tyco Electronics

FIST-SCO2-BE06

INSTALLATION INSTRUCTION

Sewage Closure Organizer

TELECOM OUTSIDE PLANT

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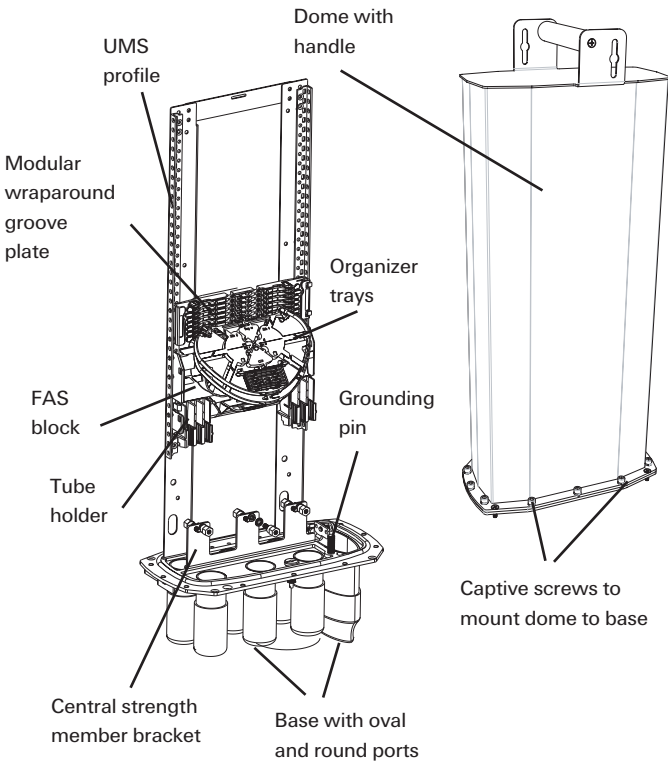
1 Introduction

- The FIST-SCO2 is a metal closure with slim design, specially developed to fit in small sewage canal systems and therefore resistant to very aggressive environments.
- It is the environmentally sealed enclosure for fiber management systems that provides the function of splicing and passive component integration in the external network.
- The product can be tailored to almost any required configuration by adding splicing and /or passive device sub-assemblies.
- The closure is a single-ended design made of AISI 316L stainless steel.
  The dome-to-base seal consists of an O-ring under controlled compression.
- The base and dome contain fixation holes to mount the closure against a wall.
- One oval entry port for looped (uncut) cable and six round ports for single cable entry/exit are provided in the base and are closed with heat-shrinkable caps.
- The cable seals are manufactured from heat-shrinkable material.
- The base has a grounding provision and a “flash test” valve.
- The FIST-SCO2 is equipped with the FIST-MK2 organizer system, which allows the storage of fiber in single circuit and in single element.
- Moreover, the system has provision to store uncut fibers as single circuits in SC-trays, as single element in SE-trays or as loose buffer tubes at the backside of the UMS profile.
  The UMS (Universal Mounting System) profiles provide the supporting frame for mounting combinations of SOSA2 (Splicing Only Sub-Assembly) and / or SASA2 (Splitter Array Sub-Assembly) modules, which consists of a modular groove plate and trays.

2 General

2.1 Abbreviation



2.2 Kit Contents

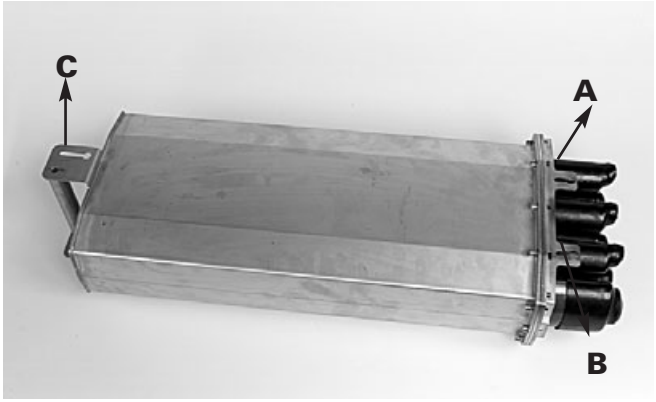
- Base including
  - 1 oval and 6 round cable ports (sealed with heat-shrinkable caps)
  - grounding provision
  - flash test valve
  - central strength member fixation bracket for all cables
  - provision for wall mounting
  - UMS profiles (to mount the splicing modules FIST-SOSA2)
- Dome with handle and captive screws to fasten dome to base
- O-ring
- 1 x FAS block (including 2 tube holders, cap and wedge) pre-installed
- 1 x Velcro to secure the trays
- 2 x Velcro's to hold the uncut loose tubes
- 1 x tray lid (fiber guiding pin included)
- Silica gel
- 2 Allen keys (for strength member termination kit and for sealing dome to base)
- Installation Instruction

2.3 Tools

- FACC-TUBE-CUTTER-01	Tube cutter	Used to cut tubing
- FACC-TUBE-STRIPPER-02	Tube stripper	Used to strip loose tubes
- FACC-HEAT-GUN-220V	Heatgun + heatgun tip	Hot air gun to shrink the cable seals
- FISTV-E7185-3010	Cutting wire	

3 Installation

3.1 Marking the mounting points



3.1.1 Position the closure against the given structure and mark the mounting points (A,B en C).

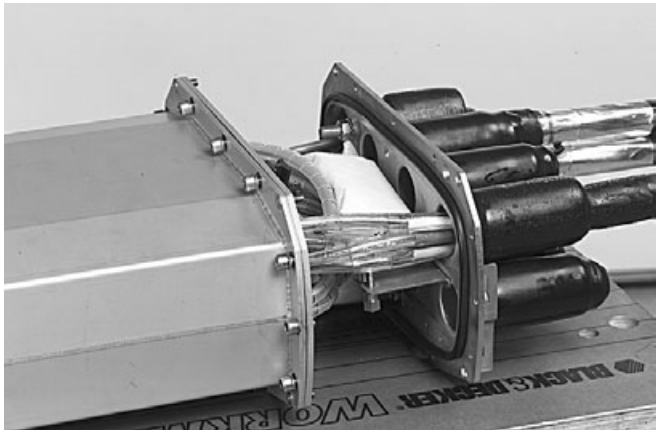
3.1.2 **Optional kit: FIST-SCO2-L-KIT**

When the closure after installation is brought to the mounting spot and the closure can not be turned in the correct position to mount (due to stiff cable), an extra mounting point can be fixed to the closure. This extra mounting point is secured opposite to the mounting points A and B.

Note: This means that two new mounting points have to be made into the structure:

- the mounting point on the base part(shown on picture):
  mark the new point exactly in the middle of the marked points A and B at point 3.1.
- the mounting point on the dome part:
  mark the new point 60 mm to the left of the already marked point C (point 3.1.1).

3.2 Opening the FIST-SCO



3.2.1 Untighten the screws (do not remove). Remove the dome and O-ring.
Remark: make sure sealing surfaces are kept clean and not damaged (O-ring, base, dome).

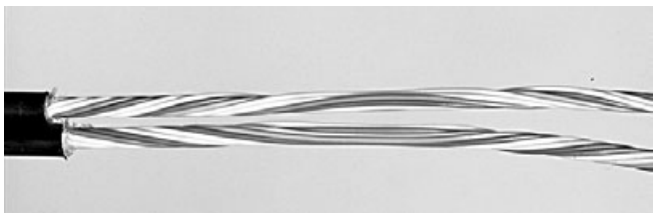
4 Cable installation oval port

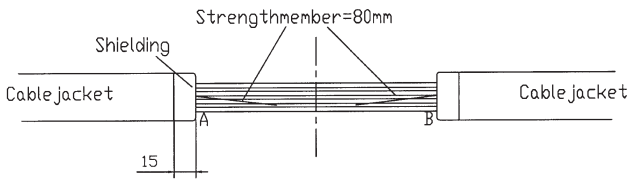
4.1 Cable preparation

A window cut of **4 m** is needed.

4.1.a Loose tube cable

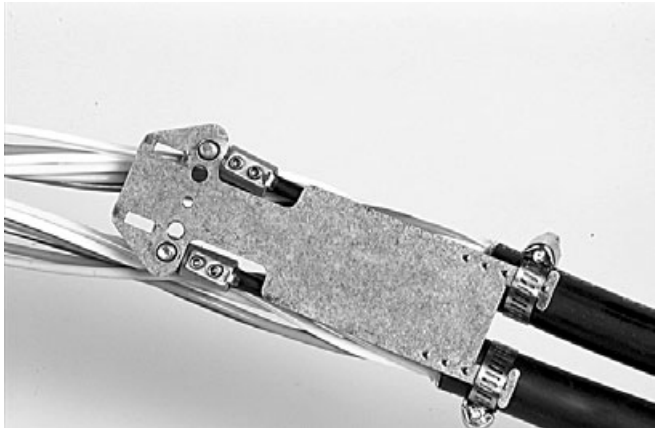
Sealing kit: FIST-GCO2-OSK-LTS



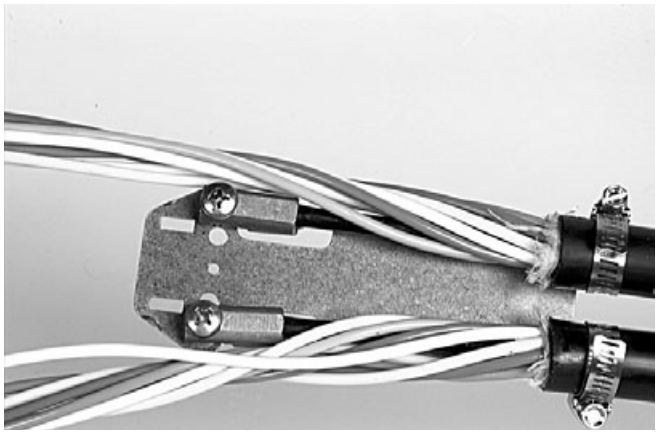


4.1.1 Reversed oscillating cable: mark the cable in the middle of the loop and remove cable jacket left and right of the mark over a total distance of 110 cm (slightly more than the distance between two reversal points on the cable). Locate the buffer tube reversal point on the cable and mark the cable at 2 meters left and right from this point. Continue with the removal of the cable jacket starting from this point.
Important: make sure that twist position of loose tube is identical in A and B. This must be done correctly for ease of installation.

4.1.2 Remove the strength member leaving 80 mm from the cable jacket, if shield is present, leave 15 mm of the shield. Clean the loose tube, remove all grease. Identify the loose tubes with the split collet rings markers if necessary. There are different FIST-split-collect-rings depending on diameter of the lose tube.



4.1.3 Insert the strength members of the cable into the universal strength member connector on the loop bracket (loosen the bolts with the Allen key if necessary) such that all loose tubes can be routed without unnecessary crossings. Avoid to twist the loop in the case of a reversed oscillating cable. Fasten with the Allen key.

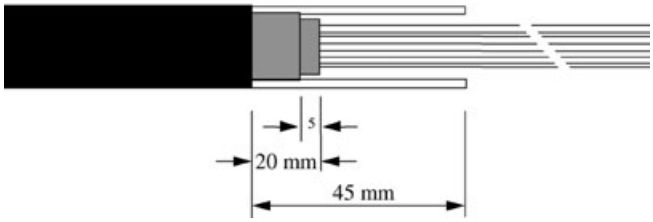


4.1.4 If the cable diameter is more than 8 mm, secure the cables with the hose clamp onto the loop bracket. Wrap a few layers of the tape around the hose clamp. If the cable diameter is less than 8 mm secure the cables with tie wraps.

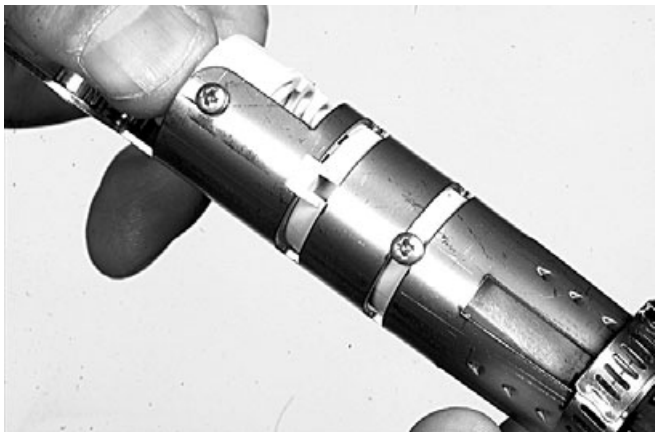
- When using cables with a diameter smaller than 12 mm:
  - bend the sharp edges on the bottom of the bracket towards the cable and use some tape around the bracket to protect the heat-shrinkable tubing
  - cable built-up has to be done with SCOP (FACC-MC-SCOP-CS-10).

4.1.b Central core cable

Sealing kit: FIST-GCO2-OSK-CC



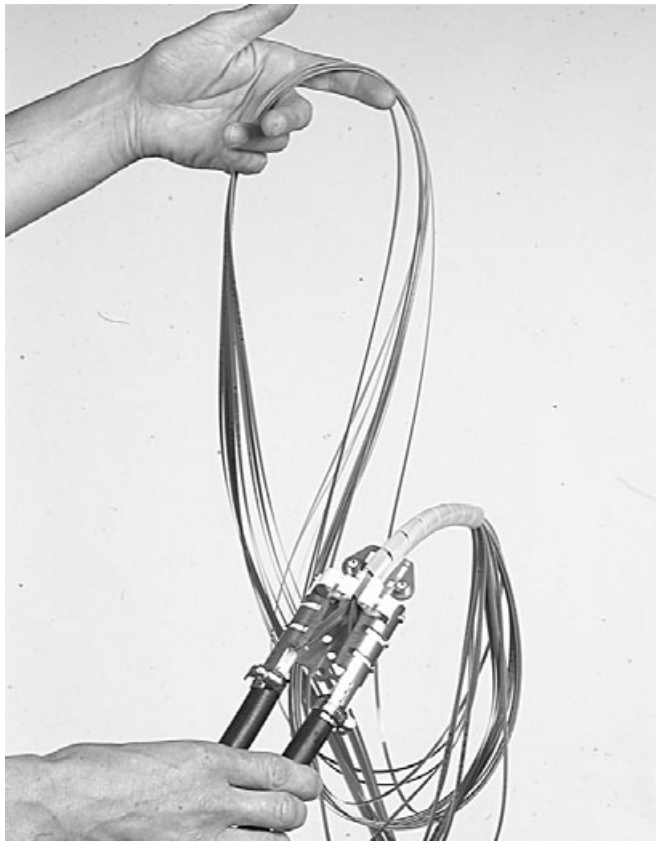
4.1.5 Remove the jacket for 45 mm leaving the strength members. Be cautious not to damage the strength members. Remove the central core leaving 20 mm from the cable jacket. Be careful not to loose the ID of the fibers. In case of metal shield, remove 5 mm from the end. Clean the fibers.

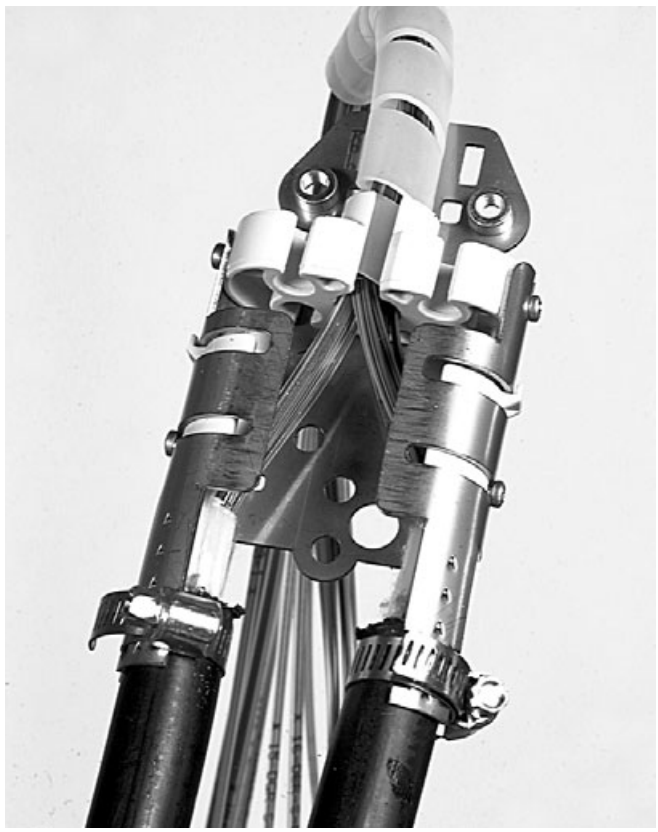


4.1.6 Slightly loosen the screws of the two strength member stops on the loop bracket such that one can position the strength member stops according to the position of the strength members.

4.1.7 Insert the strength members from the cable into the strength member stop. In case cable diameter is more than 8 mm, secure the cable with the hose clamp onto the loop bracket. In case cable diameter is less than 8 mm, secure the cable with tie wrap onto the loop bracket. Secure the screw of the strength member stop on the loop bracket. Wrap a few layers of tape around the hose clamp.

- When using cables with a diameter smaller than 12 mm:
  - bend the sharp edges on the bottom of the bracket towards the cable and use some tape around the bracket to protect the heat shrinkable tubing
- cable built-up has to be done with SCOP (FACC-MC-SCOP-CS-10).

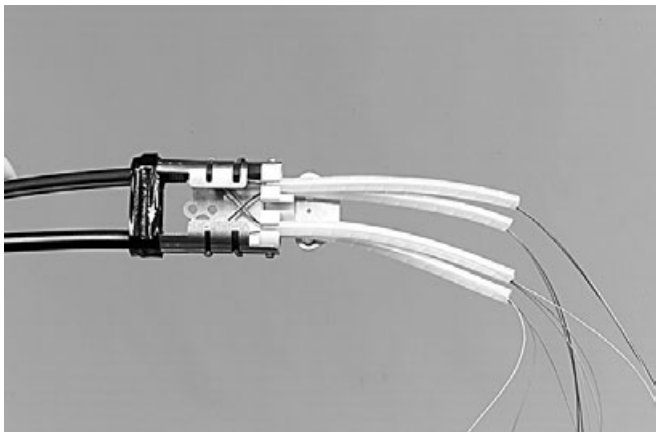




4.1.8 Take the spiral tube and cut it at 160 mm length.
Put the tube over the bundle fibers and insert this in the central cavity of the loop breakout device.

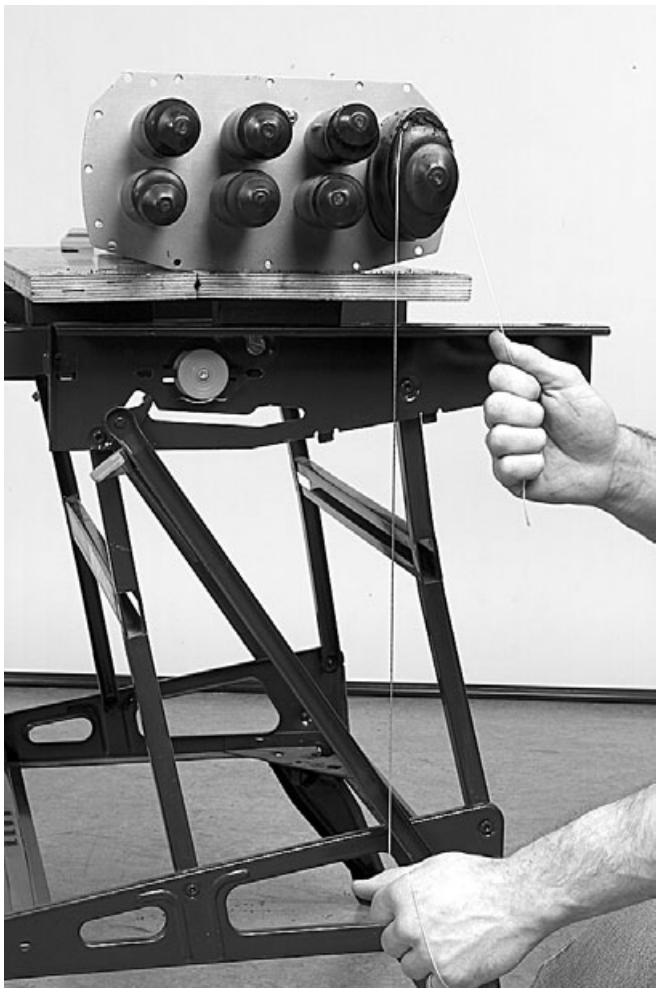
4.1.c Microgain cable

Sealing kit : FIST-GCO2-OSK-CC

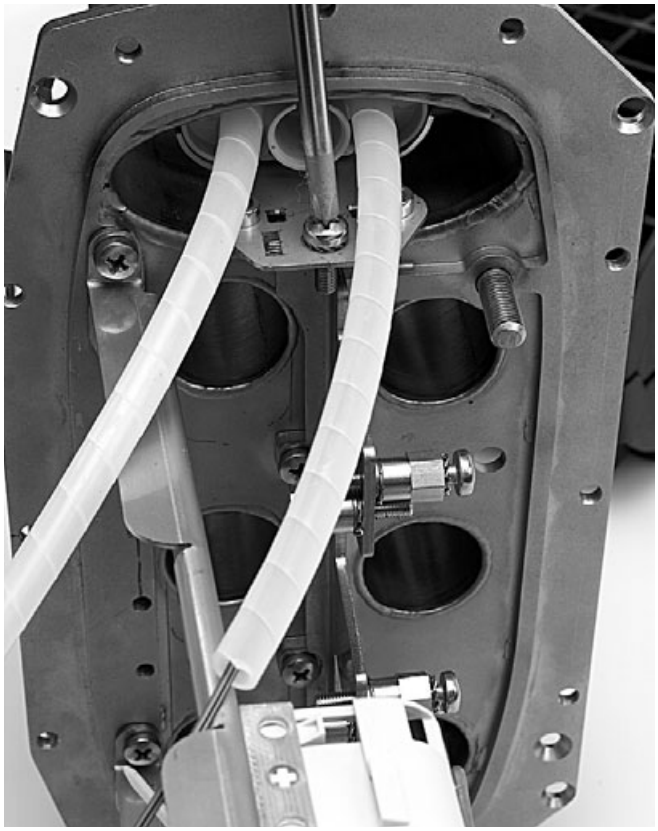


4.1.9 The cable preparation, see central core 4.1.5 until 4.1.7 Fiber routing can be done differently, see picture.

4.2 Placing the cable



4.2.1 Open the oval port, do not remove the whole heatshrink, start to use a saw and continue the cutting by using the cutting wire.

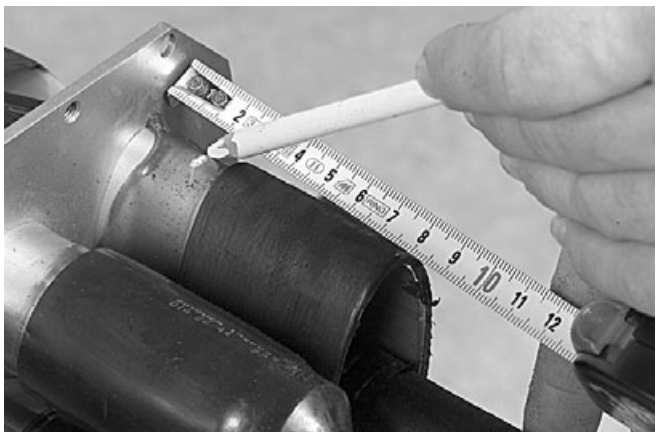


4.2.2 Pull the cable gently in the closure. Position the loop bracket and use the screw (which is already installed on the central strength member bracket) to mount the loop bracket onto the central strength member bracket.

4.3 Installing the oval port

4.3.1 Clean by using the cleaning tissue. Abrade the port and remove sharp edges with abrasive paper.

4.3.2 Clean and abrade the cable.

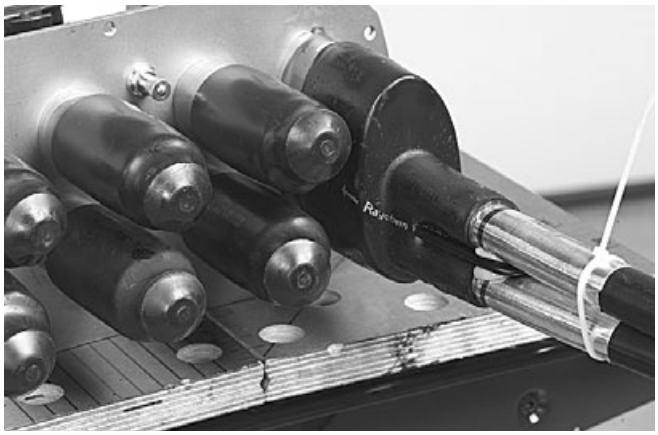


4.3.3 Remove the packing bag out of the seal, position the sleeve at 20 mm from the base and mark the cable flush with the seal. Make sure the uncoated zone is pointing towards the base (arrows on the sleeve pointing towards the base).

4.3.4 Match the blue line of the aluminium protection foil with the marks on the cables. Wrap aluminium cable protection foil around the cable (the aluminium foil should not be more than 25 mm inside the sleeve).

4.3.5 Position the sleeve at the blue line.

4.3.6 Start heating the seal on the base, wait 1 minute and shrink in spiral movements downwards.



4.3.7 Hold the cable in position. Shrink till the green painting dots become black, and the hotmelt is visible on the bottom. Postheat the clip on both sides till the adhesive shows a proper flow on the clip between the two cables. Do not move the closure or cable during 20 minutes. Tie wrap the cables together.

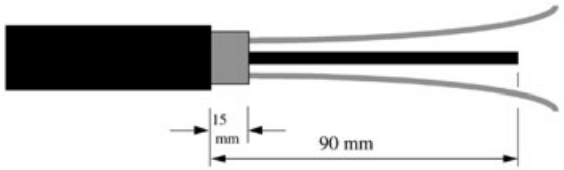
5 Cable installation round port

5.1 Cable preparation

Remove the jacket of all cables for 2 m.

5.1.a Loose tube cable

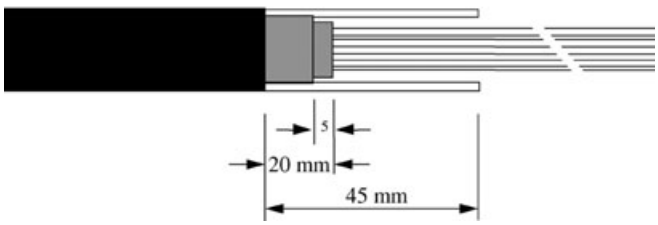
Sealing kit: FIST-GCO2-RSK-LTS



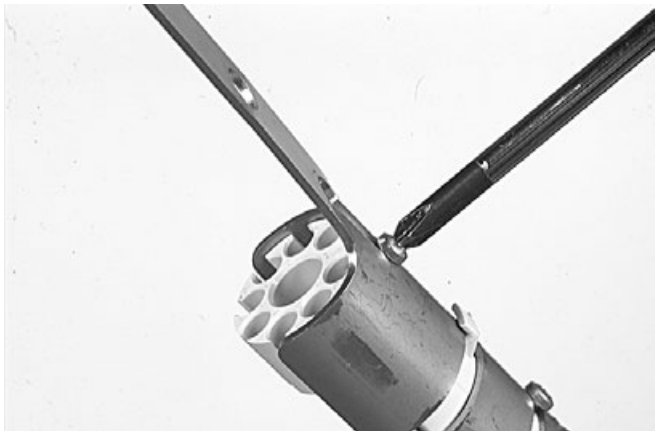
5.1.1 Remove the strength member leaving 90 mm from the cable jacket. If a shield is present, leave 15 mmm of the shield.

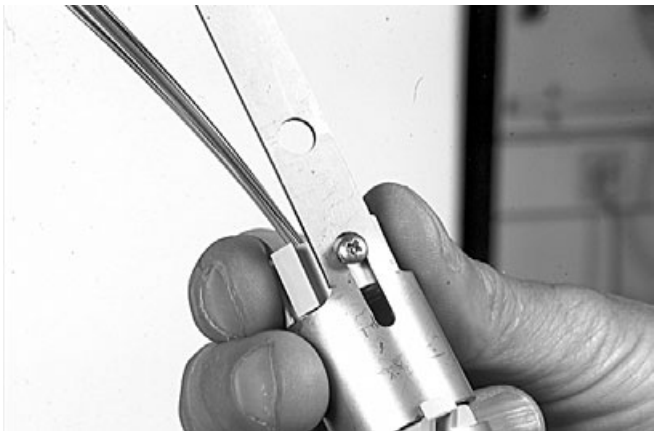
5.1.b Central core cable

Sealing kit: FIST-GCO2-RSK-CC

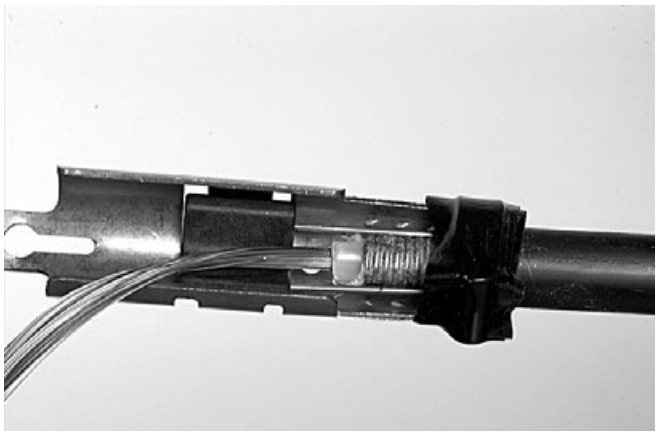


5.1.2 Remove the jacket for 45 mm leaving the strength members. Be cautious not to damage the strength members. In case of metal shield, remove 5 mm from the end. Remove the central core leaving 20 mm from the cable jacket. Be careful not to loose the ID of the fibers. Clean the fibers.



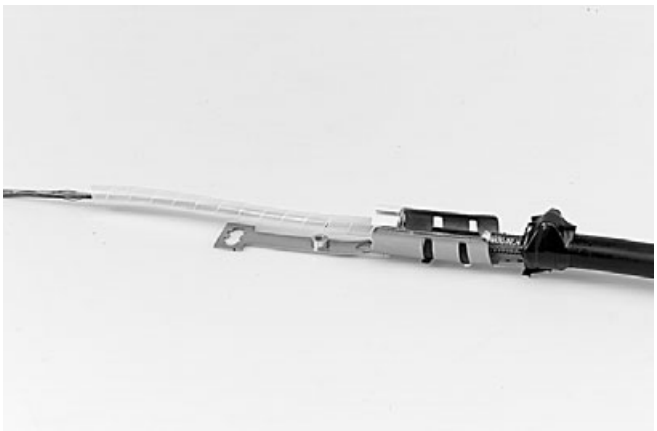


5.1.3 Loosen a little bit the screws such that one can position the strength member stop according to the position of the strength members and remove the break-out part.



5.1.4 Insert the strength members from the cable into the strength member stop. Secure the cable with the hose clamp onto the bracket in case cable diameter is more than 8 mm . Secure the cable with a tie wrap onto the bracket in case cable diameter is less than 8 mm. Secure the screws of the strength member stop on the bracket. Wrap a few layers of tape around the hose clamp.

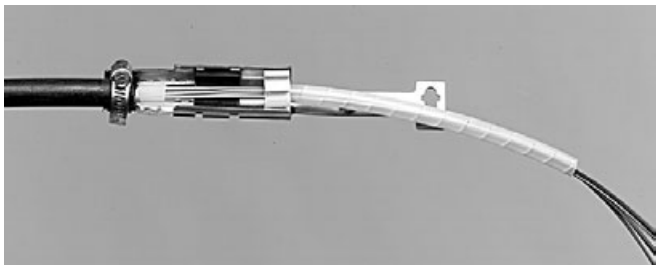
5.1.5 Put the fibers in the breakout through the center (put the tube stop at cable jacket side) and slide the breakout on the bracket and secure it with the screws.



5.1.6 Insert the ST (spiral tube) over the fibers into the breakout till the tube stop. Open the round port and place the heatshrink as described in loose tube preparation.

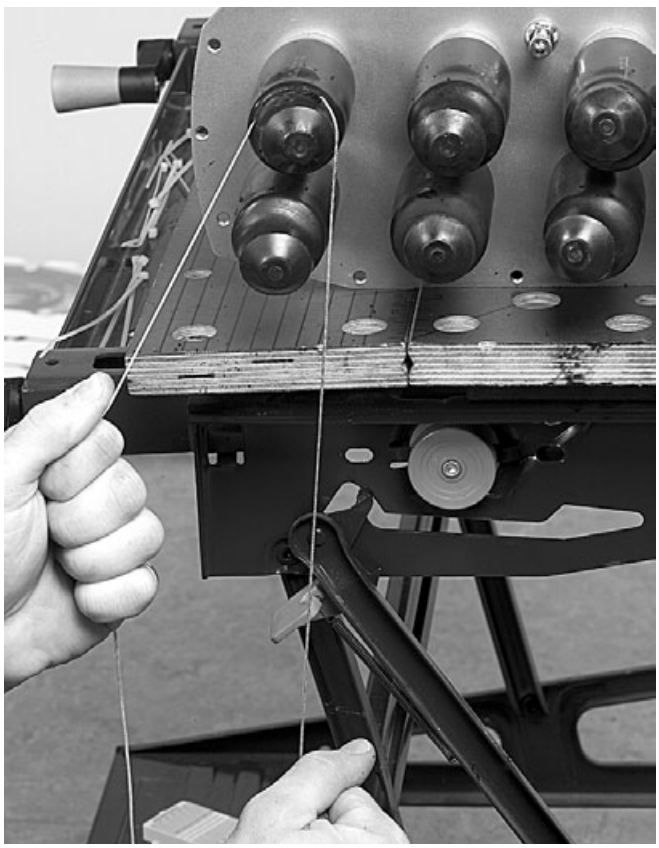
5.1.c Microgain cable

Sealing kit: FIST-GCO2-RSK-CC

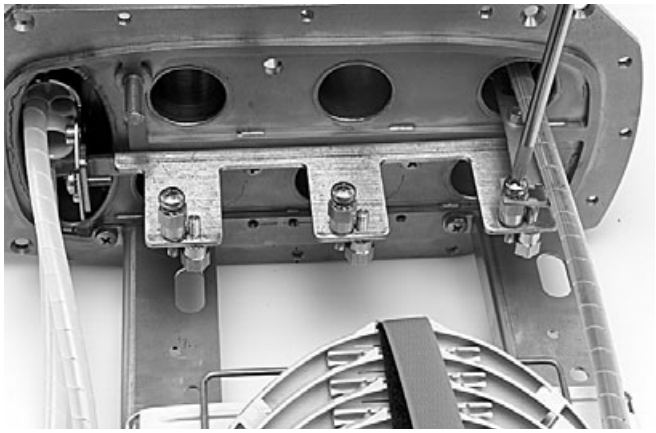


5.1.7 Cable preparation, see central core, 5.1.2 until 5.1.6.

5.2 Installing the cable in the round port



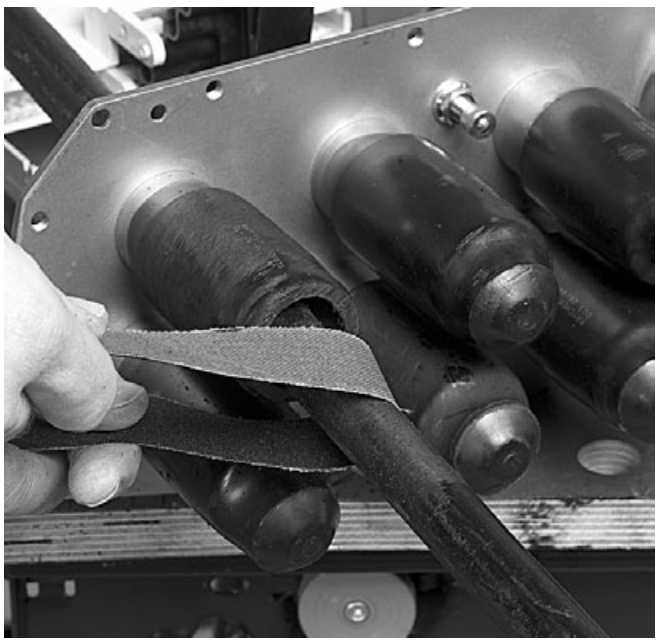
5.2.1 Open the round port, do not remove the whole heatshrink. Start by using a saw and continue the cutting by using the cutting wire.



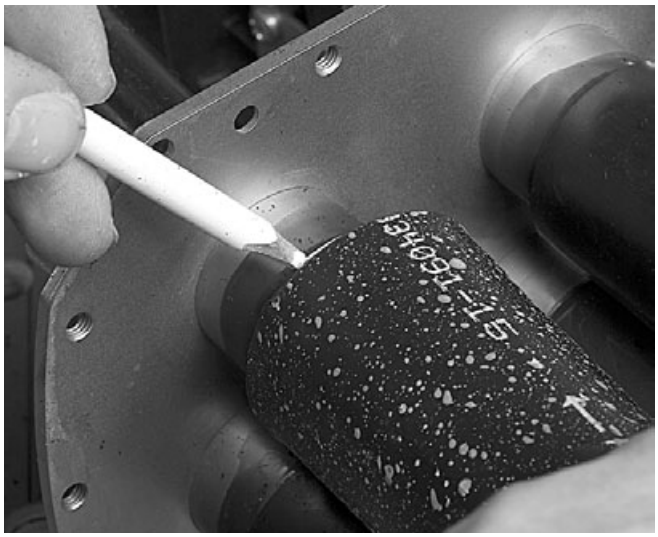
5.2.2 Secure the bracket with the screw (which is already installed on the central strength member bracket) to mount the drop bracket onto the central strength member bracket.

5.3 Installing the round port

5.3.1 Clean by using the cleaning tissue. Abrade the port and remove sharp edges with abrasive paper.



5.3.2 Clean and abrade the cable.



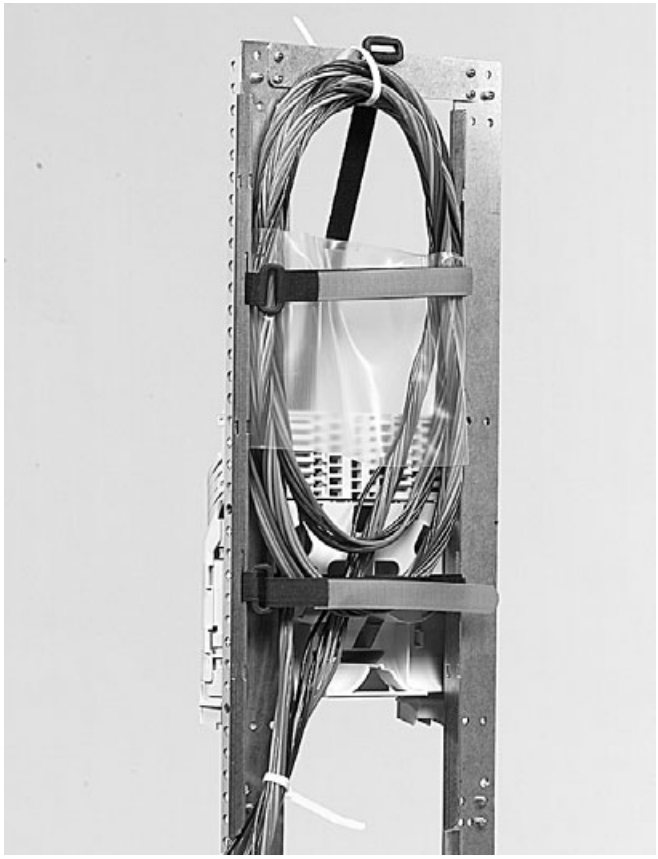
5.3.5 Start heating the seal on the base, wait 1 minute and shrink in spiral movements downwards.

5.3.3 Remove the packing bag out of the seal, position the sleeve at 20 mm from the base and mark the cable flush with the seal. Make sure the uncoated zone is pointing towards the base (arrows on the sleeve pointing towards the base).

5.3.6 Hold the cable in position. Shrink till the green painting dots become black, and the hotmelt is visible on the bottom. Do not move the closure or cable during 20 minutes.

5.3.4 Match the blue line of the aluminium protection foil with the marks on the cables. Wrap aluminium cable protection foil around the cable (the aluminium foil should not be more than 25 mm inside the sleeve).
Position the sleeve at the blue line.

6 Loose buffer tube storage

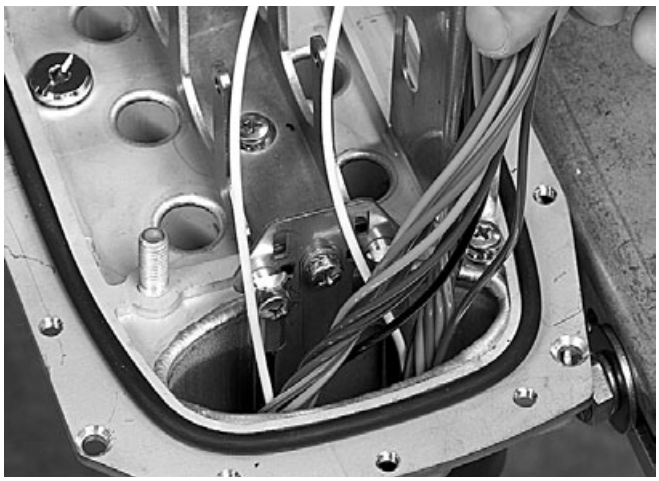


6.1 Make some loops with the uncut loose tubes, and put these in the plastic bag (be careful not to damage the loose tubes!). Two sizes of bags are available. Use the correct size according to the volume of the loose tubes. Place the bag at the back side of the trays. Secure the plastic bag with the tubes on the UMS profile with the Velcro, and secure the tubes with tie-wraps.

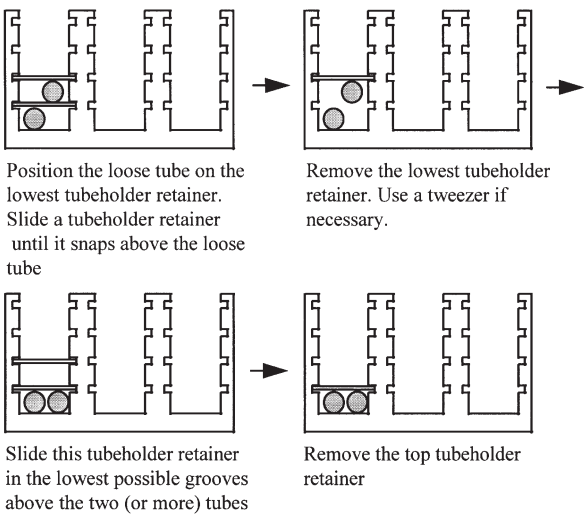
7 Tube preparation

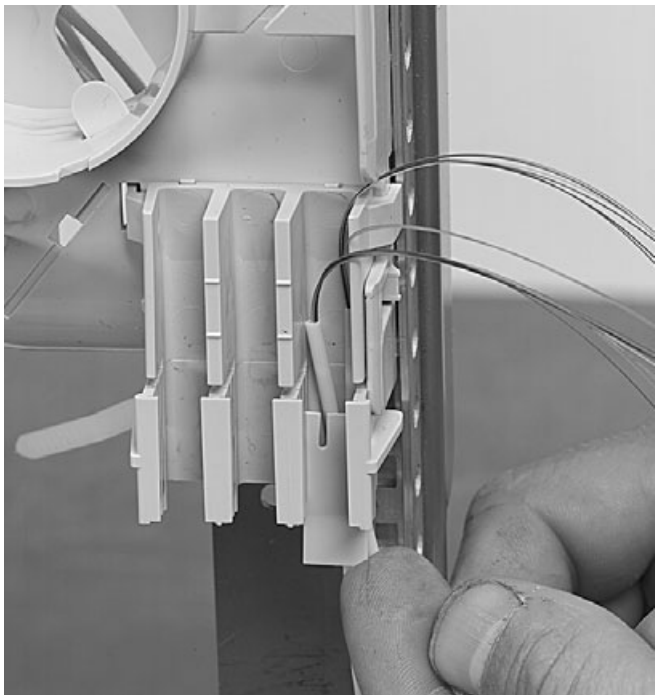
7.1 Loop cable (loose tube)

7.1.1 Select the loose tube(s) with the fibers which need to be spliced.

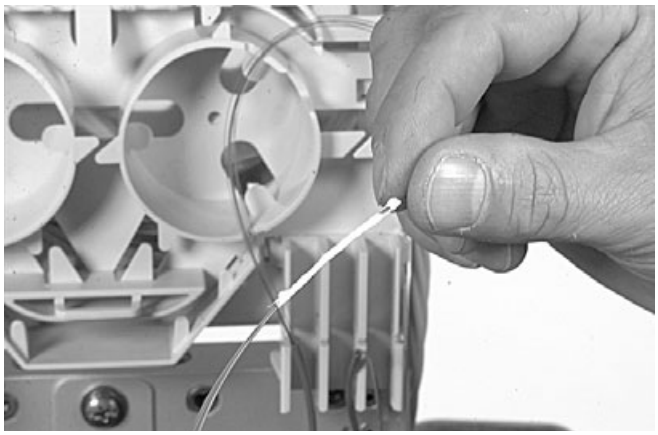


7.1.2 **In case of reversed oscillating cable**: separate the loose tube(s).
Match the loose tube(s)on the tube holder and mark both sides between the two marks. Shave between the two marks with the appropriate tooling. Clean the fibers and wind some Teflon around the ends of the tubes and fibers,to protect the transition from tube to fibers.
In case of S-cable: cut the loose tube(s)(with fibers that have to be spliced) in the middle of the loop. Separate the cut loose tube(s)from the others. Match the loose tube(s)on the tube holder and mark both sides. Strip the loose tube(s). Clean the fibers. Separate the fibers up to the tube holder and route to single circuit or single element tray(s).
Remark: loose tube routed up to the tube holder should be routed in such way that one still has complete access to the stored tubes. This is needed for later routing of loose tubes from the loops to the tube holder, without creating crossing and disturbances on the loose tubes already routed up to the tube holders.





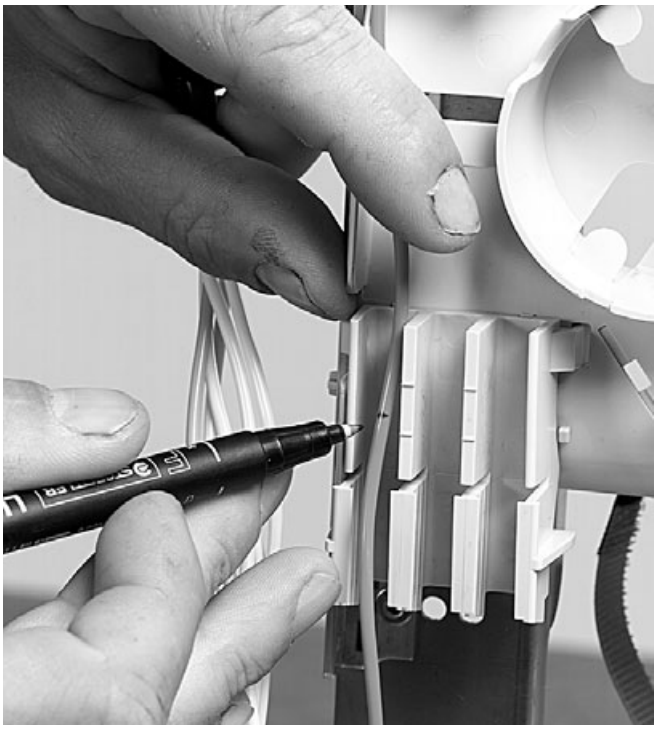
7.1.3 Different tubes can be put together beneath the same tube holder retainer.Position one or more loose tubes in the tube holder and slide the tube holder retainer with the snap forward in the lowest possible cavity of the tube holder above the loose tube(s). The tube holder retainer must snap.



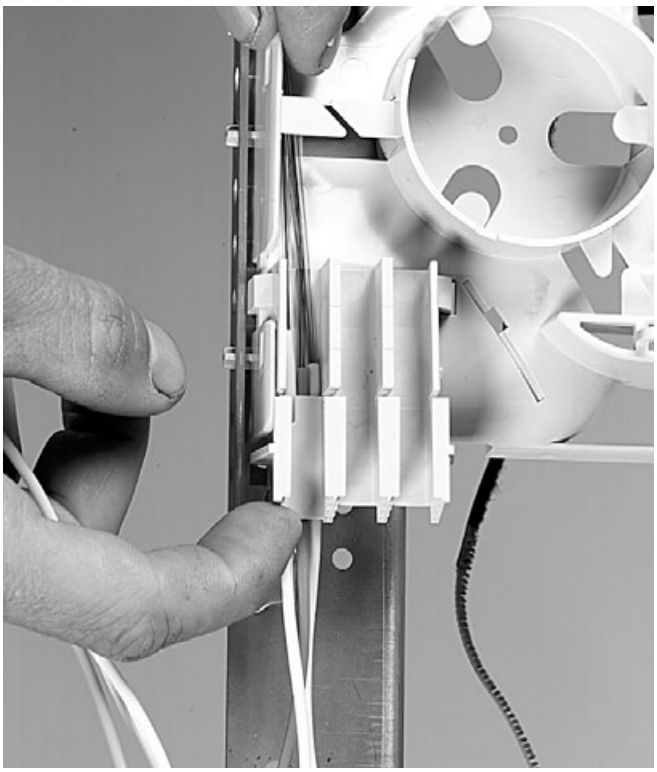
7.1.4 Identify exchange and customer side using some Teflon tape around the fibers. One can also use the FIST-Split-Collet-Rings to identify the loose tubes.

7.1.5 If the fibers are twist free one can route the fibers separate to single circuit trays or single element trays. Separately all fiber loops first up to the tube holder. If the fibers are not twist free, select first the fiber(s) that have to be spliced and cut these fibers in the middle of the loop.
Remove these out of the bundle up to the tube holder. These fibers can be routed to single circuit trays, the uncut once will be routed to a single element tray (never in dark fiber storage) (see fiber routing).

7.2 Loose tube cable (drop)

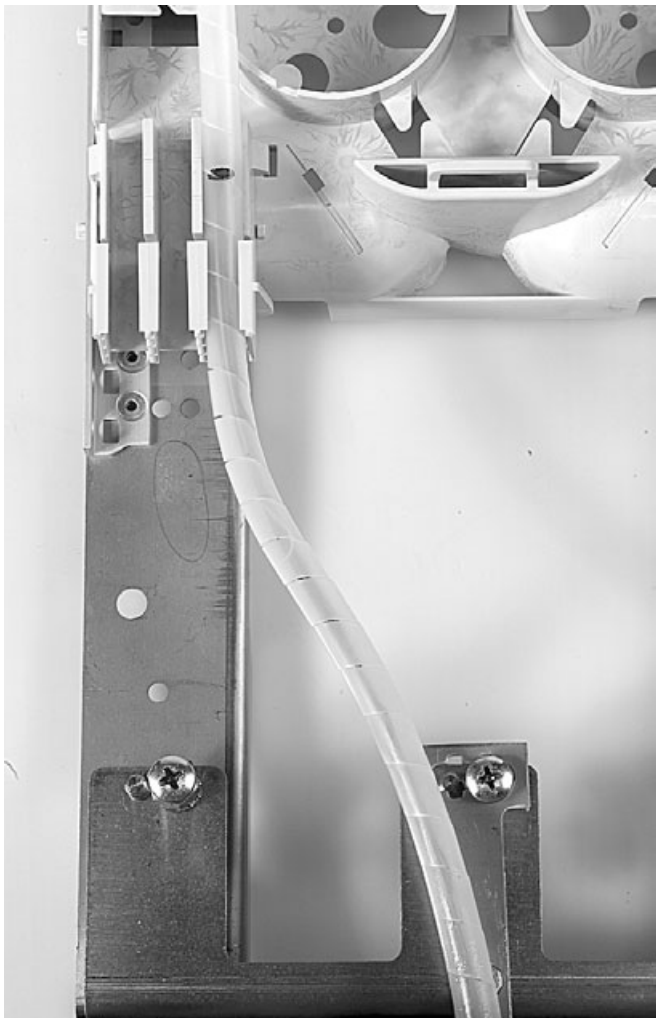


7.2.1 Match the loose tube on the tube holder, mark and strip the loose tube from this mark. Clean the fibers.



7.2.2 Position one or more loose tubes in the tube holder according to the correct position and slide the tube holder retainer with the snap forward in the lowest possible cavity of the tube holder above the lose tube. The tube holder retainer must snap.

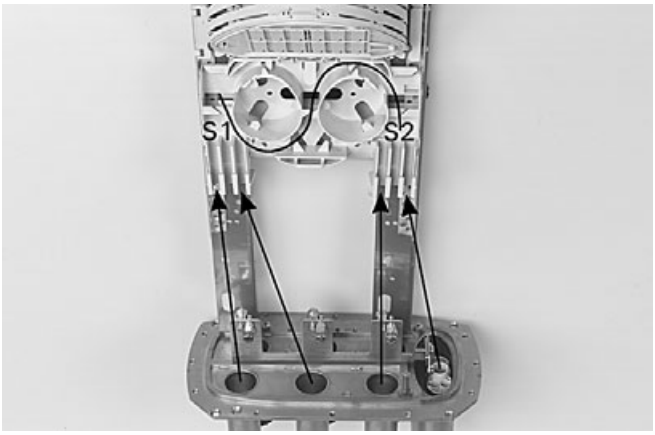
7.3 Central core cable and Microgain



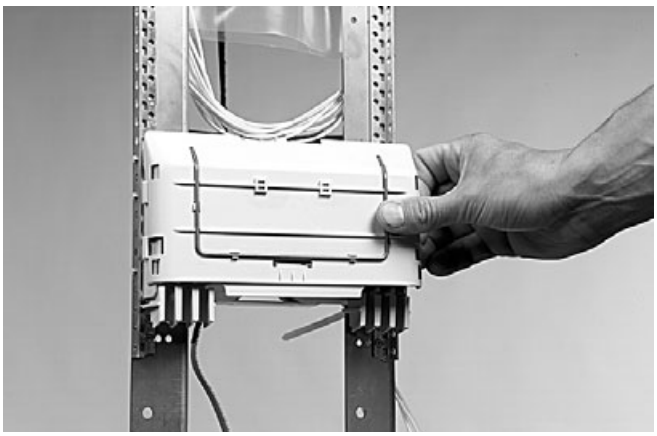
7.3.1 Match the spiral tube on the tube holder, mark the spiral tube on the position as in the loose tube case and cut the spiral tube from this mark (see pictures 7.2.1).

8 Fiber routing

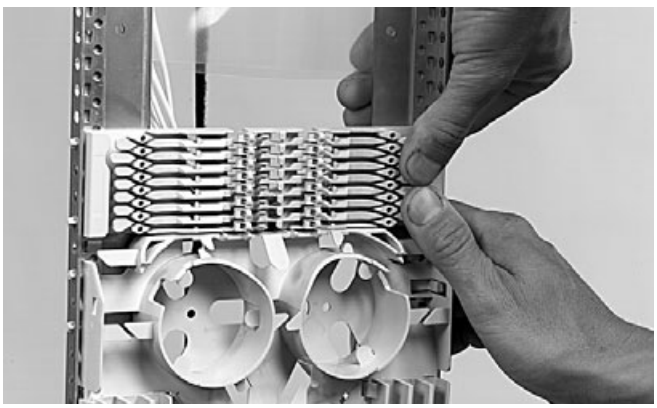
Fibers can be routed on the routing block from S1 to S2 and otherwise. The selection of the ports according to the cable layout is important.



8.1 **Note**: use the islands if fiber has to be routed from one side to the other (S1-S2).
Verify the position of two cables if they are placed on the same side (next to each other) because the total amount of loose tubes in ports can never be more than mentioned in the capacity of the tube holder. Cables in the 4 ports on the left side of the closure should be routed to the tube holder at the S1 side. Cables in the 2 ports and the oval port should be routed to the tube holder at the S2 side.

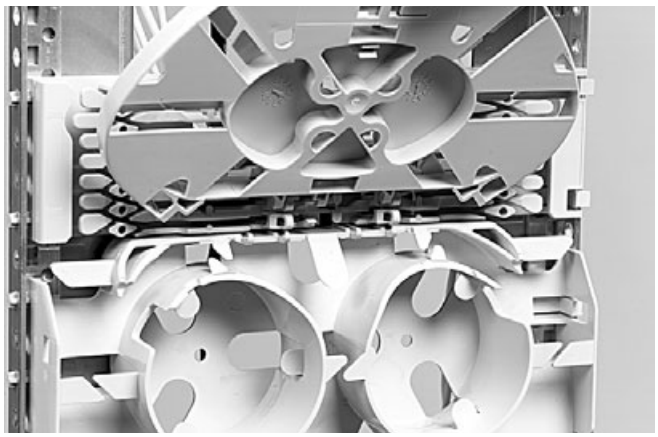


8.2 Remove the Velcro and the routing block cap. To remove the routing block cap lift the two snaps at one side.

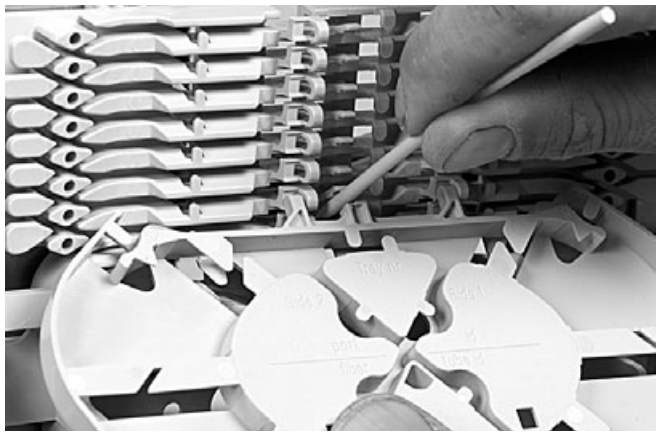


8.3 Secure the wraparound groove plate on the UMS by putting the plate with the long protrusions in the S1 UMS profile and sliding the plate in the S2 UMS profile until it snaps (do not leave gaps between groove plates).

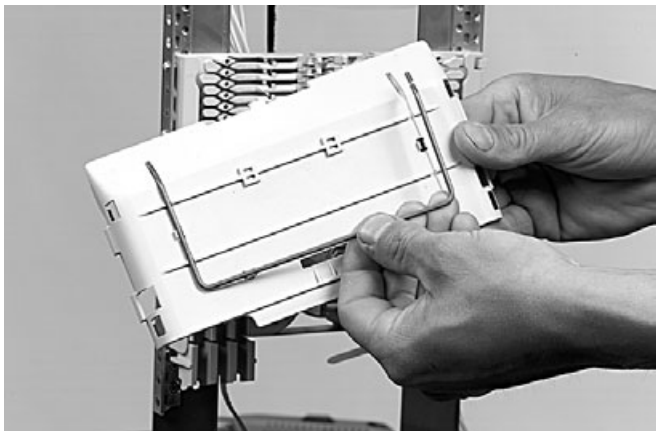
8.4 To remove push the two snapfits inwards at the UMS profile and slide the wraparound plate.

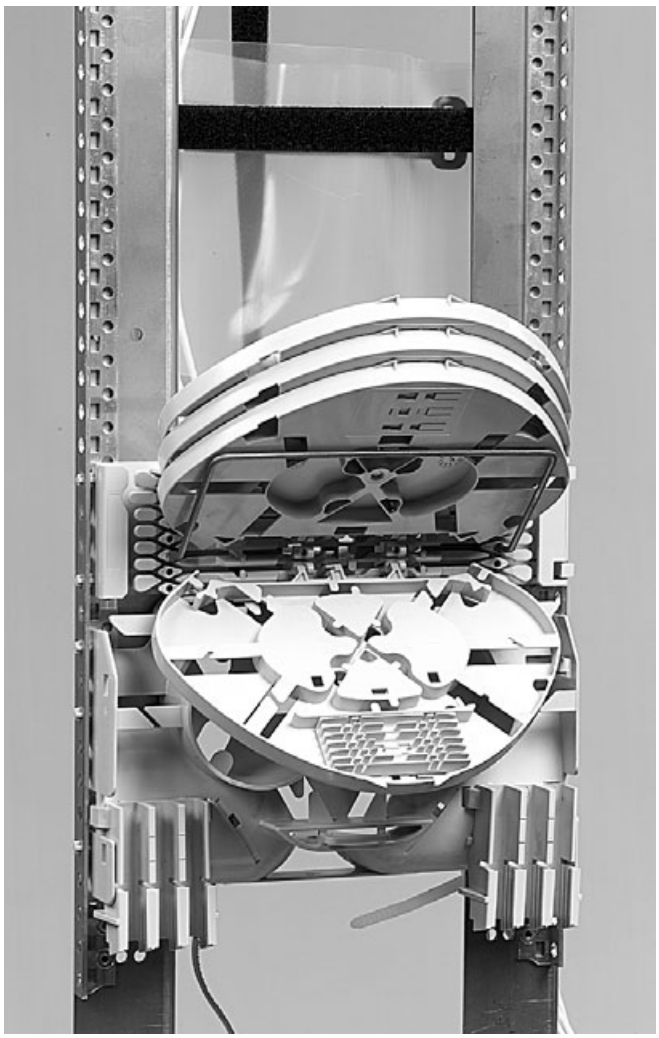


8.5 Place a tray in the wraparound groove plate, do this by pushing the lip on the groove plate (lowest possible position) slightly down with the tray and move the tray laterally into the hinge-cavities of the groove plate. To snap the Single Element tray (SE) in the wraparound single fiber groove plate, leave always one hinge facility open between FAS block or previous tray and the SE-tray.

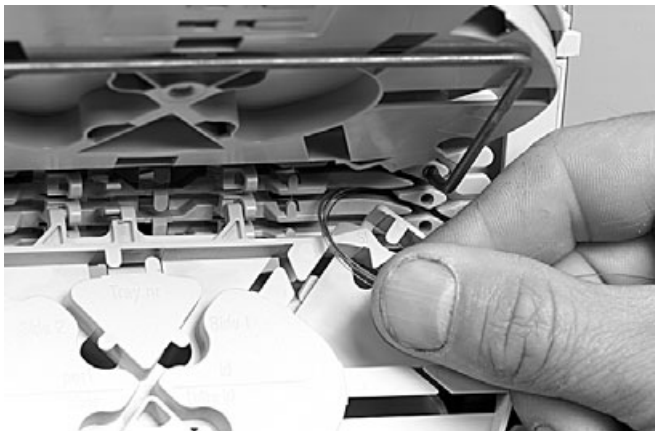


8.6 To remove the tray, put the fiber guiding pin between the lip on the wraparound groove plate and the tray and move in lateral direction.

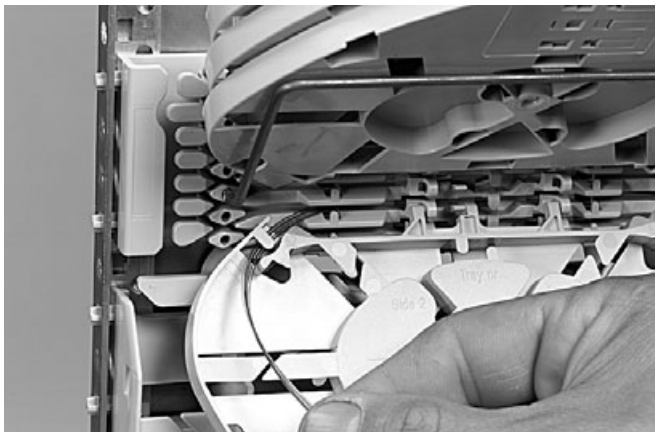




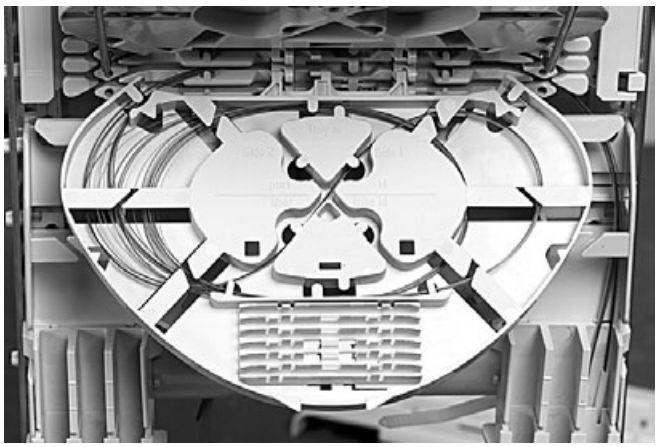
8.7 Identify the tray to be worked on and make it accessible. If the routing block and trays are in vertical position you will have to support the trays above the selected one by using the tray wedge which fits in the cavities of the wraparound groove plate. Position the wedge carefully such that the groove is still accessible for the fibers and be careful not to push the wedge against fibers.
To remove the wedge use two hands to pull on both ends (near the groove plate).



8.8 Route the fiber in the grooves of the wraparound groove plates to the entrance of the identified tray. Fiber must be routed in the groove below the hinge of the tray.



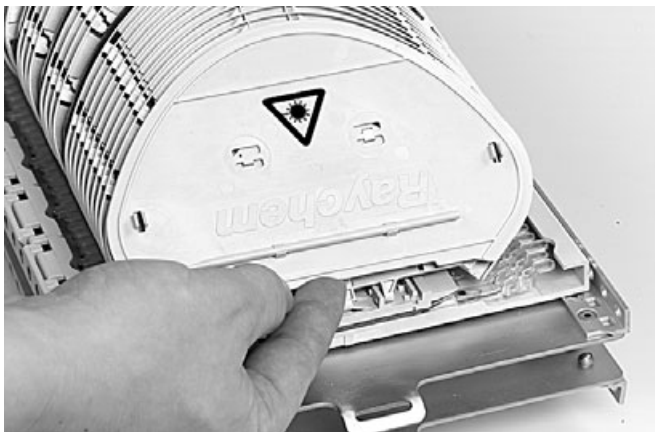
8.9 Pull gently on the fibers in the tray and make sure that the fibers are well contained in the routing block and wraparound groove



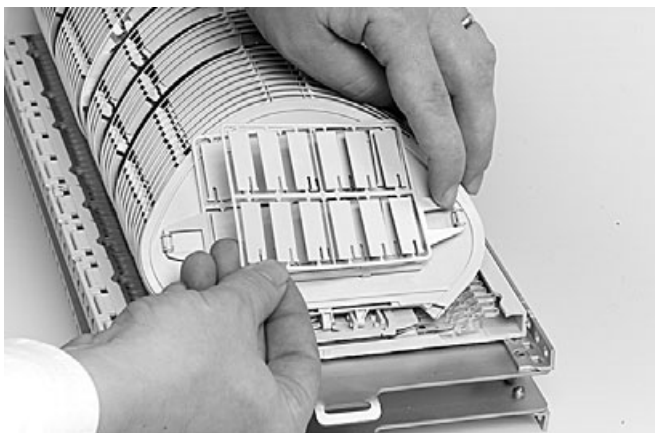
8.10 Store the fibers temporarily on a tray (picture shows situation in case of a loop back).
Note: do not wrap tightly around the center of the tray.

8.11 Storing dark fibers can be done in different ways.
1 Organize dark fibers in different trays.
2 Organize dark fibers together into the first available tray (i.e. with a max. of 24 cut or 12 loops primary coated fibers in one SE-tray).

8.12 Secure the tray lid on the last tray.



8.13 How to take off the tray lid.



8.14 Secure the tube holders.

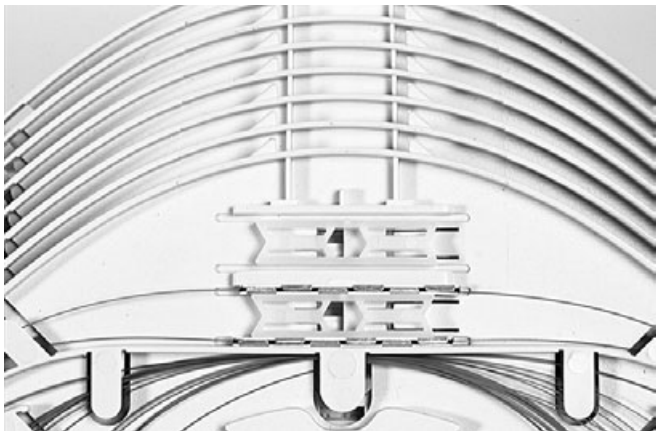
9 Fiber routing and identification on tray

9.1 Take the splice protector and put it centered towards the splice.

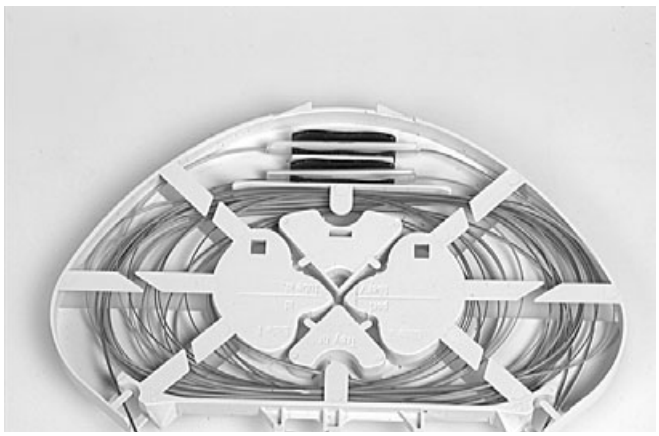
9.2 SMOUV in SE tray.

9.3 SMOUV in SC tray.

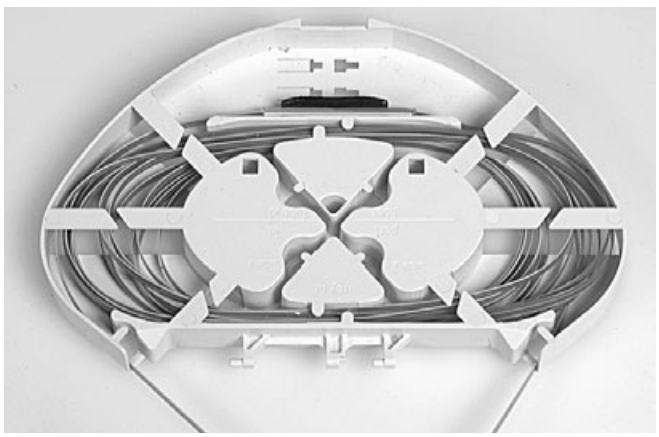
9.4 ANT in SE tray.



9.5 ANT in SC tray.



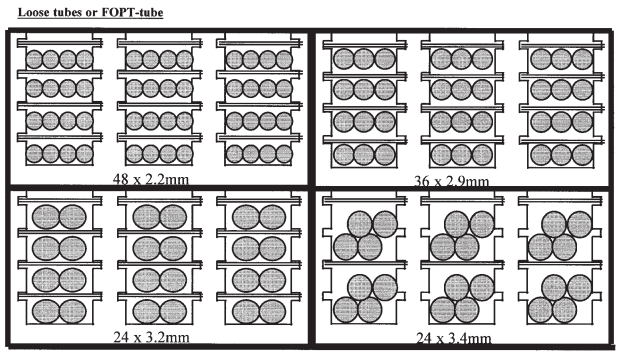
9.6 Ribbon 4/8 tray.

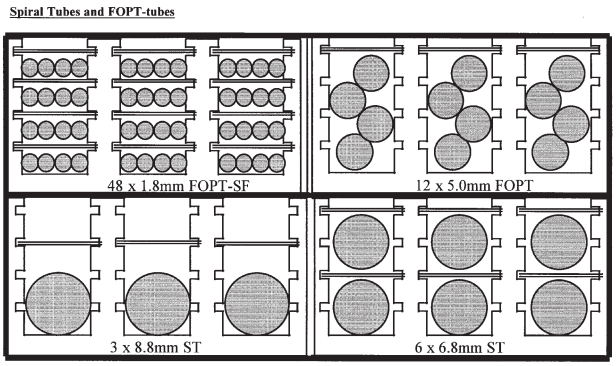


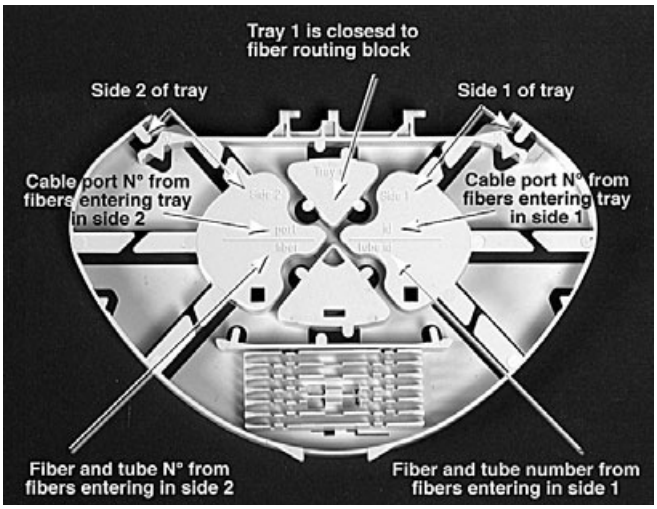
9.7 Ribbon 12 tray.

10 Tube holder capacity

Number x outer diameter loose tube (mm).



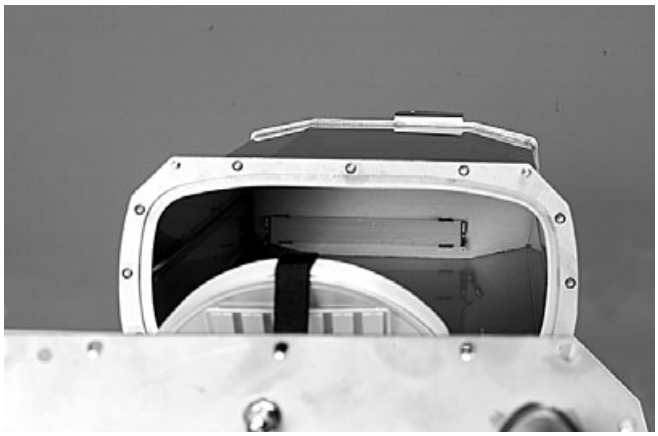




10.1 Use a permanent marker to write on the tray.

11 Closing the dome

11.1 Place the O-ring back. Open the packaging and place the silica-gel bag on the base.



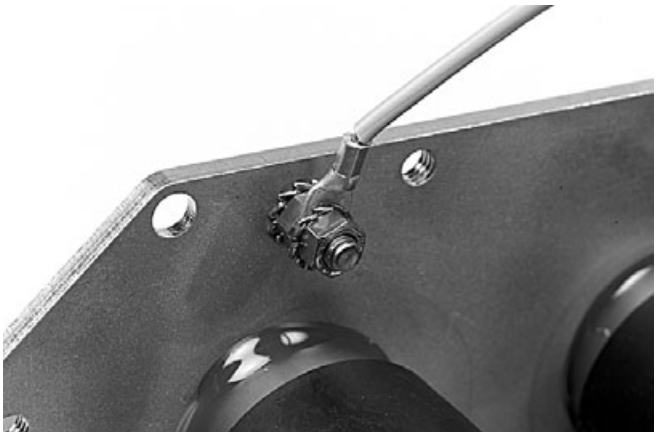
11.2 The dome has only one mounting position. When mounting the dome on the base, make sure that the UMS profiles will fit in the profile of the dome. First hand tight all screws. Use the Allen key afterwards.

11.3 Do not damage the trays and loops when sliding the dome over it.

12 Important steps during installations

- Make sure that the grooves on the wraparound groove plate are clean.
- Clean the fibers.
- Loose tube routed up to the tube holder should be routed in such a way that one still has complete access to the stored tubes . This is needed for later routing of loose tubes from the loops to the tube holders without creating crossings and not creating interruptions on the loose tubes already routed up to the tube holders.
- Use the correct lengths in the tube holders.
- Make sure not to loose ID.
- Use only 45 mm long SMOUV.
- Be careful when preparing window cut on loose tube cable for storing uncut fiber.
- Avoid in all cases crossing of fibers and loose tubes in the cable brackets.
- Be careful when mounting the dome, do not damage the trays and loops by sliding the dome over it.
- Put a new bag of Silica gel once the closure has been opened.

13 Cable grounding and mounting the closure



13.1 In case of grounding, grounding wire on the grounding bolt.

13.2 Mount the closure at the wall using the holes that you have drilled in point 3.1.

14 Re-arrangement

- Avoid pulling fibers in between groove plates.
- Avoid fiber movement between the tube holder and the first containment lip on the routing block
- Take special care for re-arranging fibers.
- If accidentally active fibers are removed from the containment devices, reposition them carefully.

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