

CABLINE®-UMF PLUG

Part No. 21102

Assembly Manual

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Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose:

This manual explains the mounting procedure of the FPC in the CABLINE-UMF PLUG, as well as the assembly of the lock cover and shell-A and pull tape holder.

2. Applicable Connector:

Name: CABLINE-UMF PLUG

Parts No.:

Set P/N	FPC Assembly	21102-0**E-2#
Discrete P/N	Housing Assembly	21103-0**E-02
	Lock Cover	3914-0**1
	Shell A	3912-0**1
	Pull tape holder	3588-0**1

3. Work Procedure:

3-1. Apply solder paste to the FPC

- Ensure that the warpage of the FPC is 0.02 mm or less.

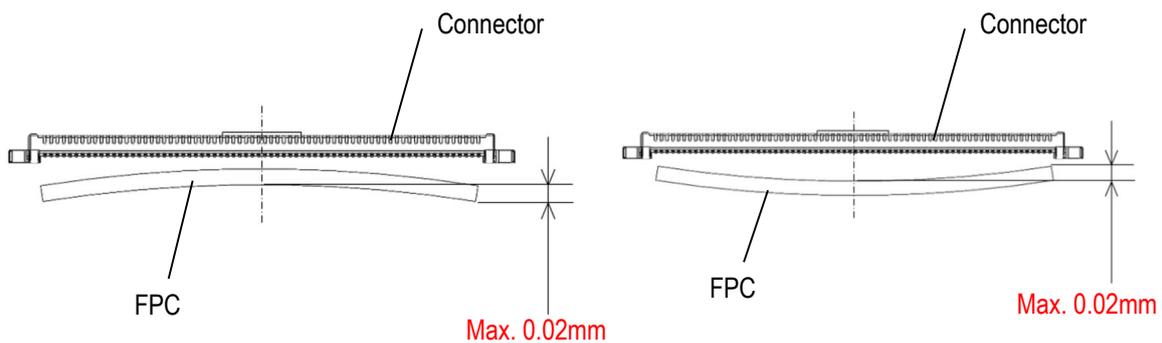


Fig.1 FPC Warpage Limit

- Please refer to I-PEX's product drawings for the recommended pattern dimensions.
- I-PEX's recommended metal mask thickness is $t = 0.12$.

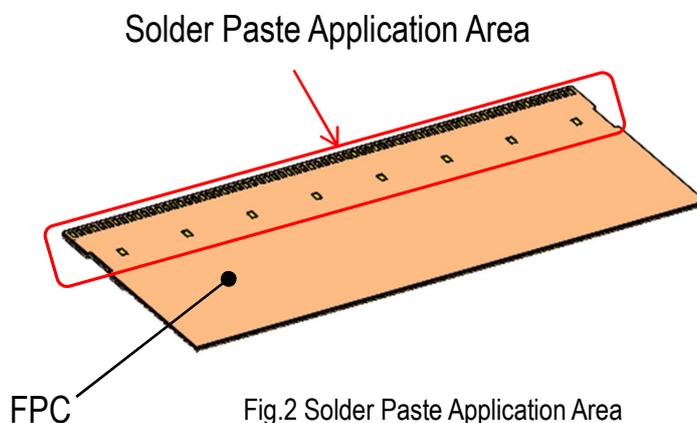
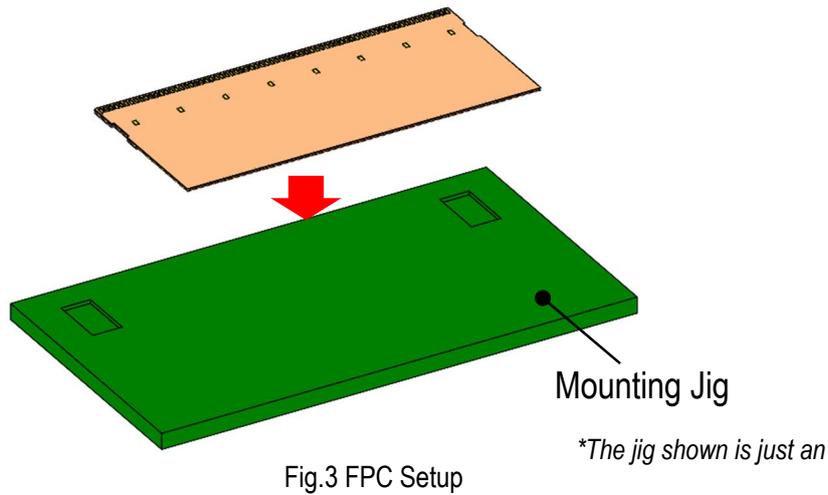
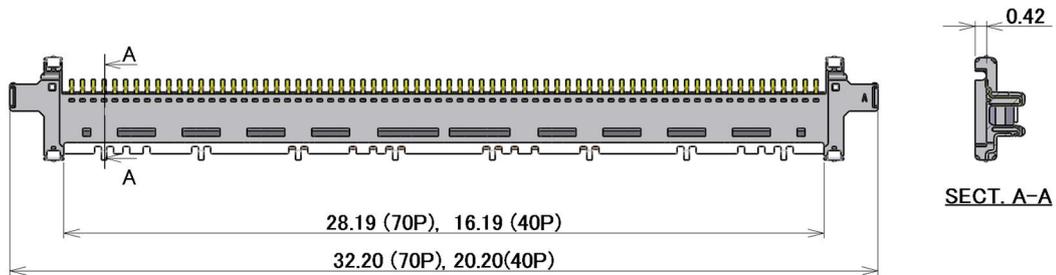


Fig.2 Solder Paste Application Area

3-2. Set the FPC in the mounting jig



Caution: The bottom surface of the plug housing assembly has a protrusion at the location shown in Fig. 4.
Please ensure that the mounting jig has a clearance to prevent interference with this protrusion.



3-3. Set the Plug Housing Assembly onto the FPC

Caution: The vacuum adsorption area and the recommended nozzle inner diameter for the Vacuum Clip are shown in Figure 6.

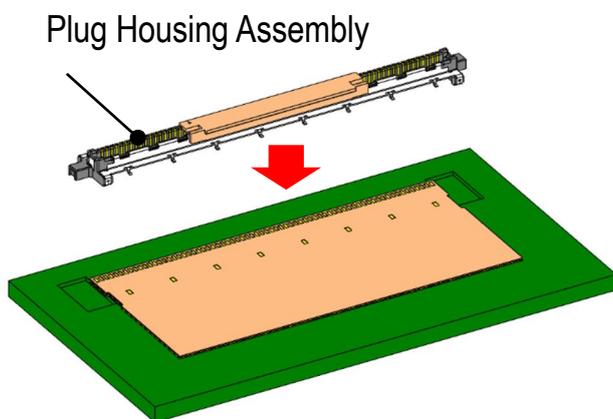
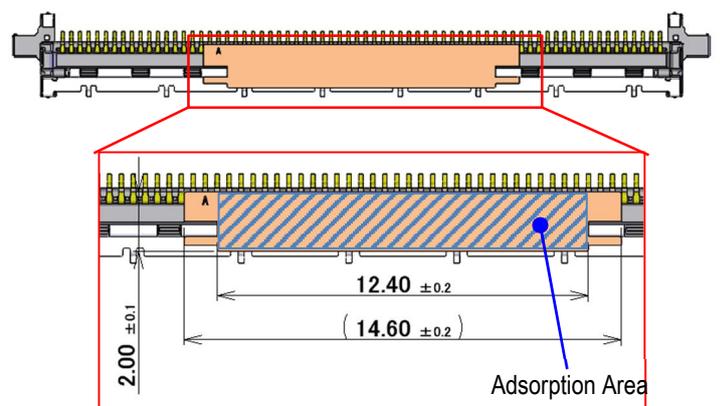


Fig.5 Plug Housing Assembly Setup



3-4. Perform mounting with a reflow machine

The mounting status can be visually confirmed.

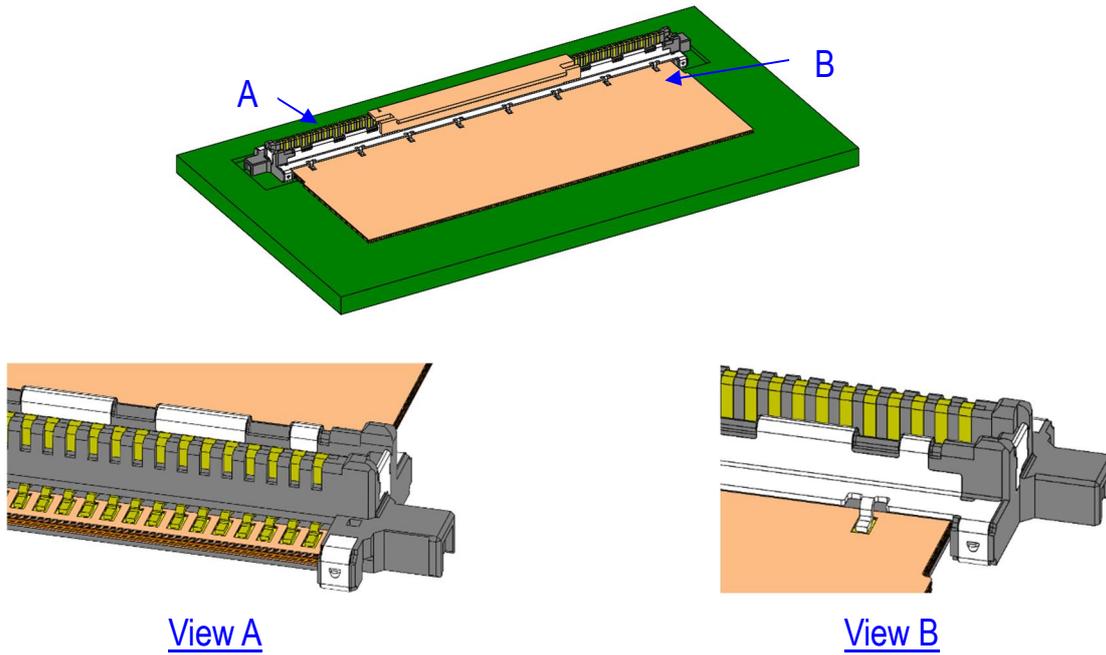
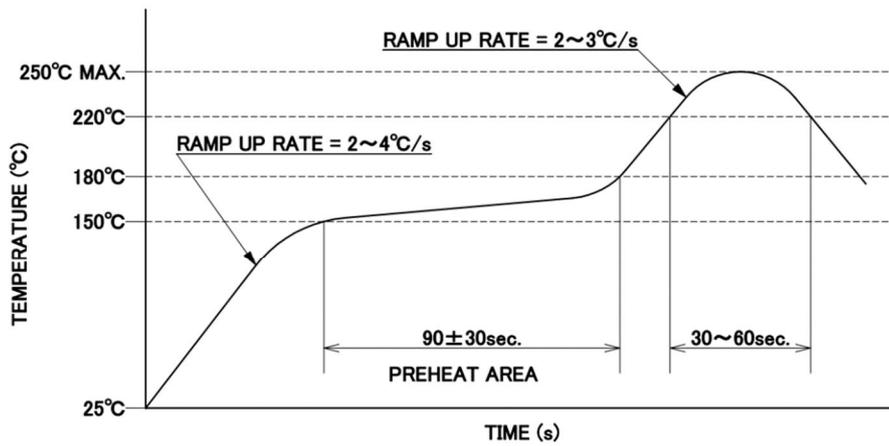


Fig.7 Mounting Status Confirmation

The recommended reflow temperature profile is as follows.

(Temperature is measured at the surface of the printed circuit board near the connector terminals)



REFLOW TEMPERATURE PROFILE
SENJU METAL INDUSTRY CO., LTD. : M705-SHF(Sn96.5 Ag3.0 Cu0.5)

Fig.8 Recommended Reflow Temperature Profile

3-5. Remove the Vacuum Clip

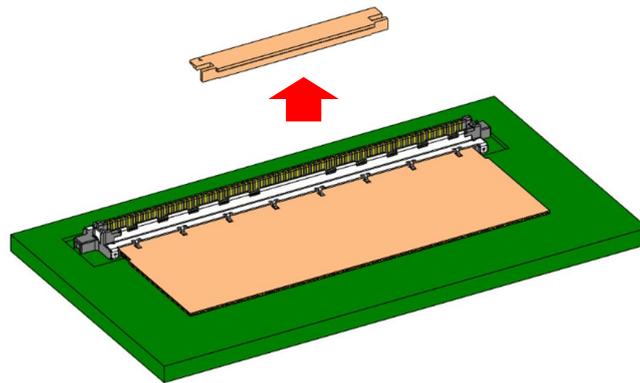


Fig.9 Removing the Vacuum Clip

When removing the Vacuum Clip, please pull up the section marked in red in the direction of the arrow shown in the figure below.

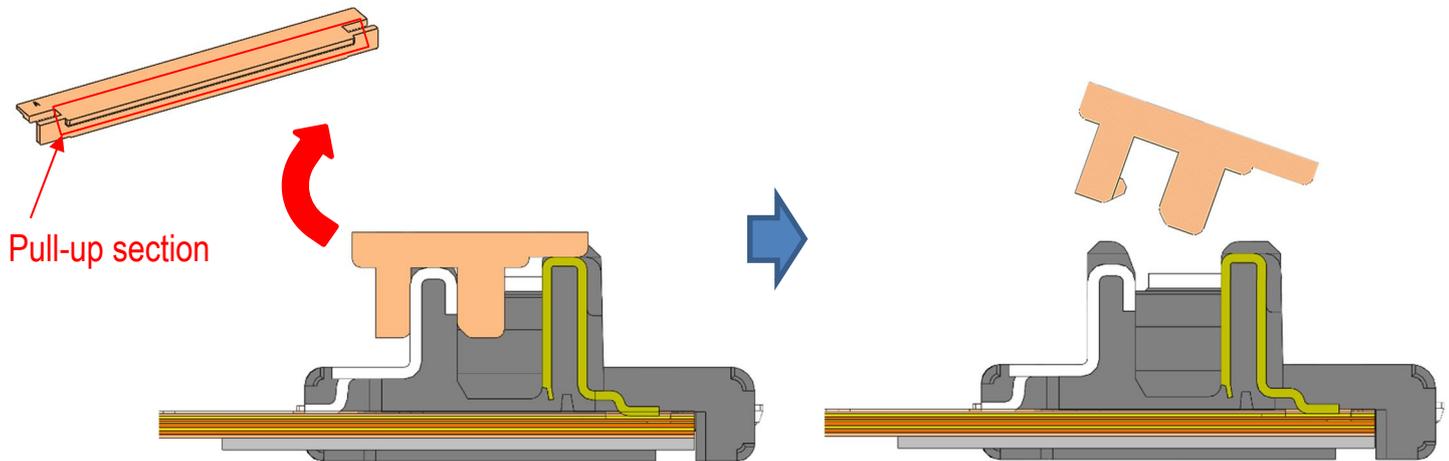
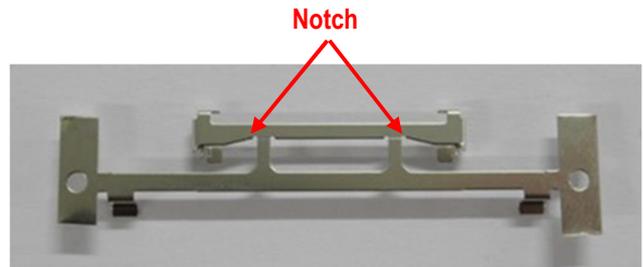
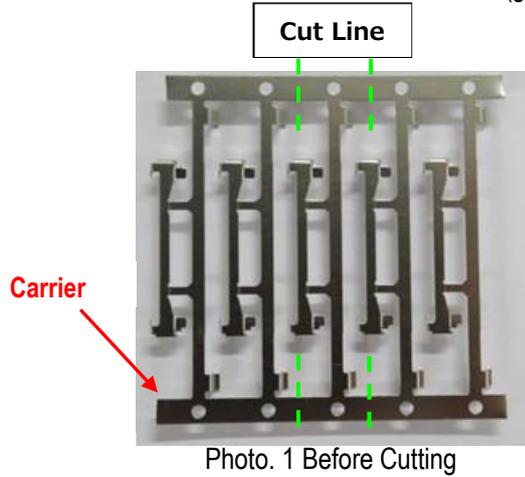


Fig.10 Direction for Removing the Vacuum Clip

3-6. Lock Cover Handling Precautions

The lock cover is delivered in a carrier reel state. The procedure for removing the lock cover from the carrier is outlined below.

- ① Use a metal scissor to cut the carrier at the cut line (green line) located at the bottom left, as shown in Photo. 1.



- ② Hold the center of the Lock Cover and move it back and forth within a $\pm 45^\circ$ range to detach it from the notch. If it does not detach, repeat this back-and-forth motion until it is separated. After detaching, ensure that there is no burr at the notch removal area. (Photo. 4)

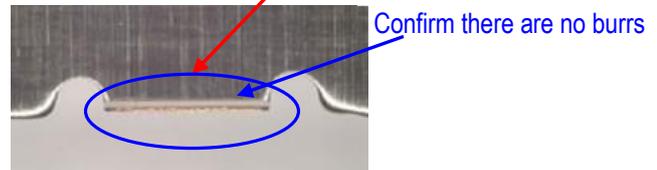
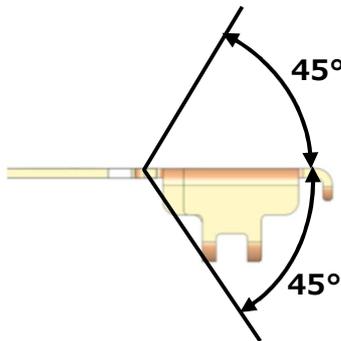
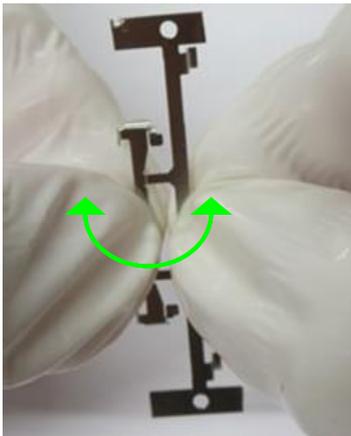


Photo. 3 Cutting Method

Lock Cover Notch Status

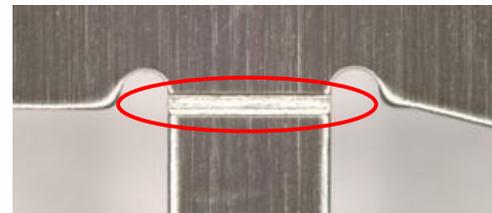


Photo. 5 Bottom Surface

Photo. 6 Top Surface

Caution: Do not forcibly pull or detach as shown in Photo. 7 (red arrow), as this can cause burrs or deformation.

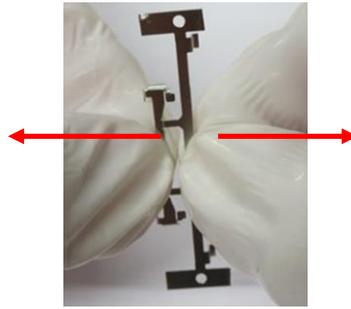


Photo. 7 Forcible Cutting (Not Recommended)

3-7. Lock Cover Assembly

As shown in Fig. 11, assemble the Lock Cover onto the top surface of the Housing Assembly.

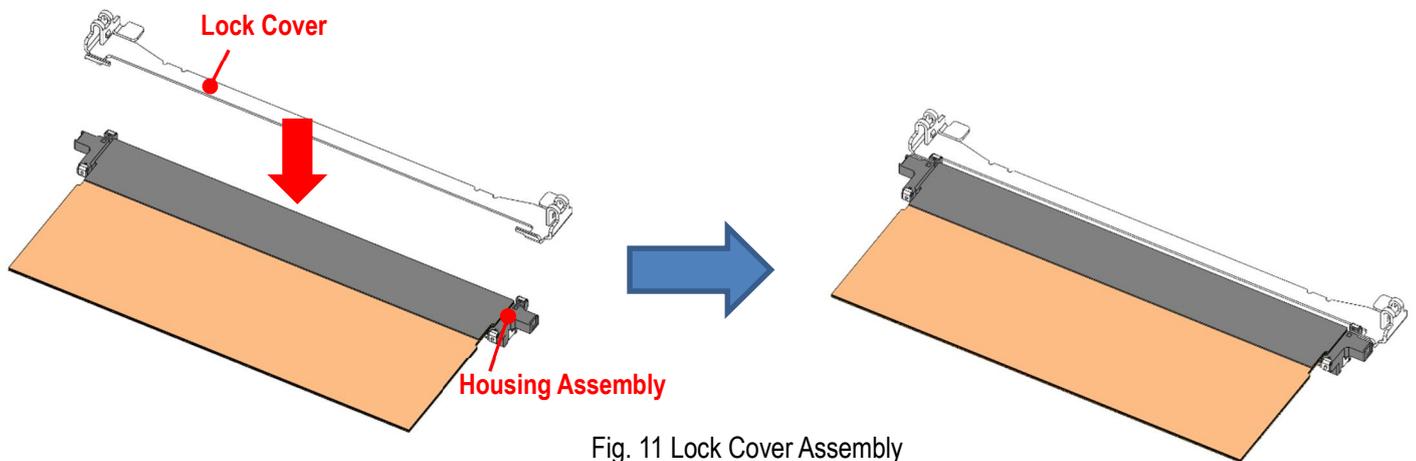


Fig. 11 Lock Cover Assembly



Fig. 12 Lock Cover Assembled

3-8. Shell-A Handling Precautions

Shell-A is delivered in a carrier reel state. The procedure for removing Shell-A from the carrier is outlined below.

- ① Use a metal scissor to cut the carrier at the cut line (green line) located at the bottom left, as shown in Photo. 8.

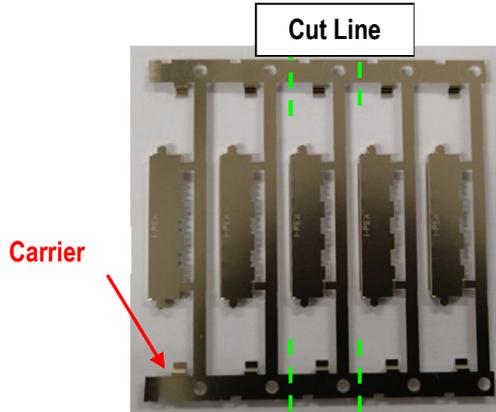


Photo. 8 Before Cutting

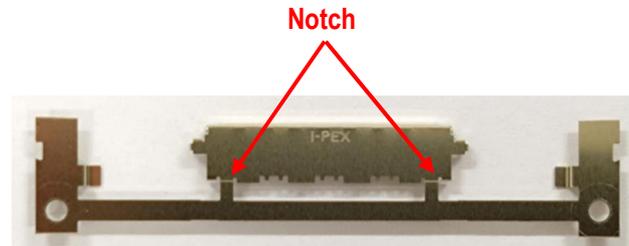


Photo. 9 After Cutting

- ② Hold the center of the Shell-A and move it back and forth within a $\pm 45^\circ$ range to detach it from the notch. If it does not detach, repeat this back-and-forth motion until it is separated. After detaching, ensure that there is no burr at the notch removal area. (Photo. 11)

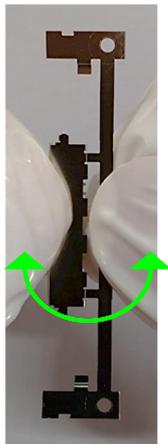


Photo. 10 Cutting Method

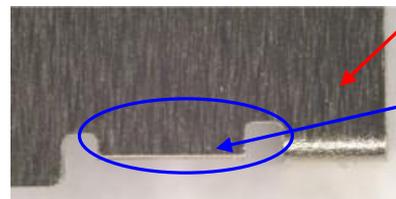
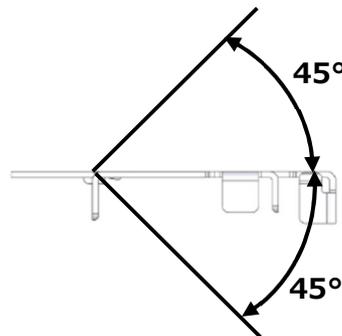


Photo. 11 After Cutting

Plug Shell-A Notch Status

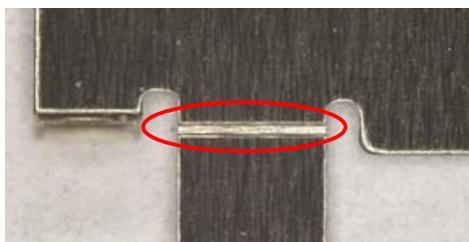


Photo. 12 Bottom Surface



Photo. 13 Top Surface

Caution: Do not forcibly pull or detach as shown in Photo. 14 (red arrow), as this can cause burrs or deformation.

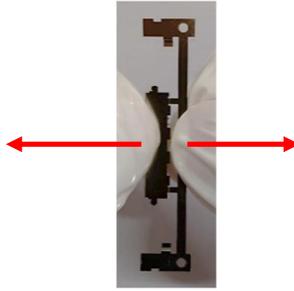


Photo. 14 Forcible Cutting (Not Recommended)

3-9. Shell-A Assembly

- ① Assemble Shell-A onto the top surface of the Housing Assembly as shown in Fig. 13.

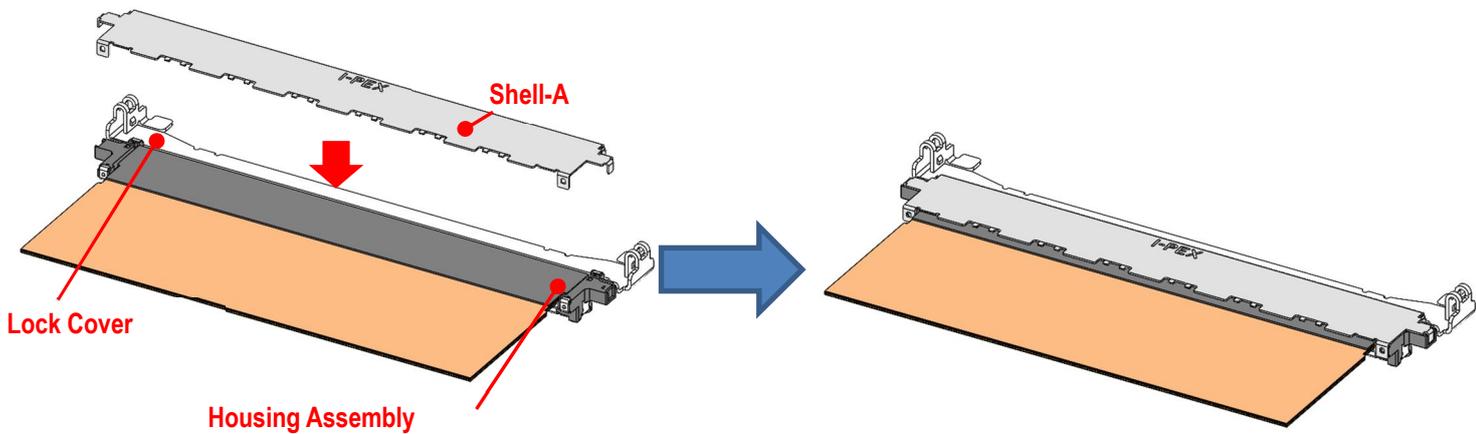


Fig. 13 Shell-A Assembly

- ② Check that Shell-A is properly assembled.
Check that the shell lock is engaged. (Fig. 14★)

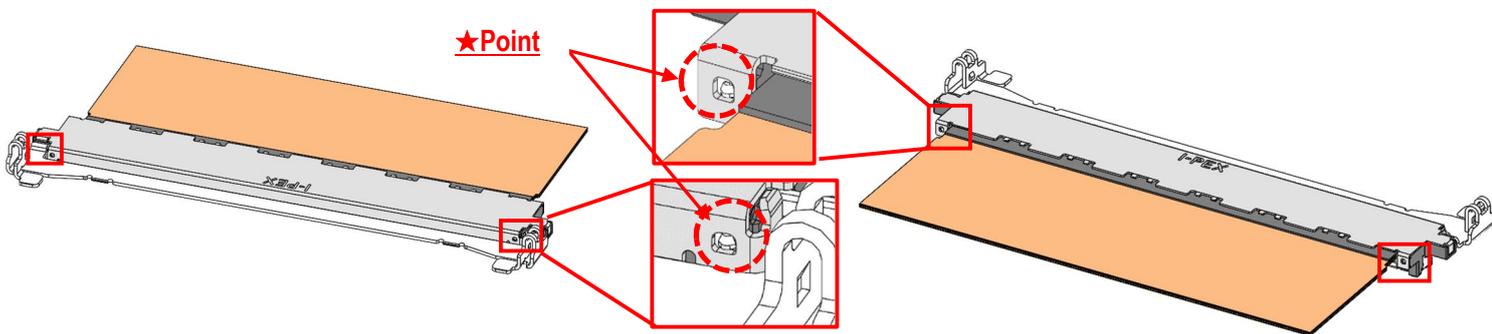


Fig. 14 Shell-A Assembly Confirmation Position

- ③ Solder Shell-A, Shell-B, and the FPC using a soldering iron (Fig. 15◆).

The maximum allowable solder height (solder amount) is shown in Fig. 20.

Soldering Iron Rated Power: 50W

Tip Temperature: 350°C

Tip Contact Time: Within 5 seconds

Recommended Solder Wire: Supplier: Uchihashi Estec Co.,Ltd.

Wire Diameter: 0.2 mm

Type Number: 10HF RSW-631-200F3

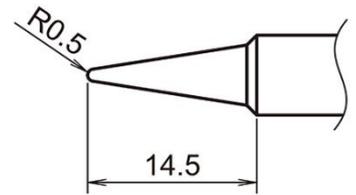


Fig. 15 Example of Soldering Iron Tip Size

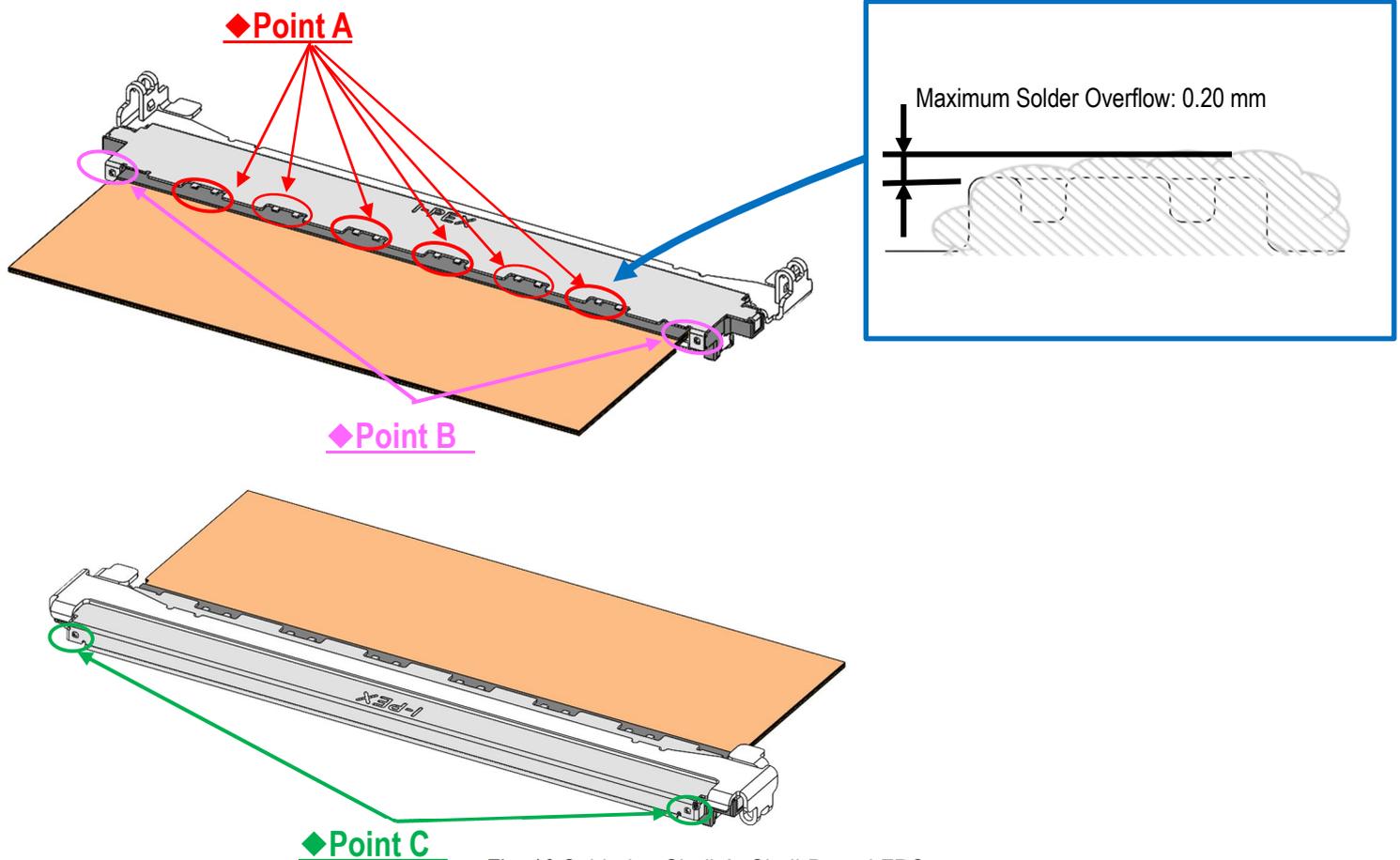


Fig. 16 Soldering Shell-A, Shell-B, and FPC

Reference: Figure 16 illustrates the recommended solder overflow amount. Functionality will not be affected provided that any excess solder does not interfere with the Lock Cover shown in Figure 17.

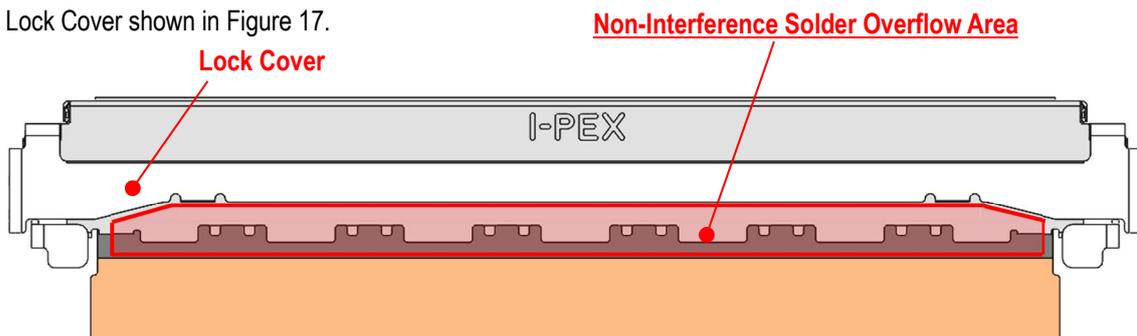


Fig.17 Solder Overflow Area Clear of Lock Cover Interference

Note: The recommended soldering height is as shown in Figure 18. However, exceeding the recommended height does not affect functionality as long as there are no issues when used on the actual unit. At Point D, if solder extends above the red line, it will interfere with the Receptacle Assembly during mating. Therefore, do not allow solder to exceed the line.

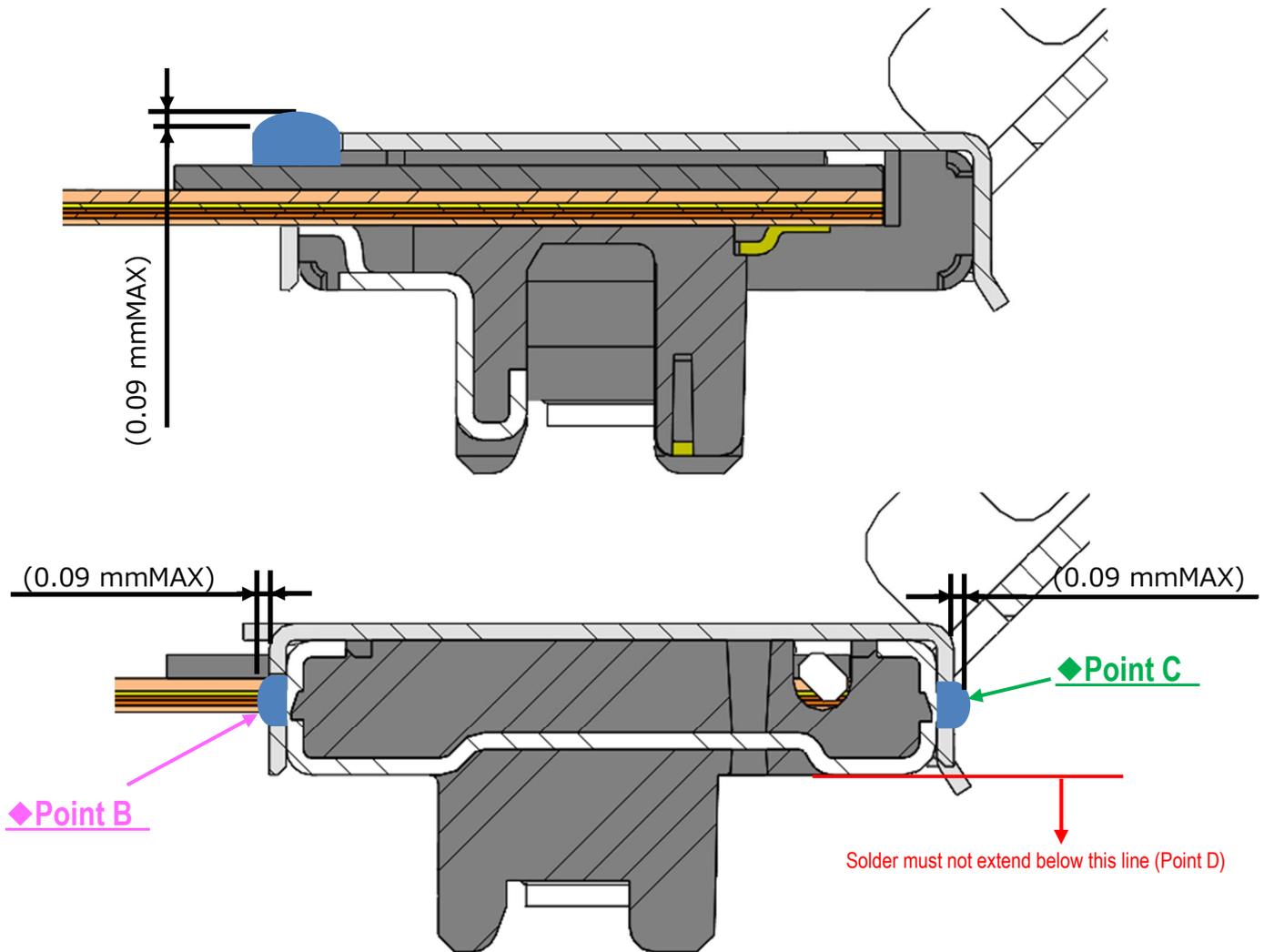


Fig. 18 Maximum Solder Height (Solder Amount)

Reference: Detailed Soldering Procedure

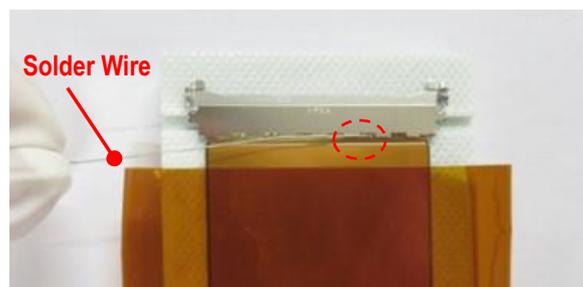
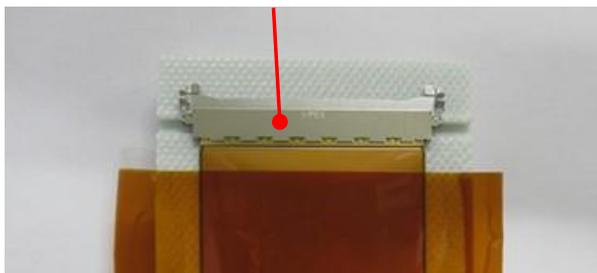
Point A and B

1. Set the plug with the lock cover open.

Note: Secure the product with the jig, tape, weights, etc., to prevent movement.

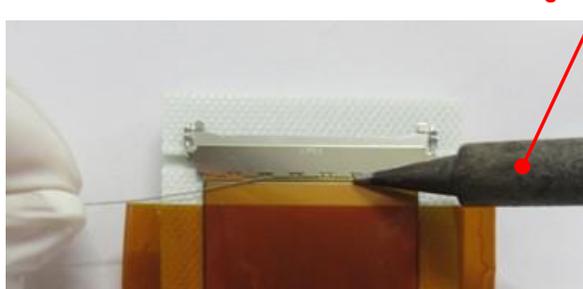
2. Place the solder wire on the plug.

CABLINE-UMF PLUG



3. Press the tip against the joint, melt the solder, and let it flow in.

Soldering Iron Tip



4. After soldering



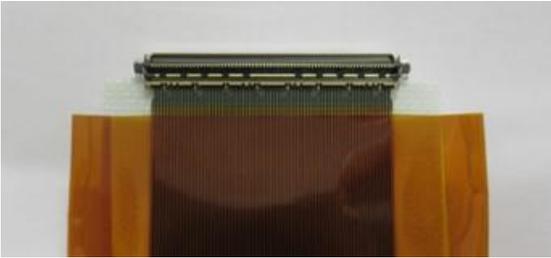
Perform steps 2 and 3 on all soldering points at Points A.

Photo 15. Soldering Procedure (Points A)

Point C and D

1. Set the plug.

Note: Secure the product with the jig, tape, weights, etc., to prevent movement.



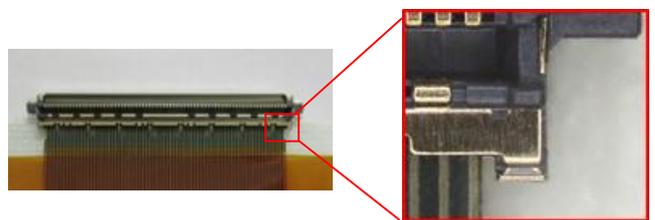
2. Place the solder wire on the plug.



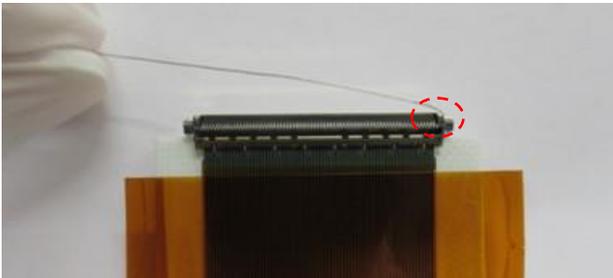
3. Press the tip against the joint, melt the solder, and let it flow in.



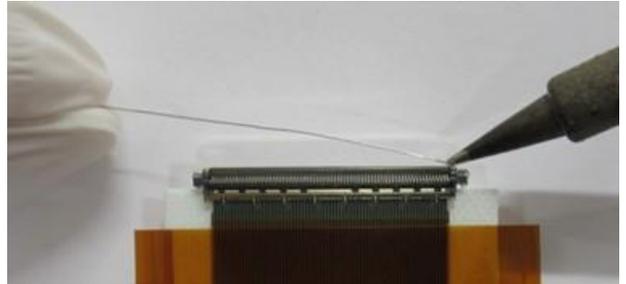
4. After soldering



5 Place the solder wire on the plug.



6. Press the tip against the joint, melt the solder, and let it flow in.



7. After soldering

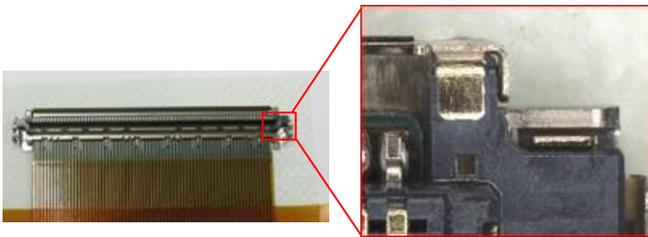


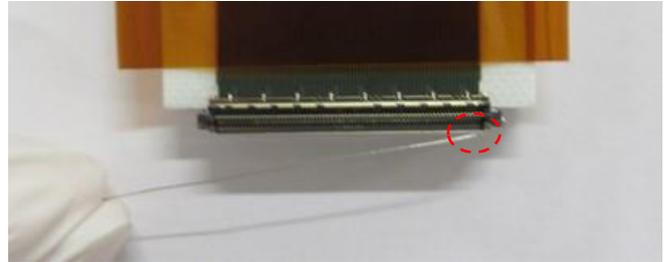
Photo 16. Soldering Procedure (Points B and C)

8. Set the plug.

Note: Flip the product upside down and apply the soldering iron from the right side to ensure the soldering iron does not touch any points other than B and C.



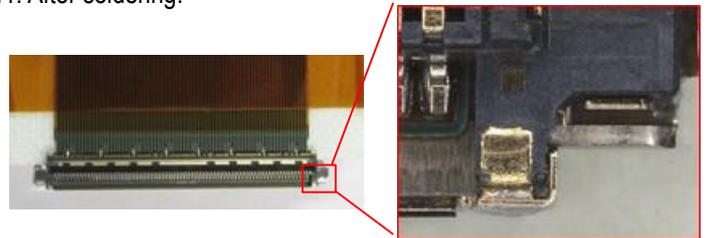
9. Place the solder wire on the plug.



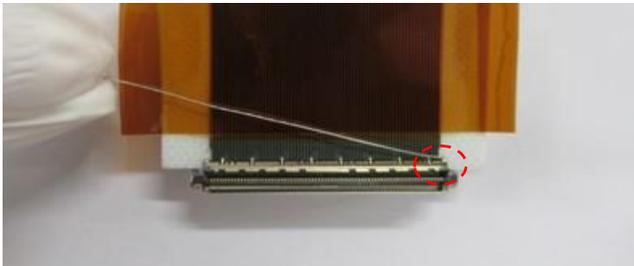
10. Press the tip against the joint, melt the solder, and let it flow in.



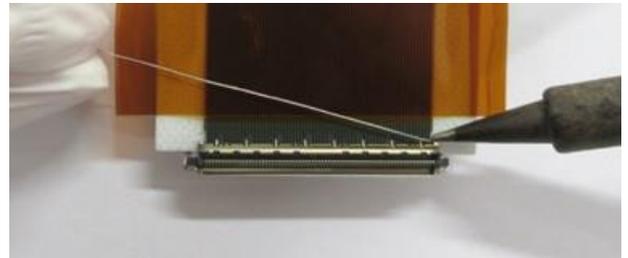
11. After soldering.



12. Place the solder wire against the product.



13. Press the tip against the joint, melt the solder, and let it flow in.



14. After soldering.

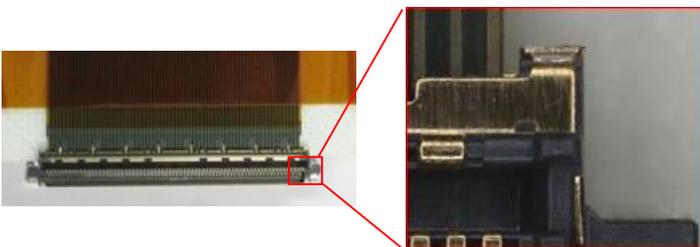


Photo 17. Soldering Procedure (Points B and C)

【When using pull tape holder without using lock cover】

3-10. 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.

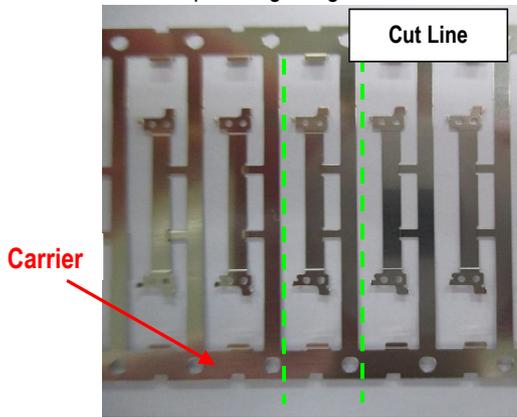


Photo.18 Before Cut

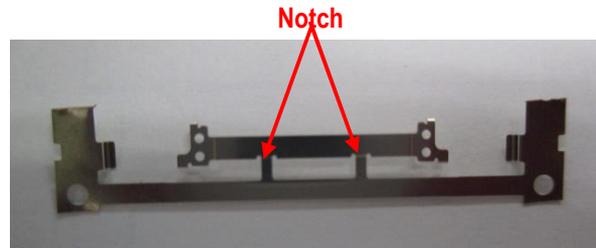


Photo.19 After Cut

- ② Hold the center of pull tape holder and bend it back and forth within ± 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)

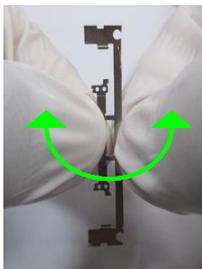


Photo.20 Cut Condition

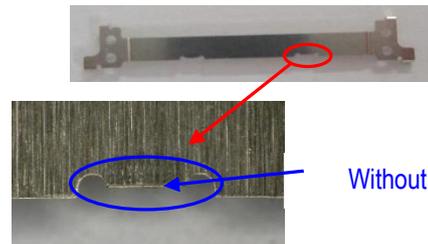
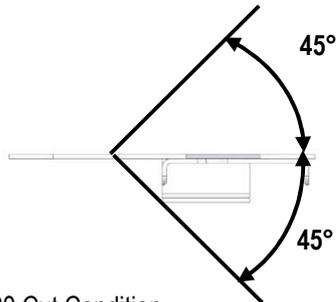


Photo.21 After Cut

Plug Detail of Notch

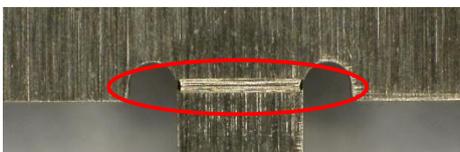


Photo.22 Bottom Side View

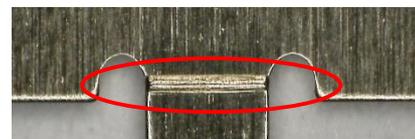


Photo.23 Upper Side View

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

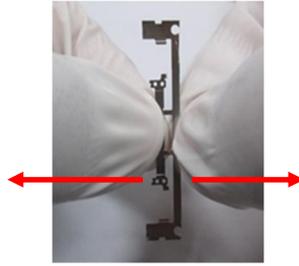


Photo.24 Cut by Force (Bad Example)

3-9. Assembling Pull Taper Holder

① Tape pull tape around pull taper holder as shown in Figure 20.

- Recommended Pull Tape Dimensions

Positions	40P	70P
Thickness	0.10 MAX.	
A	11.3 ~ 13.7	23.3 ~ 25.7
B	14.0	26.0

*Reference Material: Polyimide

Unit : mm

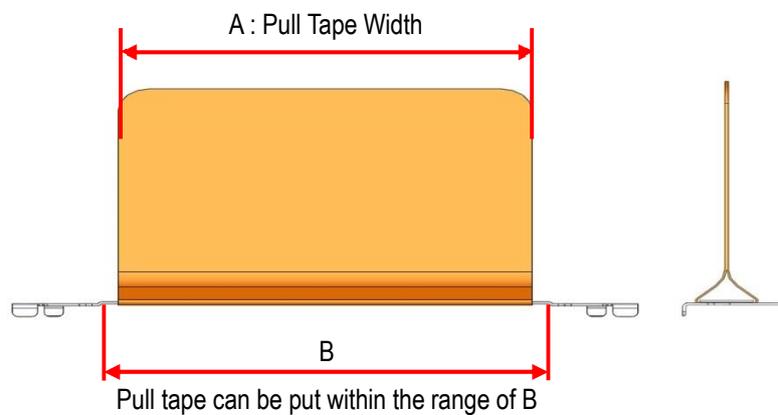


Fig.19 Pull Tape Dimensions

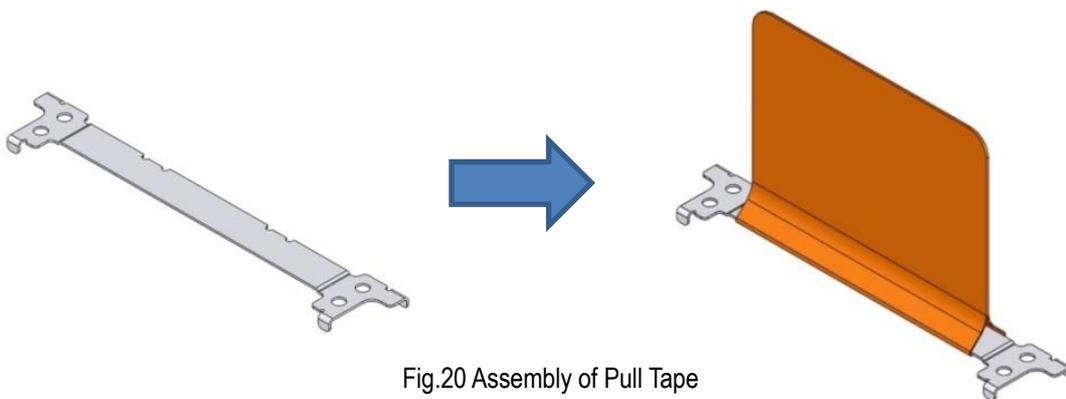


Fig.20 Assembly of Pull Tape

- ② Assemble the pull tape holder from upper surface of shell-A.

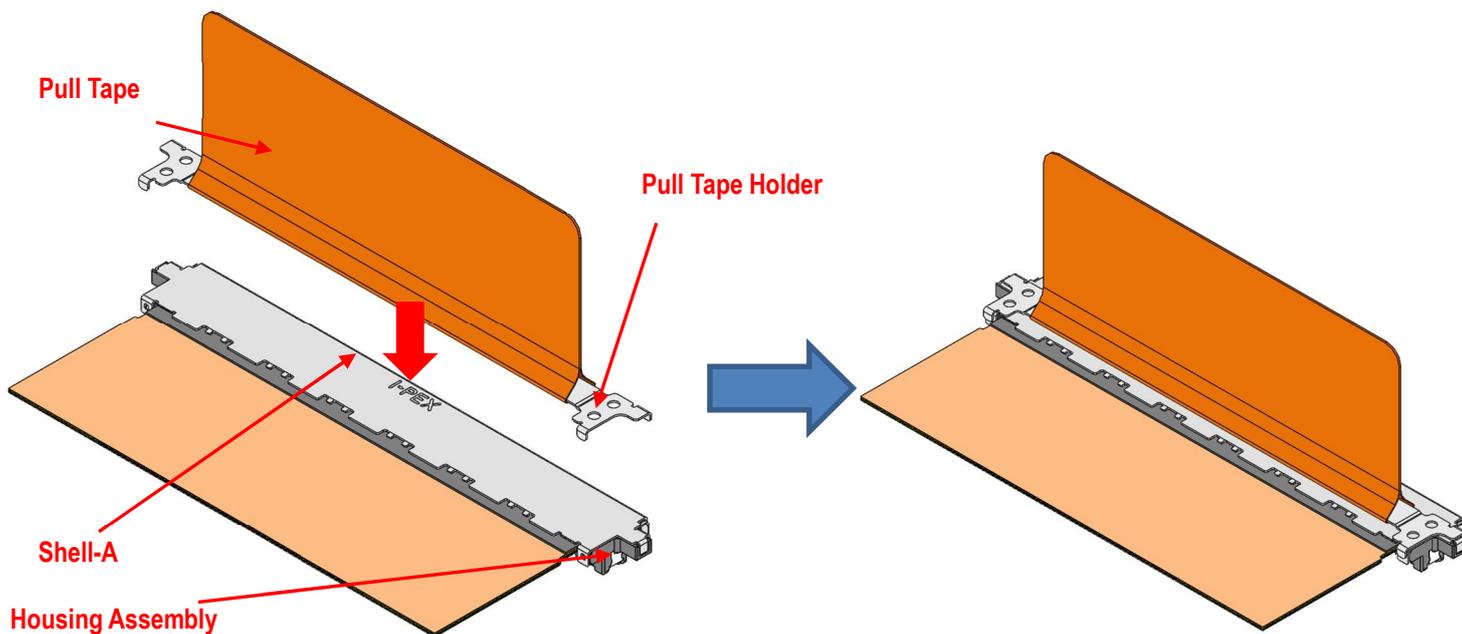


Fig.21 Assembly of Pull Tape Holder

- ② Make sure that pull tape holder is assembled properly.(Fig.22★Point)

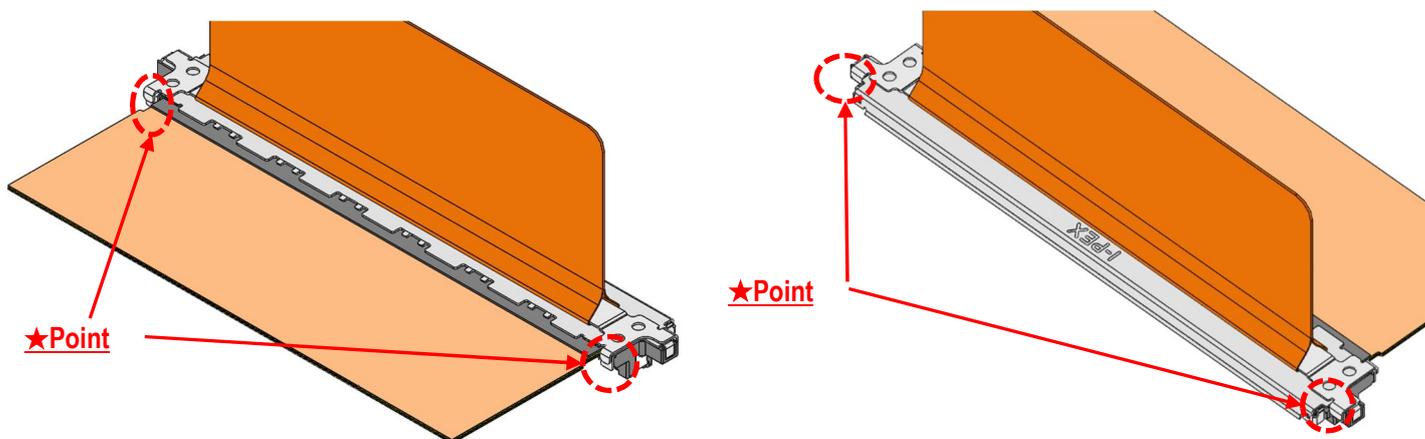


Fig.22 The Assembly Confirmation of Pull Tape Holder

- ③ Use soldering iron to solder pull tape holder and Shell-A. (Fig.23◆Point)

Refer to sheet 10 for soldering conditions.

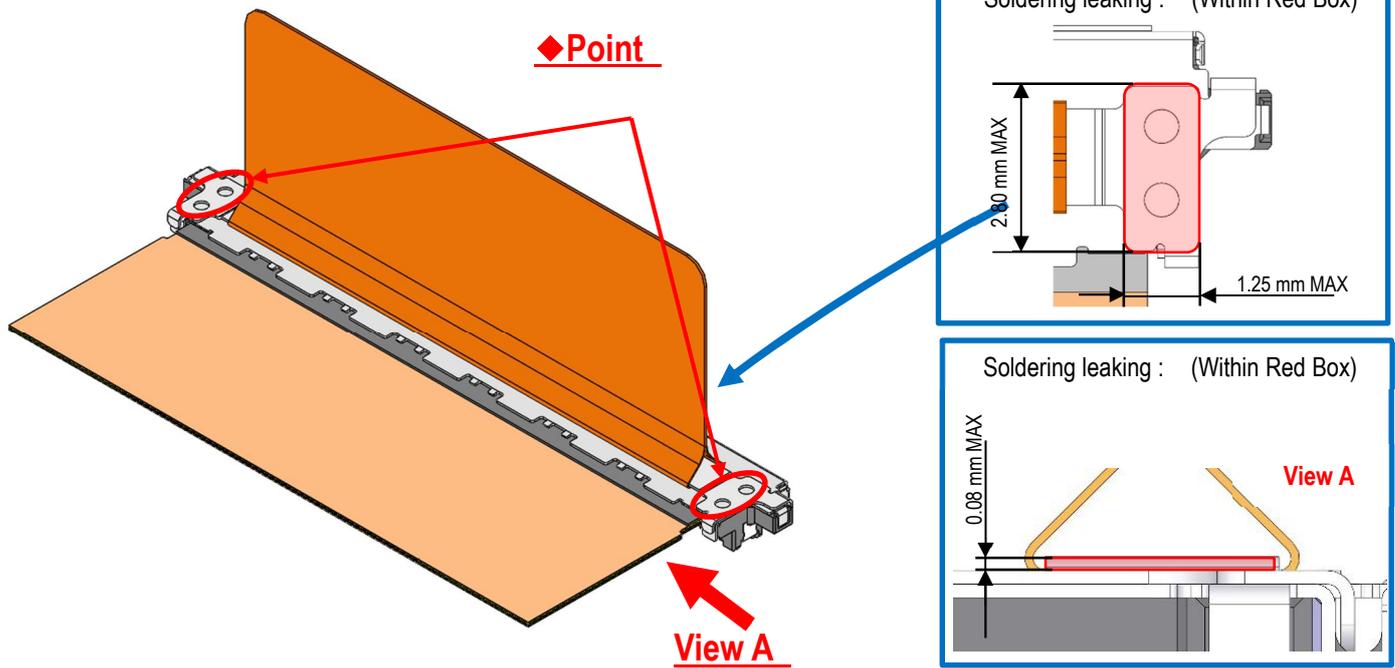


Fig.23 Soldering of Pull Tape Holder

[70P Only – Additional Soldering]

Solder Shell-A and Shell-B at the ◆ points shown in Fig. 24 after completing Step 4.

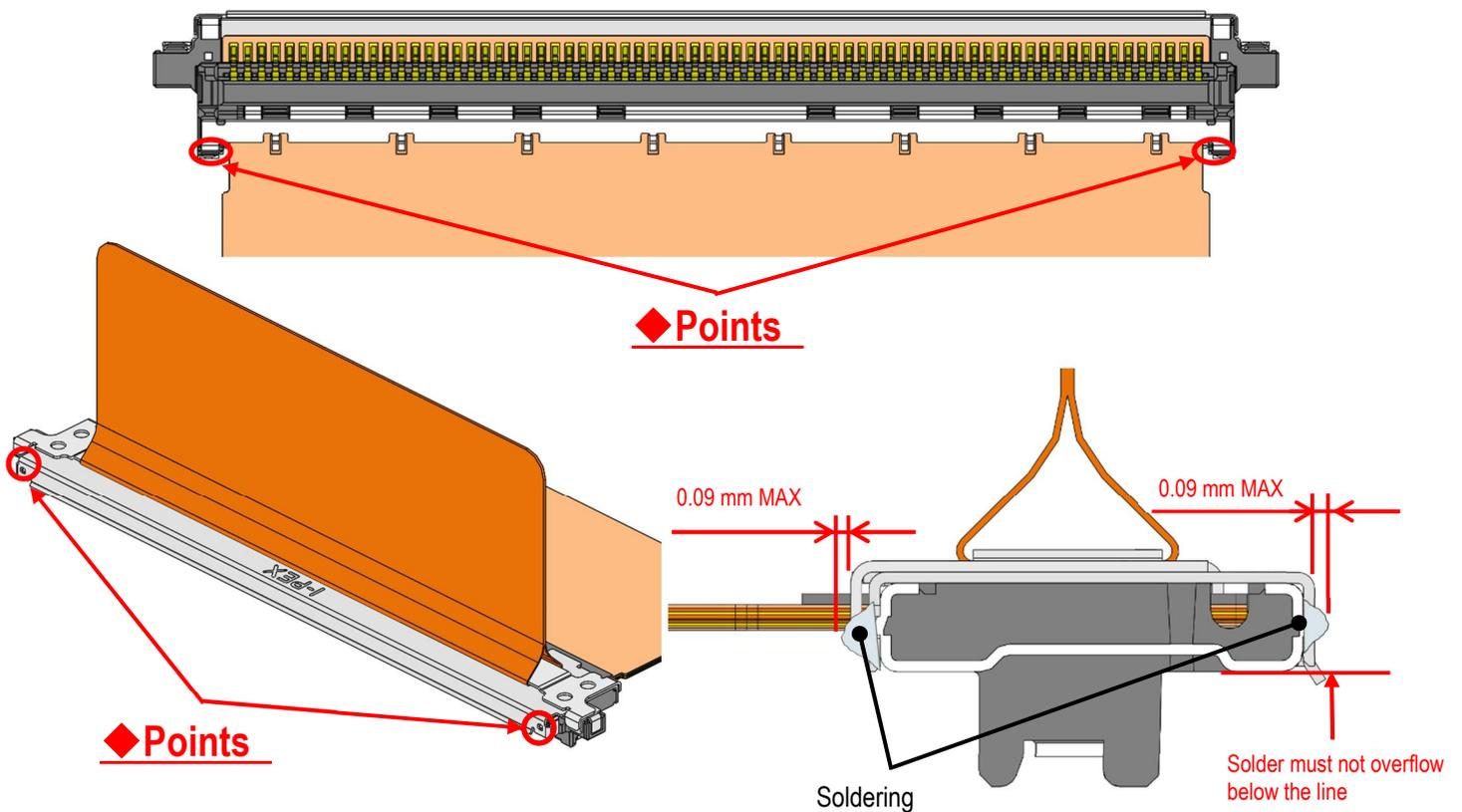


Fig.24 Additional Soldering Points for Shell-A and Shell-B

[Caution]

*Do not place pull tape holder upside-down.

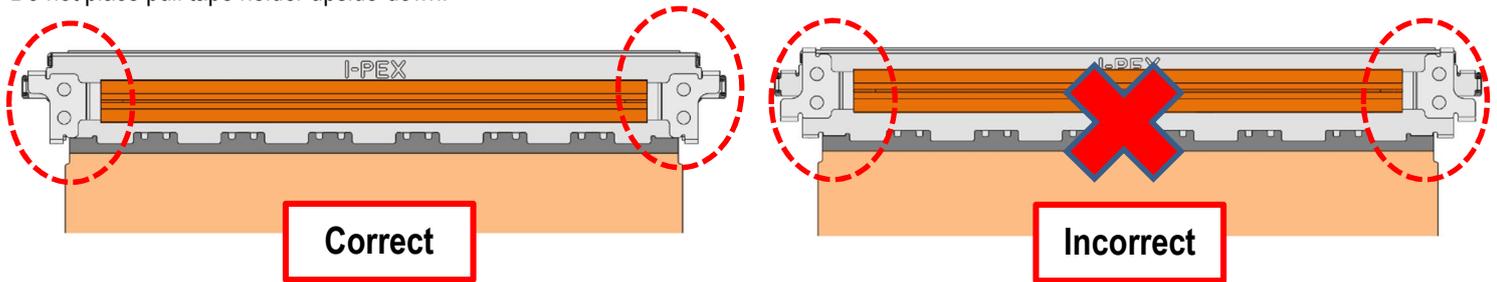


Fig. 25 Assembling Pull Tape Holder

*If pull tape holder is unstable, secure it before soldering.

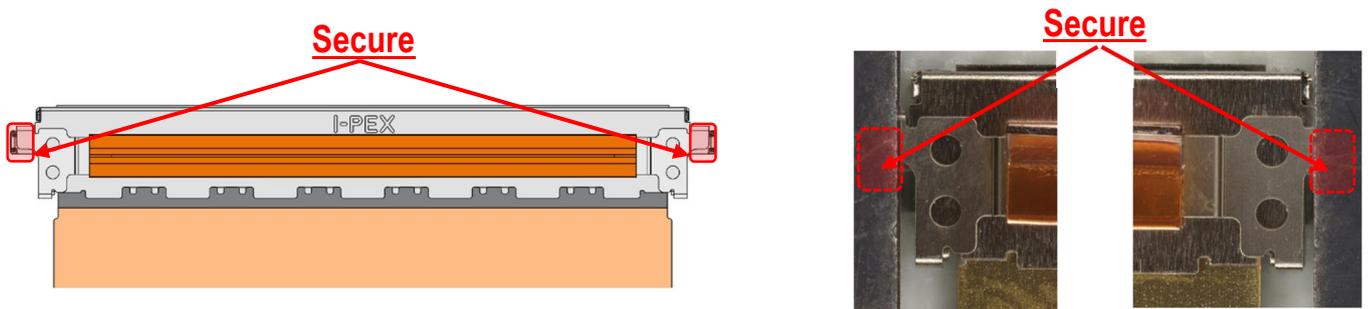


Fig.26 Secured Pull Tape Holder

*If soldering paste amount is not enough, strength of pull tape holder may decrease.
Make sure all four holes are soldered as shown in correct photo.

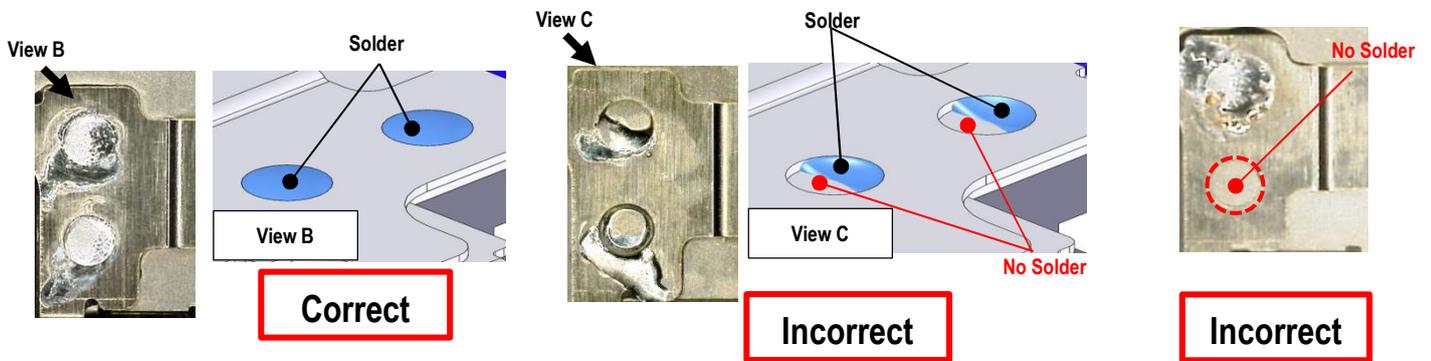


Photo.25 Soldering

*Do not touch pull tape with soldering iron or it may melt it according to the heat-resistant temperature.