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Title subject:	JMC Connector (Absorption Misalignment Type)	Revision date: May 17, 2020	

This manual describes important and required points of handling about JMC connector absorption misalignment type (embossed-taping product).

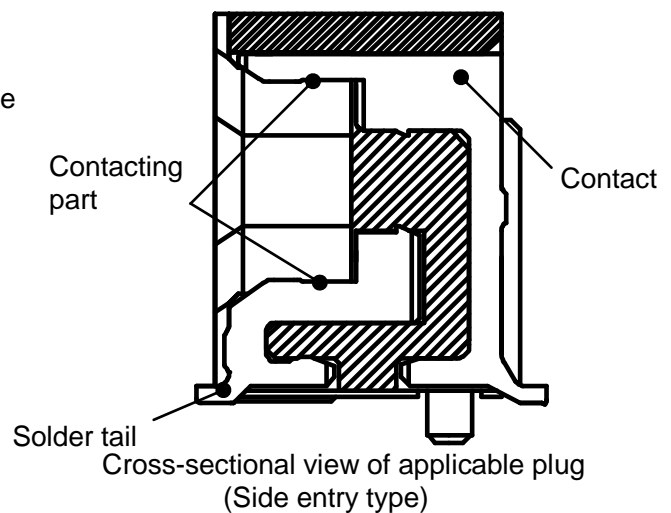
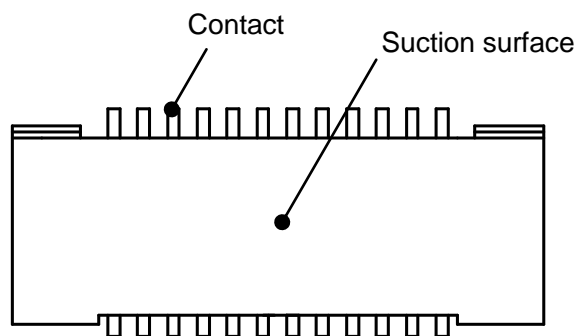
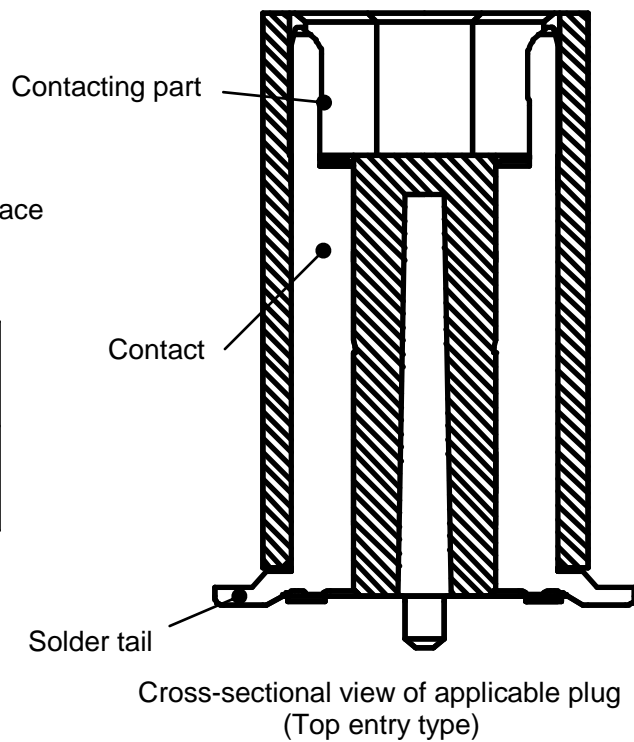
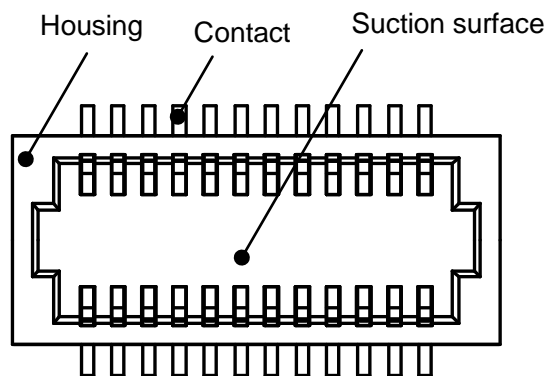
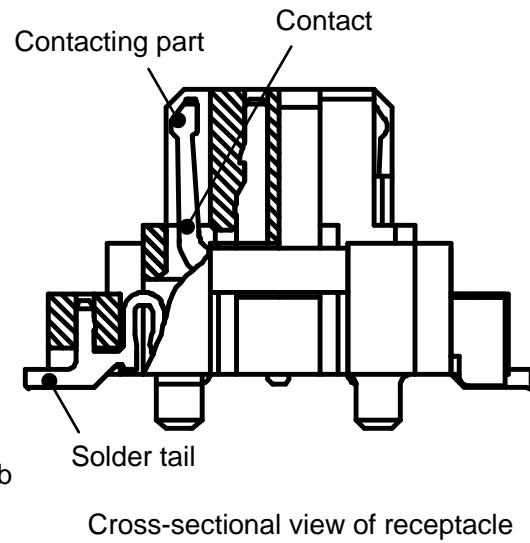
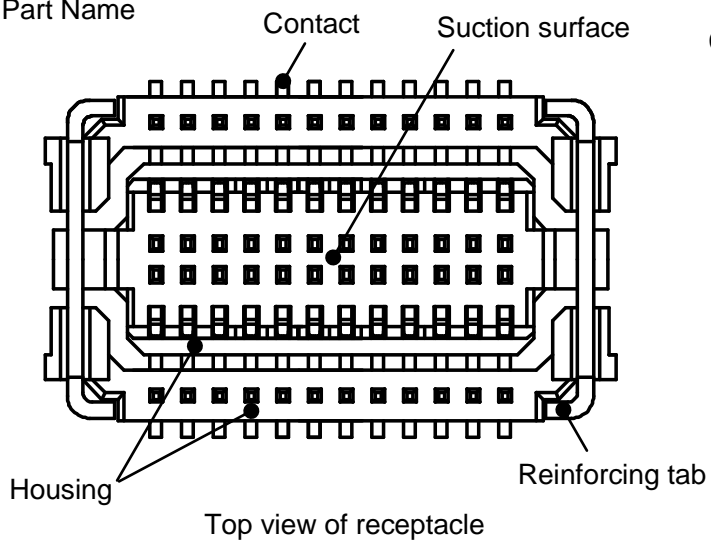
Be sure to read this manual thoroughly before using this connector.

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## 1. Part Name



<b>JST</b>	Title subject: JMC Connector (Absorption Misalignment Type)	No. CHM-1-2153
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## 2. Model Number

Part name			Model No.
Receptacle	Loose piece product	With bosses	(*)RF-JMCS-G-1B (N)(LF)(SN)(*)
		Without bosses	(*)RF-JMCS-G-1 (N)(LF)(SN)(*)
	Embossed-taping product	With bosses	(*)RF-JMCS-G-1B-TF (N)(LF)(SN)(*)
		Without bosses	(*)RF-JMCS-G-1-TF (N)(LF)(SN)(*)

Note 1: Number of circuits in two-digit figure is indicated by (\*<sub>1</sub>).

Note 2: Spot plating product is indicated in (\*<sub>3</sub>).

Note 3: Ending identification marking "(LF)(SN)" stands for purified lead-free product.  
(LF)(SN) shall be displayed on product label.

### Applicable plug

Part name			Model No.
Top entry type plug	Loose piece product	With bosses	(*)P(* <sub>3</sub> )-JMCS-G-B (* <sub>2</sub> )(* <sub>4</sub> )
		Without bosses	(*)P(* <sub>3</sub> )-JMCS-G (* <sub>2</sub> )(* <sub>4</sub> )
	Embossed-taping product	With bosses	(*)P(* <sub>3</sub> )-JMCS-G-B-TF (* <sub>2</sub> )(* <sub>4</sub> )
		Without bosses	(*)P(* <sub>3</sub> )-JMCS-G-TF (* <sub>2</sub> )(* <sub>4</sub> )
Side entry type plug	Loose piece product	With bosses	(*)PS-JMCS-G-1B (* <sub>2</sub> )(LF)(SN)(* <sub>4</sub> )
		Without bosses	(*)PS-JMCS-G-1 (* <sub>2</sub> )(LF)(SN)(* <sub>4</sub> )
	Embossed-taping product	With bosses	(*)PS-JMCS-G-1B-TF (* <sub>2</sub> )(LF)(SN)(* <sub>4</sub> )
		Without bosses	(*)PS-JMCS-G-1-TF (* <sub>2</sub> )(LF)(SN)(* <sub>4</sub> )

Note 1: Number of circuits in two-digit figure is indicated by (\*<sub>1</sub>).

Note 2: Plating specification of contact is indicated in (\*<sub>2</sub>).

Note 3: Stacking height for top entry type plug is indicated in (\*<sub>3</sub>).

Note 4: Spot plating product is indicated in (\*<sub>3</sub>).

Note 5: Ending identification marking "(LF)(SN)" stands for purified lead-free product.  
(LF)(SN) shall be displayed on product label.

### Precaution for applicable plug

As the height of this product (absorption misalignment type) is 1.0 mm higher than that of standard type receptacle, the height of applicable top entry type plug should be considered.

- For example of combination, when distance between boards (stacking height) is 5.0 mm, applicable plug connector should be as below.

Model No.: ( )P4.0-JMCS-G-( )-TF (N)

└─ 1.0 lower than distance between boards

## 3. Storage

### 3-1 Connector storage

Recommended storage condition: Temperature: 5 – 35 °C, Relative humidity 60 % or less  
(Under packaging like the state of JST shipment)

Keep off direct sunlight, places exposing to such corrosive gas as industrial gas (generate from a stove and whatnot) and ammonia gas (generate from a toilet and whatnot), dusty place and condensation.

Note that the resin molding part may break due to transportation and handling, such as processing and mating, under dry or low temperature condition.

After unpacking, return products in the original package to store.

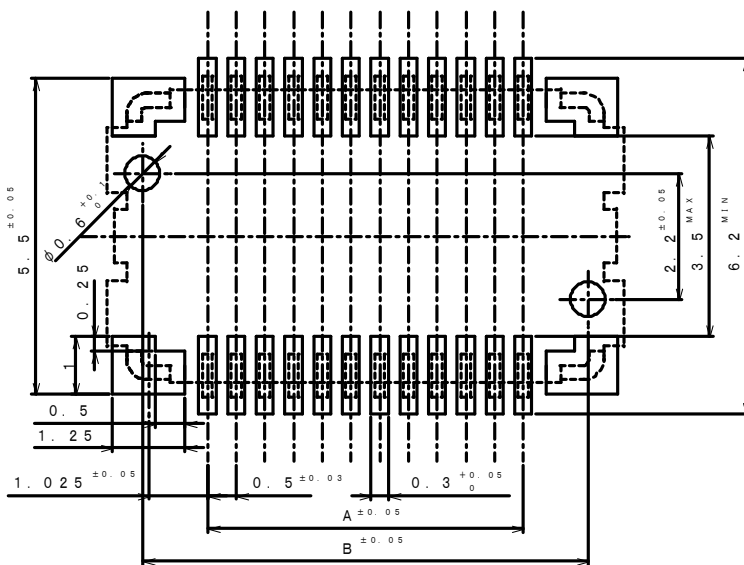
### 3-2 Storage of the processed connectors

Not leaving the processed connectors to stand in a place exposed to high humidity and direct sunshine, and not placing them directly on the ground, keep them in a clean storage room.

### 4. PC Board Pattern Layout

The following PC board pattern layout is recommended.

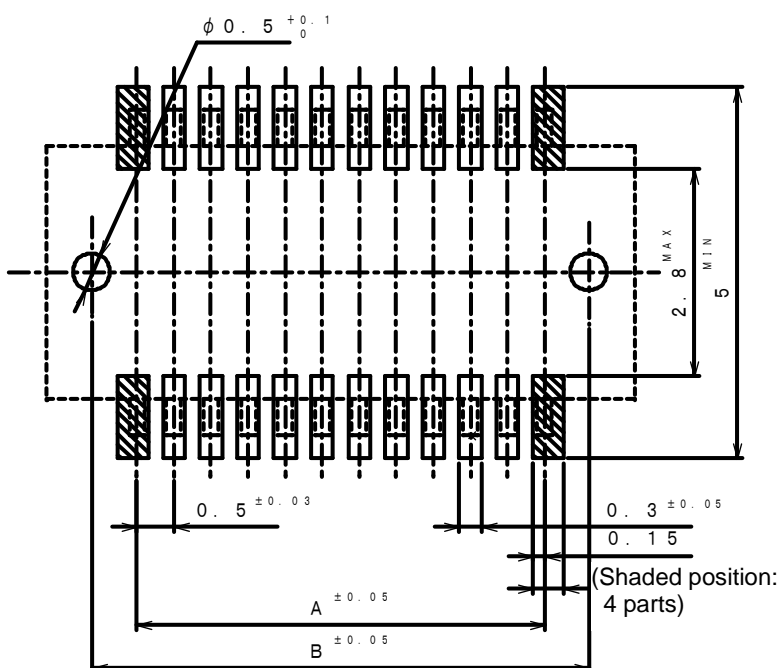
#### Receptacle side



Circuits	"A" dimension	"B" dimension
20	4.5	6.75
30	7.0	9.25
40	9.5	11.75
44	10.5	12.75
50	12.0	14.25
60	14.5	16.75
64	15.5	17.75

Reference PC board pattern layout (Viewed from component side)

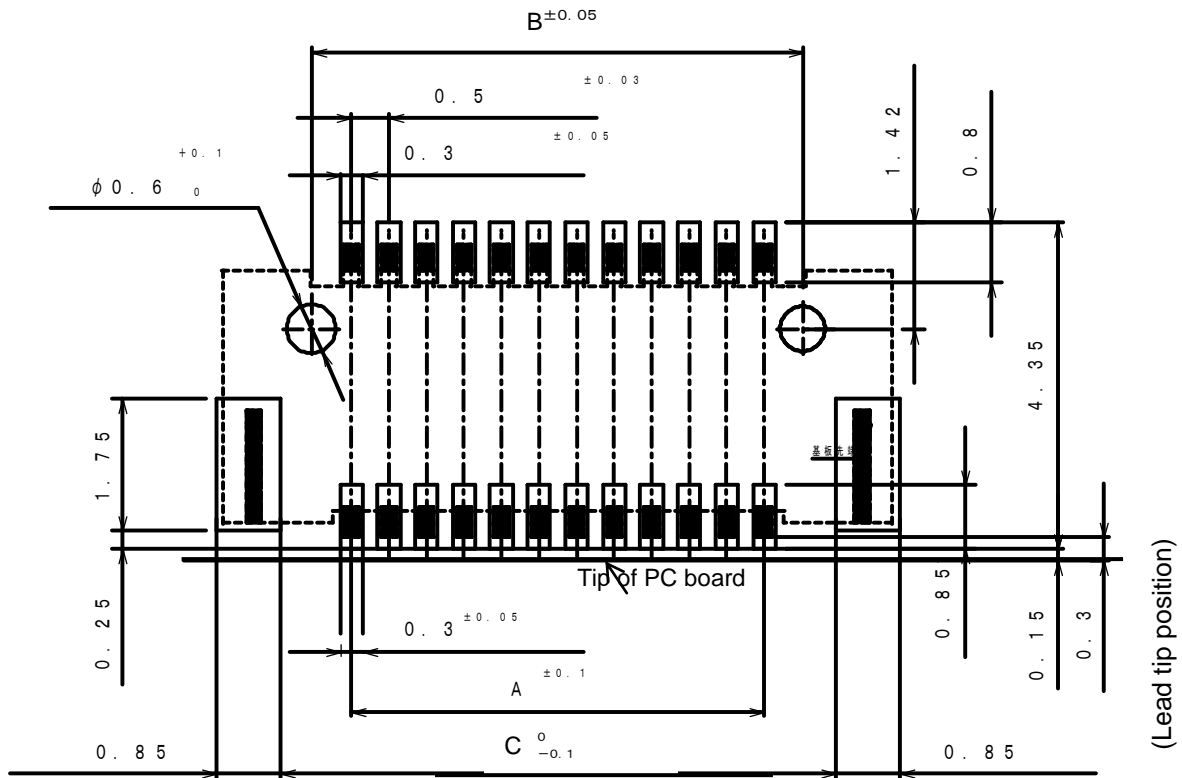
#### Applicable plug side (top entry type plug)



Circuits	"A" dimension	"B" dimension
20	4.5	5.7
30	7.0	8.2
40	9.5	10.7
44	10.5	11.7
50	12.0	13.2
60	14.5	15.7
64	15.5	16.7

Reference PC board pattern layout (Viewed from component side)

Applicable plug side (side entry type plug)



Reference PC board pattern layout (Viewed from component side)

Circuits	"A" dimension	"B" dimension	"C" dimension
20	4.5	5.55	6.4
30	7.0	8.05	8.9
40	9.5	10.55	11.4
44	10.5	11.55	12.4
50	12.0	13.05	13.9
60	14.5	15.55	16.4
64	15.5	16.55	17.4

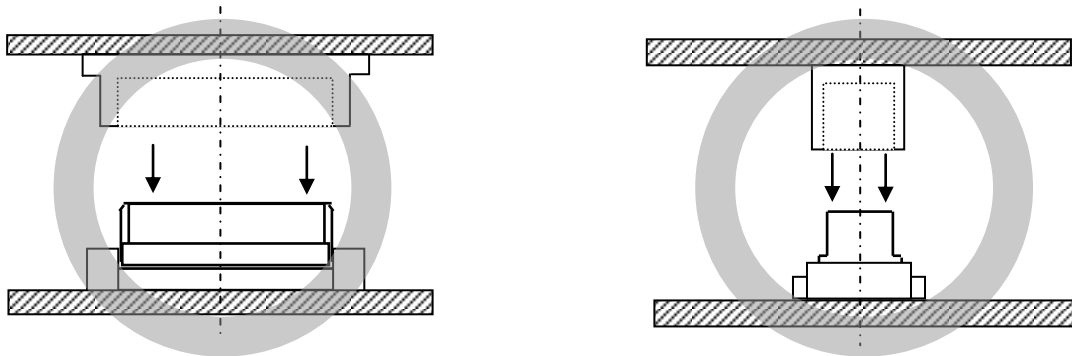
## 5. Handling Precautions

### 5-1 Mating operation

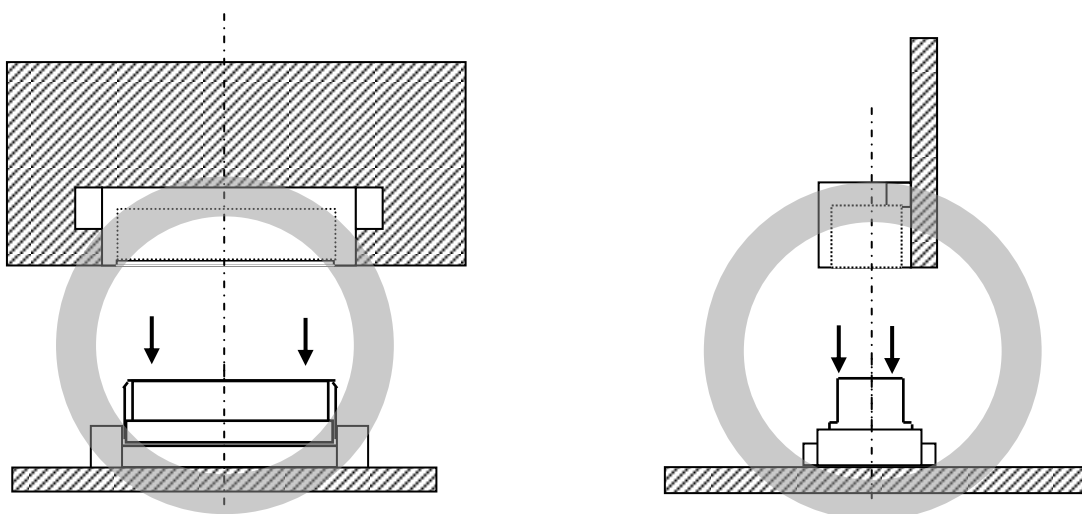
Normal operation method: Plug side is straightly mated with receptacle side (or contrary).

- ① Mate both housings on the same axis without applying force such as prying.  
When mating operation is conducted forcibly without aligning both housings, such handling may lead to scratch or hollow of housing and breakage of connector.
- ③ Press the whole of connector gently and mate plug with receptacle housing in a straight line.  
There is a “click” sound (you feel a click) when mating operation is properly completed.  
When there is no feeling of a click, there is a possibility that mating is not finished completely.  
Conduct mating operation again.  
(The number of such mating and unmating operation should be decreased as much as possible.)

- Top entry type



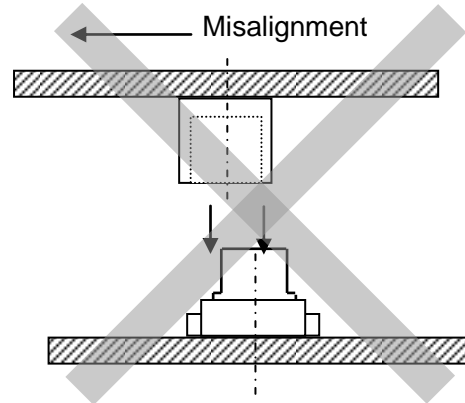
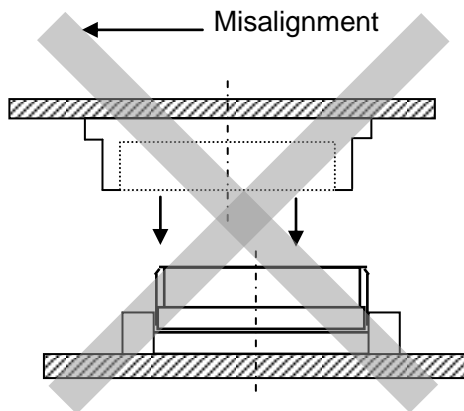
- Side entry type



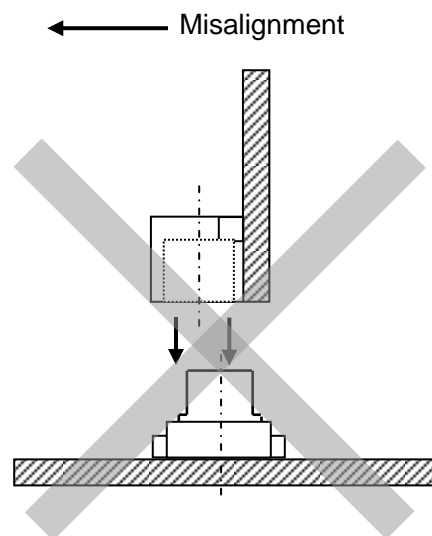
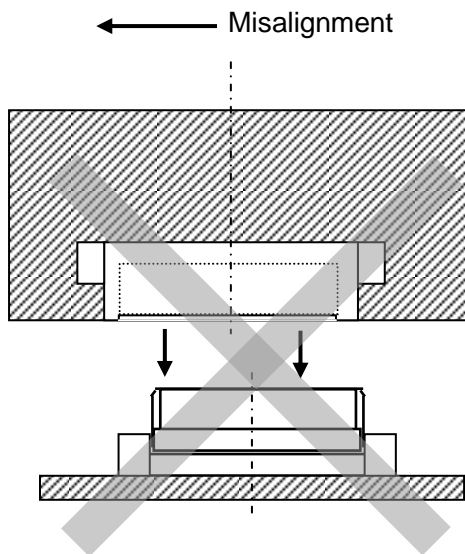
Prohibited matter in mating operation

Do not mate plug with receptacle with each pitch misaligned.  
(Such handling may cause deformation of contact and chip or crack of housing.)

- Top entry type



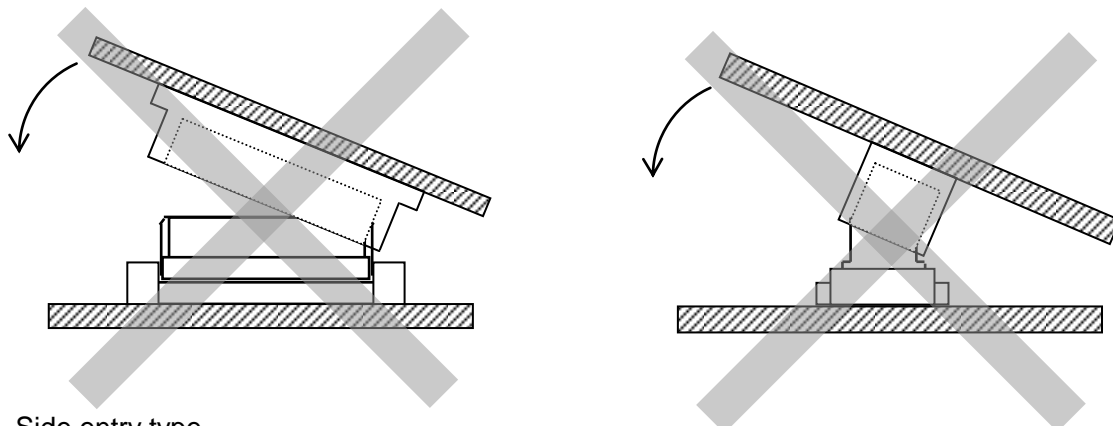
- Side entry type



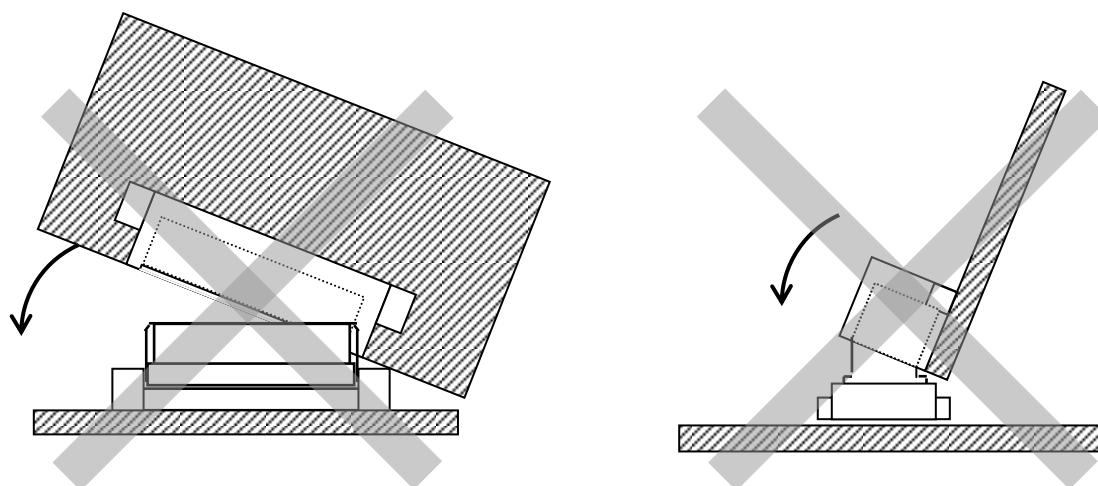
Do not mate plug with receptacle by rotating plug from slanting condition after mating only one side of connector as below.

(Such handling may cause deformation of contact and chip or crack of housing.)

- Top entry type



- Side entry type



Note: It may be difficult that plug and receptacle housing are mated in a straight line against mating axis direction until the operation is completed, judging from operating condition in massproduction line.

Therefore, it is assumed that mating operation is conducted in either of following two methods on the following page, while such handling applies excessive load to connector more than normal operation. (It may cause breakage of connector.)

Pay careful attention to the following precautions during mating operation in particular.

- Conduct mating operation in a straight line from above.
- Do not mate connectors with misaligned pitch.
- Do not apply excessive force to one part of connector during mating operation.
- There is feeling of a click when mating operation is properly completed.
- Do not press further down connector from above after mating operation.
- The number of mating and unmating operation should be decreased as much as possible.

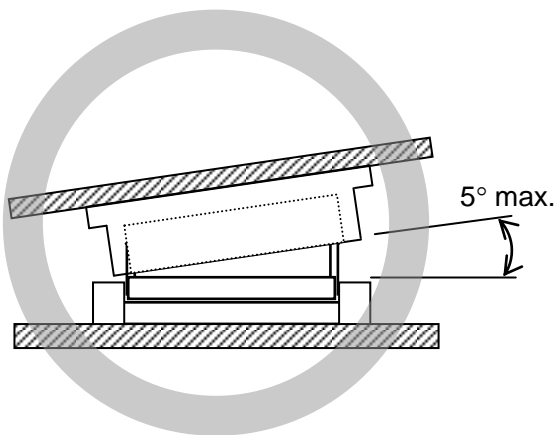


Other operation method

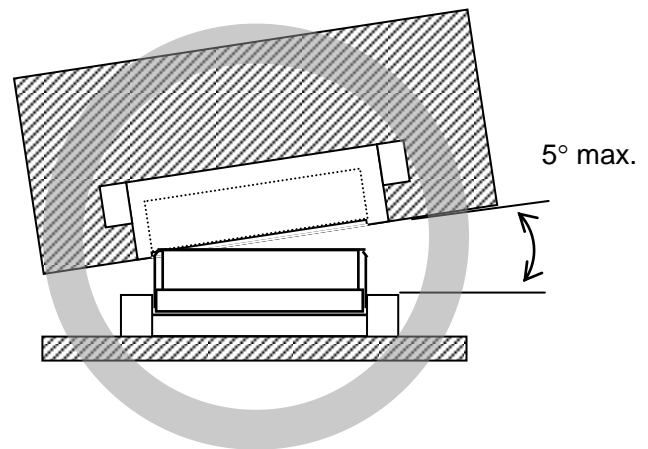
Method 1: Slanting mating operation in the direction to pitch  
(Mating in the direction of the connector length)

- ① Mate connectors as nearly parallel as possible (MAX. 5°).
- ② Do not mate connectors pressing down the one part of connector but mate connectors gently in a straight line pressing down the whole of connector.  
There is a “click” sound (you feel a click) when mating operation is properly completed.  
When there is no feeling of a click, conduct mating operation again.

- Top entry type

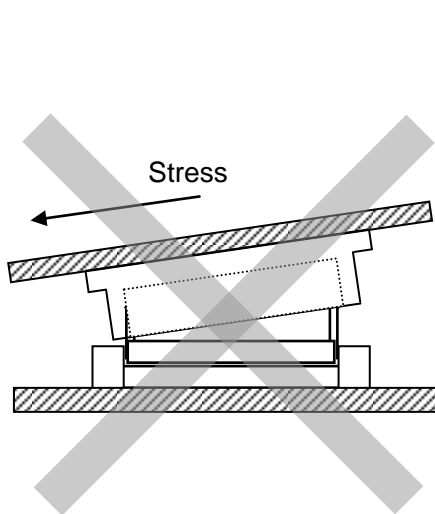


- Side entry type

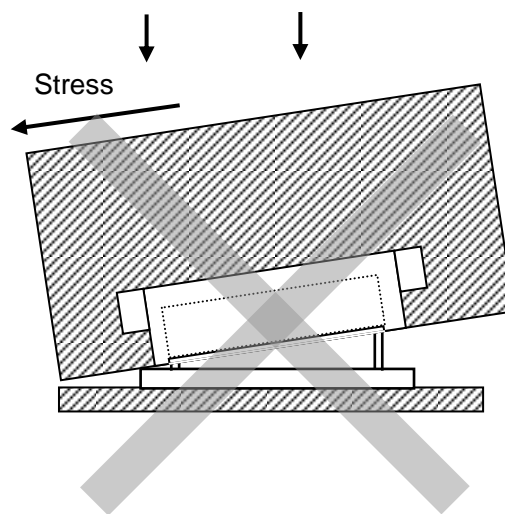
Prohibited matter in mating operation

Do not mate connector under the condition that connector is largely deviated to the direction to pitch, because such condition may cause deviation of pitch or breakage of housing part.

- Top entry type



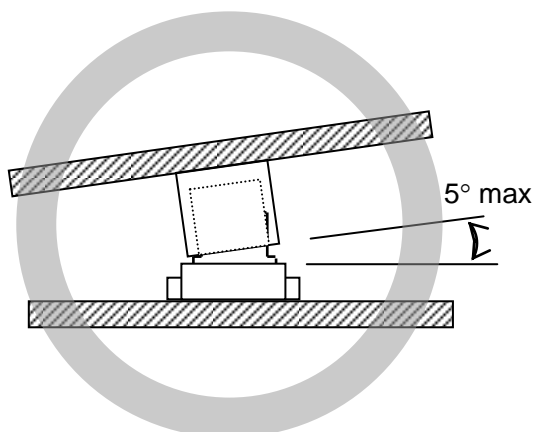
- Side entry type



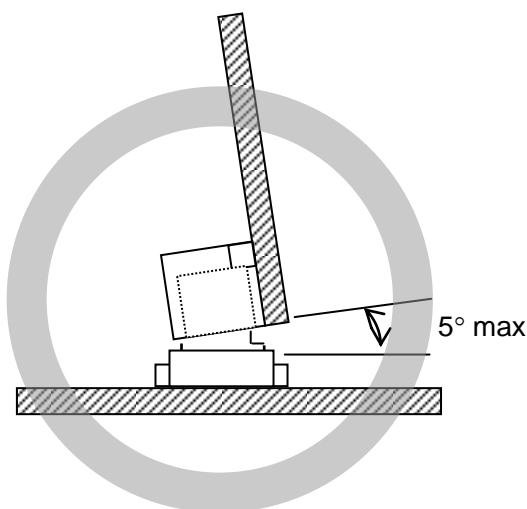
Method 2: Slanting mating operation in the rectangular direction to pitch  
(Mating in the direction of the connector width)

- ① Mate connectors as nearly parallel as possible (MAX. 5°).
- ② Do not mate connectors pressing down the one part of connector but mate connectors gently in a straight line pressing down the whole of connector.  
There is a “click” sound (you feel a click) when mating operation is properly completed.  
When there is no feeling of a click, conduct mating operation again.

- Top entry type



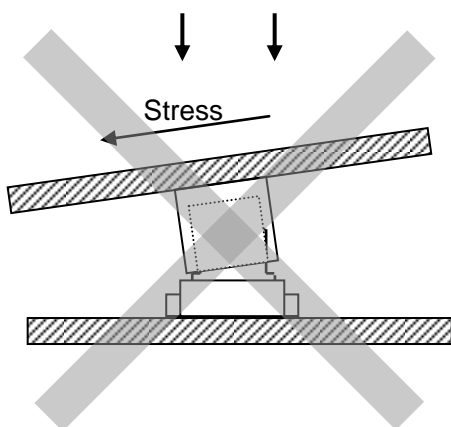
- Side entry type



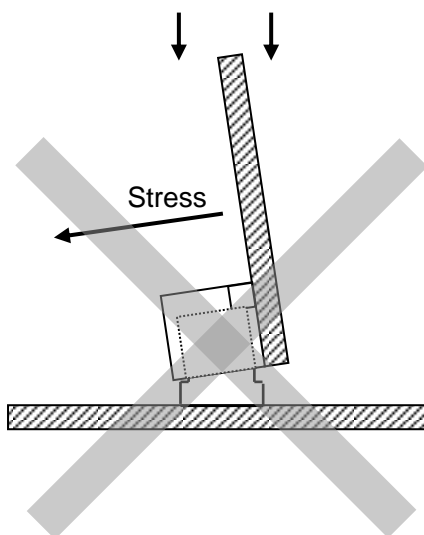
### Prohibited matter in mating operation

Do not mate connector under the condition that connector is largely deviated to the rectangular direction to pitch, because such condition may cause deformation of receptacle contact spring part and a critical defect as electrical discontinuity of connector.

- Top entry type



- Side entry type

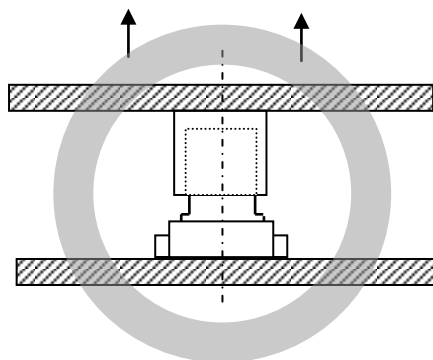
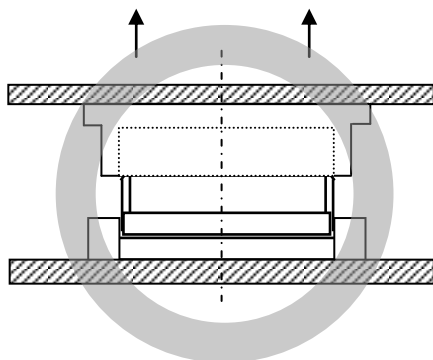


## 5-2 Unmating operation

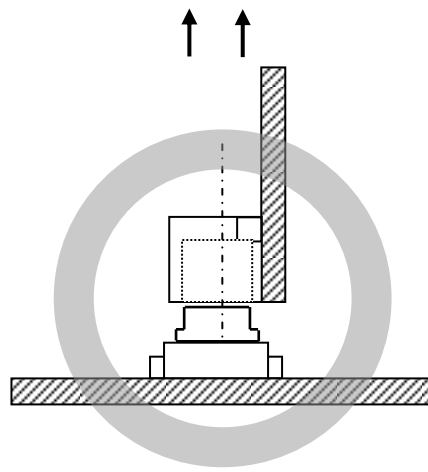
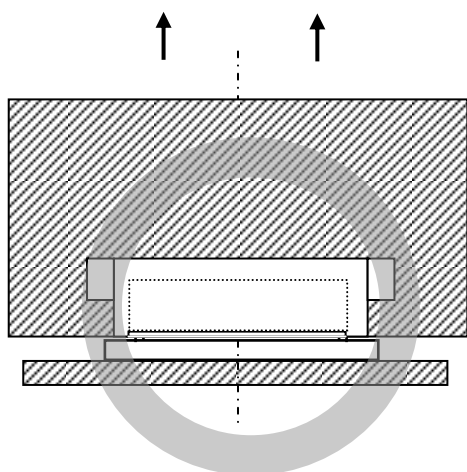
Normal operation method: Plug side is straightly extracted from receptacle side (or contrary).

① Unmate connectors as nearly parallel as possible (MAX. 5°).

- Top entry type



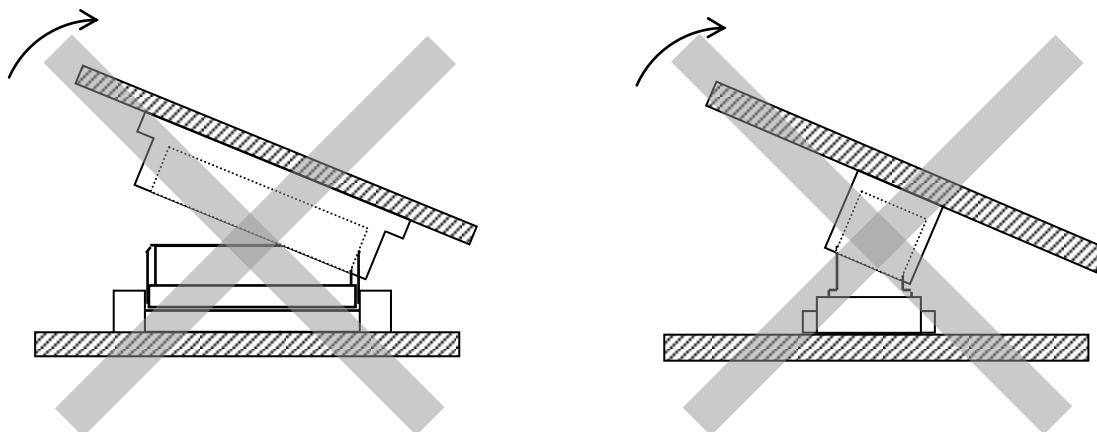
- Side entry type



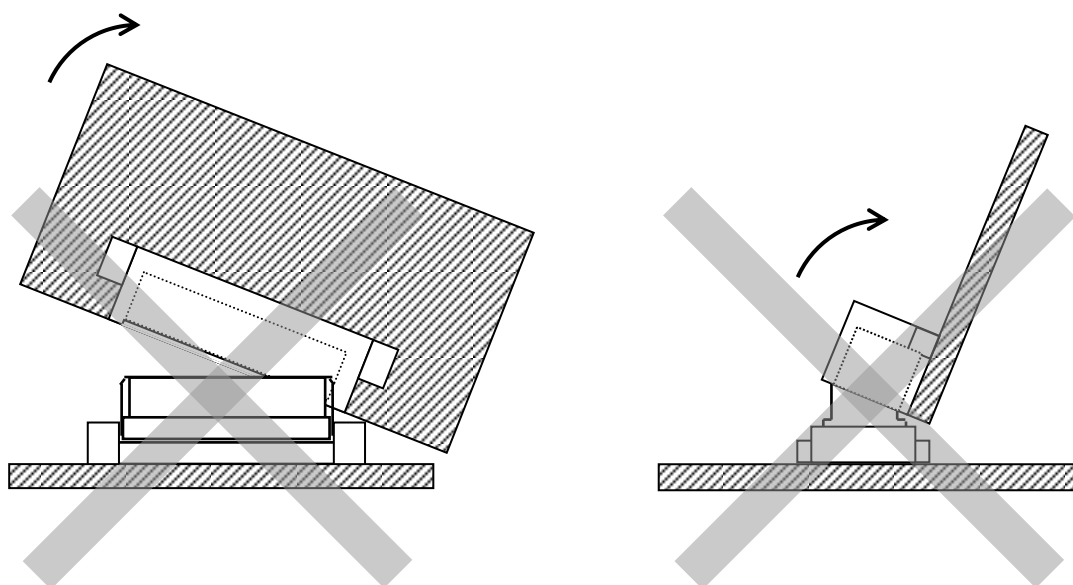
Prohibited matter in unmating operation

Do not unmate plug from receptacle by rotating it with holding one end of PC board at plug side as below, because such handling may cause deformation of contact and chip or crack of housing.

- Top entry type



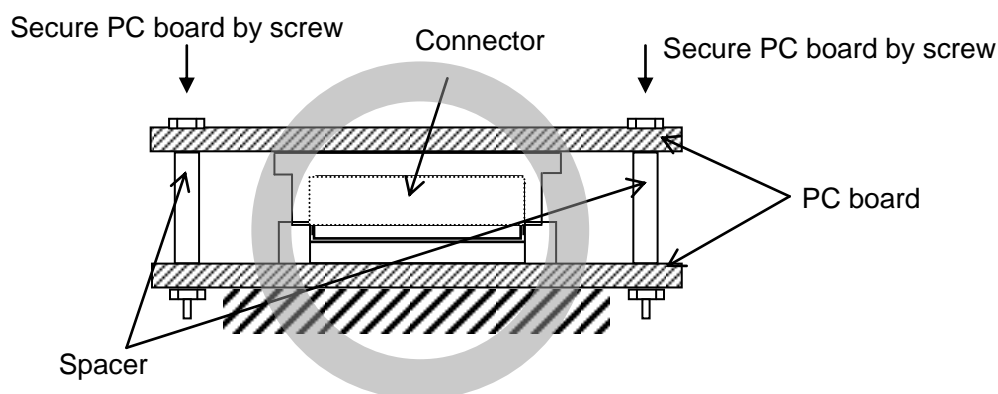
- Side entry type



## 5-3 Handling of connector after mating

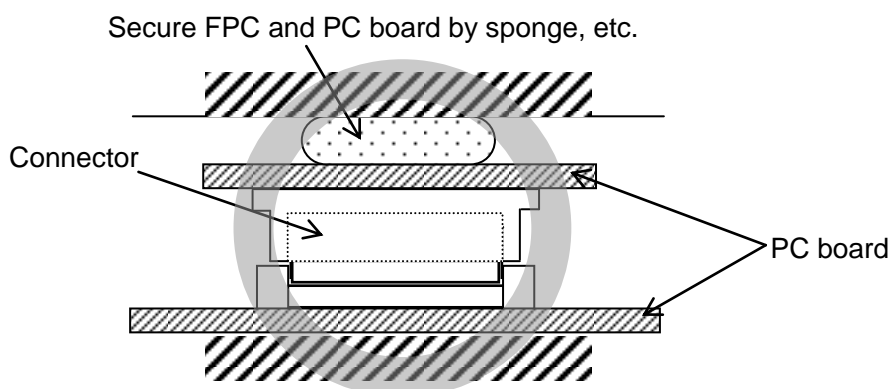
- ① When both connectors are mounted on rigid PC board, fix the PC board so that connector does not come off PC board due to vibration and shock.
- ② Do not apply external force to connector due to deviation of position between PC boards after screwing or fixing PC boards, because solder crack, etc. as a critical defect may occur.

e.g.: Top entry type



- ③ When above PC board fixing method is difficult due to mounting on FPC, etc., fix FPC and PC board by pressing to the mating direction as below.

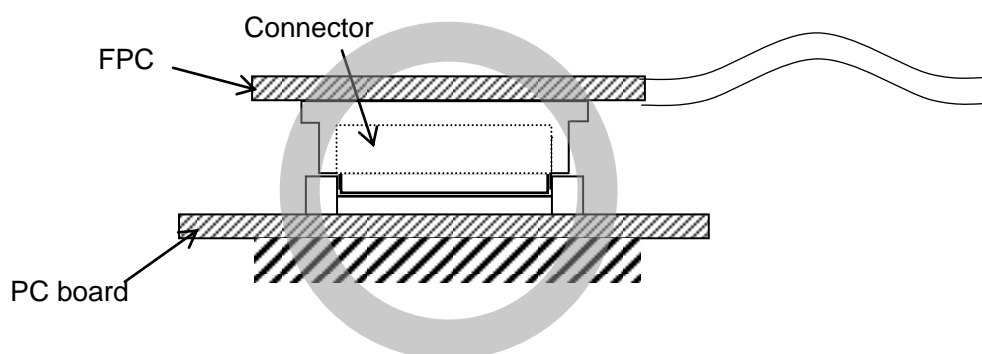
e.g.: Top entry type



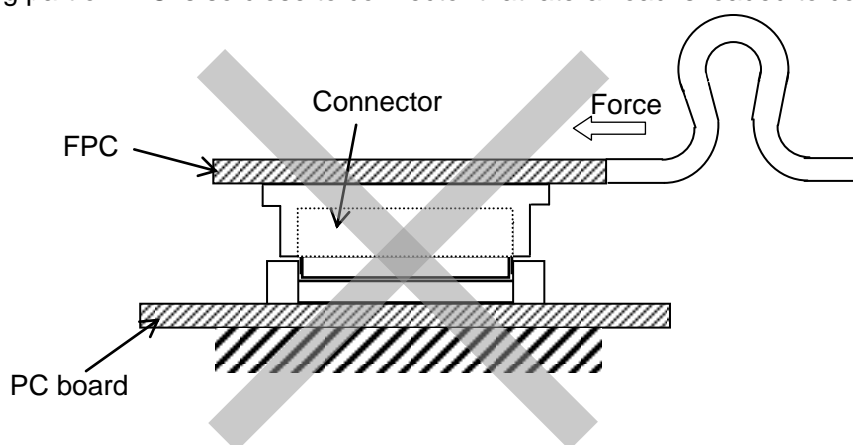
- ④ When FPC with connector is used, provide sufficient FPC length for handling, because force

which is caused by bending of FPC or pulling FPC is loaded to connector.

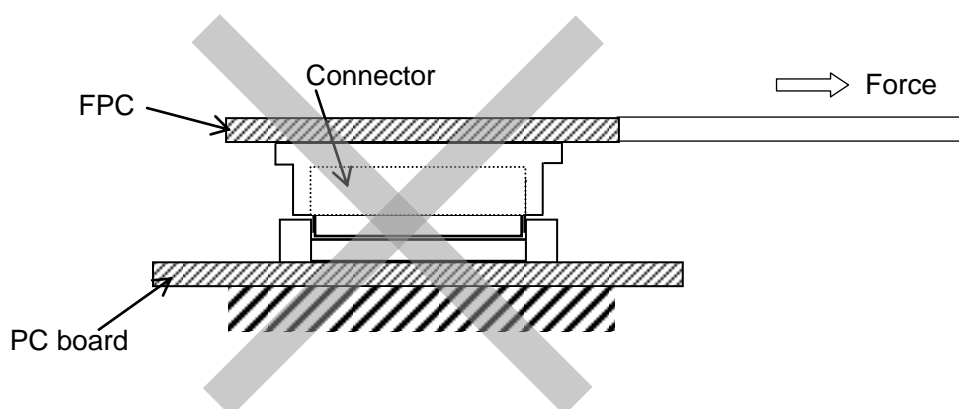
FPC length is sufficient, so that force is not loaded to connector.



Bending part of FPC is so close to connector that lateral load is loaded to connector.



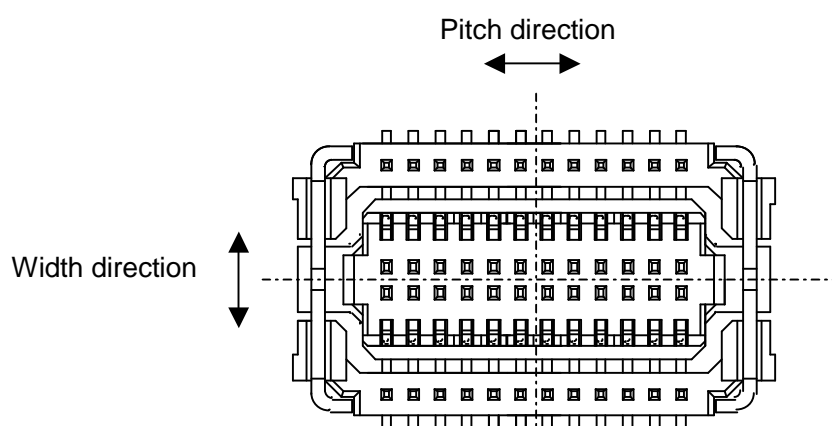
Pulling force is applied to connector due to insufficient FPC length



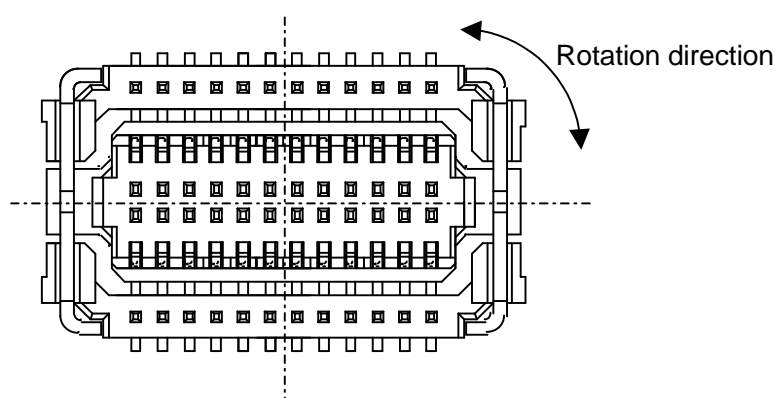
## 5-4 Absorption misalignment mechanism

- ① As JMC connector receptacle adopts 2 piece mechanism, it has a absorption misalignment mechanism for width direction, pitch direction and rotation direction between PC boards after mating as below.  
However, it does not absorb misalignment for repeating move or vibration.
- ② Excessive moving may cause breakage of connector, and critical defect may occur.  
Be sure to use connector within the following movable range.

		Circuit						
		20P	30P	40P	44P	50P	60P	64P
Moving direction	Width direction	Max. ±0.15 mm		Max. ±0.25 mm				
	Pitch direction	Max. ±0.25 mm						



		Circuit						
		20P	30P	40P	44P	50P	60P	64P
Moving direction	Rotation direction	Max. $\pm 2.2^\circ$	Max. $\pm 1.7^\circ$	Max. $\pm 2.7^\circ$	Max. $\pm 2.5^\circ$	Max. $\pm 2.2^\circ$	Max. $\pm 1.9^\circ$	Max. $\pm 1.8^\circ$



Note: Angle in the table stands for rotation angle from center of connector (a point of intersection of above dotted line).

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## 5-5 Precautions for soldering operation

### ① Reflow soldering method

Soldering should be conducted at the temperature below the temperature profile shown in Product Specification as item of "Resistance to soldering heat".

Though recommended reflow temperature condition varies depending on solder paste to be used, evaluate and find adequate condition before production.

Considering handling of this connector in mating operation, tenacious heat-resistant nylon resin is used for the material of a wafer. But 'blister' may generate on the outer surface of a wafer during the process of reflow soldering, depending on the condition of water absorption in a wafer and the condition of reflow soldering. However, because 'blister' is not caused by decomposition of resin, it does not affect the performances of the connector.

When bridge trouble appears in process of reflow soldering and repair is conducted by hand, use a soldering iron with temperature of 350°C at the tip and do it quickly within 3 seconds so that the contact pin is pushed by soldering iron tip and external load is not applied to it. If done, dismount and change connector.

Do not reuse dismounted connector.

### ② Solder paste

As JMC connector is a fine pitch connector, blanking part of metal mask is very small, so soldering by using solder paste for fine pitch is recommended.

If solder paste which is not for fine pitch is used, solder coming off metal mask becomes worse, so that solderability may be affected.

### ③ Reflow soldering type

Reflow soldering by hot air reflow soldering is recommended. However, when N<sub>2</sub> reflow soldering or high active solder is used, use Nickel-underplated striped gold-plated type to prevent the solder wicking.

Note: Nickel-underplated striped gold-plated type has an identification marking (N) at the end of model number.

### ④ Specification of metal mask (amount of solder)

Metal mask of following blanking part ratio and thickness is recommended:

- Blanking part ratio: It shall be 100% against recommended PC board pattern layout as mentioned in item-4.
- Thickness: 120 μm

If the amount of solder increases, bridge trouble, solder rising, flux rising, etc. may occur, and if it is reduced, such condition may lead to deterioration of connector performance such as defective soldering, solder crack and so on.



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#### 5-6 Precautions for using FPC

When either JMC connector plug or receptacle is mounted on FPC, use it under the following conditions, otherwise, defective condition such as coming off solder or pattern of FPC during unmating connector may occur.

- ① Be sure to use FPC, attaching reinforcing plate to the back part of connector mounting part. The outer dimensions of reinforcing plate should be larger than that of mounted connector.
- ② As material of reinforcing plate, be sure to use the plate which can secure sufficient strength and flat surface and its thickness shall be 0.3 mm min.