

# **CM10-SP××S-x-D Plug Connector (Soldering Type) Cable Assembly Manual**

DDK Ltd.  
2ND Production eng. dept. assembly engineering section.  
14 Matsuyama-cho, Moka-shi, Tochigi, 321-4393, Japan

Date of Issue: Mar 26, 2008

Material No. TC-609

Revision	Date	Revision No.
A	Mar 26, 2008	New Issue
B	May 13, 2008	No. T-2204
C	Feb 25, 2009	No. T-2488
D	Oct 23, 2013	No. T-3671

Material No.	Page
TC-609	1/11

# Contents

	Page
1. Outline .....	2
2. Specifications .....	2
2-1. Applicable connector .....	2
3. Cable Assembly Process .....	3
3-1. Cutting a cable .....	3
3-2. Inserting parts.....	3
3-3. Stripping a cable.....	3
3-4. Soldering a contact.....	4
3-5. Inserting a contact .....	5
3-6. Tightening a back shell .....	6
3-7. Inserting a bushing and a cable clamp .....	8
3-8. Tightening a clamp nut .....	9

Material No.	Page
TC-609	2/11

1. Outline

This Cable Assembly Manual explains how to assemble the wire to the CM 10 angle plug connector.  
(Solder type)

2. Specifications

2-1. Applicable connector

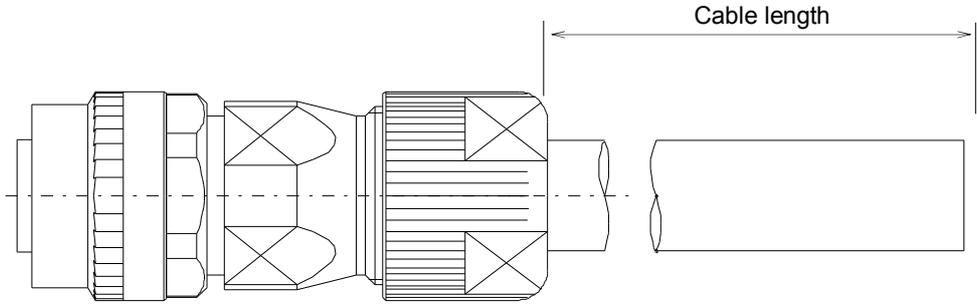
Connector name	Drawing number
CM10-SP2S-S-D	115J-AP10991-1
CM10-SP2S-M-D	115J-AP10991-2
CM10-SP2S-L-D	115J-AP10991-3
CM10-SP10S-S-D	115J-AP10990-1
CM10-SP10S-M-D	115J-AP10990-2
CM10-SP10S-L-D	115J-AP10990-3

3. Cable Assembly Process

3-1. Cutting a cable

Cut the cable to the following dimensions:

**Note! Not to change cable length.**



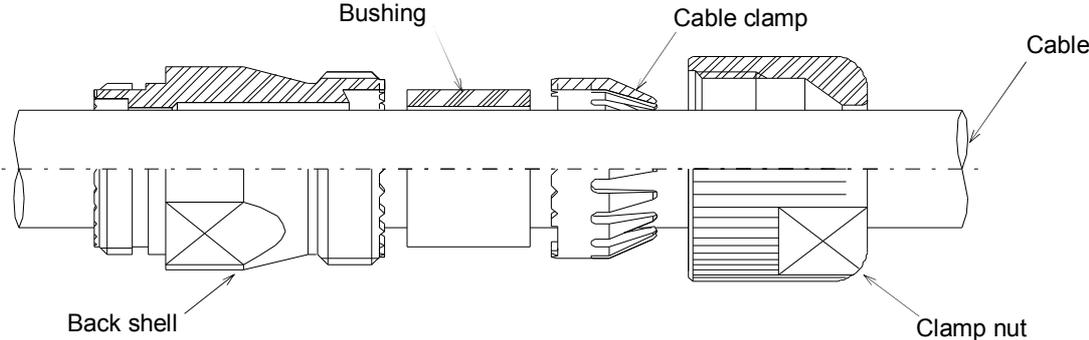
\* Cable cut length=  $35 \pm 0.5\text{mm}$  for CM10-SPxxS-X-D + Cable length  
=  $35 \pm 0.5\text{mm}$  + Cable length

3-2. Inserting parts

Insert the clamp nut, the cable clamp, the bushing and the back shell to the cable.

**Note! Pay attention to the direction each part is inserted.**

**Make sure that every part is inserted.**



3-3. Stripping a cable

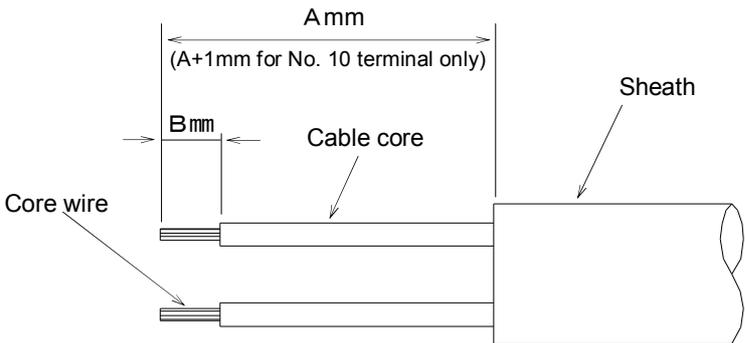
Strip the cable's sheath to the A length, cut the wire set at its root and strip the core wire to the B length.

**Note! Make sure to strip the cable to the correct length.**

**Do not leave cutting or scratch to the cable core.**

\* When making CM10-SP10S-x-D, strip the cable for No. 10 terminal in a way that the A length becomes 1mm longer than that of other cables.

(This is to prevent excessive tension of the cable when inserting the contact to the housing in the next process.)



Product name	A	B
CM10-SP10S- x -D	18.5 ~19.5	4.5~5.0
CM10-SP2S- x -D	17.5~18.5	

3-4. Soldering a contact

Apply preliminary soldering to each contact and to the cable's core wire, then solder the core wire to the contacts.

Contact name	Applicable contact	Applicable cable
CM10-SP10S-X-D	CM10-#22SC(S1)(D8)	AWG20 or below
CM10-SP2S-X-D	CM10-#22SC(S2)(D8)	AWG16 or below

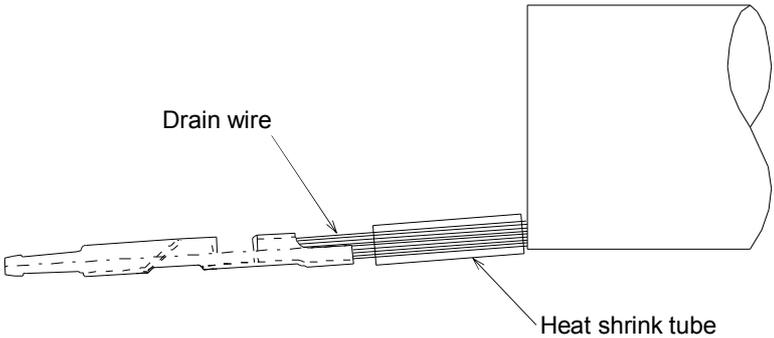
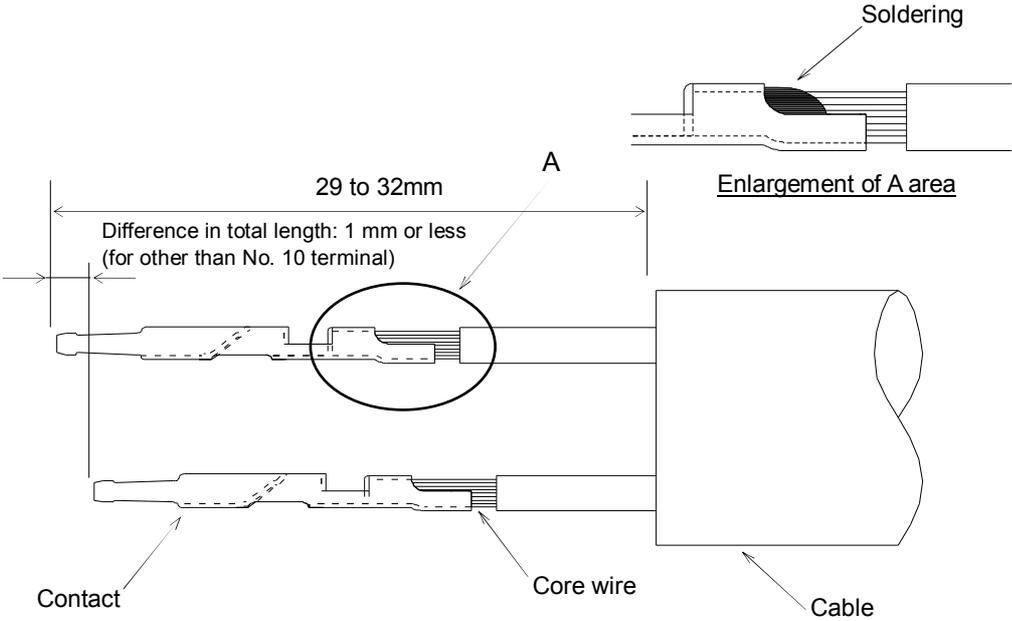
**Note!** Make sure that the core wire does not come out of the contact.

**When soldering, make sure that the solder does not stick to the circumference of the solder cup.**

**When using a drain wire, attach a heat shrink tube to the drain cable after soldering.**

\* **When making CM10-SP10S-x-D, the cable for No. 10 terminal is 1mm longer than other cables. (To avoid the cable tension when inserting a contact to the housing in a later process.)**

\* **The difference in the total A length of the cables for other than No. 10 terminal must be 1mm or less.**



**If a drain wire is soldered**

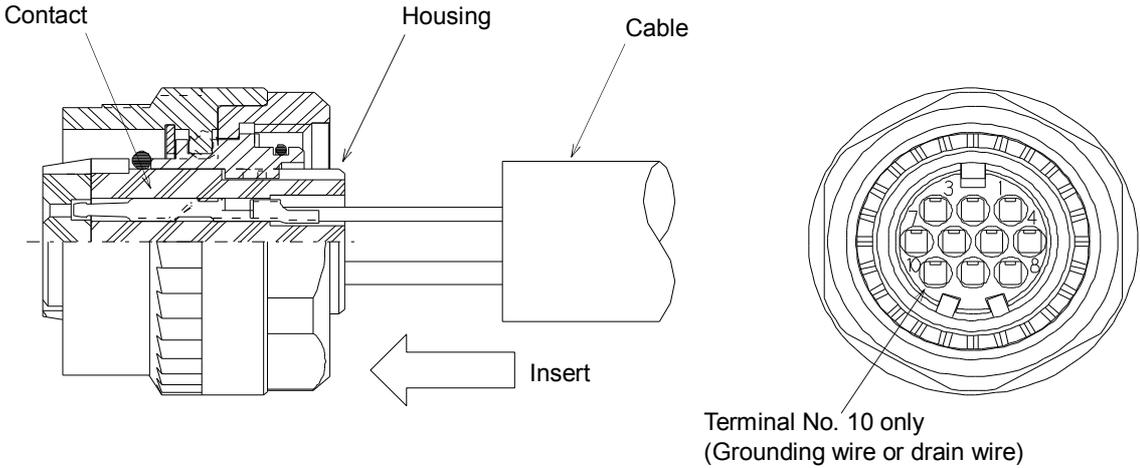
3-5. Inserting a contact

Insert the contact into the specified terminal number point in the housing.  
 (Insert grounding wire or drain wire into terminal No. 10).

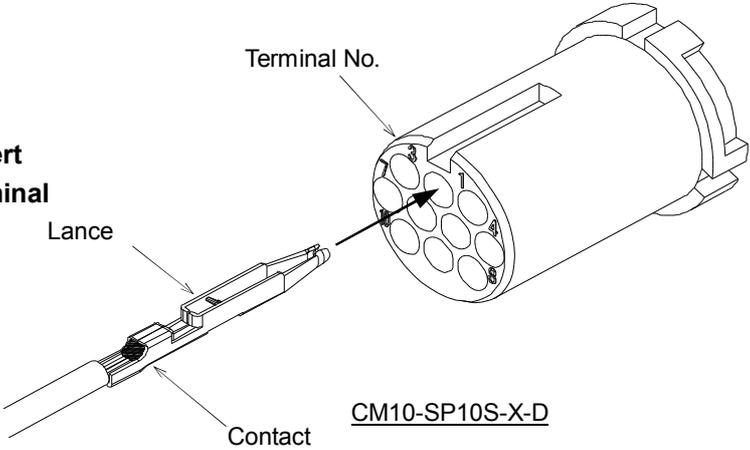
- \* **When the contact catches the housing, you will hear a snap.**
- \* **Pulling the wire for confirming the correct position.**

**Note! Before inserting the contact, check that the clamp nut, cable clamp, bushing and angle back shell is inserted.**

**Take care not to insert the contact upside down as shown below.**



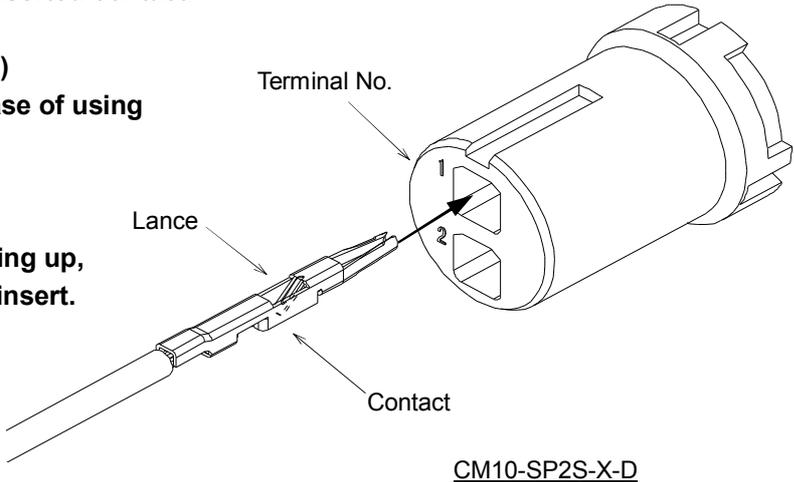
- \* **Insert the contact so that the terminal number face the same direction.**  
**However, in case of CM10-SP2S-X-D, insert the contact so that the lance and the terminal number face the opposite direction.**



- \* **Using a pull out tool for pulling up inserted contact.**  
**Jig/Tool Used : Contact removing jig (357J-50548T)**

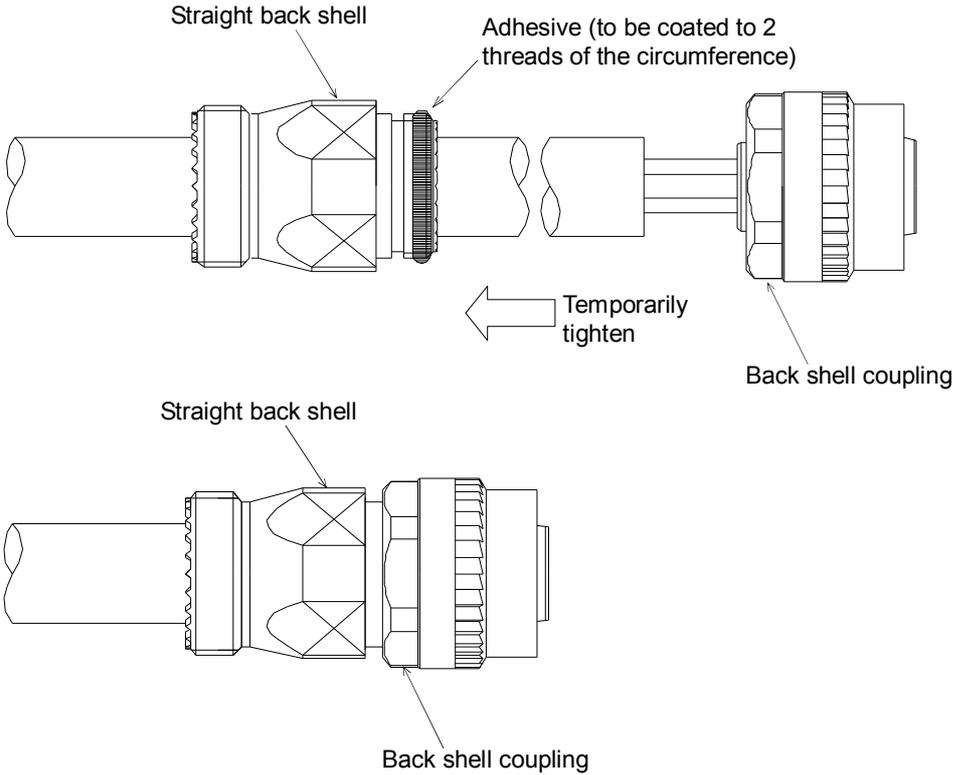
**Refer to the instruction manual in case of using pull up tool.**

- \* **As Lance falls down easily after pulling up, set up to original position before re-insert.**

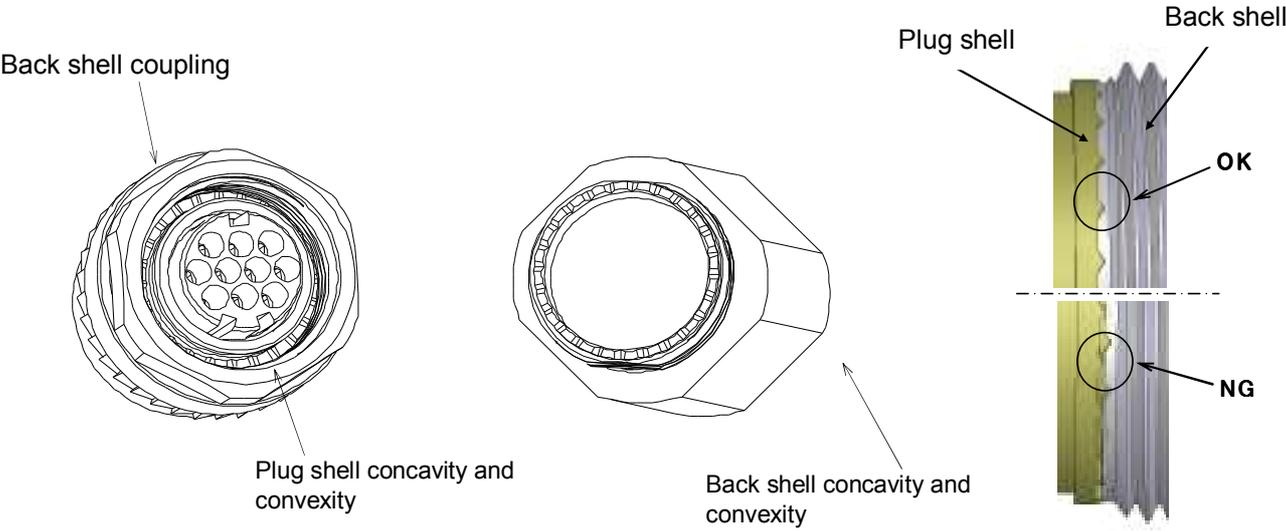


3-6. Tightening a back shell

- (1) To prevent the straight back shell from loosening, coat 2 threads of the circumference of the straight back shell with adhesive.
- \*To prevent loosening, the adhesive should be applied to the angle back shell.**
- (2) Rotate the back shell coupling of the connector and temporarily tighten the straight back shell.



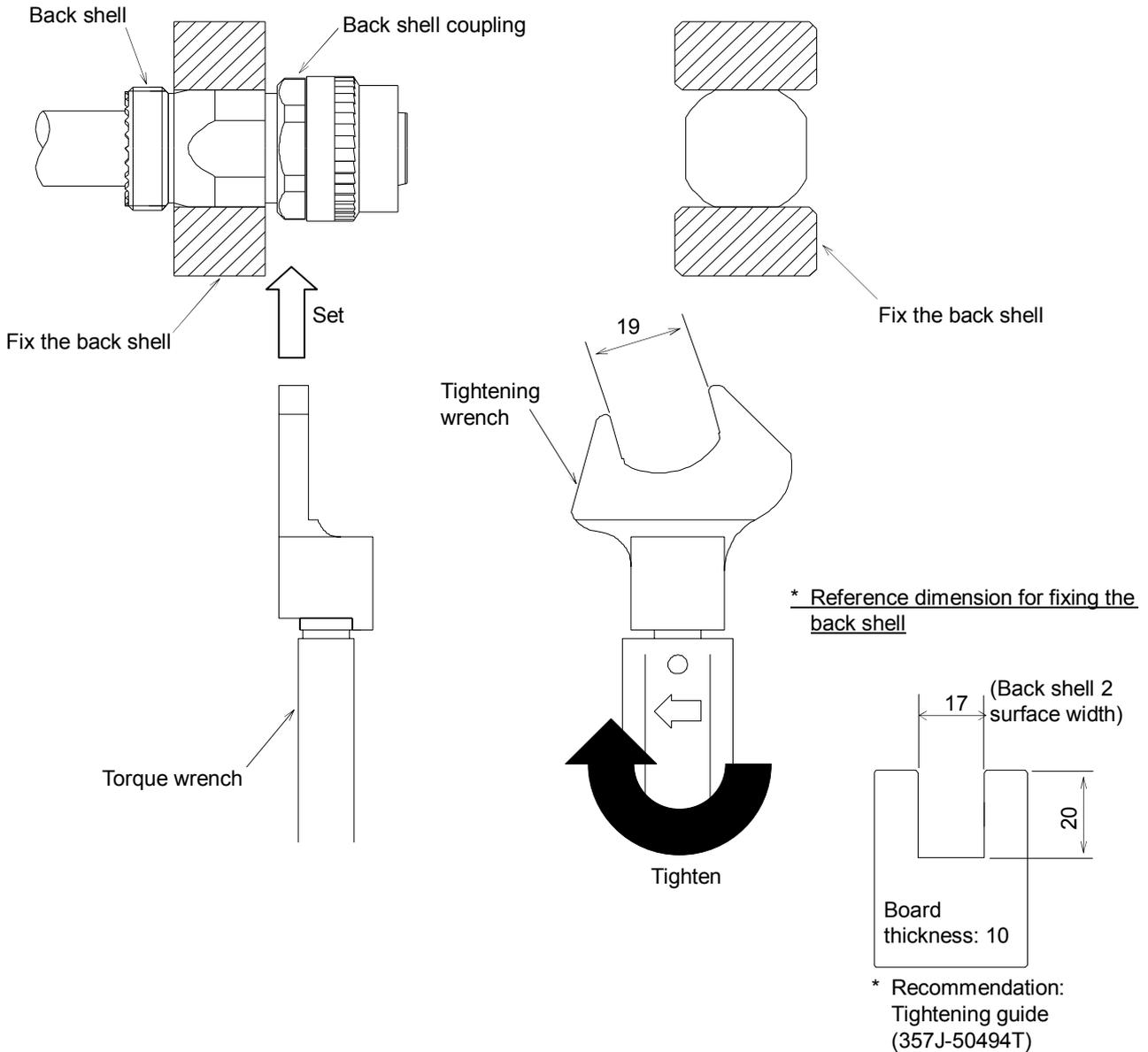
**\*When tightening temporarily, match the concavity and convexity of the plug shell with those of the angle back shell.**  
**(You can confirm the correct connection of concavity and convexity waving lightly back shell just before inserting to BS coupling.)**



- (3) Fix the 2 surface width of the angle back shell on the tightening guide.
- (4) Set the tightening wrench adjusting to the back shell coupling.
- (5) With the wrench, tighten the back shell coupling to the angle back shell.

**Recommended tightening torque: 4to5 N·m**

**Note! When setting the work to the wrench, adjust it to the 2 surface width.  
To remove, take the reverse steps.**



● Jig/Tool Used : BS coupling tightening tool (wrench) (357J-51333T)

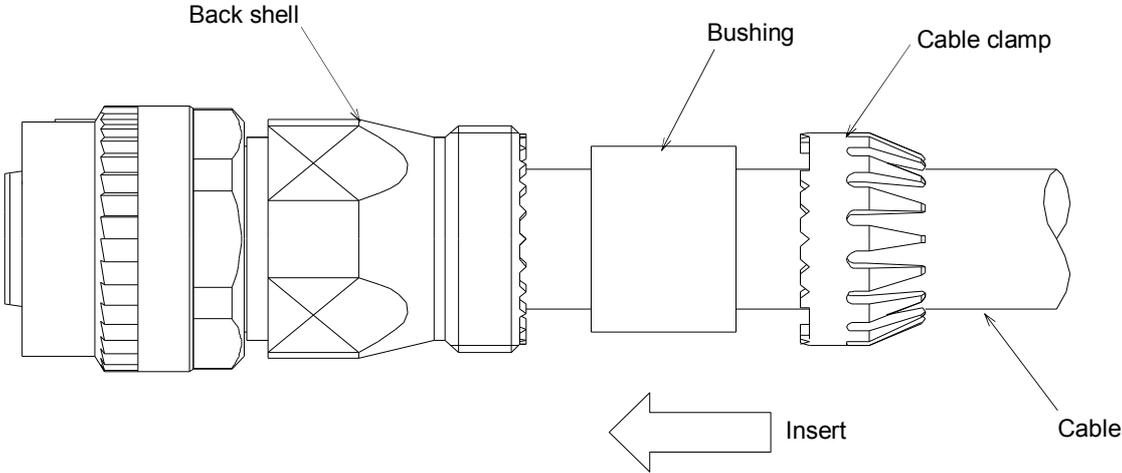
Bit (357J-51344T)  
Torque wrench (CL6N x 8D), Tonichi Mfg.)

\* Recommended tightening guide: (357J-50494T)

\*Recommended adhesive: 1401B (Three Bond Co., Ltd.)

3-7.Inserting a bushing and a cable clamp

Insert the bushing and the cable clamp in the back shell.



**Note! After the Bushing insert, confirm that cable position should be inside of Bushing.**

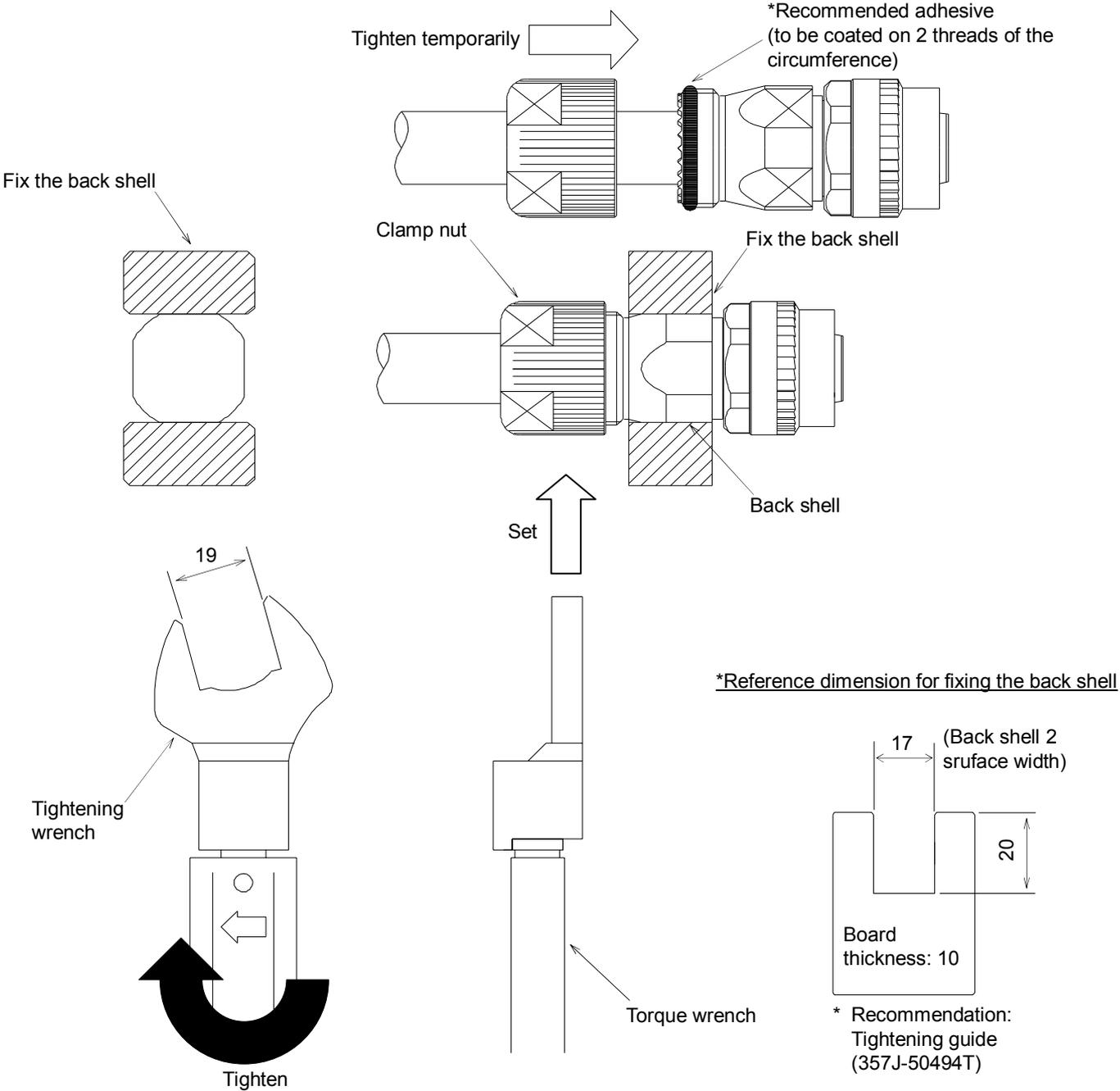
3-8. Tightening a clamp nut

- (1) Temporarily tighten the clamp nut on the angle back shell.
- \* To prevent the loosening, it is recommended to coat the straight back shell with adhesive.**
- (2) Fix the 2 surface width of the angle back shell on the tightening guide.
- (3) Set the tightening wrench adjusting the 2 surface width of the clamp nut.
- (4) With the wrench, tighten the clamp nut on the angle back shell.

**Recommended tightening torque: 4to5 N·m**

**Note! When setting the work to the wrench, adjust the 2 surface width.**

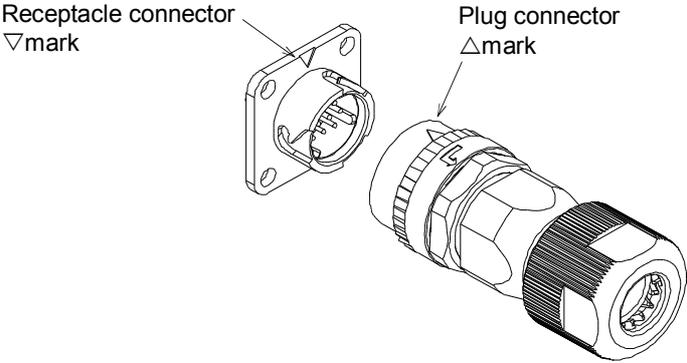
**To remove, take the reverse steps.**



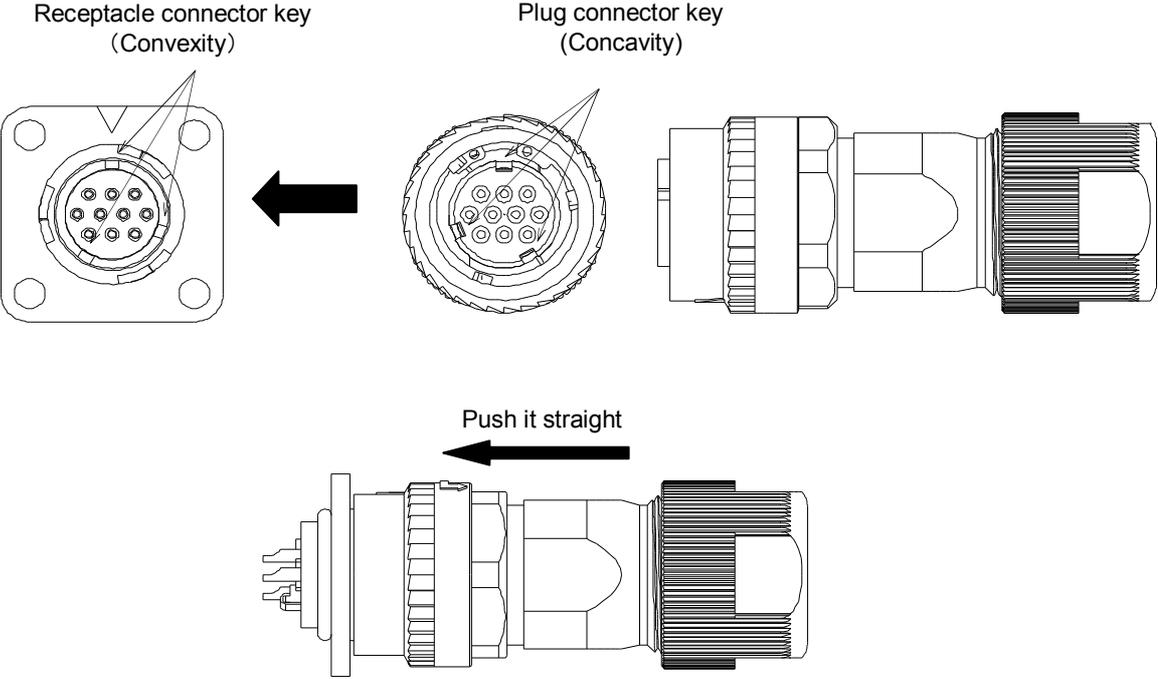
- Jig/Tool Used : Clamp nut tightening tool (wrench) (357J-51334T)
- [ Bit (357J-51345T)
- Torque wrench (CL6N×8D, Tonichi Mfg.) ]
- \* Recommended tightening guide : (357J-50494T)
- \* Recommended adhesive: 1401B (Three Bond Co., Ltd.)

\*To connection

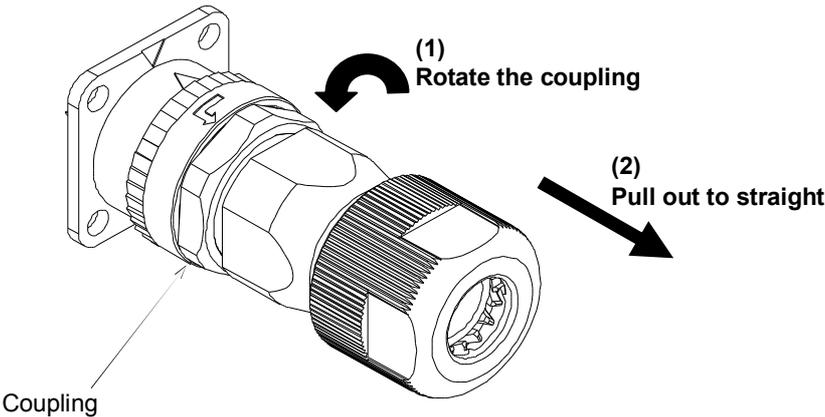
(1) Set the  $\Delta$  mark of each other's connectors.



(2) Each other's key (concavity and convexity) are fit in. Push it straight, take care not to tilt.

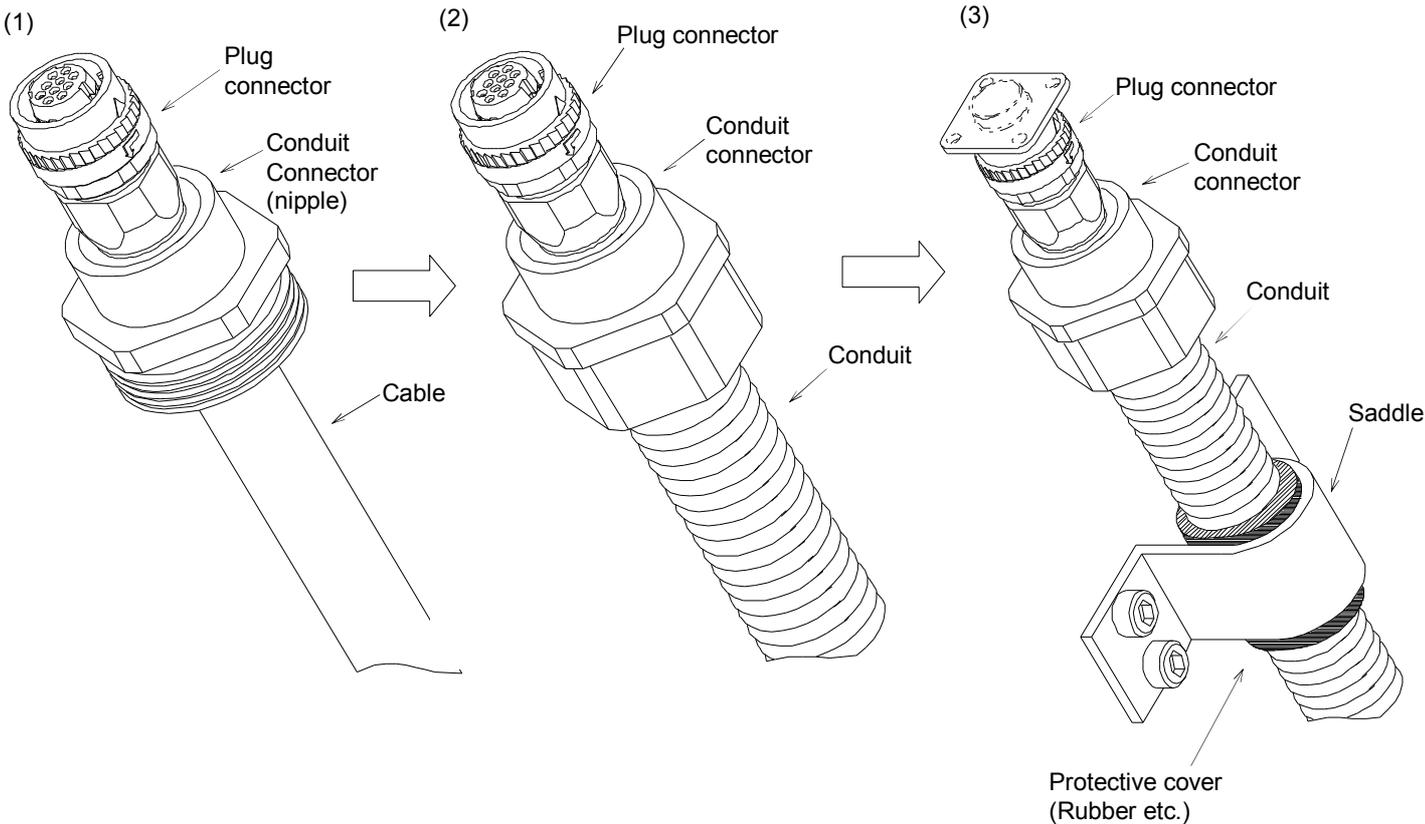


\*To remove , rotate the coupling and pull out to straight.



\*When using a conduit

- (1) Tighten the nipple of conduit connector on the plug connector (CM10).
- (2) Set the conduit on the nipple of conduit connector.
- (3) Fix the conduit to the plug connector (CM10). If the conduit is used in a moving part, fix the conduit with a saddle, etc. so that no load is applied to the plug connector (CM10) and to the conduit connector. If the conduit is fixed with a saddle, etc., make sure that no load is applied to the fixing area. Set the protective cover (rubber etc.) on the conduit to avoid cable damage.



● Recommended conduit & connector : NIPPON FLEX CO.LTD

- Conduit
- Tipe:VF Tipe:SR Tipe:FBN Tipe:EM
- Tipe:VFS Tipe:SRK etc.,
- Connector
- Tipe:RCM

\* NIPPON FLEX CO., LTD home page → <http://www.nipolex.co.jp>