

**USER HANDBOOK**

REF. : RAD-GEN-CSHF.UHD

DATE:
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5/-**PAGE :**
1/21**TITLE**

HIGH RELIABILITY

LOW LOSS COAXIAL

CABLE ASSEMBLIES

USER HANDBOOK

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DOCUMENTATION CHANGE NOTICE

REVISION OR ISSUE	DATE	CHANGE
1 -	04/11/2004	Creation
1 A	20/01/2005	Cancelled SHF2.4MS and SHF3MS in the tables
2 -	17/06/2008	Updated with SHF2.4MS and SHF3MS in the tables.
2 A	09/11/2010	Updated to add note on the marking sleeves
3 -	22/06/2016	Updated to have only an English version
4 -	13/03/2019	Updated to add more information for SMP Lock cable assemblies
5-	24/10/2023	Add LPV + 0.047'' bending radius and other information, add SMPM lock connectors



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1. OBJECT

This document gives the mounting recommendations applicable to any type of SHF or LPV cable assembly on the equipment of satellites in order to preserve the whole of their initial characteristics.

2. CARE AND HANDLING

The SHF and LPV cable assemblies have high electrical performances, any mistake in handling methods can generate irremediable degradations of performances

The cable assembly should not have blows, deformations, flat areas or other defects visible with naked eyes.


Before integration the interface of the connector will be free from all detachable particles, or pollution.

The area of link between cable and connector protected by a heat-shrinkable sleeve shall not be subjected to abnormal stress.

A light torsion of the cable is authorized within the limit of the values given in the table here-after.

The technical data sheets of the cable assemblies or the table 1 below specify 2 values of bending radius of the cable, namely:

- Static bend radius
 - It authorizes the bending only once, the straightened of the cable is not allowed.
- Dynamic bend radius
 - It authorizes 5 bending / unbending in the same zone of the cable without any degradation of its performances.

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For swept versions:

The swept at the extremity of the cable assembly shall not be used to maintain it manually or to block its rotation during the mating or unmating of the connector on the equipment. Indeed, there is a risk of deformation of the swept. However a modification of the angle of approximately + or - 5° is acceptable during integration phase.

The assembly of the connectors on the equipment shall be carried out using 2 keys, one with a torque wrench regulated with the value requested in the Technical Data Sheets or the table 2 to ensure the locking of the coupling nut, the other placed on the flats of the back of the connector to avoid its rotation.

3. BEND RADIUS OF CABLE ASSEMBLIES

TABLE 1

	SHF 2.4 MS	SHF 3MS	SHF 4.8MS	SHF 5MS	SHF 8MS	LPV 0.086	LPV 0.130	SHF 047
Minimum static bend radius (mm)	15	15	25	25	40	9	13	5
Minimum dynamic bend radius (mm)	20	25	50	50	80	25	25	10
Torsion per meter of cable	± 90°					-	-	-

4. COUPLING TORQUE OF MATING CONNECTORS

TABLE 2

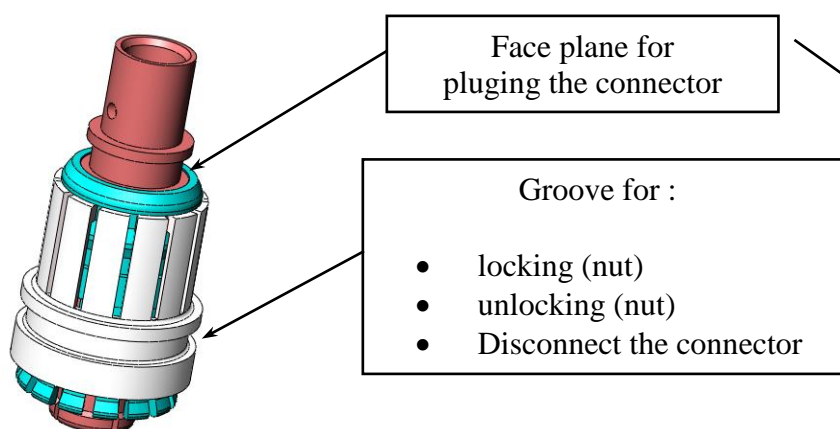
SMA	SMA2.9	TNC	SMP/SMP LOCK/SMPM LOCK
80 -120 N.cm	80-115 N.cm	265 N.cm	N.A.

5. MATING / UNMATING THE CONNECTORS SMP LOCK

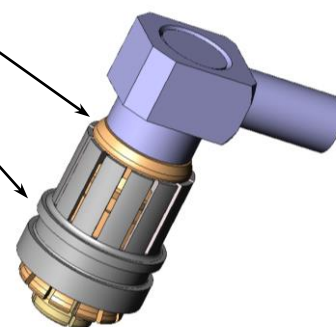
For SMP Lock Straight and right angle connector a tool should be used to plug, lockn unlock and unplug the connector :

Recommended tool: R282.868.290 to plug and to lock the connector (can also be plugged manually)
R282.868.330 to unlock and to unplug the connector (to unplug manually is not recommended, risk to damage the cable at the rear of the connector).

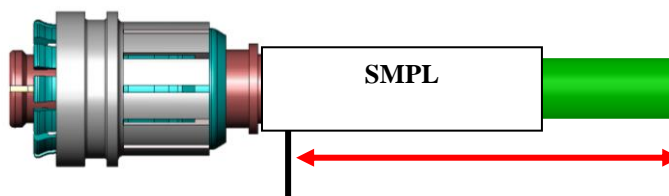
SMP LOCK STRAIGHT:



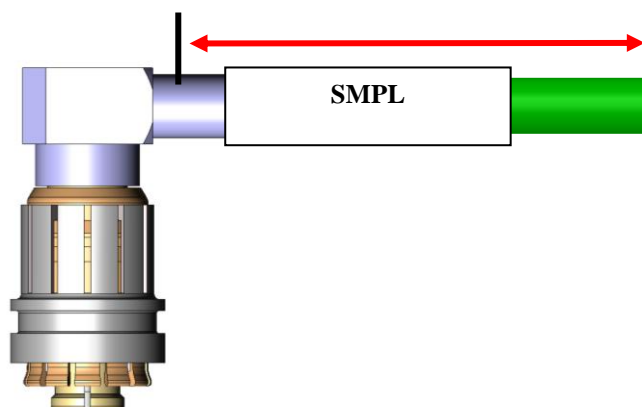
SMP LOCK RIGHT ANGLE:



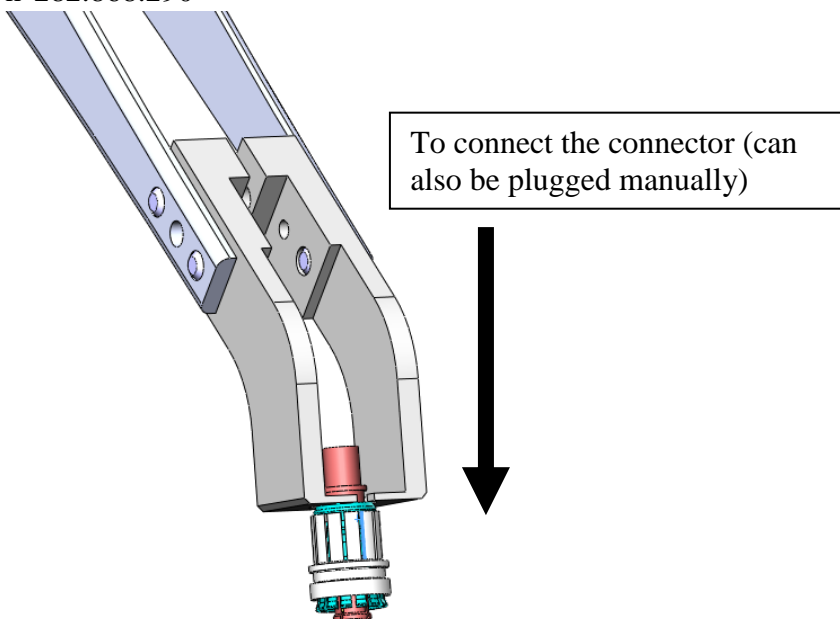
WARNING: It is forbidden to push or pull the cable manually at the rear of the connector to plug or unplug the connector.



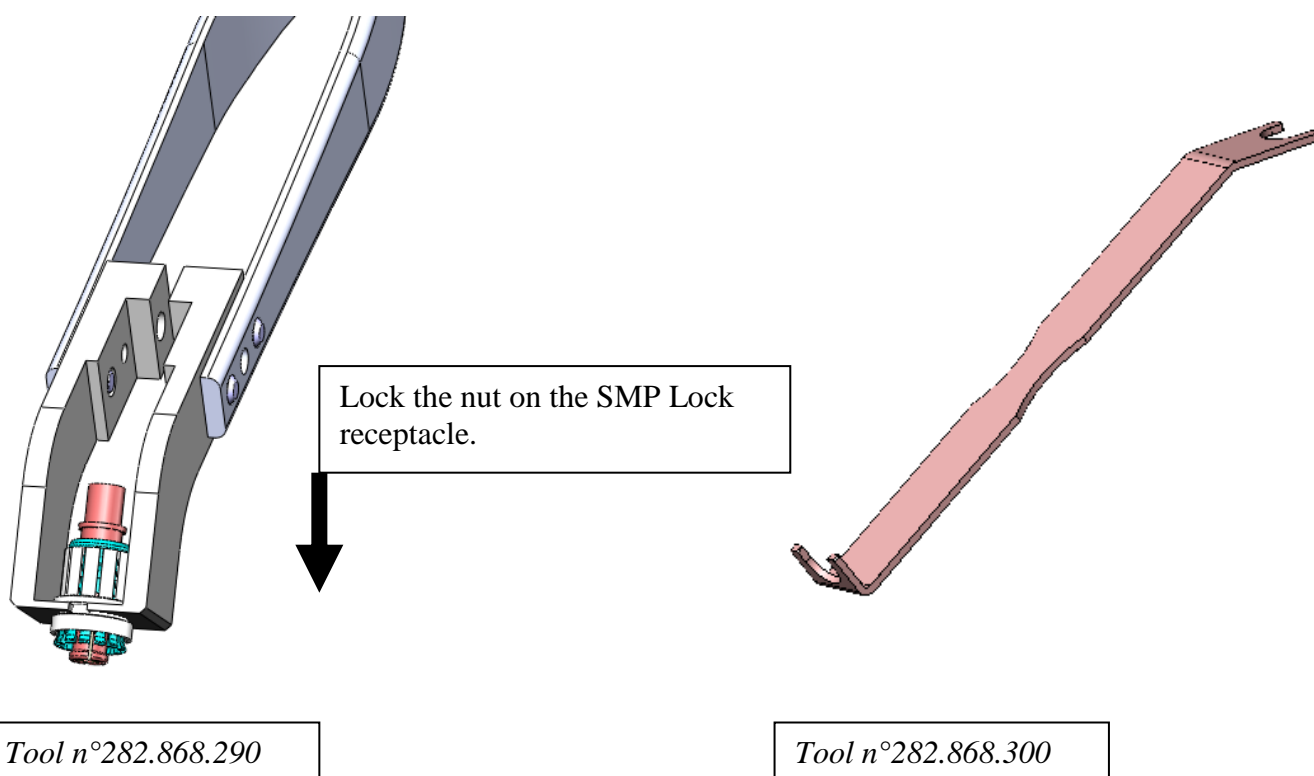
Prohibited area to push or pull the cable manually



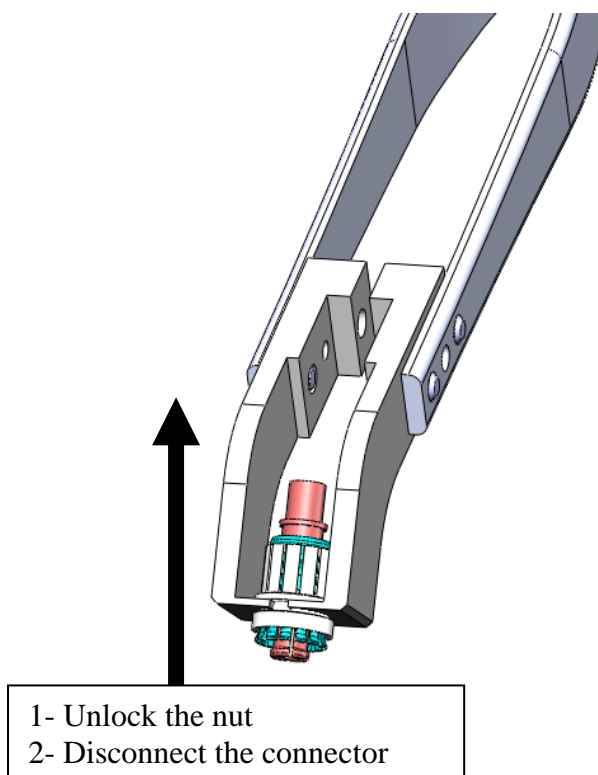
To plug: with Tool n°282.868.290



To Lock: with Tool n°282.868.290 or R282.868.300



To Unlock and to unplug: with Tool n°282.868.290 or R282.868.300



To Unlock and to unplug within a limited area: with Tool n°282.868.330

1st step: Positioning the tool into the SMP groove



2nd step: Push at the stop position (flange)

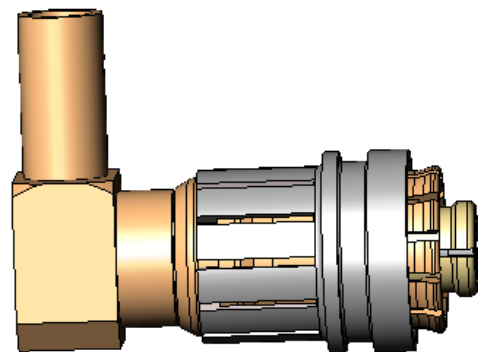
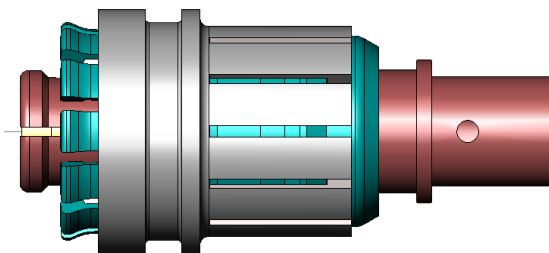


3rd step: And press more to unplug the connector



LOCKED / UNLOCKED POSITION

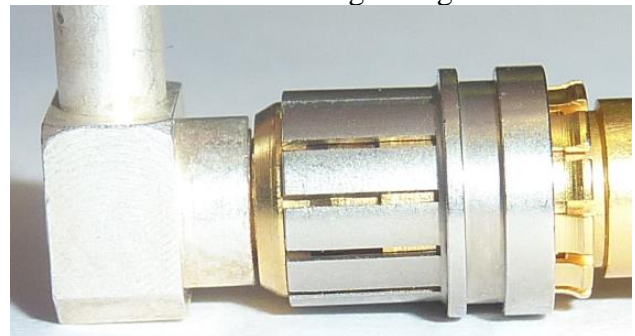
SMP Lock connector in UNLOCKED position



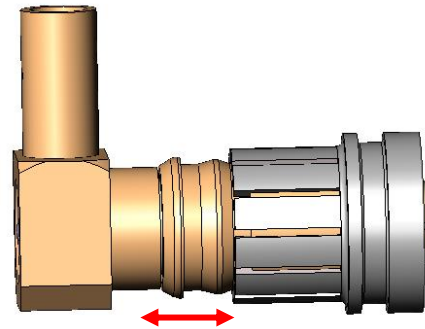
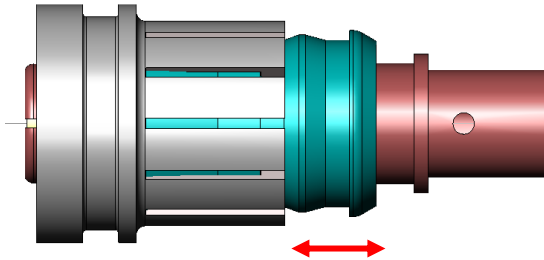
Real view on SMP Lock Straight



Real view on SMP Lock Right Angle

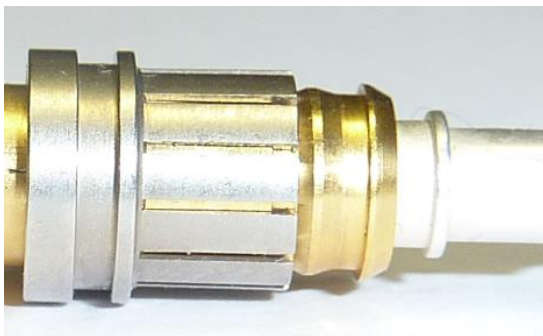


SMP Lock connector in LOCKED position

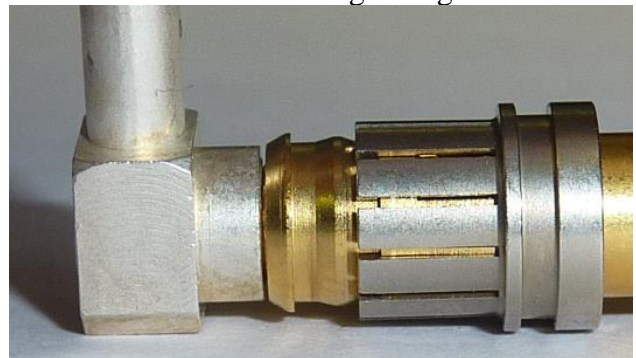


This area should be in gold color when the SMP Lock connector is locked

Real view on SMP Lock Straight

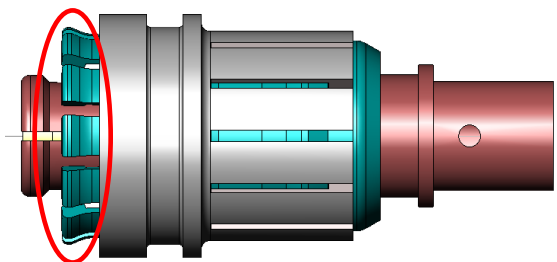


Real view on SMP Lock Right Angle

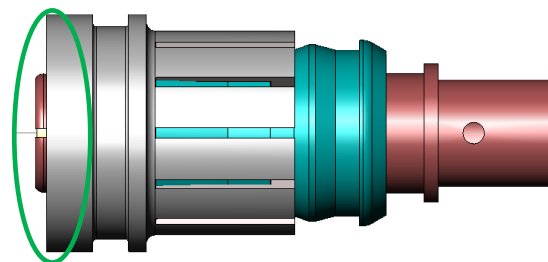


Visual criteria to validate the perfect locking of the connector:

- The locking petals of the connector shall be completely covered by the cap

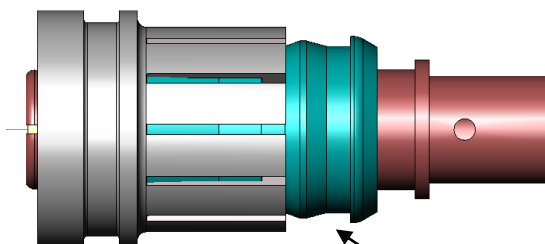


Not locked

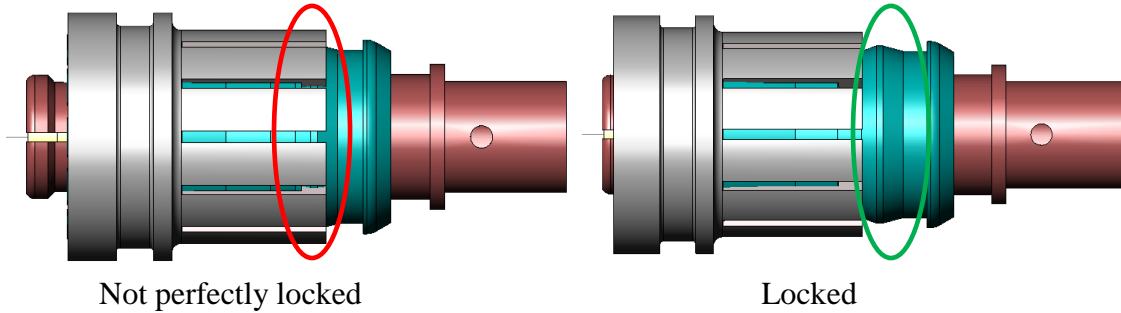


Locked

- And, at the rear of connector, the petals of the cap shall be after knurling:



Knurling

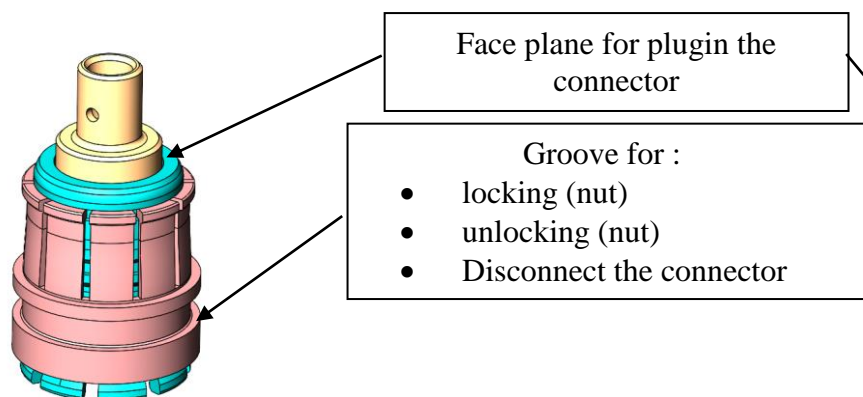


6. MATING / UNMATING THE CONNECTORS SMPM LOCK

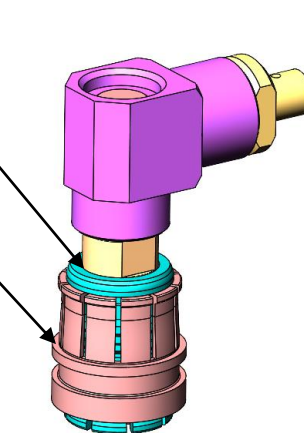
For SMPM Lock Straight and right angle connector, a tool should be used to plug, lock, unlock and unplug the connector :

Recommended tool: **R282868400** to plug/unplug and to lock/unlock the connector.

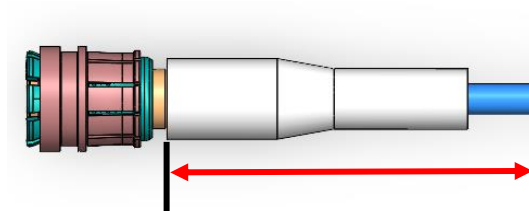
SMPM LOCK STRAIGHT:



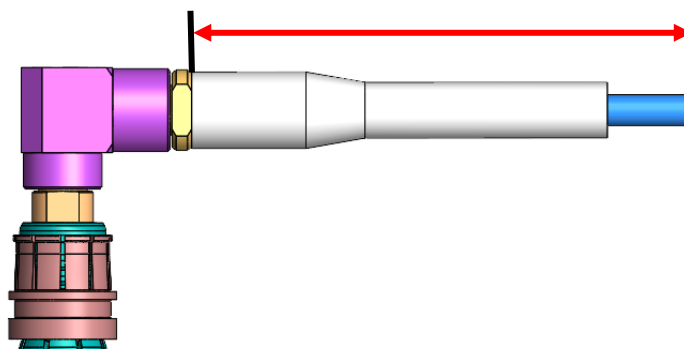
SMPM LOCK RIGHT ANGLE:



WARNING: It is forbidden to push or pull the cable manually at the rear of the connector to plug or unplug the connector.

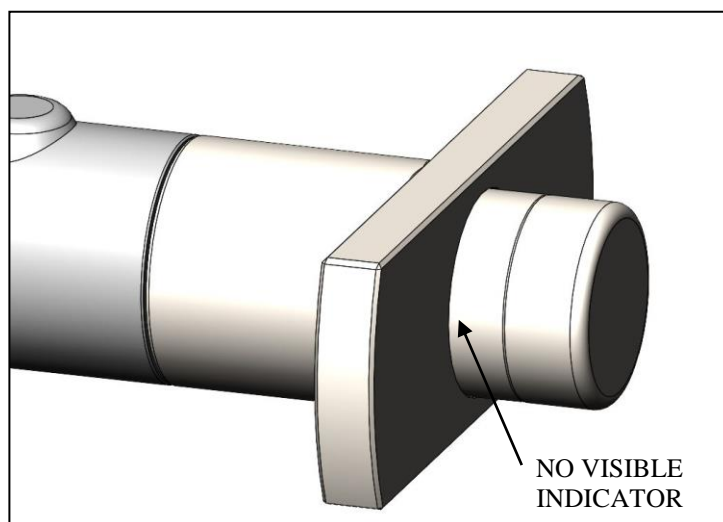
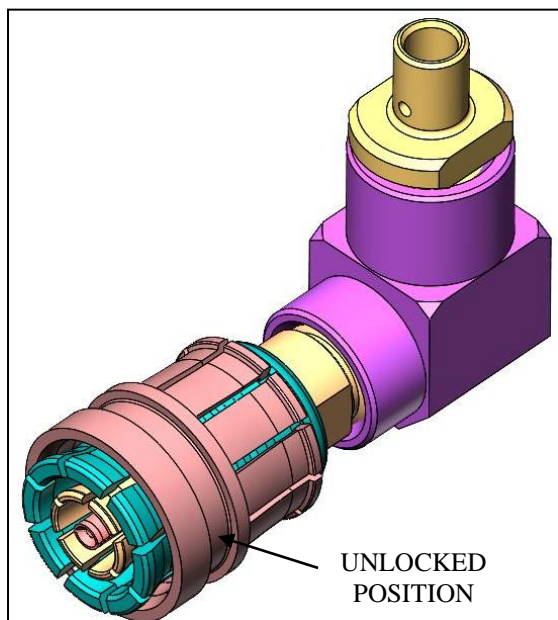


Prohibited area to push or pull the cable manually

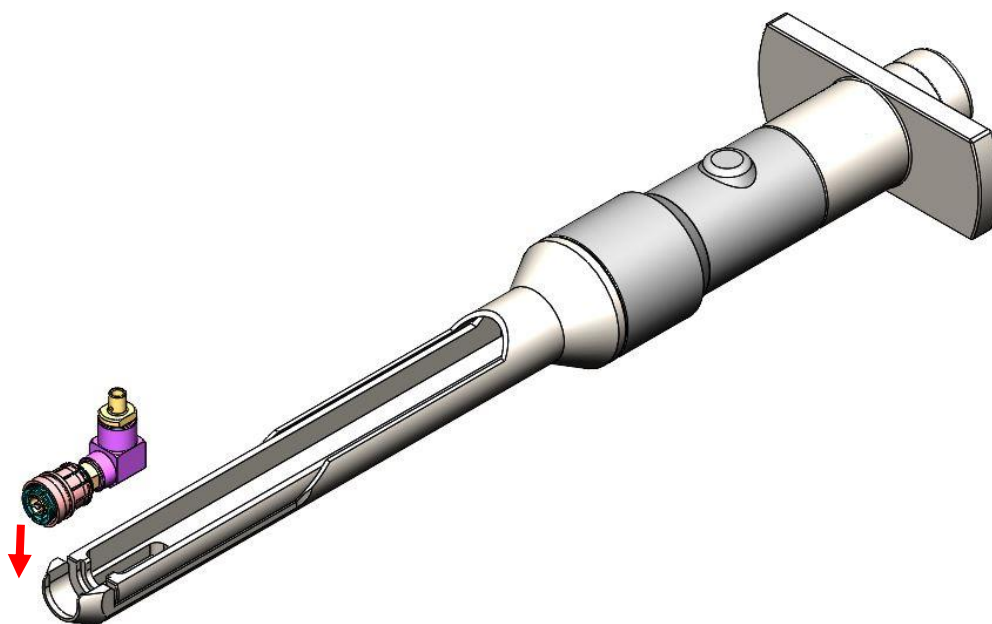


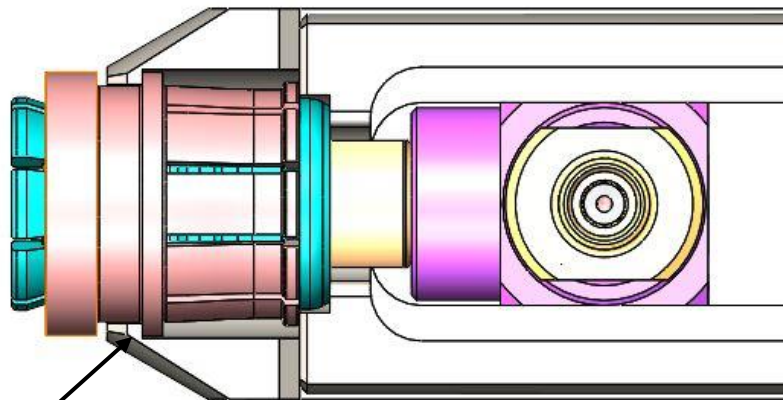
Instruction for use

1. Verify that the connector and the tooling are in the unlocked position.



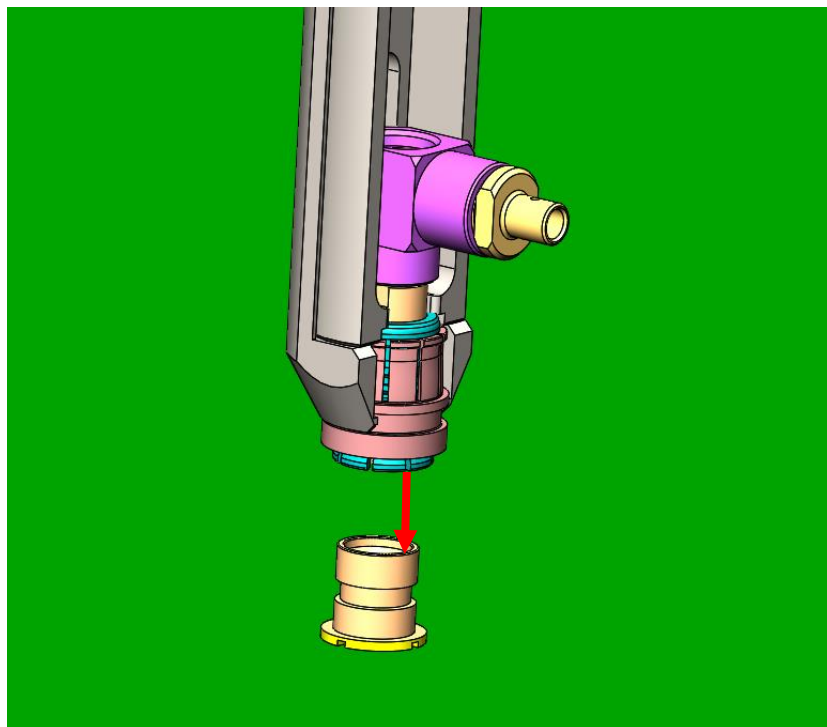
2. Insert the connector on the tooling



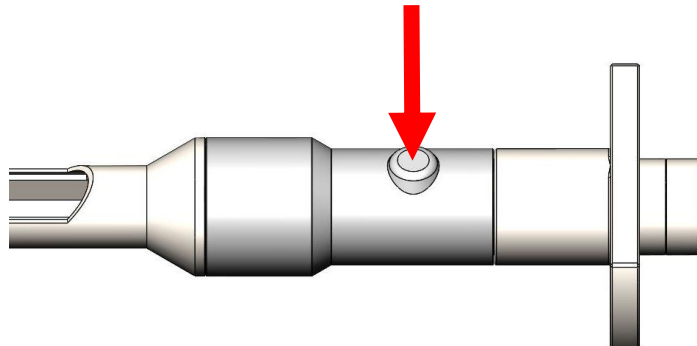


THE FORK MUST
BE PLACED IN
THE GROOVE OF
THE RING

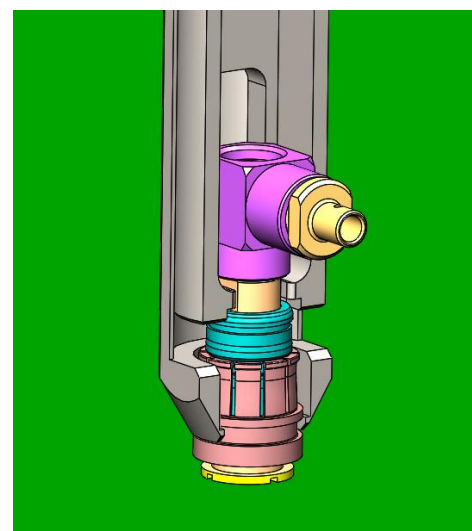
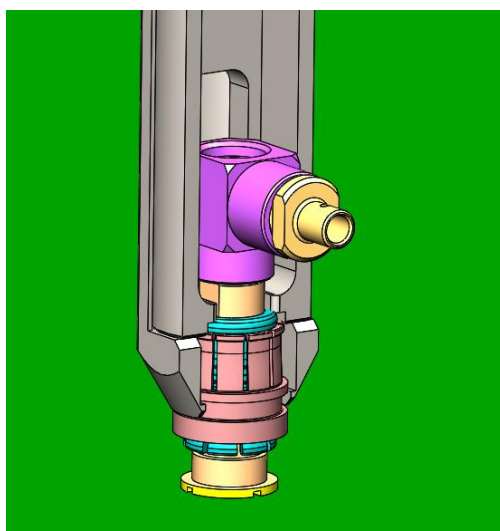
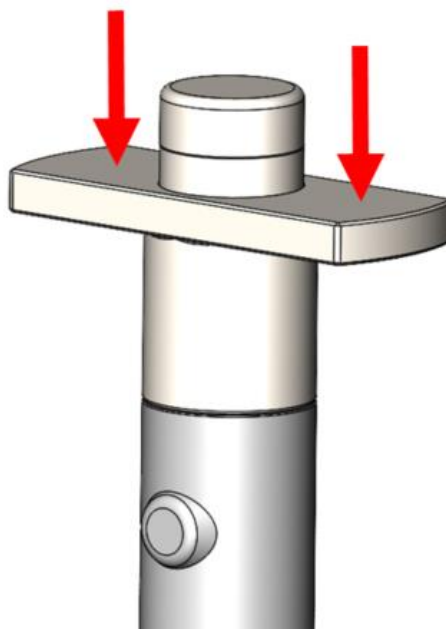
3. And connect the female interface with the male interface



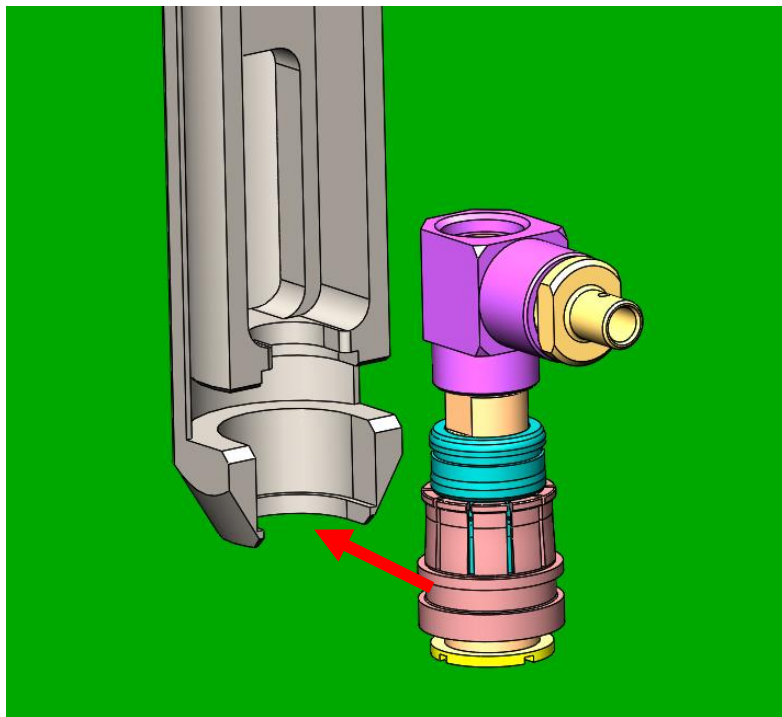
4. Release the tooling by pushing the button



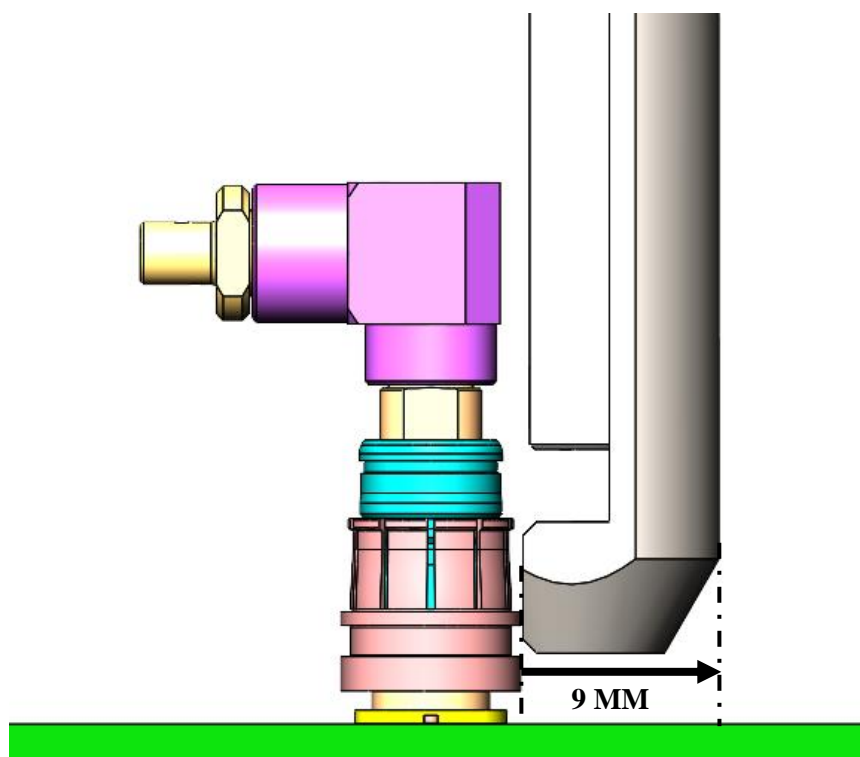
5. Push the fins to lock the connector



6. Extract laterally the tooling

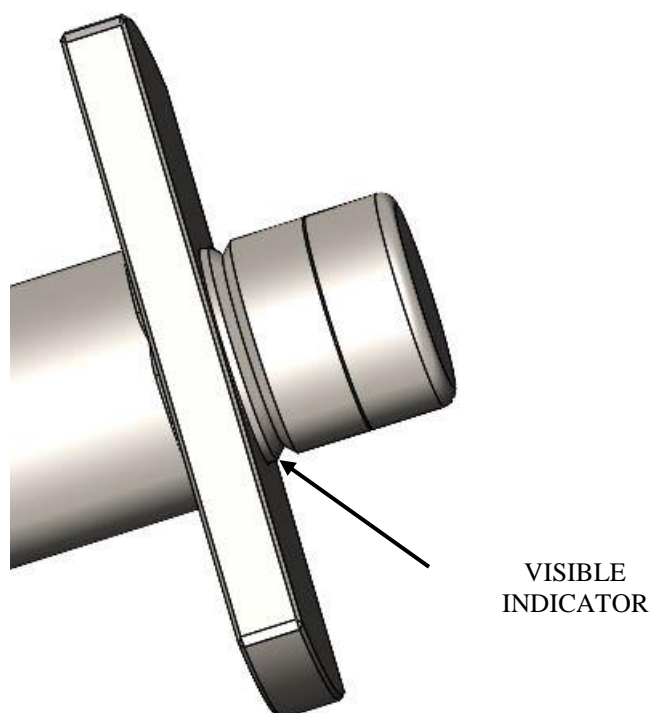


Anticipate a space around the interfaces to allow the insertion / extraction of the tooling

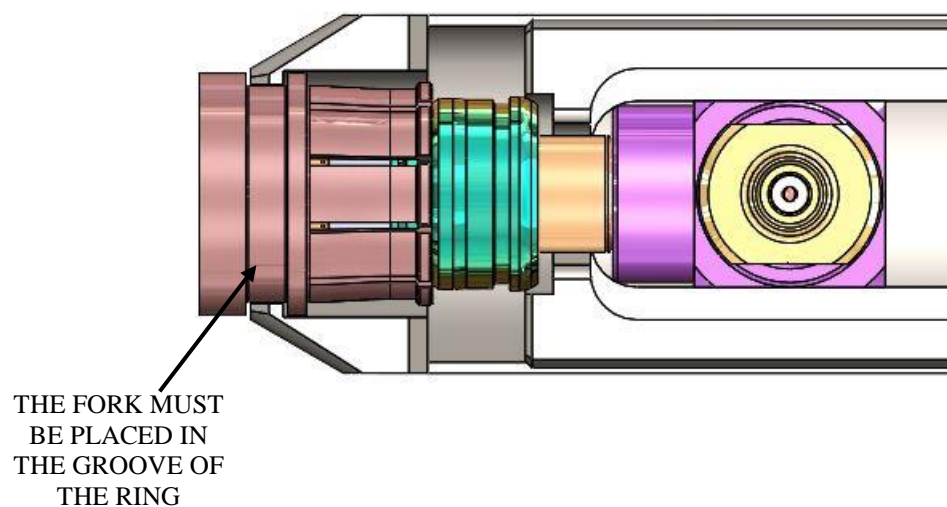


Disconnection procedure

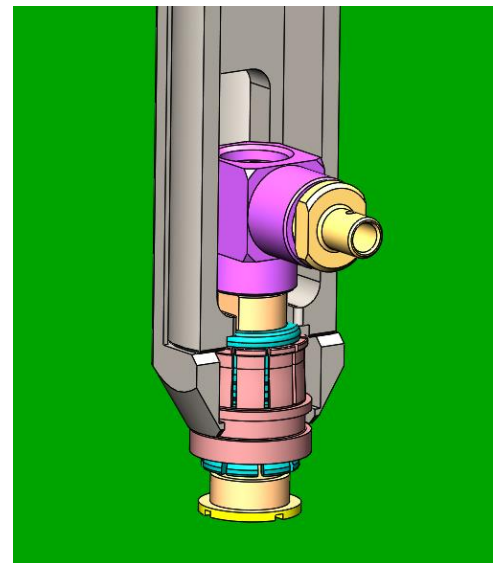
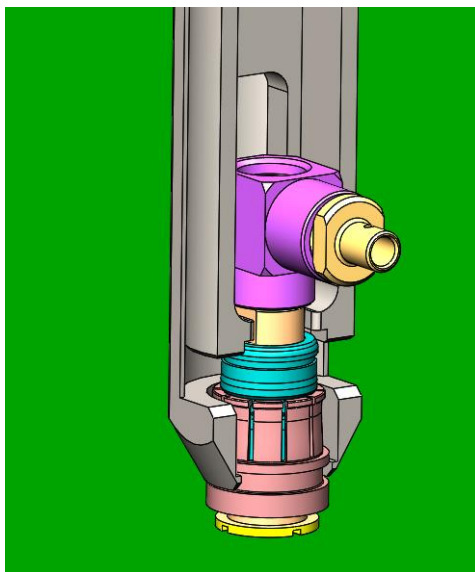
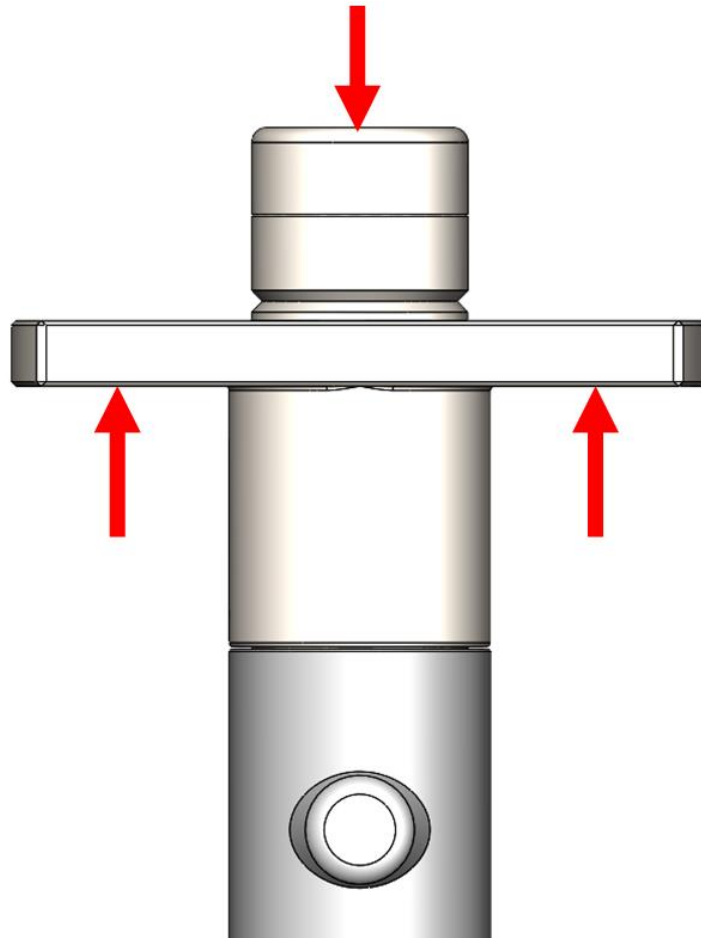
- 1. Verify that the tooling is in the default position (Visible indicator)**

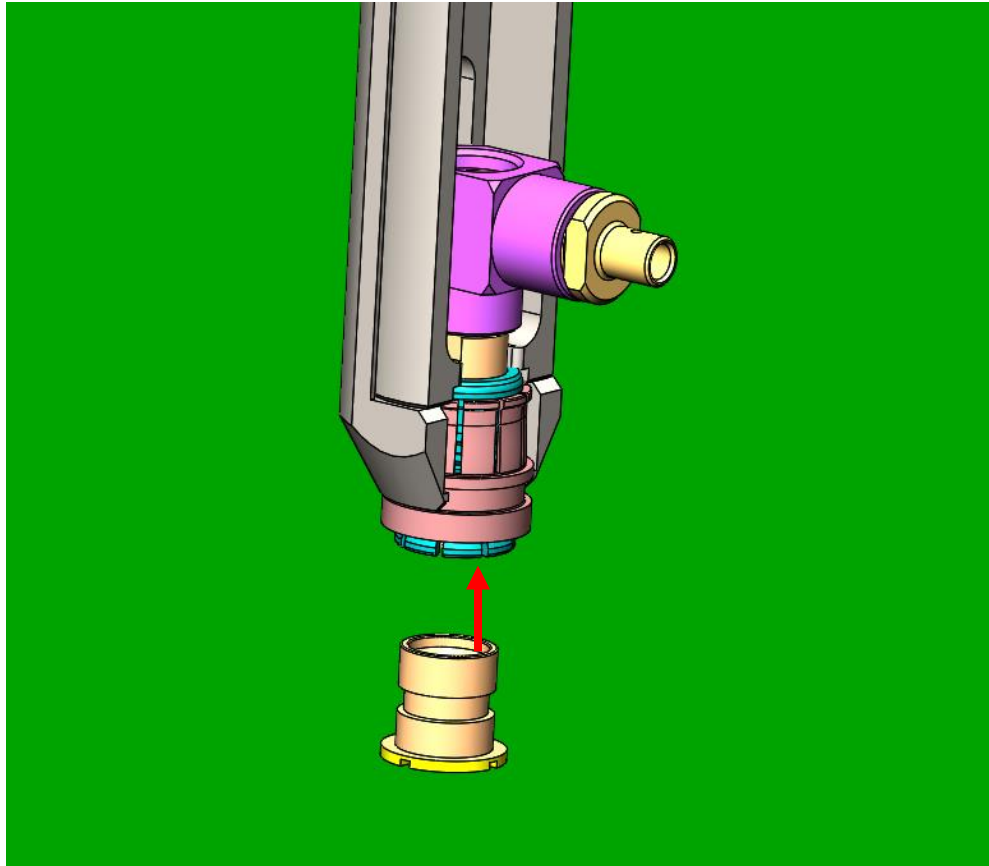


- 2. Insert laterally the tooling on the connector**



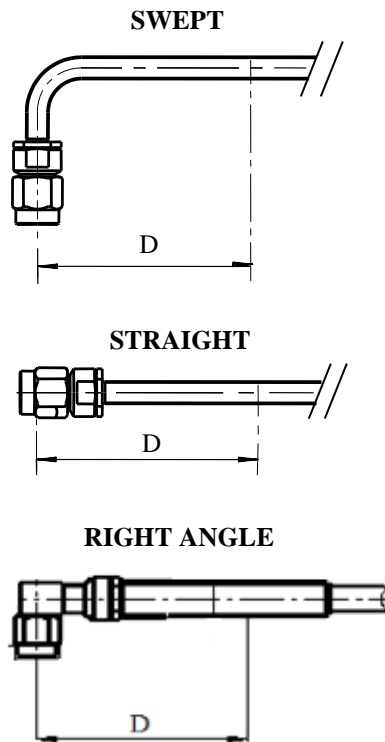
3. Push like a syringe to unlock the connector




4. Unplug the interfaces

7. BENDING DISTANCE OF CABLE / CONNECTOR

For each SHF and LPV cable assemblies, a portion of the cable at the rear of the connector should be kept straight to avoid any damage of the cable assembly in this area. For each configuration, the dimension are indicated in the datasheet as (1): minimum length before bending the cable. Please refer to the datasheet to know the minimum length before bending the cable.



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8. NOTE ON THE MARKING SLEEVES

1ST CASE : CABLE ASSEMBLY WITH TWO MARKING SLEEVES AT EACH END

In case there are only two marking sleeves (at each end of the cable assembly), these sleeves are fixed and should not move.

2ND CASE : CABLE ASSEMBLY WITH THREE MARKING SLEEVES

In case there are three marking sleeves (one at each end of the cable assembly and a third at the middle), the two marking sleeves at each end are fixed and could not move. The marking sleeve on the middle is free to be able to move it along the cable in function of the fixing points on the equipment.

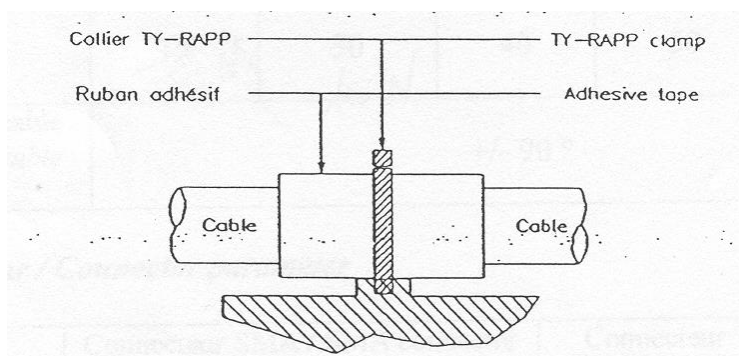
Radiall installs three marking sleeves when there is a special marking required by the customer: a reference of the cable and special marking for each port of the cable assembly.

The customer can shrink the middle sleeves if he wishes.

To shrink the marking sleeve, use a hot air generator fitted with an adaptor on the end.

When the new sleeve is placed at the right position on the cable, set the hot air generator thermostat between 150°C to 160°C maximum. The thermal sleeve should be shrunk homogenously along the cable. Check if it is possible to rotate the thermal sleeve around the cable. If yes, please heat again. If no, the shrinking of sleeve is good.

9. CLAMPING METHODS OF CABLE ASSEMBLIES



USED MATERIALS

- Adhesive tape :
 - Material : glass fiber
 - Thickness : 0.1 mm
 - Width : > 20 mm
- Ty-rapp clamp :
 - Material : for Space use
 - Width : 2 mm
- Method :
 - Roll up 6 turns minimum of adhesive tape around the cable, to attach the cable on its support under an adequate force to fix the cable without damaging it.
 - The distance between the TY-RAPPs should be 15 – 20cm.