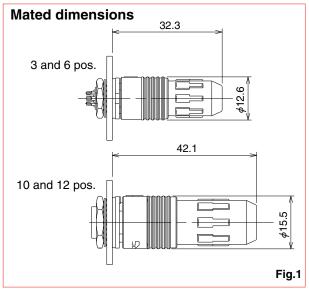
# **Miniature Waterproof Plastic Connectors**

### HR30 Series





### ■ Features

### 1. Small-size with low profile

3, 6 contacts: Maximum outer diameter  $\phi$ 12.6mm Mated length 32.3mm (from the panel

10, 12 contacts: Maximum outer diameter  $\phi$ 15.5mm Mated length 42.1mm (from the panel surface)

These small, compact connectors offer unique features available only from Hirose.

#### 2. Waterproof construction

IP67 and 68 waterproof construction in the mated state IP67: Left submerged in water at a depth of 1m for 30 minutes IP68: Left submerged in water at a depth of 2m for 14 days

#### 3. Push/pull lock

Waterproof connectors feature an easy to operate push/pull locks developed with our exclusive technology.

#### 4. Light weight

3 and 6 contacts: 6g (plug + receptacle) 10 and 12 contacts: 9g (plug + receptacle)

#### 5. Clamp structure

Our proprietary clamping method allows clamping the cable by simply tightening the cord ring.

#### 6. Easy mating operation

The plug can be securely locked while holding it in your hand while mating. (Fig.2)

### 7. Mis-insertion prevention

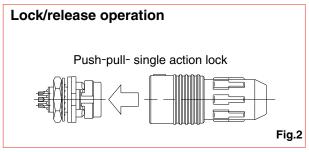
Mating portions are polarized to avoid improper mating and connector damage.

#### 8. Mating mark

Both the plug and the receptacle feature a white index mark on them which is used to quickly align the two interfaces for proper mating.(Fig.3)

### 9. Complies with the RoHS requirements

In consideration of environmental issues, we use only materials that comply with the RoHS Directive.





### **■ Product Specifications**

Current ra	Current rating	5A (3 pos.) 2A (6,10,12 pos.)	Operation Temperature Range	-25℃ to +85℃
Haurigs	Voltage rating	100V AC,140V DC(3,6 pos.) 30V AC,42V DC(10,12 pos.)	StorageTemperature Range	-10℃ to +60℃

Characteristic	Specification	Conditions
1.Contact resistance	$5m\Omega$ max. (3 pos.) $15m\Omega$ max. (Solder type: 6, 10, and 12 pos.) $30m\Omega$ max. (Through hole type: 6 and 12 pos.)	1A DC
2.Insulation resistance	1000MΩ min.	100V DC
3.Withstanding voltage	No flashover or insulation breakdown	300V AC / one minute
4.Vibration	No electrical discontinuity of $10\mu$ s or more	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 1 cycle= 5min, 10 cycles in each of the 3 directions.
5.Durability (mating/un-mating)	Contact resistance $10m\Omega$ min. (3 pos.) Contact resistance $30m\Omega$ min. (Solder type: 6, 10, and 12 pos.) Contact resistance $100m\Omega$ min. (Through hole type: 6 and 12 pos.)	1000 cycles
6.Temperature cycle	Insulation resistance $100M\Omega$ min.	(-55°C: 30 minutes → Room temperature: 10 to 15 minutes → +85°C: 30 minutes → Room temperature: 10 to 15 minutes) for 5 cycles
7.Humidity resistance	Insulation resistance $10M\Omega$ min. (when humidity high) $100M\Omega$ min. (when dry)	96 hours at temperature of 40°C and humidity of 90% to 95%
8.Waterproof performance	No water penetration inside.	While mated with corresponding or protective cap submerged at depth of 1m for half hour.

### ■ Material / Finish

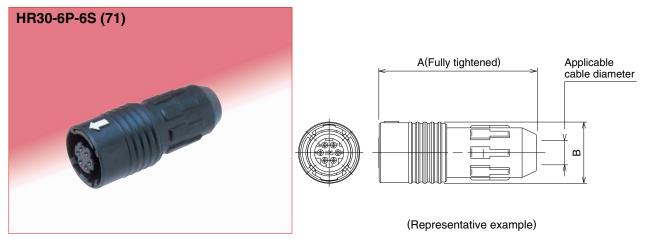
Assembly	Component	Material	Finish	Remarks
		PPS	Black	UL94V-0
	Insulator  PBT  Polyace  Polyace  Silicone rubber  Contacts  Coppet  Spring  Insulator  PPS  Gasket  Chlorop  Brass, Coppet  Spring  Insulator  PPS  Gasket  Chlorop  Hexagonal nut  Washer  Contacts  Phospit  Contacts  Phospit	PBT	Black	UL94V-0
		Polyacetal	Natural	
Plug	Gasket	PPS PBT Polyacetal Silicone rubber, chloroprene rubber Brass, phosphor bronze, Copper compound metal Stainless steel PPS Chloroprene rubber Brass, phosphor bronze, Copper compound metal Stainless steel The Chloroprene rubber Brass, phosphor bronze, Copper compound metal Stainless steel Drass, phosphor bronze, Copper compound metal Drass, phosphor bronze, Copper compound metal	Red/Black	
	Contacts		Gold plated	
	Spring	Stainless steel		
	Contacts Copper co Spring Stainless s Insulator PPS	PPS	Black	UL94V-0
	Gasket	Chloroprene rubber	Black	
Receptacles	Insulator  PBT  Polyacetal  Silicone rubb rubber  Contacts  Copper comp Spring  Stainless ste  Insulator  PPS  Gasket  Chloroprene  Brass, phosp Copper comp  Hexagonal nut  Washer  Contacts  Phosphor bro		Gold plated	
	Hexagonal nut	Zinc alloy	Chromate	
Receptacles  Contacts  Brass, phospho Copper compo Hexagonal nut Zinc alloy	Phosphor bronze	Nickel plated		
Crimp contact (male/female)	Contacts	Phosphor bronze	Selective gold plated	

# **■ Product Number Structure**

Model name : HR30	5 Number of Contacts: 3, 6, 10 and 12
2 Shell size : Outside diameter/plug mating side	6 Contact type S : Female contact
3 Connector type : P : Plug	P : Male contact
R : Receptacle	Contact wiring type
J: Jack	Blank: Solder
4 Variation	C : Crimping
Blank: Standard	D : Through hole
A : Fine wire	Other specifications:
B : Over mold type	A two-digit character is added to indicate other specifications as needed.

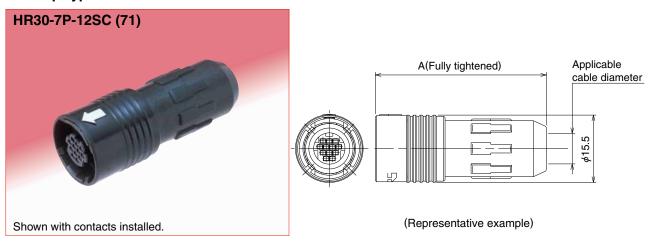
# **■ Plugs**

### Solder Type



Part No.	HRS No.	Α	В	Applicable cable diameter range	Solder pot inner diameter	Weight
HR30-6P-3S(71)	130-0004-1 71	29.8			1.1 mm	
HR30-6P-6S(71)	130-0010-4 71			4.2 to 5	0.8 mm	
HR30-6P-6P(71)	130-0009-5 71	30.3	100		0.6 11111	4 ~
HR30-6PA-3S(71)	130-0021-0 71	20.0	29.8		1.1 mm	4g
HR30-6PA-6S(71)	130-0019-9 71	29.6		29.0	3.5 to 4.3	0.8 mm
HR30-6PA-6P(71)	130-0020-8 71	30.3			0.6 11111	
HR30-7P-12S(71)	130-0027-7 71	20.0	15.5	6.2 to 7	0.6 mm	6.70
HR30-8P-12P(71)	130-0026-4 71	39.8	15.5	6.2 10 7	0.6 111111	6.7g

### Crimp Type



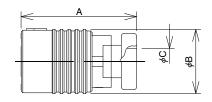
Part No.	HRS No.	Α	Applicable cable diameter range	Crimp contact	Weight
HR30-7P-10SC(71)	130-0013-2 71			HR30-SC-211	
HR30-7P-12SC(71)	130-0014-5 71	39.8	6.2 to 7	HH30-3C-211	6g
HR30-8P-12PC(71)	130-0015-8 71	1		HR30-PC-211	

# ■ Plug for overmolds

### Solder Type



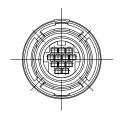


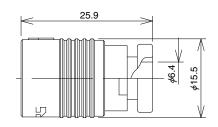


Part No.	HRS No.	Α	В	С	Solder pot inner diameter	Weight
HR30-6PB-3S	130-0034-2 00	22.7			1.1 mm	3.1g
HR30-6PB-6S	130-0032-7 00	22.7	12.6	5.2	0.8 mm	2.00
HR30-6PB-6P	130-0037-0 00	23.2				2.9g
HR30-7PB-12S	130-0035-5 00	25.9	15.5	6.4	0.6 mm	4.7g
HR30-8PB-12P	130-0030-1 00	25.9	15.5	6.4	0.6 mm	4.5g

### Crimp Type





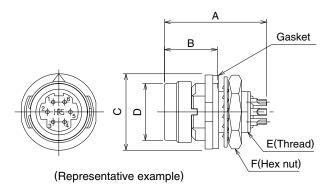


Part No.	HRS No.	Crimp contact	Weight	
HR30-7PB-10SC	130-0036-8 00	HP20-80-211	410	
HR30-7PB-12SC	130-0033-0 00	HR30-SC-211 4.		
HR30-8PB-12PC	130-0031-4 00	HR30-PC-211	4.3g	

### ■ Receptacles

### Solder Type

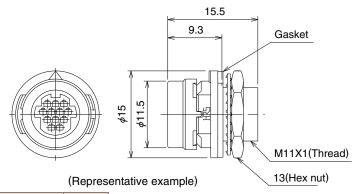




Part No.	HRS No.	Α	В	С	D	E	F	Solder pot inner diameter	Weight
HR30-6R-3P(71)	130-1003-4 71	16						1.1mm	
HR30-6R-6P(71)	130-1009-0 71	16	8.3 1	12	8.9	M8×0.75	M8×0.75 10	0.8mm	2g
HR30-6R-6S(71)	130-1008-8 71	18.4						U.OIIIII	
HR30-7R-12P(71)	130-1016-6 71	10.6	0.2	15	11 5	M11×1	10	0.6mm	2.40
HR30-8R-12S(71)	130-1018-1 71	10.0	8.6 9.3	0.3   15	5   11.5	M11×1	13	0.6mm	3.4g

### Crimp Type

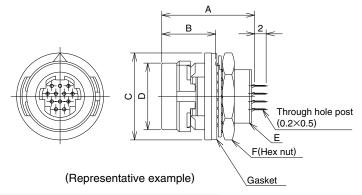




Part No.	HRS No.	Crimp contact	Weight
HR30-7R-10PC(71)	130-1012-5 71	HR30-PC-211	
HR30-7R-12PC(71)	130-1013-8 71	ППЗО-РС-211	3g
HR30-8R-12SC(71)	130-1014-0 71	HR30-SC-211	

### ● Through hole Type



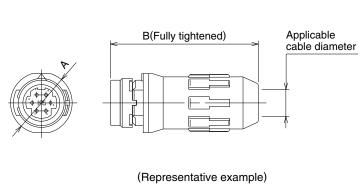


Part No.	HRS No.	Α	В	С	D	Е	F	Weight
HR30-6R-6PD(71)	130-1020-3 71	14.9	0.0	12	0.0	M0×0.75	10	200
HR30-6R-6SD(71)	130-1021-6 71	15.2 8.3		12	8.9	M8×0.75	10	2g
HR30-7R-12PD(71)	130-1017-9 71	16	0.0	1.5	44.5	M11×1	10	0.4~
HR30-8R-12SD(71)	130-1019-4 71	16	9.3	15	11.5	IMITAT	13	3.4g

### Jacks

### Solder Type

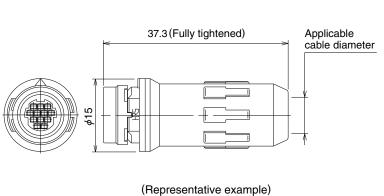




Part No.	HRS No.	Α	В	Applicable cable diameter range	Solder pot inner diameter	Weight
HR30-6J-6P(71)	130-2009-6 71	12	28.8	4.2 to 5	0.0 mm	3g
HR30-6JA-6P(71)	130-2018-7 71	12	20.0	3.5 to 4.3	- 0.8 mm	
HR30-7J-12P(71)	130-2020-9 71	15	27.2	6.0 to 7	0.6 mm	5.7g
HR30-8J-12S(71)	130-2019-0 71	15	37.3	6.2 to 7	0.6 111111	5.9g

### Crimp Type



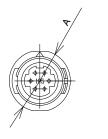


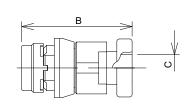
Part No.	HRS No.	Applicable cable diameter range	Crimp contact	Weight
HR30-7J-10PC(71)	130-2015-9 71		UD20-DC-011	
HR30-7J-12PC(71)	130-2017-4 71	6.2 to 7	HR30-PC-211	5g
HR30-8J-12SC(71)	130-2016-1 71		HR30-SC-211	

### ■ Jack for overmolds

### Solder Type



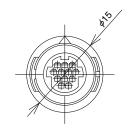


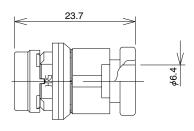


Part No.	HRS No.	Α	В	С	Solder pot inner diameter	Weight
HR30-6JB-6P	130-2021-1 00	12	21.7	<b>5</b> 2	5.2 0.8 mm	
HR30-6JB-6S	130-2028-0 00	12.7	21.7	5.2		
HR30-7JB-12P	130-2023-7 00	15	23.7	6.4	0.6 mm	3.6g
HR30-8JB-12S	130-2024-0 00	15	23.7	.7 6.4	0.6 mm	4.1g

## ● Crimp Type





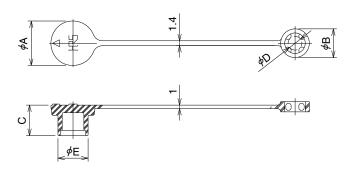


Part No.	HRS No.	Crimp contact	Weight
HR30-7JB-10PC	130-2025-2 00	HR30-PC-211	
HR30-7JB-12PC	130-2022-4 00	TH30-PG-211	3.1g
HR30-8JB-12SC	130-2026-5 00	HR30-SC-211	

## ■ Caps

### For Plugs



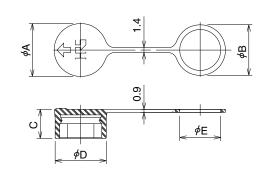


(Representative example)

Part No.	HRS No.	Α	В	С	D	Е	Applicable cable diameter	Weight
HR30-6P-C(71)	130-3000-7 71	13	8.4	8.9	4	8.8	φ4.2 to 5	1g
HR30-7P-C(71)	130-3004-8 71	16	10.4	10.5	6	11.4	16.0 to 7	Oa
HR30-8P-C(71)	130-3003-5 71	16	10.4	10.5	6	11.4	1.4 φ6.2 to 7	2g

### For Receptacle





(Representative example)

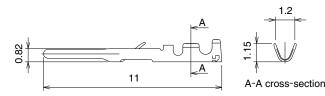
Part No.	HRS No.	Α	В	С	D	Е	Remarks	Weight
HR30-6R-C(71)	130-3001-0 71	12.6	11.8	7.5	12.1	9.1		
HR30-7R-C(71)	130-3002-2 71	15.5	14.8	8.5	15	12.1	This cap fits each size of the HR30-7R and HR30-8R receptacles	1g

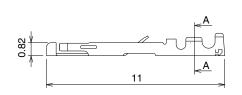
Note: When using these caps, do not use the gasket that is normally supplied with the receptacle. The "B" diameter end of the receptacle cap will serve as the gasket.

### Crimp Contacts

#### Male contact

#### **Female contact**







(Representative example)

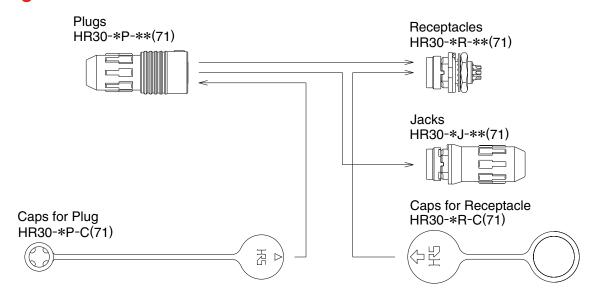
(Representative example)

Туре	Part No.	HRS No.	Packaging type	Weight
Loose contact	HR30-PC-111	130-0022-3	100pcs/pack	0.03g/1 pin
Reel contact	HR30-PC-211	130-0016-0	10,000pcs/reel	0.03g/1 pin

Туре	Part No.	HRS No.	Packaging type	Weight
Loose contact	HR30-SC-111	130-0023-6	100pcs/pack	0.03g/1 pin
Reel contact	HR30-SC-211	130-0017-3	10,000pcs/reel	0.03g/1 pin

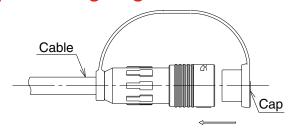
Note: Use wire size 26 to 30 AWG with a jacket diameter of 1 mm max.

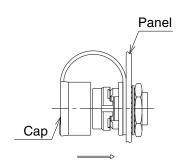
### **● Diagrams of Connectors in Combination**



- Note 1: Please use connectors with compatible shell size and number of contacts. If you are using a male contact plug, please also use a corresponding product with a female receptacle and a jack.
- Note 2: Please install the applicable crimping contacts when using the crimping style connectors. (Please refer to the manual for wiring work.)
- Note 3: When using the cap on the receptacle side, do not use the gasket that is normally supplied with the receptacle. The Hirose cap has the necessary gasket as part of the cap unit.

## **●** Cap mounting diagram





### Applicable Tools

### Cable Assembly Tools

Part No.	HRS No.	Applicable Connectors
		HR30-6P-3S(71)
HR30-6P-3S-T01	150-0220-1	HR30-6PA-3S(71)
		HR30-6PB-3S
		HR30-6P-6S(71)
HR30-6P-6S-T01	150-0214-9	HR30-6PA-6S(71)
		HR30-6PB-6S
		HR30-6P-6P(71)
HR30-6P-6P-T01	150-0221-4	HR30-6PA-6P(71)
		HR30-6PB-6P
HR30-7P-10SC-T01	150-0228-3	HR30-7P-10SC(71)
11130 71 1030 101	130 0220 3	HR30-7PB-10SC
		HR30-7P-12S(71)
HR30-7P-12SC-T01	150-0223-0	HR30-7PB-12S
11130 71 1230 101	130 0223 0	HR30-7P-12SC(71)
		HR30-7PB-12SC
		HR30-8P-12P(71)
HR30-8P-12PC-T01	150-0227-0	HR30-8PB-12P
111100 01 121 0 101	130 0227 0	HR30-8P-12PC(71)
		HR30-8PB-12PC
HR30-6R-3P-T01	150-0225-5	HR30-6R-3P(71)
		HR30-6R-6P(71)
LIDOS OD OD TOA	450,0040,0	HR30-6J-6P(71)
HR30-6R-6P-T01	150-0218-0	HR30-6JA-6P(71)
		HR30-6JB-6P
HR30-6R-6S-T01	150-0222-7	HR30-6R-6S(71)
LID20 7 L 10DC T01	150 0001 0	HR30-7J-10PC(71)
HR30-7J-10PC-T01	150-0231-8	HR30-7JB-10PC
HR30-7J-12PC-T01	150-0230-5	HR30-7J-12PC(71)
ПК3U-/J-12PU-1U1	150-0230-5	HR30-7JB-12PC
HR30-8J-12SC-T01	150-0226-8	HR30-8J-12SC(71)
17030-07-1590-101	150-0220-0	HR30-8JB-12SC

Note: Wiring for soldering or disassembly and assembly of plugs and jacks can be accomplished more efficiently when using the cable assembly tool.

### ● Tightening collar for back shell

Part No.	HRS No.	Applicable Connectors
HR30-6P-T02	150-0216-4	3 and 6 contacts
HR30-8P-T02	150-0224-2	10 and 12 contacts

Note: The code ring tightening collar is used to tighten the cord ring to the specified torque. (Please refer to the manual for assembly procedures.)



### Applicable Tools

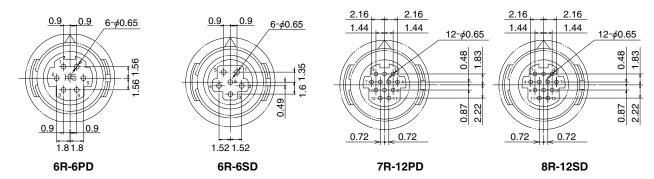
Type	Description	Part No.	HRS No.	Applicable contact	Applicable wire
Manual	Manual arimping tool	UT-100/UD20-1	150-0229-6	HR30-SC-111	AWG26 to 30
Iviariuai	Manual crimping tool	HT-102/HR30-1	150-0229-6	HR30-PC-111	AVVG26 10 30
	Automatic crimping machine	CM-105C	901-0001-0		
Automatic	Applicator	AP105-HR30-1	901-2015-9	HR30-SC-211	AWG26 to 30
				HR30-PC-211	AVVG20 to 30
		LIDOS TD		HR30-SC-111	
	Extraction tool		150 0010 0	HR30-SC-211	
Extraction tool		HR30-TP	150-0219-2	HR30-PC-111	
				HR30-PC-211	







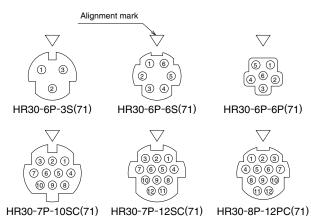
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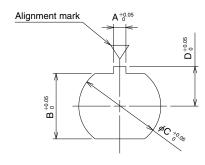
Remark: 1.The receptacle through hole configuration depicts a view from the mating side of the connector.

- 2.The above  $\triangle$  mark indicates the guide key position.
- 3. The recommended board maximum thickness: 1.2mm.
- 4.Tolerance of +0.03mm is recommended for the plated through hole location. Tolerance of +0.02mm is recommended for the plated through hole diameter.

### **● Contact Position Arrangement**



## Panel Cutout



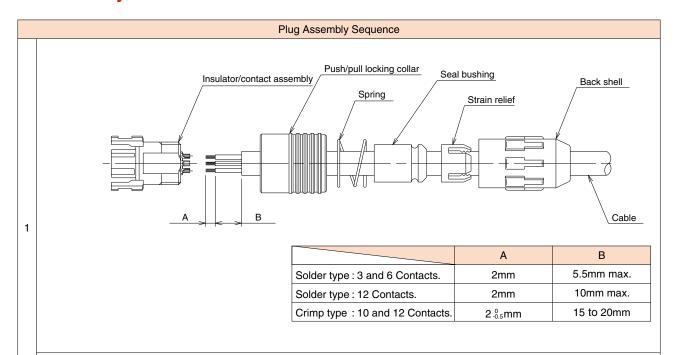
	А	В	С	D	Panel Thishness
3,6 pos.	1.25	6.45	8.05	3.95	0.7 to 2
10,12 pos.	1.35	9.25	11.05	5.45	0.7 to 3

Remarks: 1. The contact arrangement depicts a view from the wiring side.

In addition, in order to prevent loosening, please apply Locktight 263 and Lockprimer 7649 manufactured by Henkel Japan Ltd., Tokyo.

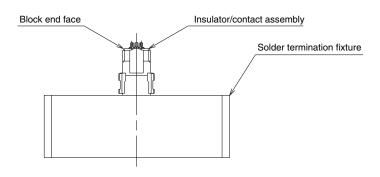
<sup>2.</sup> Installation is accomplished by securing the receptacle from the back side of the panel using the supplied hexagon nut. The tightening torque of the hexagon nut should be 0.5 N·m for 3, 6 contacts, and 0.8 N·m for 10, 12 contacts.

### Assembly Procedures



Insert the cable in the following order: 1. Back shell, 2. cord clamp, 3. gasket, 4, spring and 5. locking collar. Prepare the cable end according to the dimensions shown in Table 1.

Note: When preparing the cable, use caution not to damage the insulation and conductors of the lead wires.



Solder type

Fix the P case block on the cable termination tool, and after preliminary soldering, solder for 3 to 4 seconds with the soldering iron at 350±10℃.

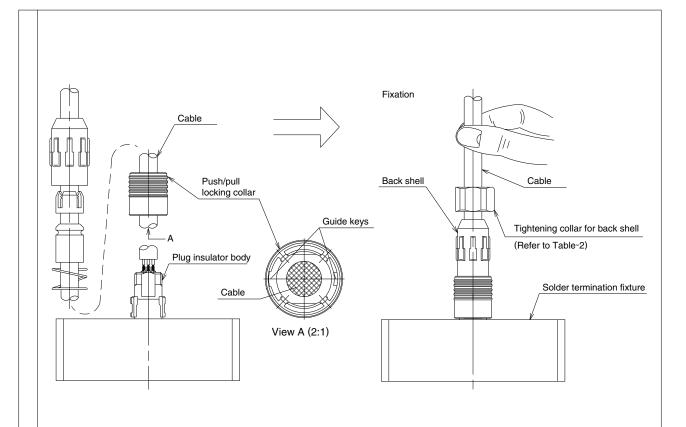
Note 1: Take care to avoid creating cold solder joints and solder joints with voids or air holes in it. Also check to make sure the solder joint is adequately fused between the lead wires and solder cup.

Note 2: The P case block is a precision unit. Please use caution when soldering the P case block so it does not become damaged. Any damage could result in loss of the waterproof performance.

#### Crimp type

After crimping the appropriate contact to the cable lead wire, insert the terminated wire into the correct contact position on the P case block.

Note: After inserting the crimping wire/contact, slightly pull the lead wire and check if the crimping contact is properly seated into the P case block.



3

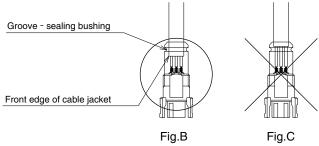


Table-2

Connector	Back shell tightening collar size	Torque
3 and 6 Contacts.	16mm	0.5N·m
10 and 12 Contacts.	18mm	0.5N·m

Insert the cable by fitting the coupling guide to the wire-connected P case block.

Then, pass the cable through and assemble in the following order: 1. spring, gasket, 2 cord clamp, and 3. cord tube. Make sure when assembling it with the cord clamp and cord tube, to maintain the positional relations between the cable sheath end face and the concave area of the gasket as shown in Fig.B.

Note: Please install the cord tube using the cord tube tightening tool with the cord ring tightening torque shown in Table-2.

In addition, in order to prevent loosening, please apply Locktight 263 and Lockprimer 7649 manufactured by Henkel Japan Ltd., Tokyo.

When screwing in the cord tube, use your hand to hold the cable so that the cable will not rotate or twist and apply stress to the soldered wires. However, as the cable tends to be twisted slightly (just over one rotation), we recommend that you twist it in the opposite direction in advance.

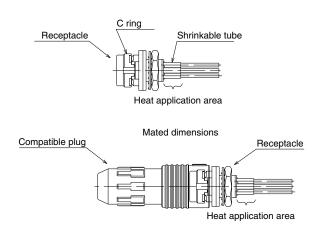
### Points to note when using Heat shrink tubing

We recommend that you use shrink tubing over the solder connections in order to protect the soldered wires and to enhance insulation. However, please be careful when applying heat in this area when installing the shrink tube so excess heat does not bleed into or affect the resin parts as shown in the figure below.

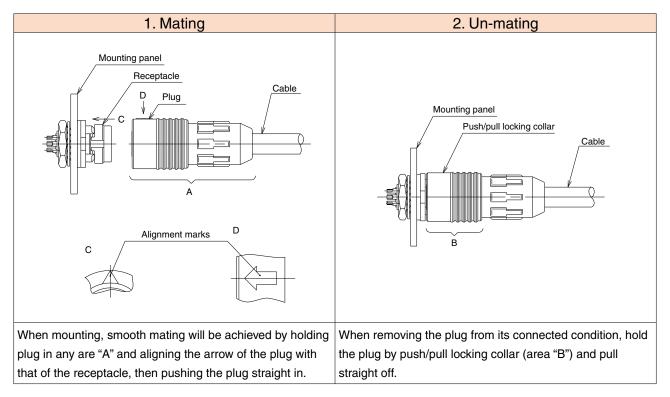
If the product does become heated beyond the area shown and into the resin parts, please make sure to prevent the following.

- ①Deformation of the C ring. This could result in prevention of locking during mating.
- 2 Melting of some parts.

To prevent the deformation of the C rings of the receptacles and the jack, we recommend heat to be applied after mating with a compatible plug.

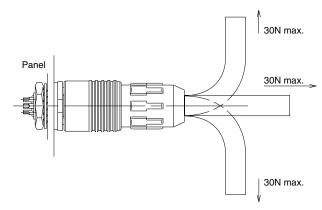


### General usage notes



### Precautions

- 1. Make sure the power is off before mating or un-mating the connector.
- When mating the connector, push it on with a force of a least 30N.
   After mating, pull slightly on the connector to check for proper mating and to ensure the connector is firmly locked to the receptacle.
- 3. After mating the connector, do not apply a force over 30N to the cable in the directions shown by the arrows. An excessive load can lead to connector damage.



- 4. To maintain the waterproof performance, cable clamping force and cable stability, please use a cable within the recommended for cable diameters.
  - Because the performance will differ depending on the cable structure, make sure to check all specifications of the cable assembly before use or production.
- 5. Please assemble and install the connector and components with the specified tightening torque. If the tightening torque is too weak or too strong, loosening or breakage can occur.
- 6.Please contact Hirose if your application requires compliance with the Electrical Appliance and Meterial Safety Act.

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