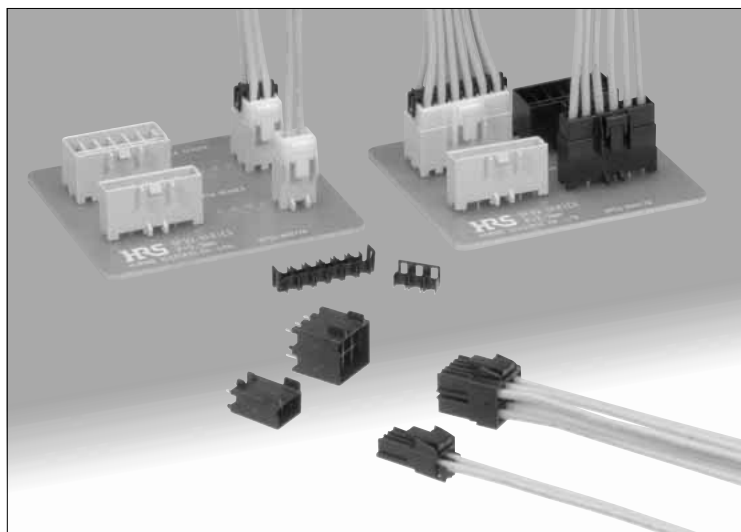
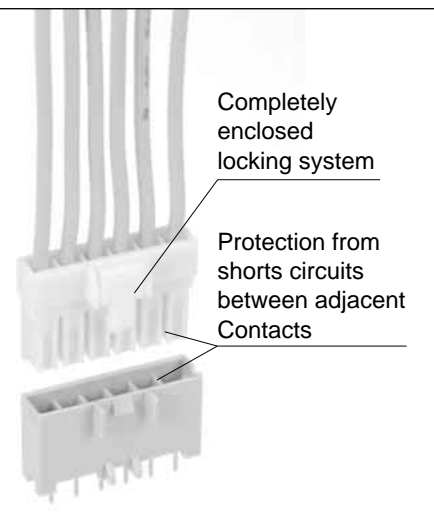


## 3.3 mm Contact Pitch, Connectors for Internal Power Supplies

### DF33 Series



#### Complete Locking Function



### ■Features

#### 1. 5 A maximum current

Single row connector can carry current of 5 A with #20 AWG conductor. Please refer to Table #1 for current ratings for multi-position connectors using other conductor sizes.

#### 2. Complete Locking Function

Reliable interior lock protects mated connectors from accidental disconnection.

#### 3. Prevention of Incorrect Connections

To prevent incorrect connection when using multiple connectors having the same Number of contacts, 3 product types having different mating configurations are available.

#### 4. Prevention of incorrect board placement

Built-in posts assure correct connector placement and orientation on the board.

#### 5. Supports encapsulation

Connectors can be encapsulated up to 10 mm without affecting the performance.

#### 6. Prevention of Short Circuits Between Adjacent Contacts

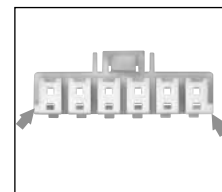
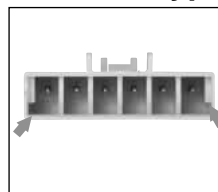
Each Contact is completely surrounded by the insulator housing electrically isolating it from adjacent contacts.

#### 7. Increased Retention Force of Crimped Contacts and confirmation of complete contact insertion

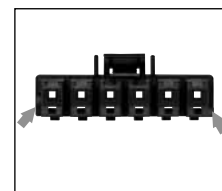
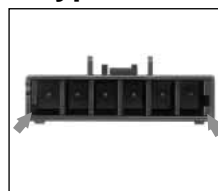
Separate contact retainers are provided for applications where extreme pull-out forces may be applied against the wire or when a visual confirmation of the full contact insertion is required.

#### Prevention of Incorrect Connections

##### ●Standard Type (Color: natural)



##### ●R Type (Color: black)



\*The photographs on the left show header (the board dip side), the photographs on the right show the socket (cable side).

\*The guide key position is indicated in position facing the mating surface of the header.

■Product Specifications

| Ratings | Current rating | Number of rows | Number of contacts | AWG20 | AWG22 | Operating temperature range | -35℃ to 85℃ (Note 1) |
|---------|----------------|----------------|--------------------|-------|-------|-----------------------------|----------------------|
|         |                | 1              | 2 to 6             | 5A    | 5A    | Operating humidity range    | 40% to 80%           |
|         |                | 2              | 4 to 12            | 5A    | 4A    | Storage temperature range   | -10℃ to 60℃ (Note 2) |
|         | Voltage rating | AC/DC 500V     |                    |       |       | Storage humidity range      | 40% to 70% (Note 2)  |

| Item  | Specification   | Condition  |
|---|---|--|
| 1. Contact resistance                       | Contact resistance(Initial value): 10 m ohms max.           | 20mV max., 1mA   |
| 2. Insulator resistance                     | 1000 M ohms min.  | 500 V DC   |
| 3. Withstanding voltage                     | No flashover or Insulator breakdown                         | 1500 V AC for 1 minute   |
| 4. Insertion-Extraction force (per contact) | 0.5N min., 4.5N max.  | Measured with a steel pin of 0.5 x 0.5 ± 0.002 thickness   |
| 5. Durability (mating/unmating)             | Contact resistance of 20 m ohms max.                        | 30 cycles  |
| 6. Vibration                                | No electrical discontinuity of 1 μs. min.                   | Frequency 10 to 55 Hz, single amplitude of 0.75 mm, 3 axis, duration of 2 hours                              |
| 7. Shock                                    | No electrical discontinuity of 1 μs. min.                   | Acceleration of 490 m/s², 11 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis.           |
| 8. Humidity                                 | Contact resistance 20 m ohms max.                           | Temperature 40℃ ± 2℃, 90% to 95% RH, 96 hours  |
| 9. Temperature cycle                        | Contact resistance of 20 m ohms max.                        | (-55℃: 30 minutes→+5 to 35℃: 5 minutes→85℃: 30 minutes→+5 to 35℃: 5 minutes) for 5 cycles                    |
| 10. Resistance to Soldering heat            | No deformation of the insulator parts affecting performance | Flow solder temperature 260℃, for 10 seconds<br>Manual soldering: Soldering iron temperature 320℃, 3 seconds |

Note 1: Includes temperature rise caused by the current flow.  
Note 2: The term "storage" refers to products stored for long period of time prior to mounting and use. Operating Temperature Range and Humidity range covers non- conducting condition of installed connectors in storage, shipment or during transportation.

■Materials

| Product        | Part      | Material                     | Finish                        | Remarks |
|----------------|-----------|------------------------------|-------------------------------|---------|
| Sockets        | Insulator | Polyamide                    | Color: Natural white (Note 1) | UL94V-0 |
| Crimp contacts | Contacts  | Copper alloy                 | Tin plated (Note 2)           | —       |
| Headers        | Insulator | Polyamide (Glass reinforced) | Color: Natural beige (Note 1) | UL94V-0 |
|                | Contacts  | Copper alloy                 | Tin plated (Note 2)           | —       |
| Retainer       | Insulator | PBT                          | Color: Black                  | UL94V-0 |

Note 1: Standard Color, colors of the differing coupling forms are black for DF33R.  
Note 2: Hirose Electric's plating incorporate anti-whisking compounds.  
Note 3: Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

■Ordering Information

●Socket, Header

●Contacts

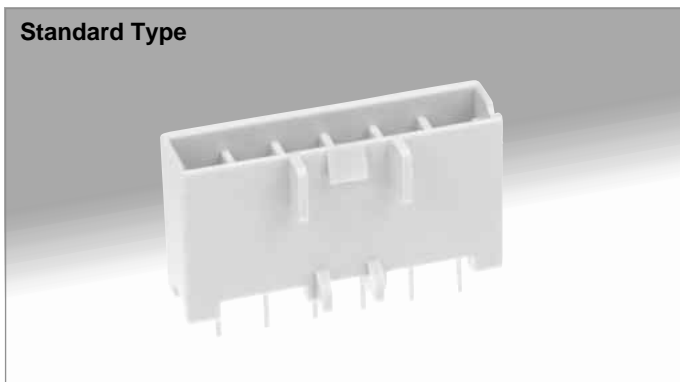
DF33 R - 2 S - 3.3 C  
① ② ③ ④ ⑤ ⑥

DF33A - 2022 SCF  
① ⑦ ⑧

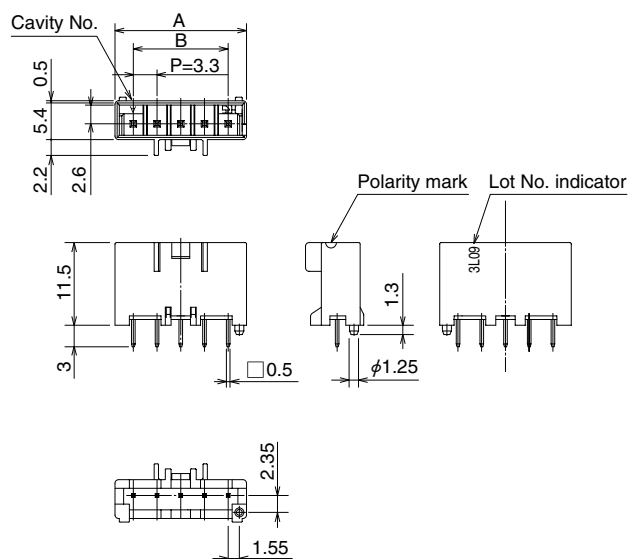
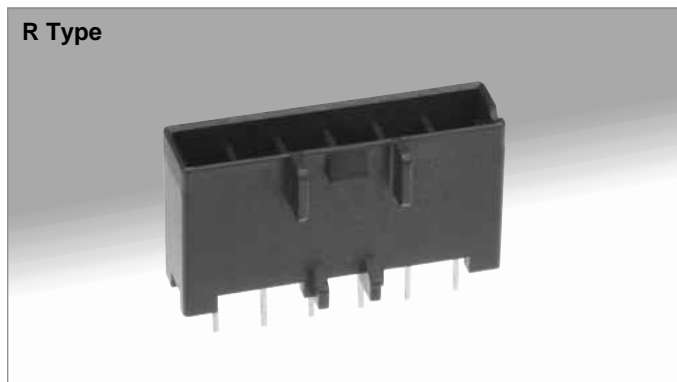
|  |   |   |
|--|---|---|
| ① Series name: DF33  | ④ Connector type<br>S : Single-row socket<br>DS : Double-row socket<br>P : Single-row header<br>DP : Double-row header<br>RS : Single-row retainer<br>RDS : Double-row retainer | ⑥ Type of housing<br>C : Crimp housing<br>DSA : Straight header           |
| ② Guide key type<br>Blank : Inside (Color: natural)<br>R : Right side (Color: black) |   | ⑦ Applicable conductor<br>2022 : AWG 20 to AWG 22                         |
| ③ Number of contacts : 2 to 6(Single row)<br>4 to 12(Double row)                     |   | ⑧ Packaging<br>SCF : Socket contacts / reel<br>SC : Socket contacts / bag |
|  |   | ⑤ Contact pitch : 3.3 mm  |

## Single row - Straight header

Standard Type



R Type



Order by number of tray Q'ty.

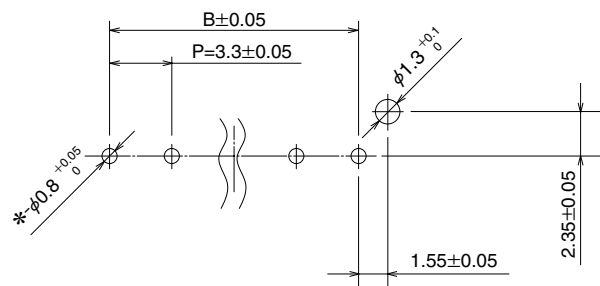
**Standard Type (Guide Key: Inside, Color: Natural Beige)**

| Pat number         | CL No.        | No. of contacts | A    | B    | Q'ty/tray |
|--------------------|---------------|-----------------|------|------|-----------|
| DF33-2P-3.3DSA(24) | 676-1016-4-24 | 2               | 8.4  | 3.3  | 135       |
| DF33-3P-3.3DSA(24) | 676-1017-7-24 | 3               | 11.7 | 6.6  | 95        |
| DF33-4P-3.3DSA(24) | 676-1018-0-24 | 4               | 15.0 | 9.9  | 75        |
| DF33-5P-3.3DSA(24) | 676-1019-2-24 | 5               | 18.3 | 13.2 | 60        |
| DF33-6P-3.3DSA(24) | 676-1020-1-24 | 6               | 21.6 | 16.5 | 50        |

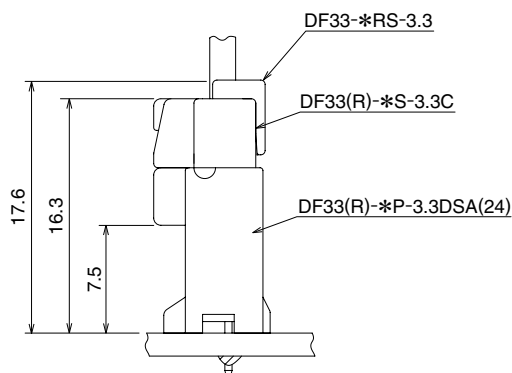
**R Type (Guide Key: Right Side, Color: Black)**

| Pat number          | CL No.        | No. of contacts | A    | B   | Q'ty/tray |
|---------------------|---------------|-----------------|------|-----|-----------|
| DF33R-2P-3.3DSA(24) | 676-1043-7-24 | 2               | 8.4  | 3.3 | 135       |
| DF33R-3P-3.3DSA(24) | 676-1044-0-24 | 3               | 11.7 | 6.6 | 95        |

## PCB mounting pattern (Board thickness: 1.6±0.1)



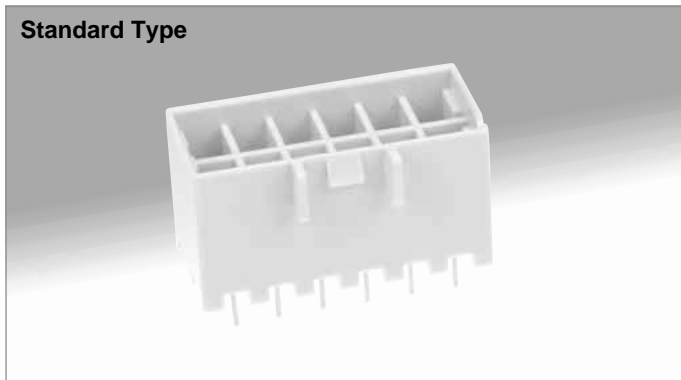
## Mating Dimensions



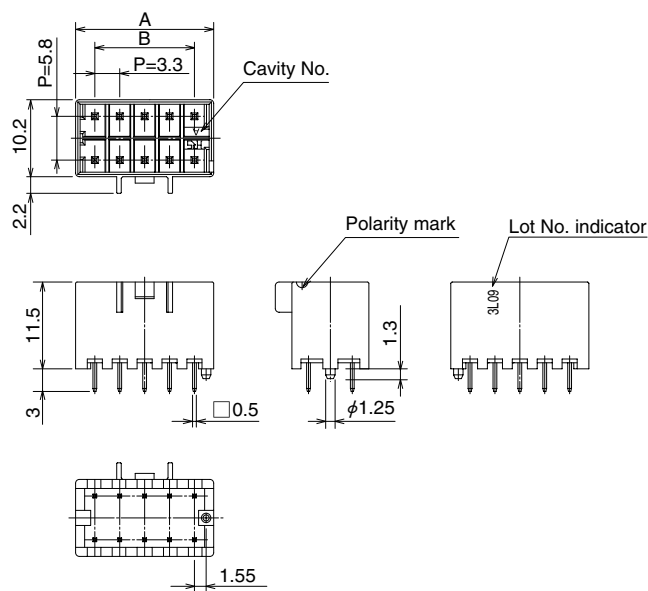
Note: Retainer is comment. Standard type and R type.

## ■Double row - Straight header

Standard Type



R Type



Order by number of tray Q'ty.

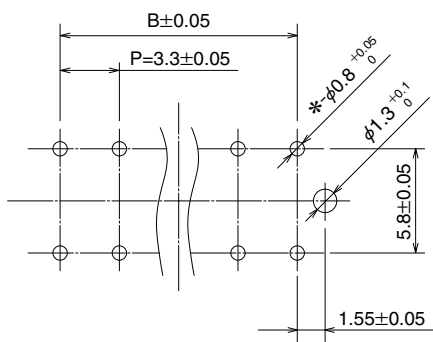
**Standard Type (Guide Key: Inside, Color: Natural Beige)**

| Pat number           | CL No.        | No. of contacts | A    | B    | Q'ty/tray |
|----------------------|---------------|-----------------|------|------|-----------|
| DF33-4DP-3.3DSA(24)  | 676-1001-7-24 | 4               | 8.4  | 3.3  | 135       |
| DF33-6DP-3.3DSA(24)  | 676-1002-0-24 | 6               | 11.7 | 6.6  | 95        |
| DF33-8DP-3.3DSA(24)  | 676-1003-2-24 | 8               | 15.0 | 9.9  | 75        |
| DF33-10DP-3.3DSA(24) | 676-1004-5-24 | 10              | 18.3 | 13.2 | 60        |
| DF33-12DP-3.3DSA(24) | 676-1005-8-24 | 12              | 21.6 | 16.5 | 50        |

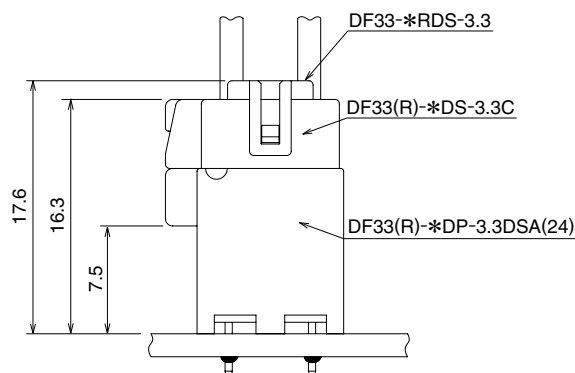
**R Type (Guide Key: Right Side, Color: Black)**

Please contact your Hirose sales representative for details.

## ■PCB mounting pattern (Board thickness: 1.6±0.1)

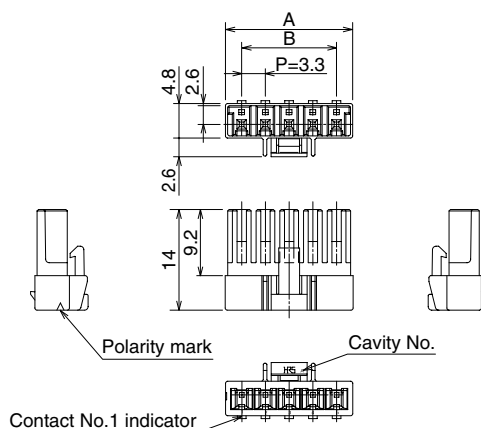
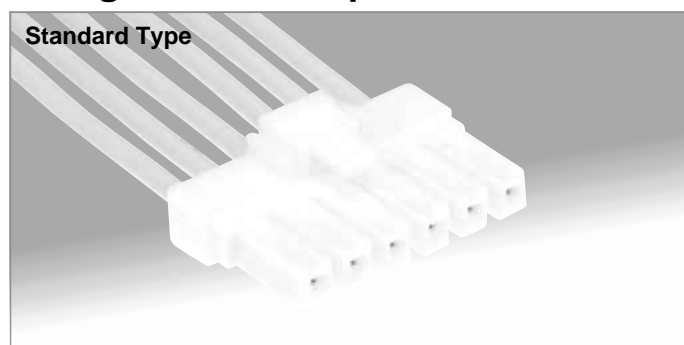


## ■Mating Dimensions

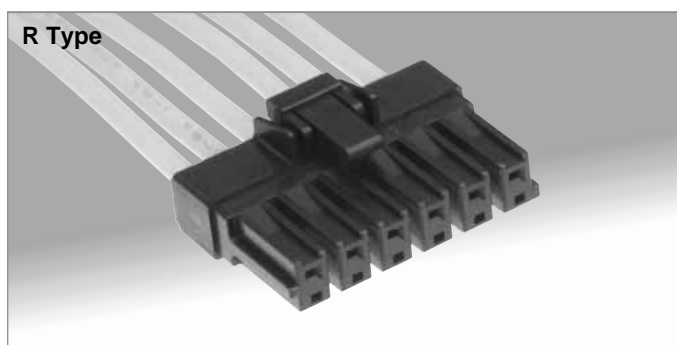


Note: Retainer is comment. Standard type and R type.

## Single row - Crimp socket



Note: bag packaging (100 pieces/bag). Order by number of bags.  
Refer to next page for retainer.



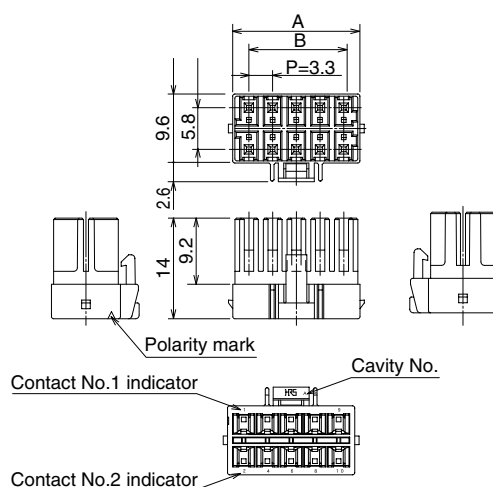
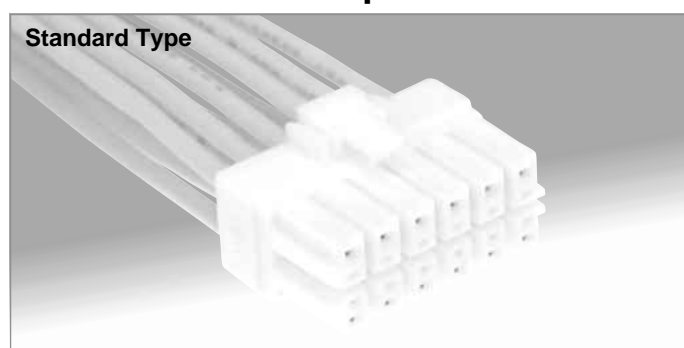
### Standard Type (Guide Key: Inside, Color: Natural Beige)

| Pat number   | CL No.     | No. of contacts | A    | B    |
|--------------|------------|-----------------|------|------|
| DF33-2S-3.3C | 676-1021-4 | 2               | 7.8  | 3.3  |
| DF33-3S-3.3C | 676-1022-7 | 3               | 11.1 | 6.6  |
| DF33-4S-3.3C | 676-1023-0 | 4               | 14.4 | 9.9  |
| DF33-5S-3.3C | 676-1024-2 | 5               | 17.7 | 13.2 |
| DF33-6S-3.3C | 676-1025-5 | 6               | 21.0 | 16.5 |

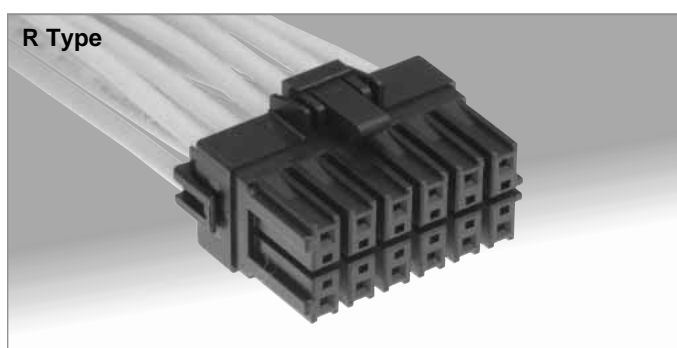
### R Type (Guide Key: Right Side, Color: Black)

| Pat number    | CL No.     | No. of contacts | A    | B   |
|---------------|------------|-----------------|------|-----|
| DF33R-2S-3.3C | 676-1048-0 | 2               | 7.8  | 3.3 |
| DF33R-3S-3.3C | 676-1049-3 | 3               | 11.1 | 6.6 |

## Double row - Crimp socket



Note: bag packaging (100 pieces/bag). Order by number of bags.  
Refer to next page for retainer.



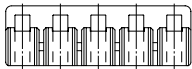
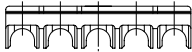
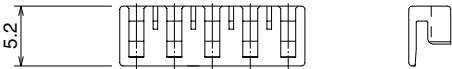
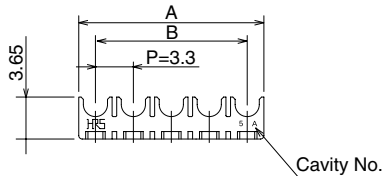
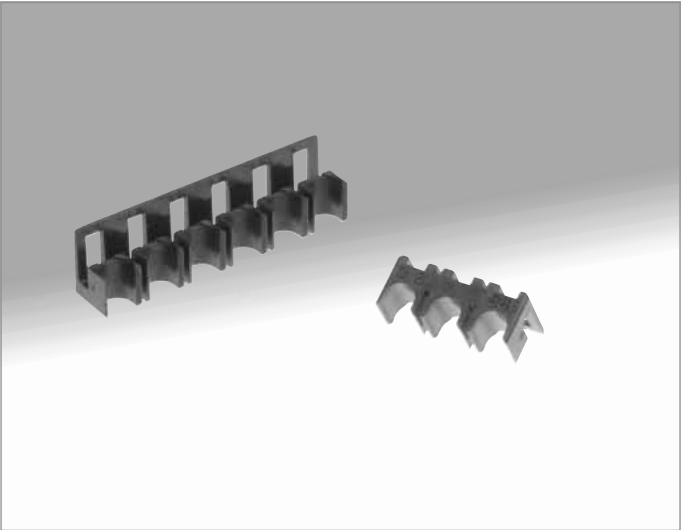
### Standard Type (Guide Key: Inside, Color: Natural Beige)

| Pat number     | CL No.     | No. of contacts | A    | B    |
|----------------|------------|-----------------|------|------|
| DF33-4DS-3.3C  | 676-1006-0 | 4               | 7.8  | 3.3  |
| DF33-6DS-3.3C  | 676-1007-3 | 6               | 11.1 | 6.6  |
| DF33-8DS-3.3C  | 676-1008-6 | 8               | 14.4 | 9.9  |
| DF33-10DS-3.3C | 676-1009-9 | 10              | 17.7 | 13.2 |
| DF33-12DS-3.3C | 676-1010-8 | 12              | 21.0 | 16.5 |

### R Type (Guide Key: Right Side, Color: Black)

Please contact your Hirose sales representative for details.

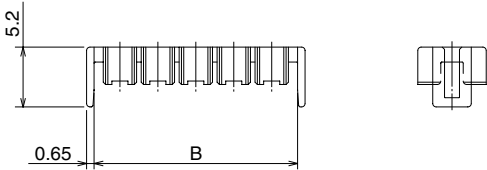
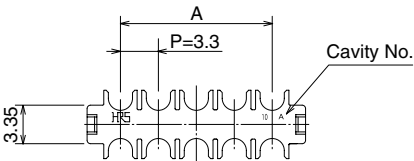
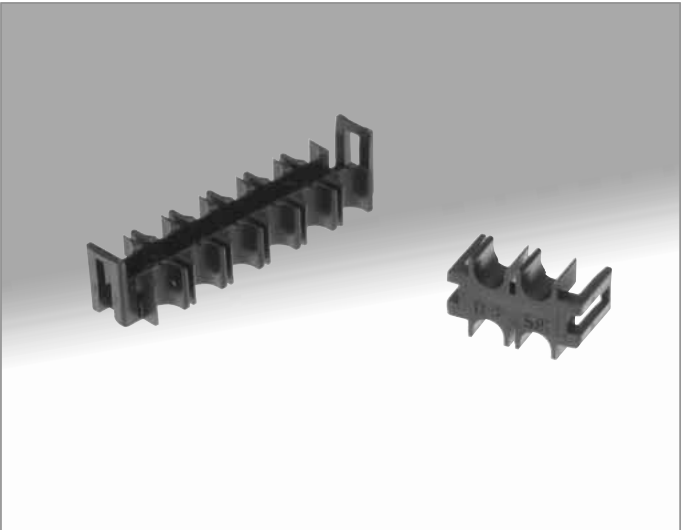
■Single row - retainer



| Pat number   | CL No.     | No. of contacts | A    | B    |
|--------------|------------|-----------------|------|------|
| DF33-2RS-3.3 | 676-1026-8 | 2               | 6.2  | 3.3  |
| DF33-3RS-3.3 | 676-1027-0 | 3               | 9.5  | 6.6  |
| DF33-4RS-3.3 | 676-1028-3 | 4               | 12.8 | 9.9  |
| DF33-5RS-3.3 | 676-1029-6 | 5               | 16.1 | 13.2 |
| DF33-6RS-3.3 | 676-1030-5 | 6               | 19.4 | 16.5 |

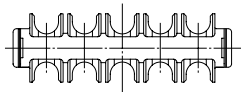
Note: Bag packaging (100 pieces/bag). Order by number of bags.

■Double row - retainer

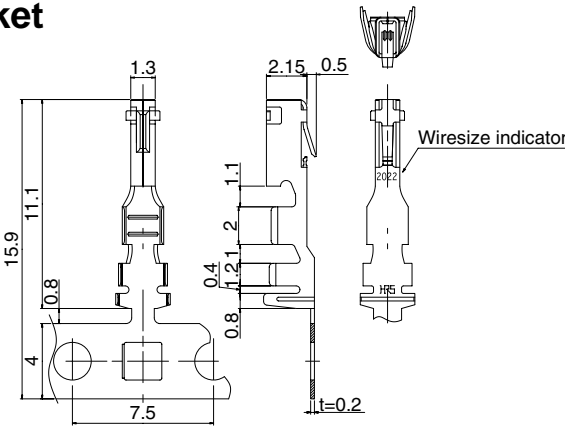


| Pat number     | CL No.     | No. of contacts | A    | B    |
|----------------|------------|-----------------|------|------|
| DF33-4RDS-3.3  | 676-1011-0 | 4               | 3.3  | 8.0  |
| DF33-6RDS-3.3  | 676-1012-3 | 6               | 6.6  | 11.3 |
| DF33-8RDS-3.3  | 676-1013-6 | 8               | 9.9  | 14.6 |
| DF33-10RDS-3.3 | 676-1014-9 | 10              | 13.2 | 17.9 |
| DF33-12RDS-3.3 | 676-1015-1 | 12              | 16.5 | 21.2 |

Note: Bag packaging (100 pieces/bag). Order by number of bags.



■Crimp contact for socket



| Part Number   | CL No.     | Applicable cable |                 |           |                         | Packaging        |
|---------------|------------|------------------|-----------------|-----------|-------------------------|------------------|
|               |            | UL Style         | Jacket diameter | Wire size | Stranded wire conductor |                  |
| DF33A-2022SCF | 676-1093-5 | 1007             | 1.5 to 1.9mm    | AWG#20    | 21/0.18mm               | 10,000 pcs./reel |
| DF33A-2022SC  | 676-1094-8 |                  |                 | AWG#22    | 17/0.16mm               | 100 pcs./bag     |

Note 1: Applicable wire with tin plated solid soft conductor.  
Note 2: When using other than the recommended wire, contact your nearest Hirose representative.  
Note 3: Strip length: 2.7 to 3.5mm

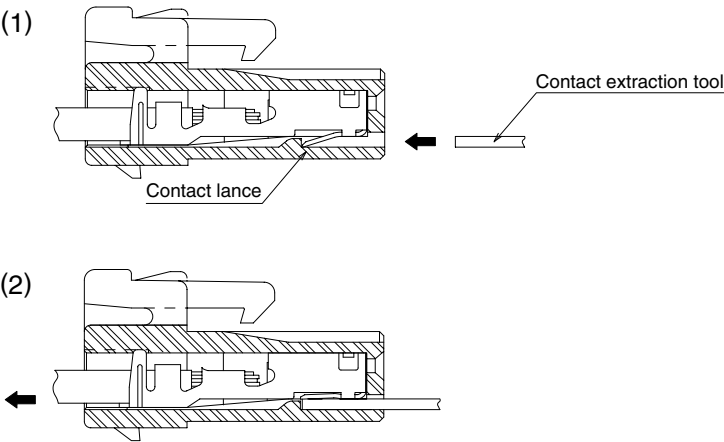
■Tools

| Type      | Item                    | Part Number      | CL No.     | Applicable contacts |
|-----------|-------------------------|------------------|------------|---------------------|
| Automatic | Applicator              | AP105-DF33-2022S | 901-4603-8 | DF33A-2022SCF       |
| Manual    | Crimp tool              | HT102/DF33-2022S | 550-0290-0 | DF33A-2022SC        |
| —         | Contact extraction tool | DF33-C-P0        | 902-4551-2 | DF33A-2022SC(F)     |


■Contact Extraction

- Contact extraction tool : DF33-C-PO
- Intended crimp Contacts: DF33A-2022SC(F)
- Work Method : DF33-\*S-3.3C, DF33A-2022SCF

Housing Cross-Sectional Diagram



1. Refer to the drawing No. 1. Insert contact extraction tool in the insulator against the lance. Deflect the lance as shown.
2. Assure that the lance is deflected to release the contact and pull- out wire with the terminated contact.



**Cautions**

Take particular care in removing the contact, thus not being subject to injury at convex portion edge of the crimping contact.

## ■Precautions

- Forcefully unmating the connectors will risk damaging them; therefore, when it is difficult to unmate a connector, first gently press down on it, then release the lock to allow removal.
- When performing a potting process, pay attention to the surface tension of the resin and fill the resin accordingly.
- Depending on the method by which wires have been routed within the equipment, tension may be exerted on the wires and a load applied to the contacts. Use of a retainer is recommended because of this.
- When reusing crimp contacts, raise the lance.
- Depending on the manufacturing lot and the storage conditions that have been used, the shade of the molded parts may change somewhat; however, this will not affect performance.

## ■Rating

The rated current listed in the catalog indicates the nominal current per contact. When all contacts will be carrying current, use a current limited to about one third of the listed rating.

Note that even when the rated current of the connector body is 3 A, when the nominal current of the specified wire is 1 A, the connector shall be used to handle 1 A overall.

Also, do not mate or unmate by hot plug. (See Note 1)

Note 1: The hot wire means that the wires are mated or unmated while electricity is being supplied to them.

## ■Application Environment

Please contact us when the application environment is such that the equipment will be used under repetitively hot and cold temperatures.



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## HIROSE ELECTRIC CO.,LTD.

5-23,OSAKI 5-CHOME,SHINAGAWA-KU,TOKYO 141-8587,JAPAN  
PHONE: 81-3-3491-5300, FAX: 81-3-3495-5230  
<http://www.hirose.com>  
<http://www.hirose-connectors.com>

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