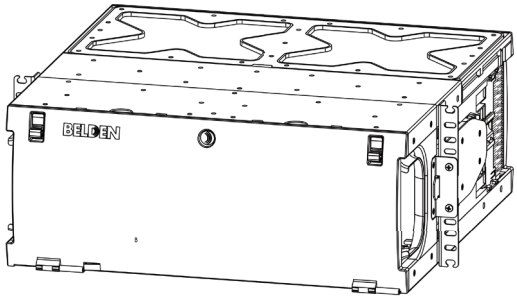
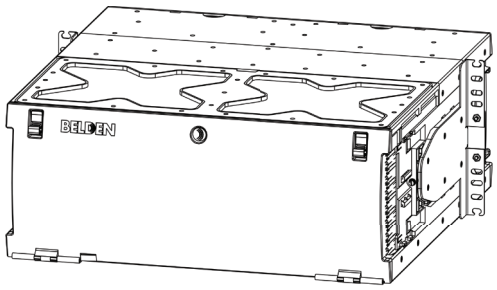
Front view



Rear view



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1. Introduction

This manual shows and provides complete instructions for:

- How to install and manipulate the ECX 4U with its components.
- How to load and manipulate cables through the rear housing.

1.1. General information/iconography meaning

= General information, notes, installation tips that are applicable in use of the 4U housing, components or any other ECX product family.

= Includes related warnings to prevent damage to equipment and/ or personal injury.

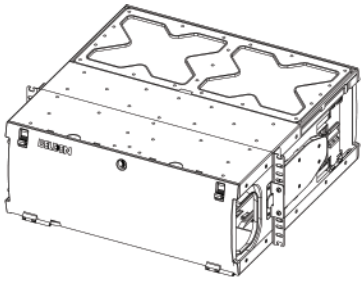
1.2. Safety Precautions

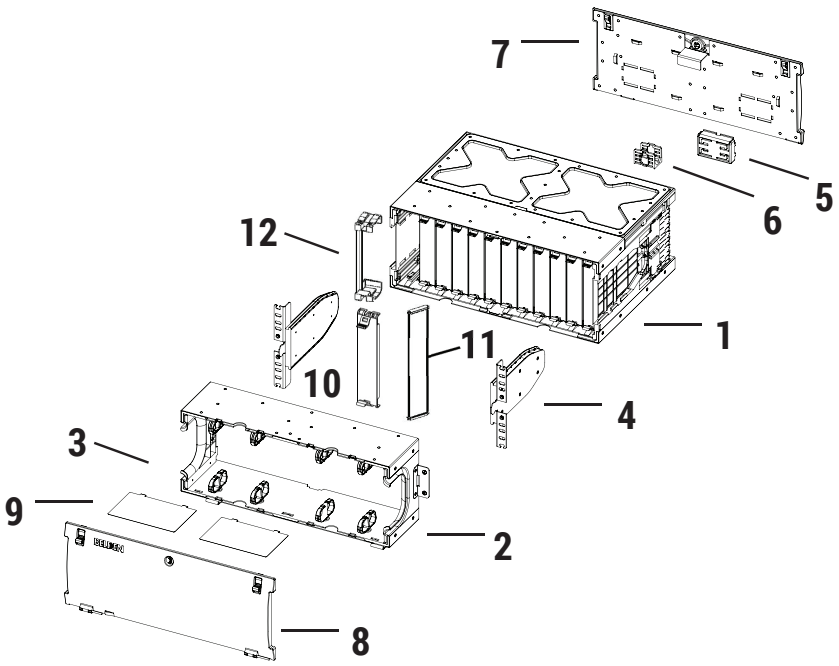
= Wearing safety glasses can prevent possible injuries (or accidents) related to handling chemicals, cables, or working with sharp pieces of glass fibers.

= Avoid contact between broken glass fiber. These glass fiber fragments are sharp and can penetrate the skin easily. The use of safety gloves is highly recommended.

= Maintain a clean work area by sweeping all the fiber scraps and disposing of them appropriately.

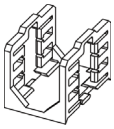
2. Carton contents





1. Rear housing (1x)
2. Front housing (1x)
3. Management clips (16x)
4. Rack mounting bracket (2x)
5. Internal strain relief (2x)
6. Intermediate strain relief (2x)
7. Rear door (1x)
8. Front door (1x)
9. Label card (2x)
10. Blank frames (12x)
11. Plastic clipping link (1x)
12. Frame brace support (12x)
13. Hardware kit (not shown)

2.1. Hardware kit contains



Intermediate strain relief (2x)

Cable tie – 4” (4x)

Management clips (16x)

Blank frames (12x)

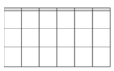
Cable tie – 7 1/2” (4x)

Door lock opening caps (2x)

90º External strain relief (2x)

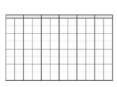
Velcro cable tie - 8”(8x)

Plastic clipping link



ID labels [8/16] (2x)

#12-24 machine screws Phillips (4x)



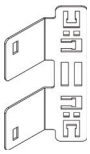
ID labels [3/6/12] (2x)

#10-32 machine screws Phillips (4x)

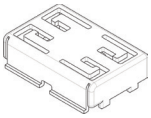
3. Available FX ECX accessories and tools required

Please take note that the following products may be required depending on your application. These components are ordered separately.
For further information regarding ECX accessories, please visit our website at ***www.belden.com***

3.1. Available FX ECX accessories

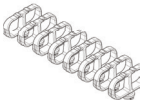


45° external strain relief
ECX-4U-EXSTRA

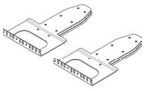


FX-ECX 4U internal strain relief
ECX-4U-INSTR

90°external strain relief
ECX-4U-EXSTR

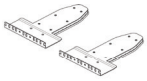


FX ECX management clips (8x)
ECX-MGTCLIPS



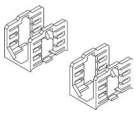
FX ECX 4U rack mounting bracket 3” (2x)
ECX-BRKTMNT-3

Mini lock-kit
ECX-LOCKKIT

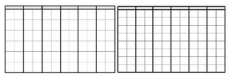


FX ECX 4U rack mounting flush bracket (2x)
ECX-BRKTMNT-0

FX ECX splice tray kit assembly
ECX-SPLICEKIT



FX ECX intermediate strain relief (2x)
ECX-INTERSTR



ID Labels / ECX ports 4U (3/6/12) and (8/16)
ECX-LBL-4U

3.2. Tools required

- Phillips screwdriver
- Flat screwdriver
- Cutting pliers

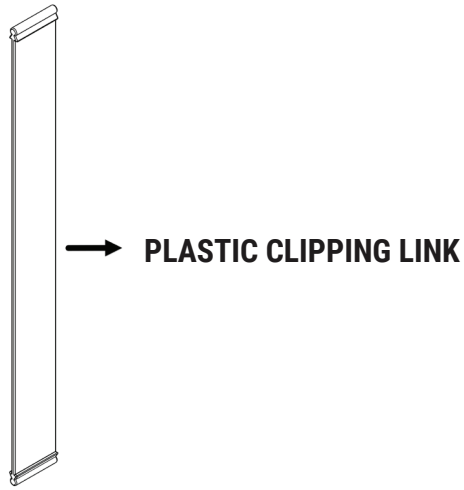
4. Installation of Plastic Clipping Link

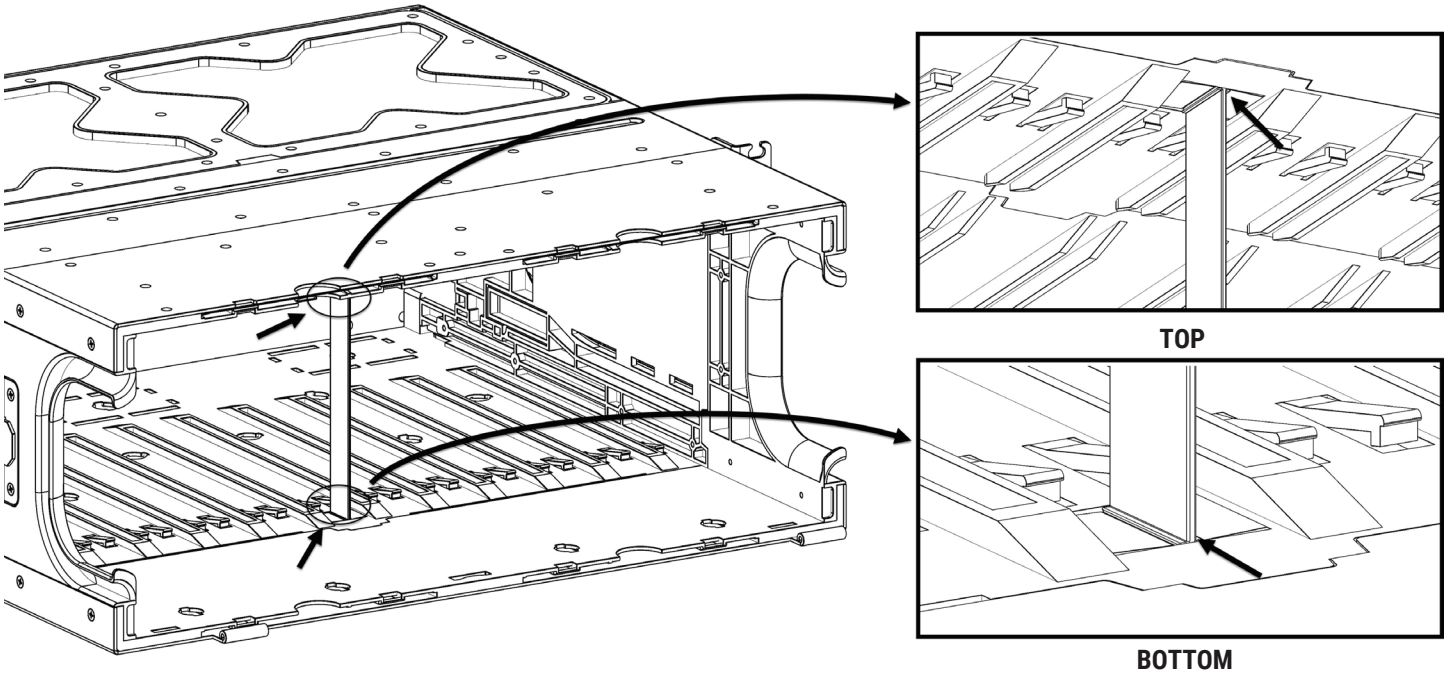
For a straightened enclosure, please use the provided plastic clipping link

1 Align the Clipping link in the finger retaining slots on Top and Bottom.

2 Start by the top, push up the clipping link until it latches on the retaining fingers.

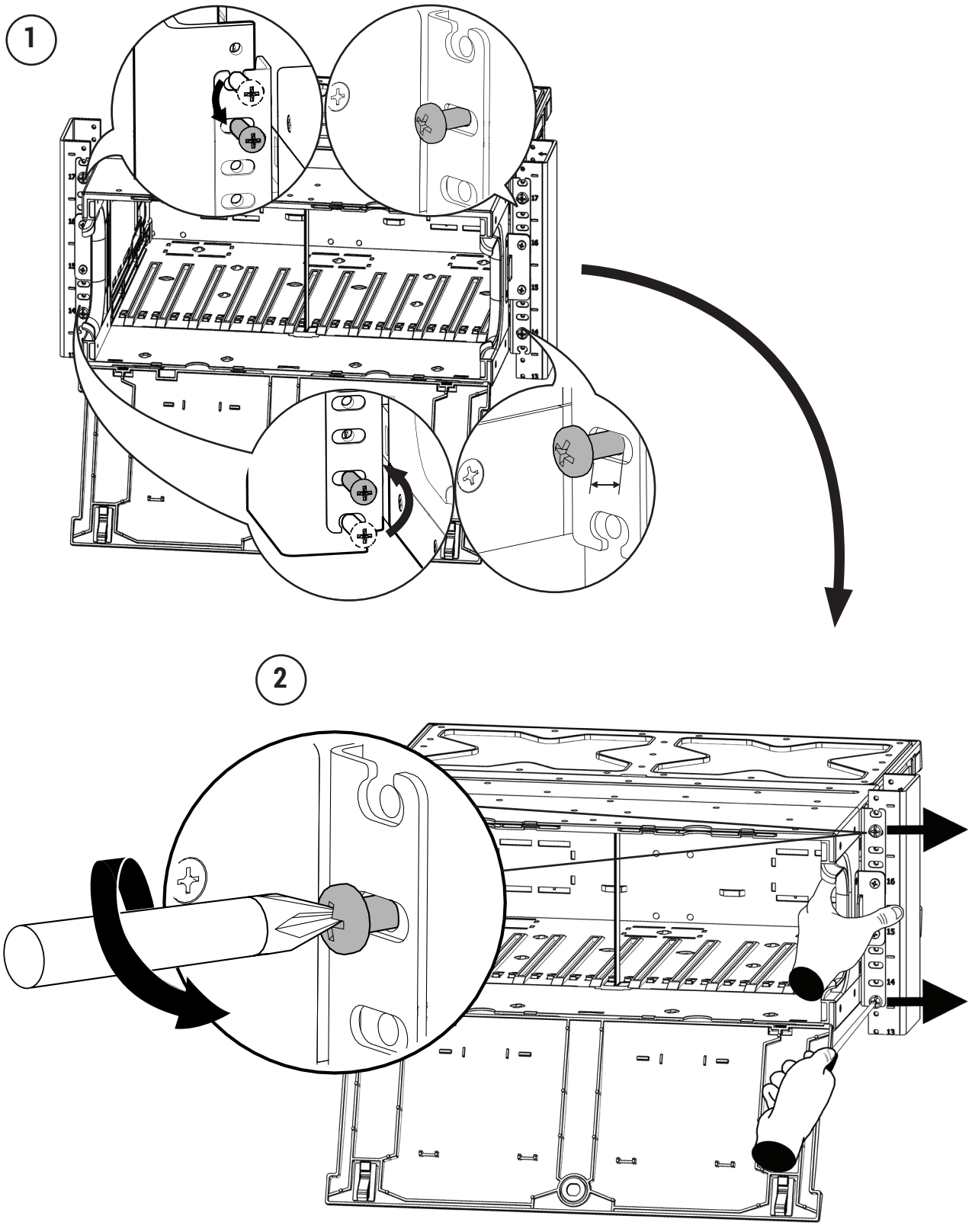
3 After the bottom, push down the clipping link until it latches on the retaining fingers.



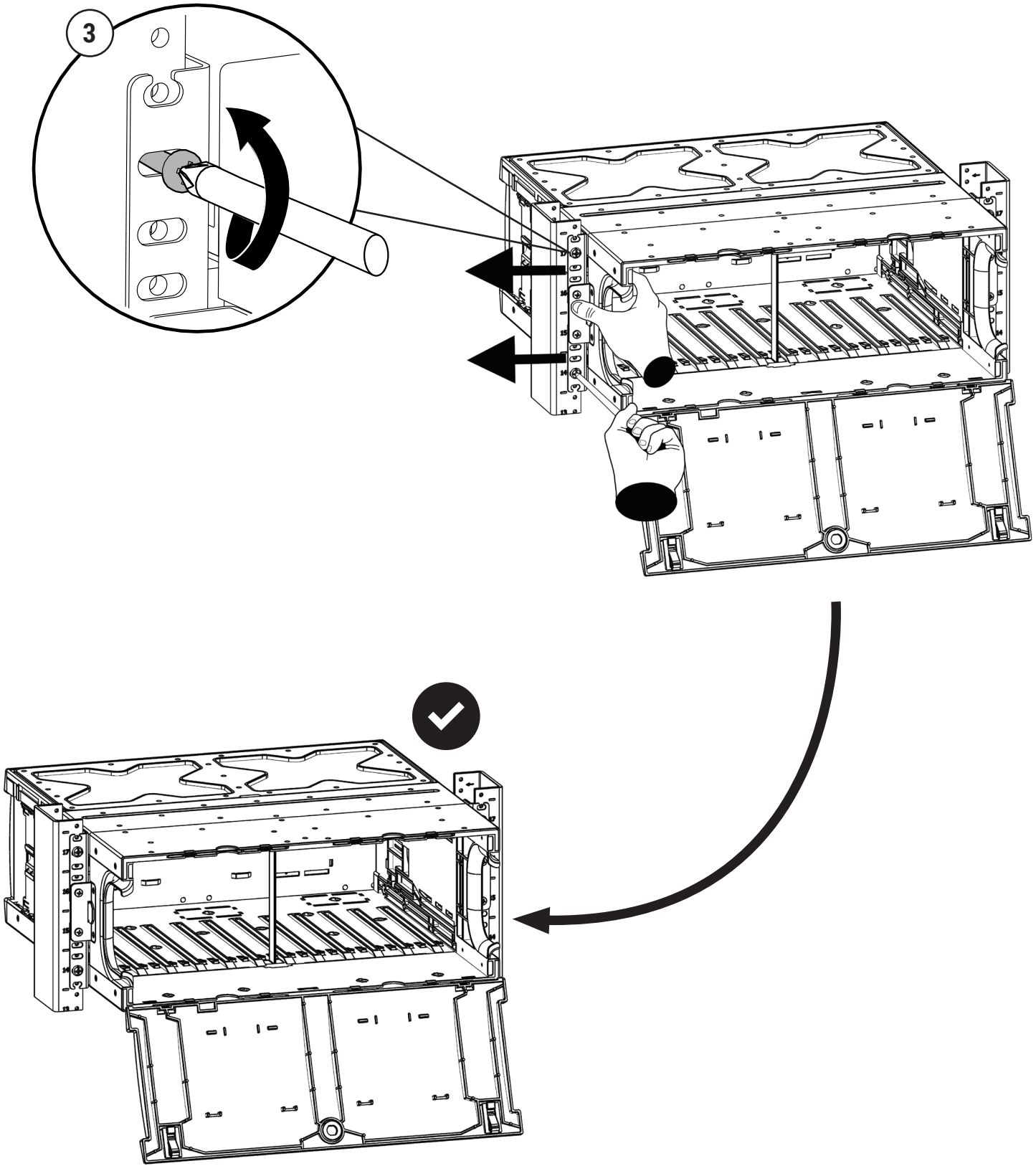


5. ECX 4U Pannel adjustement

1. Relocate the brackets top & bottom screws as shown, without tightening them completely.
2. Tighten both screws on the right side while pulling the housing towards the right mounting rail.

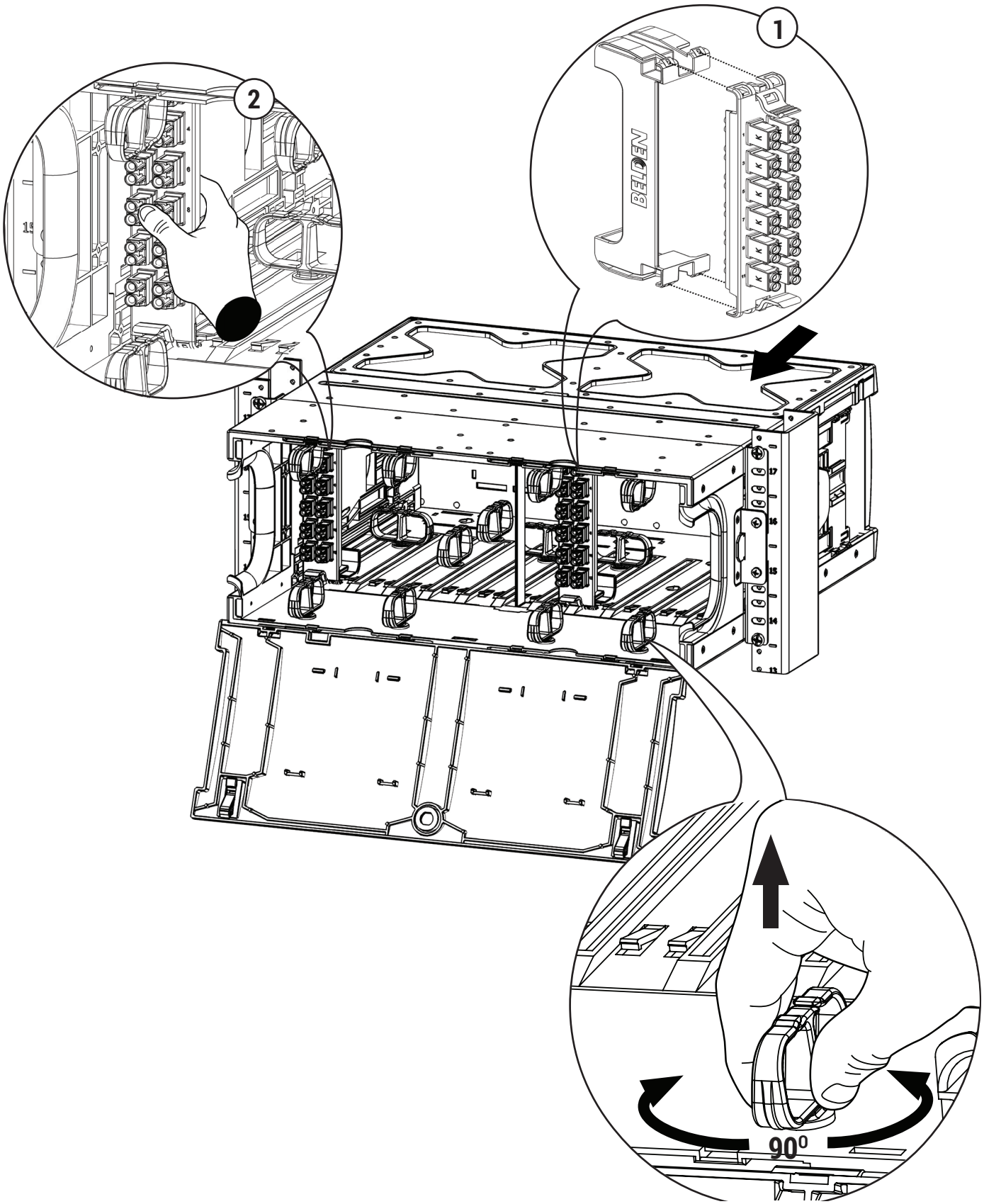


3 Repeat the same procedure shown at the previous page (***step 2***) for the left side..



6. Installation of brace support.

1. Place the frame into the frame brace support. If the management clip is in the way, remove it by turning it in 90 degrees.
2. Install the desired frame as shown. (Frame + Frame brace support)



7. Mounting the ECX housing

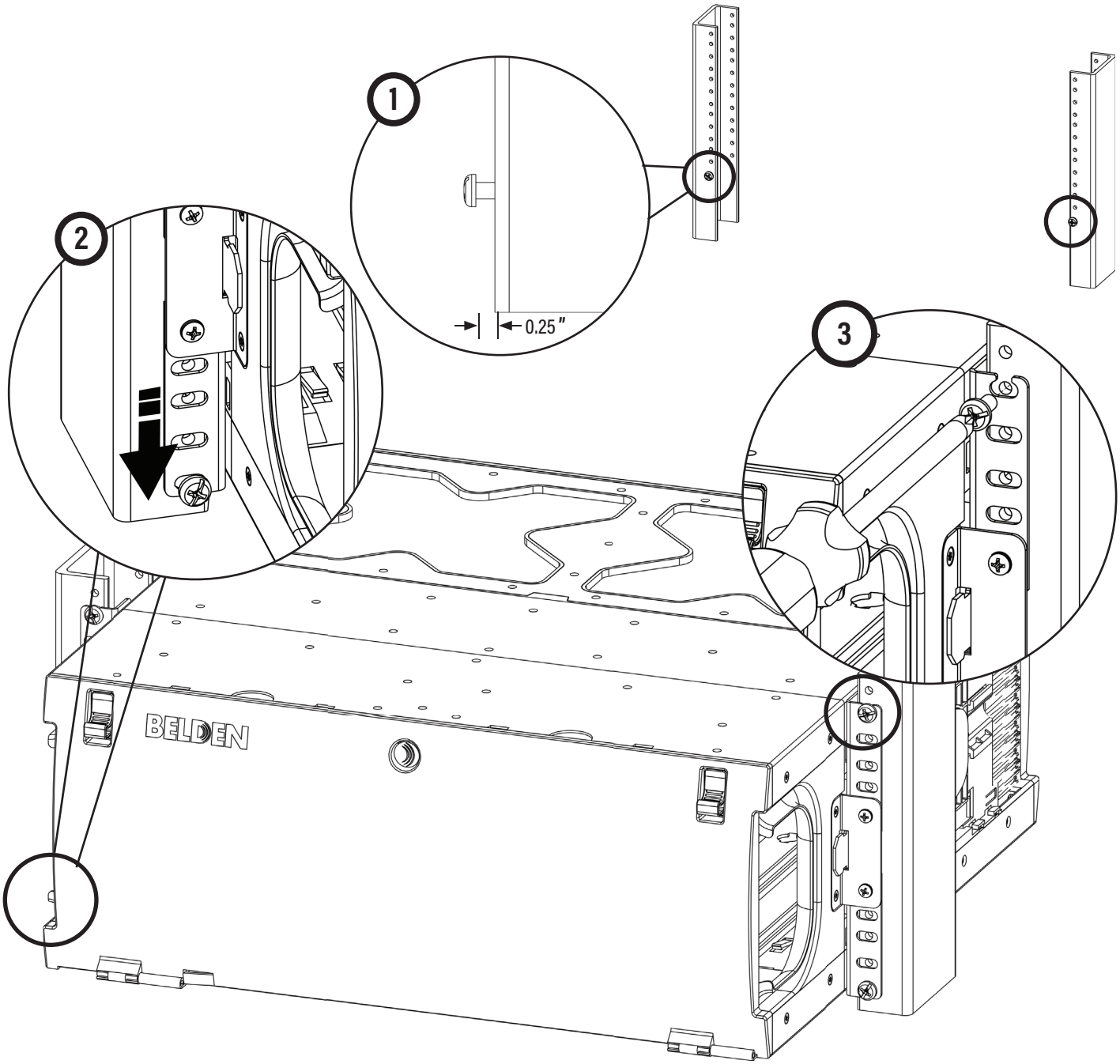
This section shows how to install the ECX 4U to a 19" rack.

ⓘ = *These installation steps are also applicable to an ECX 4U assembled with **flush (ECX-BRKTMNT-0)** or **3" mounting brackets(ECX-BRKTMNT-3)**. For further information regarding the installation of those accessories, please refer to **section 11.1. (installing ECX 4U flush mounting brackets)** at **page 29.***

1 Insert the bottom screws (2) into the rack as shown (use #12-24 or #10-32 screws provided in the hardware kit).
Let ¼" of the screw exposed.

2 Install the assembled housing into the rack and position the bottom slots of the mounting bracket onto the installed screws.
These screws will carry the weight of the housing during the installation.

3 Install and tighten the top screws as shown.
Tighten the bottom screws firmly.

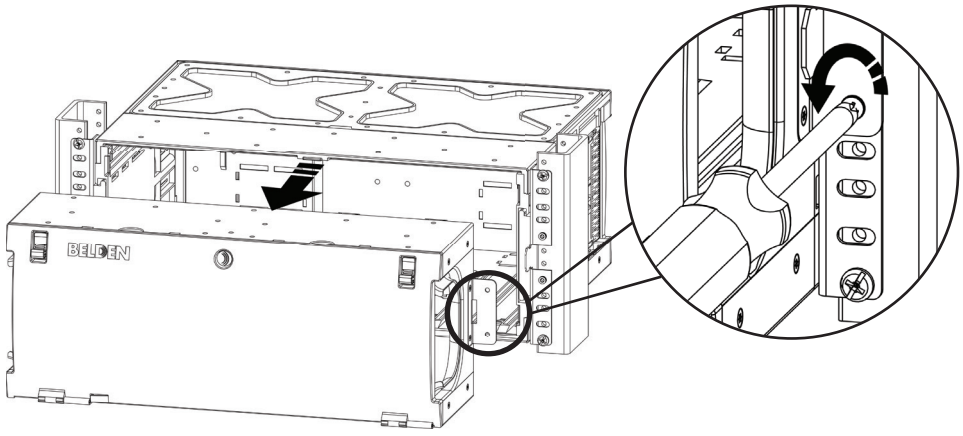


8. Housing features and manipulation

This section explains accessibility features of the ECX housing.

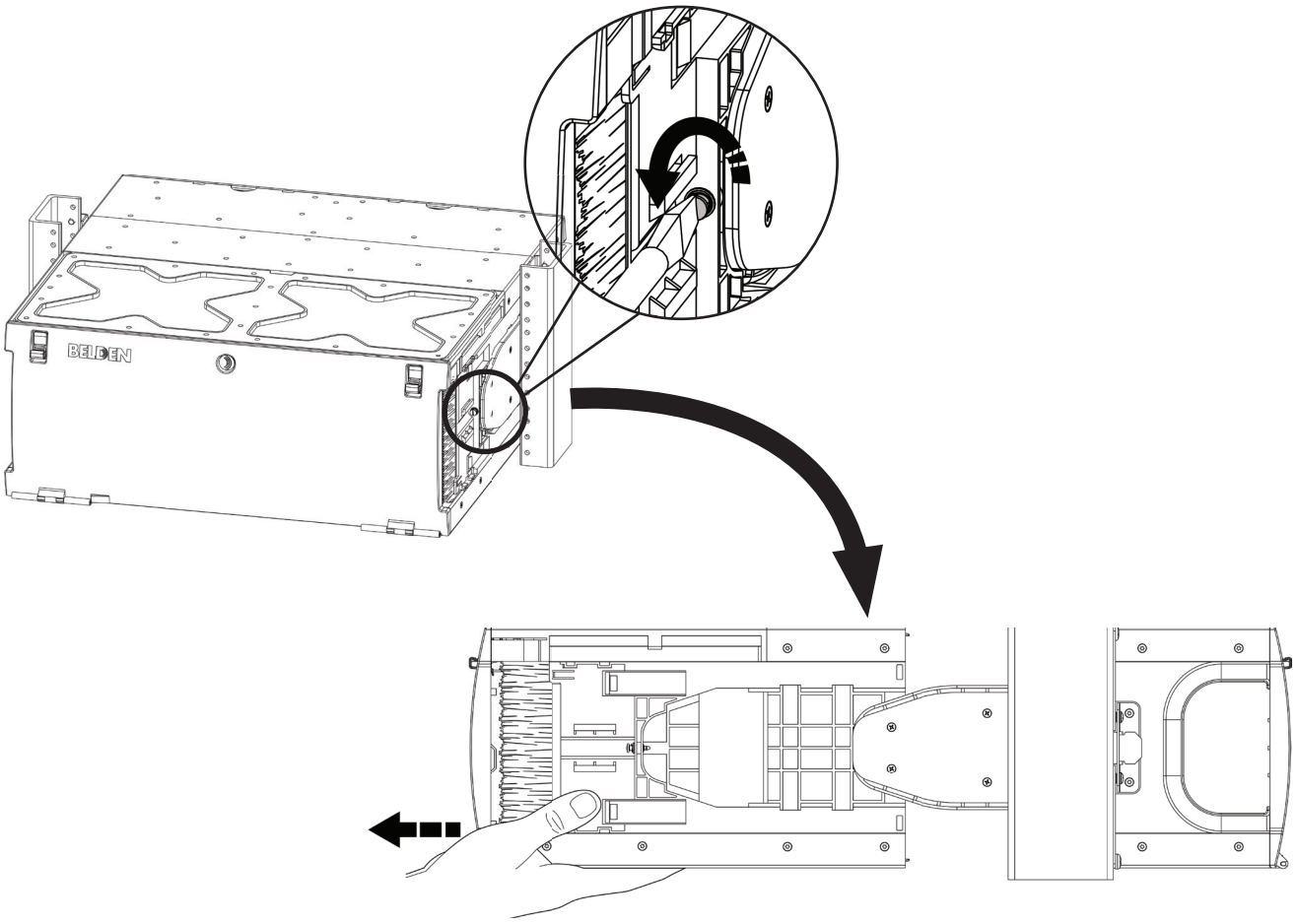
8.1. Removal of the front housing

1 Remove the screws located on the standard rack mounting brackets.



8.2. Installation and removal of the rear housing

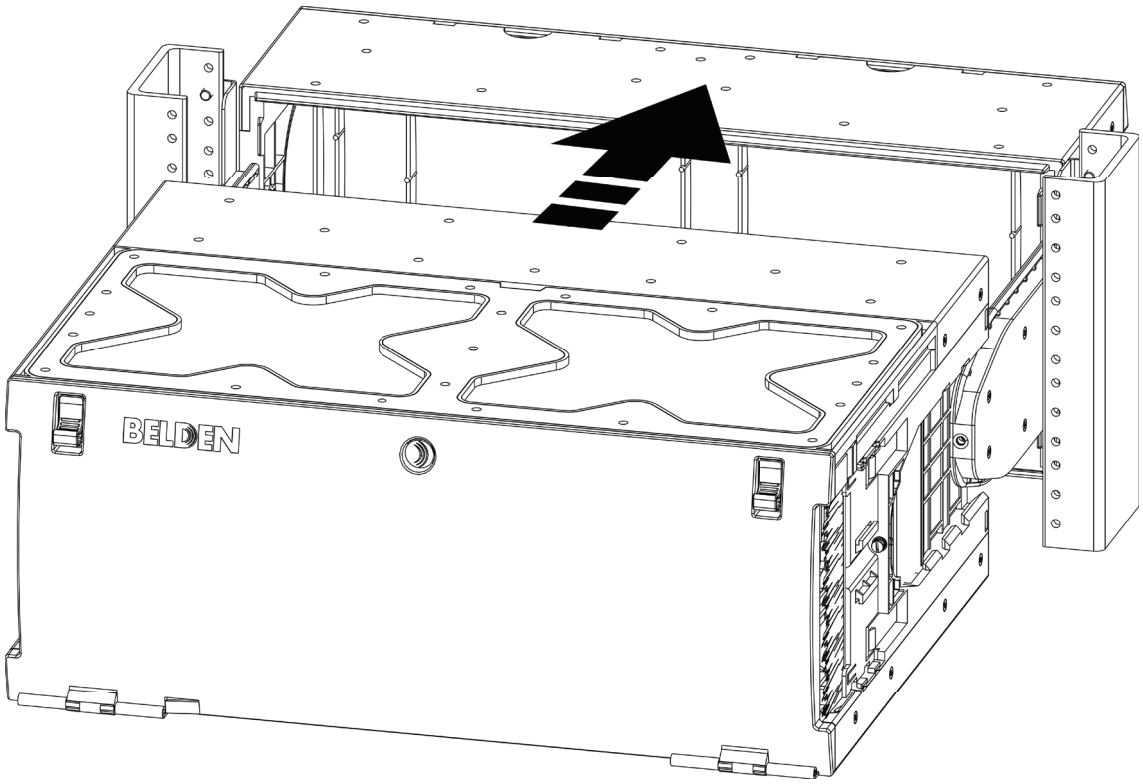
1 Unscrew the quarter-turn fastener on both sides and remove the rear housing.



ⓘ = *This step is useful when the rear patch panel is loaded with cables and management components.*

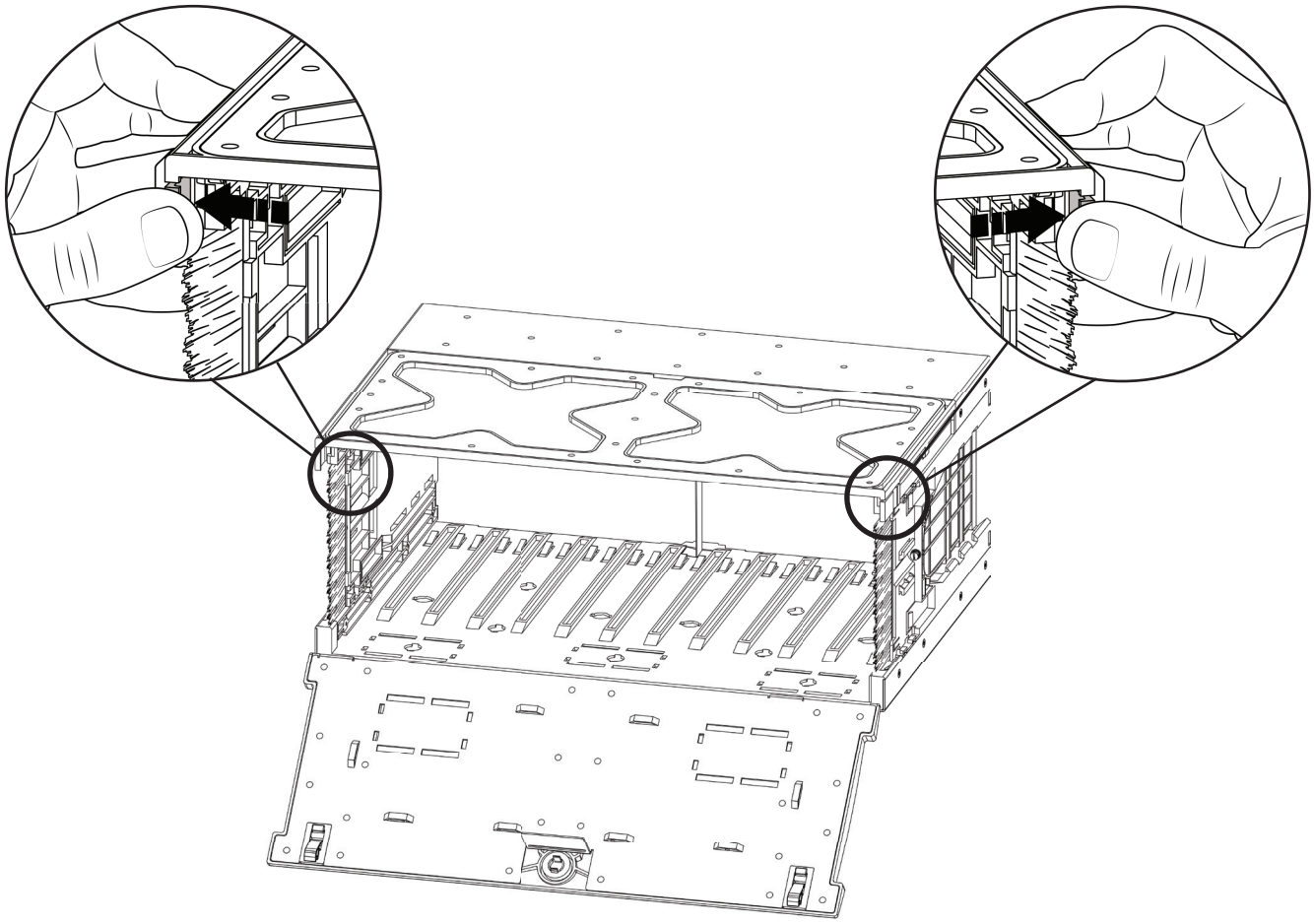
2 For the housing installation, slide the patch panel into the mounting brackets and tighten both quarter-turn fasteners.

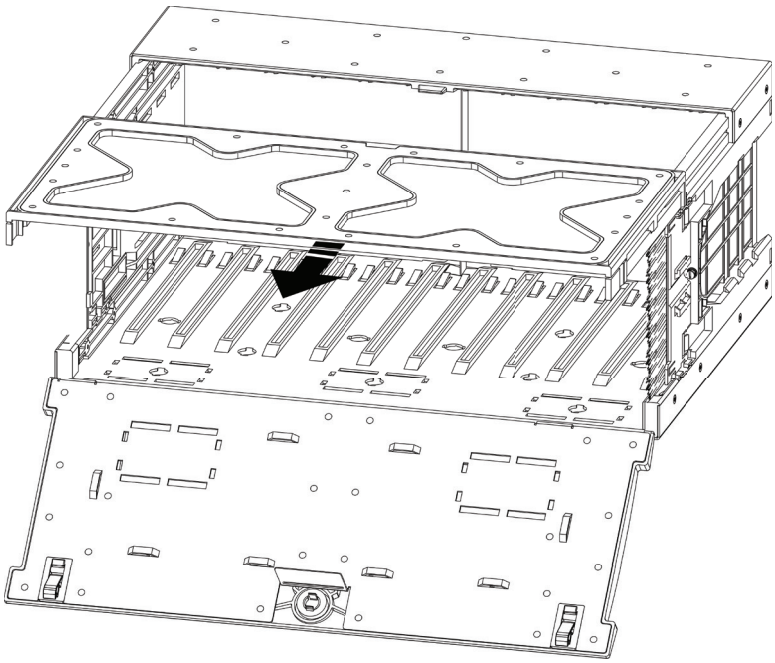
ⓘ = *Make sure the rear housing is properly pushed in.*



8.3. Removal of the top rear cover

1 Release the top cover by pressing both tabs outwards simultaneously as shown.
Remove the cover by pulling out slightly.

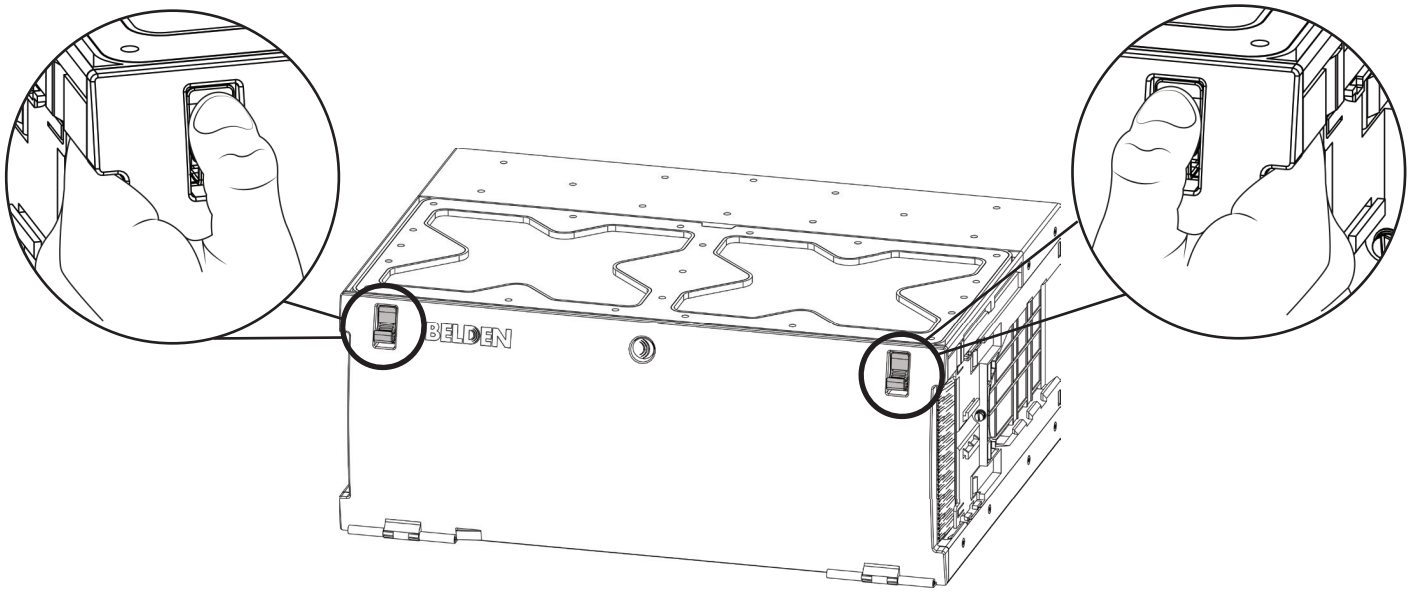




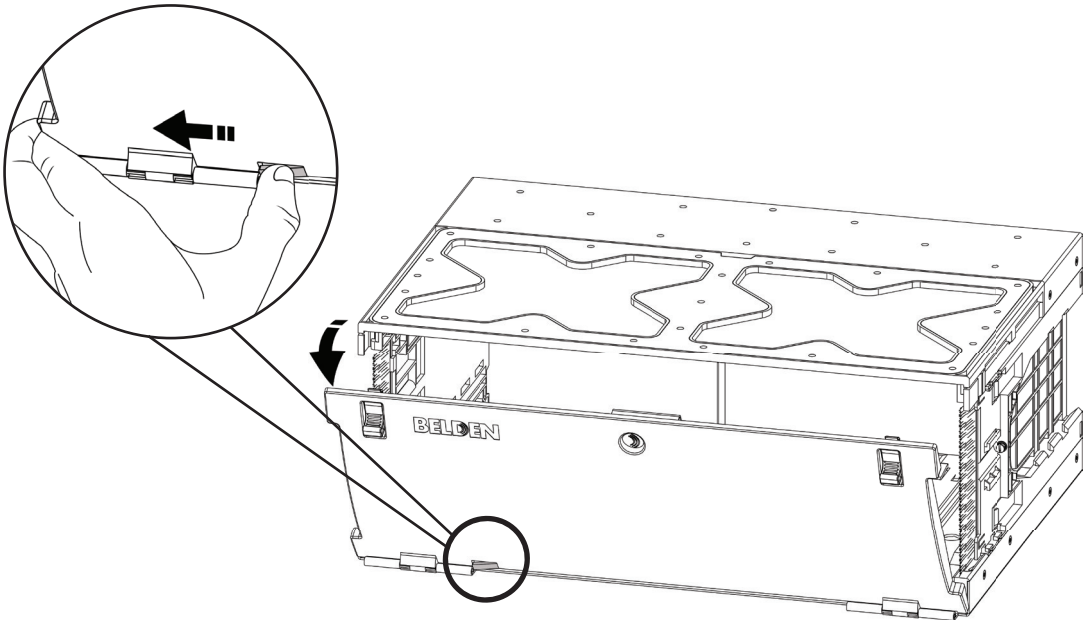
8.4. Opening and removing the ECX (rear or front) doors (optional)

ⓘ = *The front door removal is identical.*

1 Press both latches simultaneously to open the door.



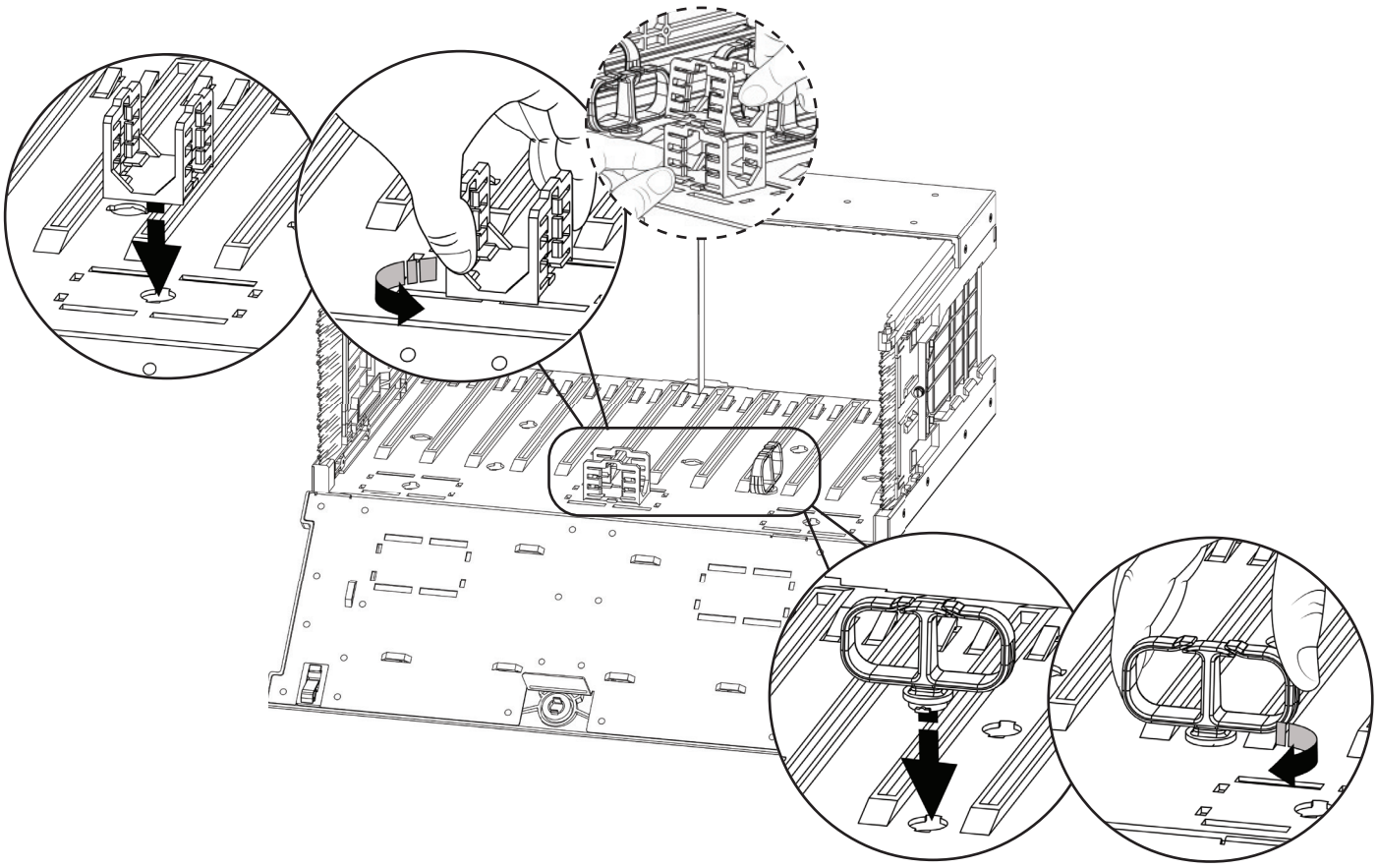
2 To remove the door, press the bottom tab and slide the door to the left as shown.



8.5. Installation and removal of cable routing components

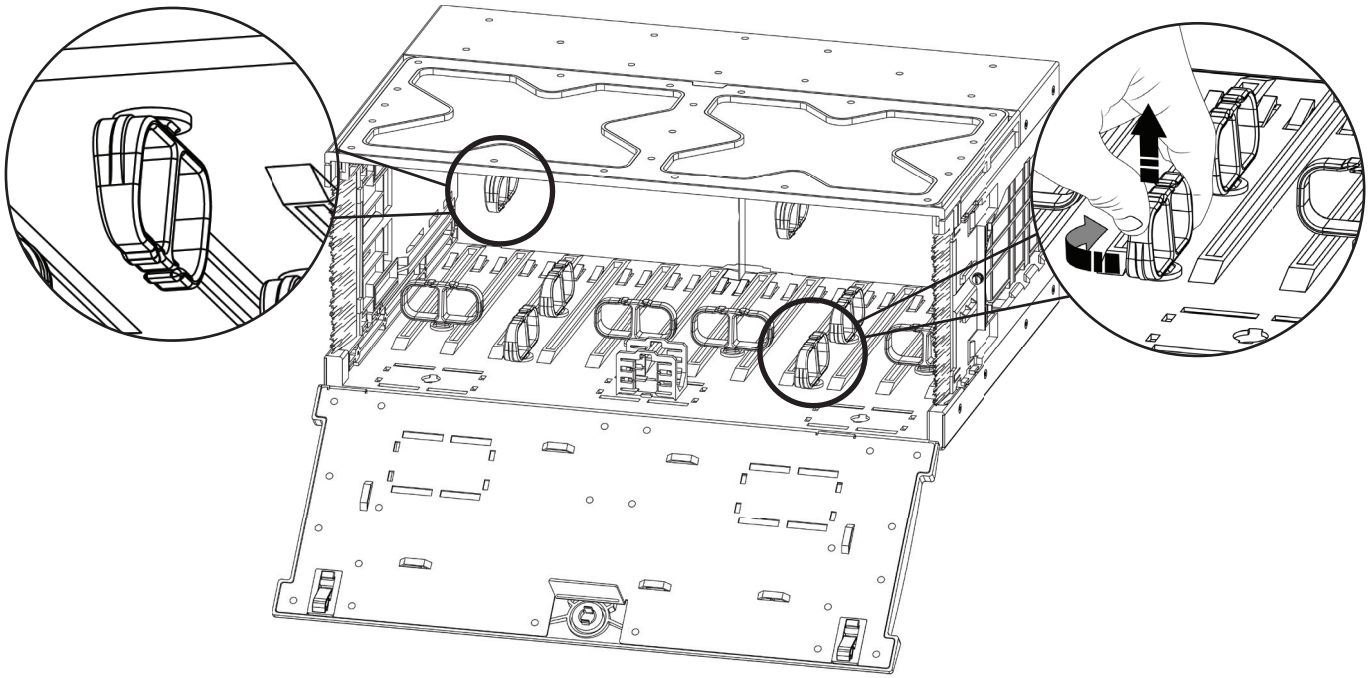
1 Align the intermediate strain relief and management clips with their respective holes.
Install the parts by pushing and turning them 90 degrees.

ⓘ = *The intermediate strain relief can also be stacked as shown .*



2 (If needed) repeat the previous step to remove the parts.

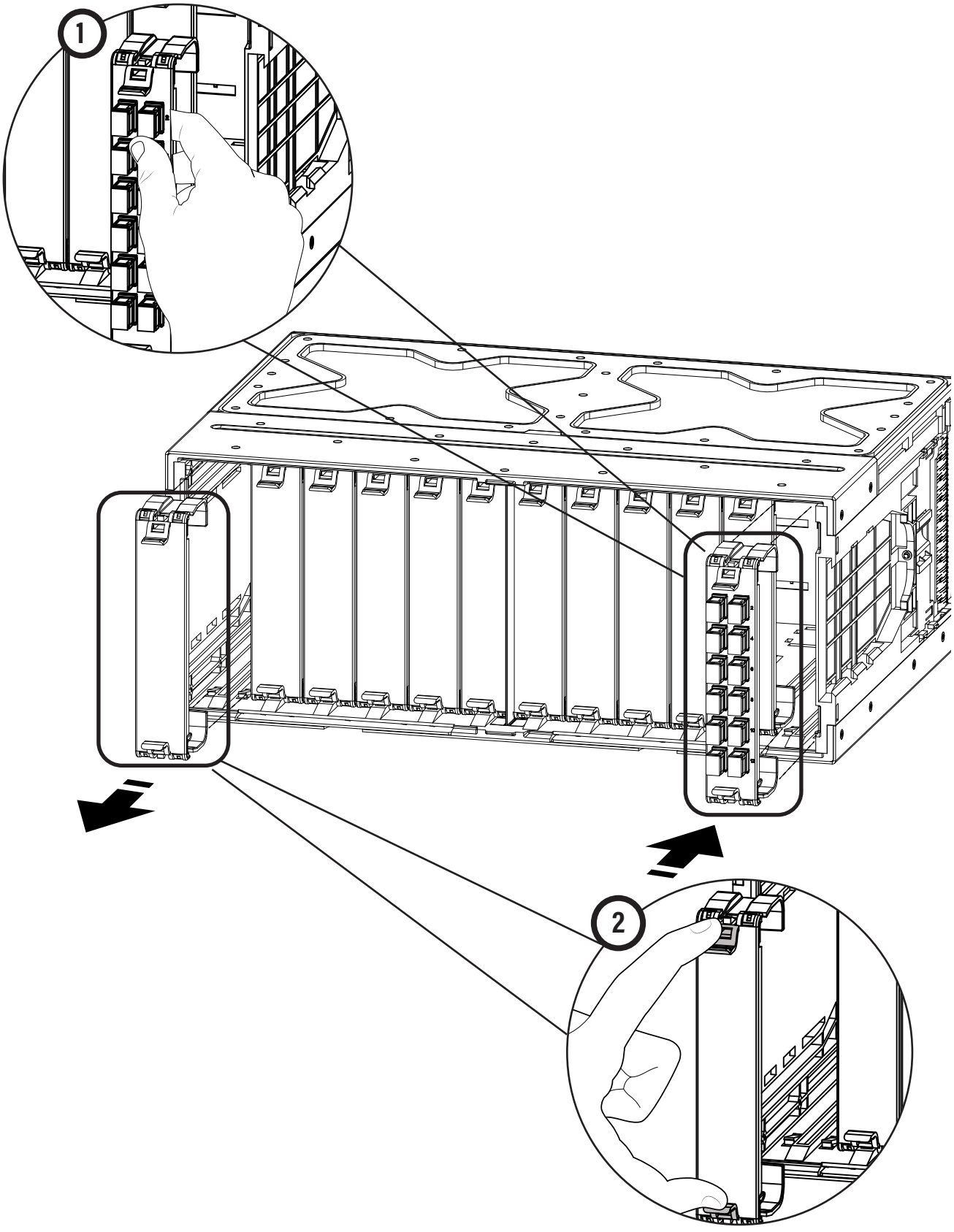
ⓘ = *Management clips can also be installed to the removable top cover as shown.*



8.6. Installation of FX ECX frames brace support.

1 Install the desired frame as shown.

2 Remove the frame by pressing both tabs simultaneously (if needed).

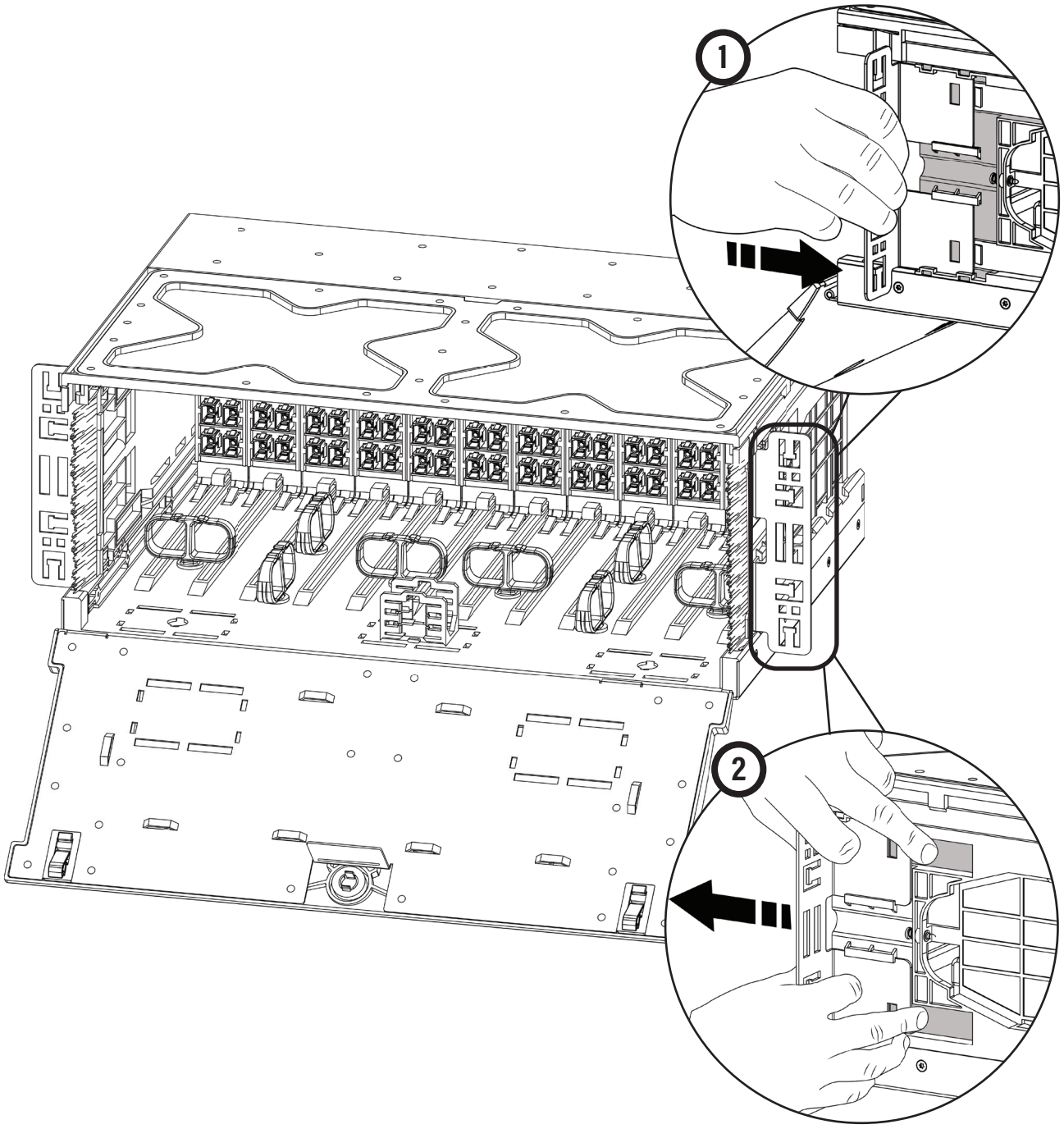


8.7. Installation and removal of the external strain relief

= The external strain relief can be installed on the right or left sides.
The 45° external strain relief installation steps are the same as below.

1 Slide the external strain relief into the appropriate slot.

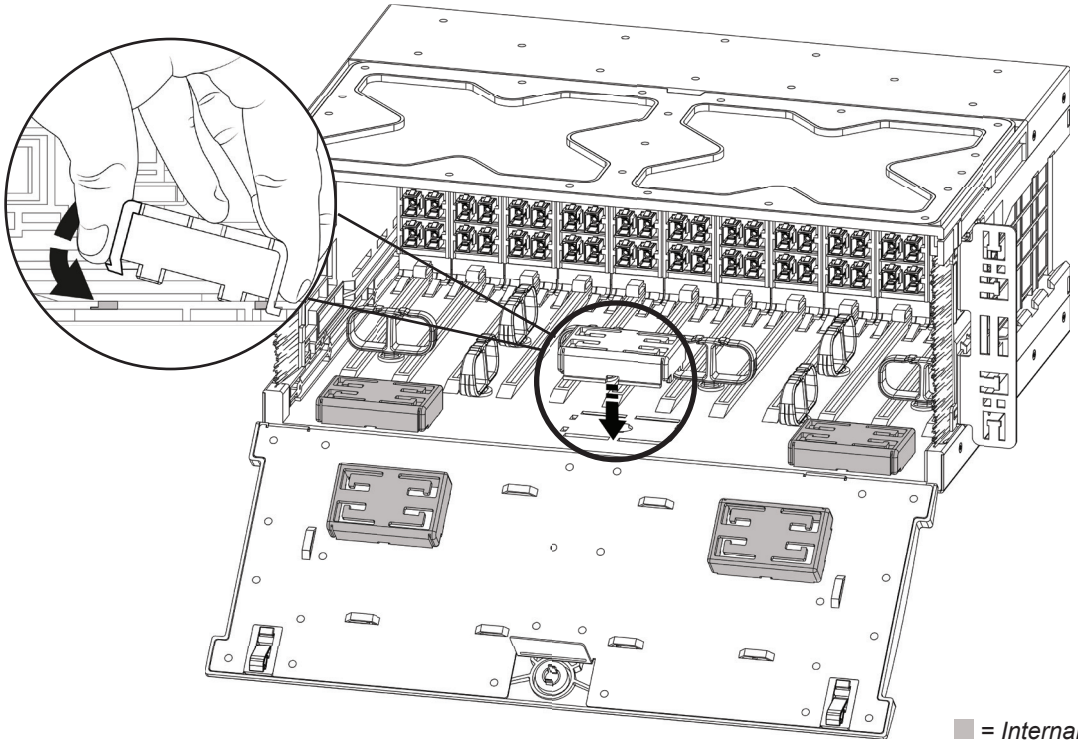
2 To remove the external strain relief, press on the 2 flanges simultaneously.



8.8. Installation and removal of the internal strain relief

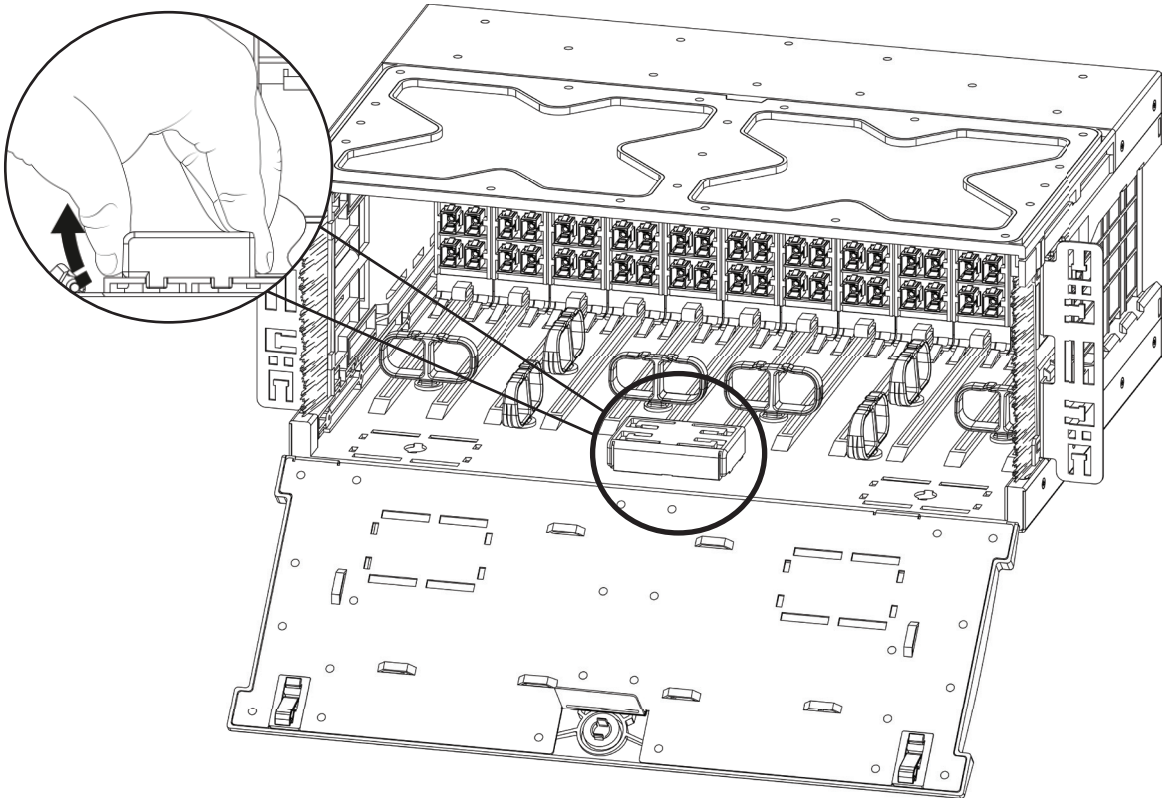
This section shows how to install and remove the internal strain relief.

1 Choose the right location for your application and secure the internal strain relief by applying pressure on the side wall as shown.



= *Internal strain relief installation areas.*

2 Remove the internal strain relief by reversing the previous step (if needed).



9. Installing distribution cable for field termination

This section shows the recommended procedure for secure and route fiber cables through the ECX adapter frames family.

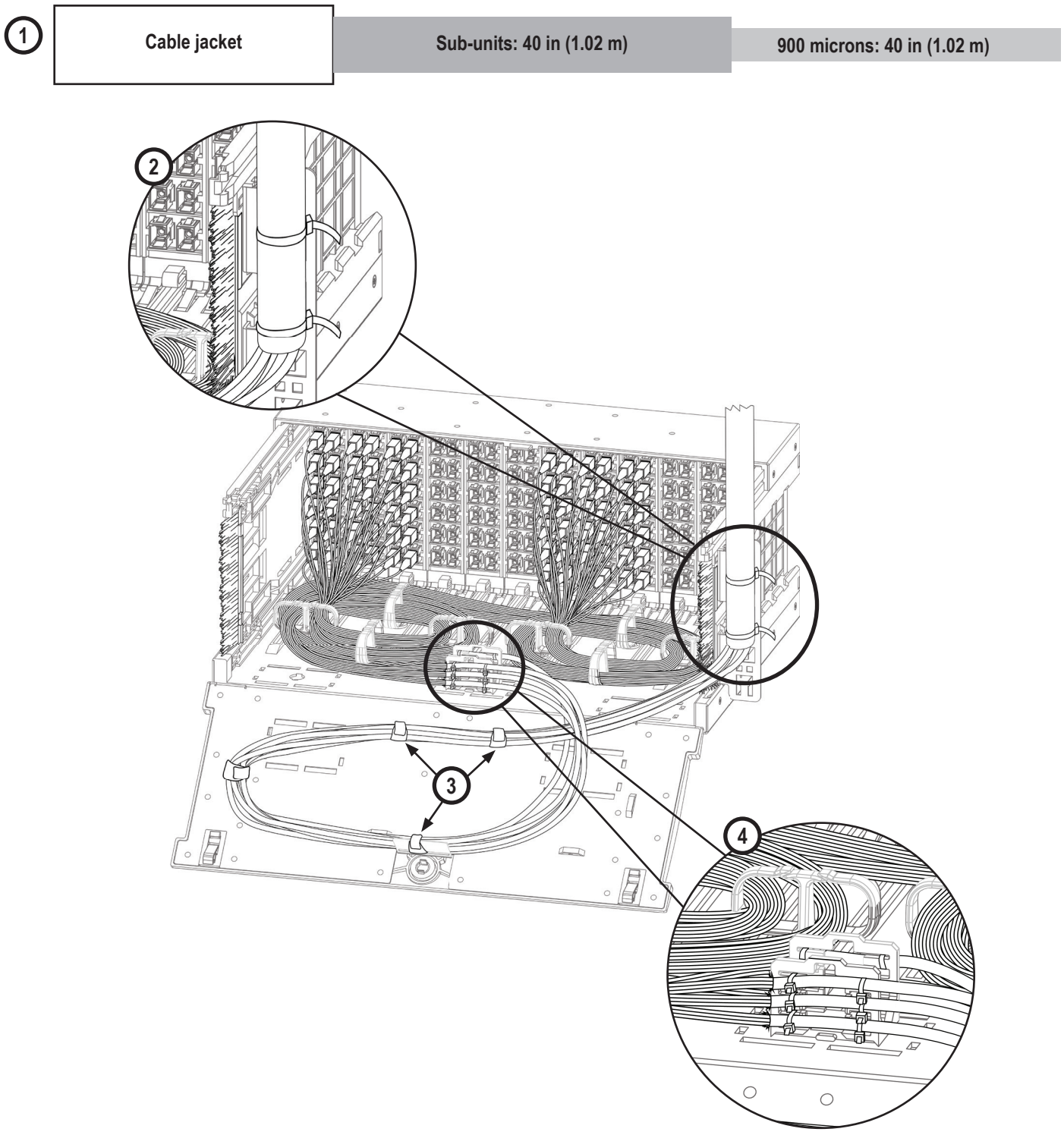
1 Prepare the cable in the following manner: leave 40 in (1.02 m) of subunits and another 40 in (1.02 m) of 900µm fiber.

2 Secure the distribution cable to the external strain relief with the provided cable tie (7½ in).

3 Loop and secure the subunits to the door using the attachment points and the provided Velcro cable ties.

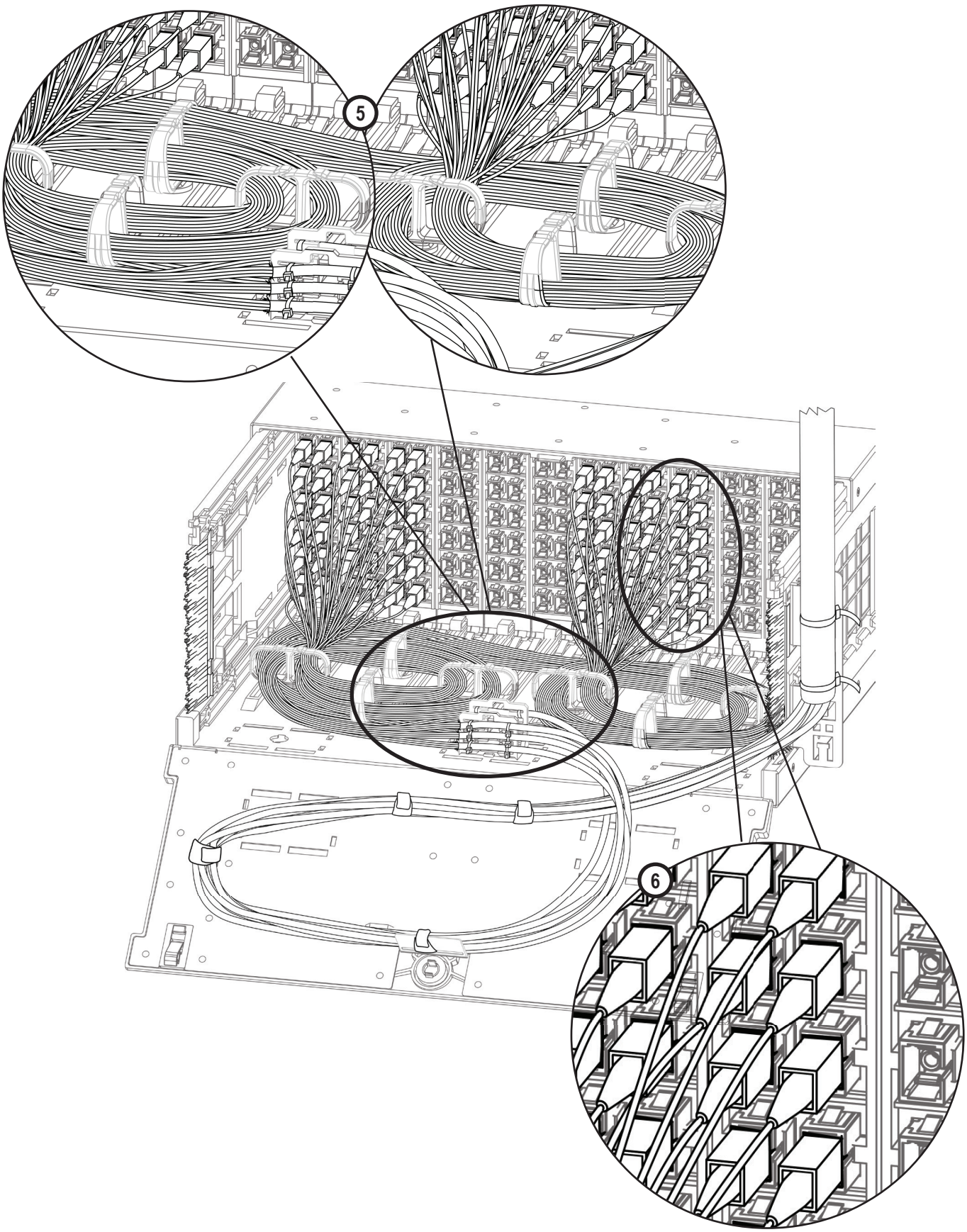
4 Secure the end of the subunits to the intermediate strain relief by using the provided cable tie (4 in).

⚠ ***= Do not over-tighten the cable tie.***



5 Route the 900µm fibers in the housing by utilizing the installed management clips.

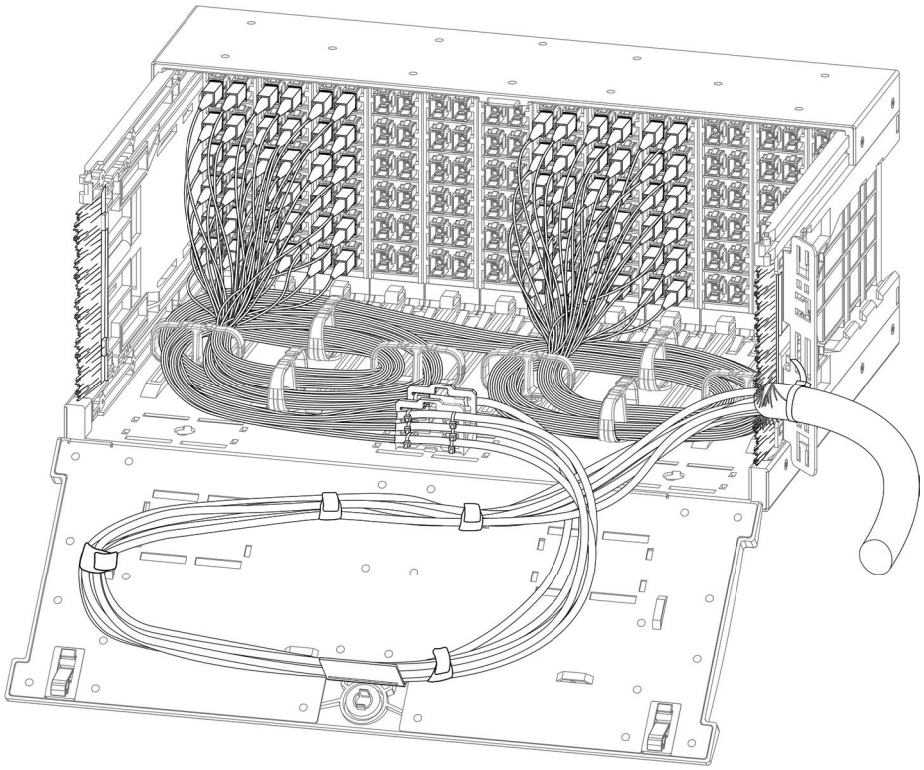
6 Install connectors in desired frame.



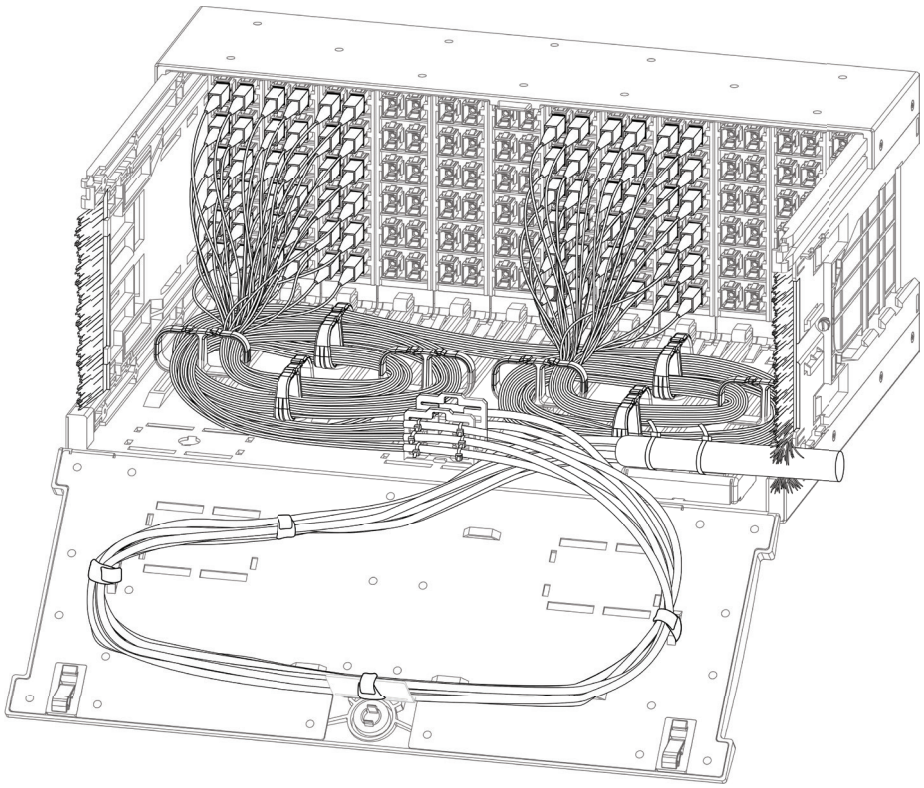
9.1. Optional recommended procedures

The following procedures that are presented below have the same installation steps mentioned as ***section 6.***

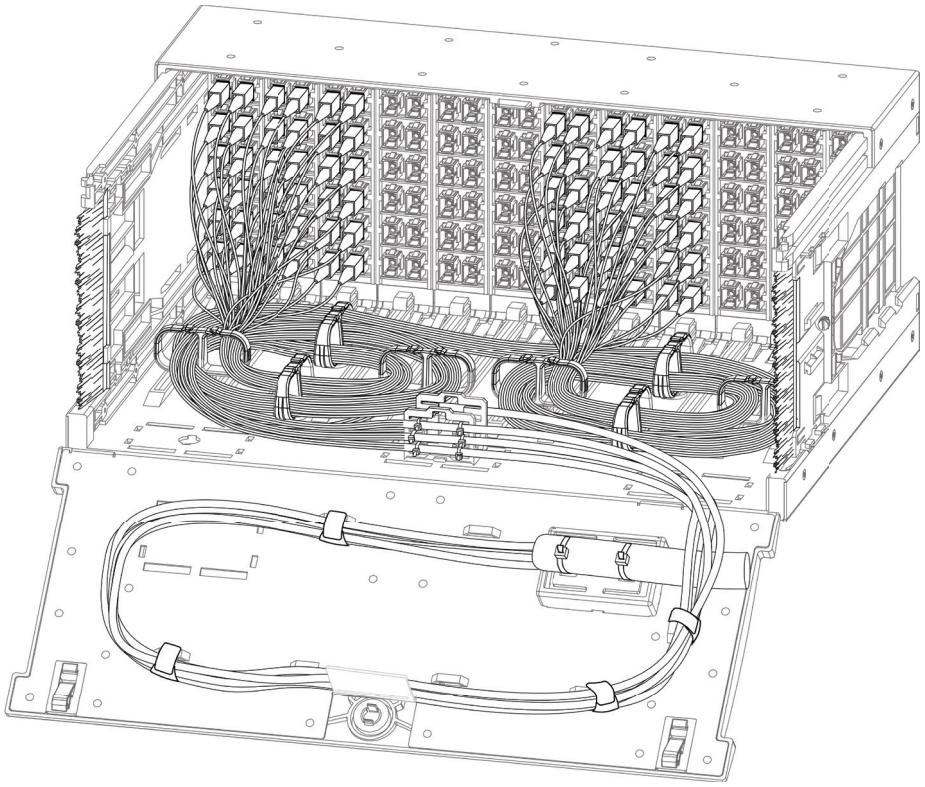
A. Distribution cable installed to the 45° external strain relief



B. Distribution cable installed inside the housing



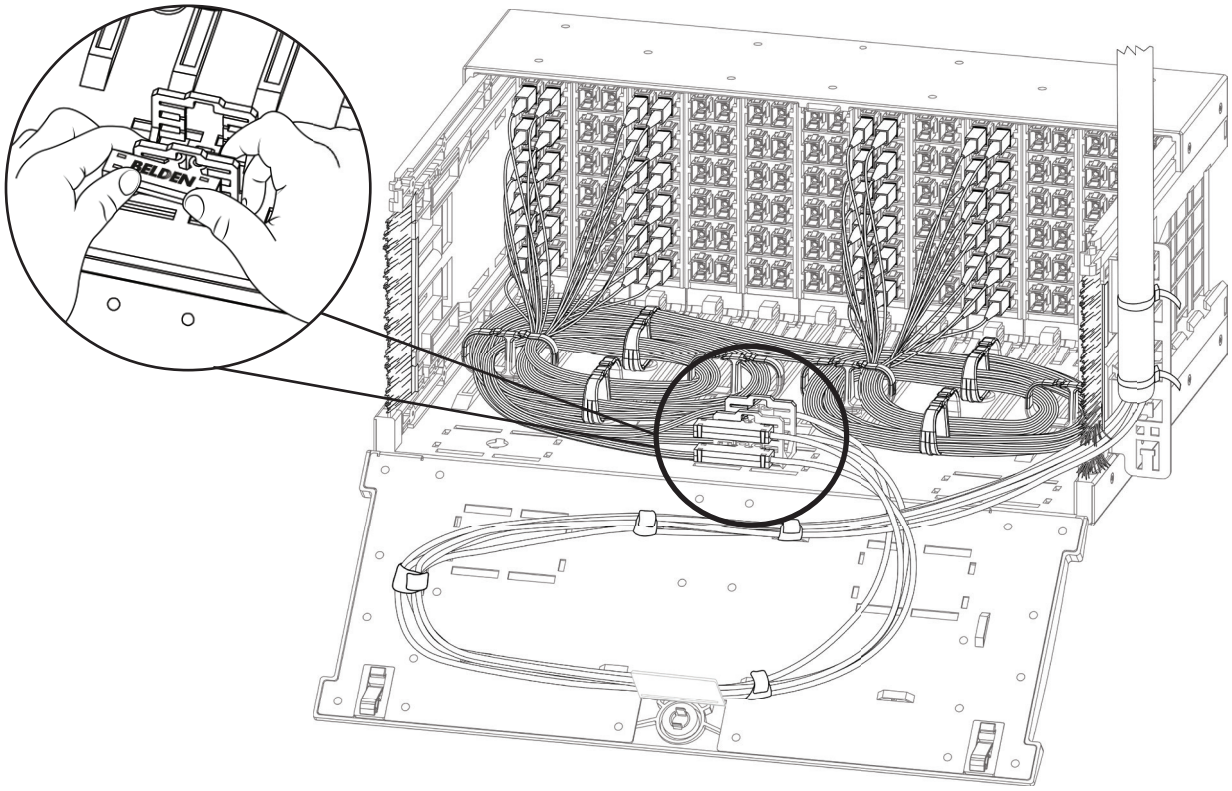
C. Distribution cable installed on the rear door



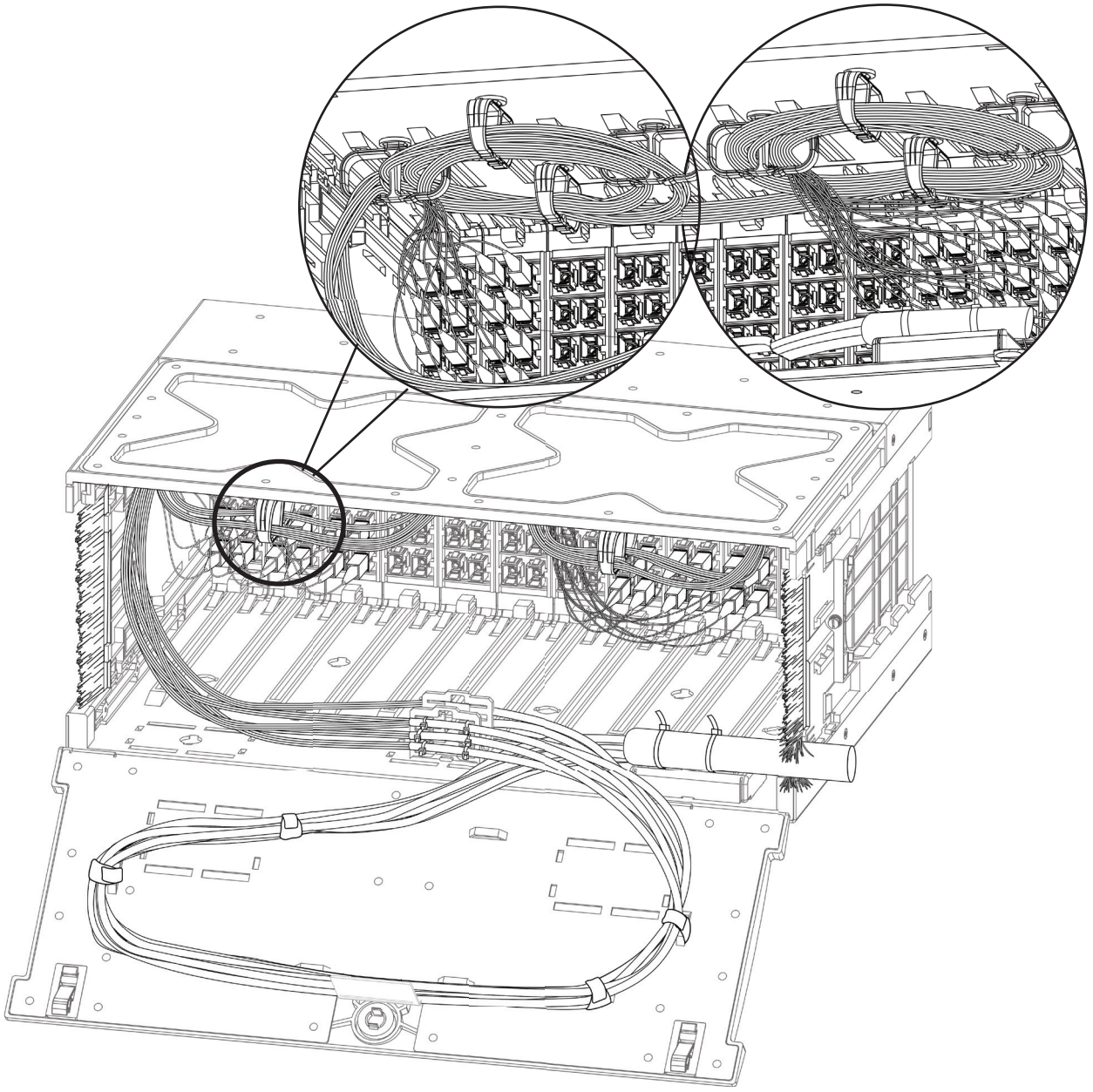
D. Breakout kit cable routing

ⓘ= *This installation guide does not include how to install the optical fiber cables into the break-out kit components. For further information, please refer to the breakout kit installation guide or visit our website at* ***www.belden.com.***

1 Secure the breakout kit by leaning it against the intermediate strain relief and pushing inwards.
Once the breakout kit is installed, route the fiber cables by following the same steps as mentioned on ***page 15 (section 6)***.



E. Optical fiber cables routed on the top cover

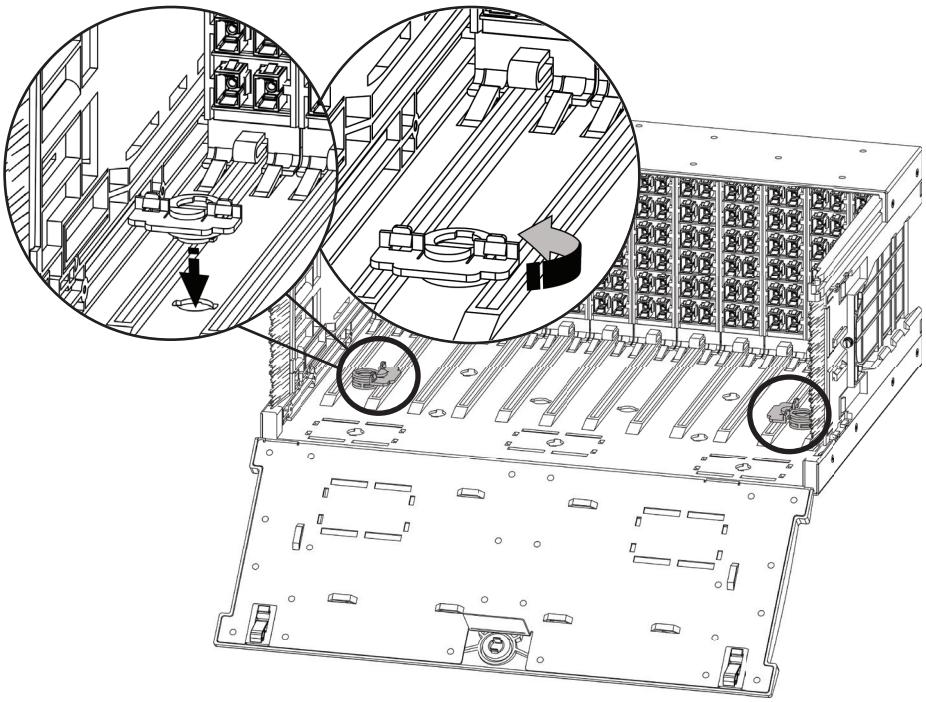


10.Installation and manipulation of the splice tray kit

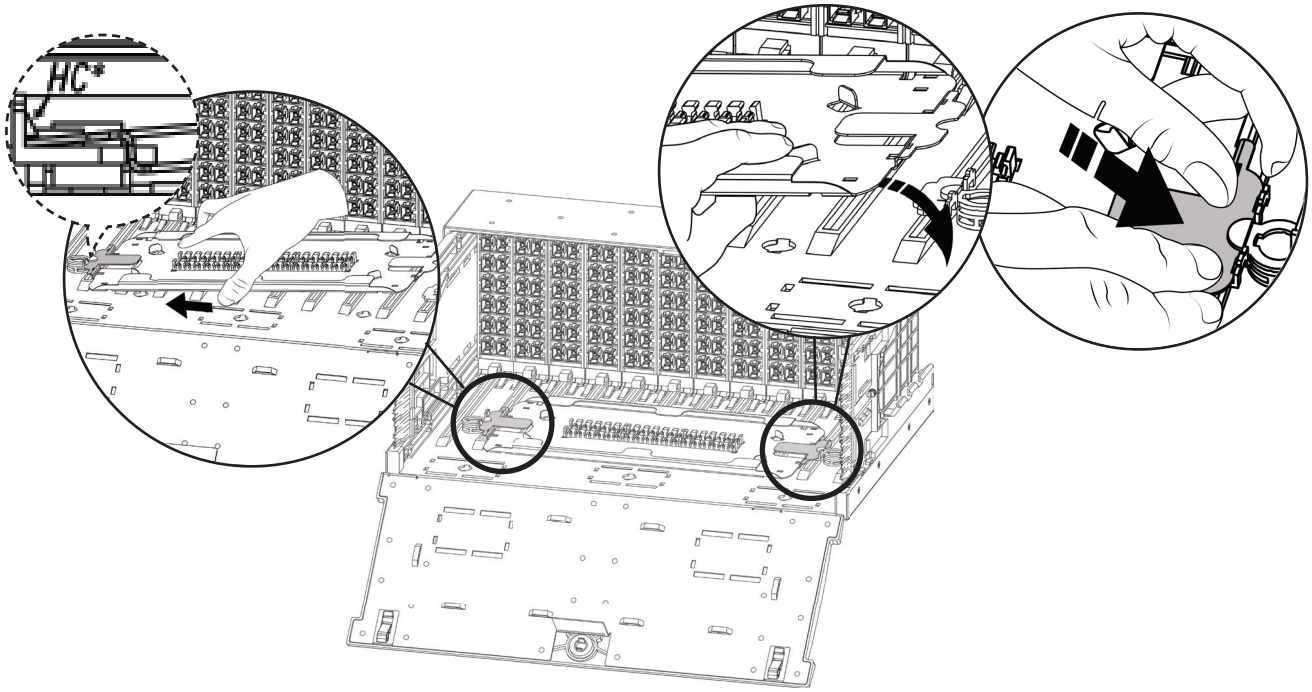
This section shows how to install a splice tray on the ECX 4U and how to secure a distribution cable to the tray.

10.1. Installing the splice tray kit

1 Align the holders with their respective holes and turn them 90°.

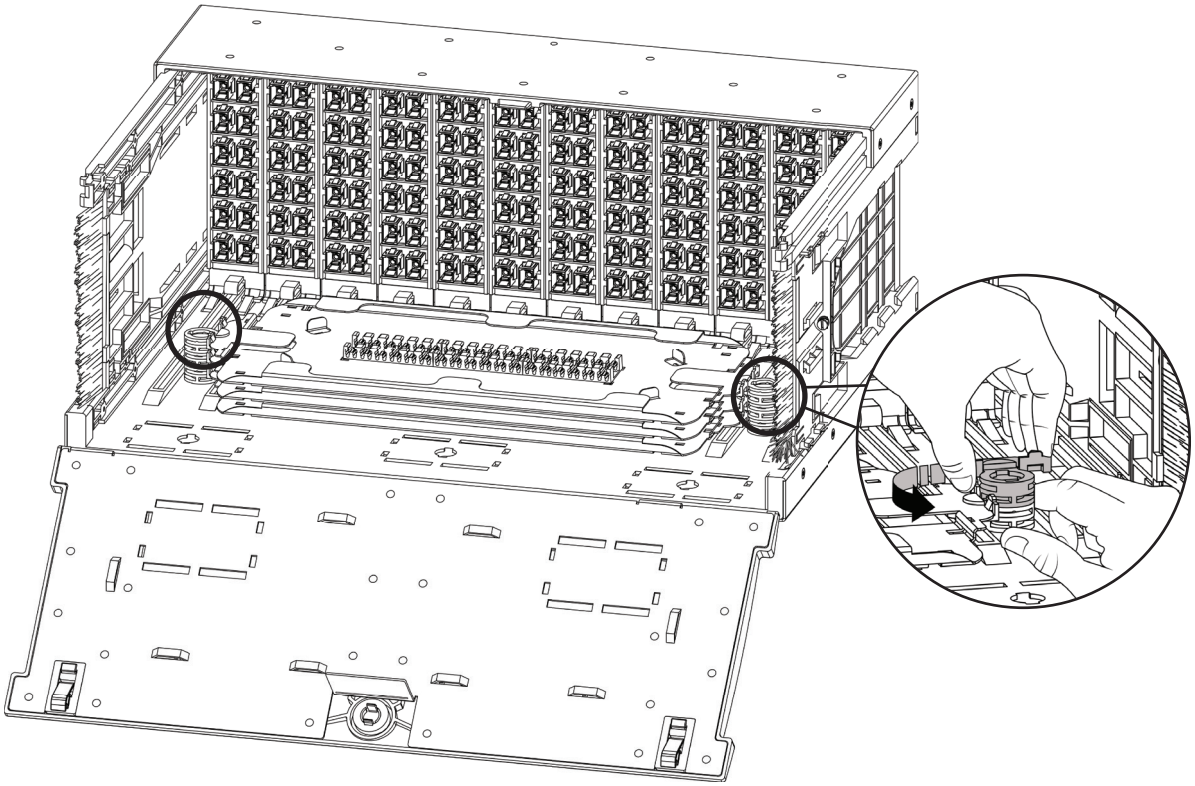


2 For the splice tray installation, tilt and insert the end of the tray to the holder clips.
Move the splice tray downwards and secure it by pushing the top surface to the holder clips as shown.

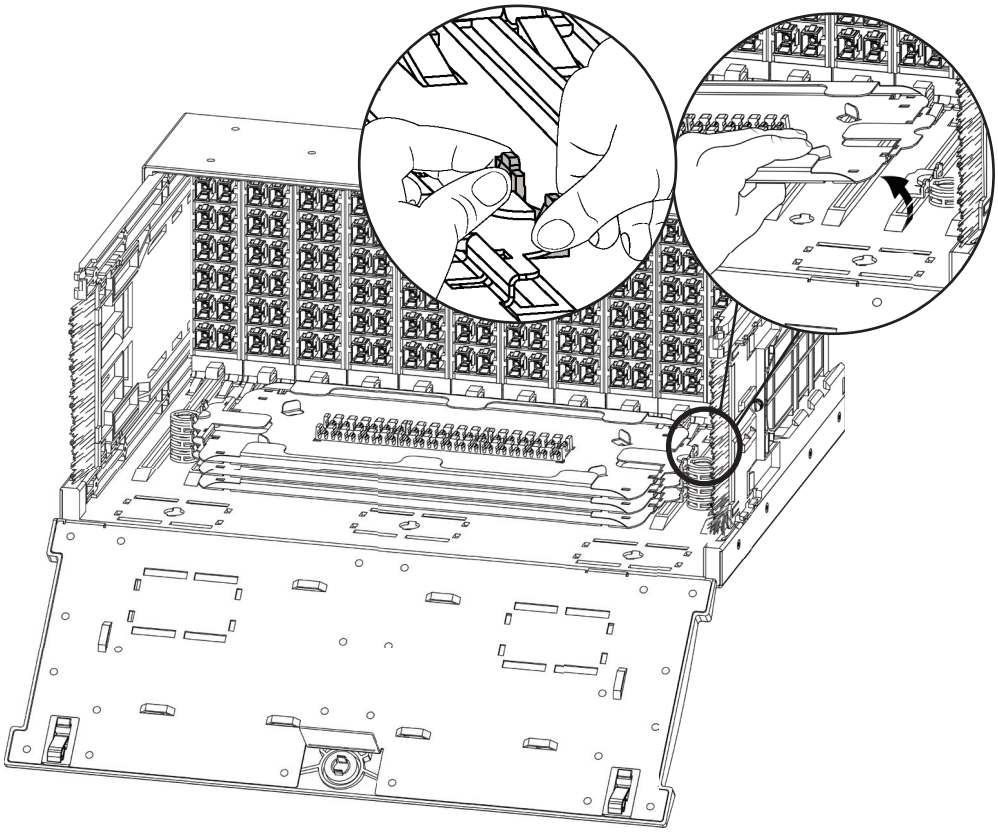


HC= Holder clips*

3 To install multiple splice trays, repeat the previous steps (if needed).
ⓘ = *When adding more holders, the first holder must be supported as the image below shows.*



4 To release the splice tray, press the holder side clips as shown.



10.2. Installing a distribution cable on a splice tray kit

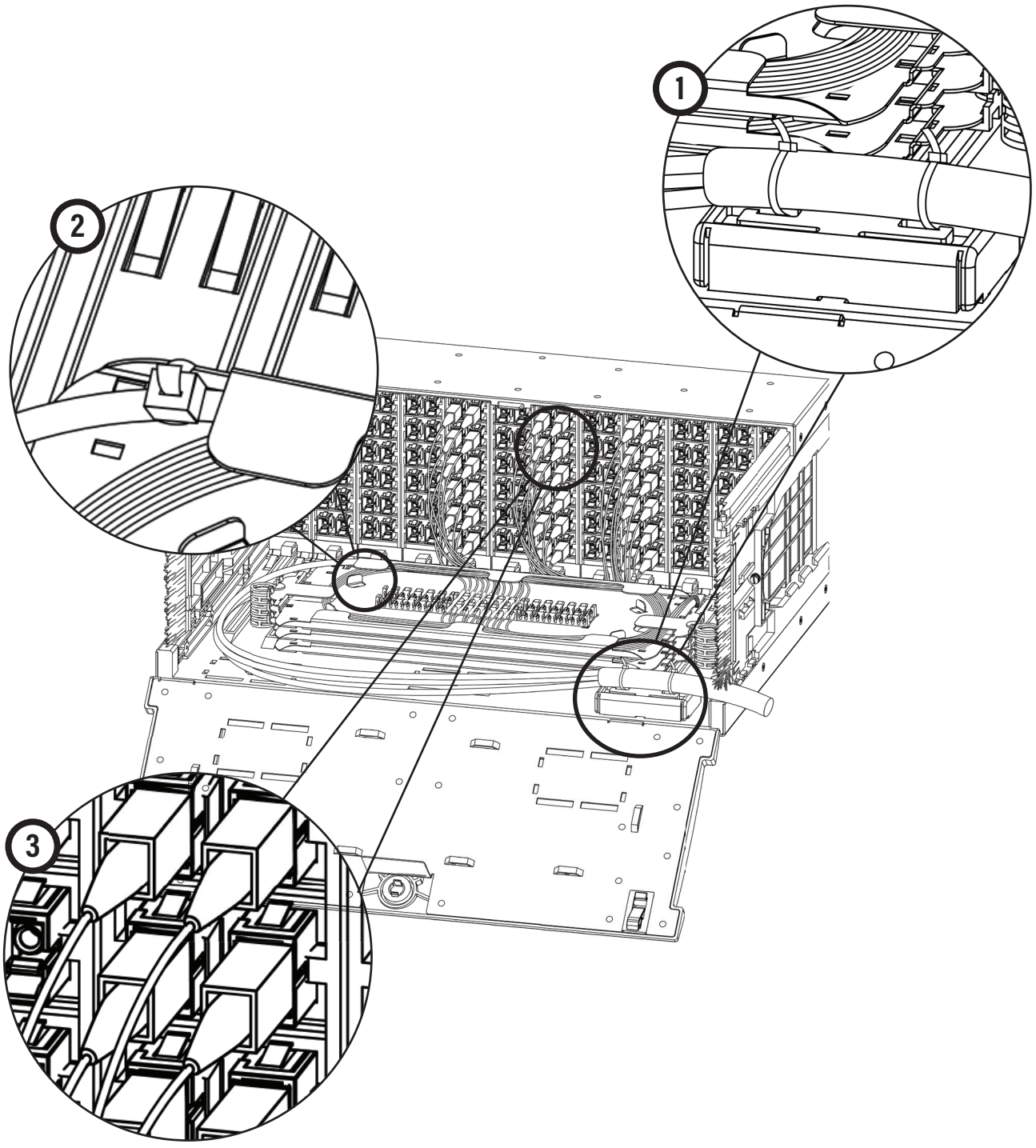
= This installation guide does not include how to route fiber cables inside the splice tray. For further information concerning the splice tray routing, please visit our website at ***www.belden.com.***

1 Install the internal strain relief to the desired position and secure the distribution cable by using the provided cable tie (7 ½").

2 Secure the end of the subunit cables to the splice tray with the provided cable tie (4").

= Do not over-tighten the cable tie.

3 Route the fiber inside the splice tray.
Install the connectors to the frames.



11. Installing fiber cables for ECX splice cassettes

This section shows the recommended procedure for secure and route fiber cables through the ECX cassettes family.

11.1. Distribution cables for ECX splice cassettes

*= This installation guide does not include the ECX cassette routing details. For further information concerning the cassette routing, please refer to our document **PX106485-EN** or visit our website at **www.belden.com.***

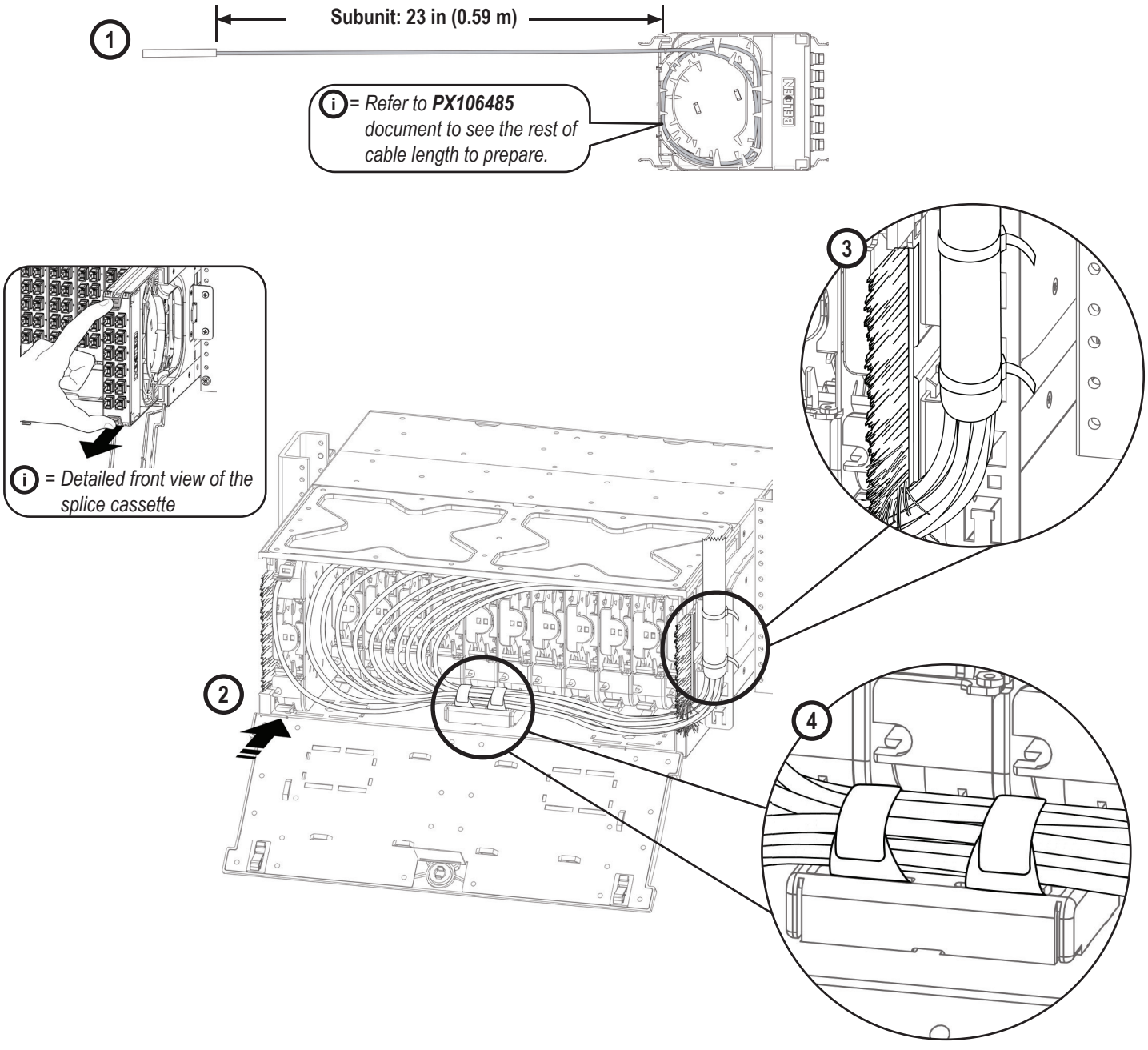
1 Leave 23" (0.59 m) of subunit cable and secure it to the end of the cassette.

2 Slide the cassette until the latches are clipped.
(If needed), remove the cassettes by pressing on the front or rear tabs as shown.

3 Secure the distribution cable to the external strain relief with the provided cable tie (7½").

4 Install the internal strain relief at the desired position and secure the subunits with the provided Velcro cable tie.

= Do not over-tighten the cable tie.



11.2. Installing cable trunks for preterm cassettes

A. Single entrance routing

1 Secure the LPM assemblies onto the external strain relief by using the provided cable ties (7½in).

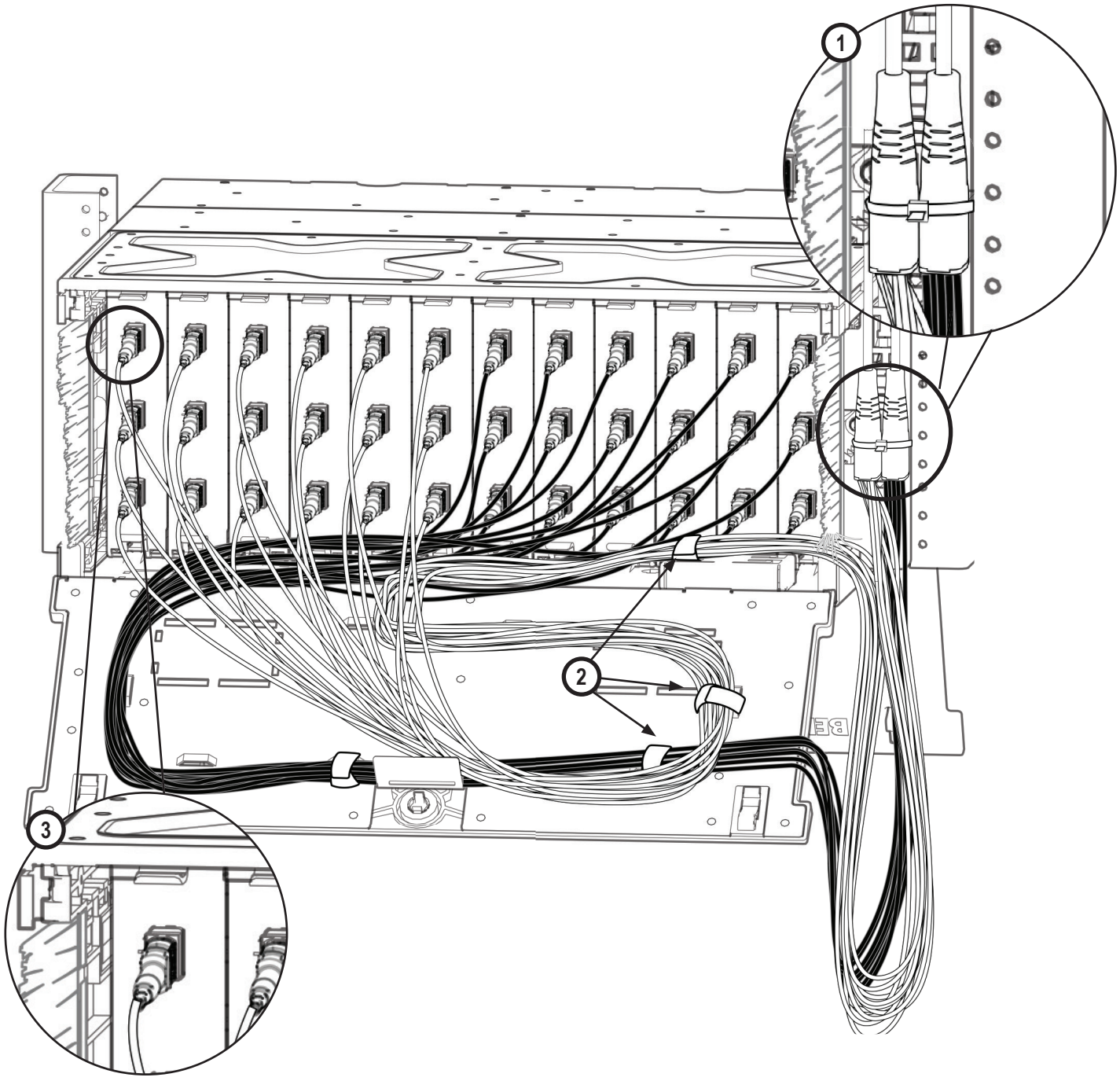
2 Route the cables depending on where the cassette is installed inside the housing:

- If the trunk cables enter to the ***rear housing*** (***white color***), the cables will load the six cassettes installed at ***left.***
- If the Trunk cables enter to the ***rear door*** (***black color***), the cables will load the six cassettes installed at ***right***.

Once the routing path is determined, secure the cables by using the provided Velcro ties at the door hinges and the internal strain relief.

3 Once all the cables are secured, mate the connector to the adapters.

ⓘ = *When the cable length exceeds, the slack is managed outside to the housing as the image below shows. The trunk cables are represented in different colors to differentiate the routing path.*

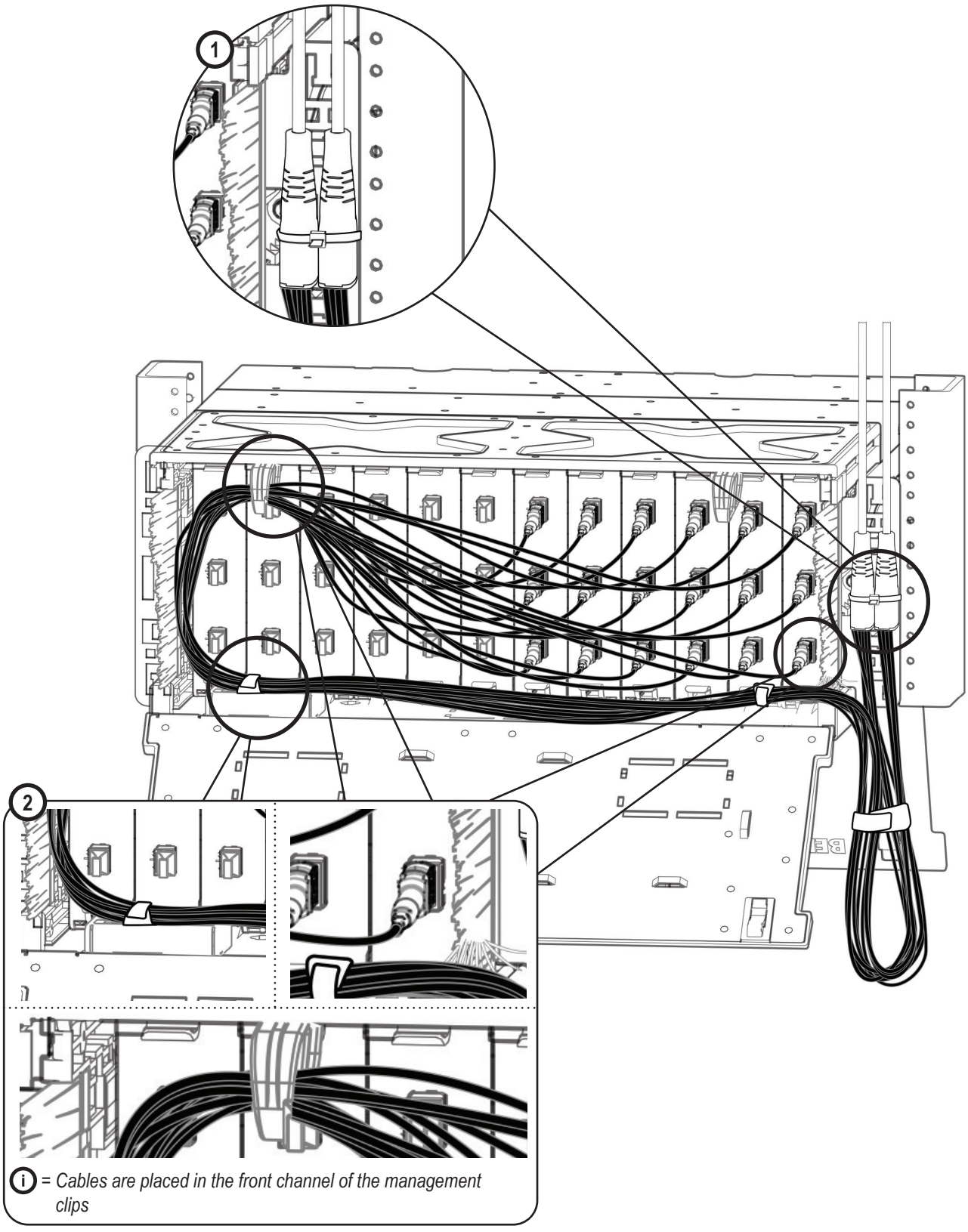


B. Double entrance routing

1 Secure the LPM assemblies onto the ***left external*** strain relief by using the provided cable ties (7½in).

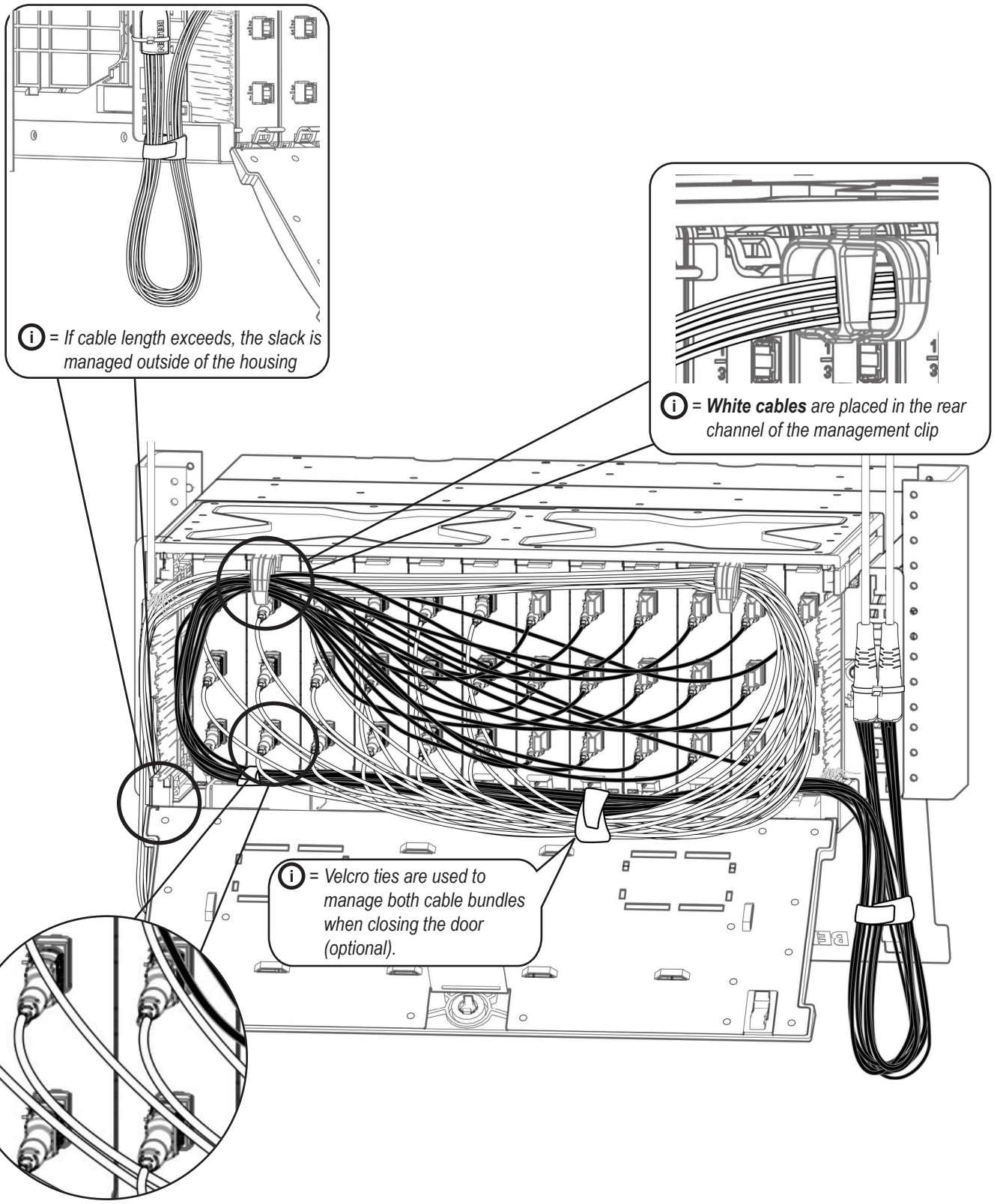
2 Route and secure the cables trunks and once it's done, insert the connectors to their respective location.

ⓘ = *When the cable length exceeds, the slack is managed outside of the housing as the image below shows.*



ⓘ = *Cables are placed in the front channel of the management clips*

3 Repeat the procedures shown at ***page 27*** to continue loading the remaining cassettes.

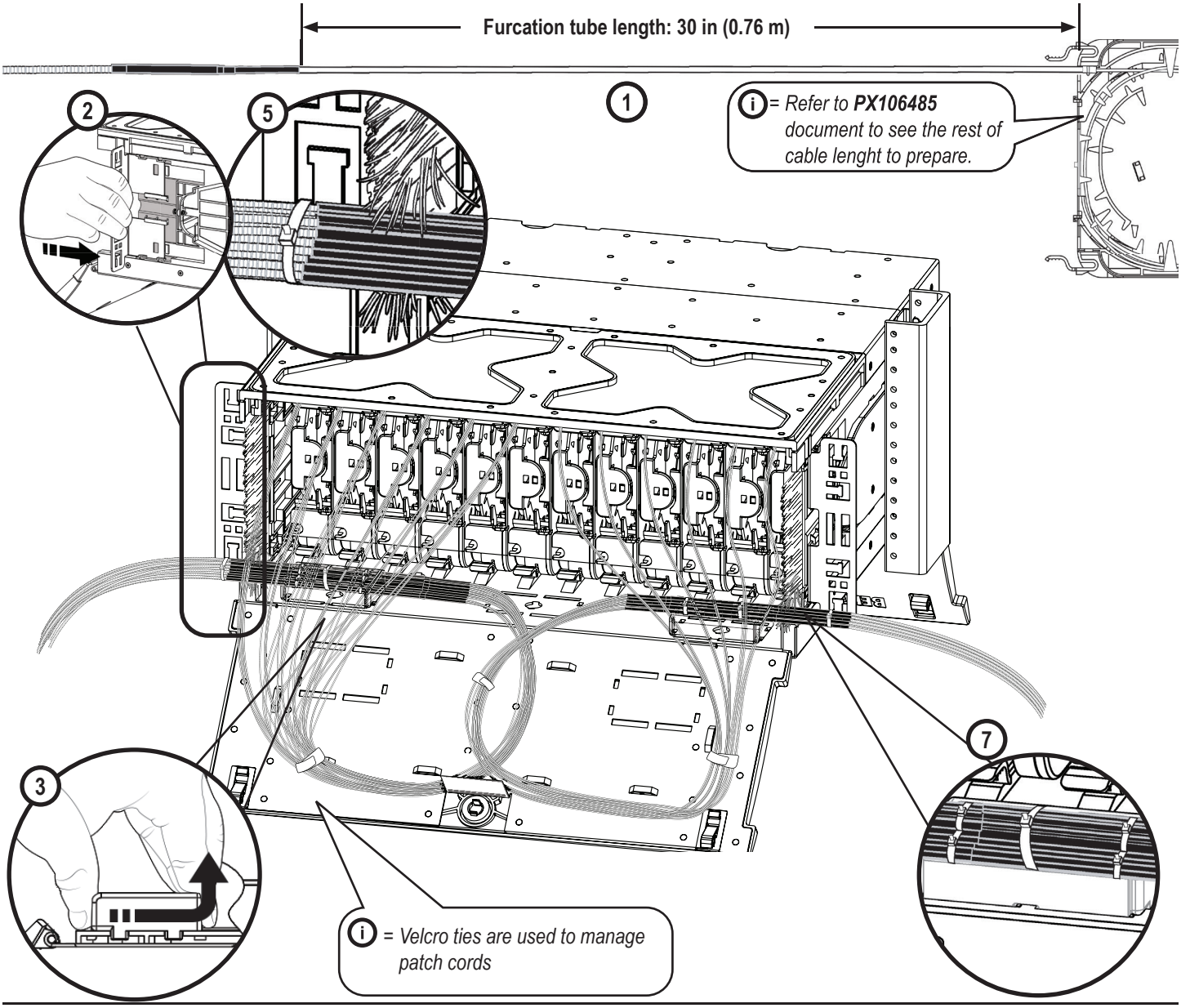


12. Installing OptiTuff cable assemblies for splice cassette

12.1. More than 24 OptiTuff cables (Horizontal entry):

1. Leave 30 in (0.76m) of furcation tube at the end of the cassette.
2. Install the external strain relief in both entries of the rear housing.
3. In order to install the cassettes, the internal strain relief must be removed by pressing on the side and then pushing upward.
4. Slide in the cassettes to the desired position.
5. Secure half the OptiTuff cables to the external strain relief on each side with the provided 7 ½ in cable ties.
6. Divide the cables in bundles of 18 maximum to ensure the cables don't slip back and forth.
7. Re-install the internal strain relief and secure those bundles to it.

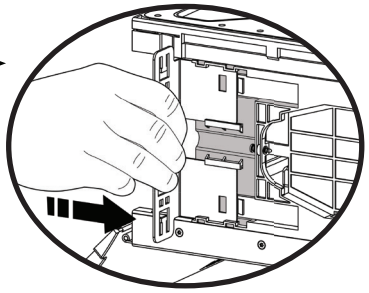
ⓘ = This document does not include instructions on how to prepare OptiTuff cable assemblies.
When grouping the cable assemblies, make sure the cable ties are only over the OptiTuff cables, heatshrink or not. (Never over the furcation tubes)
Due to the large amount of cables that enter through the rear housing, using the external strain relief allows the cable bundles to be completely secured and prevents lifting up the internal strain relief.
If some cassettes need to be removed to terminate more fibres, please take note that the cassettes that are close to both rear entries need to be pulled from the front housing (or patch-cord side).

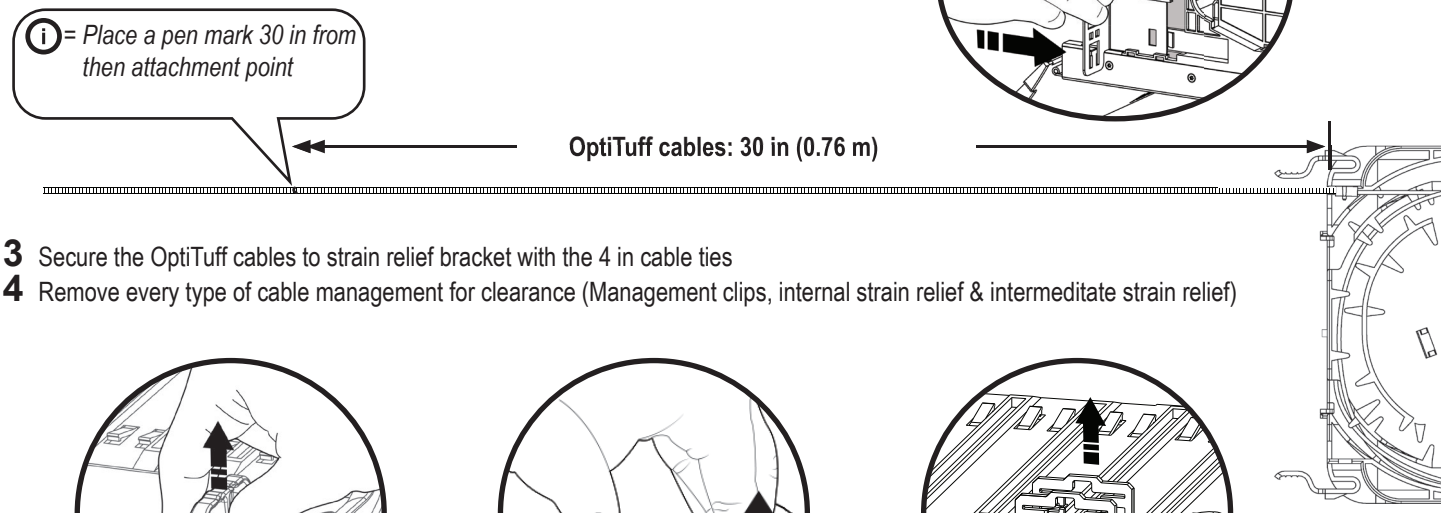


12.2 Two OptiTuff cables or less per cassette :

1 Install strain relief brackets on entry side:

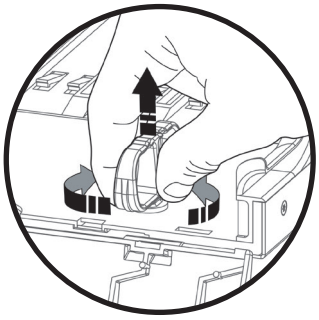
2 Leave 30 in(0.76m) of OptiTuff cables from the cassette to the strain relief bracket.

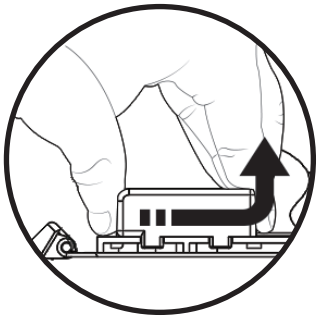


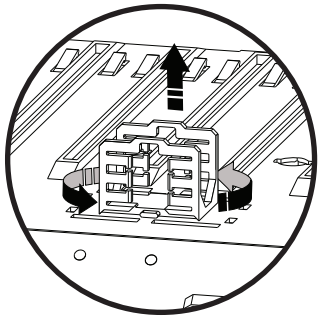


3 Secure the OptiTuff cables to strain relief bracket with the 4 in cable ties

4 Remove every type of cable management for clearance (Management clips, internal strain relief & intermeditate strain relief)

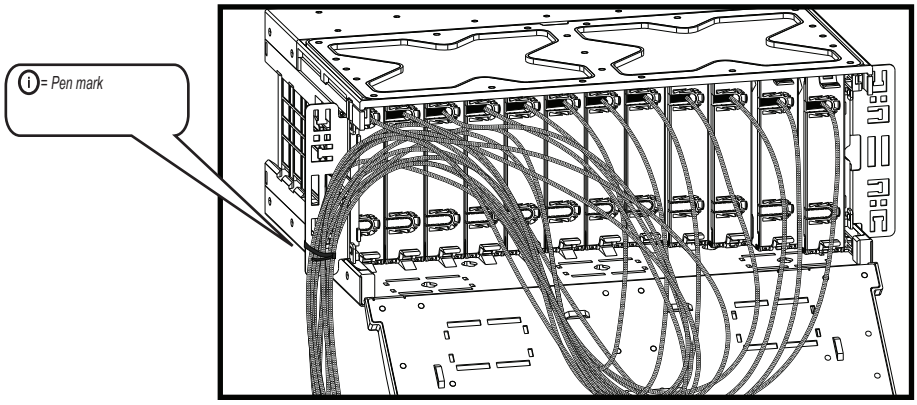




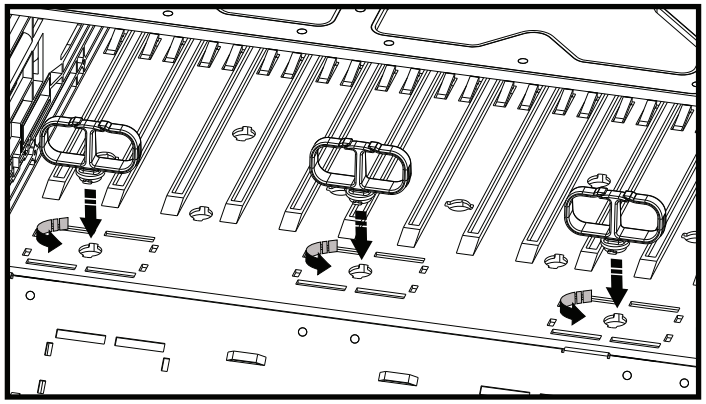


5 Start inserting the cassettes from cable entry side first.

= Make sure the cables enter through the top of the cassettes, whether your cable rntry is top of bottom.



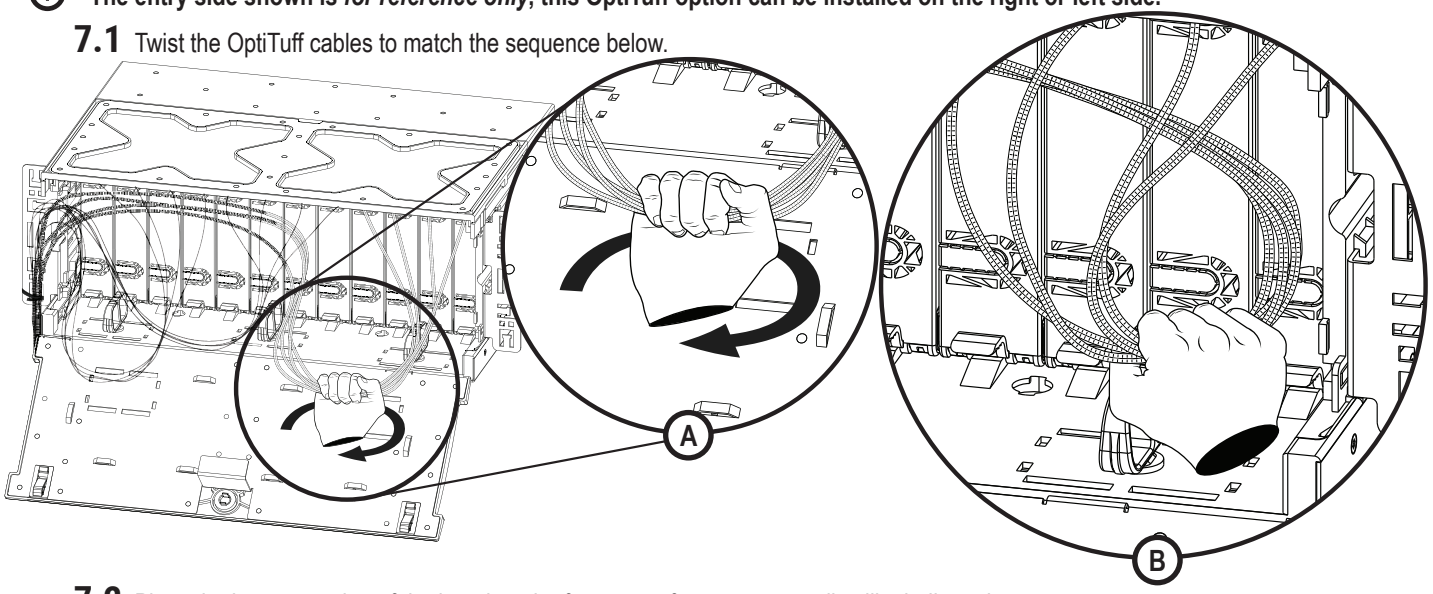
6 Re-install cable management clips to these 3 areas:



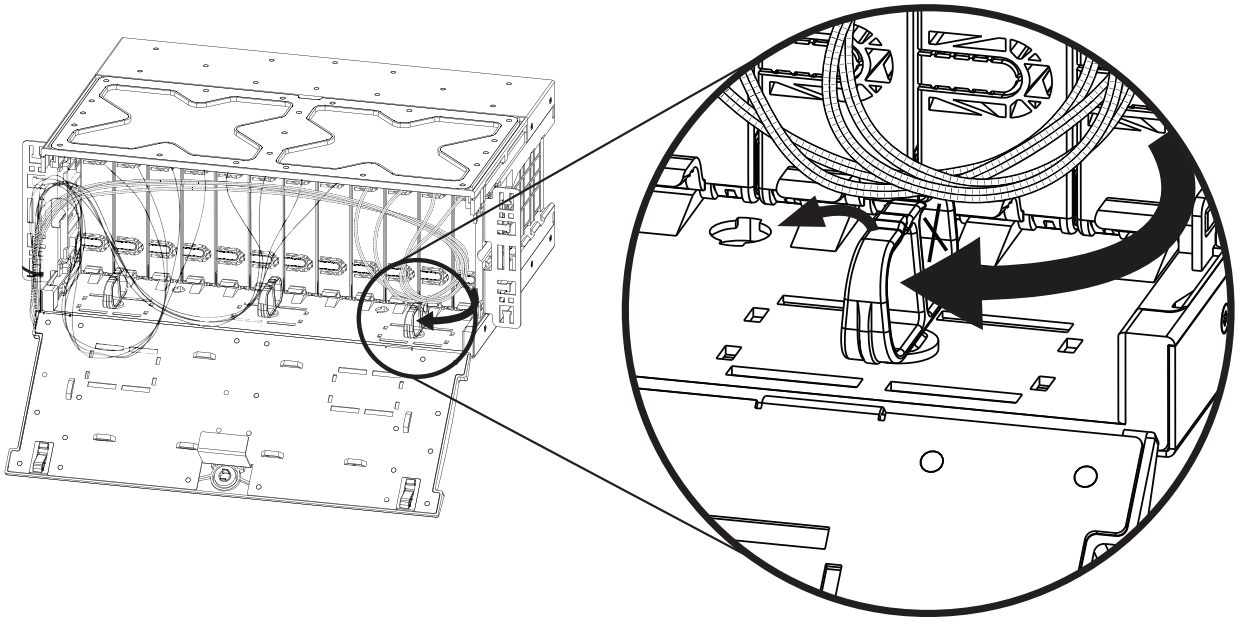
7 To cable manage this OptiTuff configuration, start routing the 4 cassettes farthest away from your cable entry.

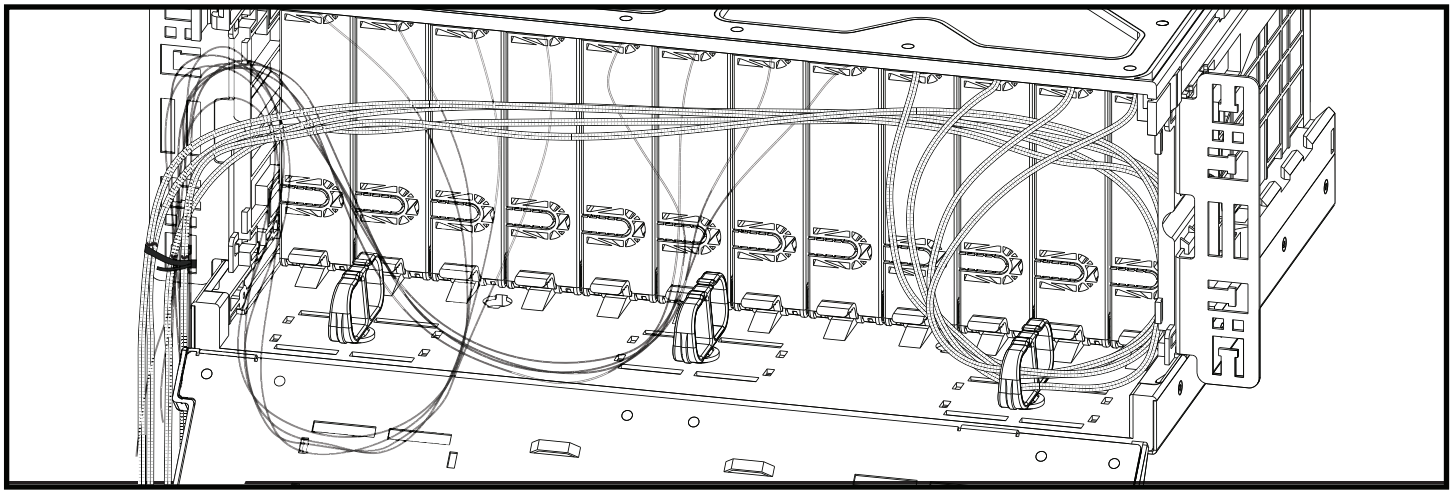
ⓘ = The entry side shown is *for reference only*, this OptiTuff option can be installed on the right or left side.

7.1 Twist the OptiTuff cables to match the sequence below.



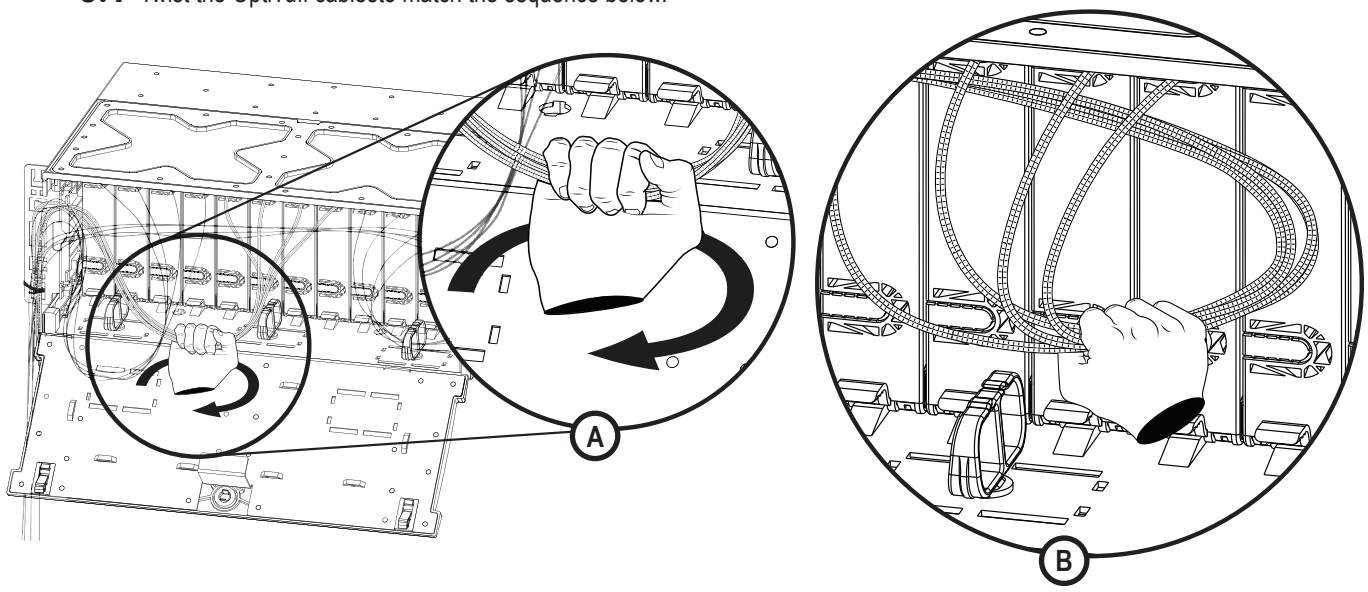
7.2 Place the bottom portion of the loop into the front part of management clips like indicated.



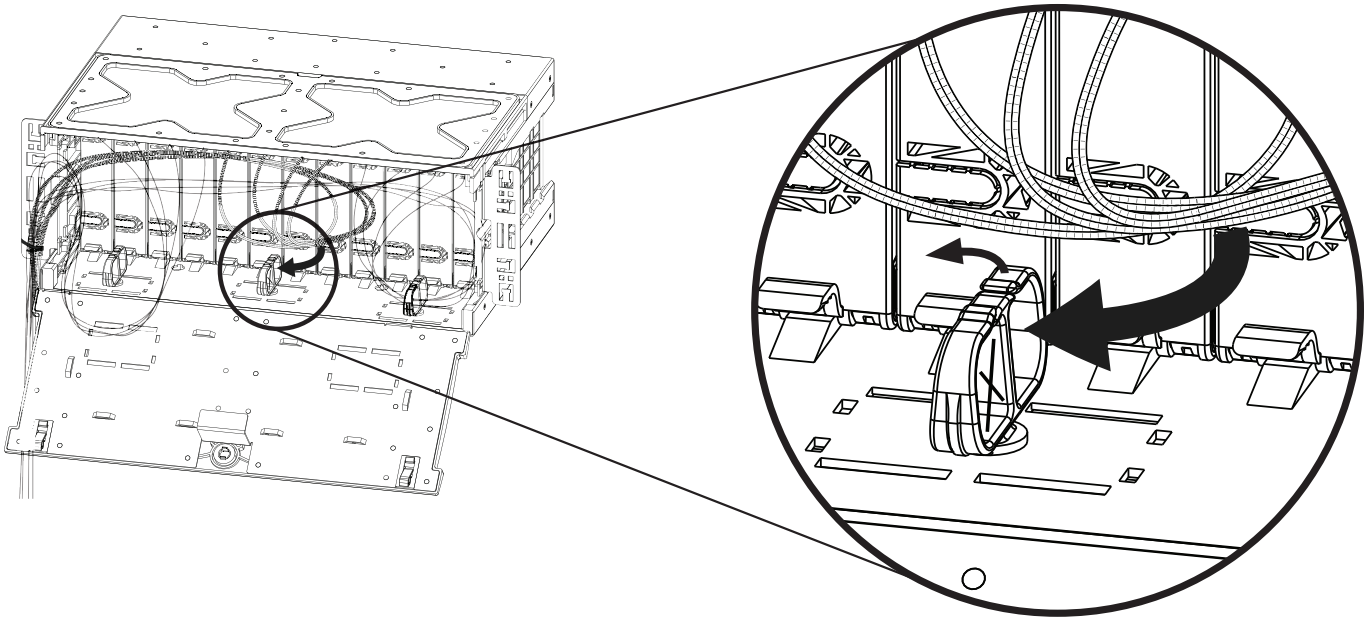


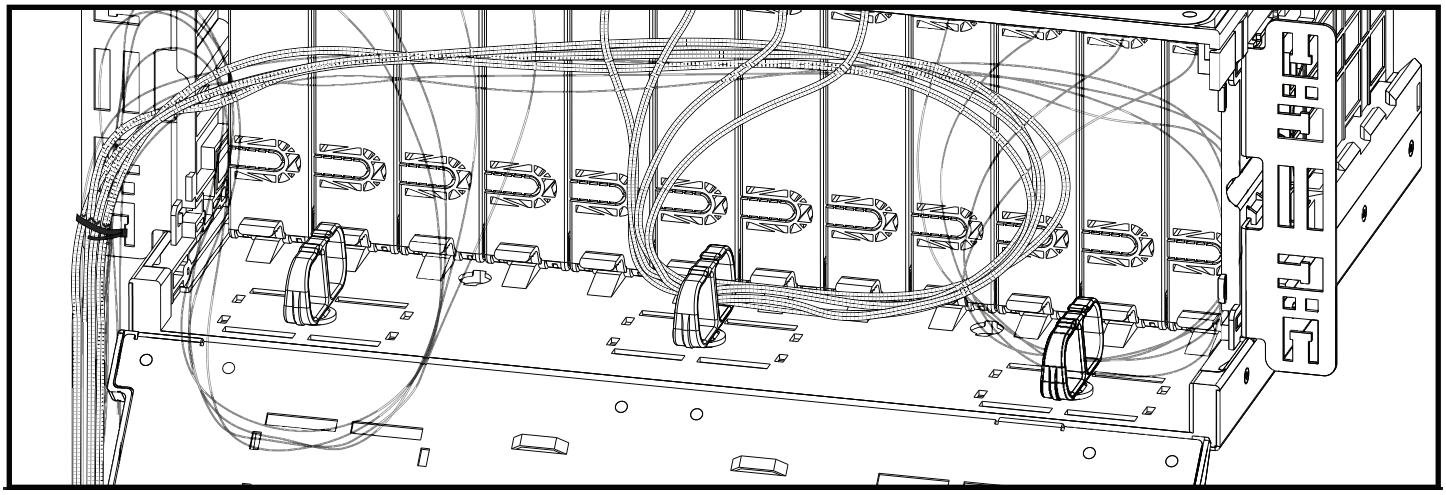
8 Start routing the 4 cassettes in the centre.

8.1 Twist the OptiTuff cablesto match the sequence below.



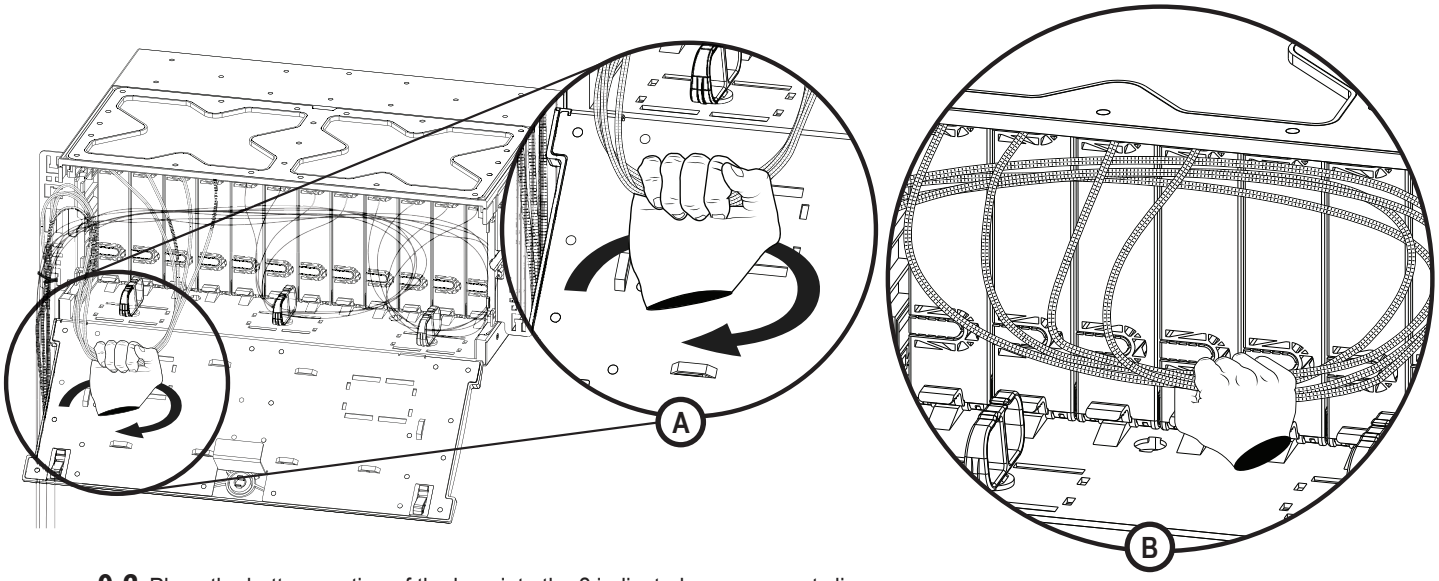
8.2 Place the bottom portion of the loop into the indicated management clip.



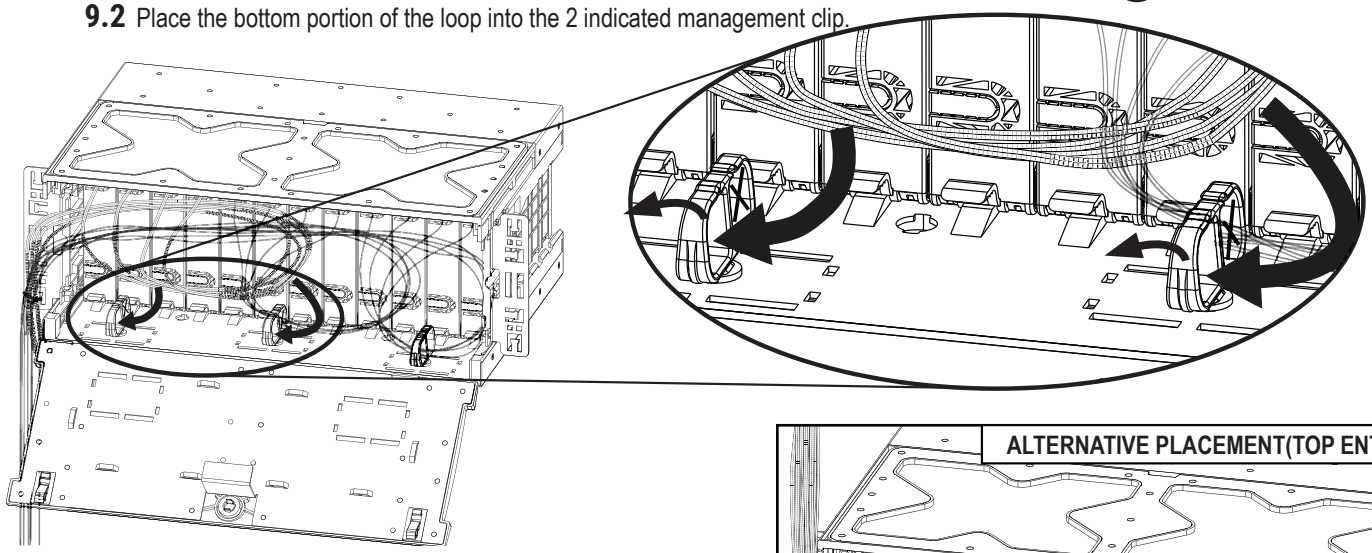


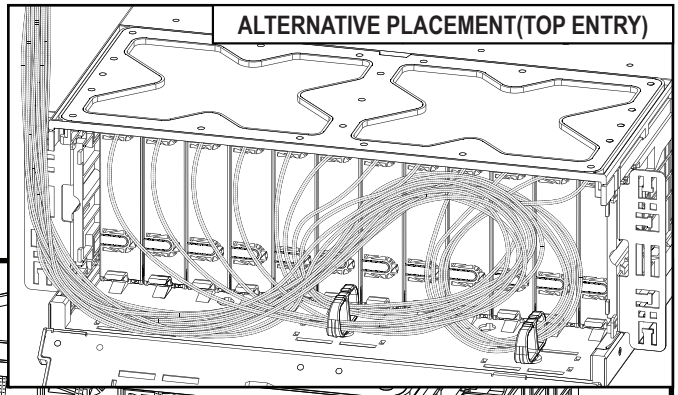
9 Start routing the 4 cassettes closest to entry.

9.1 Twist the OptiTuff cables to match the sequence below.

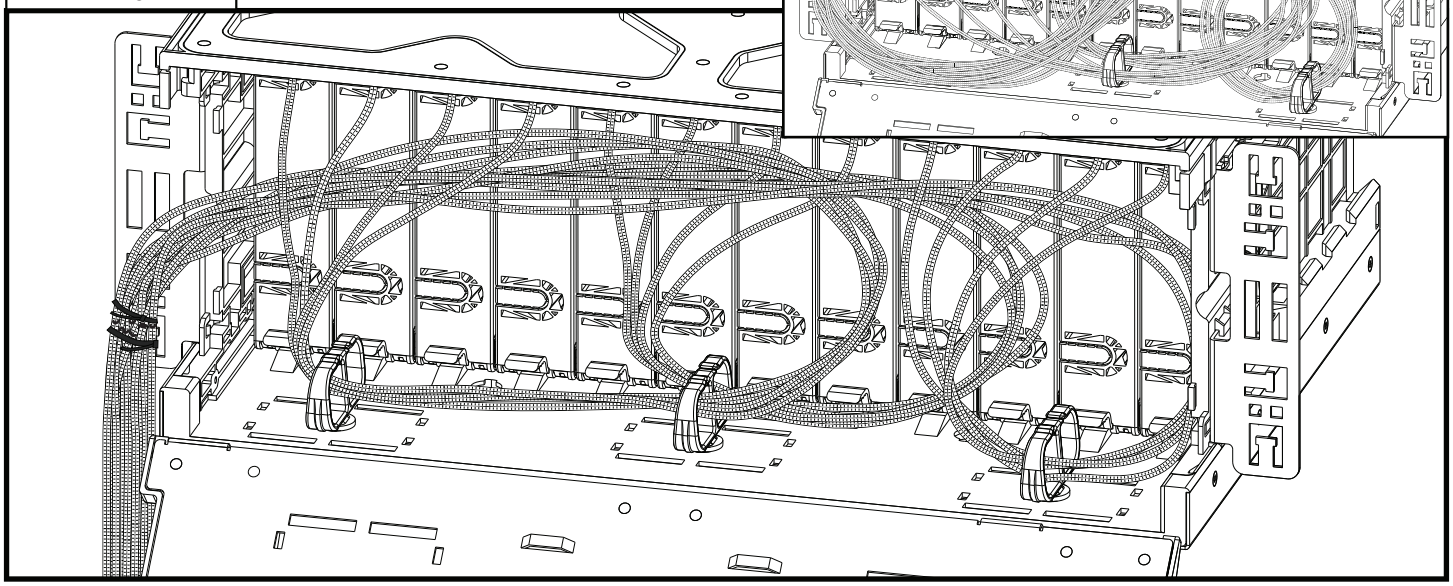


9.2 Place the bottom portion of the loop into the 2 indicated management clip.





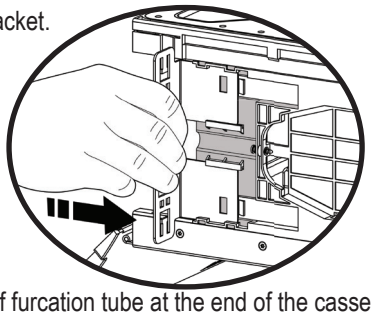
FINAL PLACEMENT



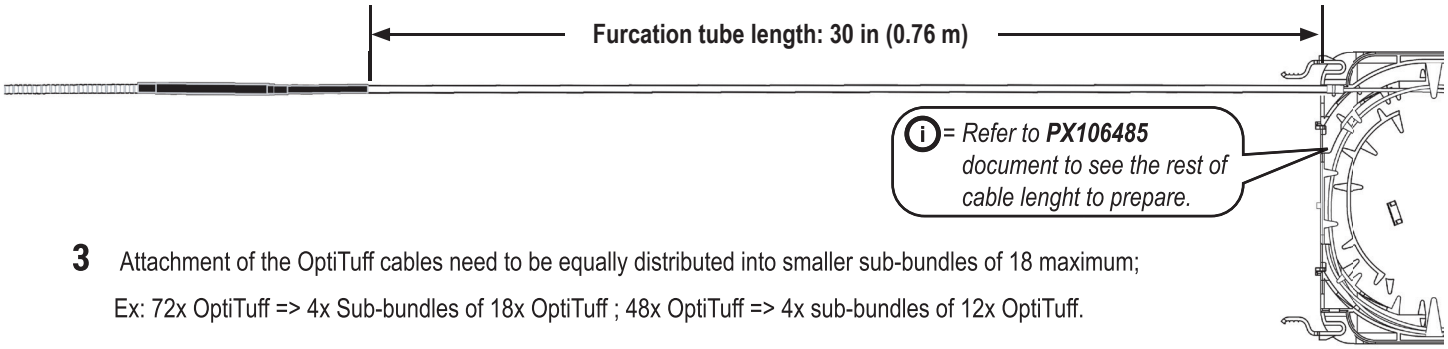
12.3. Two fibers per OptiTuff (Vertical entry) (using transtition kit AX106696-697):

= We will illustrate how to Attach 72x OptiTuffs on one side of the ECX 4U enclosure. For a total quantity of 144x OptiTuffs you need to install 72x on each side. 2 fibers per OptiTuff cable. This solution requires the OptiTuff to be prepared with the appropriate Belden transition kit.

1 Insert Strain Relief bracket.



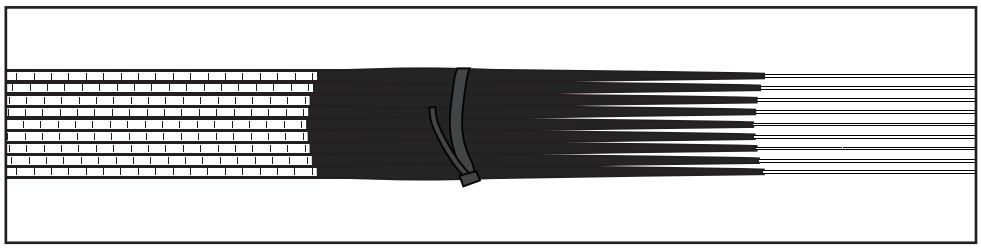
2 Leave 30 in (0.76m) of furcation tube at the end of the cassette.



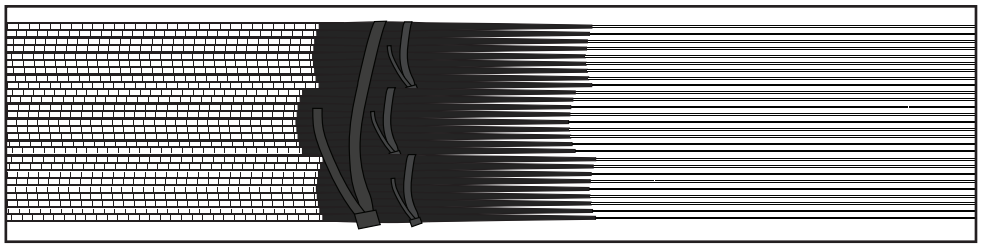
3 Attachment of the OptiTuff cables need to be equally distributed into smaller sub-bundles of 18 maximum;

Ex: 72x OptiTuff => 4x Sub-bundles of 18x OptiTuff ; 48x OptiTuff => 4x sub-bundles of 12x OptiTuff.

3.1 Prepare each sub-bundles and secure by tightly wrapping a cable tie (4 in cable tie) on the Heat shrinked OptiTuff portion.

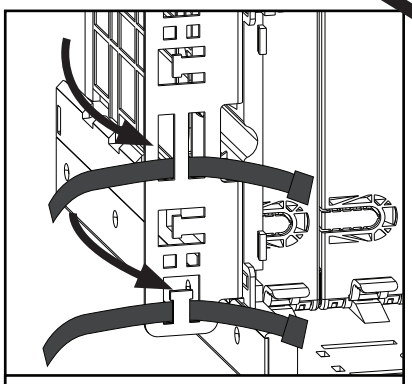


3.2 Secure the sub-bundles together using a cable tie (7 ½ in cable tie) on the Heat shrinked OptiTuff portion.

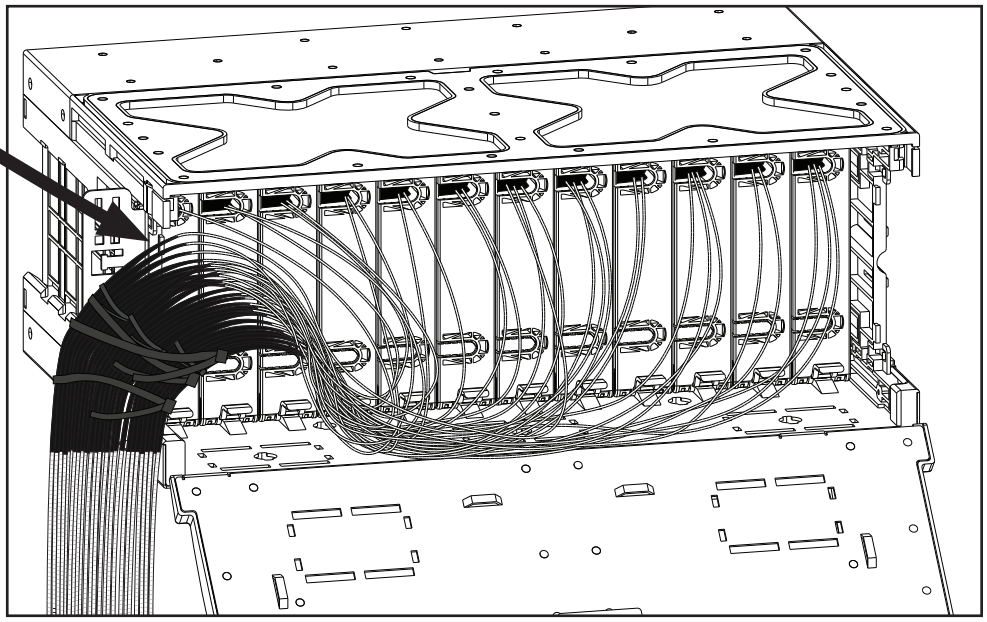


3.3 Secure the assembled bundles using two cable ties (7 ½ in cable ties) onto the external Strain relief bracket.

ⓘ = Make sure the furcation tube is fully inside the enclosure, no furcation tube shall be visible when the enclosure is closed.

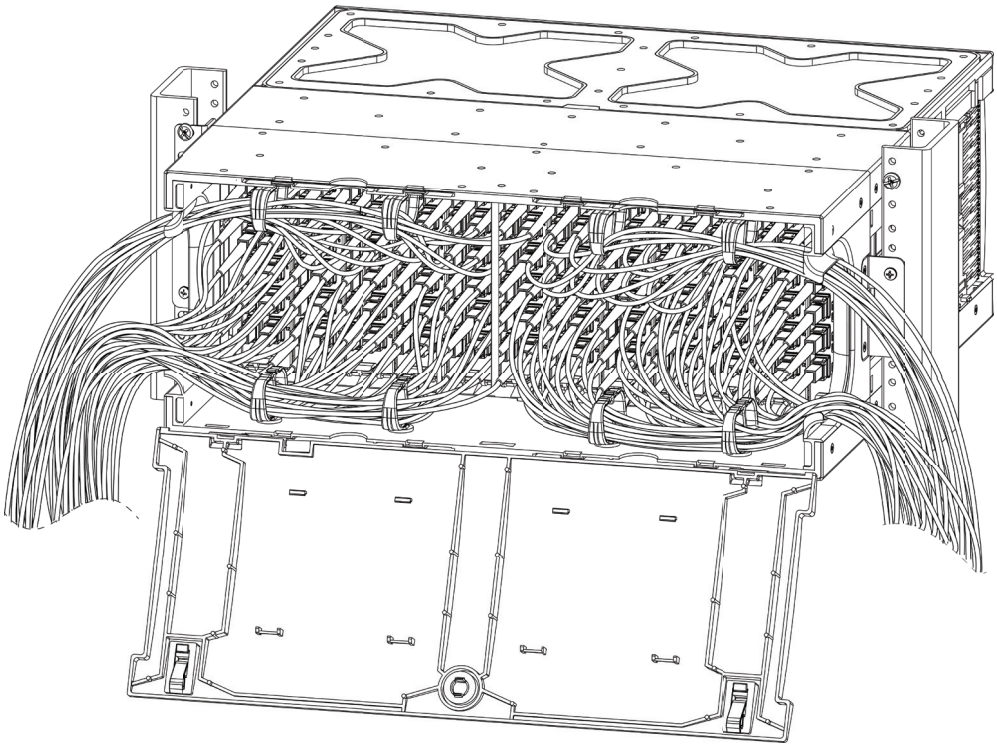


This cable attachment points are the recommended placement for the least amount of rotation

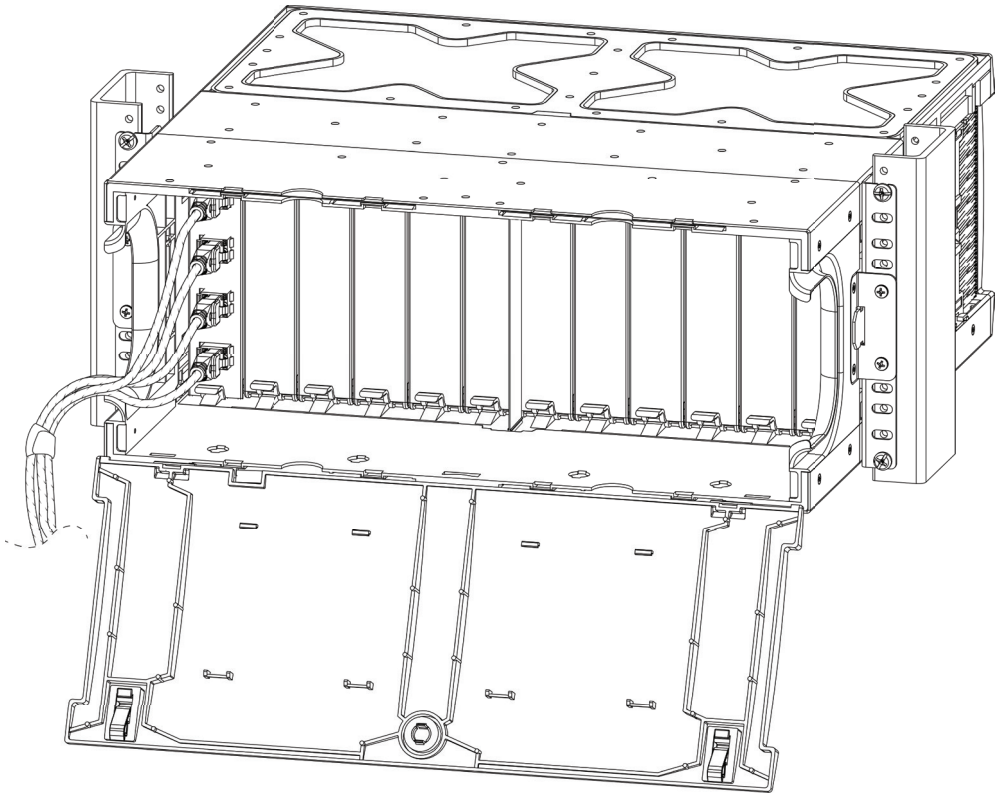


13.Recommended front housing cable management for fiber and copper

13.1. Fiber patch cords management



13.2. Copper front connectivity (optional)



14.ECX Labeling

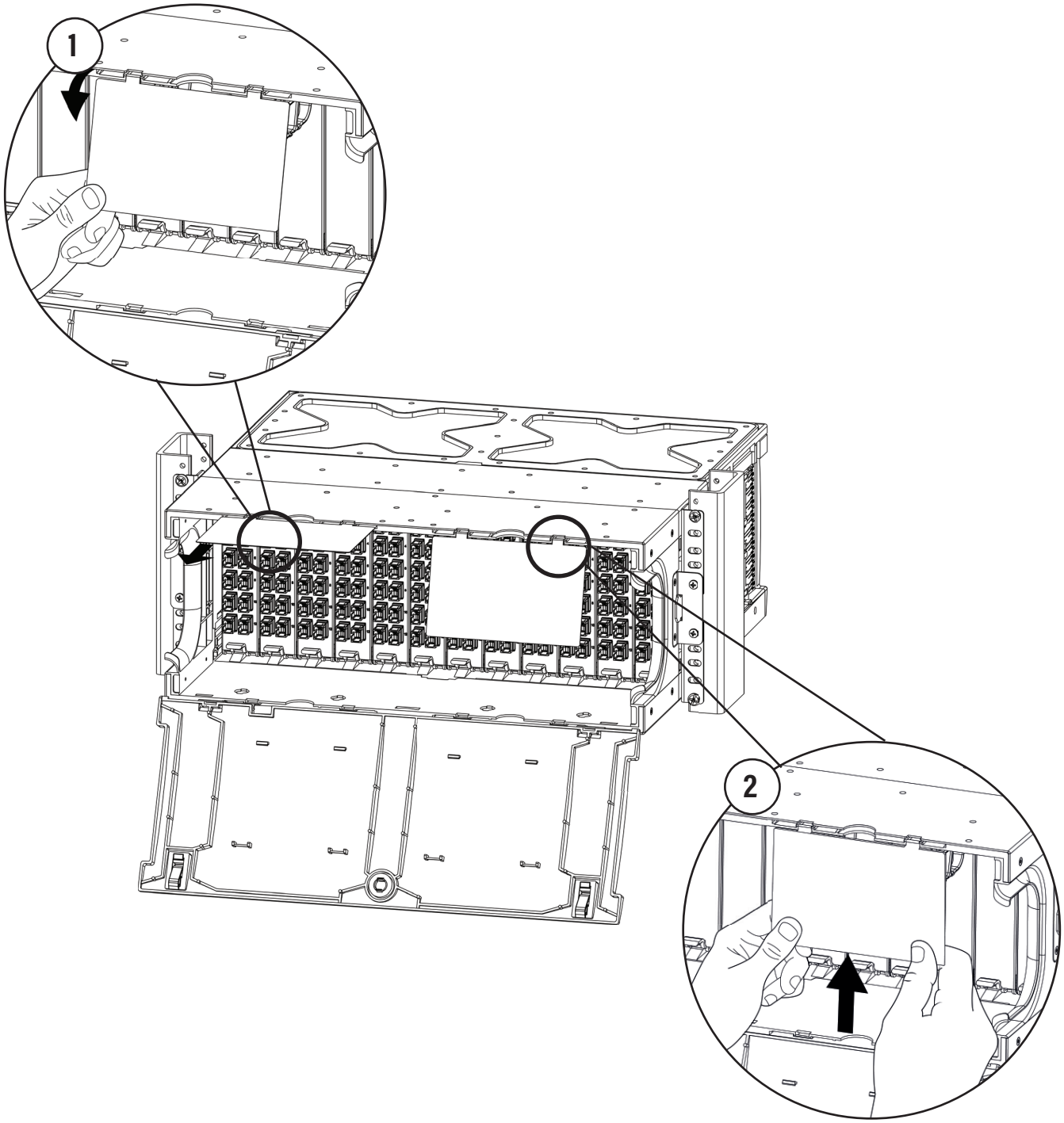
14.1.I.D. Label card positions

This section shows different options regarding label card location and installation.

A. Front housing

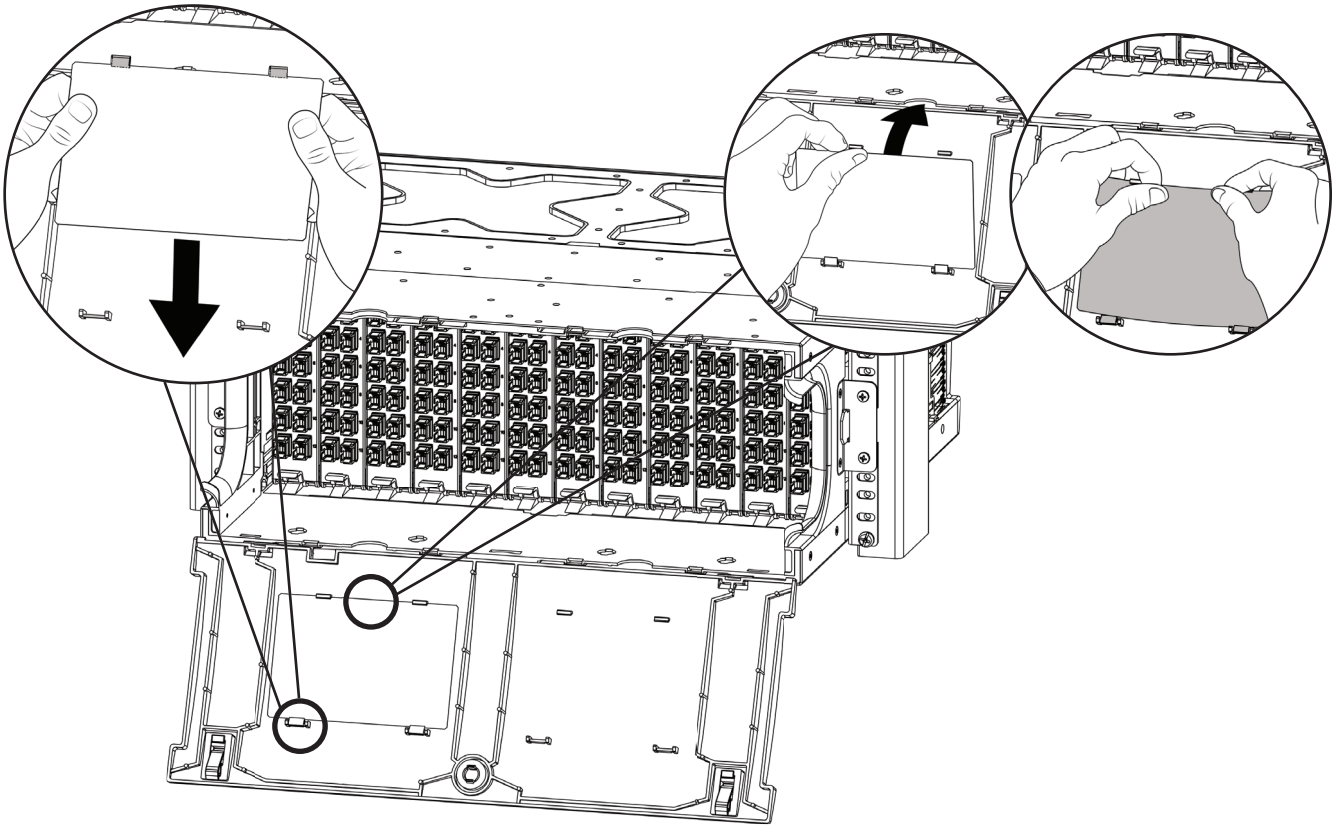
1 Pull out the label cards and tilt them downwards.

2 (If needed) remove the label card by pushing upwards.

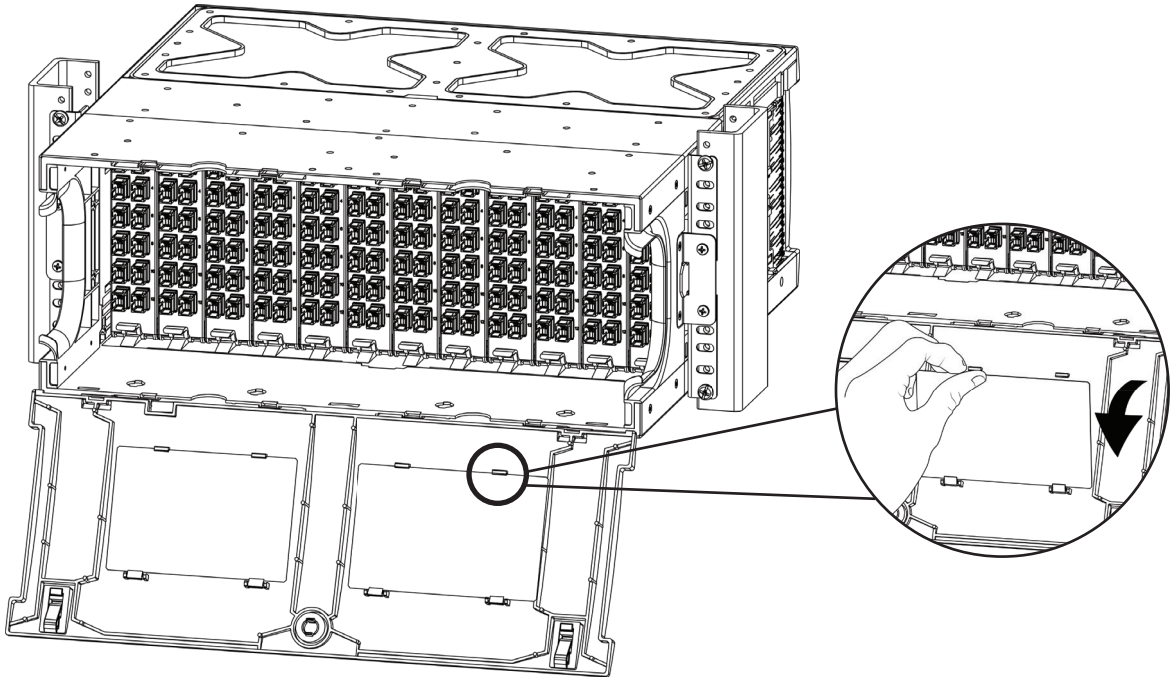


B. Front door

1 Open the door and align the door hooks to the card tabs.
Tilt the label card upwards and secure it by applying a slight pressure.



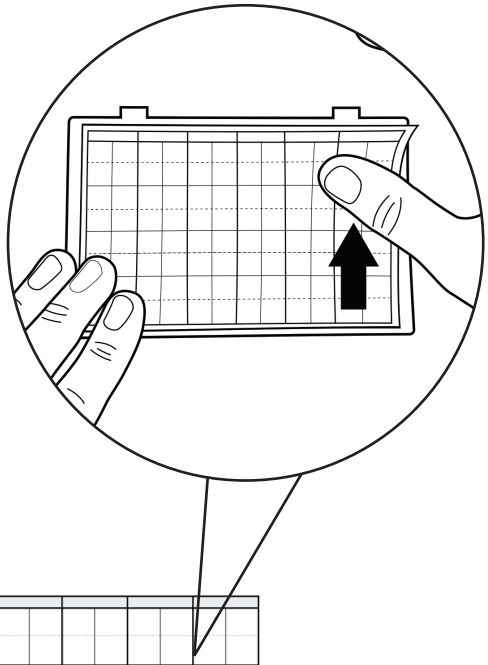
2 To access or remove label cards, invert the previous step.

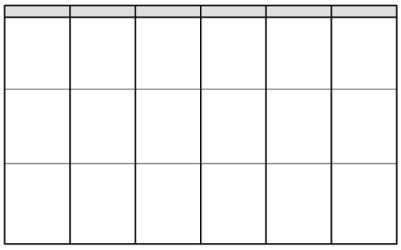


14.2. Applying ID label

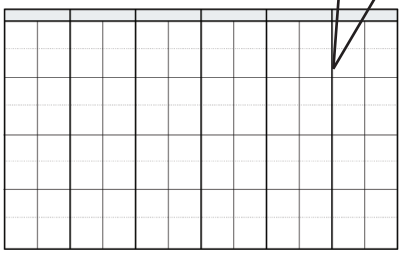
ⓘ = *Surface should be cleaned properly before applying label.*

1 Select the desired ID label.
Apply the provided sticker on the label card from bottom to top as shown.





(8/16) I.D. label ports



(3/6/12) I.D. label ports

15.ECX accessories features and installation

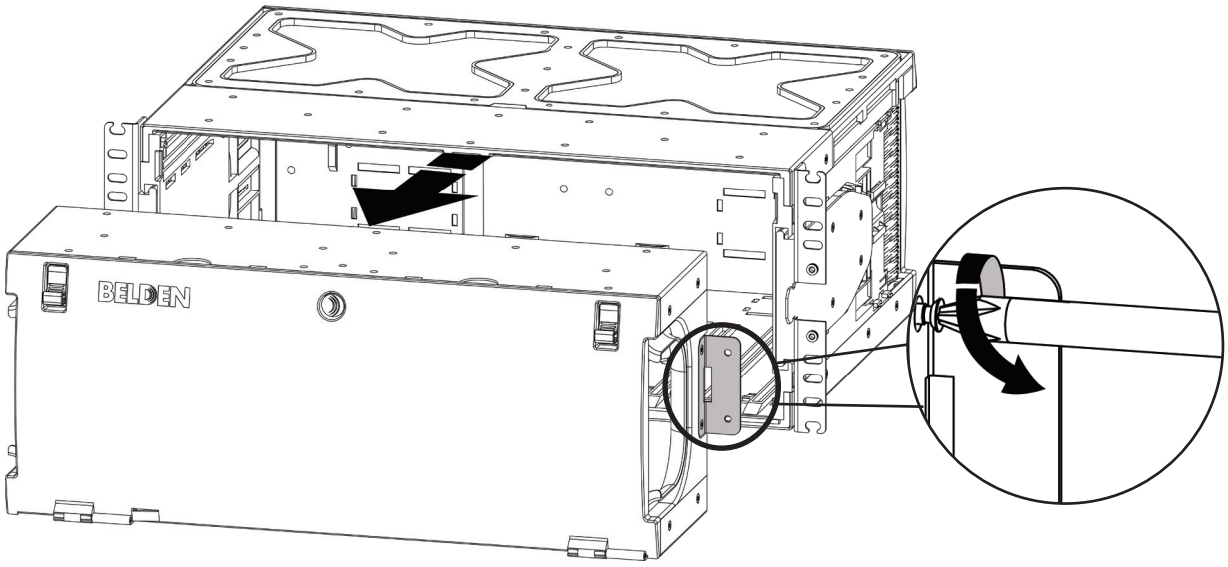
This section shows the installation of some ECX accessories.

15.1.Installing ECX 4U flush rack mounting brackets

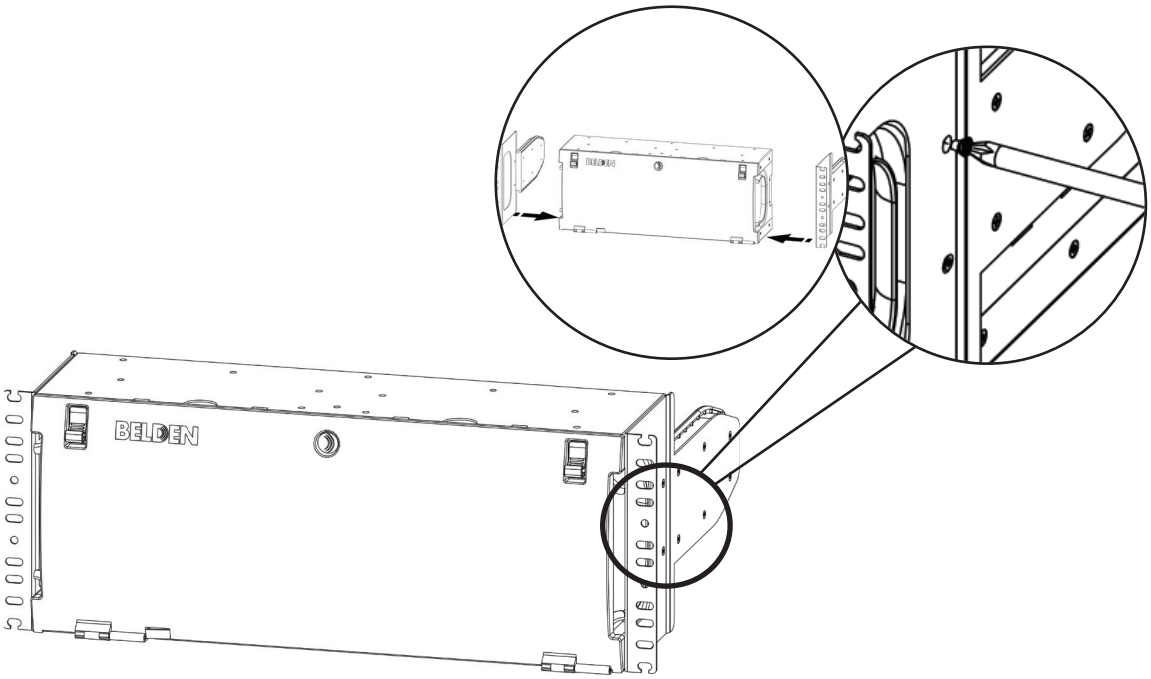
This section shows how to mount the flush rack brackets on the ECX housing.

ⓘ = *For further information about the housing removal, please refer to to* ***section 5.1. and section 5.2****.*

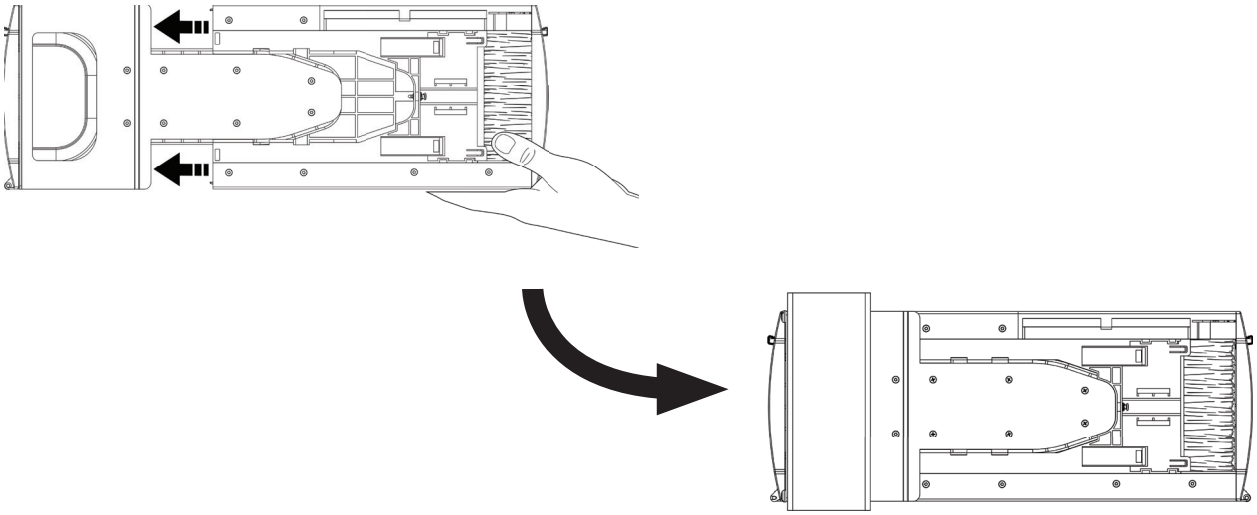
1 Detach the front housing and remove the 2 L-shaped brackets.



2 Align and secure the flush mounting brackets to the front housing by inserting the appropriate screws from both sides.

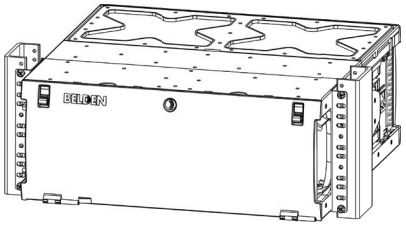


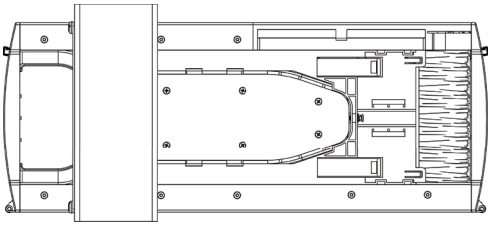
3 Slide and secure the rear housing to the assembled front housing.
Install the assembled housing to the 19" rack.



15.2. ECX 4U 3" rack mounting brackets overview

= The installation of this accessory is the same as the flush rack brackets.

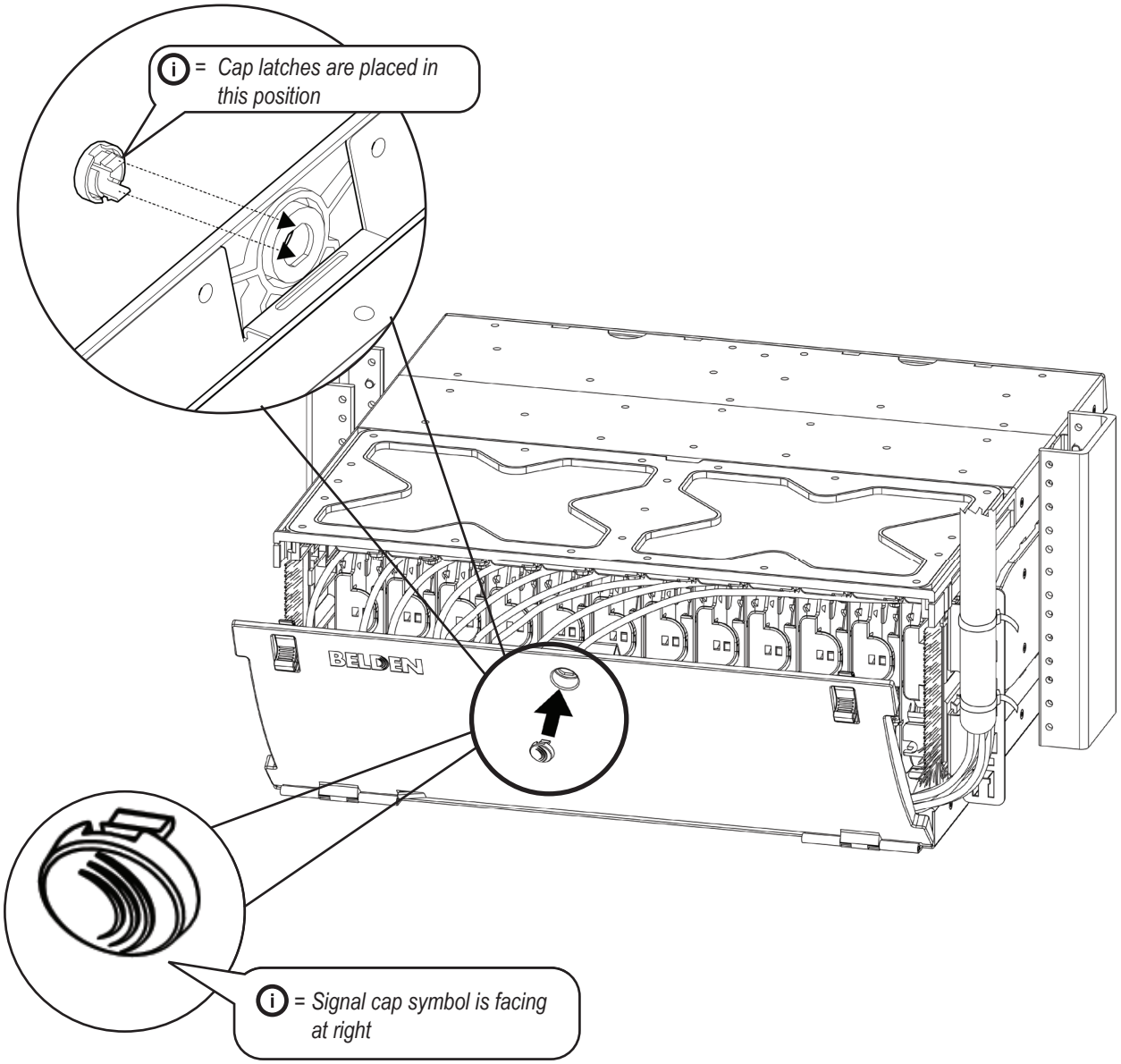




15.3. Door cap installation

1 Align door cap latches to the door slots.

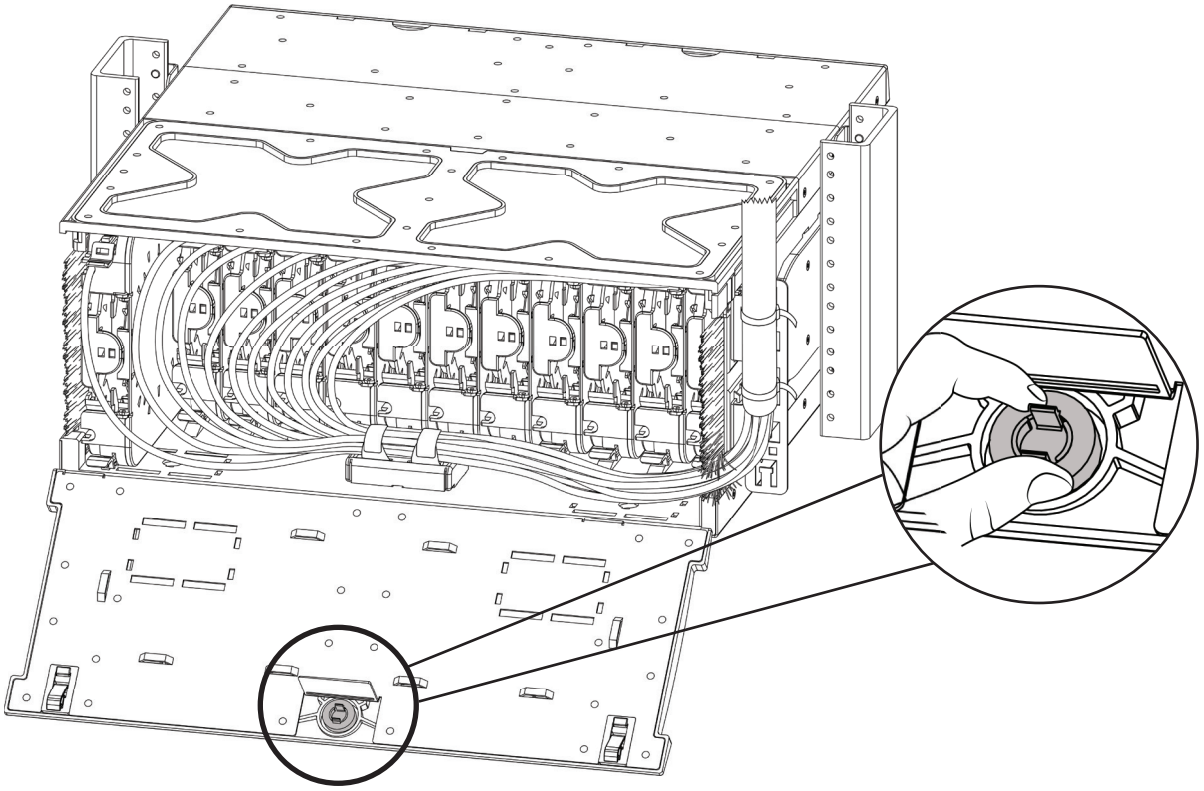
= This accessory can be installed on the front and rear doors.
When installing the cap, make sure that the signal cap symbol is facing to the right side as shown in the detailed view below.



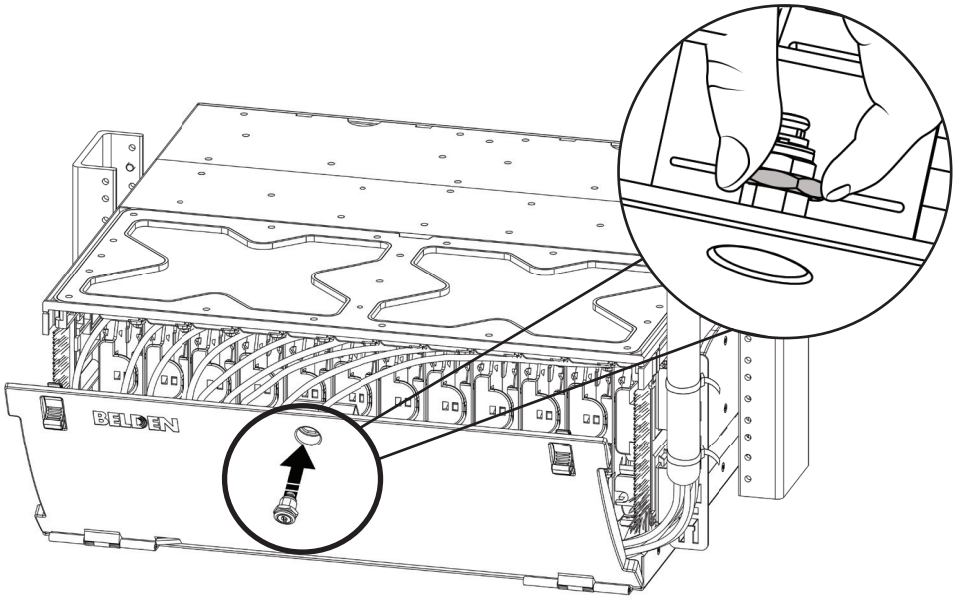
15.4 Lock-kit installation

ECX locks can be installed in rear and front doors to prevent unauthorized access. The use of this accessory is optional.

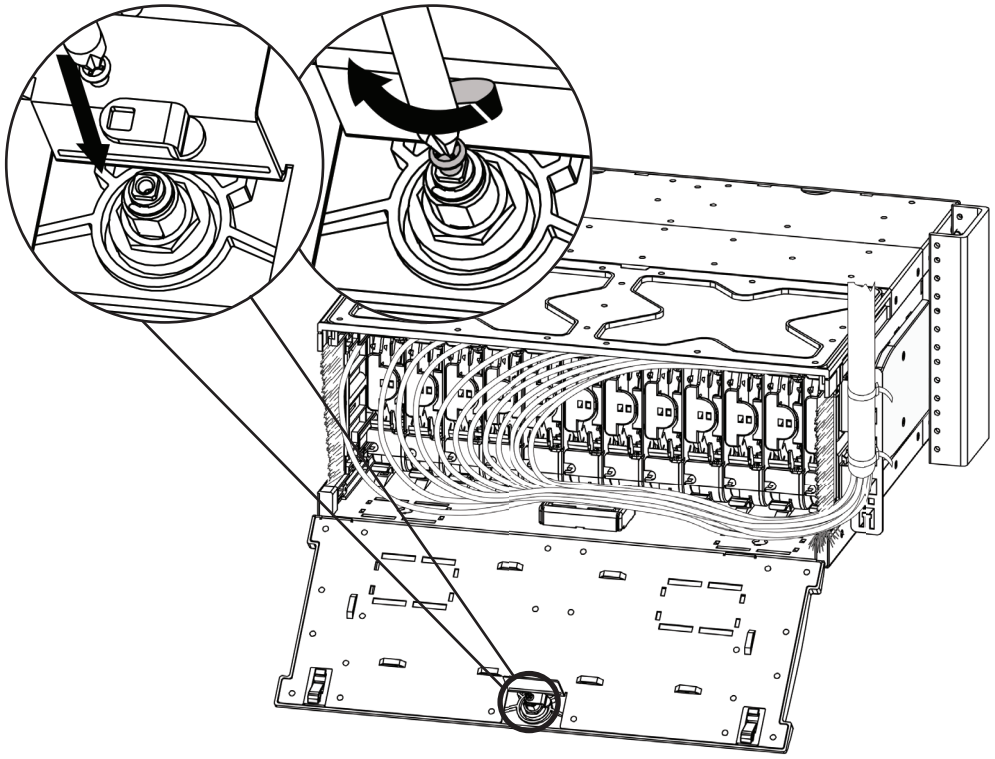
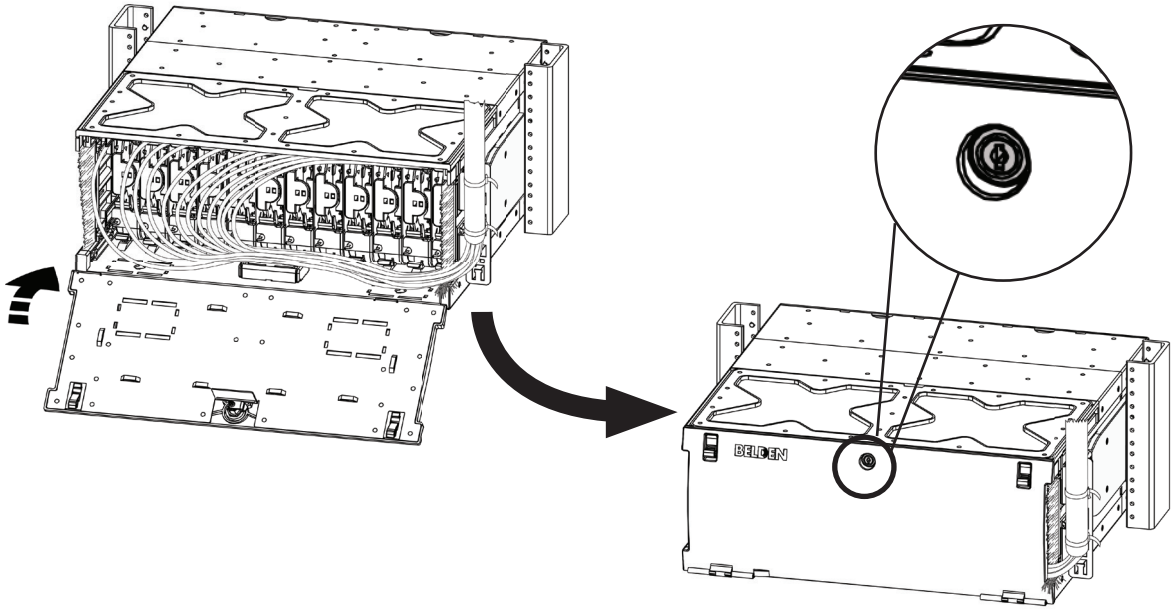
1 Open the (front or rear) door and remove the cap by pinching the rear tabs as shown.
ⓘ = *When removing the door cap, pinch slightly both latches to avoid breaking them.*



2 Place the lock to its respective location.
Secure the lock by tightening the flat nut as shown.



3 Remove the tighten screw and position the clamp.
Secure the clamp by tightening the screw.



4 Once the lock kit is installed, close the rear (or front) door and secure it with the provided key.