

# MHF® 4L LK Harness with Receptacle Hand Tool Jig Narrow Pitch Type

## Instruction Manual

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This manual describes the mating / unmating of MHF 4L LK Harness and lock / unlock of LK methods and important handling points of the MHF 4L LK Harness for proper use.

【Products】

MHF 4L LK Harness  
MHF 4 & 4L RECEPTACLE (Part Number: 20449-001E-\*\* / 20579-001E)

【About MHF 4L LK Hand Tool Jig Narrow Pitch Type】

The connector recommends using the jig shown in Figure 1 for unmating and locking/unlocking operation to avoid excessive stress to a cable connection point.

I-PEX Jig Part No. 91493-0001 (MHF 4L LK Hand Tool Jig Narrow Pitch Type)

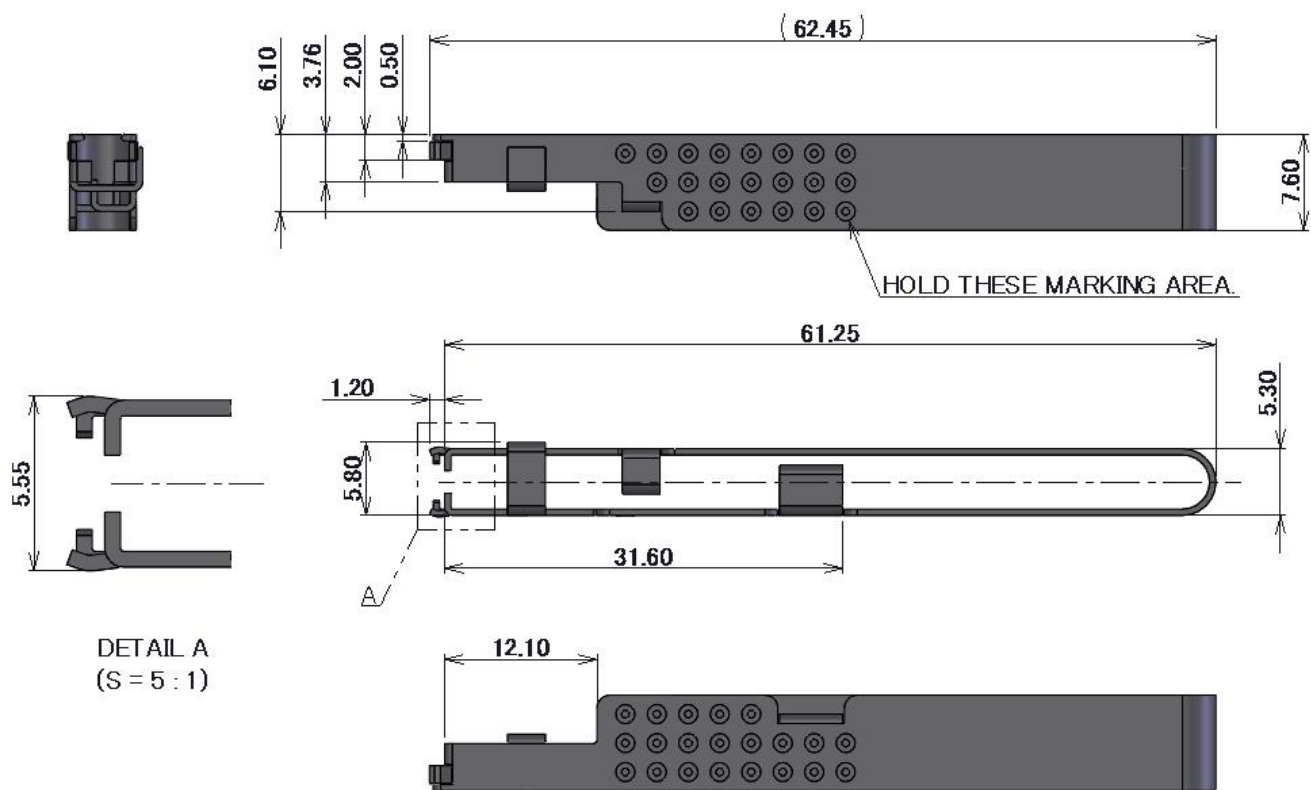


Figure 1 MHF 4L LK Hand Tool Jig Narrow Pitch Type

【Connector operation means】

Table 1. Connector operation means

Operation	Hands	Jig (Part No : 91493-0001)
Mate	Available (Recommended)	Available
Lock	Available	Available (Recommended)
Unlock	Available	Available (Recommended)
Unmate	Unavailable	Available (Recommended)

## 【Connector layout for MHF 4L LK Harness and Receptacle】

This MHF 4L LK Hand Tool Jig Narrow Pitch Type enables smooth unmating, locking, and unlocking operation in the narrow pitch layout of MHF 4L LK Harness as below.

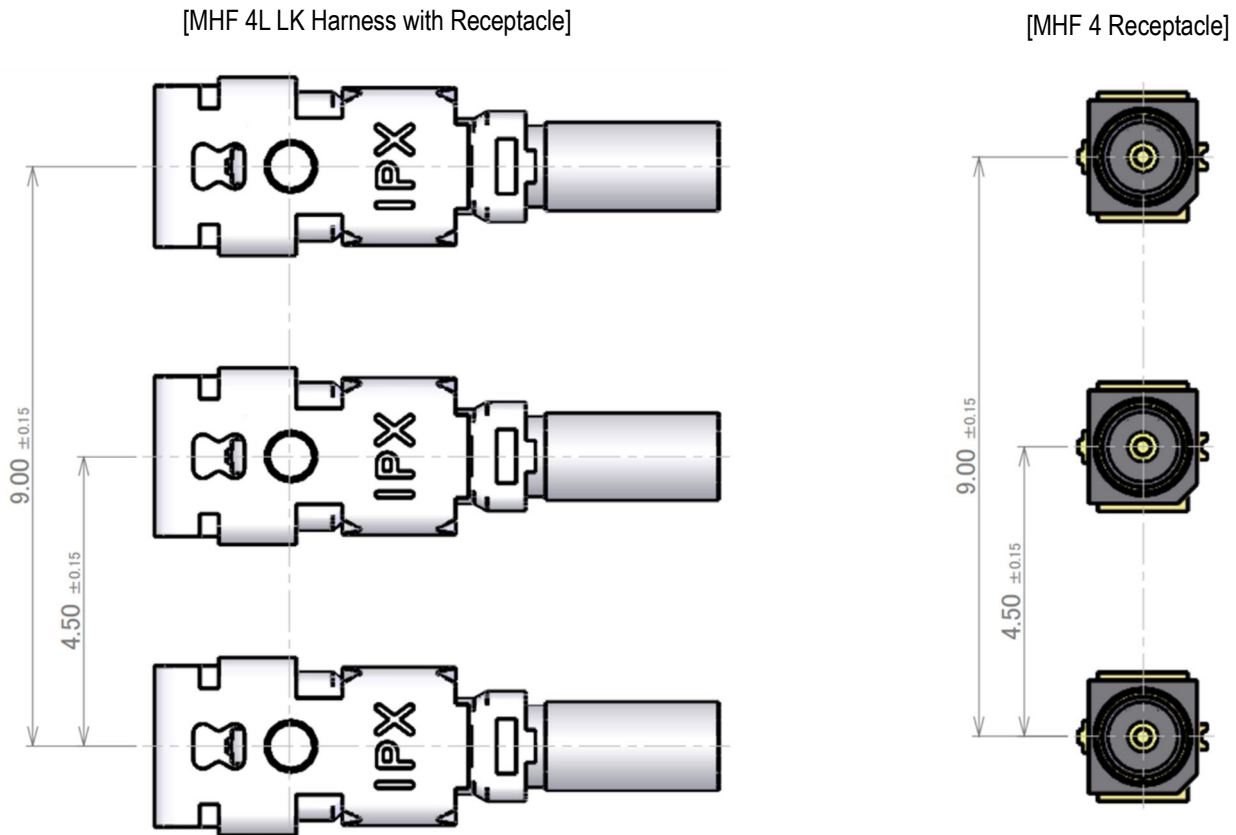


Figure 2

See page 4 and following pages for the detail instructions for the jig. The jig needs designated space for the operation. See Figure 36 and 37 on page 14 for the component placement prohibited area.

【Use image of MHF 4 Receptacle mounting on the module card】

Figure 3 is the layout image of MHF 4L LK Harness to the module card to use the jig.

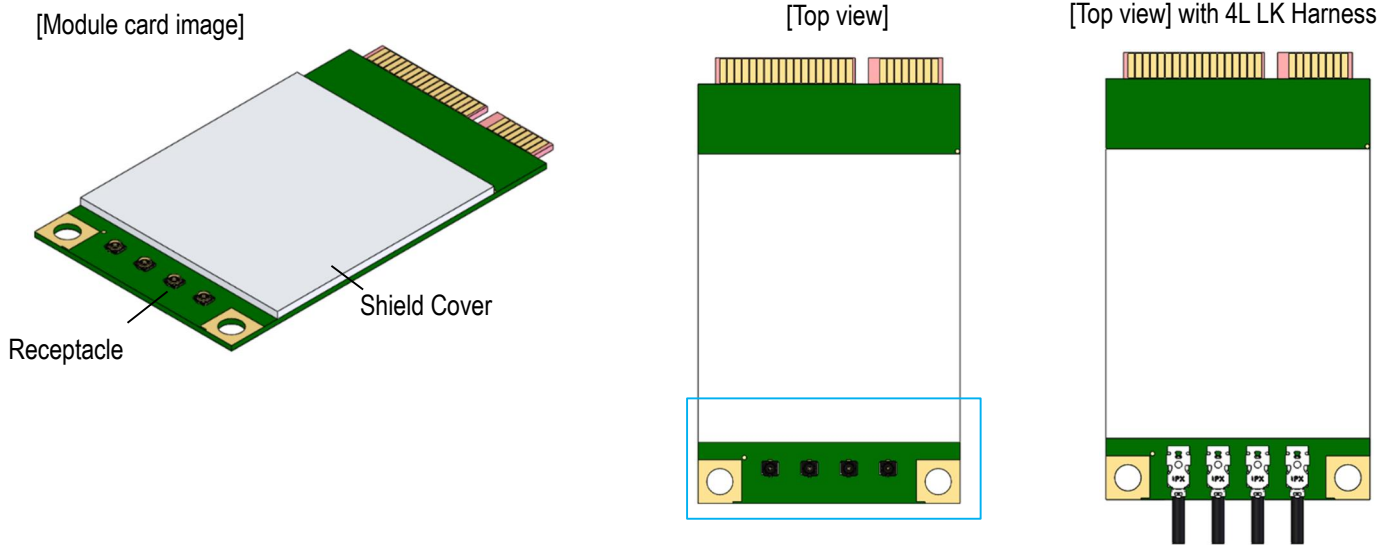


Figure 3

Figure 4 shows layout details and component placement prohibited area.

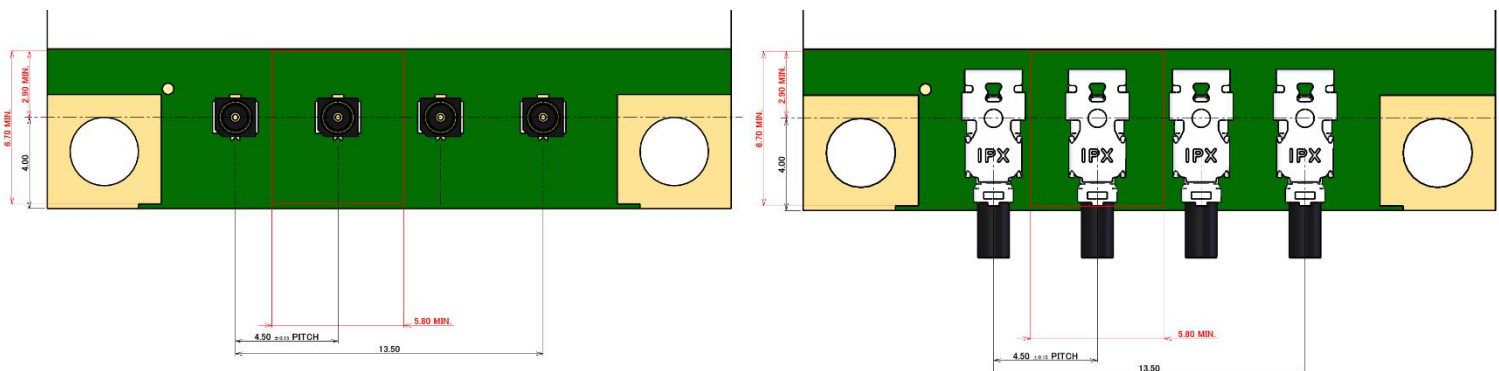
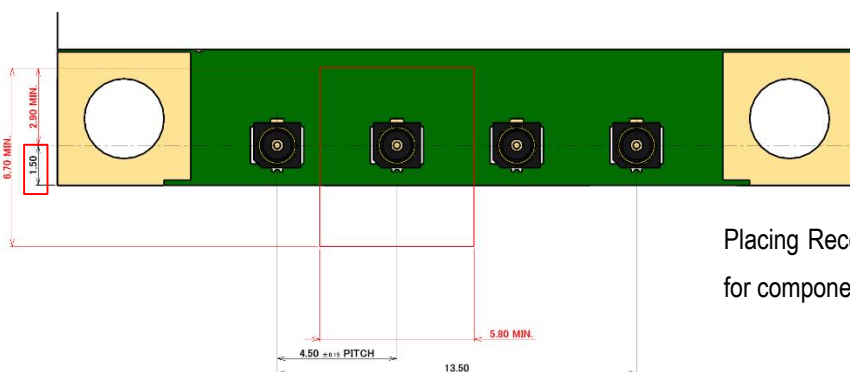


Figure 4



Placing Receptacle close to the board edge provides a larger space for components such as the shield cover as shown in Figure 5.

Figure. 5

#### CAUTION

- Do not place components including connectors and shield covers in the prohibited area.
- In the module PCB layout design, see MHF 4 Receptacle drawing and check the recommended footprint pattern for the appropriate connector placement.

## 【Recommended way of jig holding】

Marks indicated in Figure 6 are printed on the MHF 4L LK Hand Tool Jig sides to identify the holding area and for anti-slip purpose.

Hold the jig as covering these marks by fingers as shown in Figure 7.

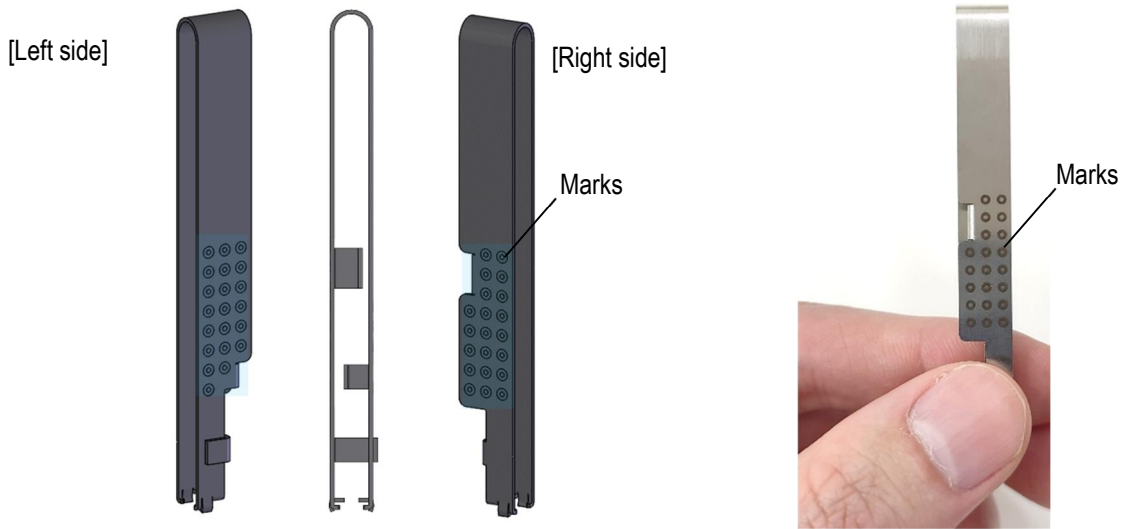
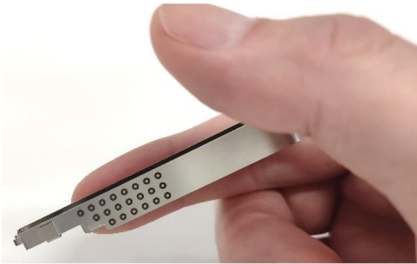
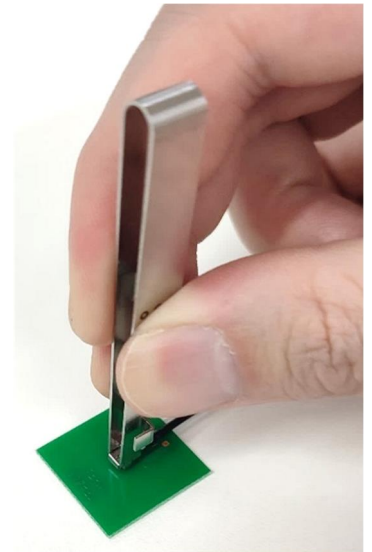


Figure 6

## 【Left side images】



## 【Holding image】



## 【Right side images】



Figure 7

## CAUTION

Do not hold or apply the force the upper side of the jig as shown in Figure 8. The jig has deformation guards around the anti-slip marks. If the force is applied to the area without the guards, the jig may deform and break.

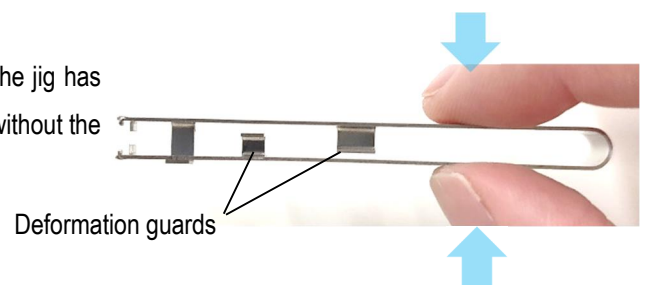


Figure 8

## 【MHF 4L LK Harness mating manual】

## Procedures for mating by hands

## ① How to hold a MHF 4L LK Harness

Hold the end of cable as show in Figure 9.

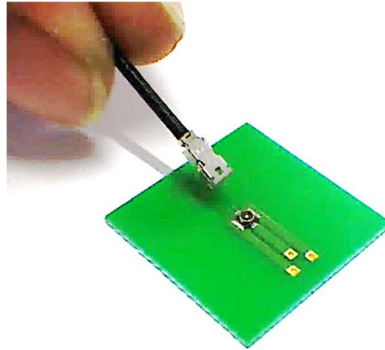


Figure 9

## ② How to align the MHF 4L LK Harness

Set Receptacle of the PCB side and MHF 4L LK Harness as shown in Figure 10. Please check they are set firmly by moving back and forth slightly.

\* Be sure that the locking function is unlocked.

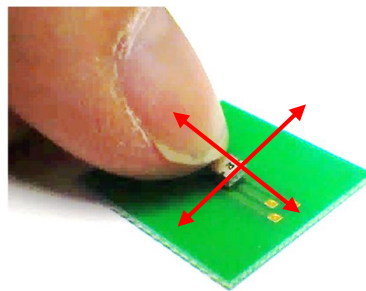
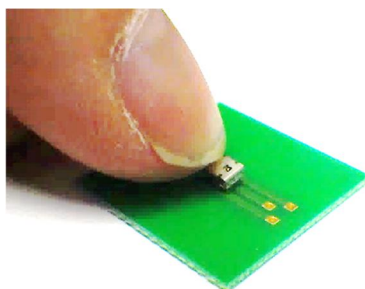


Figure 10

## ③ How to mate

Push the MHF 4L LK Harness center vertically as show in Figure 11. The connector clicks when completely mated.



Push "○" mark of the connector.



Figure 11

**CAUTION**

- Be sure to set the MHF 4L LK Harness parallel to the PCB and push vertically. Slant mating may cause the damage to the connectors.
- In the mating alignment, contact the MHF 4L LK Harness to the PCB connector lightly and move the MHF 4L LK Harness back, forth, right and left. Do not apply the insertion load before connectors are aligned.
- In mating, confirm the LK is unlocked. Mating the locked connector forcibly damages connectors seriously.

Proper MHF 4L LK Harness position (parallel to PCB)

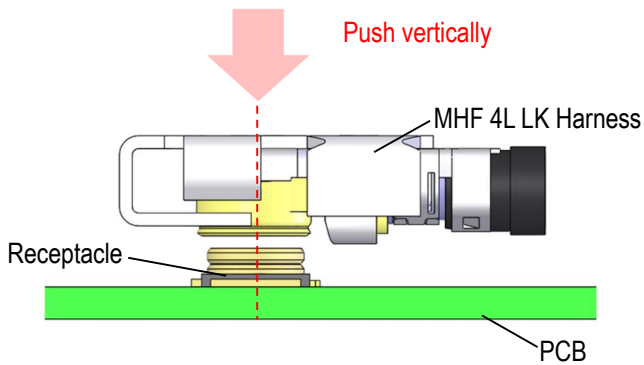


Figure 12

Improper MHF 4L LK Harness position (not parallel to PCB)

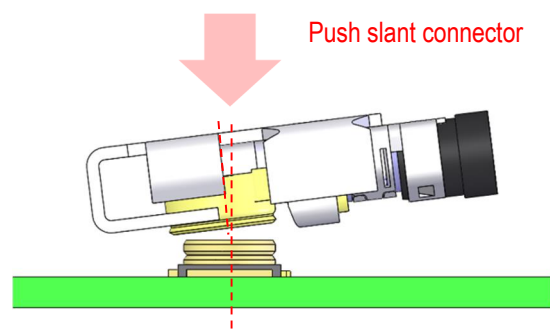


Figure 13

## 【MHF 4L LK Harness mating manual with jig】

In case of using the jig to connector mating, follow these instructions.

- ① Set the jig from above the connector as shown in Figure 14 and hold the MHF 4L LK Harness.

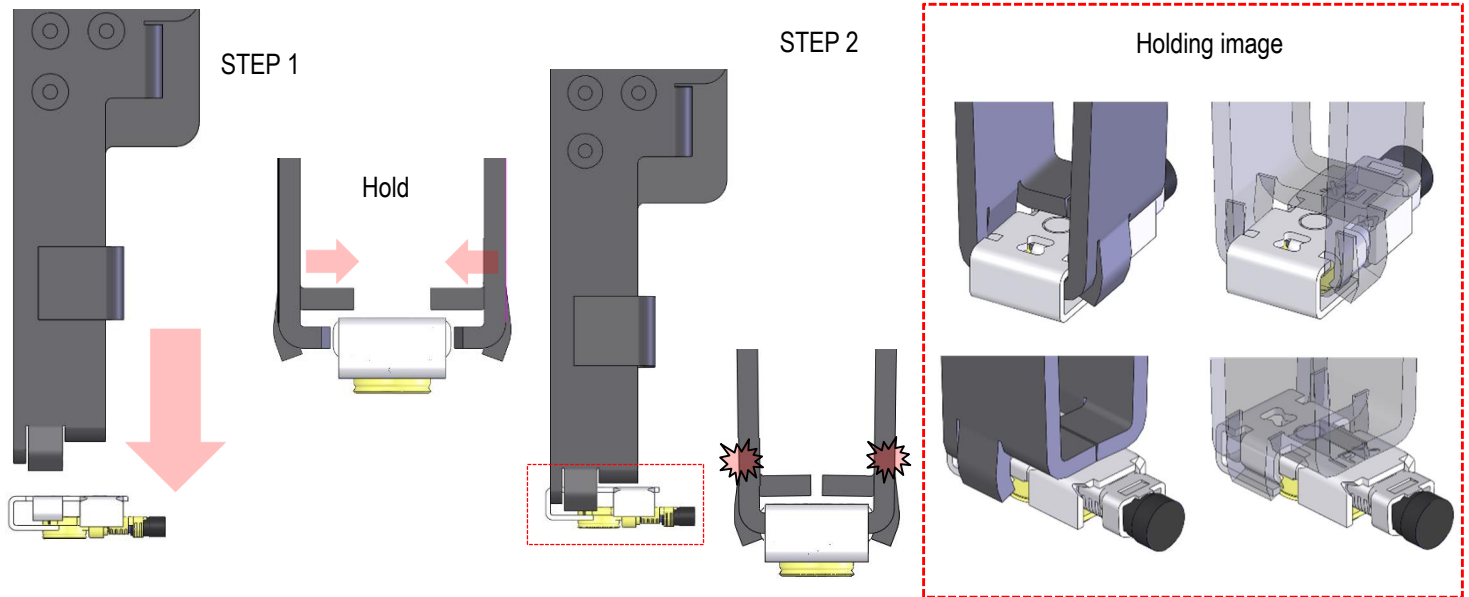


Figure 14

- ② Hold the MHF 4L LK Harness and mate to the receptacle, which is mounting on the PCB, vertically as shown in Figure 15 and 16.

\* Please check they are set firmly and correctly by moving back and forth slightly before applying mating force.

After mating, release the jig from the MHF 4L LK Harness and pull upward the jig vertically as shown in Figure 19.

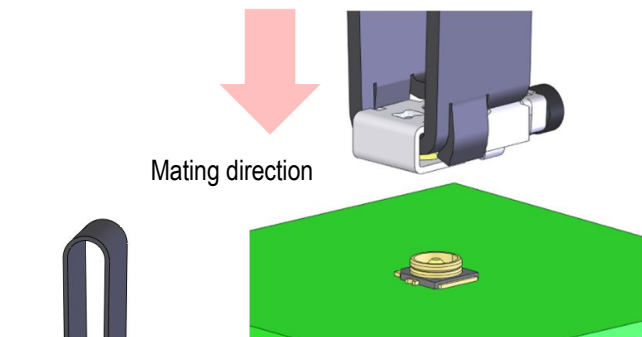


Figure 15

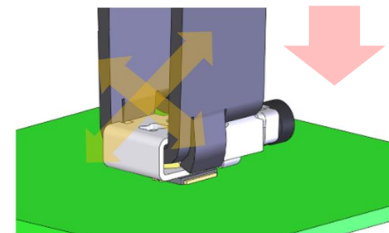


Figure 16

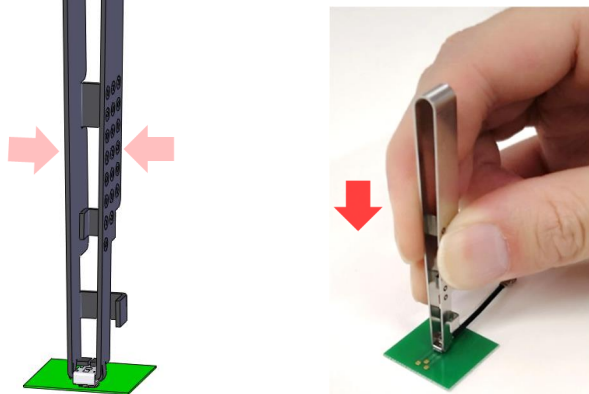


Figure 17

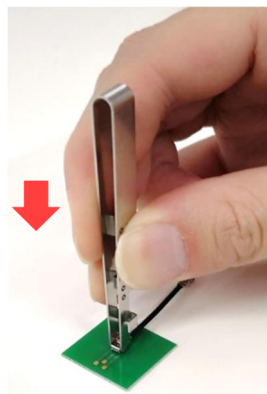


Figure 18

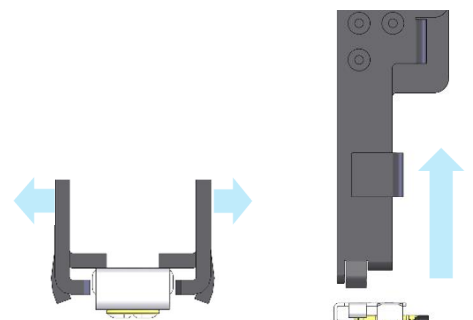


Figure 19



**CAUTION**

- Be sure to mate the MHF 4L LK Harness vertically to the PCB as shown in Figure 20. Slant mating may cause the damage to the connectors.
- Mating with the jig is possible, but the operation via jig is more difficult than mating by hand. We recommend the hand operation.

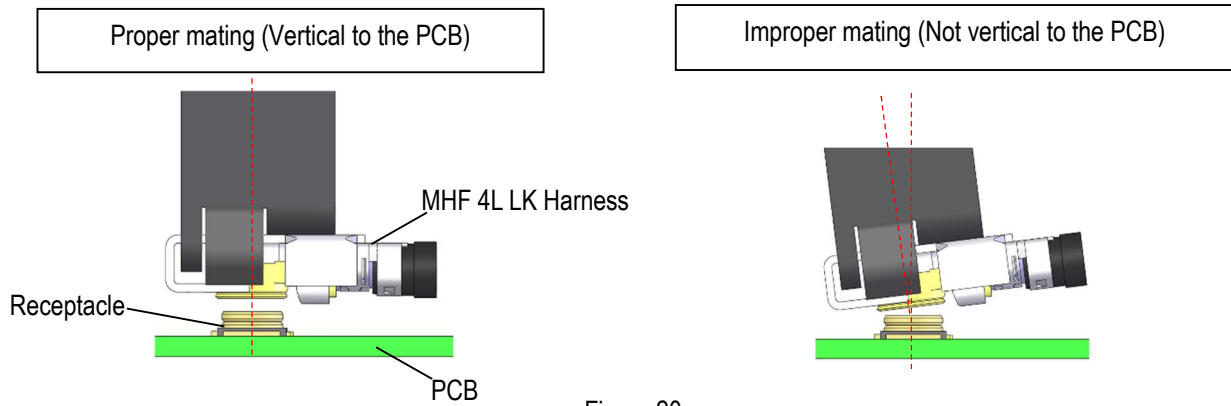


Figure 20

Jig must insert vertically from the PCB surface in the setting operation.

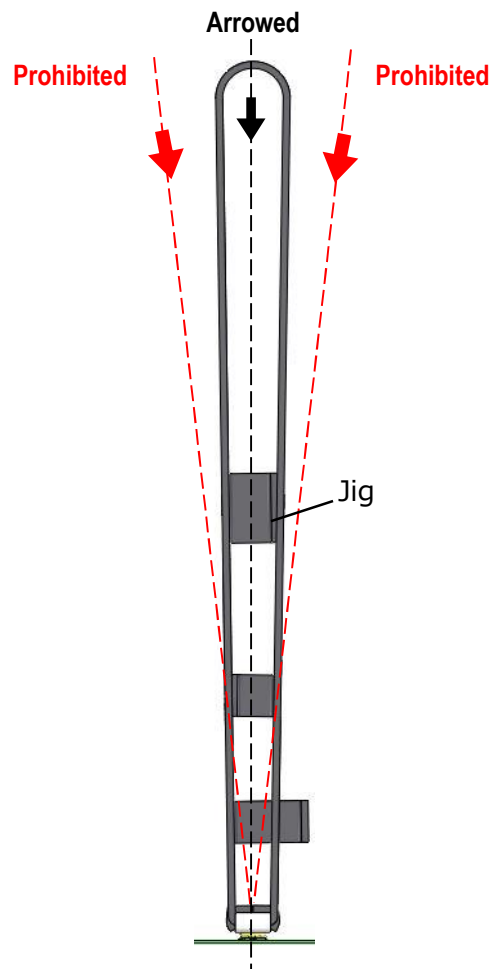


Figure 21

## 【How to lock the LK by hand】

- ① Set a finger on the surface indicated in a red box in Figure 22 and push the LK to the direction indicated in red arrow.

\*LK clicks when completely locked.

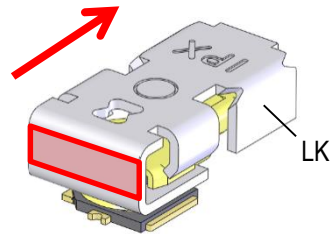


Figure 22

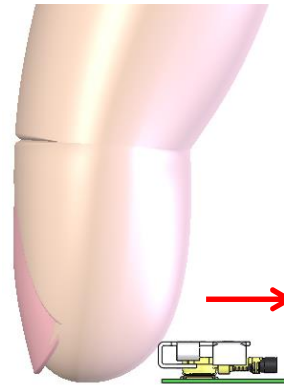


Figure 23

## 【How to lock the LK with jig】

- ① After mating MHF 4L LK Harness, place the jig tip on the head of the locking part and hold the locking part as shown in Figure 24. Close the jig tip in the jig setting. Then, slide the locking part until feel a click.

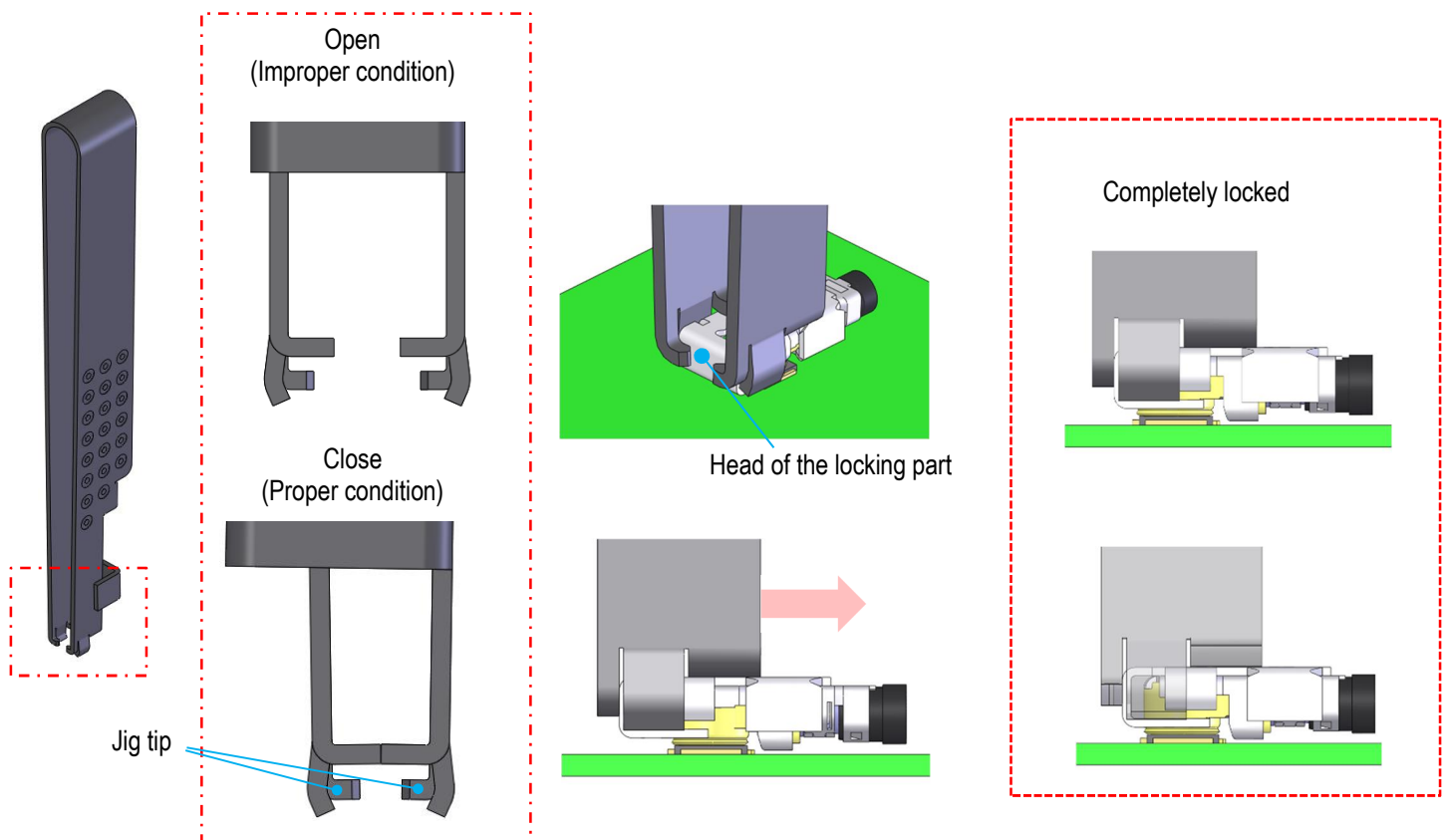


Figure 24

**CAUTION**

- If there is not enough space to handle the locking part by hand, use the jig.
- Slide the LK until the connector passes the far edge of the hole at the LK as shown in Figure 26. Do not apply excessive force to slide the LK.
- Incomplete locking as Figure 27 reduces the retention force. Check the locking part position after slid the LK and felt a click.

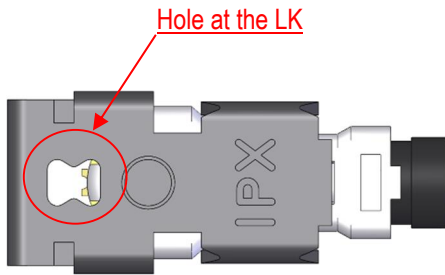


Figure 25 (Unlocked)

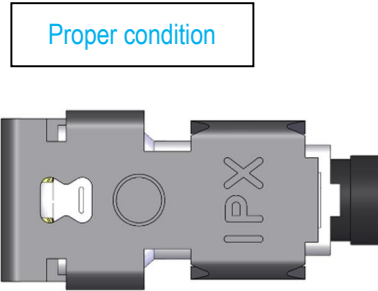


Figure 26 (Locked)

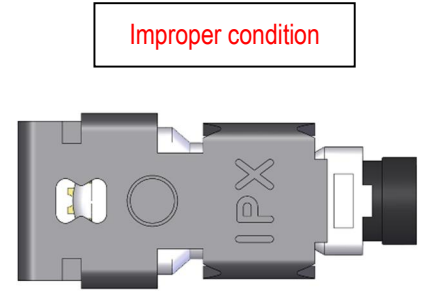


Figure 27 (Incomplete locking)

## 【How to unlock the LK by hand】

Set a finger on the surface indicated in a red box in Figure 28 and slide the LK to the direction indicated in red arrow as shown in Figure 29.

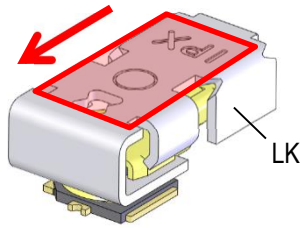


Figure 28

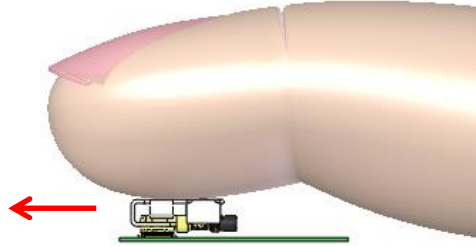


Figure 29

## 【How to unlock the LK with jig】

Set the jig from above the connector as shown Figure 30, and insert the jig tip to the LK designated area described in Figure 31.

Then, slide the jig to the direction described in Figure 32 to unlock. In unlocking, the operator feels a click when the LK is unlocked.

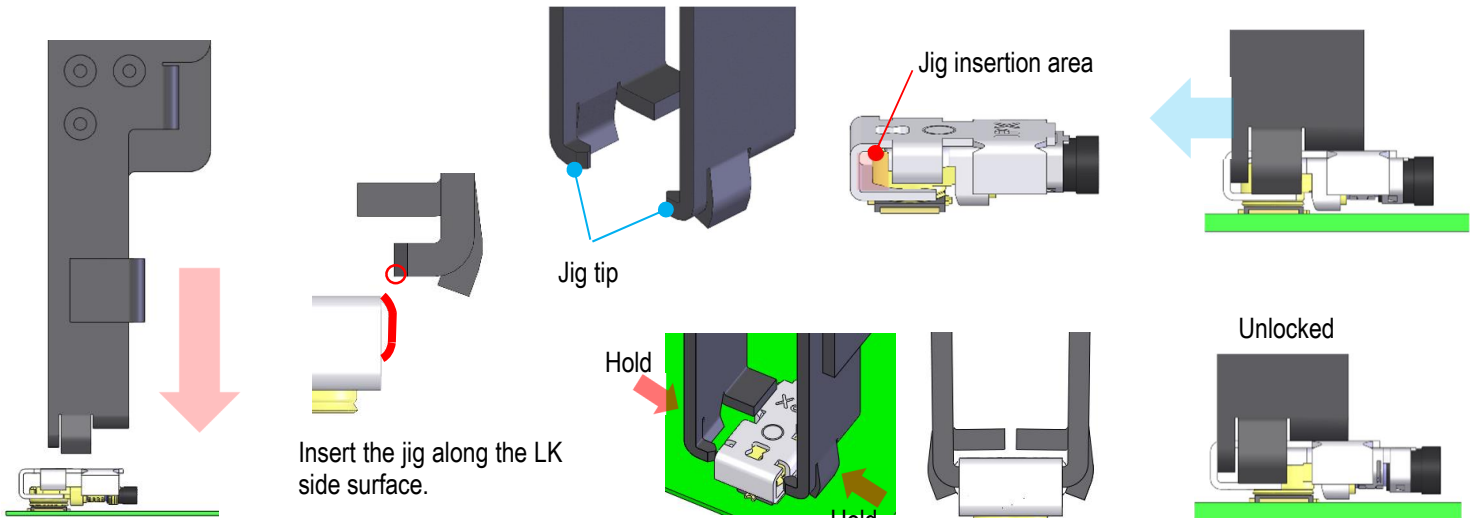


Figure 30

Figure 31

Figure 32

**CAUTION**

- In jig setting, insert the jig from above the connector to avoid interference with neighboring MHF 4L LK Harness.

## 【MHF 4L LK Harness unmating manual】

After unlocking completion, pull up the jig vertically to unmate MHF 4L LK Harness.

The operator cannot unmate MHF 4L LK Harness by hand. Please use the jig.

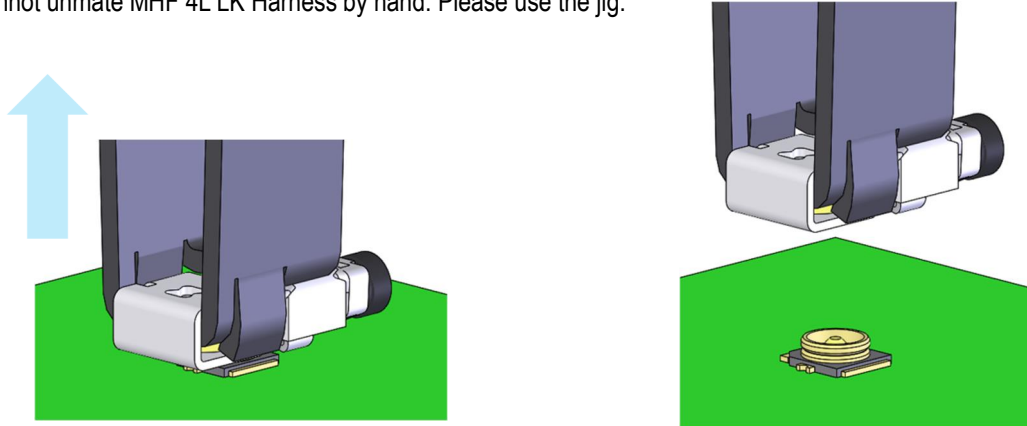


Figure 33

**CAUTION**

Jig must be raised vertically from the PCB surface.

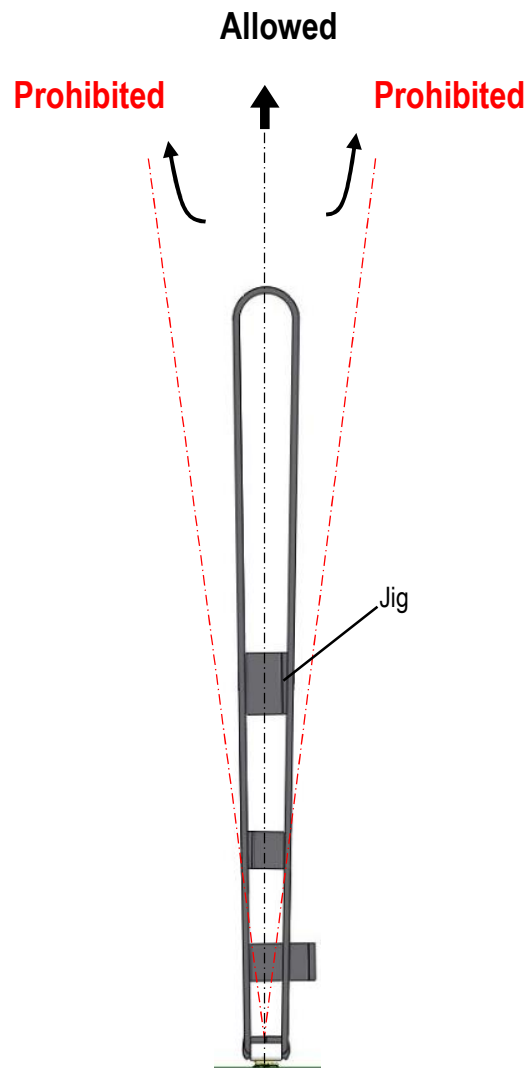


Figure 34

## 【Caution in MHF 4L LK Harness handling】

In the case of Figure 35, it has possibility to damage to the connector and come off from receptacle connector. Especially when operator gives continuous force to the direction (red arrow), the tendency becomes higher. So please take care of handling of MHF 4L LK Harness.

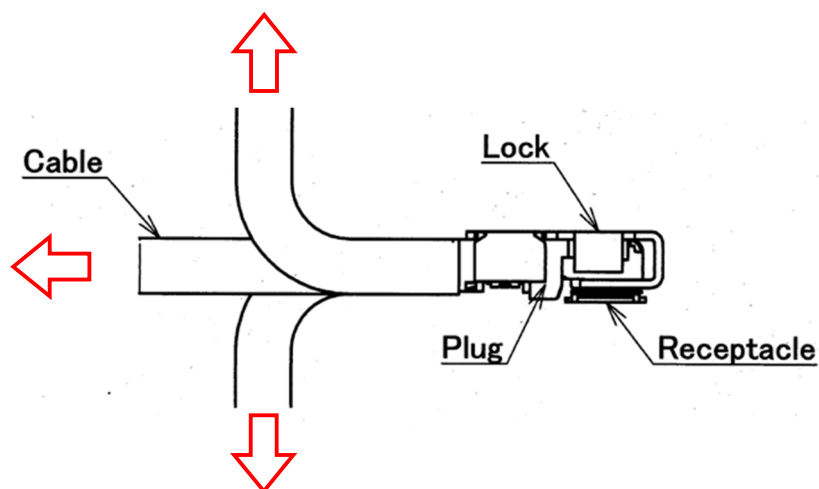


Figure 35

## 【Component placement prohibited area】

- Secure the space as shown in Figure 36 for the jig operation. Figure 37 is the layout of MHF 4L LK Harness in pitch 4.5 mm. The  $4.5 \pm 0.15$  mm pitch layout enables jig access.

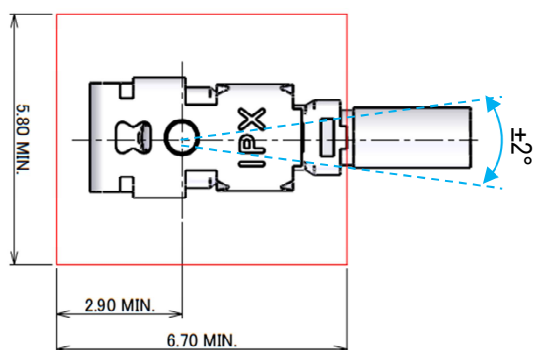


Figure 36

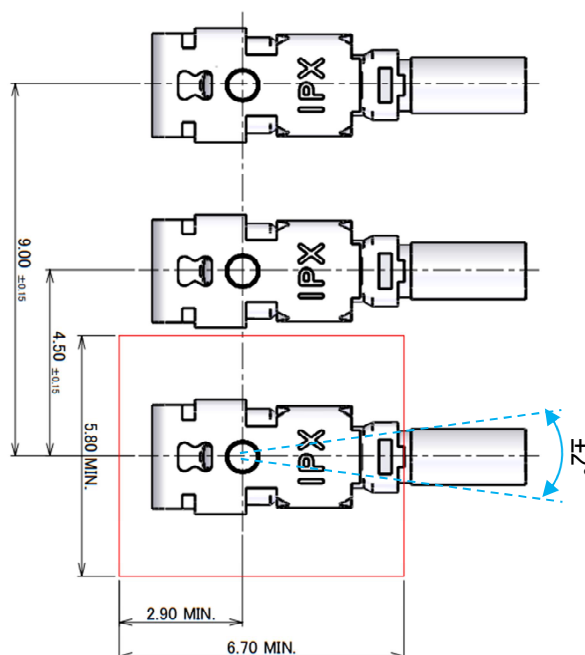


Figure 37

**CAUTION**

The applicable connector layout for MHF 4L LK Harness is  $4.5 \pm 0.15$  mm. The jig cannot be used to MHF 4L LK Harness placed in smaller than 4.35 mm pitch.

In the jig use, the allowable rotation angle of MHF4L LK Harness is  $\pm 2^\circ$ . When the jig is used for MHF4L LK Harness which tilt exceeding  $\pm 2^\circ$ , the jig may hit the neighboring MHF 4L LK Harness and damage the connector.