

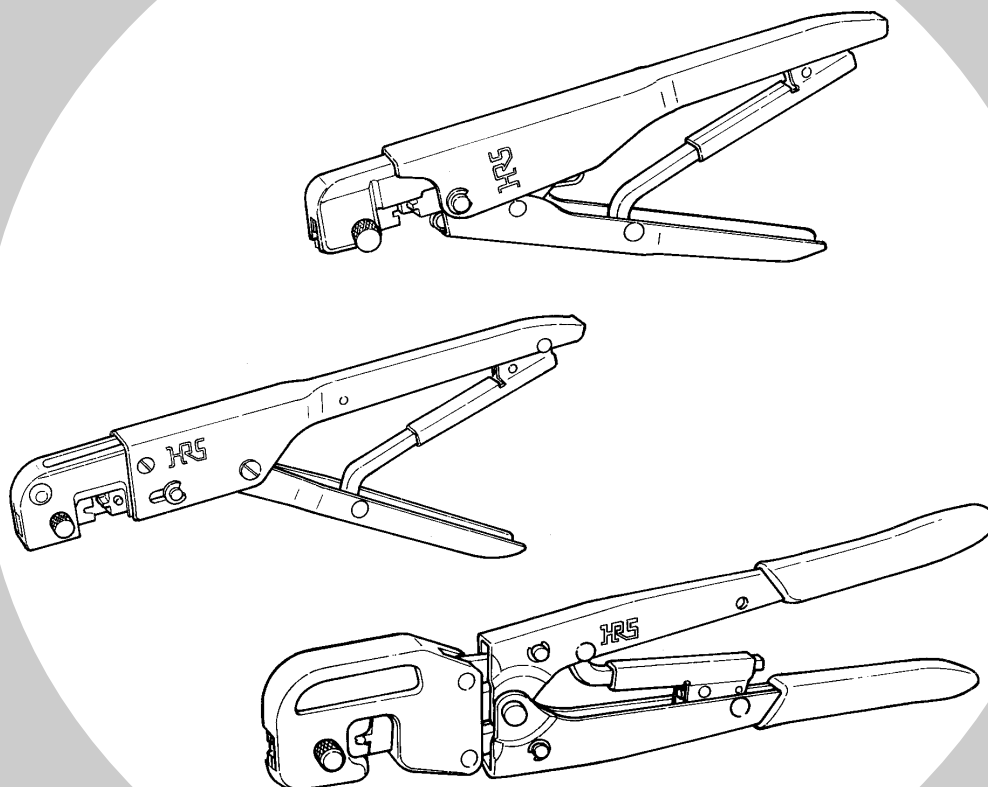
# Manual crimping tool

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## INSTRUCTION MANUAL

**CAUTION :**

Be sure to read this Instruction Manual carefully before using it to secure safety in operation. In addition, save this Instruction Manual so that it is available whenever necessary for review.






**HIROSE ELECTRIC CO., LTD.**

# FOR SAFE OPERATION

The operators of the tool and the maintenance personnel who are in charge of maintenance and repair work are required to read the following **SAFETY INSTRUCTIONS**.

Fully understand and follow the descriptions given in this Instruction Manual and the warning symbols attached to the tool.

## (I) Description of warning symbols

 <b>DANGER</b>	Misuse of the tool will expose the operator to immediate danger of major injury or death.
 <b>WARNING</b>	Misuse of the tool may expose the operator to danger of major injury or death.
 <b>CAUTION</b>	Misuse of the tool may expose the operator to danger of injury and may cause damage to property.

**Major injury** : Loss of eyesight, wounds, burns (hyperthermal and hypothermal burns), electric shocks, fracture of a bone, poisoning, etc. requiring emergency treatment or extended medical care.

**Injury (Minor injury)** : Wounds, burns, electric shocks, etc. requiring medical treatment.

**Damage to property** : Damage to the machinery and or the surrounding area.

## SAFETY INSTRUCTIONS



### CAUTION

#### Basic safety instructions

1. Be sure to read understand and follow all the instructions and other materials supplied with the unit as before using the tool. Save this Instruction Manual and make it available for review whenever necessary.

#### Safe operation

1. Be sure to use the tool as instructed so that your fingers or are not part of clothing caught in the tool during crimping operation.

#### Application

1. This tool shall only be used for its originally intended purpose while following the instructions specified in this Instruction Manual. Hirose assumes no responsibility for any misuse of the tool other than the intended use.
2. Modifications to this tool is prohibited. We assume no responsibility for accidents resulting from modifications.

#### Maintenance

1. To prevent possible accidents caused by unfamiliarity with the operation of the tool, repair and adjustment of the tool shall be conducted only by maintenance personnel who have a full knowledge of the tool. Any repair and adjustment beyond the range covered by the instructions given in this Instruction Manual is prohibited. We assume no responsibility for accidents caused by improper repair or adjustment or the use of non-genuine part(s).
2. To protect against personal injury, check to be sure that screws and nuts are properly tightened after the completion of repair/adjustment works or replacement of the parts.
3. Periodically cleaning of the tool is recommended.
4. In the event that your tool fails to perform normally after repair or adjusting immediately stop the work and contact us for service so as to protect against personal injury.

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## 1. Forward

Thank you for purchase of our manual crimping tool.

This is the Instruction Manual for the manual crimping tool.

For safe operation read, understand and follow this Instruction Manual.

## 2. Precautions in handling the tool and maintenance

### ■ Precautions in handling

- (1) Fine adjustment of the crimp height cannot be performed with the manual crimping tool. In case the cable to be used is different from the specified one, the cable is not applicable to the tool even when the cable is in the range of applicable cable for the contact.
- (2) Never crimp any material other than applicable contacts and applicable cables given in this Instruction Manual.
- (3) Never apply any physical impact to the tool by tapping or dropping from an elevated place.
- (4) The handle cannot be opened before releasing the ratchet. Forcibly opening the handle is strictly prohibited since doing so can cause the tool to break down.
- (5) If applying an extra load to the handle continuously after the ratchet is released, the handle may sometimes remain closed and fail to open. In this event, put a screwdriver or the like in the handle to open it as shown in Fig. 1.
- (6) If the tool is defective, do not disassemble it but contact us for repair while showing the detailed description of the defect.

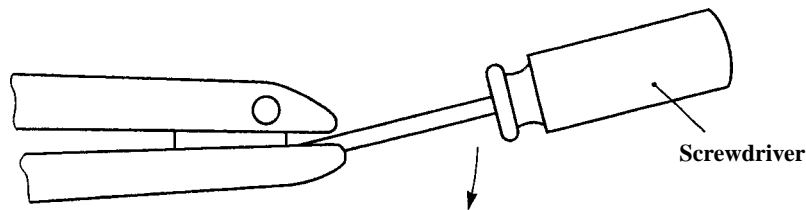


Fig. 1

### ■ Maintenance and inspection

#### Routine maintenance

- (1) Upon completion of works, wipe the tool to remove stains and foreign materials with a piece of soft cloth and close the handle to avoid any foreign material from entering the crimper and the anvil. Then, store the tool in a dry place.
- (2) When opening/closing the handle, check to be sure that the anvil smoothly slides without galling.

#### Periodical maintenance

Hirose performs maintenance service to judge whether the tools used are in the proper state. Please ask our sales office or agents when you desire to receive such maintenance service.

#### Repair of tools

When the trouble of tool has occurred and you desire to repair the tool, please ask our sales office or agents by clearly describing the contents of trouble while keeping the state as it is without disassembling the tool.

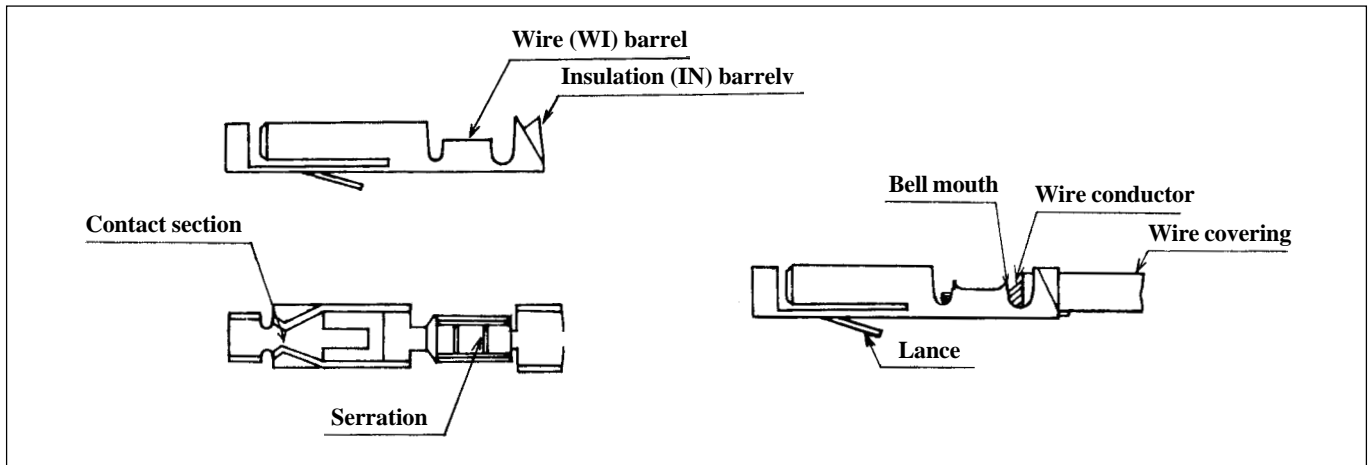
Please note that the tool may not be able to be repaired in accordance with the contents of trouble.

### 3. Basic outline of crimping operation

This section describes basic general matters on the crimping operation.

#### 3-1. Configuration and function of crimping contact

##### 3-1-1. Configuration of crimping contact



##### 3-1-2. Function of each part of crimping contact

(1) Wire barrel (contact wire crimping section)

This barrel has a shape of letter U and plays a role in caulking and holding the conductor by mechanical force and connecting the conductor to the contact.

The range of applicable wire can be determined by the size of the wire barrel. The required performance cannot be obtained if the wire other than the applicable wire is crimped, and as a result, serious accident in quality may occur.

(2) Insulation barrel

This is a barrel to hold the outer cable insulation. It has a function of strain relief, preventing transmission of force to a conductor crimp area.

(3) Lance

This plays a role of the locking device so that the contact cannot be withdrawn from the housing when the contact is inserted into the housing (insulation case).

If the lance is deformed, the locking device does not function after the contact is inserted into the housing. As a result, the contact may be withdrawn from the housing or a given fixed force may not be obtained.

(4) Bell mouth

This is set in order to prevent the wire break at the end face of the barrel and to stabilize the tensile force at the crimping part.

(5) Serration

There is a case that a dimple of parallel or cross knurl is set on the inside of the wire barrel. This is called "Serration".

Serration promotes the destruction of the oxide film on the barrel face and the conductor at the time of crimping and aims for more electrically stabilizing the connection.

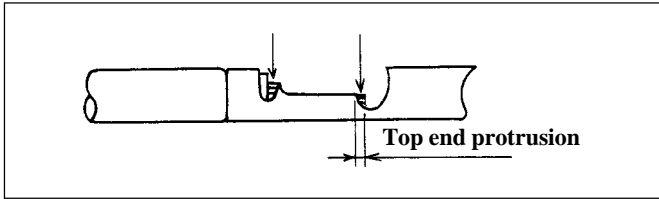
(6) Contact section

A section to allow electrical connection with a mating contact when the female and male of the connectors are engaged with each other.

## 3-2. Stripping of wire covering

### 3-2-1. Correct stripping length

Stripping length of the wire is specified for each contact. The quality of working property of crimping depends on the accuracy of finishing of the stripping length. So, be careful.



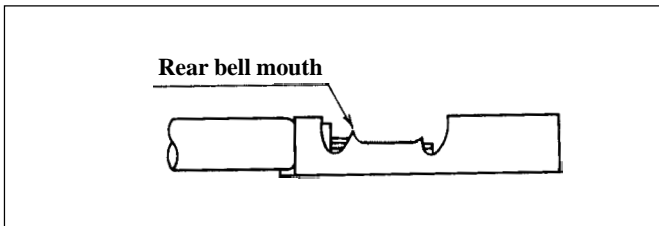
When crimping is performed, the conductor should protrude from the top end of the wire barrel, and the covering should not be pulled in the insulation barrel or not be entered inside the wire barrel.

### 3-2-2. Wire stripped condition

- (1) Conductor should be free from any damage or partially broken or missing wires.
- (2) Length of the conductor or cut-off end face of the covering should not be irregular nor loosened.



## 3-3. Bell mouth



Check to be sure that the contact that has been crimped is provided with a bell mouth at the rear.

Size of the bell mouth varies according to different contacts.

If the bell mouth is excessively small, there is a danger of wire break of the conductor at the end face of the wire barrel or shortage of the tensile strength at the crimped section.

## 3-4. Crimp height

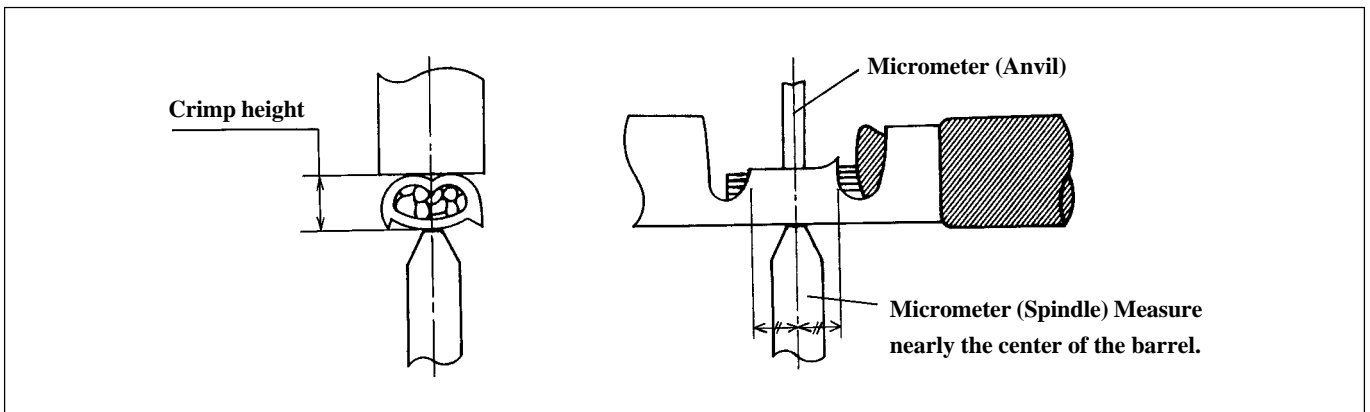
Crimp height is an essential factor in determining the crimping quality of the crimped contact.

If the crimp height is out of the standard, there is a danger of causing a serious accident.

In case of the manual crimping tool, even when the wire is in the range of the applicable wire for the contact, there is a case where the tool is not applicable to the wire used. So, be careful.

### 3-4-1. Measuring the crimp height

Use the micrometer for measuring the crimp height to measure the crimp height.



### 3-5. Tensile strength of crimped section and measuring method

#### 3-5-1. Tensile strength of crimped section

This is the strength that can be endured when the wire conductor that has been crimped (wire barrel section) is pulled. Tolerance value is set to each contact and each wire.

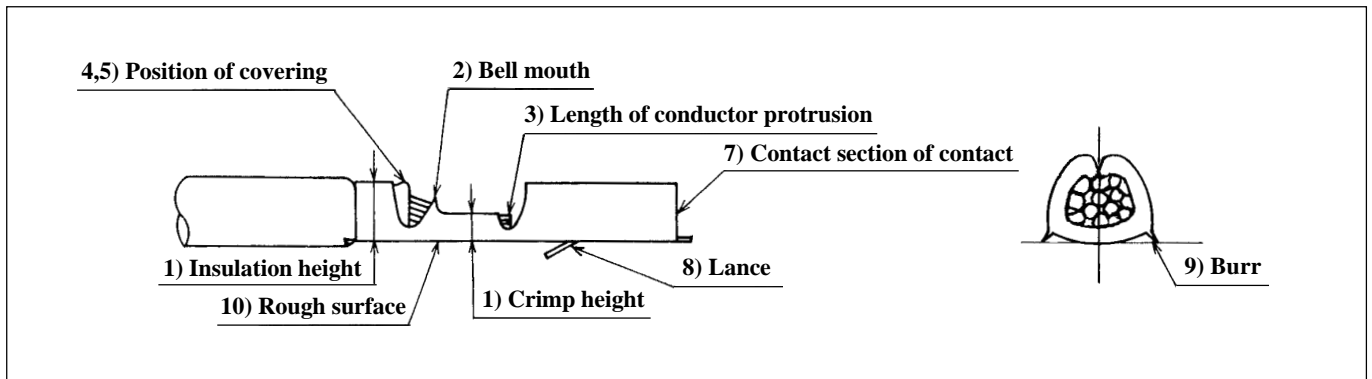
#### 3-5-2. Testing method of tensile strength

Crimp a wire having a little larger stripping length so that the insulation barrel does not function, and install it on the tension tester to measure the value at which the wire is broken. (Set the pulling speed of the wire at 20mm to 80mm/min.)

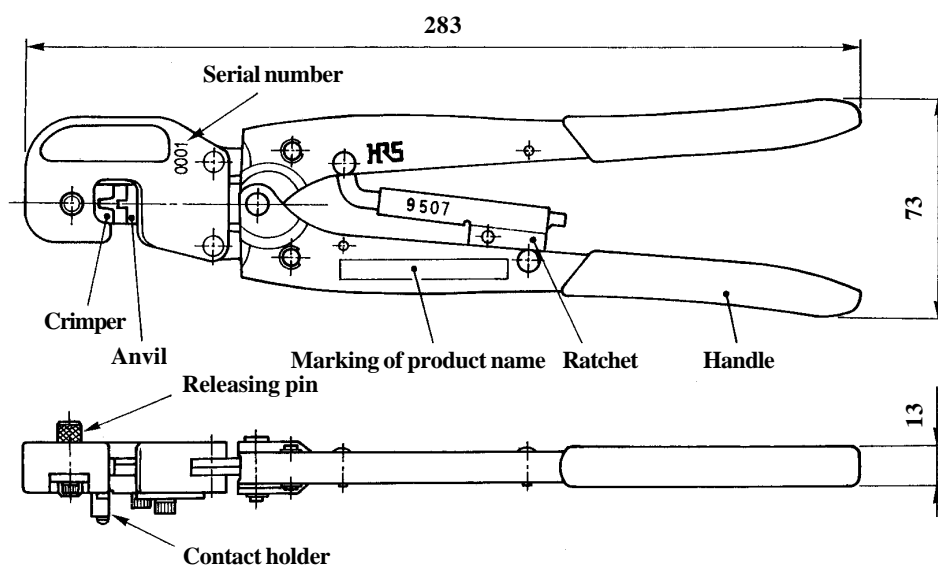
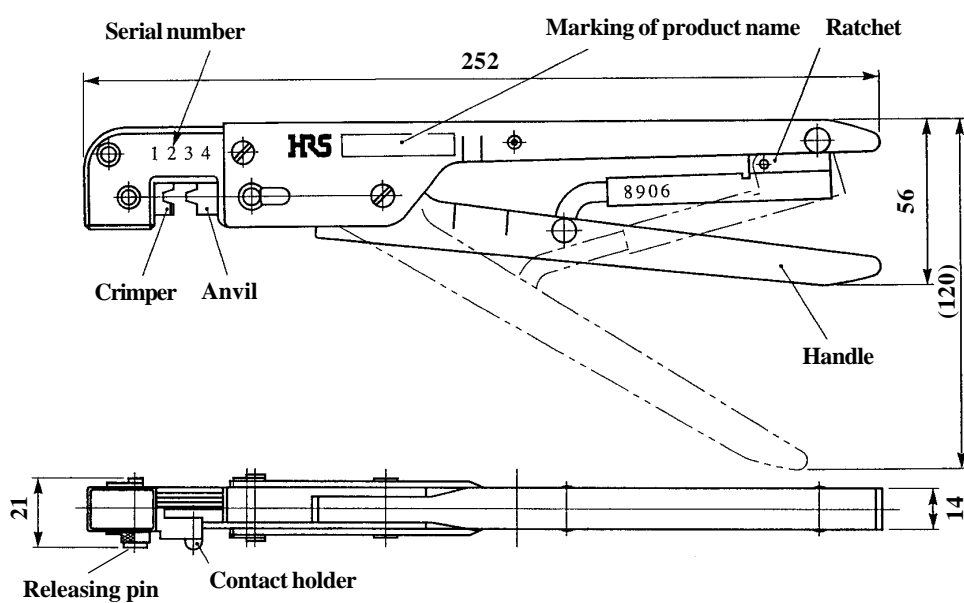
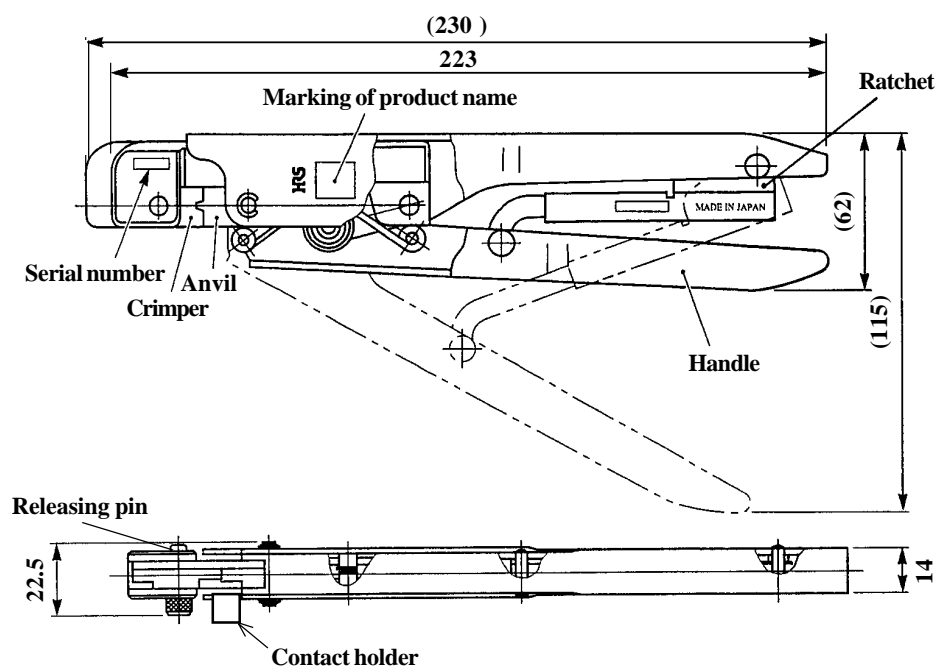
### 3-6. Confirmation of the shape of contact after crimping

#### 3-6-1. Standard of good products

- (1) The crimp height is in the specified range.
- (2) The bell mouth is correct size.
- (3) The protrusion of the conductor is correct.
- (4) The covering is not inserted into the conductor barrel.
- (5) The covering is properly crimped onto the insulation barrel.
- (6) The conductor does not protrude from the wire barrel.
- (7) The contact section of the contact is not deformed.
- (8) The lance is not deformed.
- (9) The wire barrel has no noticeable burr.
- (10) The finished crimped section is free from any crack or rough barrel outside surface.
- (11) The contact is not deformed.



## 4. Configuration of tools





## 5. Table of tools

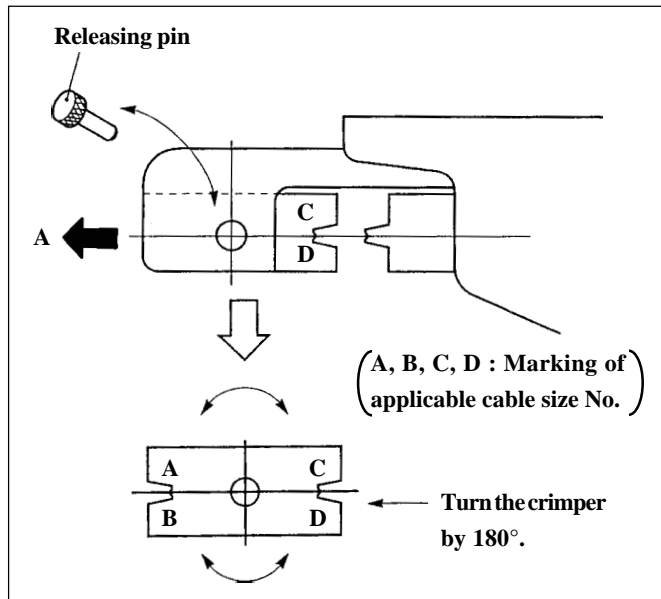
No.	Product No. of tool	HRS No. of tool	Product No. of applicable contact	HRS No. of applicable contact	Standard applicable wire for tool			
					STYLE No.	AWG No.	Sectional area (mm <sup>2</sup> )	Outside diameter of covering
1	RP13-TC-11	150-0024-3	RP13-PC-112	113-0178-7		18 to 22	0.865 to 0.343	φ 1.9 MAX
2	RP13-TC-12	150-0025-6	RP13-PC-121 RP13-PC-122 DF1-PD2428SCB DF1B-2428PC	113-0361-3 113-0179-0 541-0661-9 541-0665-0		24 to 28	0.221 to 0.057	φ 1.4 MAX
3	RP13A-TC-11	150-0026-9	RP13A-SC-112	113-0180-9		18 to 22	0.865 to 0.342	φ 1.9 MAX
4	RP13A-TC-12	150-0027-1	RP13A-SC-121 RP13-SC-122	113-0363-9 113-0181-1		24 to 30	0.221 to 0.055	φ 1.4 MAX
5	RP17-TC-11	150-0043-8	RP17-PC-112 RP17-SC-112	113-0503-6 113-0505-1	UL1007	18 to 22	0.865 to 0.324	φ 1.7 MAX
6	RP17-TC-12	150-0044-0	RP17-PC-122 RP17-SC-122	113-0504-9 113-0506-4	UL1007	24 to 30	0.221 to 0.055	φ 1.2 MAX
7	RP19-TC-11	150-0048-1	RP19-PC-112 RP19-SC-112	113-0267-5 113-0269-0		18 to 22	0.865 to 0.342	φ 1.79 MAX
8	RP19-TC-12	150-0049-4	RP19-PC-122 RP19-SC-122	113-0268-8 113-0270-0		24 to 30	0.221 to 0.055	φ 1.15 MAX
9	HR22-TA2428HC	150-0200-4	HR22-PC-122 HR22-SC-122	122-0017-9 122-0016-6		24 to 28	0.221 to 0.089	φ 1.5 to φ 0.9
10	HT104/HR24-1	150-0211-0	HR24-PC-211	124-5012-5	UL1007	18 to 24	0.865 to 0.221	φ 2.1 to φ 1.5
11	HR25-TA3032HC	150-0207-3	HR25-PC-111 HR25-SC-111	197-0562-9 197-0563-1	UL1571	30	0.055	φ 0.7 MAX
12	HT102/HR30-1	150-0229-6	HR30-PC-112 HR30-SC-112	130-0016-0 130-0017-3	UL1571	26 to 30	0.141 to 0.055	φ 1 MAX
13	RP34-1/CR-HT	150-0202-0	RP34-SC-112	113-5076-4		18 to 22	0.865 to 0.342	φ 1.7 to φ 1.3
14	HT102/PR34L-SC1-212	150-0210-8	RP34L-SC1-212	113-5151-8	UL1007	18 to 22	0.865 to 0.342	φ 2.1 to φ 1.6
15	DN50-TA2628HC	250-0101-0	DN50-2628PC1	225-0007-2	UL1007	26 to 28	0.141 to 0.089	φ 1.3 to φ 1.2
16	HT104/PX50-3	250-0229-4	PX50-SC-131	236-0008-9	UL1007	16 to 18	1.317 to 0.865	φ 2.4 to φ 2.1
17	HIF3-TA2022HC	550-0124-0	HIF3-2022SC	562-0492-4	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
18	HIF3-TA2428HC	550-0100-2	HIF3-2428SC HIF3-2428SCA	562-0124-0 562-0246-8	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.1
19	HIF3-TB2226HC	550-0154-1	HIF3-2226SCC A1-2226SCC	613-0004-7 619-0214-8		22 to 26	0.342 to 0.141	φ 1.7 to φ 1.0
20	HIF3-TB2630HC	550-0155-4	HIF3-2630SCC A1-2630SCC	613-0003-4 613-0215-0		26 to 30	0.141 to 0.055	φ 1.3 to φ 0.9
21	A3B-TA2630HC	550-0200-7	A3B-2630SCC	621-0302-0		26 to 30	0.141 to 0.055	φ 1.2 to φ 1.1
22	A3B-TA32HC	550-0213-9	A3B-32SCC	621-0304-5	UL1571	32	0.035	φ 0.55
23	EC1-TA2226HC	550-0101-5	EC1-2226SC	535-0101-2		22 to 26	0.342 to 0.141	φ 1.8 to φ 1.0
24	PCN10-TA2226HC	550-0218-2	PCN10-2226SC	583-0216-8	UL1007	22 to 26	0.342 to 0.14	φ 1.6 to φ 1.3
25	PCN10-TA2630HC	550-0163-2	PCN10-2630SC	583-0102-9	UL1007	26 to 30	0.141 to 0.055	φ 1.3 to φ 1.1
26	DF1-T2428S	550-0102-8	DF1-2428SC	541-0135-6		24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
27	DF2-TA2428HC	550-0172-3	DF2-2428PC	542-0021-3	UL1007 UL1061	24 to 28	0.221 to 0.089	φ 1.5 to φ 0.9
28	DF3-TA2428HC	550-0164-5	DF3-2428SC DF3-2428SCC	543-0002-5 543-0047-3		24 to 28	0.221 to 0.089	φ 1.5 to φ 0.9
29	DF3-TA22HC	550-0257-4	DF3-22SC	543-0236-6	UL1061	22	0.342 to 0.141	φ 1.3
30	DF3EP-TA2428HC	550-0184-2	DF3-EP2428PC DF3-EP2428PCA	543-0063-0 543-0150-2	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
31	DF4-TA2428HC	550-0173-6	DF4-2428PC	544-0021-6		24 to 28	0.221 to 0.089	φ 1.2 to φ 0.9
32	DF5-1822/CR-HT	550-0264-0	DF5-1822SC	676-0002-4	UL1007	18 to 22	0.865 to 0.342	φ 2.1 to φ 1.6
33	DF5A-1822/CR-HT	550-0265-2	DF5A-1822SC	676-0004-0	UL1015	18 to 22	0.865 to 0.343	φ 2.9 to φ 2.4
34	DF6-TA1822HC	550-0174-9	DF6-1822PC	546-0010-2	UL1007	18 to 22	0.865 to 0.342	φ 2.1 to φ 1.6

No.	Product No. of tool	HRS No. of tool	Product No. of applicable contact	HRS No. of applicable contact	Standard applicable wire for tool			
					STYLE No.	AWG No.	Sectional area (mm <sup>2</sup> )	Outside diameter of covering
35	DF6A-TA1822HC	550-0222-0	DF6A-1822PC	546-0014-3	UL1015	18 to 22	0.865 to 0.342	φ 2.9 to φ 2.4
36	HT104/DF7-1618	550-0268-0	DF7-1618SC DF7-1618PC DF7-1618SCA DF7-1618PCA	680-0002-3 680-0006-4 680-0138-5 680-0142-2	UL1007 UL1015	16 to 18	1.317 to 0.865	φ 3.2 to φ 1.8
37	HT104/DF7-2022	550-0269-3	DF7-2022SC	680-0004-9	UL1007	20 to 22	0.534 to 0.342	φ 2.6 to φ 1.6
38	DF11-TA22HC	550-0228-6	DF11-22SC DF11-22SCA	543-0602-2 543-0604-8	UL1061	22	0.342 to 0.141	φ 1.3
39	DF11-TA2428HC	550-0197-4	DF11-2428SC DF11-2428SCA DF11A-2428SC	543-0501-5 543-0551-3 543-0635-1	UL1007 UL1061	24 to 28	0.221 to 0.089	φ 1.5 to φ 0.9
40	HT102/ DF11-2628S-S	550-0275-6	DF11-2428SC DF11-2428SCA DF11A-2428SC	543-0501-5 543-0551-3 543-0635-1		26 to 28	0.141 to 0.089	φ 0.8 to φ 0.58
41	DF11-TA30HC	550-0230-8	DF11-30SC DF11-30SCA	543-0606-3 543-0608-9	UL1061	30	0.055	φ 0.8
42	DF11EP-TA2428HC	550-0227-3	DF11-EP2428PC	543-0616-7	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
43	HT104/ DF22-1416	550-0285-0	DF22-1416PC DF22-1416SC	680-1080-2 680-1001-6	UL1430	16	1.373	φ 3.2
44	HT104/ DF22A-1416	550-0286-2	DF22A-1416PC DF22A-1416SC	680-1081-5 680-1003-1	UL1015	14 to 16	1.373 to 2.176	φ 3.2 to φ 3.8
45	DF1B-TA2022SHC	550-0182-7	DF1B-2022SC DF1B-2022SCA	541-0224-4 541-0663-4	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
46	DF1B-TA2022PHC	550-0183-0	DF1B-2022PC DF1B-2022PCB	541-0260-8 541-0691-0	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
47	DF1B-TA2428SHC	550-0209-1	DF1B-2428SC DF1B-2428SCA	541-0679-4 541-0681-6	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
48	DF1B-TA2428PHC	550-0224-5	DF1B-2428PC DF1-PD2428SCB	541-0665-0 541-0661-9	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
49	DF1B-TA30SHC	550-0211-3	DF1B-30SC DF1B-30SCA	541-0683-1 541-0685-7	UL1007	30	0.055	φ 1.2 to φ 1.1
50	DF1B-TA30PHC	550-0210-0	DF1B-30PC DF1B-30PCB	541-0687-2 541-0689-8	UL1007	30	0.055	φ 1.2 to φ 1.1
51	HT102/DF1E-2022S	550-0277-1	DF1E-2022SC	541-1000-2	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
52	HT102/ DF1BE-2022P	550-0278-4	DF1B-2022PC DF1B-2022PCB DF1E-2022PC	541-0260-8 541-0691-0 541-0938-0	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
53	HT102/ DF1BE-2428P	550-0279-7	DF1B-2428PC DF1-PD2428SCB DF1E-2428PC	541-0665-0 541-0661-9 541-0940-2	UL1007	24 to 28	0.221 to 0.089	φ 1.5 to φ 1.2
54	HT102/ DF1BE-30P	550-0280-6	DF1B-30PC DF1B-30PCB DF1E-30PC	541-0687-2 541-0689-8 541-0942-8	UL1007	30	0.055	φ 1.2 to φ 1.1
55	MDF6-TA1618HC	550-0203-5	MDF6-1618SC	547-0071-3	UL1007	16 to 18	1.317 to 0.865	φ 2.4 to φ 2.1
56	MDF6-TA2022HC	550-0204-8	MDF6-2022SC	547-0073-9	UL1007	20 to 22	0.534 to 0.342	φ 1.8 to φ 1.6
57	MDF12-TA1416HC	550-0236-4	MDF12-1416PC	547-0223-0	UL1007	16	1.317	φ 2.4
58	MDF12A-TA1416HC	550-0237-7	MDF12A-1416PC	547-0224-2	UL1015	14 to 16	2.078 to 1.317	φ 3.7 to φ 3.2
59	MDF12-TA1822HC	550-0238-0	MDF12-1822PC	547-0221-4	UL1007	18 to 22	0.865 to 0.342	φ 2.1 to φ 1.6
60	MDF12A-TA1822HC	550-0239-2	MDF12A-1822PC	547-0222-7	UL1015	18 to 22	0.865 to 0.342	φ 2.9 to φ 2.4
61	HT104/GT3-2024	780-0012-5	GT3-2024SCF	753-0006-0	JIS AVS	(Nominal sectional area 0.5 to 0.3)		φ 2.0 to φ 1.8

## 6. Operating procedure

### 6-1. Replacing the crimper

Use the manual crimping tool by replacing the crimpers in accordance with the cable size to be used. (The anvil is shared by both crimpers.)



- (1) Draw out the releasing pin located at the crimping tool head section.
- (2) Draw out the crimper in the direction of the arrow mark A.
- (3) Turn the crimper by 180° and attach it on the head so that the inscription mark showing the size of the cable used can be observed and insert the releasing pin.

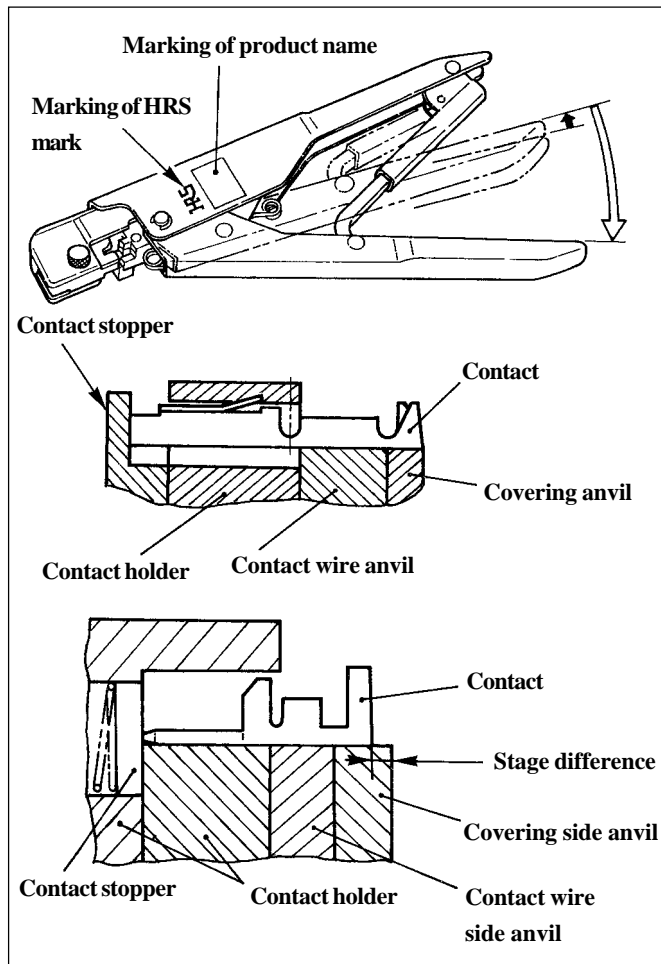
**(Caution)** The tools, HT104/DF7-1618 and HT104/DF7-2022, have to replace the crimpers themselves in accordance with the style size of the wire to be used. The style size of the applicable cable is marked on the side of the crimper.

### 6-2. Operating procedure



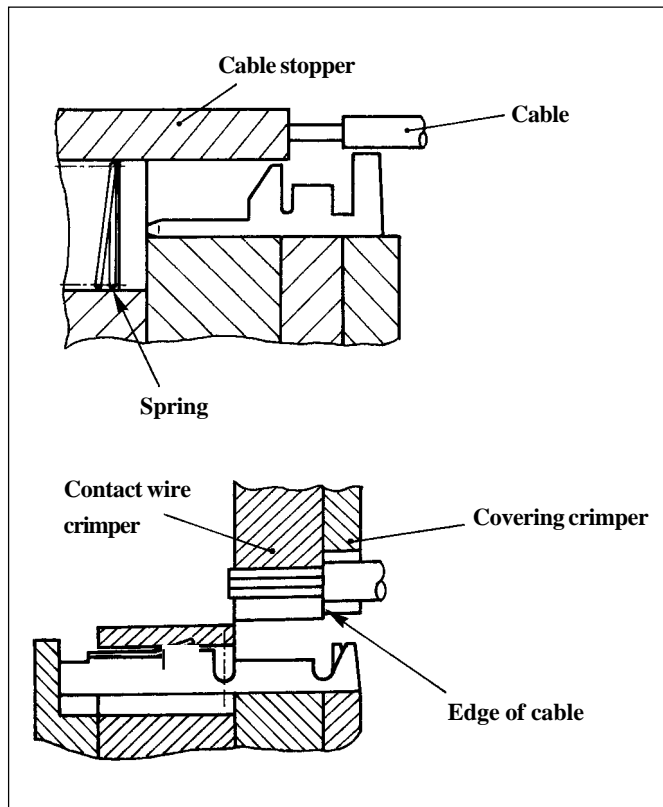
**CAUTION**

To prevent injury, do not place the fingers between the handles or crimping portion.



- (1) Hold the tool with HRS mark and product name facing up.
- (2) Grasp the handle far enough until the ratchet becomes disengaged, and then fully open the handle.
- (3) Place the contact on the anvil and insert it into the contact holder until it comes in contact with the stopper in the contact holder.

**(Caution)** There are some models of which the contact stopper moves forward or backward, having spring. The position where the contact comes in close contact with the contact stopper and there is no load on it is the set position.



(4) Strip the covering of the cable by a given length. Then make the cable come in contact with the cable stopper while taking care not to allow the contact wire to become loose.

Some tools are not provided with the cable stopper. In this case, perform the positioning of the cable by eye measurement making the barrel of contact as a mark or perform the positioning making the crimper of the tool as a reference.

(For the dimensions of the finish of ends of cable, refer to Table of crimping quality standard 7-1.)

(5) Grab the handle by hand until ratchet is released and open the handle.

(6) Withdraw the crimped contact while holding the cable.

(7) Verify that the crimp is correct.

(Refer to Table of crimping conditions and crimping quality standard 7-1.)

**(Caution)** When inserting the contact into the tool or taking it out from the tool, be careful that the contact is not caught with the cable stopper, anvil, etc., and is not deformed.

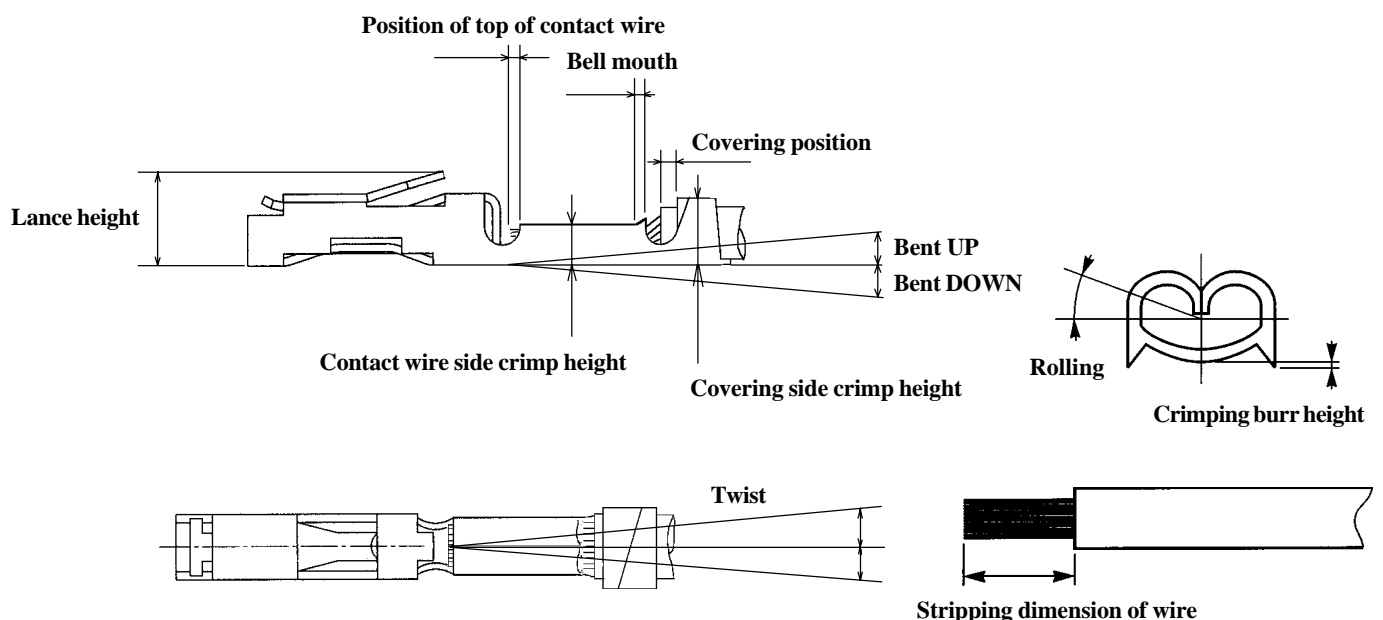
## 7. Crimping conditions and crimping quality standard

1) Check to be sure that the contact that has been crimped using the tool satisfies the standard described in Table 7-1 with respect to the crimp height and the tensile strength.

2) Check to be sure that the contact that has been crimped using the tool is within the standard of good product with respect to the shape.

**(Caution 1)** When using a wire of which the diameter of covering is different from that of the standard applicable wire, bend the wire up and down, to the left and right at the crimping zone of covering after crimping. Then check to be sure that caulking strength is to such an extent that the covering position is not slipped and that the internal conductor is not damaged.

**(Caution 2)** The figure below is an example of the shape of contact. Use the figure for reference of configuration.



## 7-1. Table of crimping conditions and crimping quality standard

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	RP13-TC-11							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(2° MAX)
RP13-PC-112	Stranded wire	18	34/0.18	Less than ϕ 1.9	0.94 to 1.02	1.72 to 1.84	59	Position of top of contact wire	(0.2 to 0.5)	Rolling	(5° MAX)
		20	26/0.16		0.94 to 1.02	1.72 to 1.84	59				
		22	17/0.16		0.84 to 0.92	1.64 to 1.76	53	Bell mouth	(0.2 to 0.3)	Lance height	2.1 to 2.25
								Bent UP	(3° MAX)	Crimping burr height	(0.1 MAX)
							Bent DOWN	(3° MAX)			

Tool product No.	RP13-TC-12							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(2° MAX)
RP13-PC-121 RP13-PC-122 DF1-PD2428SCB DF1B-2428PC	Stranded wire	24	11/0.16	Less than ϕ 1.4	0.68 to 0.76	1.26 to 1.38	35	Position of top of contact wire	(0.2 to 0.5)	Rolling	(5° MAX)
		26	7/0.16		0.68 to 0.76	1.26 to 1.38	24				
		28	7/0.127		0.58 to 0.66	1.16 to 1.28	16	Bell mouth	(0.2 to 0.3)	Lance height	2.1 to 2.25
								Bent UP	(3° MAX)	Crimping burr height	(0.1 MAX)
								Bent DOWN	(3° MAX)		

Tool product No.	RP13A-TC-11							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(2° MAX)
RP13A-SC-112	Stranded wire	18	34/0.18	Less than ϕ 1.9	0.94 to 1.02	1.72 to 1.84	59	Position of top of contact wire	(0.2 to 0.5)	Rolling	(5° MAX)
		20	26/0.16		0.94 to 1.02	1.72 to 1.84	59				
		22	17/0.16		0.84 to 0.92	1.64 to 1.76	53	Bell mouth	(0.2 to 0.3)	Lance height	1.6 to 1.7
								Bent UP	(3° MAX)	Crimping burr height	(0.1 MAX)
							Bent DOWN	(3° MAX)			

Tool product No.	RP13A-TC-12							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(2° MAX)
RP13A-SC-121 RP13A-SC-122	Stranded wire	24	11/0.16	Less than ϕ 1.4	0.68 to 0.76	1.26 to 1.38	35	Position of top of contact wire	(0.2 to 0.5)	Rolling	(5° MAX)
		26	7/0.16		0.68 to 0.76	1.26 to 1.38	24				
		28	7/0.127		0.58 to 0.66	1.16 to 1.28	16	Bell mouth	(0.2 to 0.3)	Lance height	1.6 to 1.7
								Bent UP	(3° MAX)	Crimping burr height	(0.1 MAX)
								Bent DOWN	(3° MAX)		

Tool product No.	RP17-TC-11						Stripping dimension of wire		3.0 to 3.5		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(3° MAX)
RP17-PC-112 RP17-SC-112	UL1007 Stranded wire	18	34/0.18	Less than $\phi$ 1.7	0.94 to 1.02	1.64 to 1.76	59	Position of top of contact wire	(0.2 to 0.4)	Rolling	(5° MAX)
		20	26/0.16		0.94 to 1.02	1.64 to 1.76	59				
		22	17/0.16		0.84 to 0.92	1.54 to 1.66	53	Bell mouth	(0.2 to 0.5)	Lance height	1.55 to 1.65
								Bent UP	(5° MAX)	Crimping burr height	(0.3 MAX)
								Bent DOWN	(5° MAX)		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	RP17-TC-12							Stripping dimension of wire		3.0 to 3.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.6)	Twist	(3° MAX)
RP17-PC-122 RP17-SC-122	UL1007 Stranded wire	24	11/0.16	Less than ϕ 1.2	0.66 to 0.74	1.44 to 1.56	35	Position of top of contact wire	(0.2 to 0.4)	Rolling	(5° MAX)
		26	7/0.16		0.66 to 0.74	1.44 to 1.56	24				
		28	7/0.127		0.56 to 0.64	1.34 to 1.46	16	Bell mouth	(0.2 to 0.5)	Lance height	1.55 to 1.65
		30	7/0.1		0.56 to 0.64	1.34 to 1.46	9.8	Bent UP	(5° MAX)	Crimping burr height	(0.3 MAX)
								Bent DOWN	(5° MAX)		

Tool product No.	RP19-TC-11							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.5)	Twist	(3° MAX)
RP19-PC-112 RP19-SC-112	Stranded wire	18	34/0.18	Less than $\phi$ 1.79	0.88 to 0.96	1.64 to 1.76	59	Position of top of contact wire	(0.2 to 0.4)	Rolling	(5° MAX)
		20	26/0.16		0.88 to 0.96	1.64 to 1.76	59				
		22	17/0.16		0.75 to 0.83	1.54 to 1.66	53	Bell mouth	(0.2 to 0.5)	Lance height	1 to 1.1
								Bent UP	(5° MAX)	Crimping burr height	(0.3 MAX)
							Bent DOWN	(5° MAX)			

Tool product No.	RP19-TC-12							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.5)	Twist	(3° MAX)
RP19-PC-122 RP19-SC-122	Stranded wire	24	11/0.16	Less than ϕ 1.15	0.63 to 0.71	1.04 to 1.16	35	Position of top of contact wire	(0.2 to 0.4)	Rolling	(5° MAX)
		26	7/0.16		0.63 to 0.71	1.04 to 1.16	24				
		28	7/0.127		0.53 to 0.61	0.94 to 1.06	16	Bell mouth	(0.2 to 0.5)	Lance height	1 to 1.1
		30	7/0.1		0.53 to 0.61	0.94 to 1.06	9.8				
								Bent UP	(5° MAX)	Crimping burr height	(0.3 MAX)
							Bent DOWN	(5° MAX)			

Tool product No.	HR22-TA2428HC						Stripping dimension of wire		2.0 to 2.5		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.7	Twist	3° MAX
HR22-PC-122 HR22-SC-122	Stranded wire	24	11/0.16	Less than ϕ 1.15	0.63 to 0.71	1.04 to 1.16	35	Position of top of contact wire	0.1 to 0.8	Rolling	5° MAX
		26	7/0.16		0.63 to 0.71	1.04 to 1.16	24				
		28	7/0.127		0.53 to 0.61	0.94 to 1.06	16	Bell mouth	0.2 to 0.5	Lance height	1 to 1.1
								Bent UP	2° MAX	Crimping burr height	0.1 MAX
							Bent DOWN	2° MAX			

Tool product No.	HT104/HR24-1							Stripping dimension of wire		3.9 to 4.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 1.0	Twist	3° MAX
RP24-PC-211	UL1007 Stranded wire	18	42/0.16	φ 2.1	1.14 to 1.20	2.20 to 2.35	59	Position of top of contact wire	0.3 to 0.9	Rolling	5° MAX
		20	27/0.16	φ 1.8	0.98 to 1.04	2.10 to 2.25	59				
		22	17/0.16	φ 1.6	0.88 to 0.94	2.05 to 2.20	53	Bell mouth	0.2 to 0.5	Lance height	1.65 to 1.75
		24	11/0.16	φ 1.5	0.86 to 0.92	2.05 to 2.15	35	Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	HR25-TA3032HC							Stripping dimension of wire		(2.0 to 2.5)	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.5)	Twist	(3° MAX)
HR25-PC-111 HR25-SC-111	UL1571 Stranded wire	30	7/0.1	ϕ 0.7 MAX	0.44 to 0.48	0.94 to 1.04	10	Position of top of contact wire	(0.2 to 0.4)	Rolling	(3° MAX)
								Bell mouth	(0.2 to 0.5)	Lance height	1 to 1.1
								Bent UP	(3° MAX)	Crimping burr height	(0.3 MAX)
								Bent DOWN	(3° MAX)		

Tool product No.	HT102/HR30-1							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	3° MAX
HR30-PC-112 HR30-SC-112	UL1571 Stranded wire	26	7/0.16	Less than ϕ 1.0	0.52 to 0.58	0.85 to 1.00	24	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		28	7/0.127		0.48 to 0.54	0.85 to 1.00	19				
		30	7/0.1		0.46 to 0.52	0.80 to 0.95	10	Bell mouth	0.1 to 0.4	Lance height	1 to 1.1
								Bent UP	3° MAX	Crimping burr height	0.1MAX
								Bent DOWN	3° MAX		

Tool product No.	RP34-1/CR-HT							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.6	Twist	4° MAX
RP34-SC-122	UL1007 Stranded wire	18	34/0.18	ϕ 2.1	0.90 to 0.96	2.00 to 2.10	59	Position of top of contact wire	0.1 to 0.6	Rolling	3° MAX
		20	27/0.16	ϕ 1.8	0.72 to 0.78	1.90 to 2.00	59				
		22	17/0.16	ϕ 1.6	0.72 to 0.78	1.90 to 2.00	53	Bell mouth	0.2 to 0.6	Lance height	2.4 to 2.5
								Bent UP	4° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	4° MAX		

Tool product No.	HT102/RP34L-SC1-212							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.8	Twist	5° MAX
RP34L-SC1-212	UL1007 Stranded wire	18	34/0.18	ϕ 2.1	1.12 to 1.18	2.2 MAX	59	Position of top of contact wire	0.2 to 0.8	Rolling	5° MAX
		20	21/0.18	ϕ 1.8	0.94 to 0.98	2.2 MAX	59				
		22	17/0.16	ϕ 1.6	0.94 to 0.98	2.2 MAX	53	Bell mouth	0.2 to 0.5	Lance height	0.7 to 0.8
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	DN50-TA2628HC							Stripping dimension of wire		1.5 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimpheight (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
	Covering position		0.2 to 0.8					Twist		3° MAX	
DN50-2628PC1	UL1007 Stranded wire	26	7/0.16	ϕ 1.3	0.58 to 0.64	1.07 to 1.19	23	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
		28	7/0.127	ϕ 1.2	0.58 to 0.64	1.07 to 1.19	13				
								Bell mouth	0.1 to 0.3	Lance height	0.35 to 0.45
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT104/PX50-3							Stripping dimension of wire		3.1 to 4.1	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 1.1	Twist	5° MAX
PX50-SC-131	UL1007 Stranded wire	16	26/0.26	ϕ 2.4	1.28 to 1.34	2.40 to 2.55	147	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		18	34/0.18	ϕ 2.1	1.12 to 1.18	2.20 to 2.35	98				
								Bell mouth	0.2 to 0.5		
								Bent UP	3° MAX		
								Bent DOWN	3° MAX		

Tool product No.	HIF3-TA2022HC							Stripping dimension of wire		3.7 to 4.1	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	4° MAX
HIF3-2022SC	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.85 to 0.95	1.82 to 1.94	88	Position of top of contact wire	0.1 to 0.5	Rolling	8° MAX
		22	17/0.16	ϕ 1.6	0.85 to 0.92	1.82 to 1.94	53				
								Bell mouth	0.2 to 0.5	Lance height	2.4 to 2.6
								Bent UP	3° MAX		
								Bent DOWN	3° MAX		

Tool product No.	HIF3-TA2428HC							Stripping dimension of wire		3.7 to 4.1	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	4° MAX
HIF3-2428SC HIF3-2428SCA	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.73 to 0.87	1.09 to 1.21	35	Position of top of contact wire	0.1 to 0.5	Rolling	8° MAX
		26	7/0.16	ϕ 1.3	0.71 to 0.81	1.09 to 1.21	24				
		28	7/0.127	ϕ 1.2	0.68 to 0.76	1.09 to 1.21	16	Bell mouth	0.2 to 0.5	Lance height	2.4 to 2.6
								Bent UP	3° MAX		
								Bent DOWN	3° MAX		

Tool product No.	HIF3-TB2226HC							Stripping dimension of wire		3.1 to 3.8	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.8	Twist	3° MAX
HIF3-2226SCC A1-2226SCC	UL1007 Stranded wire	22	17/0.16	$\phi$ 1.6	0.81 to 0.89	1.43 to 1.63	53	Position of top of contact wire	0.1 to 0.8	Rolling	10° MAX
		24	11/0.16	$\phi$ 1.5	0.76 to 0.84	1.43 to 1.63	35				
		26	7/0.16	$\phi$ 1.3	0.76 to 0.84	1.43 to 1.63	24	Bell mouth	0.1 to 0.4	Lance height	2.4 to 2.6
								Bent UP	3° MAX	Crimping burr height	0.3 MAX
								Bent DOWN	3° MAX		



(Unit of the dimensions not specified in the table is mm.)

Tool product No.	HIF3-TB2630HC							Stripping dimension of wire		3.1 to 3.8	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.8	Twist	3° MAX
HIF3-2630SCC A1-2630SCC	UL1007 Stranded wire	26	7/0.16	ϕ 1.3	0.71 to 0.79	1.35 to 1.55	24	Position of top of contact wire	0.1 to 0.8	Rolling	10° MAX
		28	7/0.127	ϕ 1.2	0.65 to 0.71	1.25 to 1.45	16				
		30	7/0.1	ϕ 1.1	0.65 to 0.71	1.25 to 1.45	10	Bell mouth	0.1 to 0.4	Lance height	2.4 to 2.6
								Bent UP	3° MAX	Crimping burr height	0.3 MAX
								Bent DOWN	3° MAX		

Tool product No.	A3B-TA2630HC							Stripping dimension of wire		1.7 to 2.1		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.1 to 0.6	Twist	5° MAX	
A3B-2630SCC	Str. W.	26	7/0.16	Less than ϕ 1.2	0.54 to 0.60	1.30 to 1.40	20	Position of top of contact wire	0.1 to 0.7	Rolling	10° MAX	
	UL1007 Stranded wire	28	7/0.127	ϕ 1.2	0.50 to 0.56	1.25 to 1.35	9.8					
		30	7/0.1	ϕ 1.1	0.50 to 0.56	1.25 to 1.35	5.9	Bell mouth	0.2 to 0.5	Lance height	(1.17)	
									Bent UP	3° MAX		
									Bent DOWN	3° MAX		

Tool product No.	A3B-TA32HC							Stripping dimension of wire		1.7 to 2.1	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.6	Twist	5° MAX
A3B-32SCC	UL1571 Stranded wire	32	7/0.08	ϕ 0.54	0.40 to 0.46	0.90 to 0.96	2.9	Position of top of contact wire	0.1 to 0.7	Rolling	10° MAX
								Bell mouth	0.2 to 0.5	Lance height	(1.17)
								Bent UP	3° MAX		
								Bent DOWN	3° MAX		

Tool product No.	EC1-TA2226HC							Stripping dimension of wire		3.0 to 3.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	(0.2 to 0.8)	Twist	(4° MAX)
EC1-2226SC	UL1007 Stranded wire	22	17/0.16	ϕ 1.6	0.88 to 1.05	(1.90)	53	Position of top of contact wire	(0.1 to 0.8)	Rolling	(5° MAX)
		24	11/0.16	ϕ 1.5	0.87 to 1.00	(1.90)	35				
		26	7/0.16	ϕ 1.3	0.85 to 0.95	(1.90)	24	Bell mouth	(0.2 to 0.5)		
								Bent UP	(3° MAX)		
								Bent DOWN	(3° MAX)		

Tool product No.	PCN10-TA2226HC							Stripping dimension of wire			3.0 to 3.6	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.1 to 0.7	Twist	3° MAX	
PCN10-2226SC	UL1007 Stranded wire	22	17/0.16	ϕ 1.6	0.76 to 0.84	1.76 to 1.88	53	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX	
		24	11/0.16	ϕ 1.5	0.66 to 0.76	1.48 to 1.60	35					
		26	7/0.16	ϕ 1.3	0.66 to 0.74	1.48 to 1.60	24	Bell mouth	0.1 to 0.6	Lance height	1.85 to 2.1	
								Bent UP	3° MAX	Crimping burr height	0.3 MAX	
								Bent DOWN	3° MAX			

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	PCN10-TA2630HC							Stripping dimension of wire		3.0 to 3.6	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	3° MAX
PCN10-2630SC	UL1007 Stranded wire	26	7/0.16	ϕ 1.3	0.68 to 0.76	1.39 to 1.51	24	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		28	7/0.127	ϕ 1.2	0.68 to 0.76	1.39 to 1.51	16				
		30	7/0.1	ϕ 1.1	0.65 to 0.73	1.29 to 1.41	9.8	Bell mouth	0.1 to 0.6	Lance height	1.85 to 2.1
								Bent UP	3° MAX	Crimping burr height	0.3 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF1-T2428S							Stripping dimension of wire		1.9 to 2.4	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.5	Twist	3° MAX
DF1-2428SC	UL1007 Stranded wire	24	11/0.16	φ 1.5	0.75 to 0.83	1.47 to 1.59	35	Position of top of contact wire	0.1 to 0.6	Rolling	5° MAX
		26	7/0.16	φ 1.3	0.75 to 0.83	1.47 to 1.59	24				
		28	7/0.127	φ 1.2	0.66 to 0.74	1.37 to 1.49	16	Bell mouth	0.1 to 0.3	Lance height	0.6 to 0.75
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF2-TA2428HC							Stripping dimension of wire		1.6 to 2.1	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.5	Twist	3° MAX
DF2-2428PC	UL1007 (UL106) Stranded wire	24	11/0.16	ϕ 1.5	0.60 to 0.68	1.59 to 1.71	35	Position of top of contact wire	0.1 to 0.4	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.58 to 0.66	1.59 to 1.71	24				
		28	7/0.127	ϕ 1.2	0.56 to 0.64	1.49 to 1.61	16	Bell mouth	0.1 to 0.3	Lance height	0.4 to 0.45
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF3-TA2428HC							Stripping dimension of wire		1.8 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	3° MAX
DF3-2428SC DF3-2428SCC	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.68 to 0.76	1.47 to 1.59	35	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.58 to 0.66	1.37 to 1.49	24				
		28	7/0.127	ϕ 1.2	0.58 to 0.66	1.37 to 1.49	16	Bell mouth	0.1 to 0.3	Lance height	0.45 to 0.5
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF3-TA22HC							Stripping dimension of wire		1.8 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	3° MAX
DF3-22SC	UL1061 Stranded wire	22	17/0.16	ϕ 1.3	0.60 to 0.68	1.65 to 1.82	53	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
								Bell mouth	0.1 to 0.3	Lance height	0.45 to 0.5
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	DF3EP-TA2428HC							Stripping dimension of wire		1.9 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.8	Twist	3° MAX
DF3-EP2428PC	UL1007 Stranded wire	24	11/0.16	φ 1.5	0.74 to 0.80	1.65 to 1.75	35	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
		26	7/0.16	φ 1.3	0.68 to 0.76	1.50 to 1.60	24				
		28	7/0.127	φ 1.2	0.66 to 0.74	1.50 to 1.60	16	Bell mouth	0.1 to 0.3	Lance height	0.4 to 0.5
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF4-TA2428HC							Stripping dimension of wire		1.3 to 1.9	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	2° MAX
DF4-2428SC	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.56 to 0.64	1.47 to 1.59	35	Position of top of contact wire	0.1 to 0.3	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.54 to 0.62	1.47 to 1.59	24				
		28	7/0.127	ϕ 1.2	0.50 to 0.58	1.44 to 1.56	16	Bell mouth	0.1 to 0.3	Lance height	1.5 to 1.7
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF5-1822/CR-HT							Stripping dimension of wire		3.0 to 4.0	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 1.1	Twist	3° MAX
DF5-1822SC	UL1007 Stranded wire	18	34/0.18	ϕ 2.1	0.98 to 1.04	2.05 to 2.25	98	Position of top of contact wire	0.2 to 1.0	Rolling	5° MAX
		20	21/0.18	ϕ 1.8	0.86 to 0.92	1.80 to 2.00	88				
		22	17/0.16	ϕ 1.6	0.80 to 0.86	1.70 to 1.90	53	Bell mouth	0.2 to 0.5	Lance height	2.6 to 2.7
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF5A-1822/CR-HT							Stripping dimension of wire		3.0 to 4.0	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 1.1	Twist	3° MAX
DF5A-1822SC	UL1015 Stranded wire	18	34/0.18	ϕ 2.9	0.98 to 1.04	2.65 to 2.85	98	Position of top of contact wire	0.2 to 1.0	Rolling	5° MAX
		20	21/0.18	ϕ 2.6	0.86 to 0.92	2.50 to 2.70	88				
		22	17/0.16	ϕ 2.4	0.80 to 0.86	2.35 to 2.55	53	Bell mouth	0.2 to 0.5	Lance height	2.6 to 2.7
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF6-TA1822HC							Stripping dimension of wire		2.1 to 2.6	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.9	Twist	3° MAX
DF6-1822PC	UL1007 Stranded wire	18	34/0.18	ϕ 2.1	0.94 to 1.04	2.14 to 2.26	98	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		20	21/0.18	ϕ 1.8	0.88 to 0.98	2.04 to 2.16	88				
		22	17/0.16	ϕ 1.6	0.86 to 0.96	2.04 to 2.16	53	Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	DF6A-TA1822HC							Stripping dimension of wire		2.3 to 2.8	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.9	Twist	3° MAX
DF6A-1822PC	UL1015 Stranded wire	18	34/0.18	ϕ 2.9	0.94 to 1.02	2.80 to 3.00	98	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		20	21/0.18	ϕ 2.6	0.92 to 1.00	2.70 to 3.00	88				
		22	17/0.16	ϕ 2.4	0.82 to 0.90	2.70 to 2.90	53	Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT104/DF7-1618							Stripping dimension of wire		3.0 to 3.8		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.2 to 1.3	Twist	5° MAX	
DF7-1618SC DF7-1618SCA DF7-1618PC DF7-1618PCA	UL1007 Stranded wire	16	26/0.26	ϕ 2.4	1.26 to 1.34	2.95 to 3.10	147	Position of top of contact wire	0.2 to 1.1	Rolling	5° MAX	
		18	34/0.18	ϕ 2.1	1.10 to 1.18	2.85 to 3.00	98					
	UL1015 Stranded wire	16	26/0.26	ϕ 3.2	1.26 to 1.34	3.10 to 3.25	147	Bell mouth	0.2 to 0.6			
		18	34/0.18	ϕ 2.9	1.10 to 1.18	3.00 to 3.15	98	Bent UP	5° MAX	Crimping burr height	0.1 MAX	
									Bent DOWN	5° MAX	Crimp width	3.4

Tool product No.	HT104/DF7-2022							Stripping dimension of wire		3.0 to 3.8		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.2 to 1.3	Twist	5° MAX	
DF7-2022SC DF7-2022SCA DF7-2022PC DF7-2022PCA	UL1007 Stranded wire	20	21/0.18	φ 1.8	0.94 to 1.02	2.35 to 2.50	88	Position of top of contact wire	0.2 to 1.1	Rolling	5° MAX	
		22	17/0.16	φ 1.6	0.86 to 0.94	2.30 to 2.40	53					
	UL1015 Stranded wire	20	21/0.18	φ 2.6	0.94 to 1.02	2.45 to 2.60	88	Bell mouth	0.2 to 0.6			
		22	17/0.16	φ 2.4	0.86 to 0.94	2.35 to 2.50	53	Bent UP	5° MAX	Crimping burr height	0.1 MAX	
									Bent DOWN	5° MAX	Crimp width	3.4

Tool product No.	DF11-TA22HC							Stripping dimension of wire		1.7 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.7	Twist	2° MAX
DF11-22SC DF11-22SCA	UL1061 Stranded wire	22	17/0.16	ϕ 1.3	0.66 to 0.72	1.40 to 1.55	53	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
								Bell mouth	0.1 to 0.3	Lance height	1.8 to 1.9
								Bent UP	2° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX	Contact gap	0.21 to 0.27

Tool product No.	DF11-TA2428HC							Stripping dimension of wire		1.7 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.7	Twist	2° MAX
DF11-2428SC DF11-2428SCA DF11A-2428SC	UL1007 (UL1061) Stranded wire	24	11/0.16	ϕ 1.5	0.60 to 0.66	1.40 to 1.55	27.4	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.54 to 0.62	1.34 to 1.50	17.6				
		28	7/0.127	ϕ 1.2	0.54 to 0.60	1.30 to 1.46	11.7	Bell mouth	0.1 to 0.3	Lance height	1.8 to 1.9
								Bent UP	2° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX	Contact gap	0.21 to 0.27

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	HT102/DF11-2628S-S							Stripping dimension of wire		1.7 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.7	Twist	2° MAX
DF11-2428SC DF11-2428SCA DF11A-2428SC	Stranded wire	26	7/0.16	φ 0.8	0.54 to 0.62	1.25 to 1.35	17.6	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
				φ 0.58		1.15 to 1.30					
		28	7/0.127	φ 0.8	0.54 to 0.60	1.25 to 1.35	11.7	Bell mouth	0.1 to 0.3	Lance height	1.8 to 1.9
				φ 0.58		1.15 to 1.30		Bent UP	2° MAX	Crimping burr height	0.1 MAX
		(Note) This tool replaces the crimper by the covering diameter of the cable used.						Bent DOWN	3° MAX	Contact gap	0.21 to 0.27

Tool product No.	DF11-TA30HC							Stripping dimension of wire		1.7 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.7	Twist	2° MAX
DF11-30SC DF11-30SCA	UL1061 Stranded wire	30	7/0.1	ϕ 0.8	0.52 to 0.56	1.30 to 1.45	9.8	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
								Bell mouth	0.1 to 0.3	Lance height	1.8 to 1.9
								Bent UP	2° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX	Contact gap	0.21 to 0.27

Tool product No.	DF11EP-TA2428HC							Stripping dimension of wire		1.9 to 2.3	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 0.8	Twist	2° MAX
DF11-EP2428PC	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.60 to 0.66	1.40 to 1.56	35	Position of top of contact wire	0.2 to 0.5	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.54 to 0.60	1.34 to 1.50	24				
		28	7/0.127	ϕ 1.2	0.54 to 0.60	1.30 to 1.46	16	Bell mouth	0.1 to 0.3	Lance height	1.65 to 1.75
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT104/DF22-1416							Stripping dimension of wire		3.5 to 4.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 1.2	Twist	3° MAX
DF22-1416PC DF22-1416SC	UL1430 Stranded wire	16	26/0.26	ϕ 2.6	1.32 to 1.40	3.00 to 3.20	147	Position of top of contact wire	0.2 to 1.3	Rolling	3° MAX
								Bell mouth	0.2 to 0.6		
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT104/DF22A-1416							Stripping dimension of wire		3.5 to 4.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.2 to 1.2	Twist	3° MAX
DF22A-1416PC DF22A-1416SC	UL1015 Stranded wire	14	41/0.26	ϕ 3.7	1.42 to 1.50	4.00 to 4.20	147	Position of top of contact wire	0.2 to 1.3	Rolling	3° MAX
		16	54/0.18	ϕ 3.2	1.30 to 1.38	3.70 to 3.90	147	Bell mouth	0.2 to 0.6		
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	DF1B-TA2022SHC							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
	Covering position		0.1 to 0.9	Twist				3° MAX			
DF1B-2022SC DF1B-2022SCA	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.84 to 0.94	2.10 to 2.20	88	Position of top of contact wire	0.1 to 1.2	Rolling	5° MAX
		22	17/0.16	ϕ 1.6	0.74 to 0.86	2.00 to 2.20	53				
								Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF1B-TA2022PHC							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
	Covering position		0.1 to 0.7	Twist				2° MAX			
DF1B-2022PC DF1B-2022PCB	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.86 to 0.96	1.65 to 1.85	88	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		22	17/0.16	ϕ 1.6	0.82 to 0.90	1.45 to 1.65	53				
								Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF1B-TA2428SHC							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
	Covering position		0.1 to 0.9	Twist				3° MAX			
DF1B-2428SC DF1B-2428SCA	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.76 to 0.82	1.40 to 1.60	36	Position of top of contact wire	0.1 to 1.2	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.68 to 0.74	1.25 to 1.45	24				
		28	7/0.127	ϕ 1.2	0.68 to 0.74	1.25 to 1.45	16	Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF1B-TA2428PHC							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	2° MAX
DF1B-2428PC DF1-PD2428SCB	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.68 to 0.74	1.40 to 1.60	36	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.60 to 0.66	1.35 to 1.55	24				
		28	7/0.127	ϕ 1.2	0.60 to 0.66	1.30 to 1.50	16	Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	DF1B-TA30SHC							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.9	Twist	3° MAX
DF1B-30SC DF1B-30SCA	UL1007 Stranded wire	30	7/0.1	ϕ 1.1	0.60 to 0.66	1.20 to 1.40	9.8	Position of top of contact wire	0.1 to 1.2	Rolling	5° MAX
								Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	DF1B-TA30PHC							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
	DF1B-30PC DF1B-30PCB	UL1007 Stranded wire	30	7/0.1	ϕ 1.1	0.48 to 0.54	1.10 to 1.30	9.8	Covering position	0.1 to 0.7	Twist
								Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
								Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT102/DF1E-2022S							Stripping dimension of wire		2.0 to 2.5	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.9	Twist	3° MAX
DF1E-2022SC	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.88 to 0.94	2.10 to 2.20	59	Position of top of contact wire	0.1 to 1.2	Rolling	5° MAX
		22	17/0.16	ϕ 1.6	0.78 to 0.84	2.00 to 2.10	39	Bell mouth	0.2 to 0.4	Lance height	0.4 to 0.6
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT102/DF1BE-2022P							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	2° MAX
DF1B-2022PC DF1B-2022PCB DF1E-2022PC	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.86 to 0.96	1.65 to 1.85	88	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		22	17/0.16	ϕ 1.6	0.82 to 0.90	1.45 to 1.65	53	Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT102/DF1BE-2428P							Stripping dimension of wire		3.0 to 3.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	2° MAX
DF1B-2428PC DF1-PD2428SCB DF1E-2428PC	UL1007 Stranded wire	24	11/0.16	ϕ 1.5	0.68 to 0.74	1.40 to 1.60	36	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX
		26	7/0.16	ϕ 1.3	0.60 to 0.66	1.35 to 1.55	24				
		28	7/0.127	ϕ 1.2	0.60 to 0.66	1.30 to 1.50	16	Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	HT102/DF1BE-30P							Stripping dimension of wire		3.0 to 3.7		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.1 to 0.7	Twist	2° MAX	
DF1B-30PC DF1B-30PCB DF1E-30PC	UL1007 Stranded wire	30	7/0.1	ϕ 1.1	0.48 to 0.54	1.10 to 1.30	9.8	Position of top of contact wire	0.1 to 0.5	Rolling	5° MAX	
									Bell mouth	0.1 to 0.3	Lance height	2.1 to 2.4
									Bent UP	3° MAX	Crimping burr height	0.1 MAX
									Bent DOWN	3° MAX		

(Unit of the dimensions not specified in the table is mm.)

Tool product No.	MDF6-TA1618HC							Stripping dimension of wire		2.7 to 4.4	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 1.1	Twist	3° MAX
MDF6-1618SC	UL1007 Stranded wire	16	26/0.26	ϕ 2.4	1.28 to 1.34	2.40 to 2.55	147	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		18	34/0.18	ϕ 2.1	1.12 to 1.18	2.20 to 2.35	127				
								Bell mouth	0.1 to 0.3	Lance height	0.65 to 0.75
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	MDF6-TA2022HC							Stripping dimension of wire		2.7 to 4.4	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 1.1	Twist	3° MAX
MDF6-2022SC	UL1007 Stranded wire	20	21/0.18	ϕ 1.8	0.90 to 0.96	1.90 to 2.05	88	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		22	17/0.16	ϕ 1.6	0.84 to 0.90	1.70 to 1.85	53				
								Bell mouth	0.1 to 0.3	Lance height	0.65 to 0.75
								Bent UP	3° MAX	Crimping burr height	0.1 MAX
								Bent DOWN	3° MAX		

Tool product No.	MDF12-TA1416HC							Stripping dimension of wire		3.3 to 4.2		
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard				
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension	
								Covering position	0.5 to 1.4	Twist	2° MAX	
MDF12-1416PC	Str. W.	14	41/0.26	ϕ 3.0	1.44 to 1.56	2.80 to 2.95	147	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX	
	UL1007 Stranded wire	16	26/0.26	ϕ 2.4	1.32 to 1.40	2.70 to 2.85	147					
									Bell mouth	0.1 to 0.5	Lance height	0.1 to 0.3
									Bent UP	3° MAX	Crimping burr height	0.2 MAX
									Bent DOWN	3° MAX		

Tool product No.	MDF12A-TA1416HC							Stripping dimension of wire		3.3 to 4.2	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.5 to 1.4	Twist	2° MAX
MDF12A-1416PC	UL1015 Stranded wire	14	41/0.26	ϕ 3.7	1.44 to 1.56	3.60 to 3.80	147	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		16	26/0.26	ϕ 3.2	1.32 to 1.40	3.40 to 3.60	147				
								Bell mouth	0.1 to 0.5	Lance height	0.1 to 0.3
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

Tool product No.	MDF12-TA1822HC							Stripping dimension of wire		3.3 to 4.2	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.5 to 1.4	Twist	2° MAX
MDF12-1822PC	UL1007 Stranded wire	18	34/0.18	ϕ 2.1	1.06 to 1.12	2.10 to 2.25	98	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		20	21/0.18	ϕ 1.8	1.02 to 1.10	2.05 to 2.20	88				
		22	17/0.16	ϕ 1.6	1.02 to 1.08	2.00 to 2.15	53	Bell mouth	0.1 to 0.5	Lance height	0.1 to 0.3
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

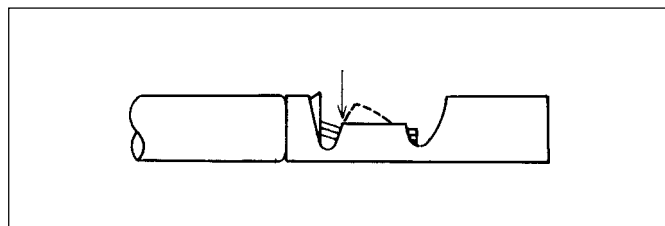


(Unit of the dimensions not specified in the table is mm.)

Tool product No.	MDF12A-TA1822HC							Stripping dimension of wire		3.3 to 4.2	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.5 to 1.4	Twist	2° MAX
MDF12A-1822PC	UL1015 Stranded wire	18	34/0.18	ϕ 2.9	1.06 to 1.12	2.80 to 2.97	98	Position of top of contact wire	0.1 to 1.0	Rolling	5° MAX
		20	21/0.18	ϕ 2.6	1.02 to 1.10	2.65 to 2.84	88				
		22	17/0.16	ϕ 2.4	1.02 to 1.08	2.63 to 2.75	53	Bell mouth	0.1 to 0.5	Lance height	0.1 to 0.3
								Bent UP	3° MAX	Crimping burr height	0.2 MAX
								Bent DOWN	3° MAX		

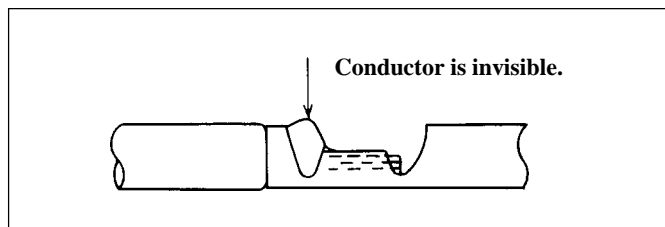
Tool product No.	HT104/GT3-2024							Stripping dimension of wire		4.1 to 4.7	
Applicable contact product No.	Standard applicable wire				Crimp height (contact wire)	Crimp height (Covering)	Tensile strength (N) or more	Crimping quality standard			
	STYLE No.	AWG No.	Structure of contact wire	Outside diameter of covering				Item	Dimension	Item	Dimension
								Covering position	0.1 to 0.7	Twist	3° MAX
GT3-2024SCF	JIS AVS  Stranded wire	0.5	7/0.32	ϕ 2.0	0.98 to 1.04	2.20 to 2.30	88	Position of top of contact wire	0.1 to 0.7	Rolling	5° MAX
		0.3	7/0.26	ϕ 1.8	0.89 to 0.95	2.10 to 2.20	53				
								Bell mouth	0.2 to 0.5		
								Bent UP	3° MAX	Crimping burr height	0.3 MAX
								Bent DOWN	3° MAX		

## 7-2. Example of defective crimping



### (1) No or excessive bell mouth

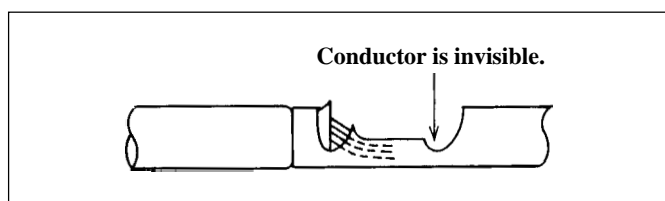
This may occur because of adjustment condition of the tool or setting of the contact to the tool. There is a danger of wire break of the conductor, shortage of tensile strength or unsteady state of electrical connection since there is no bell mouth or an excessive bell mouth.



### (2) Deep indentation

This may occur when the stripping dimensions of wire or setting of the wire to the tool is improper.

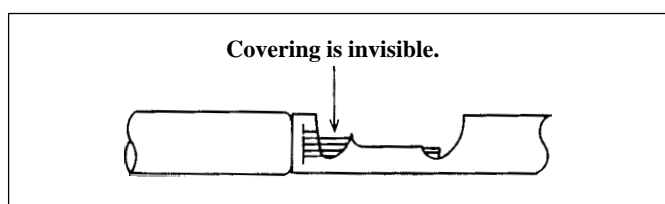
There is a danger of wire break of the conductor by the deep indentation.



### (3) Insufficient insertion of conductor

This may occur when the stripping dimensions of wire is improper.

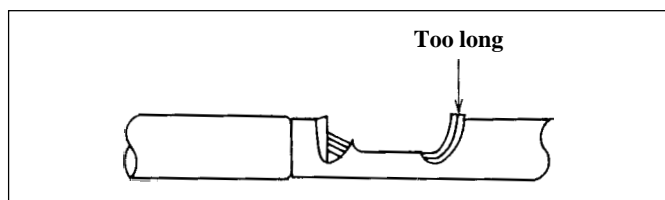
There is a danger of the shortage of tensile strength or unsteady state of electrical connection because of the insufficient insertion of the conductor.



### (4) Poor pressing

This may occur when the stripping dimensions of the wire is improper.

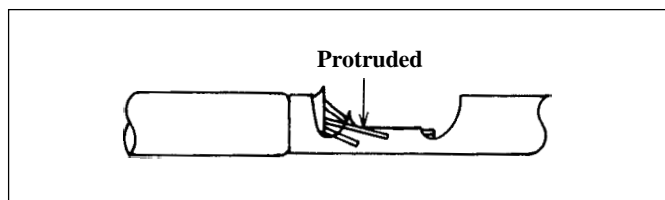
There is a danger of wire break since the load applied to the wire is directly transmitted to the crimped section of the conductor by the poor pressing.



### (5) Protrusion of the conductor is too long.

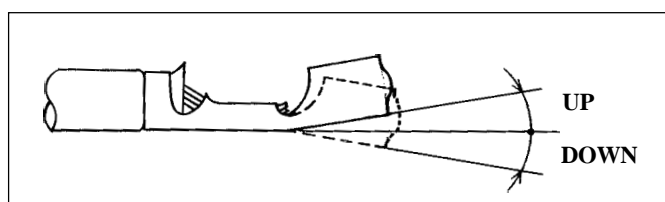
This may occur when the stripping dimensions of the wire or setting of the wire to the tool is improper.

There is a danger of contact trouble of the contact or insufficient insertion into the housing since the protrusion of the conductor is too long.



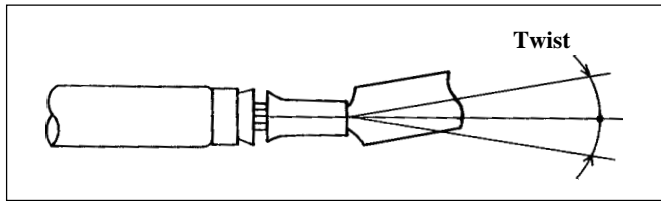
### (6) Protruded conductor

This may occur when the wire, the conductor of which is loosened is used. There is a danger of the unsteady state of electrical connection or shortage of tensile strength because of the protruded conductor.



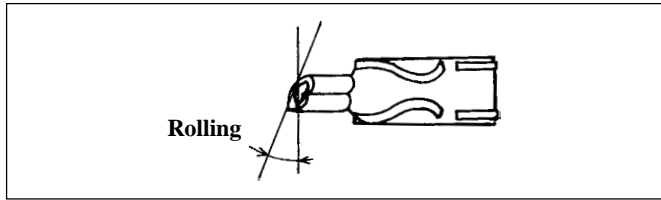
### (7) Deformed contact (Bent UP/DOWN)

This may occur by the adjustment condition or wear of the tool, setting condition of the contact in the tool, or handling of the contact. If the bent UP/DOWN is excessive, insertion of the contact into the housing may not be performed.



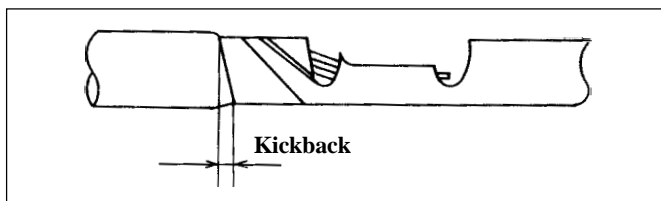
(8) Deformed contact (Twist)

This may occur by the adjustment condition of the tool, setting condition of the contact in the tool, or handling of the contact. If the twist is excessive, insertion of the contact into the housing may not be performed.



(9) Deformed contact (Rolling)

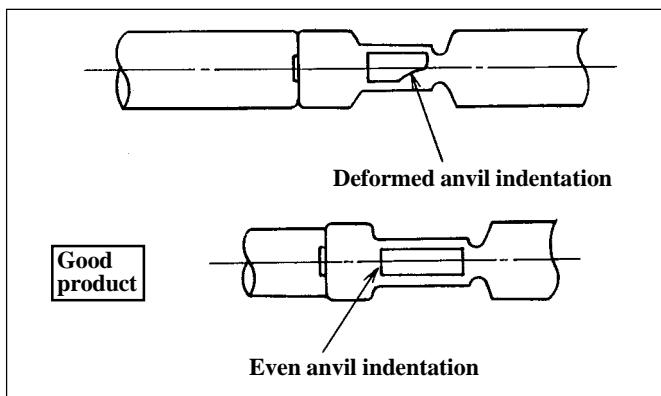
This may occur by the adjustment condition of the tool, wear of blade edge, setting condition of the contact in the tool or handling of the contact. If the rolling is excessive, insertion of the contact into the housing may not be performed.



(10) Deformed insulation barrel (Kickback)

This may occur when the wire that is not applicable to the tool is used.

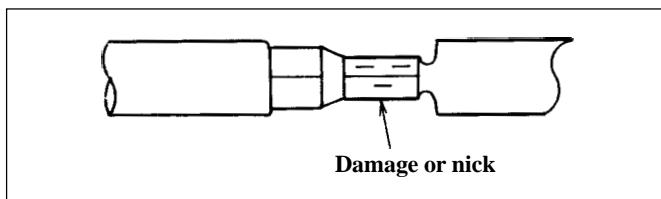
If the kickback is excessive, there may be a problem of pressure resistance since the contact is exposed from the housing after the contact has been inserted into the housing.



(11) Uneven anvil indentation

This may occur by the wear of anvil or the like.

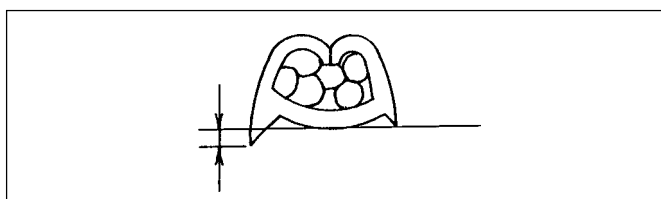
If the anvil indentation is uneven, there may be an unsteady state of electrical contact.



(12) Damaged or nicked crimped face

This may occur when there is a damage or wear on the crimper.

If there is a damage or nick on the crimped face, deformation of the contact, peeling of coatings, etc. may occur.

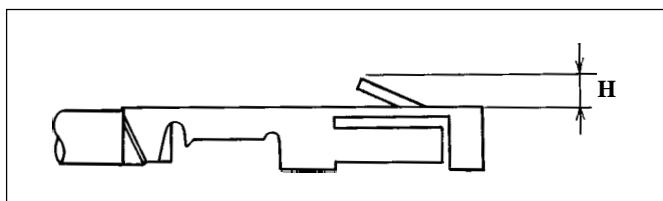


(13) Too large or irregular crimping burr

This may occur because of the adjustment condition of the tool, or wear or damage on the crimper or anvil. There is a danger of crack on the contact at the burr section, unsteady state of electrical connection, shortage of tensile strength, or deformation of the contact since the burr is excessive, or right- and left-hand sides of the contact are not even.

## 8. Insertion of contact into housing

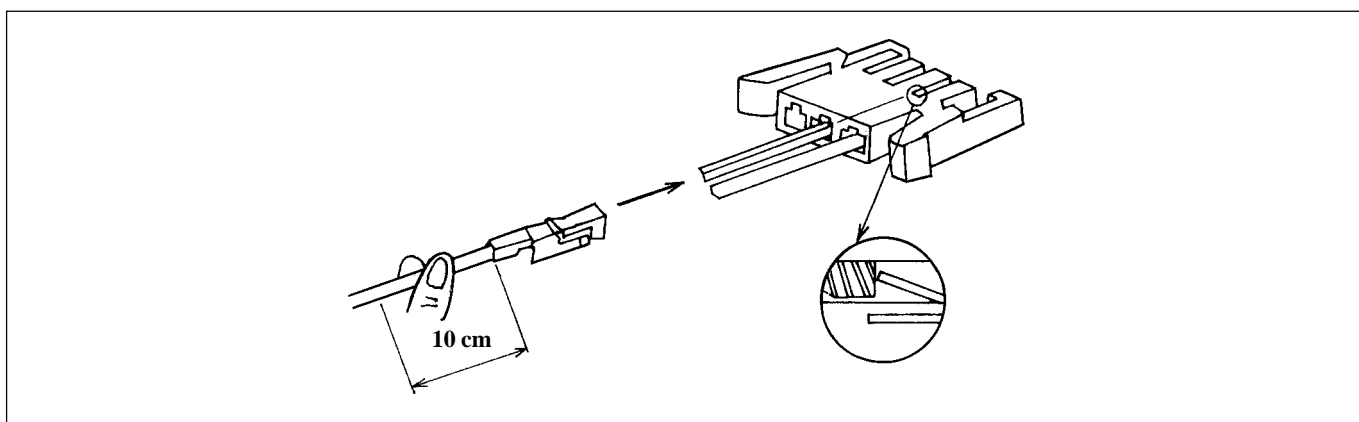
### 8-1. Checking of lance height



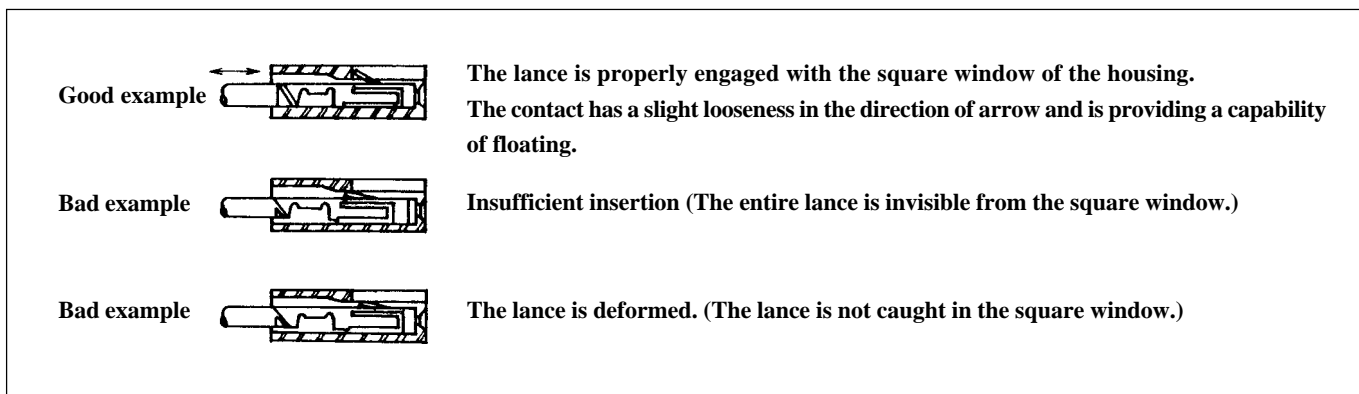
Check to be sure that the lance height of the crimped contact is in the range of the specified dimensions.

### 8-2. Assembling procedure (example)

- (1) Hold a part of the wire which is located within 10 cm from the contact and insert it into the housing.
- (2) Insert the contact into the housing so that the contact should be levelled to the housing.
- (3) Do not interrupt inserting the contact when performing the insertion and completely perform the insertion until the lance is engaged. There are a sound of "snap" and response when the lance is properly engaged.



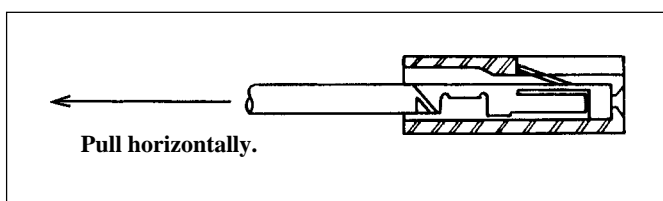
### 8-3. Checking the assembly condition of the housing



### 8-4. Drawing out the contact

Drawing out the contact from the housing varies in accordance with the connectors. Exclusive jigs for drawing out the contact are prepared for some tools. For details, check the catalogue for connectors.

### 8-5. Checking after assembly



- (1) Check to be sure that the contact is correctly assembled into the housing.
- (2) Slightly pull the wire by hand and check to be sure that the contact cannot be pulled out.

## **9. Other precautions**

### **9-1. Precautions when tying the wire**

Make an allowance for the wire when tying the wire so that an extra load is not applied to the contact.

When tying both ends of the wire, be careful that any load is not applied to the contact on which the wire is tied first.

### **9-2. Continuity pressure resistance check**

When performing the electrical test for the tied wire, perform the test in a state that the wire is fit for the connector on the receiving side.

If foreign material is inserted into the contact section of the contact, the contact section is deformed. As a result, there is a danger of defective continuity.

### **9-3. Handling the contact**

- (1) Do not touch the contact more frequently than minimum required opportunity.
- (2) When touching the contact, wear the gloves or the like to prevent the contact from corrosion.
- (3) Do not roughly handle the contact. The contact is deformed if any thing is placed on the contact or the contact is dropped.
- (4) Do not forcibly pull the contact when it is entangled. Disentangle it with care to prevent it from possible deformation.
- (5) Lightly pick up the contact when picking it up. Do not pick up the lance, contact section, etc. which are easily deformed.
- (6) Be careful so that the respective contacts of the wires that have been crimped should not be entangled with each other.

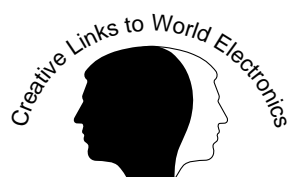
In case tying or overlapping the crimped wires, be careful that external force should not be applied to the contacts.

- (7) Keep the contact in a polyvinyl bag or the like to prevent it from corrosion.

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