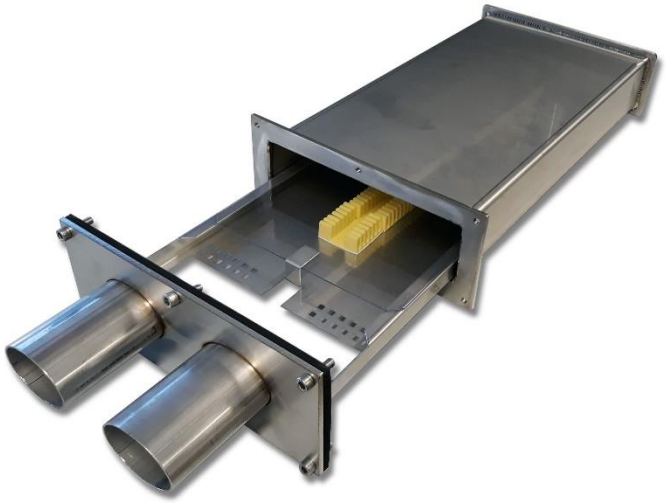
NAF GENERAL JOINT CLOSURE (GJC) 48/96-F

INSTALLATION INSTRUCTIONS

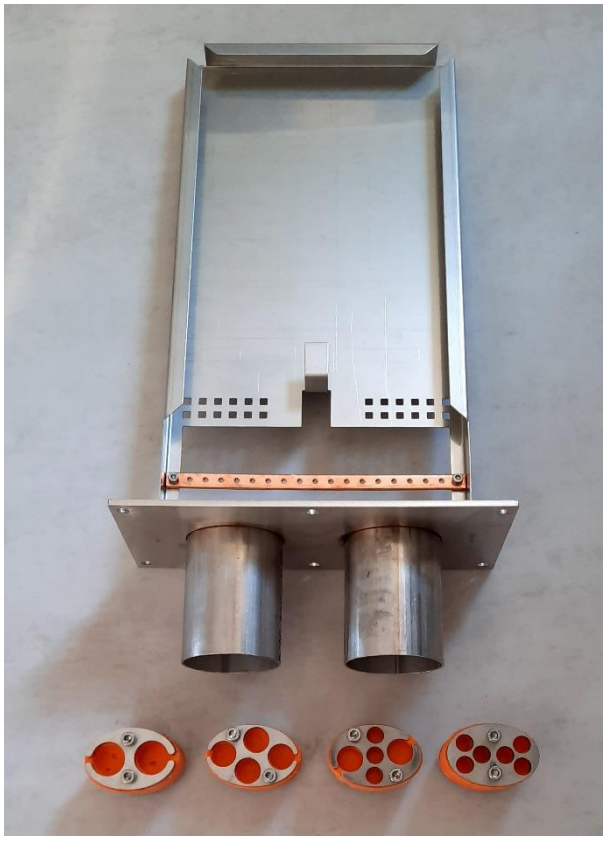


Introduction

NAF GJC 48/96-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 7269294
- The case is so called dome closure consisting of an inner part with splice tray and a protective cover.
- Capacity for 48 or 96 splices
- Suitable for different cable structures and for micro duct projects.
- 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. 100 pcs of splice protection sleeves are also included.
- The closure can be used for mid span access.
- External dimensions 489 x 235 x 94 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.
- IP 68. Designed and manufactured in Finland
- Suitable shrink-free cable lead throughs: Identification Codes: 7263240, 7263241, 7263242, 723243
- The identification code for NAF GSC 48/96-f without cable glands or shrinks is 7263341



The inner part of the joint closure and the fitting mechanical cable glands for different cable diameters. Starting from the left: 2x20mm (7263240), 4x15mm (7263241), 2x15mm+3x10mm (7263242) and 6x10mm (7263243)

Equipment for the joint closure

- Normal accessories
  - Splice holders 24-f, 4 pcs
  - Cable ties 3 x 100 mm, 12 pcs
  - Grounding connectors, 8 pcs
  - Grounding wire 2,5 mm^2 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

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.

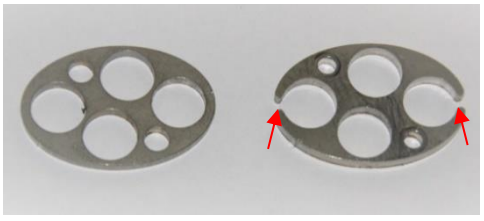
XOKO cable gland 4 x 10 mm

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

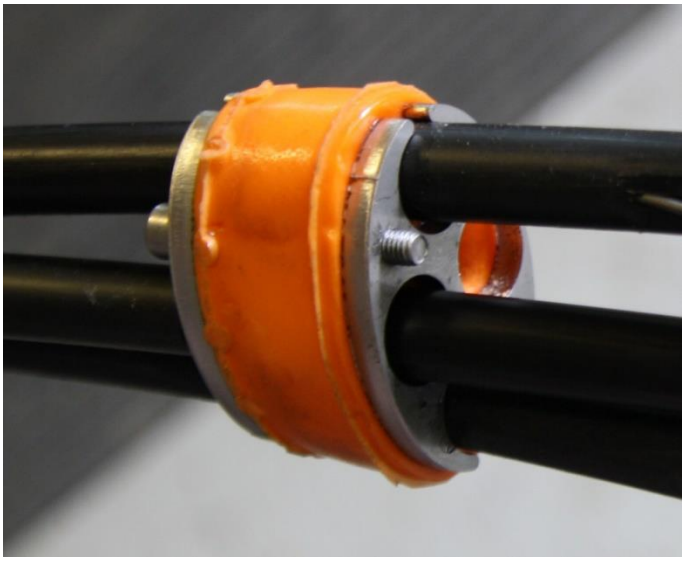
Preparation of cables for joint closure installation

Clean the cables and mark the starting points for the peeling. The peeling lengths are the same for all cable types.

The cable length to be peeled:

- The length to be peeled is 120 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 240 cm

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

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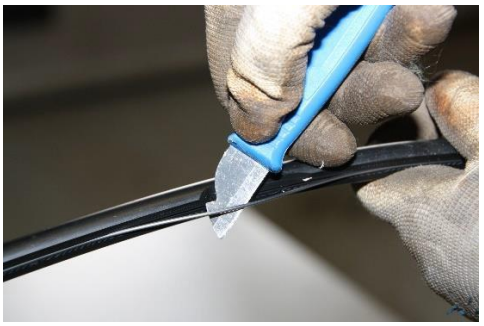
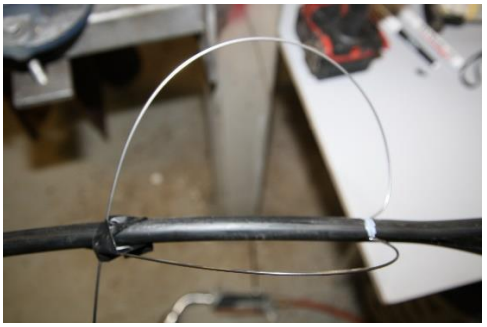
Peel the sheath off the steel wires along the entire length to be peeled.



Dig out the steel wires.

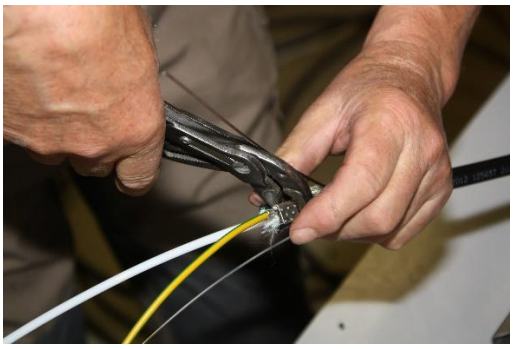
Cut the steel wires at each end to a length of about 20 cm.



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.

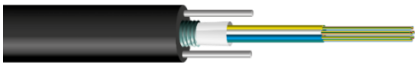
Bend the cable slightly to separate the halves of the cable at the bending point. Cut off the halves of the sheath so that the remaining pieces are about 3 cm long. Cut the reinforcements under the cable sheath.



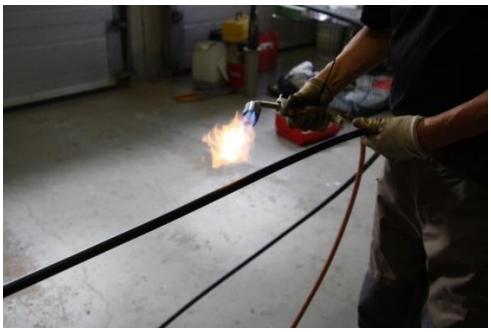
Use a knife to scrape off the white ribbon under the armoring from one of the halves of the cable sheath. Also scrape off the plastic layer on the surface of the armoring. Carefully install the grounding wire.

Protect the connector of the grounding wire with insulation tape.

The peeling of FZVD2PMU Flex direct buried cable



Cable structure

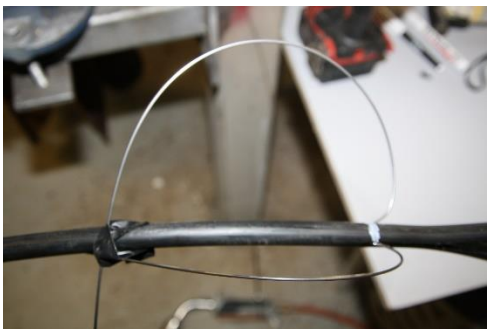


Clean the cable from any dirt and heat the cable sheath over the entire length to be peeled. This makes peeling easier, as the cable sheath material is HDPE, which is harder material than the LDPE traditionally used in outdoor cables.

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.



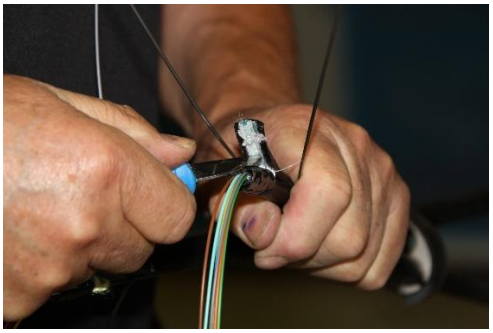
Bend the steel wires backwards and lock them with e.g. insulation tape to prevent damage from their sharp ends.

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.

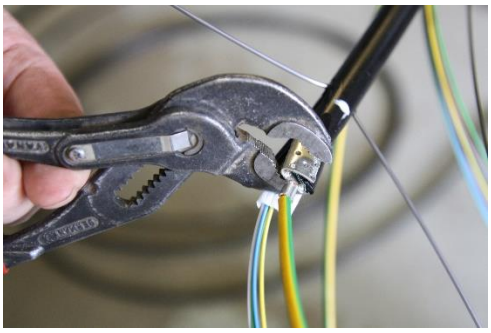
Pull the cable halves apart while taking care not to damage the Flex fiber tubes. If you have opened the cable for only a short distance, carefully pull the Flex-tubes out as a bundle from the outer end of the cable

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

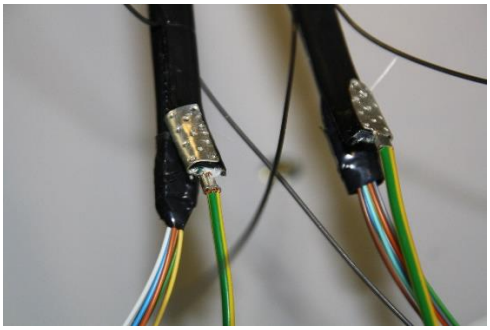
Bend one of the halves of cable sheath and press the Flex-tubes inside the white ribbon against it . Protect the tubes by wrapping insulation tape around the tubes and the cable sheath half.



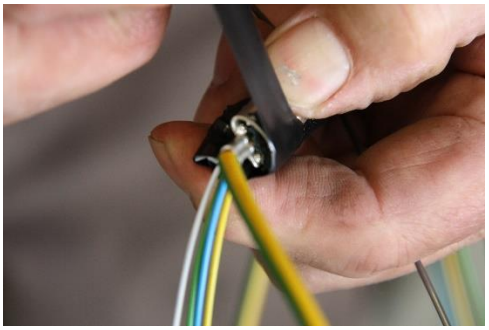
Use a knife to scrape off the white ribbon under the armoring from one of the halves of the cable sheath. Also scrape off the plastic layer on the surface of the armoring.



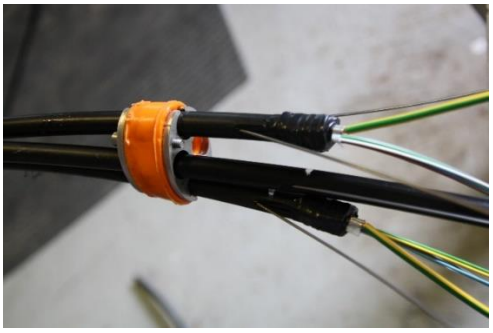
Flatten the end of the cable sheath with pliers and squeeze the connector of the grounding wire onto that half of the sheath.



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.

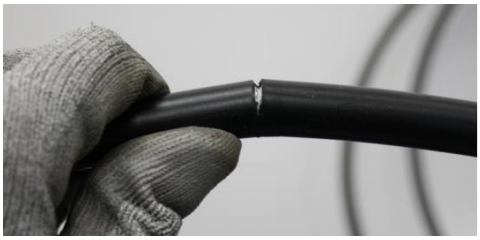


FZVD2PMU Flex direct buried cables in a mechanical cable gland.

The peeling of FZOMVDMU-SD direct buried cable

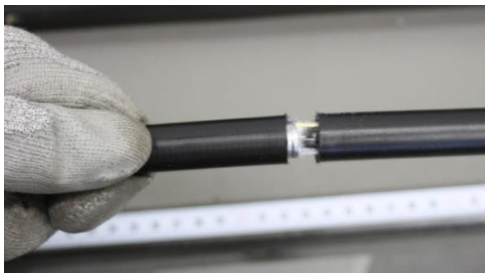
Cable structure

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.

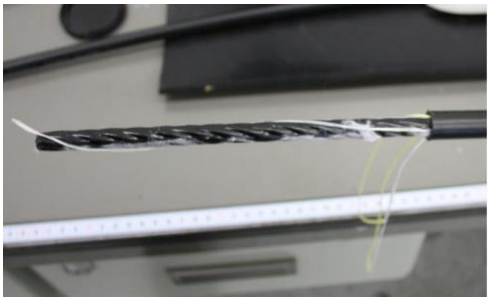


Bend the cable in different directions at the incision point to break the steel band.

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.

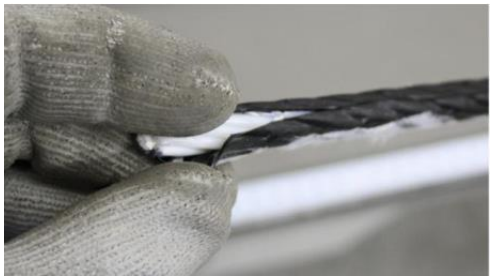
Note. Pull the wire straight out of the cable in a 90 degree angle so that the wire does not cause damage to the fibers.

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.

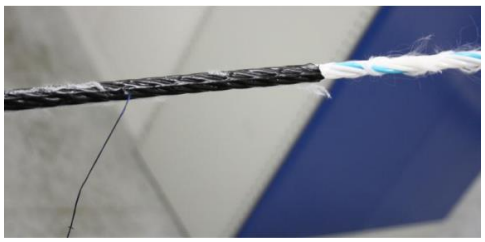
Carefully make a longitudinal incision to the middle sheath between 10 cm and 15 cm in length. Do not cut too deep to prevent damage to fiber tubes.



Open up the middle sheath from the end with a knife, enough to get a gpip 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

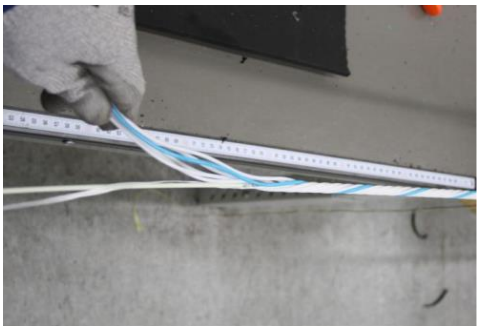
Note. Pull the wire straight out of the cable in a 90 degree angle so that the wire does not cause damage to the fibers.

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 strenght member. Untwine them.

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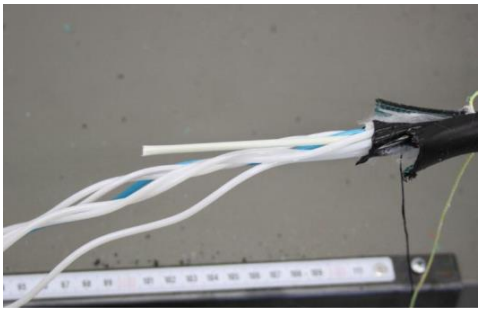
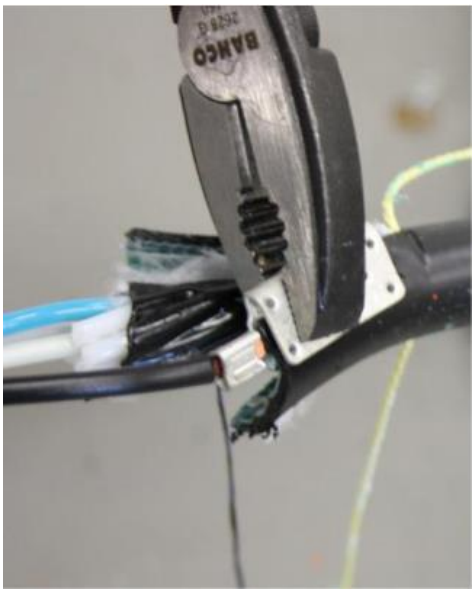
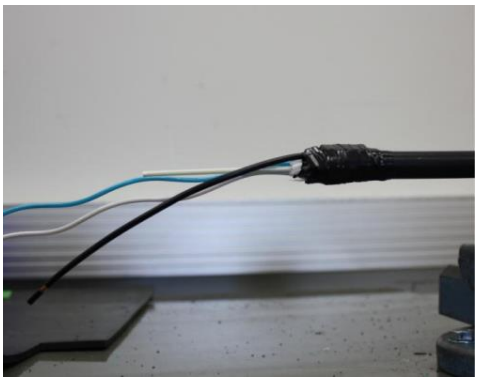


Cut any filling elements at the peeling point and leave the middle element to about 10 cm in length.

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

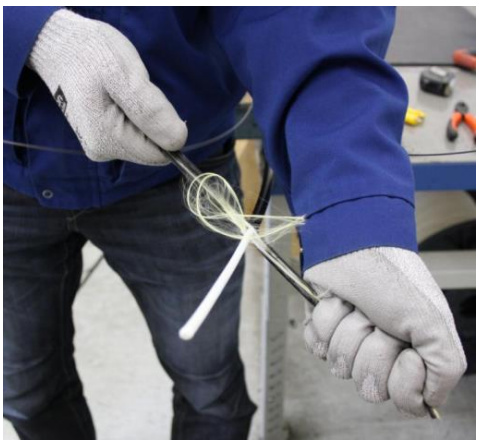
FYO2RMU 3,5 kN

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

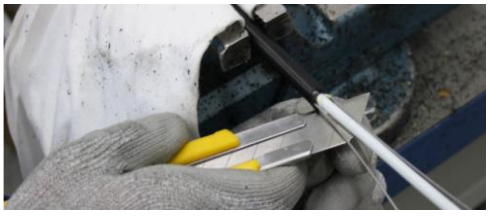
Bend out the ends of the steel wires or fiberglass strength members and pull them out of the sheath along the entire length to be peeled.

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

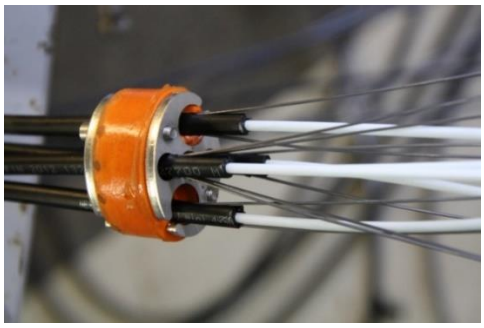
Split the sheath from the end of the cable from the grooves of the strength members for about 15 cm.



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.



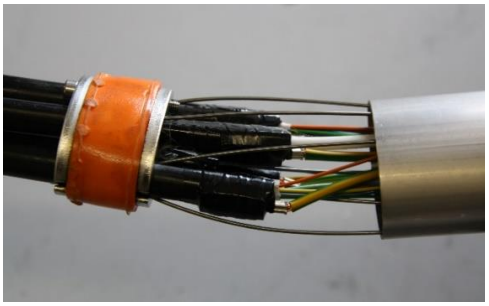
Peeled FYO2PMU Mini FTTH cables in a mechanical cable gland.

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.

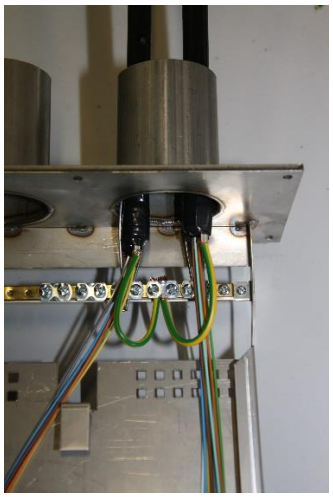
Note. Silicone spray is not included in the normal accessories.



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

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.

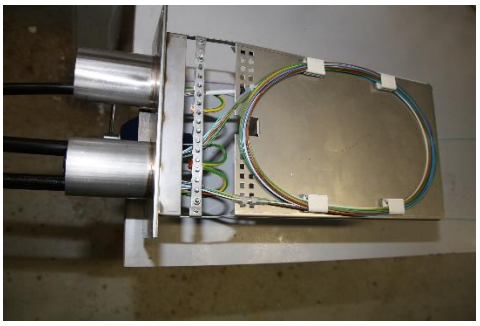
Note. Always tighten manually to prevent screws or their counterparts from breaking.



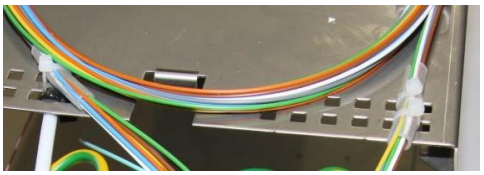
Connect the steel strength members and grounding wires of the cables to the grounding rail of the closure.

Setting the fibers on the splice tray

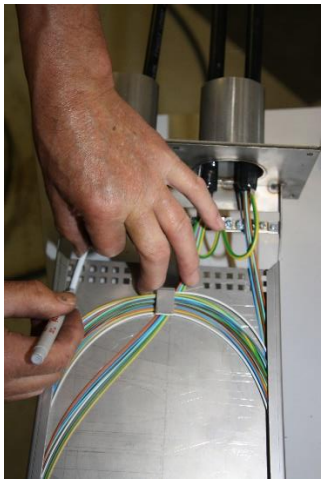
In the case of a straight extension, bring the fibers of all the cables directly to the splice tray and attach the tubes to the splice tray. On the other hand, in the case of mid span access, place the fibers in their tubes below the splice tray, pull straight and separate the fiber tubes to be cut. Cut these tubes from the middle. Place the fibers to be spliced in their tube above the splice tray and bundle and attach the uncut fiber tubes below the splice tray.



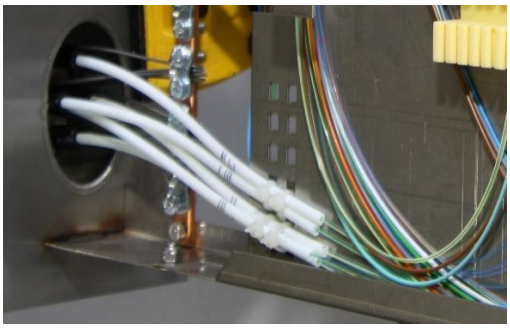
The uncut fiber tubes are attached to the underside of the splice tray with the adhesive fasteners that come with the joint closure.



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



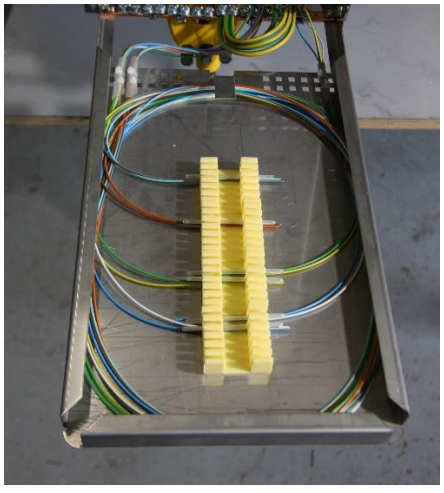
Mark the starting points of peeling on the fiber tubes, cut the fiber tubes without damaging the fibers, remove the gel on top of the fibers and attach the fiber tubes to the splice tray.



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.

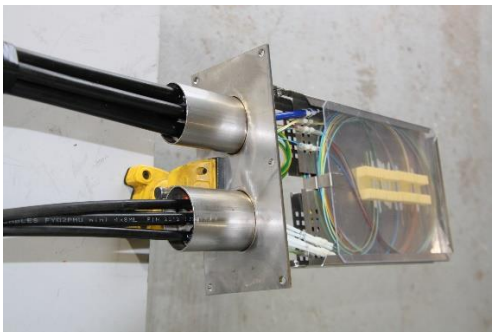
Note. Mark the fiber tube of each FTTH cable with its own id, e.g. address, number or similar.

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 fibres to come to their holders from the side where they come to the splice tray.



The fibers are measured on the splice tray before splicing.

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



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

Closing of the joint closure

Add the necessarry markings to the closure and to the cables

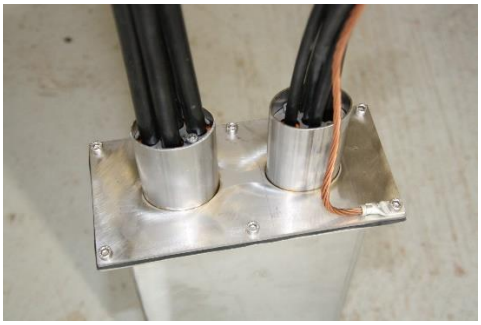
Close the joint closure.

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.

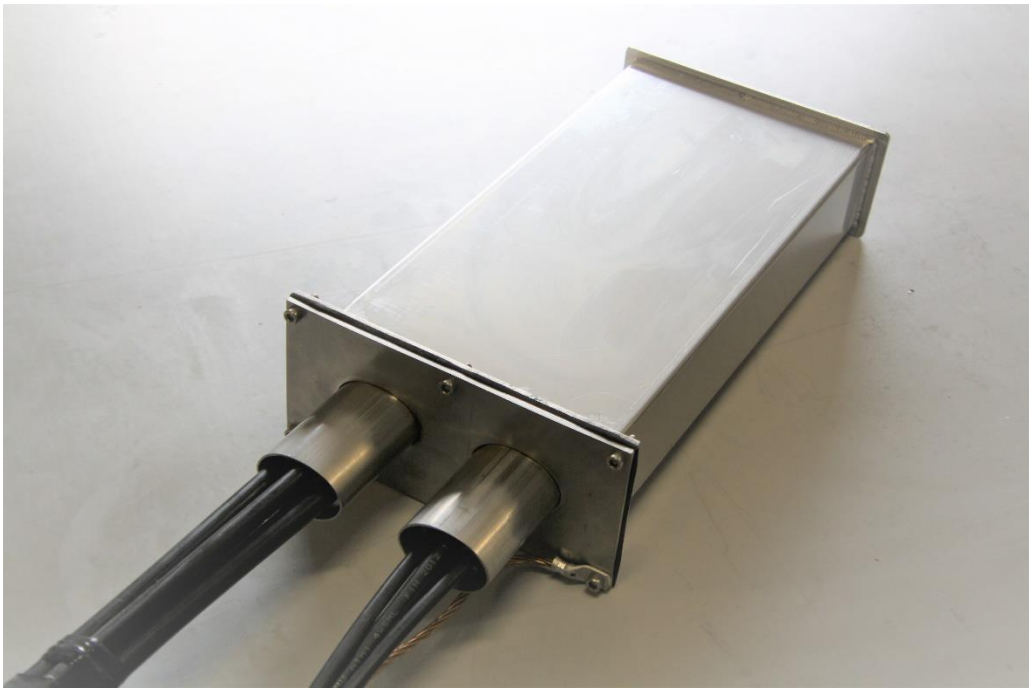
It is very important to note **that the screws are not tightened too much,** as this will reduce the properties of the seal!

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 mm^2 copper grounding wire's connector under one of the screws of the closure.



Installed NAF GJC.

Use of the joint closure in micro duct networks

Thanks to its mechanical cable glands, the NAF GJC 48/96-f is also ideal joint closure for micro duct networks when splice cabinets cannot be used.

Since micro duct cables are relatively small in diameter, 2,0 – 8,0 mm, and the crush strength is a lot less than it is with direct buried cables, we recommend, that the micro ducts and the cables are brought into the joint closure. The handling of the closure with micro duct cables, and the installation to a manhole or to the ground is much safer than it would be if only micro cables would have been brought into the closure.

The cable glands used depend on the size of the micro ducts.

- The most used micro duct size for trunk cables these days is 14/10 mm. The suitable cable glands for these are 4x15 mm or 2x15 + 3x10 mm. When using NAF cable glands, the openings for micro ducts are drilled with a 11 or 12 mm drill bit for wood.
- For FTTH cables the most used micro duct size is 7/3,5 mm. For these ducts only NAF cable glands are used. Either 6x10 mm or the three 10 mm openings in 2x15 + 3x10 mm cable gland. The openings for micro ducts are drilled with a 5 mm drill bit for wood.

Micro ducts are pushed through the cable glands for about 5 cm in length so that their ends appear inside the joint closure. The cables coming in from the micro ducts are guided directly to the splice tray. The trunk cables are guided on outer side and preferably on different side of the splice tray than the FTTH cables. Small FTTH cables are bundled into bundles of 4 –6 cables and attached in bundles to the splice tray. Remember to mark each cable inside the joint closure with its own id, such as address or number.