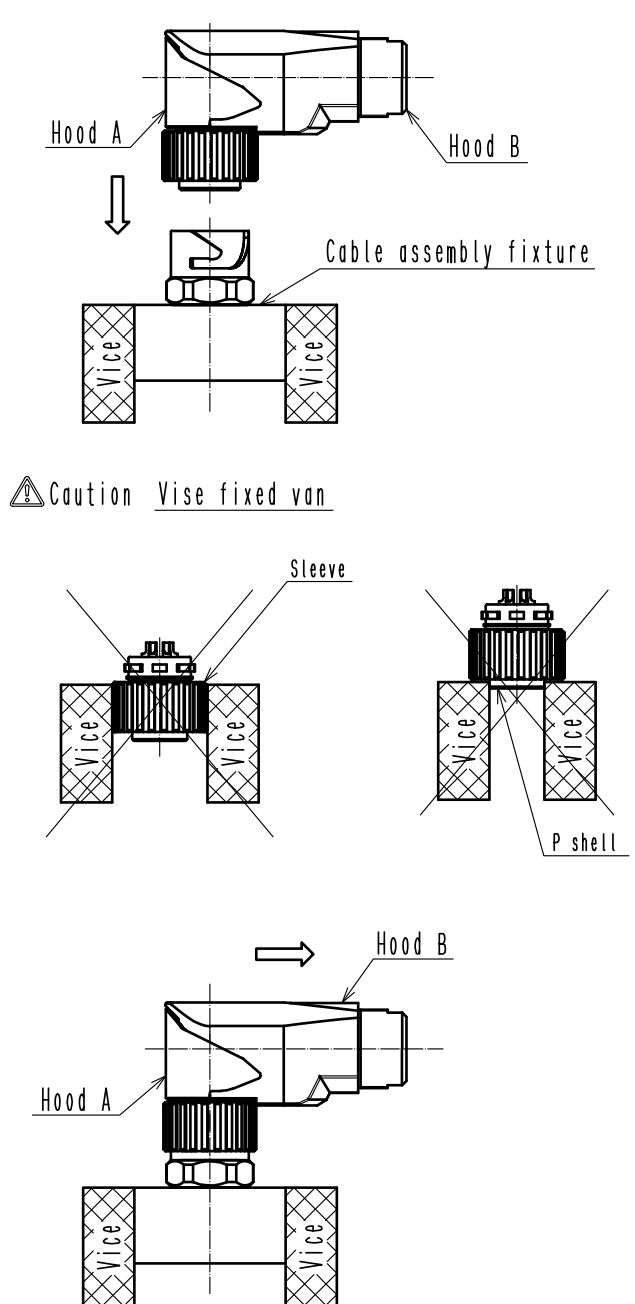
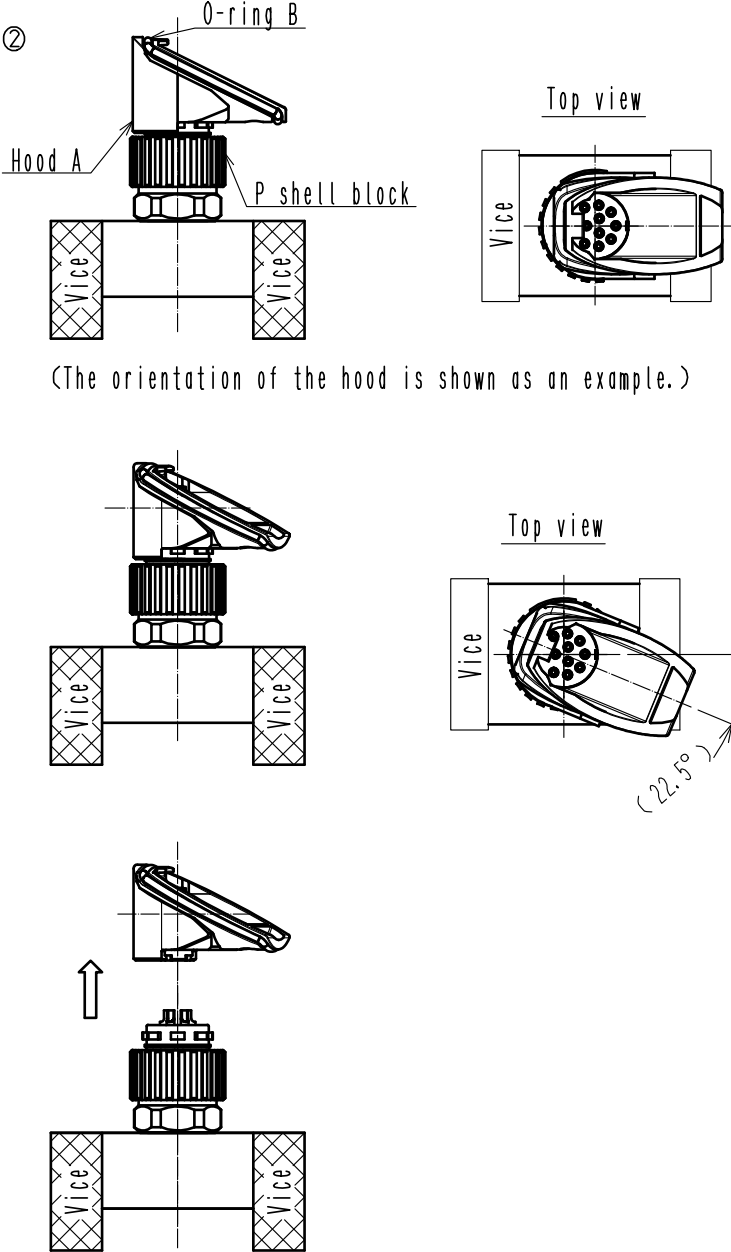
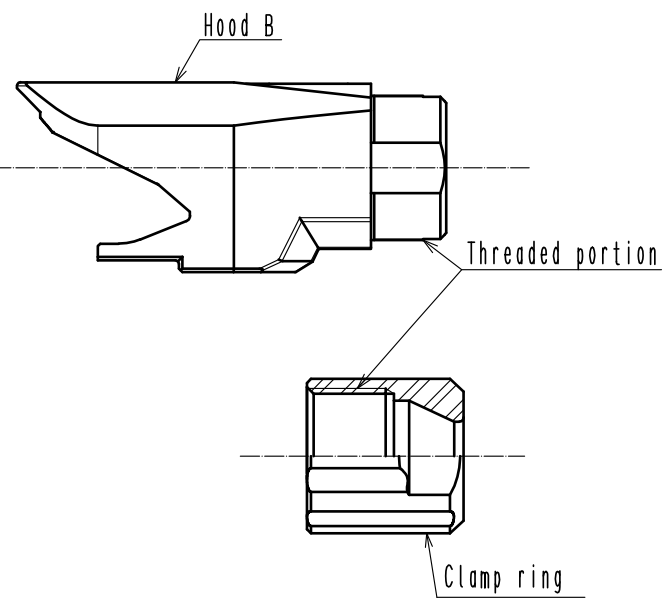
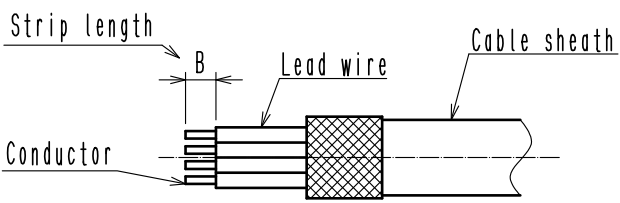
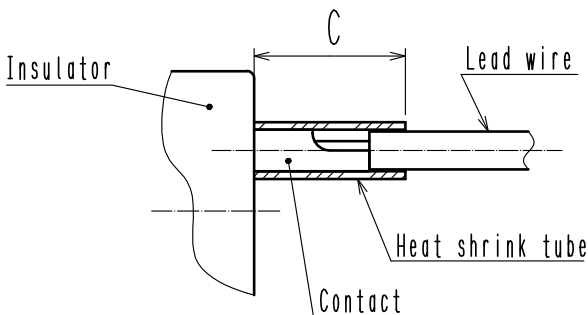
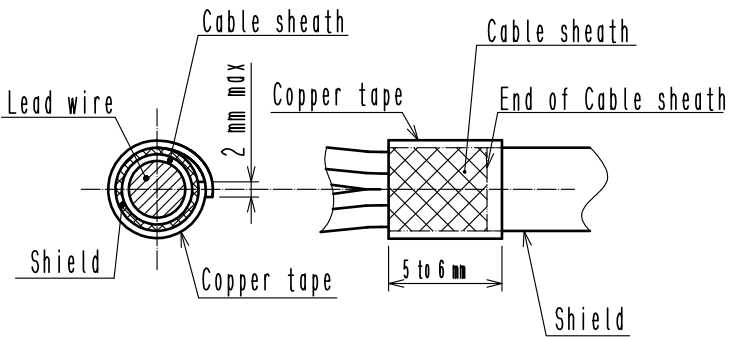



This document describes the recommended assembly procedure of low profile LF right angled connectors.

No.	Drawing	Procedure Details				
1	<p>①</p>  <p>⚠ Caution Vise fixed van</p>	<p>(Plug disassembly)</p> <p>With the cable assembly fixture fixed in place with a vice etc., mate it with the plug.</p> <p>Table 1. Cable assembly fixture</p> <table border="1"><thead><tr><th>Tool Name</th><th>Applicable Product</th></tr></thead><tbody><tr><td>LF10BP-T01</td><td>LF10WBLPA-※※</td></tr></tbody></table> <p>⚠ Caution</p> <p>(1) When removing, assembling and wiring, be sure to use a cable assembly fixture. Directly fixing the sleeve and P shell in place with a vice etc., could lead to damage, deformation or lacuna of retaining ring.</p> <p>(2) If the cable assembly fixture is not fixed enough, the connector may tilt during assembly, causing damage to the connector or tightening with the specified torque.</p> <p>Pull hood B in the direction shown to remove hood B from hood A.</p> <p>Notes</p> <p>(1) After removing hood B, the O-ring B inside hood A may come off until it is assembled again. Please be careful not to lose it while working.</p> <p>(2) Hood B may be difficult to remove.</p>	Tool Name	Applicable Product	LF10BP-T01	LF10WBLPA-※※
Tool Name	Applicable Product					
LF10BP-T01	LF10WBLPA-※※					
△	COUNT 3	DESCRIPTION OF REVISIONS DIS-C-00014088	DESIGNED TR. YAMANOE	CHECKED EJ. KUNII	DATE 20230131	
TITLE LF Right Angled Plug (low height type) Assembly Procedure				HRS HIROSE ELECTRIC CO., LTD.		
TECHNICAL SPECIFICATION				APPROVED	YH. YAMADA	20190828
				CHECKED	HN. TANAKA	20190827
				CHARGED	KN. IKEHARA	20190827
				WRITTEN	KN. IKEHARA	20190827
ETAD-C0408-00				△	1	8

No.	Drawing	Procedure Details
	<p>②</p>  <p>(The orientation of the hood is shown as an example.)</p> <p>Rotate hood A approximately 22.5° as shown.</p> <p>Pull out hood A in the direction shown. (The hood A can be easily removed by gently pulling and rotating it in the direction indicated by the arrow.)</p> <p>Note If you do not rotate hood A, it will get caught in the shell and will not come off.</p>	<p>Remove hood A from the P shell block.</p>
2	<p>①</p>  <p>Hood B</p> <p>Threaded portion</p> <p>Clamp ring</p>	<p>[Connector Assembly Preparation]</p> <p>Spray or brush Loctite 7649 primer, manufactured by Henkel Japan LTD., on the threaded portions of both the hood B and the clamp ring, and then allow the primer-applied surfaces to dry completely.</p> <p>Notes (1) Leave to dry for 30 to 70 seconds at room temperature. (2) While drying, make sure there is sufficient ventilation, as solvent components are volatilized during drying. (3) After applying primer, keep the primer-applied surfaces away from dirt or dust.</p>

No.	Drawing	Procedure Details						
	<p>② 【 If the plug has already been disassembled [1-1] and the P-shell block is already installed, this process [2-2] is not necessary. 】</p> <p>Insert</p> <p>P shell block</p> <p>Caution Vise fixed van</p> <p>Sleeve</p> <p>Cable assembly fixture</p> <p>P shell</p>	<p>Attach the P shell block to the cable assembly fixture.</p> <p>Table 1. Cable assembly fixture</p> <table><tr><th>Tool Name</th><th>Applicable Product</th></tr><tr><td>LF10BP-T01</td><td>LF10WBLPA-※※</td></tr></table> <p>⚠Caution</p> <p>(1) When removing, assembling and wiring, be sure to use a cable assembly fixture. Directly fixing the sleeve and P shell in place with a vice etc., could lead to damage, deformation or lacuna of retaining ring.</p> <p>(2) If the cable assembly fixture is not fixed enough, the connector may tilt during assembly, causing damage to the connector or tightening with the specified torque.</p>	Tool Name	Applicable Product	LF10BP-T01	LF10WBLPA-※※		
Tool Name	Applicable Product							
LF10BP-T01	LF10WBLPA-※※							
	<p>③</p> <p>Hood A</p> <p>Hood B</p> <p>Gasket</p> <p>Clamp ring</p> <p>Cable clamp</p> <p>Cable end to be treated</p>	<p>Pass the parts through the cable in the order shown.</p> <ol style="list-style-type: none">1. Clamp ring2. Cable clamp3. Gasket4. Hood B5. Hood A <p>Note</p> <p>Threading of the components may not be possible after treating the cable.</p>						
3	<p>①</p> <p>Strip length</p> <p>A</p> <p>Cable sheath</p> <p>Shield</p> <p>Table 2. Strip lengths</p> <table><tr><th>Shell size</th><th>Number of Contacts</th><th>A Length</th></tr><tr><td>LF10</td><td>12</td><td>28~30</td></tr></table> <p>(Unit : mm)</p>	Shell size	Number of Contacts	A Length	LF10	12	28~30	<p>(Cable-end stripping)</p> <p>Strip the cable at the appropriate length shown in the table 2.</p> <p>Notes</p> <p>(1) When stripping the cable sheath, be careful not to damage the shield.</p> <p>(2) Be careful not to damage the cable sheath, as it could affect waterproof performance.</p>
Shell size	Number of Contacts	A Length						
LF10	12	28~30						
	<p>②</p> <p>Shield</p> <p>Lead wire</p> <p>Cable sheath</p> <p>4 to 5 mm</p> <p>Shield</p> <p>Cable sheath</p>	<p>(Fold back of shield wire)</p> <p>Fold the shield over the cable sheath uniformly.</p>						
HRS HIROSE ELECTRIC CO., LTD.		ETAD-C0408-00						
		⚠ 3/8						

No.	Drawing	Procedure Details								
	<p>③</p>  <p>Table 3. Strip Length [Unit : mm]</p> <table border="1"> <thead> <tr> <th>Shell size</th><th>Number of Contacts</th><th>B Length</th></tr> </thead> <tbody> <tr> <td>LF10</td><td>12</td><td>2±0.5</td></tr> </tbody> </table>	Shell size	Number of Contacts	B Length	LF10	12	2±0.5	<p>(Lead Wire Strip)</p> <p>Strip the lead wire in the dimension shown in the table 3.</p> <p>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.</p>		
Shell size	Number of Contacts	B Length								
LF10	12	2±0.5								
4	 <p>Soldering conditions Soldering tip temperature: 350±10℃ Soldering time: 5 seconds MAX</p> <p>Table 4. Heat shrink tube size [Unit : mm]</p> <table border="1"> <thead> <tr> <th>Number of Contacts</th><th>Contact Number</th><th>C Length</th></tr> </thead> <tbody> <tr> <td rowspan="2">12</td><td>1~9</td><td>6</td></tr> <tr> <td>10~12</td><td>8</td></tr> </tbody> </table>	Number of Contacts	Contact Number	C Length	12	1~9	6	10~12	8	<p>(Soldering)</p> <p>(1) Pass the heat shrink tube (Inner dia. ϕ1.1mm Min.) through all lead wires. ※ Please refer to table 4 for dimensions.</p> <p>(2) Place the lead wire sheath to the contact and then solder.</p> <p>(3) With the heat shrink tube in contact with the insulator as shown in the diagram, apply heat to shrink the tube.</p> <p>⚠ Caution When heating heat shrink tube, be careful hot air does not hit cable or insulation case directly. If the cable and housing are exposed to hot air, they may deform or melt due to heat, causing a insulation failure.</p> <p>Notes (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 the lead wire and the contact are soldered.</p>
Number of Contacts	Contact Number	C Length								
12	1~9	6								
	10~12	8								
5	<p>①</p> 	<p>(Fixed the shield)</p> <p>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.</p> <p>Notes (1) Make sure that the overlapping portion of the tape is under 2 mm. (2) If the end of the shielded cable protrudes from the copper tape, the O-ring inside hood A may be damaged in the subsequent process [6-1], causing a defect in waterproof characteristics.</p>								
 HIROSE ELECTRIC CO., LTD.		ETAD-C0408-00 <table border="1" style="float: right;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">4</td> <td style="text-align: center;">8</td> </tr> </table>	1	4	8					
1	4	8								

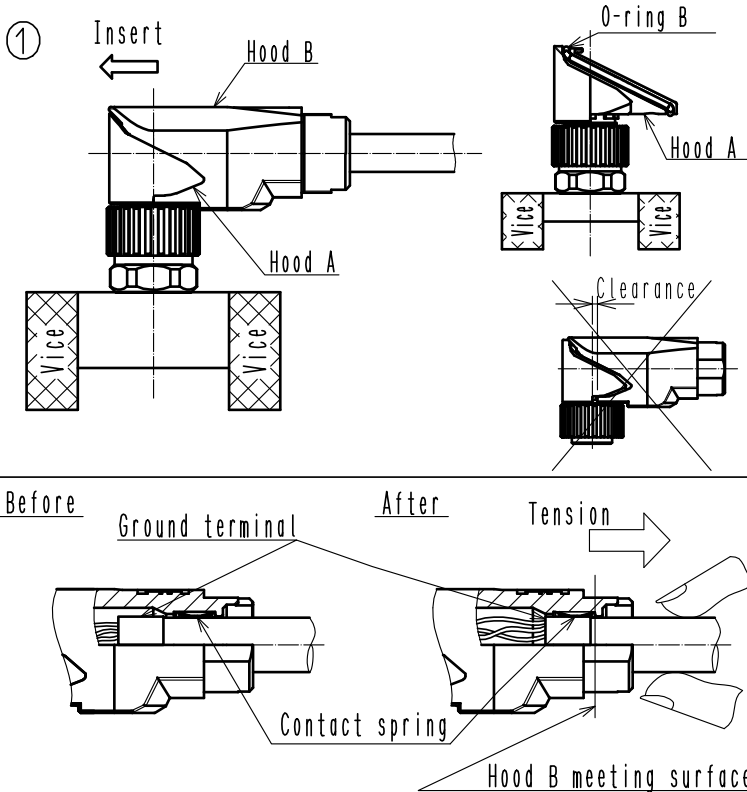
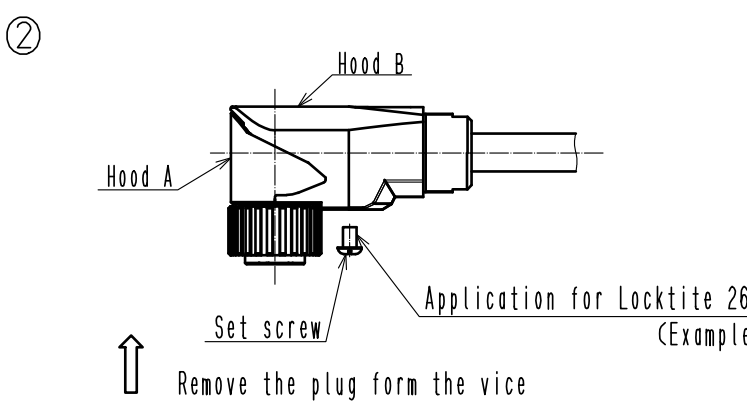
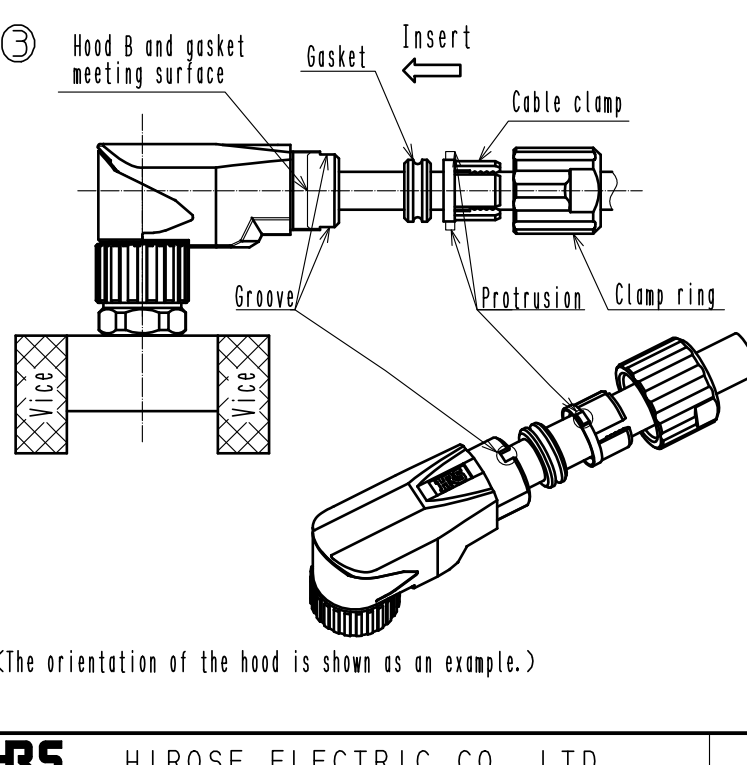
No.	Drawing	Procedure Details										
②	<p>Cable sheath Ground terminal Copper tape Lead wire Shield Ground terminal aperture Copper tape Cable sheath Ground terminal 1±0.5 mm End of copper tape position</p>	<p>(Ground terminal attached)</p> <p>The ground terminal should be placed over the copper tape as shown in the diagram. The end of the copper tape should be at the bottom face of the U-shape.</p> <p>Note If the end of the copper tape faces the mouth, the ground terminal will not cover the tape ends after crimping.</p>										
③	<p>Pliers Open mouth side U-shaped inner surface Ground terminal E</p>	<p>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 5. This process will make it easier to crimp the ground terminal.</p> <p>Table. 5</p> <table><tr><th>Shell size</th><th>E</th></tr><tr><td>LF10</td><td>7 mm max</td></tr></table>	Shell size	E	LF10	7 mm max						
Shell size	E											
LF10	7 mm max											
④	<p>F Groove for crimping Crimping tool Groove sizes 7.9 9.1 Change the figure No sticking out 7.9 9.1</p>	<p>Place the ground terminal into the groove of the crimp tool as shown in the figure, and then crimp.</p> <p>⚠ Cautions (1) Be careful not to stick out the ground terminal from the tool. ※Refer to F.</p> <p>Cable Crimping tool Ground terminal Over hang</p> <p>(2) Ensure that both ground terminal plates are inserted into the crimping die set before starting to crimp. ※Refer to figure on the left.</p> <p>If the ground terminal is stuck out and crimped, without following the above precautions it may not be assembled into the connector or the performance may be impaired.</p> <p>Table 6. Crimp Tools</p> <table><tr><th>Shell Size</th><th>Crimp Tool Name</th><th>Groove Size</th><th>Applicable Cable</th><th>Ground Terminal Outer Diameter After Crimping [mm]</th></tr><tr><td>LF10</td><td>LF-TC-01</td><td>7.9</td><td>φ7.3</td><td>φ7.9 to φ8.1</td></tr></table>	Shell Size	Crimp Tool Name	Groove Size	Applicable Cable	Ground Terminal Outer Diameter After Crimping [mm]	LF10	LF-TC-01	7.9	φ7.3	φ7.9 to φ8.1
Shell Size	Crimp Tool Name	Groove Size	Applicable Cable	Ground Terminal Outer Diameter After Crimping [mm]								
LF10	LF-TC-01	7.9	φ7.3	φ7.9 to φ8.1								

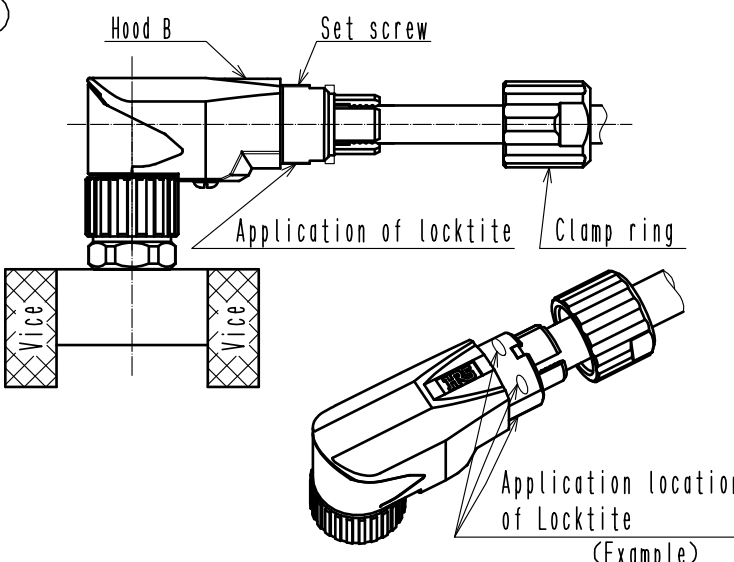
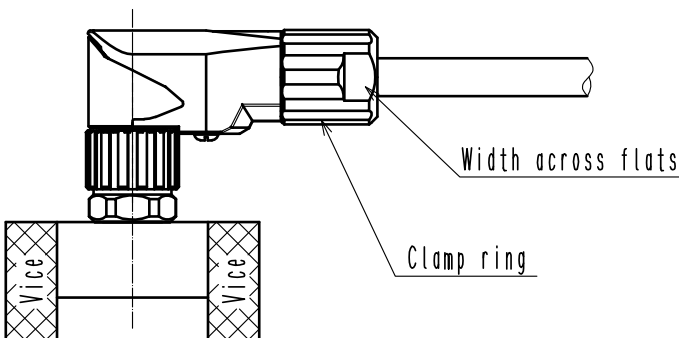
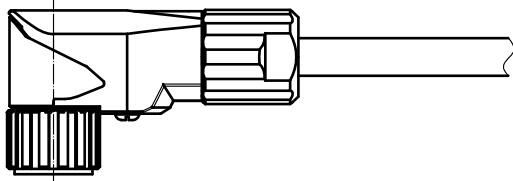
HIROSE ELECTRIC CO., LTD.

ETAD-C0408-00

5

No.	Drawing	Procedure Details
6	<div data-bbox="284 152 1050 694"> <p>①</p> <p>Insert</p> <p>Hood A</p> <p>Ground terminal</p> <p>Cable</p> <p>Lead wire</p> <p>P shell block</p> <p>Vise</p> <p>Hood A concave part</p> <p>P shell convex part</p> </div> <div data-bbox="284 694 1050 1209"> <p>②</p> <p>Hood A</p> <p>Vise</p> <p>Top view</p> <p>22.5°</p> </div> <div data-bbox="284 1209 1050 1608"> <p>③</p> <p>Hood A</p> <p>Vise</p> <p>Top view</p> <p>45°</p> </div> <div data-bbox="284 1653 1050 2145"> <p>(The orientation of the hood is shown as an example.)</p> <p>45°</p> <p>45°</p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧</p> </div>	<p>(Hood A assembly)</p> <p>(1) Move hood A towards the P shell block.</p> <p>(2) Align the recessed part of hood A with the protruding part of the P shell, and insert it in the direction shown in the figure.</p> <p>Caution</p> <p>(1) If the hood A is inserted at an angle, the internal O-ring may be damaged, causing a defect in waterproof characteristics.</p> <p>(2) If hood A is not fully inserted, it cannot be rotated. If it cannot be rotated, check that it is correctly inserted.</p> <p>(3) Rotate hood A as shown in the diagram.</p> <p>Note</p> <p>If hood A is not rotated, it cannot be assembled in the next process [7-1].</p> <p>Hood A can be routed in a total of eight directions depending on its rotational position.</p>

No.	Drawing	Procedure Details
7	<p>①</p>  <p>Before</p> <p>After</p> <p>Tension</p> <p>Ground terminal</p> <p>Contact spring</p> <p>Hood B meeting surface</p>	<p>(Hood B assembly)</p> <p>Insert hood B into hood A. If the O-ring B inside hood A is caught when installing the product, waterproof failure may occur.</p> <p>Note</p> <p>If hood B is not fully inserted as shown in the figure, screw tightening in the next process cannot be completed. The direction of rotation of hood A may be incorrect, or the O-ring may get caught.</p> <p>Pull the cable lightly in the direction indicated by the arrow in the diagram while holding hood B. Move the ground terminal to the contact surface of the hood. ※The contact spring must be in contact with the ground terminal inside the connector for shielding performance.</p>
	<p>②</p>  <p>Hood B</p> <p>Hood A</p> <p>Set screw</p> <p>Application for Locktite 263 (Example)</p> <p>Remove the plug from the vice</p>	<p>Remove the plug from the cable assembly tool and tighten the set screw to hood B. - Recommended tightening torque: 0.3 to 0.35 N · m</p> <p>Note</p> <p>Due to the recoil of O-ring B, hood B may not be in the specified position when tightening the screw. Install the screw with hood B in the specified position.</p>
	<p>③</p>  <p>Hood B and gasket meeting surface</p> <p>Gasket</p> <p>Insert</p> <p>Cable clamp</p> <p>Protrusion</p> <p>Groove</p> <p>Clamp ring</p> <p>Vice</p> <p>Vice</p> <p>(The orientation of the hood is shown as an example.)</p>	<p>Insert the plug into the cable assembly tool fixed with a vice, etc. Insert the gasket until it hits the hood B and gasket meeting surface. Align the protrusions of the cable clamp with the grooves of the hood B and insert.</p> <p>⚠ Caution</p> <p>(1) If the clamp ring is tightened without aligning the groove of hood B and the protrusion on the cord clamp, disconnection or waterproof failure may result.</p> <p>(2) Secure the connectors and cables to prevent the ground terminal from moving.</p>

No.	Drawing	Procedure Details						
	<p>④</p>  <p>Hood B</p> <p>Set screw</p> <p>Application of locktite</p> <p>Clamp ring</p> <p>Vice</p> <p>Application location of Locktite (Example)</p>	<p>Apply Loctite 7649 of Henkel Japan Ltd., to the thread of the hood. After checking that it has dried, apply Loctite 263 around the full circumference.</p> <p>Reference condition of application for Locktite</p> <ul style="list-style-type: none"> • About 3 to 4 places • About 2 to 3 thread • About the thread is buried <p>⚠ Caution If too much Locktite is applied and it protrudes from the screw holes, it may stick to the gasket etc. and cause waterproof defects.</p>						
	<p>⑤</p>  <p>Width across flats</p> <p>Clamp ring</p> <p>Vice</p> <p>Table 7. Recommended tightening torque</p> <table border="1" data-bbox="327 1265 957 1366"> <thead> <tr> <th>Shell size</th><th>Tightening Torque</th><th>Wrench Width</th></tr> </thead> <tbody> <tr> <td>LF10</td><td>0.8 ~ 1 N · m</td><td>14 mm</td></tr> </tbody> </table>	Shell size	Tightening Torque	Wrench Width	LF10	0.8 ~ 1 N · m	14 mm	<p>Install the clamp ring in hood B. Recommended tightening torque is shown in Table 7.</p> <p>⚠ Caution Depending on the hardness of the cable, a gap may be visible between the clamp ring and the hood B. However, be careful not to tighten more than that. Forcibly tightening until the gap disappears may cause damage or deterioration of performance.</p>
Shell size	Tightening Torque	Wrench Width						
LF10	0.8 ~ 1 N · m	14 mm						
	<p>⑥</p> 	<p>Remove the connector from the cable assembly fixture holding it by the sleeve. Do not pull on the cable. It may cause breakage.</p>						
	<p>[Water Performance Test]</p> <p>When assembly is completed, apply 17.6 kPa 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.</p>							