

Page	1 of 16	GSN GROUP	 WE MAKE TECHNOLOGY BETTER
Doc. No.	C-3-S-03		
Version	A5		

Revision history

Ver.	Revision of content					Revision date	Revised by	Effective date
A0	Initial release.					2010-10-07	Hamed	2010-10-11
A1	Update of Company Logo.					2014-03-10	Hamed	2014-03-14
A2	Update of Company Address.					2019-12-16	Corinna	2019-12-20
A3	Adopting a unified controlled file format.					2023-05-15	Corinna Katharina Guofu	2023-05-16
A4	Editorial updates and document formatting adjustments					2026-03-15	Guofu Corinna	2026-03-17
A5	1. Comprehensive supplements, adjustments, and improvements have been made to Chapters 1-8. 2. Optimized the overall format and layout.					2026-06-05	Guofu Corinna	2026-06-08
Prepared by / Date	Reviewed by / Date							Approved by / Date
	☒ HR & Finance	☒ Engineering	☒ Supply chain	☒ Production	☒ Quality	☒ GM	☒ GSN GE	
Corinna Guofu 2026-06-05	Amy 2026-06-05	Jie 2026-06-05	Angela 2026-06-05	Alex 2026-06-05	Jeff 2026-06-05	Numen 2026-06-05	Hamed 2026-06-05	Frank 2026-06-05

Page	2 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

Contents

1	Purpose.....	3
2	Common Instructions and Precautions.....	3
3	Handling Precaution for Terminal and Connector in Electrical Appliances	9
4	Note for Wire Connection Processing of Harness Processing, etc.	10
5	Note for PCB assembly (Soldering and Press-Fit)	15
6	Note regarding the storage of any GSN product	15
7	Note about the quality of a connection	16
8	Note for field trial of any GSN product	16
9	Contact us	16

Page	3 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

1 Purpose

This manual describes basic precautions for the use of terminals and connectors. Make use of this manual when wire connection processing is conducted in appliance designing and harness process. When there are doubtful points in use, contact GSN.

GSN shall not be liable for damages resulting from improper handling or use that deviates from the instructions in this manual.

This document defines mandatory handling instructions, safety precautions, and usage limitations for all connectors, terminals, cable assemblies, and related products supplied by GSN.

This document applies to:

Storage

Handling

Processing (crimping, assembly, PCB mounting)

Transportation

End-use application

Failure to comply with these instructions may result in product malfunction, safety risks, and exclusion of any liability by GSN.

GSN shall not be liable for damages resulting from improper handling, misuse, insufficient validation, or use outside specification.

2 Common Instructions and Precautions

GSN terminals and connectors are designed solely for electrical connections and must not be used as structural components or for mechanical load-bearing purposes.

GSN products are designed exclusively for electrical connections within electrical/electronic equipment.

Products shall NOT be used:

As structural or load-bearing components

In building wiring or infrastructure installations

Outside specified electrical and environmental limits

Use outside defined specifications constitutes misuse and voids any warranty or liability.

Page	4 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

GSN's terminal and connector are designed for wiring in electrical appliances or between electrical appliances. GSN's terminal and connector are designed only for usage of "domestic wiring of electrical appliance" in Electrical Appliance and Material Safety Law. Appropriate provision is required for electrical appliances so that general person does not touch terminal and connector.

GSN's terminal and connector are designed to aim electrical connection in electrical appliances or between electrical appliances. They are not "connection appliance" conformed to Electric Appliance and Material Safety Law, so that they cannot use for wiring inside building material and cable wiring for indoor and outdoor.

Use GSN's terminal and connector within the range of rated value of product specification and performance specification. This rated value and performance specification are specified as parts themselves, when using in actual use, use them after checking to satisfy regulation and design standard about appliances to be used.

Do not expose GSN's terminal and connector, processing process product and processing product (harness, etc.) to corrosive substance, corrosive gas, extreme temperatures outside specification and high humidity and direct sunshine. Exposure to the above-mentioned may result in corrosion, insulation degradation and contact failure.

Avoid contamination: Do not touch contacts with bare hands; protect against oil, dust, and debris. Contamination may cause increase contact resistance, intermittent failures and long-term reliability issues. Any contamination-related failure is excluded from liability.

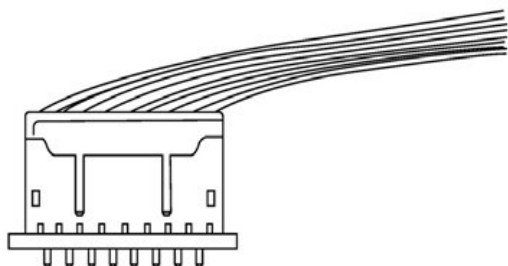
Do not apply external load to GSN's terminal and connector, processing process product and processing product (harness, etc.). Deformation and breakage may occur, and it causes performance defects of connector.

Appearances differences such as black spot in the resin molding part of the connector and the color tone might be different, it does not affect the performances of the connector.

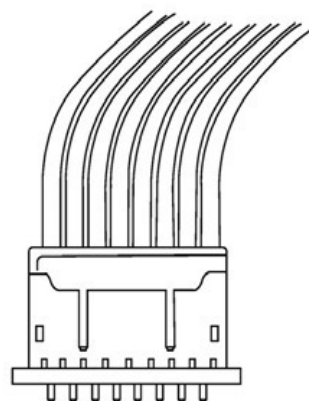
When checking circuit of harness with terminal and connector, handling wire harness, etc. in assembly of appliances or after wiring is fixed or applying load, due to tensile strength, to joint part of GSN's terminal and connector, joint part of contact contacting part and wire is damaged, and it may cause contact defects. When handling and wiring wire harness, etc., provision such as an appropriate slack to wire is required in order not to apply abnormal load to joint part of GSN's terminal and connector. See examples 1 and 2.

Page	5 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

Example 1: Wire to Board connectors

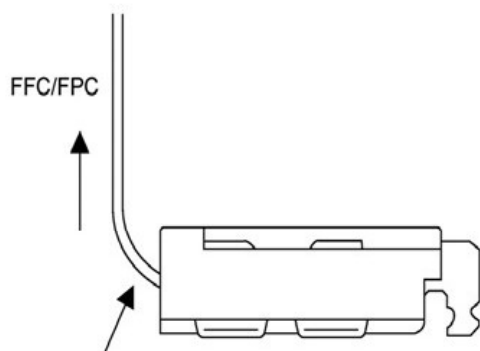


× Wire length is not sufficient to handle.



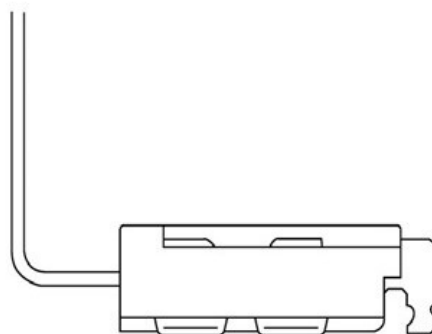
○ Wire length is sufficient to handle.

Example 2: FFC/FPC connectors

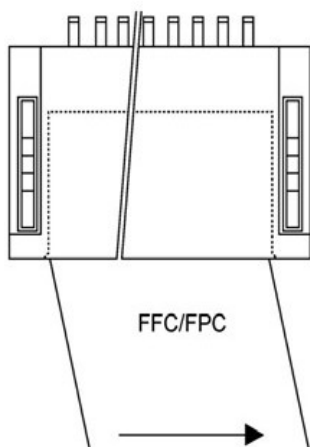


Force is loaded to FFC/FPC.

× FFC/FPC length is not sufficient to handle.

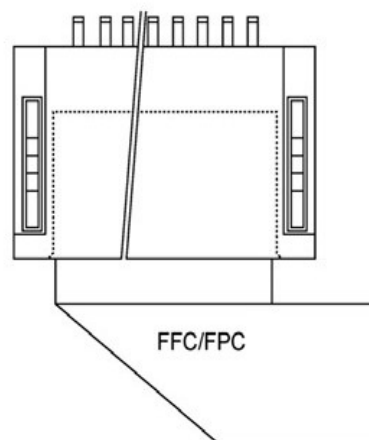


○ FFC/FPC length is sufficient to handle.



Force is loaded to FFC/FPC.

× Force is loaded to FPC.

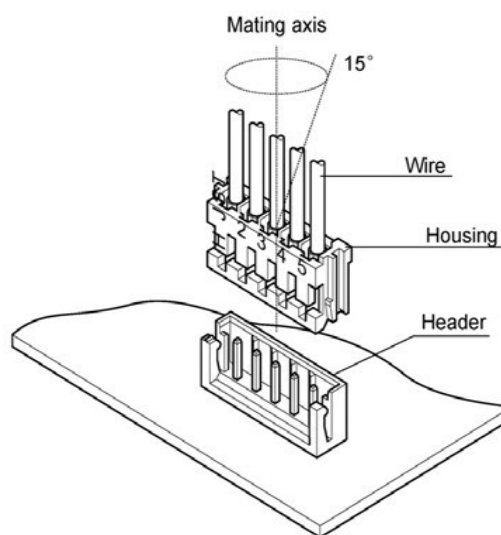


○ Forming processing is conducted to FPC so as not to load force to connector.

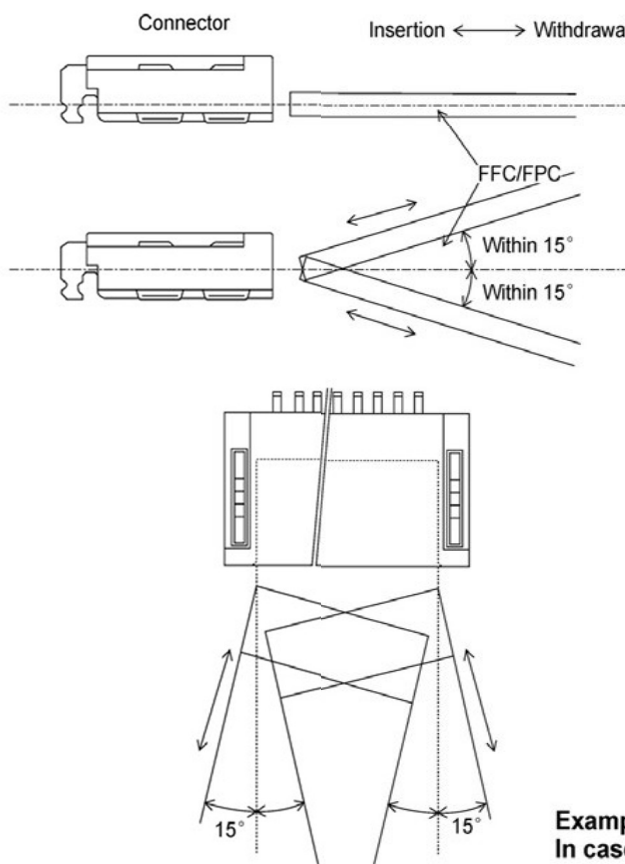
Page	6 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

When GSN's terminals and connectors are mated or unmated (hereafter referred to as operation), hold wire in a bundle and operate it in an angle within maximum 15 degrees in any direction (see example 3 & 4). As for deviating operation angles specified in GSN product specification, the specified one is prior. After assembly, the above-mentioned maximum angle (in doubt 15° in any direction) applies for permanent fixation as well. Operation and/or permanent fixation beyond specified angle leads to damages and any liability ceases immediately.

When electrical continuity of circuit and miss-wiring are checked, do not insert others than the applicable mating component. GSN is not liable for deformation of contact, etc., and causes of contact defect if the intended mating component is not used.



Example 3: In case of wire to board connector



**Example 4:
In case of connectors for FFC/FPC**

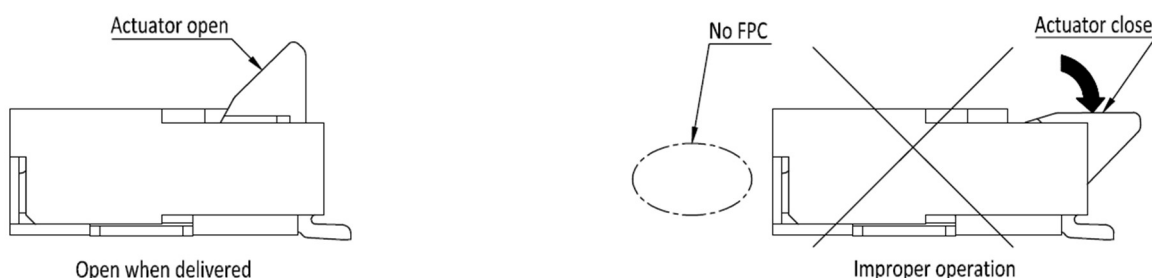
Page	7 of 16	GSN GROUP Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Doc. No.	C-3-S-03		
Version	A5		

Operation and Precautions FFC connector:

For FPC connector, these connectors feature small, thin and back flip design, requiring delicate and careful handling. Read through the instructions shown below and handle the connectors properly.

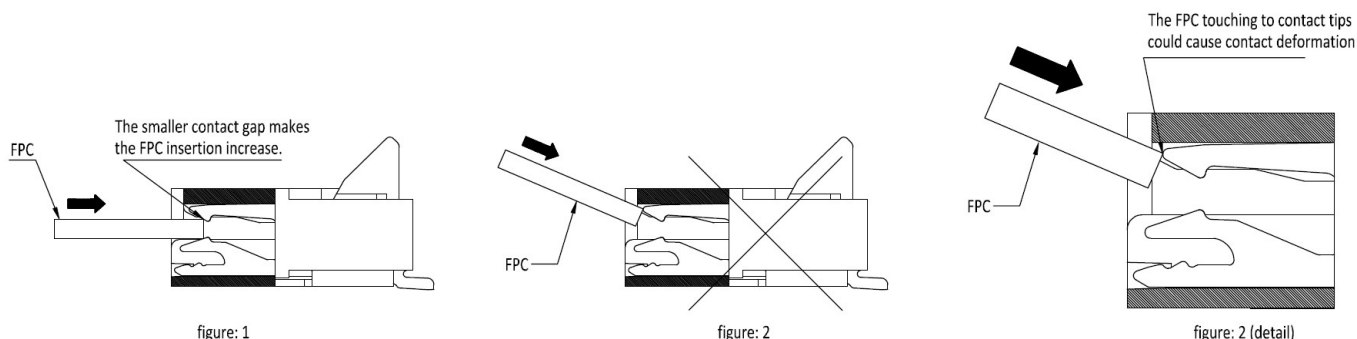
Initial condition

Actuator does not have to be operated before inserting FPC, as the connector is delivered with actuator open.



Prohibited acts:

Do not close the actuator before inserting FPC. Closing the actuator without FPC could make the contact Gap smaller, which could increase the FPC inserting force when FPC is inserted (figure:1). Do not insert the FPC at a sharp angle as this may cause contact deformation by the FPC touching to contact tips. (figure:2)

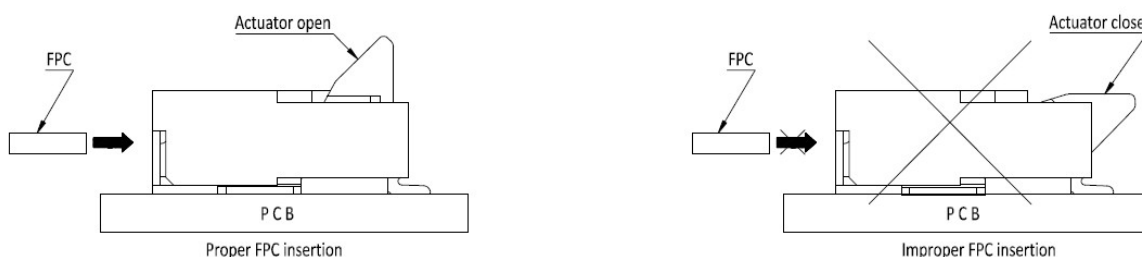


How to insert FPC

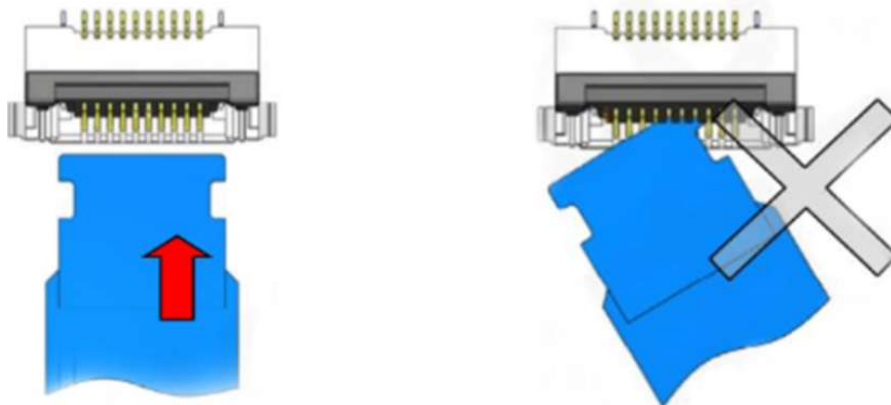
Insert the FPC into the connector horizontally to the board plane. Insert it properly to the very end.

Caution:

Insert the FPC with the actuator open. Twisting the FPC to up and down, right and left or an angle could cause contact deformation and contact failure. Do not apply excessive force to the actuator, it may be deformed or damaged. The terminal transformation happens when FPC/FFC is diagonally inserted. And the loose connection happens.

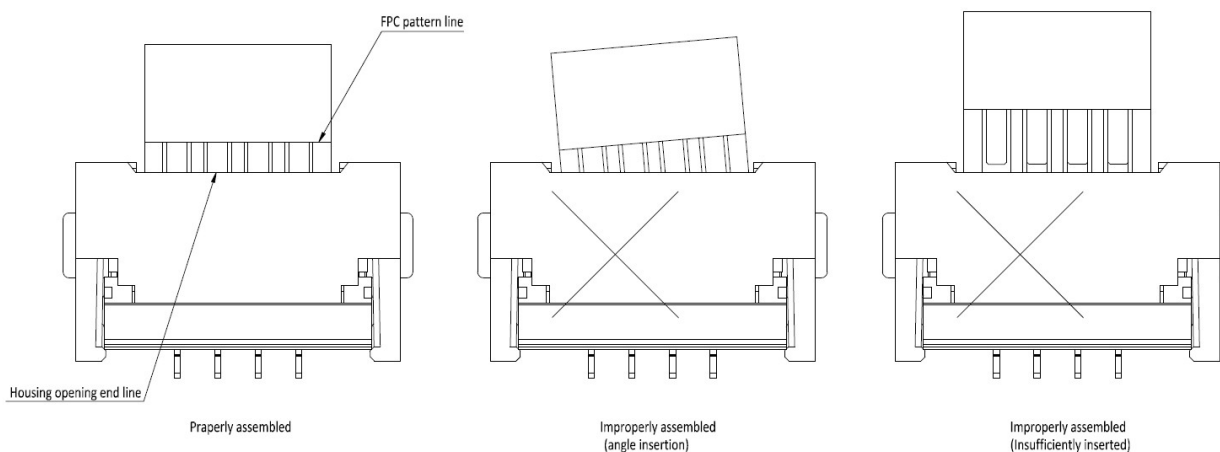


Page	8 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		



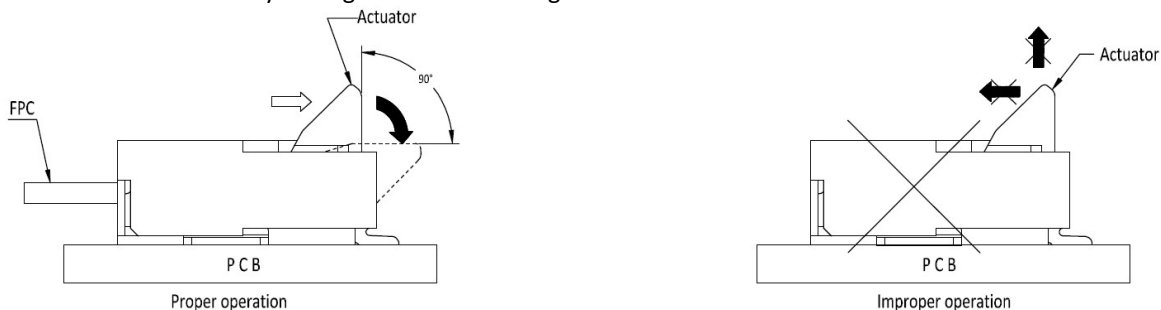
FPC insertion check (for using contacts on the top, for FPC pattern applicable)

Improper assembly modes are prevented by visual check, comparing positions of housing opening end line and FPC pattern line.



How to lock

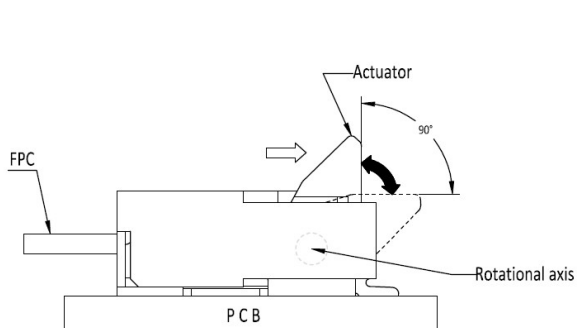
Apply load to rotate the actuator by 90 degrees after inserting the FPC.



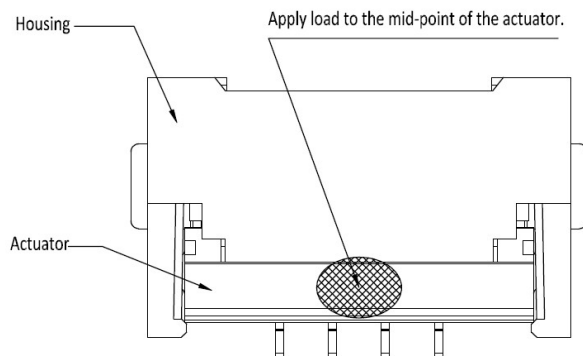
Caution:

The actuator rotates around the rotational axis as shown below. Do not rotate the actuator to the counter direction. Do not pinch or pick the actuator to lift. Otherwise, it may break. Apply load to the mid-point on the actuator to rotate it. Do not apply force to side end of actuator. Uneven load could twist the actuator and cause half mating. Do not apply excess force to the housing during the operation.

Page	9 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		



Actuator movable range
(Side view)



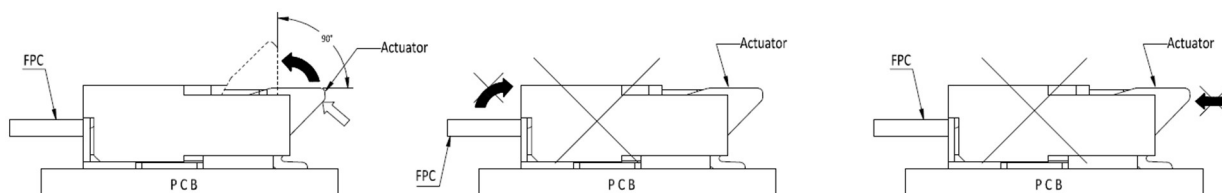
Autuator operation area (lock and release)
(Top view)

How to remove FPC (How to unlock)

Slowly flip up the actuator to release the lock and remove the FPC

Caution:

-The actuator is open to the movable limit of 90 degrees. Do not open the actuator beyond the specified degree or apply excess force to the actuator. To open the actuator, operate at the mid-point of the actuator. Do not lift up the side end of actuator or it may twist. The actuator and cause breakage. Do not press down the actuator toward connector when operating. Otherwise, it could deform the contact.



When electrical continuity of circuit and miss-wiring are checked, do not insert others than the applicable mating (shrouded header and header, etc.). It leads to deformation of contact, etc., and causes of contact defect.

3 Handling Precaution for Terminal and Connector in Electrical Appliances

GSN's terminal and connector are not designed so that they may disconnect in live electrical circuit. Do not disconnect GSN terminals and connectors under live electrical conditions in order to prevent damage and performance defect by spark, etc.

In case that condensation and water leak occurred on GSN's terminal and connector, there is a risk that insulation defect may occur between circuits. When it is estimated that condensation and water leak occur, appropriate countermeasure to prevent water drop is required.

When using GSN's terminal and connector, avoid using to branch and apply electricity more than rated value to some circuits. Even if electricity per a circuit is set not to exceed rated value on calculation, electricity per a circuit is not shared equally due to variation of circuit pattern and contact resistance, so that performance deterioration makes progress by current continuity more than rated value, and abnormality occurs.

* "GSN" or "GSN Group" refers to GSN Electronics (Shenzhen) Ltd., GSN Electronics (Hong Kong) Ltd., GSN Corporation GmbH & Co. KG, as well as their affiliated companies, including subsidiaries and sister companies, unless otherwise specified.

Page	10 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

When connectors are used at parts that wire and printed circuit board with connectors resonate or mating part (connection part) of connector always moves whenever appliance has rotation structure or moving part, that causes contact defect by fretting corrosion of contact part. Appropriate provision such as fixing of wire and printed circuit board in appliances or support of printed circuit board and suppression of resonance, etc.

When contact material of GSN's terminal and connector is brass, breakdown and cracking (stress corrosion cracking) occur in the existence of corrosive gas and moisture (condensation, etc.) of ammonia and sulfur gas, etc., and that causes of contact defect of connector. When effect of corrosive gas of ammonia and sulfur gas, etc. aforementioned condition is expected in use place of terminal, connector and its electrical appliances to use, use copper-alloy material (phosphor bronze material, etc.) except for brass material as a contact material. Contact GSN for products.

After connector was connected to printed circuit board with solder, when printed circuit board is stacked on connector, deformation of mating part of connector and adhesion of foreign matter occur, and that causes of contact defect of connector. Do not stack printed circuit board after connection with solder.

The customer is solely and fully responsible for:

- validation of product suitability for the intended application
- system integration and design verification
- compliance with all applicable standards and regulations

GSN specifications apply exclusively to the supplied component and do not constitute approval for any specific application.

Any failure resulting from insufficient validation remains the sole responsibility of the customer.

Misuse includes, but is not limited to:

- use outside specified electrical, mechanical, or environmental limits
- deviation from handling, storage, or processing instructions
- use of unapproved tools, materials, or processes
- mechanical overstress, contamination, or improper mating

In all such cases, GSN assumes no liability.

4 Note for Wire Connection Processing of Harness Processing, etc.

When GSN's terminal, chain terminal and connector are crimped or terminated with wire in GSN. If connection is conducted by other tools than the specified one, it causes contact defect and breakage. Besides, after checking processing operation condition, etc., process harness.

As defect control of important control point on wire connection processing of GSN's terminal and connector such as applicable wires and crimp height, etc. causes contact defect, check control point before processing. As a rule, applicable wires for crimping connector and insulation displacement connector are tin-plated annealed copper wire (stranded wire). It is necessary to check when using bare copper wire, solid wire, tin coated wire and shielding wire. However, wires of terminal and connector specified individually are decided depending on each specification. When wire is used in insulation displacement connectors, use only wires specified in the relevant product specification.

* "GSN" or "GSN Group" refers to GSN Electronics (Shenzhen) Ltd., GSN Electronics (Hong Kong) Ltd., GSN Corporation GmbH & Co. KG, as well as their affiliated companies, including subsidiaries and sister companies, unless otherwise specified.

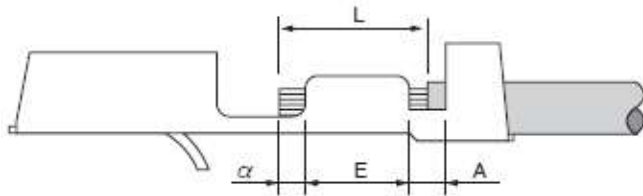
Page	11 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

Precaution for Crimping Process The following instructions describe the procedure to be adopted when crimping terminals or contacts onto wires

Applicable wires, before starting the crimping process, please confirm that the wire to be used is within the range of the chosen crimping terminal. As a rule, applicable wires for crimping connectors are tin-plated annealed copper stranded wire. Bare copper wire, solid wire, tin-coated wire, shielded wire and so on are out of range. However, it is possible to use other wires if they are checked for compatibility with the chosen crimping terminal.

Control Points for Crimping Operation Please check the following points to ensure that a correctly crimped terminal and wire combination is produced.

Stripping Wire Insulation Operation. As the wire stripping length is influenced by wire style, crimping method and so on, please set the proper stripping length according to processing condition. After setting the correct length depending on the terminal used, strip the insulation carefully by a wire stripper etc. without any damage to the wire conductors.



[Reference]

Stripping length $L = E + A/2 + \alpha$

The proper value of α is depended on each terminal.

[Cautions]

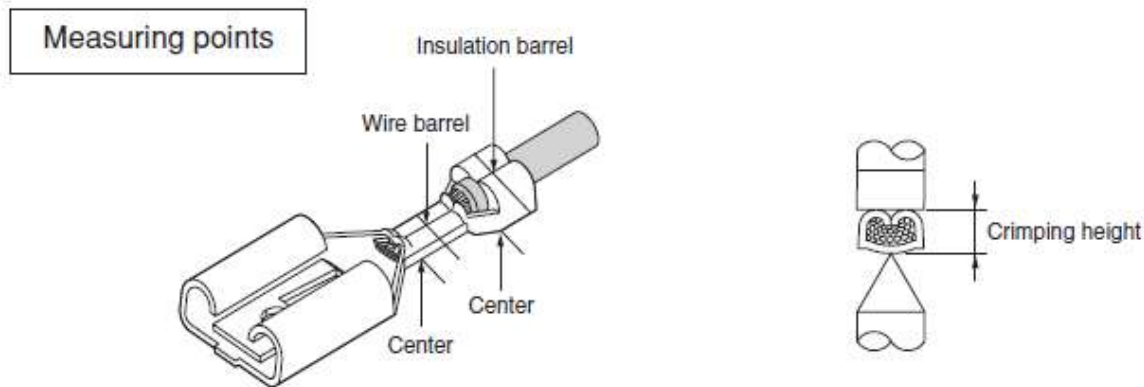
- (1) Take care to prevent cutting of wire conductors, uneven stripping length and insufficient cutting of the insulation.
- (2) Ensure the strands do not spray come apart.
- (3) Do not excessively twist the strands.

Crimping height is one of the important quality management items in the crimping process. As crimping terminals without the correct crimp-height is the cause of poor conductivity, measure the crimp-height at the start, in the middle and at the end of the crimping process.

Measuring Method Measure the crimping height of the crimped terminals with a specified crimp micrometer at the center of the wire barrel and at the center of the insulation barrel.

Page	12 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

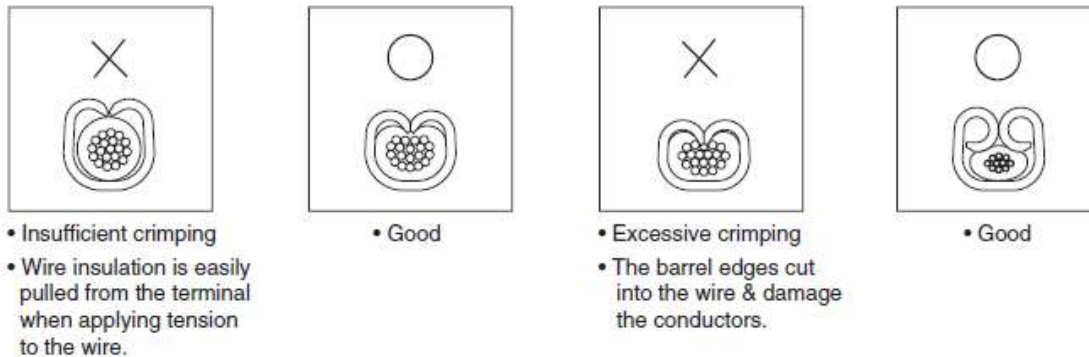
Measuring points



Set the crimping height of the wire conductor barrel within the range specified by GSN.

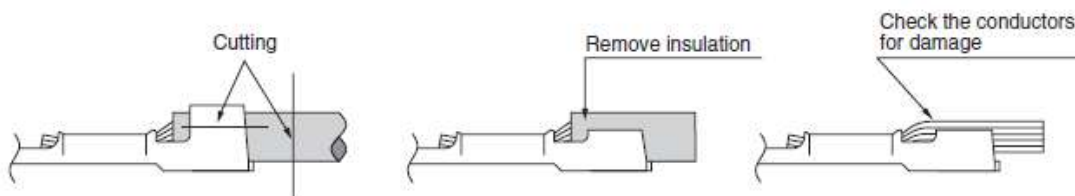
Adjust the crimping height of the insulation barrel in relation to the outer diameter of the wire insulation and wire type.

Determine the range of crimping height for insulation barrel so that it is not crimped excessive nor too loosely.



Check: Cut off the insulation support and remove the wire insulation, then check the wire conductors for 7 GSN damage.

Cutting Remove insulation Check the conductors for damage.

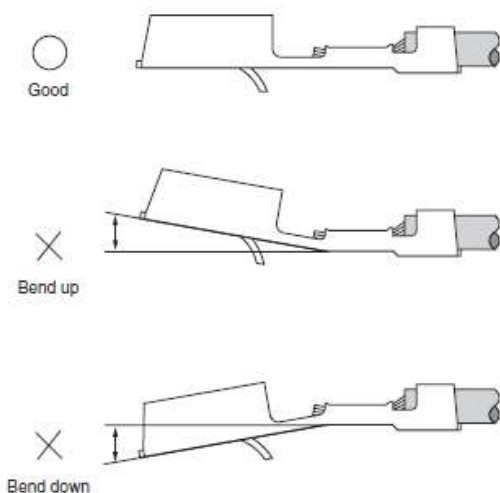


Check crimped appearance visually (using loupe etc.) to confirm correct crimping conditions. As the inspection items change with each terminal, an example is shown below. Check with GSN for each terminal or connector about the specific details to be checked.

Page	13 of 16	GSN GROUP Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	 GSN WE MAKE TECHNOLOGY <i>BETTER</i>
Doc. No.	C-3-S-03		
Version	A5		

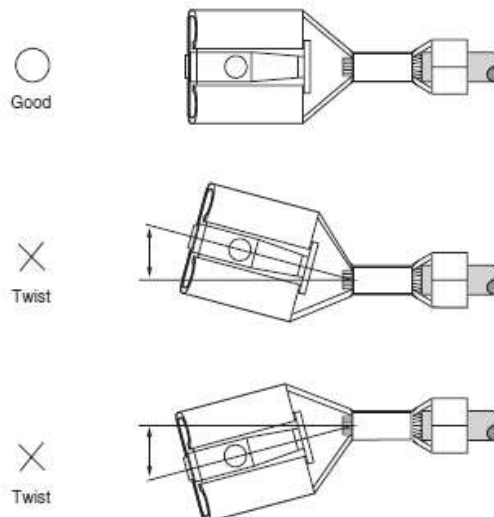
Bend up & Bend down

Check the angle of bend up or bend down at the wire barrel.



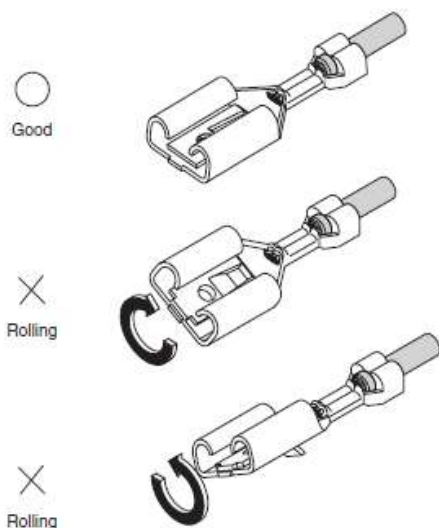
Twist

Check the angle of twist at the wire barrel.



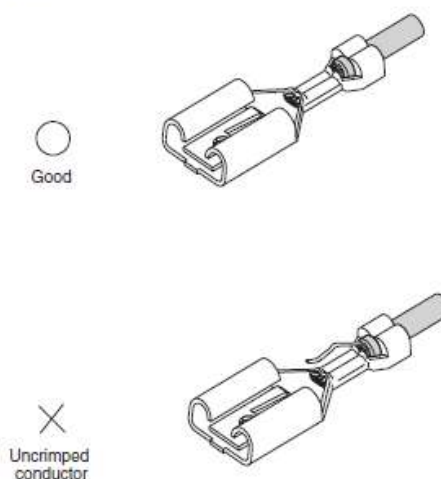
Rolling

Check the angle of rolling at the wire barrel.



Uncrimped Conductor

Check that there are no uncrimped conductors at the wire barrel.

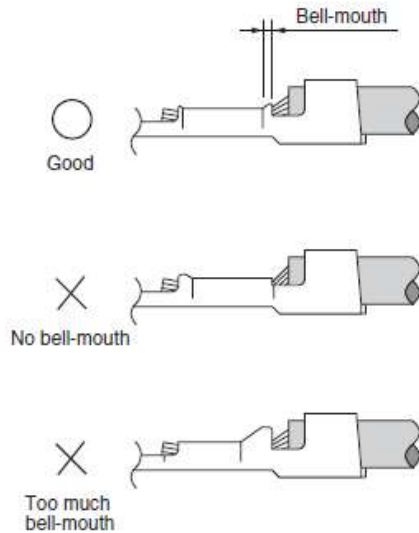


Page	14 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		



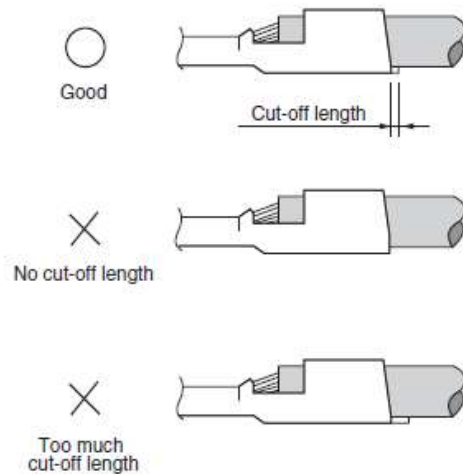
Bell-mouth

Check bell-mouth size.

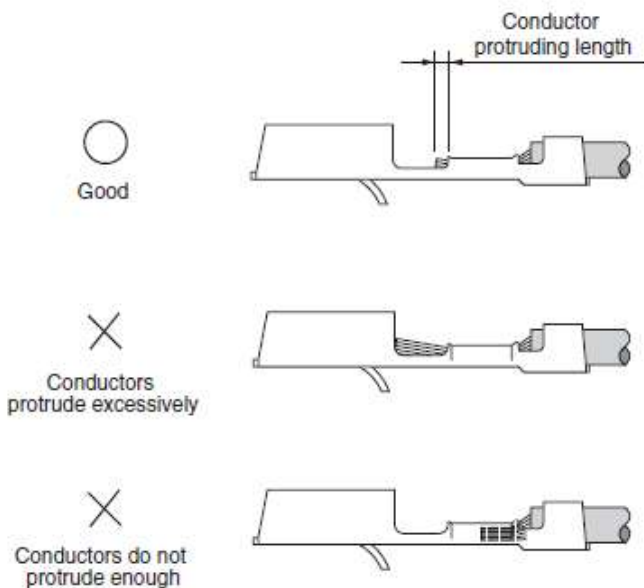


Cut-off Length

Check cut-off length.



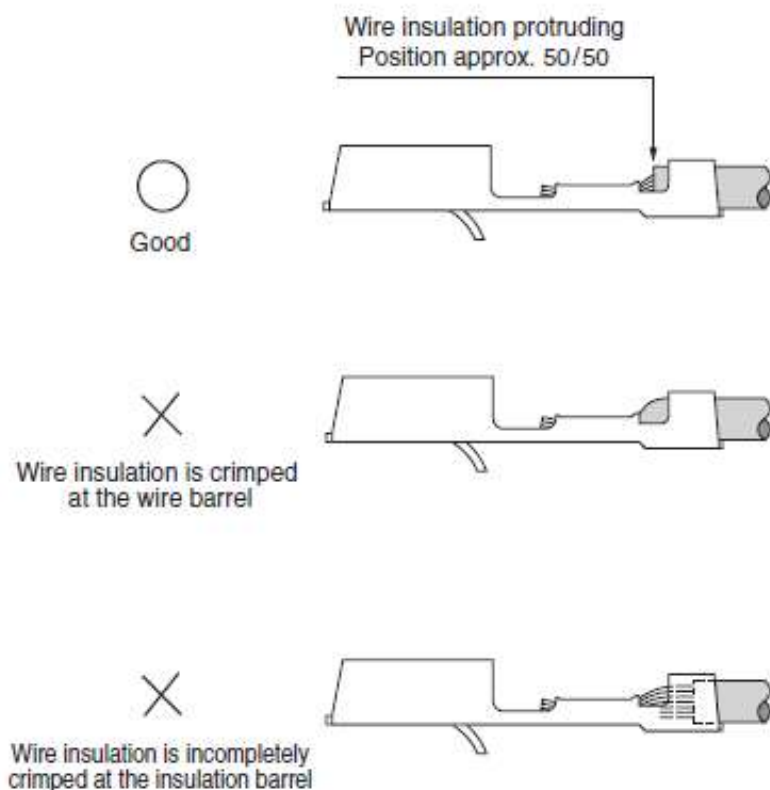
Check the conductors are crimped at the correct position of whole wire barrel.



Check the wire insulation is held by the whole insulation barrel and crimped at the wire barrel, so that a "window" of conductor is seen between the wire and insulation barrel approximately 50/50.

* "GSN" or "GSN Group" refers to GSN Electronics (Shenzhen) Ltd., GSN Electronics (Hong Kong) Ltd., GSN Corporation GmbH & Co. KG, as well as their affiliated companies, including subsidiaries and sister companies, unless otherwise specified.

Page	15 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		



5 Note for PCB assembly (Soldering and Press-Fit)

If a product of GSN must be assembled into/onto a PCB, the customer must thoroughly test the intended way of connecting any product of GSN with the PCB and prove that it is working without any defects, problems or anything that might be regarded as unsatisfactory by the customer. All specifications by GSN are recommendations by GSN only and it does not contain any warranty, as there are many criteria beyond responsibility of GSN that led or lead not to a well working assembly. GSN does not always specify all possible criteria (e.g. humidity, temperature, type and quality of solder paste and many more) and thus customers must verify the functionality of any system according to the respective mass production conditions themselves. All PCB assembly processes must be validated by the customer.

6 Note regarding the storage of any GSN product

If a product of GSN is not processed immediately after arrival at the customer, the storage conditions inside the warehouse must be a temperature of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and a humidity of less than 70% RH.

Maximum storage period: 3 months under specified conditions. After this period, revalidation by the customer is mandatory before use. GSN assumes no liability for performance deviations after exceeded storage time.

In packaging and storage of a GSN product, do not apply mechanical load through stacking, etc. It leads to deformation of GSN's products and may cause a performance defect. During transport avoid shock, vibration, and stacking loads.

* "GSN" or "GSN Group" refers to GSN Electronics (Shenzhen) Ltd., GSN Electronics (Hong Kong) Ltd., GSN Corporation GmbH & Co. KG, as well as their affiliated companies, including subsidiaries and sister companies, unless otherwise specified.

Page	16 of 16	GSN GROUP	
Doc. No.	C-3-S-03	Handling Instructions and Safety Precautions for Connectors, Cables, Terminals and any other product of GSN	
Version	A5		

7 Note about the quality of a connection

If a product of GSN is connected with another product, the customer must intensively test the intended way of connecting any product of GSN with any other product and prove that it is working without any defects, problems or anything that might be regarded as unsatisfactory by the customer. All specifications by GSN are recommendations by GSN only and it does not contain any warranty, as there are many criteria beyond responsibility of GSN that lead or lead not to a well working connection. GSN does not always specify all possible criteria (e.g. mating angle, mating force, mating frequency, mating speed, humidity, temperature and many more) and thus customers must verify the functionality of any connector system according to the respective mass production conditions by themselves. In case of any doubt/question, please contact GSN immediately. Before use, product must be visually inspected and rejected if; bent or deformed contacts, contamination present, housing damage or cracks or misalignment of terminals. Use of defective components may result in immediate failure or latent field defects.

8 Note for field trial of any GSN product

All GSN products may only be used after customers successfully test their use or impact with regard to their specific intended use in their area of application. This applies to new and modified products. If products already on the market are used in a different area of application, corresponding tests shall also be performed.

GSN shall not be liable for any direct, indirect, incidental, or consequential damages resulting from:

- misuse of the product
- deviation from this document
- improper handling, storage, or processing
- insufficient validation by the customer

Use of GSN products implies acceptance of these conditions.

9 Contact us

Asia

GSN Electronics (Shenzhen) Ltd.
518109 Shenzhen / P.R.C.
T. +86 755 26 62 30 93

service@gsn.cn.com

Europe

GSN Corporation GmbH & Co. KG
67098 Bad Dürkheim / Germany
T. +49 (0) 6322 30 559 0

service@gsneurope.com