



FlexCore™ Front Access Ingress/Egress Cabling Guide

Part Number(s): FDFSPLKITBL, FDFMX5KITBL,
FM5PPBLF***-12, FDFVCMPLTKT**

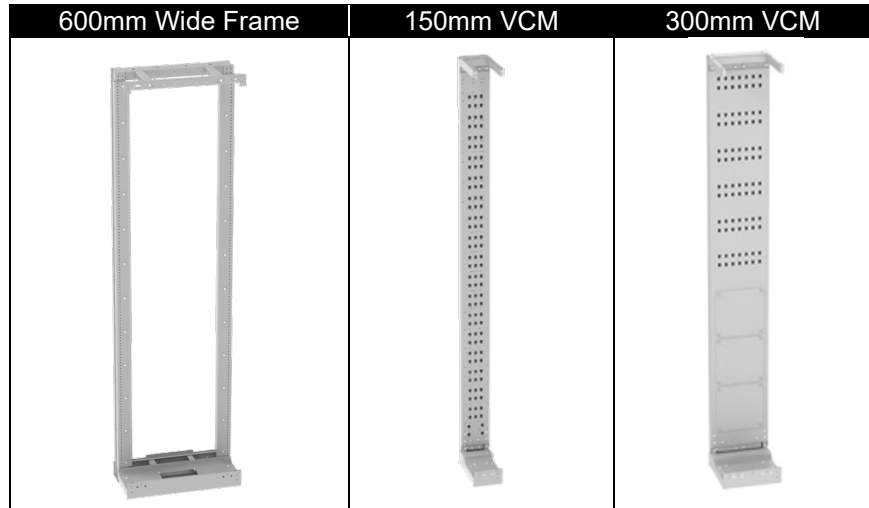
Table of Contents

1. Determine 150mm or 300mm Vertical Cable Manager (VCM) Position.....	2
2. Installation of Ingress/Egress Plates on 150mm or 300mm VCM	3
3. Installation Orientation of Ingress/Egress Plates Depending on Application	5
4. Breakout Locations on Ingress/Egress Breakout Plates for All Enclosures to Ensure No Cable Crossover.....	10
5. Breakout of Cables used for Single Fiber or Fusion Splice Applications using FDFMX5KITBL	11
6. Breakout of Factory Terminated Cables – Non HD Flex – Also use for FOBKF**YM1	22
7. Breakout of Factory Terminated Cables – HD Flex Transition.....	22
8. Managing Cables going to Tethered Cassettes.....	23
9. Managing Slack on Factory Terminated Cable Assemblies using FDFSPLKITBL.....	23
10. Managing Cable Above or Below Breakout Point.....	25
11. Grounding Armored Fiber Optic Cable before Entering System.....	26
12. Various Cable Assemblies/Constructions and and Breakout Strategy Considerations	27

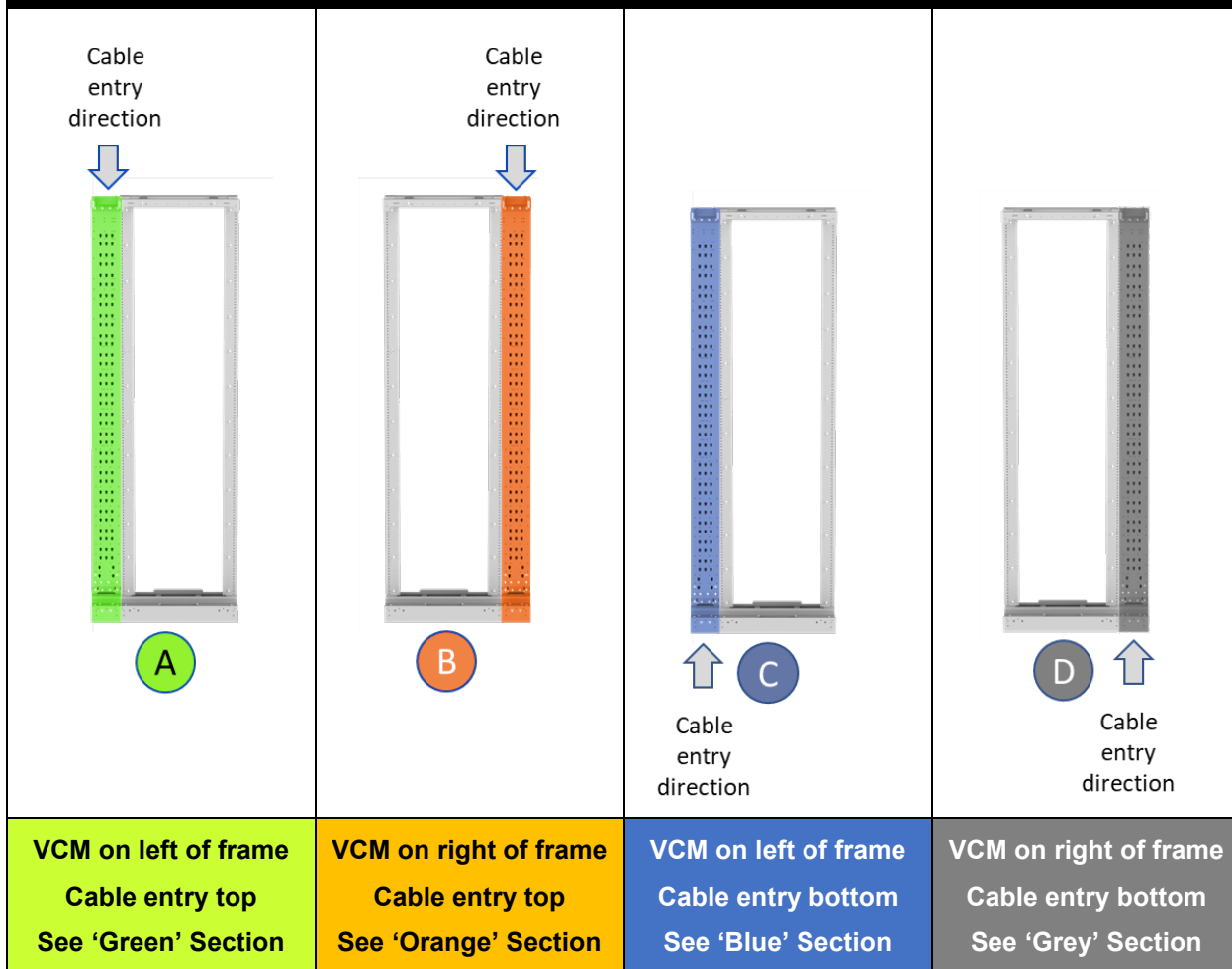
Disclaimer: The information contained in this manual is intended as a guide for use by persons having technical skill at their own discretion and risk. The recommended practices are based on average conditions. Panduit makes no representation or warranty, express or implied, nor assumes any responsibility for the accuracy or completeness of these installation instructions. Panduit does not guarantee any favorable results nor assume any liability for damages, improper installation, system failures, or any other problems that could arise in connection with the use of these installation instructions

1. Determine 150mm or 300mm Vertical Cable Manager (VCM) Position

Note: All images shown with 150mm VCM



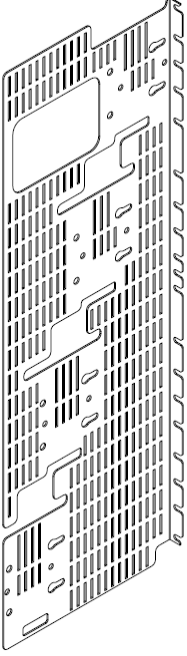
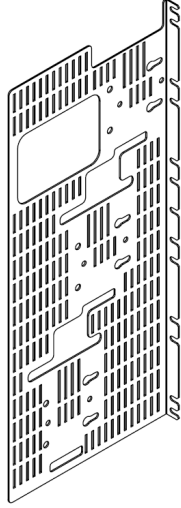
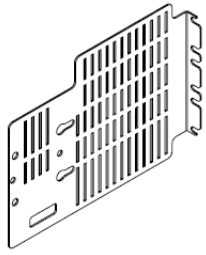
4 possible options for VCM and cable entry position



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2. Installation of Ingress/Egress Plates on 150mm or 300mm VCM

2.1. There are (4) Ingress/Egress Plates included with the 150mm VCM or with the VCM Ingress/Egress Plates Kit (FDFVCMPLTKT**). Sold separately. The VCM Ingress/Egress Plates Kit, (FDFVCMPLTKT**) can be purchased separately to be used with the 300mm VCM to provide additional capacity when a higher volume of Ingress/Egress cables need to be managed than the 150mm VCM can accommodate.

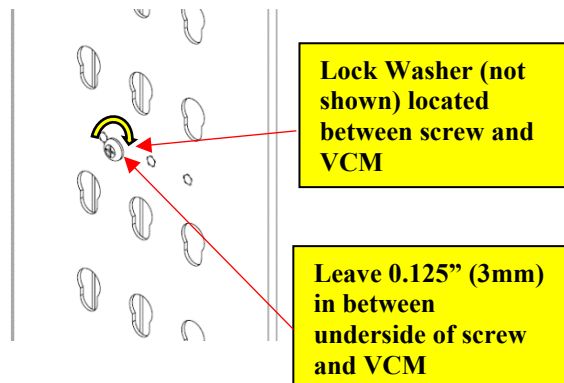
Plates Included with 150mm VCM or VCM I/E Plates Kit		
4 Enclosure Breakout Plate (1 provided with 150mm VCM or VCM I/E Plates Kit)	3 Enclosure Breakout Plate (2 provided with 150mm VCM or VCM I/E Plates Kit)	1 Enclosure Breakout Plate (1 provided with 150mm VCM or VCM I/E Plates Kit) - only use if 11 enclosures are used/frame
		

2.2. To properly install selected plate onto vertical cable manager

2.2.1. Start #10-32 screws into tapped holes on VCM.

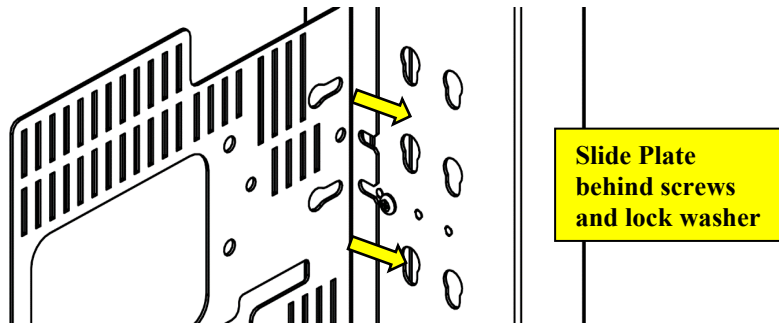
2.2.1.1. Place lock washer between screw and VCM.

2.2.1.2. Screw in until approximately 0.125" is between back of screw head and VCM.

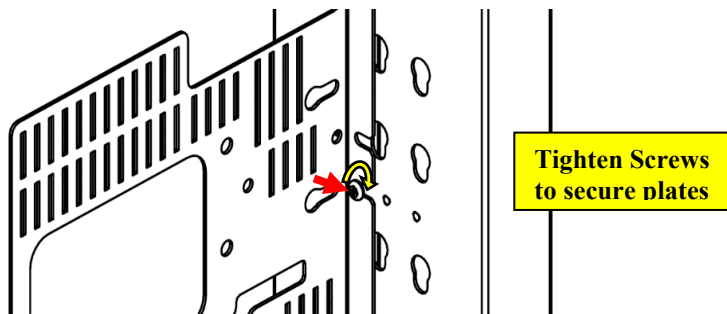


2.2.2. Slide Ingress/Egress plate behind screws and lock washers

2.2.2.1. Horizontal slots on plates allow for install



2.2.3. Go back and tighten screws to hold plates in correct positions

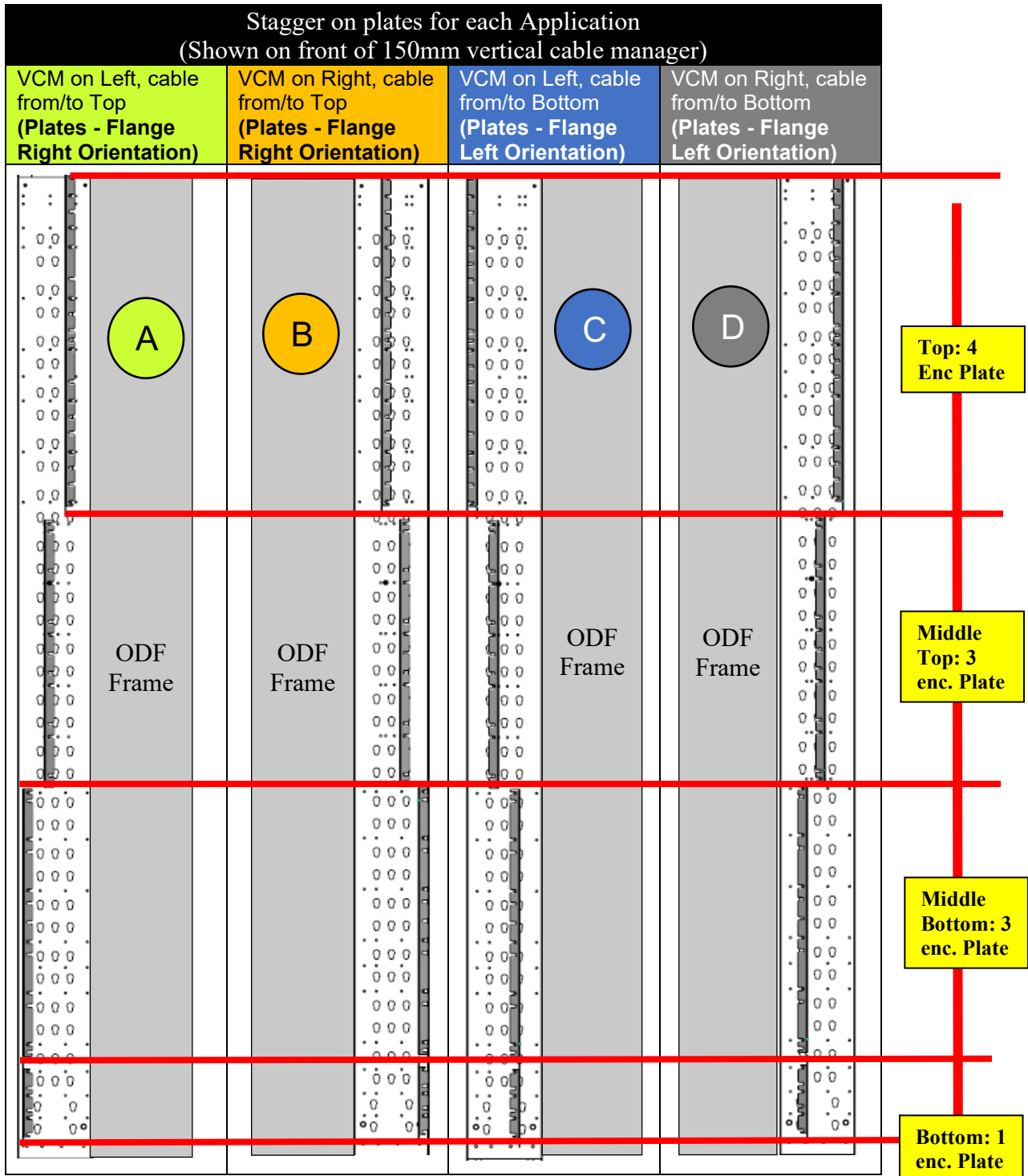


2.3. Ingress/Egress Plates are universal and can be installed with the flange on the Right or flipped upside down and the flange located on the Left, depending on where cable is coming from.

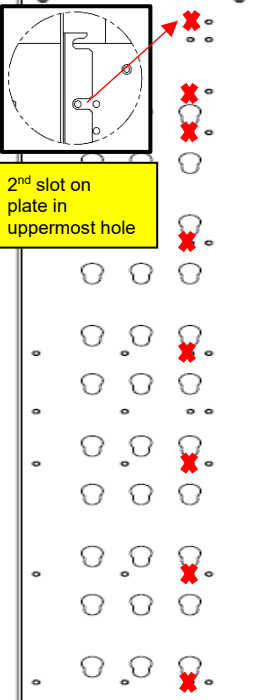
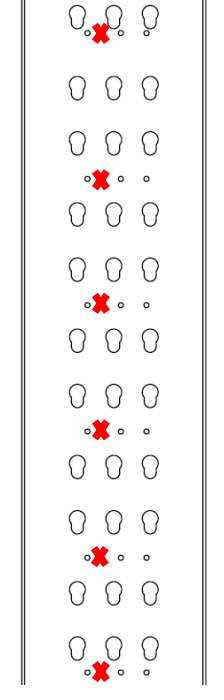
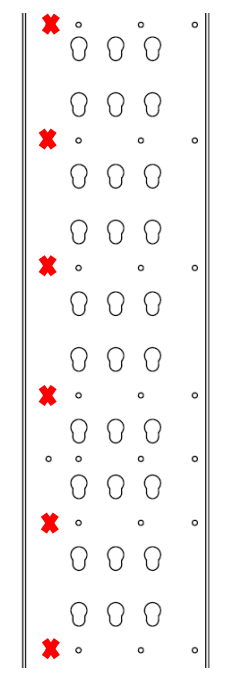
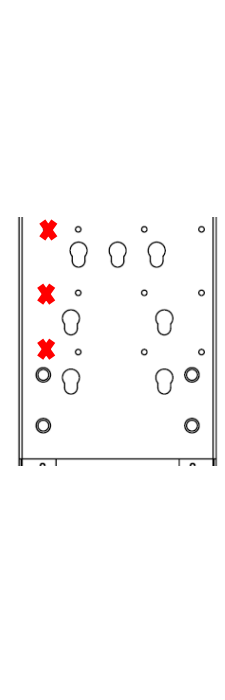
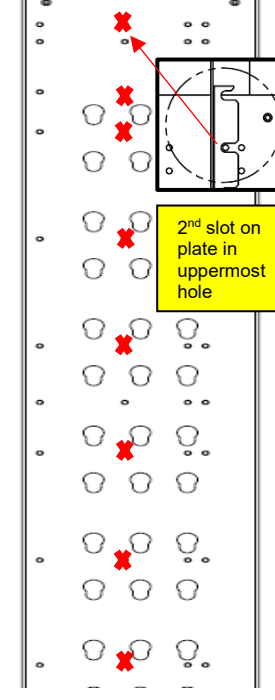
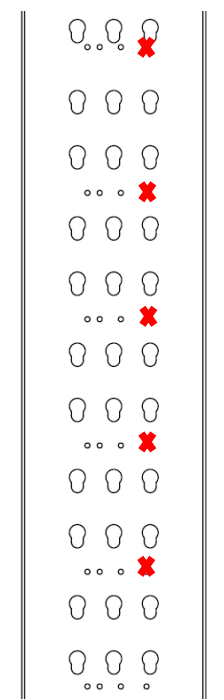
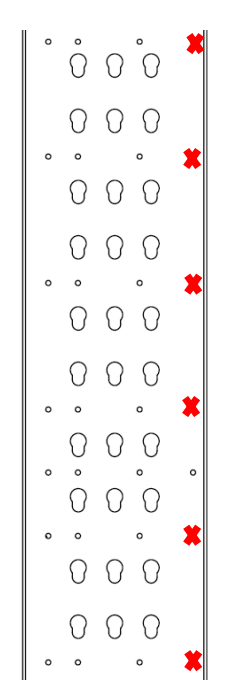
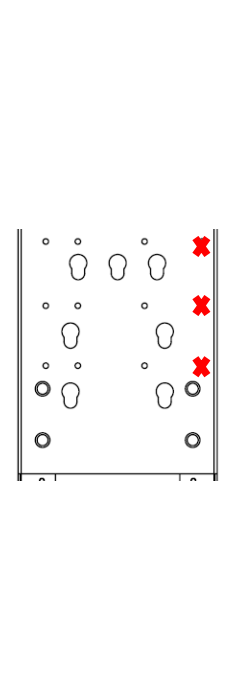
For cable entering/exit from top , plates should be installed as shown below: (Options A and B)	For cable entering/exit from bottom , plates should be installed as shown below (Options C and D)
<p>A technical diagram showing a side view of a rack panel with a large rectangular cutout at the top. A red arrow points to the cutout with a yellow callout box labeled "Large Cutout". Another red arrow points to the right edge of the panel with a yellow callout box labeled "Flange (Right)".</p>	<p>A technical diagram showing a side view of a rack panel with a flange on the left edge. A red arrow points to the flange with a yellow callout box labeled "Flange (Left)". Another red arrow points to a large rectangular cutout at the bottom of the panel with a yellow callout box labeled "Large Cutout".</p>

3. Installation Orientation of Ingress/Egress Plates Depending on Application

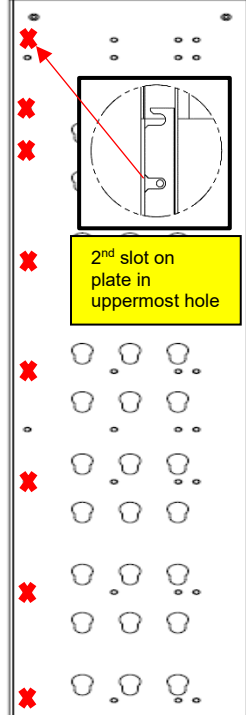
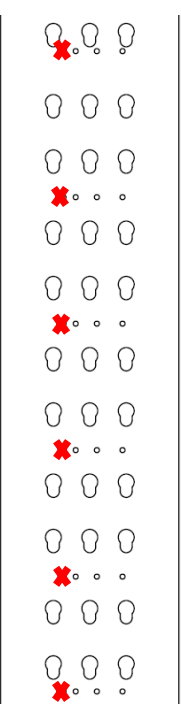
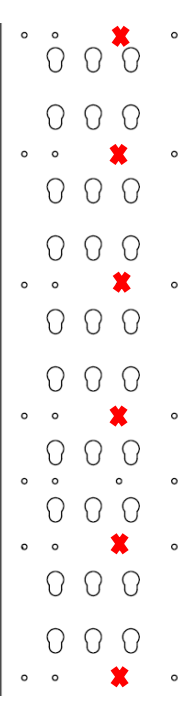
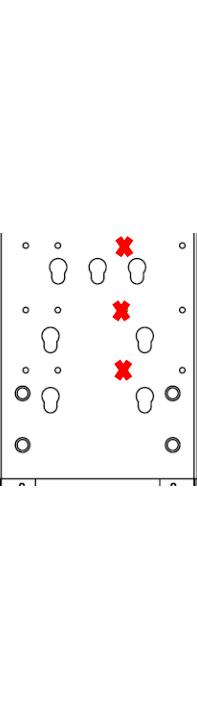
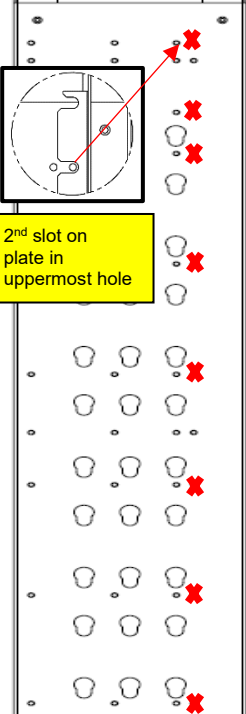
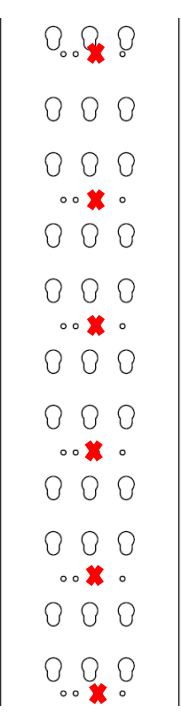
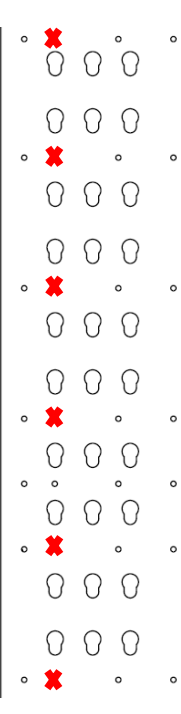
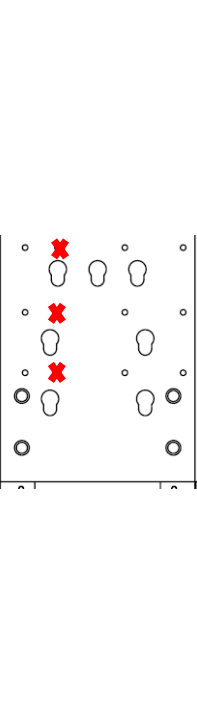
Note: All views below show breakout with 11 x 4RU enclosures per frame. Fewer enclosures can be used and the system can be scaled as needed. If application requires bottom trough to be used, the maximum number of enclosures per frame is 10.



150mm VCM mounting hole positions for ingress/egress breakout plates

Application	Holes to use on VCM for 4 enc. Plate (Top Section) (2 nd slot in plate used with uppermost hole)	Holes to use on VCM for 3 enc. Plate (Top Middle Section)	Holes to use on VCM for 3 enc. Plate (Lower Middle Section)	Holes to use on VCM for 1 enc. Plate (Bottom Section – only for 11 th enclosure)
<p>150mm VCM on Left, cable from/to Top (Plates - Flange Right Orientation)</p> <p style="text-align: center; font-size: 2em;">A</p>	 <p>2nd slot on plate in uppermost hole</p>			
<p>150mm VCM on Right, cable from/to Top (Plates - Flange Right Orientation)</p> <p style="text-align: center; font-size: 2em;">B</p>	 <p>2nd slot on plate in uppermost hole</p>			

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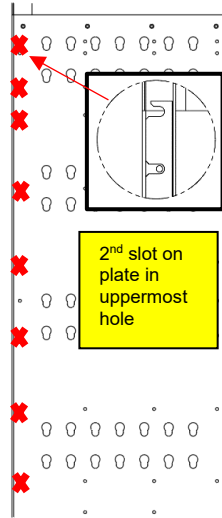
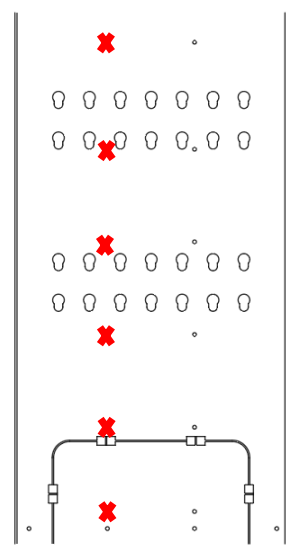
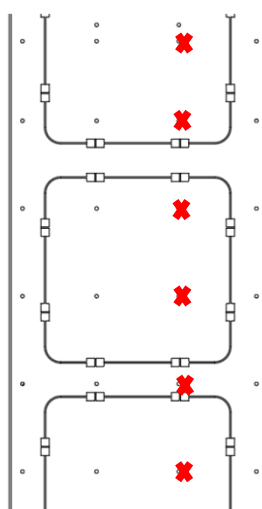
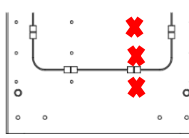
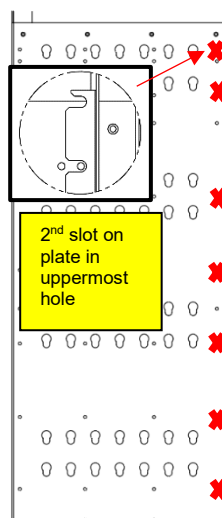
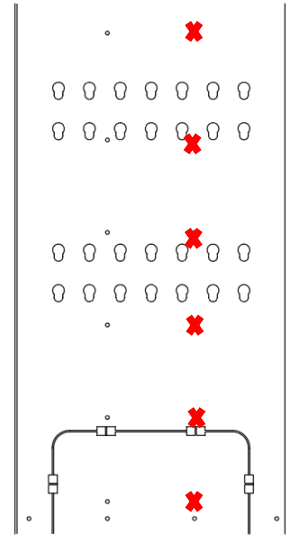
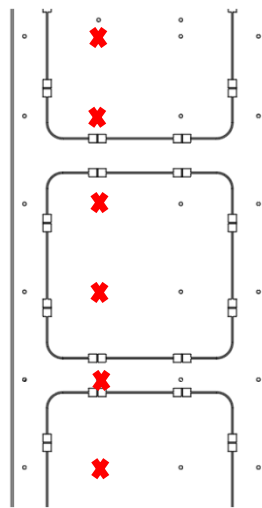
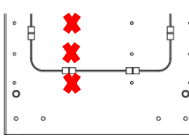
Application	Holes to use on VCM for 4 enc. Plate (Top Section) (2 nd slot in plate used with uppermost hole)	Holes to use on VCM for 3 enc. Plate (Upper Middle Section)	Holes to use on VCM for 3 enc. Plate (Lower Middle Section)	Holes to use on VCM for 1 enc. Plate (Bottom Section – only for 11 th enclosure)
<p>150mm VCM on Left, cable from/to Bottom (Plates - Flange Left Orientation)</p> <p style="text-align: center; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">C</p>				
<p>150mm VCM on Right, cable from/to Bottom (Plates - Flange Left Orientation)</p> <p style="text-align: center; border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">D</p>				

* Use at least 5 screws per plate (3 for bottom plate). All possible screw locations which can be used are highlighted with red "x"

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300mm VCM mounting hole positions for ingress/egress breakout plates				
Application	Holes to use on VCM for 4 enc. Plate (Top Section) (2 nd slot in plate used with uppermost hole)	Holes to use on VCM for 3 enc. Plate (Top Middle Section)	Holes to use on VCM for 3 enc. Plate (Lower Middle Section)	Holes to use on VCM for 1 enc. Plate (Bottom Section – only for 11 th enclosure)
<p>300mm VCM on Left, cable from/to Top (Plates - Flange Right Orientation)</p> <p style="text-align: center; font-size: 2em;">A</p>				
<p>300mm VCM on Right, cable from/to Top (Plates - Flange Right Orientation)</p> <p style="text-align: center; font-size: 2em;">B</p>				

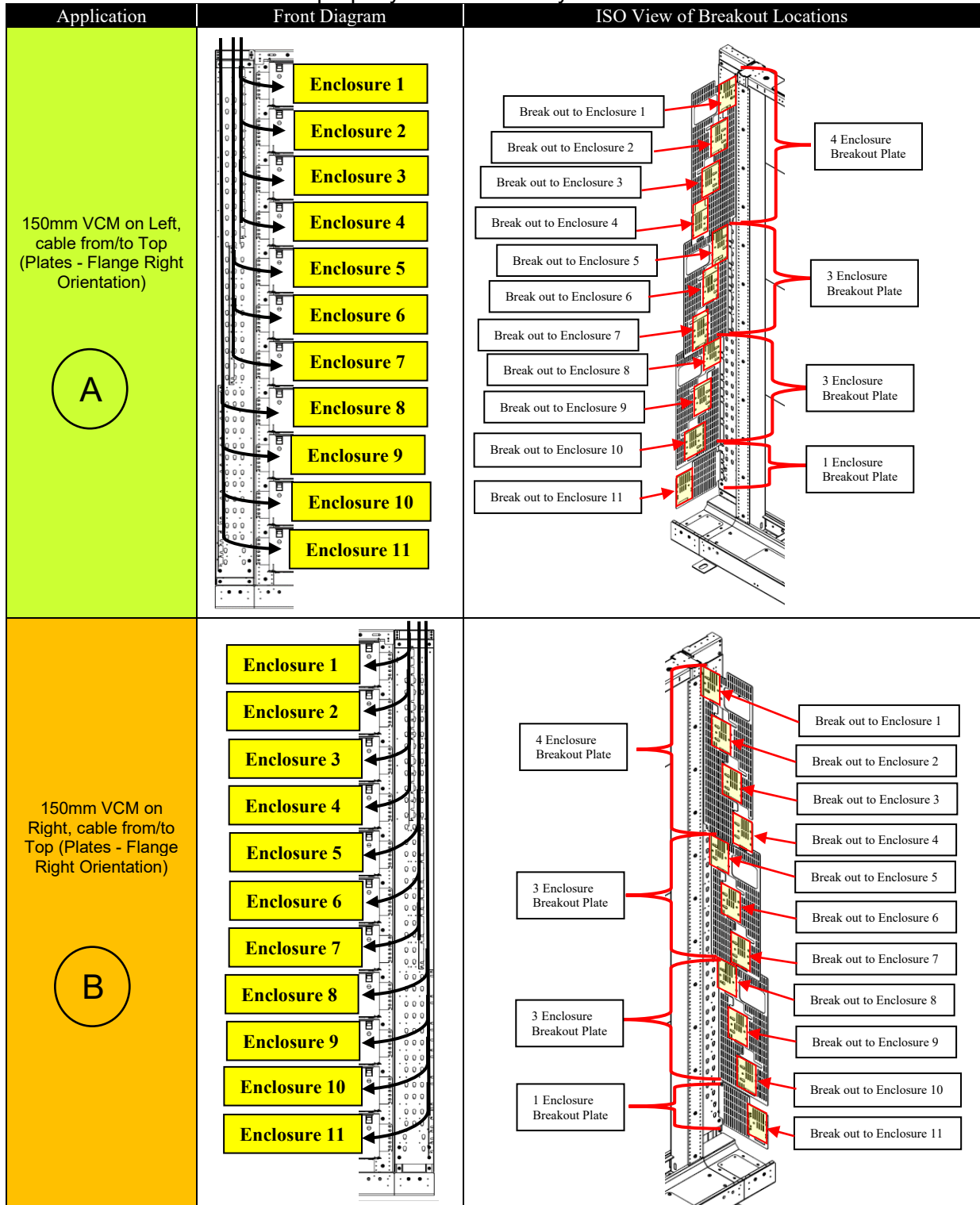
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Application	Holes to use on VCM for 4 enc. Plate (Top Section) (2 nd slot in plate used with uppermost hole)	Holes to use on VCM for 3 enc. Plate (Upper Middle Section)	Holes to use on VCM for 3 enc. Plate (Lower Middle Section)	Holes to use on VCM for 1 enc. Plate (Bottom Section – only for 11 th enclosure)
<p>300mm VCM on Left, cable from/to Bottom (Plates - Flange Left Orientation)</p> <p style="text-align: center;">C</p>	 <p>2nd slot on plate in uppermost hole</p>			
<p>300mm VCM on Right, cable from/to Bottom (Plates - Flange Left Orientation)</p> <p style="text-align: center;">D</p>	 <p>2nd slot on plate in uppermost hole</p>			

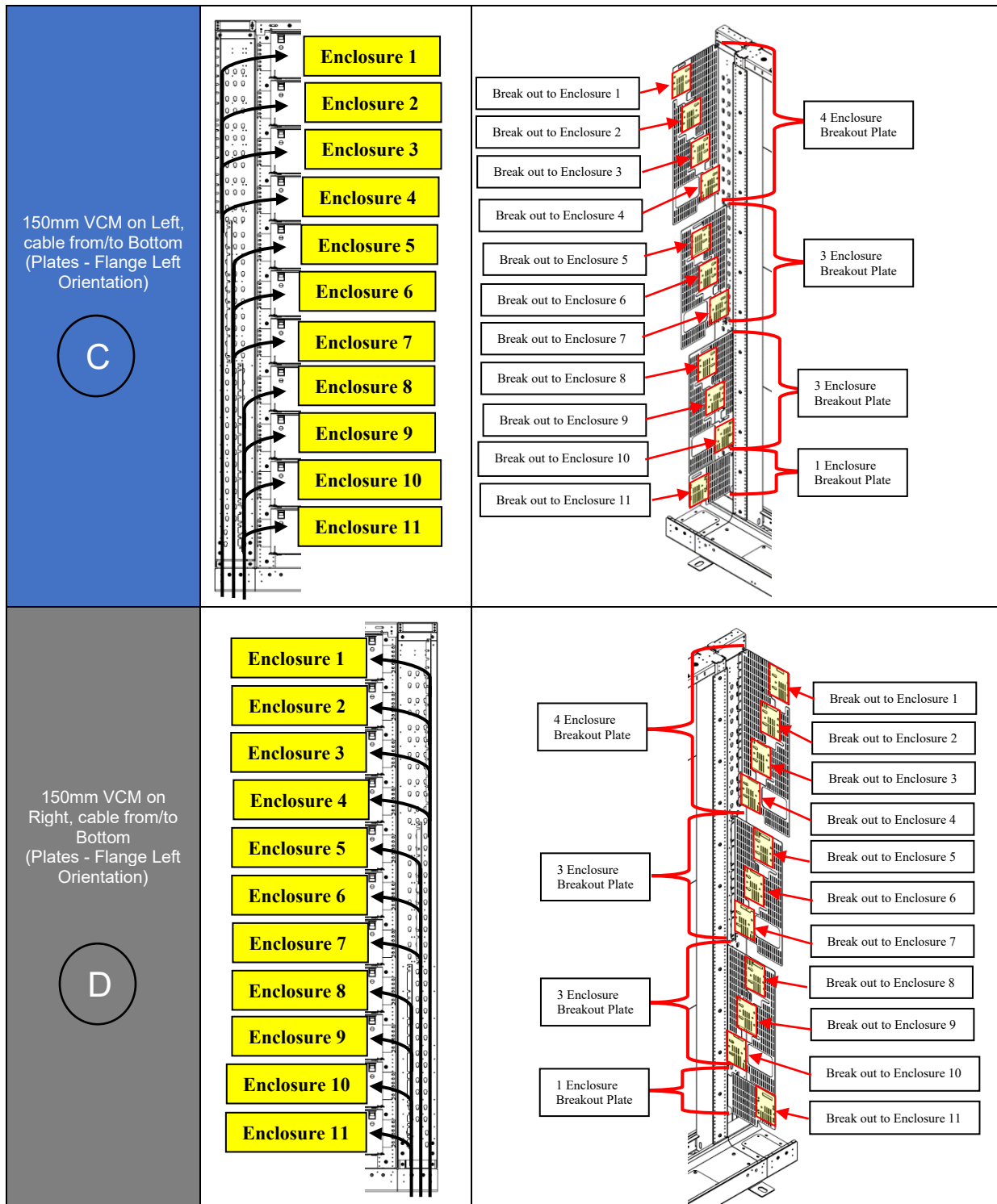
4. Breakout Locations on Ingress/Egress Breakout Plates for All Enclosures to Ensure No Cable Crossover

4.1. Features are patterned on the ingress/egress plates which allow for cable management products to breakout cable to certain enclosures within a frame

Note: Large fiber optic cables which cannot be brought directly to the cassette need to be broken out into workable subunits to be installed properly into the ODF system.



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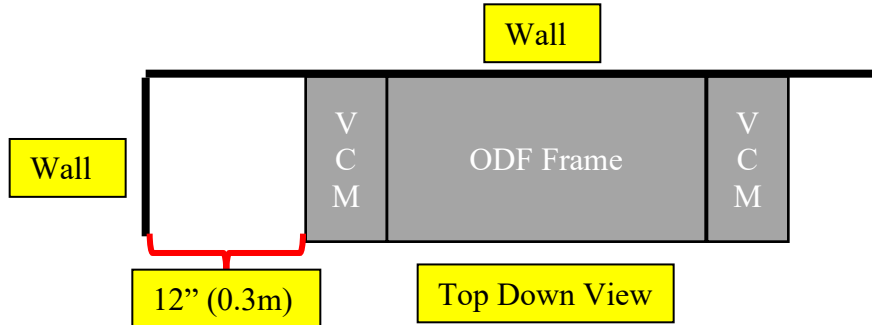


Note: If cables are entering/exiting from the top of the system, breakout cables in an order from the top enclosure going down

Note: If cables are entering/exiting from the bottom of the system, breakout cables from the bottom enclosure up

5. Breakout of Cables used for Single Fiber or Fusion Splice Applications using FDFMX5KITBL

Note: To have proper finger access to thumb screws in FDFMX5KITBL, leave half a floor tile, or 12in. (0.3m) horizontal space between 150mm VCM and side wall.



5.1. Breakout kit utilizing 5.0mm outside diameter (3.1mm inside diameter) protection tube

5.1.1. **Panduit Part #:** FDFMX5KITBL

5.1.2. FDFMX5KITBL will be used in conjunction with Panduit Splice Cassettes (explained in **FS200 and FS201**) (Part #'s: FDS**-24-*** (Connectorized) and FDSN-24 (Splice Only))

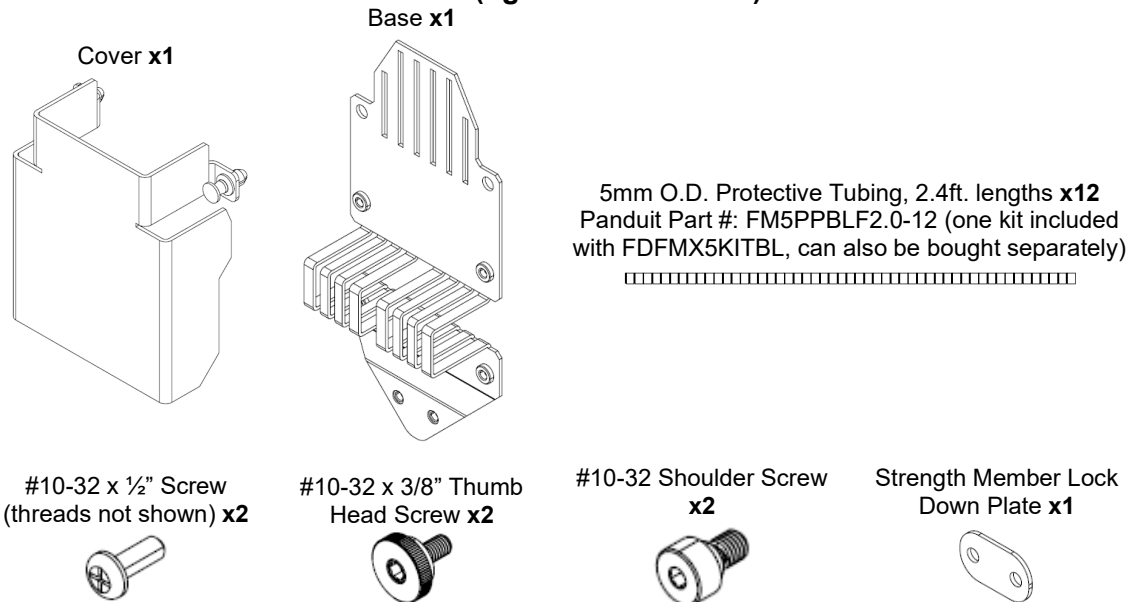
5.1.3. The 5.0mm tubing can hold the following amount of fiber:

Type of Fiber	Qty which can fit in each tube
Rollable/Flexible Ribbon	Up to 48 fibers (4 rollable/flexible ribbons)
Flat Ribbon	Up to 24 fibers (2 flat ribbons)
250um Loose tube	Up to 36 fibers
900um Fiber	Up to 6 fibers

Note: For high density splicing applications, Panduit recommends the use of flexible ribbon technology to minimize cable diameter and amount of tubing needed for breaking out cable.

Note: For 900um fiber, 12 fibers can be spliced in each cassette. 6 fibers fit within a tube, and the splice cassette can handle (2) tubes coming into the cassette. 12 fibers is 50% of the maximum capacity of the splice cassette, and is **not** recommended for high density systems. Contact your Panduit representative for more information.

5.1.4. Parts included with FDFMX5KITBL (**figures not to scale**)



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5.1.5. (3) different kits of (12) protection tubes at different lengths are available for purchase separately.

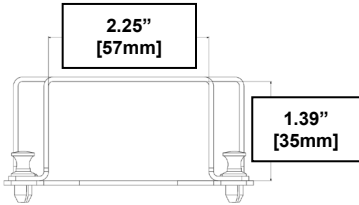
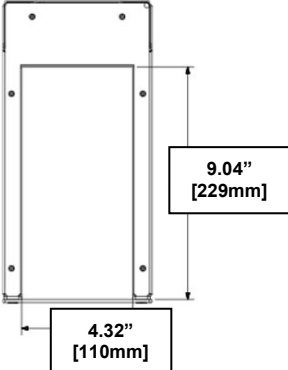
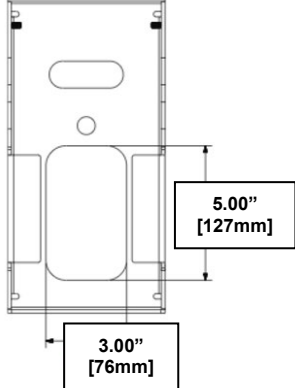
Note: FDFMX5KITBL has the ability to hold (36) tubes, and comes with (12). **Any quantity over 12 that is needed for a breakout application will have to be bought separately.**

5.1.5.1. FM5PPBLF2.0-12: (12) 2.4ft lengths of protection tube – used for breakout to closest enclosure

5.1.5.2. FM5PPBLF4.0-12: (12) 4.4ft lengths of protection tube – used for breakout to enclosure further away from breakout point (Ex. 2nd enclosure in a 864 fiber breakout)

5.1.5.3. FM5PPBLF8.0-12: (12) 8.4ft lengths of protection tube – used for breakout to enclosure further away from breakout point (Ex. 3rd enclosure in a 864 fiber breakout)

5.1.6. The O.D. of the incoming cable will determine how many cables can be held within a FDFMX5KITBL. The opening of FDFMX5KITBL and the 150mm VCM (FDFVCM1545**-FS191) determines what can be accepted in the system.

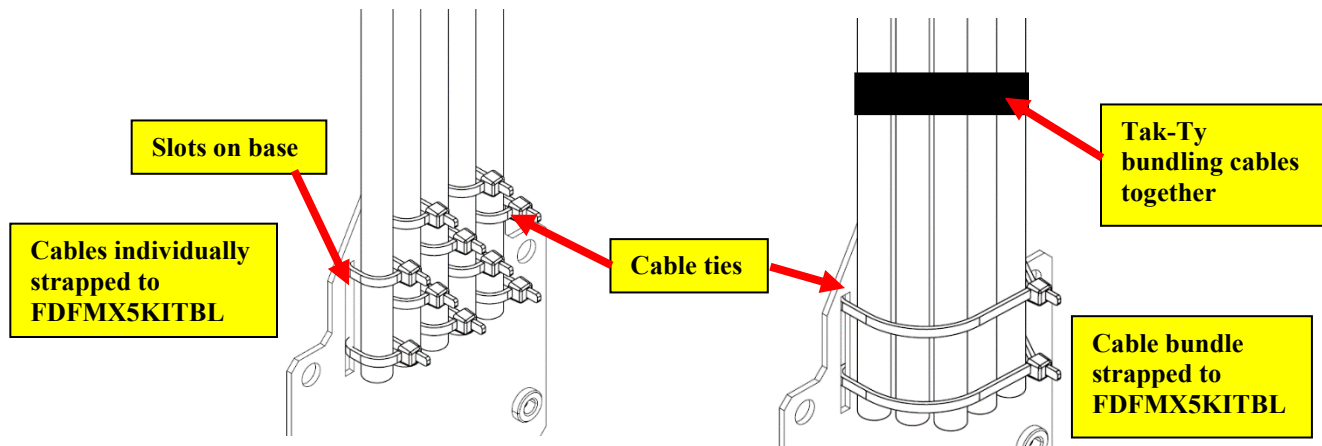
Opening at Top of FDFMX5KITBL (NOT TO SCALE)	Overhead Incoming Cable Area for FDFVCM1545** (NOT TO SCALE)	Floor Incoming Cable Area for FDFVCM1545** (NOT TO SCALE)
		

5.1.7. The max O.D. for (1) cable which can be accepted into FDFMX5KITBL is 1.34" [34mm].

5.1.8. Maximum # of cables which can be strapped directly to FDFMX5KITBL is 5, determined by number of slots on FDFMX5KITBL.

5.1.8.1. More cables can be brought into FDFMX5KITBL as a bundle as shown below.

Note: For inquiries on greater numbers or different combinations of cable entering FDFMX5KITBL, please reach out to your Panduit representative.



Example 1 – Breakout of (2) 144 fiber cables going to one enclosure using FDFMX5KITBL

5.1.9. Strip cable outer jacket to length per table below

5.1.9.1. If Kevlar or central strength member is present, cut to 7.5”(190mm) from end of outer jacket. If both are present, cut Kevlar back flush with outer jacket.

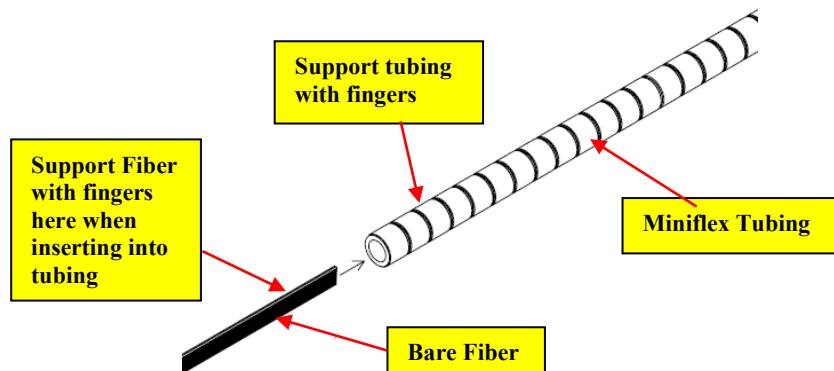
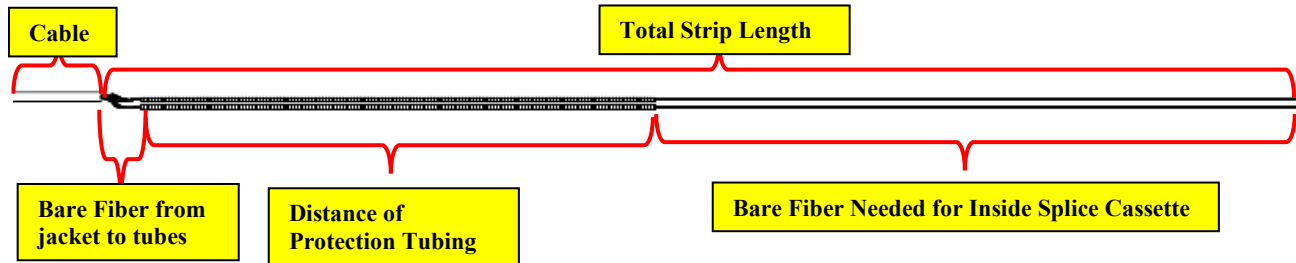
5.1.10. Slide protection tube over bare fiber as shown in below, determine amount of fibers per tube per application.

5.1.10.1. For this example, 24 fibers are going to be put in (12) tubes, 6 tubes/144 fiber cable. (1) tube will go to each tray in the enclosure.

Note: There are (12) trays per enclosure. All trays should have a universal length of protection tubing per below table if all protection tubes are **going to the same enclosure**. If tubes are going to various enclosures (larger) cable counts, refer to next example.

Note: This example represents splicing off-frame, where all cassettes are spliced and then placed into the enclosure.

Distance of Bare Fiber from outer jacket to protection tubes	Distance of protection tube	Distance of Bare Fiber Needed for Inside Splice Cassette	Total Strip Length of outer jacket
1.75” (45mm)	29” (740mm) Use FM5PPBLF2.0-12	39” (1m)	69.75” (1.8m)

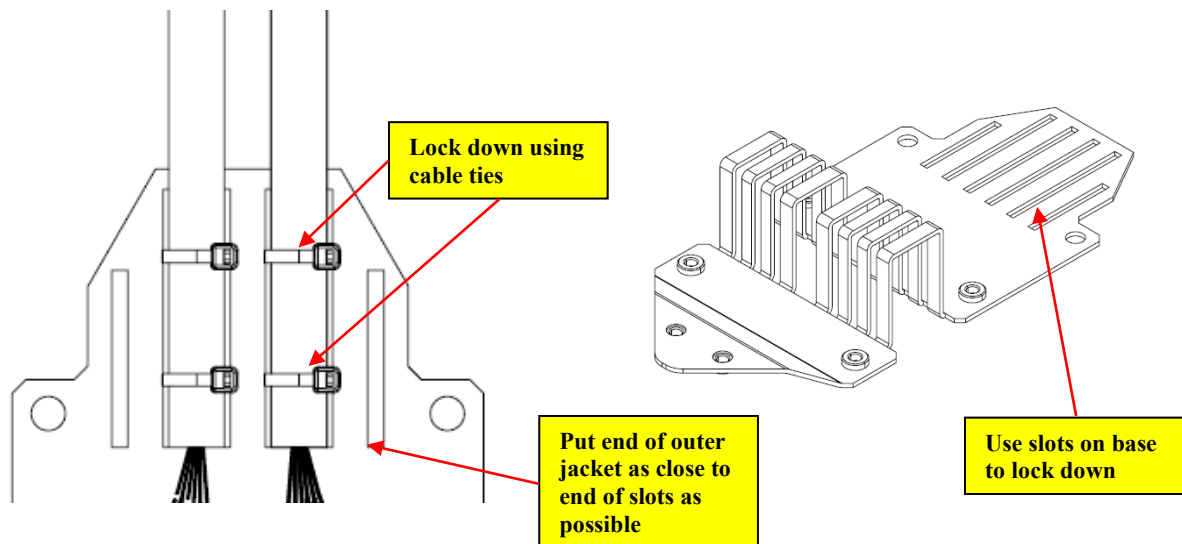


5.1.11. Attach cable to base using cable ties

Note: (30) Panduit Cable Ties Part #:PLT2S-M0 are included with the 150mm vertical cable manager. (<https://www.panduit.com/en/products/wire-routing-management-protection/cable-wire-ties-mounts-straps/cable-wire-ties/plt2s-m0.html>)

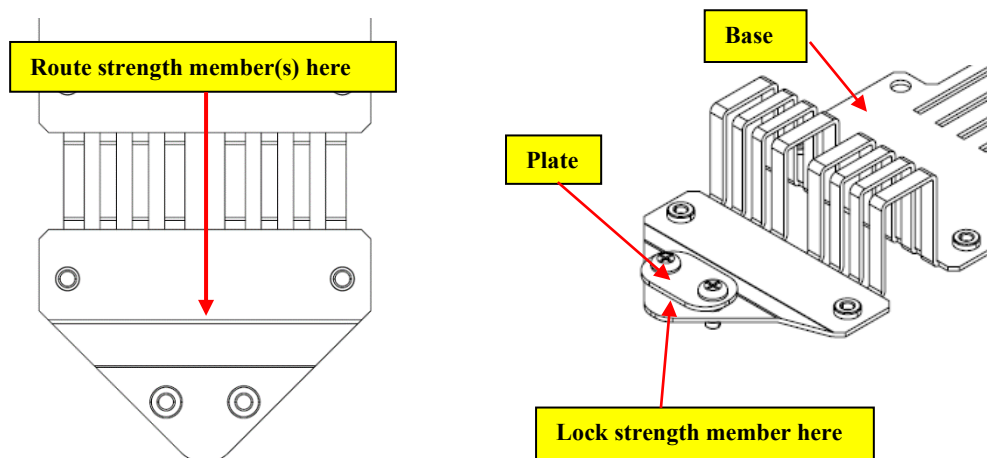
Note: In this step, the protection tubing may be slid back to allow for adequate room to lock down the outer jacket of the cable.

Note: If installer fears cable ties may cause damage/kinking of cable, use of tak-ty is acceptable.



5.1.12. Lock strength member(s) into plate

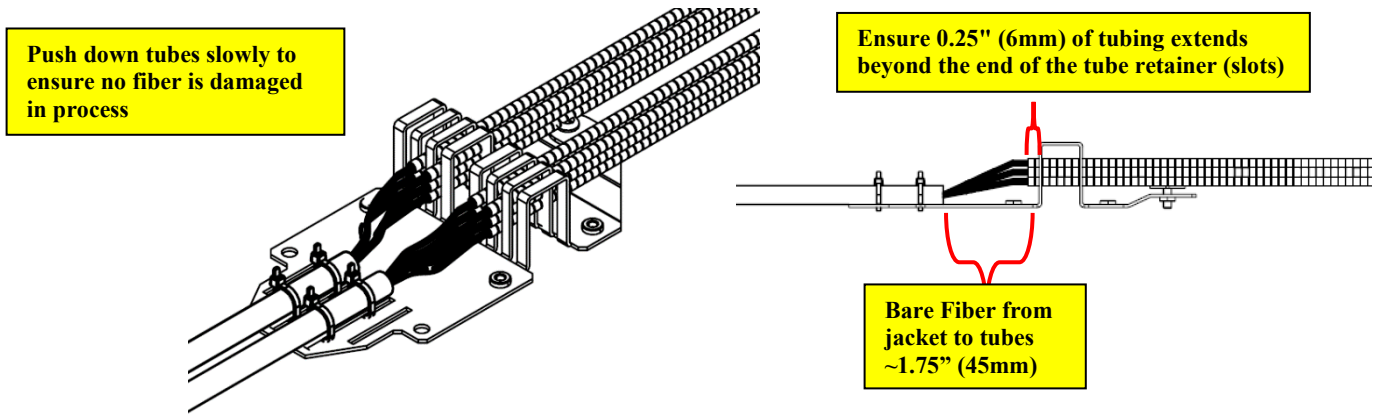
- 5.1.12.1. Lock in between plate and base using #10-32 x 1/2" Screw(s) provided with FDFMX5KITBL



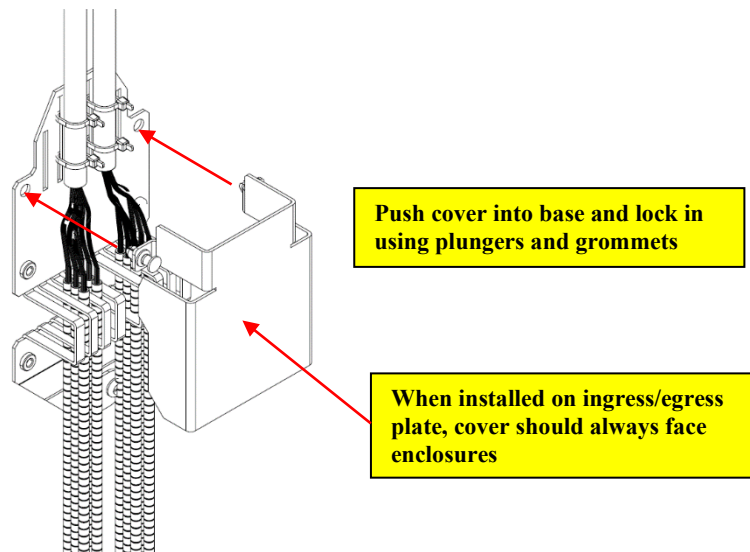
5.1.13. Push protection tubing into place on base

- 5.1.13.1. Protection tubing fits as a press fit into the holder base slots

Note: Install tubes in a way that does **not** flex bare fiber. Maintain necessary bend radius.



5.1.14. Place cover on FDFMX5KITBL using plungers and grommets



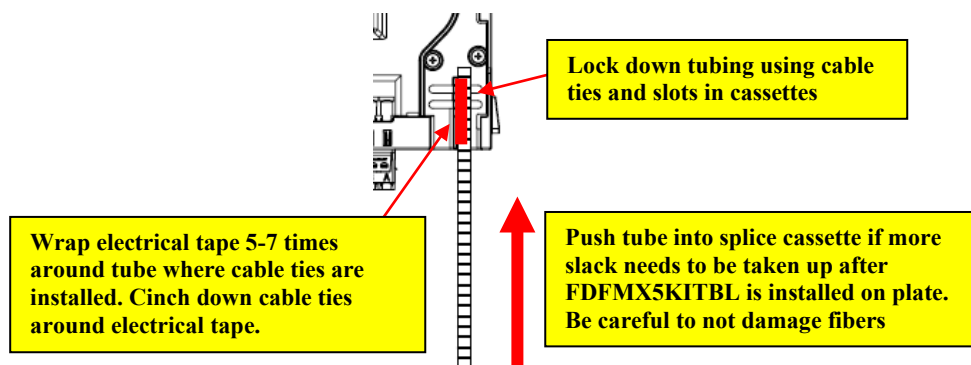
5.1.15. Splice fibers within cassette (Ref FS200 and FS201)

Note: There will be enough slack (~69"/1.7m) of bare fiber inside splice cassette and length of protection tube that off frame splicing can be accomplished

5.1.16. Once splice cassette is fully populated, place slack loop(s) of bare fiber inside cassette, slide protection tubing up bare fiber, and lock protection tube into splice cassette

5.1.16.1. Use provided cable ties to lock protection tube into opening on splice cassette

Note: If more protection tube slack needs to be taken up, (1) tube can be pushed into the cassette up to 2" (51mm).



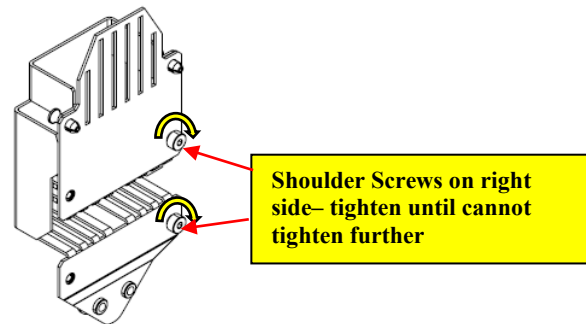
5.1.17. After all cassettes are spliced, install cassettes into necessary enclosure (FS 203).
Picture of slack of protection tubing going into enclosure shown below.

5.1.18. Install FDFMX5KITBL onto necessary plate and location.

5.1.18.1. Install #10-32 shoulder screw on right side:

5.1.18.1.1. If 150mm VCM is located on the left, cable coming from bottom

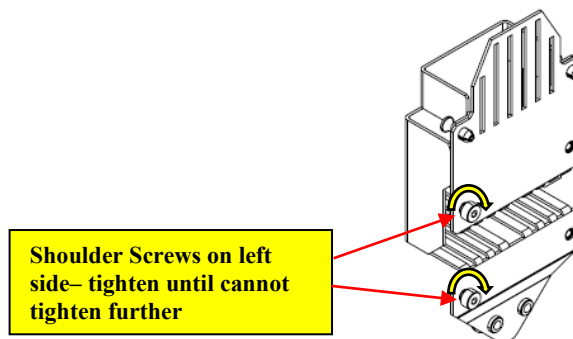
5.1.18.1.2. If 150mm VCM is located on the right, cable is coming from top,



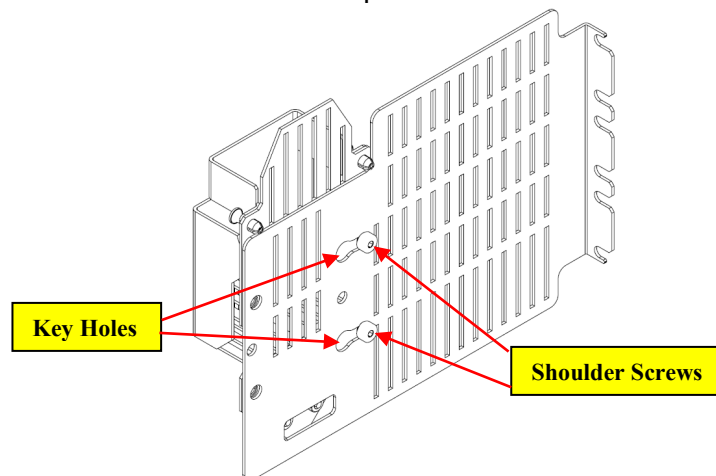
5.1.18.2. Install #10-32 shoulder screw on left side:

5.1.18.2.1. If 150mm VCM is located on the left, cable coming from top

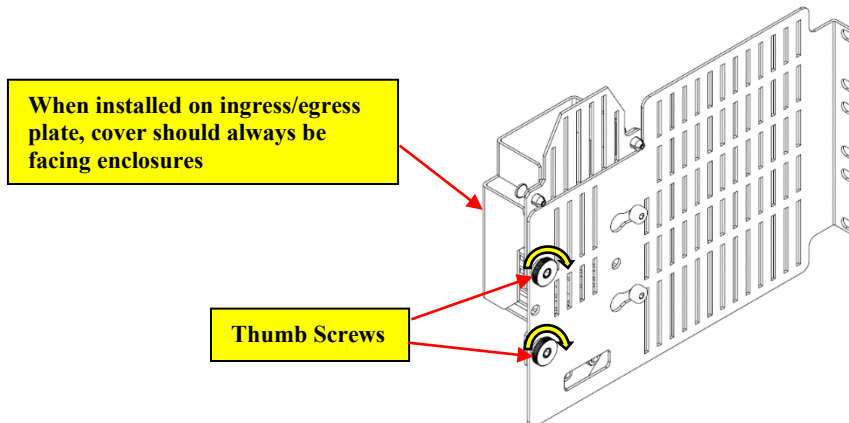
5.1.18.2.2. If 150mm VCM is located on the right, cable coming from bottom



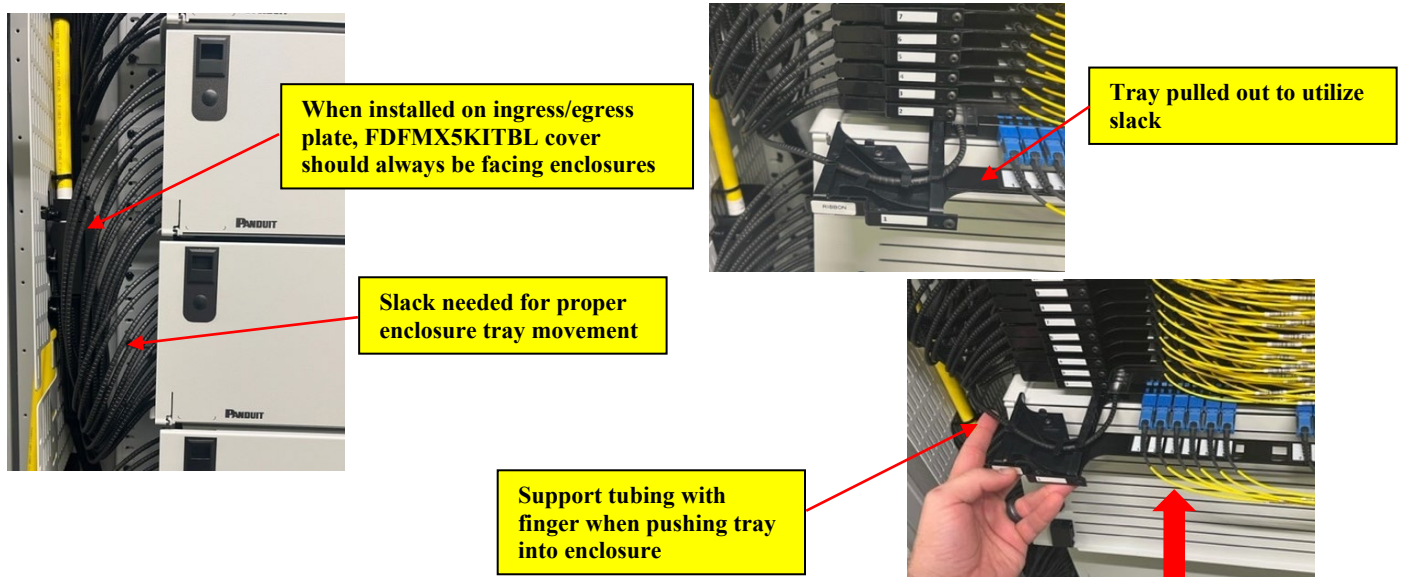
5.1.18.3. Slide FDFMX5KITBL into correct keyhole(s) on ingress/egress plate depending on position and enclosure. 1 enclosure plate shown below



5.1.18.4. Secure FDFMX5KITBL to plate using thumb screws. 1 enclosure plate shown below:



Note: To have proper finger access to thumb screws, leave half a floor tile, or 12in. (0.3m) horizontal space between vertical cable manager and wall.



5.1.18.5. Breakout is of (2) 144F cables to one enclosure is complete!

5.2. Example 2 – Breakout of (1) 864 fiber cable with central strength member, going to (3) enclosures

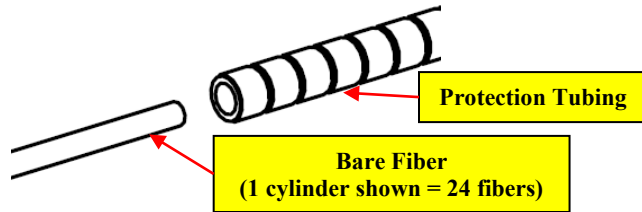
Note: This is a higher fiber count than the previous example, and tells how to properly breakout cables that are going to multiple enclosures.

Note: This example represents splicing off-frame, where all cassettes are spliced and then placed into the enclosure.

5.2.1. Strip cable outer jacket to length per table below. Strip outer jacket to longest length (highlighted) and then cut back bare fiber as needed for the first 2 enclosures.

5.2.1.1. If Kevlar or central strength member is present, cut to 7.5" (19.05cm) from end of outer jacket. If both are present, cut Kevlar back flush with outer jacket.

5.2.2. Slide protection tube over bare fiber as shown in below picture, determine amount of fibers per tube per application.



5.2.2.1. For this example, 24 fibers are going to be put in (36) tubes, (1) tube will go to each tray in each enclosure.

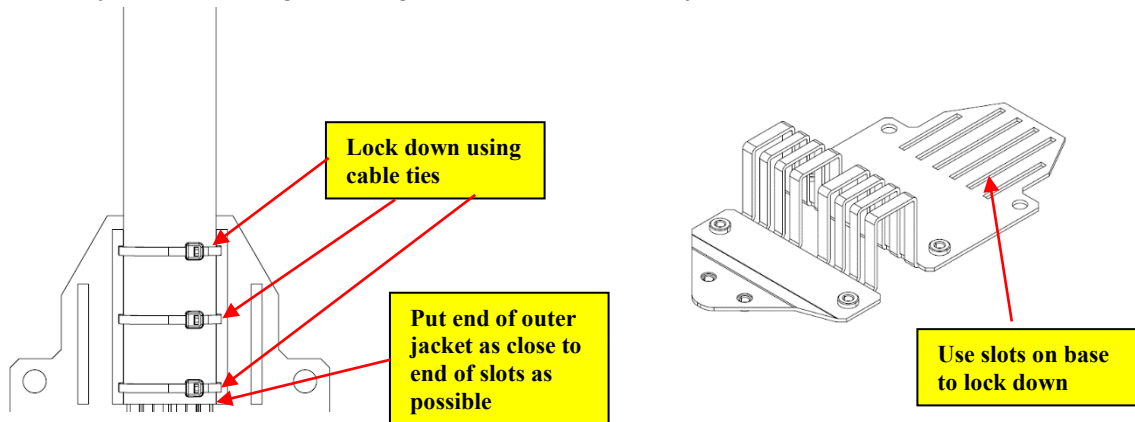
Fiber going to	Distance of Bare Fiber from outer jacket to protection tubes	Distance of protection tube	Distance of Bare Fiber Needed for Inside Splice Cassette	Total Strip Length of outer jacket
Enclosure 1 (1 st 288 fibers)	1.75" (45mm)	29" (0.73m) Use FM5PPBLF2.0-12	39" (1m)	69.75" (1.77m)
Enclosure 2 (2 nd 288 fibers)	1.75" (45mm)	47" (1.19m) Use FM5PPBLF4.0-12 and cut down to 42"	39" (1m)	87.75" (2.23m)
Enclosure 3 (3 rd 288 fibers)	1.75" (45mm)	65" (1.65m) Use FM5PPBLF8.0-12 and cut down to 60"	39" (1m)	105.75" (2.69m)

5.2.3. Attach cable to base using cable ties

Note: (30) Panduit Cable Ties Part #:PLT2S-MO are included with the 150mm vertical cable manager. (<https://www.panduit.com/en/products/wire-routing-management-protection/cable-wire-ties-mounts-straps/cable-wire-ties/plt2s-m0.html>)

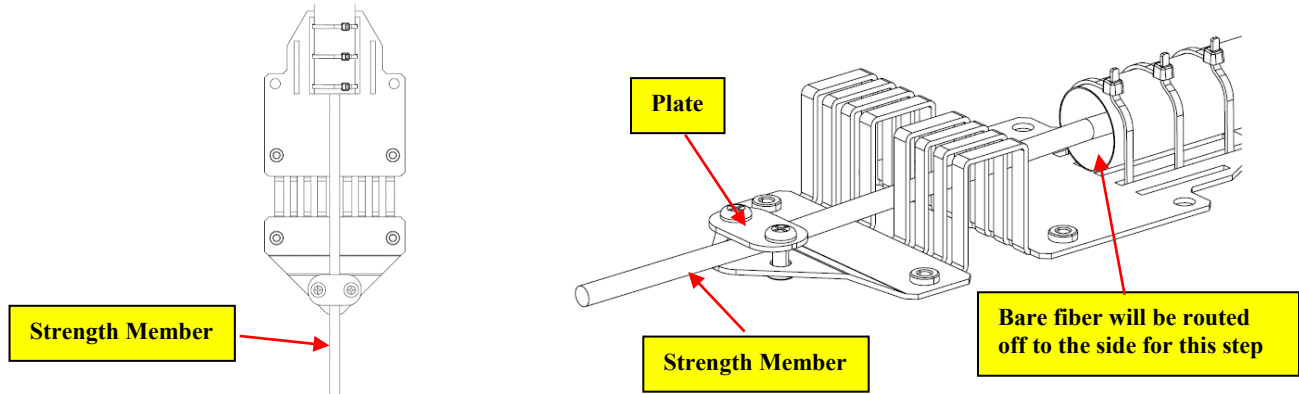
Note: In this step, the protection tubing may be slid back to allow for adequate room to lock down the outer jacket of the cable.

Note: If cable ties may cause damage/kinking of cable, use of tak-ty is acceptable.



5.2.4. Lock strength member(s) into plate

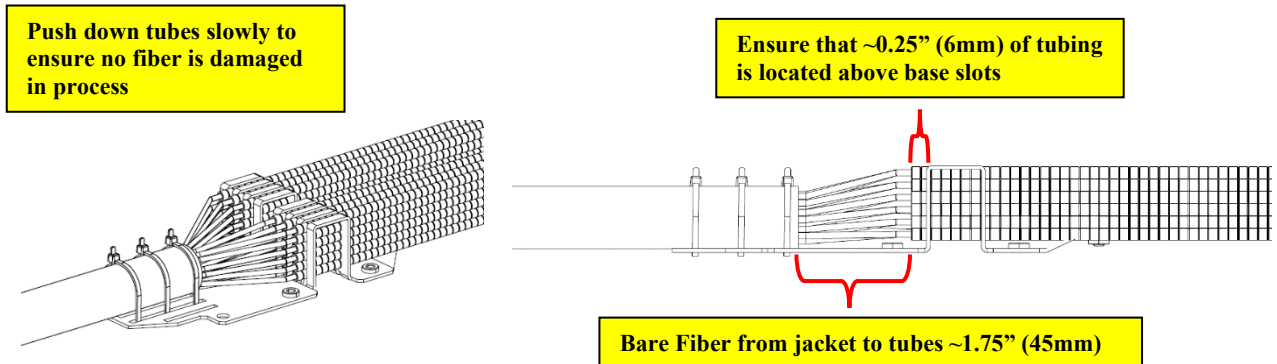
5.2.4.1. Lock in between plate and base using #10-32 x 1/2" Screw(s) provided with FDFMX5KITBL



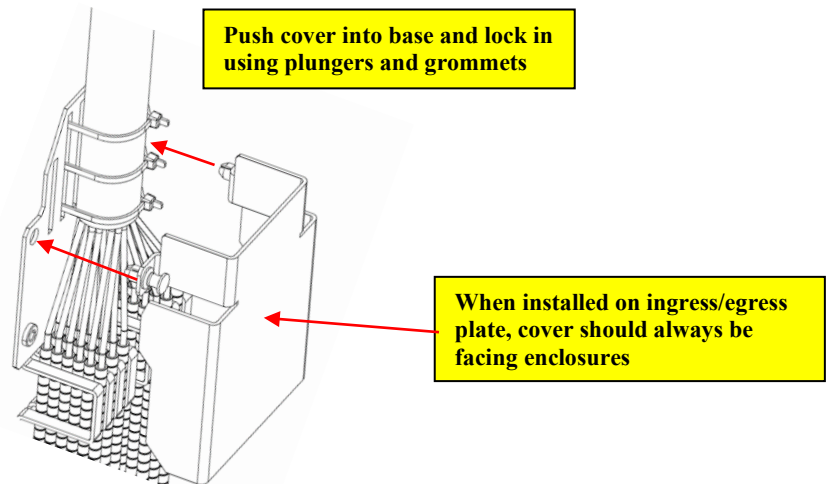
5.2.5. Push protection tubing into place on base

5.2.5.1. Protection tubing fits as a press fit into the holder base slots

Note: Install tubes in a way that does not flex bare fiber. Maintain necessary bend radius. For this example, install (6) tubes into each of the 6 slots.



5.2.6. Place cover on FDFMX5KITBL using plungers and grommets

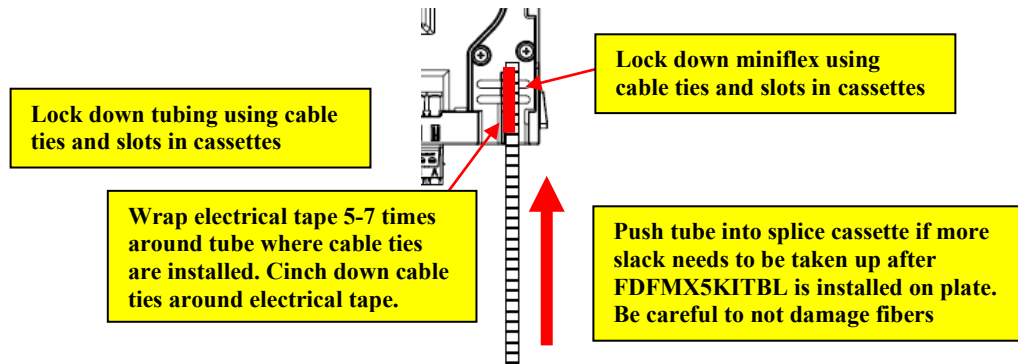


5.2.7. Splice fibers within cassette (Ref FS200 and FS201)

5.2.8. Once splice cassette is fully populated, place slack loop(s) of bare fiber inside cassette, slide protection tubing up bare fiber, and lock protection tube into splice cassette

5.2.8.1. Use provided cable ties to lock protection tube into opening on splice cassette

Note: If more protection tube slack needs to be taken up, (1) tube can be pushed into the cassette up to 2" (51mm).



5.2.9. After cassettes are spliced, install cassettes into necessary enclosure. Refer to FS203.

5.2.9.1. Place first group of 12 cassettes into closest enclosure

5.2.9.2. Place second group of 12 cassettes into 2nd enclosure

5.2.9.3. Place third group of 12 cassettes into enclosure furthest from breakout point

5.2.10. Install FDFMX5KITBL onto necessary plate and location. Follow step 5.1.18 to properly install. For cables breaking out to multiple enclosures, install FDFMX5KITBL in the position for the enclosure which will be accepting the first group of cassettes.

5.3. For flat ribbon cables up to 864 fibers, Panduit recommends using the fiber breakout kit [Panduit #: FOBKF*YM1]. See FS187 for details.

5.3.1. FOBKF*YM1 is the yellow furcation kit for singlemode fiber.

5.3.2. FOBKF*AM1 is the aqua furcation kit for multimode fiber.

5.3.2.1. * represents the number of fibers in the cable (24-864).

5.3.3. FOBKF*YM1 comes with 1 meter lengths of furcation tubing. Installers can modify this length based on application and slack needed.

Note: Refer to Section 6 to see how to lock the breakout kit to the ingress/egress breakout plate

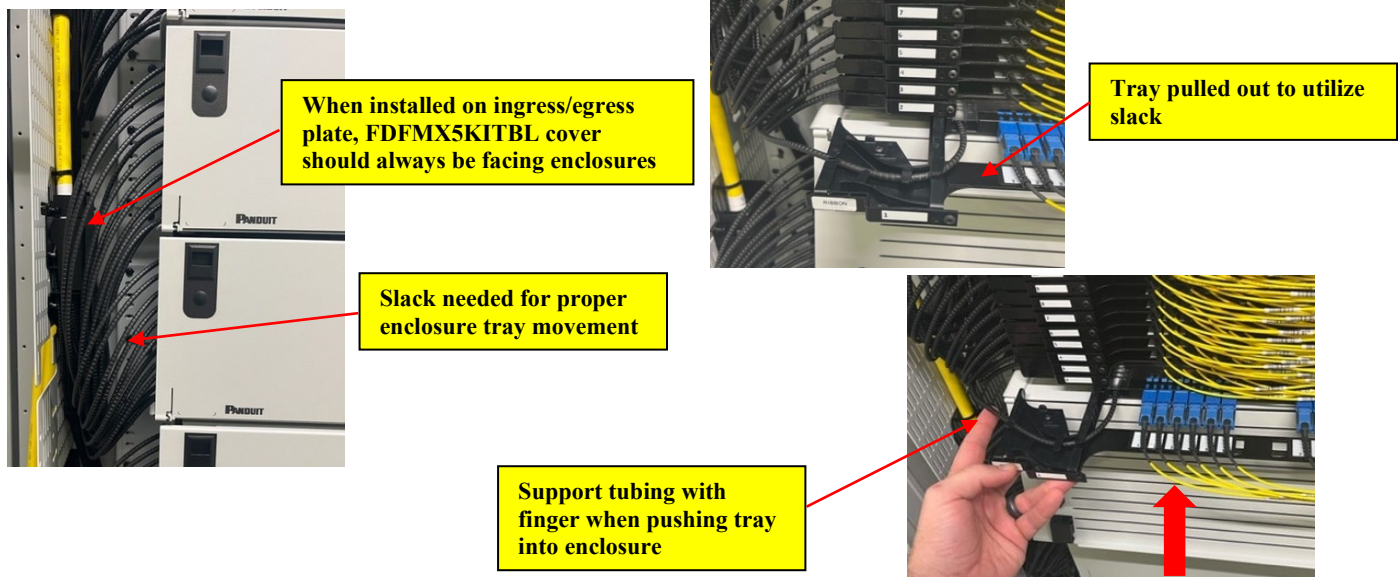
Note: The breakout kit is especially useful for cables without central strength members, as it does not provide strain relief for the strength members

5.4. The process for utilizing the FDFMX5KITBL and splicing cables into the system can be done in many different ways. The 2 most common ways are:

5.4.1. Off Frame splicing prepares FDFMX5KITBL and splice cassettes away from the frame, then brings completed FDFMX5KITBL to the frame as the to attach to the breakout plate.

5.4.2. On Frame splicing can be done by attaching FDFMX5KITBL onto the breakout plate first, and then following the steps to breakout and splice cable.

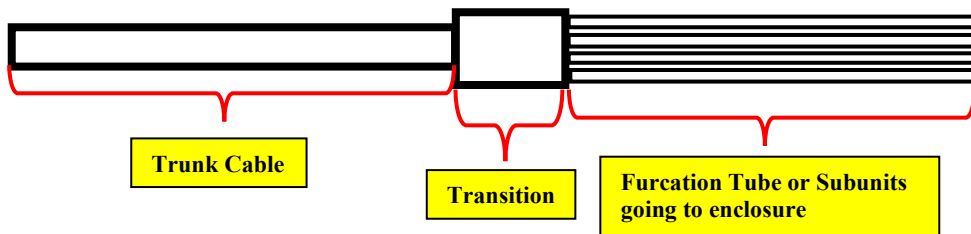
5.5. Picture below of FDFMX5KITBL fully installed with slack for tray movement:



6. **Breakout of Factory Terminated Cables – Non HD Flex – Also use for FOBKF**YM1**

Note: Maximum cable diameter which can be used for ingress/egress within the FlexCore™ Front Access ODF is 1.34" (34mm)

6.1. Factory terminated trunk cables are all made with a transition point where the large trunk cable breaks down into more usable subunits.



6.2. For factory terminated trunk cables with breakout lengths longer than 2.4 ft. (.69m), the extra slack will need to be managed by FDFSPLKITBL, explained in **Section 9**.

6.3. Lock down the transition point of each cable assembly with cable ties or tak-ty in the necessary locations per **Section 4** of this document.

7. **Breakout of Factory Terminated Cables – HD Flex Transition**

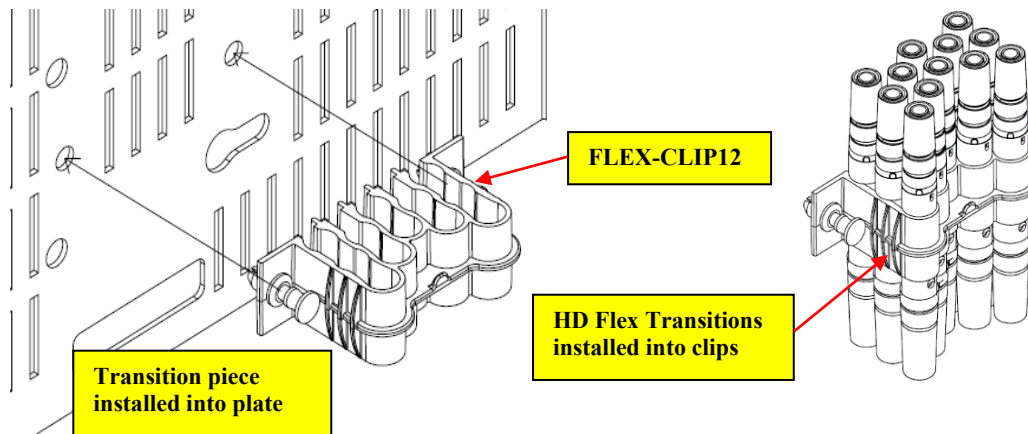
7.1. For cable counts of 24 and 48 fibers terminated to MPO connectors, Panduit offers special transitions (HD Flex transitions) on trunk cables which can easily interact with cable management features.

7.1.1. Contact your Panduit representative for specific part numbers and more information on HD Flex trunks cable assemblies.

7.2. HD Flex transitions have a plastic middle piece that can be snapped into a bundling clip [Panduit Part #: FLEX-CLIP12 (12 transition bundling clip) or FLEX-CLIP18 (18 transition bundling clip)]

Link to **FLEX-CLIP12**: <https://www.panduit.com/en/products/fiber-optic-systems/fiber-optic-panels-cassettes-enclosures/fiber-optic-enclosure-accessories/flex-clip12.html>

Link to **FLEX-CLIP18**: <https://www.panduit.com/en/products/fiber-optic-systems/fiber-optic-panels-cassettes-enclosures/fiber-optic-enclosure-accessories/flex-clip18.html>



8. Managing Cables going to Tethered Cassettes

- 8.1. Install cassette into proper tray in the furthest working position to properly determine slack.
- 8.2. ODF tethered cassettes utilize 24 fiber small diameter trunk cable, and do **not** have trunk transitions.
- 8.3. To manage, group together cables using Tak-Ty, and adhere the large bundle of cables onto the ingress/egress plates using Tak-Ty or cable ties.

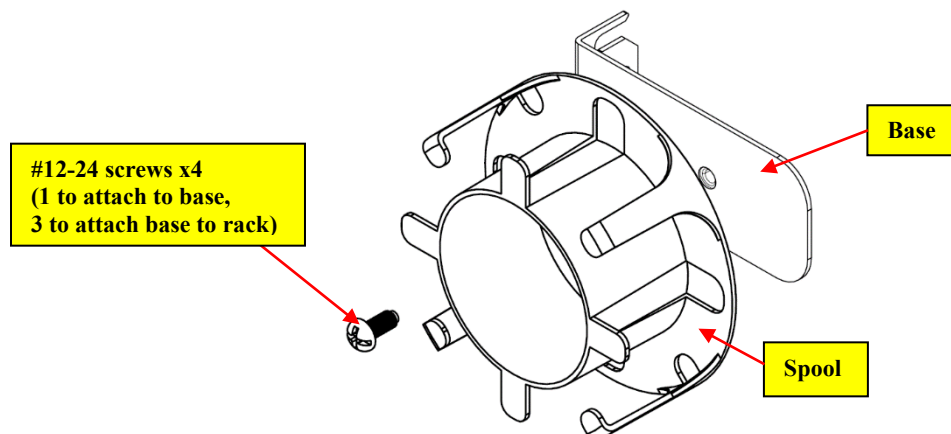
9. Managing Slack on Factory Terminated Cable Assemblies using FDFSPLKITBL

Note: Factory terminated assemblies refer to assemblies which are bought already terminated with connectors.

- 9.1. Factory terminated cable assemblies come with longer breakout lengths, most around 1 meter.
 - 9.1.1. 1 meter breakouts are longer than necessary to breakout from the ingress/egress plates to a cassette.
 - 9.1.2. The extra cable slack needs to be managed by using FDFSPLKITBL

Note: If breakout lengths are 24"-30", FDFSPLKITBL does not need to be used.

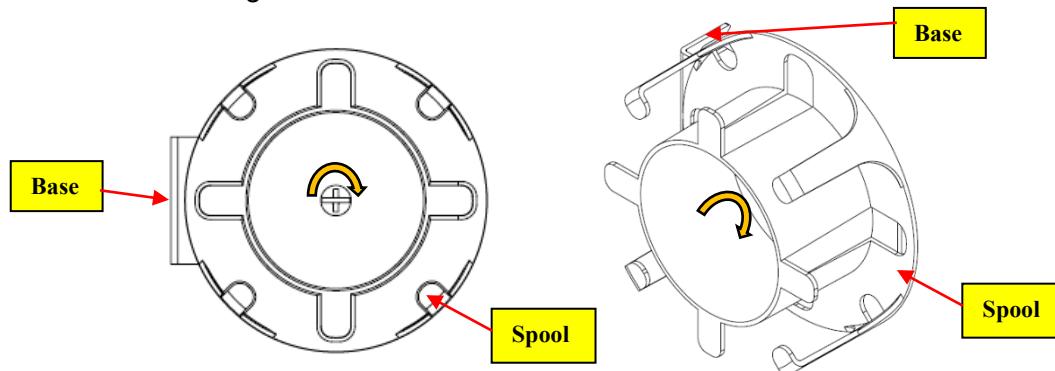
- 9.2. Parts included with FDFSPLKITBL (**figures not to scale – #12-24 screws to attach base to frame not shown**)



9.3. To install FDFSPLKITBL

9.3.1. Attach spool to base using #12-24 screws

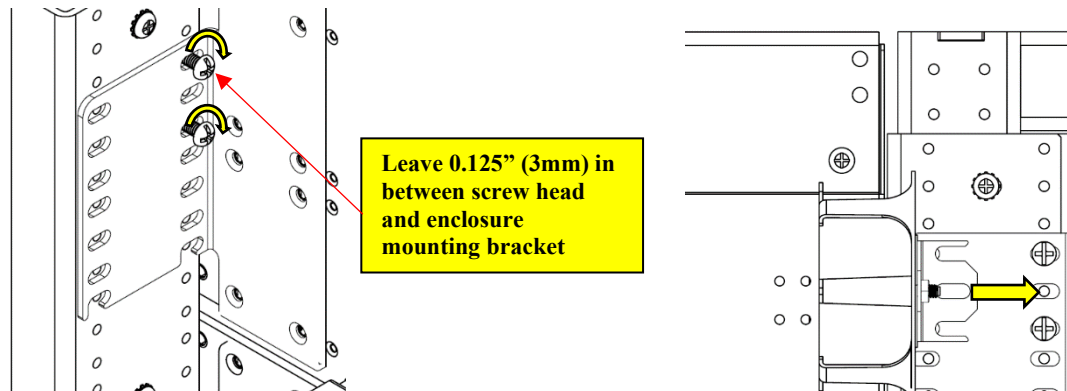
Note: Spool will come with adhesive backing. It is suggested to not peel off the backing and screw through the adhesive backing into the base.



9.3.2. (1) FDFSPLKITBL will be used per enclosure .

9.3.3. Screw in top and bottom screws until approximately 0.125" is located between enclosure mounting flange and back of screw head.

9.3.4. Slide FDFSPLKITBL behind screws

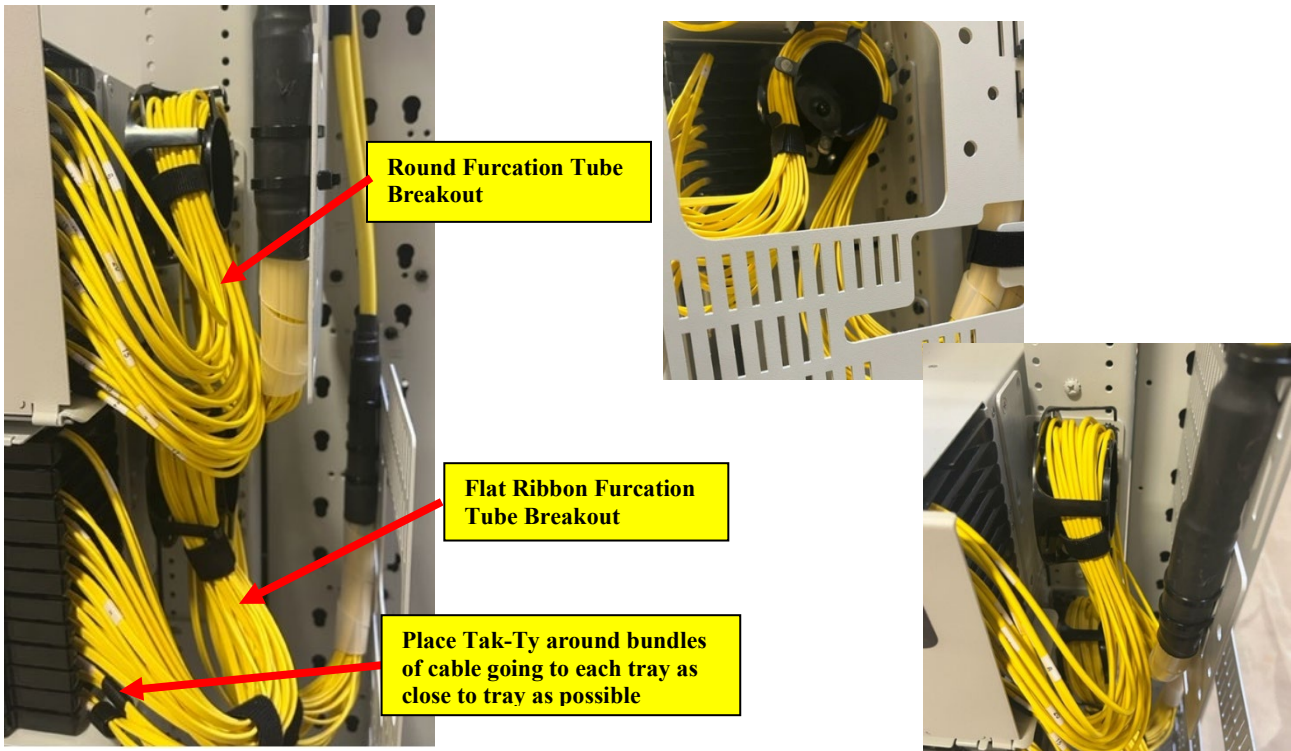


9.3.5. Also insert a 3rd screw into the middle hole on the base to secure bracket in place

9.3.6. Tighten all screws to attach FDFSPLKITBL to rack

9.4. Insert MPO connectors into cassette adapters

9.5. Manage slack by routing cables from the cassette and around the spool as shown below.



10. Managing Cable Above or Below Breakout Point

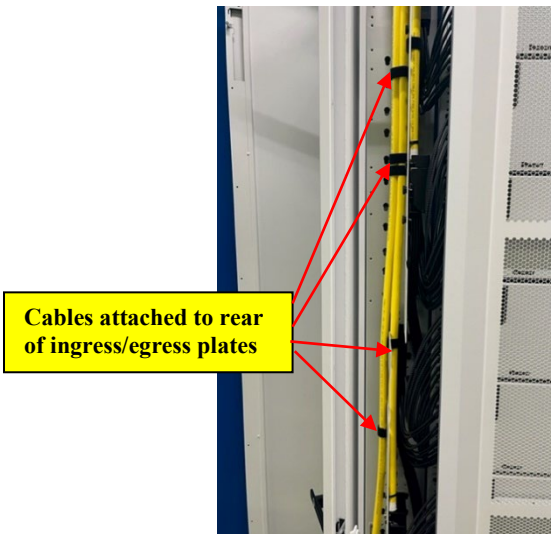
10.1. Cables route out the top or bottom of the frame, and can be secured to the back of ingress/egress plates located above and below breakout location, using the slots located on the ingress/egress plates



Side view(s) of 150mm VCM with ingress/egress plates installed



Front view of cables routed out top of system



Cables attached to rear of ingress/egress plates

11. Grounding Armored Fiber Optic Cable before Entering System

11.1. Armored fiber optic cables may have a minimum bend radius that prohibits entry through top or bottom of the system. In such cases the armor must be stripped back and grounded before entering the system.

11.1.1. Panduit offers Armored Cable Grounding Kits (Panduit Part #: ACG24K*, ACGK*)

11.1.1.1. Website for Armored Cable Grounding Kits:

<https://www.panduit.com/en/products/grounding-bonding/bonding-straps-jumpers/equipment-bonding-kits/acg24k.html>

11.1.1.2. Reference Installation Instruction: T-PMPI-292-PC

Note: If armored cable outer diameter is too large for plastic clamshell located in kit, the clamshell does not need to be used.

12. Various Cable Assemblies/Constructions and Breakout Strategy Considerations

12.1. Various cable breakout examples are referenced in the table below. Please contact your Panduit sales representative to discuss preferred cable design option(s) and cable availability. Cables detailed are representative examples only and may not be supported by Panduit or partners.

Note: Ingress/Egress cable assemblies or cables utilizing 900um fiber are **not** recommended for use in the FlexCore™ ODF. For 900um fiber, only 12 fibers can be spliced in each cassette. 12 splices per cassette is 50% of the maximum capacity of the splice cassette.

Possible Ingress/Egress Applications

Fiber Count	Type of Fiber	Connectorized? Or for splicing?	Cassette Type	Breakout Type*6	FDSPKITBL Needed?	Cables per enclosure	Fibers per enc.
24*1	250um (loose tube)	Connectorized [(2) 12F MPOs] [(1) 24F MPO] [Non - HD Flex transition]	LC-MPO*2	Factory terminated cables – Non HD Flex (Section 5.0)	Yes	12	288
24*1	250um (loose tube)	Connectorized [(2) 12F MPOs] [(1) 24F MPO] [HD Flex transition]	LC-MPO*2	Factory terminated cables – HD Flex (Section 6.0)	Yes	12	288
24*1	900um*	Splicing	LC Splice*	DFMX5KITBL (Section 4.0) [(6) fibers per tube] [24 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0-12]	No	6	144
24*1	Rollable Ribbon	Splicing	LC Splice*	DFMX5KITBL (Section 5.0) [(24) fibers per tube] [12 tubes/enclosure]	No	12	288
24*1	Flat Ribbon	Splicing	LC Splice*	FOBKF24YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	12	288
24*1	250um (loose tube)	Connectorized [Cassettes]	Tethered Cassette*	Factory terminated cables – Non HD Flex (Section 5.0)	No	12	288
48*1	250um (loose tube)	Connectorized [(4) 12F MPOs] [(2) 24F MPO] [Non - HD Flex transition]	LC-MPO*2	Factory terminated cables – Non HD Flex (Section 5.0)	Yes	6*	288
48*1	250um (loose tube)	Connectorized [(4) 12F MPOs] [(2) 24F MPO] [HD Flex transition]	LC-MPO*2	Factory terminated cables – HD Flex (Section 6.0)	Yes	6	288
48*1	900um*	Splicing	LC Splice*	DFMX5KITBL (Section 5.0) [(6) fibers per tube] [24 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0-12]	No	3	144
48*1	Rollable Ribbon	Splicing	LC Splice*	DFMX5KITBL (Section 5.0) [(24) fibers per tube] [12 tubes/enclosure]	No	12	288
48*1	Flat Ribbon	Splicing	LC Splice*	FOBKF48YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	12	288
48*1	Rollable Ribbon	Splicing	Splice* Only	DFMX5KITBL (Section 5.0) [(48) fibers per tube] [12 tubes/enclosure]	No	12	576
72-288	-250um (loose tube) -Flat Ribbon -Rollable Ribbon	Connectorized [(6) 12F MPOs – 72F] [(8) 12F MPOs – 96F] [(12) 12F MPOs – 144F] [(24) 12F MPOs – 288F] [Non - HD Flex transition]	LC-MPO*2	Factory terminated cables – Non HD Flex (Section 6.0)	Yes	4 (72F cable) 3 (96F cable) 2 (144F cable) 1 (288F cable)	288
72-288	-Flat Ribbon	Splicing	LC Splice*	FOBKF***YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	4 (72F cable) 3 (96F cable) 2 (144F cable) 1 (288F cable)	288
72-288	-250um (loose tube) -Rollable Ribbon	Splicing	LC Splice*	DFMX5KITBL (Section 5.0) [(24) fibers per tube] [12 tubes/enclosure]	No	4 (72F cable) 3 (96F cable) 2 (144F cable) 1 (288F cable)	288
72-288	- Flat Ribbon	Splicing	Splice* Only	FOBKF***YM1*5 (FS187) [(12) fibers per tube] [48 tubes/enclosure]	No	8 (72F cable) 6 (96F cable) 4 (144F cable) 2 (288F cable)	576

For Technical Support: www.panduit.com

Possible Ingress/Egress Applications

Fiber Count	Type of Fiber	Connectorized? Or for splicing?	Cassette Type	Breakout Type*6	FDFSPLKITBL Needed?	Cables per enclosure	Fibers per enc.
72-288	-250um (loose tube)	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [24 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0-12]	No	8 (72F cable) 6 (96F cable) 4 (144F cable) 2 (288F cable)	576
72-288	Rollable Ribbon	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(48) fibers per tube] [12 tubes/enclosure]	No	8 (72F cable) 6 (96F cable) 4 (144F cable) 2 (288F cable)	576
432-864	-250um (loose tube) -Flat Ribbon -Rollable Ribbon	Connectorized [(36) 12F MPOs – 432F] [(48) 12F MPOs – 576F] [(72) 12F MPOs – 864F] [Non - HD Flex transition]	LC-MPO*2	Factory terminated cables – Non HD Flex (Section 6.0)	Yes	2/3 (432F cable) ½ (576F cable) 1/3 (864F cable)	288
432 x2	-250um (loose tube) -Rollable Ribbon	Splicing	LC Splice*3	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [36 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF4.0- 12] [Buy (1) extra FM5PPBLF8.0- 12]	No	2 cables can fill 3 enclosures	288
432 x2	Flat Ribbon	Splicing	LC Splice*3	FOBKF432YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	2 cables can fill 3 enclosures	288
432 x2	Flat Ribbon	Splicing	Splice*4 Only	FOBKF432YM1*5 (FS187) [(12) fibers per tube] [48 tubes/enclosure]	No	2 cables can fill 1.5 enclosures	576
432 x2	Rollable Ribbon	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(48) fibers per tube] [18 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF4.0- 12, Only use (6) tubes]	No	2 cables can fill 1.5 enclosures	576
432 x2	250um (loose tube)	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [36 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0-12] [Buy (1) extra FM5PPBLF4.0- 12]	No	2 cables can fill 1.5 enclosures	576
576	-250um (loose tube) -Rollable Ribbon	Splicing	LC Splice*3	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [24 tubes – 12tubes/enclosure] [Buy (1) extra FM5PPBLF4.0- 12]	No	1 cable can fill 2 enclosure	288
576	Flat Ribbon	Splicing	LC Splice*3	FOBKF576YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	1 cable can fill 2 enclosure	288
576	Flat Ribbon	Splicing	Splice*4 Only	FOBKF576YM1*5 (FS187) [(12) fibers per tube] [48 tubes/enclosure]	No	1 cable can fill 1 enclosure	576
576	Rollable Ribbon	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(48) fibers per tube] [12 tubes/enclosure]	No	1 cables can fill 1 enclosure	576
576	250um (loose tube)	Splicing	Splice*4 Only	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [24 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0- 12]	No	1 cables can fill 1 enclosure	576
864	-250um (loose tube) -Rollable Ribbon	Splicing	LC Splice*3	FDPMX5KITBL (Section 5.0) [(24) fibers per tube] [36 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF4.0- 12] [Buy (1) extra FM5PPBLF8.0- 12]	No	1 cable can fill 3 enclosures	288
864	Flat Ribbon	Splicing	LC Splice*3	FOBKF864YM1*5 (FS187) [(12) fibers per tube] [24 tubes/enclosure]	No	1 cable can fill 3 enclosures	288
864	Flat Ribbon	Splicing	Splice*4 Only	FOBKF864YM1*5 (FS187) [(12) fibers per tube] [48 tubes/enclosure]	No	1 cable can fill 1.5 enclosures	576

For Technical Support: www.panduit.com

Possible Ingress/Egress Applications

Fiber Count	Type of Fiber	Connectorized? Or for splicing?	Cassette Type	Breakout Type* ⁶	FDFSPLKITBL Needed?	Cables per enclosure	Fibers per enc.
864	Rollable Ribbon	Splicing	Splice* ⁴ Only	FDFMX5KITBL (Section 5.0) [(48) fibers per tube] [18 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF4.0- 12] Only use (6) tubes	No	1 cables can fill 1.5 enclosures	576
864	250um (loose tube)	Splicing	Splice* ⁴ Only	FDFMX5KITBL (Section 5.0) [(24) fibers per tube] [36 tubes – 12 tubes/enclosure] [Buy (1) extra FM5PPBLF2.0-12] [Buy (1) extra FM5PPBLF4.0- 12]	No	1 cable can fill 1.5 enclosures	576

*1 Cables under 72 fibers will need to be bundled together before getting to breakout location, with either cable ties or tak-ty.

*2 LC-MPO Cassette Part Numbers are FDC**-24****(LH or RH)

*3 LC Splice Cassette Part Numbers are FDS**-24-***

*4 Splice Only Cassette Part Number is FDSN-24 (Can support 24 discrete splice or 48 fiber ribbon splice)

*5 FOBKF**YM1 is for yellow jacketed singlemode cables. FOBKF**AM1 is available for aqua multimode cables.

*6 If 12 fiber or 24 fiber subunits are present on a cable going to a splice cassette, Panduit recommends bringing necessary subunits directly to splice cassette to lock down.

FlexCore™ System Installation Instructions

Installation Instruction Number	Panduit Part Number	Description
FS187	FOBKF**(Y/A)M1	Fiber Breakout Kit, Flat Ribbon Furcation Tube
FS190	FDF45**	FlexCore™ Optical Distribution Frame
FS191	FDVCM1545**	FlexCore™ 150mm Vertical Cable Manager
FS192	FDVCM3045**	FlexCore™ 300mm Vertical Cable Manager
FS193	FDUFD**45*X**	FlexCore™ Single Hinge Front Doors
FS194	DFEP45**	FlexCore™ End Panels
FS196	FDFLMBKT6	FlexCore™ ODF 6x4 FIBERRUNNER™ Lower Trough System
	FRESPKT6	
FS197	FDUFD6045*HKT**	FlexCore™ ODF 600mm Door Swing Conversion Kits (Righthand or Lefthand)
FS198	FDUSP	FlexCore™ Fiber Spool
FS199	FDUSP6	FlexCore™ Fiber Spool 6-pack Color Coordinated Kit
FS200	FDS**-24-***	FlexCore™ Fusion Splice Cassette - Cable to LC Adapter
FS201	FDSN-24	FlexCore™ Fusion Splice Cassette - Cable to Cable
FS203	FDUE4**	FlexCore™ 4RU Universal Enclosure
FS204	N/A	FlexCore™ Front Access Optical Distribution Frame Patchcord Routing Guide
FS205	DFRC45**	FlexCore™ Frame Rear Panel
FS206	N/A	FlexCore™ Front Access Ingress/Egress Cabling Guide
FS216	FDUPN4**	FlexCore™ Patch Panel
FS217	FDFVCMPLTKT**	FlexCore™ Vertical cable Manager Ingress Egress Plate Kit

For Technical Support: www.panduit.com