

5 6 7 8

Recommended PCB mounting pattern

Recommended stencil pattern

(Recommended stencil thickness: t=0.12)

Notes

NO.	MATERIAL	FINISH . REMARKS	NO.	MATERIAL	FINISH . REMARKS
4	Copper alloy	Tin plating (reflow finished) 1μm MIN and copper (interlayer) 15μm MIN over nickel 1μm MIN	9	(Connector)	
3	Copper alloy	Contact area lead: Gold plating 0.03μm MIN over nickel 1μm MIN. Others: Nickel plating 1μm MIN.	8	Polystyrene	
2	LCP	BLACK UL94V-0	7	Polyester	
1	LCP	GRAY UL94V-0	6	Polystyrene	

UNITS mm

SCALE 7 : 1

COUNT

DESCRIPTION OF REVISIONS

DESIGNED

CHECKED

DATE

APPROVED : HS. HIRAHARA 20220119

CHECKED : HS. HIRAHARA 20220119

DESIGNED : KN. KOBAYASHI 20220119

DRAWN : NM. YONEYAMA 20220119

DRAWING NO. EDC-388109-99-00

PART NO. FH63S-**S-0.5SH(99)

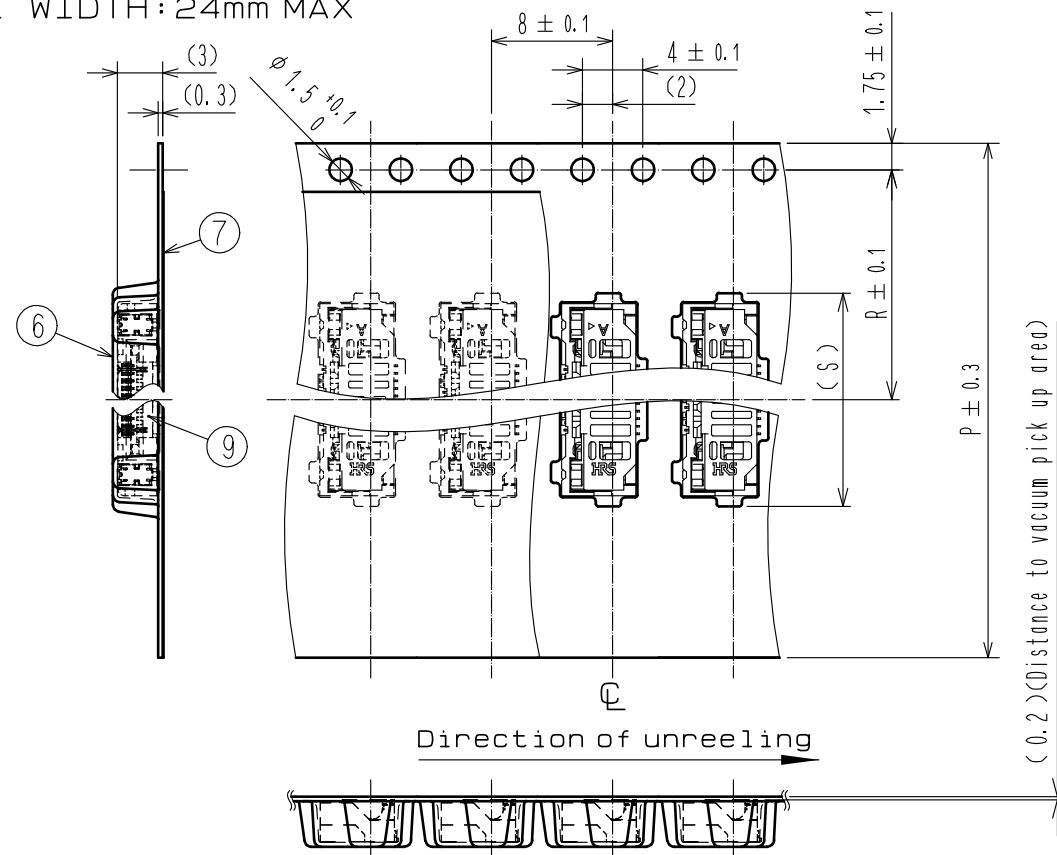
CODE NO. CL580

1/8

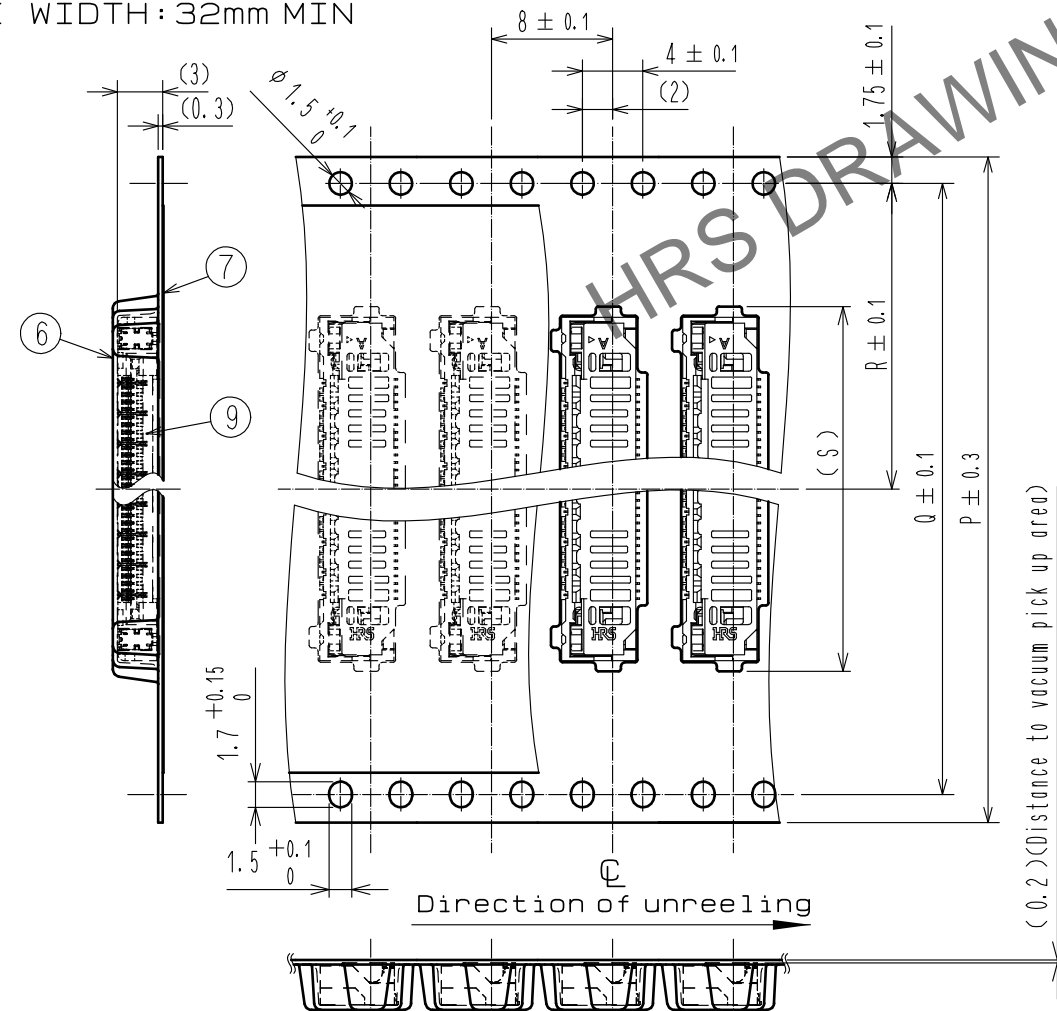
Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

Embossed carrier tape dimension (2:1)

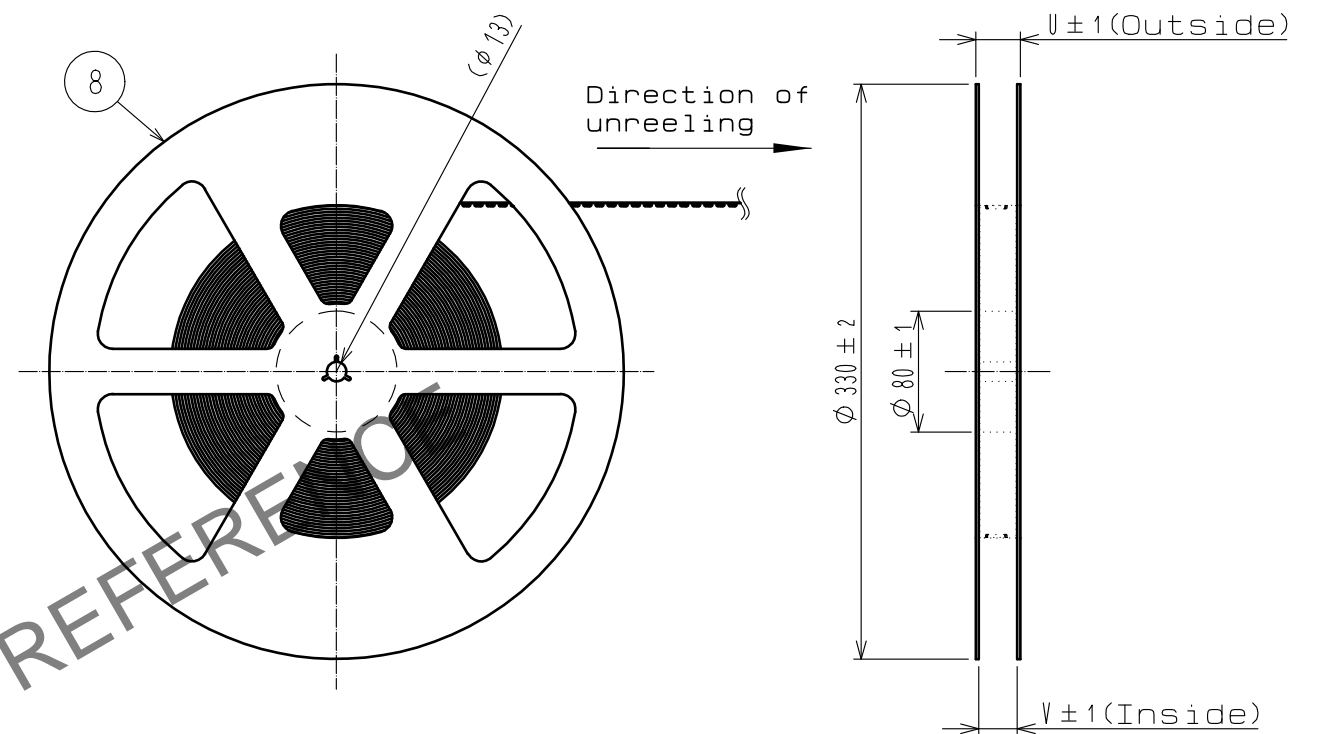
■ TAPE WIDTH: 24mm MAX



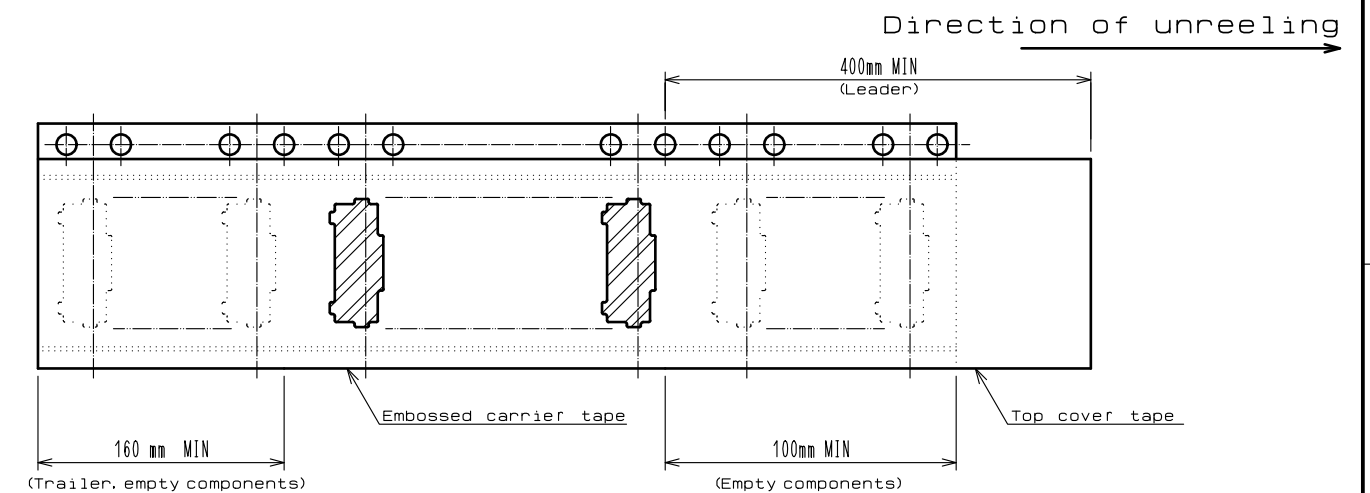
■ TAPE WIDTH: 32mm MIN



Reel dimension (No scale)



Leader, Trailer dimension (No scale)



- Notes
- 10. 1 reel : 500 connectors.
 - 11. Refer to JIS C 0806 and IEC 60286-3.
(Packaging of components for automatic handling)

<Packing specification>

HRS

DRAWING NO.	EDC-388109-99-00
PART NO.	FH63S-**S-0.5SH(99)
CODE NO.	CL580

3/8

Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

Part No.	Code Number	Number of contacts	Dimension of connector, PCB mounting pattern, metal mask, FPC, FFC, and shielded FFC												Dimension of drawing for packing					
			A	B	C	D	E	F	G	H	J	K	L	M	P	Q	R	S	U	V
FH63S-10S-0.5SH(99)	CL580-4414-0-99	10	12.7	4.5	5.55	4	2	7.15	9.9	3	7.1	5.5	9.1	4.9	24	—	11.5	14.1	29.4	25.4
FH63S-20S-0.5SH(99)	CL580-4419-0-99	20	17.7	9.5	6.55	9	1.5	12.15	14.9	6	12.1	10.5	14.1	9.9	32	28.4	14.2	19.1	37.4	33.4
FH63S-30S-0.5SH(99)	CL580-4415-0-99	30	22.7	14.5	5.55	14	2	17.15	19.9	8	17.1	15.5	19.1	14.9	44	40.4	20.2	24.1	49.4	45.4
FH63S-40S-0.5SH(99)	CL580-4416-0-99	40	27.7	19.5	10.55	19	1.5	22.15	24.9	11	22.1	20.5	24.1	19.9	44	40.4	20.2	29.1	49.4	45.4
FH63S-50S-0.5SH(99)		50	32.7	24.5	15.55	24	2	27.15	29.9	13	27.1	25.5	29.1	24.9	56	52.4	26.2	34.1	61.4	57.4
FH63S-60S-0.5SH(99)		60	37.7	29.5	20.55	29	1.5	32.15	34.9	16	32.1	30.5	34.1	29.9	56	52.4	26.2	39.1	61.4	57.4

※The products without code number are currently under planning.
Please contact HIROSE for detailed information about product variation.

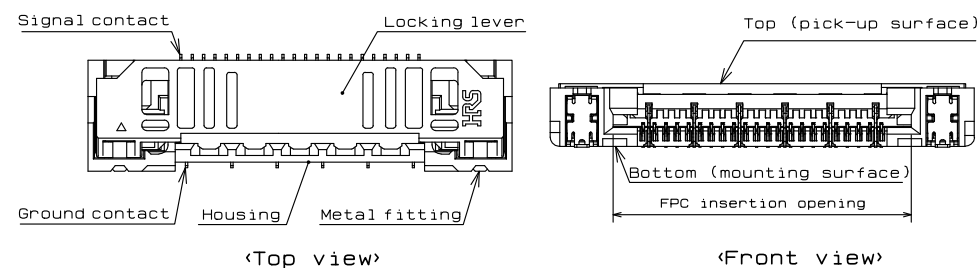
<Dimension table>

HRS	DRAWING NO.	EDC-388109-99-00	
	PART NO.	FH63S-**S-0.5SH(99)	
	CODE NO.	CL580	<div><div></div><div>4</div><div>8</div></div>

Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

This connector requires delicate and careful handling.
To prevent connector/FPC breakage and contact failure (mating failure, FPC pattern breakage, etc),
read through the instructions shown below and handle the connector properly.
This instruction manual is applicable to usage with FPC/FFC/shielded FFC.

[Connector part nomenclature]



[Operation and precautions]

1. Initial condition

The product is supplied with the locking lever closed.
Locking lever does not have to be operated before inserting FPC.

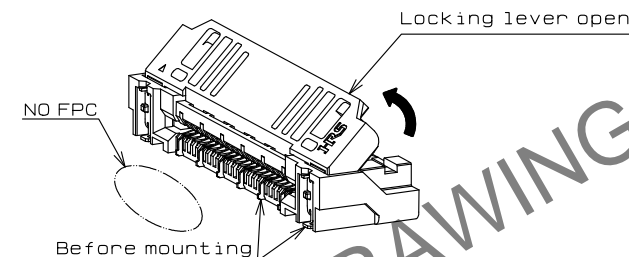
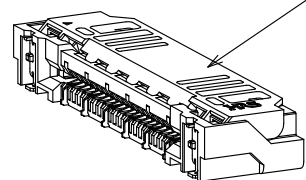
[Caution]

- Do not open the locking lever when the FPC is not inserted.
The locking lever is to be used only when extracting the FPC (Example 1).
- Do not insert FPC or operate locking lever before mounting (Example 1).

Example 1)

- When delivered -

Locking lever close



2. How to insert FPC

Insert the FPC into the connector opening horizontally to the PCB surface (Example 2).
Insert it properly to the very end.

[Caution]

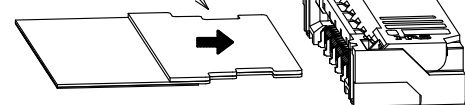
- Make sure the locking lever is closed when inserting the FPC.
Do not insert the FPC when the locking lever is open (Example 3).
- Do not insert the FPC when the locking lever is pressed from above a finger. (Example 4).
- Align both sides of FPC horizontally to the sides of the connector opening and insert straight forward.
- Do not twist the FPC to up and down or right and left or an angle (Example 5, 6).

Example 2)

OK

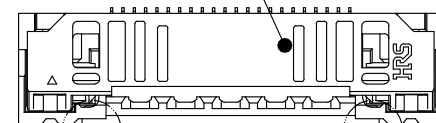
Locking lever close

FPC (Horizontal state)



OK

Locking lever close



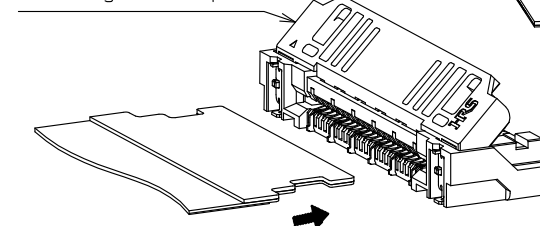
FPC (Horizontal state)

Align both sides of FPC horizontally to the sides of the connector opening and insert straightforward.

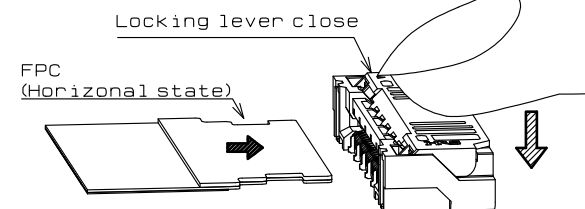
Example 3)

NG

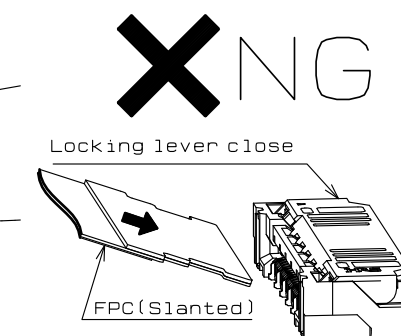
Locking lever open



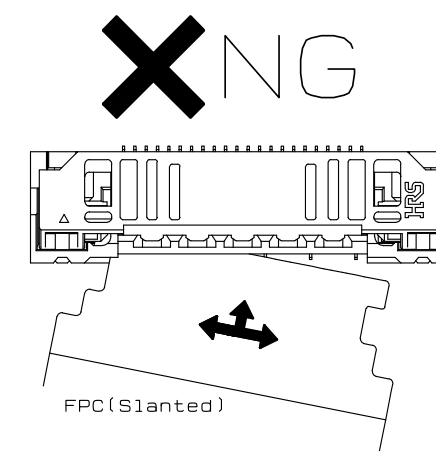
Example 4)



Example 5)



Example 6)



3. FPC insertion check

Make sure that the FPC tabs are located in proper position after FPC insertion (Example 7).
(The FPC position is to be aligned by the protrusion of the locking lever.)

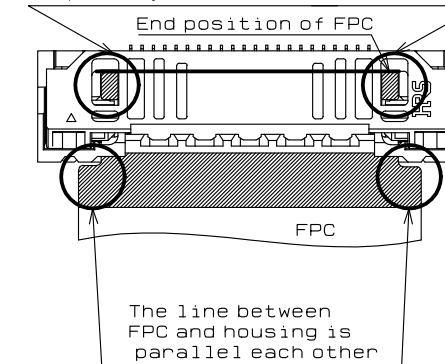
[Caution]

- Do not insert the FPC at an angle and/or stop it before insertion is completed (Example 8, 9).
- As this product is designed for one action locking, the locking lever does not have to be operated after inserting FPC.

Example 7)

OK

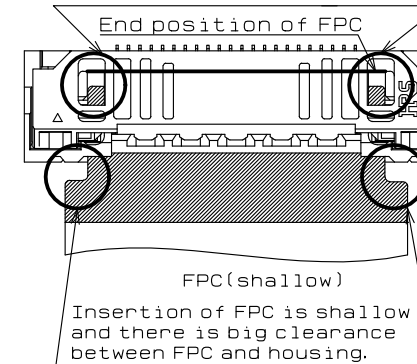
Tabs of FPC are visible when FPC is completely inserted to the end



Example 8)

NG

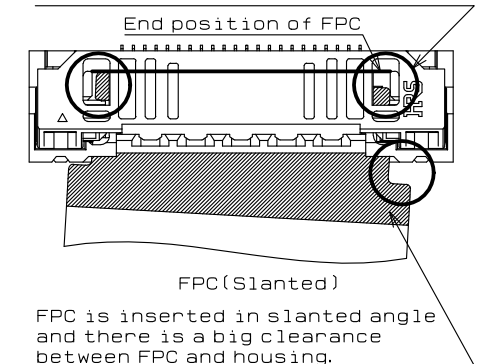
Insertion of FPC is shallow and not fully inserted to the end.



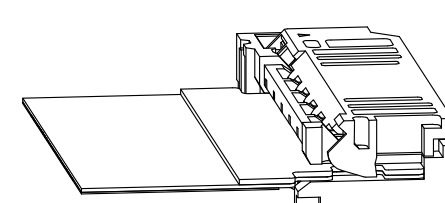
Example 9)

NG

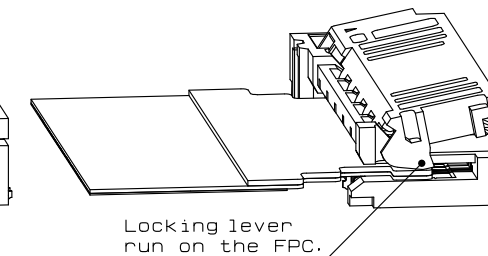
FPC is inserted in slanted angle and not fully inserted to the end.



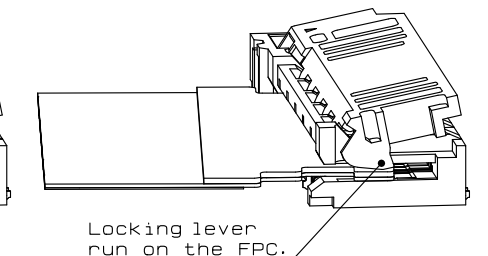
Section - locking area -



Section - locking area -



Section - locking area -



<Instruction manual(1)>

HS

DRAWING NO.	EDC-388109-99-00
PART NO.	FH63S-**S-0.5SH(99)
CODE NO.	CL580

5/8

Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

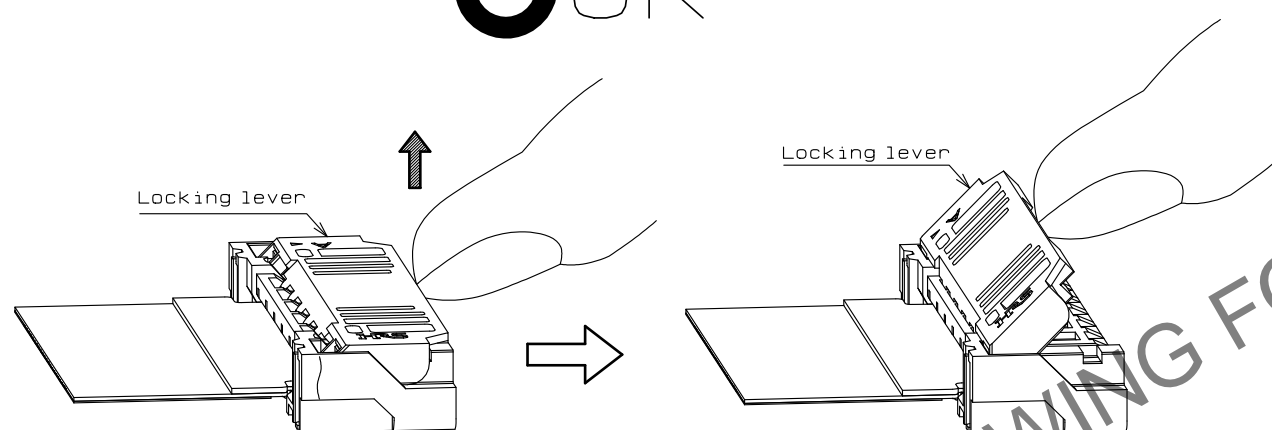
4. How to release the lock
Slowly flip up the locking lever to release the lock (Example 10).

[Caution]

- To open the locking lever, operate at the center of the locking lever (Example 11).
- To open the locking lever, do not operate the locking lever at one end only (Example 12).
- The locking lever is opened up to the movable limit, 45 degree.
Do not open the locking lever beyond the specified degree or apply excess force to the locking lever (Example 13).
- Do not pick the locking lever to lift and pull it (Example 14).
- Operate the locking lever by hand without using sharp tool such as Tweezers. (Example 15).
- Do not apply excess force to the housing during the operation (Example 16).
- Do not try to open the lock lever from the FPC insertion side, as the locking lever is designed with the opposite direction from the FPC insertion direction (Example 17).

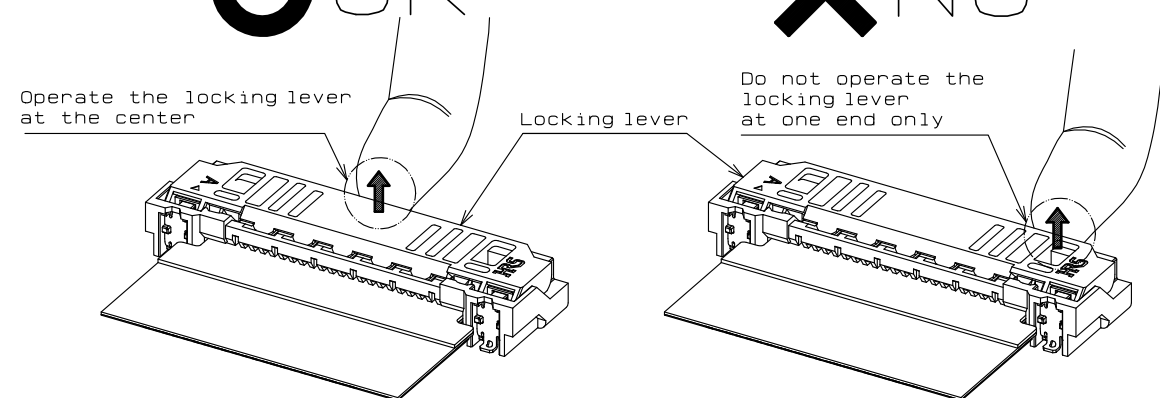
Example 10)

OK



Example 11)

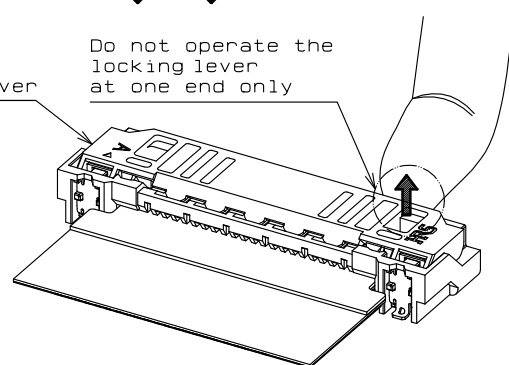
OK



Example 12)

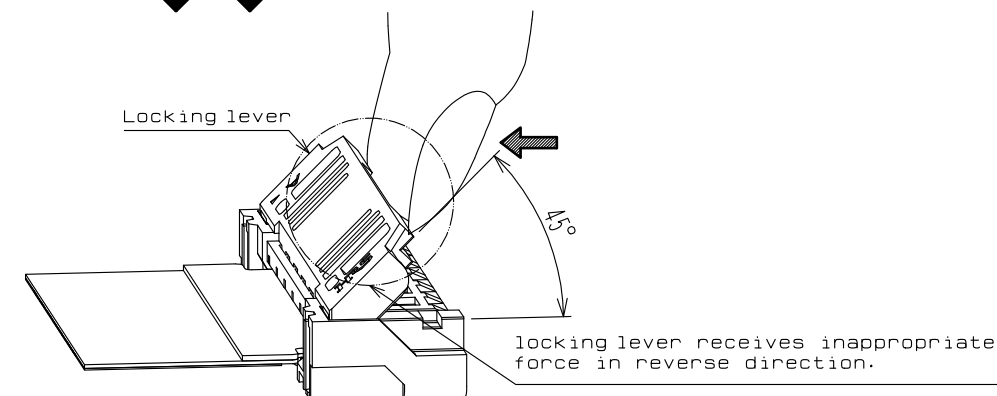
NG

Do not operate the locking lever at one end only



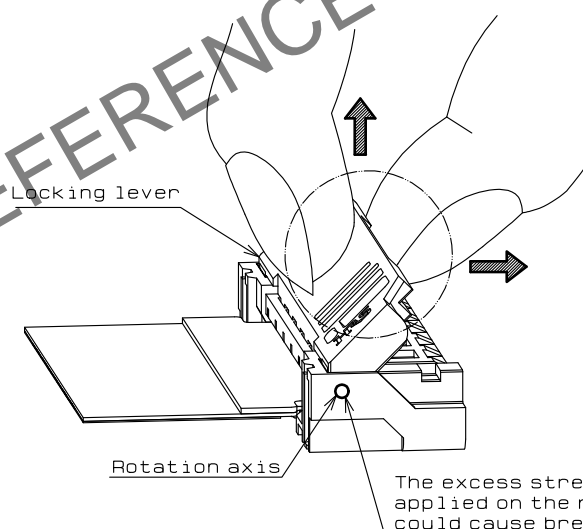
Example 13)

NG



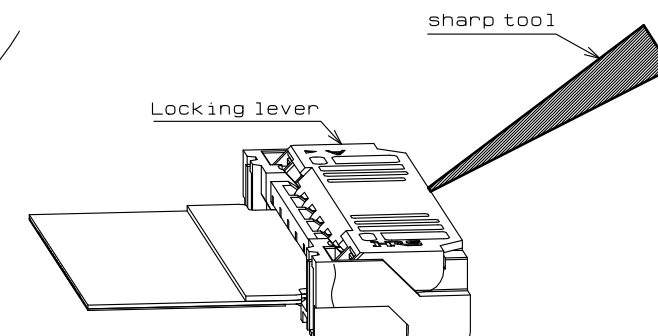
Example 14)

NG



Example 15)

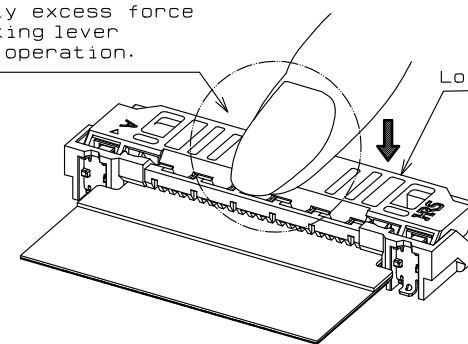
NG



Example 16)

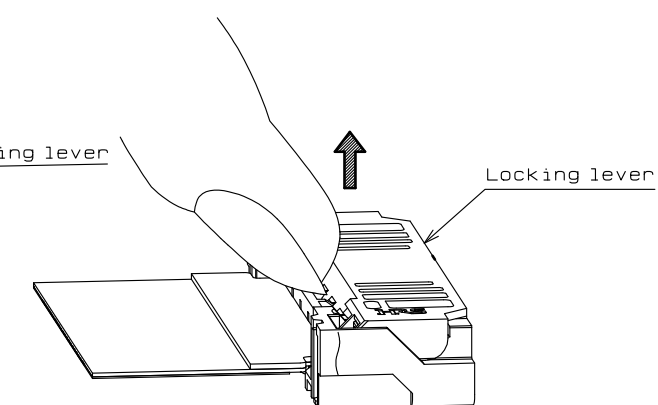
NG

Do not apply excess force to the locking lever during the operation.



Example 17)

NG



<Instruction manual(2)>

HRS

DRAWING NO.	EDC-388109-99-00
PART NO.	FH63S-**S-0.5SH(99)
CODE NO.	CL580

6/8

Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

5.How to remove FPC

After flip up the locking lever to the fully opened position carefully withdraw the FPC and close the lock lever(Example 18).
Do not withdraw the FPC on the condition that the locking lever is held by a finger(Example 19).
The lock lever close automatically when the FPC is removed, but this is not a defect of the product.(Example 20).

[Caution]

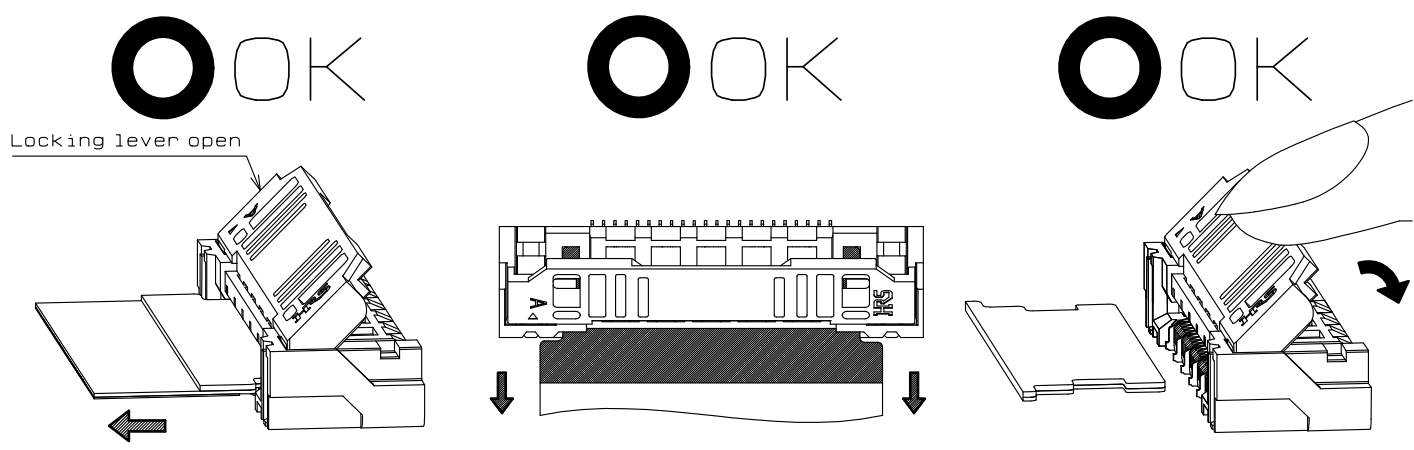
- Do not attempt to pull the FPC without unlocking the locking lever(Example 21).
- This connector has a temporary FPC holding structure with the locking lever.
For FPC removal,do not pull out the FPC upward or angled direction(Example 22).

Example 18)

- Removal FPC -

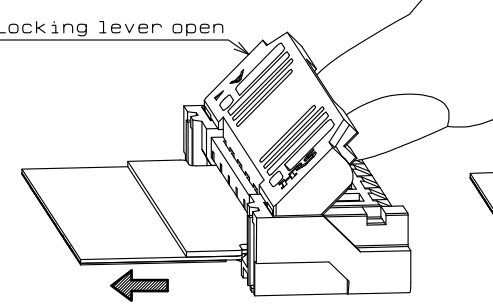
- Removal FPC -

- Close the lock lever -



Example 19)

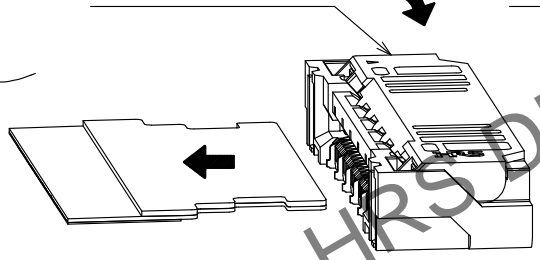
✗ NG



Example 20)

- After removing FPC -

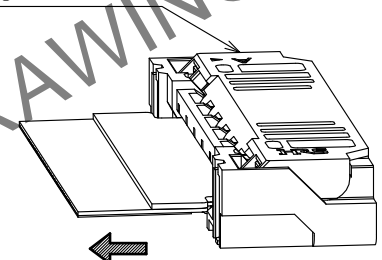
Locking lever close



Example 21)

✗ NG

Locking lever close

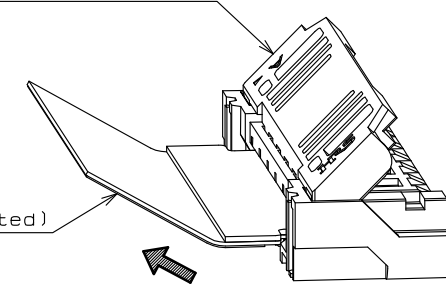


Example 22)

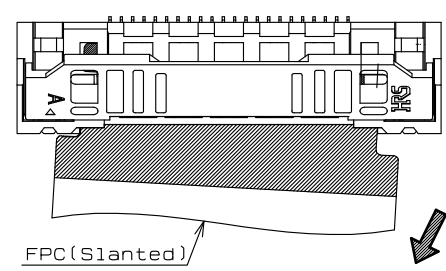
✗ NG

Locking lever open

FPC(Slanted)



✗ NG



[Precautions for component layout]

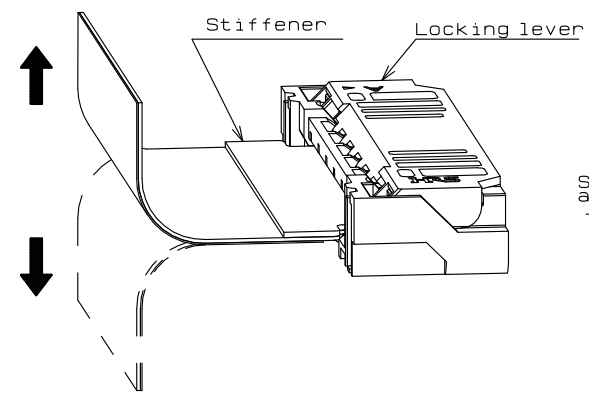
Depending on a FPC rounding, a load is applied to the connector, and a contact failure may occur.
To prevent a failure, take the following notes into a consideration during mechanism design.

[Caution]

- When fixing FPC after FPC cabling, avoid pulling FPC, and route the wire FPC with slack.
In this regard,the stiffener is parallel to the PCB (Example23).
- Avoid applying forces to FPC in vertical or horizontal directions.
Do not bend the FPC excessively near the connector during use, or it may cause contact failure or FPC breakage.
Stabilizing the FPC is recommended (Example 24,25).
- Do not mount other components touching to the FPC underneath the FPC stiffener (Example26).
- Make adjustments with the FPC manufacturer for FPC bending performance and wire breakage.
- Keep a sufficient FPC insertion space in the stage of the layout in order to avoid incorrect FPC insertion.
Appropriate FPC length and component layout are recommended for assembly ease.
Too short FPC length makes assembly difficult.
- Keep spaces for the locking lever movement and its operation for PCB design and component layout.
- Please consult with our sales representative if you are using FPC with different configuration from our recommendation.

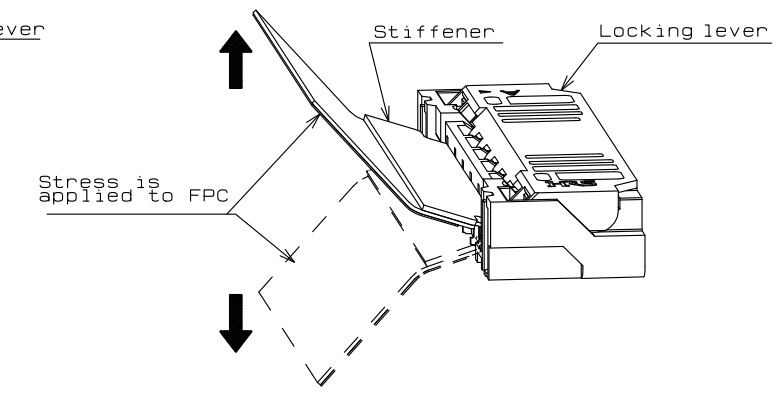
Example 23)

OK



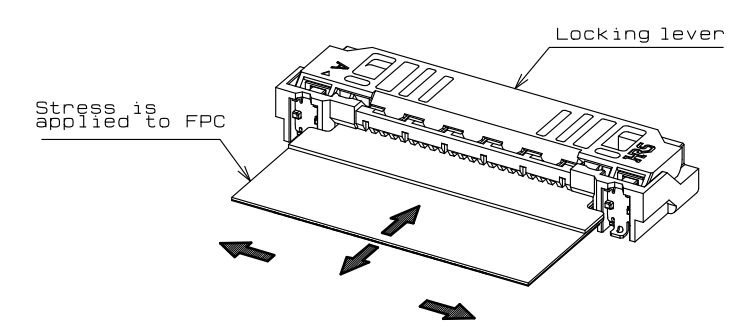
Example 24)

✗ NG



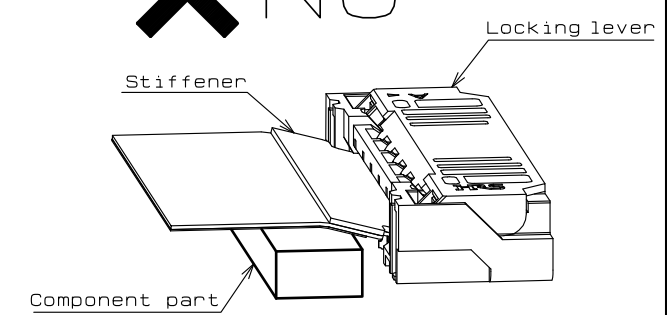
Example 25)

✗ NG



Example 26)

✗ NG



<Instruction manual(3)>

HRS	DRAWING NO.	EDC-388109-99-00
	PART NO.	FH63S-**S-0.5SH(99)
	CODE NO.	CL580
		7/8

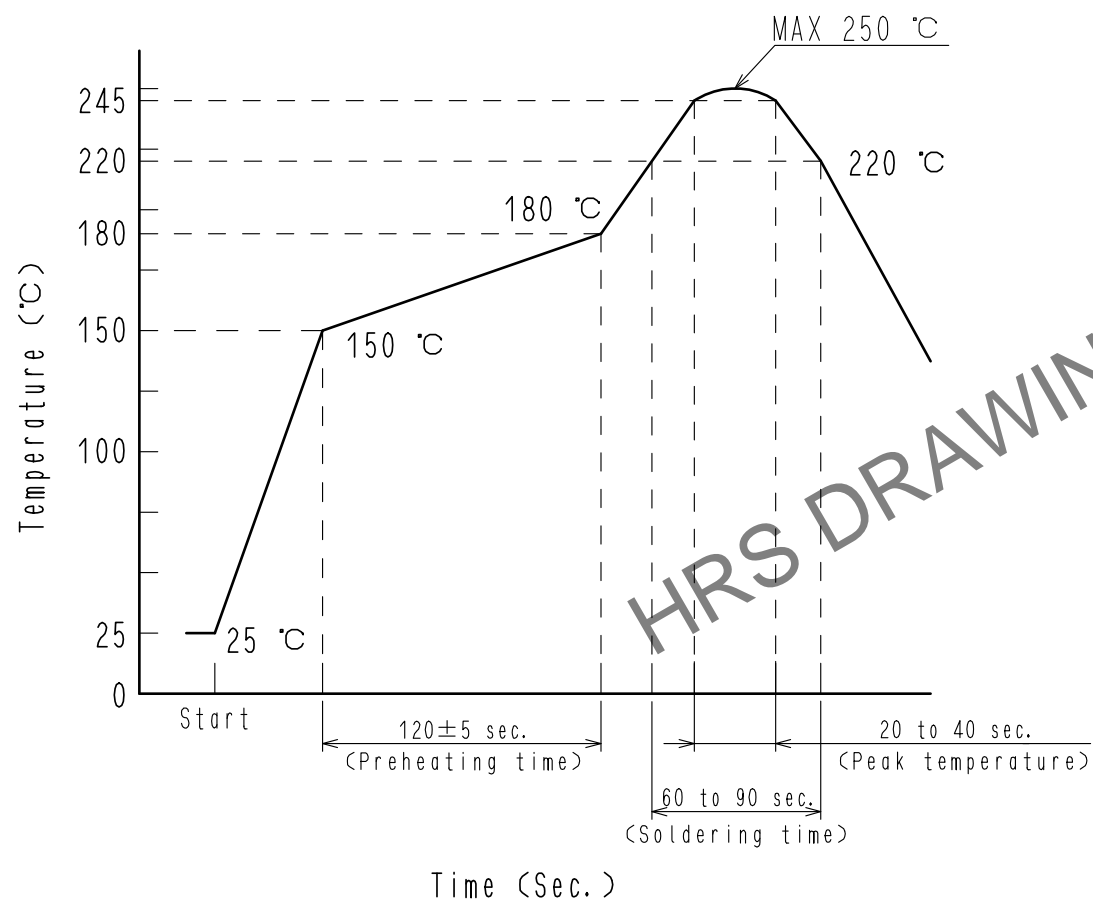
Feb.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

[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 lead 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.
- 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 1.0 N or greater external force when unreel or pick and place the connector etc. or it may get broken.
- 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. The temperatures mentioned below refer to the PCB surface temperature near the connector contact leads.
- Reflow method: IR reflow
- Number of reflow cycles: 2 cycles MAX.



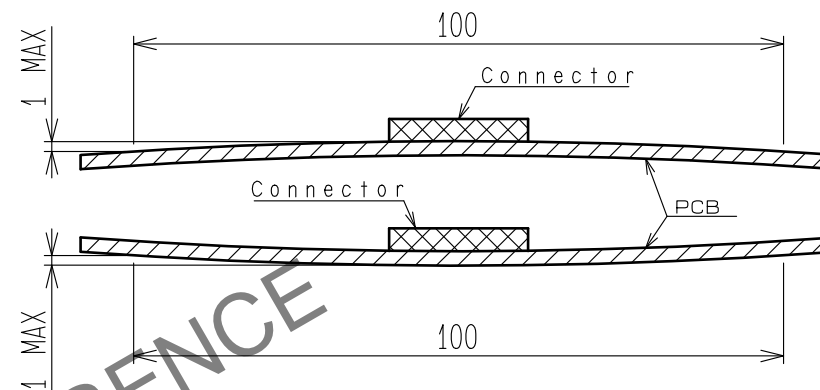
[Instructions for PCB handling after mounting the connector]

Follow the instructions shown below when mounting on the PCB.

[Caution]

- Splitting a large PCB into several pieces
 - Installing mounting screw on PCB
- During the assembly processes described above, care shall be taken so as not to give any stresses of deflection or twisting to the PCB. Stresses applied on PCB may damage the connector as well.
- The warpage of a 100 mm wide PCB should remain within 1.0 mm.
 - The warpage of PCB may apply excessive stress on the connector and damage the connector (Example 27).

Example 27)



[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 inserted into the connector.
 - Do not heat the connector excessively. Be very careful not to let the soldering iron touch 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 contact leads, solder or flux may adhere to the contacts, resulting in poor conduction. Supplying excessive solder to the metal fittings may hinder locking lever rotation, resulting in breakage of the connector.

[Other]

- 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.

<Instruction manual(4)>

HRS

DRAWING NO.	EDC-388109-99-00
PART NO.	FH63S-**S-0.5SH(99)
CODE NO.	CL580

8/8