

# IARPB<sup>®</sup> VERTICAL CONNECTOR

## Instruction Manual

Rev.	ECN	Date	Prepared by	Checked by	Approved by
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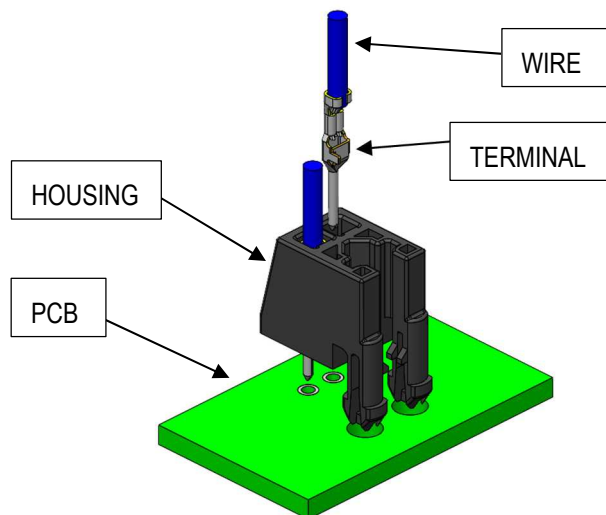
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## 1. Purpose

The Manual explains the handling of IARPB VERTICAL CONNECTOR.

## 2. Applicable items

The Manual is applicable to the items listed below.



Name	Part number	NOTE	Image
2P HOUSING	V0145-91002-01	-	
3P HOUSING	V0145-91003-01	Not Available	
4P HOUSING	V0145-91004-01	-	
5P HOUSING	V0145-91005-01	-	
6P HOUSING	V0145-91006-01	-	
7P HOUSING	V0145-91007-01	-	
8P HOUSING	V0145-91008-01	Not Available	
9P HOUSING	V0145-91009-01	Not Available	
10P HOUSING	V0145-91010-01	Not Available	

Name	Part number	Image
TERMINAL	V0145-71001-01	

### 3. Crimping procedure

#### 3-1. Applicable wires

Table1. Applicable wires

Wire size	Insulation outer diameter
0.3mm <sup>2</sup>	φ1.67mm MAX.

#### 3-2. Wire strip length

- ① Strip the insulation off at the dimension shown in Fig .1.
- ② Check to see that there is no damage to the conductors or insulation, cut off conductors, short conductors and deformed conductors as shown in Fig. 2.

Do not use wires with damaged conductors, cut off conductors, short conductor, and deformed conductors.

Using faulty wires may cause crimping problems.

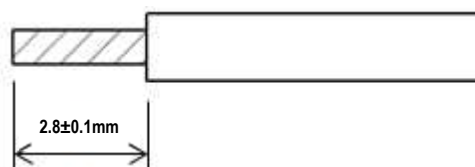


Fig 1. Wire strip

Condition	Image	Condition	Image
Good		Cut off conductors (defect)	
Damaged conductors (defect)		Deformed (defect)	

Fig 2. Stripped wires (unacceptable examples)

### 3-3. Terminal part names

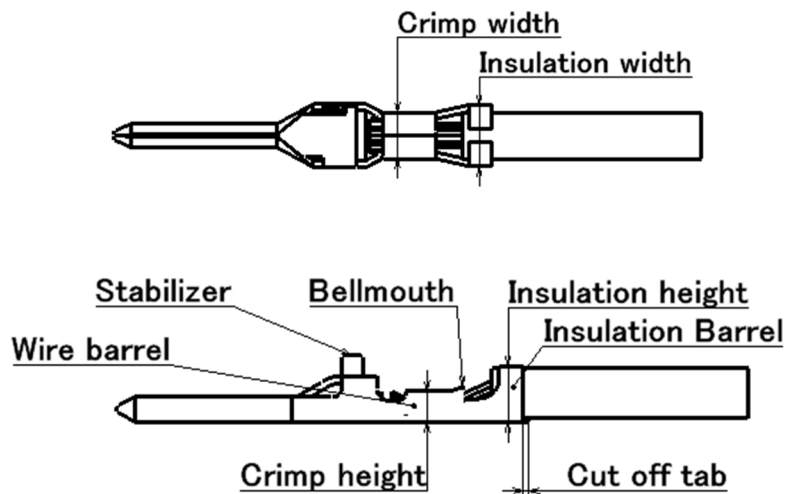


Fig 3. Terminal part names

### 3-4. Crimping requirements

#### (1) Crimp dimension

Terminals must satisfy the crimp dimension specified in Table 2.

Table 2. Crimp dimension

Wire size	Insulation outer diameter	Crimp height (※)	Crimp width	Insulation height	Insulation width
0.3mm <sup>2</sup>	Φ1.67mm MAX.	0.85±0.05 mm	1.40±0.05 mm	1.55±0.05 mm	1.85±0.05 mm

※Crimp dimensions may be different depending on conductor construction of the wire.

Please contact our sales Department shown in 10 (sheet17) about wire used, then we will verify it and notify you the appropriate crimp dimensions.

Use the blade micrometer shown in Fig.4 for measurement.



Fig 4. Micrometer

(1)-1. Measuring method for crimp height and width of wire barrel is described below.

Measure with a micrometer between the top and the bottom of the wire barrel or both sides of the wire barrel. (See Fig. 5.)

Fix the terminals firmly so that they do not rattle.

Do not pinch the bell mouth as it cannot measure the crimp height accurately.

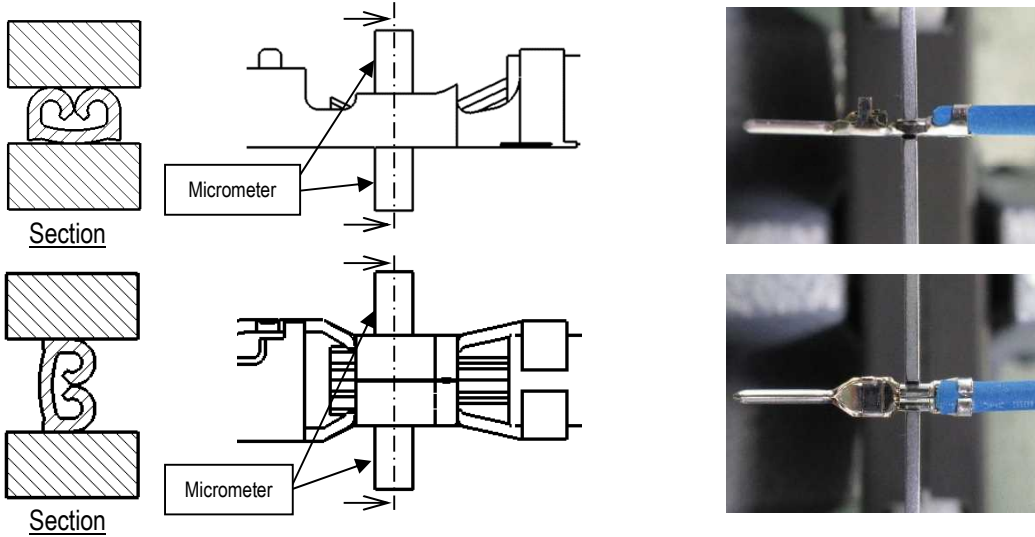


Fig 5. Crimp height and width measurement

(1)-2. Measuring method for crimp height and wide of Insulation barrel is described below.

Measure with a micrometer between the top and the bottom of the insulation barrel or both sides of the insulation barrel. (See Fig. 6.)

Fix the terminals firmly so that they do not rattle.

There is possibility of damage on the conductor because the insulation barrel bite into the wires by over-crimping.

Cut off the insulation barrel only, and strip off the covering, then check that there is no damage on the conductor. (See Fig.7)

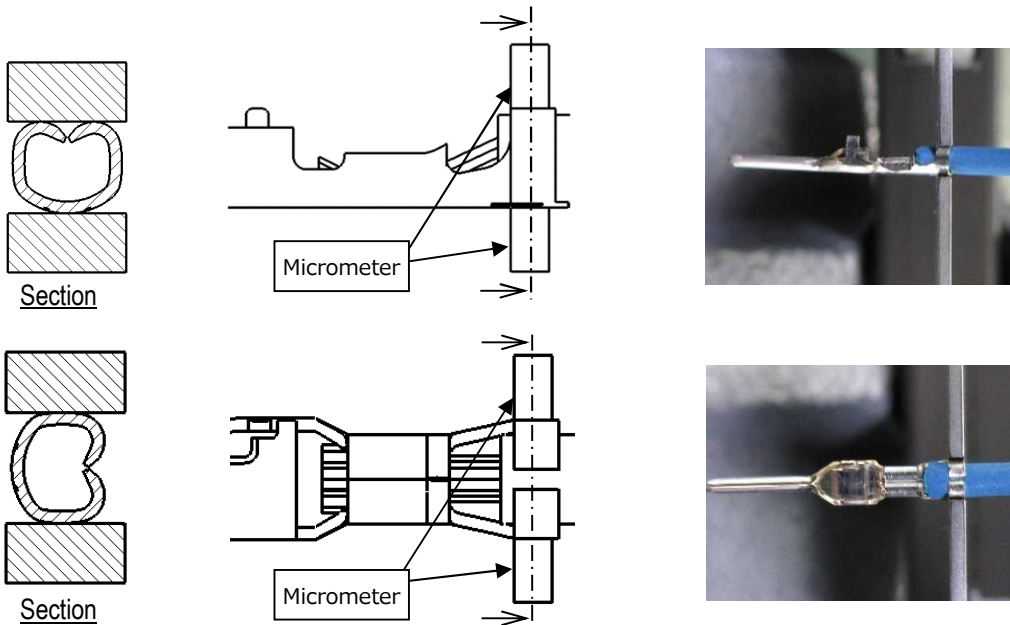


Fig 6. Insulation height and width measurement

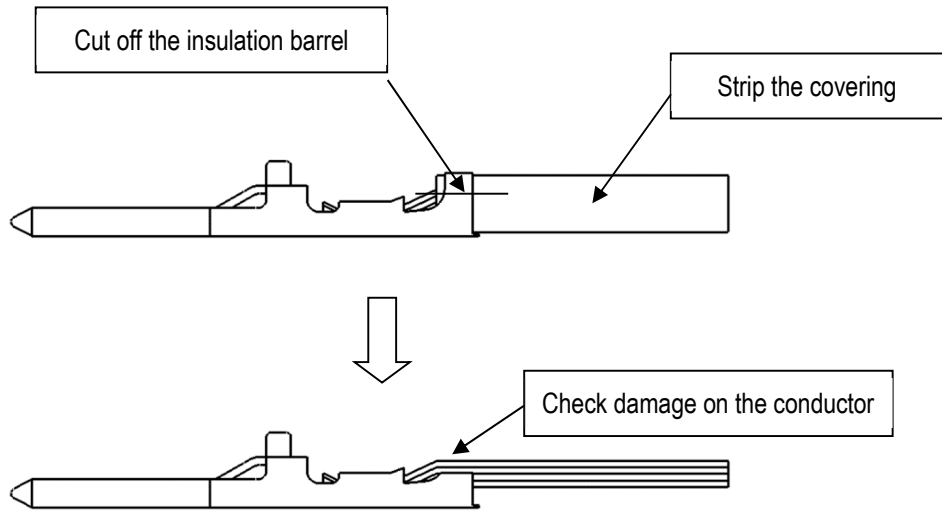


Fig.7 How to check damage (by over-crimping insulation barrel)

(2) Bottom burrs

Burrs produced during crimping process must not extend beyond the bottom surface. (See Fig.8)

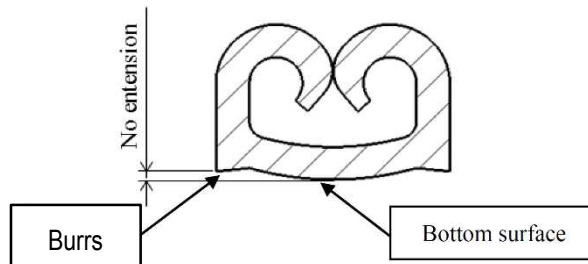


Fig 8. Bottom burrs

(3) Bellmouth, excess conductors, and cut-off tab

Bellmouth, excess conductors, and cut-off tab must satisfy the dimensions shown in Fig. 9.

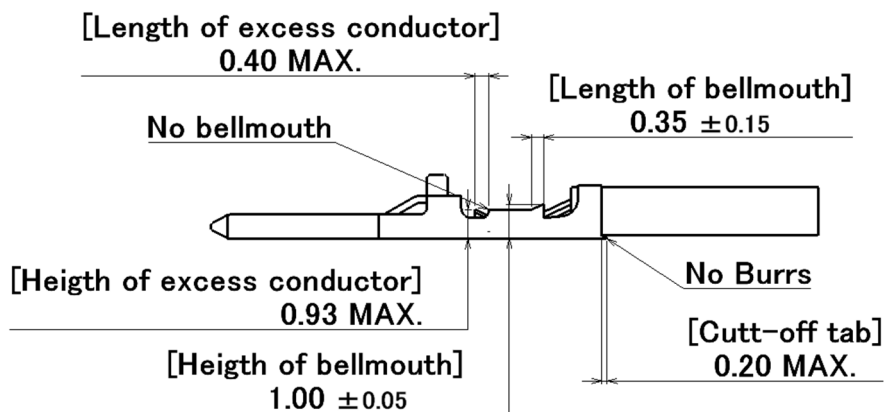


Fig 9. Bellmouth, excess conductors, and cut-off tab

(4) Unaligned wire barrel ends

Unaligned wire barrel ends are 0.1mm MAX. (see Fig.10)

※If wire barrel ends are not aligned, resulting in different dimension of excess conductors(Fig. 9 0.40MAX.) or bellmouth between the sides (Fig. 9 0.35±0.15), dimensions must be measured on larger side and be satisfied. (In the case shown in Fig.11, measure excess conductors, bellmouth.)

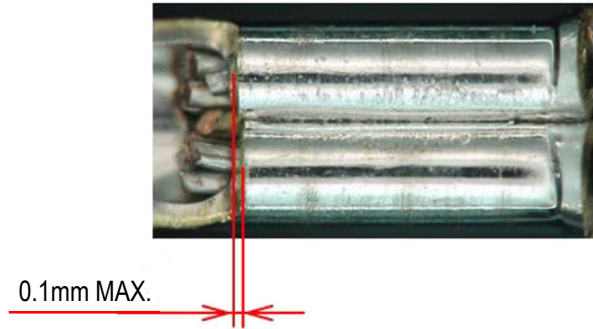


Fig 10. Unaligned wire barrel ends

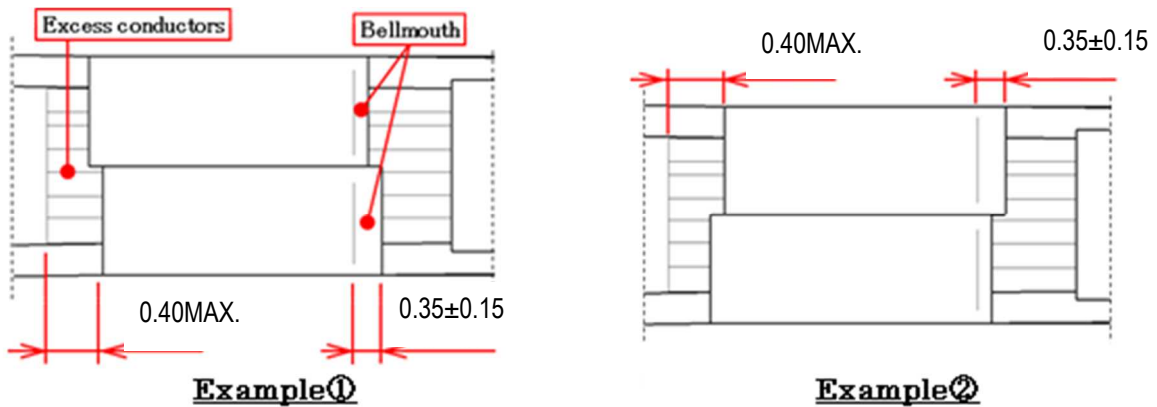


Fig 11. Examples of unaligned wire barrel ends

(5) Rolling

Rolling is 4° MAX. from the wire barrel (baseline). (See Fig.12)

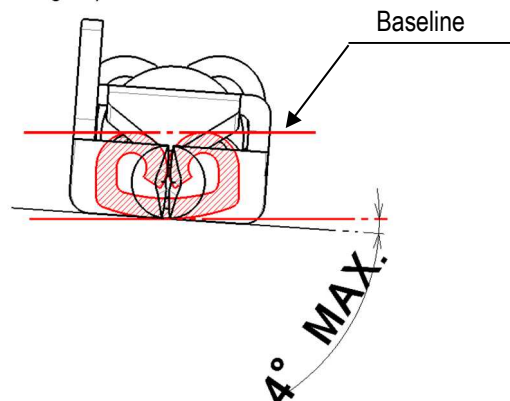


Fig 12. Rolling



(6) Terminal twist

Terminal twist is 3° MAX. from the wire barrel (baseline). (see Fig. 13)

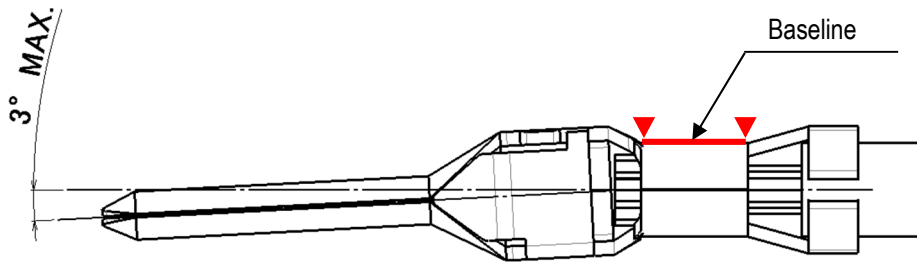


Fig 13. Terminal twist

(7) Bend up and Bend down

Bend up and Bend down from the wire barrel must satisfy the dimensions shown in Fig.14 and 15.

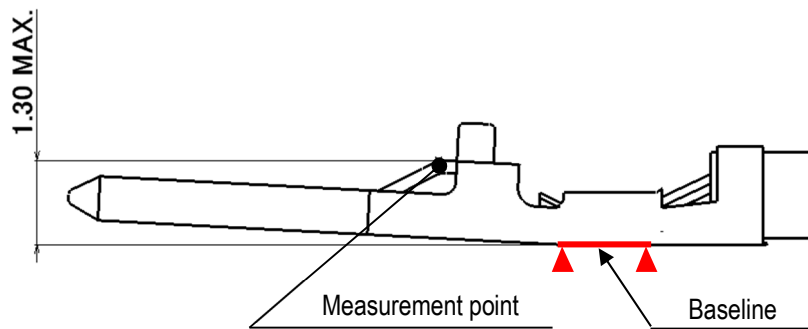


Fig 14. Bend up

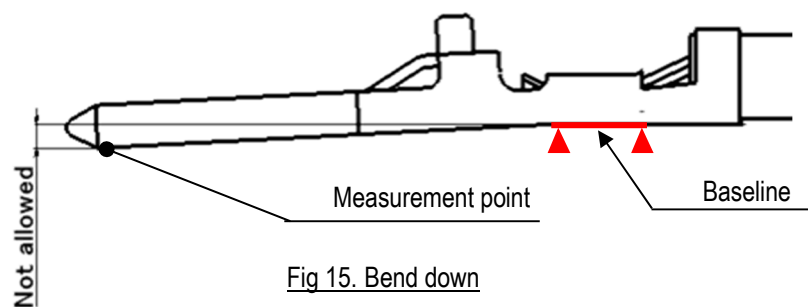


Fig 15. Bend down

**3-5. Defective criteria**

Terminals with the following conditions are deemed defective.

**(1) No rear bellmouth**

Rear bellmouth is not formed. (See Fig.16)

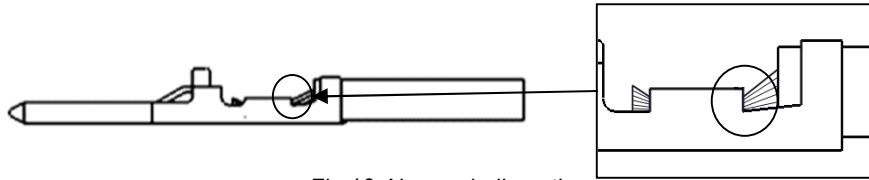


Fig 16. No rear bellmouth

**(2) Insufficient conductors' insertion**

Conductors are insufficiently inserted into the wire barrel. (See Fig.17)

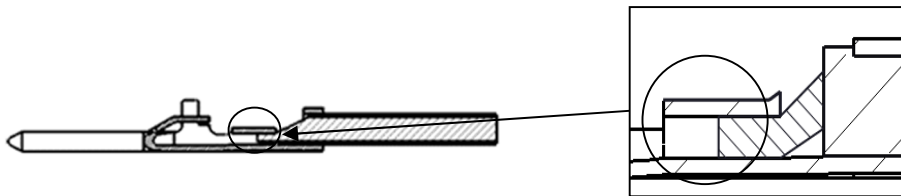


Fig 17. Insufficient conductors' insertion

**(3) Excessive conductors out**

Excess conductors protrude from the wire barrel and do not satisfy the dimension in Fig.9 of sheet seven. (See Fig.18)

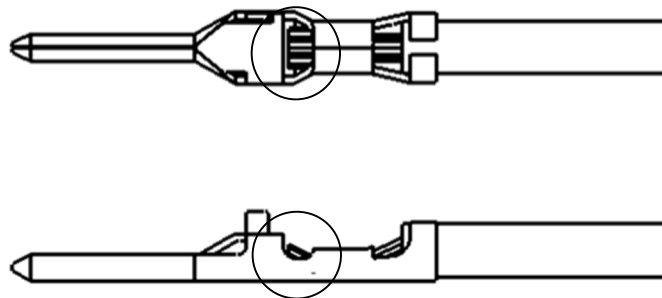


Fig 18. Excessive conductors out

**(4) Incomplete conductors crimping**

Conductors are not crimped inside the wire barrel, or within the terminal. (See Fig.19)

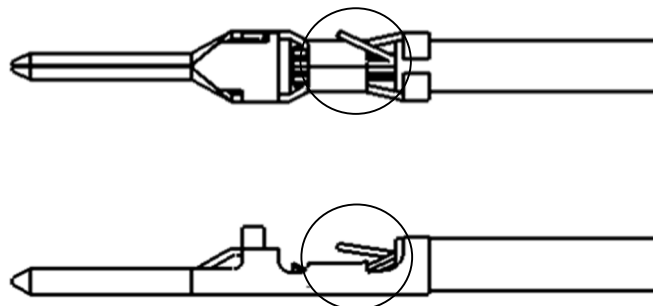


Fig 19. Incomplete conductors crimping

## (5) Incomplete insulation crimping

Strip length is too short, and insulation is crimped inside the wire barrel (see Fig. 20).

Strip length is too long, and insulation does not fit completely inside the insulation barrel (see Fig.21).

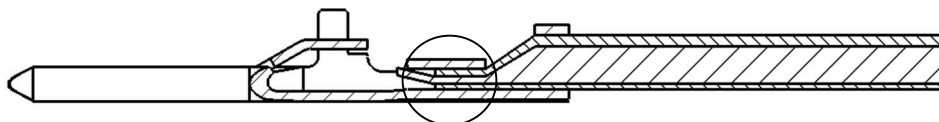


Fig 20. Strip too short

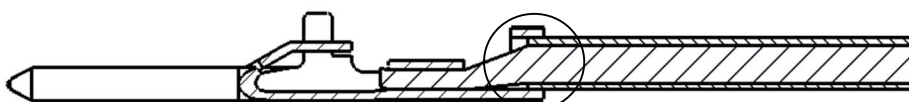
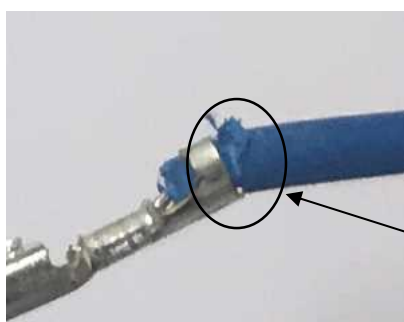


Fig 21. Strip too long

## (6) Torn insulation

Insulation is torn by insulation barrel. (See Fig.22)



Torn insulation caused by  
insulation crimping.

Fig 22. Torn insulation

### 4. Terminal insertion

- ① Ensure that the terminal is crimped correctly and there is no damage, deform or dirt present.
- ② Hold the wire to insert the terminal as shown in Fig.23.
- ③ Insert the terminal into the corresponding core hole of the housing, as deeply as possible, in the orientation as shown in Fig. 23.
- ④ Once the terminal is inserted, ensure that the terminal retention is fastened by pulling the wire lightly towards you.

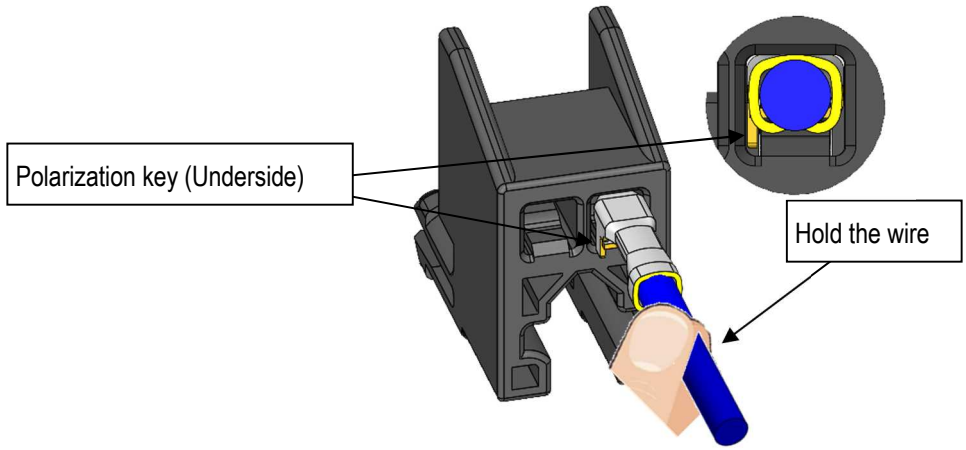


Fig 23. Terminal insertion direction

Notes:

- ① Terminals must be inserted in the orientation instructed. Forcibly inserting terminals in any other orientation may result in damage or deformation. Furthermore, if the terminals are inserted with incorrect orientation, terminal key prevents insertion into core holes. (See Fig.24)
- ② Once the terminal is inserted, do not apply excessive pulling force to the wire.

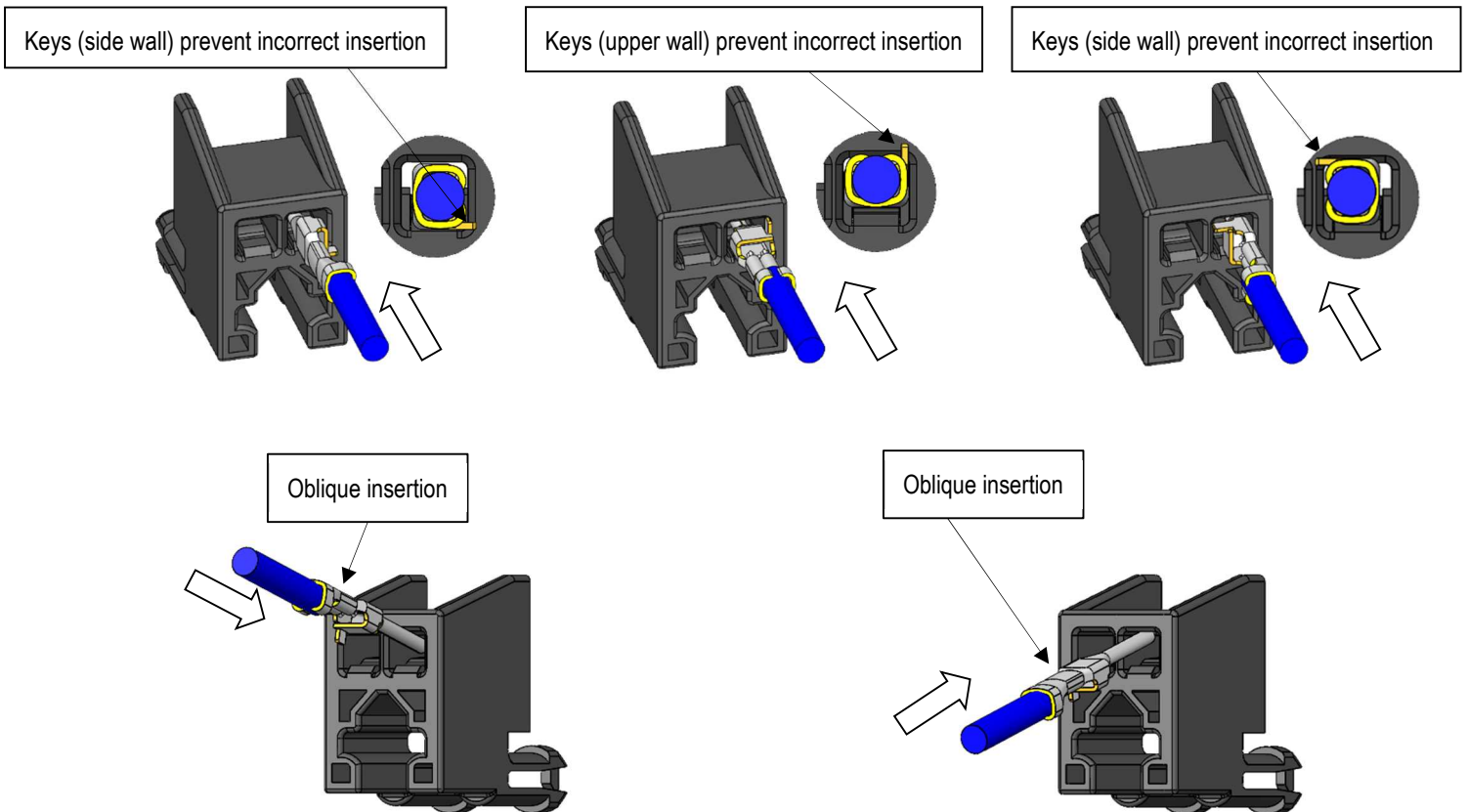


Fig24. Incorrect terminal insertion

## 5. Solderability

### 5-1. Recommended conditions for soldering

Recommended soldering conditions are shown in Table3,4.

Table3. Recommended flow soldering conditions

Temperature	Immersion time	Composition	Flux
255~275°C	5~10s	Sn-3.0Ag-0.5Cu	Flux activity: Rosin L1 type (J-STD-004)

Table4. Recommended hand soldering conditions

Soldering iron temperature	Soldering time	Solder Structure
340~360°C	4~6s	Sn-3.0Ag-0.5Cu

- Recommend that ensure the PCB and the bottom surface of the housing are touching each other in applying the load of 2N to 5N. (See Fig.25)  
Solderability is affected by PCB dimensions, placement of installed parts, etc.  
If the solderability is insufficient, it should examine appropriate conditions.
- Do not allow solder to come in contact with the housing bosses during flow.
- Do not touch the housing with the soldering iron when hand soldering.
- If the soldering time exceeds in Table 3 and 4 or the mounting time, heat may be transferred from the terminals and the housing may melt.

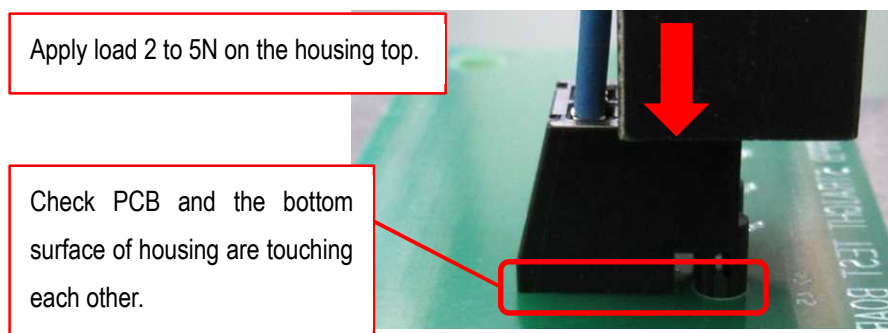


Fig.25 Pressing load

## 6. How to release the terminals

- ① Hold the wire and push in the terminal lightly. Place the terminal releasing jig into the releasing apertures of the housing (see Figs. 26 and 27).
- ② Insert the tip of the terminal removal JIG diagonally from below as shown in Figure 28. When the terminal removal JIG and the housing come into contact as shown in Figure 29, Lift the pull-out JIG upwards as shown in Figure 30 to release the resin lance. While maintaining this state, pull out the terminal wire horizontally.
- ③ If there is any difficulty in pulling out the terminal, do not pull it forcefully. Check that the jig is in the correct place, that it is pushed fully in, etc. and repeat the procedures ① and ②.

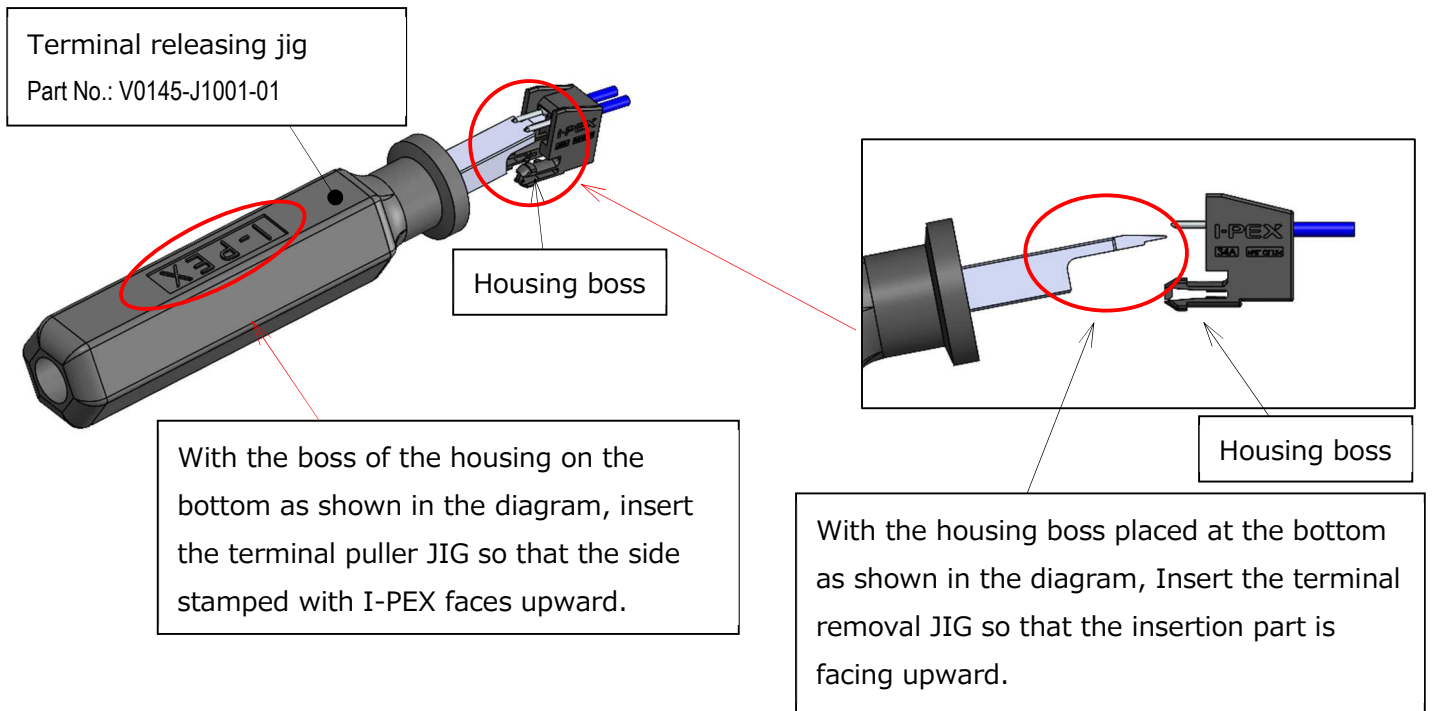


Fig26 Housing and Direction of release

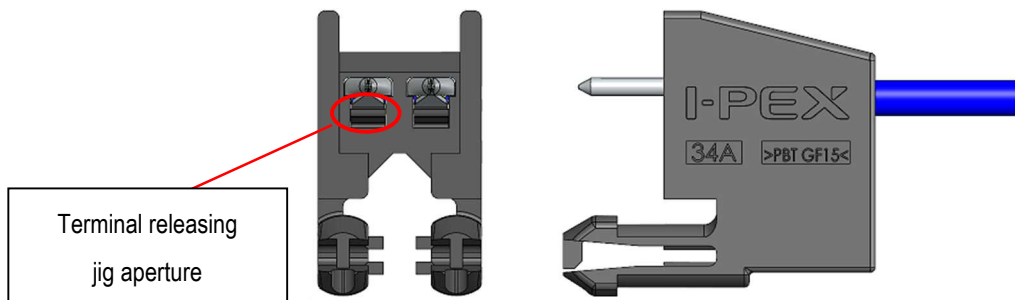


Fig27 Terminal releasing jig aperture

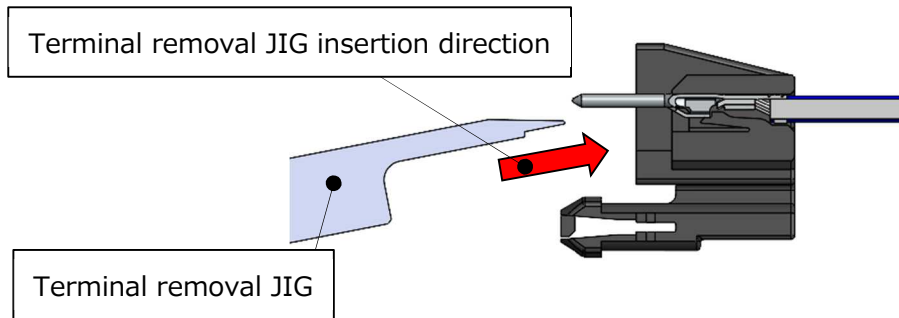


Fig.28 Terminal removal JIG insertion process

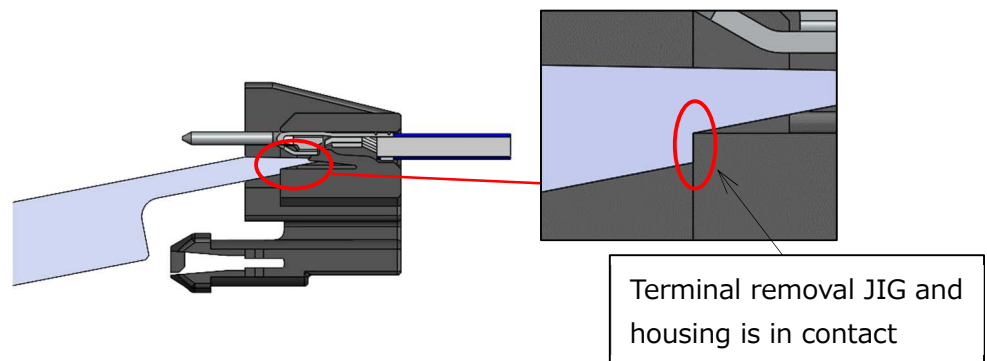


Fig. 29 Terminal removal jig and housing are in contact

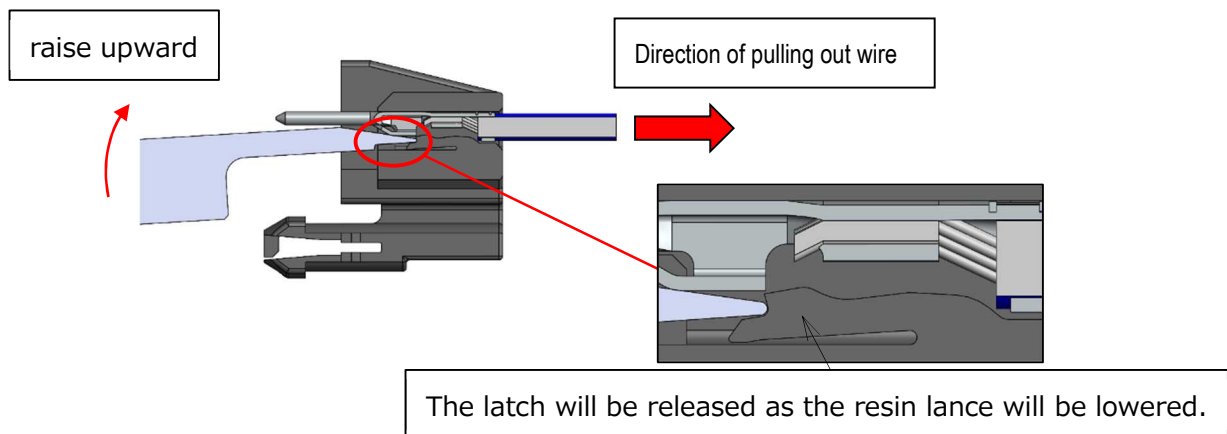


Fig30. Terminal releasing jig in operation

Notes

- ① Do not pry the terminal extraction JIG or terminals during terminal extraction work. Also, make sure that there is no damage or deformation to the terminal or housing when the terminal is pulled out.
- ② Do not pull the terminals or rotate the terminal extraction JIG when the resin lance is not fully lifted. It may lead to damage or deformation of the resin lance and JIG.
- ③ If the terminal or housing is damaged or deformed, do not reuse it, but replace it with a new one.
- ④ Use only the proper terminal removal JIGs, and do not use any other JIGs.
- ⑤ It cannot be lifted with the terminal removal JIG facing the opposite direction. Also, pulling on the wire in that condition may cause the resin lance to buckle or break. Please do not forcefully insert the wire but confirm the proper orientation before starting the operation from the beginning.
- ⑥ Dropping the terminal-removal JIG may damage or deform it, so handle with care.

## 7. Handling of Product

### 7-1. Conductivity test

- ① When conducting conductivity test of the connector, place the probe on the tip (DIP side) of the terminal from the arrow mark directions. (Load: 0.5N MAX.)  
If load exceeds 0.5N, terminal may be damaged or deformed. (See Fig. 31)
- ② If there is any damage or deformation, do not use the damaged item.  
Replace the item with a new one.

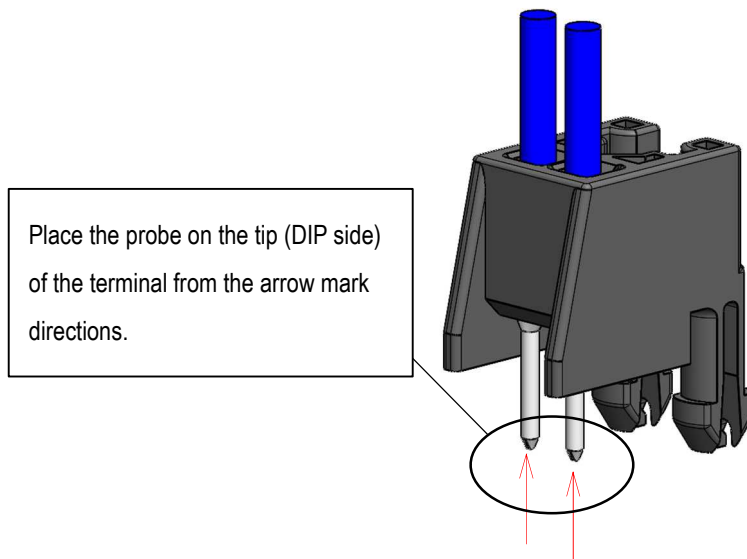


Fig.31 Conductivity test for terminals (contacts)

### 7-2. Arrangement of Wires

- ① When arranging the wires horizontally, to avoid excessive stress to the sidewalls and terminals, please keep the wires straight (at least 15mm) from connector as shown in Fig.32.
- ② Once straight portion is secured, arrange the wires with adequately large R.

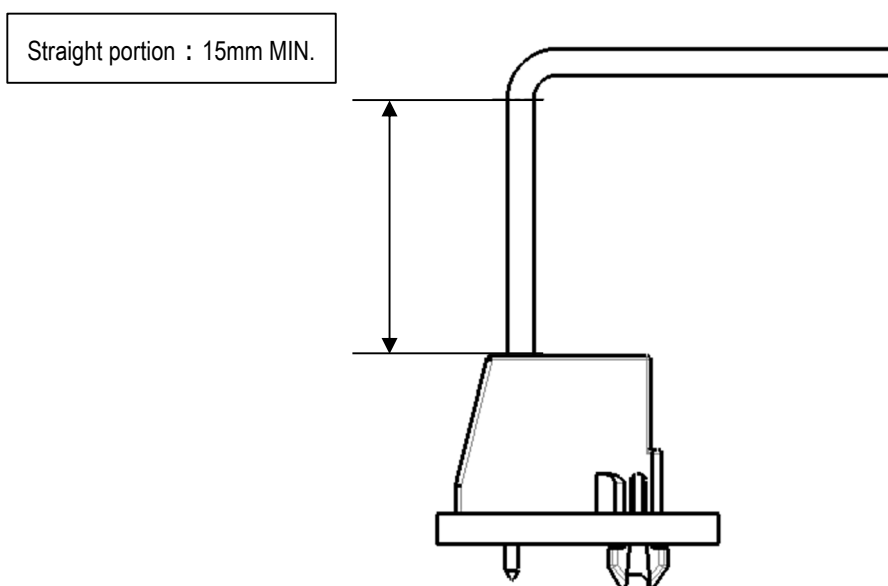


Fig.32 Arrangement of wires



## 8. Storage of housings and terminals

- ① Store housings and terminals in a warehouse which is controlled temperature and humidity.  
(Recommend: Temperature 27°C MAX., Humidity 65% MAX.)
- ② Store housings in a cardboard box. Avoid storing in a way that may cause damage to the boxes, e.g., placing boxes on top of other boxes or storing in a precarious way to cause the boxes to fall. Housing may be deformed if the boxes have been damaged.
- ③ Store terminals in a cardboard box. Avoid storing in a way that may cause damage to the boxes, e.g., placing boxes on top of other boxes or storing in a precarious way to cause the boxes to fall. Reel(s) or terminal(s) may be deformed if the boxes have been damaged.  
It is recommended that the connector is soldered to PCB in 90 days after delivery.

## 9. Other notes

- ① Handle products with care. Do not place excessive force/impact to connectors main bodies or wires.
- ② Store products in a dry place without any dust or dirt.  
Avoid storage for an extended period or any way that may cause damage or deformation to connectors.
- ③ While transporting of products should ensure that no excessive force must be applied to the connectors and wires, and that no rainwater, dust, and dirt, etc. are present.
- ④ Handle products with care. If there is any damage, deformation, discoloration, etc. to wires, housings, and any other parts, do not use the damaged item. Replace the item with a new one.
- ⑤ Do not touch the soldering part of the connector with fingers or with any object.
- ⑥ Do not apply excessive current. Doing so may cause fire and melting damage.
- ⑦ Do not disassemble products.
- ⑧ Do not insert any terminals into housing other than those specified.
- ⑨ Follow this Manual for using the products. Do not use in any way other than instructed.

## 10. Inquiries

Sales Dept. Yokohama office I-PEX Inc.

TEL: +81-45-472-7111 FAX: +81-45-472-7130