

This connector requires delicate and careful handling. Example 3 Example 4 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] Housing <u>Contacts</u> Top (pick-up surface) Do not operate the actuator< at one end only. Open the actuator at the center (Bottom (mounting surface) - Correct operation Incorrect operation \Actuator FPC/FFC insertion opening В ≪Top view» Example 5 Example 6 《Front view》 Deformation of the terminal Operation and Precautions upper arm 1. Initial condition The connector is delivered with the actuator closed. [Caution] Contact lead -Do not insert FPC/FFC or operate actuator before mounting. Contact point 《Contact view》 Deformation of the terminal 2. How to unlock (Before inserting FPC/FFC) - Incorrect operation Incorrect operation -Do not try to rotate the actuator further towards the opening direction or apply any extra force to the actuator while it is fully open (example 7)

—Do not attempt to dislodge the actuator (example 8.9) - Incorrect operation Example 1 Rotational axis Example 8 Example 9 - Correct operation Example 2 - Incorrect operation - Incorrect operation <INSTRUCTION MANUAL(1)>△ EDC-328248-99-00 FH52-**S-0.5SH(99) Failure from the actuator pushed in Incorrect operation CL580 /1\ \ \ 5 \ \ \ \ \ FORM HC0011-5-8 4

3. How to insert FPC/FFC 4. FPC/FFC insertion check This connector has contact point on the bottom, insert the FPC/FFC with the exposed conductors face down. Guide for positioning FPC/FFC guide the FPC/FFC tabs to the correct position. This connector has Guide for positioning FPC/FFC, insert the FPC/FFC at about 10 degree angle Make sure that the FPC/FFC tabs are located in correct position to the PCB mounting surface. (example 10) as shown in the figure below after FPC/FFC insertion (example 14) In case of using FPC/FFC without tabs, insert the FPC/FFC horizontally along the surface. [Caution] [Caution] -Do not insert the FPC/FFC at an angle and/or stop it before insertion is completed (example 15.16) -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 (example 11) Example 14 Example 15 Example 16 -Insert the FPC/FFC with the actuator opened (example 12) -Do not twist the FPC/FFC to up and down, right and left or an angle (example 13) Example 10 Guide for positioning FPC/FFC FPC/FFC alignment to
Guide for positioning FPC/FFC

- Correct opera+: FPC/FFC (<u>inserted with angle</u>) FPC/FFC (insufficient inserted) Insert the FPC/FFC - Incorrect operation -- Incorrect operation with the exposed conductors face down. - Correct operation -Example 11 Pattern breakage - Incorrect operation Hook of guide for positioning FPC/FFC FPC/FFC TAB run on the guide FPC/FFC TAB run on the guide fits in FPC/FFC TAB. Example 12 Example 13 for positioning FPC/FFC. for positioning FPC/FFC.

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HR5 | DRAWING NO. | EDC-328248-99-00 | PART NO. | FH52-**S-0.5SH(99) | CDB NO. | CL580 | A 6

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- Incorrect operation -

FPC/FFC

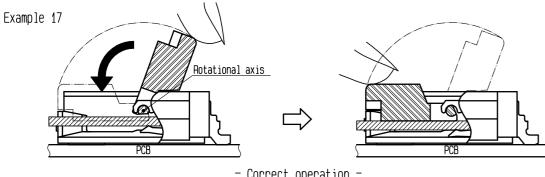
FPC/FFC

- Correct operation -

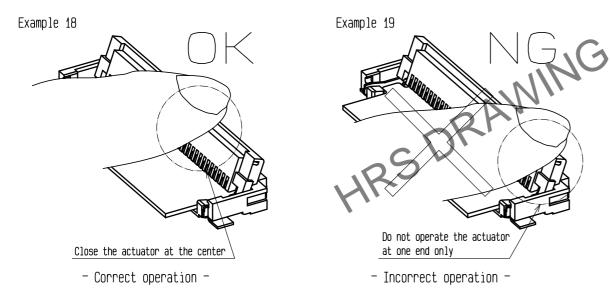
5. How to lock

The actuator rotates on its axis as shown below. Apply load to rotate the actuator after inserting the FPC/FFC. (example 17)

- -Close the actuator by carefully operating it at the center. (example 18)
- -Do not operate the actuator at one end only. (example 19)
- -The actuator must be operated by hand only.
- Do not insert any tools or fingernails into the connector.
- -Do not try to rotate the actuator further towards the opening direction while it is fully open.
- -Do not apply excessive force to the actuator other than force necessary for rotating the actuator.
- -Do not attempt to dislodge the actuator.
- -After the actuator is closed, the actuator should be parallel to the PCB mounting surface.



- Correct operation



6. Mating confirmation of the FPC/FFC

After the actuator is closed, please check if the actuator is parallel to the PCB mounting surface. Please keep the actuator stress free while it is near its 0° position. Any extra stress on actuator may lead to contact deformation.

- Incorrect operation -

7. How to unlock

Slowly flip up the actuator to release the lock. (example 20)

[Caution]

- -Open the actuator by carefully lifting it at the center (example 21)
- -Do not lift the actuator at one end only. (example 22)
- -Do not apply excessive force to the actuator in the direction parallel to the actuator while unlocking the actuator.
- -The actuator must be operated by hand only.
- Do not insert any tools or fingernails into the connector.
- -The actuator rotates 116 degrees max.

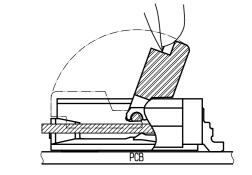
Example 20

Example 23

Do not try to rotate the actuator further towards the opening direction or apply any extra force to the actuator while it is fully open (example 23)

Rotational axis

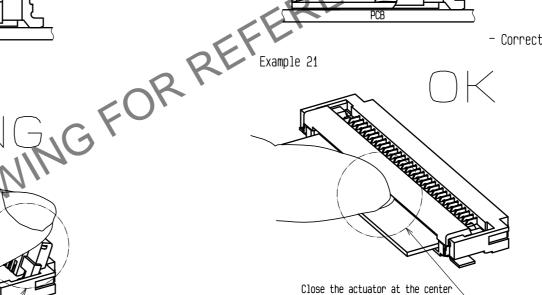
-Do not attempt to dislodge the actuator. (example 24)



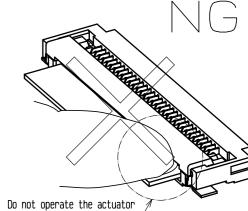
Example 22

- Correct operation

Example 24

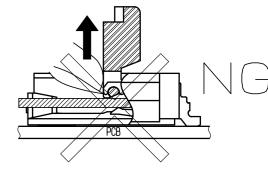


- Correct operation



at one end only

- Incorrect operation -



- Incorrect operation -

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8. How to remove FPC/FFC

This connector has a FPC/FFC positioning structure for guiding the FPC/FFC into the right position while insertion. After rotating the actuator to the fully open position, carefully withdraw the FPC/FFC

at about 10 degree angle to the PCB mounting surface (example 25)

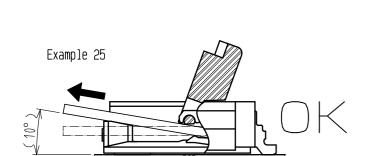
In case of using FPC/FFC without tabs, pull out the FPC/FFC horizontally along the PCB mounting surface.

[Caution]

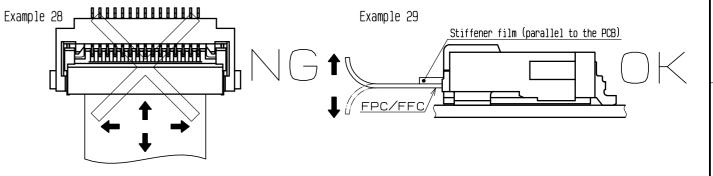
-For FPC/FFC removal, do not pull out the FPC/FFC horizontally.

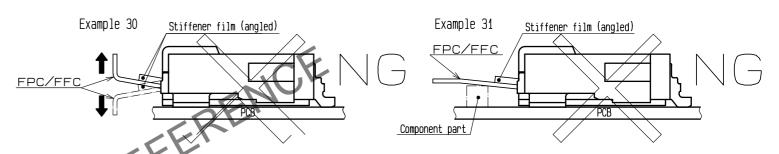
-Do not withdraw the FPC/FFC at extreme(inclined towards vertical) angle (example 26)

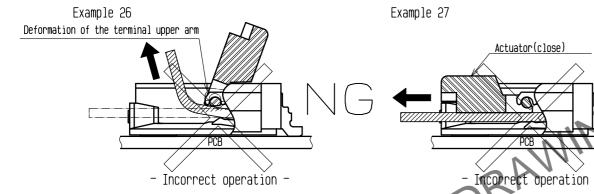
-Do not attempt to pull the FPC/FFC without unlocking the actuator (example 27)



Correct operation







Precautions for component layout

While the FPC/FFC is under tension due to the connecting configuration, extra stress may be applied to the connector. As a result, conduction failure may occur due to the extra stress.

In order to prevent such kind of conduction failure, please read through the following parts before making circuits/mechanism design.

[Caution]

-Avoid applying forces to/pulling the FPC/FFC along/perpendicular to the direction of FPC/FFC insertion (example 28)
Avoid pushing/pulling the FPC/FFC upwards/downwards.

—If the FPC/FFC has to be curled/bended in your cabling design.

please keep enough degree of freedom in your design to keep the FPC/FFC tension free.

In this regard, the stiffener should be parallel to the PCB (example 29)

—If the FPC/FFC has to be curled/bended in your cabling design, do not curl/bend the FPC/FFC area near the connector. This may lead to conduction failure or FPC/FFC breakage. (example 30)

It is recommended to keep the FPC/FFC fixed to avoid applying stress through the FPC/FFC to the connector.

—Do not mount other components underneath the FPC/FFC stiffener which may interfere with the connection (example 31)

-Follow the recommended FPC/FFC design.

Please consult with the FPC/FFC manufacturer about FPC/FFC bending performance and wire breakage strength while making design-Keep sufficient operating space for FPC/FFC insertion during layout design in order to avoid incorrect FPC/FFC insertion.

Please keep enough FPC/FFC length and component layout space for assembly during design process.

FPC/FFC with too short length may make the assembly difficult.

-Keep enough space for the rotation of the actuator during PCB and component layout design

-Please consult with our sales representative if you are using FPC/FFC with different configuration from our recommendation.

Instructions for mounting on the PCB

Follow the instructions shown below when mounting on the PCB.

[Caution]

-Refer to recommended layouts on page 1 for PCB and stencil pattern.

-Using either narrower land pattern or wider stencil pattern than recommendation

may end up with excessive amount of solder/flux climbing on contact.

Please inspect the size of solder fillet and flux climbing height of the mounted connector

while using different land/stencil pattern from our recommendation.

-Clearance between the mounting surface of the connector contact lead and the bottom of the housing is very small. Solder resist/silk screening applied underneath the connector may interfere with the connector. This may lead to soldering defect/insufficient fillet formation.

Please verify your solder resist/silk screening design carefully before implementing the design.

-Apply reflow temperature profile within the specified conditions.

For specific applications, the recommended temperature may vary depending on

type/volume/thickness of solder paste and size/thickness of PCB.

Please consult with your solder paste and equipment manufacturer for specific recommendations.

-Please try to minimize the warpage of the PCB. Soldering failure could still occur

due to the PCB warpage even if the coplanarity of the connecter is under 0.1mm.

-If the connector is mounting on FPC/FFC, please make sure to put a stiffener on the backside of the FPC/FFC.

Recommended stiffner: Glass epoxy material with thickness of 0.3 mm MIN.

-Do not apply 1 N or greater external force on the connector when unreeling or handling the connector before mounting.

Excessive mechanical stress may damage the connector before mounting.

<INSTRUCTION MANUAL(4)>

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Instructions for PCB handling after mounting the connector Instructions on manual soldering Follow the instructions shown below when mounting on the PCB. Follow the instructions shown below when soldering the connector manually during repair work, etc. [Caution] [Caution] - Splitting a large PCB into several pieces -Do not perform manual soldering with the FPC/FFC inserted into the connector. ·Installing mounting screw on PCB -Do not heat the connector excessively. Be very careful not to let the soldering iron touch During the assembly processes described above, care shall be taken any parts other than connector leads. Otherwise, the connector may be deformed or melted. so as not to give any stresses of deflection or twisting to the PCB. -Do not supply excessive solder (or flux). Stresses applied on PCB may damage the connector as well —The warpage of a 100 mm wide PCB should remain within $0.5\ mm$.(example 32) If excessive solder (or flux) is supplied on the contact lead, solder or flux may adhere to the contact point or rotating parts of the actuator, resulting in conduction failure or a rotation failure of the actuator. The warpage of PCB may apply excessive stress on the connnector and damage the connector. Supplying excessive solder to the metal fittings may hinder actuator rotation. -Please perform conduction check with caution. Conductivity probe may damage the connector contacts. resulting in breakage of the connector. -Attachment of foreign particles with the connector contact may lead to conduction failure. In this particular case, the conduction failure may be fixed by re-inserting the FPC/FFC. 100 Example 32 5 MAX Connector Connector 5 MAX Example 33 Deformation of the contact upper arm Conductivity probe EMPERATURE 150℃ 25 90~120 sec MAX 60 sec. (60 sec.) PRE-HEATING TIME SOLDERING TIME TIME (sec.) <Recommended reflow temperature profile> EDC-328248-99-00 FH52-**S-0.5SH(99) CL580 1 9/9 FORM HC0011-5-8 1