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Title subject:	FXR Connector	Revision date: October 8, 2019	

This manual describes important and required points of handling about FXR connector (embossed-taping product.)

Be sure to read this manual thoroughly before using FXR connector.

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1. Model Number and Part Name

(1) Model number

Part name		Model No.
FXR connector	Loose piece product	**FXR-RSM1-(1) <u>Identification marking</u>
	Embossed-taping product	**FXR-RSM1-(1)-TB <u>Identification marking</u>

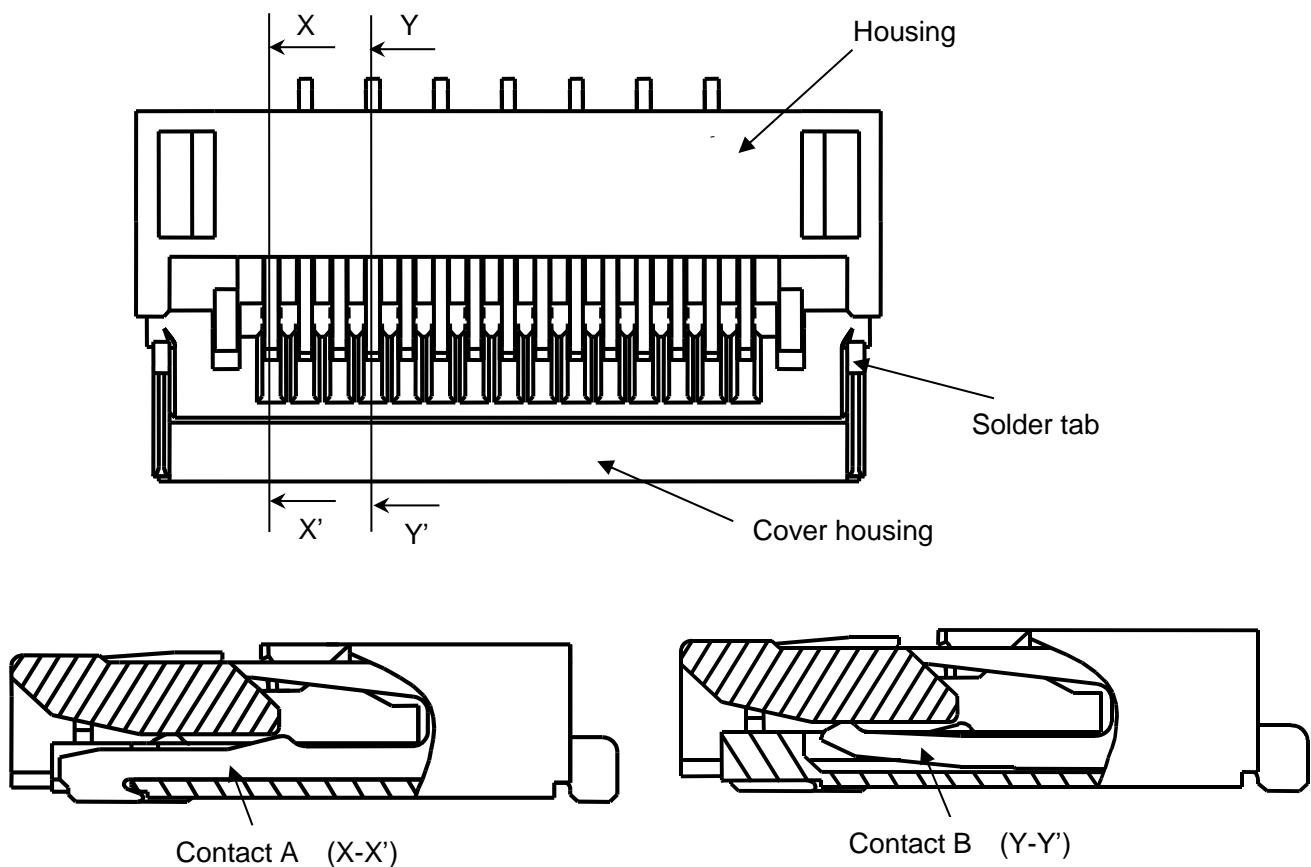
Note 1: Number of circuits is indicated in **.
 e.g.:51FXR-RSM1-GAN-TB
 51-circuit FXR connector (embossed-taping product)

Note 2: “(1)” stands for contact surface finish.
 Blank: Tin-plated
 GAN: Nickel-underplated Striped gold-plated

Note 3: Connector handling method is not changed even if the model number has an identification marking.

Note 4: FXR connector is supplied on embossed-tape (5000 pcs./reel).

(2) Part name



2. Applicable FPC

Item	Rated value
Applicable FPC	Lead: Tin-plated copper foil Gold-plated copper foil
	Lead pitch: 0.3 mm
	Lead width: 0.3 mm
	Mating part thickness: 0.20 ± 0.03 mm

Note 5: Dimensions of FPC greatly affect to the contacting reliability with connector.
Conform the dimensions of FPC with those of applicable ones described in drawing.

Note 6: Especially, narrow pitch connector has a high possibility to come off from contact point due to warpage, deformation, slant insertion, insufficient insertion and so on of FPC.
In order to reduce these risks, manage that the important dimensions such as conductor width, length, pitch, FPC total width, position misalignment between conductor and FPC width etc. shall be satisfied with the given tolerances, considering the variations of those dimensions.

Note 7: Confirm the applicability of the connector with the FPC used, before use.
FPC, which applicability is not confirmed, might not be able to guarantee the performance.

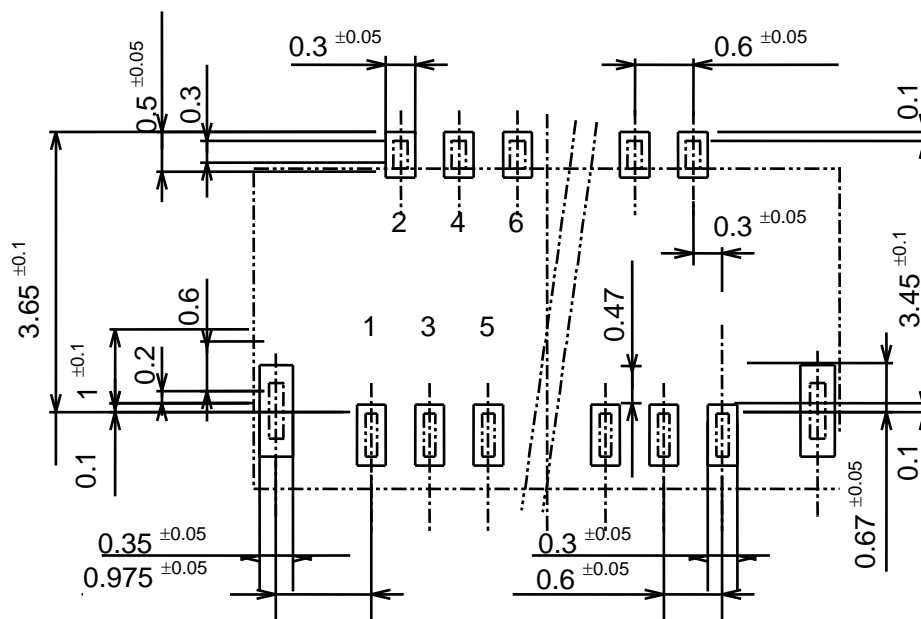
Note 8: Blanking shall be conducted in the direction from conductor side to reinforcing plate side.

Note 9: Material of reinforcing plate should be polyimide.

Note 10: Thermosetting adhesive shall be used.

3. PC Board Pattern Layout

The following PC board pattern layout is recommended.

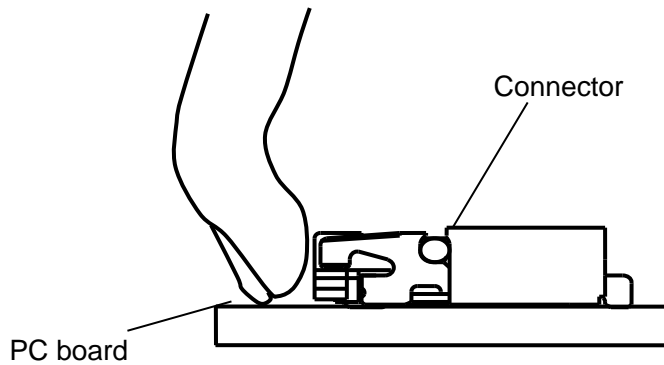


4. Handling Precautions

4.1. Mating operation method of FPC

Operation 1: Opening cover housing of connector

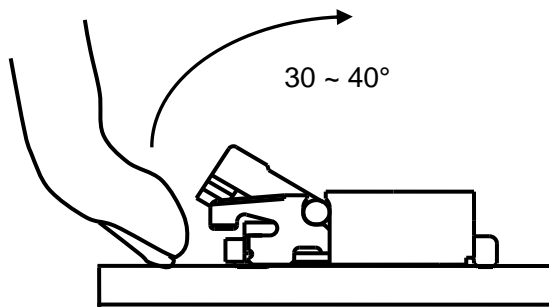
Cover housing is closed.



Lift cover housing of the mounted connector upward by the tip of finger as shown in figure on the left. This operation releases the locked cover housing with reinforcing tab when cover housing is rotated from 30 to 40 degrees. Do not apply excessive load to reinforcing tab by finger, etc. to open cover housing. Such handling may cause deformation and affect lock mechanism. Open and close cover housing around the center.

Cover housing is half opened.

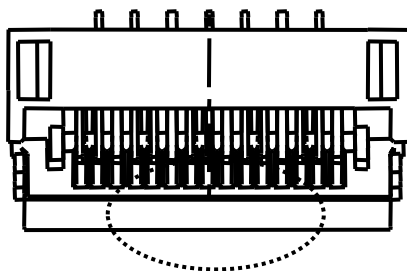
Viewed from side surface



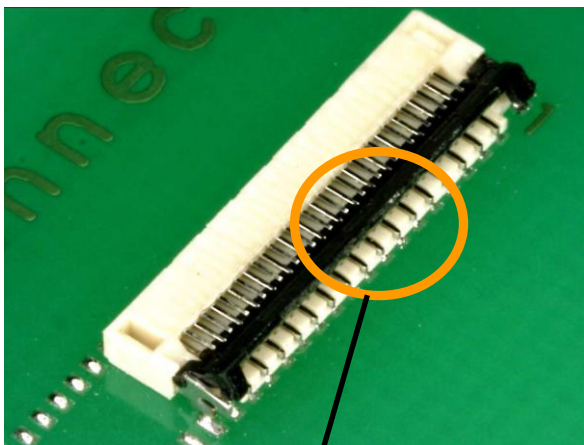
After lock of cover housing is released, lift the center of cover housing by finger to rotate cover housing in the arrow direction shown in the figure on the left, and lock is released. Open cover housing slowly to 135 degrees.

Note₁ Do not twist cover housing with holding one end. Such handling may cause the breakage of cover housing. Be sure to hold the center part of cover housing. (Refer to figure on the left.)

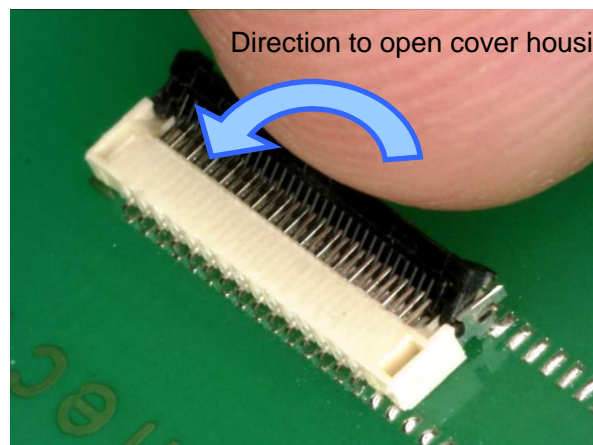
Viewed from top surface



Note₂ Open cover housing not to apply such pulling force as picking up cover housing.

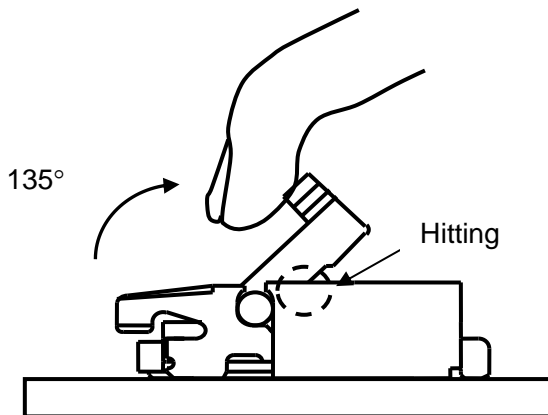


Center part of cover housing (Place to hook finger)

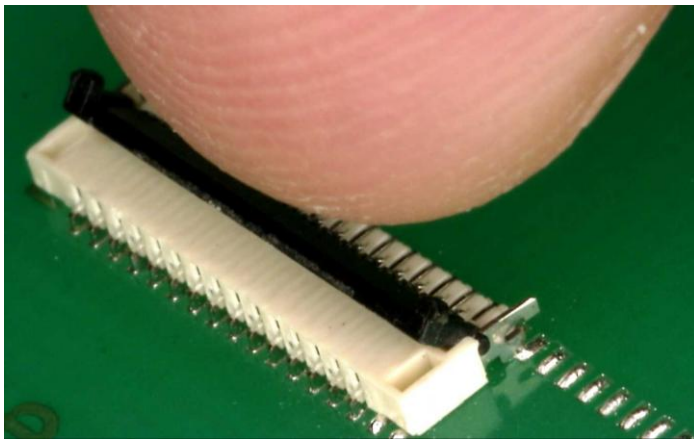


Direction to open cover housing

Cover housing is closed.



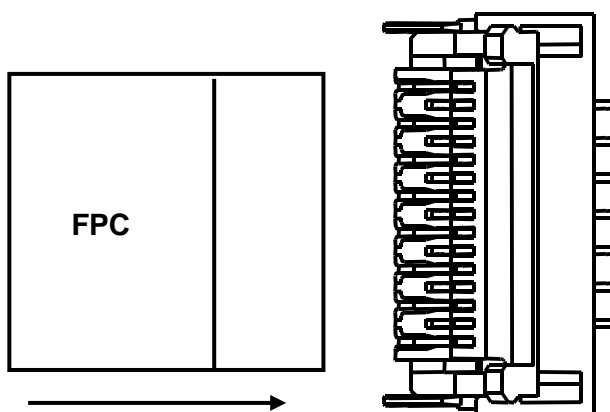
Cover housing is fully opens at 135 degree (cover housing hitting position) and stops.
Do not press cover housing by excessive force after fully opening it. Such handling may cause breakage of cover housing. Cover housing has structure which can be opened only to 135 degrees. Excessive opening beyond 135 degrees may cause the breakage of a cover housing.



Open it till cover housing is fully opened at 135 degree.

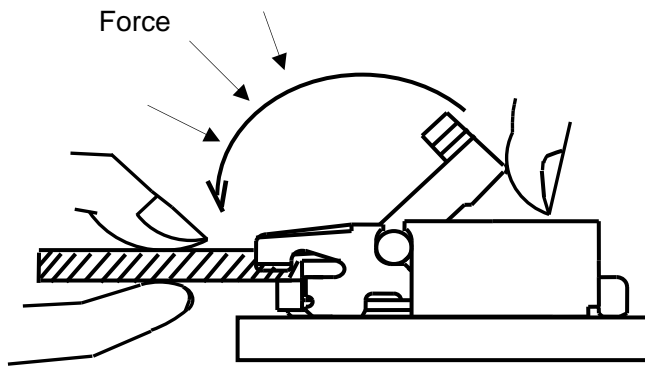
Operation 2: Inserting FPC into connector and closing cover housing

Insert FPC and rotate cover housing.
Viewed form top surface



Insert FPC straightly into connector with fully opening cover housing.

(Note) Do not fix it without fully opening cover housing, such handling may affect the insertion of FPC and cause the breakage of a cover housing.

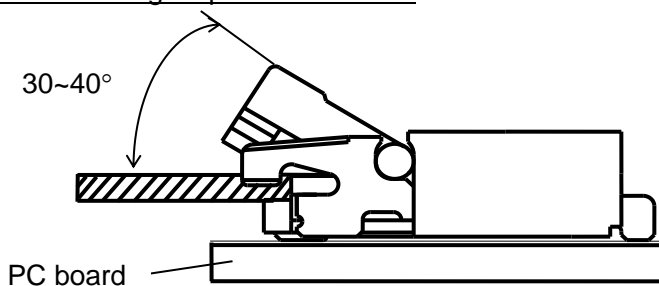


Close cover housing slowly with pressing the center part by finger.
When closing cover housing to about 90 degree, force to close cover housing gradually becomes strong.

(Note₁) Close cover housing with care so that finger which holds FPC does not hit the cover housing. Such handling may cause breakage of cover housing.

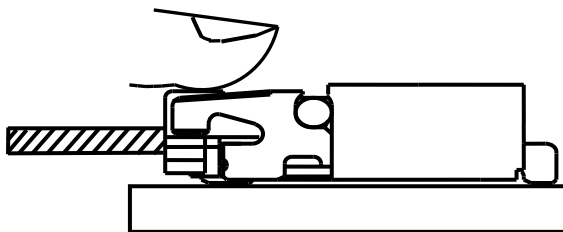
(Note₂) Do not operate the closing cover housing at both sides because such handling may cause the breakage of cover housing.
Do operate around the center of cover housing.

Cover housing stops on solder tab.

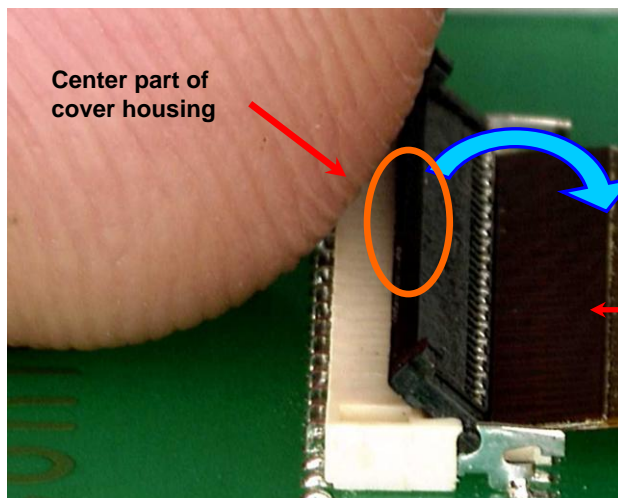


When force is started applying to cover housing, close it with applying force in rotation direction axis (center part).
When cover housing is started closing, cover housing temporarily may stop on the solder tab. Close cover housing completely until it becomes 0 degree.

Cover housing is locked.

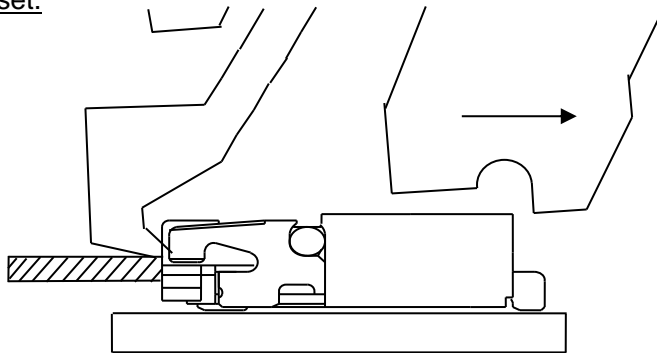


Be sure to check that cover housing is completely closed, because performance defect may occur.

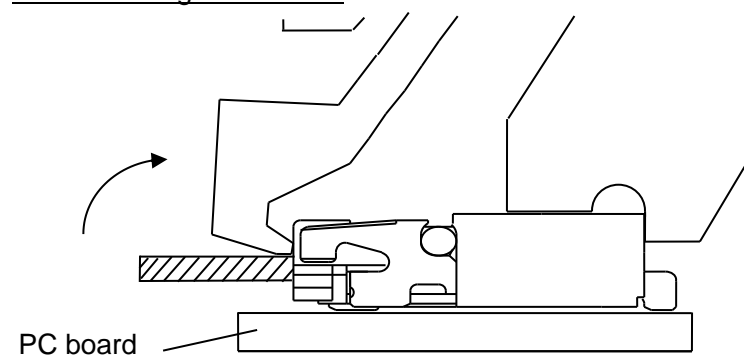


Direction to close cover housing

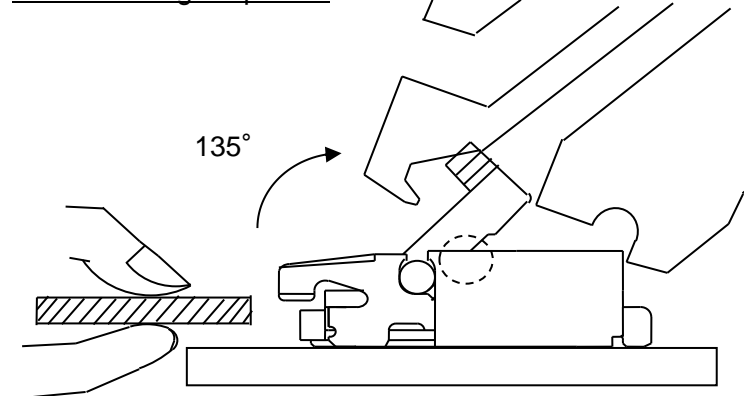
FPC

Operation 3: Releasing FPC from connector by jigJig is set.

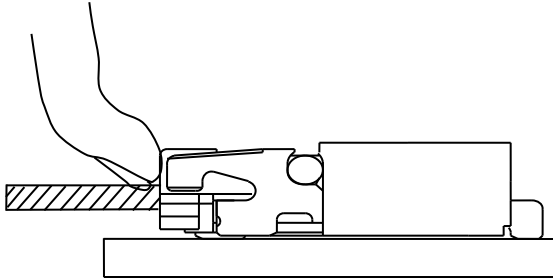
After tip of jig is set in cover housing as shown in the figure on the left, bend jig in the mating axis to mount into housing.

Cover housing is released.

Open it so that cover housing rotates. When cover housing is rotated from 30 to 40 degree, lock is released.

Cover housing is opened.

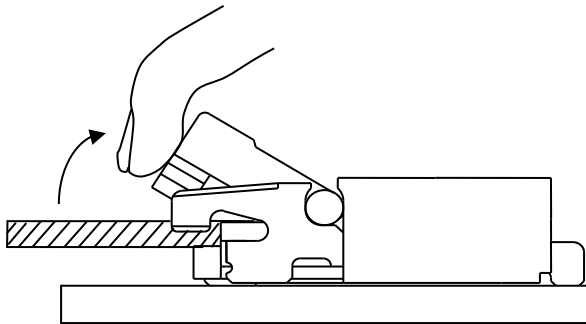
Cover housing is fully opened at 135 degree (cover housing hitting position) and stops. Do not press cover housing by excessive force after fully opening it. Such handling may cause breakage of cover housing.

Operation 3: Releasing FPC from connector by manual operationRotate cover housing.

Lift cover housing upward by fingertip.

(Note₁) Do not apply force to cover housing regionally. Such handling may cause breakage of cover housing.

(Note₂) When opening cover housing, do not apply the force in FPC inserting direction.

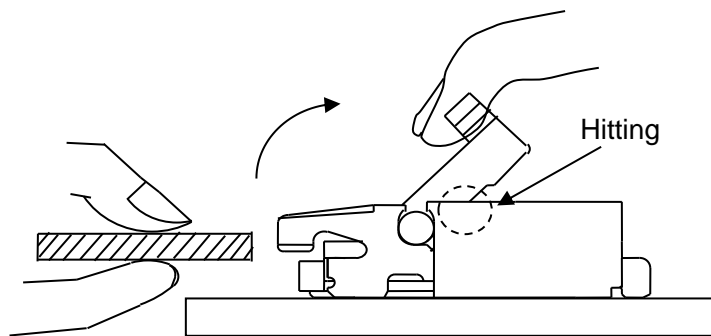
Lock is released.

Rotate cover housing from 30 degrees to 40 degrees to release lock.

(Note₁) Do not apply excessive force in the mating direction to open cover housing. Such handling may cause deformation of contact and performance defect.

(Note₂) Do not twist cover housing with holding one end. Such handling may cause breakage of cover housing. Be sure to hold the center part of cover housing.

(Note₃) Open it not to apply such pulling force as picking up cover housing.

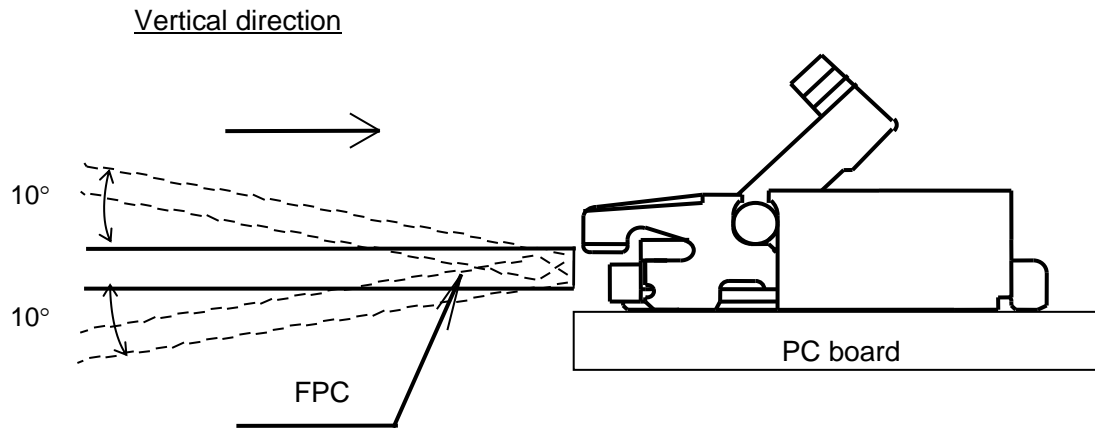
Cover housing is opened.

Cover housing is fully opened at 135 degree (cover housing hitting position) and stops. Remove FPC horizontally.

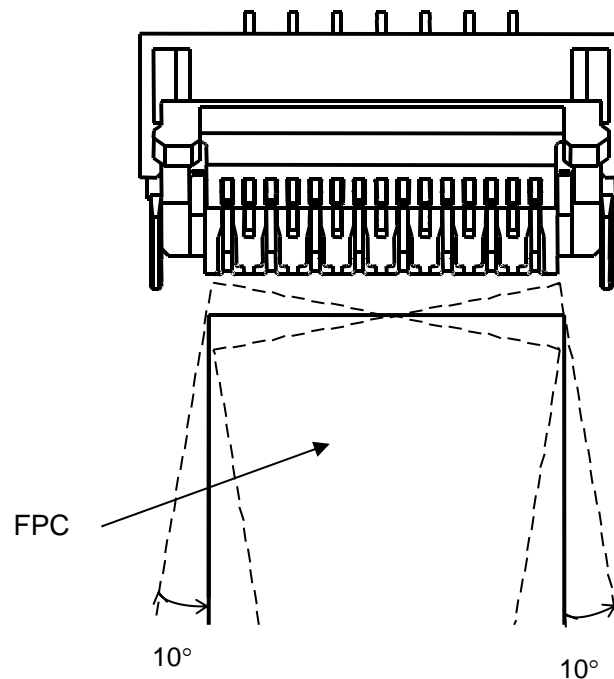
(Note) Do not press cover housing by excessive force after fully opening it. Such handling may cause breakage of cover housing.

4.2. Inserting and releasing FPC

Inserting and releasing operations with FXR connector and FPC shall be conducted on the same axis. When the operation on same axis is difficult, conduct smooth operation within 10 degrees to each direction as shown in the figure below.

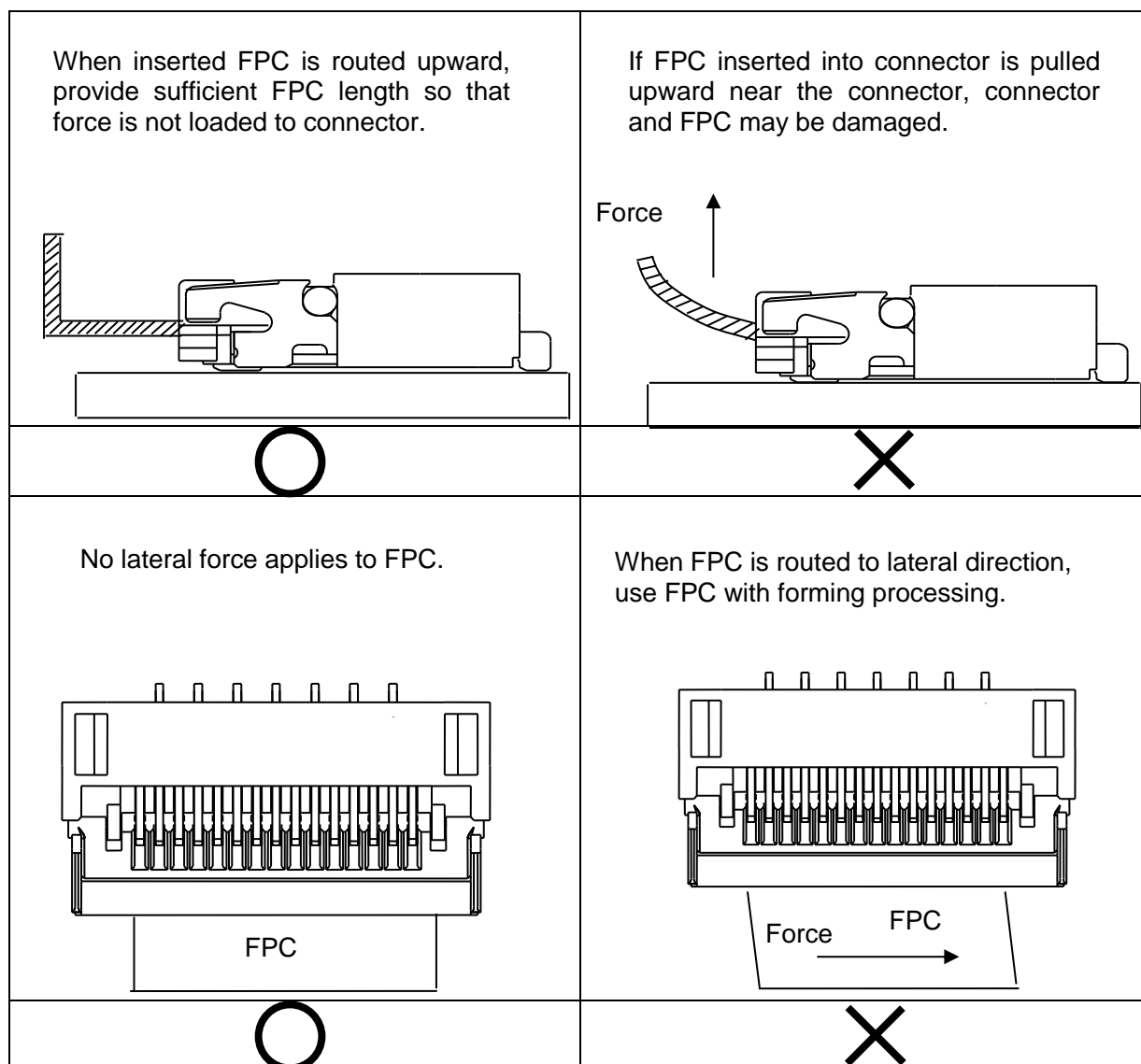


Lateral direction



4.3. Handling of FPC after mounting connector on PC board

Be careful for handling of FPC as shown in the figure below.



In the case that FPC, which is inserted into connector, moves when movable parts or rotation parts of apparatus operate, such condition may cause defective contacting at connector mating part due to abrasion.

JST	Title subject: FXR Connector	No. CHM-1-2072
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4.4. Precautions for soldering operation

4.4.1. Solder iron method

Solder a connector mounted on PC board using a soldering iron with temperature of 350 °C at the tip of soldering iron quickly within 3 seconds, and check appearance visually.

Do not strongly press soldering iron tip on connector contact lead part nor apply abnormal load such as lateral load, etc. If done, dismount and exchange connector, and conduct soldering again.

Do not reuse dismounted connector.

4.4.2. Reflow soldering method

Reflow soldering by lower temperature profile than that of described in item "Resistance to Soldering Heat" of product specification is recommended, though recommended reflow temperature condition varies depending on solder paste to be used.

When bridge trouble appears in process of reflow soldering and repair is conducted by hand, strictly conduct item 4.4.1 "Solder iron method."

4.4.3. Thickness of metal mask

Following configuration of metal mask is recommended for mounting operation;

- Blanking part: same area as pad area on PC board
- Thickness: 0.10 to 0.12 mm

When metal mask more than 0.12 mm thickness is used, area of blanking part should be smaller than pad area on PC board, and amount of solder should be properly adjusted.

5. Storage

Keep FXR connector (embossed-taping product) in the following ambience.

Storage temperature	5 ~ 35°C
Relative humidity	60% max.

6. Other Precautions

- ① FXR connector is correspondent to ultra low profile with 1.0 mm height and narrow space, and each part composed of connector is very delicate manufacture. Especially when operating cover housing or routing FPC, be sure to read through the aforementioned handling manual.
- ② Cover housing of FXR connector is locked with solder tab. Be sure to mount solder tab, because connector performance may be affected.
- ③ Do not withdraw FPC forcibly with cover housing closed after inserting FPC. Such handling may cause breakage of connector and FPC.
- ④ This connector is designed on the basic concept of ultra low-profile and space-saving. It is recommended to use jig for operation of cover housing