

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

## HR43 Series

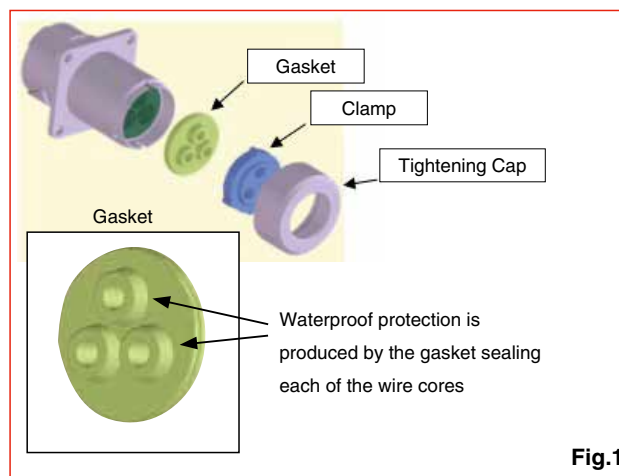
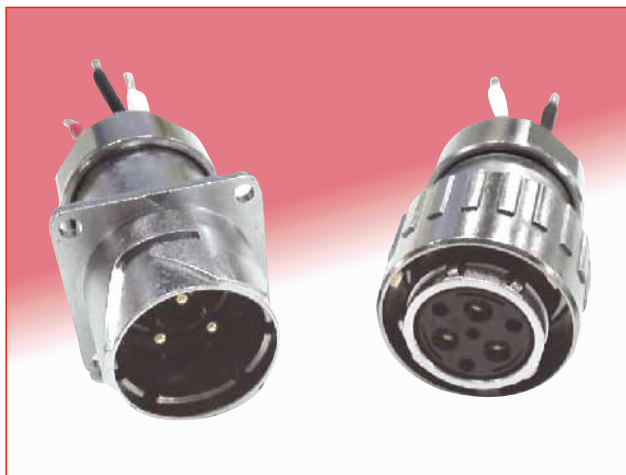


Fig.1

### ■ 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 <sup>2</sup> ) <sup>2</sup> /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 <sup>2</sup> , 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.

## 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	

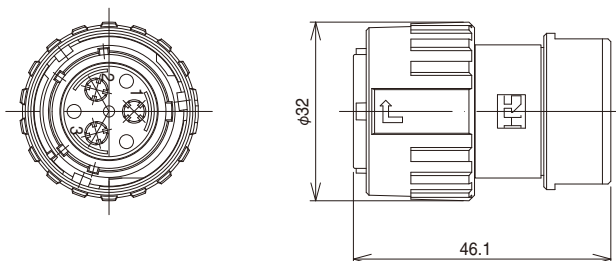
### ● Crimp Contact

**HR43 - SC - 1 1 1**

① ② ③ ④ ⑤

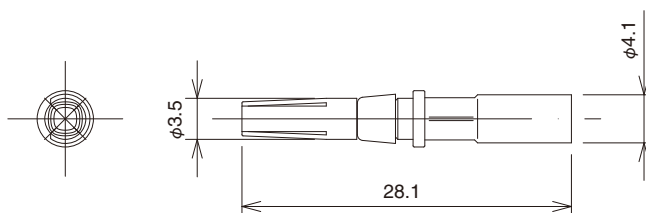
① Type name: HR43 series	④ Type of applicable cable 1: For wires of 2 mm <sup>2</sup> conductor cross section In applications when the dimensions or type of cables are different, they should be identified by numbers like 1, 2, 3, etc.
② Contact type SC: Female contact, PC: Male contact	⑤ Plating type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

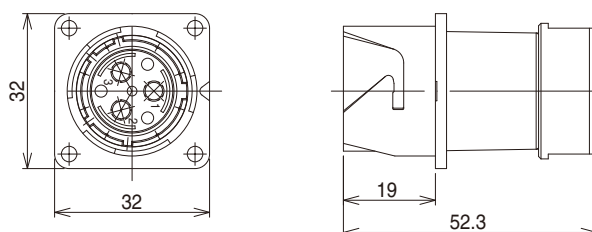


Part No.	HRS No.	Applicable Cable	
HR43-SC-111	143-0003-5	Conductor cross section	1.6 to 2.6 mm <sup>2</sup>
		Conductor outer dia.	maximum of $\phi 2$ mm
		Insulator outer dia.	maximum of $\phi 3.5$ mm

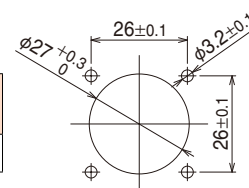
Female contacts are sold in a 3 piece pack.

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

## ■ Jack

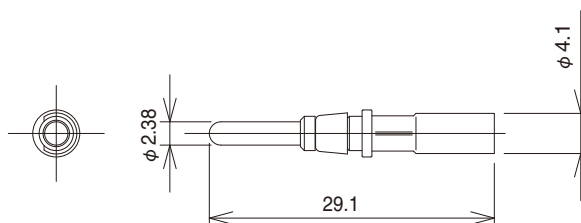
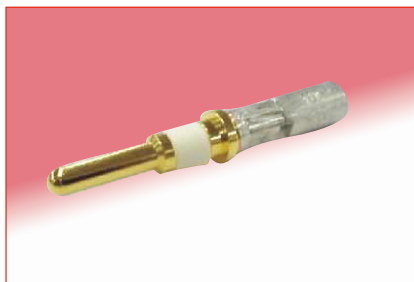


Panel mounting  
dimensions



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 <sup>2</sup>
		Conductor outer dia.	maximum of $\phi 2$ mm
		Insulator outer dia.	maximum of $\phi 3.5$ mm

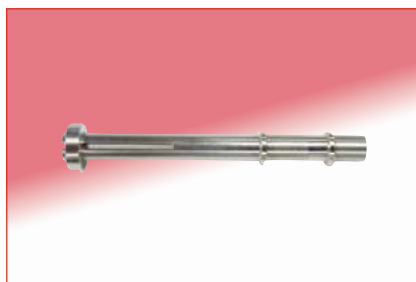
Male contacts are sold in a 3 piece pack.

(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

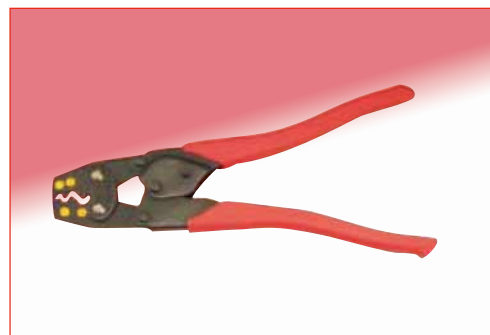
### ● Contact crimp tool

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.

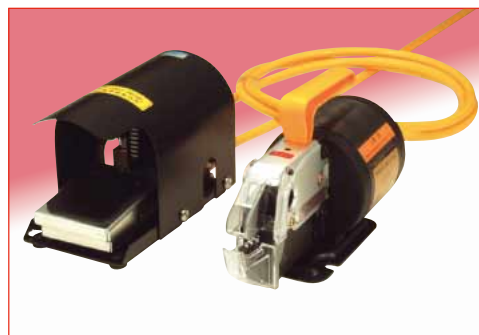
#### ◆ Manual Crimp Tools

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.



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