

**USER'S MANUAL****2.0mm PITCH W/B CONN. SINGLE Series****Application Products**

	Product Name	Part Number	
Harness side	PLUG HOUSING	502439 series	
	PLUG TERMINAL	502438 series	
	APPLICABLE WIRE (※)	AWG#22~26	
	APPLICABLE CRIMP TOOL (※)	578045-3000	
PCB side	RECEPTACLE HOUSING ASS'Y	R/A TYPE	502494 series
		S/T TYPE	502443 series

※ For details, please refer to the crimp specification, CS-502438-001

- Please confirm this specification before using the connector.
- The illustrations used in the spec may have a slight difference since they are printed.
- The contents in this spec may change without notice.
- In case there are any questions or comments regarding this spec, please feel free to contact us.

REV.	B															
SHEET	1~21															
REVISE ON PC ONLY						TITLE:										
B	REVISED J2009-1736 '09/01/16 N.I.TO					2.0mm PITCH W/B CONN. SINGLE Series APPLICATION SPECIFICATION										
REV.	DESCRIPTION					THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION										
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EN-37-1(019)																



INTRODUCTION

1. Storage before usage P-3

2. Instructions during harnessing P-3

3. Definitions

 3-1. Definitions on Plug. terminal P-4

 3-2. Definitions on harness P-5

4. Crimping

 4-1. Appearance P-6

 4-2. Crimping rejects P-6

5. Instructions on mating crimped terminal to Plug. HS'G

 5-1. Mate a crimped terminal P-10

 5-2. crimped terminal repairing P-13

6. Bonding harness P-14

7. Packaging harness P-15

8. Instructions on mating connectors

 9-1. Recommended insertion P-17

 9-2. Recommended removal P-18

 9-3. Wiring after mating P-19

9. Other P-20

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 2/21
EN-37-1(019)			



APPLICATION SPECIFICATION



LANGUAGE

ENGLISH

【1. Storage before usage】

- ① Please store the products in our boxes, in a cool, non-humid location avoiding direct sunshine. This is necessary in order to keep the material from deforming or degradation.
- ② Please store in a condition avoiding pressure. This is necessary in order to keep the material from deforming or degradation.
- ③ When transferring the products, please be careful not to apply shock from dropping or hitting the boxes.

【2. Instructions during harnessing】

- ① Please confirm if you the Plug. HS'G, terminal, crimp condition, wire meets the crimp specification before starting the harnessing. (In case they do not meet, please inform our sales)
- ② Do not use terminals with deformation on the contact boxes. These terminals may not meet the required insertion force to the Plug. HS'G or not meet electrical requirements.
- ③ Do not touch the terminals with your hands directly. The oil and the organic substances could apply negative effect to the plating leading to electrical failure.
- ④ Do not pull the terminals robustly when the terminals have problem fitting. It could deform the terminal.
- ⑤ Do not apply extended force to the Plug. HS'G, terminals, products in line, harnesses. This could cause connector deforming which leads to failure meeting connector requirements.
- ⑥ Keep away Plug. HS'G, terminals, products in line, and harnesses from dust, corrosive properties, corrosive gas, high temperature, high humidity, and direct sunshine. This could lead to product failure caused by contact failure, terminal corrosion, and HS'G insulation failure. Please be careful when storing the products.
- ⑦ Do not deform the Plug. HS'G and terminals on purpose. It would lead to product failure.
- ⑧ Please use all products on that day after un-packing the box. The surrounding air condition could cause material degradation. In case you have to store the parts for a while, please seal the parts and keep them in the box.
- ⑨ Please look out for sharp edges to avoid injury.
- ⑩ Please look out for paper in the reels, to avoid paper cuts.

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 3/21
EN-37-1(019)			



【3. Definitions】

3-1. Plug. terminal definitions: 502438 series

Insulation barrel

This would crimp the insulation area.

Wire barrel

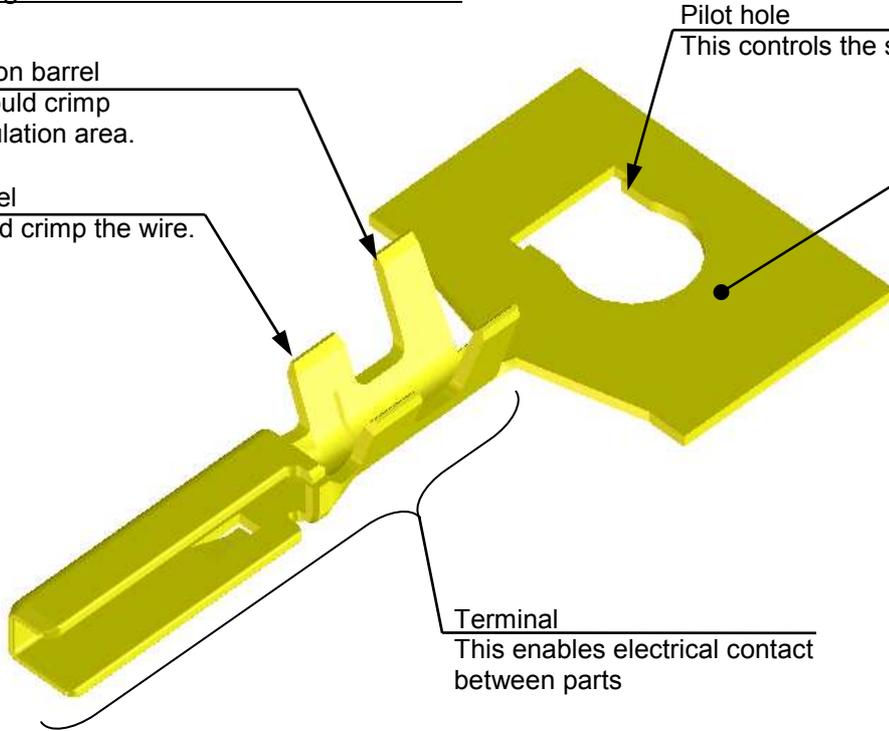
This would crimp the wire.

Pilot hole

This controls the stamping position.

Carrier

This connects the terminals in a chain.

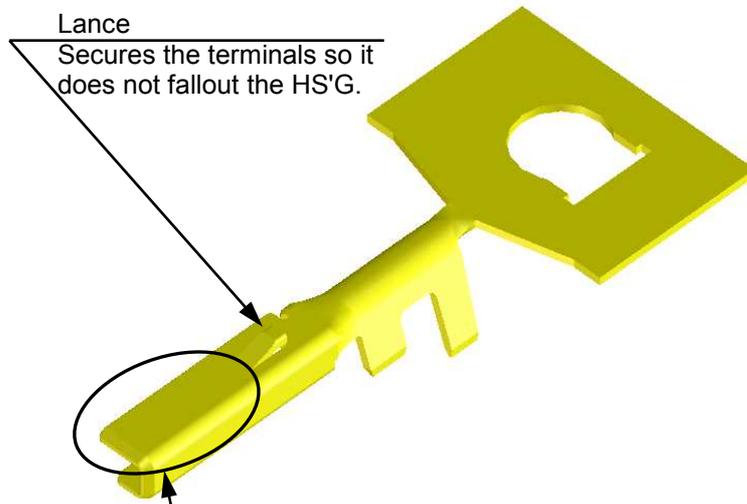


Terminal

This enables electrical contact between parts

Lance

Secures the terminals so it does not fallout the HS'G.



Contact area.

Where terminals meet to have electrical connection.

※ Please refer to MX DWG (SD-502438-001) for detailed dimensions and shape.

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 4/21
EN-37-1(019)			



3-2. Definitions on harness: 502439 series

Lock protection wall

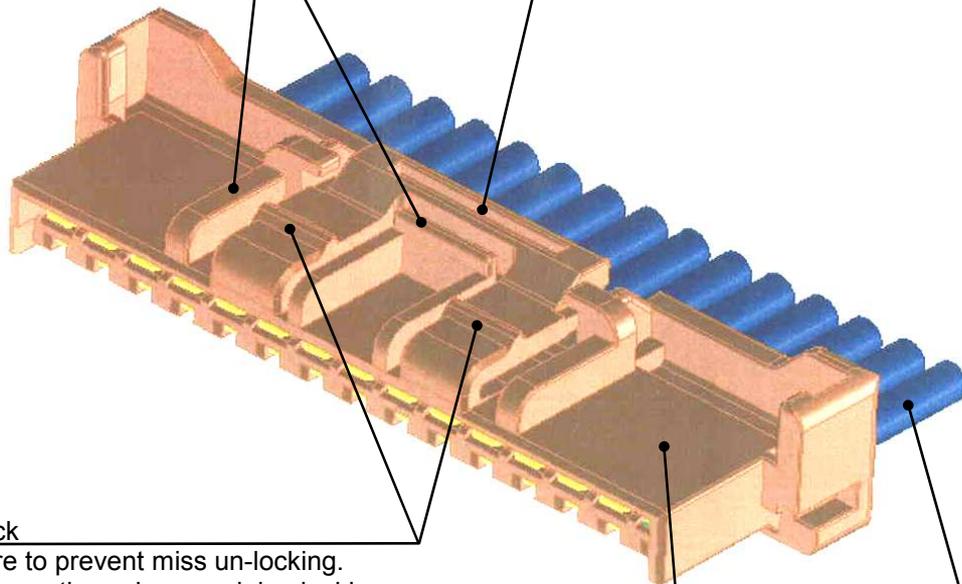
Prevents lock from breaking due to hooking, and pushing.

Lock release bar

Connected part to release positive lock arranged right and left at the same time

Positive lock

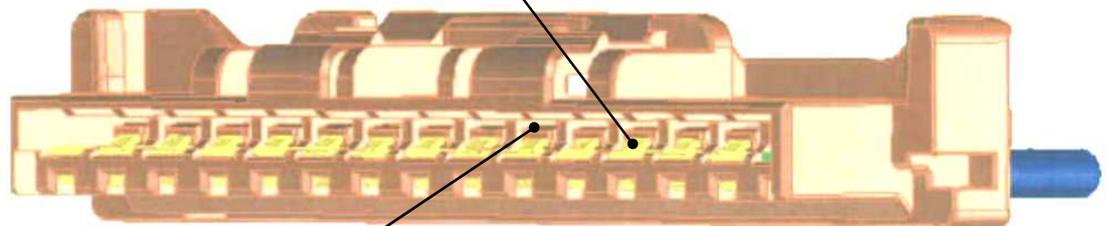
Lock feature to prevent miss un-locking. You need to go through a special unlocking procedure when removing the terminal.



Plug. TERM.
(502438 series)

Plug. HS'G
(502439 series)

Applicable wire
(AWG#22~#26)



Mold lance

Locks the terminals so it does not fall out the HS'G.

※ Please refer to MX DWG (SD-502439-001) for detailed dimensions and shape.

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 5/21
EN-37-1(019)			

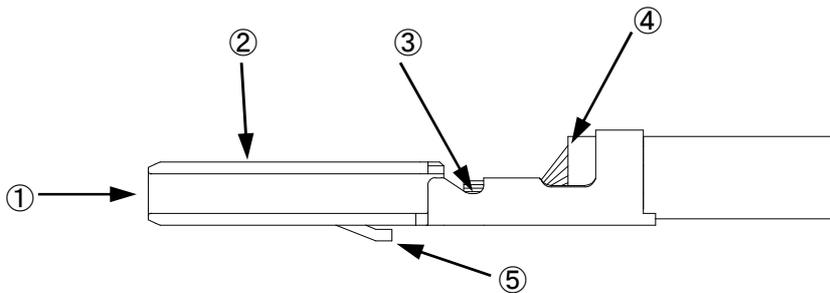


【4. Crimping】

The following define the correct appearance and crimping rejects after crimping

※Please refer to MX DWG (CS-502438-001) for detailed crimp height and applicable wire etc.

4-1. Appearance



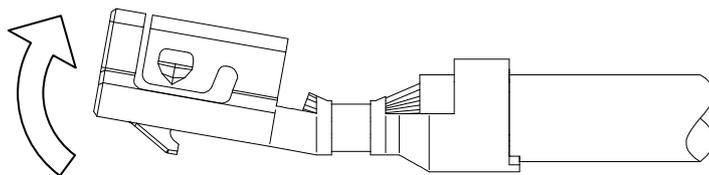
- ① No deformation, straight
- ② No deformation on the contact and box
- ③ The wire is coming out from the wire barrel but does not jump out from the terminal.
- ④ The insulation ends just in the middle of the insulation barrel and the wire barrel.
- ⑤ No deformation on the lance.
- ⑥ No other abnormality.

4-2. Crimp rejects(The product shape is an example)

Following rejects could apply negative impact toward HSG insertion and product performance.

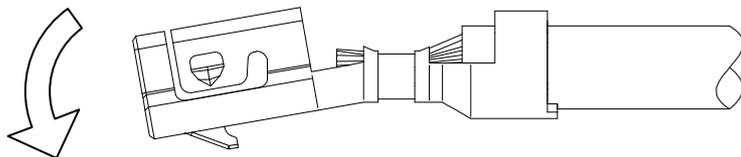
① Bend up

This could cause bad insertion force, retention force, and electrical failure.



② Bend down

This could cause bad insertion force, retention force, and electrical failure.

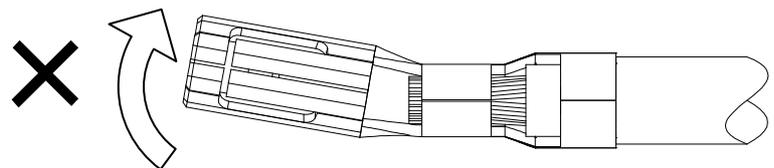
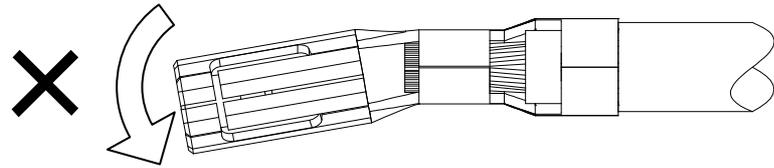
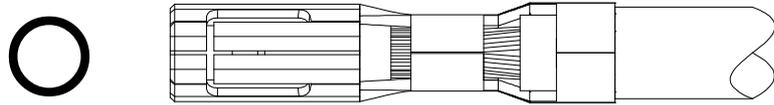


REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 6/21
EN-37-1(019)			



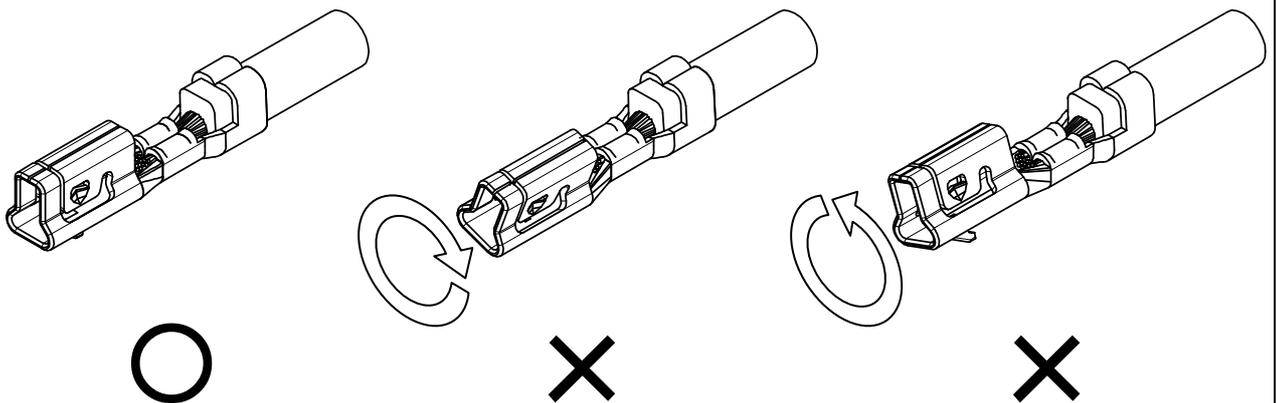
③ Twist

This could cause bad insertion force, retention force, and electrical failure.



④ Rolling

This could cause bad insertion force, retention force, and electrical failure.



REVISE ON PC ONLY

B

SEE SHEET 1 OF 21

TITLE:

**2.0mm PITCH W/B CONN.SINGLE Series
APPLICATION SPECIFICATION**

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AS-502439-002

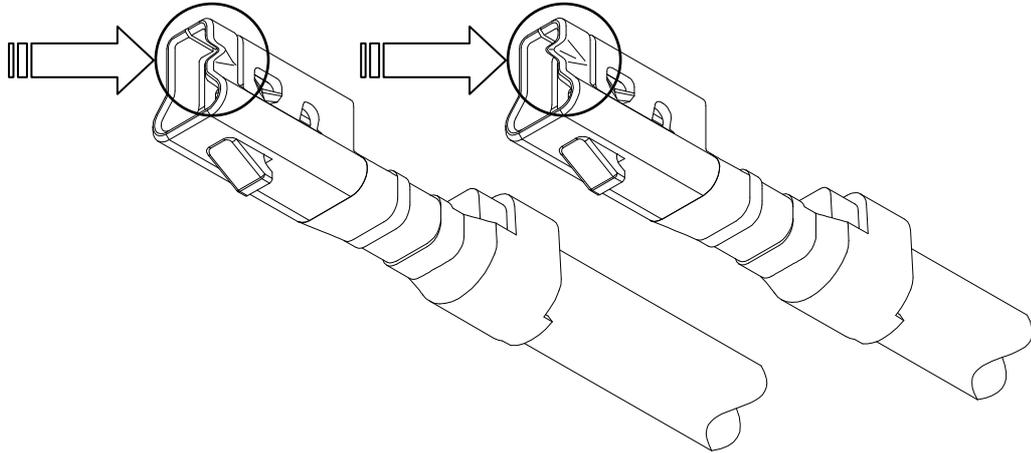
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AS502439002.DOC

SHEET
7/21



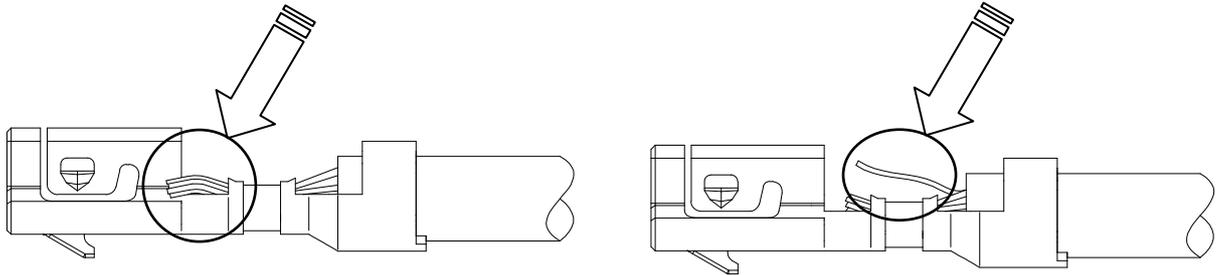
⑤ Contact box deformation

This could cause bad insertion force, retention force, and electrical failure.



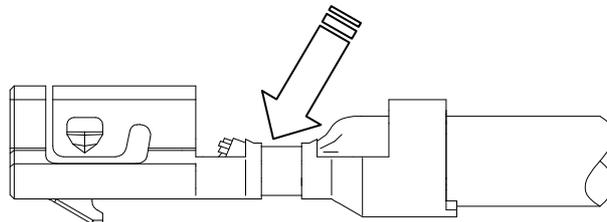
⑥ Wire jumping out

Bad efficiency when inserting terminal to the HS'G.



⑦ Crimping position too close

If you crimp the insulation with the wire barrel, this could lead to disconnection, low pull strength, electrical failure and etc.

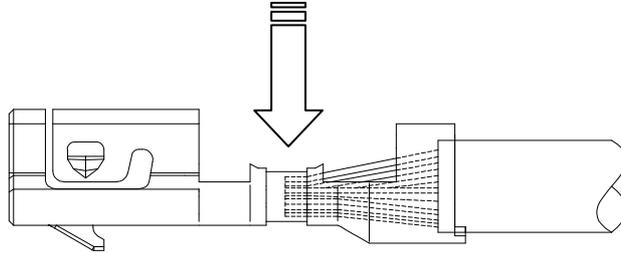


REVISE ON PC ONLY		TITLE:	
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DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 8/21
EN-37-1(019)			

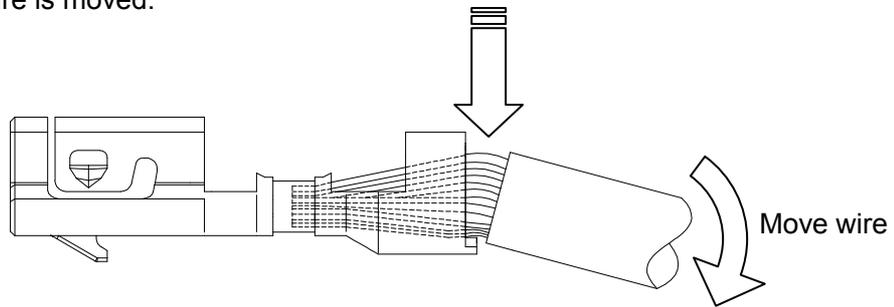


⑧ Crimping position too far

When the crimping is be done outside the barrel, the pull strength could decline and electrical performance may fail from meeting the requirements.

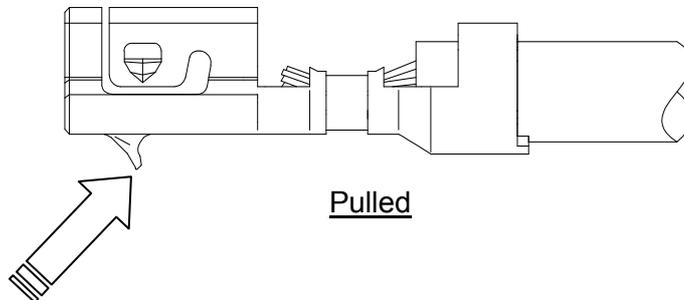
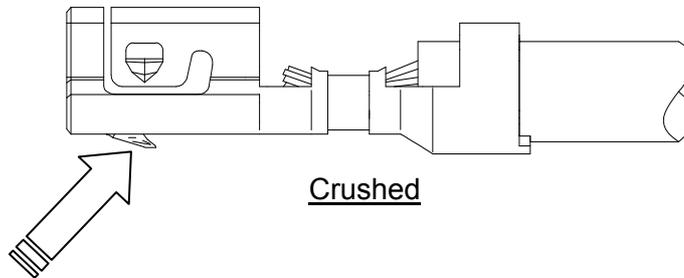


The insulation is not hold down with the barrel, therefore, the wire could easily be exposed when the wire is moved.



⑨ Deformation of terminal lance

HS'G lock force too low which could cause retention force decline.



REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
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DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 9/21
EN-37-1(019)			



【5. Instructions on mating crimped terminal to Plug. HS'G】

Following defines(※) the terminal insert and repair.

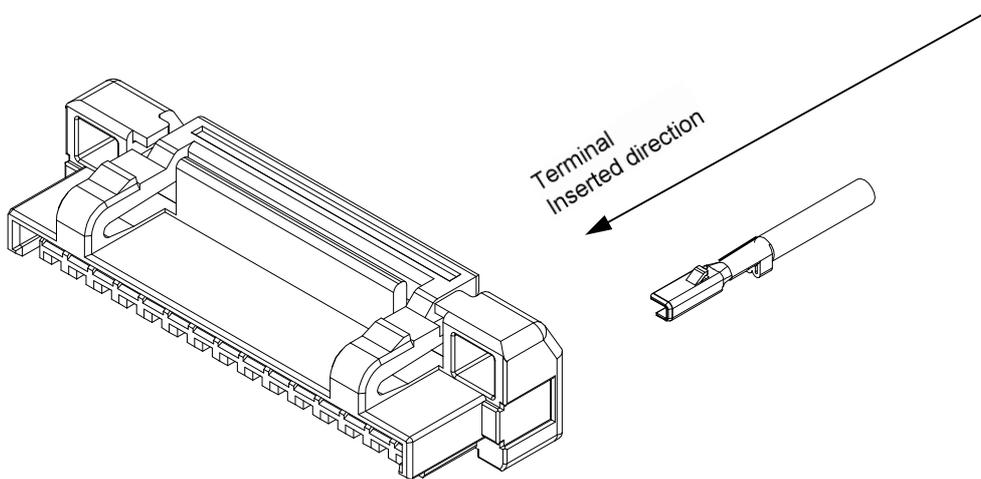
5-1. Terminal mating

- ① Hold the HS'G on the top/bottom surface.
- ② Please hold the cable at a 10mm distance from the crimped section.

NOTE

※When you hold the wire at a further position, the wire would bend easily, making it difficult to insert the terminal.

※The value (10mm) is a reference. It changes regards to the wire size and material. Please confirm the best position before starting the insertion.



REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 10/21
EN-37-1(019)			



APPLICATION SPECIFICATION



LANGUAGE

ENGLISH

- ③ Hold terminal with the lance on the top, insert the terminal straight into the HS'G until the terminal hits the inner wall. (300 -500g forces is recommended) (See Figure 1)

NOTE

※Please crimp the terminal using the specified height and width.
(Refer to CS- 502438-001)

※When insertion cannot be done smoothly, do not force the terminal to mate the connector. Please reconfirm if there is no deformation in the plastic or the terminal and re- insert.

Please be careful on the direction of the terminal insertion. When the terminal is inserted in the wrong direction, it could lead to terminal deformation or Plug. HS'G breakage. (See Figure 1,2)

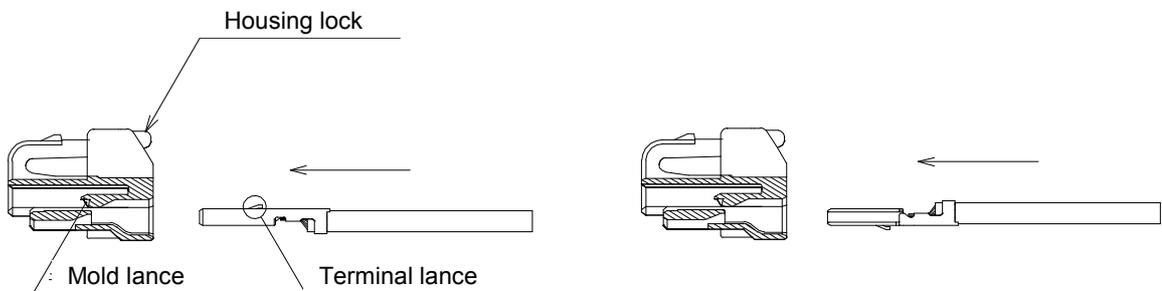
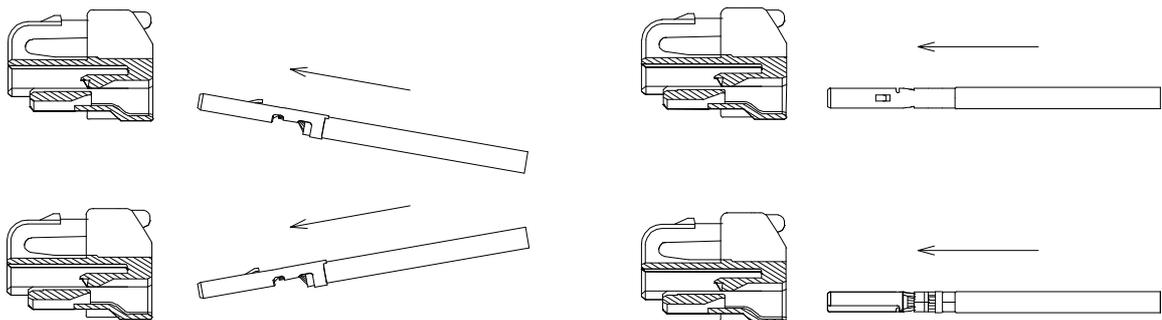


Fig. 1 ○ Correct mating direction

✗ Terminal upside down



✗ Tilted

✗ 90degrees rotated

Fig.2 Wrong direction

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 11/21
EN-37-1(019)			



- ④ Confirm if the terminal is inserted correctly by pulling the terminals with little force (100g). Do not pull hard.
- ⑤ After inserting all terminals, confirm from the mold lance windows to see if all the lances are in the correct position. If they are inserted correctly, you would be able to see the lances clearly. (See Figure 3, 4)

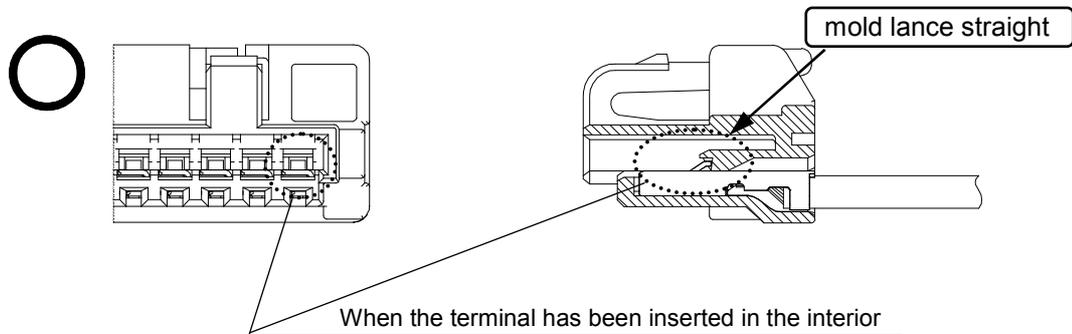


Fig.3 Correct mated

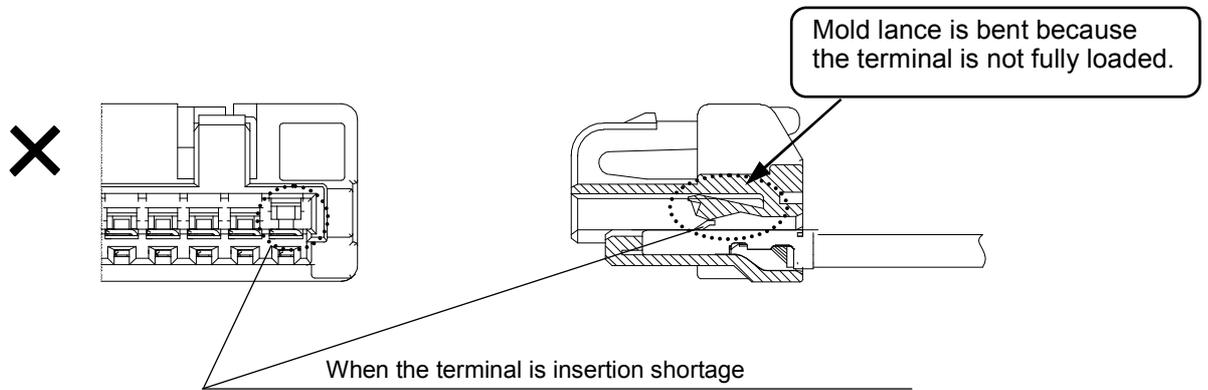


Fig.4 Not correct mated

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 12/21
EN-37-1(019)			



NOTE

※When the terminal is not loaded fully, the terminal would fall out of the HS'G.

※In the above figure, the mold lance is bent at the most. Therefore, even if you re-insert the terminal, the mold deformation may not improve, which could lower the retention force. In this case, please be sure to use a new Plug. HS'G.

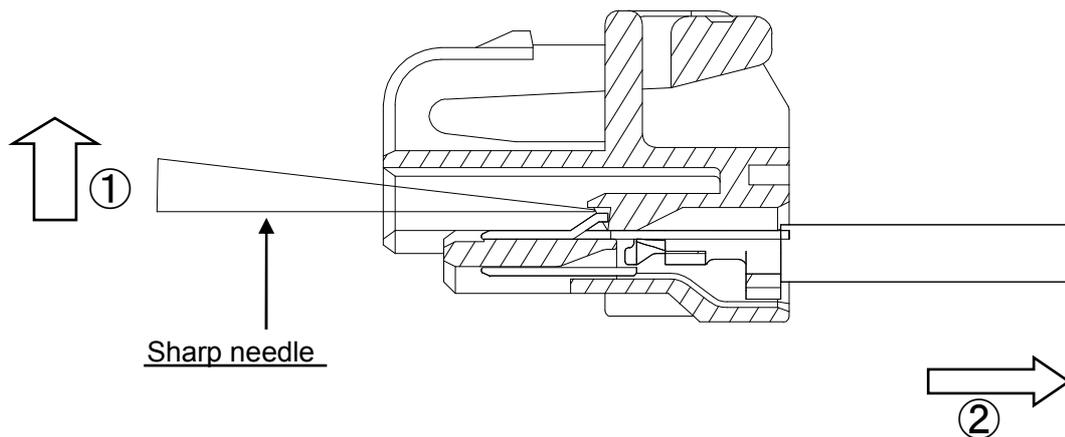
- ⑥ When checking after terminal insertion, do not pull or bend the wire too much. The unanticipated force to the connector may lead to contact failure.
- ⑦ Please use the defined mating connector when you check the continuity. Mating with the wrong connector may lead to terminal deformation and contact failure.

5-2. Crimped terminal repairing

When you need to remove the terminal which was once inserted, please use a sharp needle and lift the mold lance. When you lift the lance, the mold lance strength declines extremely. Therefore, when you re-insert the terminal, the terminal may fall out easily. **To prevent this condition, please use a new Plug. HS'G.**

※Do not pull the wire with too much force.

※When repairing the connection, please be careful not to deform the lance on the terminal.



REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
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DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 13/21
EN-37-1(019)			

【6. Bonding harness】

Please consider the following when bonding the harness.

- ① When bonding the connector, please bond at a further position than 35mm so the force on the wire would be equal at all points. (See Figure 5)
- ② Please bond so force is distributed. (See Figure 6)

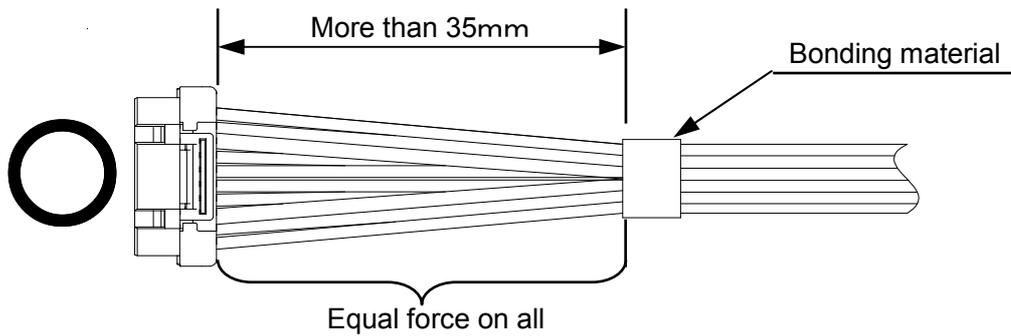


Fig.5. Correct bonding condition

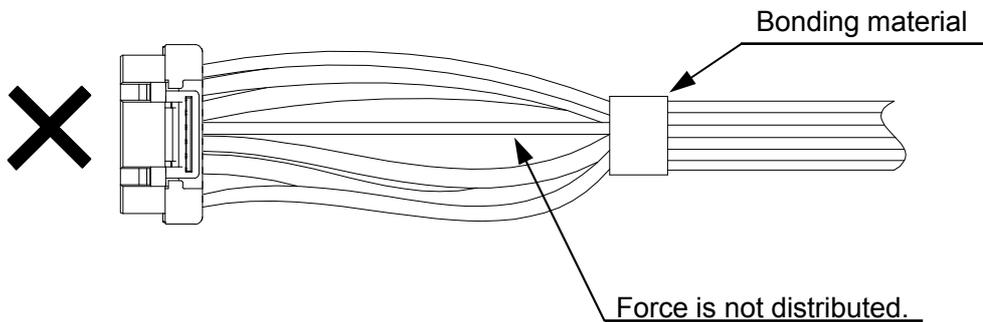


Fig.6 Not correct bonding condition

NOTE

※Do not pull too much even when the products are entangled. The connectors could break.

※Do not drop or hit the connectors.

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 14/21
EN-37-1(019)			



【7. Harness packaging】

Please consider the following when packing the products.

- ① Bond the harnesses. **One bond should have 20 MAX harnesses.**

NOTE

※When bonding the harnesses, do not use tight material such as rubber bands but use plastic ribbons and bond in the middle. Furthermore, use air stuffing to prevent damage from shock. (See Figure 7)

When you bond number of connectors at once, the connectors could hit each other and break. Please be careful.

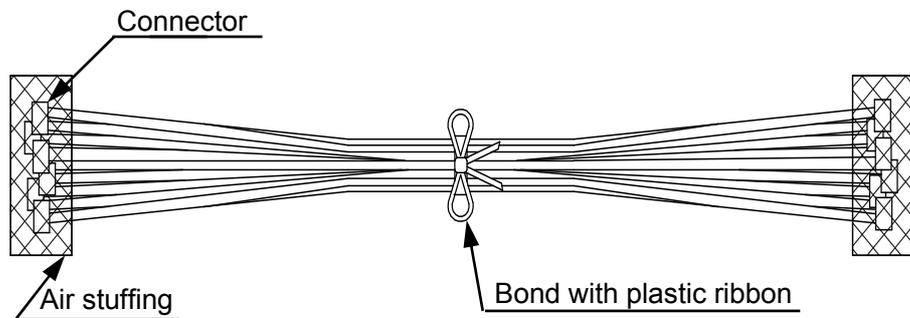


Fig.7 One Bond

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
REV.	DESCRIPTION	THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INC. AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION	
DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 15/21
EN-37-1(019)			



APPLICATION SPECIFICATION



LANGUAGE

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② Place the harnesses in the box.

NOTE

※Please pack the products alternately as described in the figure to prevent too much force on the connectors. (See Figure 8 ①)

※Please locate air stuffing in the very bottom and places where space can be found. (See Figure 8 ②)

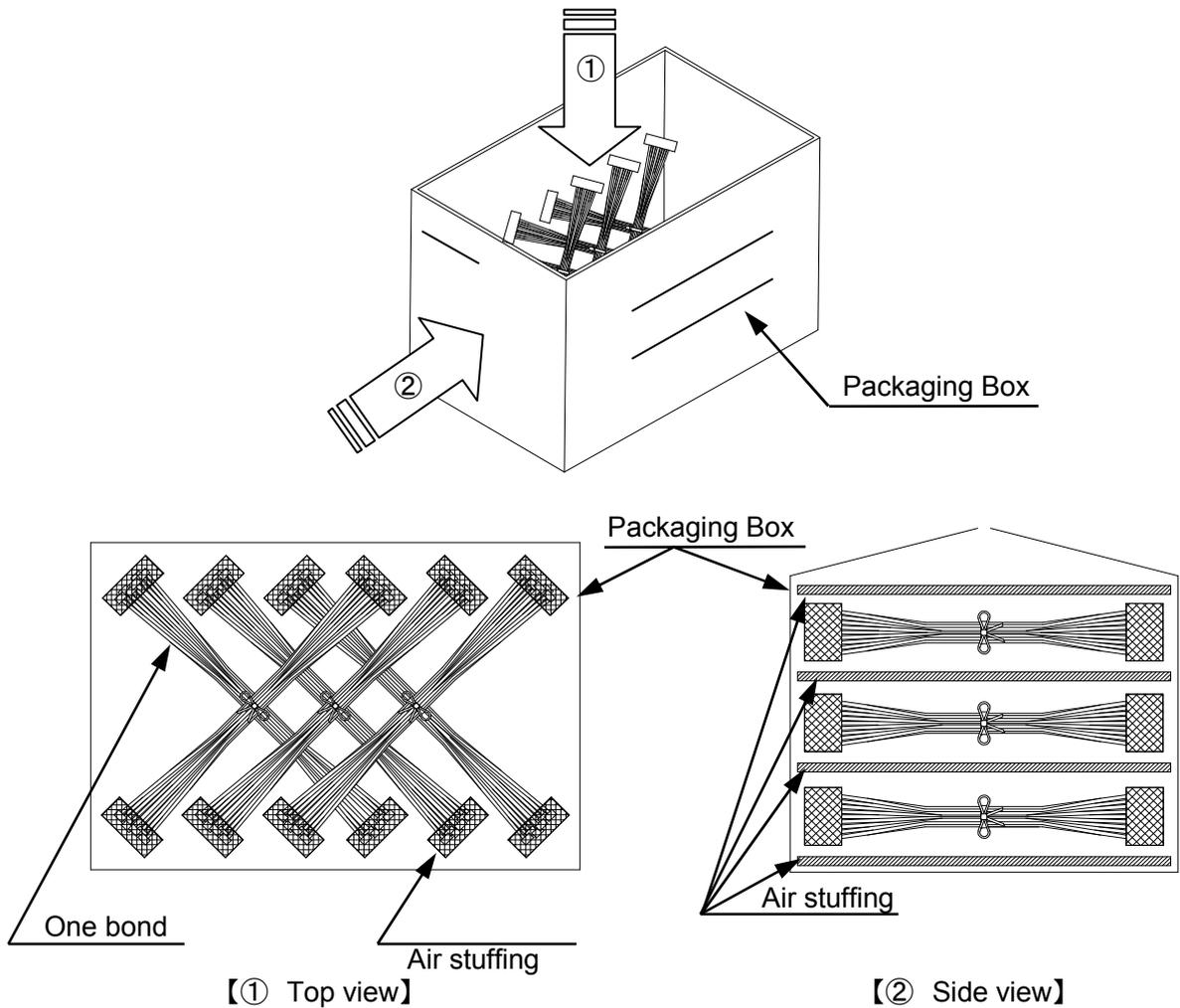


Fig.8 Packaging view

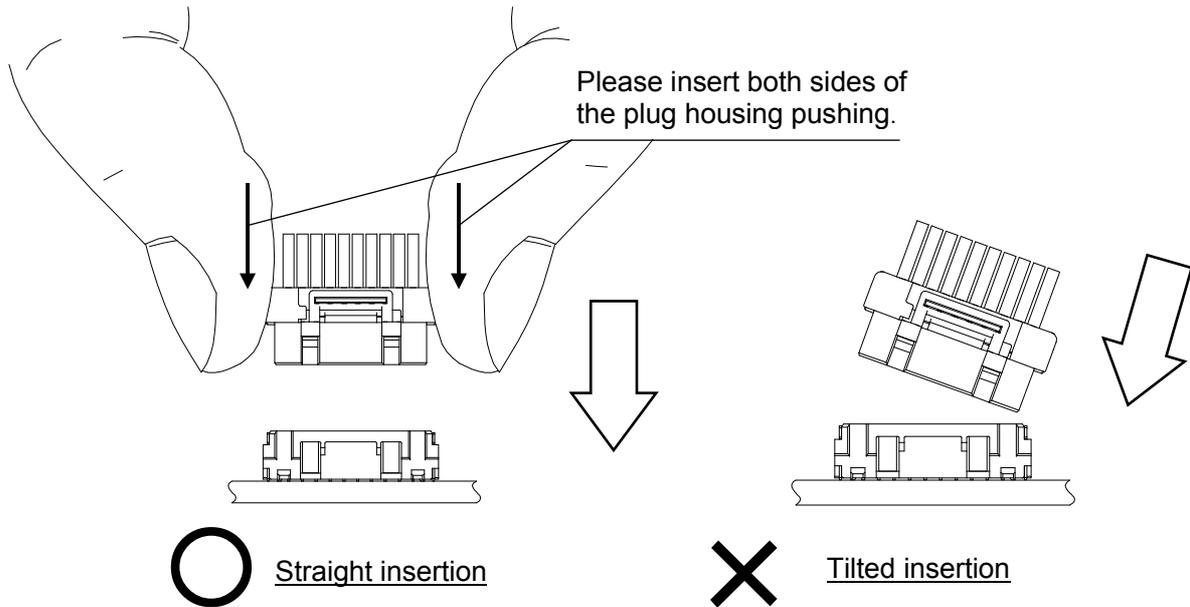
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DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 16/21
EN-37-1(019)			



【8. Instructions on mating crimped terminals to plug HS'G】

8-1. Recommended insertion

Set the Plug. and the Rec HS'G ASS'Y in the correct direction and insert the Rec. HS'G straightly in the Plug HS'G. Please hold the both sides of the Plug. HS'G and **push until the connectors lock completely**. After mating, confirm the positive lock is in the correct location.



NOTE

※Do not push the positive lock of the Plug. HS'G when mating. This prevents the formal movement of the locking where the lance slips over the positive lock. This leaves excessive load to the HS'G and end as a damage.

※Please push the connector until it hits the wall. This connector is designed to prevent pin damage due to tilted insertion. However, please keep in mind that tilted insertion could widen the side walls on the mold which could lead to lock force decrease, especially when the number of circuits is big.

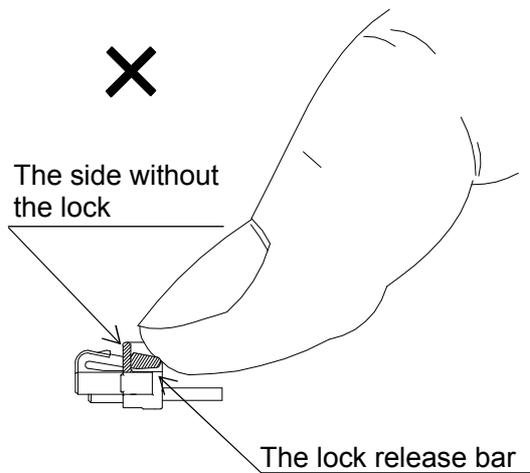
※In case the insertion is not smooth, please confirm if there is no damage to the connector nor the pin, and reinsert.

REVISE ON PC ONLY		TITLE:	
B	SEE SHEET 1 OF 21	2.0mm PITCH W/B CONN.SINGLE Series APPLICATION SPECIFICATION	
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DOCUMENT NUMBER AS-502439-002		FILE NAME AS502439002.DOC	SHEET 17/21
EN-37-1(019)			

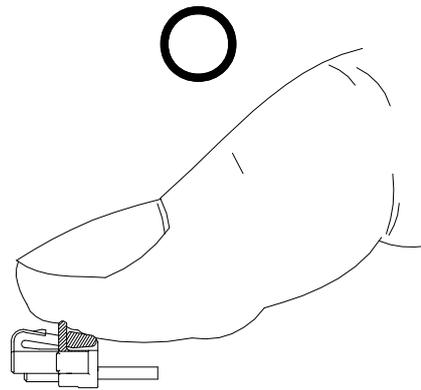


8-2. Recommended removal

Hold the wires together, attach your fingers to the side without the lock and push the positive lock on the sides. **When confirmed that the lock is released**, pull the connector upwards.



The lock release bar is pushed only by the tip of a finger.



The lock release bar is pushed flat of the finger.

NOTE

※Please hold all wires equally to prevent excessive force on certain wires. Excessive force could lead to damage.

※When you press the lock removal bar, use your finger cushion and not the tip of your fingers, to avoid nail damage injury.

※When removing the lock, be sure to unlock completely. This connector is designed so the connector does not unlock when the positive lock is in effect. When you try to pull the connector with the positive lock is in effect, the connector will break.

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EN-37-1(019)			



8-3. Wiring after mating(The product shape is an example)

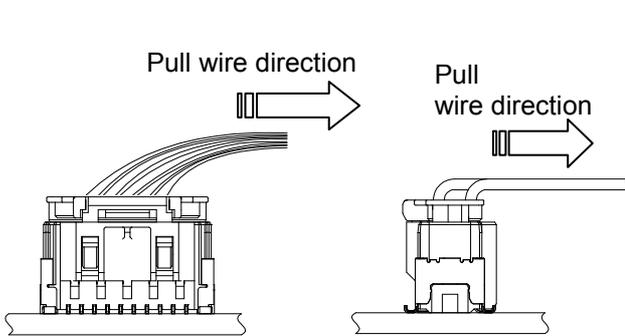
NOTE

※After mating, do not pull or bend the wire excessively. The pull strength could add force to the terminal crimping area and the connectors which would cause contact failure. Especially, avoid such conditions where force is applied to certain wires only. (See Figure 9)

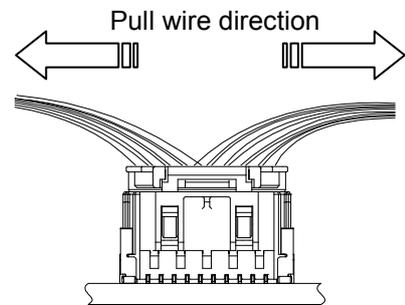
※When all force is gathered to one wire, the wire could fall out of the connector.

※After mating, do not pull the wires in more than two different directions. (See Figure 10)

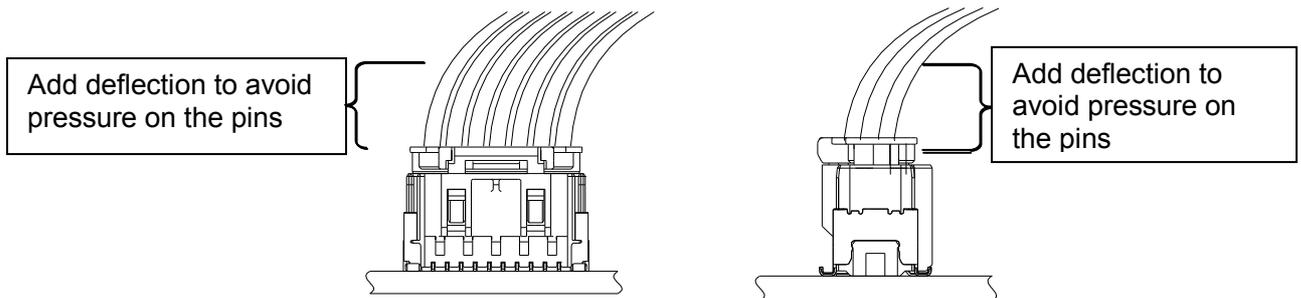
※When you check the wiring, please care for the connector so the connector does not receive excessive force. (See Figure 11)



✗ Fig.9 Pull excessively



✗ Fig.10 Pull in more than two directions



○ Fig.11 Wire with deflection

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EN-37-1(019)			



APPLICATION SPECIFICATION



LANGUAGE

ENGLISH

【9. Other】

○Tools and wire to use

1. In case you would like to use different size wire, please let us know in advance since they would not be covered under warranty.
2. For rejects that occurred by using different tools other than specified in the spec, they would not be covered under warranty.

○Rating & performance spec

1. Please use this product within the spec (PS-502443-001)
2. Do not mate/unmated while electricity is flowing.
3. Please use the connector after confirming that it meets the required spec for your product.
4. In order to avoid short circuits, please be careful so no metal panels and metal pieces interfere with the connector.

○Application

1. This is not designed to meet applications which are used under conditions where a person's life could be put under danger. Please do not use this product for applications in the medical, aircraft, atomic power, etc without notifying us.
2. In case you were to use this connector for automotive/boat applications, please notify us in advance. (We would test to see toward your spec.)
3. Do not use the product outside or any other atmosphere which is equivalent to this.

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EN-37-1(019)			

