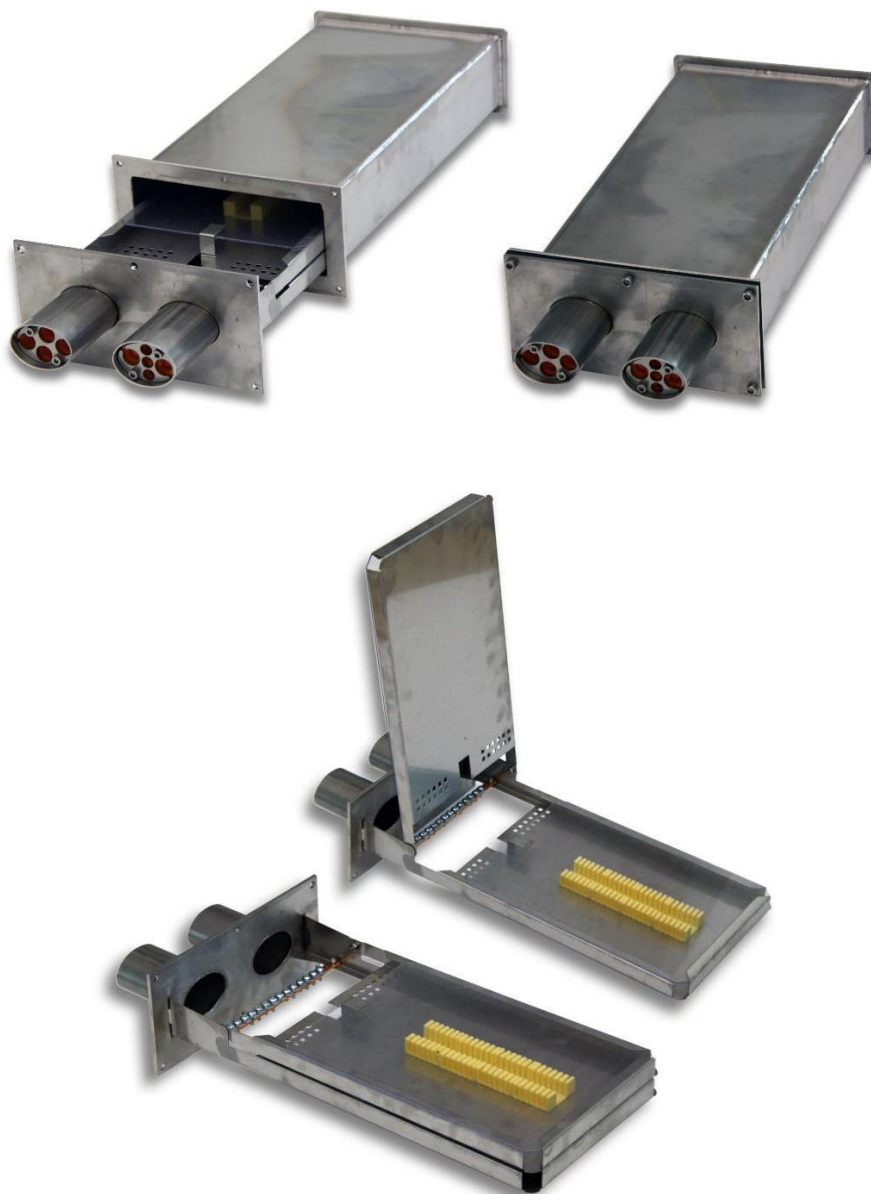


NAF GENERAL JOINT CLOSURE (GJC) 192-F

INSTALLATION INSTRUCTIONS



Introduction

NAF GJC 192-f is a joint closure which can be directly buried, placed in a manhole or a cabinet. It is used for jointing and branching fiber optic cables.

Features of the joint closure:

- Identification code 7269300
- The case is so called dome closure consisting of an inner part with splice tray and a protective cover.
- Capacity for 192 splices
- In addition to normal accessories, the basic package includes mechanical cable glands of 4x15mm and 6x10mm and cable shrinks with branching pieces as an alternative to this. 200 pcs of splice protection sleeves are also included.
- The closure can be used for mid span access.
- External dimensions 515 x 235 x 110 mm.
- There are two oval pass-throughs for mechanical cable glands on the inner part.
- Material is acid-proof steel
- Under the splice tray there are plastic fasteners for the uncut fiber tubes.
- Contains two 96-fiber splice trays, the upper tray is hinged
- IP 68. Designed and manufactured in Finland
- Suitable shrink-free cable glands: : 2x20mm (7263240), 4x15mm (7263241), 2x15mm+3x10mm (7263242) and 6x10mm (7263243)

Equipment for the joint closure

- Normal accessories
 - Splice holders 24-f, 8 pcs
 - Cable ties 3 x 100 mm, 12 pcs
 - Grounding connectors, 8 pcs
 - Grounding wire 2,5 mm² x 500 mm, 2pcs
 - Fixing screws, 16 pcs
 - Fastener for fiber tubes, 5 pcs
 - Cleaning wipe, 1 pc
 - Silica gel bag 25 g, 1 pc

Preparation of cables for joint closure installation

Clean the cables and mark the starting points for the peeling and peel the cables. If you are installing central tube cables like FYO2PMU, FYO2PMU Mini, FYO2RMU 3.5 kN, FYORMU FTTH 3.5 kN or FYOVD2PMU, do not cut their central tubes!

The cable length to be peeled:

- The length to be peeled is 130 cm in straight extensions, regardless of the type of cable.
- The length to be peeled for mid span access, regardless of the type of cable, is 260 cm

The preparation of the joint closure for installation

Prepare the cable glands. Alternatives are XOKO cable glands with plugs or openable mechanical NAF cable glands.



XOKO cable gland 4 x 10 mm



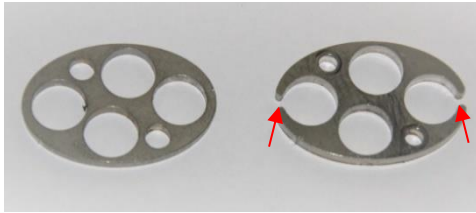
NAF cable gland 4 x 10 mm

If you are using the mechanical NAF cable glands, they have their own installation instructions.



The opening of NAF cable glands. The cable gland is opened with a drill, using the appropriate metallic drill bits. **It is important to notice that the size of the drill bit is at least 2 mm smaller than the outer diameter of the cable.**

In the case of mid span access, the cable glands need to be prepared in the following way:



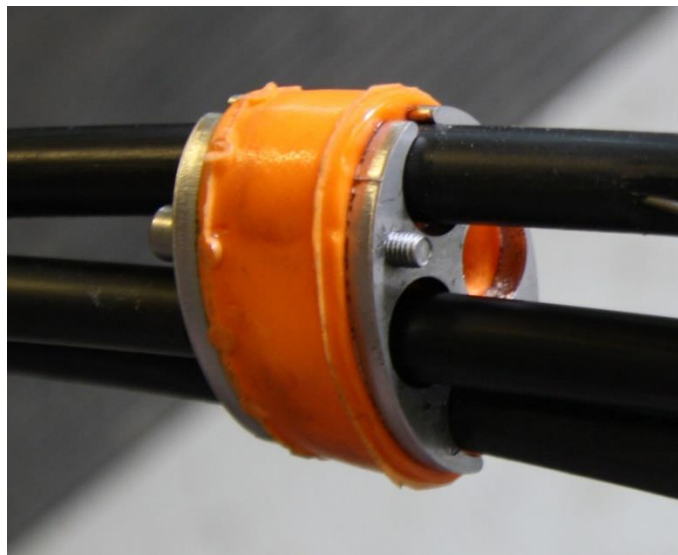
If using XOKO cable glands, dismantle the cable gland and make notches on both sides of the holes in the metal parts.

For NAF cable glands, this procedure does not need to be performed



Split the sealing piece of the cable gland with a sharp knife

Push the cables through the mechanical cable glands so that you can handle them individually.



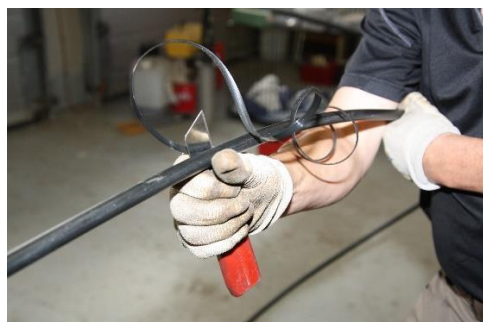
Cables brought through a 4-hole cable gland

Peel the cables but leave the fibers in their own tubes or central tube for cover at this point. The following instructions are for peeling of direct buried cables commonly used in Finland.

The peeling of FYOVD2PMU direct buried cable



Cable structure



Peel the sheath off the steel wires along the entire length to be peeled.



Dig out the steel wires.



Cut the steel wires at each end to a length of about 20 cm.



Bend the steel wires backwards and lock them with e.g. insulation tape to prevent damage from their sharp ends.



Split cable sheath using ST-OCS splitting tool. Guide the tool blade into the groove of the steel wire and pull the sheath open on both sides of the cable.



Bend the cable slightly to separate the halves of the cable at the bending point. Cut off the halves of the sheath so that the remaining pieces are about 3 cm long. Cut the reinforcements under the cable sheath.



Use a knife to scrape off the white ribbon under the armoring from one of the halves of the cable sheath. Also scrape off the plastic layer on the surface of the armoring. Carefully install the grounding wire.

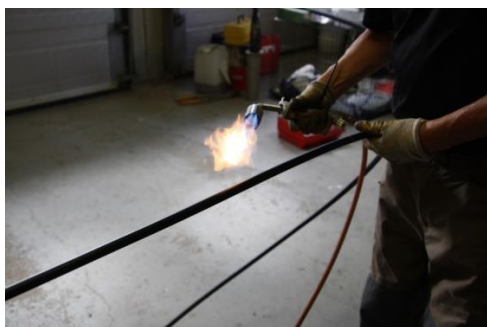


Protect the connector of the grounding wire with insulation tape.

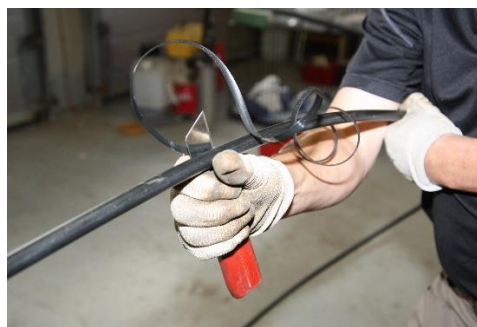
The peeling of FZVD2PMU Flex direct buried cable



Cable structure



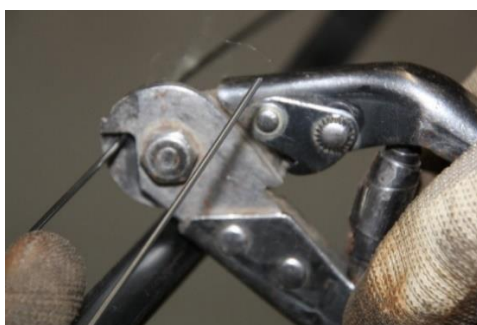
Clean the cable from any dirt and heat the cable sheath over the entire length to be peeled. This makes peeling easier, as the cable sheath material is HDPE, which is harder material than the LDPE traditionally used in outdoor cables.



Peel the sheath off the steel wires, either for about 50 cm or for the entire length to be peeled.



Dig out the steel wires.



Cut the steel wires at each end to a length of about 20 cm.



Bend the steel wires backwards and lock them with e.g. insulation tape to prevent damage from their sharp ends.



Split cable sheath using ST-OCS splitting tool. Guide the tool blade into the groove of the steel wire and pull the sheath open on both sides of the cable.



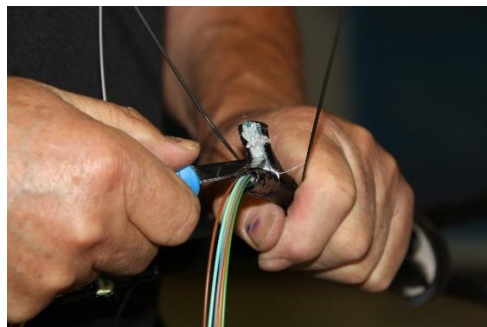
Pull the cable halves apart while taking care not to damage the Flex fiber tubes. If you have opened the cable for only a short distance, carefully pull the Flex-tubes out as a bundle from the outer end of the cable



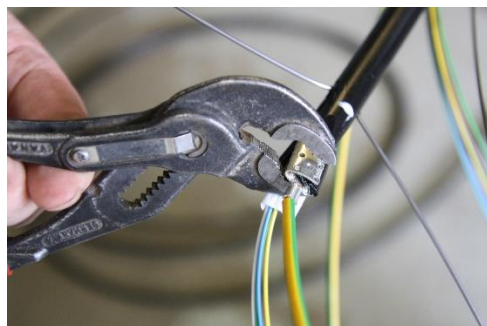
Cut off the halves of the sheath so that the remaining pieces are about 3 cm long.



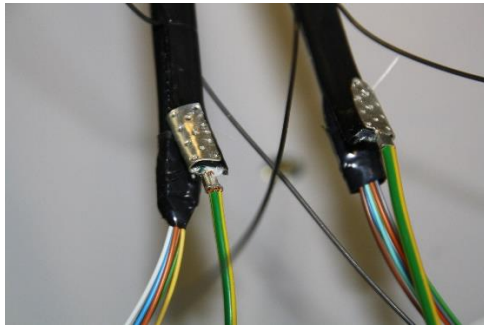
Bend one of the halves of cable sheath and press the Flex-tubes inside the white ribbon against it. Protect the tubes by wrapping insulation tape around the tubes and the cable sheath half.



Use a knife to scrape off the white ribbon under the armoring from one of the halves of the cable sheath. Also scrape off the plastic layer on the surface of the armoring.



Flatten the end of the cable sheath with pliers and squeeze the connector of the grounding wire onto that half of the sheath.



The connectors of grounding wires installed into FZVD2PMU Flex direct buried cables. Notice the protection of fiber tubes against one of the halves of the cable sheath.

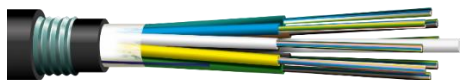


Protect the connector of the grounding wire with insulation tape.



FZVD2PMU Flex direct buried cables in a mechanical cable gland.

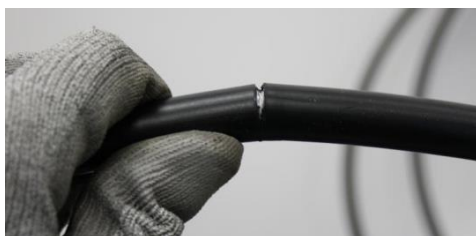
The peeling of FZOMVDMU-SD direct buried cable



Cable structure



Use the knife to cut around the cable sheath up to the steel band at a distance of approximately 15 cm from the end of the cable.



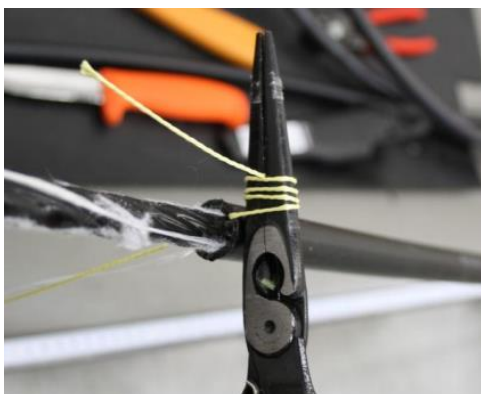
Bend the cable in different directions at the incision point to break the steel band.

Note. Do not bend the cable too sharply to prevent damage to the fibers.



Pull the severed part off the middle sheath to get the yellow tear wires out.





Turn the tear wire around a screwdriver or pliers and pull the wires to make the sheath break.

Note. Pull the wire straight out of the cable in a 90 degree angle so that the wire does not cause damage to the fibers.

Split the sheath on the other side in the same way using another tear wire.



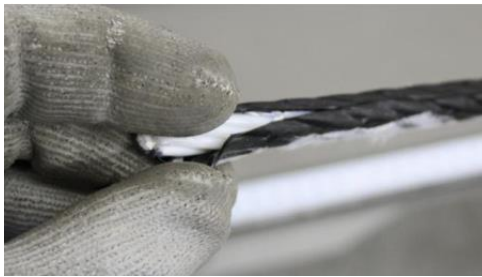
Pull the sheath open to the starting point of the peeling.



Cut the halves of the sheaths to about 3 cm in length and remove the white swelling strip and its binding threads from the middle sheath. Also cut the tear wires at the base of their splitting grooves.



Carefully make a longitudinal incision to the middle sheath between 10 cm and 15 cm in length. Do not cut too deep to prevent damage to fiber tubes.



Open up the middle sheath from the end with a knife, enough to get a grip from the edges.



Manually tear the incision open.



Bend the middle sheath away and find the black and blue tear wire on its inner surface. Remove the end of the tear wire from the sheath with the tip of the knife and pull the wire off the sheath to the split point.



Cut off the bended section without damaging the tear wire and split the rest of the sheath using the tear wire

Note. Pull the wire straight out of the cable in a 90 degree angle so that the wire does not cause damage to the fibers.



Pull the split sheath off the fiber tubes and cut it under the halves of the outer jacket.

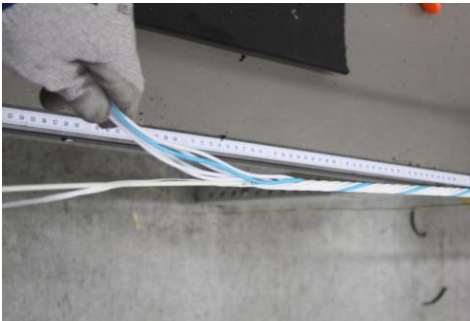


Push the binding threads of the fiber tubes towards the cable to loosen them, and cut them at the base of the sheath.

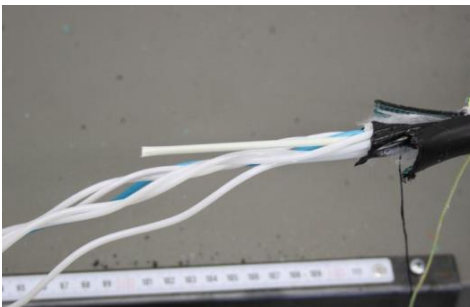
Be careful not to damage the fiber tubes when cutting the binding threads.



Pull the binding threads as bundle off the fiber tubes.



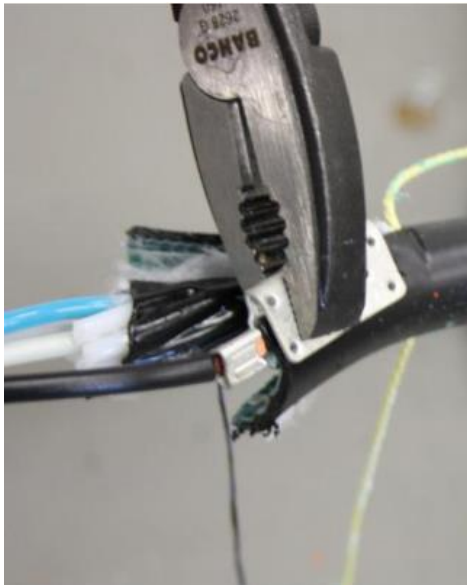
The fiber tubes are twined around the central strength member. Untwine them.



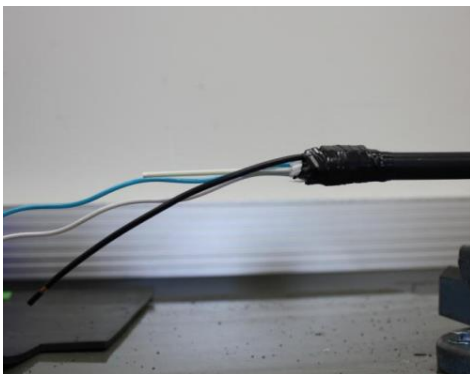
Cut any filling elements at the peeling point and leave the middle element to about 10 cm in length.



Scrape off the white ribbon under the armoring from one of the sheath halves and the plastic layer on the surface of the armoring.



Flatten the end of the cable sheath with pliers and squeeze the connector of the grounding wire onto that half of the sheath.



Protect the connector of the grounding wire with insulation tape. After that squeeze the sheath halves against each other and tape them together

In case of mid span access, straighten the fiber tubes with heat so that the uncut fiber tubes can be placed neatly and clearly under the splice tray.

The peeling of FYO2PMU, FYO2PMU Mini ja FYO2RMU 3,5 kN FTTH cables



Cable structures

FYO2PMU, FYO2PMU Mini



FYO2RMU 3,5 kN



Peel out the steel wires or fiberglass strength members of the cables along the entire length to be peeled.



Bend out the ends of the steel wires or fiberglass strength members and pull them out of the sheath along the entire length to be peeled.



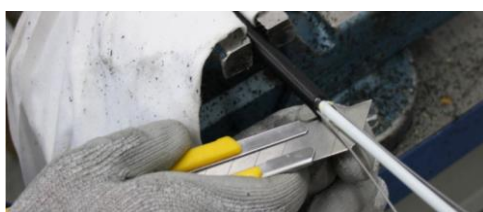
Cut the steel wires or fiberglass strength members to about 10 cm in length.



Split the sheath from the end of the cable from the grooves of the strength members for about 15 cm.



Grab both halves of the sheath and pull them apart until the peeling point.



Cut the halves of the sheath and the threads between the sheath and the central tube from the base of the peeling.



Peeled FYO2PMU Mini FTTH cables in a mechanical cable gland.

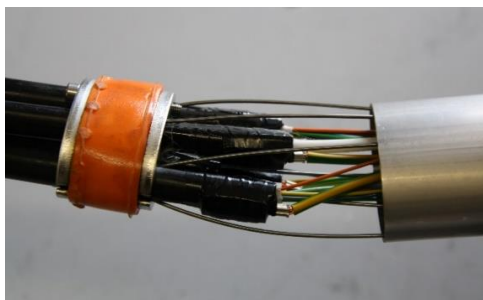
Installation of cables into the joint closure

Pull the cables back from the mechanical cable glands so that the length of the sheaths on one side of the cable gland is about 5 cm.



Spray silicone spray on the screws of the cable gland and on top of the cable gland seal. If using XOKO cable glands spray on the plugs as well.

Note. Silicone spray is not included in the normal accessories.



Guide the cables with fibers, steel wires and grounding wires as a bundle inside the joint closure.

Note. Already guide the fiber tubes to their own splice trays during the entry phase!



Push the cable gland with cables inside the oval pass-through at a depth of 5 to 15 mm and tighten the screws until the cable gland remains in place.

Note. Always tighten manually to prevent screws or their counterparts from breaking.

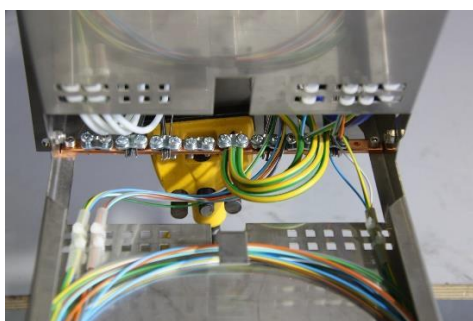


Connect the steel strength members and grounding wires to the grounding rail of the joint closure.

Guide and fasten the fiber tubes to the splice tray in the following way:

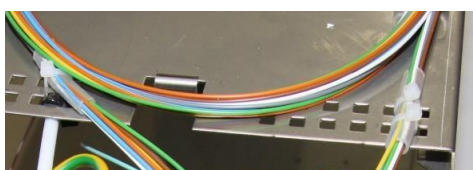
Flex fiber tubes

Take the straight extension tubes of the trunk cable on the lower splice tray and the distribution and FTTH fibers on the upper splice tray.



Use a silicone tube to protect the fastening of Flex fiber tubes, otherwise the cable ties will squeeze the fibers too much. Note that there will be no bends in the Flex tubes, as these will cause fiber attenuation and tension, which in turn causes life cycle of the fibers to decrease.

A 3 mm silicone tube is used to protect individual fiber tubes and 6 mm tube to protect four fiber tubes.



Attach the uncut fiber tubes under the lower splice tray with split silicone tubes and cable ties.

The tubes of Multi Loose Tube cables (FZ...)

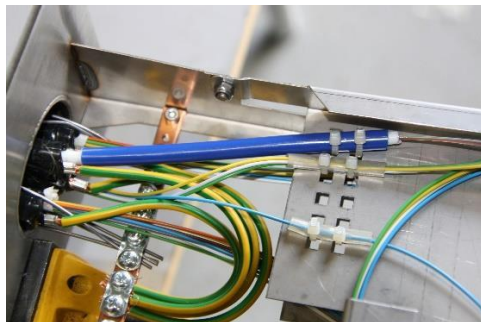
Mark the peeling points on the fiber tubes, cut the tubes, clean the fibers and attach their ends to the splice tray, placing the first tubes on the edge of the splice tray and the following tubes in the fiber sequence from the edge to the center.

The central tubes of FYOVD2PMU direct buried cables

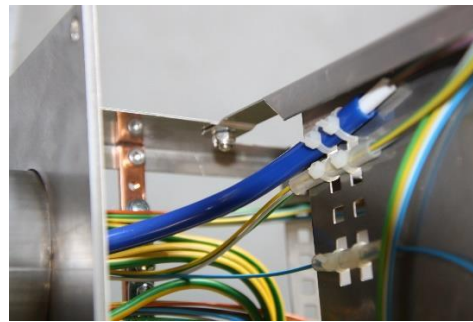
If you bring the central tubes onto the lower splice tray, then guide the tubes as far to the edge of the splice tray as possible, mark the peeling point, cut the tube,

clean the fibers from the gel and attach the tube to the splice tray.

If you bring the central tubes to the upper splice tray, then protect the tubes from denting with a flexible protective tube, e.g. 8/6 mm Nylon tube. Do not attach the central tubes to the splice tray, but only the protective tubes, fig. below! In this way, the central tubes can move slightly at the end of the splice tray, preventing the tubes from bending too sharply with the tray in an upright position.



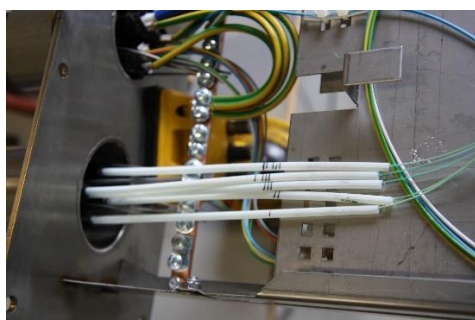
The central tube of the FYOVD2PMU cable is protected at the end of the cable sheath to the upper splice tray with an 8/6 mm Nylon tube.



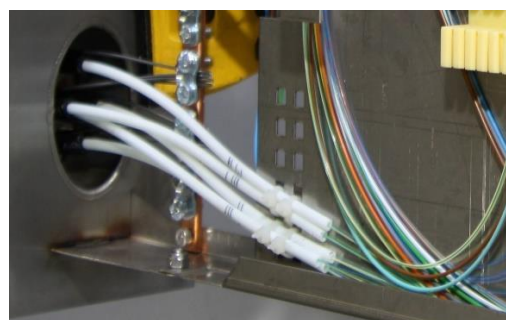
Nylon tube prevents the cables center tube from denting when the extension plate is in an upright position.

The central tubes of FYO2PMU Mini and other FTTH cables

Always bring the fiber tubes of the FTTH cables to the upper splice tray. Mark their IDs on the tubes, mark the peeling points, cut the tubes, clean the fibers from the gel and attach the tubes to the splice tray. Fastenings can be made in bundles of several fiber tubes.

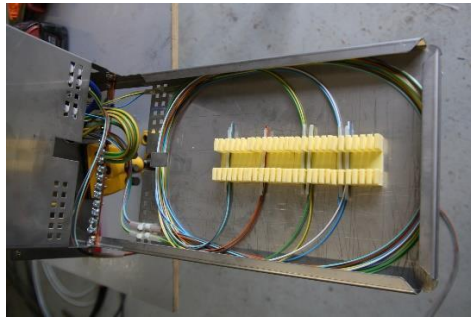


The central tubes of the FTTH cables have been brought to the upper splice tray. Note the tags added to the tubes.



To save space, it is a good idea to attach the fiber tubes of FTTH cables in bundles to the splice tray, but at most 4 tubes per bundle.

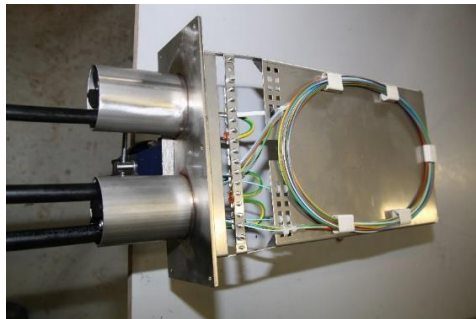
Place the splice holders and measure the fibers. When you measure the fibers, turn them a full turn around the splice tray and then take them in groups to their own splice holders. Always aim for the fibers to come to their holders from the side where they come on to the splice tray.



The fibers are measured on the lower splice tray before splicing.

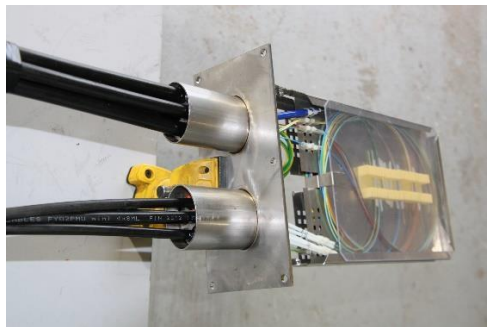


The fibers are measured on the upper splice tray before splicing.



In case of mid span acces, guide the the uncut fiber tubes below the lower splice tray and use the fasteners that come with the joint closure.

Splice the fibers by fiber group and place them on the splice tray.



Protect the spliced fibers with the plexiglass cover that comes with the splice tray.

Add the necessary markings to the closure and to the cables.



Close the joint closure.



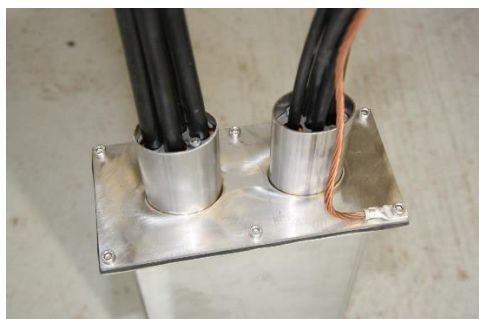
If you are using a battery-powered screwdriver to tighten the screws, finally use a hand tool to make sure that the joint closure is securely closed.



Check the tightness of the screws in the cable glands using hand tools.

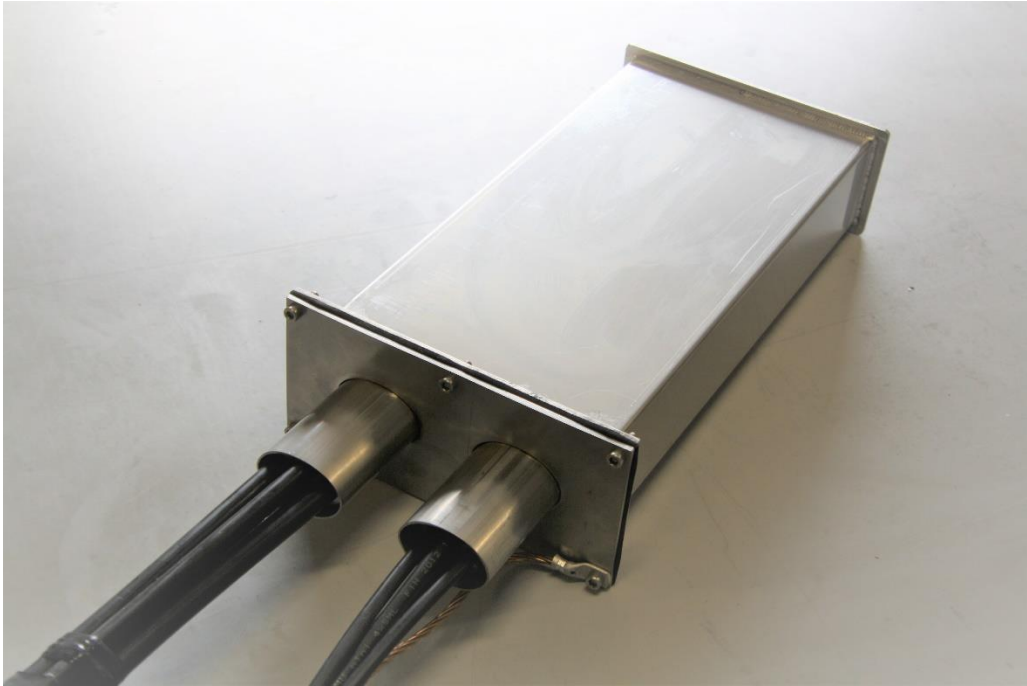
It is very important to note **that the screws are not tightened too much**, as this will reduce the properties of the seal!

The sealing material should not penetrate out of the openings or at the edges of the cable gland.



If cables containing metal are brought into the closure, the closure must always be grounded.

To do the grounding, connect a 16 mm² copper grounding wire's connector under one of the screws of the closure.



Installed NAF GJC.