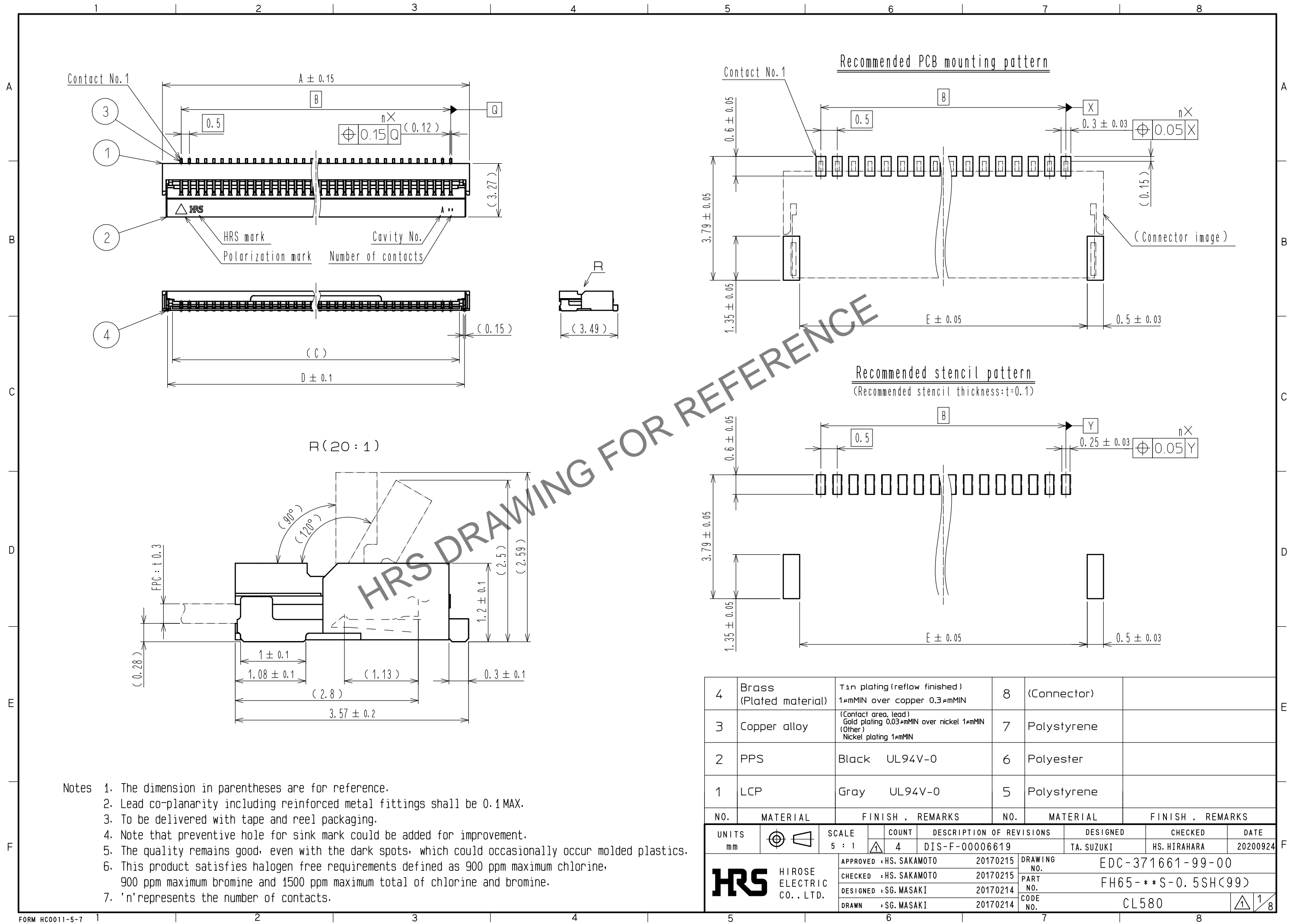
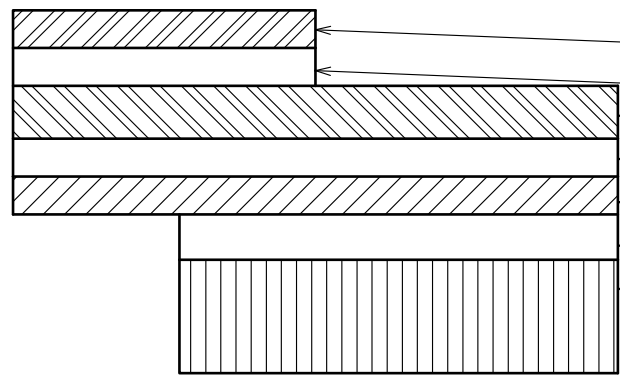


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FFC configuration (reference example) (Scale: free)



Material name	Material	Thickness(μm)
Polyester film		(12)
Adhesive	Polyester thermoplastic type	(30)
Goldplated· soft copper film		35
Adhesive	Polyester	30
Polyester		12
Adhesive	Polyester	30
Stiffener	Polyester	188

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Part No.	Code No.	Number of contact	Dimension of connector, PCB mounting pattern, stencil pattern and FFC/FPC								Dimension of drawing for packing					
			A	B	C	D	E	F	G	H	J	K	L	M	N	P
FH65-4S-0.5SH(99)	————	4	3.8	1.5	2.57	3.18	2.8	3.83	2.5	2.87	4.0	7.5	16.0	—	21.4	17.4
FH65-6S-0.5SH(99)	————	6	4.8	2.5	3.57	4.18	3.8	4.83	3.5	3.87	5.0	7.5	16.0	—	21.4	17.4
△ FH65-8S-0.5SH(99)	CL580-4703-0-99	8	5.8	3.5	4.57	5.18	4.8	5.83	4.5	4.87	6.0	7.5	16.0	—	21.4	17.4
△ FH65-10S-0.5SH(99)	CL580-4704-0-99	10	6.8	4.5	5.57	6.18	5.8	6.83	5.5	5.87	7.0	11.5	24.0	—	29.4	25.4
FH65-12S-0.5SH(99)	————	12	7.8	5.5	6.57	7.18	6.8	7.83	6.5	6.87	8.0	11.5	24.0	—	29.4	25.4
FH65-14S-0.5SH(99)	————	14	8.8	6.5	7.57	8.18	7.8	8.83	7.5	7.87	9.0	11.5	24.0	—	29.4	25.4
△ FH65-15S-0.5SH(99)	CL580-4701-0-99	15	9.3	7.0	8.07	8.68	8.3	9.33	8.0	8.37	9.5	11.5	24.0	—	29.4	25.4
FH65-16S-0.5SH(99)	————	16	9.8	7.5	8.57	9.18	8.8	9.83	8.5	8.87	10.0	11.5	24.0	—	29.4	25.4
FH65-18S-0.5SH(99)	————	18	10.8	8.5	9.57	10.18	9.8	10.83	9.5	9.87	11.0	11.5	24.0	—	29.4	25.4
FH65-20S-0.5SH(99)	————	20	11.8	9.5	10.57	11.18	10.8	11.83	10.5	10.87	12.0	11.5	24.0	—	29.4	25.4
FH65-22S-0.5SH(99)	————	22	12.8	10.5	11.57	12.18	11.8	12.83	11.5	11.87	13.0	11.5	24.0	—	29.4	25.4
FH65-24S-0.5SH(99)	————	24	13.8	11.5	12.57	13.18	12.8	13.83	12.5	12.87	14.0	11.5	24.0	—	29.4	25.4
FH65-26S-0.5SH(99)	————	26	14.8	12.5	13.57	14.18	13.8	14.83	13.5	13.87	15.0	14.2	32.0	28.4	37.4	33.4
FH65-28S-0.5SH(99)	————	28	15.8	13.5	14.57	15.18	14.8	15.83	14.5	14.87	16.0	14.2	32.0	28.4	37.4	33.4
FH65-30S-0.5SH(99)	————	30	16.8	14.5	15.57	16.18	15.8	16.83	15.5	15.87	17.0	14.2	32.0	28.4	37.4	33.4
FH65-32S-0.5SH(99)	————	32	17.8	15.5	16.57	17.18	16.8	17.83	16.5	16.87	18.0	14.2	32.0	28.4	37.4	33.4
FH65-34S-0.5SH(99)	CL580-4700-0-99	34	18.8	16.5	17.57	18.18	17.8	18.83	17.5	17.87	19.0	20.2	44.0	40.4	49.4	45.4
FH65-36S-0.5SH(99)	————	36	19.8	17.5	18.57	19.18	18.8	19.83	18.5	18.87	20.0	20.2	44.0	40.4	49.4	45.4
FH65-40S-0.5SH(99)	————	40	21.8	19.5	20.57	21.18	20.8	21.83	20.5	20.87	22.0	20.2	44.0	40.4	49.4	45.4
FH65-45S-0.5SH(99)	————	45	24.3	22.0	23.07	23.68	23.3	24.33	23.0	23.37	24.5	20.2	44.0	40.4	49.4	45.4
FH65-50S-0.5SH(99)	————	50	26.8	24.5	25.57	26.18	25.8	26.83	25.5	25.87	27.0	20.2	44.0	40.4	49.4	45.4
FH65-60S-0.5SH(99)	————	60	31.8	29.5	30.57	31.18	30.8	31.83	30.5	30.87	32.0	26.2	56.0	52.4	61.4	57.4
FH65-64S-0.5SH(99)	————	64	33.8	31.5	32.57	33.18	32.8	33.83	32.5	32.87	34.0	26.2	56.0	52.4	61.4	57.4
FH65-68S-0.5SH(99)	————	68	35.8	33.5	34.57	35.18	34.8	35.83	34.5	34.87	36.0	26.2	56.0	52.4	61.4	57.4

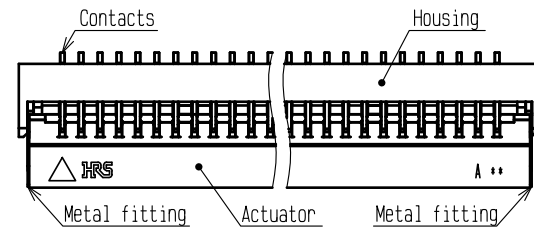
※Contact positions without code numbers are currently under planning.
Please contact Hirose for detailed information about product variation.

HRS	DRAWING NO.	EDC-371661-99-00	
	PART NO.	FH65-**S-0.5SH(99)	
	CODE NO.	CL580	△ 4/8

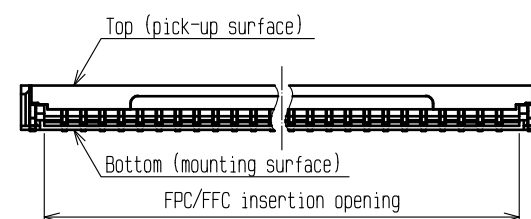
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This connector features small and thin, requiring delicate and careful handling.
To prevent connector/FPC/FFC breakage and contact failure (mating failure, FPC/FFC pattern breakage, etc),
read through the instructions shown below and handle the connector properly.
Each values indicating here are for reference and may differ from standard value.

[Connector Part Nomenclature]



(Top view)



(Front view)

[Operation and Precautions]

1. Initial condition

The connector is delivered with the actuator closed.

[Caution]

-Do not insert FPC/FFC or operate actuator before mounting.

2. How to unlock (Before inserting FPC/FFC)

The actuator rotates on its axis as shown below.
Slowly flip up the actuator to release the lock.

[Caution]

-Open the actuator by carefully lifting it at the center.

-Do not lift the actuator at one end only.

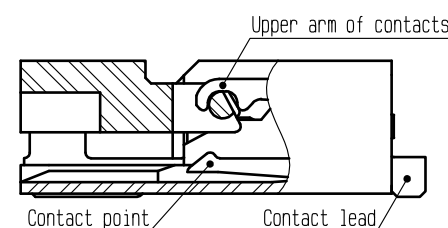
-The actuator must be operated by hand only,
and do not insert any tools or fingernails inside the connector.

-The actuator rotates 120 degrees max.

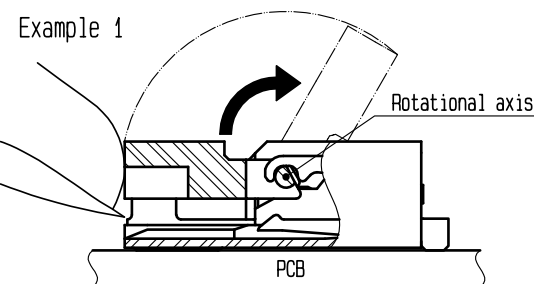
Do not attempt to force the actuator to backside further.

-When operating the actuator do not apply any force in the direction of the connector.

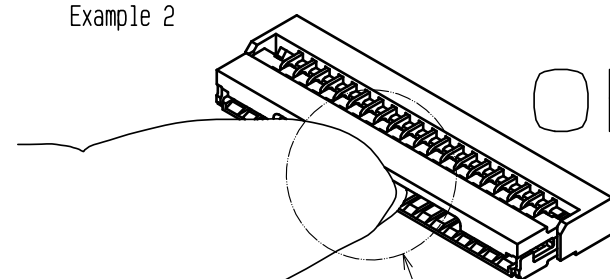
-Do not attempt to dislodge the actuator.



(Contact view)

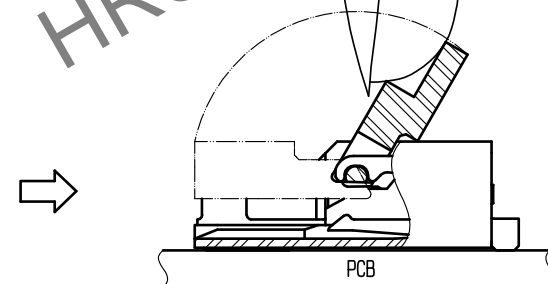


Example 2

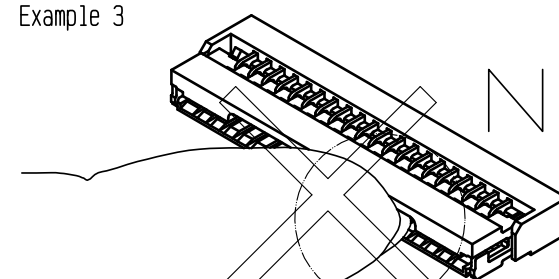


Open the actuator at the center

- Correct operation -



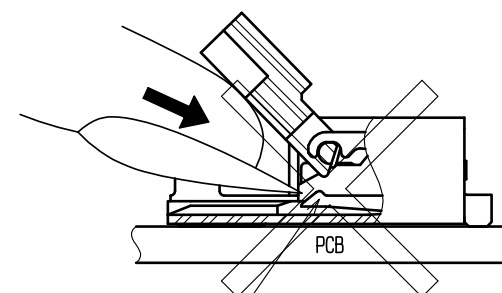
Example 3



Do not operate the actuator
at one end only.

- Incorrect operation -

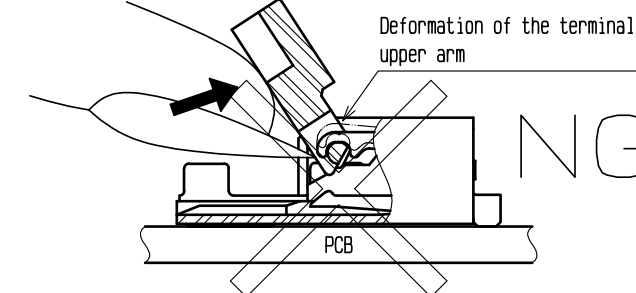
Example 4



Deformation of the terminal

- Incorrect operation -

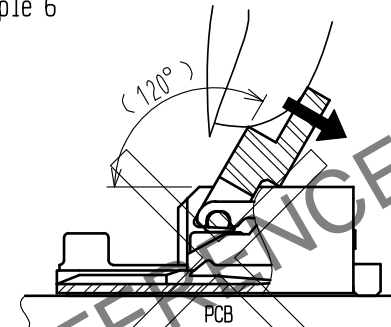
Example 5



Deformation of the terminal
upper arm

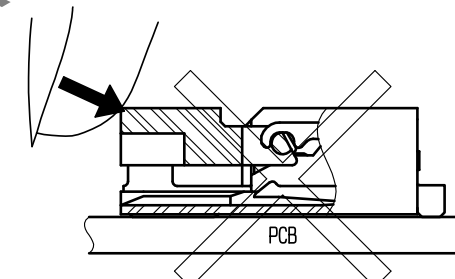
- Incorrect operation -

Example 6

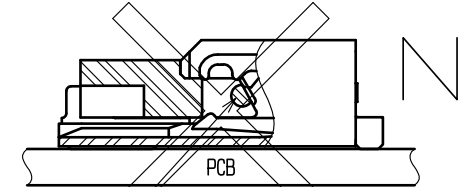


- Incorrect operation -

Example 7

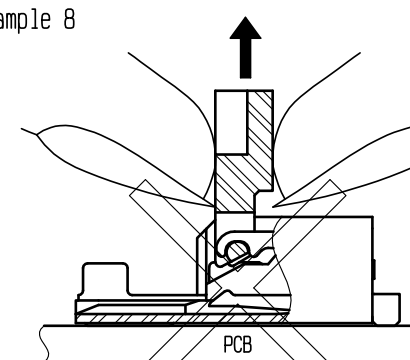


- Incorrect operation -



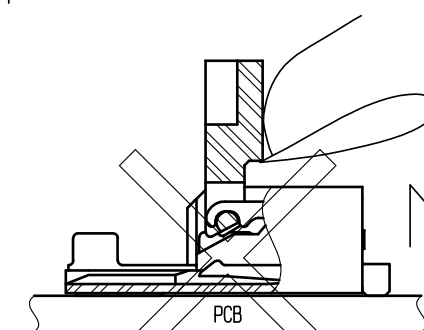
Failure from the actuator pushed in

Example 8



- Incorrect operation -

Example 9



- Incorrect operation -

<INSTRUCTION MANUAL (1)>

HRS

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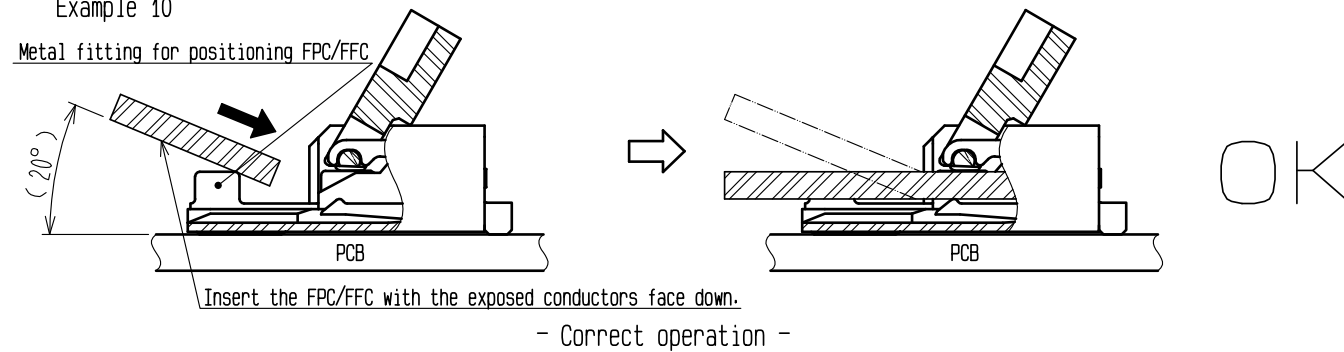
3. How to insert FPC/FFC

This connector has contacts on the bottom, insert the FPC/FFC with the exposed conductors face down.
This connector has metal fittings, insert the FPC/FFC at about 20 degree angle to the PCB mounting surface.

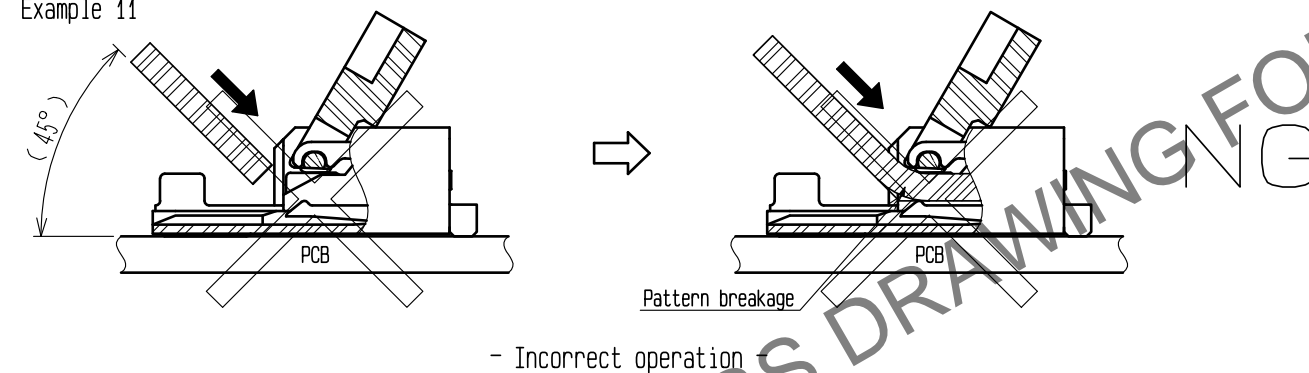
[Caution]

- Do not insert the FPC/FFC with the conductor surface face up.
- Insert the FPC/FFC properly to the very end.
- Do not insert the FPC/FFC at an angle.
- Insert the FPC/FFC with the actuator opened.
- Do not twist the FPC/FFC to up and down, right and left or an angle.

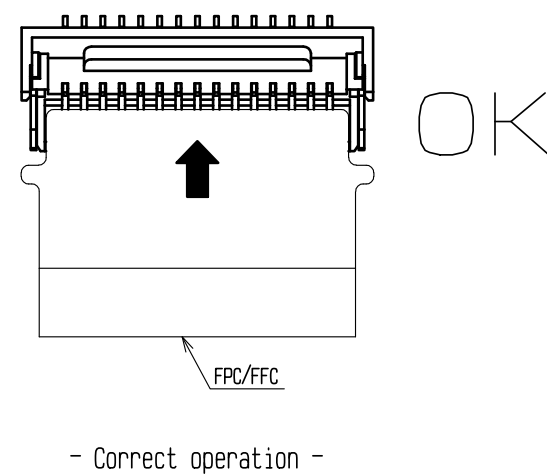
Example 10



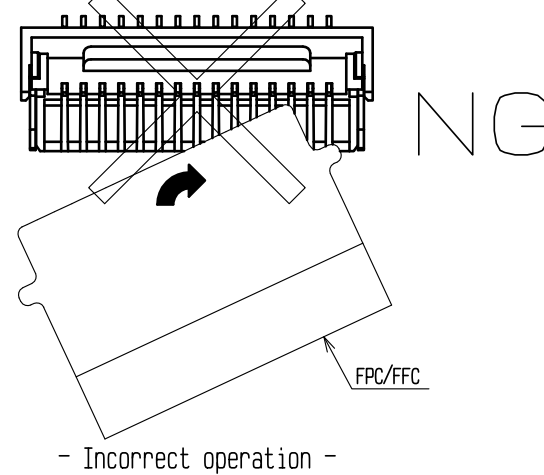
Example 11



Example 12



Example 13



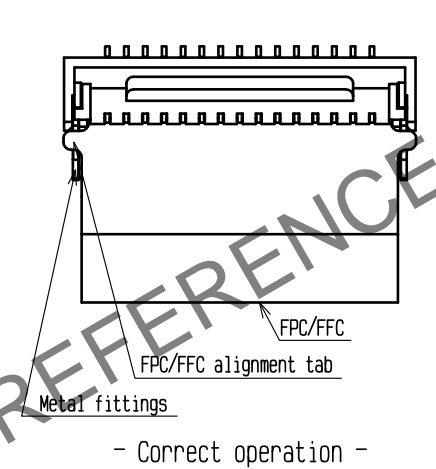
4. FPC/FFC insertion check

Metal fittings guide the FPC/FFC tabs to the correct position.
Make sure that the FPC/FFC tabs are located in correct position as shown in the figure below after FPC/FFC insertion.

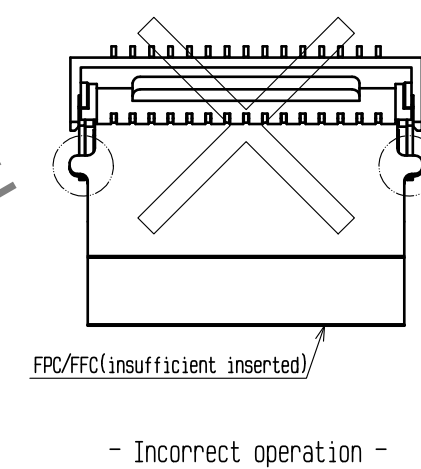
[Caution]

- Do not insert the FPC/FFC at an angle and/or stop it before insertion is completed.

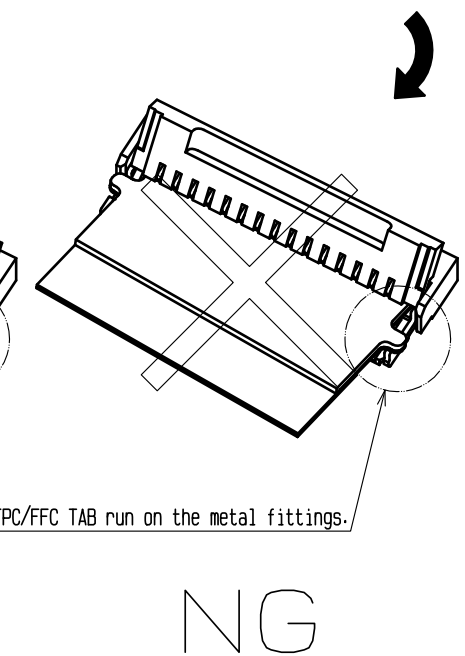
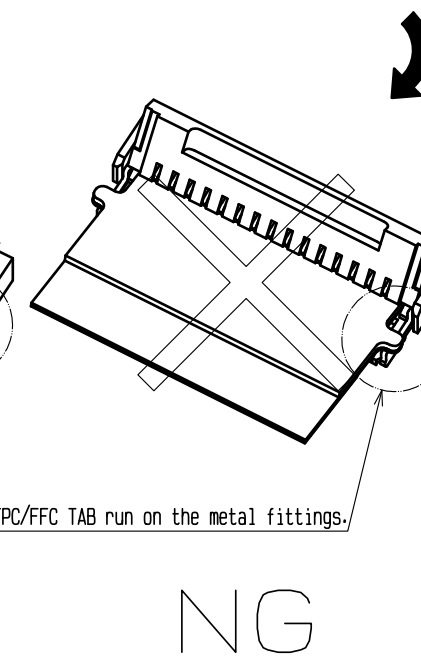
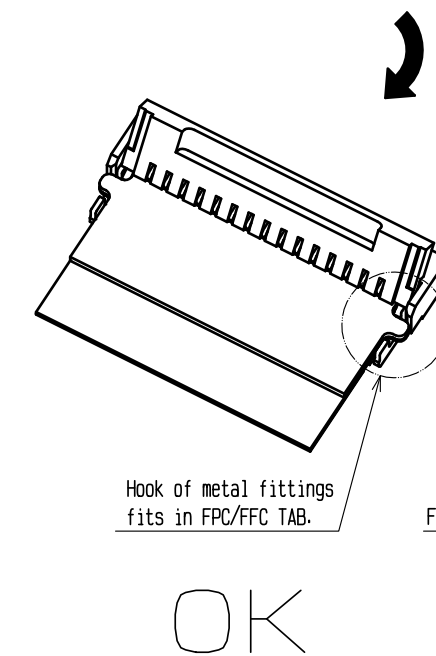
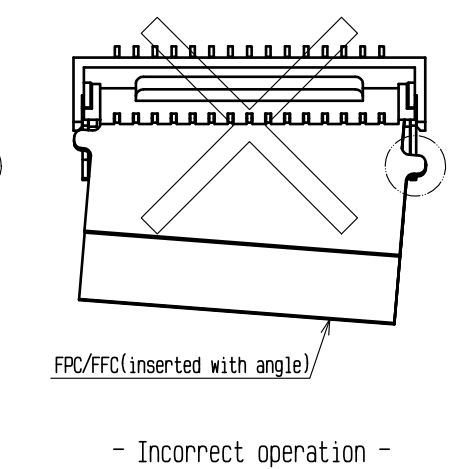
Example 14



Example 15



Example 16



<INSTRUCTION MANUAL(2)>

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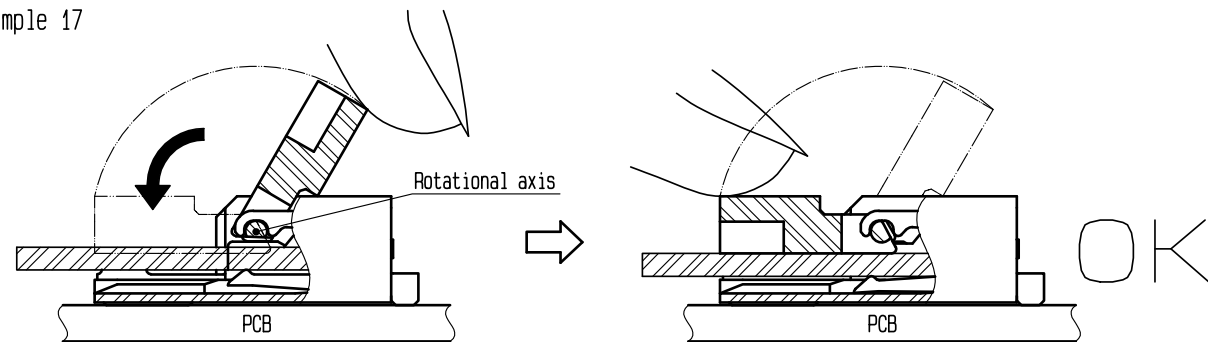
5. How to lock

The actuator rotates on its axis as shown below.
Apply load to rotate the actuator after inserting the FPC/FFC.

[Caution]

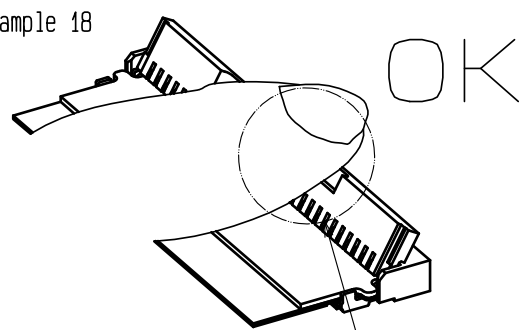
- Close the actuator by carefully operating it at the center.
- Do not operate the actuator at one end only.
- The actuator must be operated by hand only, and do not insert any tools or fingernails inside the connector.
- Do not attempt to force the actuator to backside further.
- Do not attempt to dislodge the actuator.
- Confirm that the actuator completely closed and is parallel to the PCB mounting surface.

Example 17



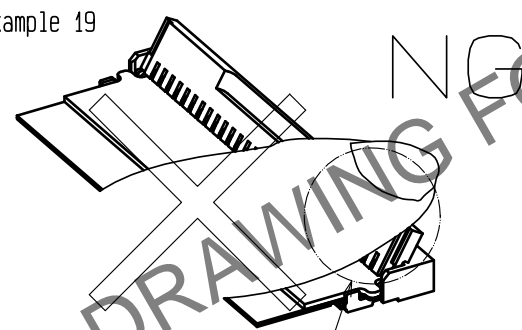
- Correct operation -

Example 18



Close the actuator at the center
- Correct operation -

Example 19



Do not operate the actuator
at one end only
- Incorrect operation -

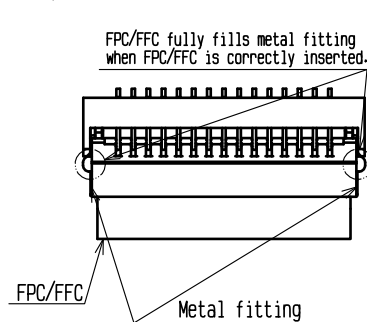
6. Mating confirmation of the FPC/FFC

Visually confirm the FPC/FFC positioning after closing the actuator.

[Caution]

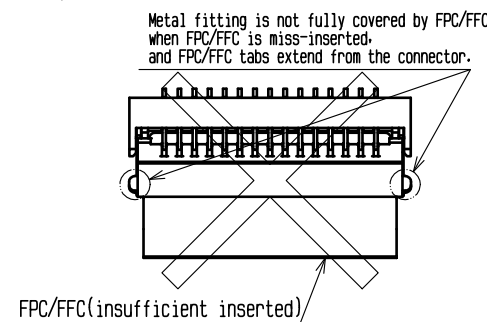
- Do not insert the FPC/FFC at an angle and/or stop it before insertion is completed.

Example 20



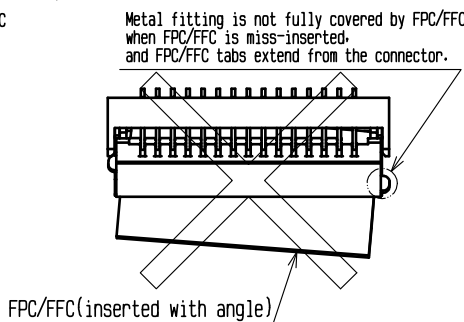
- Correct operation -

Example 21



- Incorrect operation -

Example 22



- Incorrect operation -

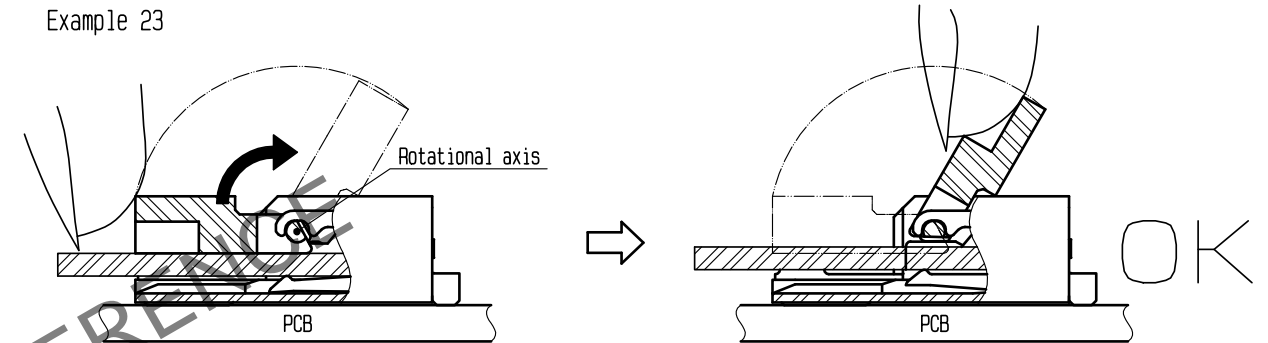
7. How to unlock

Slowly flip up the actuator to release the lock.

[Caution]

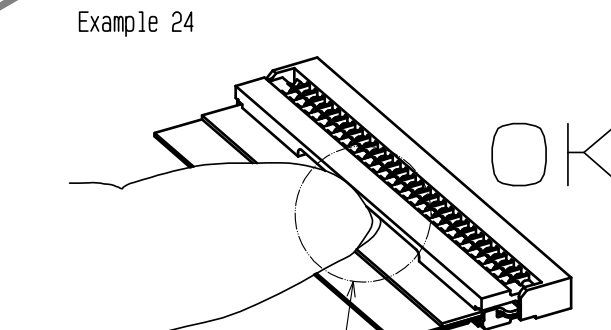
- Open the actuator by carefully lifting it at the center.
- Do not lift the actuator at one end only.
- The actuator must be operated by hand only, and do not insert any tools or fingernails inside the connector.
- The actuator rotates 120 degrees max. Do not attempt to force the actuator to backside further.
- Do not attempt to dislodge the actuator.

Example 23



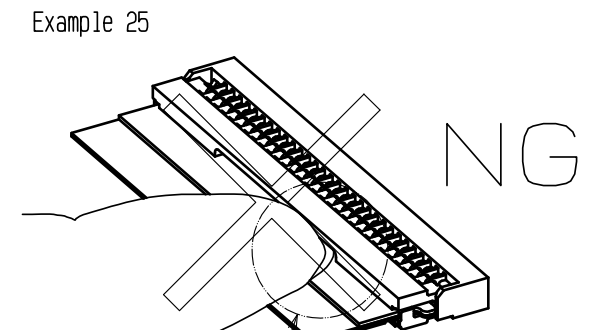
- Correct operation -

Example 24



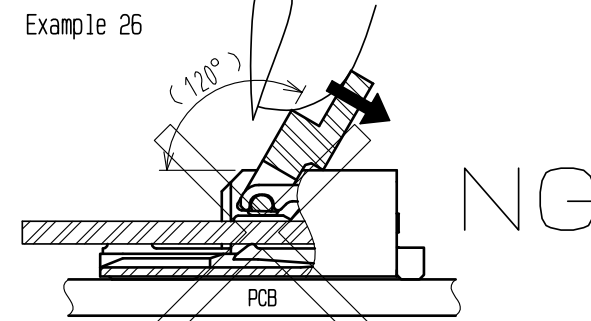
Close the actuator at the center
- Correct operation -

Example 25



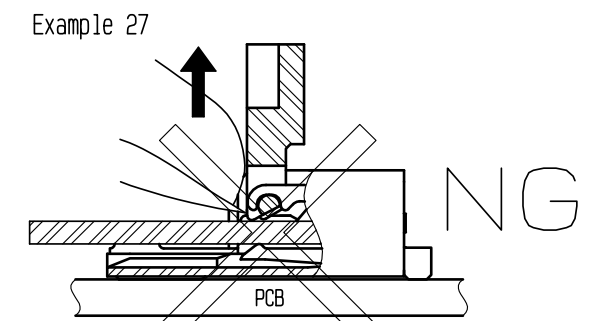
- Incorrect operation -

Example 26



- Incorrect operation -

Example 27



- Incorrect operation -

<INSTRUCTION MANUAL(3)>

HRS

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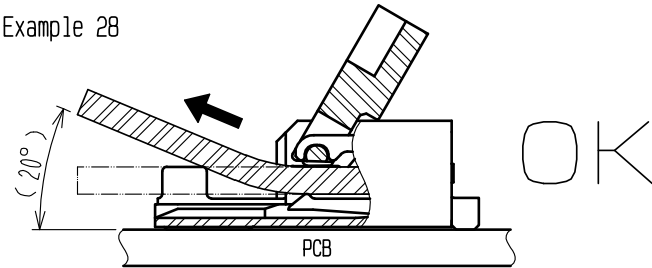
8. How to remove FPC/FFC

This connector has a temporary FPC/FFC holding structure with metal fittings.
After rotating the actuator to the fully opened position carefully withdraw the FPC/FFC pulling out at about 20 degree angle to the PCB mounting surface.

[Caution]

- For FPC/FFC removal, do not pull out the FPC/FFC horizontally.
- Do not withdraw the FPC/FFC at an angle.
- Do not attempt to pull the FPC/FFC without unlocking the actuator.

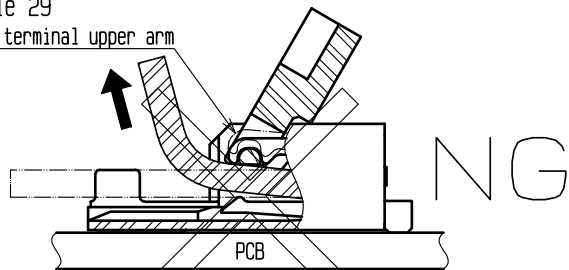
Example 28



- Correct operation -

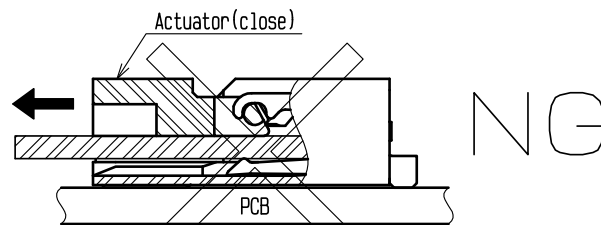
Example 29

Deformation of the terminal upper arm



- Incorrect operation -

Example 30



- Incorrect operation -

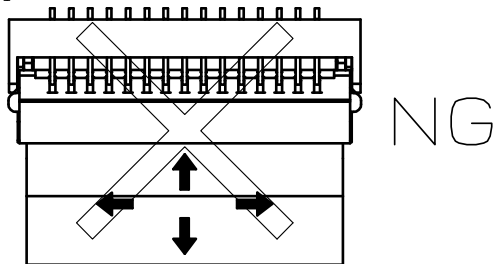
[Precautions for component layout]

Depending on a FPC/FFC rounding, a load is applied to the connector, and a contact failure may occur.
To prevent a failure, take the following notes into a consideration during mechanism design.

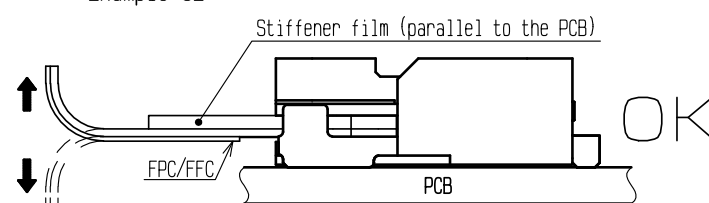
[Caution]

- Avoid applying forces to FPC/FFC in vertical or horizontal directions. In addition, avoid pulling up and down on the FPC/FFC.
- When fixing FPC/FFC after FPC/FFC cabling, avoid pulling FPC/FFC, and route the wire FPC/FFC with slack.
- In this regard, the stiffener is parallel to the PCB.
- Do not bend the FPC/FFC excessively near the connector during use, or it may cause contact failure or FPC/FFC breakage.
- Fixing the FPC/FFC is recommended to prevent these failures.
- Do not mount other components touching to the FPC/FFC underneath the FPC/FFC stiffener.
- Follow the recommended FPC/FFC design.
- Make adjustments with the FPC/FFC manufacturer for FPC/FFC bending performance and wire breakage.
- Keep a sufficient FPC/FFC insertion space in the stage of the layout in order to avoid incorrect FPC/FFC insertion.
- Appropriate FPC/FFC length and component layout are recommended for assembly ease.
- Too short FPC/FFC length makes assembly difficult.
- Keep spaces for the actuator movement and its operation for PCB design and component layout.

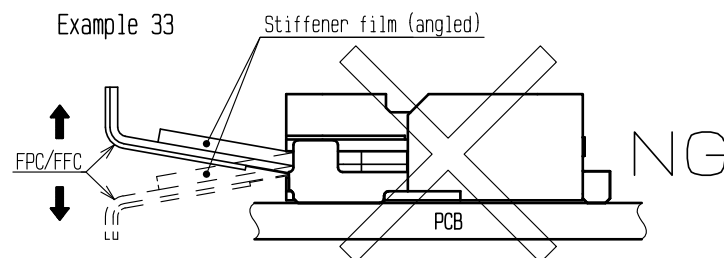
Example 31



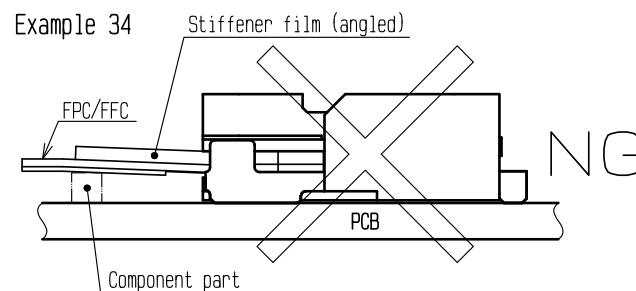
Example 32



Example 33



Example 34



[Instructions for mounting on the PCB]

Follow the instructions shown below when mounting on the PCB.

[Caution]

- Refer to recommended layouts on the page 1 for PCB and stencil pattern.
- Shorter pattern width than the recommended PCB dimension, could cause solder wicking and/or flux penetration.
- Larger pattern than the recommended stencil dimension, could cause solder wicking and/or flux penetration.
- Clearance underneath the contact and the housing is very small.
- In case solder resist and/or silk screening are applied on PCB underneath the connector, verify the thickness, or it could push up the connector bottom and may cause soldering defect and/or insufficient fillet formation.
- Apply reflow temperature profile within the specified conditions.
- In individual applications, the actual temperature may vary, depending on solder paste type, volume/thickness and PCB size/thickness.
- Consult your solder paste and equipment manufacturer for specific recommendations.
- Prevent warpage of PCB, where possible, since it can cause soldering failure even with 0.1 mm max coplanarity.
- When mounting on the flexible board, please make sure to put a stiffener on the backside of the flexible board.
- We recommend a glass epoxy material with the thickness of 0.3 mm MIN.
- Do not add 1 N or greater external force when unreel or pick and place the connector etc, or it may get broken.

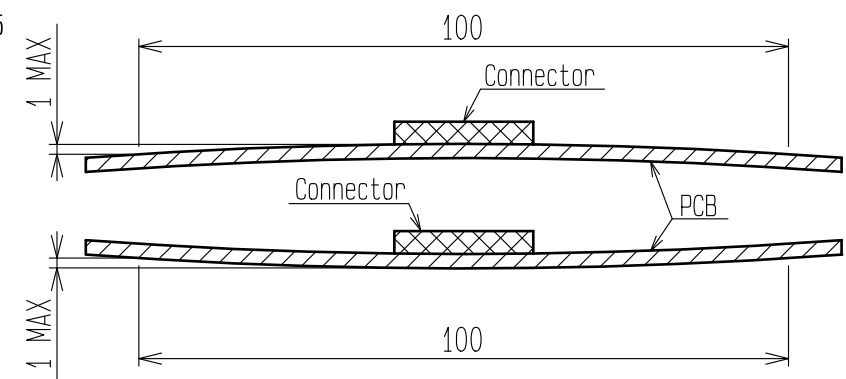
[Instructions for PCB handling after mounting the connector]

Follow the instructions shown below when mounting on the PCB.

[Caution]

- Splitting a large PCB into several pieces
- Screwing the PCB
- Avoid the handling described above so that no force is exerted on the PCB during the assembly process.
- Otherwise, the connector may become defective.
- The warp of a 100 mm wide PCB should be 1 mm or less.
- The warp of PCB suffers stress on connector and the connector may become defective.

Example 35



[Instructions on manual soldering]

Follow the instructions shown below when soldering the connector manually during repair work, etc.

[Caution]

- Do not perform manual soldering with the FPC/FFC inserted into the connector.
- Do not heat the connector excessively. Be very careful not to let the soldering iron contact any parts other than connector leads. Otherwise, the connector may be deformed or melt.
- Do not supply excessive solder (or flux).
- If excessive solder (or flux) is supplied on the terminals, solder or flux may adhere to the contacts or rotating parts of the actuator, resulting in poor contact or a rotation failure of the actuator.
- Supplying excessive solder to the metal fittings may hinder actuator rotation, resulting in breakage of the connector.

<INSTRUCTION MANUAL (4)>

HRS

DRAWING NO.	EDC-371661-99-00
PART NO.	FH65-**S-0.5SH(99)
CODE NO.	CL580

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