

CABLINE®-CAL PLUG

Part No. 20728

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-CAL plug with cable,
and assembly of shell-A, lock bar.

2. Applicable Connector :

Name: CABLINE-CAL plug

Parts No.:

Set P/N	Cable Assembly	20728-0**T-#1
Discrete P/N	Housing Assembly	20777-0**T-#1
	Shell-A	3298-0**1
	Lock bar	3300-0**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

	30P	40P
Thickness	0.45 ⁰ _{-0.05}	0.45 ⁰ _{-0.05}
Width	13.40 ⁰ _{-0.03}	17.40 ⁰ _{-0.03}

Unit: mm

• Recommended solder bar

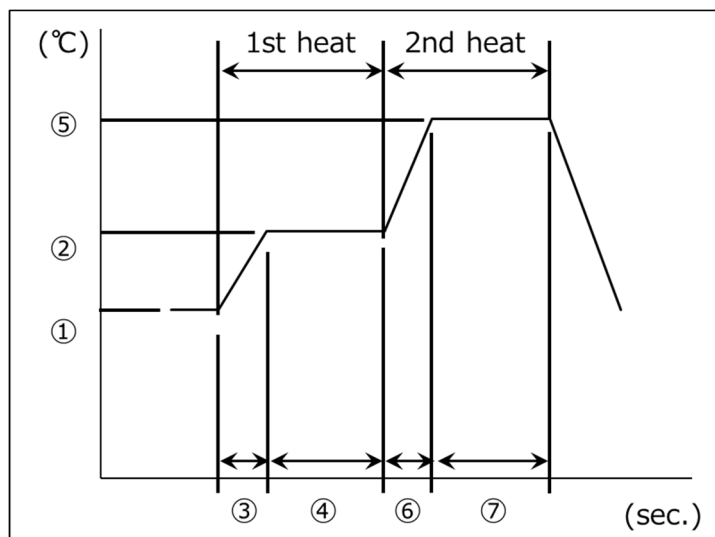
Resin-free solder made by Uchihashi Estec Co., Ltd. was used.

Positions		30P	40P
Solder size	AWG#34, #36	φ0.14	φ0.14
	AWG#38~#44	φ0.10	φ0.10
Length		13.2 Ref.	17.2 Ref.

Unit: mm

4. Recommended Pulse Heat Condition

	conditions
① Idle temp.	150°C
② 1 st heat temp.	220°C
③ " rise time	0.5sec.
④ " holding time	3.0sec.
⑤ 2 nd 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.

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

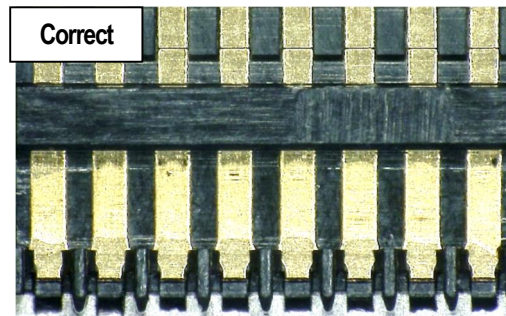
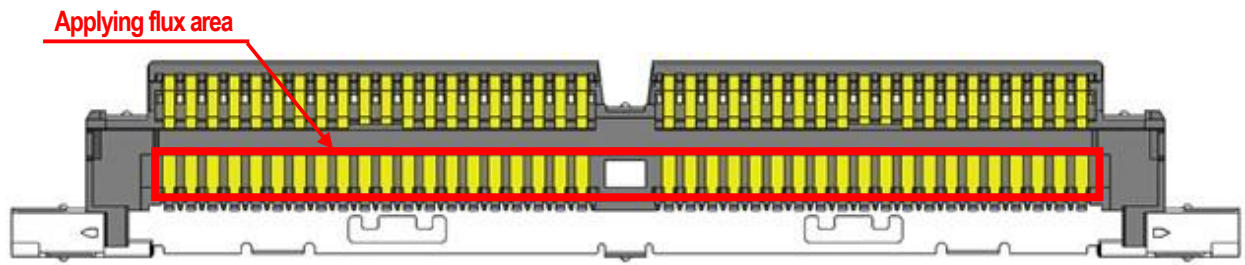


Photo.1 After Applying Flux

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

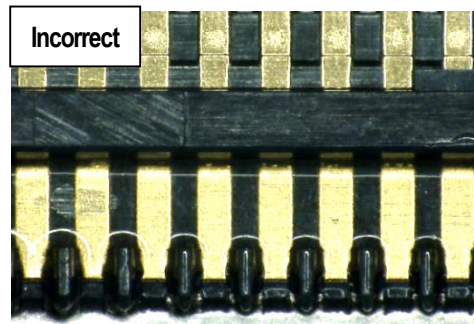


Photo.2 Extra Flux

※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 assembly).

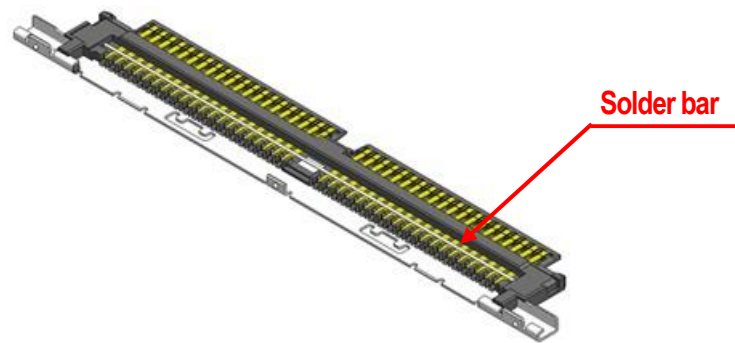


Fig.1 Set of Solder Bar.

- ④ Set the cable.

※Setting discrete wire is to protect 0.25max. as Fig.3. There is danger that center conductor touch shell.

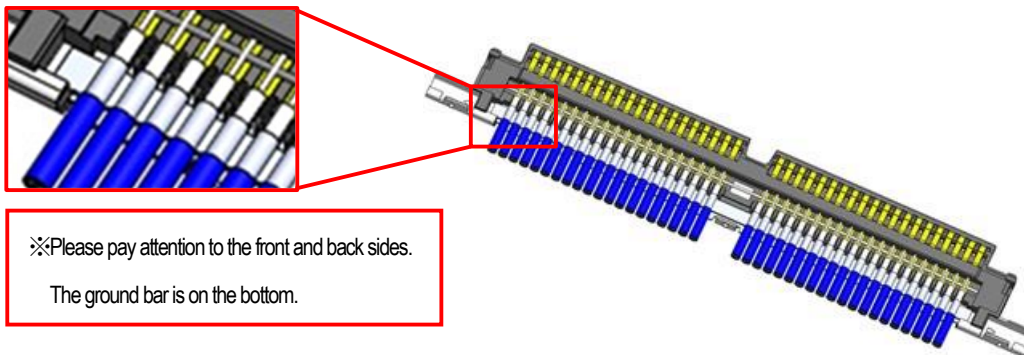


Fig.2 Set of Cable.

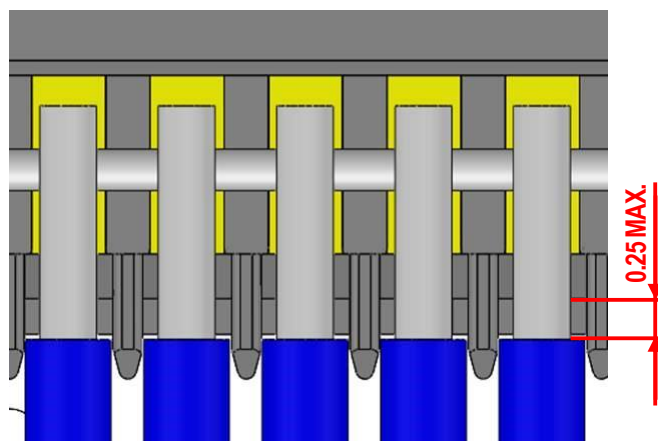


Fig.3 Setting Discrete Wire

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

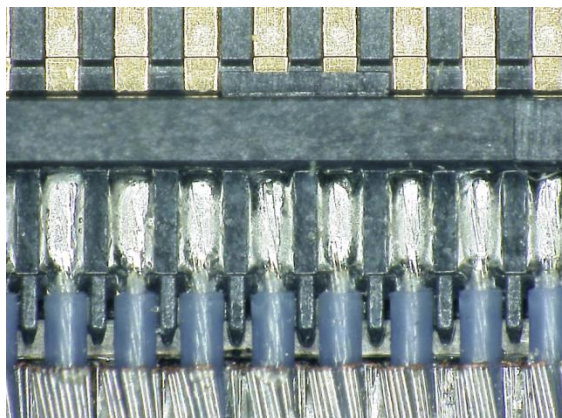


Photo.3 AWG#40

※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 an Incorrect point.

Condition of Soldering iron : 50W
Operating temperature : 350°C
Application time of soldering iron : Within 5sec.

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

Caution: The shell bottom side of plug housing assembly has convex shape at the points shown in Fig.4, so please make escape shape on the receiving jig of the pulse heater to prevent interference.

	A	B
30P	8.80	18.60
40P	12.80	22.60

Unit: mm

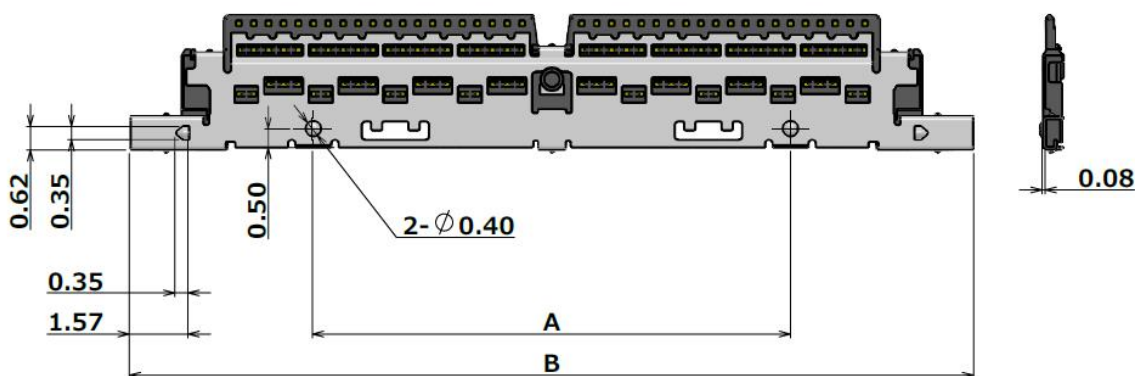


Fig.4 The Shell Bottom Side of Plug Housing Assembly

5-2. 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.

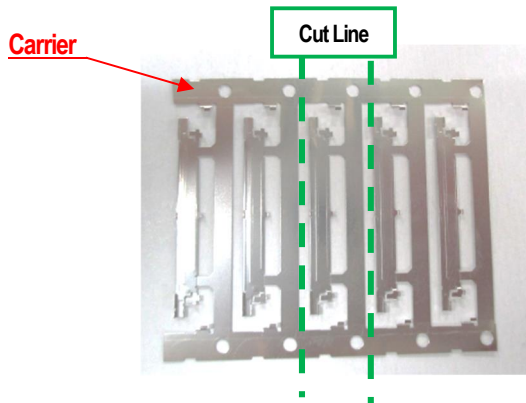


Photo.4 Before Cut

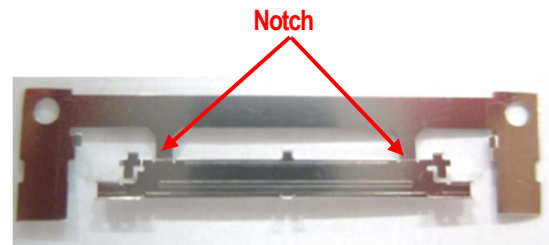


Photo.5 After Cut

- ② Hold the center of plug 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.7)

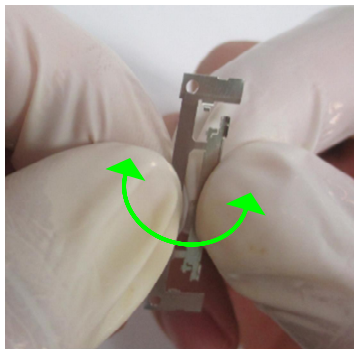
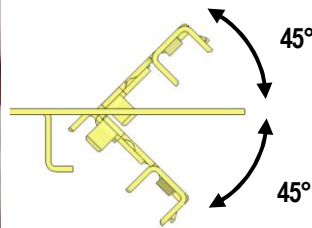


Photo.6 Cut Condition



Without burrs

Photo.7 After Cut

Plug shell-A detail of notch.

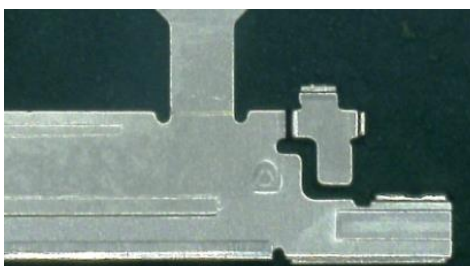


Photo.8 Bottom Side View

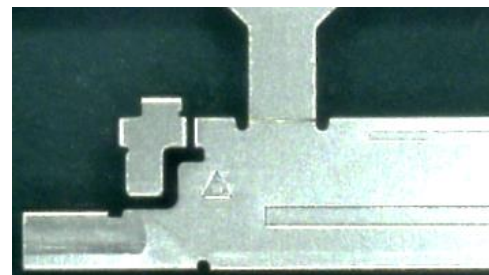


Photo.9 Upper Side View

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

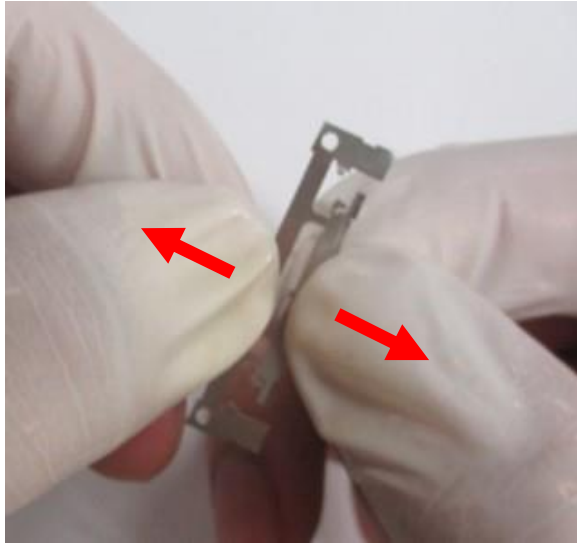


Photo.10 Cut by Force (Bad example)

5-3. Assembly of Lock Bar

Lock bar is assembled to housing assembly.

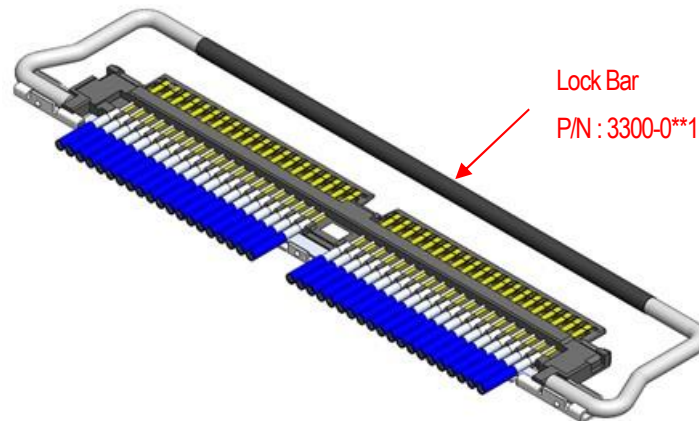


Fig.5 Assembly of Lock Bar

5-4. Assembly of Shell-A

① Shell-A is assembled from the upper side of housing assembly.

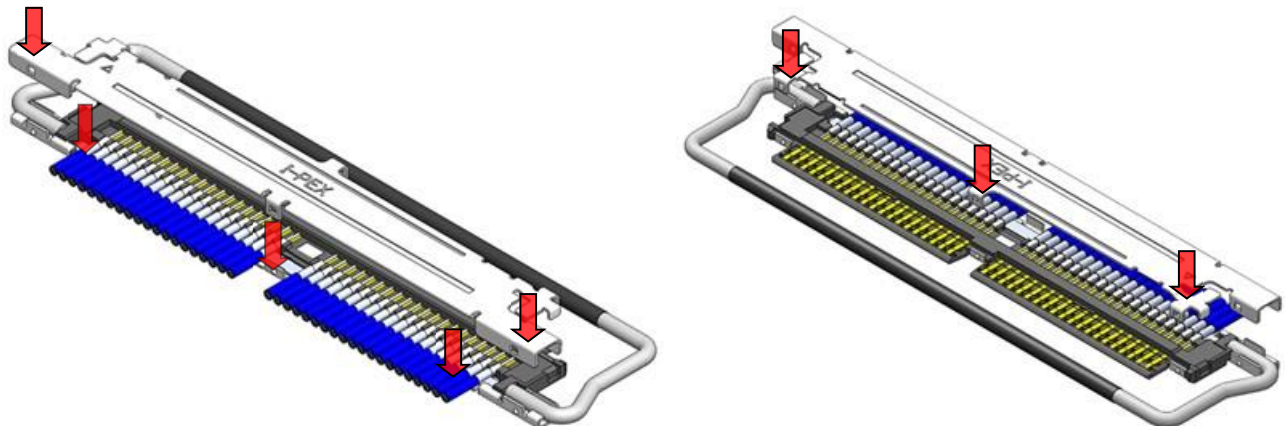


Fig.6 Assembly of Shell-A

② Confirms whether shell-A is assembled properly.

Whether shell locks are assembled properly. (Fig.7 ★ point)

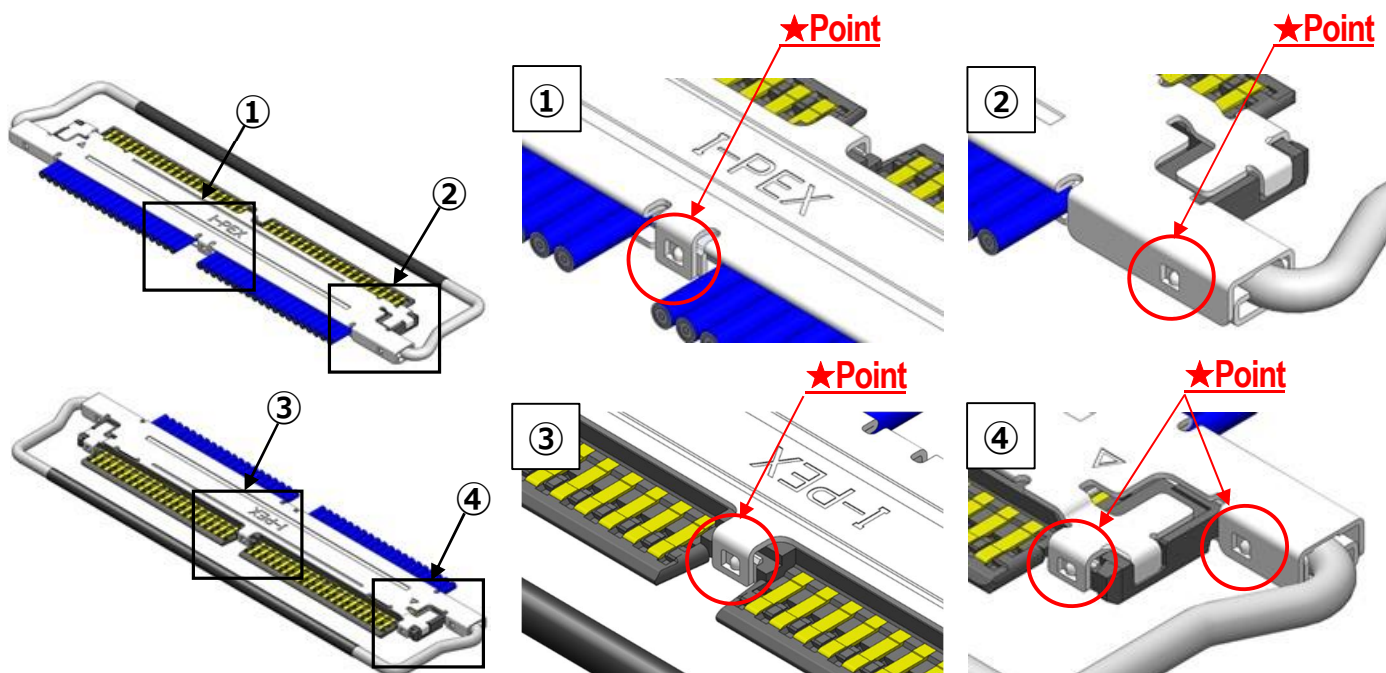


Fig.7 The Assembly Confirmation of Shell-A

③ Soldering shell-B and ground bar with the soldering iron at all designated points is recommended. (Fig.8 ◆ point)

Although soldering at all designated locations is recommended, some solder joints may be omitted provided that the product maintains its performance. Before production, several samples shall be assembled and confirmed to have no functional issues.

Refer to Fig.11 for a limit of the solder height.

For conditions of soldering iron refer to sheet 7.

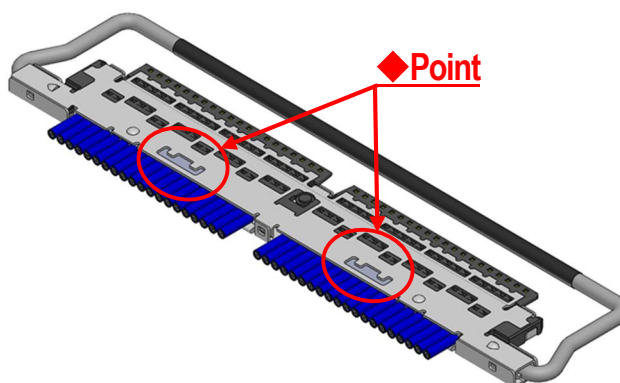


Fig.8 Soldering of Shell-B and Ground Bar

- ④ Soldering shell-A and shell-B with the soldering iron at all designated points is recommended. (Fig.9 ◆point)

Although soldering at all designated locations is recommended, some solder joints may be omitted provided that the product maintains its performance. Before production, several samples shall be assembled and confirmed to have no functional issues.

Conditions of soldering iron refer to sheet 7.

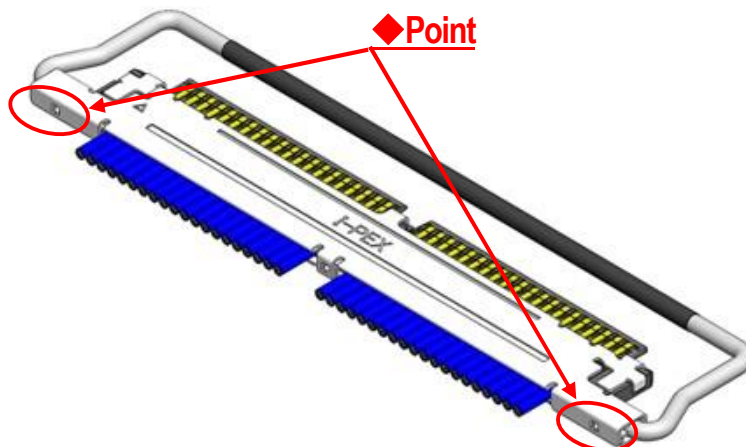


Fig.9 Soldering of Shell-A and Shell-B

5-5. Cable Fixation

Fix the cable terminal part with the bond.

Bond: LOCTITE 352

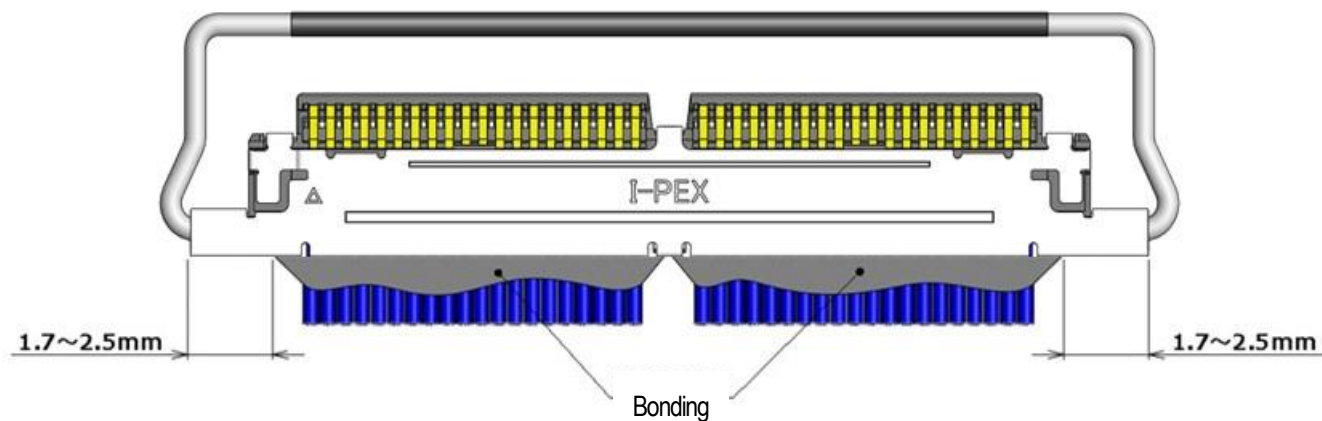


Fig.10 Bonding

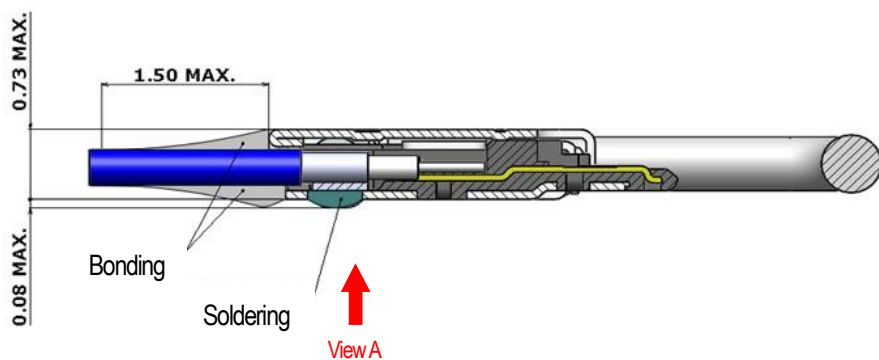
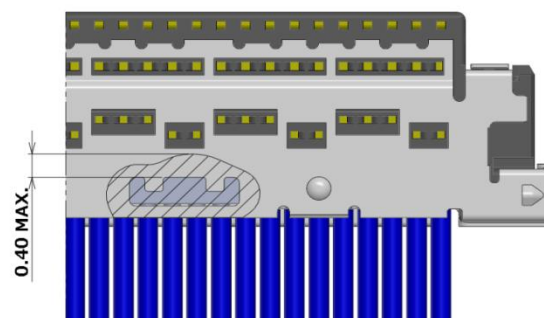


Fig.11 Soldering & Bonding



View A (Solder leaking)