

Waterproof, Shock and Vibration Resistant Bayonet Lock Connectors for Railway Vehicles

HR43 Series

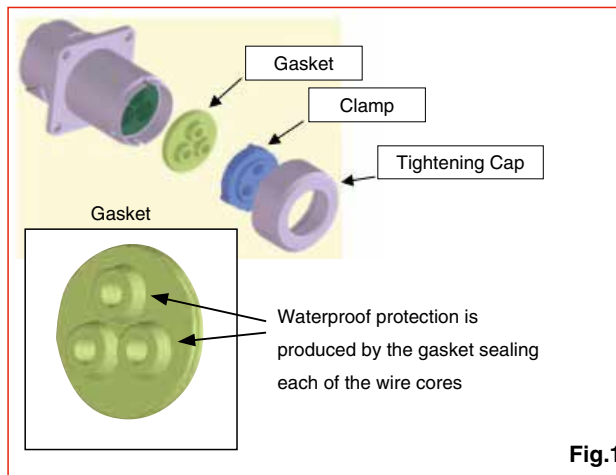
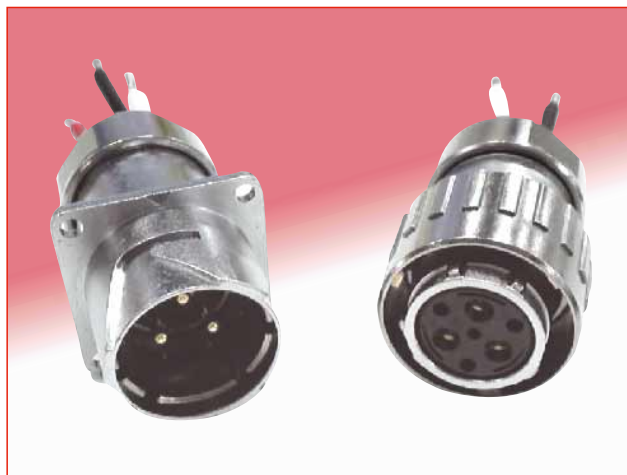


Fig.1

■ Features

1. Passed shock and vibration test of Railway Vehicles

Complies with the Class 2 standard: IEC 61373, "Rolling stock equipment-Shock and vibration tests".

2. Waterproof structure

The structure features a unique gasket that seals individual wires and provides IP67 waterproof protection. (See Fig.1). It also delivers IP67 rated protection in mated condition.

3. Crimp contact termination

Wire crimping allows simple and uniform wiring.

4. User-friendly bayonet lock mechanism

The bayonet locking structure is user friendly and delivers a firm mating operation.

5. Sturdy metal shell

The metal shell is constructed of aluminum alloy and is lightweight and rugged.

■ Product Specifications

| | | | | |
|---------|---------------|--------|-----------------------|----------------|
| Ratings | Rated Current | 20A | Operating Temp. Range | -25°C~ +85°C |
| | Rated Voltage | AC600V | Storage Temp. Range | - 10°C~ + 60°C |

| Items | Specifications | Conditions |
|----------------------------------|---|--|
| 1. Contact resistance | Maximum of 5 mΩ | Measured at DC 1 A |
| 2. Insulation resistance | Minimum of 5,000 MΩ | Measured at DC 500 V |
| 3. Withstand voltage | No flashover or breakdown | Apply AC 2,100 V for 1 min |
| 4. Vibration resistance (random) | No electrical discontinuity of 1μs or more | Tested at 10 to 100 Hz, acceleration spectrum density 11.83 (m/s ²) ² /Hz, 5 hours each for 3 directions (Test according to JIS E 4031, Item 9, Class 2, with both directions for all 3 axes. |
| 5. Shock resistance | No electrical discontinuity of 1μs or more | Acceleration 490 m/s ² , duration 11 ms, 3 times each for 6 axial directions |
| 6. Durability | Contact resistance: Maximum 10 mΩ | 100 mating cycles |
| 7. Temperature cycles | Insulation resistance: Minimum of 5,000 MΩ | 200 cycles of (-40°C for 30 min → ambient temp for 2 to 3 min → +105°C for 30 min → ambient temp for 2 to 3 min) |
| 8. Moisture-resistance | Insulation resistance Minimum of 50 MΩ (at high humidity) Minimum of 500 MΩ (dry) | Temperature: +40°C; humidity: 90 to 95%, left for 96 hours |
| 9. Salt water spray | Normal operation of mating and locking | Leave in 5% concentration salt water mist for 500 hours in mated condition. |
| 10. Water pressure resistance | No water intrusion into connector inside | Left submerged in water at the depth of 1 m, for 0.5 hours, in the mated condition. |

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Materials

Plug

| Item | Materials | Finish | Remarks |
|----------------|-------------------------|---|---------|
| Outer shell | Aluminum alloy | Chrome plating, with nickel under plating | _____ |
| Insulator | PBT resin (black) | _____ | UL94V-0 |
| Female Contact | Phosphor bronze | Gold plating | _____ |
| O-ring, gasket | Silicone rubber (black) | _____ | _____ |

Jack

| Item | Materials | Finish | Remarks |
|----------------|-------------------------|---|---------|
| Outer shell | Aluminum alloy | Chrome plating, with nickel under plating | _____ |
| Insulator | PBT resin (black) | _____ | UL94V-0 |
| Male Contact | Brass | Gold plating | _____ |
| O-ring, gasket | Silicone rubber (black) | _____ | _____ |

Product Number Structure

Refer to this page when determining product specifications by model types. Please place orders with part numbers listed in this catalog. The characteristics and specifications of the product described in this catalog are reference values. Please make sure to check the latest delivery specifications at the time of product use.

Plug

HR43 - 21 W B P - 3 SC

① ② ③ ④ ⑤ ⑥ ⑦

| | |
|---|--|
| ① Type name: HR43 series | ⑤ Shell type P: Plug |
| ② Shell size: Diameter (mm) of the mating interface of the plug | ⑥ Number of contacts |
| ③ Specialty W: Waterproof type | ⑦ Contact shape SC: For crimp wiring female contact |
| ④ Lock mechanism B: Bayonet lock | |

Jack

HR43 - 21 W B J - 3 PC

① ② ③ ④ ⑤ ⑥ ⑦

| | |
|---|--|
| ① Type name: HR43 series | ⑤ Shell type J: Jack |
| ② Shell size: Diameter (mm) of the mating interface of the plug | ⑥ Number of contacts |
| ③ Specialty W: Waterproof type | ⑦ Contact shape PC: For crimp wiring female contact |
| ④ Lock mechanism B: Bayonet lock | |

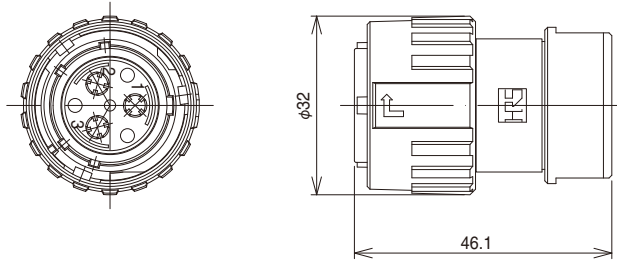
Crimp Contact

HR43 - SC - 1 1 1

① ② ③ ④ ⑤

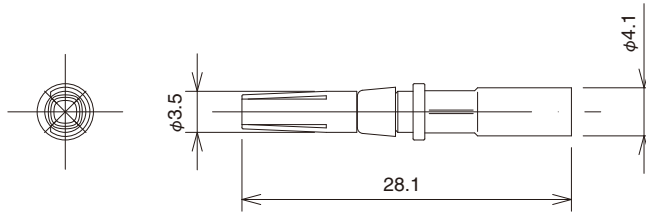
| | |
|--|---|
| ① Type name: HR43 series | ④ Type of applicable cable 1: For wires of 2 mm ² conductor cross section In applications when the dimensions or type of cables are different, they should be identified by numbers like 1, 2, 3, etc. |
| ② Contact type SC: Female contact, PC: Male contact | ⑤ Plating type 1: Gold plating |
| ③ Contact shape 1: Discrete contact | |

■ Plug



| Part No. | HRS No. | No. of Contacts | Applicable Cable |
|----------------|------------|-----------------|---|
| HR43-21WBP-3SC | 143-0001-0 | 3 | Insulator outer dia. maximum of $\phi 3.5$ mm |

■ Female Contact

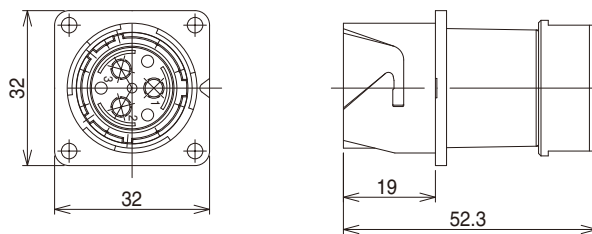


| Part No. | HRS No. | Applicable Cable |
|-------------|------------|--|
| HR43-SC-111 | 143-0003-5 | Conductor cross section 1.6 to 2.6 mm ² Conductor outer dia. maximum of $\phi 2$ mm Insulator outer dia. maximum of $\phi 3.5$ mm |

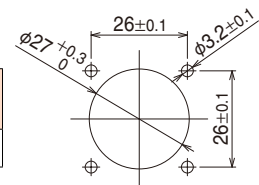
Female contacts are sold in a 3 piece pack.

(Note) Waterproof characteristics may vary due to the cable structure. Please check the cable specifications before use.

■ Jack

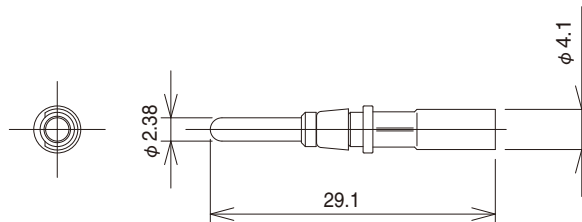
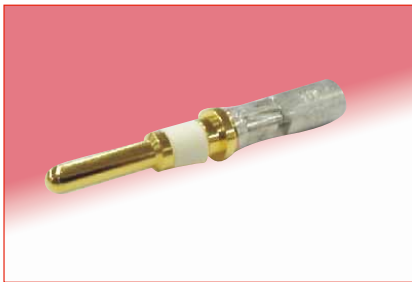


Panel mounting dimensions



| Part No. | HRS No. | No. of Contacts | Applicable Cable |
|----------------|------------|-----------------|---|
| HR43-21WBJ-3PC | 143-0002-2 | 3 | Insulator outer dia. maximum of $\phi 3.5$ mm |

■ Male Contact



| Part No. | HRS No. | Applicable Cable |
|-------------|------------|--|
| HR43-PC-111 | 143-0004-8 | Conductor cross section 1.6 to 2.6 mm ² Conductor outer dia. maximum of $\phi 2$ mm Insulator outer dia. maximum of $\phi 3.5$ mm |

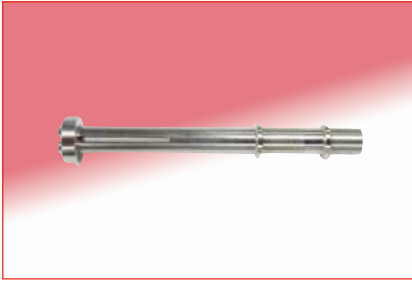
Male contacts are sold in a 3 piece pack.

(Note) Waterproof characteristics may vary due to the cable structure. Please check the cable specifications before use.

◆ Tools

● Contact extraction tool

When contacts need to be extracted from the connector, please use the dedicated extraction tool.



| Part No. | HRS No. |
|----------|------------|
| HR43-TP | 150-0257-1 |

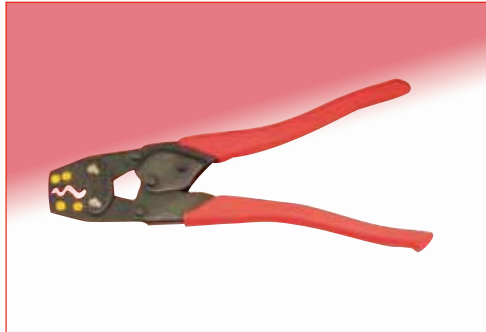
● Contact crimp tool

Only use crimp tools that are JIS C 9711 compliant.

The following manufacturers offer compliant crimp tools. Please consult them separately for their tool specifications.

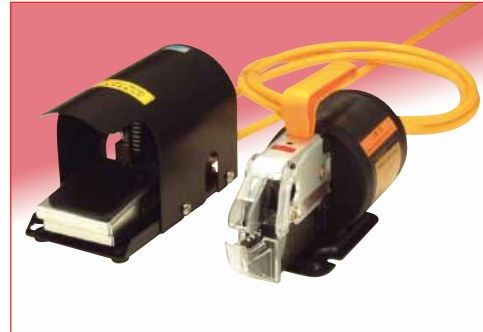
◇ Manual Crimp Tools

| Tool Maker | Product Number |
|------------------------------|----------------|
| HOZAN TOOL INDUSTRIAL CO.LTD | P-75 |
| LOBTEX CO.,LTD. | AK15A |



◇ Pneumatic Crimp Tools

| Tool Maker | Product Number |
|------------------------|---------------------------|
| Izumi Products Company | AC-5N.D Dies No.1 Head |



◆ Usage Precautions

1. Prior to insertion or extraction, make sure that the power is off.
2. Before mating the connector, make sure the plug and jack are aligned. If they are not aligned, make the proper adjustments to ensure the correct insertion.
3. Using the recommended cables will ensure a waterproof connection and keep the cable clamp secure. Performance may vary according to the cable structure. Please check the specifications before putting the cable into use.
4. Please contact your local Hirose Sales Representative for instructions on assembly procedures or any questions regarding this series.



HIROSE ELECTRIC CO.,LTD.

2-6-3,Nakagawa Chuoh,Tsuzuki-Ku,Yokohama-Shi 224-8540,JAPAN
 TEL: +81-45-620-3526 Fax: +81-45-591-3726
<http://www.hirose.com>
<http://www.hirose-connectors.com>