

# FieldSmart® Fiber Scalability Center (FSC)

*Installation Manual*



# FieldSmart® Fiber Scalability Center (FSC)

## Installation Manual

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### PON Cabinet Overview

#### Application

FieldSmart FSC PON Cabinets provide an interconnect environment from the feeder network through the optical passive splitter to the distribution network in an FTTH PON OSP cabinet. The four different cabinet sizes provide scalability from 12 ports to 1,152 ports. Designed for the outside plant environment, these cabinets provide a single distribution point to distribute FTTH in urban or dense neighborhood.

#### Description

The FieldSmart FSC PON is the complete solution for managing 12 to 1,152 port distribution fibers for an outside plant FTTx PON application. Through the incremental design of the Clearview® Cassette, user capacity can be scaled from as few as 12 ports to the maximum configuration of the cabinet, allowing the service provider to align the investment in capital equipment to the turn-up of revenue-generating circuits.



#### Technical Specifications

FieldSmart FSC PON Cabinets	288 Port	432 Port	576 Port	1,152 Port
Dimensions ( <i>without riser</i> )	32" H x 16.78" W x 16.9" D	36.67" H x 21.17" W x 16.9" D	32" H x 33" W x 16.9" D	64" H x 33" W x 16.9" D
Weight	54 lbs	66 lbs	86 lbs	172 lbs
Port Density	288	432	576	1,152
Feeder/Express Ports	48	48	96	192
Cable Entrances	6	6	12	12
Mounting Options	Vault mount; pole mount; pad mount	Vault mount; pole mount; pad mount	Vault mount; pad mount	Vault mount; pad mount
Standing Riser Base	4" (6 lbs)	4" (6 lbs)	4" (8 lbs)	4" (8 lbs)
Optional Riser Base	12" (12 lbs)	12" (16 lbs)	12" (20 lbs)	12" (20 lbs)
Splitter Slots	9	14	18	36
Cassette Types Supported	Clearview® Blue and Clearview Classic			
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC			
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)			
Splice Capacity	12 splices in each Clearview Cassette			
Ground Locate Box	Yes - Optional			
Material	0.125 aluminum with almond powder coating			

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### Cross-Connect Cabinet Overview

#### Application

The FieldSmart FSC Cross-Connect Cabinet is the complete solution for managing up to 1,728 fibers in most any feeder/distribution ratio for an outside plant FTTx application. This solution provides an interconnect environment from the feeder network and the distribution field in a FTTH network.

#### Description

With the Clearview® Cassette as its foundation, the FieldSmart FSC Cross-Connect Cabinet uses the same components as the FieldSmart Fiber Crossover Distribution System (FxDS) deployed in the central office. This enables service providers to standardize on a single building block, allowing them to stock a single fiber management component for either environment. Technicians also have the ease of working with a single fiber architecture for central office or outside plant deployment - saving training and installation time. Using Clearview, FieldSmart changes the rules of fiber management. Optimal access is ensured to all ports and superior fiber protection is integrated within the Clearview Cassette. Through the incremental design of the Clearview Cassette, user capacity can be scaled from as few as 12 ports to the maximum configuration of the cabinet, allowing the service provider to align the investment in capital equipment to the turn-up of revenue-generating circuits. Further, labor and other field costs are minimized through this craft-friendly layout.



#### Technical Specifications

FieldSmart FSC Cross-Connect Cabinets	432 Port	864 Port	1,728 Port
Dimensions (without riser)	32" H x 16.78" W x 16.9" D	32" H x 33" W x 16.9" D	64" H x 33" W x 16.9" D
Weight	54 lbs	86 lbs	172 lbs
Port Density	432	864	1,728
Cables Entrances	6	12	12
Mounting Options (Hoist kits included with each cabinet)	Vault mount; pole mount; pad mount	Vault mount; pad mount	Vault mount; pad mount
Standard Riser Base	4" (6 lbs)	4" (8 lbs)	4" (8 lbs)
Optional Riser Base	12" (12 lbs)	12" (12 lbs)	12" (20 lbs)
Cassette Types Supported	Clearview® Blue and Clearview Classic		
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC		
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)		
Splice Capacity	12 splices in each Clearview Cassette		
Ground Locate Box	Yes - optional		
Material	0.125 aluminum with almond powder coating		
Recommended Jumper Length	2 meters	2 meters	4 meters



# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

## Hub Collapse Cabinet Overview

### Application

The FieldSmart Hub Collapse Cabinet (HCC) provides a centralized location within a service provider's network that houses both fiber terminations and optical components. This eliminates the need for a physical "hub" location, thereby saving land, maintenance and permitting expenses. Service providers increase revenue by collapsing multiple locations into one centralized service point.

### Description

The FieldSmart Hub Collapse Cabinet (HCC) is designed for the cable operator looking to separate their passive infrastructure from the electronics without the need for a traditional, and expensive, standard hub architecture. Hub collapse environments allow passive architecture to be placed in the most craft-friendly place for circuit and wavelength allocation and associated MAC (moves, adds, and changes) work - on the ground. Providing up to 120-fiber terminations using the Clearview® Cassette and up to 32 LGX compatible CWDM/DWDM modules, the FieldSmart Hub Collapse Cabinet (HCC) separates critical active components typically protected in the node, such as Cisco's O-Hub platform or Aurora V-Hub, and allows existing optical components to be reused throughout the network.



Clearfield's Hub Collapse Cabinet (HCC) provides a centralized location that will accommodate both optical components and fiber terminations, making it an ideal solution for service providers looking to maximize existing fibers within their network. With a small footprint (32" H x 17" W x 16 ¾" D), real estate costs can be minimized with a variety of mounting options (pole, pad or vault mount).

### Technical Specifications

FieldSmart FSC Hub Collapse Cabinet 1,728 Port	
Dimensions (without riser)	32" H x 17" W x 16 ¾" D
Weight	54 lbs
Port Density	120 (can add five additional cassettes - 60 ports per LGX slot using adapter plates)
LGX Compatible Bulkhead Slots	32
Cassette Types Supported	Clearview® Blue and Clearview Classic
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Cable Types	Indoor/Outdoor, Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Splice Capacity	12 splices in each Clearview Cassette
Cable Entrances	6
Recommended Jumper Length	Two meters
Mounting Options (Hoist kit included with each cabinet)	Vault mount; pole mount; pad mount
Standard Riser Base	4" (6 lbs)
Optional Riser Base	12" (12 lbs)
Ground Locate Box	Yes - Optional
Material	0.125 aluminum with almond powder coating

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### Cabinet Packaging

All cabinets are packaged for protection for shipment to our customers, depending on the application, packaging may vary.

Patch and splice cabinets are typically bubble wrapped and put inside of a cardboard box.



For patch only cabinets with pre-terminated fiber tails, they are bubble wrapped and attached to a pallet.

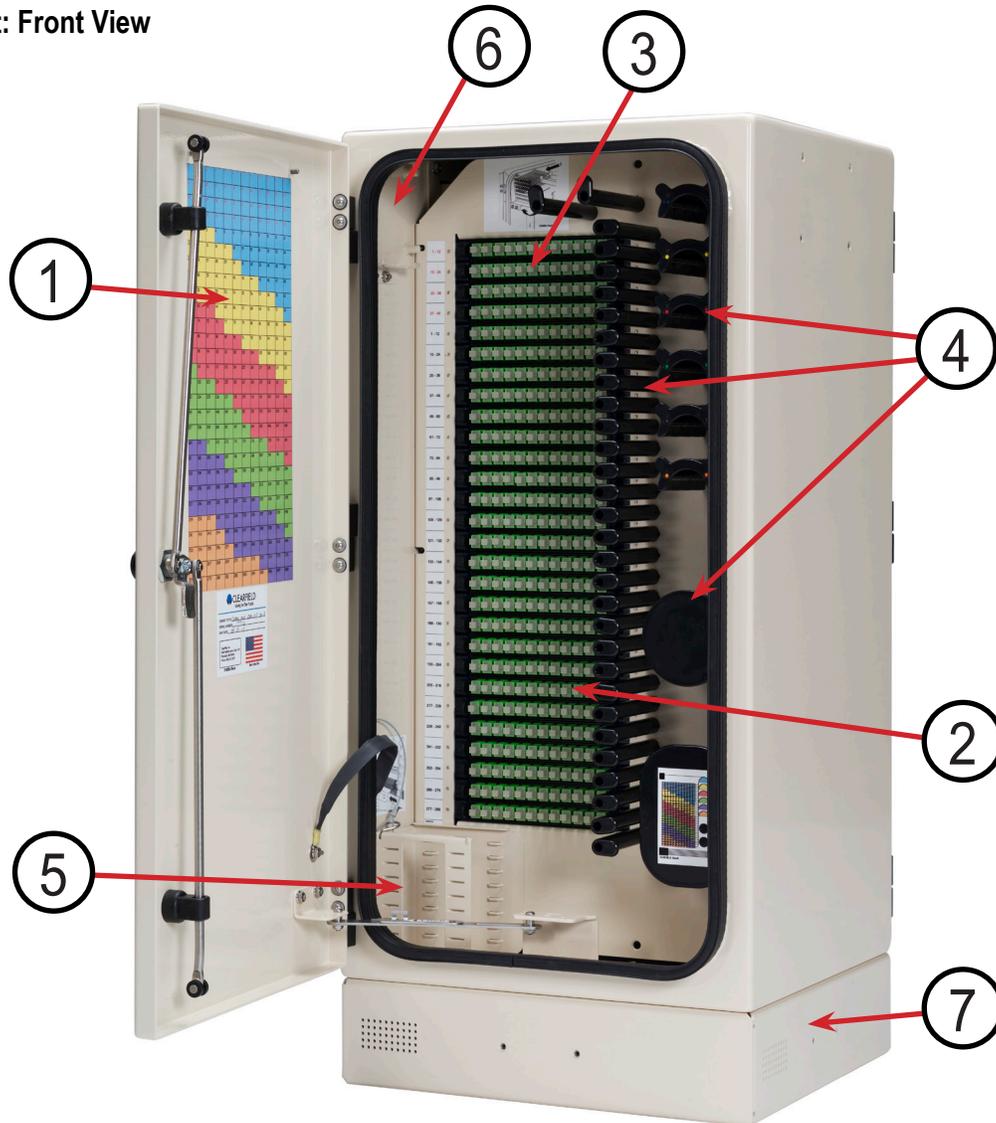


Risers, if ordered, will typically ship separately (on the top of the cabinet). This is done for installation purposes.

**Note:** *There are multiple items and small parts packaged with every cabinet. When unpackaging cabinets, make sure to inspect all packaging materials for these items.*

## FSC Cabinet Component Views

### 288 PON Cabinet: Front View



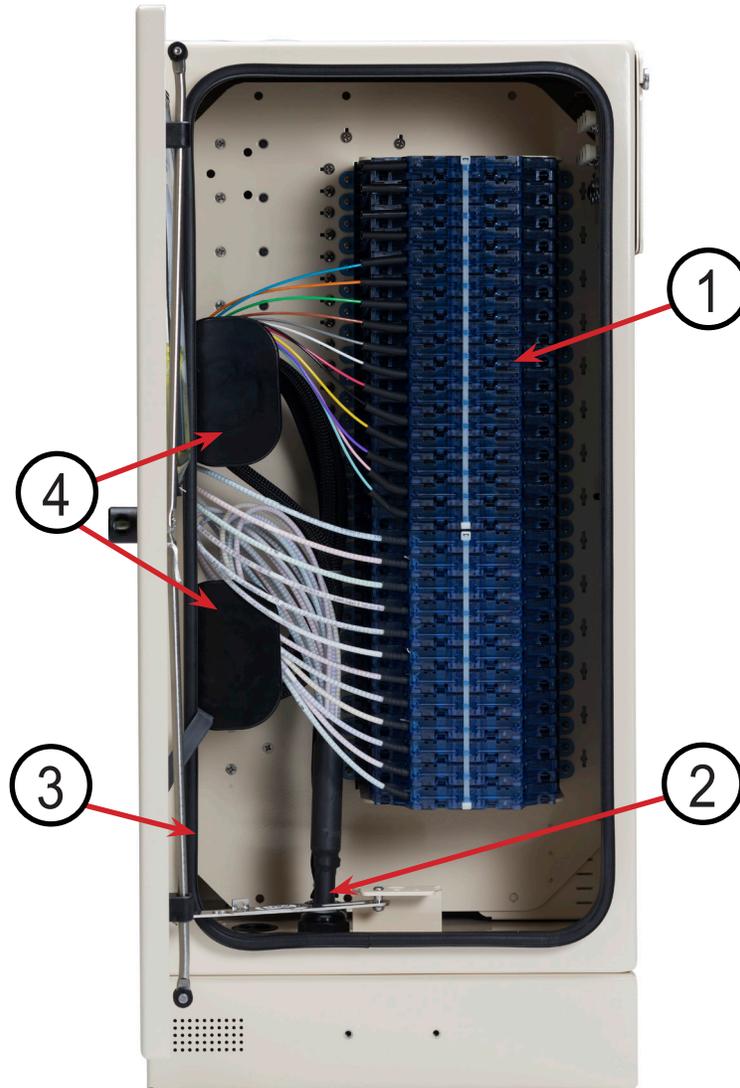
1. Designation Card
2. Distribution Cassettes
3. Feeder Cassettes
4. Fiber Management Rods and Spools
5. Fiber Splitter Storage
6. Staging Plate
7. Riser (Available in 4" or 12")
8. Not Shown - Access Panel (Included on 12" Riser)

# FieldSmart® Fiber Scalability Center (FSC)

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### 288 PON Cabinet: Rear View



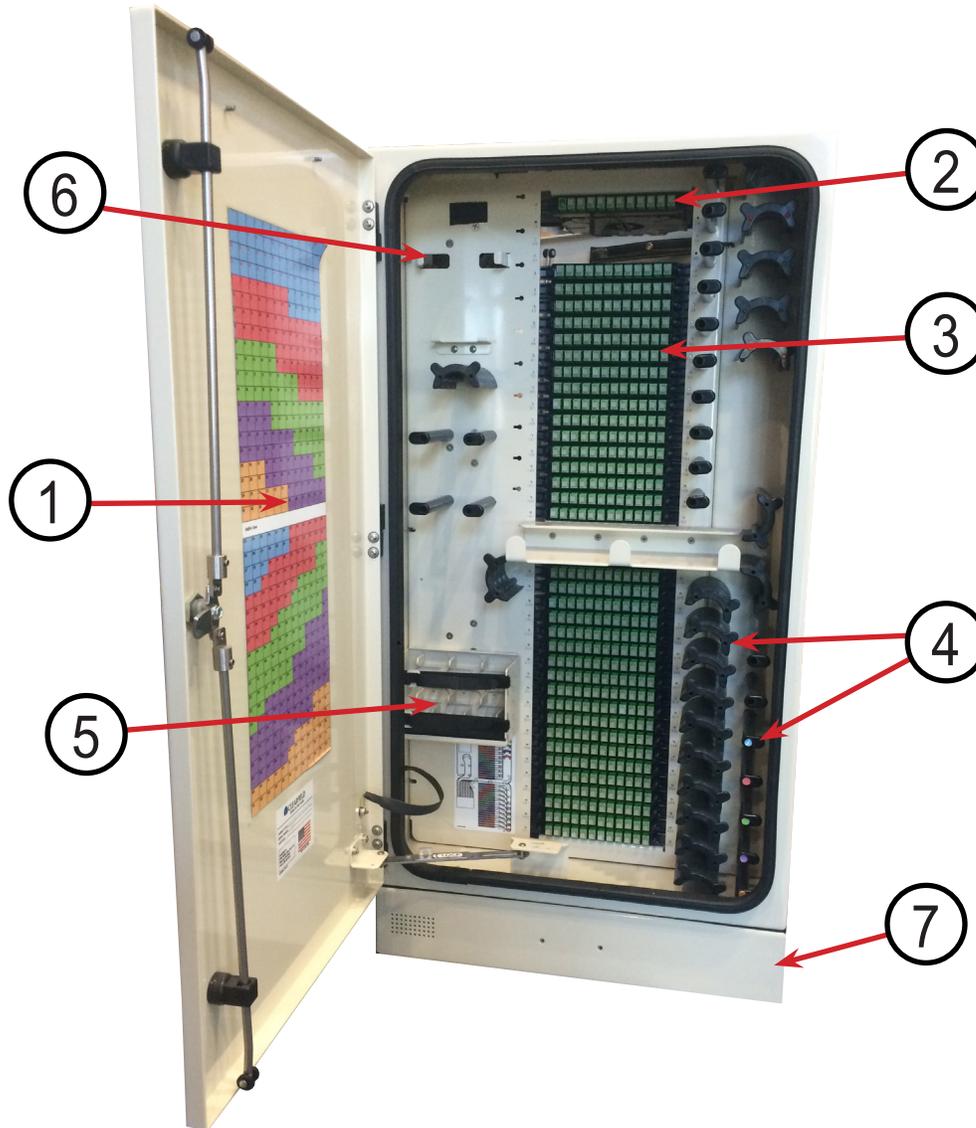
1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding Bar
4. Fiber Management Rods and Spools



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## 432 PON Cabinet: Front View



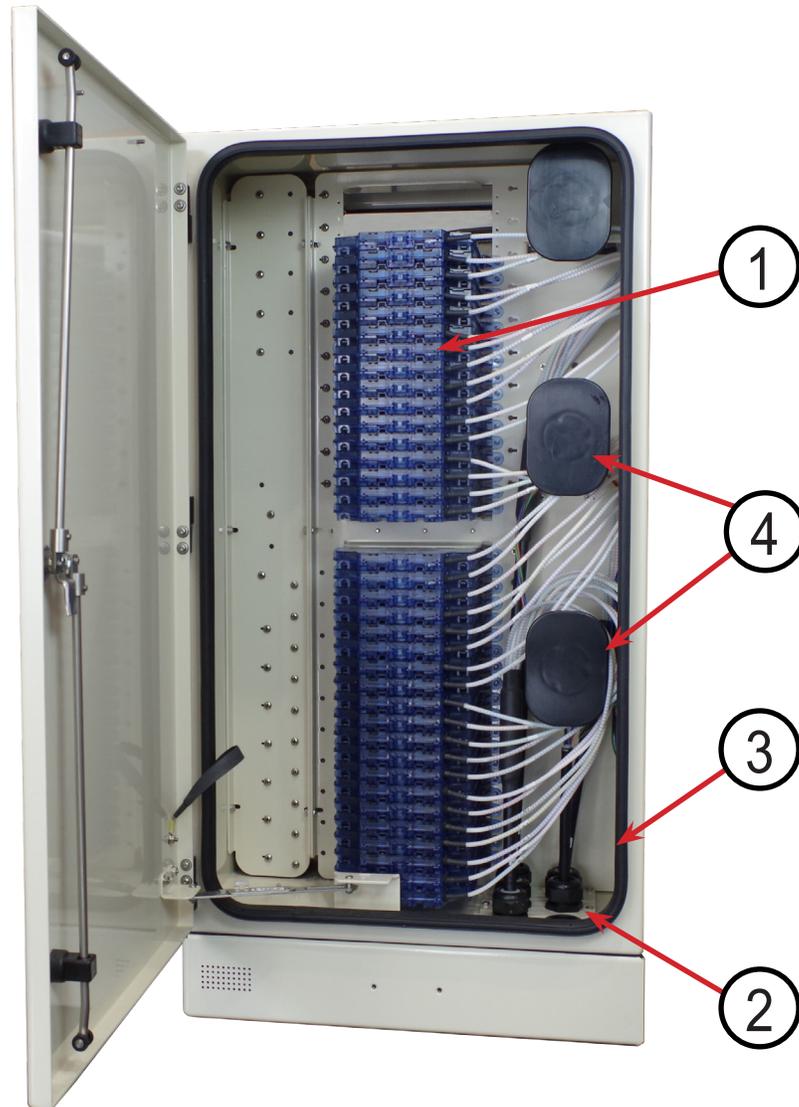
1. Designation Card
2. Feeder Cassettes
3. Distribution Cassettes
4. Fiber Management Rods and Spools
5. Fiber Splitter Storage
6. Staging Plates
7. Riser (Available in 4" and 12")
8. Not Shown - Access Panel (Included on 12" Riser)

# FieldSmart® Fiber Scalability Center (FSC)

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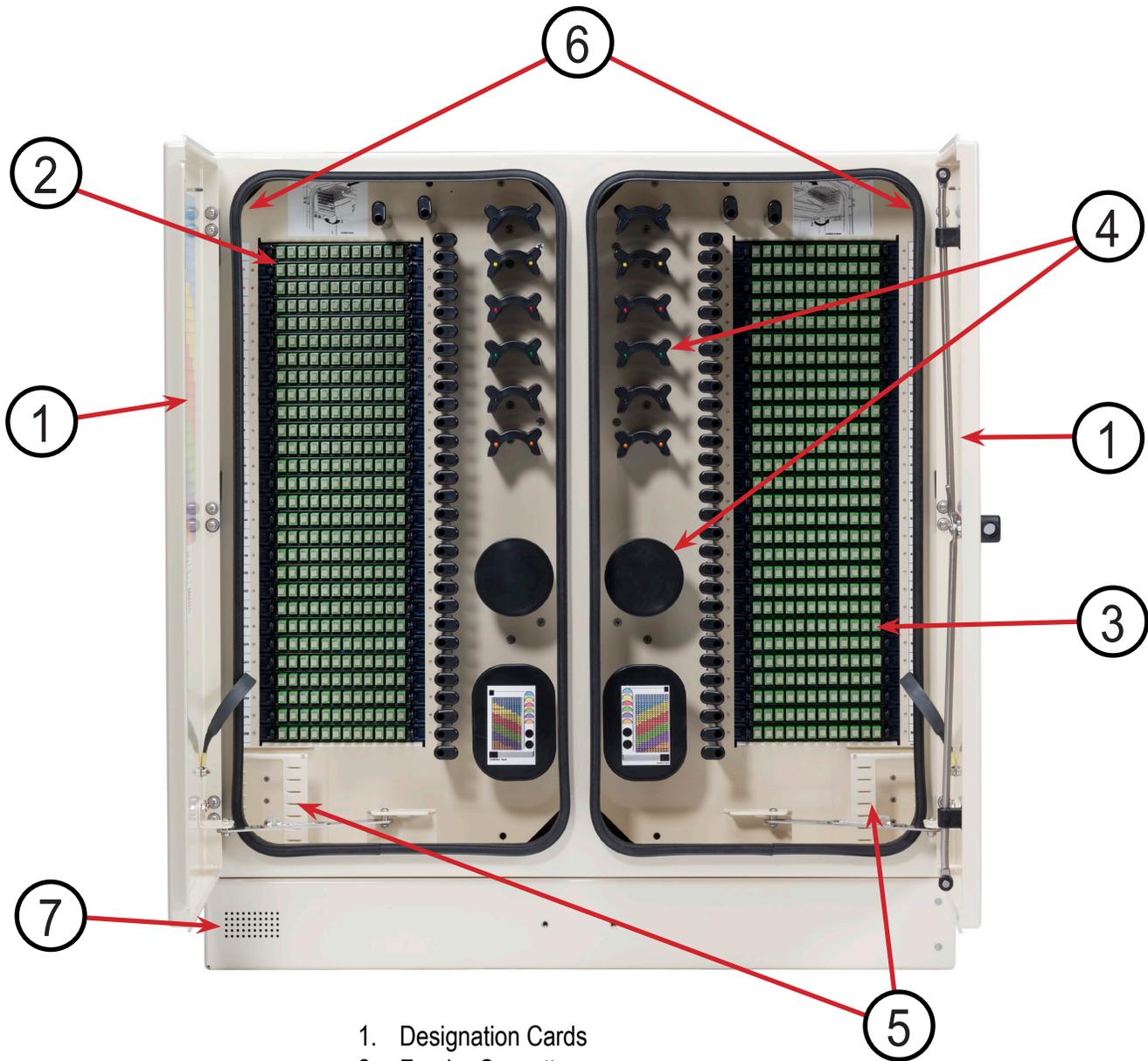


### 432 PON Cabinet: Rear View



1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding Bar
4. Fiber Management Spools

### 576 PON Cabinet: Front View



1. Designation Cards
2. Feeder Cassettes
3. Distribution Cassettes
4. Fiber Management Rods and Spools
5. Fiber Splitter Storage
6. Staging Plates
7. Riser (Available in 4" and 12")
8. Not Shown - Acces Panel (Included on 12" Riser)

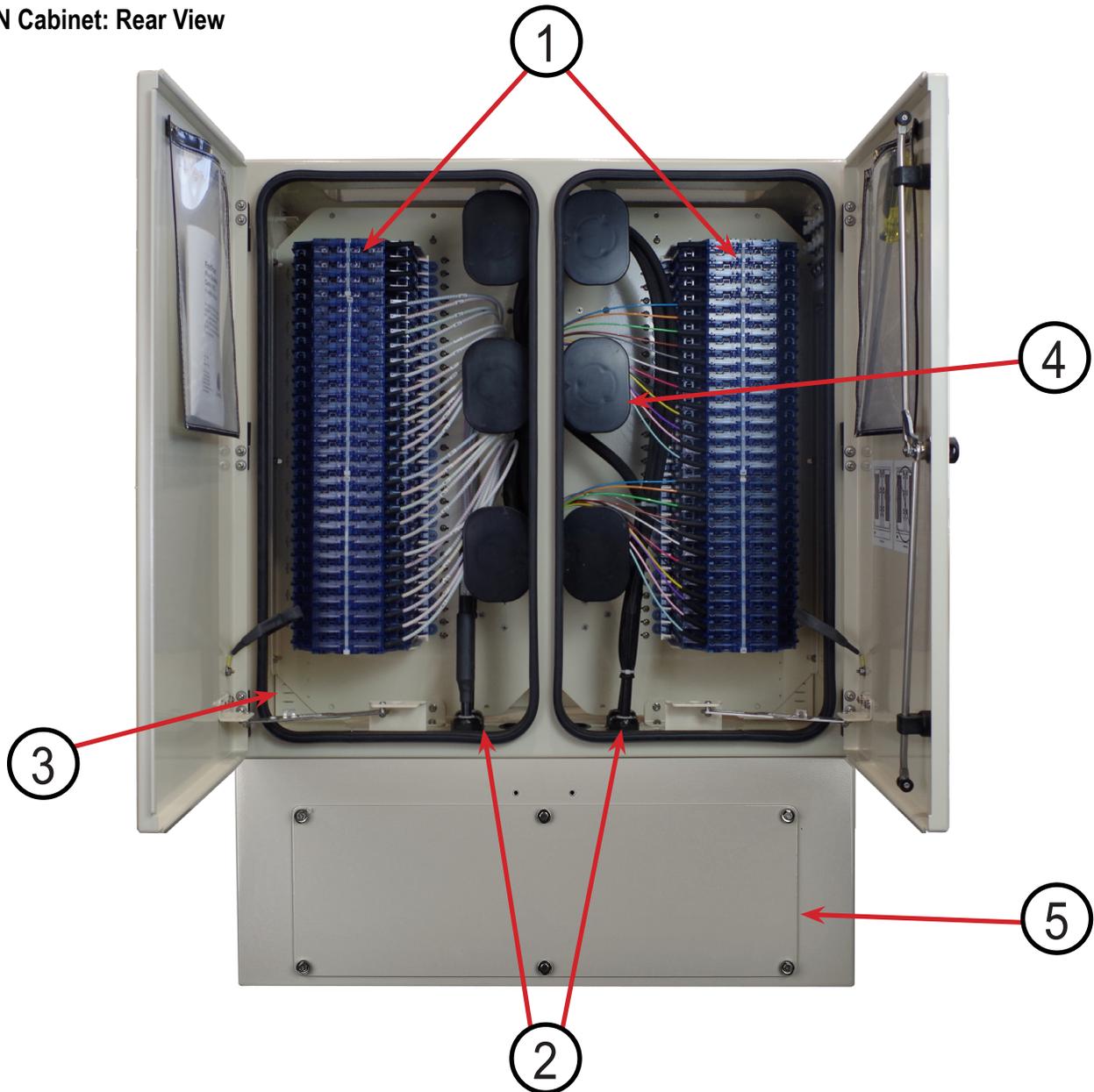
**Note:** The 1,152 PON Cabinet is comprised of two 576 Cabinets stacked on top of eachother. The features will be the same as the ones pointed out here.

# FieldSmart® Fiber Scalability Center (FSC)

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576 PON Cabinet: Rear View



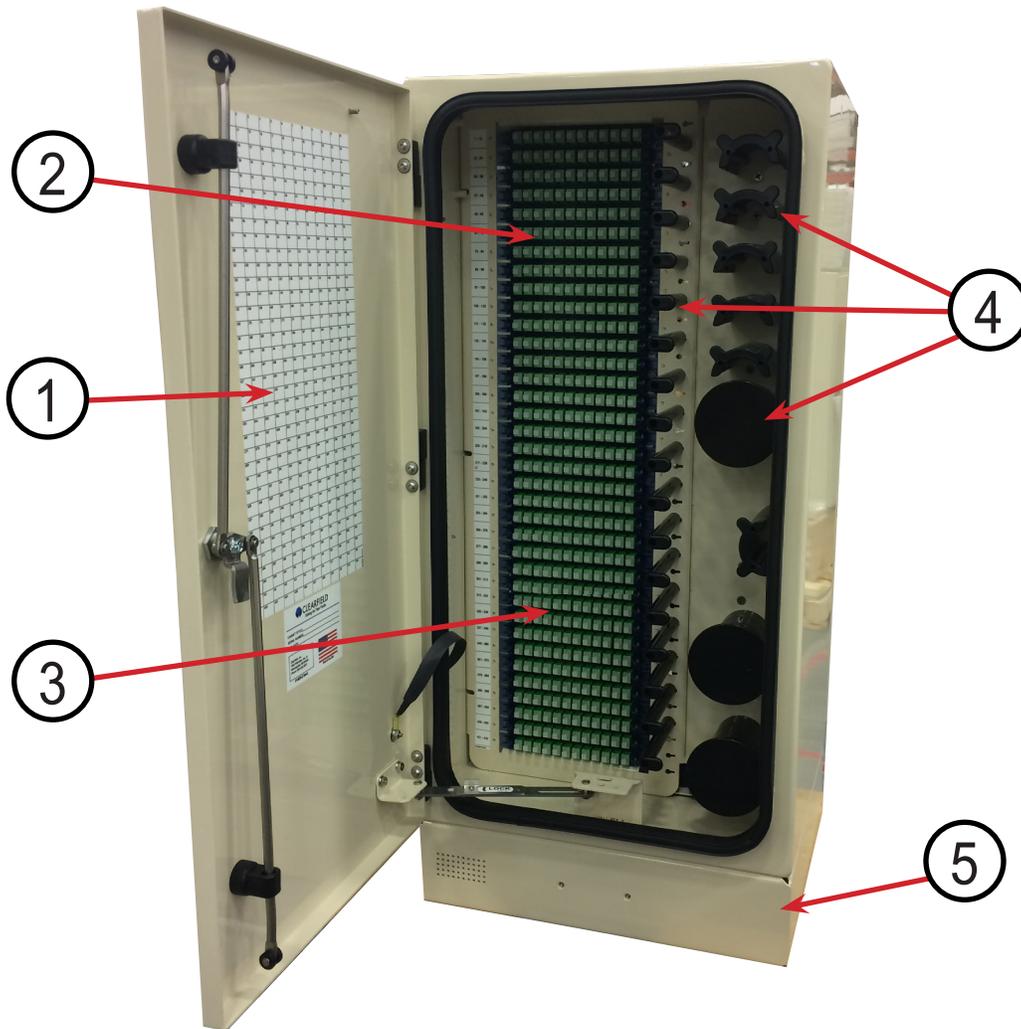
1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding Bar
4. Fiber Management Spools
5. Access Panel (on 12" Riser Only)

**Note:** The 1,152 PON Cabinet is comprised of two 576 Cabinets stacked on top of each other. The features will be the same as the ones pointed out here.



# FieldSmart® Fiber Scalability Center (FSC) *Installation Manual*

## 432 Cross-Connect Cabinet: Front View



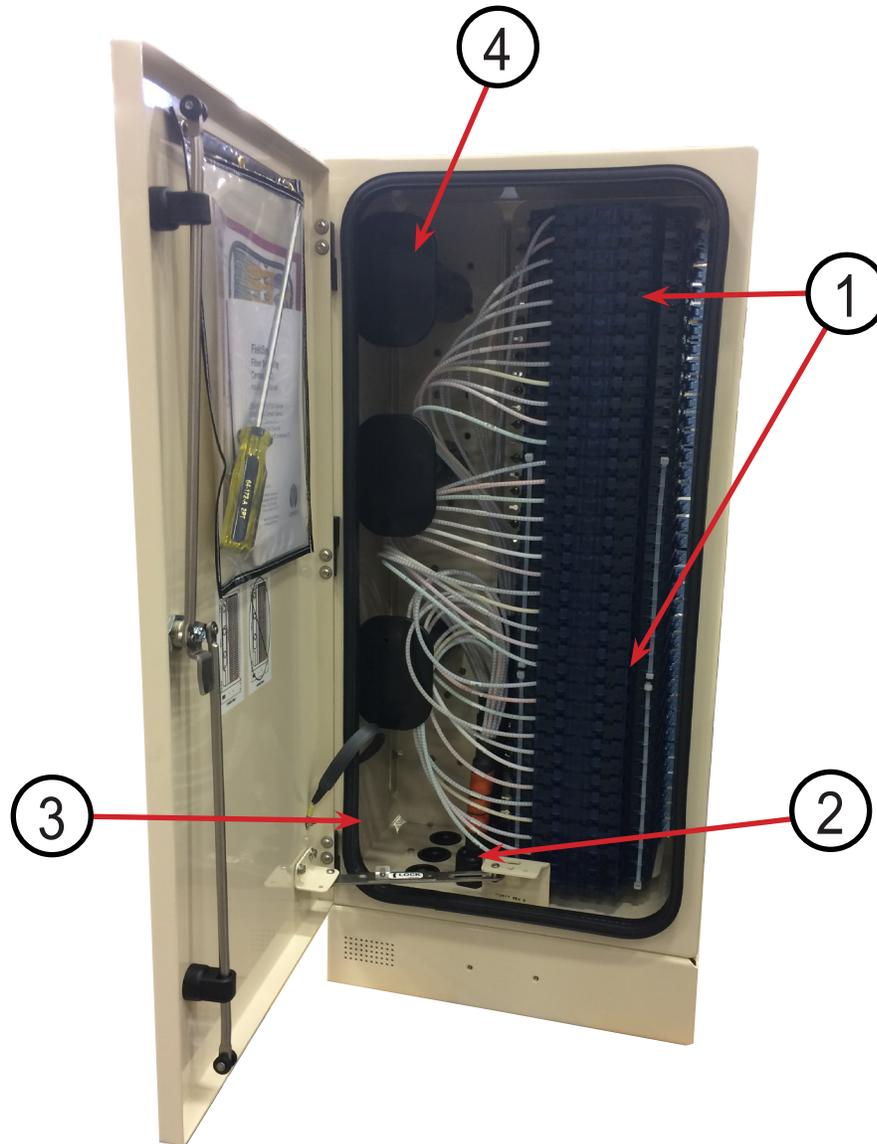
1. Designation Card
2. Distribution Cassettes
3. Feeder Cassettes
4. Fiber Management Rods and Spools
5. Riser (Available in 4" and 12")
6. Not Shown - Access Panel (Included on 12" Riser)

# FieldSmart® Fiber Scalability Center (FSC)

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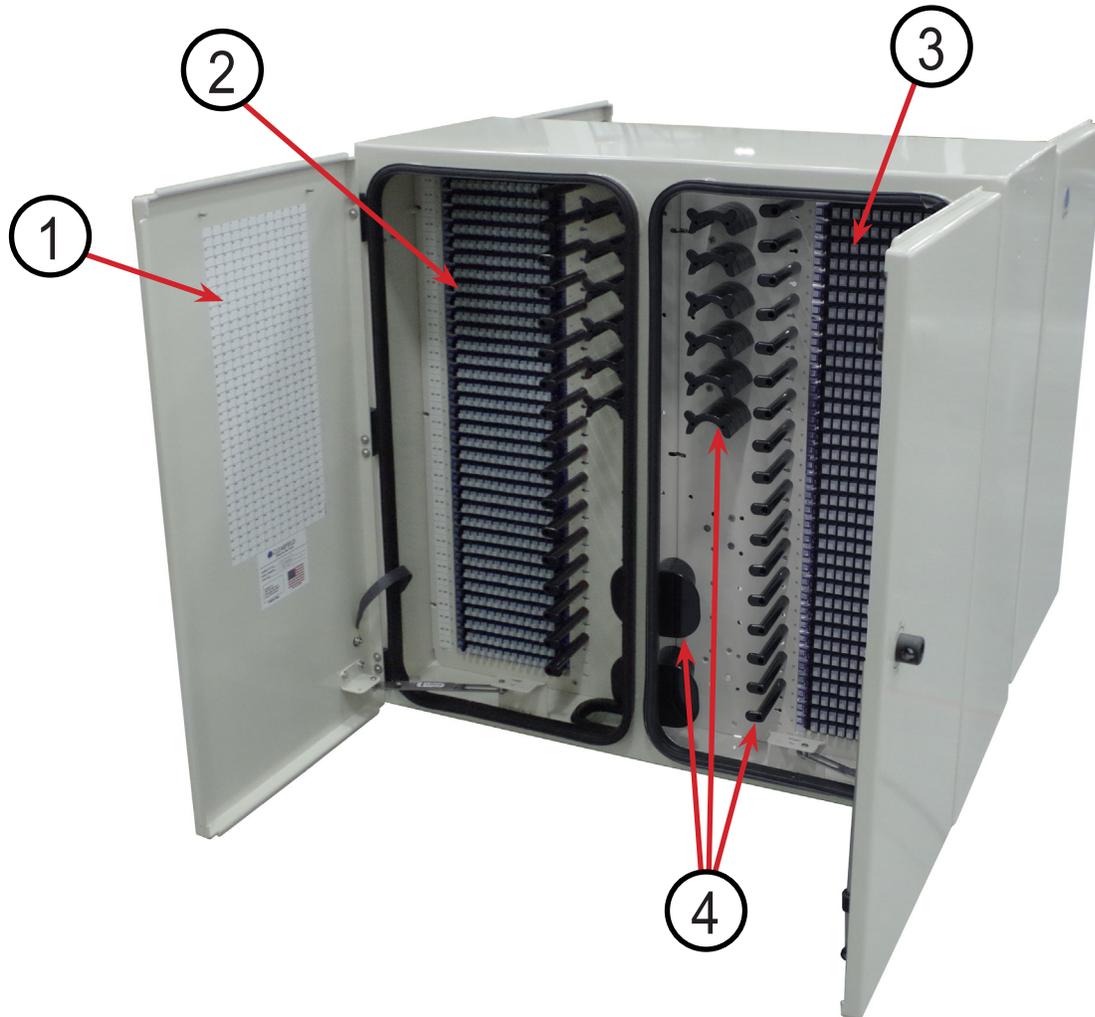


### 432 Cross-Connect Cabinet: Rear View



1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding BAR
4. Fiber Management Spools
5. Not Shown - Access Panel (Included with 12" Riser)

## 864 Cross-Connect Cabinet: Front View



1. Designation Cards
2. Feeder Cassettes
3. Distribution Cassettes
4. Fiber Management Rods and Spools
5. Not Shown - Riser (Available in 4" and 12")
6. Not Shown - Access Panel (Included on 12" Riser)

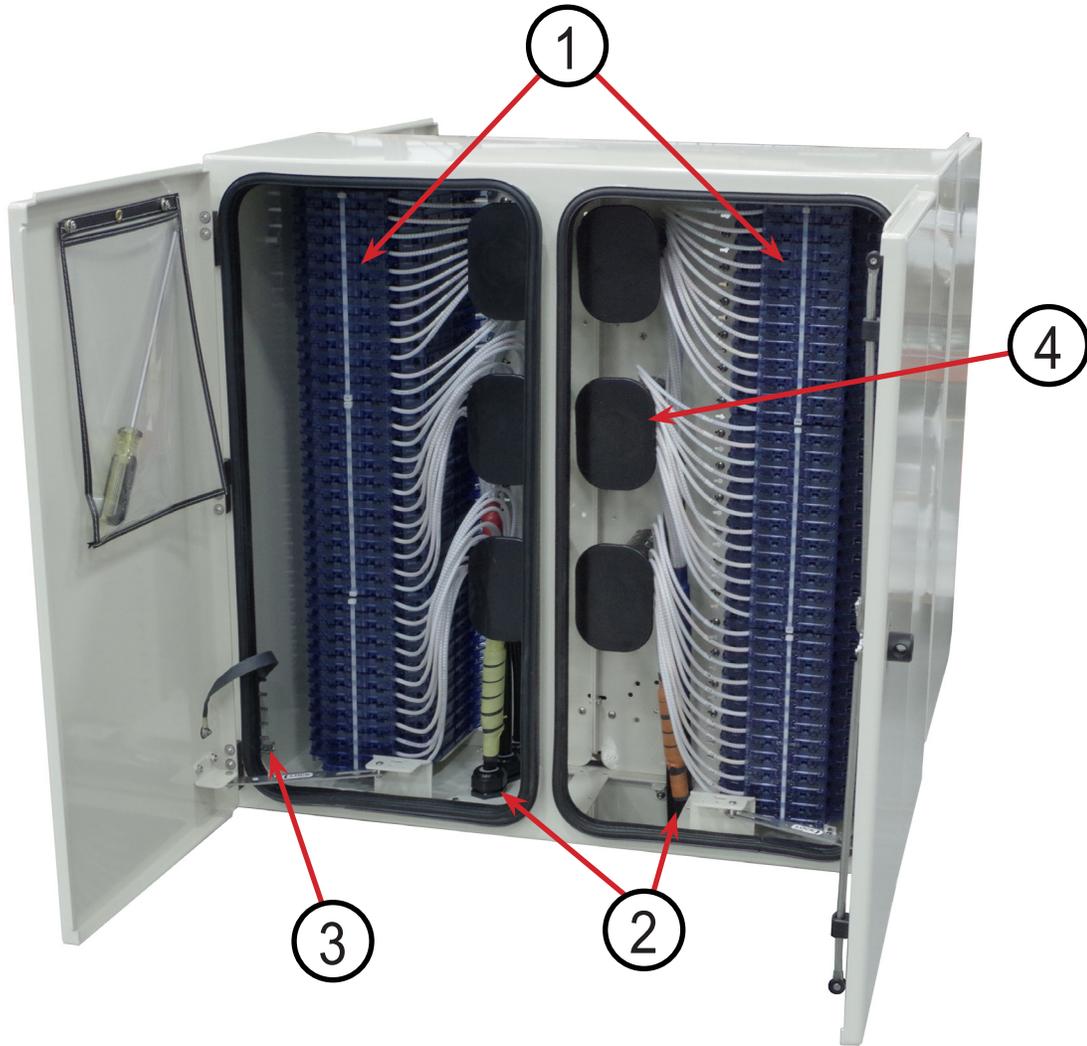
**Note:** The 1,728 Cross-Connect Cabinet is comprised of two 864 Cabinets stacked on top of each other. The features will be the same as the ones pointed out here.

# FieldSmart® Fiber Scalability Center (FSC)

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### 864 Cross-Connect Cabinet: Rear View



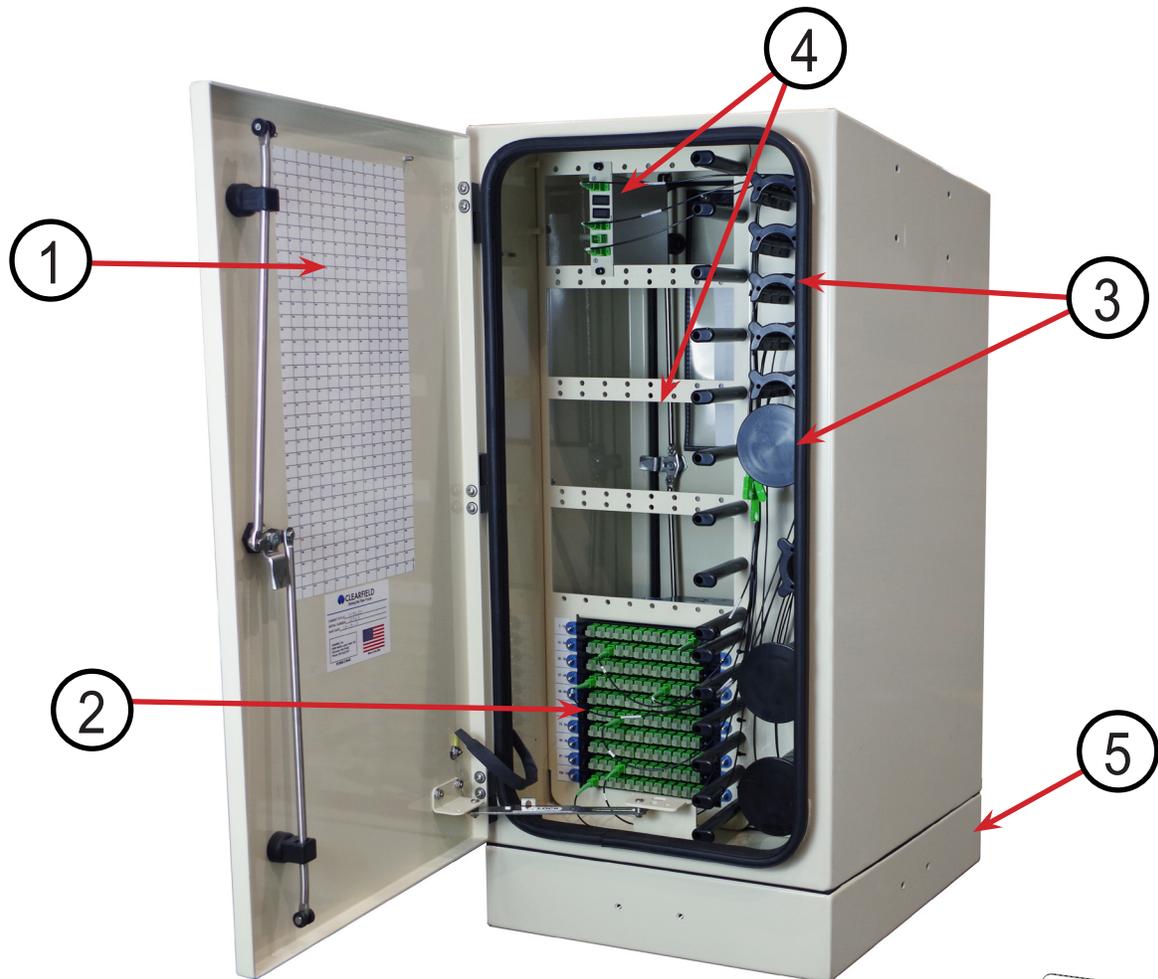
1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding Bar
4. Fiber Management Spools
5. Not Shown - Riser (Available in 4" or 12") and Access Panel (On 12" Riser Only)

**Note:** The 1,728 Cross-Connect Cabinet is comprised of two 864 Cabinets stacked on top of each other. The features will be the same as the ones pointed out here.

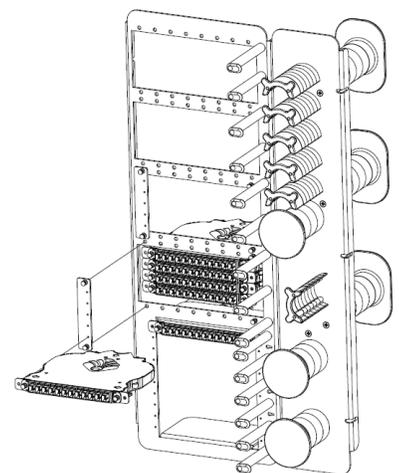


# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

## Hub Collapse Cabinet (HCC): Front View



1. Designation Card
2. Distribution and Feeder Cassettes
3. Fiber Management Rods and Spools
4. LGX Card Areas
5. Riser (Available in 4" and 12")
6. Not Shown - Access Panel (Included on 12" Riser)



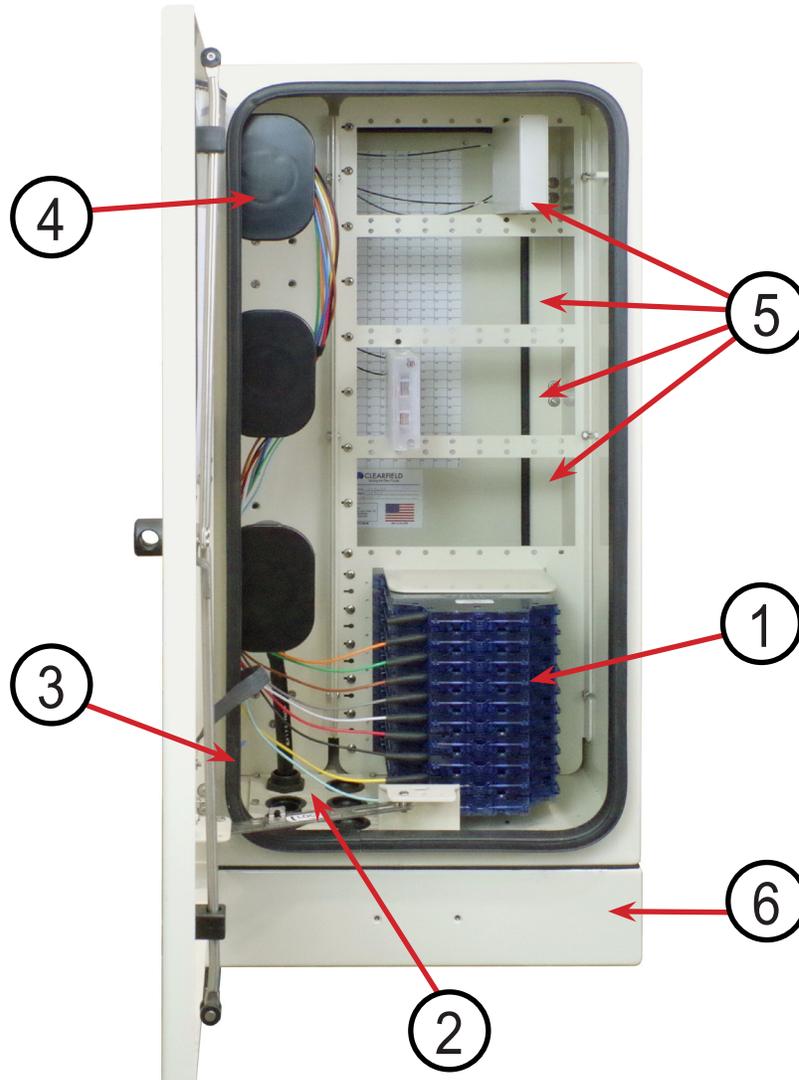
HCC Bracket (P/N 014375)

# FieldSmart® Fiber Scalability Center (FSC)

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### Hub Collapse Cabinet (HCC): Rear View



1. Distribution and Feeder Cassettes
2. Distribution and Feeder Cable Ports
3. Grounding Bar
4. Fiber Management Spools
5. LGX Card Areas
6. Riser (Available in 4" and 12")
7. Not Shown - Access Panel (Included on 12" Riser)



CLEARFIELD

# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

## Vault Installation

These instructions provide general information useful for vault installation. This guide cannot anticipate all situations that could develop in the field. Rather, it represents information applicable to common installation conditions.

### Site Preparation:

Ensure that national/local electrical and building codes, as well as OSHA and company safety work rules, are observed and provisions made for street flags, barricades, and cones. Secure permits as required by the city and company.

### **WARNING: Buried Telecommunications Cables - Call Before Digging**

### Excavation:

Plan excavation approximately twelve to sixteen inches (12" - 16") longer and wider than the actual dimensions of the vault to be installed. Similarly, excavate six to eight inches (6" - 8") deeper than the overall dimensions of the vault with the cover in place.

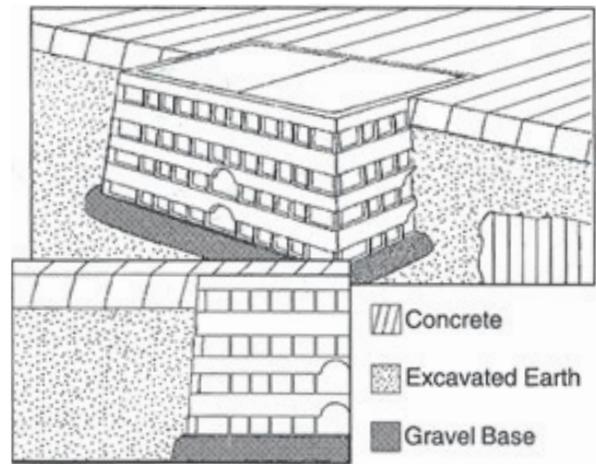
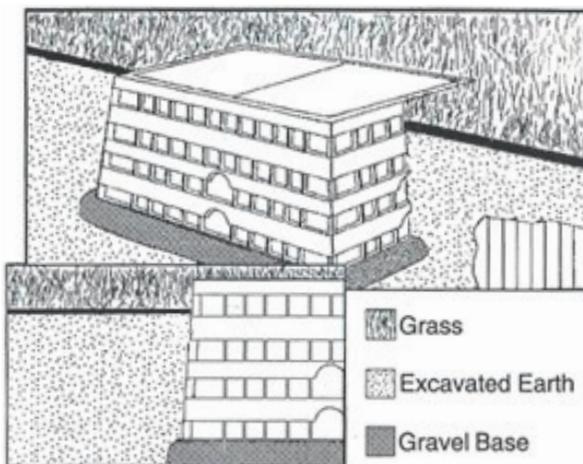
**Note:** Vault size is generally defined by the approximate cover dimensions. The vault actual measurements will differ. The dimensions above for determining the size of the excavation provide sufficient volume for accommodating the maximum recommended select backfill. The volume of excavation would be reduced if a lesser volume of backfill material were chosen. Excavate the hole to appropriate dimensions with a mechanical excavator or hand dig as appropriate. **Confirm the excavation floor is level.**

### Installation:

Clearfield highly recommends the installation of a vapor barrier beneath the crushed rock floor of the excavated area. It is recommended to use a minimum of three to six (3" - 6") inches of crushed rock to prevent subsidence over time. Gravel is the recommended material because of its drainage characteristics. The compacted material should be leveled so the top of the vault is flush to the grade.

**Note:** Base material shall be crushed rock 3/4" and smaller, and not "river rock" or "round stone." Desired compaction and equivalent resistance to lateral loading will not be achieved with round stone. The rock should be free of soil and organic material.

**Install the vault with the cover and support beams in place.** Backfill the extra excavated material into the gaps around the vault and compact by hand.



# FieldSmart® Fiber Scalability Center (FSC)

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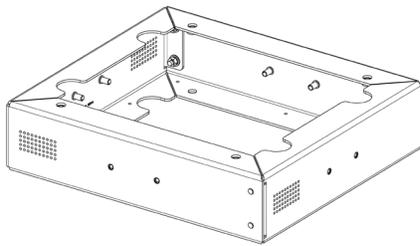


### Cabinet Mounting

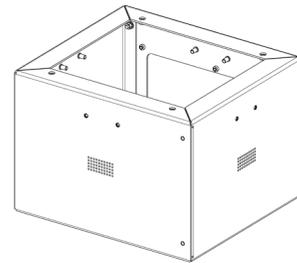
#### Preparing the Enclosure Base for Installation

Locate the enclosure base and remove any packaging materials. They are typically assembled and packaged on top of FieldSmart Cabinets. There are both a 4" and 12" riser kit available to each style cabinet. All have pre-cut vent holes and the 12" has an access door.

#### 288 PON, 432 Cross-Connect, Hub Collapse Cabinets:



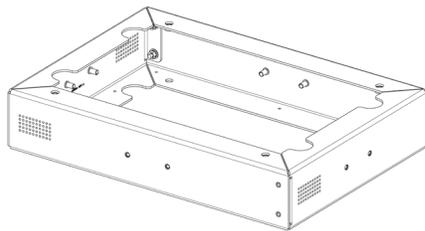
4"



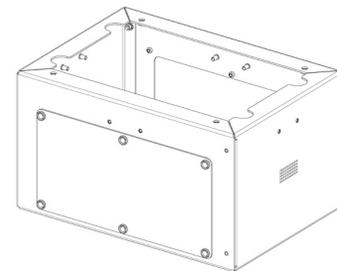
12"

Access door facing rear of cabinet

#### 432 PON Cabinets:



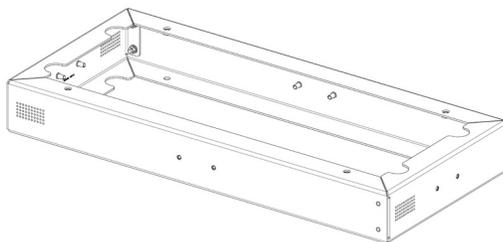
4"



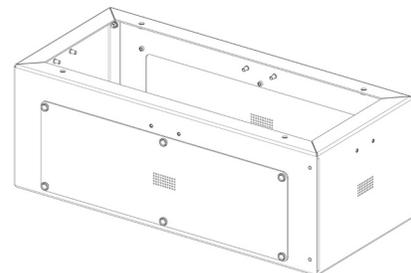
12"

Access door facing front and rear

#### 576 PON, 864 Cross-Connect, 1152 PON, 1,728 Cross-Connect Cabinets:



4"



12"

Access door facing front and rear



# FieldSmart<sup>®</sup> Fiber Scalability Center (FSC)

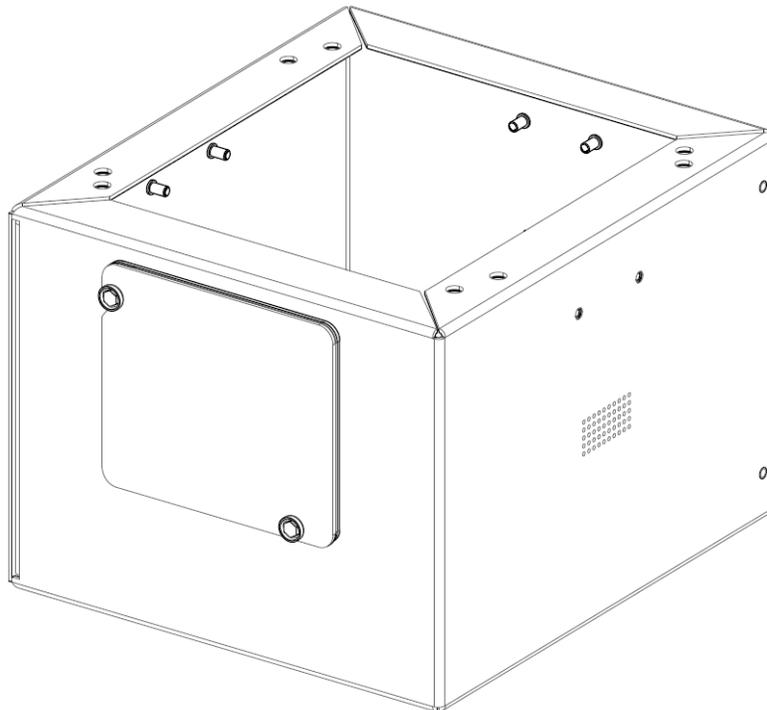
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### Ground/Locate Box

The ground/locate box allows the ability to locate distribution cables without the risk of damage to live circuits by opening the cabinet. Through the use of the main cabinet ground bar, and Clearfield's ground stud kit (P/N 016953), the customer can have a locate point on the outside of the cabinet.

Clearfield suggests:

To install a ground stud, drill a 1/4" hole in the base of the cabinet and insert the stud. Tighten and seal with silicon sealant. Ground leads can then be attached from the ground stud to the Ground/Locate Box.



### Mounting Base on Concrete Pad/Vault Lid

**Mount the cabinet base to the concrete pad per your local practice.**

If the base is installed on the enclosure, remove the base by removing the 4 bolts from the bottom of the inside of the cabinet. Position the enclosure base onto the pad (typically concrete). Assure that the 4 anchor locations in the enclosure base align with the anchor locations in the pad. After verification of the anchor alignment, mount per your local practice.

**Note:** Anchors are supplied by the customer, to comply with local rules and regulations. Be sure to use anchors with the diameter dimensions which will fit the holes in the base/riser.

Optionally, you may choose to use the round cut outs for more flexibility in mounting the base. Place the rectangular washer plates (found in the hardware package) onto the enclosure base, aligning the holes with the anchor locations in the pad (or placing over cast-in-studs). Orient the plates to provide the most contact and support with the base/riser flange. Place the base/riser on the anchor or cast-in-studs.

Run the nuts onto the anchors or cast-in-studs and **finger tighten them. DO NOT TIGHTEN the anchor nuts or cast-in-stud nuts at this step.**

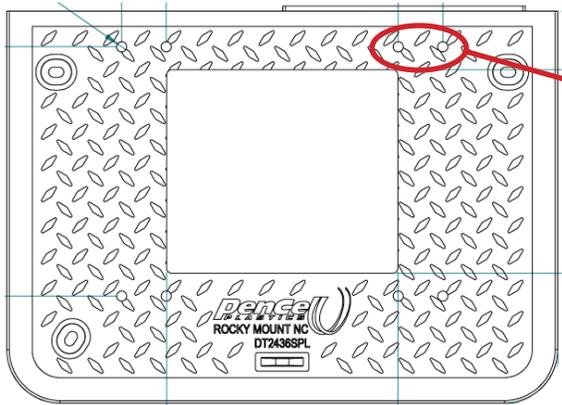




# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

## Mounting Base to CraftSmart HDPE Lids

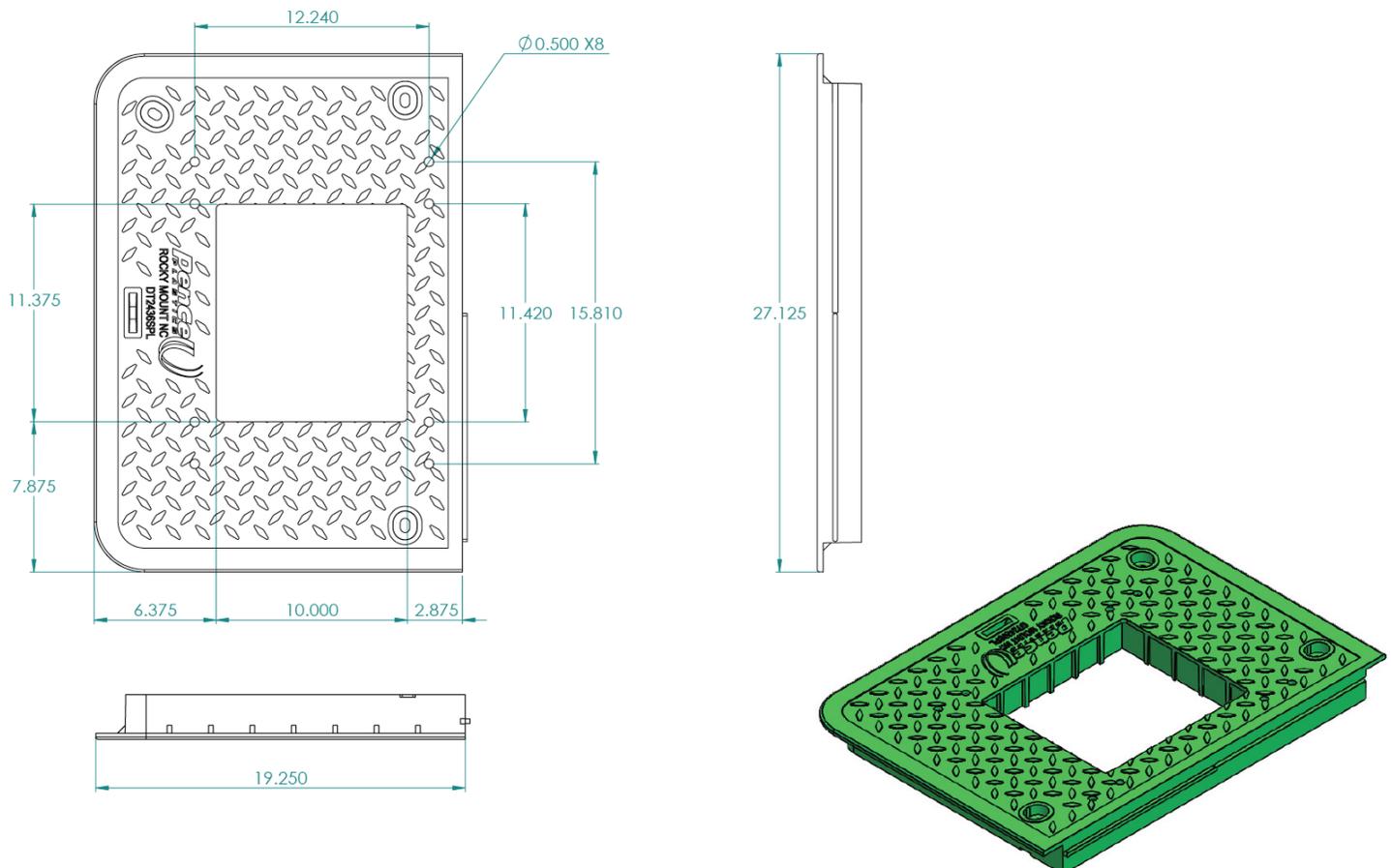
Locate the bolt hardware kit, supplied with each CraftSmart vault that have cut outs for the FieldSmart FSC Cabinets.



Bagged bolt kit (P/N 009092) will be attached to the underside of the vault lid via two zip ties using these two pre-drilled base mounting holes.

All CraftSmart HDPE Vault Lids come with a pre-cut cable entrance hole and pre-drilled base mounting holes - so no drilling is required in the field.

**24 x 36 Vault:** Accepts 288 and 432 PON cabinets, 432 Cross-Connect cabinets, and Hub Collapse Cabinets

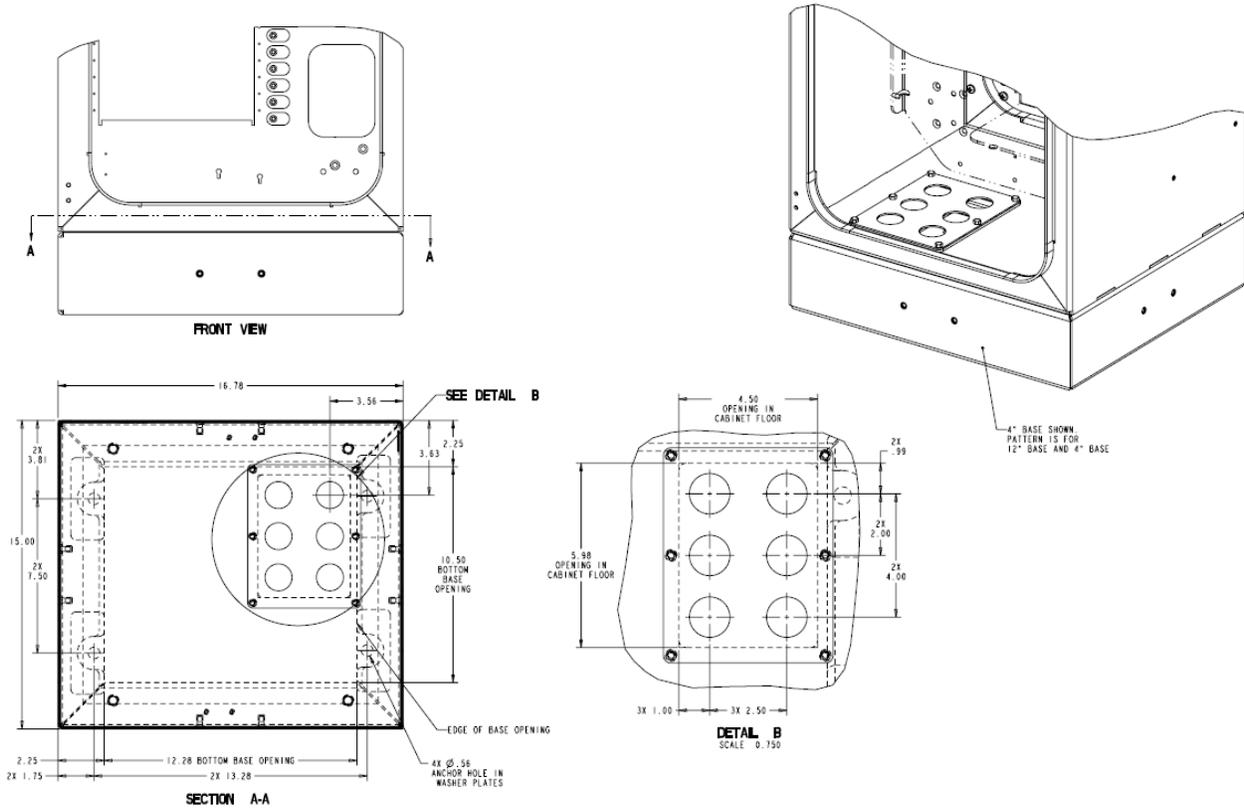


# FieldSmart® Fiber Scalability Center (FSC)

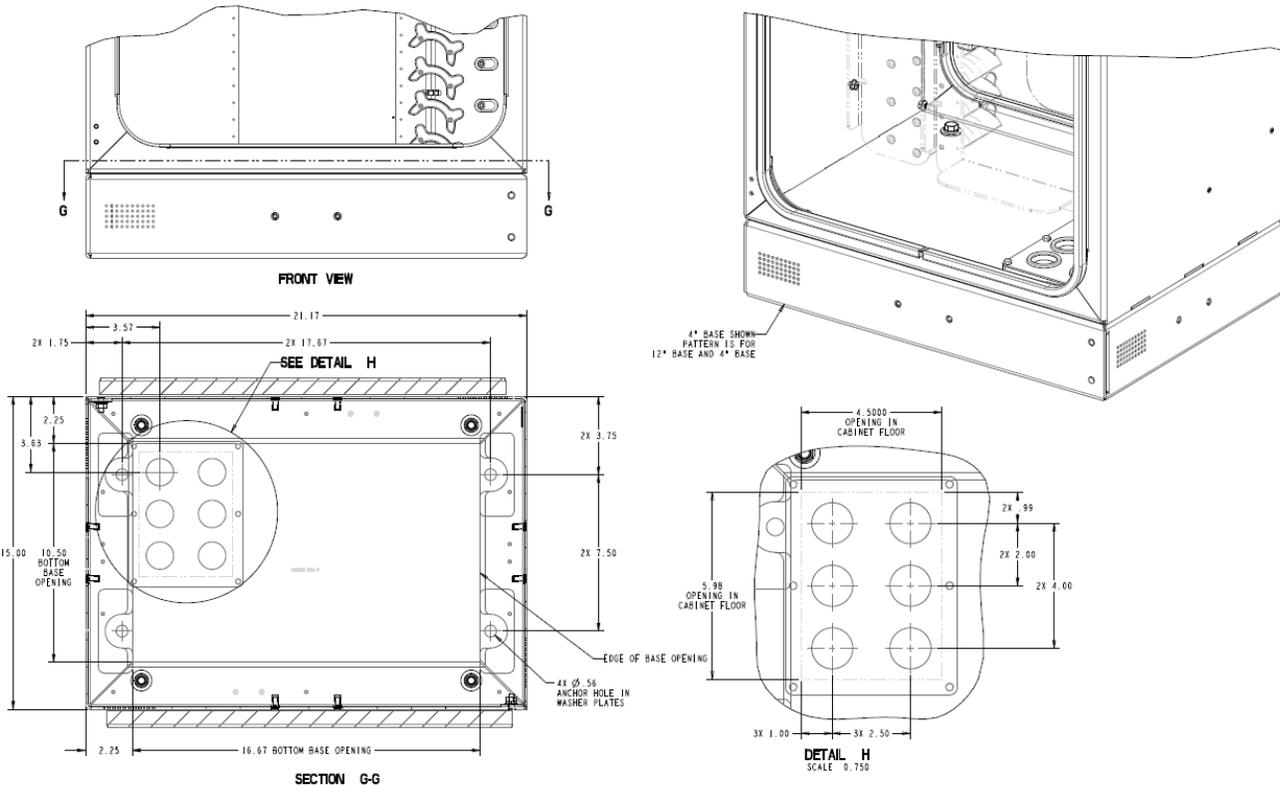
## Installation Manual



### 288 PON, 432 Cross-Connect, Hub Collapse



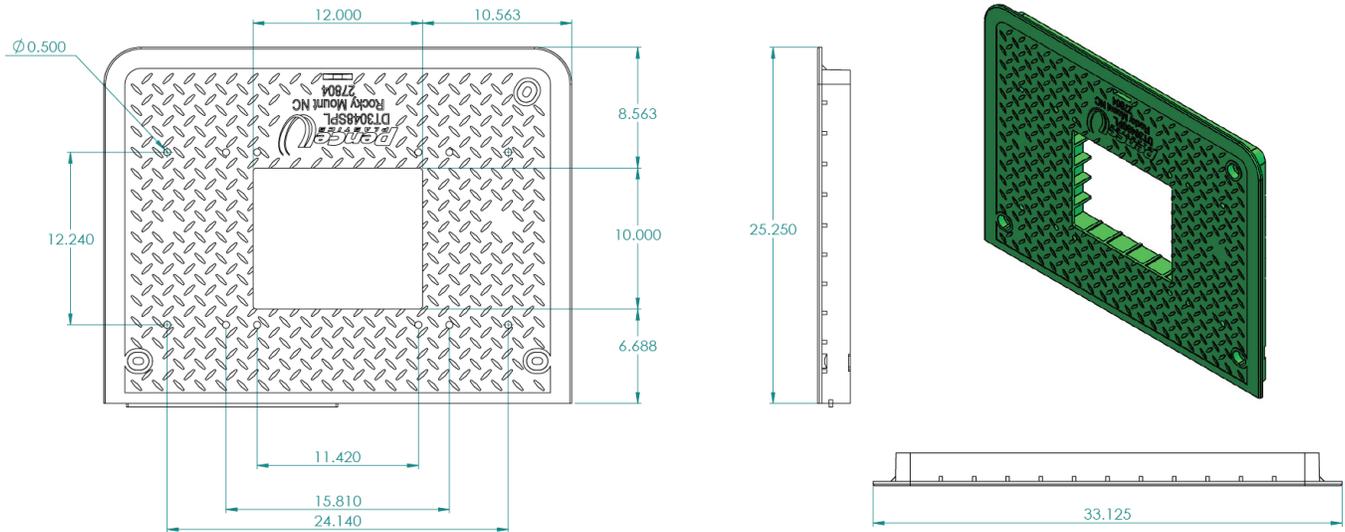
### 432 PON



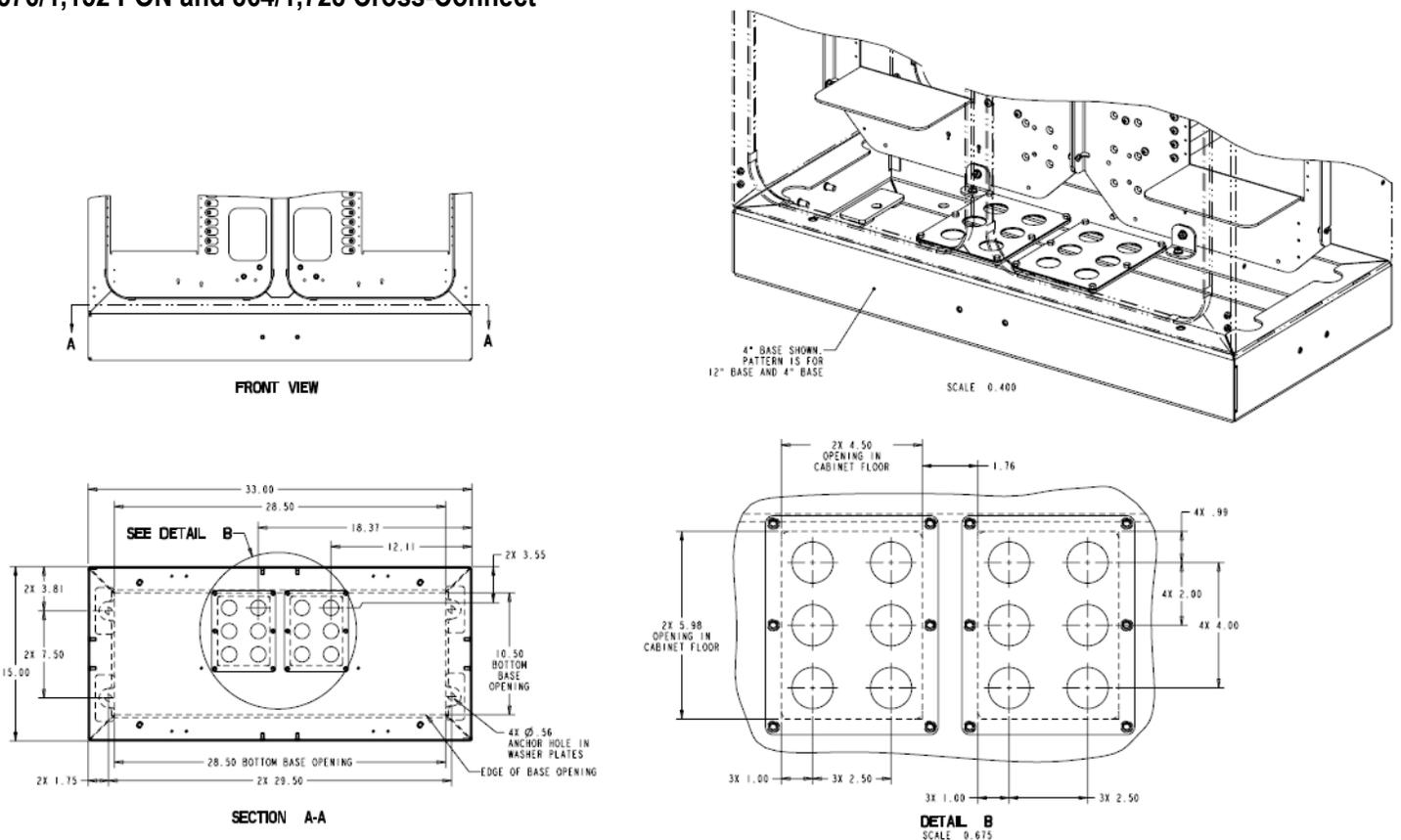


# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

**30 x 48 Vault:** Accepts 576 and 1,152 PON cabinets, 864 and 1,728 Cross-Connect cabinets (in addition to 288 and 432 PON cabinets, 432 Cross-Connect cabinets, and Hub Collapse cabinets)



## 576/1,152 PON and 864/1,728 Cross-Connect



# FieldSmart® Fiber Scalability Center (FSC)

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Use the J-bolts supplied in the bolt kit to attach the cabinet base to the vault lid. J-bolts are installed from the bottom of the lid and are “hooked” into one of the ribs on the underside of the vault lid. Secure with washer, lock washer and nut.



### Mounting Enclosure on Base

Locate the hardware package shipped with the enclosure. Locate the (4) bolts, washers and lock washers. Assure the enclosure is oriented properly to the base and then insert the bolts through holes in the corners of the enclosure. Insert all four bolts before tightening them with a wrench.

Check for and remove all tape, cardboard and foam supports used during shipping.

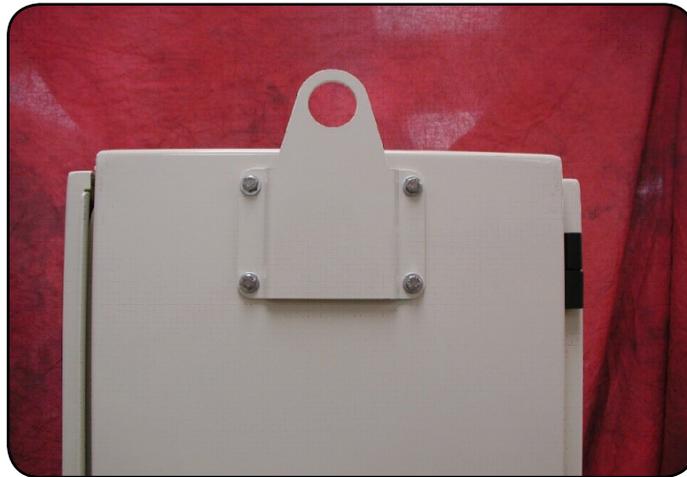




### Pole Mount Installation

**Note:** Clearfield does not provide the mounting hardware. Required hardware includes a 5/8" threaded rod (3" longer than pole diameter), washers, lock washers, nuts and Lock Tight (red).

1. Locate the hoist plate and install, using the included hardware, to the top of the cabinet on the side that will be closest to the pole.



**Note:** A second hoist plate is included for use if the cabinet will be raised by a hoist

2. Locate the toothed bracket that has the mounting holes in the flange and mount it to the base (below the previously installed hoist plate) using the included hardware.



3. Determine the top height of the cabinet. Drill a 5/8" hole 8 inches below the anticipated height of the cabinet, all the way through the pole.

# FieldSmart® Fiber Scalability Center (FSC)

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4. Mount the loose toothed bracket to the pole using threaded rod, washers and nuts on either side of the pole. Rod length will depend on the diameter of the pole. It is suggested to add 3" to the diameter of pole for rod length.



**Note:** Clearfield does not recommend using lag bolts to mount cabinet to pole. Clearfield recommends using hardware with a minimum of 5/8" diameter. Care should be taken to avoid over-tightening and deforming the hoist plate. Lock tight (red) should be used on nuts to prevent loosening of nuts. Make sure the thread rod/nut does not exceed the top bend in bracket or it will interfere with cabinet.

5. Lower the cabinet onto the pole mounted toothed bracket until the hoist plate is over the flange of the toothed bracket.



- Level cabinet and drill 5/8" hole through lower bracket and pole, and install 5/8" rod, washers and nuts.



**Note:** Care should be taken to avoid over-tightening and deforming the hoist plate.

- Cabinet Fully Mounted



### FieldSmart FSC Pole Mount Under Plate Kit

1. After cabinet has been mounted on pole, the optional Pole Mount Under Plate Kit may be installed.



2. The kit comes with two plates with stenciled templates for multiple sizes of conduit. The standard knock out is for a 2" conduit. If larger conduit is being used, cut the plates to the appropriate size.
3. After plates have been prepared for correct conduit, install one side of the plate onto the bottom of the cabinet.
4. Install conduit and cable. Secure conduit with cable clamp provided in kit on inside/top of the installed plate.
5. Install remaining plate, locking the conduit in place.
6. RTV or other silicone type sealing may be used if needed to seal opening.



## Wall Mount Installation

### 288 & 432 Port FSC, 432 Cross-Connect, Hub Collapse Cabinet

The FSC cabinet wall mounting kit consists of two hoist plates, with hardware to mount the hoist plates to the cabinet, and two mounting brackets. Wall mounting the cabinet will require a 5/8" socket, a drill and drill bit, and mounting hardware of your choice. All cabinet variations will require a riser to be installed to attach the bottom mounting bracket.

**Note:** Clearfield does not provide the mounting hardware. Clearfield recommends 5/8" diameter mounting hardware to support the cabinet's weight, as well as washers, lock washers, nuts and Lock Tight (red).

**Note:** Cabinet shown in images may not match cabinet received. Wall mount installation method will remain the same.

1. Using the provided hardware and a 5/8" socket, attach one of the hoist plates to the side of the cabinet that will be facing the wall. Tighten firmly. If your cabinet already has the hoist plates installed, check to ensure that the bolts securing them to the cabinet are tightened and proceed to step two.

**Note:** If the cabinet will be hoisted with a rope, the additional hoist plate can be added to the other side for this purpose.



2. Install one of the mounting brackets with teeth to the bottom of the cabinet on the side of the cabinet that will face the wall, using the pems on the cabinet riser and the hardware provided.

**Note:** Be sure to face the teeth away from the cabinet as shown.



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3. Determine where you wish to mount the cabinet, and mark the backboard at the top center of the cabinet location.
4. Measure down 8 inches from the mark you made for the top of the cabinet. Mark this location, drill your pilot hole, and use it to mount the second/top mounting bracket.

**Note:** Be sure not to over-tighten hardware, as the mounting bracket could deform.



5. Lift the cabinet and slide the top mounting bracket under the hoist plate at the top of the cabinet until fully seated.
6. Level the cabinet prior to installing the mounting hardware into the lower mounting bracket.
7. Attach the bottom mounting bracket to the wall using appropriate hardware.



### Cable Installation and Splicing

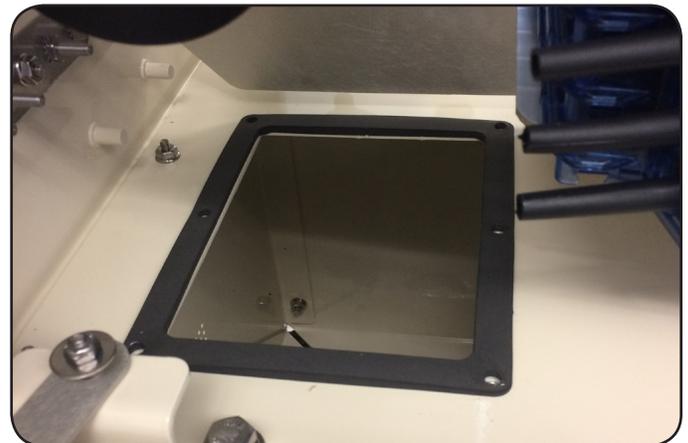
The steps below are written with the 4" riser, which doesn't feature an access door, in mind. If you have a 12" riser with an access door, any step which involves removing the entrance plate can be done instead by removing the riser access door and accessing the underside of the entrance plate from inside the riser.

1. Determine which port(s) in the feed-through entrance plate will be used to install the cable(s).

**Note:** *If you intend to bring more cables into the cabinet at a later date, it is recommended that you work from back to front, installing initial cables as far in and as close to the cabinet bulkhead as possible.*



2. If the entrance plate already has a cable installed, you will need to loosen the sealcon's dome nut. This will allow the plate to slide along the pre-installed cable.
3. Remove the 6 mounting screws holding the entrance plate into the cabinet and remove the plate. Save the mounting screws and keep the gasket around the entrance plate hole.



4. Bring your cables up through the entrance plate hole, into the cabinet, and place the lock nuts over the ends of your cables.

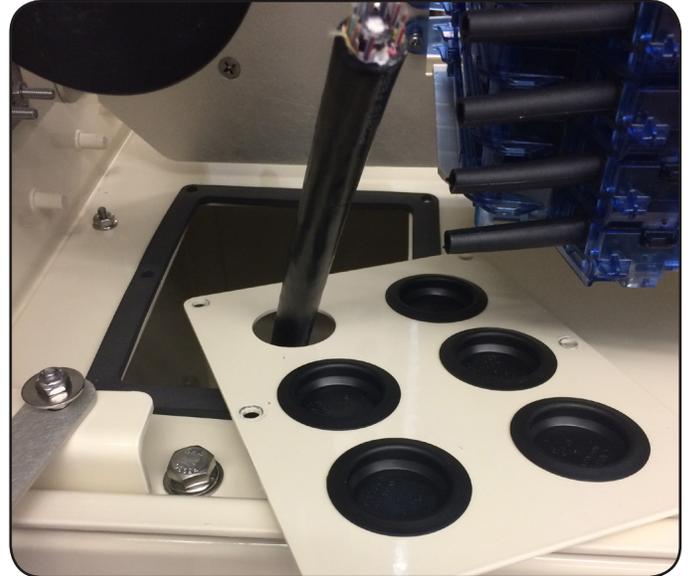


# FieldSmart® Fiber Scalability Center (FSC)

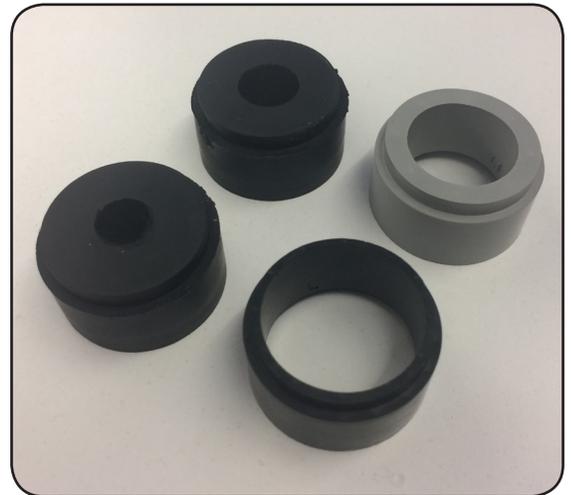
## Installation Manual



5. Remove the plugs from selected holes in the entrance plate and feed the cables through. Ensure the entrance plate gasket is around the cables and below the entrance plate before proceeding.



6. Select the compression fitting grommet size that most nearly fits the cable to be installed. The grommets are included in the ship-along hardware.



Compression Fitting Grommet	Cable Size (Inches)
Small Black Grommet	0.3 - 0.4
Medium Black Grommet	0.41 - 0.5
Gray Grommet (Comes Pre-Installed)	0.51 - 0.79
Large Black Grommet (Comes Pre-Installed)	0.71 - 0.98

**Note:** If more sealcons or strength member clamps are needed, speak to your sales representative about a cable expansion kit, part number FMA-XXX-14.

7. In order to swap grommets, remove the dome nut from the sealcon and pry the current grommet out, being careful not to damage the compression fitting. Push the new one in to place. Ensure new grommets are installed with the tapered side up (see pictures).



**Note:** It is sometimes easier to remove the grommet by using a blunt ended tool to push at it from the bottom, inside the sealcon. Take care not to damage the grommet.

8. Ensure the O-ring on the underside of the sealcon is present before installation.
9. Loosen, or if needed, remove the dome nut on the sealcon to allow the cable to fit through the internal sealing grommet.

**Note:** If utilizing a strength member clamp, insert the cable through the clamp before the sealcon.



O-Ring



# FieldSmart® Fiber Scalability Center (FSC)

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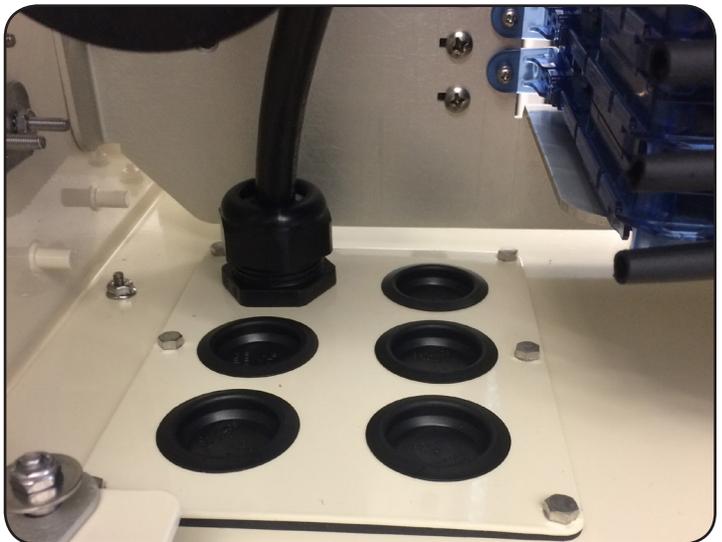


- Slide the sealcon down the length of the cable to the entrance plate, and secure the sealcon to the plate by engaging and tightening the locking nut underneath the entrance plate. If the sealcon dome nut is not already installed, install after tightening lock nut, but do **NOT** tighten to secure cable.

**Note:** Clearfield recommends the use of a set of sealcon wrenches (P/N's 013190 - 40mm, and 013191 - 42mm) to properly tighten the sealcon lock nut and dome nut. These feature an open channel, which allows the wrench to slide over cables and onto the sealcon.



- Re-install the entrance plate into the cabinet. Tighten the 6 bolts until the gasket has been reduced by half of its uncompressed thickness to ensure a proper seal.



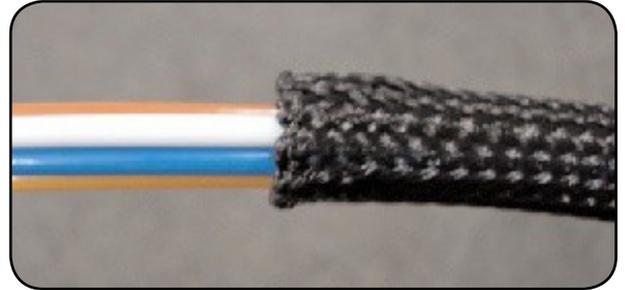


# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

12. Pull the length of cable you intend to open through the sealcon and out of the cabinet. Clearfield recommends 15 feet of opened cable to work with inside the cabinet (12 feet of slack and 3 feet for splicing in the cassette). Open the cable.

**Note:** If you intend to use a strength member clamp, leave 5 inches of strength member after opening the cable.

13. Optionally, group the buffer tubes to be spliced and fully insert them into one of the mesh sleeves (snake skin) enclosed in the ship along hardware. This will help to control the bundle while routing and storing.



14. Start marking the buffer tubes 11 feet from the outer jacket and staggering the marks 1" longer for each buffer tube (11' blue, 11' 1" orange, 11' 2" green, etc.). This will allow for the different lengths required for each buffer tube to reach its cassette after storing the slack around the spools in the cabinet.

15. Remove all Clearview Cassettes from the cabinet that are to be spliced (if required).

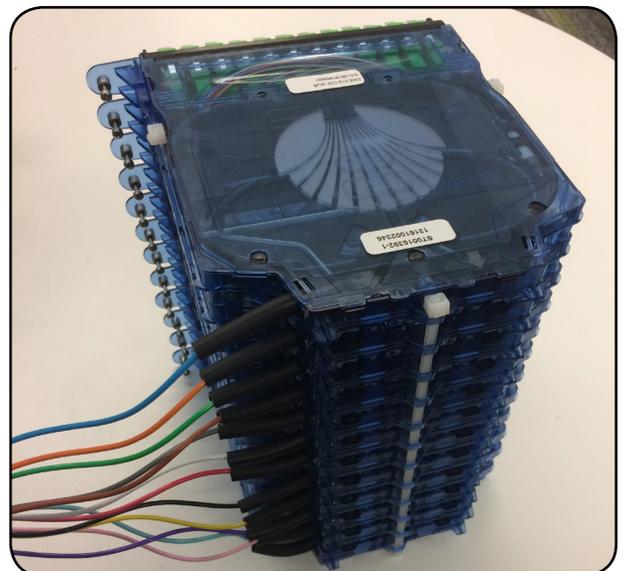
**See the Clearview Blue Cassette Installation Manual for splicing instructions, located under the Resources tab of the Clearfield website, [www.seeclearfield.com](http://www.seeclearfield.com).**

Viewable here:

<https://www.seeclearfield.com/assets/documents/installation-manuals/clearview-blue-cassette-install-manual.pdf>

The buffer tubes will be opened up and secured into the cassettes at the marks you made, using a "Left Exit" configuration. The cassette will typically use 3 feet of fiber inside the splice tray.

16. After splicing is complete, stack the cassettes and gang them together using cable ties and the ganging loops on the sides and back for easy installation.

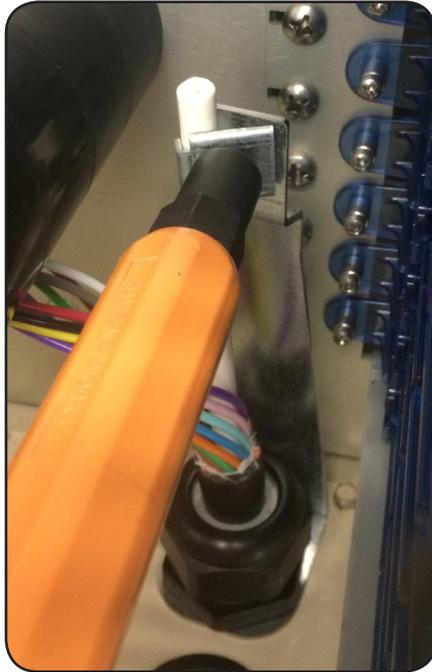


# FieldSmart® Fiber Scalability Center (FSC)

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17. Pull the extra unopened cable slack back through the sealcon and out of the cabinet.
18. If utilizing a strength member clamp, bring the strength member over to the clamp and secure tightly.



19. Tighten the dome nut on the sealcon securely, being careful not to damage the threads.



20. Route the grouped buffer tubes first over the top radius limiter (**Figure 1**).

21. Continue routing the grouped buffer tubes down and around the bottom radius limiter (**Figure 2**).



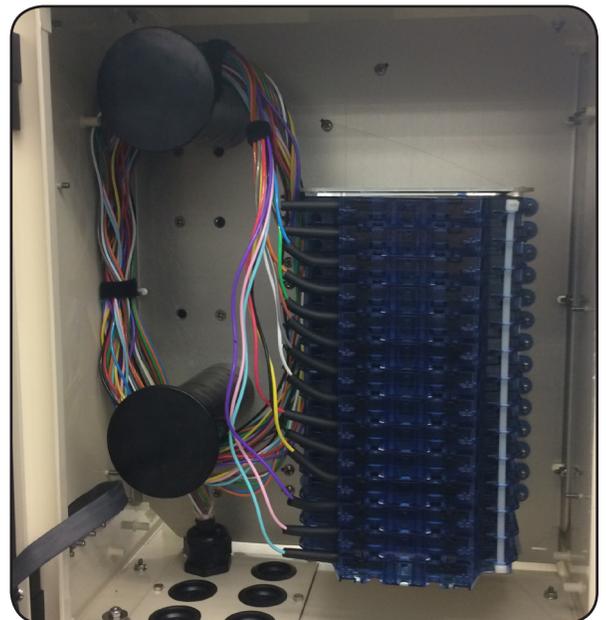
**Figure 1**



**Figure 2**

22. Finish routing the grouped buffer tubes back up and around the top radius limiter. Repeat until all slack is stored.

23. After routing the buffer tubes, install the cassette into the bulkhead in the appropriate port locations from the rear of the cabinet and tighten fastener screws



# FieldSmart® Fiber Scalability Center (FSC)

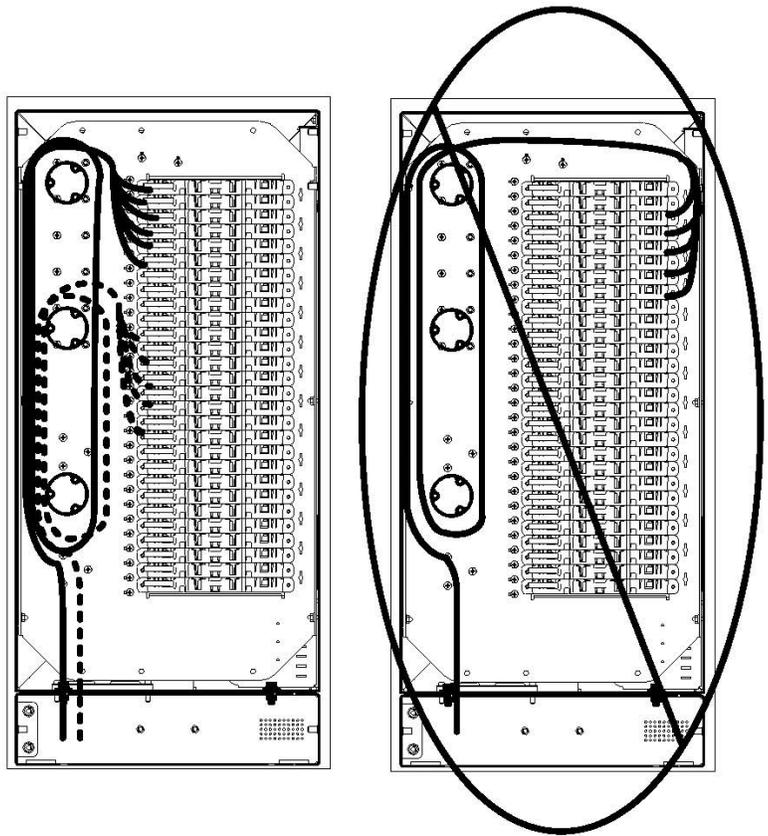
## Installation Manual



### 288 PON Routing (Rear of Cabinet)

The suggested cable routing for feeder and distribution cables is in the rear of the cabinet.

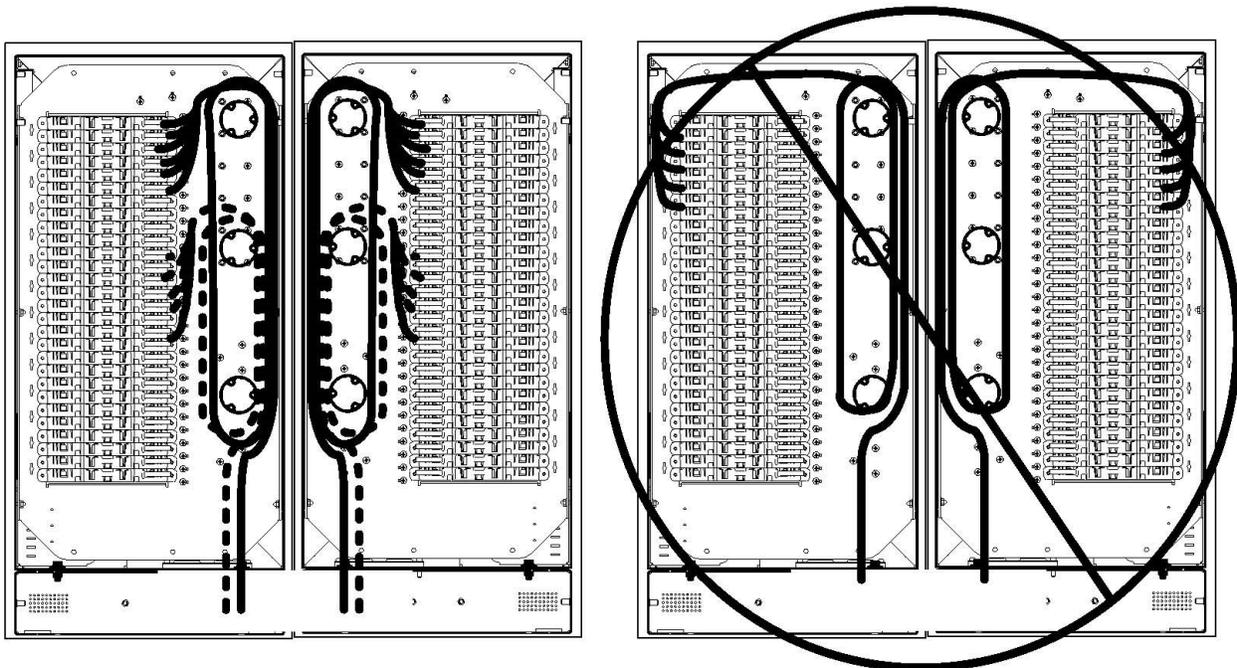
**Note:** Cables should enter cassettes on side closest to cable management – not crossed over.



### 576 PON Routing (Rear of Cabinet)

Suggested cable routing for feeder and distribution cables in the rear of the cabinet.

**Note:** Cables should enter cassettes on side closest to cable management – not crossed over.





### Grounding the Enclosure

Clearfield recommends that all grounding installations follow the “per local practice” guidelines for each application.

A grounding plate and lug is located in the lower left corner of the rear of the cabinet.

The cabinet can be grounded via the large lug attached to the plate using a 6 gauge or larger wire. Individual cables can be grounded using the remaining studs on the ground plate.



# FieldSmart® Fiber Scalability Center (FSC)

## Installation Manual



### Optional Top Cable Entrance Ports

If this option is used, the cabinet is typically drilled at the factory and sent to the customer with watertight plugs installed to maintain cabinet's environmental integrity.

If additional cables need to be added to the top entrance holes:

1. Remove the wing nut and washer from inside the cabinet
2. Carefully remove the grey sealing plug from the hole
3. Install 1" NPT sealing plug and correct size cable grommet, tighten to cabinet
4. Install cable through grommet/plug and into cabinet

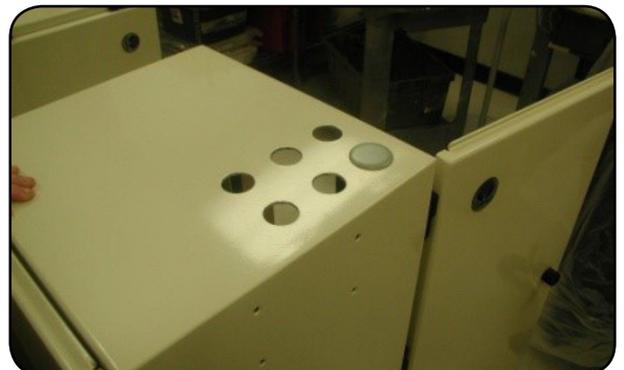
**Note:** Midspanning of cable cannot be done using the top entry ports.



If the cabinet does not have factory drilled holes, the following can be done to field install to the cable entrance ports:

1. Locate the "dimples" on the top of the cabinet (there are 6 on the 288 PON, 432 PON and 432 Cross-Connect cabinets - the cabinets that can be pole mounted).
2. Carefully drill a 1.365 inch hole, using the dimples as a centering point.
3. De-burr the hole, being careful not to scratch/damage the painted surface.
4. Install 1" NPT sealing plug into the hole and tighten.
5. Install cable as mentioned above.

**Note:** Midspanning of cable cannot be done using top entry ports.





# FieldSmart® Fiber Scalability Center (FSC) Installation Manual

## Optical Splitter Routing

Record the fiber splitter number and port designations in the space provided on a designation card. Additional designation cards can be ordered from Clearfield.

Install the splitter into the top-most usable slot in the splitter cage and lock into place using the splitter retainer pin.

Route the fibers from the splitter over to and around the right side of the D-spool in the lower right side of the cabinet. Then route the fibers to the top-most radius spool in the upper right side of the cabinet, loop the fibers over the radius limiter and across the two support fingers. Install the staging plate into the brackets located in the top corners of the cabinet.

Slide any excess slack in the fibers back to the bottom of the cabinet, if installed correctly the fiber will hang from the splitter module and not rest on the floor of the cabinet. The input and output pigtails for the fiber splitter are stored and accessed in the staging plate located in the top corners of the cabinet. Route the input pigtail to the feeder port. The input pigtail is identified by the red booted connector. Route the output pigtails to the distribution ports.



**Note:** The splitters should be installed starting at the top of the storage bracket to the bottom so that fiber crossing is minimized.

# FieldSmart® Fiber Scalability Center (FSC)

## Installation Manual



### 288 PON Cabinet

The 288, 576 and 1152 PON Cabinets will allow up to 2 staging plates in each staging area at the top of the cabinet. One staging plate can be installed with the foam cradle in place, or you can remove the foam cradle and replace with the foam strips on each end of the staging plate. This will allow two staging plates to fit in each staging area.

Choose your desired port to connect the splitter leg and reference the designation card. Each port will have a color, corresponding to the radius spool that the splitter leg must route over to properly take up the slack before connection.

**Splitter Leg Routing**



**Single Staging Plate**

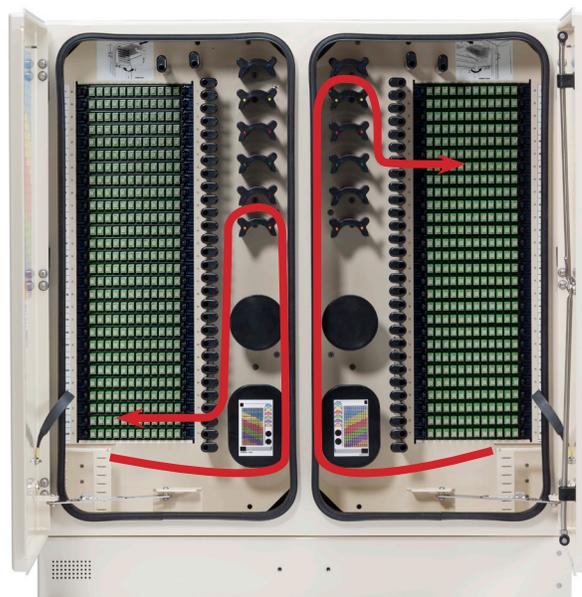


**Two Staging Plates**



### 576 PON Cabinet

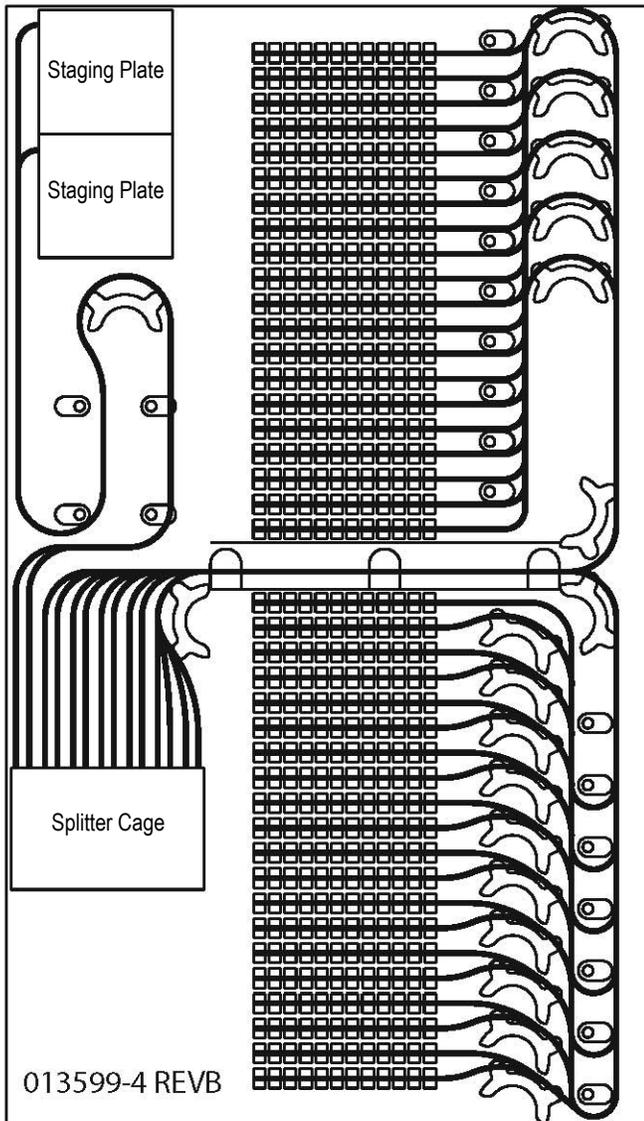
Fiber routing in the 576- port cabinet is done in the same fashion as the 288 port, with the exception that splitter outputs from either side of the cabinet can reach distribution and feeder ports on either side of the cabinet.



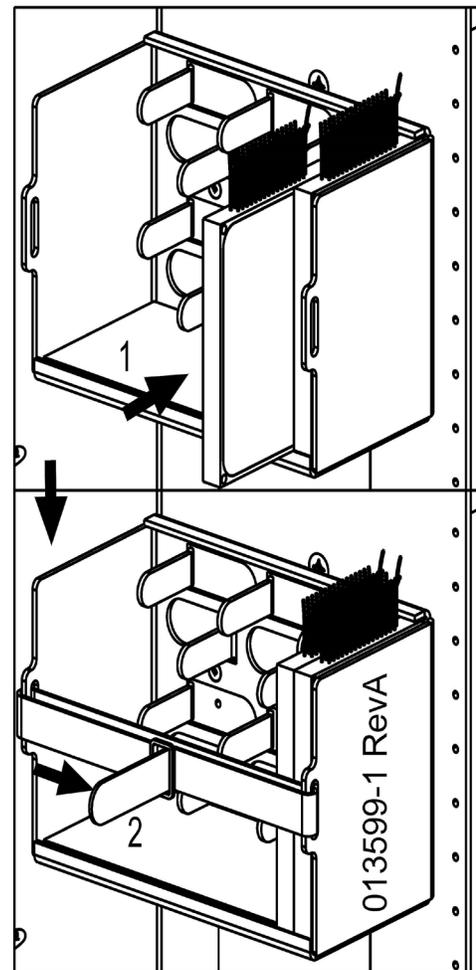
### 432 PON Cabinet

The 432 PON Cabinet has a different splitter routing scheme than the other FSC Cabinets available from Clearfield. The top staging plate area will hold two staging plates with the foam cradles in place.

**Splitter Leg Routing**



**Splitter Cage**



**Staging Plates**



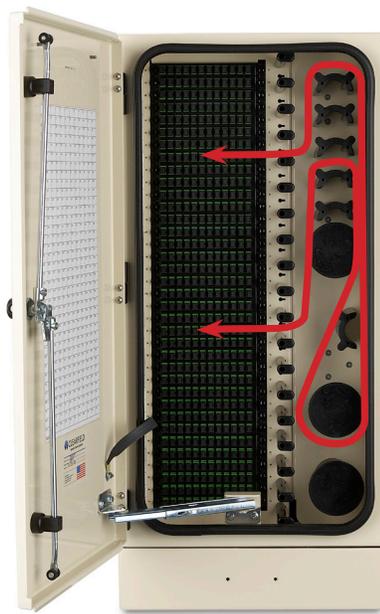
# FieldSmart® Fiber Scalability Center (FSC)

## Installation Manual

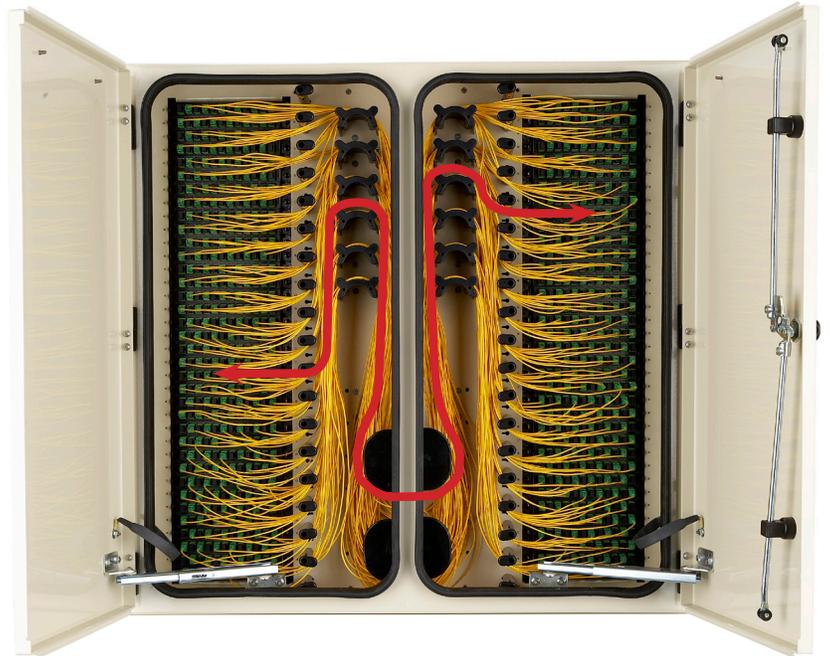


### Jumper Routing

Shown below are routing diagrams for jumpers in Clearfield's 432 and 864 Cross-Connect Cabinets. The 1728 Cross-Connect would function in the same manner.



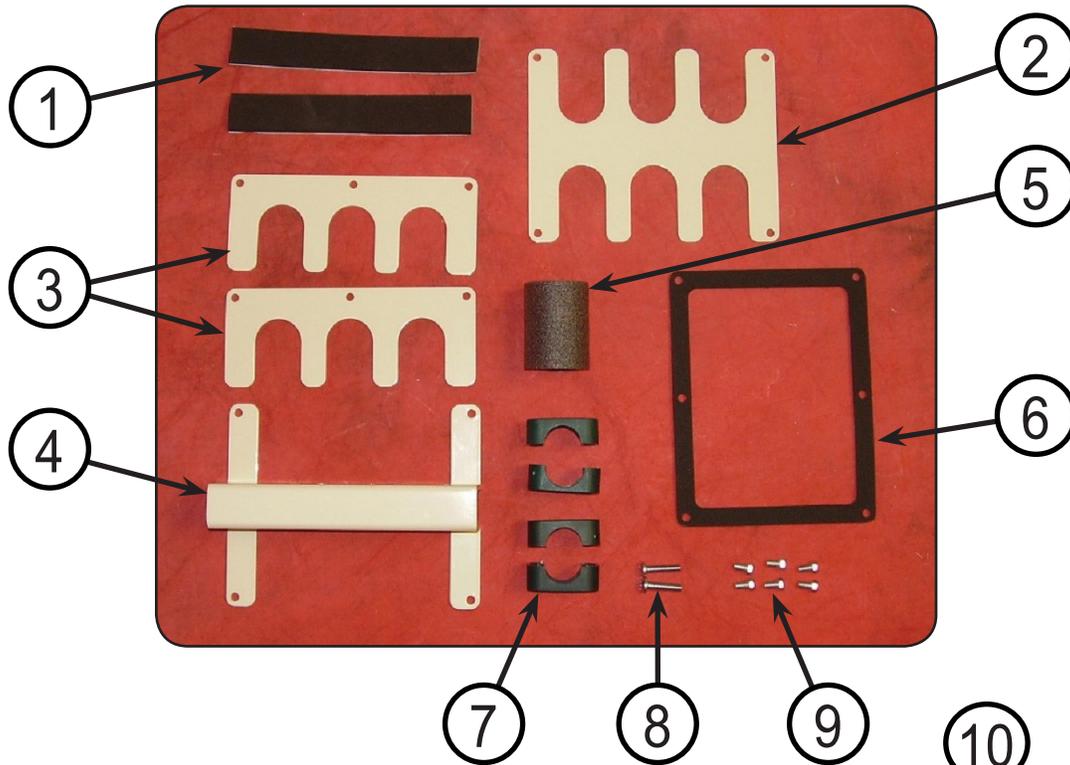
**432 Cross-Connect Cabinet**



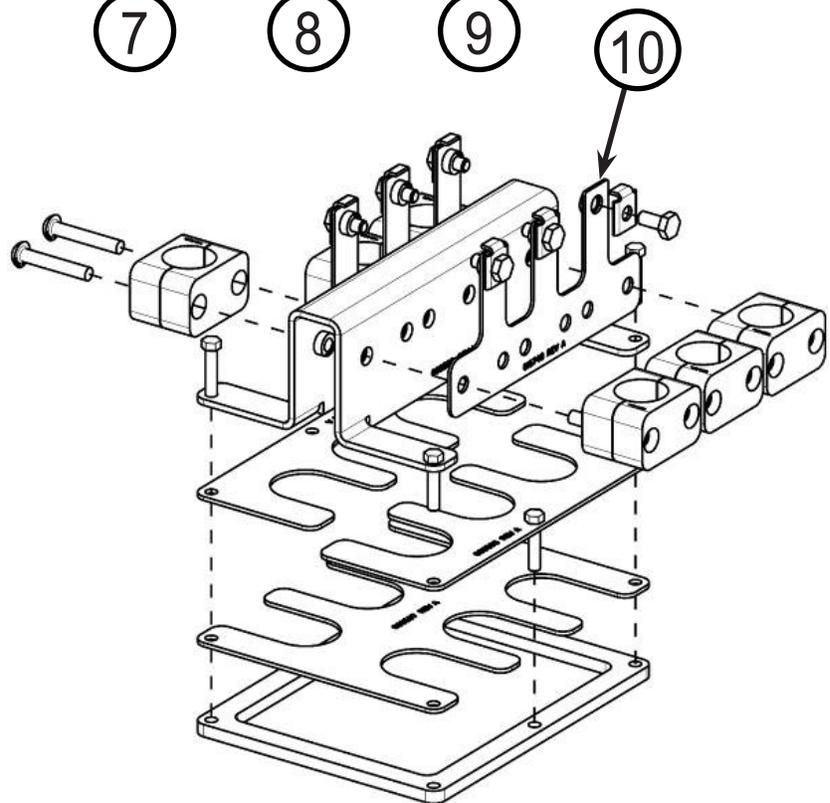
**864 Cross-Connect Cabinet**

## Cabinet Accessories

### Mid-Span Opening Feed-Trough Plate Kit



1. Grommet Tape
2. Feed Through Plate A
3. Feed Through Plate B (x2)
4. Clamping Bracket
5. Foam Sealing Plug
6. Foam Gasket
7. Cable Clamp Shells
  - a. 1"
  - b. 3/4"
  - c. 1/2"
8. Clamp Mounting Screw
9. Kit Mounting Bolts
10. Strength Member Clamp Plate (Use is Optional)



# FieldSmart® Fiber Scalability Center (FSC)

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1. Prep the cable according to the instructions provided earlier in the manual and your local rules for mid-span cable opening.

**Note:** This kit will enable the cable to be prepped using either a mid-span opening or the end of the cable.

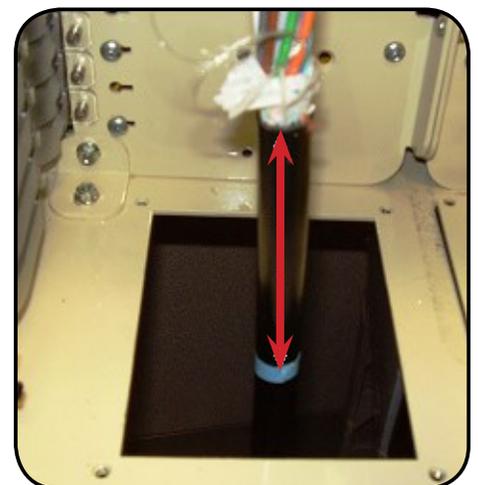


2. Locate the green clamp shells and corresponding 1/4-20 mounting screws from the ship-along hardware.

The clamp shells are used in same-size pairs. Avoid using a clamp that is too small and does not easily close around the cable. Use the next larger clamp and grommet tape. Grommet tape should be applied to the green clamp shell prior to installation.



3. Locate the height that is required to install the cable and mark the cable jacket where the cable passes through the floor of the cabinet. Be sure to leave at least 3" to 4" above the cabinet floor.

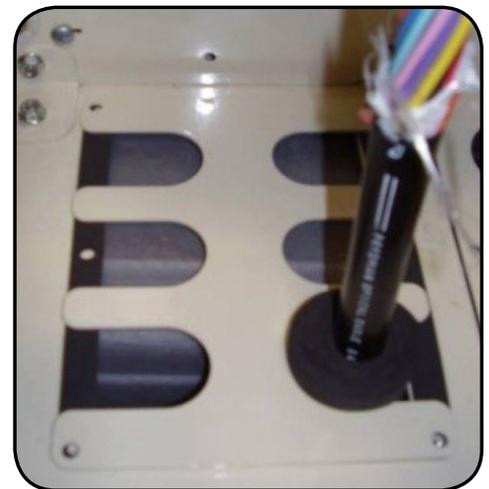


4. Wrap grommet tape around the cable at the mark, until you have an overall outside diameter of 1 3/4".



5. Place the foam gasket around the cable entrance hole in the bottom of the cabinet. Bring your cables up through the hole and slide them into the slots in feed through plate A.

**Note:** It is recommended to work from back to front, so cables installed at a later date are easier to access.



6. Feed through plate B can then be slid onto the cable followed by the cable clamp bracket. All four pieces can now be pinned together in the air by using 4 of the kit mounting bolts



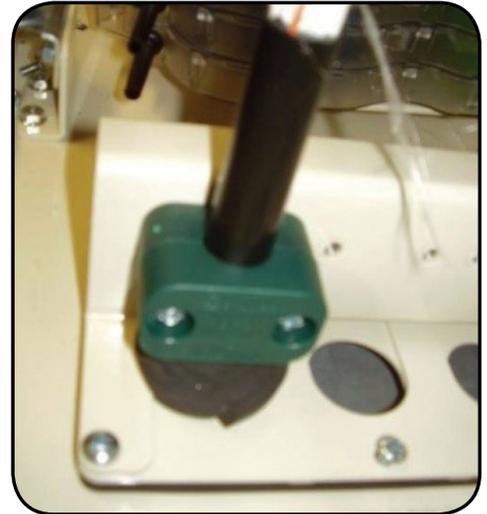
# FieldSmart® Fiber Scalability Center (FSC)

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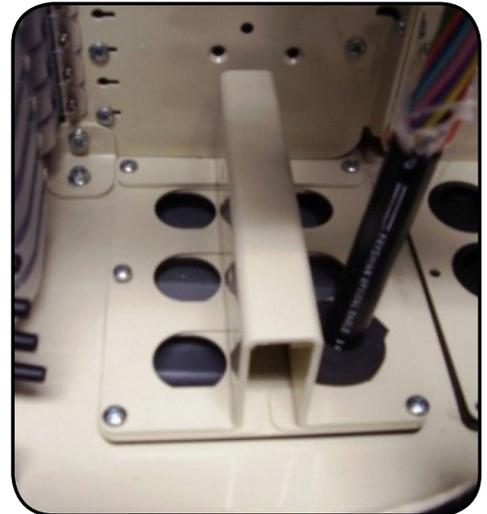


7. Attach the cable clamps to the bracket using the clamp mounting screws.

**Note:** If choosing to use the strength member clamp plate, the plate will go in behind the cable clamps and the clamp mounting screws will secure both in place to the cable clamp bracket.



8. Once all your cables are secured to the cable clamp bracket, attach the entire kit to the base of the cabinet using the 6 kit mounting bolts and tightening them evenly to avoid warping the plates



9. The unused holes can be plugged with the included foam plugs. Simply squeeze the foam to compress, insert and it will expand to seal the hole.

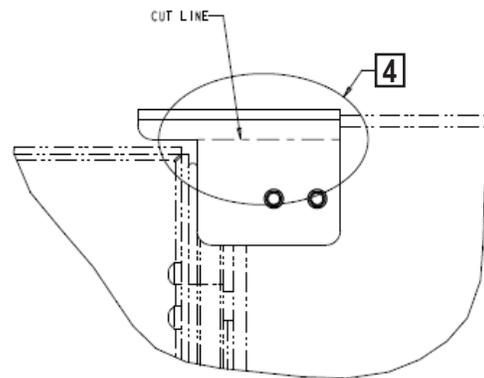
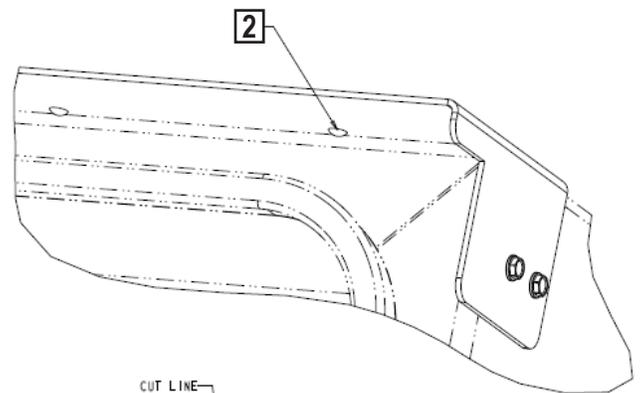
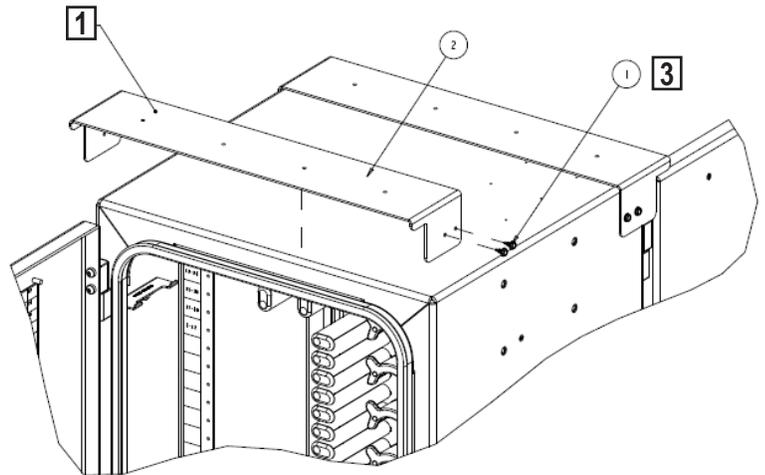


## Debris Shield

1. Apply a generous amount of sealant/adhesive to the underside of the debris shield.

**Note:** Clearfield recommends Sikaflex-221, available in most hardware stores.

2. Align the debris shield with the top of the cabinet, using the dimples as a guide for how far it should overhang. The dimples will prevent you from installing the debris shield too far back.
3. Self-drilling screws are provided with the debris shield, though their use is optional. Use them to secure the shield for additional strength.
4. If cabinet is equipped with additional external accessories that interfere with the debris shield, the shield must be cut along the dotted line. Screws will not be able to be used on that side of the debris shield.



### Connector Cleaning Procedure

Whether factory terminated or field spliced, clean connectors are essential for proper system operation. Even the smallest dust particle can cause transmission problems, so for optimal network performance inspect, and if necessary, clean connectors and adapters prior to mating.

#### Inspect Then Connect

These are Clearfield recommended products/applications. Use the product you feel will complete your cleaning procedures. Create a “best practice” for your company and follow those procedures.

The use of Chemtronics end face and bulkhead cleaning products and techniques ensures a clean end face, no matter the type of contamination.

Before cleaning any connector, be sure you know what type of contaminate you are cleaning (dry, fluidic, or combination). All the available products are good, it's the process that you need to be aware of. Using a dry cleaning method to clean “dirt” can lead to scratching of the end face. Learn the process of cleaning properly.

**Note:** It is **NOT** recommended to use isopropyl alcohol to clean the end face.

### Cleaning an SC/LC Connector

#### Cleaning the End Face

- Place one wiping paper on QbE-2 FiberSafe™ Cleaning Platen. (Figure 1)
- Apply small amount of precision cleaner (about 1” in diameter) with Electro-Wash MX pen on to one end of the wipe. (Figure 2)
- Hold end face at a 90 degree angle. For APC connection, adjust by slightly tilting the container or end face. Angle is correct when no drag is felt on the end face. (Figure 3)
- Draw end face from wet to dry part of the wipe 3 times. Use just enough pressure to ensure complete contact between end face and the wipe.

**Note:** **DO NOT** retrace previous step.



Figure 1



Figure 2



Figure 3

### Cleaning the Ferrule

- Lightly moisten the fiber optic swab (2.5mm/38542F or 1.25mm/38040) by spotting a small amount (about 1”) of Electro-Wash PX or Electro-Wash MX pen onto the QbE. Hold the swab, 1 side down to the wetted area and hold for a count of 1-2-3-4-5. (**Figure 4**)



Figure 4

- Insert swab into side of ferrule, wet side to the ceramic ferrule and circle around 2-3 times and remove. Turn swab to dry side and repeat. (**Figure 5**)



Figure 5

### Cleaning the Mate Through an Adapter AND the Adapter Itself

- Lightly moisten the fiber optic swab (2.5mm/38542F or 1.25mm/38040) by spotting a small amount (about 1”) of Electro-Wash PX or Electro-Wash MX pen onto the QbE. Hold the tip of the swab onto the wetted area and hold for a count of 1-2-3-4-5.
- Insert the swab into the adapter to the connector, press lightly against the connector, twist 2-3 times, remove and discard.
- Dry with a second dry swab.
- Inspect, repeat cleaning if necessary, and test for signal strength.
- Use additional swabs to clean inside the actual adapter. Moisten swab, like above, and insert through hole and remove while twisting. (**Figure 6**)

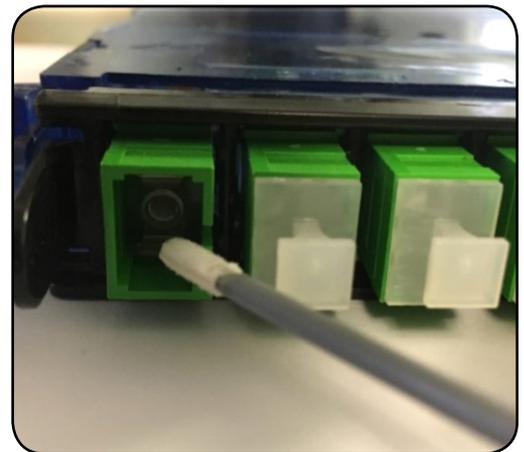
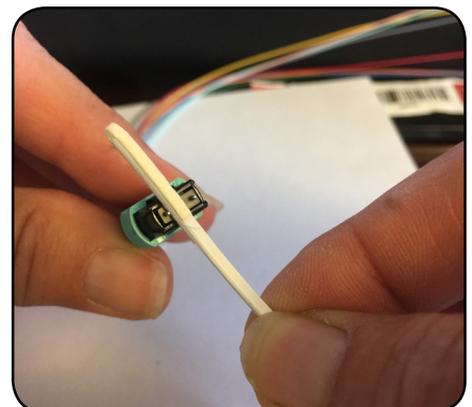
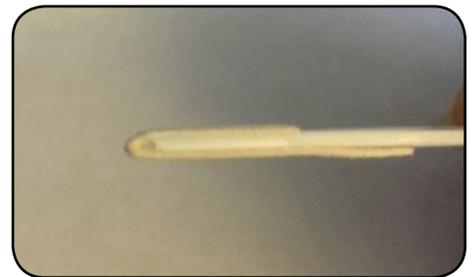
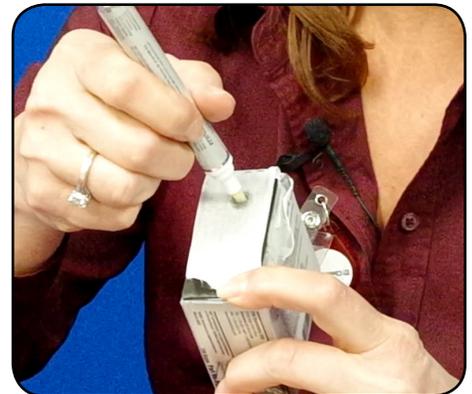


Figure 6

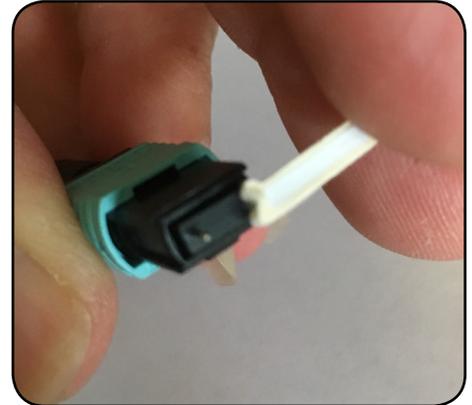
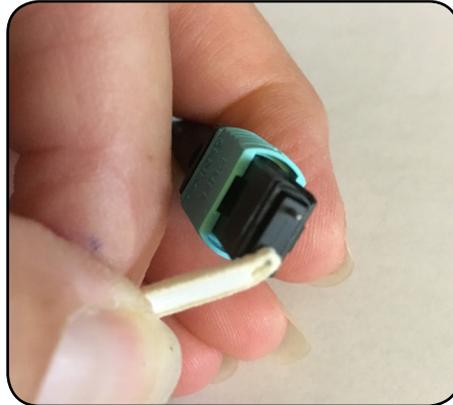
### Cleaning an MPO/MTP Connector

#### Male Connector

- Use of Chemtronics MTP Connector Cleaning Swabs (CC505F) is recommended. Even after cleaning with a probe cleaner, you should always clean the pins with this (or an equivalent) type swab. Cleans ALL MTP/MPO connector end faces. This swab also cleans the “pins” of the male connector
- Lightly “spot” a QbE-2 wipe on the platen with Electro-Wash PX Fiber Optic Cleaner, the FiberWash or MX Pen.
- Lightly touch short side of the MTP/MPO Connector Swab to the wetted area (3-5 secs) to absorb some cleaning solution (DO NOT over saturate the swab).
- Wipe connector areas to be cleaned, sliding pad from bottom of pad across and forward to tip of swab, from 1 side to the other, turn over and use long side to dry in same movement.



- Use the hole on end of pad to clean one alignment pin, then press the end of the swab into the other pin to clean.
- Check your work with a fiber scope. This can take several attempts to get the endface clean.

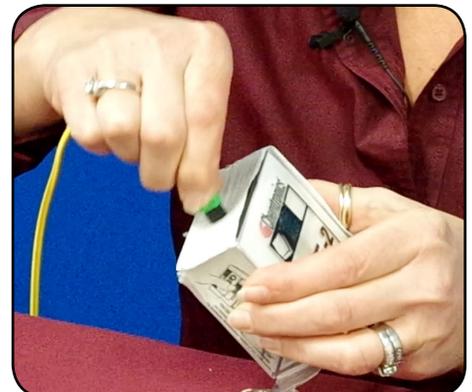


### Female Connector (without pins)

- Cleaned like a single fiber connector, using a cleaning platform. The receptacles will be cleaned as long as you are using a combination cleaning process as recommended.
- Again, using a platen, moisten the platen with cleaning solvent on one end to accommodate 3 swipes of the MPO female endface.

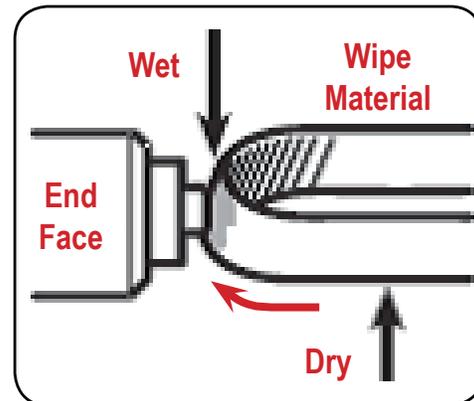


- Holding the connector (If APC, slightly at an angle to accommodate for 8° angle) swiping with medium pressure, from the wet area into the dry area 3 times, without wiping over previous area.
- Inspect, and if clean, make the connection. If NOT, repeat above steps until clean or if determined that the end face is damaged (based on standards of 5 cleanings per connection), replace.

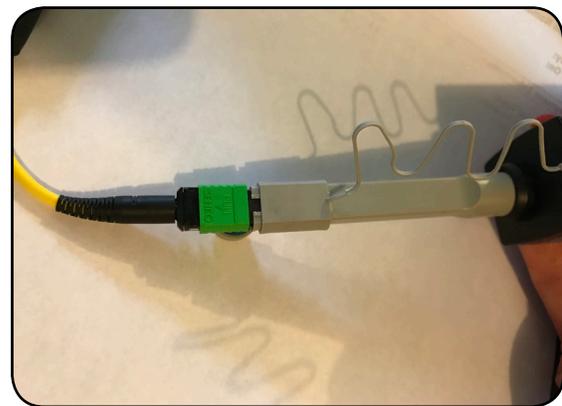
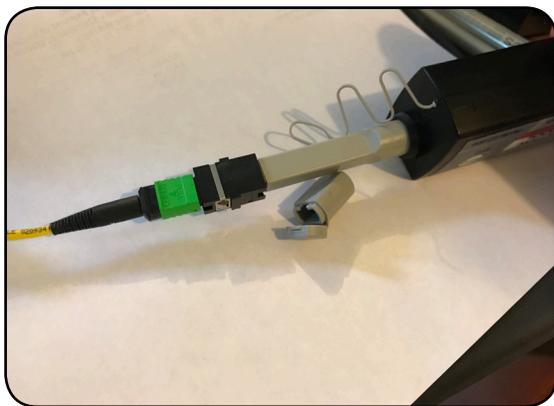


### Cleaning Using a Probe-Style Cleaning Tool

- The probe style cleaning tools are capable of cleaning a connector end face separately or through the adapter.
- Slightly engage probe by pulling back but do not allow to click. Lightly “spot” a QbE-2 wipe on the platen with Electro-Wash PX Fiber Optic Cleaner, this will help alleviate “over saturation” of the material.
- Lightly touch the tip of probe and release.



- Insert connector or insert probe through adapter and click 2-3 times to move past the wet area and allow material to dry wipe.



- Inspect connector, repeat if necessary (following standards)
- If cleaning a male connector, clean the pins (see above)



### Standard Warranty

Clearfield warrants to the original purchaser of the Product sold hereunder is free from defects in material and workmanship under normal use and service, subject to exceptions stated herein. Product purchased is warranted as follows: Clearfield designed and branded Products are warranted for three (3) years; Products manufactured by Clearfield to customer prints and/or specifications are warranted for one (1) year; and any Product Clearfield acquires from or through a third-party manufacturer or distributor and resells to Customer as the original customer will carry the manufacturer's pass-through warranty, if any. In all cases, the warranty period commences on the date of shipment to the original purchaser.

### Warranty Claim Procedure

If any Product purchased from Clearfield is found defective under the above warranty, the following basic procedure must be followed:

1. Customer must contact Clearfield and obtain a Return Materials Authorization
2. Following authorization, the Customer ships the product-freight collect-to Clearfield's manufacturing facility
3. Clearfield shall repair or replace the defective Product at its sole option and discretion, and return the repaired or replacement Product to Customer's site, freight prepaid

Note: If the Product is not found to be defective by Clearfield, the product will be returned to the Customer and the customer billed for freight in both directions.

View our warranty policy here: <https://www.seeclearfield.com/warranty.html>

### Limitations of Warranty

Correction of defects by repair or replacement, at the option of Clearfield Inc, shall constitute the exclusive sole remedy for a breach of this limited warranty. Clearfield shall not be liable under any circumstances for any special, consequential, incidental, punitive, or exemplary damages arising out of or in any way connected with the product or with agreement to sell product to buyer, including, but not limited to damages for lost profits, loss of use, or for any damages or sums paid by buyer to third parties. The foregoing limitation of liability shall apply whether the claim is based upon principles of contract, warranty, negligence or other tort, breach of statutory duty, principles of indemnity or contribution, the failure of any limited or exclusive remedy to achieve its essential purpose, or otherwise.

Clearfield will not be responsible for any labor or materials costs associated with installation or incorporation of Clearfield products at customer sites, including any costs of alteration, replacement or defective product, or any field repairs.

### Other Limitations

Clearfield assumes no warranty liability regarding defects caused by:

1. Customer's modification of Product, excepting installation activities described in Clearfield documentation
2. Customer re-packaging of Product for shipment to third parties or destinations other than those originally shipped to by Clearfield, or any defects suffered during shipping where the Product has been re-packaged
3. Customer's installation or maintenance, excepting activities described in and performed in accordance with Clearfield documentation
4. Customer's improper or negligent use or application of Product
5. Other causes external to the Product, including but not limited to accidents, catastrophe, acts of God, government action, war, riot, strikes, civil commotion, sovereign conduct, or the acts or conduct of any person or persons not party to or associated with Clearfield
6. Environmental factors and weathering resulting in aging and damage not necessary or applicable to the function of the product

# FieldSmart® Fiber Scalability Center (FSC)

## Installation Manual

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### Technical Support

Clearfield, Inc. can be contacted for any issues that arise with the supplied product.

If you need to return the supplied product, you must contact the Clearfield, Inc. Customer Service Department to request a Returned Materials Authorization (RMA) number.

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