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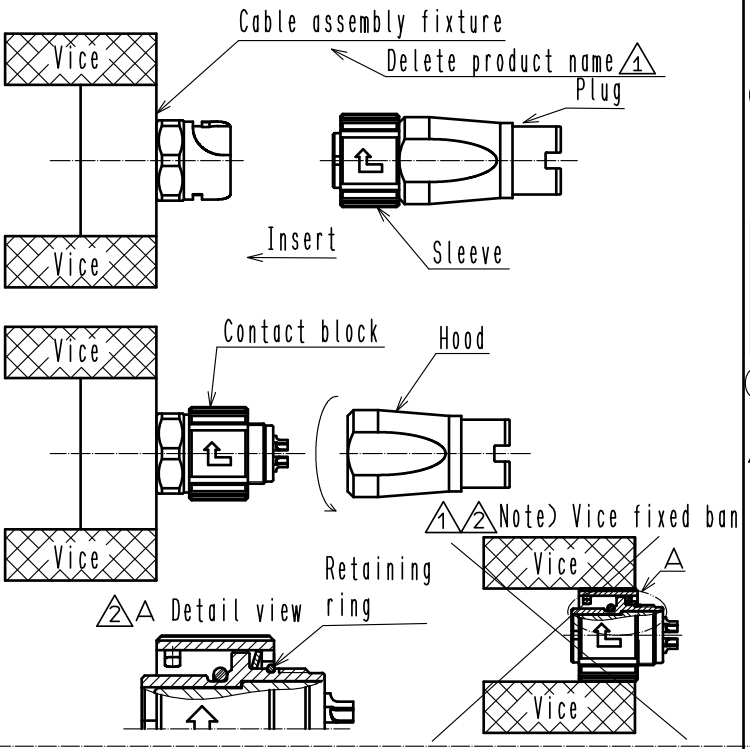
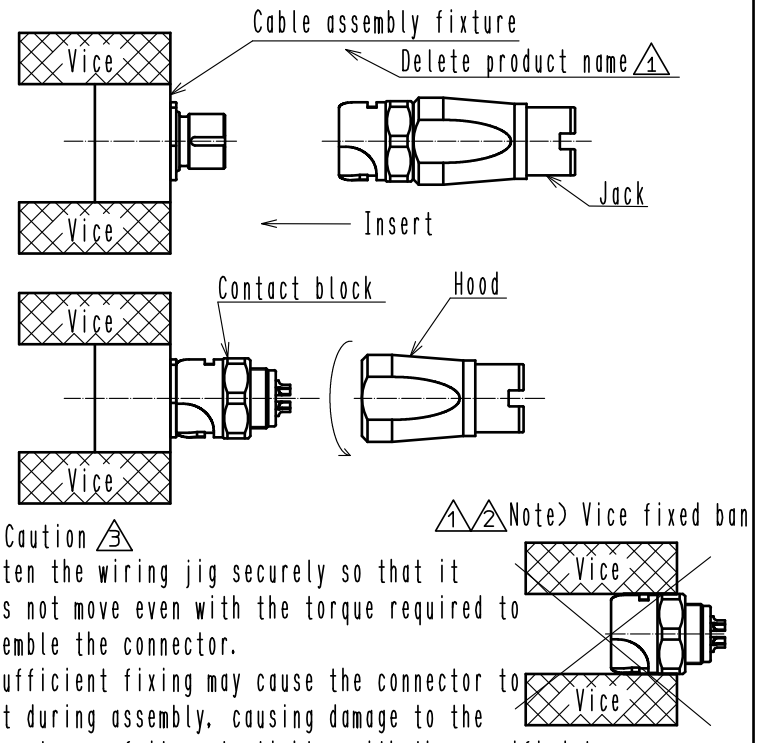
△1 This document desceibes the recommended asssembly procedure of LF connectors(Plug, Jack).

1. Procedure

No.	Drawing	Procedure Details
1		[Plug Disassembly] (1) With the cable assembly fixture fixed in place with a vice etc., mate it with the plug. Table 1. △1△2 Tool Name / Applicable Product LF07BP-T01 / LF07WBP-※※ LF10BP-T01 / LF10WBP-※※ LF13BP-T01 / LF13WBP-※※ (2) Loosen the hood, and remove from the connector. △1△2 Note) When removing, assembling and wiring, be sure to use a cable assembly fixture. Directly fixing the sleeve in place with a vice etc., could lead to damage, deformation or lacuna of retaining ring.
	 △Caution △3 Fasten the wiring jig securely so that it does not move even with the torque required to assemble the connector. Insufficient fixing may cause the connector to tilt during assembly, causing damage to the connector or failure to tighten with the specified torque.	[Jack Disassembly] (1) With the cable assembly fixture fixed in place with a vice etc., mate it with the Jack. △1 Table 2. Tool Name / Applicable Product LF07BJ-T01 / LF07WBJ-※※ LF10BJ-T01 / LF10WBJ-※※ LF13BJ-T01 / LF13WBJ-※※ (2) Loosen the hood, and remove from the connector. △1 Note) When removing, assembling and wiring, be sure to use a cable assembly fixture. Directly fixing the sleeve in place with a vice etc., could lead to damage or derformation.

	COUNT	DESCRIPTION OF REVISIONS	DESIGNED	CHECKED	DATE
△6	1	DIS-C-00017502	YJ. KOGA	KI. NAGANUMA	20240424

TITLE △1

LF CONNECTOR
ASSEMBLY PROCEDURE.

HRS HIROSE ELECTRIC CO., LTD.

APPROVED	MR. YOSHIDA	20050105
CHECKED	MO. SATOH	20050105
CHARGED	YH. YAMADA	20050105
WRITTEN	YH. YAMADA	20050105

TECHNICAL SPECIFICATION | ETAD-C0099 | △6 | 1/7

FORM 213-1

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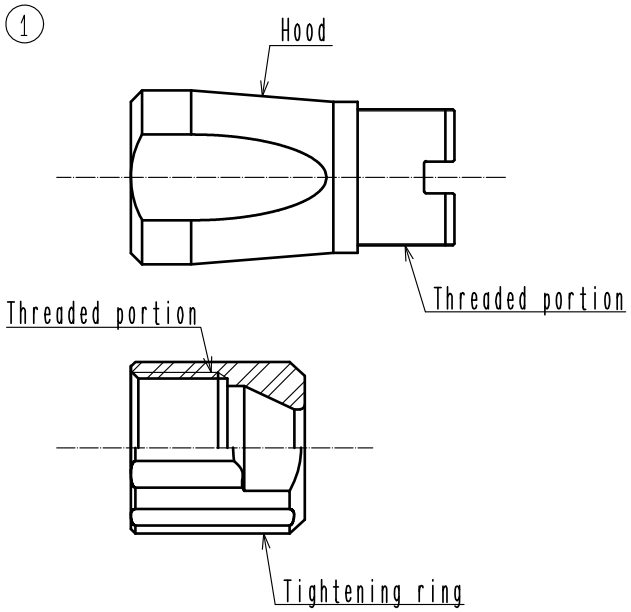
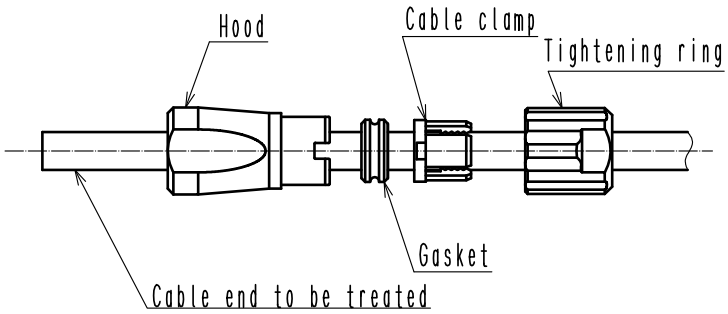
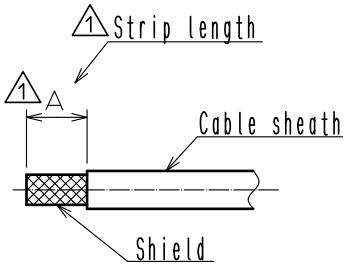
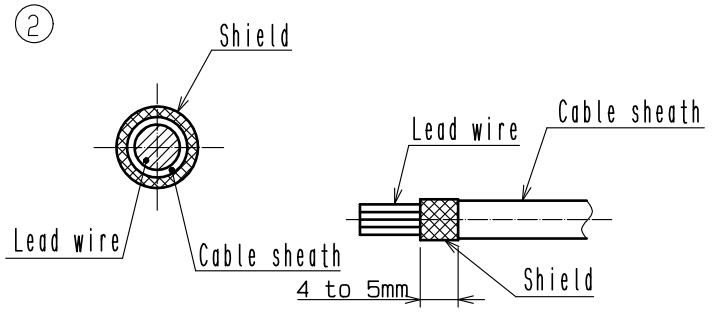
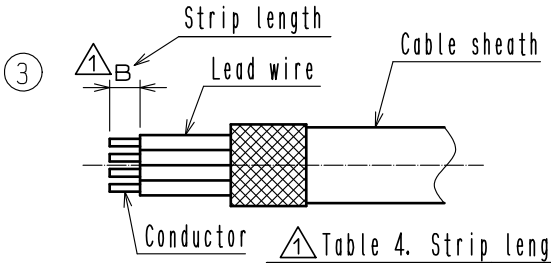
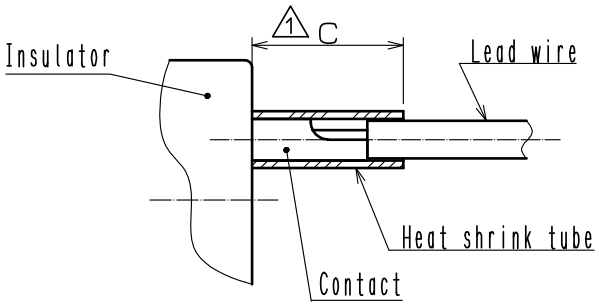
No.	Drawing	Procedure Details
2	① 	[Connector Assembly Preparation] ① Spray or brush Loctite 7649 primer, manufactured by Henkel Japan LTD., on the threaded portions of both the hood and the tightening ring, and then allow the primer-applied surfaces to dry completely. Notes (1) Leave to dry for 30 to 70 seconds at room temperature. (2) While drying, make sure there is sufficient ventalation, as solvent components are volatized during drying. (3) After applying primer, keep the primer-applied surfaces away from dirt or dust.
	② 	② Thread the cable through the tightening ring, cable clamp, gasket, and hood in the order shown in the figure. Note) Threading of the componenets may not be possible after treating the cable.
3	① 	[Cable-end stripping] △1 ① Strip the cable at the appropriate length shown in the table 3. Notes (1) When stripping the cable sheath, be careful not to damage the shield. (2) Be careful not to damage the cable sheath, as it could affect waterproof performance.

△1 Table 3. Strip lengths [Unit : mm]

Number of Contacts	A Length
3	8 to 9
6	
4	13 to 14
12	14 to 15
20	23 to 24
11	22 to 23 (No. A to D)
	23 to 24 (No. 1 to 7)

No.	略　図	作業内容
3	② 	〔Crimping of ground terminal〕 ② Fold the shield over the cable sheath uniformly.
	③  △1 Table 4. Strip lengths [Unit: mm] Number of Contacts / B Length 3 / 2.5± 0.5 6 / 2± 0.5 4 / 3± 0.5 12 / 2± 0.5 20 11 / △2 3± 0.5 (No. A to D) △2 2± 0.5 (No. 1 to 7)	△1 ③ Strip the lead wire in the dimension shown in the table 4. Note) When stripping the cable, be careful not to damage the lead wire, the conductor, or the shield as it could lead to faulty insulation, faulty conduction or a loss of waterproof performance.
4	② −1  △1 Table 5. [Unit: mm] Number of Contacts / Contact Number / C Length 6 / 1 to 6 / 4 12 / 1 to 9 / 4 10 to 12 / 6 20 / 1 to 5, 16 to 20 / 4 6 to 15 / 6 11 / 1 to 4 / 6 5 to 7 / 4 ⚠ Caution △3 When heating heat shrink tube, be careful hot air does not hit cable or insulation case directly.	[Soldering] ① Soldering conditions Soldering tip temperature: 350± 10℃ Soldering time: 5 seconds MAX Notes △3 (1) Follow the soldering conditions. Otherwise, the insulator may melt or the terminal may be loosened. (2) When soldering, be careful to avoid a cold joint, an overheated joint, or any other defects. (3) Check that the the solder is fused sufficiently where thelead wire and the contact are soldered. ② Soldering △1 △2 ②−1 For 6, 12, 20 and 11 (Contacts 1 to 7 only) Contact Types (1) Thread a heat shrink tube (with an inner diameter of φ1.1 MIN) over every second lead wire. The length of the tube should be in accordance with table 5. △1 (2) Place the lead wire sheath to the contact and then solder. (3) With the heat shrink tube in contact with the insulator as shown in the diagram, apply heat to shinrk the tube.

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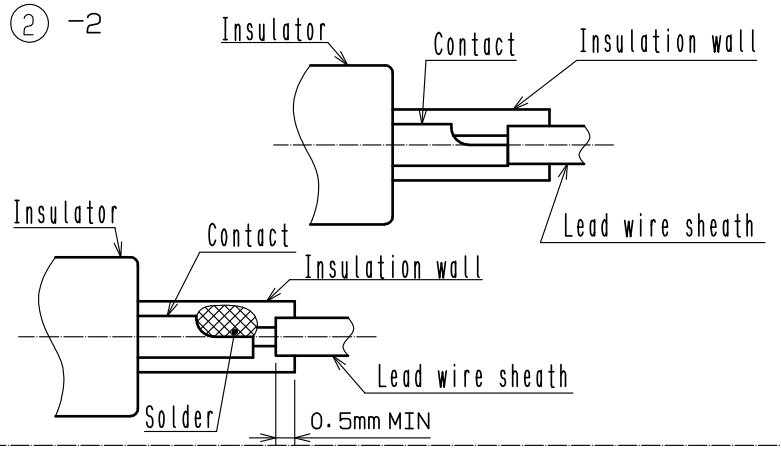
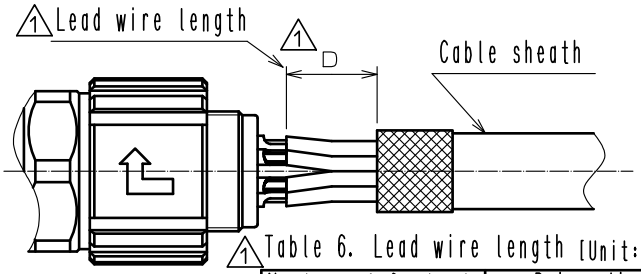
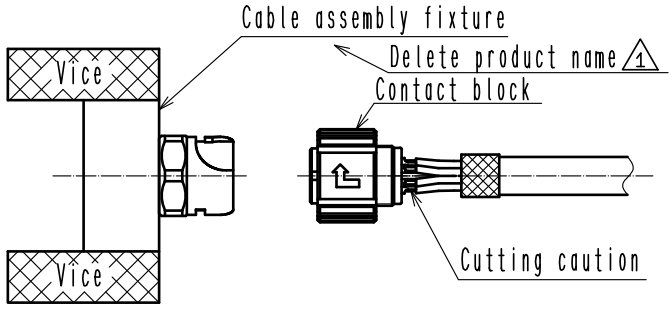
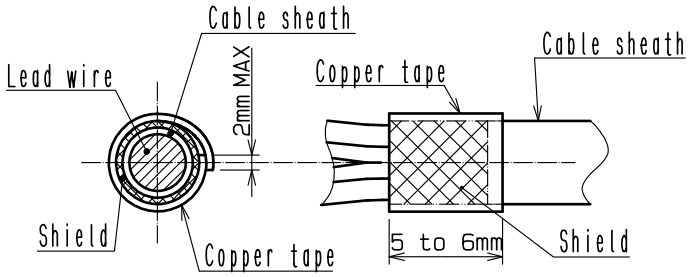
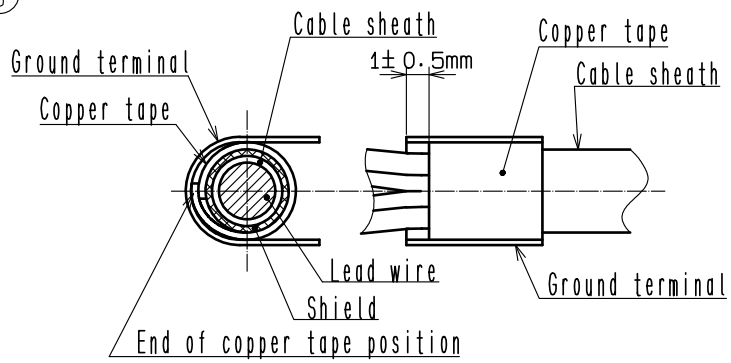
No.	Drawing	Procedure Details
4	② -2  	△1 ②-2 For 3, 4 and 11 (Contacts A to D only) Contact Types (1) Place the lead wire sheath to the contact and then solder. △1(2) When soldering, the insulation wall should overlap the lead wire by more than 0.5mm, as shown in the diagram, in order to maintain insulation between the contacts.
	③  △1Table 6. Lead wire length [Unit: mm] Number of Contacts / D Length 3, 6 / 6 to 7 4 / 10 to 11 12 / 13 to 14 11, 20 / 18 to 19	△1 ③ After soldering, the distance between the contact end surface and the cable sheath end should be as shown in the table 6. △1 Note) If this distance is not satisfied, secure connection of the clamped shield to the shell may not be acquired.
5	①  	[Crimping of ground metal] ① After soldering, extract contact block from the cable assembly fixture. Note) Be cafeful that the lead wire does not break or bend at the soldered area.
	②  	② Wrap copper tape, of width 5 to 6mm, around the shield to prevent it from loosening. Make sure that the shield does not extend out of the copper tape. Note) Make sure that the overlapping portion of the tape is under 2mm.
	③  	③ The ground terminal should be placed over the copper tape as shown in the diagram. The end of the copper tape should be at the bottom face of the U-shape. Note) If the end of the copper tape faces the mouth, the ground terminal will not cover the tape ends after crimping.

FORM 213-2

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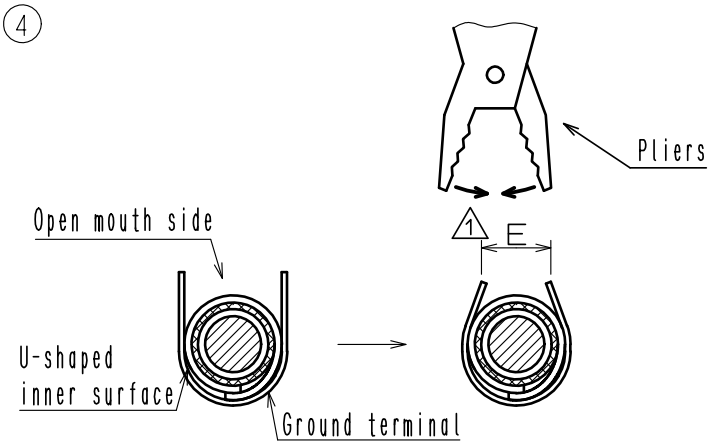
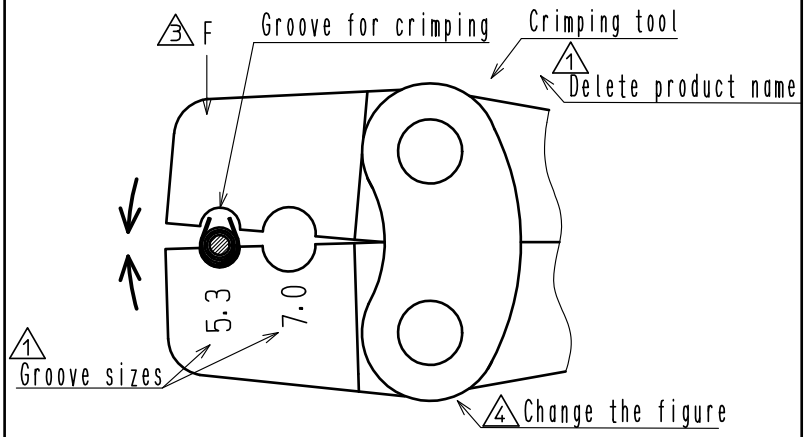
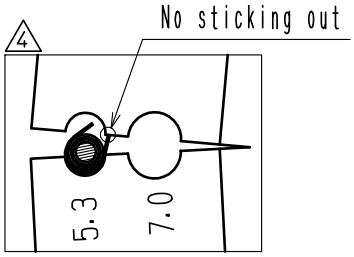
No.	Drawing	Procedure Details
5	④  	④1 Next, to prevent the ground terminal from falling, use a pliers, etc. to close the mouth of the ground terminal to the appropriate size as shown in table 7. This process will make it easier to crimp the ground terminal. 1 Table 7.

Shell Size	E
LF07	5mm MAX
LF10	7mm MAX
LF13	

⑤





1 Table 8. Crimp Tools

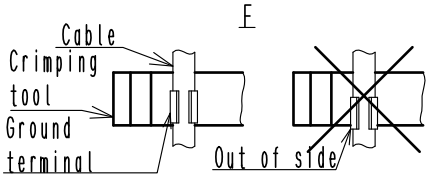
Shell Size	Crimp Tool Name	Groove Size	Applicable Cable	Ground Terminal Outer Diameter After Crimping
LF07	HR10A-TC-02	5.3	Ø5	Ø5.3mm to Ø5.5mm
LF10	LF-TC-01	7.9	Ø7.3	Ø7.9mm to Ø8.1mm
LF13	LF-TC-01	9.1	Ø8.7	Ø9.1mm to Ø9.3mm

⑤1 Place the ground terminal into the groove of the crimp tool as shown in the figure, and then crimp.

1 Note) The appropriate cable size for each groove is shown in table 8.

⚠ Caution 3

(1)Be careful not to stick out the ground terminal from the tool.
※Refer to figure F.



(2)Ensure that both ground terminal
4 plates are inserted into the crimping die set before starting to crimp.
※Refer to figure on the left.

If the ground terminal is sticked out and crimped, without following the above precautions it may not be assembled into the connector or the performance may be impaired.

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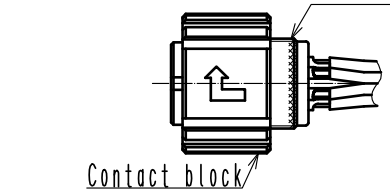
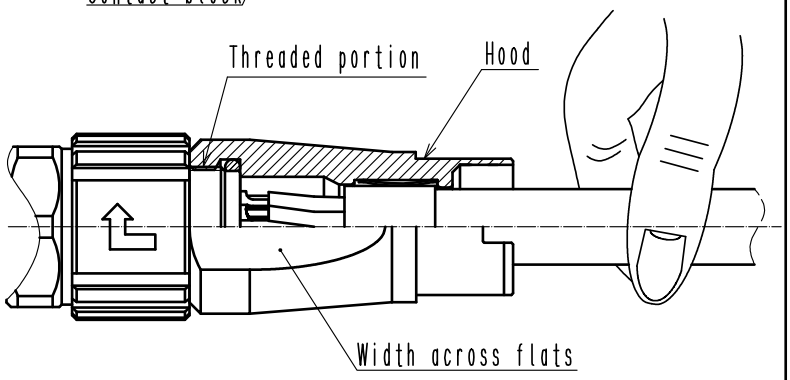
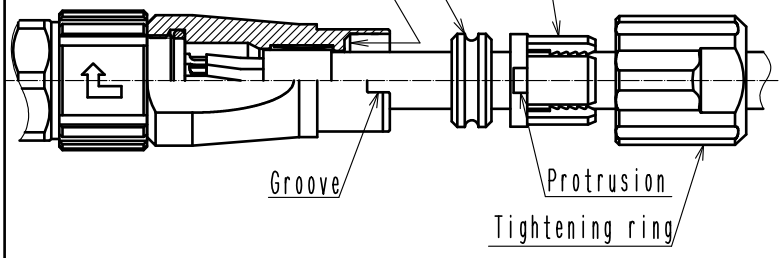
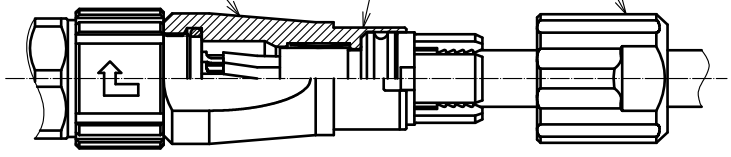
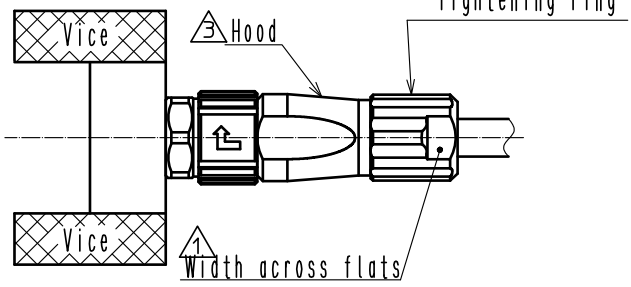
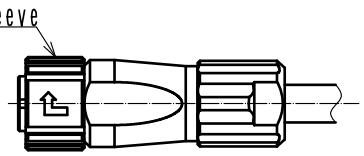
No.	Drawing	Procedure Details
6	①、② Locktite area Wiring side 1 to 2 threaded portion  Contact block  Threaded portion Hood Width across flats △6 Table 9. Recommended Tightening Torque	[Connector assembly] ①Mate the cable-assembled contct block with the cable assembly fixture. (Applicable tool) Plug assembly:Reference table 1. Jack assembly:Reference tabel 2. ②Coat the threaded portion of the contact block with Loctite 263 compound(manufactured by Henkel Japan.Ltd.), tightening it with a torque specified in the table 9. △5(Reffer to ETAD-C0522-00) Notes(1)The applied loctite should not protrude out further than the wiring side 1 to 2 threaded portion. If it does, it may affect waterproof performance and locking. Please remove any protruding loctite with a cloth or cotton swab, etc. (2)If the cable is rotated it could cause a disconnection. The cable should be kept in place by hand, etc.
	③、④ Hood and gasket meeting surface Gasket Cable clamp  Groove Protrusion Tightening ring	③Insert the gasket until it hits the hood and gasket meeting surface. ④Align the protrusions of the cable clamp with the grooves of the hood and insert. △1 Note) If the groove of the hood and the protrusion of the clamp are not prorperly aligned, the cable could be twisted when the tightening ring is being tightened, which could lead to a disconnection.
	⑤ Threaded portion Hood Tightening ring 	△1 △5 ⑤Apply Loctite 7649 of Henkel Japan Ltd., to the thread of the hood. After checking that it has dried, to prevent loosening, apply LOCTITE 263 manufactured by HENKEL JAPAN Co.,Ltd. according to the Loctite applying procudure manual(ETAD-C0522-00).

No.	Drawing	Procedure Details
6	⑥  1 Table 10. Recommended tightening torque Shell Size / Tightening Torque / Wrench Width LF07 / 0.8N·m to 1N·m / 10mm LF10 / 0.8N·m to 1N·m / 14mm LF13 / 1N·m to 1.5N·m / 16mm	1 ⑥ Tighten the tightening ring to the hood. The recommended torque is shown in Table 10. ⚠Caution 3 Depending on the hardness of the cable, a gap may be visible between the tightening ring and the hood, but be careful not to tighten any further. Overtightening the screws until there is no clearance can cause damage or deterioration of performance.
	⑦  	⑦ Remove the connector from the cable assembly fixture, holding it by the sleeve. Do not pull on the cable. It may cause breakage.
7		[Waterproof Performance Test] When assembly is completed, apply 17.6kPa of air pressure to the connector from the mating side for 30 seconds, and check that no air bubbles appear from the inside of the connector.

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