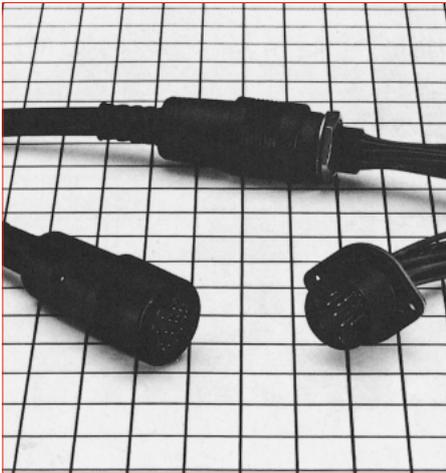


Plastic Push-Pull Lock Connectors

RP13 Series



■ Features

1. Superior mating operability

- A secure mating condition is achieved by simply pushing the plug on to the receptacle; Pull back on the locking sleeve to easily un-mate the connector.
- Index marks are provided on the plug for easy mating alignment.
- Our proprietary guide keys aid with making a correct mating orientation in blind or low light conditions.

2. Light weight and robust design

The strong outer shell is made of glass-reinforced polycarbonate resin, producing light but durable connectors.

3. Available in an anti-static version

The metal plates in the receptacle protect the signal lines from static electricity.

4. Variation

| Items | |
|-----------------------------|--|
| Number of contacts | 13, 20 |
| Connector type | Plug and jack: Straight, Receptacle: Straight, right angle |
| Plug termination type | Crimp |
| Receptacle termination type | Crimp, PCB dip |
| Receptacle mounting style | Flange, jam nut |

■ Product Specifications

| Ratings | Rated current | Standard type : 2A (when using a wire of at least 24 AWG) Anti-static type : 2A (when using a wire of at least 22 AWG) | Operating temperature range | -10 to +60°C |
|---------|---------------|---|-----------------------------|--------------|
| | Rated voltage | For 13 contact positions : AC 100V, DC 140V 20 contacts : AC 100V, DC 140V or AC 30V, DC 42V | Storage temperature range | -10 to +60°C |

| Items | Specifications | Conditions |
|--------------------------|--|--|
| 1. Contact resistance | For 13 contact positions : 15mΩ max. 20 contacts : 30mΩ max. | Measured at DC 1A |
| 2. Insulation resistance | 1,000MΩ min. | Measured at DC 250V |
| 3. Withstanding voltage | No flashover or dielectric breakdown. | AC 300V for 1 minute |
| 4. Vibration resistance | No electrical discontinuity for 10μs or greater. | 10 to 55Hz/cycle, amplitude : 0.75mm, 3 axis directions, 2 hours each |
| 5. Shock resistance | No electrical discontinuity for 10μs or greater. | Acceleration : 490m/s ² , duration : 11ms, 3 axis directions, 3 cycles each |
| 6. Mating cycles | Contact resistance : For 13 contact positions : 20mΩ max. For 20 contact positions : 45mΩ max. | 1,000 times |
| 7. Temperature cycle | Insulation resistance : 100MΩ min. | -55°C : 30 minutes → Normal temperature : 10 to 15 minutes → 85°C : 30 minutes → Normal temperature : 10 to 15 minutes, leave total 5 cycles |
| 8. Moisture resistance | Insulation resistance : 10MΩ min. (at high humidity) 100MΩ min. (when dry) | Temperature : 40°C, relative humidity : 90 to 95%, leave 96 hours |

■ Materials / Finish

| Items | Material | Finish | |
|---------------|---------------------|----------------------|------------------------------|
| Plug | Exterior, insulator | Polycarbonate resin | |
| | Clamp | Brass | |
| | Bushing | Vinyl chloride resin | |
| Receptacle | Exterior, insulator | Polycarbonate resin | |
| | | PBT resin | |
| | | Steel | Nickel plating |
| | Female contact | Phosphor bronze | Silver plating |
| | Male contact | Brass | |
| Crimp contact | Female contact | Phosphor bronze | Silver plating, gold plating |
| Crimp contact | Male contact | | |

■ Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

● Plug

RP13A - 12 P A - 13 S C (01)

①
②
③
④
⑤
⑥
⑦
⑧

| | |
|---|---|
| <p>① Model name : RP13A Series</p> | <p>⑥ Contact form S : Female contact P : Male contact</p> |
| <p>② Shell size : The shell size is the outer diameter of the mating end of the plug.</p> | <p>⑦ Contact termination type: A : Straight, PCB dip B : Right-angle, PCB dip C : Contact termination by crimping</p> |
| <p>③ Shell type P : Straight plug R : Receptacle J : Jack</p> | <p>⑧ Other specifications : A two-digit character is added to indicate other specifications as needed.</p> |
| <p>④ Shell variation : Connectors are distinguished by A, B, or C if a variation is made within the series.</p> | |
| <p>⑤ Number of contacts</p> | |

● Crimp contact

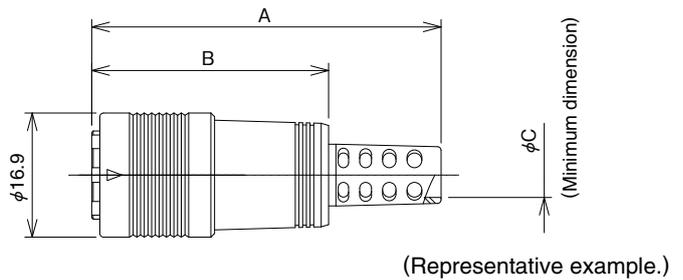
RP13A - SC - 2 1 1

①
⑨
⑩
⑪
⑫

| | |
|--|--|
| <p>① Model name : Indicates the series name. RP13, RP13A, RP19</p> | <p>⑪ Barrel form : RP13, RP13A 1 : For 18 to 22 AWG 2 : For 24 to 28 AWG RP19 For 24 to 30 AWG</p> |
| <p>⑨ Contact type : SC : Socket type crimp contact (female) PC : Pin type crimp contact (male)</p> | <p>⑫ Identification of plating : 1 : Gold plating 2 : Silver plating</p> |
| <p>⑩ Contact form : 1 : Loose piece contacts 2 : Reel contacts</p> | |

■ Standard type

● Standard plug

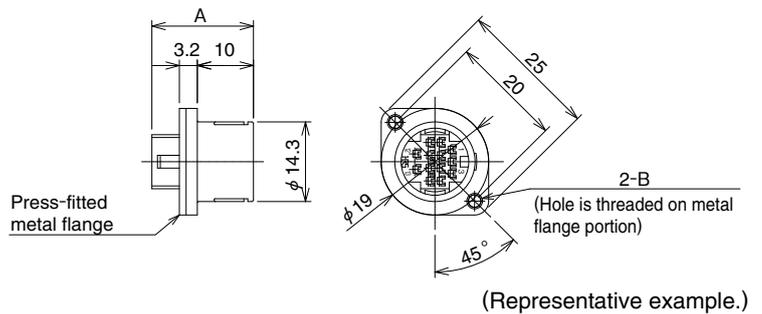


| Part No. | HRS No. | No. of contacts | A | B | φC | Weight | Part No. | HRS No. | No. of contacts | A | B | φC | Weight | | |
|---------------------|---------------|-----------------|------|-----|-----|--------|---------------------|---------------------|-----------------|---------------|----|-----|--------|-----|--|
| RP13A-12PA-13SC(71) | 113-0182-4 71 | 13 | 47.2 | 32 | 6.1 | 6.0g | RP13A-12PD-20SC(71) | 113-0214-9 71 | 20 | 52.2 | 37 | 6.1 | 6.0g | | |
| RP13A-12PB-13SC(31) | 113-0184-0 31 | | | | 5.7 | | | RP13A-12PG-20SC(71) | | 113-0210-8 71 | | | | 7.5 | |
| RP13A-12PD-13SC(71) | 113-0186-5 71 | | 52.2 | 37 | 6.1 | | 47.2 | 32 | | 6.4 | | | | | |
| RP13A-12PE-13SC(71) | 113-0201-7 71 | | 47.2 | 32 | 6.4 | | 52.2 | 37 | | 7.1 | | | | | |
| RP13A-12PK-13SC(71) | 113-1006-7 71 | | | | 7.1 | | | | | 8.1 | | | | | |
| RP13A-12PS-13SC(71) | 113-1026-4 71 | 52.2 | 37 | 8.1 | | | | | | | | | | | |

(Note) Cable clamping, cable rotation, and other forces may vary with the cable construction. Please make sure that your cable is suitable for use with these connectors before usage and production.

● Receptacle (Flange type)

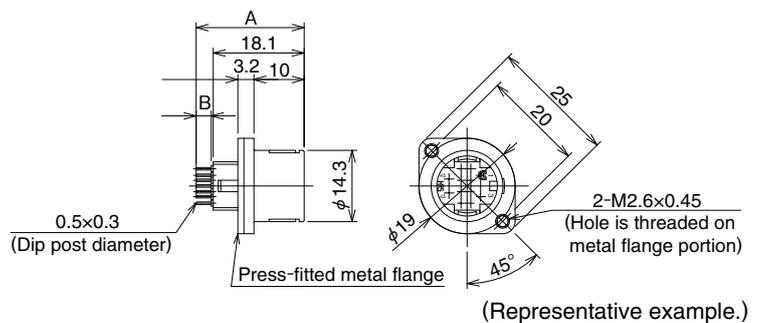
(Crimp type)



| Part No. | HRS No. | No. of contacts | A | B | Weight |
|---------------------|---------------|-----------------|------|-----------|--------|
| RP13A-12RA-13PC(71) | 113-0183-7 71 | 13 | 18.1 | M2.6×0.45 | 4.0g |
| RP13A-12RA-20PC(71) | 113-0215-1 71 | 20 | 16 | | |

(Remarks) See page 5 for details on mounting hole dimensions.

(Dip type)

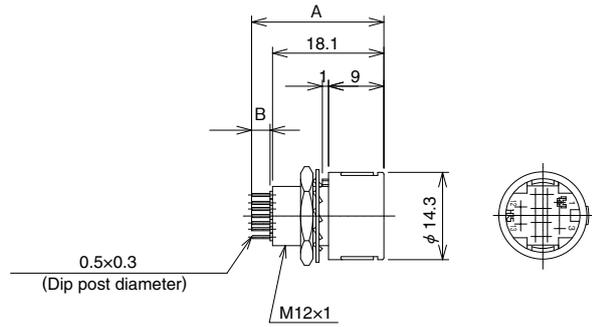


| Part No. | HRS No. | No. of contacts | A | B | Weight |
|---------------------|---------------|-----------------|------|---|--------|
| RP13A-12RA-13PA(71) | 113-0202-0 71 | 13 | 21.5 | 3 | 5.0g |

(Remarks) See page 5 for details on mounting dimensions and page 7 for details on dip post arrangement sizes.

● Receptacle (Jam nut to be fastened)

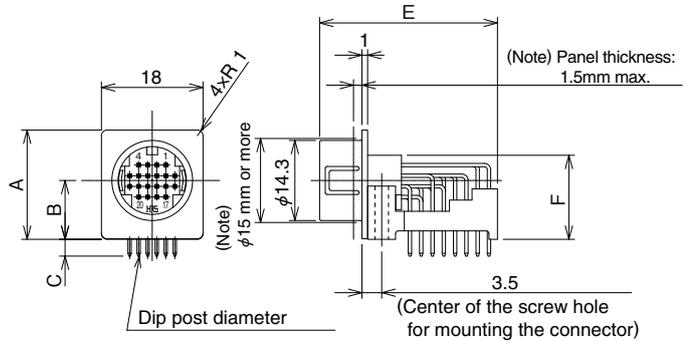
(Dip type)



| Part No. | HRS No. | A | B | No. of contacts | Weight |
|---------------------|---------------|------|---|-----------------|--------|
| RP13A-12RB-13PA(71) | 113-0203-2 71 | 21.5 | 3 | 13 | 3.5g |

(Remarks) See page 5 for details on mounting hole dimensions and page 7 for details on dip post arrangement sizes.

● Right-angle, dip type

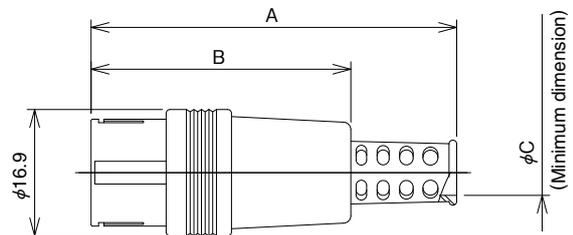


(Note) The mounting panel thickness should be 1.5mm or less. Mounting hole should be φ15 mm or more.

| Part No. | HRS No. | No. of contacts | A | B | C | φD | E | F | Weight |
|-----------------|------------|-----------------|------|------|-----|------|------|----|--------|
| RP13A-12RC-13PB | 113-1020-8 | 13 | 17.5 | 8.5 | 3.5 | 0.64 | 23.5 | 13 | 4.0g |
| RP13A-12RC-20PB | 113-0211-0 | 20 | 19.5 | 10.5 | 3 | 0.6 | 31.5 | 15 | 5.0g |

(Remarks) See page 7 for details on dip post arrangement sizes.

● Jack



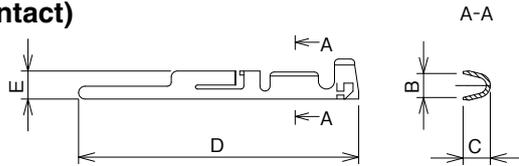
(Representative example.)

| Part No. | HRS No. | No. of contacts | A | B | φC | Weight |
|---------------------|---------------|-----------------|------|------|-----|--------|
| RP13A-12J-13PC(71) | 113-0166-8 71 | 13 | 49.1 | 34.6 | 6.1 | 4.5g |
| RP13A-12JG-20PC(71) | 113-1004-1 71 | 20 | 52.6 | 37.4 | 7.4 | |

(Note) Cable clamping, cable rotation, and other forces may vary with the cable construction. Please make sure that your cable is suitable for use with these connectors before usage and production.

◆ **Contact**

(Male contact)



(Representative example.)

For 13 contact positions

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|----------------------|-----|------|------|-----|----------------------|
| Loose piece contacts | RP13-PC-122 | 113-0179-0 | Silver plating | 1.2 | 1.35 | 13.9 | 1.4 | 24 to 28 AWG |
| Reel contacts | RP13-PC-221 | 113-0360-0 | Partial gold plating | | | | | |
| | RP13-PC-222 | 113-0141-7 | Silver plating | | | | | |

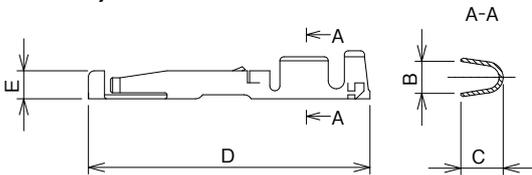
13 contact position for super-thick wires (available for contact position numbers 12 and 13 only)

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|----------------|-----|-----|------|-----|----------------------|
| Loose piece contacts | RP13-PC-112 | 113-0178-7 | Silver plating | 1.6 | 2.1 | 13.9 | 1.4 | 18 to 22 AWG |
| Reel contacts | RP13-PC-212 | 113-0140-4 | | | | | | |

For 20 contact positions

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|----------------|-----|------|----|------|----------------------|
| Loose piece contacts | RP19-PC-122 | 113-0268-8 | Silver plating | 1.2 | 1.35 | 12 | 1.18 | 24 to 30 AWG |
| Reel contacts | RP19-PC-222 | 113-0264-7 | | | | | | |

(Female contact)



(The form shown above represents an example.)

For 13 contact positions

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|--------------|------------|----------------------|-----|------|------|-----|----------------------|
| Loose piece contacts | RP13A-SC-121 | 113-0363-9 | Partial gold plating | 1.2 | 1.35 | 13.9 | 1.4 | 24 to 28 AWG |
| | RP13A-SC-122 | 113-0181-1 | Silver plating | | | | | |
| Reel contacts | RP13A-SC-221 | 113-0362-6 | Partial gold plating | | | | | |
| | RP13A-SC-222 | 113-0151-0 | Silver plating | | | | | |

13 contact position for super-thick wires (available for contact position numbers 12 and 13 only)

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|--------------|------------|----------------|-----|-----|------|-----|----------------------|
| Loose piece contacts | RP13A-SC-112 | 113-0180-9 | Silver plating | 1.6 | 2.1 | 13.9 | 1.4 | 18 to 22 AWG |
| Reel contacts | RP13A-SC-212 | 113-0150-8 | | | | | | |

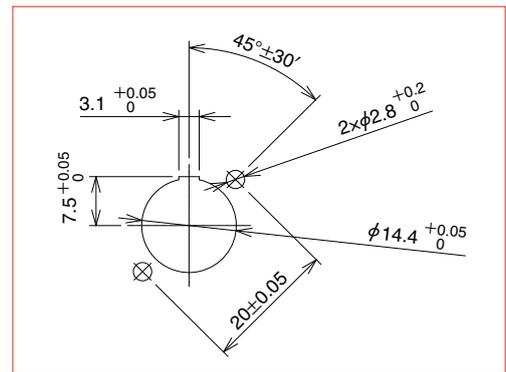
For 20 contact positions

| Type | Part No. | HRS No. | Plating | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|----------------|-----|------|----|------|----------------------|
| Loose piece contacts | RP19-SC-122 | 113-0270-0 | Silver plating | 1.2 | 1.35 | 11 | 1.18 | 24 to 30 AWG |
| Reel contacts | RP19-SC-222 | 113-0266-2 | | | | | | |

(Note 1) Use connectors with gold-plated contacts if the connectors will be subjected to constant vibration.

(Note 2) Loose piece contacts are available in 100 piece packs. Reel contacts are available as 10,000 piece reels.

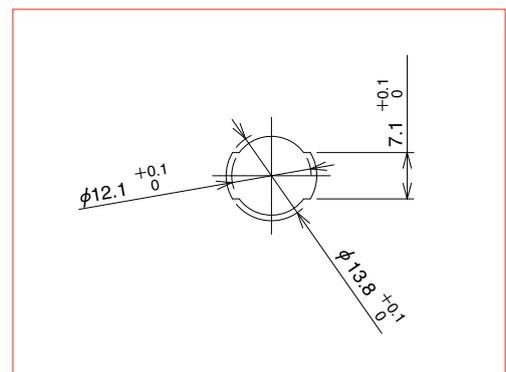
◆ **Panel mounting hole dimensions**



(Flange type)

● **Applicable connector**

| Part No. | HRS No. |
|---------------------|---------------|
| RP13A-12RA-13PC(71) | 113-0183-7 71 |
| RP13A-12RA-13PA(71) | 113-0202-0 71 |
| RP13A-12RA-20PC(71) | 113-0215-1 71 |



(Jam nut to be tightened)

● **Applicable connector**

| Part No. | HRS No. |
|---------------------|---------------|
| RP13A-12RB-13PA(71) | 113-0203-2 71 |

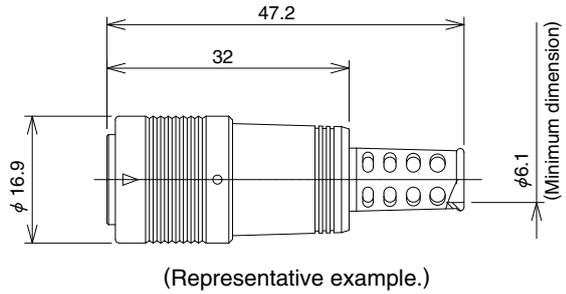
(Note 1) Above figures show the arrangement viewed from the panel surface. The mating guide of flange type is located on the top position.

(Note 2) The applicable panel thickness for the flange type receptacle is 2.7mm max., since this type is mounted from the back surface of the panel.

(Note 3) The applicable panel thickness for a hex nut fastening type is 5mm max. and 1mm min.

■ RP13A anti-static type

● Plug

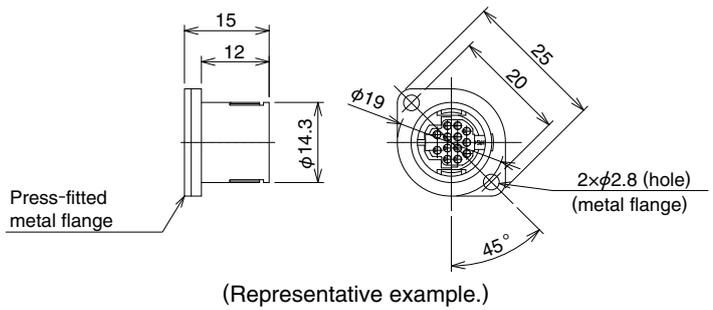


| Part No. | HRS No. | No. of contacts | Weight |
|---------------------|---------------|-----------------|--------|
| RP13A-12PA-13PC(71) | 113-4003-5 71 | 13 | 6.0g |

(Note) Cable clamping, cable rotation, and other forces may vary with the cable construction. Please make sure that your cable is suitable for use with these connectors before usage and production.

● Receptacle (flange type)

(Crimp type)

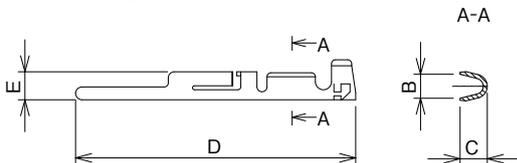


| Part No. | HRS No. | No. of contacts | Weight |
|--------------------|---------------|-----------------|--------|
| RP13A-12R-13SC(71) | 113-4002-2 71 | 13 | 4.0g |

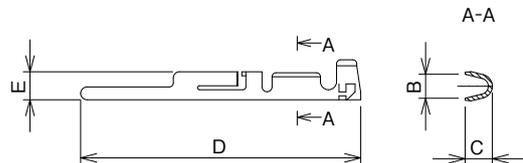
(Remarks) See page 7 for details on mounting hole dimensions.

◆ Contact

(Male contact)



(Female contact)

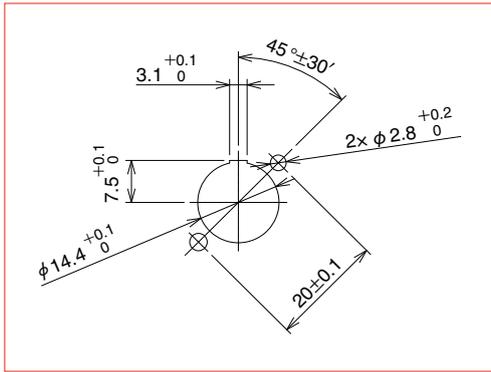


| Type | Part No. | HRS No. | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|-----|------|----|------|----------------------|
| Loose piece contacts | RP19-PC-122 | 113-0268-8 | 1.2 | 1.35 | 12 | 1.18 | 24 to 30 AWG |
| Reel contacts | RP19-PC-222 | 113-0264-7 | | | | | |

| Type | Part No. | HRS No. | B | C | D | E | Applicable wire size |
|----------------------|-------------|------------|-----|------|----|------|----------------------|
| Loose piece contacts | RP19-SC-122 | 113-0270-0 | 1.2 | 1.35 | 11 | 1.18 | 24 to 30 AWG |
| Reel contacts | RP19-SC-222 | 113-0266-2 | 1.2 | 1.35 | | | |

(Note) Loose piece contacts are available in 100 piece packs. Reel contacts are available as 10,000 piece reels.

◆ Panel mounting hole dimensions (for anti-static type)



(Flange type)

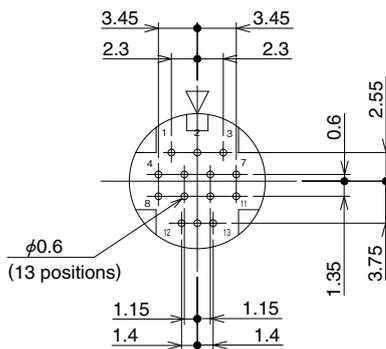
(Note 1) Above figures show the arrangement viewed from the panel surface. The mating guide of flange type is located on top the position.

(Note 2) The applicable panel thickness for a flange type receptacle is maximum 4.7mm, as this type is mounted from the back surface of the panel.

◆ Dip post arrangement sizes for receptacles

● Straight dip type

13 contacts

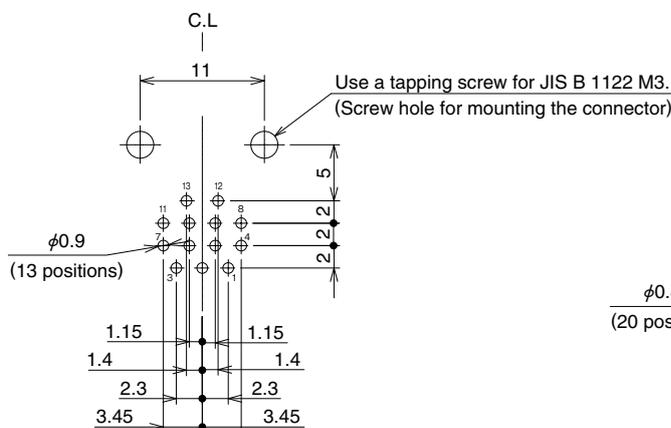


(Remarks) 1. The figure shown above for 13 contact positions is viewed from the receptacle mating end.

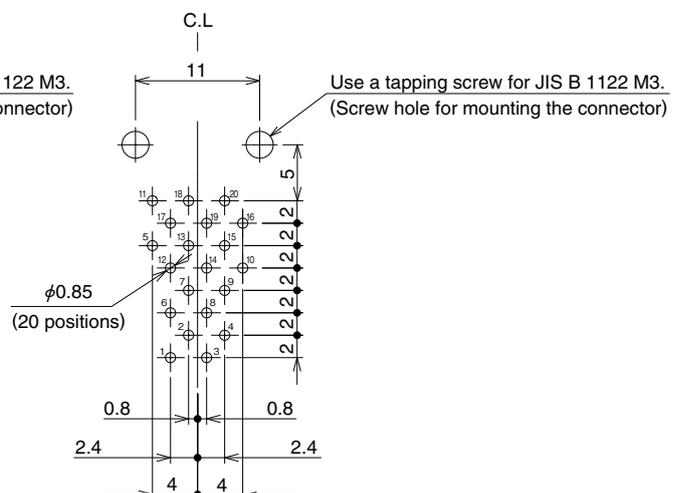
2. A machining tolerance of ± 0.05 is recommended for the PCB layout dimensions.

● Right-angle, dip type

13 contacts



20 contacts

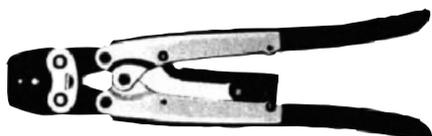


(Remarks) 1. The figures shown above are viewed from the contact insertion end.

2. A machining tolerance of ± 0.05 mm is recommended for the PCB layout dimensions.

◆ Applicable tools

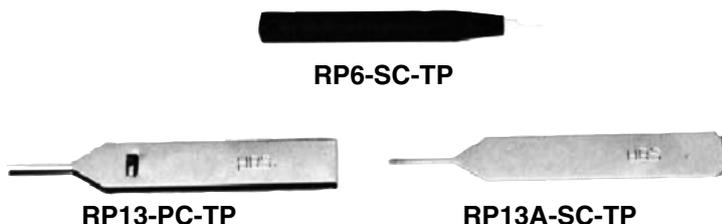
| Type | Items | Part No. | HRS No. | Applicable contact | Applicable wire size and applicable cable diameter |
|---------------------|--------------------------|--------------|------------|---------------------------------------|--|
| Manual | Manual crimping tool | RP13-TC-11 | 150-0024-3 | RP13-PC-112 | 18 to 22 AWG |
| | | RP13-TC-12 | 150-0025-6 | RP13-PC-121, 122 | 24 to 28 AWG |
| | | RP13A-TC-11 | 150-0026-9 | RP13A-SC-112 | 18 to 22 AWG |
| | | RP13A-TC-12 | 150-0027-1 | RP13A-SC-121, 122 | 24 to 28 AWG |
| | | RP19-TC-12 | 150-0049-4 | RP19-PC-122 RP19-SC-122 | 24 to 28 AWG |
| Auto | Automatic crimping press | CM-105C | 901-0001-0 | ————— | ————— |
| | Applicator | AP105-RP13-2 | 901-2024-0 | RP13-PC-221, 222 RP13A-SC-221, 222 | 24 to 28 AWG |
| | | AP105-RP19-2 | 901-2014-6 | RP19-PC-222 RP19-SC-222 | 24 to 28 AWG |
| Cable crimping tool | | RP13A-TC-01 | 150-0070-0 | ————— | $\phi 4.6 \sim \phi 5.8$ $\phi 7 \sim \phi 7.5$ |
| | | RP13A-TC-02 | 150-0071-3 | ————— | $\phi 6.3, \phi 7.8$ |
| Extraction tool | | RP13-PC-TP | 150-0021-5 | Male contact | ————— |
| | | RP13A-SC-TP | 150-0022-8 | Female contact | ————— |
| | | RP6-SC-TP | 150-0039-0 | Male/female contact for RP19 | ————— |



RP13A-TC-02
Cable crimping tool
(handle shape is shown as an example.)



RP13-TC-11
Manual crimping tool



Extraction tools

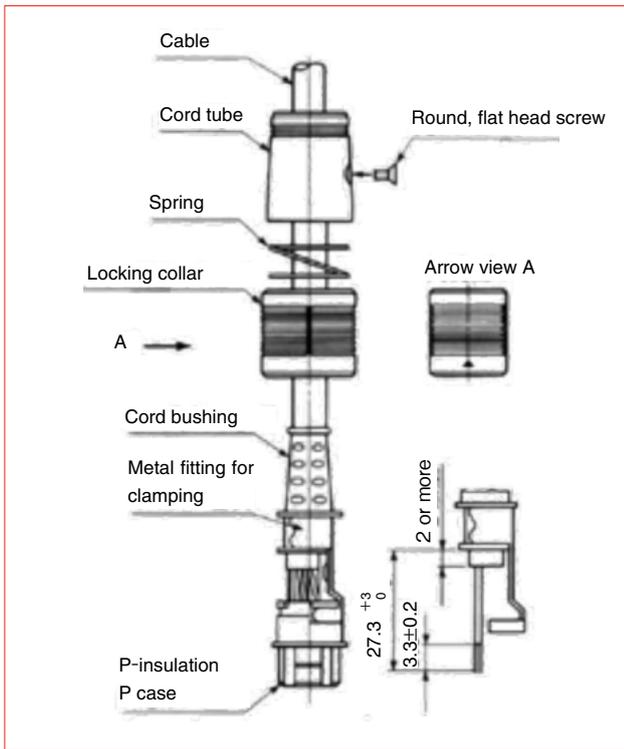


Automatic crimping press (Type CM-105C)

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◆ Termination/assembly procedure

● Plug



○ Assembly procedure

1. First, pass the terminated cable through the cord tube in the following order: spring, connection sleeve, and cord bushing, and then crimp and terminate the contacts.
2. Assemble the crimped and terminated contacts to the contact holes of the P-insulation P case. At this time, please make sure that the crimped contacts are securely engaged onto the contact holes of the P-insulation P case by lightly pulling the cable.
3. Attach the metal fitting by clamping to it the cord bushing and assemble these into the P-insulation P case. Then crimp the metal fitting by clamping it with the applicable tool.
4. Next, attach in the following order to the P-insulation P case: connection sleeve, spring, and cord. Then align the screw hole of the cord tube and that of the metal fitting for clamping, and tighten the round flat screw to the specified torque of 0.15 to 0.2N·m.
In addition, in order to prevent loosening of the screw, please apply Locktight 243 manufactured by Henkel Japan Ltd., Tokyo or equivalent.
5. After the assembly procedure described above has been completed, test the parts to make sure that the locking collar moves correctly.

◆ Contact Arrangement

(Standard type)

| | | |
|---------------------|----|----|
| Contact arrangement | | |
| No. of contacts | 13 | 20 |

(Anti-static type)

| | |
|---------------------|----|
| Contact arrangement | |
| No. of contacts | 13 |

(Remarks) 1. The figures shown above are viewed from the receptacle and jack mating end (plug connection end).

◆ Precautions

This product series uses silver plated contacts. Silver reacts easily to exposure to sulfur gas so the below conditions may cause tarnishing.

- Dusty environments
- Area with a high concentration area of gases such as sulfur dioxide gas, hydrogen sulfide gas, nitrogen dioxide gas and so on.
Example; In close proximity to factory exhaust, automotive emissions, etc.
- Close to heaters, or in other areas marked by extreme temperature differences or high humidity.
- Close to rubber products includes rubber adhesives.

The Electrical connection is not affected by tarnishing on a silver surface due to the wiping effect of the contact pins.

Storage

Packing state; Packed in original packing or equivalent container

Temperature -10 to +60°C

Humidity 85% Max

(It is recommended that the product be stored in an area of normal level of temperature and humidity, and free of any temperature fluctuation)

Please use this products within 6 months of delivery.

(After 6 month, please check the solderability before use)

“Storage” means long-term storage of the unused products in sealed packaging, prior to assembly to PCB.

Please note that the white label on the connector may come off due to solvents such as alcohol.

