tyco Electronics

FIST-GMS2

INSTALLATION INSTRUCTION

FIST Generic Mixed Shelf MK2

TELECOM OUTSIDE PLANT

Contents

1 Introduction

Product function

- The Generic Mixed Shelf, FIST-GMS2, is a multi-purpose mechanical shelf assembly for the FIST fiber management system in a rack environment.
- The product is used to store splices of external cable to pigtails. These shelves combine splice storage and patching functions.
- It can be installed in Tyco's FIST Racks and other 19" or metric (ETSI) rack sizes.
- Accessories are available for termination of most common cable types.
- Modular wraparound grooveplates can be clicked in the UMS (Universal Mounting System) profile. They provide the foundation for mounting combinations of SOSA2 (Splicing Only Sub-Assembly) and/or SASA2 (Splitter Array Sub-Assembly) modules.
- A 24 unit patchpanel is provided which can accommodate :
  - connector adapters for all common connector types
  - kevlar termination units (KTU's) to provide the necessary strain relief when terminating common pigtail types.
  - a mix of connector adapters and KTU's

* The shelf is delivered with a metal hingable cover.

2 General

2.1 Kit content

Kit content: example: FIST-GMS2-MA
1 shelf, incorporating:

- metal chassis with drawer
- hingable and removable front cover
- 24-unit patch panel
- pre-mounted tubes
- pre-mounted FAS block + cover
- 1 pigtail horn
- cable termination kit for 2 loose tube cables
- 1 tray lid + fiber guiding pin
- cage nuts + bolts
- mounting brackets + screws
- FOPT-CT transportation tube
- installation instruction

2.2 Tools

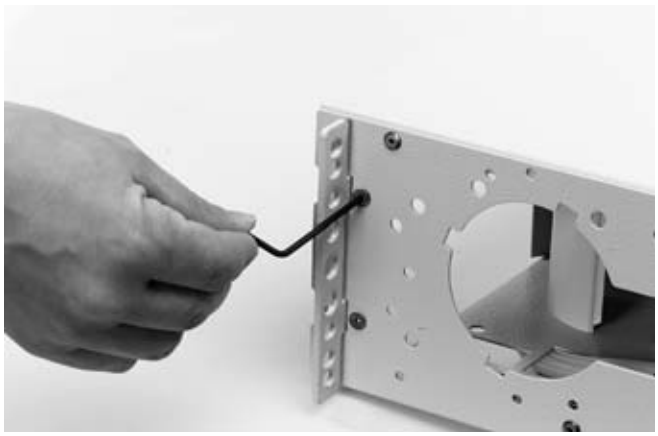
· FACC-ALLEN-KEY-5-350	to mount shelf in the rack
· FACC-CAGE-NUT-TOOL	for easy installation of cage nuts in the rack
· FACC-TUBE-CUTTER-01	cutter for transportation tubes
· FACC-TUBE-STRIPPER-02	loose tube stripper
· FACC-FIBRE-FEEDER	fibre feeder
· FISTV-E7170-0003-S5027	marker pen

2.3 Optional extra's

· FIST-ADX-XX-X	connector adapters
· FISTV-E7187-6316	Velcro rolls
· FIST-GR-CTB100	cable term. kit for loose tube ribbon cable
· FIST-GR-CTB100CC	cable term. kit for central core cable (single fiber or ribbon)
· FIST-GSS2-CT-BR-2	cable back termination kit (strength member in the rack)
· FIST-GSS2-CT-BS-2	cable back termination kit (strength member on the shelf)
· FSA-ADK-H0-4	Pigtail Termination Kit including: - Retainer to hold 2 KTUs - 2 x KTU (max. Ø 3.1 mm single fiber pigtails (2x) or ribbon pigtails)
· FIST-MB2-M	Adaption brackets 19"-ETSI
· FIST-MB2-M-AS	Asymmetric adaption bracket 19"-ETSI
· FIST-UST-3HU-A-A	Termination unit for 2 loose tube cables (top or bottom)
· FIST-UST-EXKIT-2CA	Upgrade for 2 extra cables on the standard termination plate
· FIST-UST-EXPL	Additional plate for a 5th and 6th cable
· FIST-GS-FLEX-17-50	50 m flexible tubing (ID 17mm)

3 Installation of the shelf

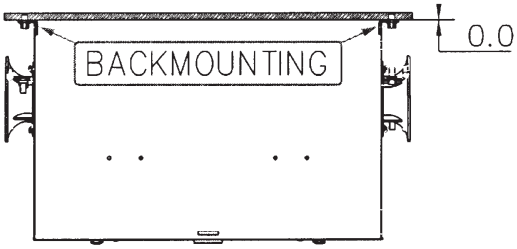
3.1 Mounting the shelf in the rack

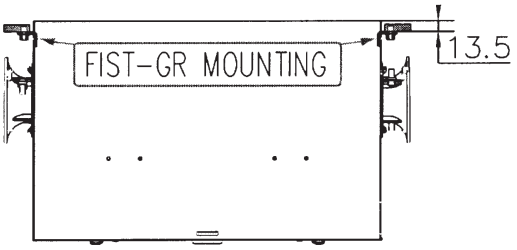


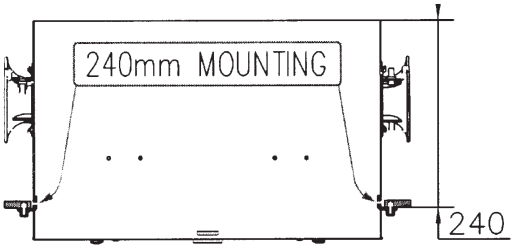
3.1.1 Install the mounting brackets on the correct position.

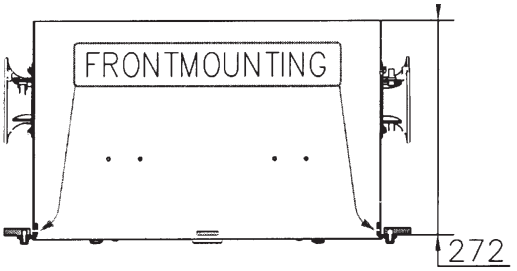
3.1.2 Determine the position of the unit (see rack installation instruction) Fix the cage nuts into the rack mounting uprights.

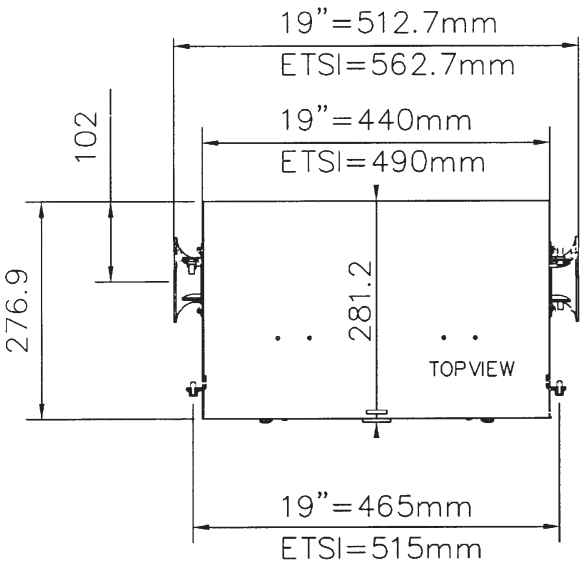
3.1.3 Mount the unit using the FACC-ALLEN-KEY.



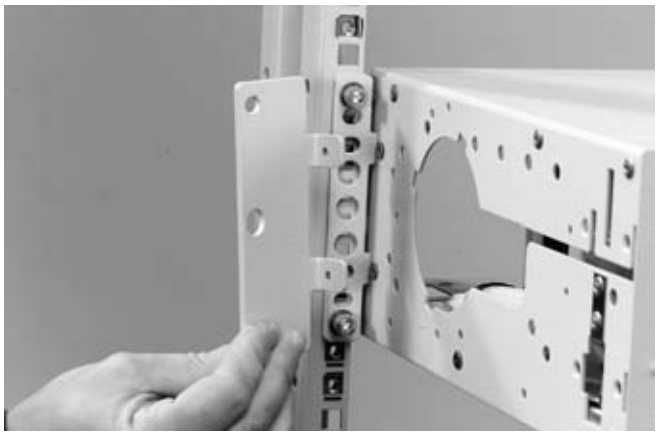






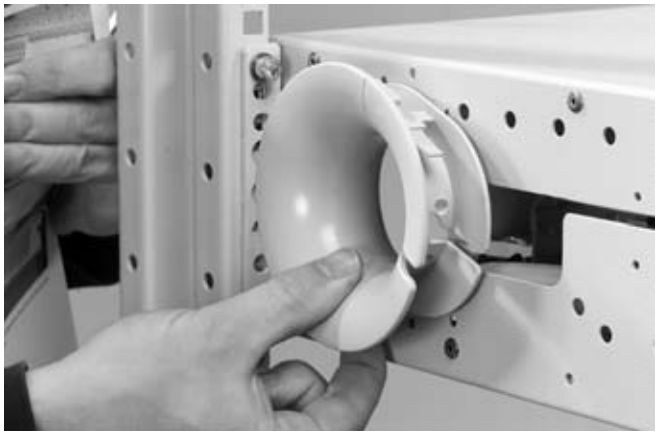


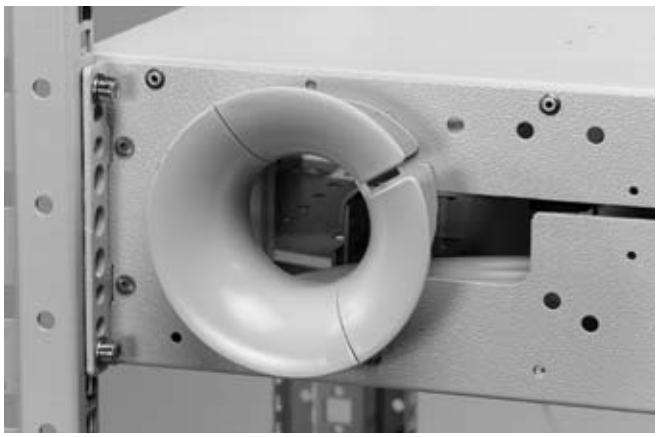
3.1.4 If a non-Tyco rack is being used it is possible that the cage nuts may not fit. In this case use locally supplied ones and install in accordance with local practices. Observe and respect minimum dimensions of the unit.



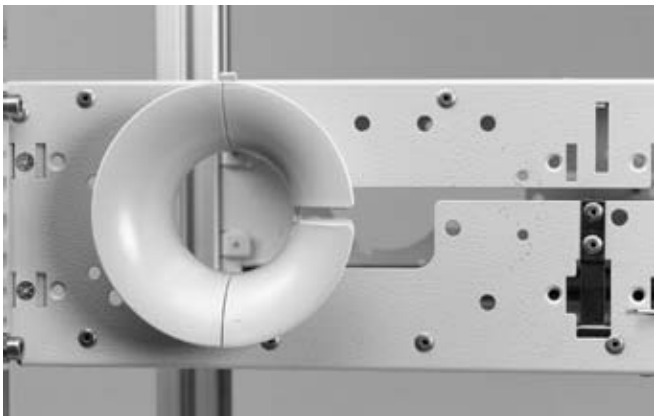
3.1.5 If necessary mount the adaptation brackets 19"-ETSI (FIST-MB2-M or FIST-MB2-M-AS).

3.2 Preparation of the shelf





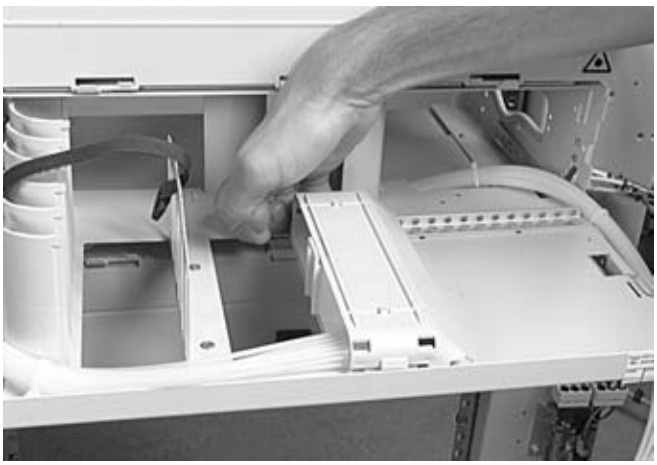
3.2.1 Install the trumpet by positioning it centrally in the opening at the side of the shelf, align the small knobs with the slots in the side. Strongly push and turn until the locking pin clicks into the positioning hole.



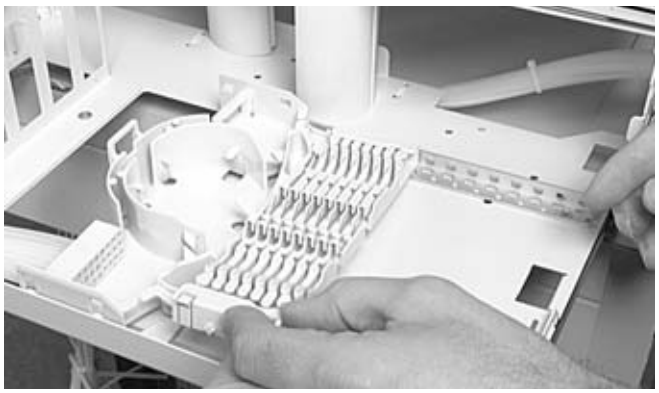
3.2.2 If needed the trumpet can easily be turned at an open position.

3.2.3 If needed, remove the cover by bending it carefully.

3.3 Preparation of the trays

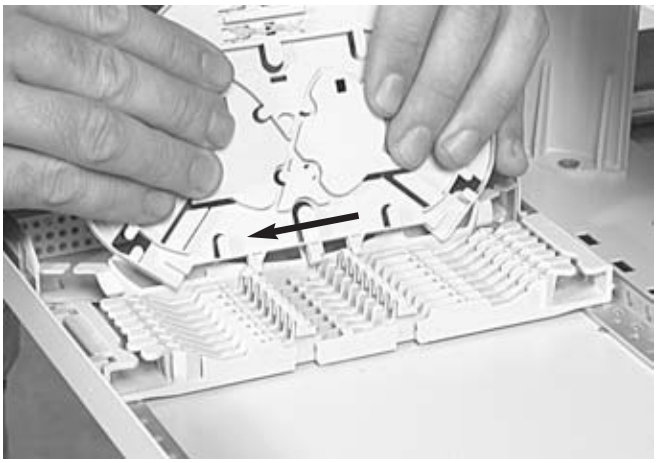


3.3.1 Pull the drawer to the fully open position. Remove the Velcro and the fasblock cover by lifting the back side of the cover.

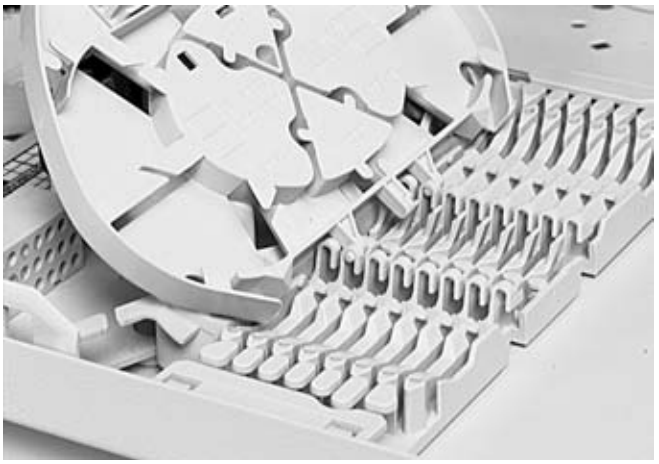


3.3.2 Click the groove plates on the aluminum profiles starting from the fasblock, leaving no spaces. First position the pins of the grooveplate at the back and pull the grooveplate to the front until it locks. Depending on the configuration: fill up the unit with grooveplates, don't leave any gaps.

3.3.3 The grooveplates can be removed using 2 flat screwdrivers.



3.3.4 Click the trays on the groove plates starting from the FAS block. Respect correct orientation of the trays. Preferably mount the trays as you fibre up. In case of SC trays, don't leave spaces.



3.3.5 In case of SE trays, start at the second position and skip 1 space for all the other trays.

3.3.6 If necessary trays can be removed using the fiber guiding pin.

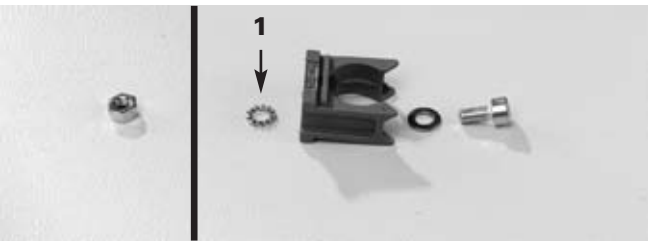
4 Cable termination

4.1 Cable termination in the rack

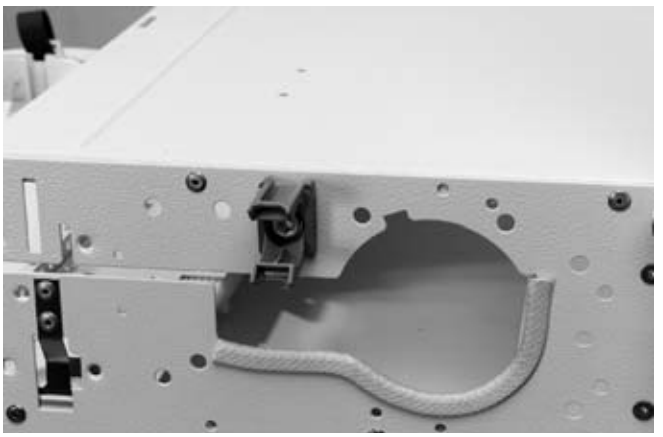
Cable is already terminated in the rack (or in the side duct of the rack) on the cable termination plate. For the loose tube cable, the tubes are protected from the cable termination plate with the flex tube. For central core cable, fibers are guided into guiding tubes going directly into the shelf.

a) Loose tube cable

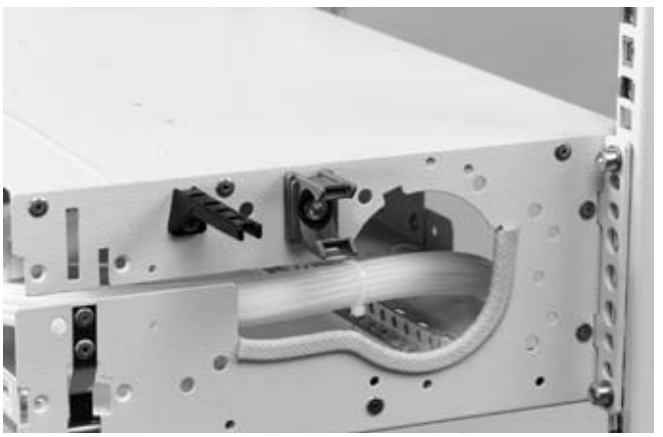
4.1.1 Take the tubes out of the unit. To avoid kinking of the tubes make sure the drawer is closed. To assure correct bend radius: do not reposition the fixed tie-wraps.



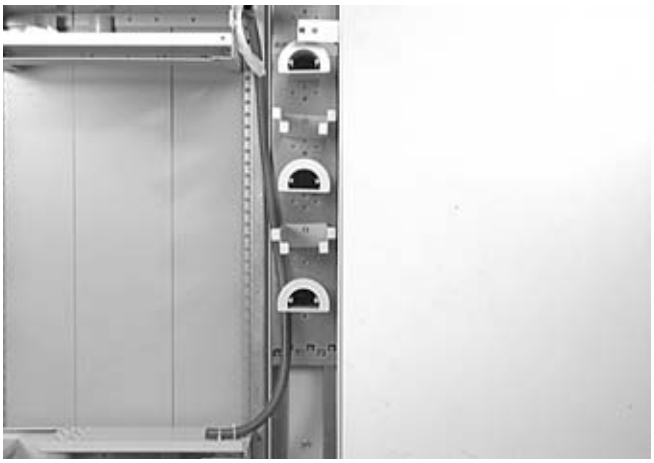
4.1.2 Mounting position: position the toothed lock washer (1) between the tube holder and the side plate.



4.1.3 For back and GR mounting: mount the flex tube holder in the third hole.



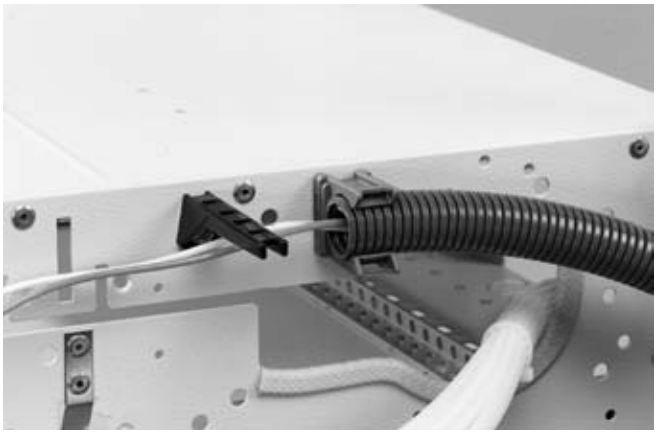
4.1.4 In case two flex tubes will be used: remove the releasable tie wrap and mount the plastic stand-off in the first hole of the front.



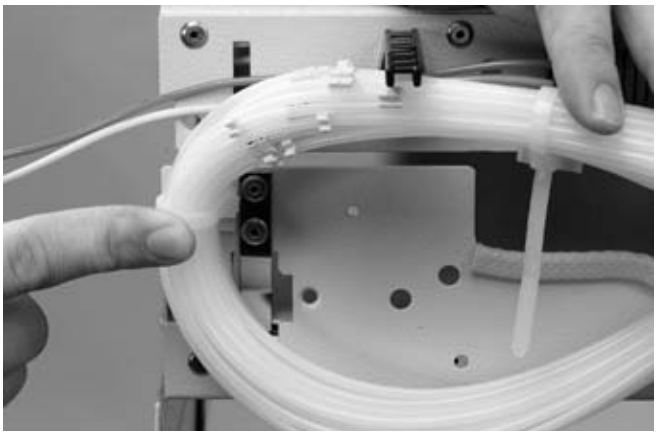
4.1.5 Prepare a piece of flex tube going from the cable termination plate in the rack to the flex tube holder on the unit.

4.1.6 Cable and strength member termination will usually be done in the rack. Terminate the cable in the rack according to Raychem rack installation instruction and local practice. Leave 3.5 m of loose tube measured from the end of the flex tube.

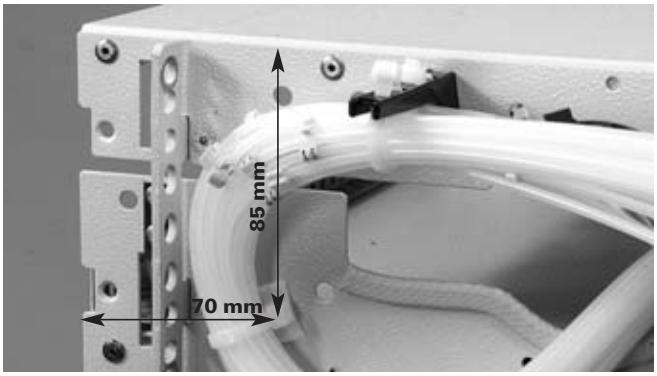
4.1.7 Identify the loose tubes and feed them trough the flex tube. Wrap PVC tape around the tubes at the end of the cable to make feeding easier.



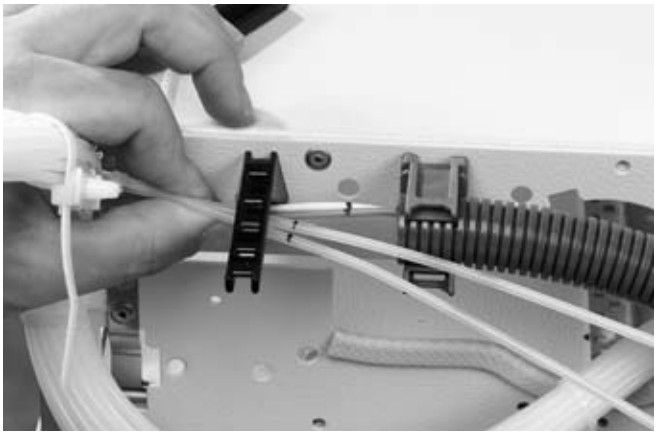
4.1.8 Bring the flex tube into the flex tube holder.



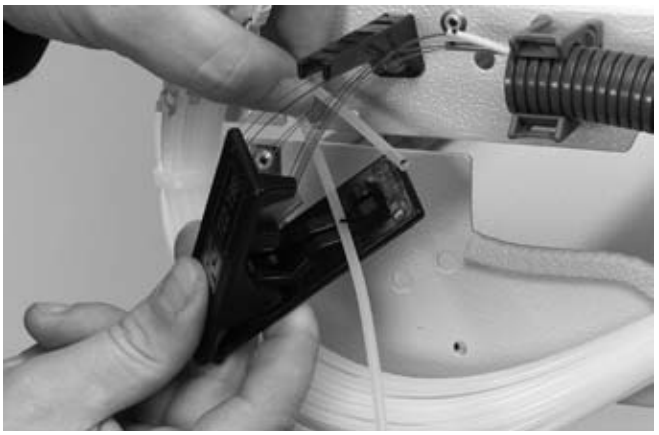
4.1.9 Mount the fixed tie wrap at the position as shown.



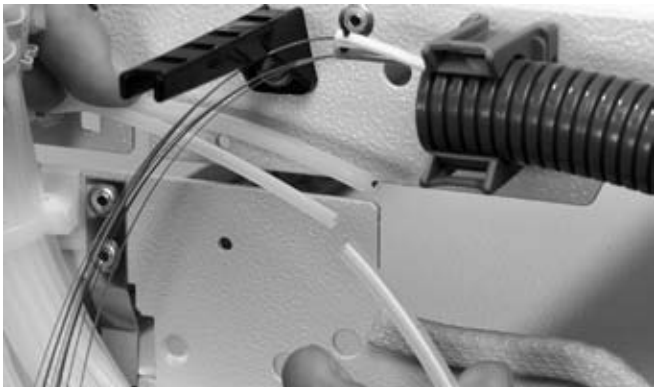
4.1.10 In case of front mounting of the shelf: mount the fixed tie wrap as shown.



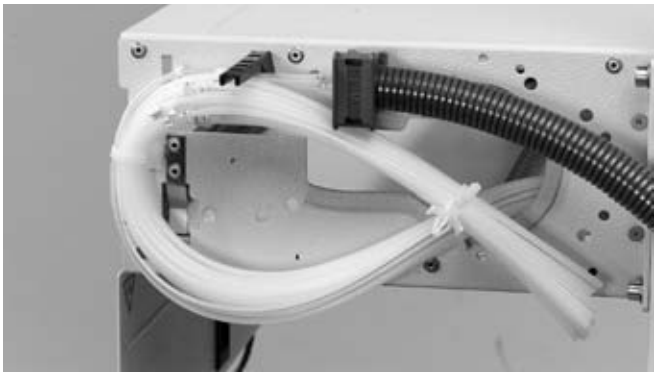
4.1.11 Mark the transportation tube at 30 mm from the end of the flex tube. Mark the loose tube at 20 mm from the end of the flex tube. **Note**: if the loose tube diameter is < 2,3 mm, the use of the FOPT-CT is not needed. Mark the transportation tube at the end of the flex tube.



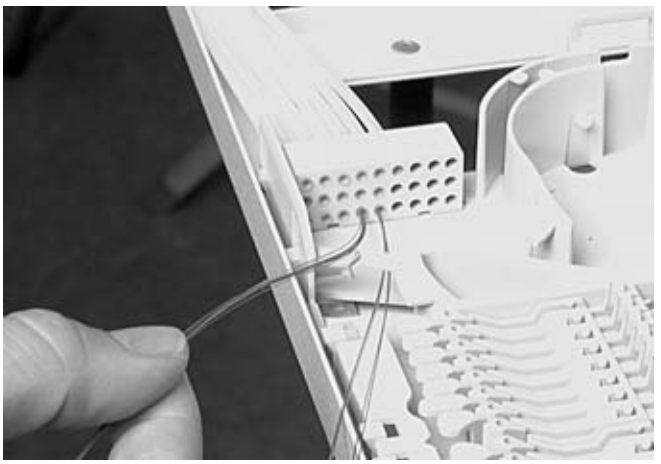
4.1.12 Strip the loose tubes from the mark and cut the overlength of the transportation tubes. Clean the fibers very well to make feeding easier.



4.1.13 Select the loose tube and slide a 75 mm long FOPT-CT over the transportation and loose tube or the transportation tube directly over the loose tube.

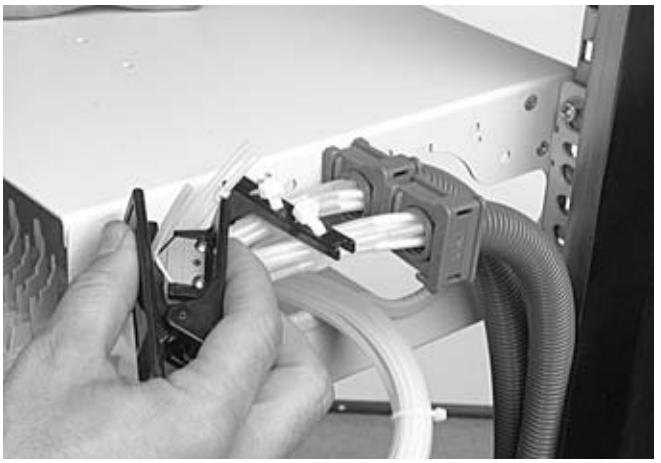


4.1.14 Route all tubes underneath the plastic stand-off and close the flex tube holder with the cover.



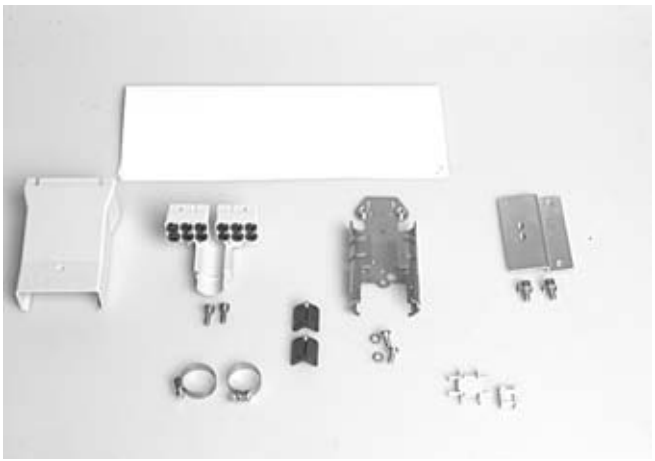
4.1.15 Pull the fibers at the other end of the tubes.

4.1.16 If no more loose tubes have to be terminated, cut the unused tubes. Secure the tubes with a tie wrap.



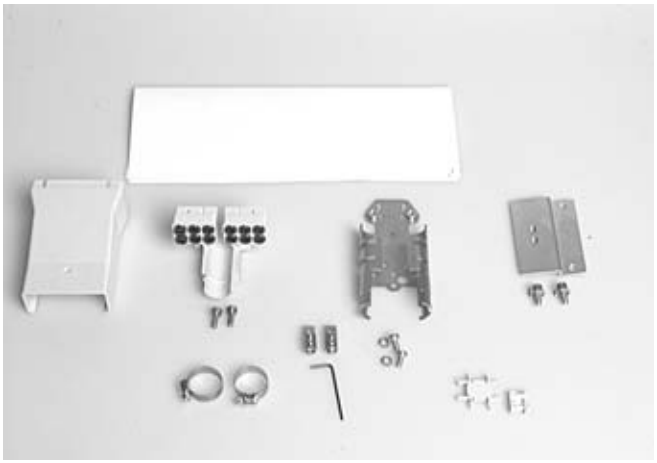
4.1.17 A second cable can be added by using the second flex tube holder.

B Central core and loose tube ribbon cable



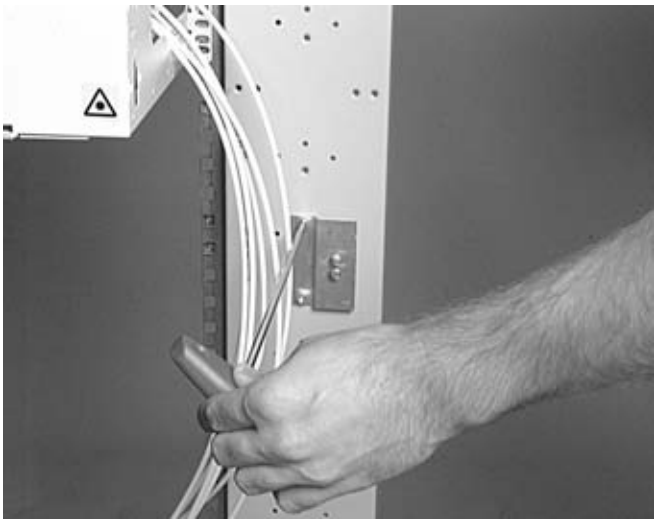
4.1.18 FIST-GR-CTB100CC (Central Core)

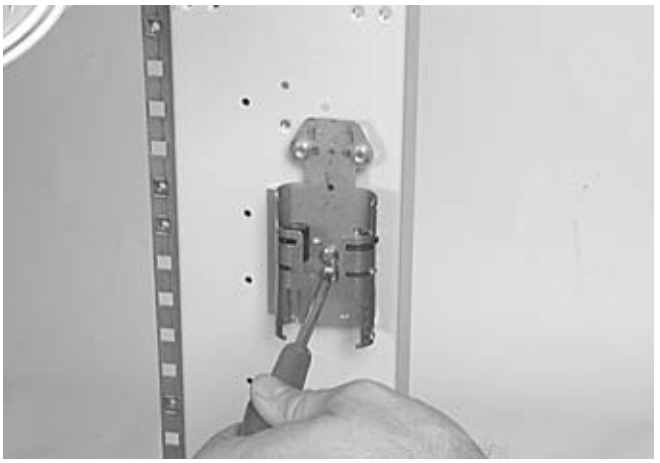
- Breakout device
- Breakout device cover + screws
- Cable bracket + screws
- Mounting bracket + washers + screws
- 2 cable clamps
- Unraveling tool
- 2 strength member stops + screws



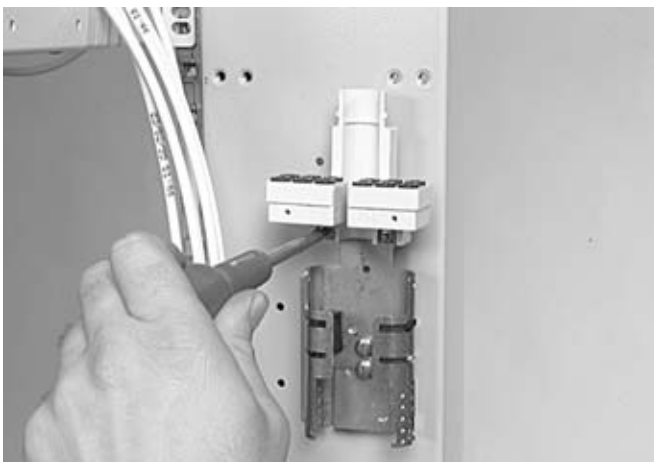
4.1.19 FIST-GR-CTB100 (Loose Tube Ribbon)

- Breakout device
- Breakout device cover + screws
- Cable bracket + screws
- Mounting bracket + washers + screws
- 2 cable clamps
- Unraveling tool
- 2 strength member terminations + screws



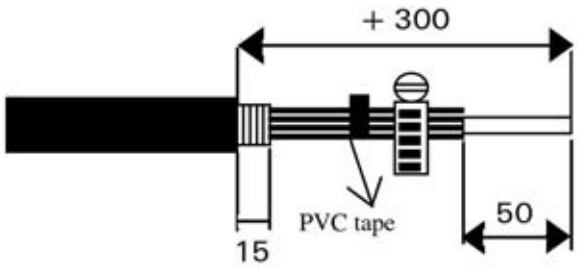


4.1.20 Choose a position in the side duct or on the cable termination plate as close as possible to the GMS. Mount the mounting bracket on that position with the two screws. Mount the cable bracket with two screws on the mounting bracket.

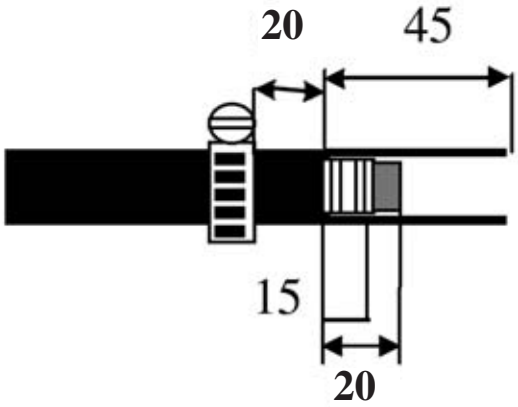


4.1.21 Place the breakout device on the cable bracket.

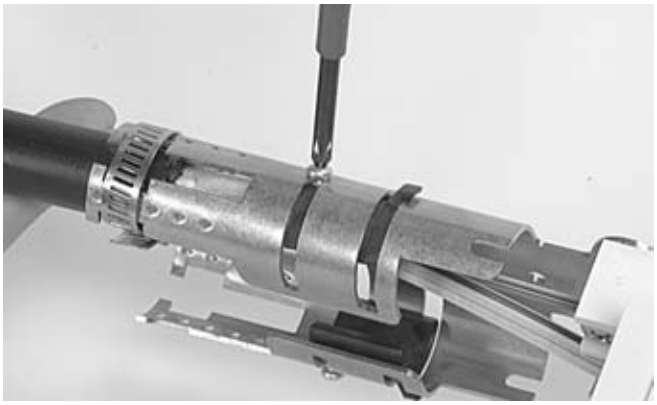
4.1.22 Prepare the cable. Make sure you have 3,5 m fiber inside the shelf. Respect dimensions shown on the drawings. Clean the fibers very well to make easy feeding possible.



Loose tube ribbon cable.

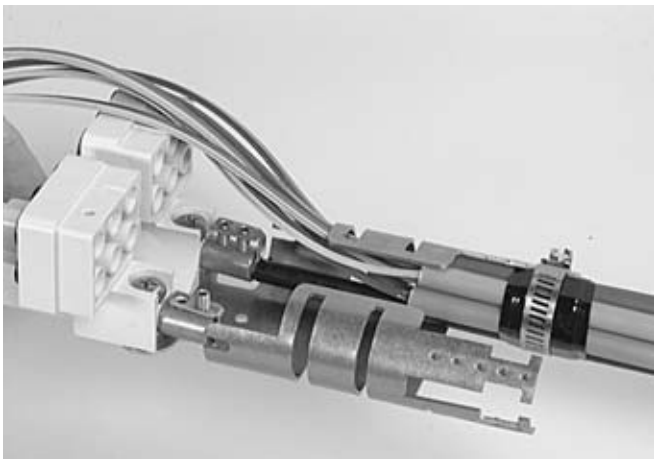


Central core cable.

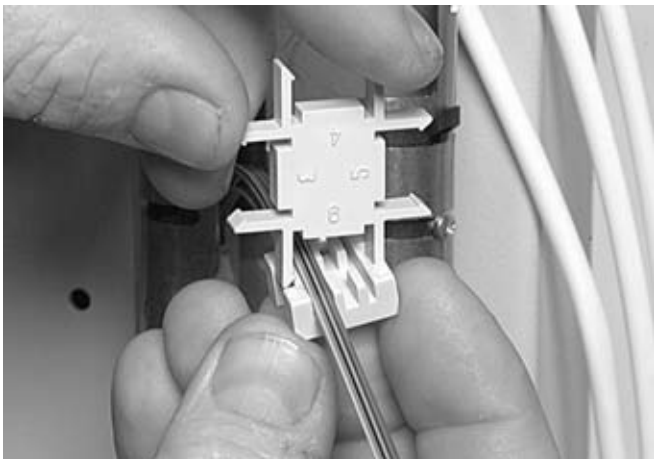


4.1.23 In case of central core cable: Loosen the screw of the strength member stop. Rotate the stop and position the strength members.

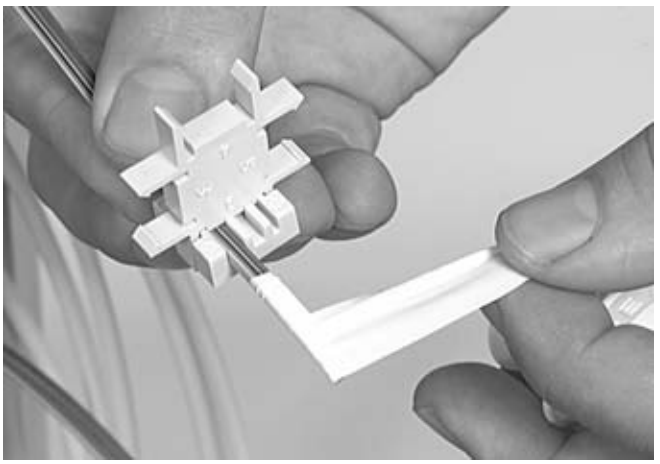
4.1.24 Secure with the cable clamp. Don't squeeze the cable.



4.1.25 In case of loose tube cable: Position the strength member at the bottom. Bundle the loose tubes with tape. Secure the strength member with the screws.



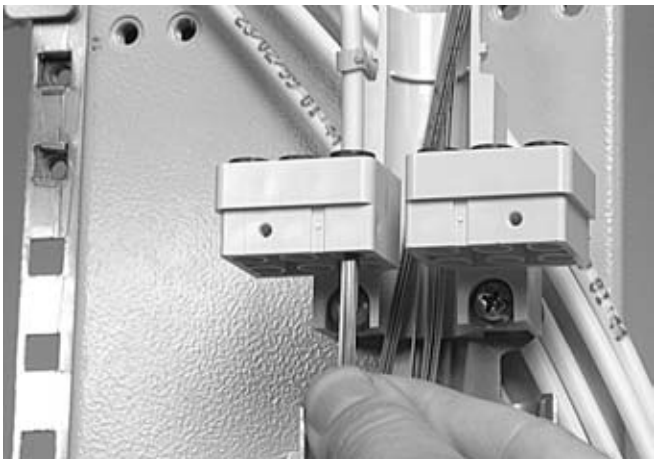
4.1.26 In case of ribbon cable: Remove twists in the ribbons.
a) If ribbons are according ITU norms: Use the unraveling device. The numbers indicate the number of ribbons you want to bundle (3-4-5 or 6). 3 sizes of ribbon can be handled: ribbon 12, 8 and 4. (3 groove sizes).
b) In other cases use local practice.



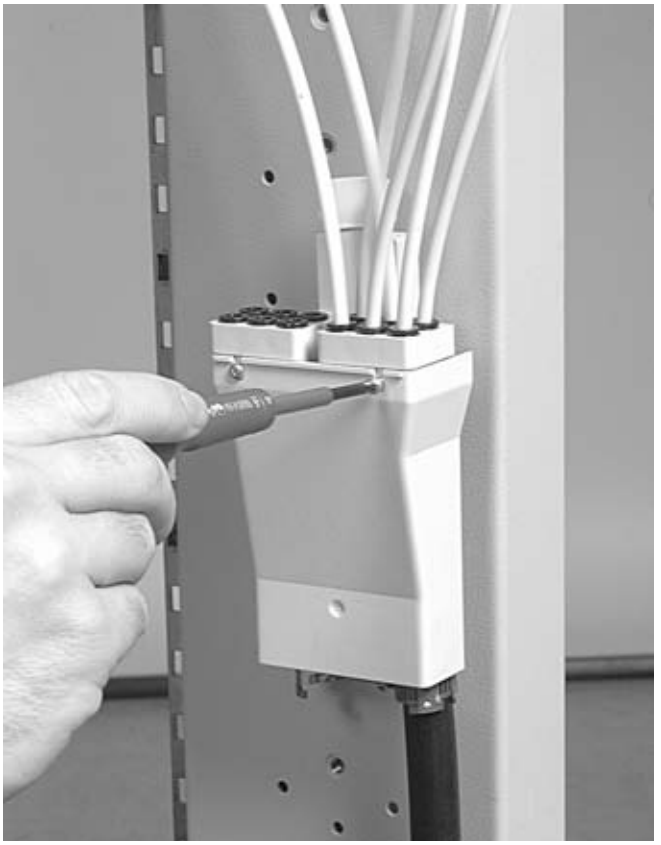
4.1.27 Slide the tool over the ribbons. Bundle at the end using Teflon tape (bundle in groups as you want to feed them through the tubes). Remove the unraveling device.

4.1.28 Cut the tubes to length using the tube cutter. Make sure the shelf is in an opened position.

4.1.29 Insert the tubes in the connectors. Use 6 positions at the left when cable is mounted at the left side of the bracket.



4.1.30 Feed the fiber groups in the tubes. Start at the back to have easy access. Avoid crossings of the fibers.

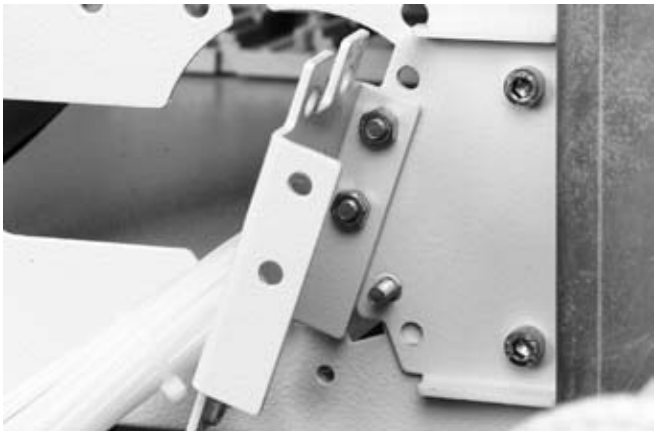


4.1.31 Slide the cover over the break-out and secure with the screws.

4.2 Side cable termination directly on the shelf

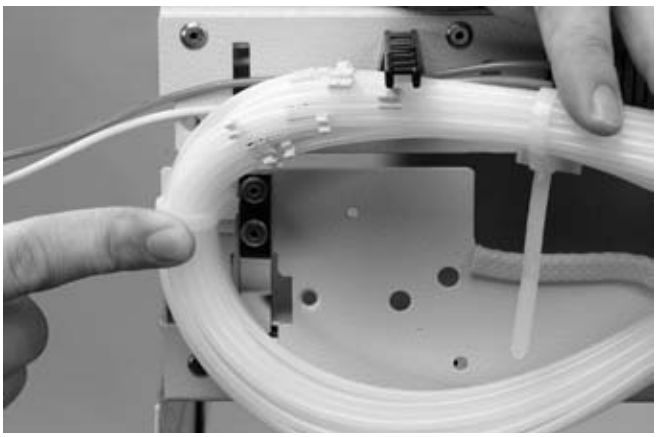
a) Loose tube cable

4.2.1 Right side mounting cable coming from the bottom.

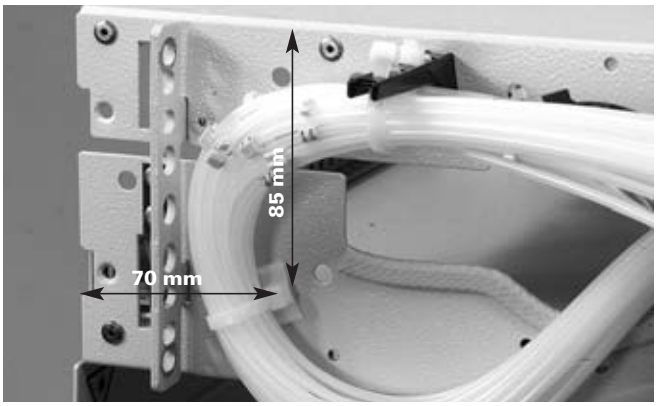


4.2.2 Right side mounting cable coming from the top.

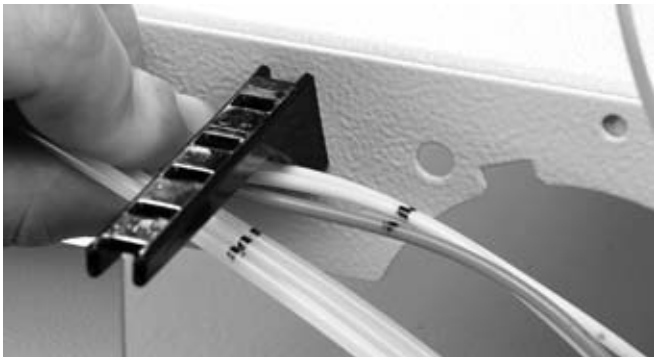
4.2.3 Strip the cable over 3,5 m. Cut the strength member at 35 mm from the outer jacket. Apply foam tape at the tie wrap positions. Install the prepared cable on the side termination plate.



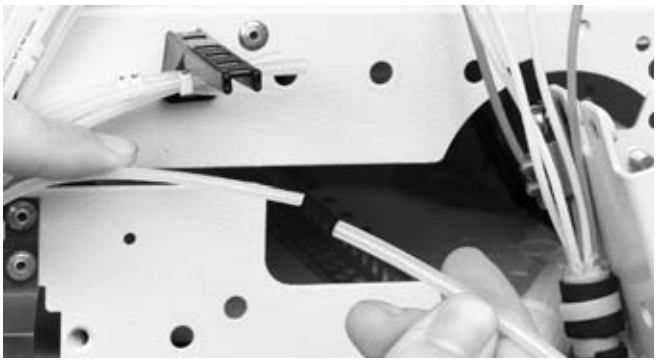
4.2.4 Install the plastic stand-off as shown. Mount the fixed tie wrap at the position as shown.



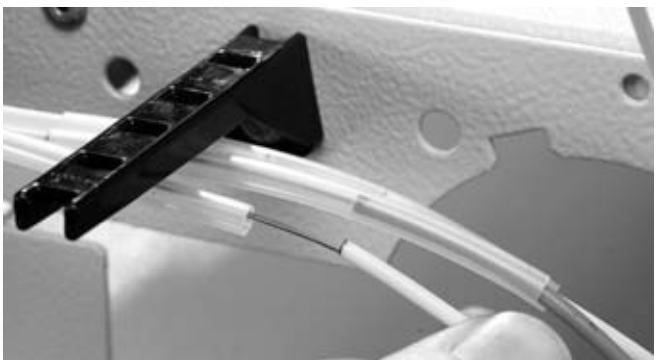
4.2.5 In case of front mounting, mount the fixed tie wrap as shown.



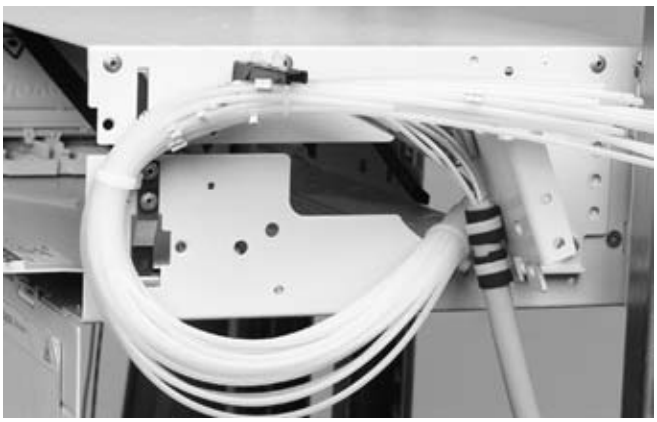
4.2.6 Mark the transportation tubes 10 mm from the plastic stand-off. Mark the loose tubes 30 mm from the plastic stand-off.



4.2.7 After stripping the loose tubes and cutting of the overlength of the transportation tubes, slide the FOPT-CT over the transportation tubes. Clean the fibers very well to make feeding easier.



4.2.8 The FOPT-CT should overlap loose tube and transportation tube.

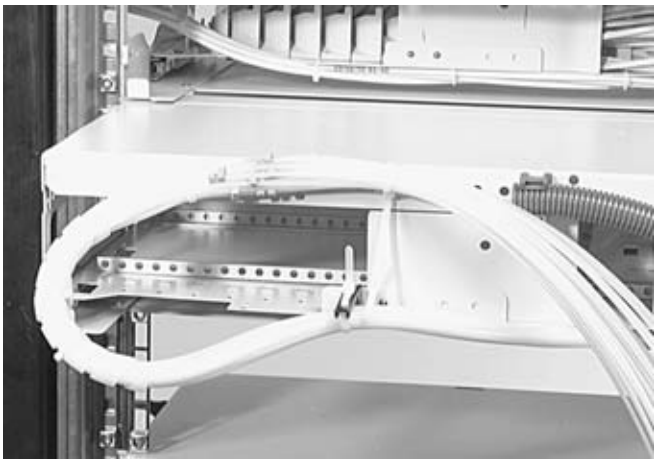


4.2.9 Transportation tubes can be fixed on the plastic stand-off with tie wraps.

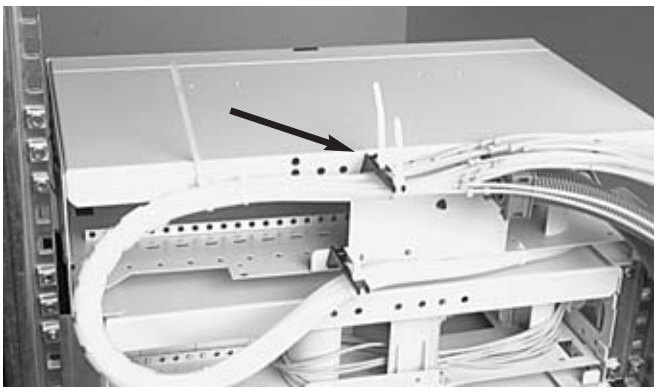
4.3 Back cable termination

A Loose tube cable

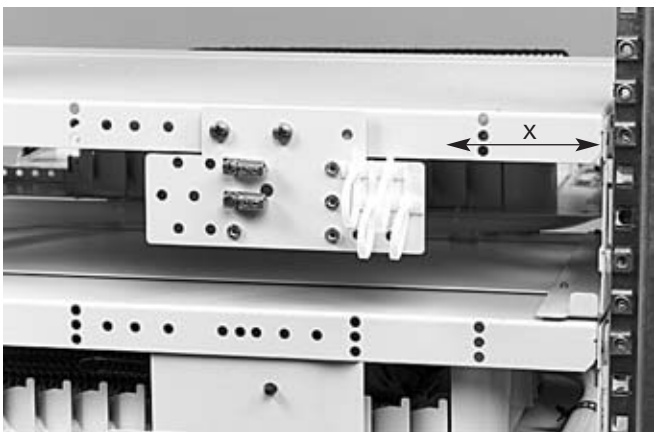
4.3.1 **Always** remove the 2 tie-wraps at the bottom of the tray.



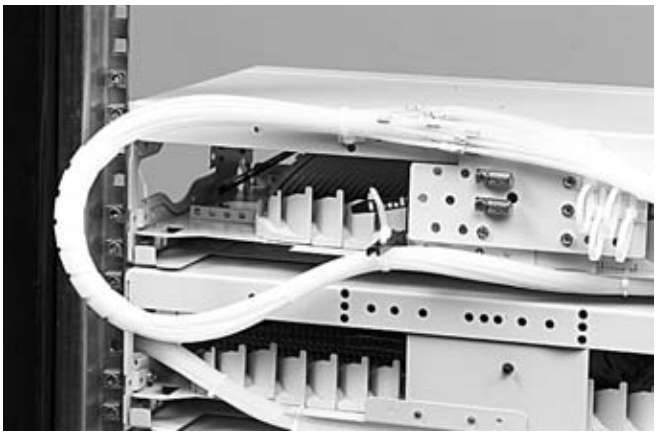
4.3.2 In case of strength member termination in the rack (use FIST-GSS2-CT-BR-2): mount the flex tube holder and the black stand-off. Mount the tubes to the black stand-off with a tie-wrap. Protect the tubes with the spiral tubing and make sure the bend is smooth. Terminate as shown.



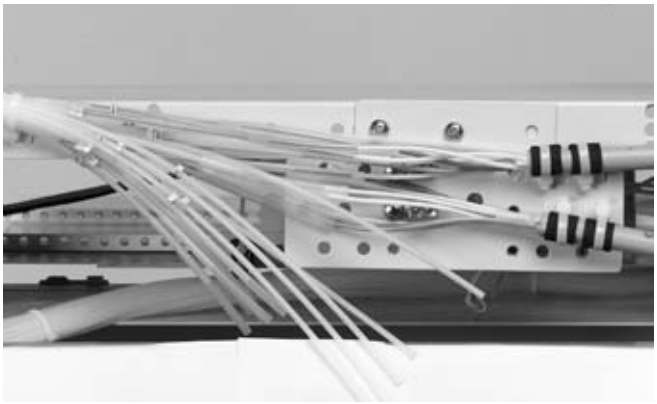
4.3.3 In case of a second cable: Replace the releasable tie-wrap by a second stand-off.



4.3.4 In case of strength member termination on the shelf (use FIST-GSS2-CT-BS-2): mount the cable plate, the strength member connectors. Use the plastic spacers between plate and shelf. The distance between the plate and the right side of the shelf X is 8 cm for a 19″ shelf and 10,5 cm for an ETSI shelf.



4.3.5 Mount the transportation tubes, the black stand-off and the tie wraps as shown. Protect the tubes with a 200 mm spiral tubing and make sure the bend is smooth.

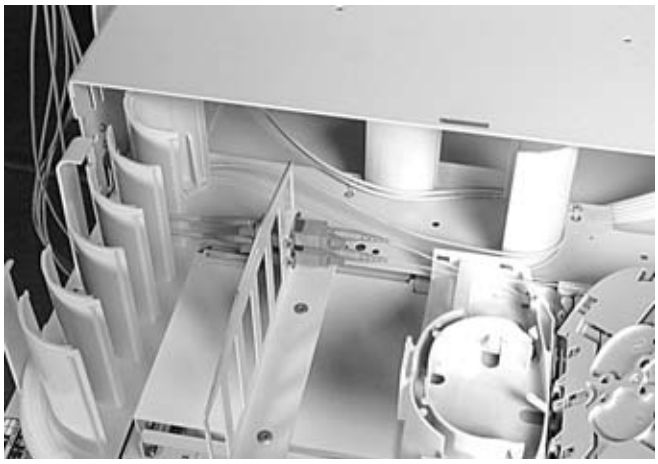


4.3.6 Install the cables. Strip the loose tube at 50 mm from the cable jacket end. Cut the transportation tube at 60 mm from the cable jacket end. Slide a 75 mm long FOPT-CT over the transition. If the loose tube diameter < 2,3 mm the use of the FOPT-CT is not needed (in this case don't cut the transportation tubes too short).

5 Termination of the pigtails

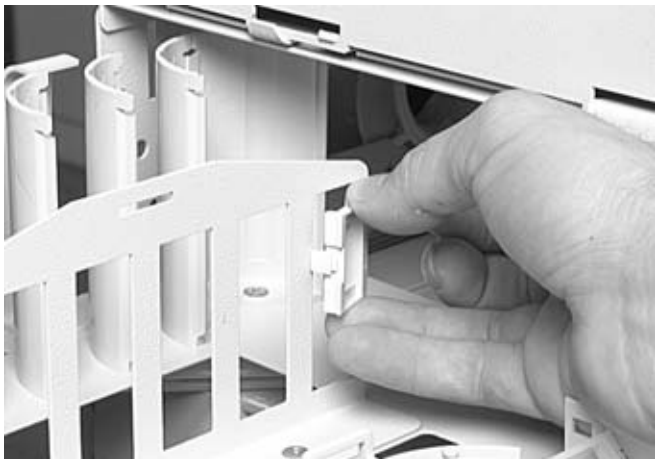
5.1 Using connector adapters

5.1.1 Insert the connector adapter in the metal bracket.

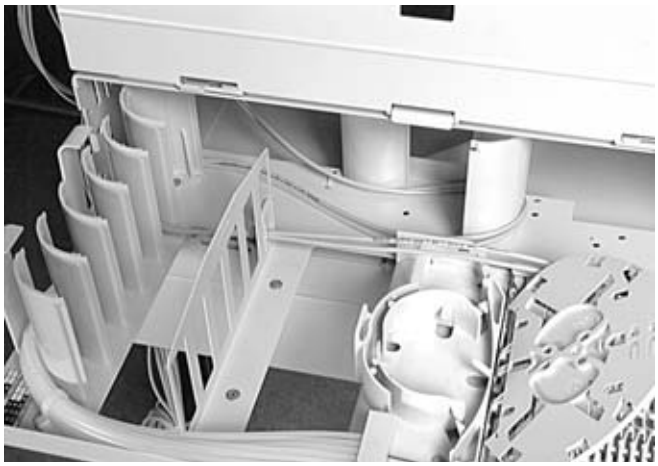


5.1.2 Route the jumper and the pigtail into the unit and click the connectors in the connector adapter.

5.2 Using KTU's

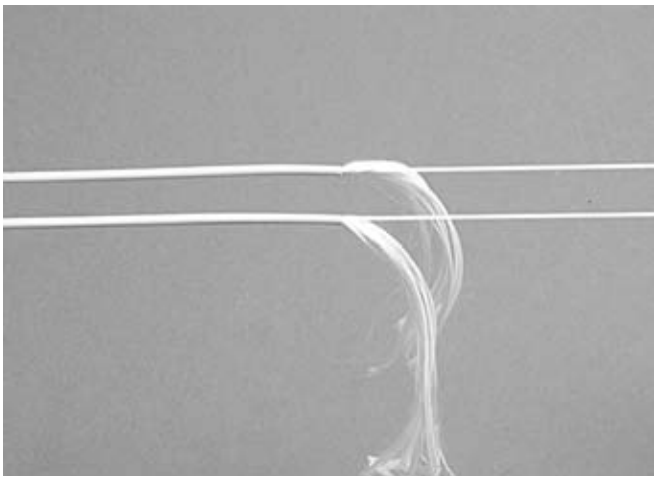


5.2.1 Insert the KTU retainer in the metal bracket.

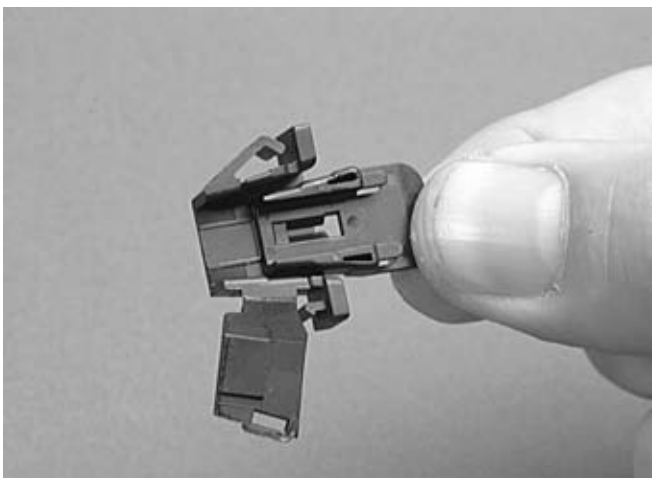


5.2.2 Route the pigtails without leaving any slack through the trumpet and through the bracket.

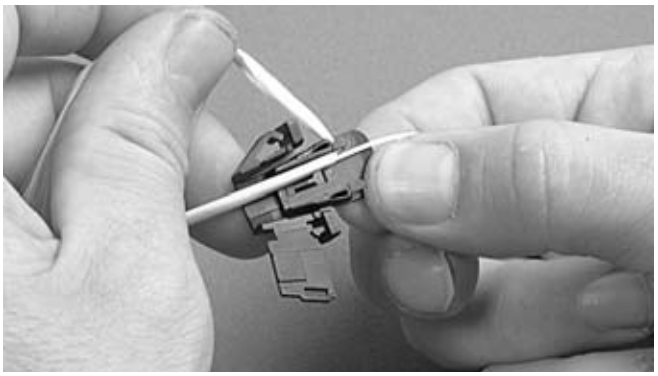
5.2.3 Mark at 5 cm from the bracket to have some slack for sliding the tray.

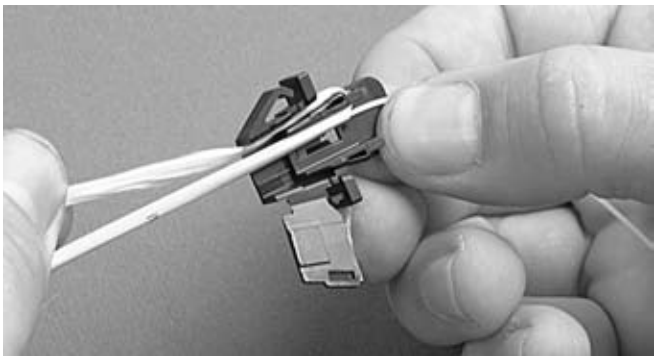


5.2.4 Cut the pigtails leaving ± 1.7 m length after the marking point. Remove the jacket beyond the marking point. Cut away the kevlar leaving 50-100 mm from the edge of the jacket.

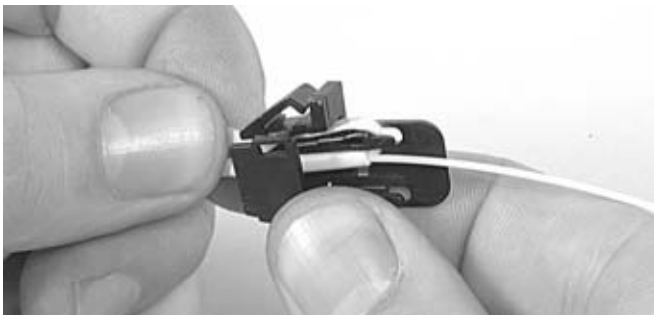


5.2.5 Mount the 2 pieces of the KTU as shown.



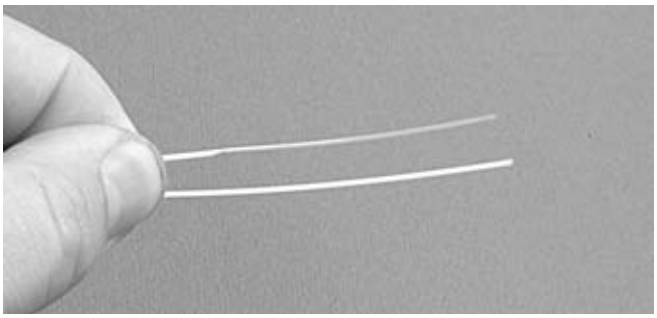


5.2.6 Guide the prepared pigtail in the KTU. Make sure the kevlar yarns do not entangle the fibers.

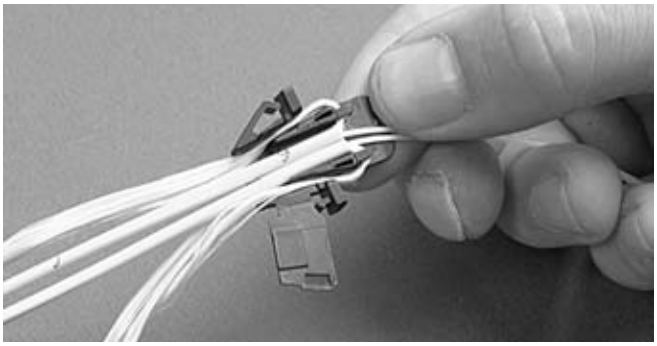


5.2.7 Close the KTU.

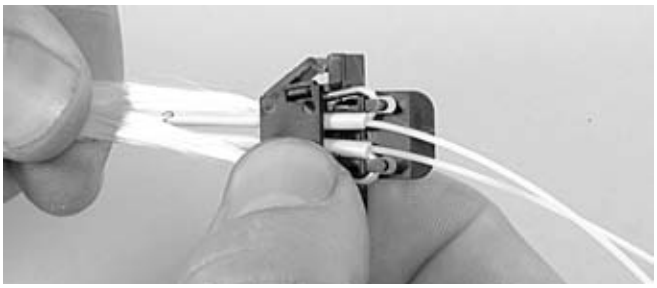
5.2.7 Slide the inner part to the left as much as possible by pulling the jacket and kevlar at the same time. Cut the excess kevlar leaving 5-10 mm.



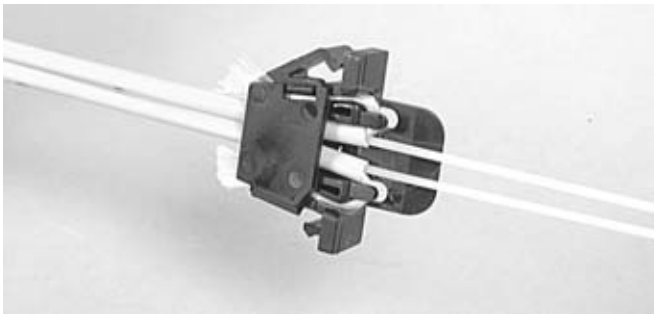
5.2.9 In case of 2 pigtails/KTU; identify 1 of the fibers with a marking pen.



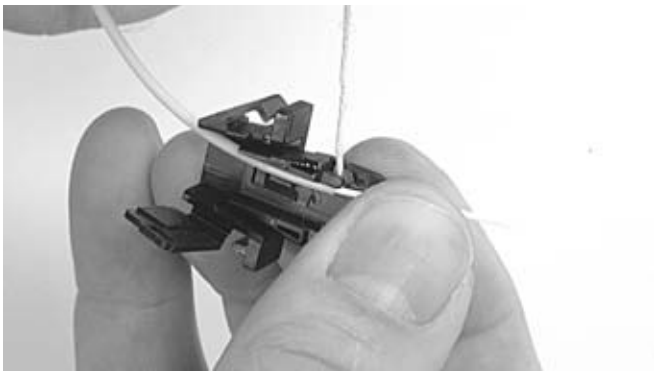
5.2.10 Guide the prepared pigtails in the KTU. Make sure the kevlar yarns do not entangle the fibers. Keep the Kevlar from each pigtail separated.



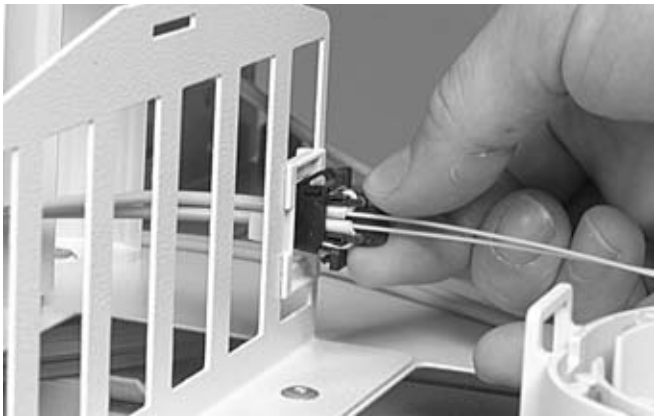
5.2.11 Slide the inner part to the left as much as possible by pulling the jacket and kevlar at the same time.



5.2.12 Cut the excess kevlar leaving 5 mm.

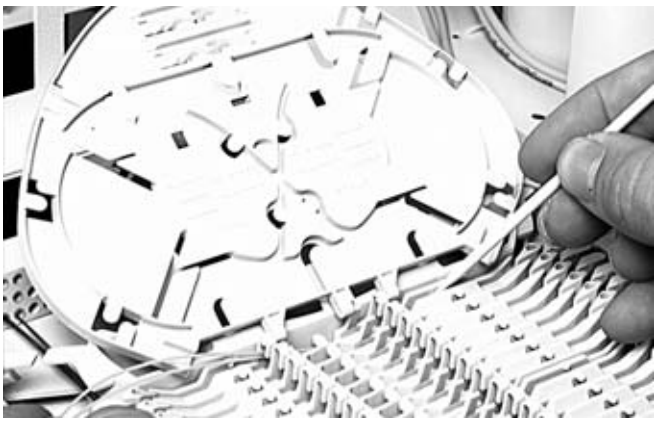


5.2.13 In case of less kevlar (typically this means pigtail diameter < 2,3 mm), wrap the kevlar to ensure a good strain relief.



5.2.14 Slide the KTU in the retainer. Respect correct orientation of the KTU as shown on the picture.

5.3 General

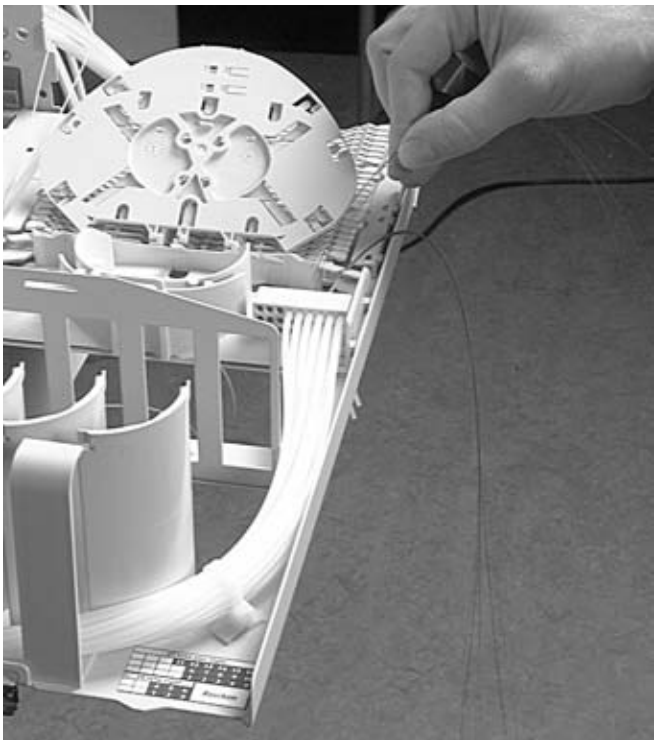


5.3.1 Guide the fibers into the corresponding groove. Make sure all fibers are positioned under the lips.

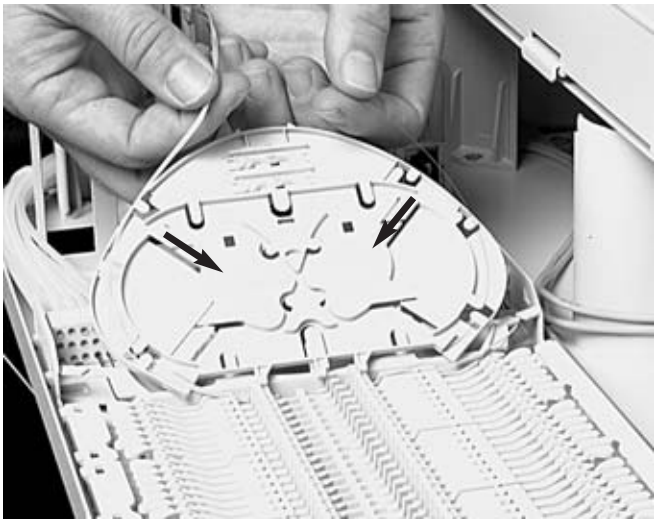
5.3.2 Make sure the transition of secondary to primary coating is in the splice protector. If this is not possible: strip the secondary coating (semi-tight) in the middle of the groove plate.

6 Splicing + fiber storage

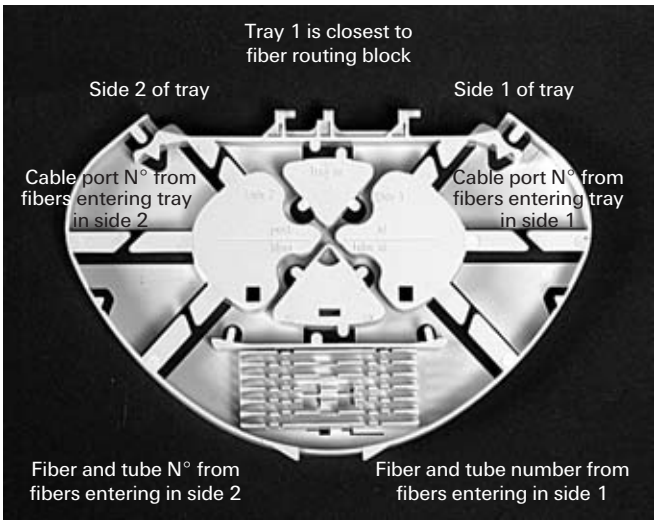
6.1 General



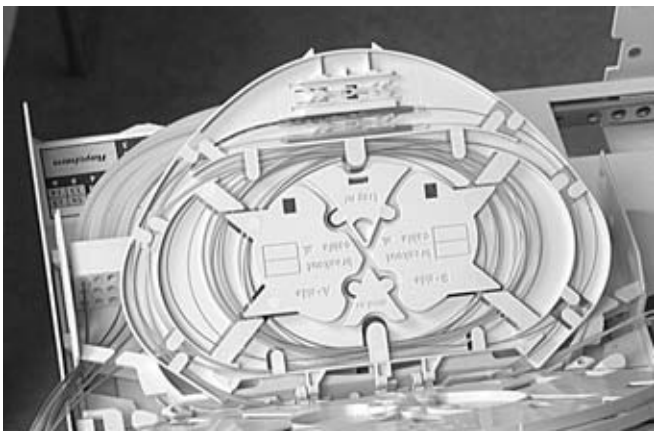
6.1.1 Select the correct fibers from the cable side according to tube position labeling and color code.



6.1.2 Guide the fibers in the groove plate. Make sure all fibers are positioned under the lips. Splice the fibers and protect the splice. Position the splice in the splice holder. Write cable and pigtail information in the ID zone.



6.1.3 Use a permanent marker to write splicing information on the tray.



6.1.4 Store the fibers into the tray. Follow the exact routing as shown.

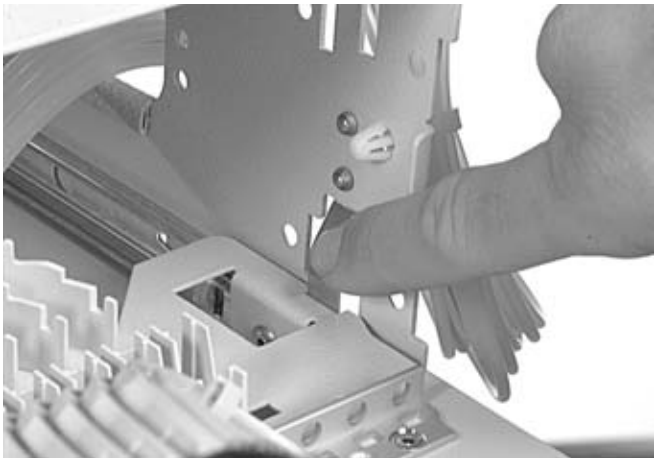
6.1.5 In case of a pigtail-to-pigtail or a cable-to-cable application, follow the routing as shown.

6.2 Ribbon

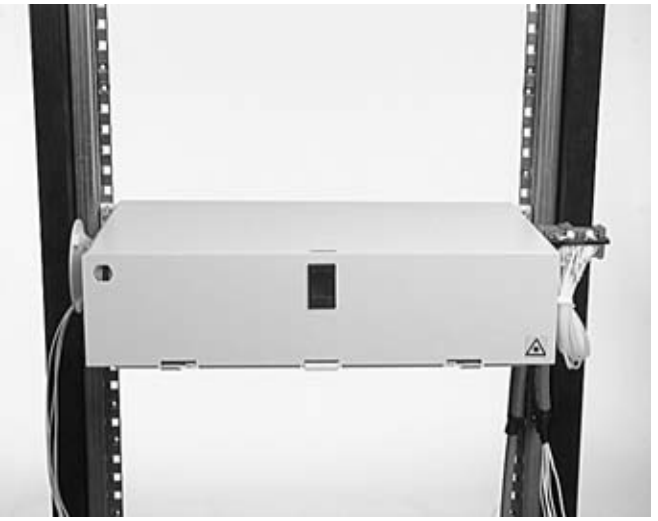
In case of ribbon pigtail: limit the numbers of torsion in the organizer system to avoid optical losses.

7 Closing the shelf

7.1 Put the cap over the FAS block. Click a tray lid onto the last tray. Lock the trays with the Velcro.



7.2 Close the drawer by activating the spring on the right side of the unit.



7.3 Close the cover.

8 Important steps

- Clean the fibers very well to make feeding easier.
- Always respect 30mm bendradius and prevent kinking when repositioning tie-wraps for the transportation tubes.
- Respect overlap dimensions for transition loose tube-transportation tube.
- Strip the loose tube cable at 3,5 m.
- Provide sufficient pigtail slack for easy sliding of trays.
- Prevent twisting of the ribbon fiber.
- Coil the fibers at a maximum diameter, minimize the number of coils.
- Make sure all fibers are positioned under the containment lips.

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