

CABLINE®-UM PLUG

Part No. 20877

Assembly Manual

|      |        |                   |             |            |             |
|------|--------|-------------------|-------------|------------|-------------|
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| Rev. | ECN    | Date              | Prepared by | Checked by | Approved by |

## 1. Purpose :

This manual is to explain the soldering method / process of the CABLINE-UM PLUG with cable,  
and assembly of LOCK COVER, SHELL-A, PULL TAPE HOLDER.

## 2. Applicable connector :

Name: CABLINE-UM PLUG

Parts No. :

|              |                  |               |
|--------------|------------------|---------------|
| Set P/N      | CABLE ASS'Y      | 20877-0**T-## |
| Discrete P/N | HOUSING ASS'Y    | 20878-0**T-#1 |
|              | LOCK COVER       | 3493-0**1     |
|              | SHELL-A          | 3488-0**1     |
|              | PULL TAPE HOLDER | 3588-0**1     |

## 3. Fixtures :

### 3-1. Components and Instruments used in the condition confirmation

#### • Pulse heater

| Name                    | P/N     | Manufacturer             |
|-------------------------|---------|--------------------------|
| Reflow head             | NA-66   | Nippon Avionics Co., Ltd |
| Pulse heat power supply | TCW-215 | Nippon Avionics Co., Ltd |

#### • Heater chip

| Positions | 30P                                | 40P                                | 60P                                |
|-----------|------------------------------------|------------------------------------|------------------------------------|
| Thickness | 0.5 <sup>0</sup> <sub>-0.05</sub>  | 0.5 <sup>0</sup> <sub>-0.05</sub>  | 0.5 <sup>0</sup> <sub>-0.05</sub>  |
| Width     | 12.2 <sup>0</sup> <sub>-0.03</sub> | 16.2 <sup>0</sup> <sub>-0.03</sub> | 24.2 <sup>0</sup> <sub>-0.03</sub> |

Unit: mm

#### • Recommended solder bar

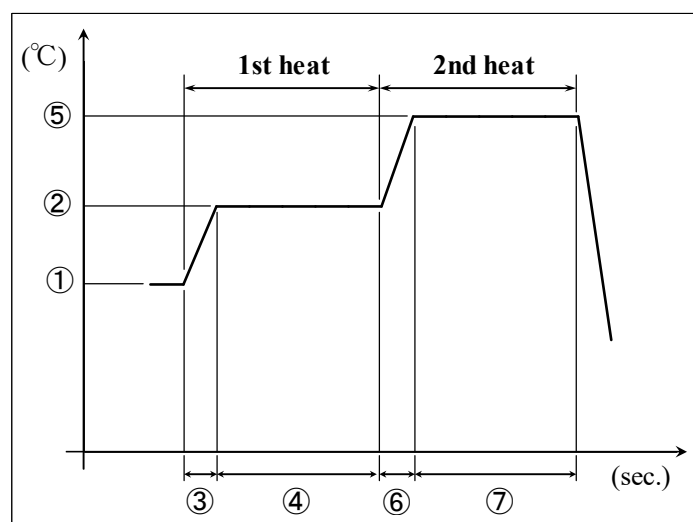
Resin-free solder made by Uchihashi Estec Co., Ltd. was used.

| Positions   |            | 30P         | 40P         | 60P         |
|-------------|------------|-------------|-------------|-------------|
| Solder size | AWG#34~#38 | φ0.14       | φ0.14       | φ0.14       |
|             | AWG#40~#44 | φ0.1        | φ0.1        | φ0.1        |
| Length      |            | 12.0mm Ref. | 16.0mm Ref. | 24.0mm Ref. |

Unit: mm

## 4. Recommended pulse heat condition

|                              | Micro-Coax |
|------------------------------|------------|
| ① Idle temp.                 | 150°C      |
| ② 1 <sup>st</sup> heat temp. | 220°C      |
| ③ " rise time                | 0.5sec.    |
| ④ " holding time             | 3.0sec.    |
| ⑤ 2 <sup>nd</sup> heat temp. | 300~320°C  |
| ⑥ " rise time                | 0.5sec.    |
| ⑦ " holding time             | 3.0sec.    |
| Heater tip Pressure          | 5~10N      |



※ This pulse heat condition was evaluated and confirmed by our pulse heat jig and instruments.

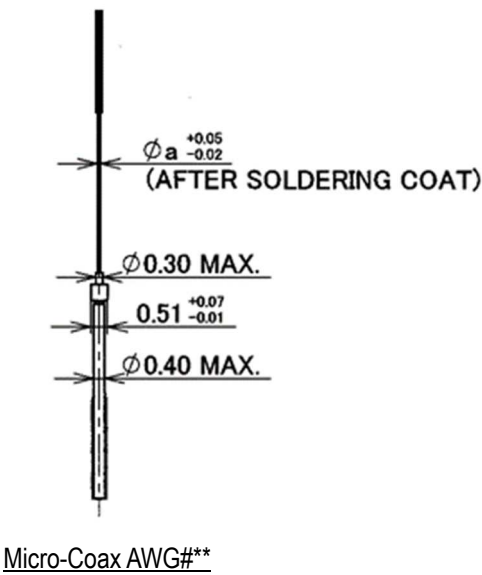
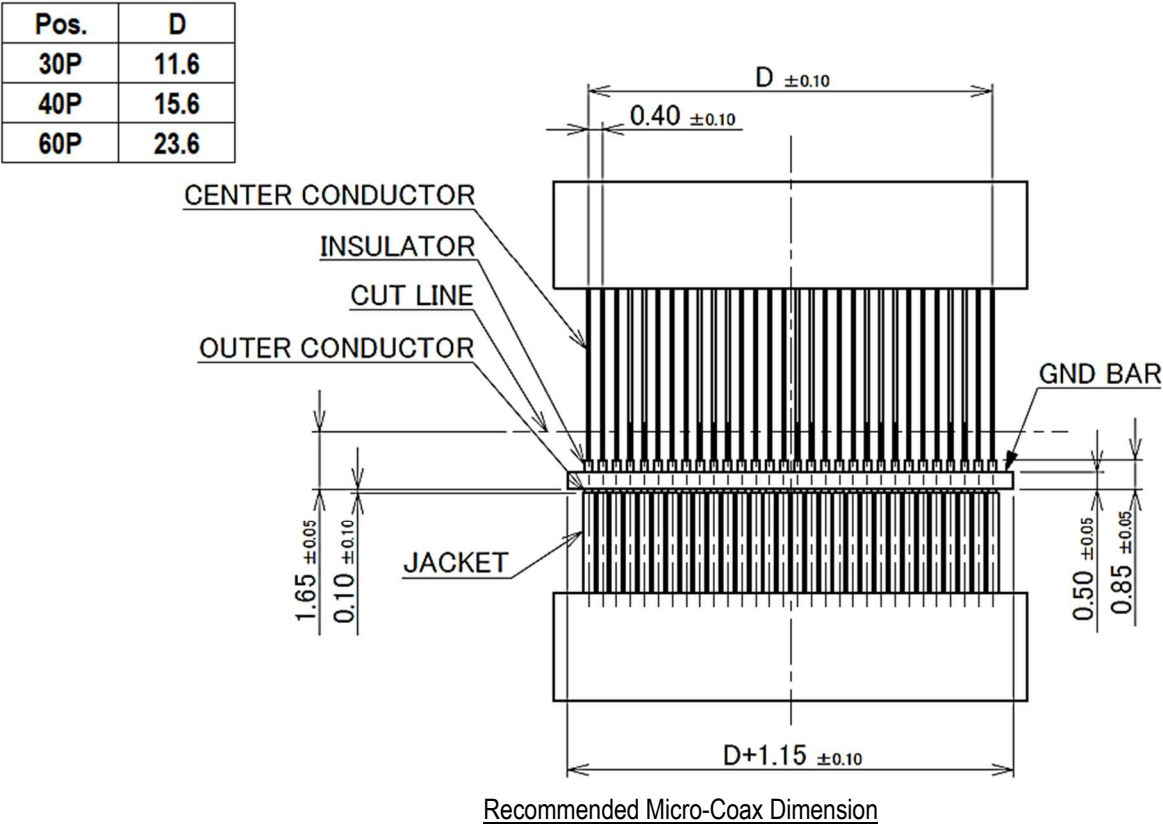
The most optimum condition may change based on the shapes of pulse heat jig and instruments, the environments, or other reason.

Therefore, please examine the pulse heat condition adequately in advance of use.

5. Work procedures :

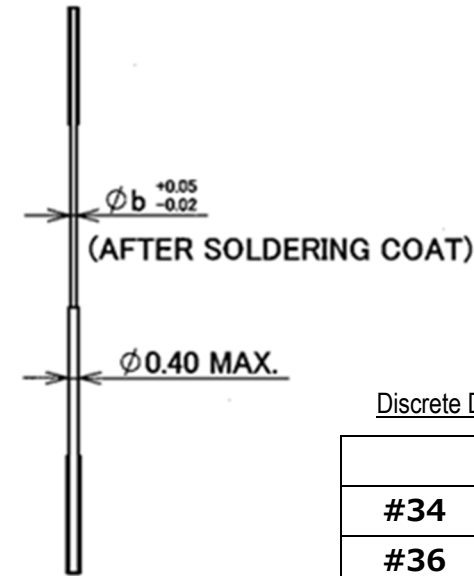
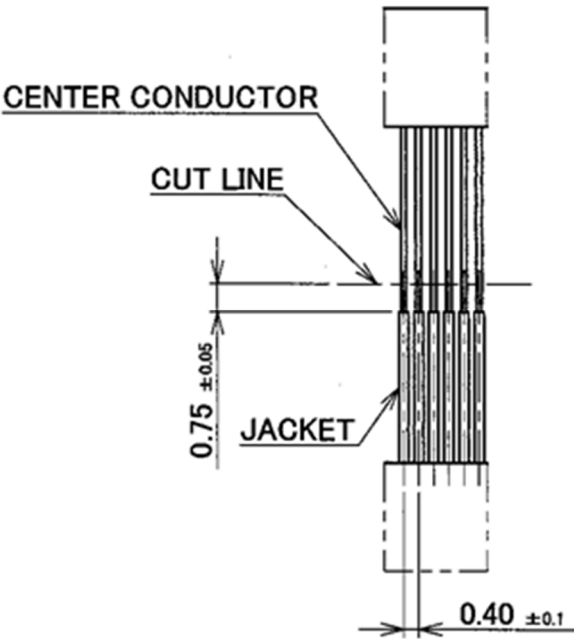
5-1. Soldering of center-conductor

① The cables have to be fabricated as shown below in advance of soldering.



|     | a     |
|-----|-------|
| #36 | 0.15  |
| #38 | 0.12  |
| #40 | 0.09  |
| #42 | 0.075 |
| #44 | 0.063 |

Micro-Coax #36: Power Only

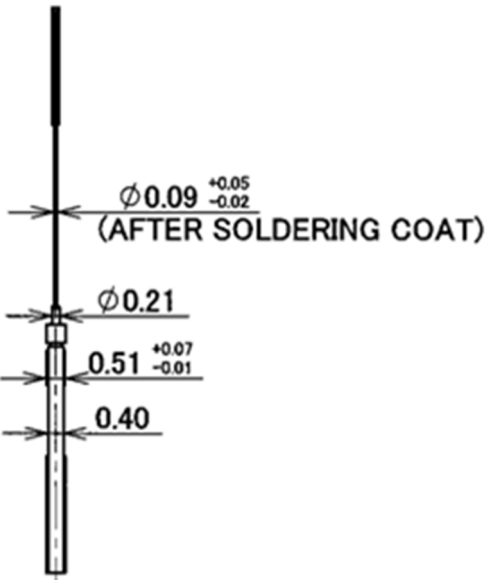
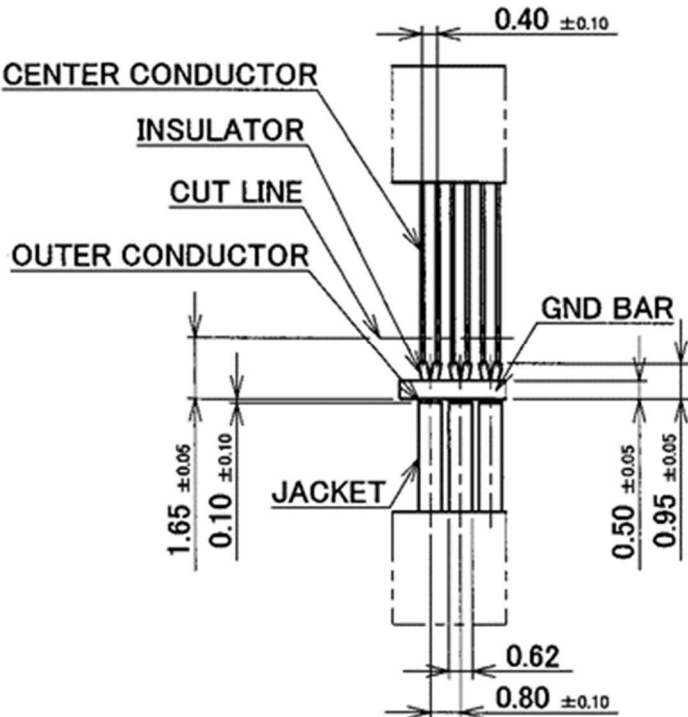


Discrete Dimension

|     | b     |
|-----|-------|
| #34 | 0.192 |
| #36 | 0.15  |

Discrete AWG#\*\*

Recommended Discrete Cable Dimension



Twincoax Cable AWG#40

Recommended Twincoax Cable Dimension

② Apply flux to contact by the dispenser etc, and please confirm all contacts were applied flux.

Applying flux area

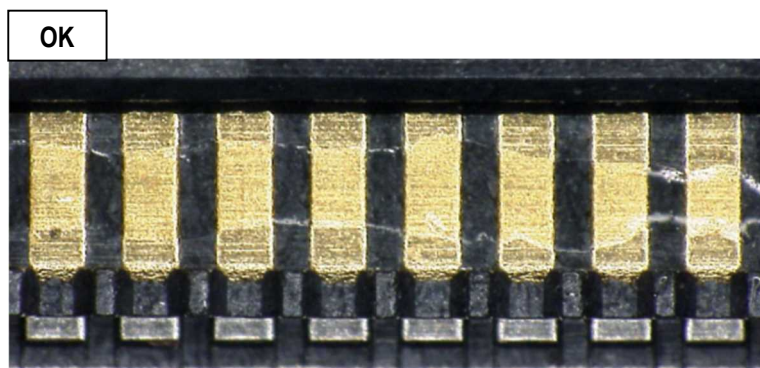
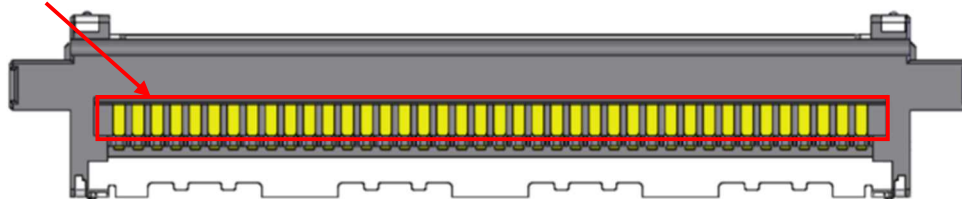


Photo.1 After applying flux

※Please do not apply flux too much like Photo.2. It can cause flux splash or leak to the mating area.

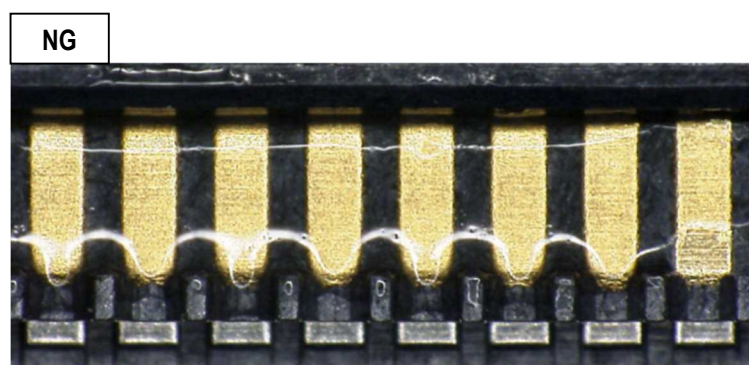


Photo.2 Extra flux

※Washer must not be used to take flux off because it may cause flux attached to mating area.

- ③ Pre-set and locate solder bar at center of connector (HOUSING ASS'Y).

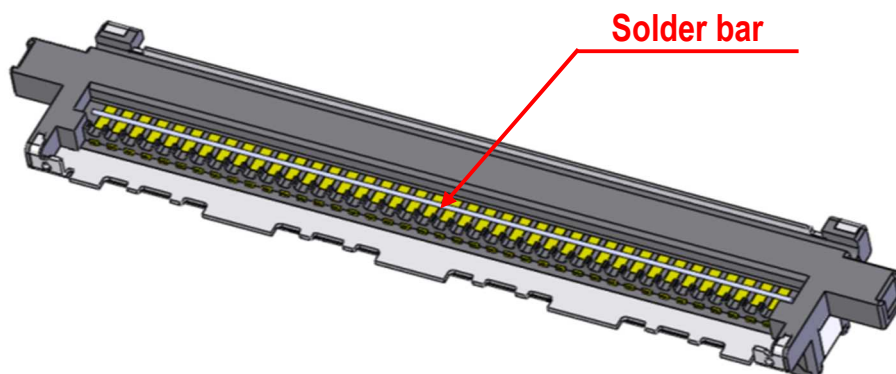


Fig.1 Set of solder bar

- ④ Set the cable.

※ Setting discrete cable is to protect 0.2MAX. as Fig.3. There is danger that Center Conductor touch shell.

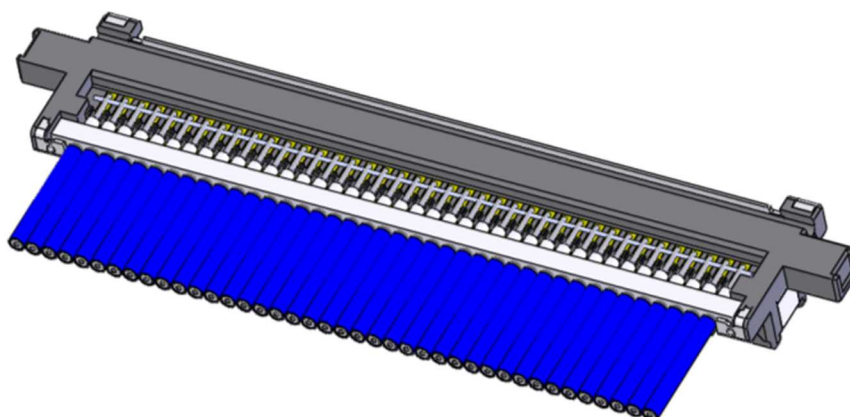


Fig.2 Set of cable

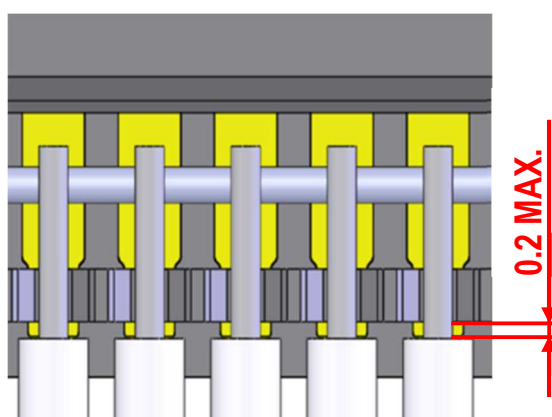


Fig.3 Setting discrete cable

⑤ Center-conductors are soldered with pulse heater. See Photo.3 of soldering condition.



Photo.3 AWG#40

※When solder bridge is appeared between the terminal, try heating again with pulse heater only one time. If the bridge isn't repaired, use the soldering iron only a NG point.

Condition of Soldering iron : 50W

Operating temperature : 350℃

Application time of soldering iron : Within 5sec.

※Because it might give product damage, please do not instigate a cable after soldering.



## 5-2. Cautions in treating LOCK COVER

LOCK COVER is delivered in the reel with a carrier.

The following is the method to cut LOCK COVER from Carrier.

- ① Cut carrier on the cut line of the left below picture (green line) by a scissors for metal.

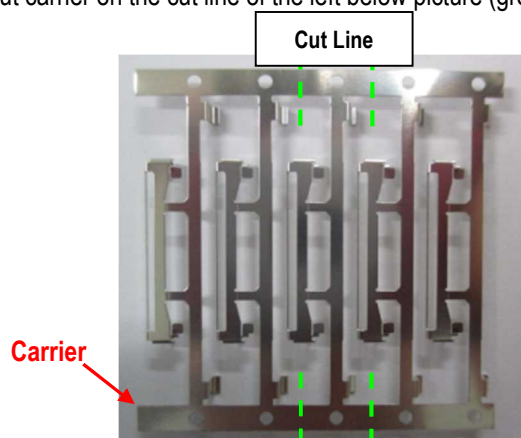


Photo.4 Before cut

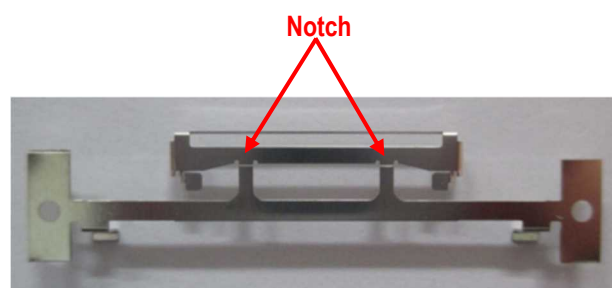


Photo.5 After cut

- ② Hold the center of LOCK COVER and cut it off from Notch by  $\pm 45^\circ$  deg of reciprocating work. When it does not be cut, try again this reciprocating work. After separated, check there is no burr around the cut part. (Photo.7)

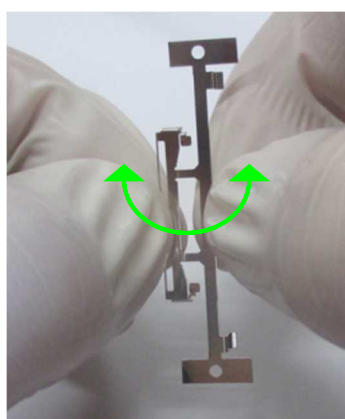


Photo.6 Cut condition

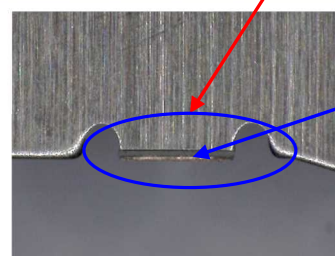
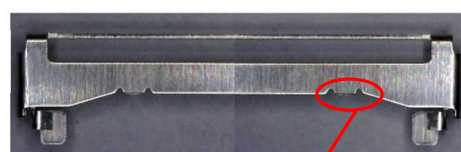
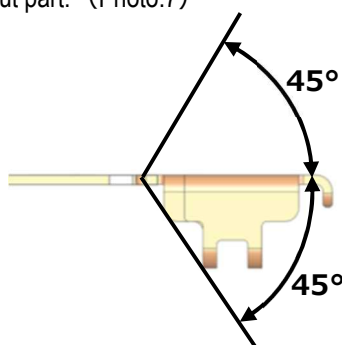


Photo.7 After cut

LOCK COVER Detail of Notch



Photo.8 Bottom side view



Photo.9 Upper side view

Caution: By pulling like the photo below to cut off by force (Red arrow direction), burrs and transformation can be caused.

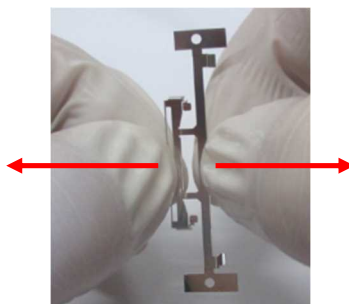


Photo.10 Cut by force (Bad example)

## 5-3. Assembly of LOCK COVER

LOCK COVER is assembled from upper side of HOUSING ASS'Y.

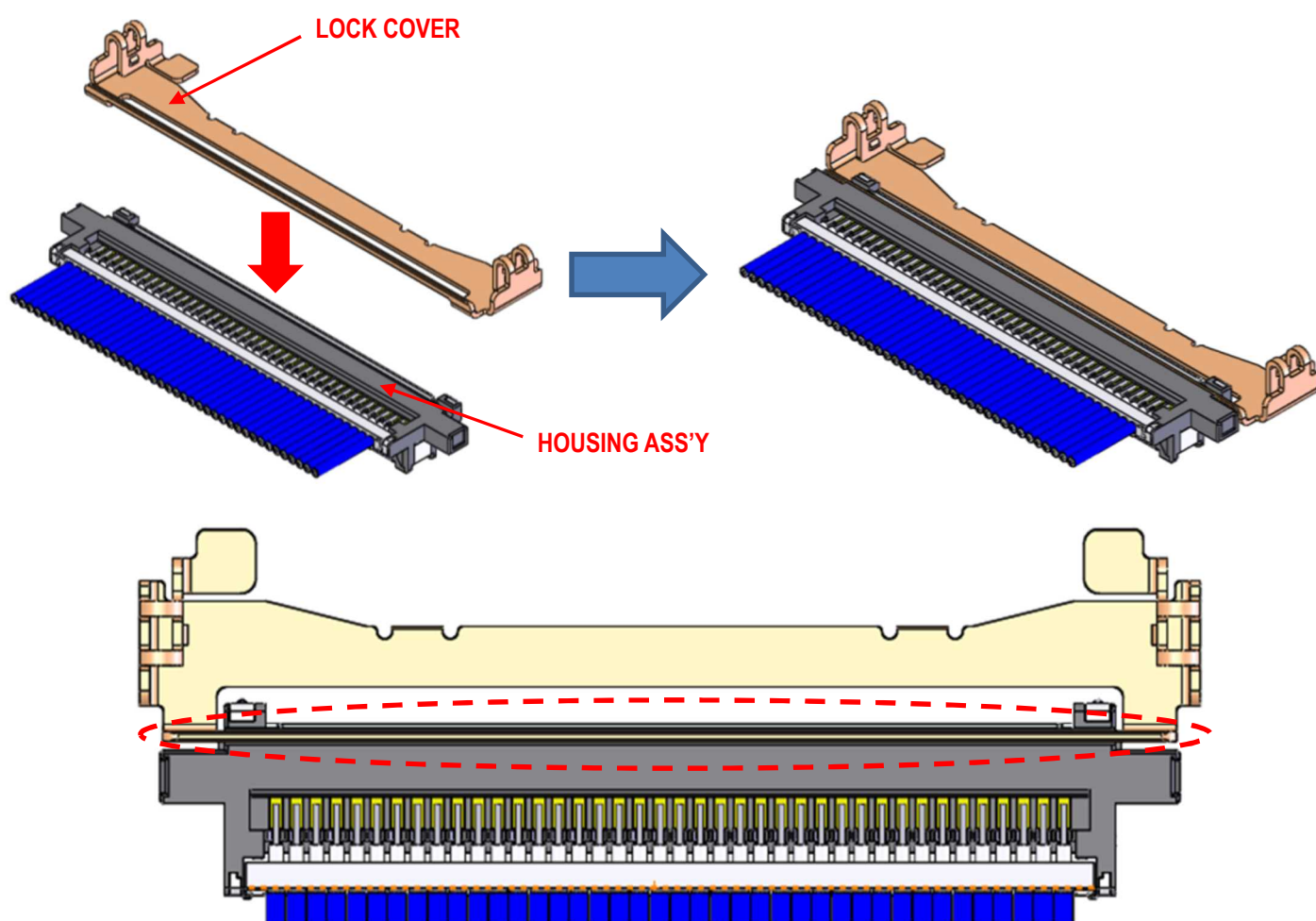


Fig.4 Assembly of LOCK COVER

## 5-4. Cautions in treating SHELL-A

SHELL-A is delivered in the reel with a carrier. The following is the method to cut SHELL-A from Carrier.

- ① Cut carrier on the cut line of the left below picture (green line) by a scissors for metal.

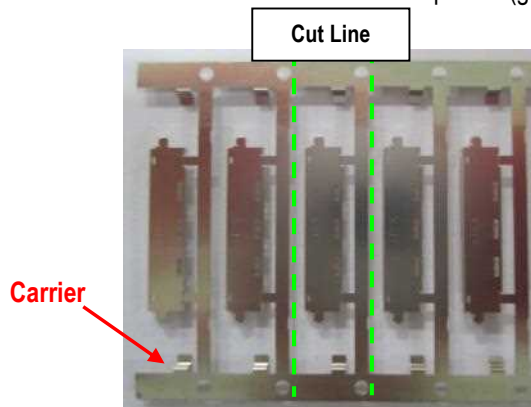


Photo.11 Before cut

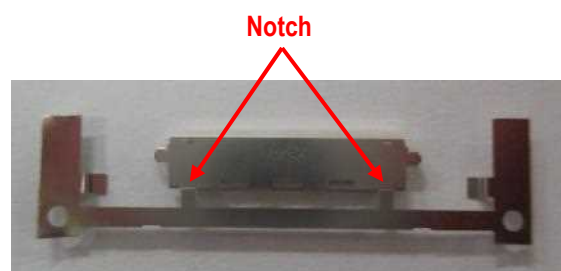


Photo.12 After cut

- ② Hold the center of SHELL-A and cut it off from Notch by  $\pm 45^\circ$  deg of reciprocating work. When it does not be cut, try again this reciprocating work. After separated, check there is no burr around the cut part. (Photo.14)

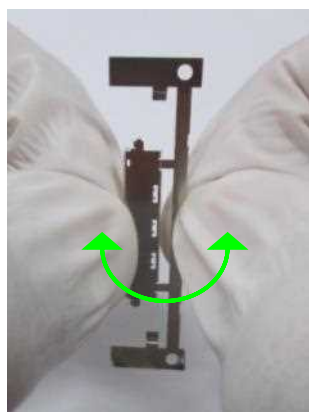


Photo.13 Cut condition

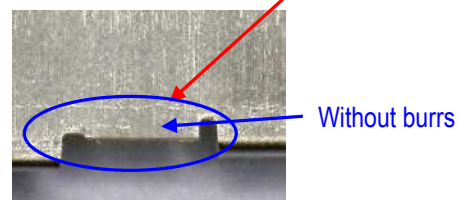
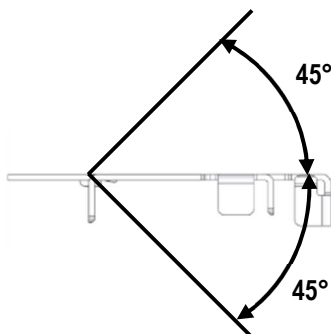


Photo.14 After cut

### Plug SHELL-A Detail of Notch

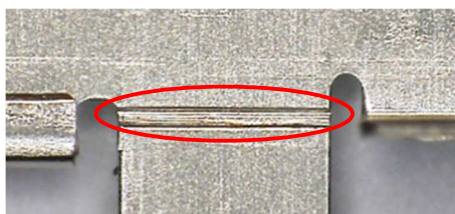


Photo.15 Bottom side view



Photo.16 Upper side view

Caution: By pulling like the photo below to cut off by force (Red arrow direction), burrs and transformation can be caused.

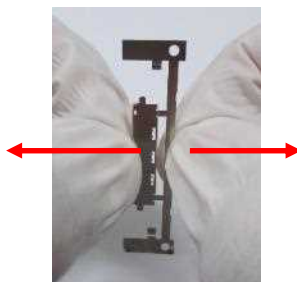


Photo.17 Cut by force (Bad example)

## 5-5. Assembly of SHELL-A

- ① SHELL-A is assembled from upper side of HOUSING ASS'Y.

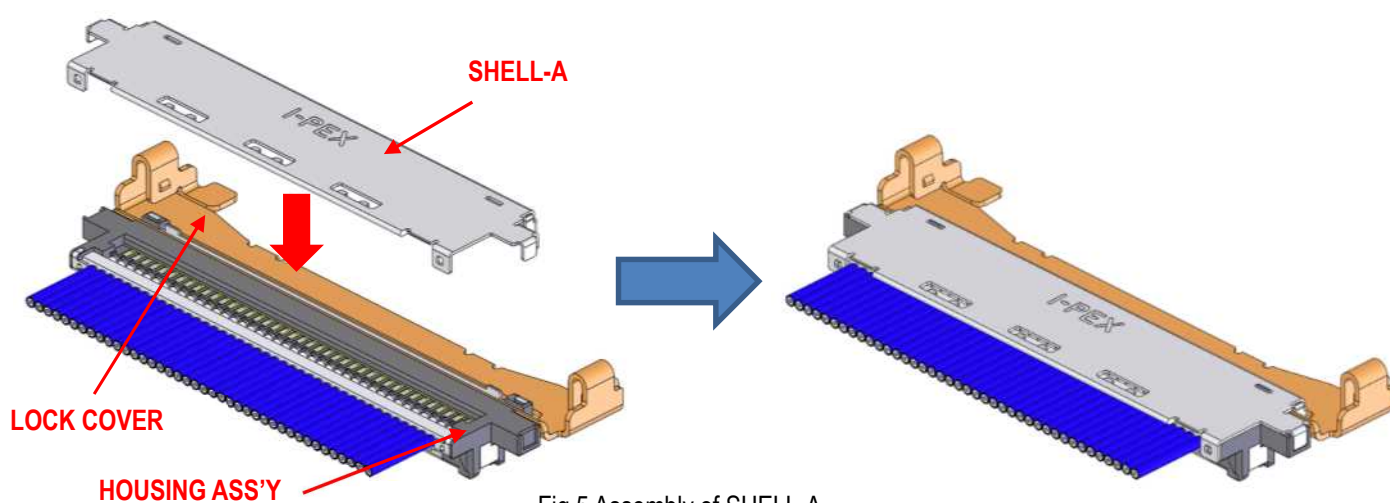


Fig.5 Assembly of SHELL-A

- ② Confirms whether SHELL-A is assembled properly.  
Whether shell locks are assembled properly. (Fig.6★ point)

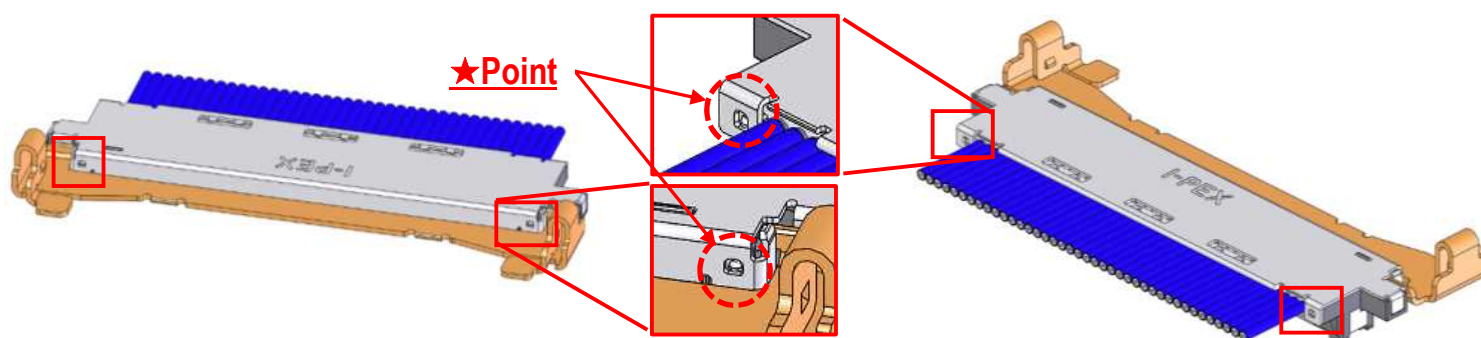


Fig.6 The assembly confirmation of SHELL-A



- ③ Soldering SHELL-A, B and GND BAR with the soldering iron at designated points is recommended. (Fig.7,8◆point)

Refer to Fig.17 for a limit of the solder height. For conditions of Soldering iron refer to sheet 8.

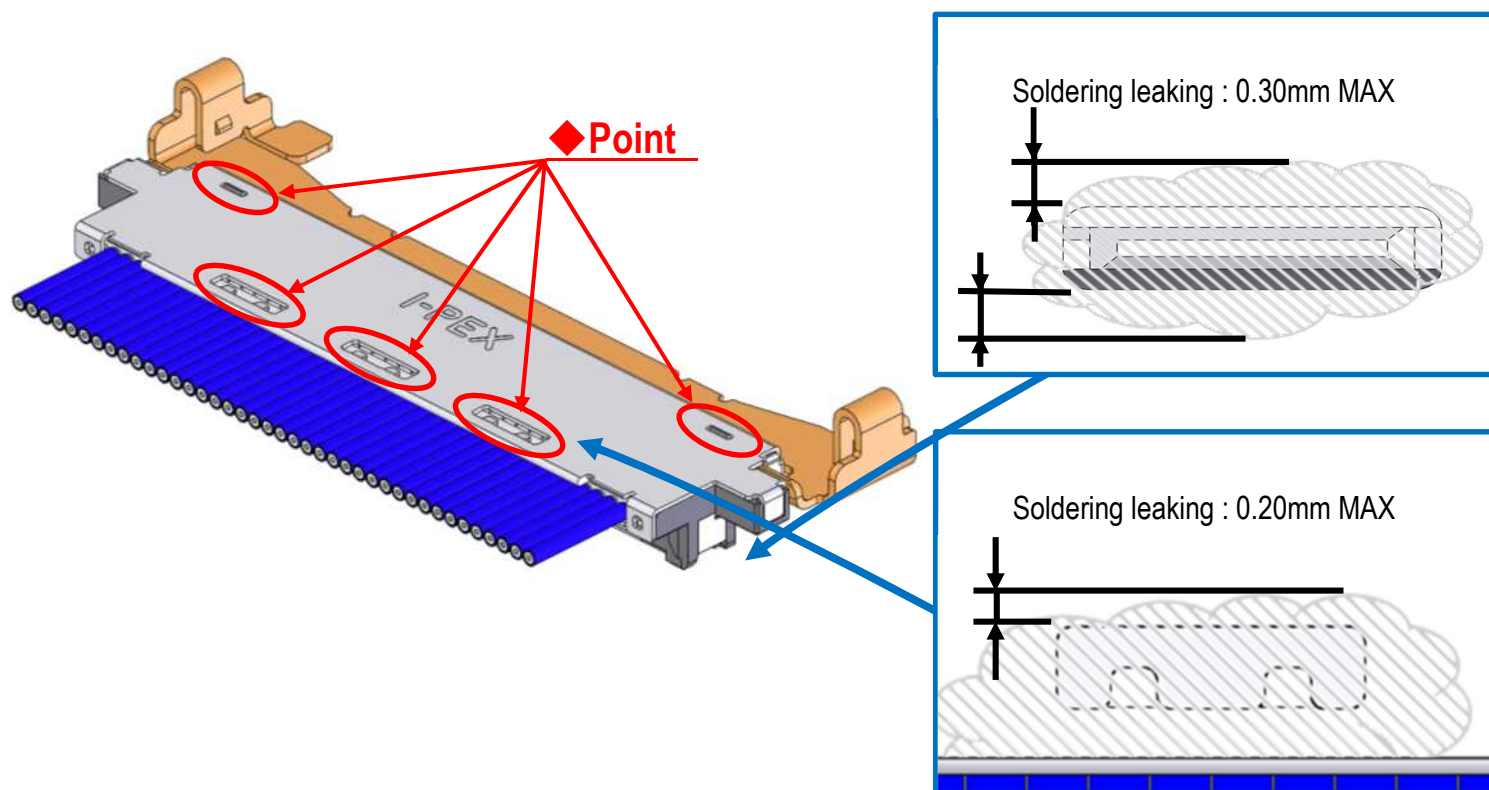


Fig.7 Soldering of SHELL-A and GND BAR

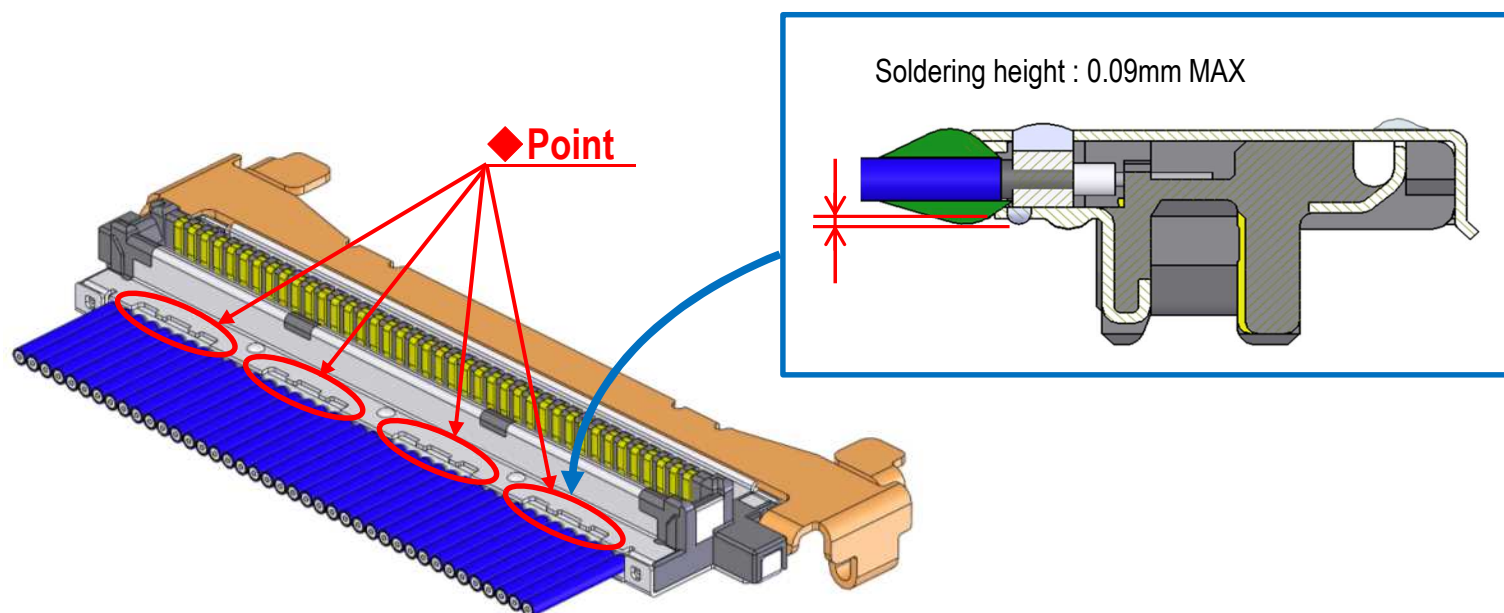


Fig.8 Soldering of SHELL-B and GND BAR

【When using PULL TAPE HOLDER without using LOCK COVER】

## 5-5.Cautions in treating PULL TAPE HOLDER

PULL TAPE HOLDER comes in a carrier tape wounded in a reel.

Follow the methods shown below to cut PULL TAPE HOLDER from carrier tape.

- ① Cut carrier tape along the green dotted cut line in Photo 18 by metal cutting scissors.

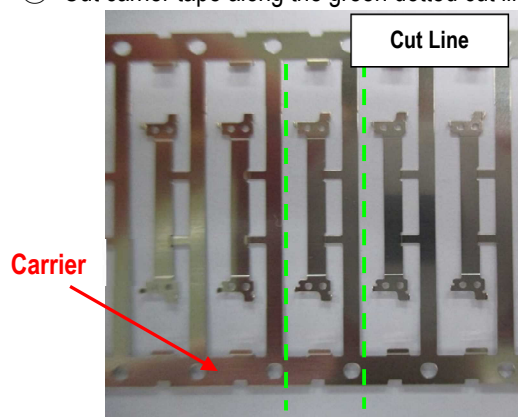


Photo.18 Before cut

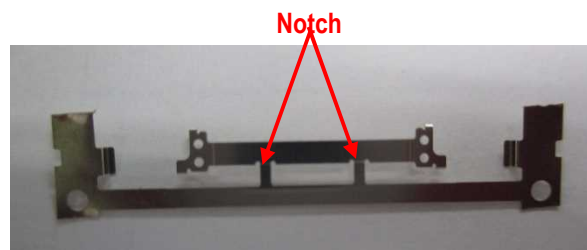


Photo.19 After cut

- ② Hold the center of PULL TAPE HOLDER and bend it back and forth within  $\pm 45$  degrees to detach it from notch. Repeat until the PULL TAPE HOLDER is separated from the notch.  
Make sure no burr is found from cut off area. (Photos 20 and 21)

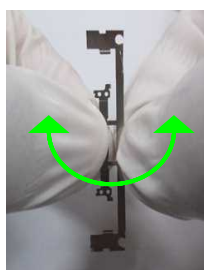


Photo.20 Cut condition

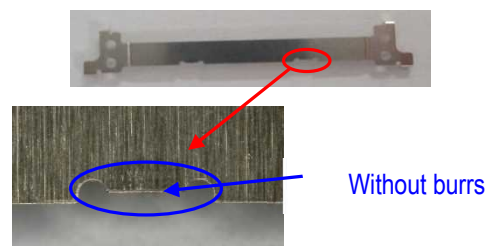
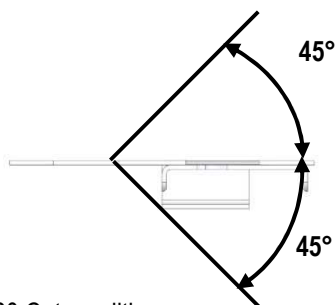


Photo.21 After cut

Plug Detail of Notch



Photo.22 Bottom side view



Photo.23 Upper side view

Caution: Do not forcibly pull carrier toward red arrow direction or it may cause deformation or burr.

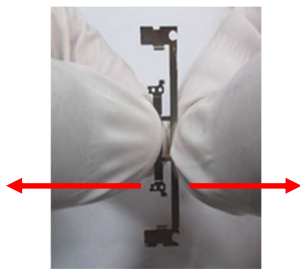


Photo.24 Cut by force (Bad example)

5-5. Assembling PULL TAPE HOLDER

① Tape PULL TAPE around PULL TAPE HOLDER as shown in Figure 10.

• Recommended PULL TAPE dimension

| Positions | 30P      | 40P        | 60P       |
|-----------|----------|------------|-----------|
| Thickness | 0.10 MAX |            |           |
| A         | 7.4~9.7  | 11.3 ~13.7 | 19.3~21.7 |
| B         | 10.0     | 14.0       | 22.0      |

※Reference material : Polyimide

Unit : mm

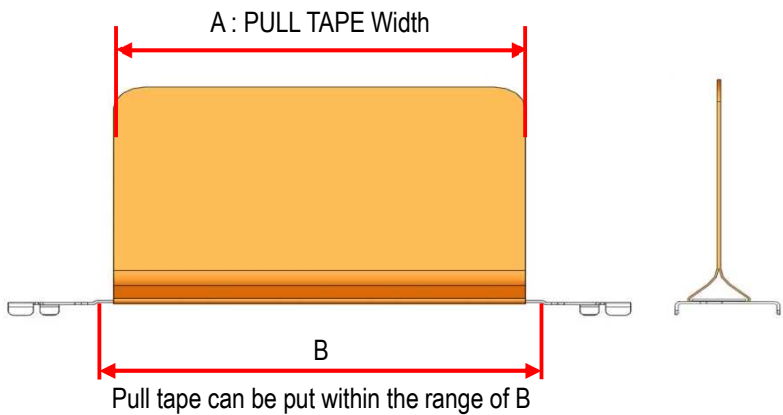


Fig.9 PULL TAPE dimension

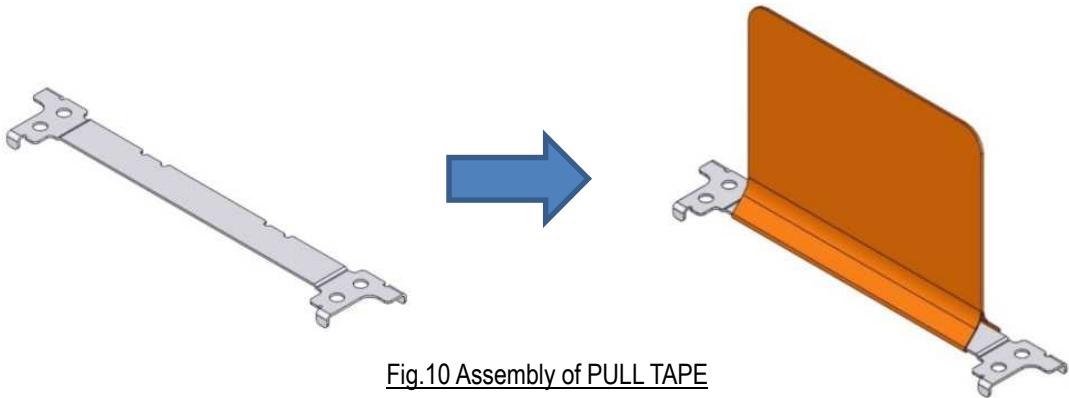


Fig.10 Assembly of PULL TAPE

- ② Assemble the PULL TAPE HOLDER from upper surface of SHELL-A.

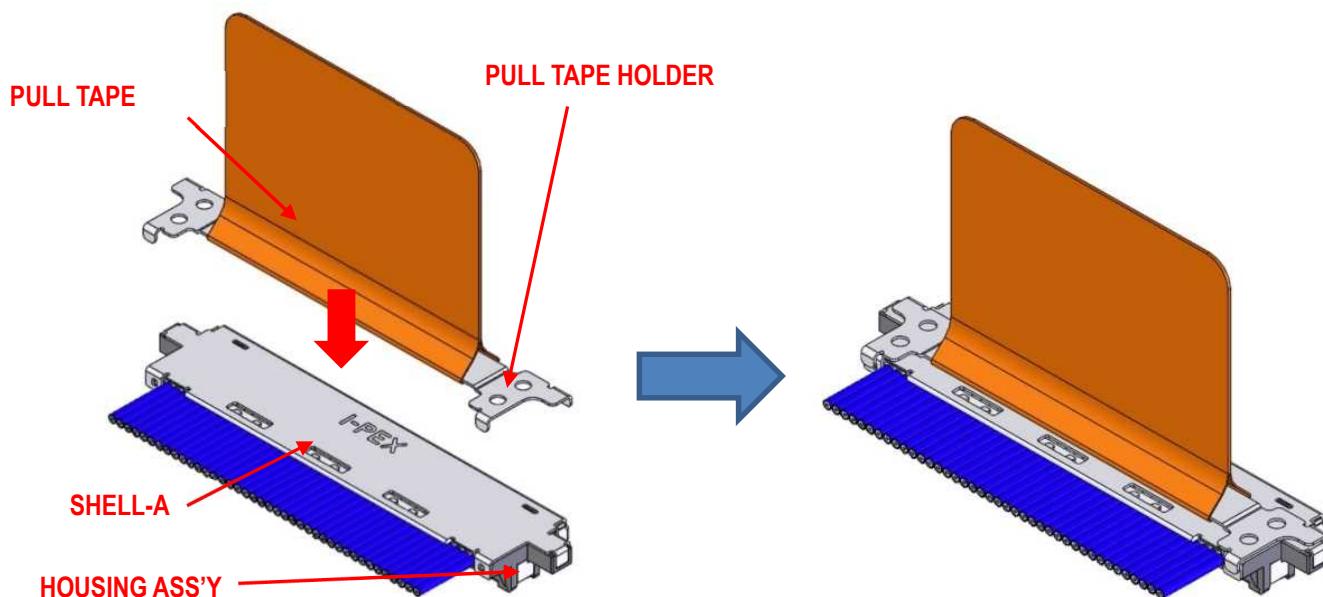


Fig.11 Assembly of PULL TAPE HOLDER

- ② Make sure that PULL TAPE HOLDER is assembled properly.( Fig.12★point)

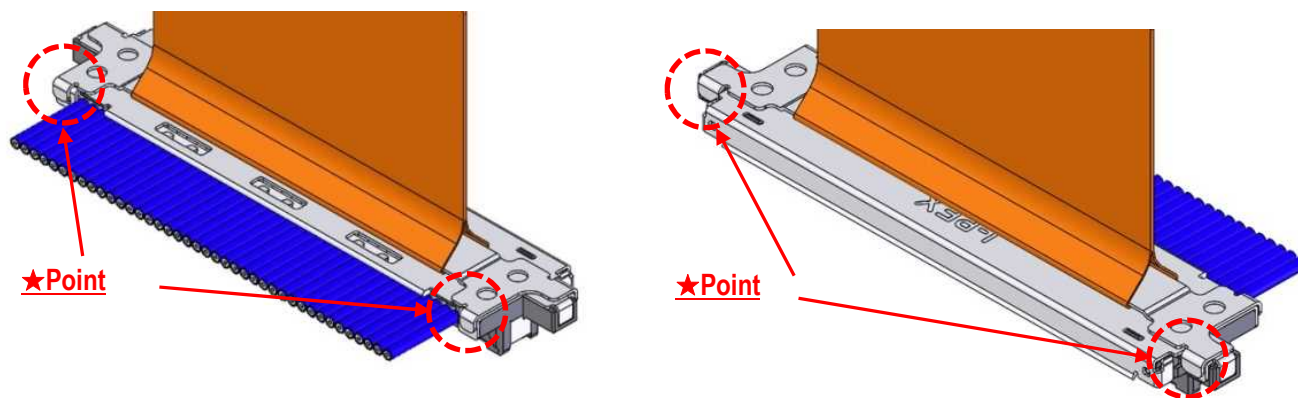


Fig.12 The assembly confirmation of PULL TAPE HOLDER



- ③ Use soldering iron to solder PULL TAPE HOLDER and SHELL-A. (Fig.13◆point)

Refer to sheet 8 for soldering conditions.

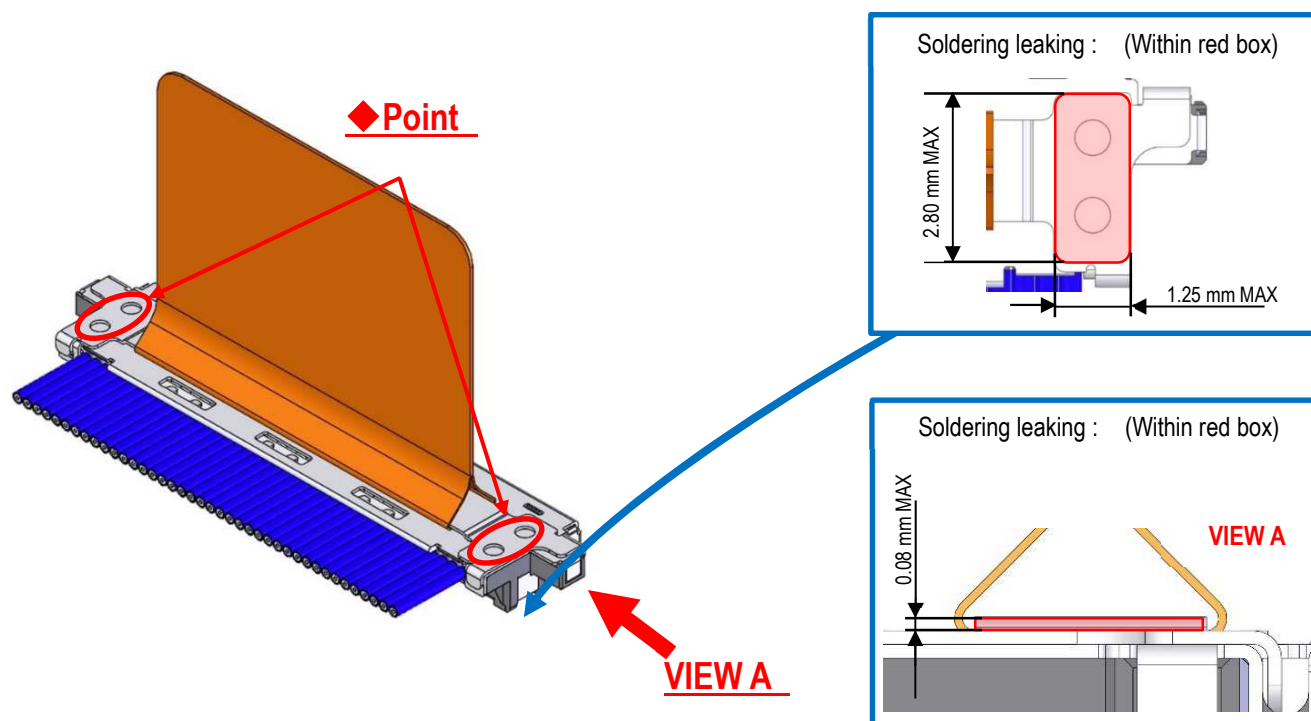


Fig.13 Soldering of PULL TAPE HOLDER

## 【Caution】

※Do not place PULL TAPE HOLDER upside-down.

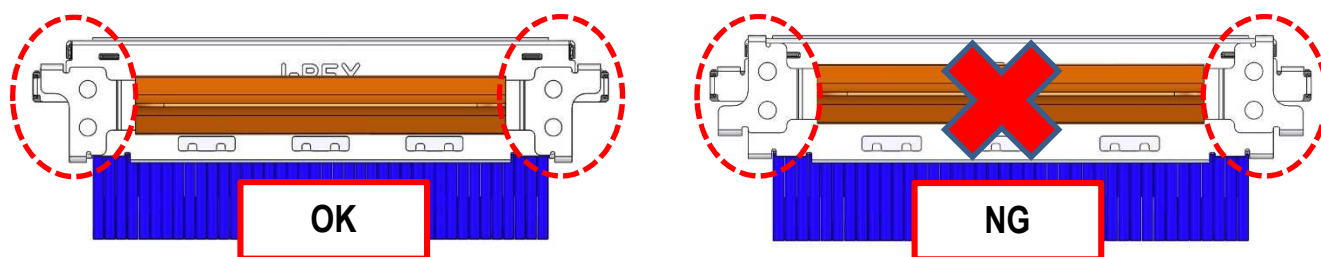


Fig. 14 Assembling PULL TAPE HOLDER

※If PULL TAPE HOLDER is unstable, secure it before soldering.

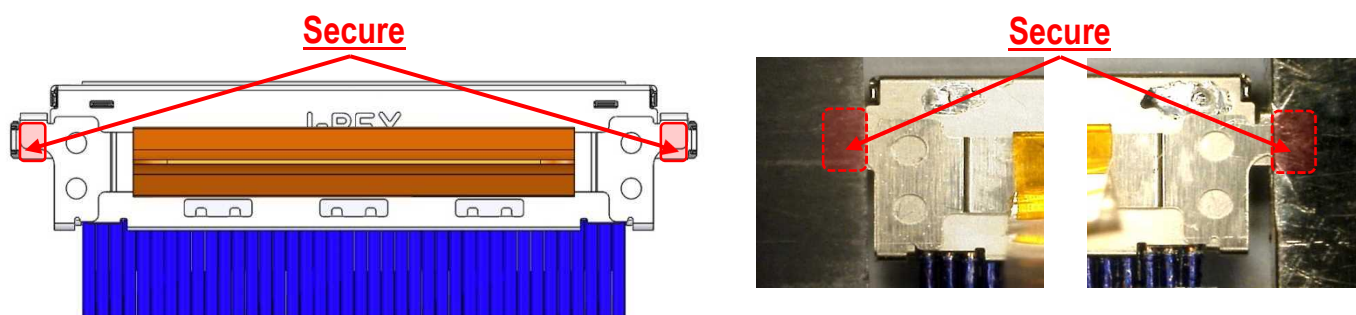


Fig.15 Secured PULL TAPE HOLDER

※If soldering paste amount is not enough, strength of PULL TAPE HOLDER may decrease.

Make sure all four holes are soldered as shown in OK Photo.

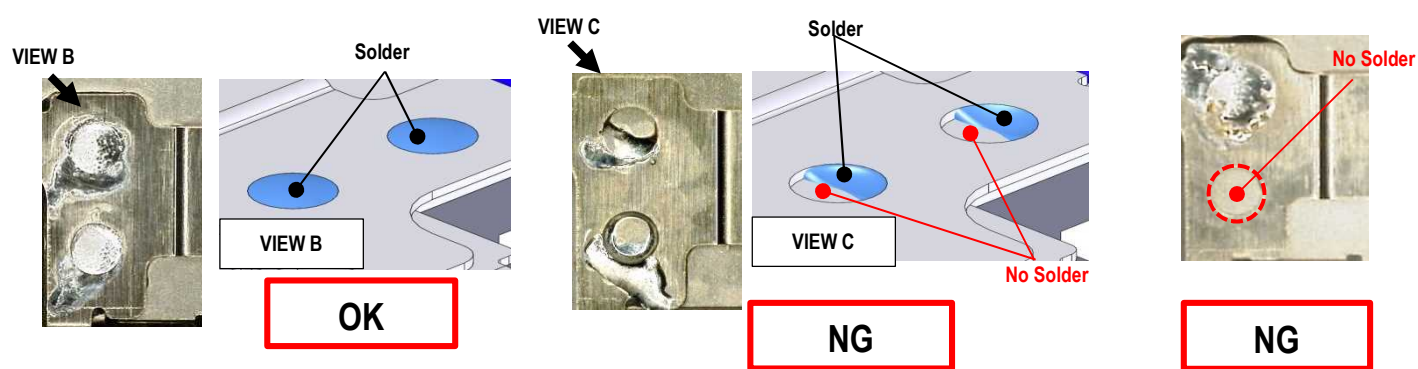
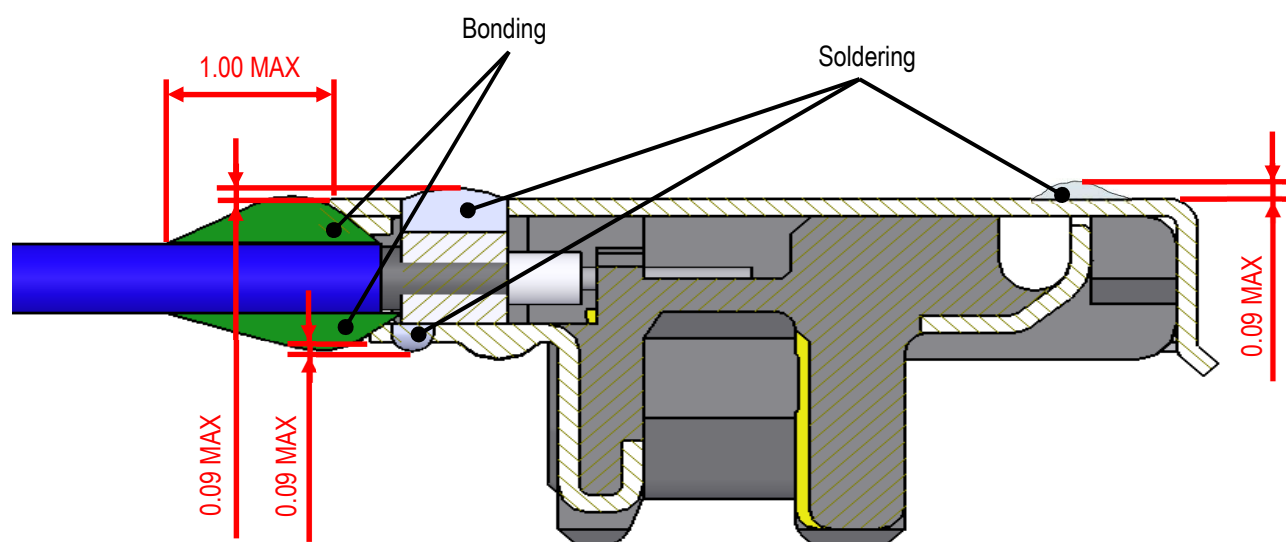
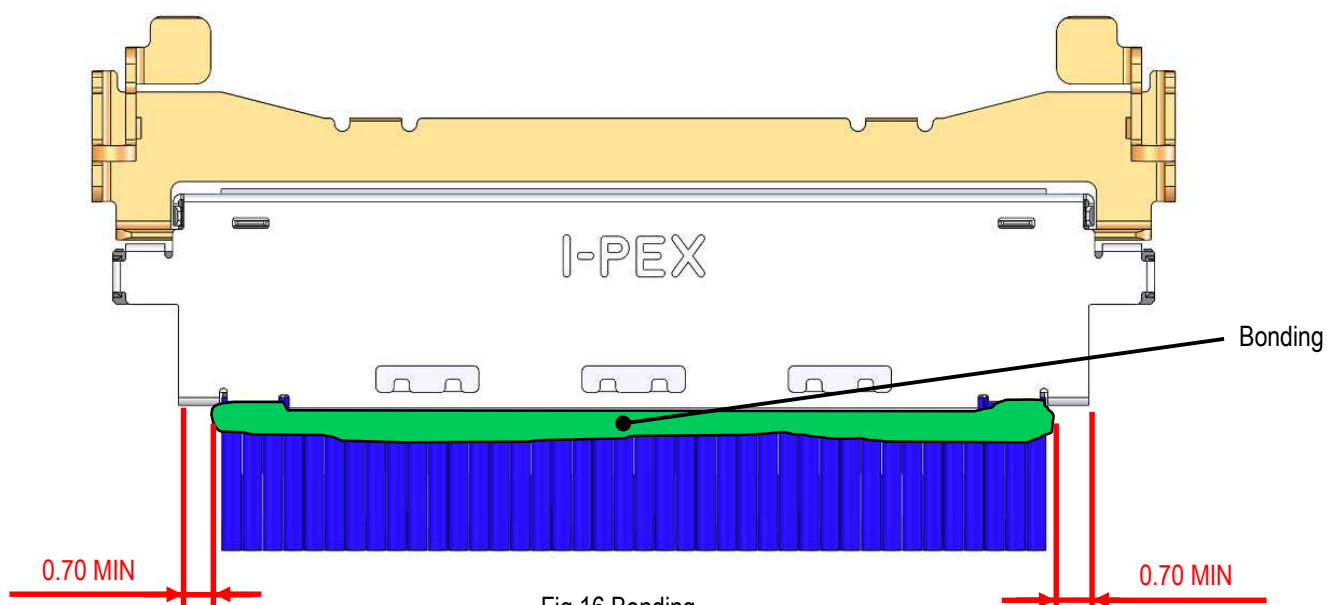


Photo.25 Soldering

※Do not touch PULL TAPE with soldering iron or it may melt it according to the heat-resistant temperature.

## 5-6. Cable fixation

Fix the cable terminal part with the bond. Recommended bond: LOCTITE 352



## 【Caution】

※Do not tape the prohibition area or LOCK COVER may not work properly.  
Bundle the cable as shown in Figure 18 and 19.

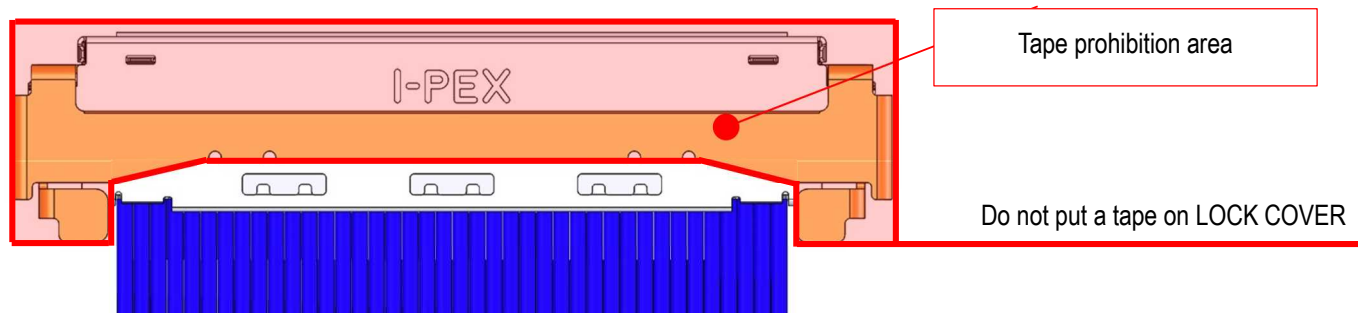


Fig.18 Top surface tape prohibition area

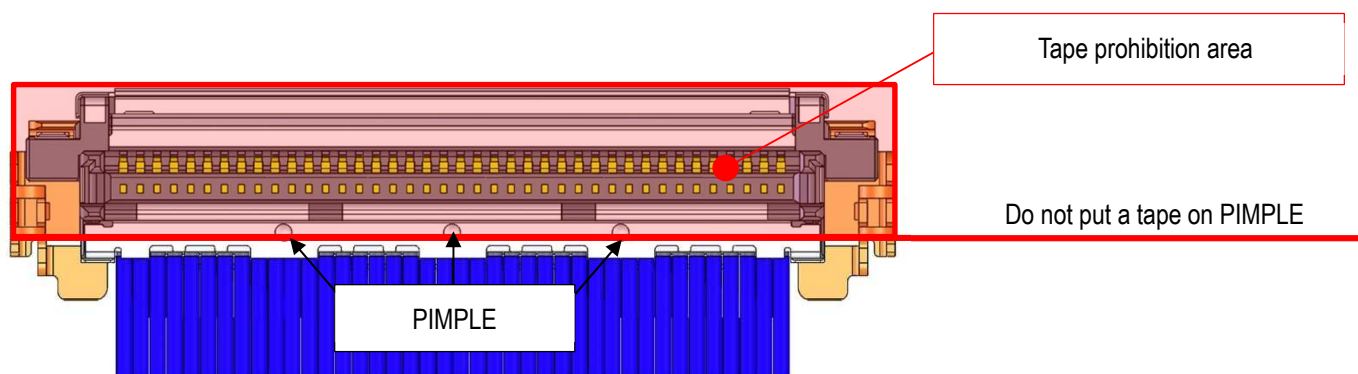


Fig.19 Bottom surface tape prohibition area