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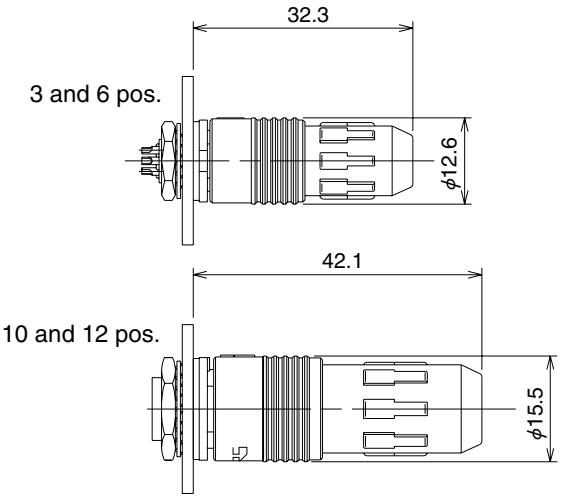
NEW

# Miniature Waterproof Plastic Connectors

## HR30 Series

## Mated dimensions




## ■Features

### 1. Small size

Short in length when fully terminated and mated.

### 2. Water and dust protected

IP67 protection rating: Complete protection against dust penetration and against water penetration when submerged 1 meter deep for half hour. Mated with corresponding connector or protective cap.

### 3. Simple pull lock release

Built-in lock/release mechanism securely locks mated connectors while allowing quick disconnection by simply pulling on the plug's release collar. Molded-in grooves prevent hand slippage when pulled.
The round configuration of the collar allows easy side-by-side panel mounting and will not snag on objects when the cable is pulled-out.

### 4. Light weight, corrosion resistant

Glass reinforced thermoplastic compounds and non-corrosive components are used in all assemblies.

### 5. Contact protection and self- alignment

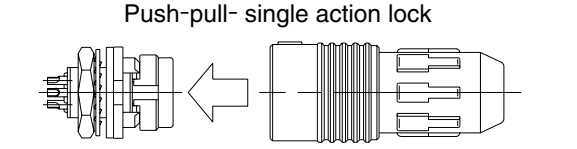
Multiple polarizing keys protect the contacts from miss-alignment or attempted insertion of the wrong connector, while assuring correct mating between the corresponding connectors.

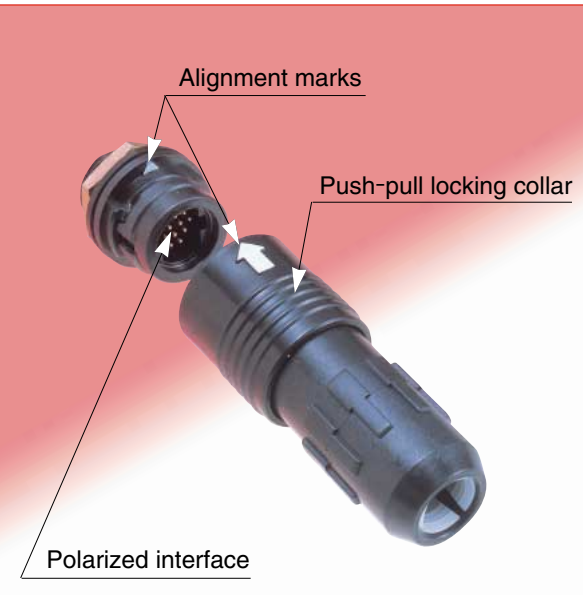
### 6. Visual alignment indicators

Permanent alignment indicators in a contrasting color on all connectors aid in correct alignment and engagement.

### 7. Built-in cable strain relief

## Lock/release operation




## ■Applications

Test and measuring equipment, portable devices, instrumentation, industrial devices, recreational equipment, I/O applications and other applications requiring use of lightweight, corrosion resistant quick mate/ release cable connections.

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## ■Product Specifications

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

| Characteristic | Specification | Conditions |
|---|---|---|
| 1.Contact resistance | 5m ohms max. (3 pos.)<br>15m ohms max. (Solder type: 6, 10, and 12 pos.)<br>30m ohms max. (Through hole type: 6 and 12 pos.) | 1A DC |
| 2.Insulation resistance | 1000M ohms min. | 100 V DC |
| 3.Withstanding voltage | No flashover or insulation breakdown | 300 V AC / one minute |
| 4.Vibration | No electrical discontinuity of 10 μs or more | Frequency: 10 to 55 Hz, single amplitude of 0.75 mm,<br>1 cycle= 5min, 10 cycles in each of the 3 directions. |
| 5.Durability (mating/un-mating) | Contact resistance 10m ohms min.(3 pos.)<br>Contact resistance 30m ohms min. (Solder type: 6, 10, and 12 pos.)<br>Contact resistance 100m ohms min. (Through hole type: 6 and 12 pos.) | 1000 cycles |
| 6.Temperature cycle | Insulation resistance 100 M ohms min. | (-55℃: 30 minutes → Room temperature: 10 to 15 minutes → +85℃: 30 minutes → Room temperature: 10 to 15 minutes) for 5 cycles |
| 7.Humidity resistance | Insulation resistance<br>10M ohms min. (when humidity high)<br>100M ohms min. (when dry) | 96 hours at temperature of 40ohmsC and humidity of 90% to 95% |
| 8.Waterproof performance | No penetration inside. | While mated with corresponding or protective cap submerged at depth of 1m for half hour. |
| 9.Dust protection | | |

## ■Material

| Assembly | Component | Material | Finish | Remarks |
|---|---|---|---|---|
| Plug | Insulator | PPS | Black | UL94V-0 |
| | | PBT | Black | UL94V-0 |
| | | Polyacetal | Natural | —— |
| | Gasket | Silicone rubber, chloroprene rubber | Red/Black | —— |
| | Contacts | Brass, phosphor bronze | Gold plated | —— |
| | Spring | Stainless steel | —— | —— |
| Receptacles | Insulator | PPS | Black | UL94V-0 |
| | Gasket | Chloroprene rubber | Black | —— |
| | Contacts | Brass, phosphor bronze | Gold plated | —— |
| | Hexagonal nut | Zinc alloy | Chromate | —— |
| | Washer | Phosphor bronze | Nickel plated | —— |
| Crimp contact (male/female) | Contacts | Phosphor bronze | Selective gold plated | —— |

## ■Ordering information

**HR30 - 6 P A - 6 S C (**)**

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

| | | | |
|---|---|---|---|
| ❶ Series name | : HR30 | ❺ Number of Contacts | : 3, 6, 10 and 12 |
| ❷ Shell size | : Outside diameter/plug mating side | ❻ Contact type S | : Female contact |
| ❸ Connector type | : P : Plug | P | : Male contact |
| | R : Receptacle | ❼ Contact wiring type | |
| | J : Jack | Blank | : Solder |
| ❹ Variation | | C | : Crimping |
| Blank | : Standard | D | : Through hole |
| A | : Fine wire | ❽ Plating (71) | : Gold plated (Except caps) |

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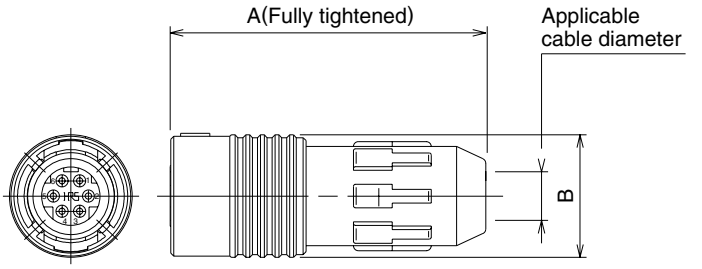
# ■Plugs

## ●Solder Type

**HR30-6P-6S (Shown)**

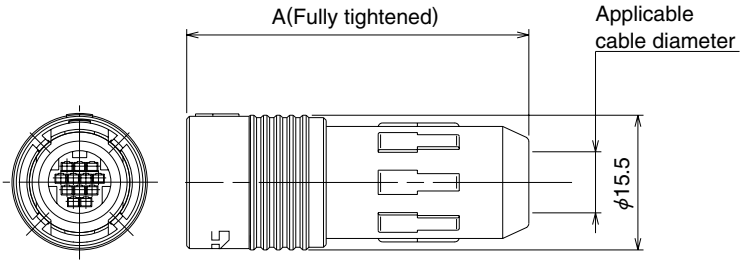



| Part Number | CL No. | A | B | Solder pot inner diameter | Applicable cable diameter range | Weight | RoHS |
|---|---|---|---|---|---|---|---|
| HR30-6P-3S(71) | 130-0004-1-71 | 29.8 | 12.6 | 1.1 mm | 4.2 to 5 | 4g | YES |
| HR30-6P-6S(71) | 130-0010-4-71 | | | 0.8 mm | | | |
| HR30-6P-6P(71) | 130-0009-5-71 | 30.3 | | | | | |
| HR30-6PA-3S(71) | 130-0021-0-71 | 29.8 | | 1.1 mm | 3.5 to 4.3 | | |
| HR30-6PA-6S(71) | 130-0019-9-71 | | | 0.8 mm | | | |
| HR30-6PA-6P(71) | 130-0020-8-71 | 30.3 | | | | | |
| HR30-7P-12S(71) | 130-0027-7-71 | 39.8 | 15.5 | 0.6 mm | 6.2 to 7 | 6.7g | |
| HR30-8P-12P(71) | 130-0026-4-71 | | | | | | |

## ●Crimp Type

**HR30-7P-12SC (Shown)**

Shown with terminated and installed contacts.




| Part Number | CL No. | A | Crimp contact | Applicable cable diameter range | Weight | RoHS |
|---|---|---|---|---|---|---|
| HR30-7P-10SC(71) | 130-0013-2-71 | 39.8 | HR30-SC-211 | 6.2 to 7 | 6g | YES |
| HR30-7P-12SC(71) | 130-0014-5-71 | | | | | |
| HR30-8P-12PC(71) | 130-0015-8-71 | | HR30-PC-211 | | | |

Note: Crimp contacts are not included. Please order applicable contacts separately.

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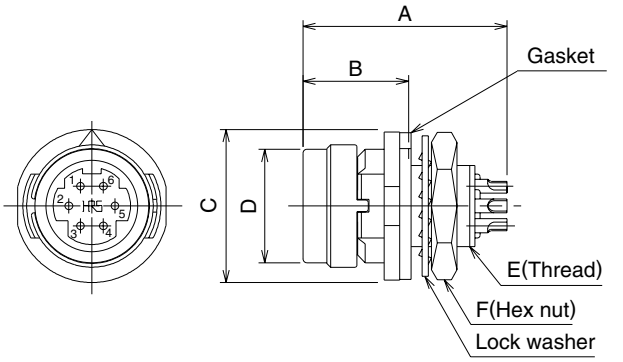
# ■Receptacles

## ●Solder Type

**HR30-6R-6P (Shown)**

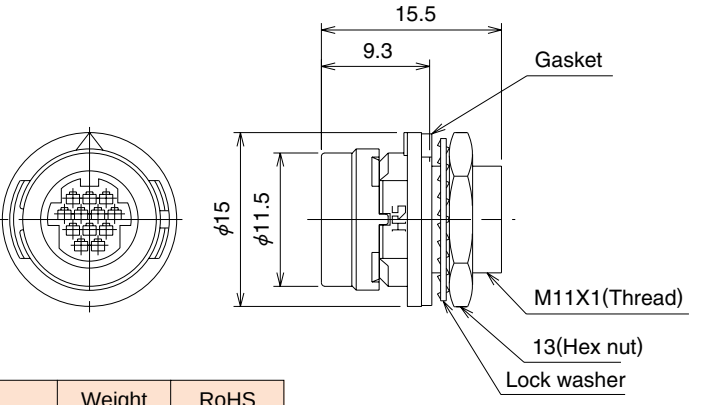



| Part Number | CL No. | A | B | C | D | E | F | Solder pot inner diameter | Weight | RoHS |
|---|---|---|---|---|---|---|---|---|---|---|
| HR30-6R-3P(71) | 130-1003-4-71 | 16 | 8.3 | 12 | 8.9 | M8×0.75 | 10 | 1.1mm | 2g | YES |
| HR30-6R-6P(71) | 130-1009-0-71 | | | | | | | 0.8mm | | |
| HR30-6R-6S(71) | 130-1008-8-71 | 18.4 | | | | | | | | |
| HR30-7R-12P(71) | 130-1016-6-71 | 18.6 | 9.3 | 15 | 11.5 | M11×1 | 13 | 0.6mm | 3.4g | |
| HR30-8R-12S(71) | 130-1018-1-71 | | | | | | | | | |

## ●Crimp Type

**HR30-7R-12PC (Shown)**

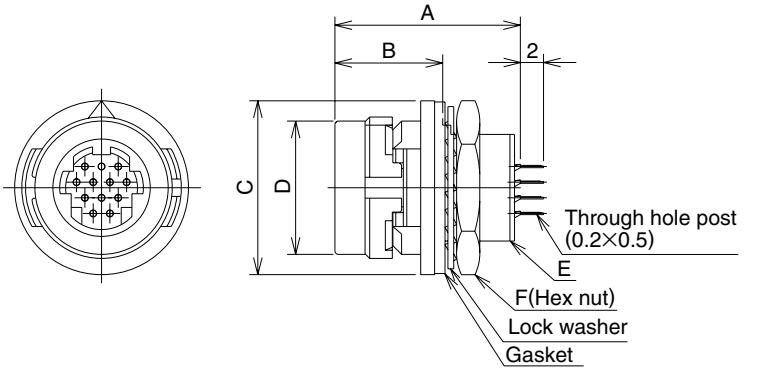
Shown with terminated and installed contacts.




| Part Number | CL No. | Crimp contact | Weight | RoHS |
|---|---|---|---|---|
| HR30-7R-10PC(71) | 130-1012-5-71 | HR30-PC-211 | 3g | YES |
| HR30-7R-12PC(71) | 130-1013-8-71 | | | |
| HR30-8R-12SC(71) | 130-1014-0-71 | HR30-SC-211 | | |

## ●Through hole Type

**HR30-8R-12SD (Shown)**




| Part Number | CL No. | A | B | C | D | E | F | Weight | RoHS |
|---|---|---|---|---|---|---|---|---|---|
| HR30-6R-6PD(71) | 130-1020-3-71 | 14.9 | 8.3 | 12 | 8.9 | M8×0.75 | 10 | 2g | YES |
| HR30-6R-6SD(71) | 130-1021-6-71 | 15.2 | | | | | | | |
| HR30-7R-12PD(71) | 130-1017-9-71 | 16 | 9.3 | 15 | 11.5 | M11×1 | 13 | 3.4g | |
| HR30-8R-12SD(71) | 130-1019-4-71 | | | | | | | | |

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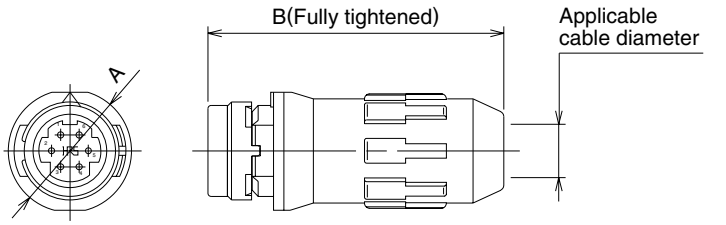
# ■Jacks

## ●Solder Type

**HR30-6J-6P (Shown)**

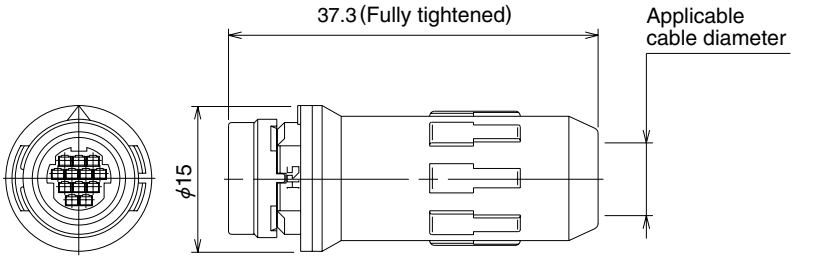



| Part Number | CL No. | A | B | Applicable cable diameter range | Solder pot inner diameter | Weight | RoHS |
|---|---|---|---|---|---|---|---|
| HR30-6J-6P(71) | 130-2009-6-71 | 12 | 28.9 | 4.2 to 5 | 0.8 mm | 3g | YES |
| HR30-6JA-6P(71) | 130-2018-7-71 | | | 3.5 to 4.3 | | | |
| HR30-7J-12P(71) | 130-2020-9-71 | 15 | 37.3 | 6.2 to 7 | 0.6 mm | 5.7g | |
| HR30-8J-12S(71) | 130-2019-0-71 | | | | | 5.9g | |

## ●Crimp Type

**HR30-7J-12PC (Shown)**

Shown with terminated and installed contacts.




| Part Number | CL No. | Crimp contact | Applicable cable diameter range | Weight | RoHS |
|---|---|---|---|---|---|
| HR30-7J-10PC(71) | 130-2015-9-71 | HR30-PC-211 | 6.2 to 7 | 5g | YES |
| HR30-7J-12PC(71) | 130-2017-4-71 | | | | |
| HR30-8J-12SC(71) | 130-2016-1-71 | HR30-SC-211 | | | |

Note: Crimp contacts are not included. Please order applicable contacts separately.

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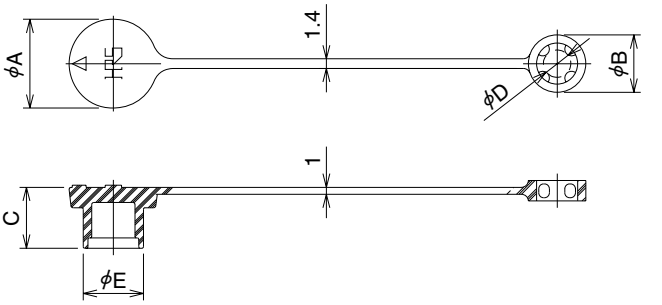
# ■Caps

## ●For Plugs

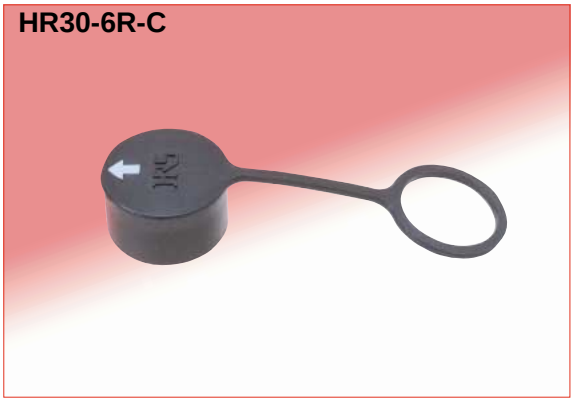
**HR30-6P-C**

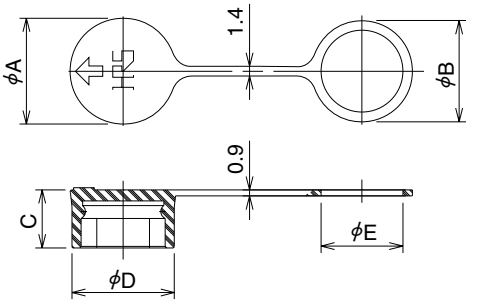



| Part Number | CL No. | Applicable connector | A | B | C | D | E | Weight | RoHS |
|---|---|---|---|---|---|---|---|---|---|
| HR30-6P-C(71) | 130-3000-7-71 | HR30-6P-3S(71) | 13 | 8.4 | 8.9 | 4 | 8.8 | 1g | YES |
| | | HR30-6P-6S(71) | | | | | | | |
| | | HR30-6P-6P(71) | | | | | | | |
| | | HR30-6PA-3S(71) | | | | | | | |
| | | HR30-6PA-6S(71) | | | | | | | |
| | | HR30-6PA-6P(71) | | | | | | | |
| HR30-7P-C(71) | 130-3004-8-71 | HR30-7P-10SC(71) | 16 | 10.4 | 10.5 | 6 | 11.4 | 2g | |
| | | HR30-7P-12S(71) | | | | | | | |
| | | HR30-7P-12SC(71) | | | | | | | |
| HR30-8P-C(71) | 130-3003-5-71 | HR30-8P-12P(71) | | | | | | | |
| | | HR30-8P-12PC(71) | | | | | | | |

## ●For Receptacle

**HR30-6R-C**






| Part Number | CL No. | Applicable connector | A | B | C | D | E | Weight | RoHS |
|---|---|---|---|---|---|---|---|---|---|
| HR30-6R-C(71) | 130-3001-0-71 | HR30-6R-3P(71) | 12.6 | 11.8 | 7.5 | 12.1 | 9.1 | 1g | YES |
| | | HR30-6R-6P(71) | | | | | | | |
| | | HR30-6R-6PD(71) | | | | | | | |
| | | HR30-6R-6S(71) | | | | | | | |
| | | HR30-6R-6SD(71) | | | | | | | |
| HR30-7R-C(71) | 130-3002-2-71 | HR30-7R-10PC(71) | 15.5 | 14.8 | 8.5 | 15 | 12.1 | | |
| | | HR30-7R-12P(71) | | | | | | | |
| | | HR30-7R-12PC(71) | | | | | | | |
| | | HR30-7R-12PD(71) | | | | | | | |
| | | HR30-8R-12S(71) | | | | | | | |
| | | HR30-8R-12SC(71) | | | | | | | |
| | | HR30-8R-12SD(71) | | | | | | | |

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.

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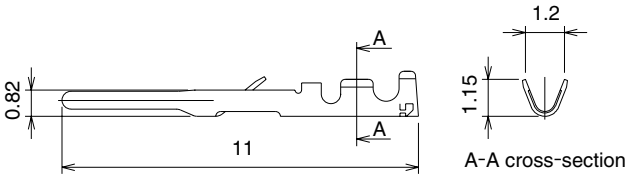
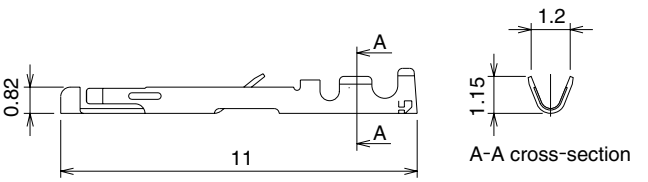
# ■Crimp Contacts

### Male contact




### Female contact

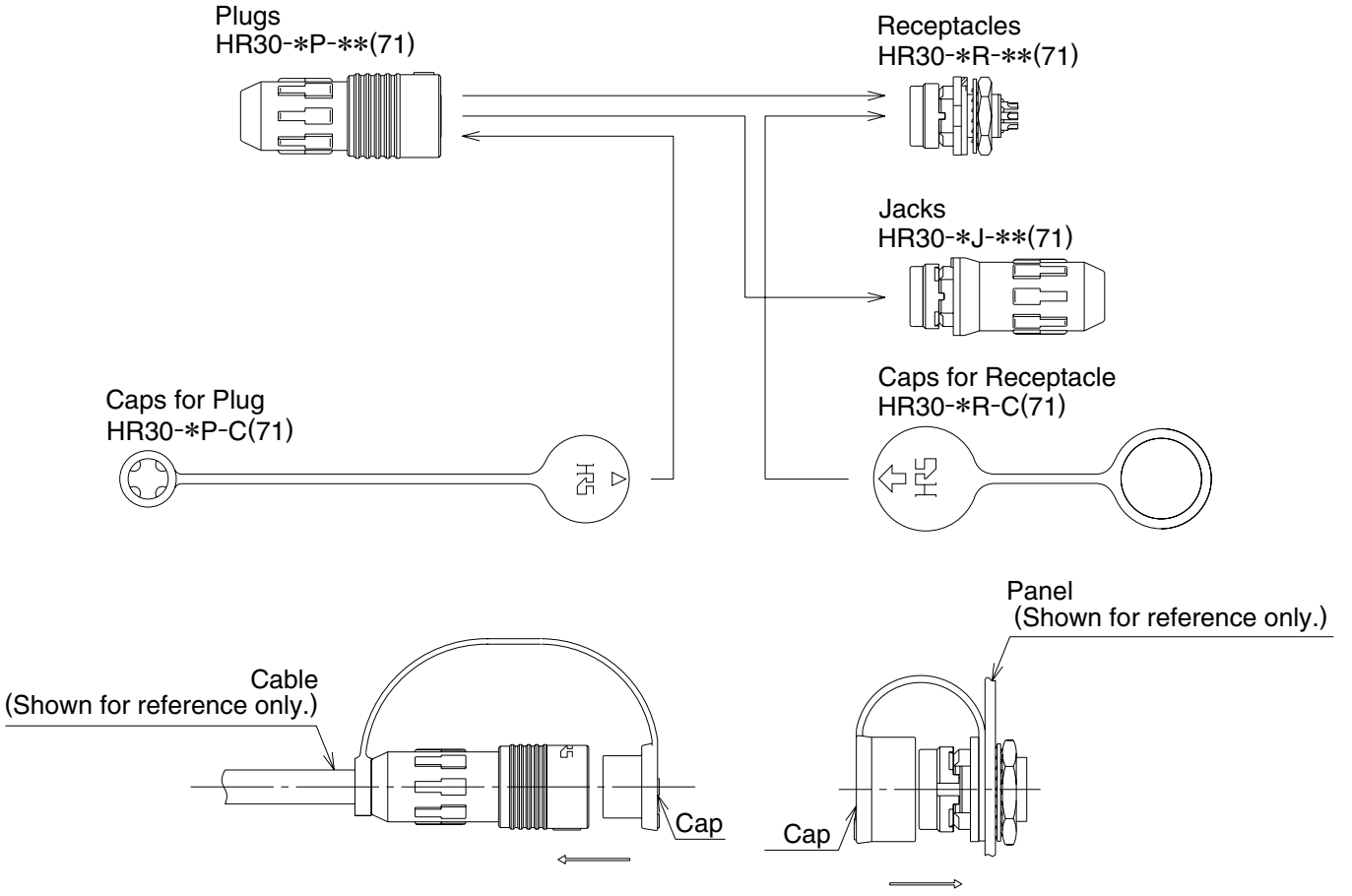



| Part Number | CL No. | Packaging type | Weight | RoHS |
|---|---|---|---|---|
| HR30-PC-111 | 130-0022-3 | 100pcs/bag | 0.03g/1per pin | YES |
| HR30-PC-211 | 130-0016-0 | 10,000pcs/reel | 0.03g/1per pin | |

| Part Number | CL No. | Packaging type | Weight | RoHS |
|---|---|---|---|---|
| HR30-SC-111 | 130-0023-6 | 100pcs/bag | 0.03g/1 pin | YES |
| HR30-SC-211 | 130-0017-3 | 10,000pcs/reel | 0.03g/1 pin | |

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

# ◆Connecting Combinations




Note 1 : When selecting connectors, take into account the shell size, contact count and gender of the contacts.
Note 2 : When using the protective caps for the receptacles, do not use the gaskets normally supplied with the receptacle. Protective caps must be fully inserted to assure specified IP67 water and dust protection.

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# ◆Applicable Fixtures

## ●Solder termination fixture

| Part Number | CL No. | Applicable Connectors |
|---|---|---|
| HR30-6P-3S-T01 | 150-0220-1 | HR30-6P-3S(71)<br>HR30-6PA-3S(71) |
| HR30-6P-6S-T01 | 150-0214-9 | HR30-6P-6S(71)<br>HR30-6PA-6S(71) |
| HR30-6P-6P-T01 | 150-0221-4 | HR30-6P-6P(71)<br>HR30-6PA-6P(71) |
| HR30-7P-10SC-T01 | 150-0228-3 | HR30-7P-10SC(71) |
| HR30-7P-12SC-T01 | 150-0223-0 | HR30-7P-12S(71)<br>HR30-7P-12SC(71) |
| HR30-8P-12PC-T01 | 150-0227-0 | HR30-8P-12P(71)<br>HR30-8P-12PC(71) |
| HR30-6R-3P-T01 | 150-0225-5 | HR30-6R-3P(71) |
| HR30-6R-6P-T01 | 150-0218-0 | HR30-6R-6P(71)<br>HR30-6J-6P(71)<br>HR30-6JA-6P(71) |
| HR30-6R-6S-T01 | 150-0222-7 | HR30-6R-6S(71) |
| HR30-7J-10PC-T01 | 150-0231-8 | HR30-7J-10PC(71) |
| HR30-7J-12PC-T01 | 150-0230-5 | HR30-7J-12PC(71) |
| HR30-8J-12SC-T01 | 150-0226-8 | HR30-8J-12SC(71) |

Note : The back shell tightening collar is used to tighten the back shell to the specified torque.
Refer to assembly procedures.

## ●Tightening collar for back shell

| Part Number | CL No. | Applicable Connectors |
|---|---|---|
| HR30-6P-T02 | 150-0216-4 | 3 and 6 pos. |
| HR30-8P-T02 | 150-0224-2 | 10 and 12 pos. |

Note: The back shell tightening collar is used to tighten the back shell to specified torque.
Refer to assembly procedures.

Solder termination fixture

**HR30-6P-6S-T01**

**HR30-6R-6P-T01**

Back shell tightening collar

**HR30-6P-T02**

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## ■Applicable Tools

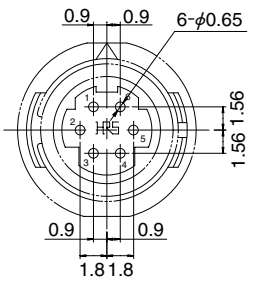
| Type | Description | Part Number | CL No. | Applicable contact | Applicable wire |
|---|---|---|---|---|---|
| Manual | Manual crimping tool | HT-102/HR30-1 | 150-0229-6 | HR30-SC-111 | AWG#26～#30 |
| | | | | HR30-PC-111 | |
| Automatic | Automatic crimping machine | CM-105 | 901-0005-4 | —— | —— |
| | Applicator | AP105-HR30-1 | 901-2015-9 | HR30-SC-211 | AWG#26～#30 |
| | | | | HR30-PC-211 | |
| Extraction tool | | HR30-TP | 150-0219-2 | HR30-SC-111 | —— |
| | | | | HR30-SC-211 | |
| | | | | HR30-PC-111 | —— |
| | | | | HR30-PC-211 | |

Manual contact crimping tool HT-102/HR30-1

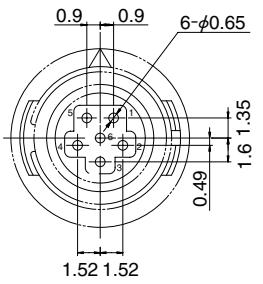
Automatic contact crimping machine CM-105

Contact extraction tool HR30-TP

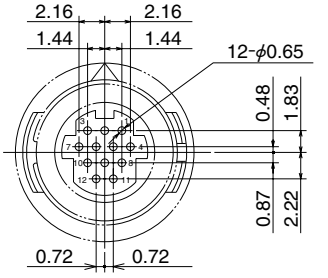
## ◆Receptacle, Board Mounting Through Hole Pattern



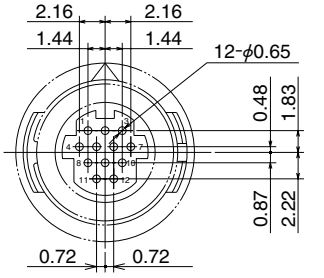
6R-6PD



6R-6SD



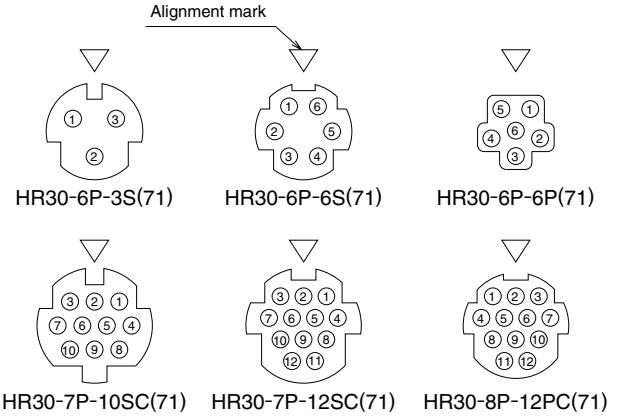
7R-12PD



8R-12SD

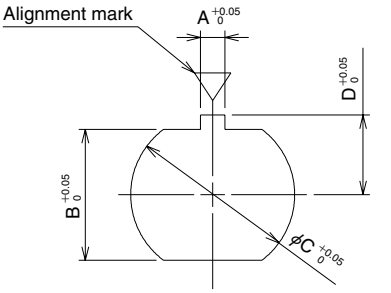
Notes 1.The receptacle through hole configuration depicts a view from the mating side of the connector.
2.The recommended board maximum thickness :1.2 mm.
3.Tolerance of +0.03 mm is recommended for the plated through hole location.
Tolerance of +0.02 mm is recommended for the plated through hole diameter.

## ◆Contact Position Arrangement



HR30-6P-3S(71) HR30-6P-6S(71) HR30-6P-6P(71)
HR30-7P-10SC(71) HR30-7P-12SC(71) HR30-8P-12PC(71)

## ◆Panel Cutout

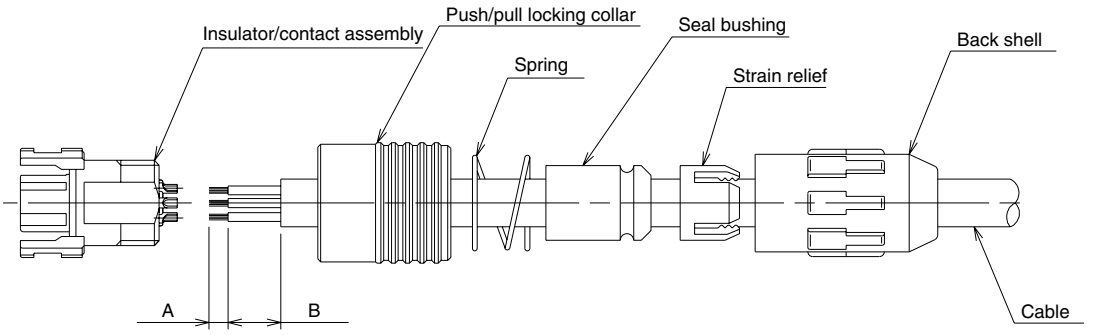
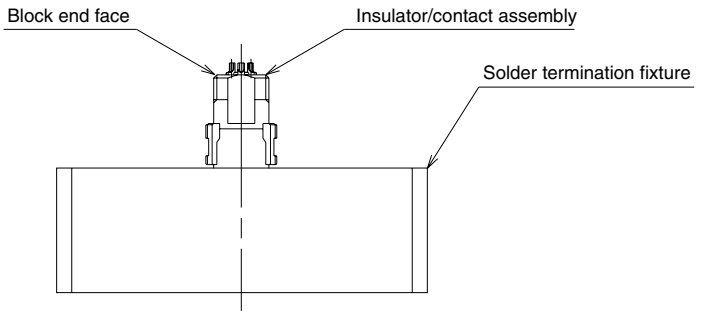



| | A | B | C | D | Panel Thishness |
|---|---|---|---|---|---|
| 3,6 pos | 1.25 | 6.45 | 8.05 | 3.95 | 0.7～2 |
| 10,12 pos | 1.35 | 9.25 | 11.05 | 5.45 | 0.7～3 |

Notes 1.The contact configuration depicts a view from the wiring side.
2. Mounting to the panel is accomplished by tightening the hexagonal nut from the rear side of the panel.

The product information in this catalog is for reference only. Please request the Engineering Drawing for the most current and accurate design information.
All non-RoHS products have been discontinued, or will be discontinued soon. Please check the products status on the Hirose website RoHS search at www.hirose-connectors.com, or contact your Hirose sales representative.

# Assembly Procedures

| Plug Assembly Sequence | |
|---|---|
| 1 |  |
| | Thread the back shell, strain relief, seal bushing, spring and push/pull locking collar over the cable as shown above. |
| 2 |  |
| | Solder type<br>1. Pre-solder the exposed cable conductors (dia. A). The diameter of the pre-soldered conductors should not exceed 0.7 mm for 6 contact plug and 1.0 mm for 3 contact plug.<br>2. Insert the insulator body over the applicable solder termination fixture.<br>3. Insert the pre-soldered conductors in the contact soldering pot and solder them in place. Soldering iron temperature should be 280 ±10℃ applied for 3-4 second.<br>Crimp type<br>1. Crimp the applicable contact to the stripped conductor. Use correct crimp tools. Verify the dimensions and crimp configuration.<br>2. Insert the contact into the appropriate opening in the insulator body.<br>3. Verify fully seated position by applying a slight pull force on the conductor. The contact should remain in place. Re-insert if not seated. |

| | A | B |
|---|---|---|
| Solder type : 3 and 6 pos. | 2 mm | 5.5 mm max. |
| Solder type : 12 pos. | 2 mm | 10 mm max. |
| Crimp type : 10 and 12 pos. | $2^{0}_{-0.5}$ mm | 15 to 20 mm |

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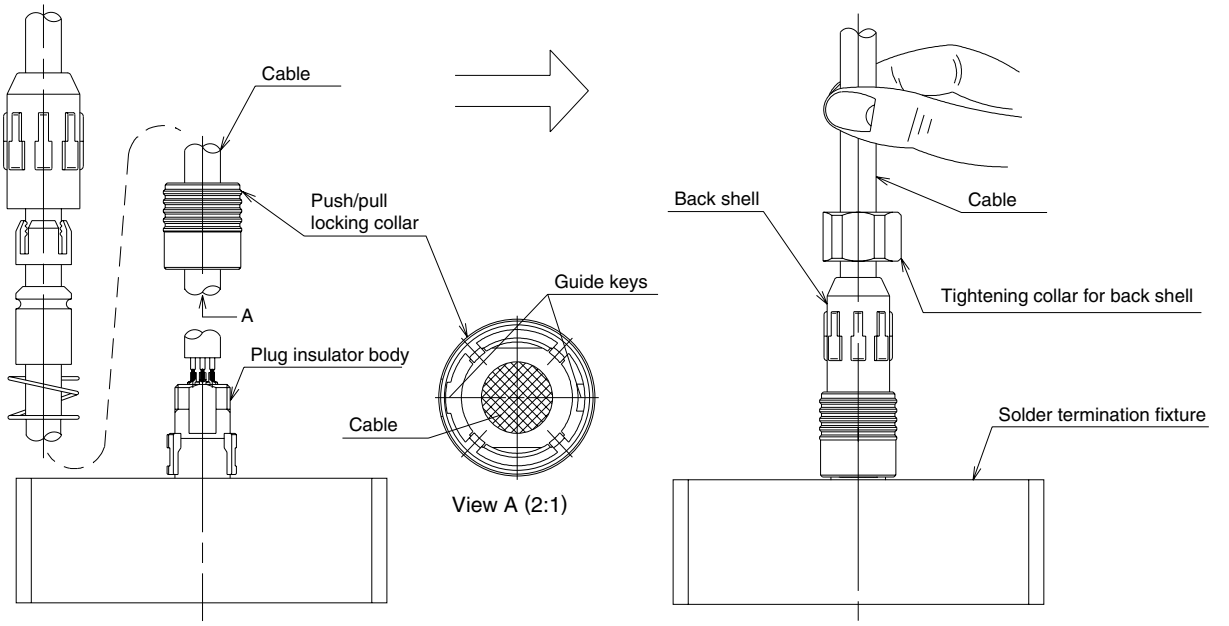
3



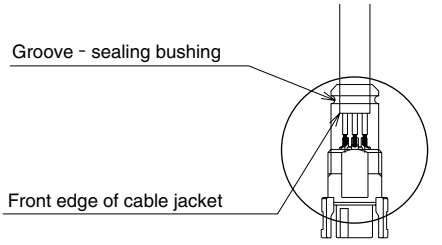




Figure B

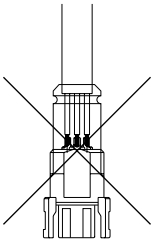


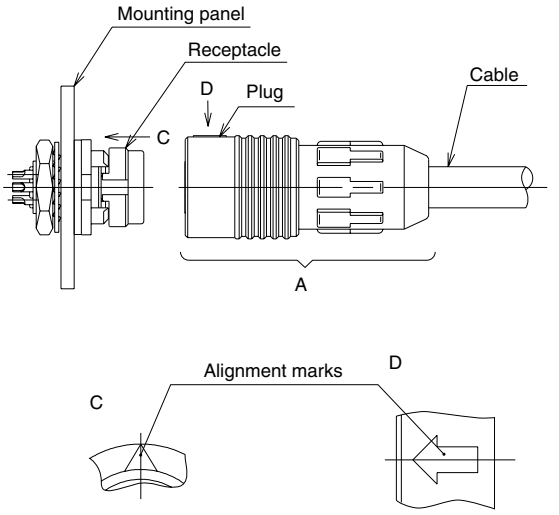
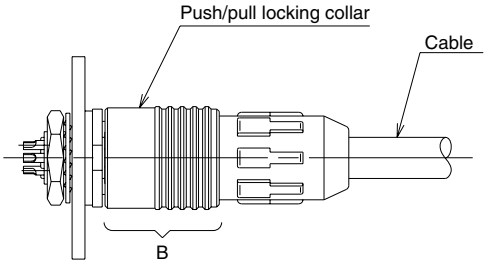
Figure C

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

1. To prevent accidental loosening of the back shell it is recommended that a small amount of primer (Loctite® 7649) and adhesive (Loctite® 271) be applied to the threads of the insulator body before proceeding.
2. Keeping the terminated insulator body on the fixture, re-assembly the plug in order shown.
4. Using the correct back-tightening collar tighten the back shell to the specified torque.
   When tightening the collar make sure that the cable will NOT turn.
5. Remove the assembly from the fixture.

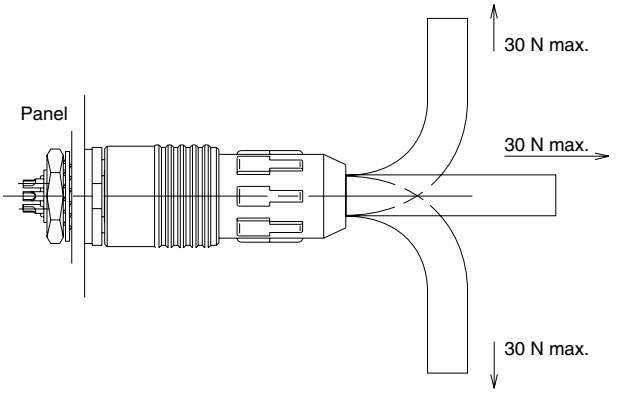
Note: Loctite is a registered trademark of the Henkel Loctite Corporation.

## General usage notes

| 1. Mating | 2. Un-mating |
|---|---|
|  |  |
| When mounting, smooth mating will be achieved by holding plug in any are “A” and aligning the arrow of the plug with that of the receptacle ,then pushing the plug straight in. | When removing the plug from its connected condition, hold the plug by push/pull locking collar (area “B”) and pull straight off. |

## Precautions

1. Do NOT apply force in excess of 30N in the directions shown below.




2. To maintain the water/dust protection performance and the cable clamp force, use a cable that is within the range of applicable cable diameter.
3. Consult HRS representative when using different cables.

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