PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

FH26 Series

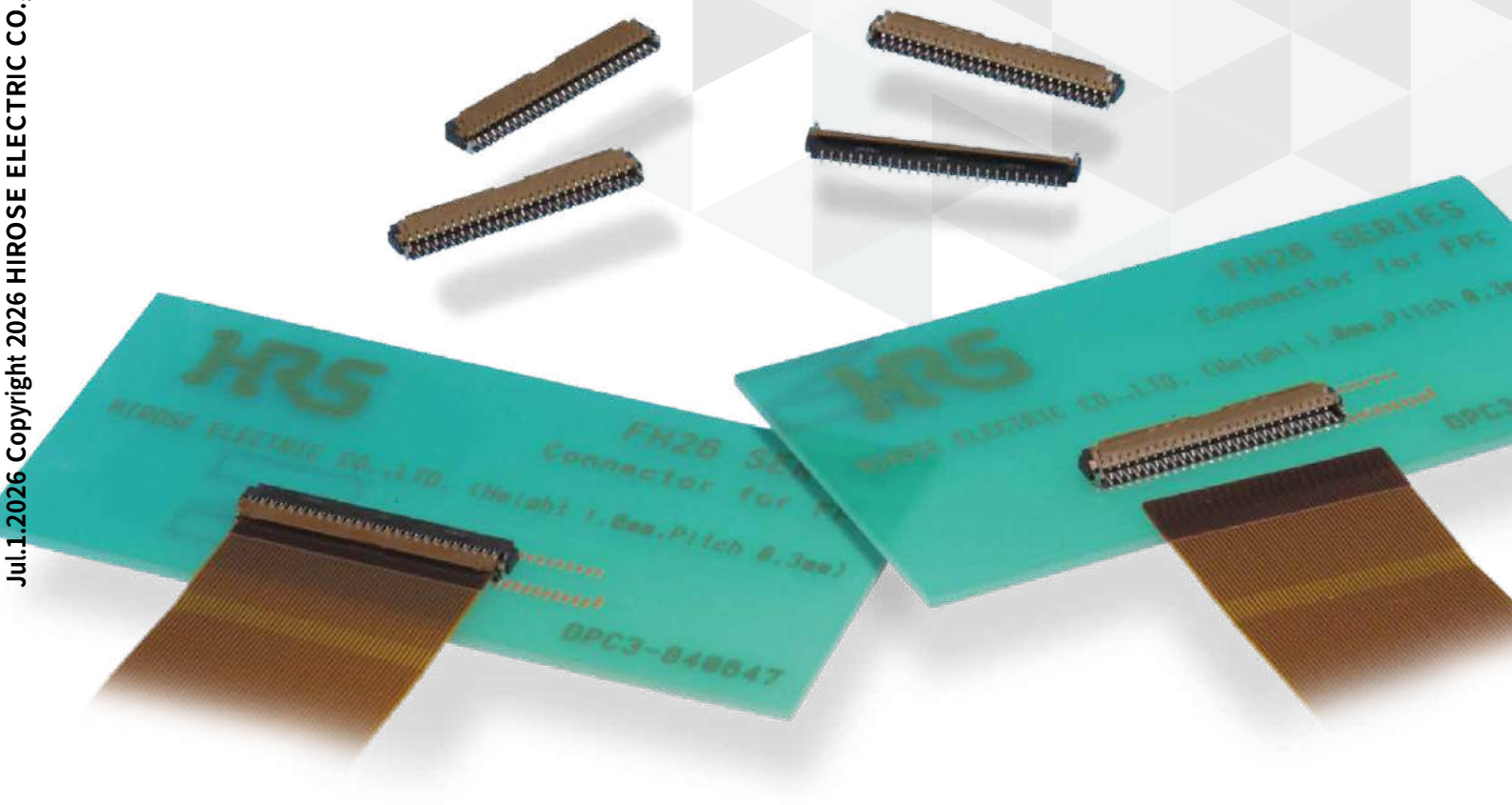
0.3mm Pitch, 1.0mm Height FPC Connector

FH™ Flip-Lock Pioneer Hirose

P= 0.3 mm — P= 0.3mm

Front Flip

Wide Variation



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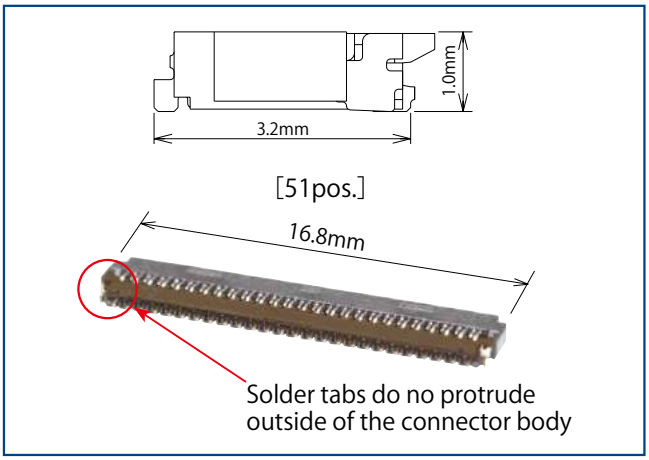
May 2017 ③

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Features

1. Low-profile 0.3mm pitch FPC connector

Ultra-thin design, 1.0mm height, 3.2mm width for space-saving design.
・30% reduction in PCB footprint
・40% reduction in weight
(Compared to our 0.3mm pitch FH23 Series 51 position connector.)



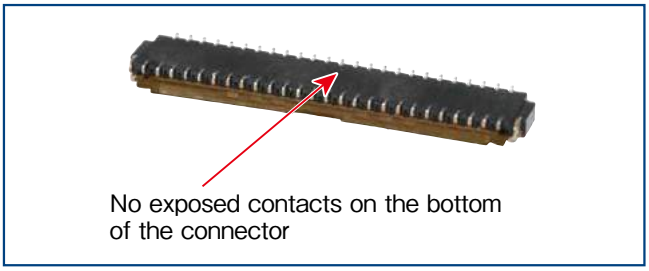
Achieve a height of 1.0mm and mated depth of 3.2mm.

2. Easy PCB Mounting

The leads are double sided and have a 0.6mm mounting lead pitch to simplify mounting.

3. No pattern prohibited area on bottom of connector (Overmolding design)

The bottom of this connector is fully molded to eliminate contact exposure and remove any restrictions to PCB patterning and design.



4. Superior Operability with Flip Lock

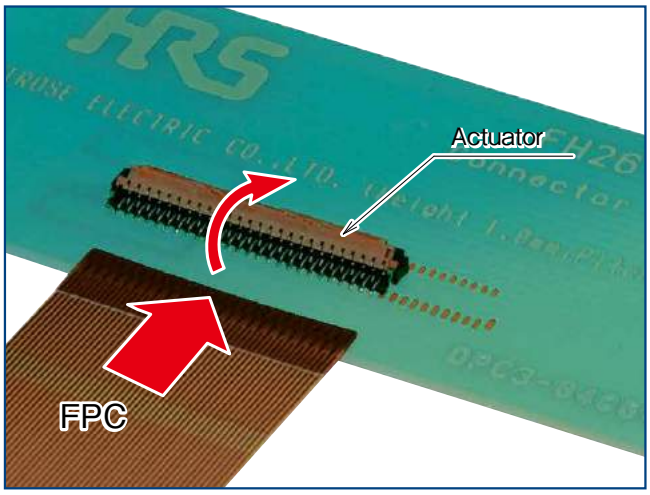
The flip lock (one-touch rotating ZIF mechanism) is easier to operate and works with a light force. A clear tactile click confirms the completion of the mating process.

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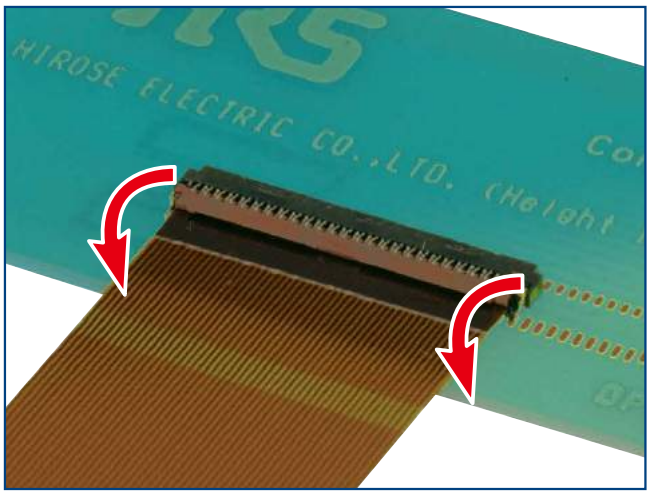
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5. Easy FPC insertion

The metal FPC insertion guides helps to make the FPC insertion process easier. The housing also has a damage-resistant design.



FPC Insertion



Lock Completion

6. Compatible with standard 0.2mm FPC Thickness

This connector accepts standard 0.2mm thick FPC. (The proper FPC stiffener thickness prevents FPC deformation and eases insertion and mating.)

7. Pick & Place Mounting

Offered in tape and reel packaging that is compatible with automatic machine mounting. (5,000 pieces per reel)

8. Halogen-free

All materials and substances used to produce this product comply with Halogen-free standards.

* Defined according to IEC61249-2-21
Br : 900ppm Max., Cl : 900ppm Max., Br+Cl : 1,500ppm Max.

9. Multiple packing options

The standard packaging is 5,000 pieces per reel, but it is also offered in a 500 piece reel. (The outer diameter of the reel will be ϕ180mm in this case.)

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Product Specifications

Rated Current (Note 1)	0.2A	Operating Temperature (Note 2)	-55 to +85℃
Rated Voltage	30V AC/DC	Storage Temperature Range (Note 3)	-10 to +50℃

Operating Humidity Range	Relative humidity 90% Max. (No condensation)	Storage Humidity Range	Relative humidity 90% Max. (No condensation)

Recommended FPC	Thickness : = 0.2±0.03mm Gold Plated

Item	Specification	Conditions
Insulation Resistance	50MΩ Min.	100V DC
Withstanding Voltage	No flashover or insulation breakdown.	90V AC for 1 min.
Contact Resistance	100mΩ Max. Including FPC conductor resistance	1mA
Mating Durability (Insertion/ Withdrawal)	Contact resistance : 100mΩ Max. No damage, cracks, or parts dislocation.	10 cycles
Vibration	No electrical discontinuity of 1μs or more. Contact resistance : 100mΩ Max. No damage, cracks, or parts dislocation.	Frequency : 10 to 55 Hz, single amplitude of 0.75mm, 10 cycles, 3 directions.
Shock	No electrical discontinuity of 1μs. Min. Contact resistance : 100mΩ Max. No damage, cracks, or parts dislocation.	Acceleration of 981 m/s^2, 6 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis
Humidity (Steady State)	Contact resistance :100mΩ Max. Insulation resistance : 50MΩ Min. No affect on appearance or performance.	96 hours at temperature of 40±2℃ and humidity of 90% to 95%.
Temperature Cycle	Contact resistance : 100mΩ Max. Insulation resistance : 50MΩ Min. No damage, cracks, or parts looseness.	Temperature : -55 ℃→ +15℃ to +35℃→ +85℃ → +15℃ to +35℃ Time : 30 → 2 to 3 → 30 → 2 to 3 (Minutes) 5 cycles
Resistance to Soldering Heat	No deformation of components affecting performance.	Reflow : At the recommended temperature profile Manual soldering: 350℃ +/-10℃ for 5±1 seconds

Note 1 : When passing the current through all of the contacts, use 70% of the rated current.
Note 2 : Includes temperature rise caused by current flow.
Note 3 : The term "storage" refers to products stored for long period of time prior to mounting and use. Operating temperature and humidity range applies to mounted connectors in the non-energized state during storage, shipment and transportation.

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Materials / Finish

Part	Material	Finish	Remarks
Insulator	LCP	Color : Black	UL94V-0
	PA	FH26W Series : Light Brown	UL94HB
Contacts	Phosphor Bronze	Gold Plated	-
Retention Tabs		Pure Tin Reflow Plated	-

Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

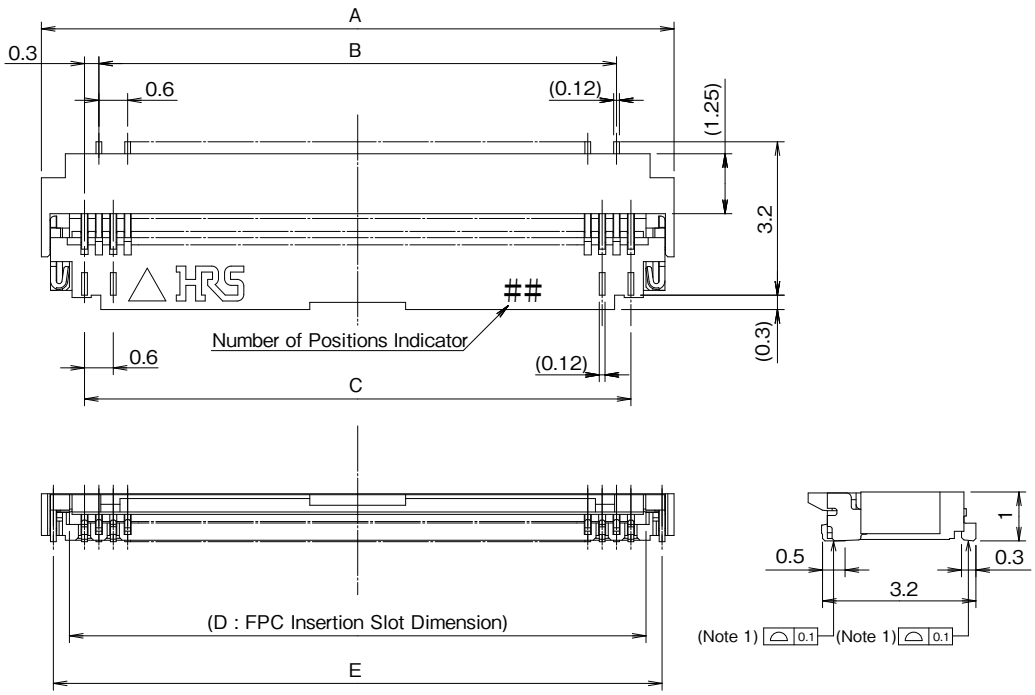
FH26W - 51S - 0.3 SHW (##)
❶ ❷ ❸ ❹ ❺

❶ Series Name	FH26W	❹ Termination Type	SHW : SMT Horizontal Staggered Mounting Type
❷ No. of Pos.	13 to 71	❺ Specifications	(60) : Gold Plating with Nickel Barrier, 5,000pcs per reel (97) : Gold Plating with Nickel Barrier, 500pcs per reel
❸ Contact Pitch	0.3mm		

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Connector Dimensions



Note 1 : The coplanarity of each terminal lead within specified dimension is 0.1mm Max.
Note 2 : Packaged on tape and reel only. Check packaging specification.
Note 3 : Please note a sink hole might be added for improvements. Black spots may appear on the resin but this does not affect product performance.
Note 4 : After reflow, the terminal plating may change color, however this does not represent a quality issue.

Note : Embossed tape reel packaging.

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Connector Dimension Table

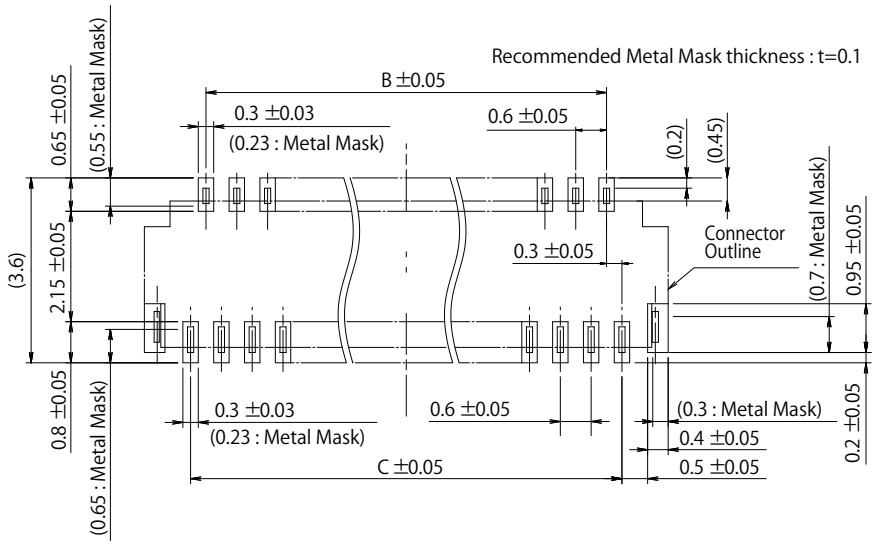
Unit : mm

Part No.	HRS No.	No. of Pos.	A	B	C	D	E	Purchase Unit	
								(60)	(97)
FH26W-13S-0.3SHW(##)	CL0580-2401-1-##	13	5.4	3.0	3.6	4.23	4.9	5,000pcs per reel	500pcs per reel
FH26W-15S-0.3SHW(##)	CL0580-2402-4-##	15	6.0	3.6	4.2	4.83	5.5		
FH26W-17S-0.3SHW(##)	CL0580-2403-7-##	17	6.6	4.2	4.8	5.43	6.1		
FH26W-19S-0.3SHW(##)	CL0580-2437-9-##	19	7.2	4.8	5.4	6.03	6.7		
FH26W-21S-0.3SHW(##)	CL0580-2404-0-##	21	7.8	5.4	6.0	6.63	7.3		
FH26W-23S-0.3SHW(##)	CL0580-2405-2-##	23	8.4	6.0	6.6	7.23	7.9		
FH26W-25S-0.3SHW(##)	CL0580-2406-5-##	25	9.0	6.6	7.2	7.83	8.5		
FH26W-27S-0.3SHW(##)	CL0580-2400-9-##	27	9.6	7.2	7.8	8.43	9.1		
FH26W-29S-0.3SHW(##)	CL0580-2407-8-##	29	10.2	7.8	8.4	9.03	9.7		
FH26W-31S-0.3SHW(##)	CL0580-2408-0-##	31	10.8	8.4	9.0	9.63	10.3		
FH26W-33S-0.3SHW(##)	CL0580-2409-3-##	33	11.4	9.0	9.6	10.23	10.9		
FH26W-35S-0.3SHW(##)	CL0580-2410-2-##	35	12.0	9.6	10.2	10.83	11.5		
FH26W-37S-0.3SHW(##)	CL0580-2411-5-##	37	12.6	10.2	10.8	11.43	12.1		
FH26W-39S-0.3SHW(##)	CL0580-2412-8-##	39	13.2	10.8	11.4	12.03	12.7		
FH26W-41S-0.3SHW(##)	CL0580-2413-0-##	41	13.8	11.4	12.0	12.63	13.3		
FH26W-45S-0.3SHW(##)	CL0580-2414-3-##	45	15.0	12.6	13.2	13.83	14.5		
FH26W-51S-0.3SHW(##)	CL0580-2415-6-##	51	16.8	14.4	15.0	15.63	16.3		
FH26W-57S-0.3SHW(##)	CL0580-2417-1-##	57	18.6	16.2	16.8	17.43	18.1		
FH26W-61S-0.3SHW(##)	CL0580-2418-4-##	61	19.8	17.4	18.0	18.63	19.3		
FH26W-71S-0.3SHW(##)	CL0580-2419-7-##	71	22.8	20.4	21.0	21.63	22.3		

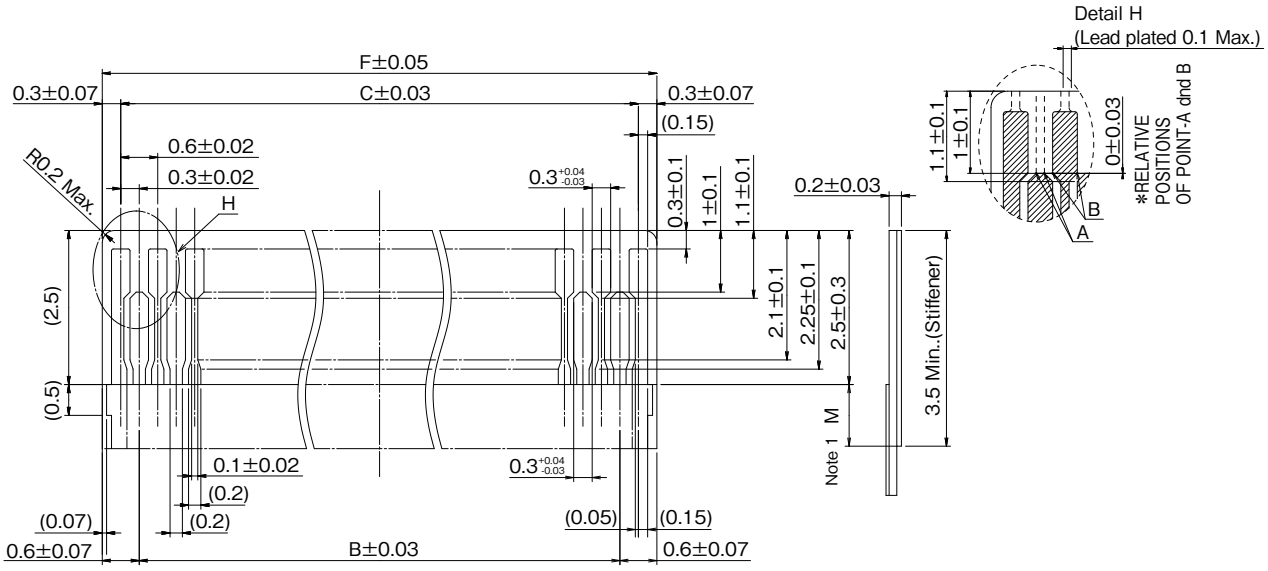
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Recommended PCB Mounting Pattern and Metal Mask Dimensions



● Recommended FPC Dimensions



Note : If the stiffener cannot be more that 3.5mm due to the FPC design, set Dimension M to a minimum of 0.5mm.

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● Recommended Land Pattern, Metal Mask and FPC Dimensions Table

Unit : mm

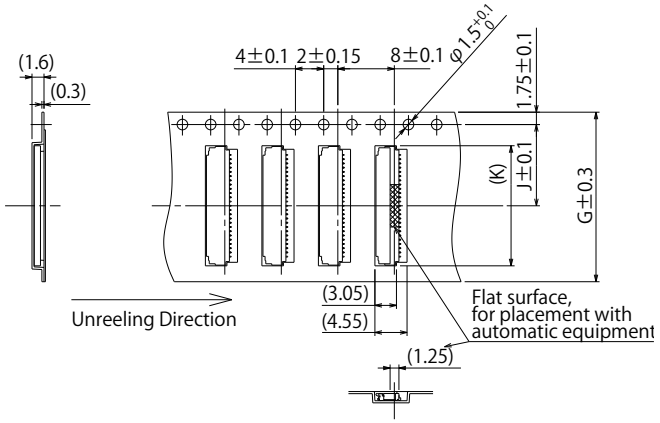
Part No.	HRS No.	No. of Pos.	B	C	F
FH26W-13S-0.3SHW(##)	CL0580-2401-1-##	13	3.0	3.6	4.2
FH26W-15S-0.3SHW(##)	CL0580-2402-4-##	15	3.6	4.2	4.8
FH26W-17S-0.3SHW(##)	CL0580-2403-7-##	17	4.2	4.8	5.4
FH26W-19S-0.3SHW(##)	CL0580-2437-9-##	19	4.8	5.4	6.0
FH26W-21S-0.3SHW(##)	CL0580-2404-0-##	21	5.4	6.0	6.6
FH26W-23S-0.3SHW(##)	CL0580-2405-2-##	23	6.0	6.6	7.2
FH26W-25S-0.3SHW(##)	CL0580-2406-5-##	25	6.6	7.2	7.8
FH26W-27S-0.3SHW(##)	CL0580-2400-9-##	27	7.2	7.8	8.4
FH26W-29S-0.3SHW(##)	CL0580-2407-8-##	29	7.8	8.4	9.0
FH26W-31S-0.3SHW(##)	CL0580-2408-0-##	31	8.4	9.0	9.6
FH26W-33S-0.3SHW(##)	CL0580-2409-3-##	33	9.0	9.6	10.2
FH26W-35S-0.3SHW(##)	CL0580-2410-2-##	35	9.6	10.2	10.8
FH26W-37S-0.3SHW(##)	CL0580-2411-5-##	37	10.2	10.8	11.4
FH26W-39S-0.3SHW(##)	CL0580-2412-8-##	39	10.8	11.4	12.0
FH26W-41S-0.3SHW(##)	CL0580-2413-0-##	41	11.4	12.0	12.6
FH26W-45S-0.3SHW(##)	CL0580-2414-3-##	45	12.6	13.2	13.8
FH26W-51S-0.3SHW(##)	CL0580-2415-6-##	51	14.4	15.0	15.6
FH26W-57S-0.3SHW(##)	CL0580-2417-1-##	57	16.2	16.8	17.4
FH26W-61S-0.3SHW(##)	CL0580-2418-4-##	61	17.4	18.0	18.6
FH26W-71S-0.3SHW(##)	CL0580-2419-7-##	71	20.4	21.0	21.6

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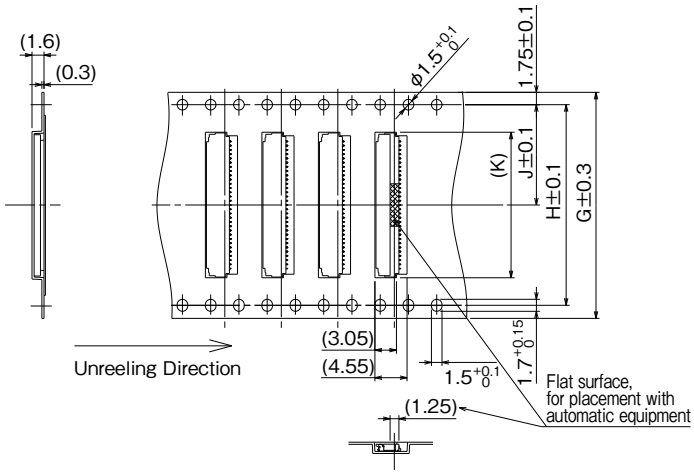
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Packaging Specification

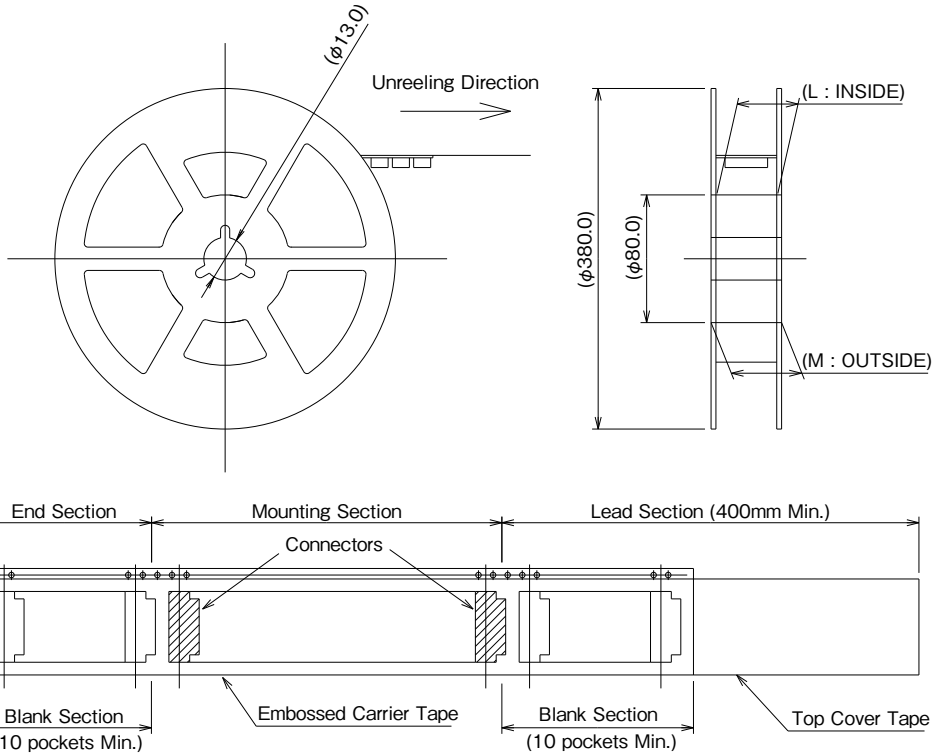
● Embossed Carrier Tape Dimensions (Tape Width 24mm Max.)



● Embossed Carrier Tape Dimensions (Tape Width 32mm Min.)



● Reel Dimensions



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Packaging Dimension Table

Unit : mm

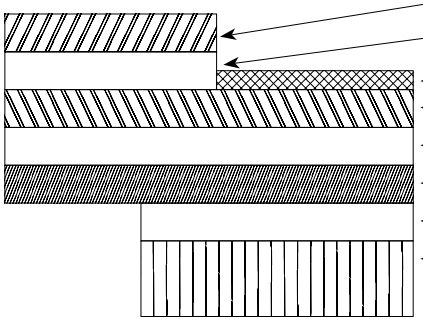
Part No.	HRS No.	No. of Pos.	G	H	J	K	L	M
FH26W-13S-0.3SHW(##)	CL0580-2401-1-##	13	16.0		7.5	5.6	17.4	21.4
FH26W-15S-0.3SHW(##)	CL0580-2402-4-##	15	16.0		7.5	6.2	17.4	21.4
FH26W-17S-0.3SHW(##)	CL0580-2403-7-##	17	16.0		7.5	6.8	17.4	21.4
FH26W-19S-0.3SHW(##)	CL0580-2437-9-##	19	16.0		7.5	7.4	17.4	21.4
FH26W-21S-0.3SHW(##)	CL0580-2404-0-##	21	16.0		7.5	8.0	17.4	21.4
FH26W-23S-0.3SHW(##)	CL0580-2405-2-##	23	16.0		7.5	8.6	17.4	21.4
FH26W-25S-0.3SHW(##)	CL0580-2406-5-##	25	16.0		7.5	9.2	17.4	21.4
FH26W-27S-0.3SHW(##)	CL0580-2400-9-##	27	16.0		7.5	9.8	17.4	21.4
FH26W-29S-0.3SHW(##)	CL0580-2407-8-##	29	24.0	-	11.5	10.4	25.4	29.4
FH26W-31S-0.3SHW(##)	CL0580-2408-0-##	31	24.0		11.5	11.0	25.4	29.4
FH26W-33S-0.3SHW(##)	CL0580-2409-3-##	33	24.0		11.5	11.6	25.4	29.4
FH26W-35S-0.3SHW(##)	CL0580-2410-2-##	35	24.0		11.5	12.2	25.4	29.4
FH26W-37S-0.3SHW(##)	CL0580-2411-5-##	37	24.0		11.5	12.8	25.4	29.4
FH26W-39S-0.3SHW(##)	CL0580-2412-8-##	39	24.0		11.5	13.4	25.4	29.4
FH26W-41S-0.3SHW(##)	CL0580-2413-0-##	41	24.0		11.5	14.0	25.4	29.4
FH26W-45S-0.3SHW(##)	CL0580-2414-3-##	45	24.0		11.5	15.2	25.4	29.4
FH26W-51S-0.3SHW(##)	CL0580-2415-6-##	51	24.0		11.5	17.0	25.4	29.4
FH26W-57S-0.3SHW(##)	CL0580-2417-1-##	57	32.0	28.4	14.2	18.8	33.4	37.4
FH26W-61S-0.3SHW(##)	CL0580-2418-4-##	61	32.0	28.4	14.2	20.0	33.4	37.4
FH26W-71S-0.3SHW(##)	CL0580-2419-7-##	71	44.0	40.4	20.2	23.0	45.4	49.4

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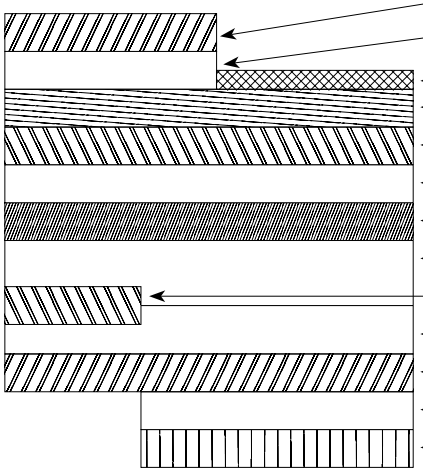
Recommended FPC Construction

1. Using Single-sided FPC



Material Name	Material	Thickness (μm)
Covering film layer.	Polyimide 1 mil thick.	25
Cover adhesive		25
Surface treatment	1 μm to 5 μm Nickel underplated 0.2 μm Gold plated	3
Copper foil	Cu 1oz	35
Base adhesive	Thermosetting adhesive	25
Base film	Polyimide 1 mil thick	25
Reinforcement material adhesive	Thermosetting adhesive	40
Stiffener	Polyimide 3 mil thick	75
	Total	203

2. Using Double-sided FPC



Material Name	Material	Thickness (μm)
Covering layer film	Polyimide 1 mil thick	25
Cover adhesive		25
Surface treatment	1 μm to 5 μm Nickel underplated 0.2 μm Gold plated	3
Through-hole copper	Cu	15
Copper foil	Cu 1/2oz	18
Base adhesive	Thermosetting adhesive	18
Base film	Polyimide 1 mil thick	25
Base adhesive	Thermosetting adhesive	18
Copper foil	Cu 1/2oz	18
Cover adhesive	Thermosetting adhesive	25
Covering layer film	Polyimide 1 mil thick	25
Reinforcement material adhesive	Thermosetting adhesive	25
Stiffener	Polyimide 1 mil thick	25
	Total	197

Note : To prevent release of the FPC due to bending, use of double-sided FPC with copper foil on the back side is NOT RECOMMENDED.

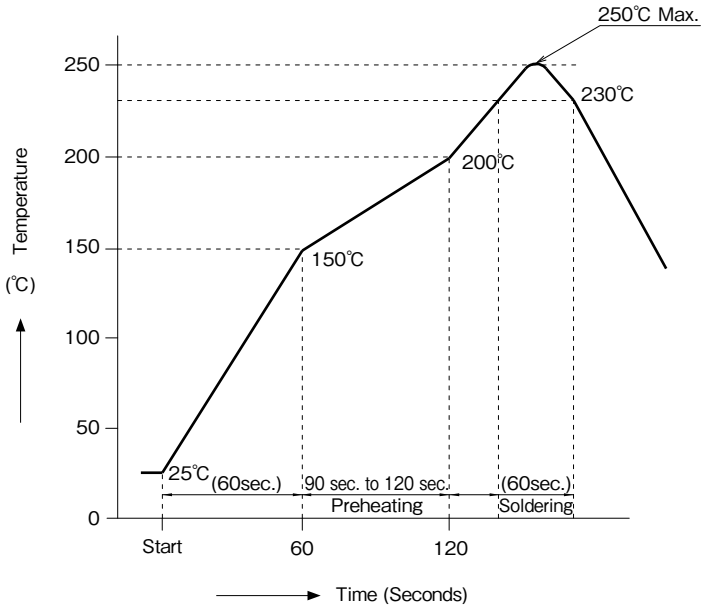
3. Precautions

1. This specification is a recommendation for the construction of the FH26 Series FPC (t=0.2±0.03).
2. For details about the construction, please contact FPC manufacturers.

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Operation and Precautions



HRS test conditions

Solder Method :	Reflow, IR/hot air
Environment :	Room air
Solder Composition :	Paste, 96.5%Sn/3.0%Ag/0.5%Cu (Senju Metal Industry, Co., Ltd.'s Part Number: M705-221CM5-32-10.5)
Test Board :	Glass epoxy 25mm × 50mm × 0.8mm thick
Land Dimensions :	0.3mm × 0.65mm, 0.3mm × 0.8mm
Metal Mask :	0.23 × 0.55 × 0.1mm thick, 0.23 × 0.65 × 0.1mm thick

The temperature profiles are based on the above conditions.
In individual applications the actual temperature may vary depending on solder paste type, volume/thickness and board size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.

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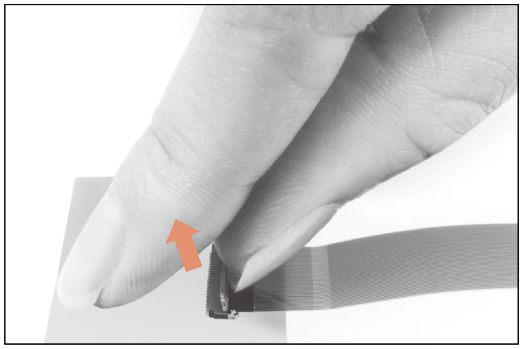
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Operation and Precautions

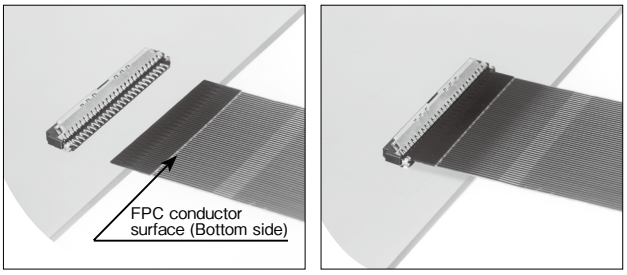
[Operation]

1. FPC insertion procedure.

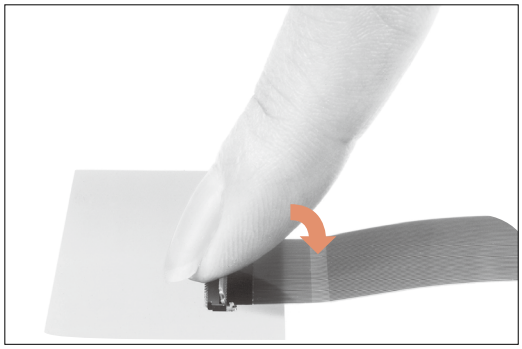
①Lift the actuator upward to unlock. (Lock release) The actuator flips open easily when operated with a finger.



②Fully insert the FPC in the connector parallel to mounting surface, with the exposed conductive traces facing down.

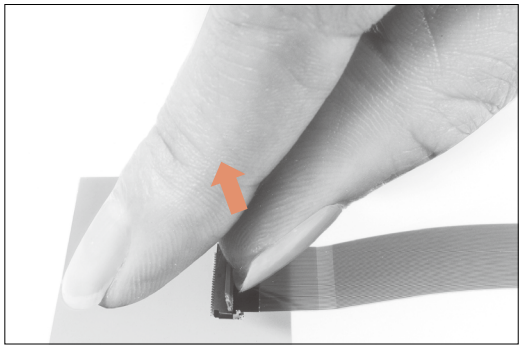


③Rotate the actuator downward until firmly closed. If the FPC is not fully inserted or is extremely misaligned remove the FPC as described in 2- ② . Reoperate starting from 1- ① .
Make sure to secure the connector during locking.



2. FPC Removal

①Lift up the actuator. Remove the FPC after releasing the lock.



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[Precautions]

This connector needs to be handled with care due to its thin, small design.

[Precautions When Mounting to PCB]

● Acceptable amount of PCB warpage
PCB warpage should be kept to a minimum. The maximum coplanarity of this connector is 0.1mm, but excessive warpage may result in solder failure.

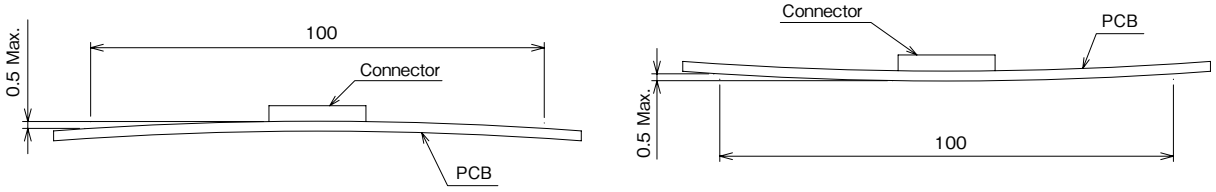
● FPC Specifications
Stiffeners can be used to improve the rigidity of the FPC. We recommend using a glass epoxy with a thickness of 0.3mm or more.

● Load to the Connector
Do not apply any excessive force (0.5N Max.) or mate/unmate the connectors until they are mounted, failure to follow this precaution can lead to deformation or damage to the connectors. Inserting the FPC prior to mounting is not recommended either.

[Precautions for Handling the PCB After Mounting]

● Applied force to the PCB
Do not place any excessive force on the PCB after connector mounting as this may damage the connectors. (e.g., When separating the PCB into multiple boards or installing fastening screws onto the PCB)

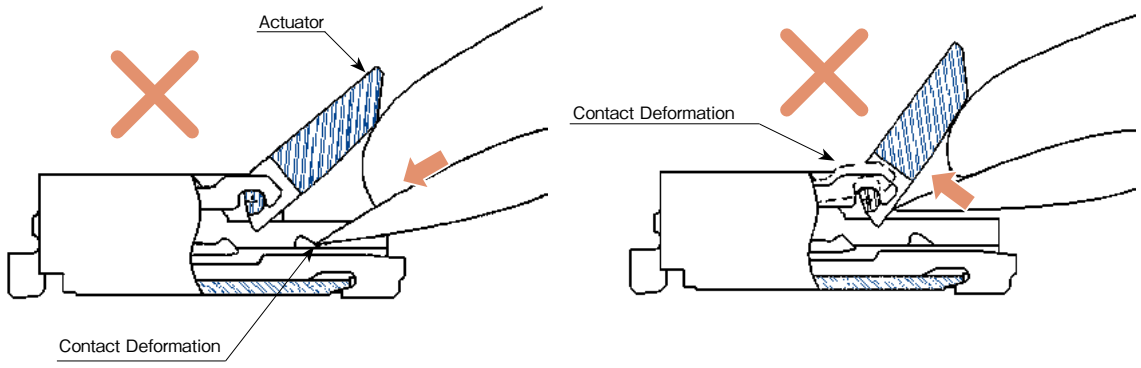
● PCB Bending
PCBs with a width of 100mm should not be bent more than 0.5mm Max. (Please refer to the diagrams below.) PCB bending places an extra load onto the connector and may lead to damage or malfunction.



[Precautions When Inserting or Coupling FPC]

Pay attention to the following points when inserting FPC.

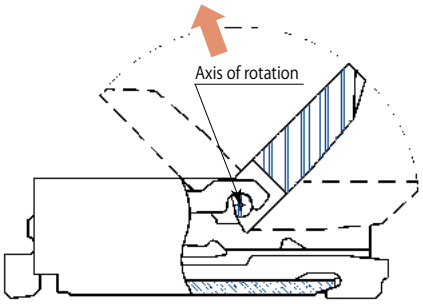
● **Actuator Operation**
①Do not apply excessive force when opening the actuator prior to FPC insertion.
When opening make sure that the force is applied only to the actuator itself. Avoid touching the contacts.



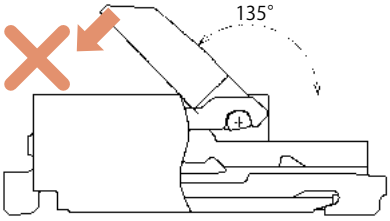
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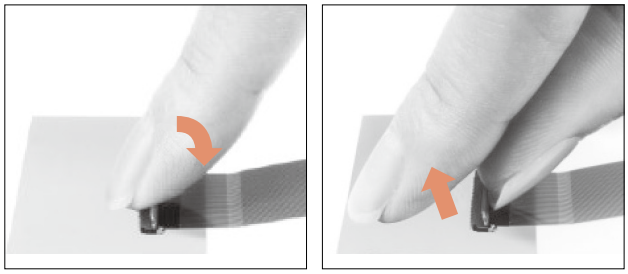
②Rotational Axis



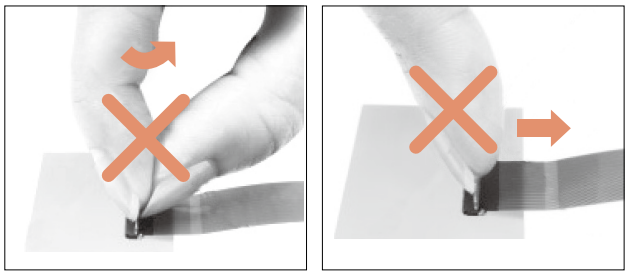
③The actuator is designed to rotate up to 135° so do not apply excessive force to rotate it further. Applying excessive force may result in the lock lever coming off or damage to the connector.



④When operating the actuator, do so at the center portion.



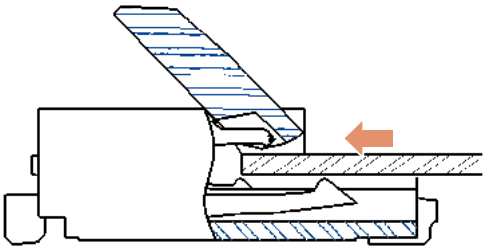
⑤As illustrated, do not attempt removal or repositioning of the actuator.
(Do not do any operation other than the axis rotation described in ②.)

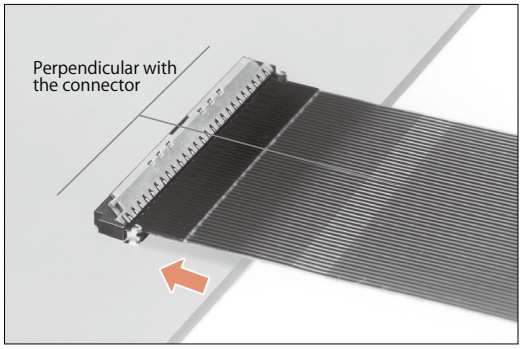


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● FPC Insertion①

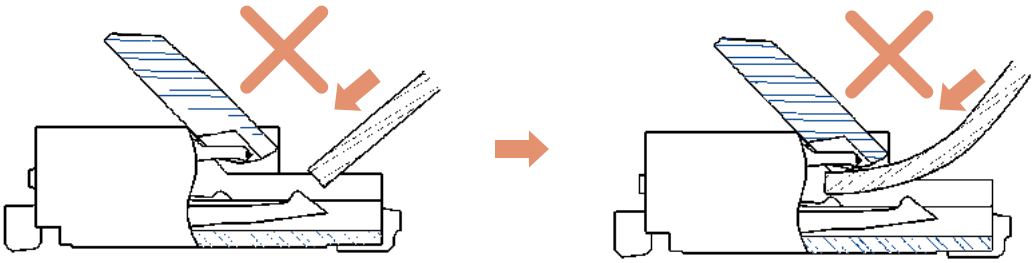




The FPC should be aligned parallel with the board surface and perpendicular with the connector (as shown), then completely inserted.
To assure correct electrical and mechanical connection do not insert the FPC at an angle. Inserting the FPC at an angle may result in a short circuit due to pitch misalignment, or the corners of the FPC may get caught and deform the contacts.
Since this is a ZIF connector with 0.35mm effective mating length (HRS recommended FPC nominal size), do not pull out the FPC after insertion when operating the actuator.

● FPC Insertion②

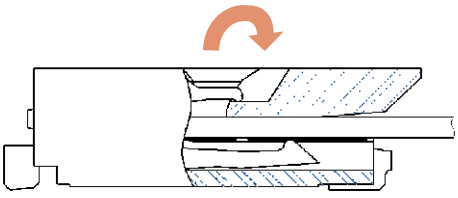
Do not insert the FPC at any angle from above.
As illustrated, angled insertion may result in FPC bending, pattern breakage or incomplete mating resulting in conduction failure.



Note 1 : To avoid inserting the FPC at an angle, secure sufficient FPC insertion space at the time of board layout. Insertion will be difficult when the FPC is too short.
Note 2 : Contact the FPC manufacturer for information about the bending specifications.

● Confirming Locking Status

When locked the actuator should be level with respect to the board surface as illustrated below.
Do not press against the actuator when is fully closed. Max force applied to the fully closed actuator should not exceed 1N.



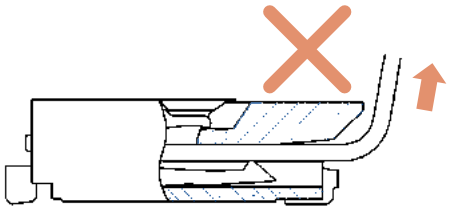
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[Precautions for Routing the FPC after FPC Insertion]

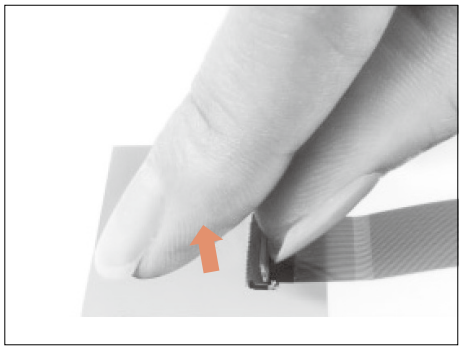
● FPC Load

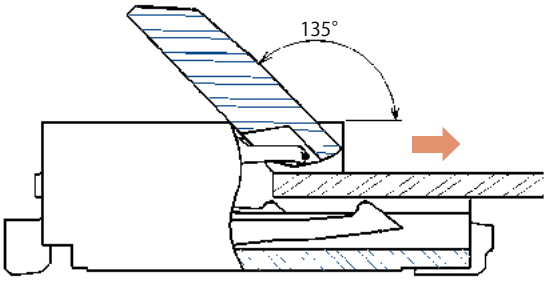
Do not apply force in excess of 0.05N/pin Max. in the upward direction (as illustrated). Excessive force may result in the connector unlocking or FPC damage. Secure the FPC when a continous load will be applied.
Do not bend the FPC too close to the actuator.



[FPC Removal]

Rotate the actuator to the open position (maximum open angle of 135). Carefully withdraw the FPC.





[Other Precautions]]

● Hand Soldering Precautions

When hand soldering:
①Do not perform reflow or hand soldering with the FPC inserted in the connector.
②Do not apply excessive heat or touch the soldering iron anywhere other than the connector leads.
③Do not use excessive amount of solder or flux compounds.
Operation of the actuator and contacts may be affected by excessive amounts of solder or flux compounds. Applying too much solder on the retention tabs may hinder the rotation of the actuator and result in connector damage.

While taking in consideration

Specifications mentioned in this catalog are reference values.
When considering to order or use this product, please confirm the "Drawing" and "Product Specifications" sheets.
Use an appropriate cable when using the connector in combination with cables.
If considering usage of a non-specified cable, please contact your sales representative.
If assembly process is done by jigs & tools which are not identified by Hirose assurance will not be given.
Please consult with your Hirose sales representative if you are planning to use the product for any of the following applications. (Automotive, medical, public infrastructure, aerospace/defense, etc.)
Hirose will consider the validity of the warranty depending on the conditions.

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