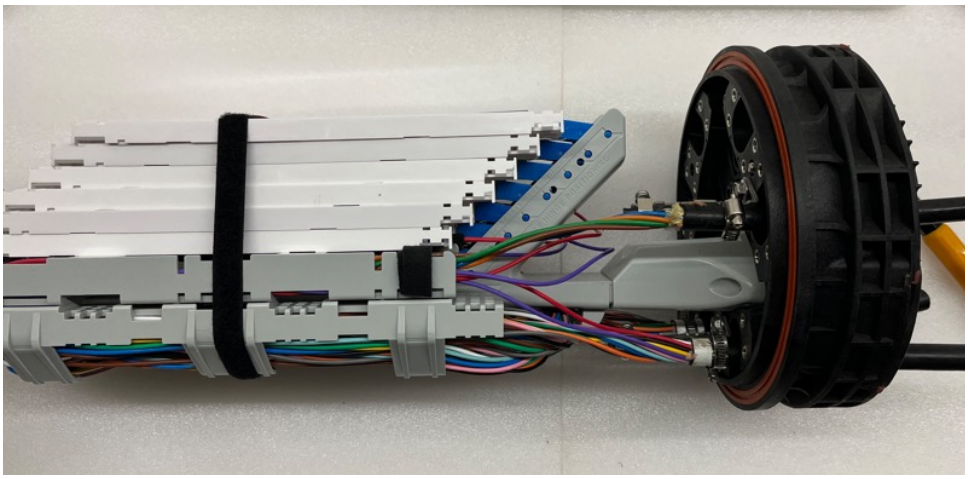


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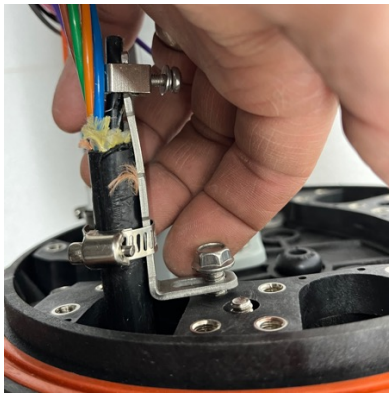
SAPPHIRE™ BASE PLATE DISASSEMBLY

Step 1: Complete, fully loaded closure before disassembly.



Step 2: Loosen and remove strength member bracket hardware (from retainer only).







Step 3: Loosen bolt and remove Gel-Block compression plate.





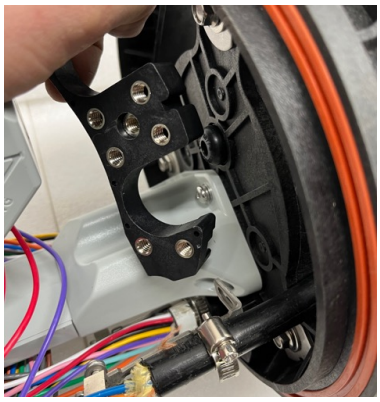
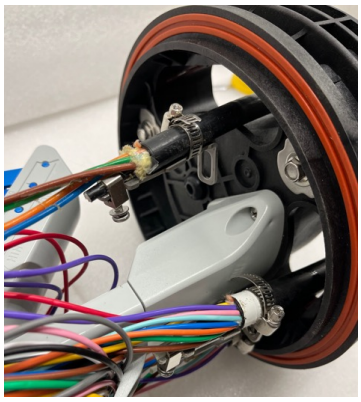
SAPPHIRE™ BASE PLATE DISASSEMBLY (cont.)

Step 4: Pull and remove all Gel-Blocks from Base Plate.

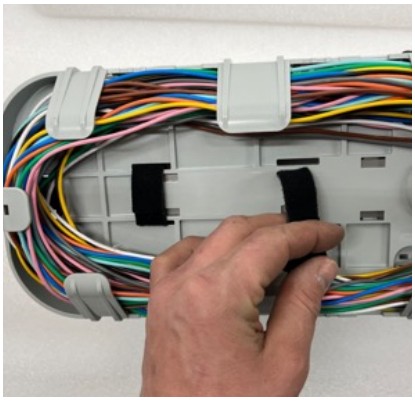
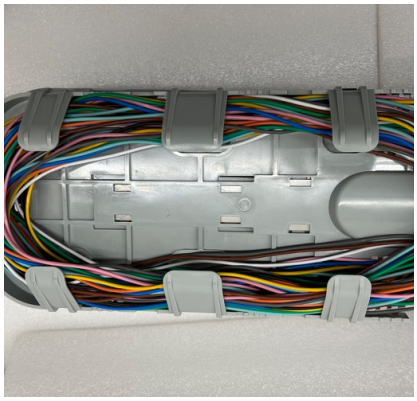
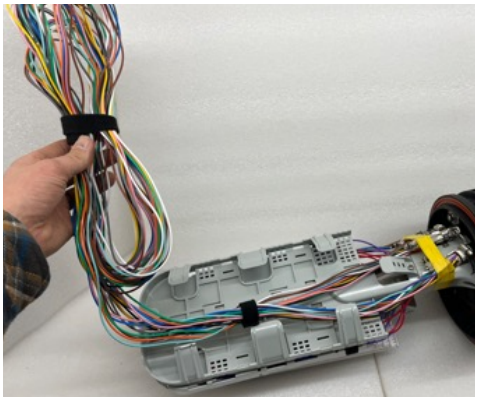




Step 5: Remove Gel-Block retainer and temporarily tape cables to the Slack and Tower Base.

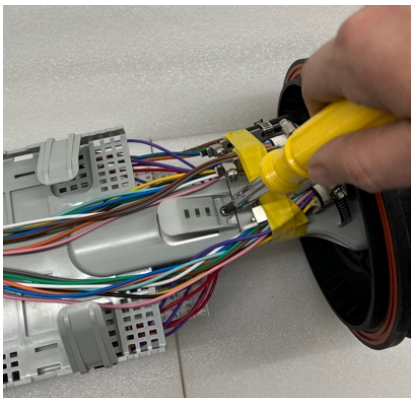
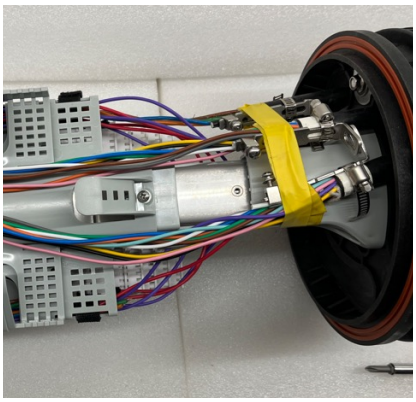
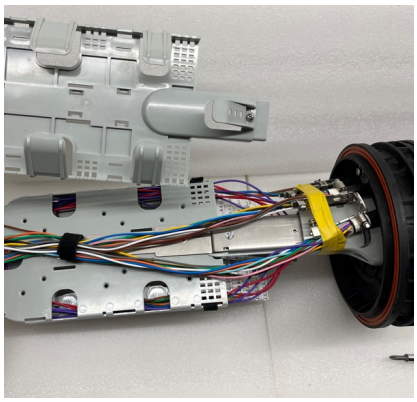




Step 6: Remove velcro from center Slack Basket (only when Flex Basket is installed) and remove buffer slack from basket and secure with velcro or tape.

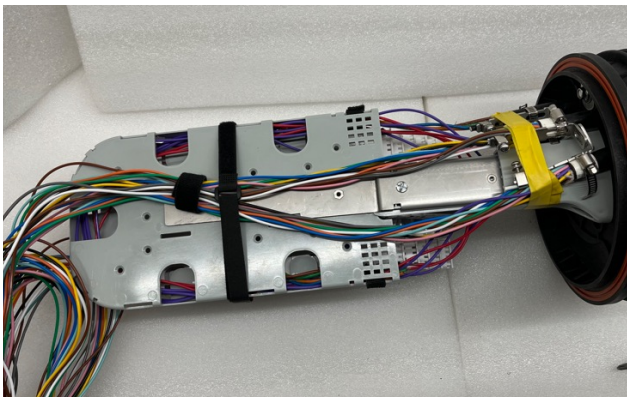
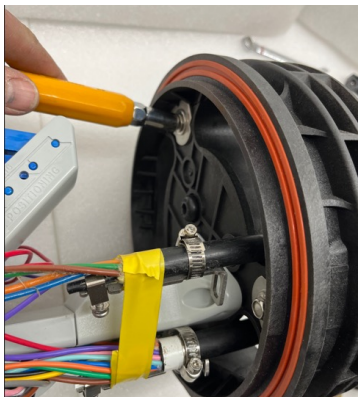




SAPPHIRE™ BASE PLATE DISASSEMBLY (cont.)

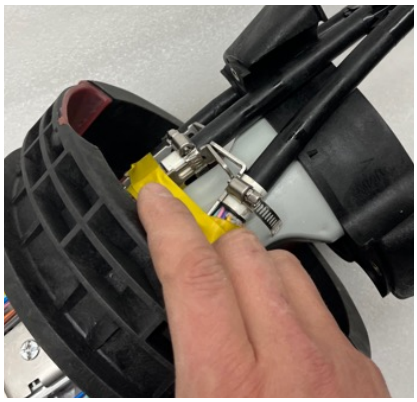
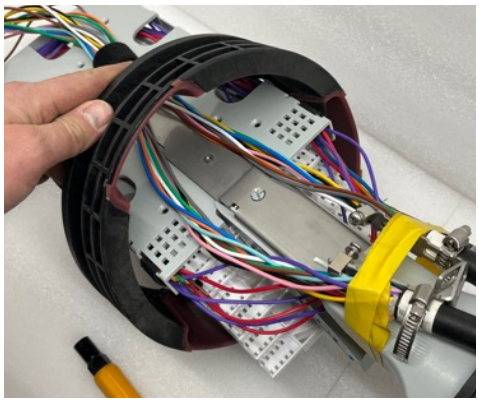
Step 7: Remove Slack Basket screw and slide Slack Basket away from Base Plate.

Step 8: Resecure buffer tubes and trays using velcro tray strap. Now remove Base Plate Ring hardware.

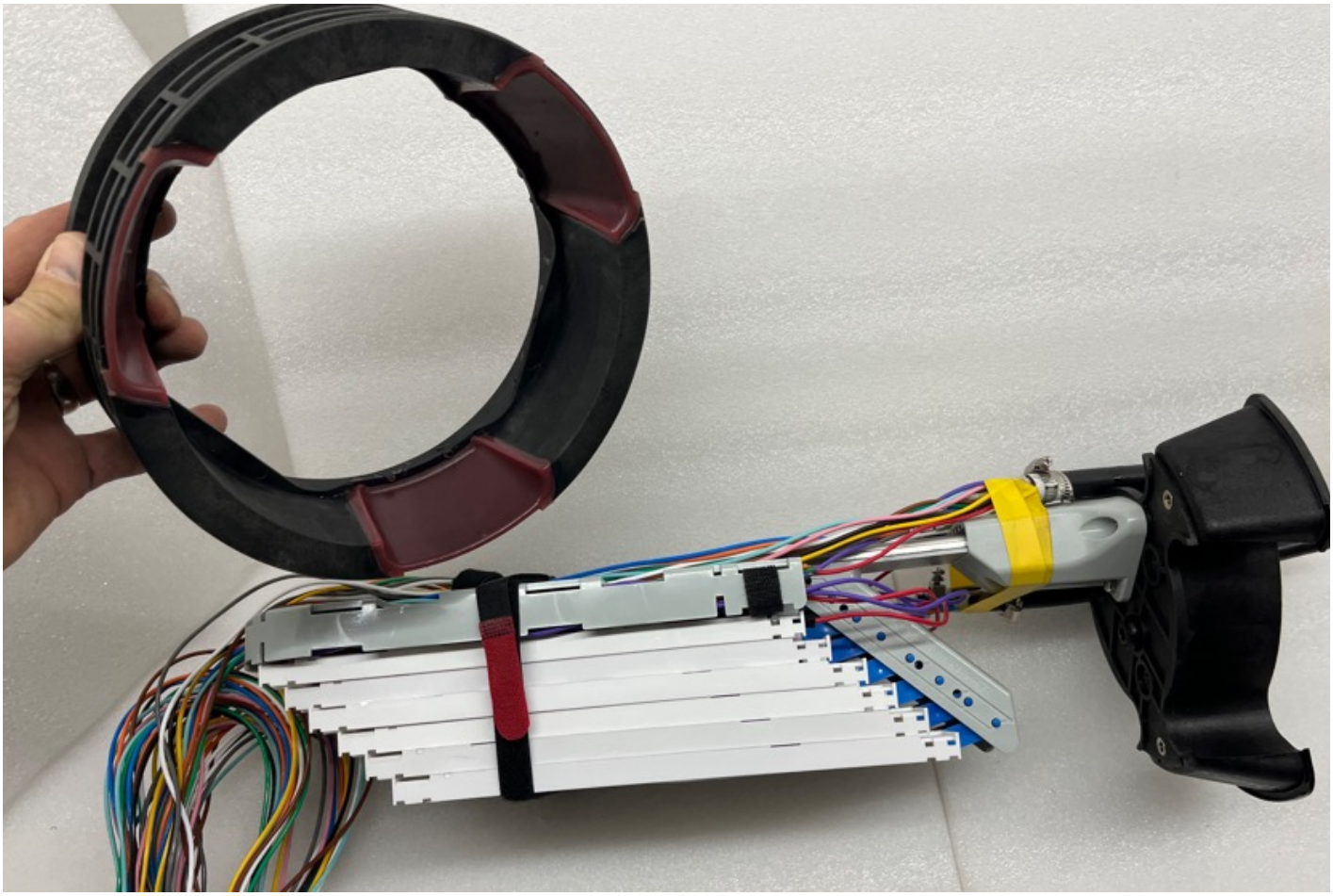




Step 9: Remove velcro from center Slack Basket (only when Flex Basket is installed) and remove buffer slack from basket and secure with velcro or tape.

SAPPHIRE™ BASE PLATE DISASSEMBLY (cont.)

Step 10: The Base Ring is now removed. Remaing trays and buffers are ready to be moved to a new closure or closure parts can be replaced for damaged closures needing rehabbed.



The same endplate disassembly method may be used in an empty Sapphire™ dome to rehabilitate compatible competitor trays (requires additional hinge kits, see spec sheet for more information). Removing trays/cables from populated competitor domes for rehabilitation into Sapphire domes may require destructive methods.

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