

ISH[®], ISH[®]-V, ISH[®]-VS

Instruction Manual

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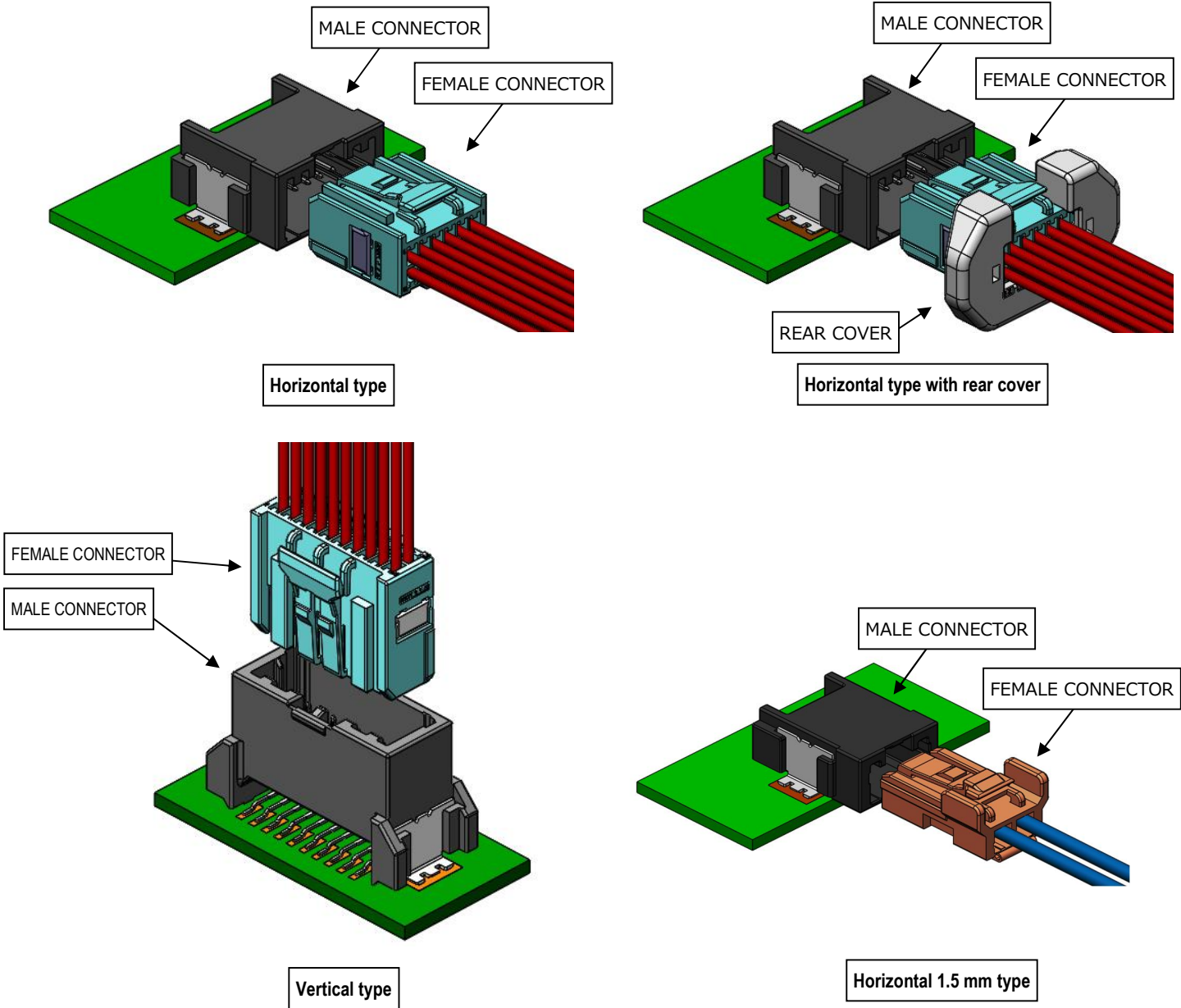
1.Purpose

The Manual explains the handling of ISH CONNECTOR・ISHV CONNECTOR and ISHVS CONNECTOR.

2. Applicable items

The Manual is applicable to the items listed below.

Name	Terminal Tab Size	Part No.	Plating	Image
FEMALE TERMINAL	0.5mm	VT009-01	Snメッキ	
		VT009-02		
		VT009-03	Auメッキ	
FEMALE TERMINAL 1.5mm	1.5mm	VT011-01 VT011-02 VT011-03 VT011-04	Snメッキ	



3. Crimping procedure

3-1. Applicable wires

Terminal Tab Size	Part No	Applicable Wire
0.5mm	VT009-01 VT009-02 VT009-03	Wire Size : $0.3\text{mm}^2 \sim 0.5\text{mm}^2$ Insulation Outer Diameter : $\phi 1.60\text{mm}$ MAX.
1.5mm	VT011-01 VT011-02	Wire Size : 0.5mm^2 Insulation Outer Diameter : $\phi 1.93\text{mm}$ MAX.
	VT011-03	Wire Size : 0.75mm^2 Insulation Outer Diameter : $\phi 2.50\text{mm}$ MAX.
	VT011-04	Wire Size : 1.25mm^2 Insulation Outer Diameter : $\phi 2.67\text{mm}$ MAX.

3-2. Wire strip length

- ① Strip the insulation off (see Fig. 1)
- ② Check to see that there is no damage to the conductors or insulation, cut off conductors, short conductors and deformed conductors as shown in Fig. 2.

Do not use wires with damaged conductors, cut off conductors, short conductors and deformed conductors.

Using faulty wires may cause crimping problems.

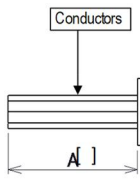
	Terminal Tab Size	Part No	Dimension [A]
	0.5mm	VT009-01 VT009-02 VT009-03	$3.0 \pm 0.1\text{mm}$
	1.5mm	VT011-01 VT011-02 VT011-03 VT011-04	$4.0 \pm 0.1\text{mm}$

Fig 1. Wire strip

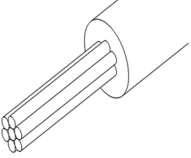
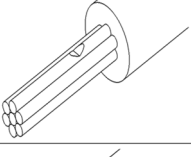
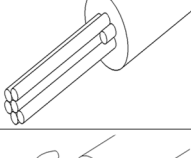
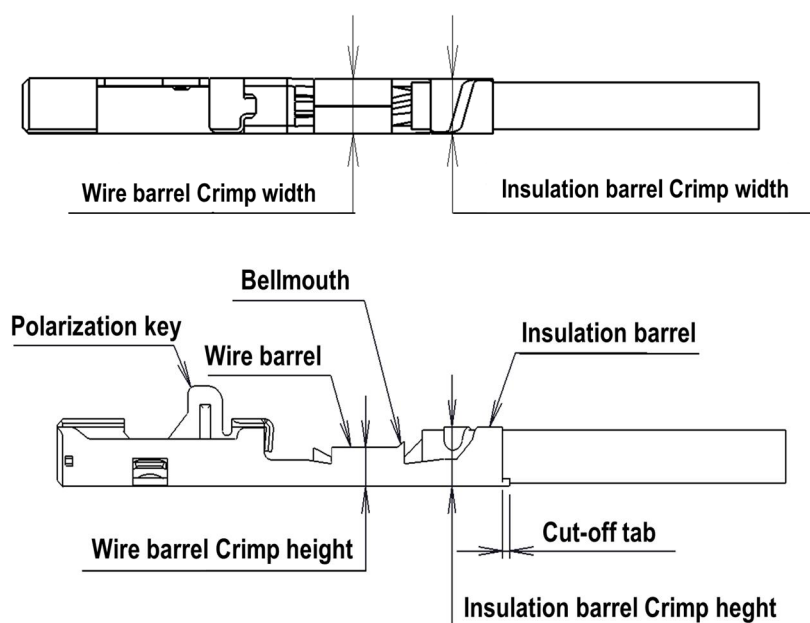
Condition	Image
Good	
Damaged conductors (defect)	
Cut off conductors (defect)	
Deformed conductors (defect)	

Fig 2. Stripped wires (unacceptable examples)

3-3. Terminal part names

**Fig 3. Terminal part names**

3-4. Crimping requirements

(1) Crimp dimension

Crimped female terminals must satisfy the crimp dimension specified in Table 1.

Table 1. Crimp dimension

Terminal Tab Size	Part No.	Wire Size	Insulation Outer Diameter	Wire barrel Crimp Height(※)	Wire barrel Crimp width	Insulation barrel Crimp height	Insulation barrel Crimp width
0.5mm	VT009-01	0.3mm ²	Φ1.60mm MAX.	0.90±0.05mm	1.40±0.04mm	1.60 ^{+0.10} _{-0.05} mm	1.55±0.05mm
	VT009-02 VT009-03	0.5mm ²		0.95±0.05mm		1.80±0.05mm	
1.5mm	VT011-01 VT011-02	0.5mm ²	Φ1.93mm MAX.	1.00±0.05mm	1.60±0.05mm	2.00 ^{+0.10} _{-0.05} mm	2.00±0.05mm
	VT011-03	0.75mm ²	Φ2.5mm MAX.	1.05±0.05mm	2.00±0.05mm	2.30 ^{+0.10} _{-0.05} mm	2.00±0.05mm
	VT011-04	1.25mm ²	Φ2.67mm MAX.	1.30±0.05mm	2.00±0.05mm	2.80 ^{+0.10} _{-0.05} mm	2.80±0.05mm

※Crimp dimensions may be different depending on conductor construction of the wire.

Please contact our Sales Department shown in 15(sheet 29) about wire used, then we will verify it and notify you the appropriate crimp dimensions.

Measuring method for crimp dimension is described below.

Use the micrometer shown in Fig.4 for measurement of each part.



Fig 4. Micrometer

(1)-1. Measuring method for wire barrel crimp height is described below.

To measure the wire barrel crimp height, pinch the top of the wire barrel (winding side) and the bottom of the wire barrel with a micrometer. (see Fig.5)

Secure terminals firmly to obtain accurate measurement.

Do not pinch the bell mouth. The wire barrel crimp height can not measure accurately.

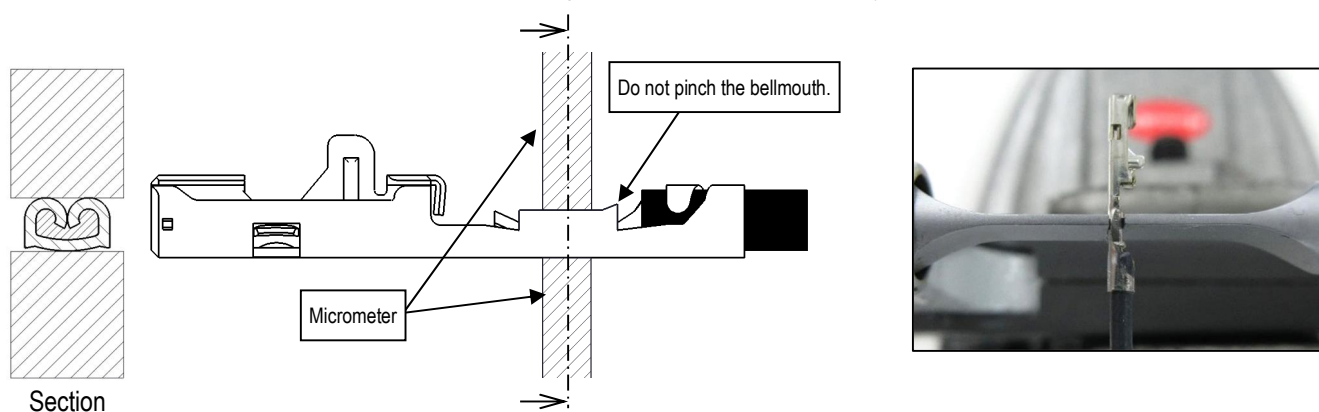


Fig 5. Wire barrel Crimp height measurement

(1)-2. Measuring method for insulation barrel crimp height is described below.

To measure the insulation barrel crimp height, pinch the top of the insulation barrel (winding side) and the bottom of the insulation barrel with a micrometer. (see Fig.6)

Secure terminals firmly to obtain accurate measurement.

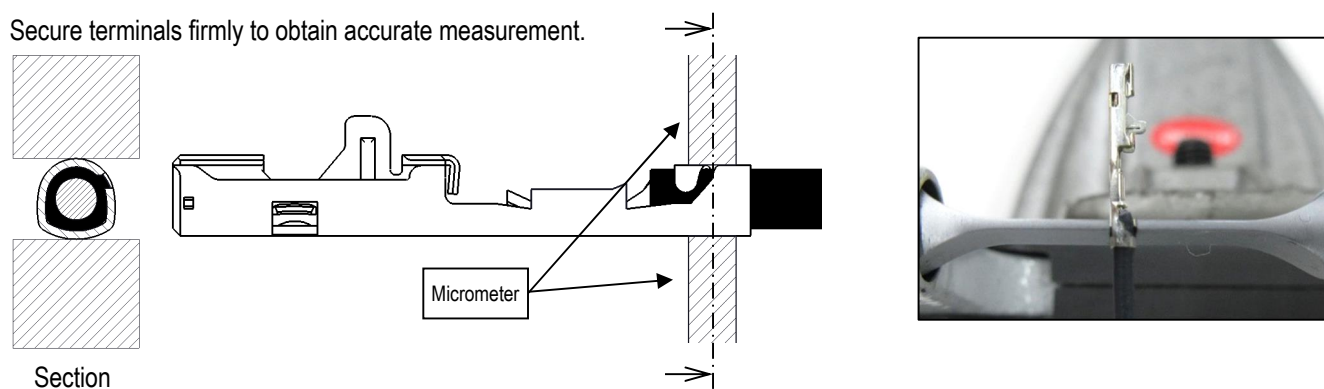


Fig 6. Insulation barrel Crimp height measurement

(1)-3. Measuring method for wire barrel crimp width is described below.

To measure the wire barrel crimp width, pinch the side of the wire barrel with a micrometer. (see Fig.7)

Secure terminals firmly to obtain accurate measurement.

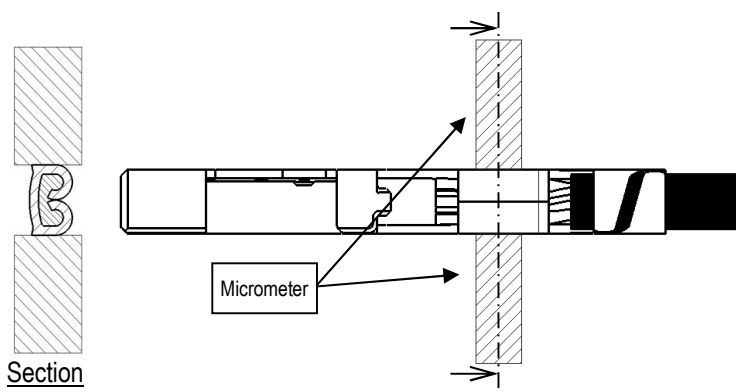


Fig 7. Wire barrel Crimp width measurement

(1)-4. Measuring method for insulation barrel crimp width is described below.

To measure the insulation barrel crimp width, pinch the side of the insulation barrel with a micrometer. (see Fig.8)

Secure terminals firmly to obtain accurate measurement.

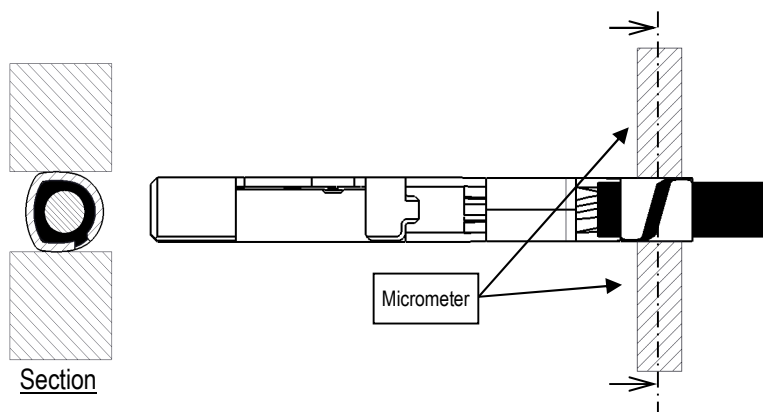


Fig 8. Insulation barrel crimp width measurement

(2) Bottom burrs

Burrs produced during crimping process must not extend beyond the bottom surface. (see Fig.9)

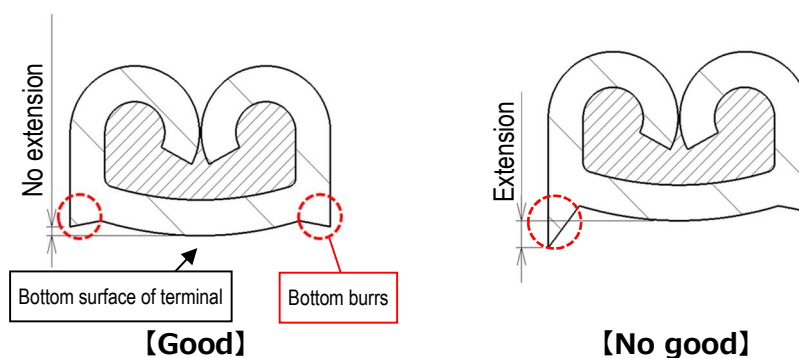


Fig 9. Bottom burrs

(3) Bellmouth, excess conductors and cut-off tab

Bellmouth, excess conductors and cut-off tab must satisfy the dimensions shown in Fig. 10 and Table 3.

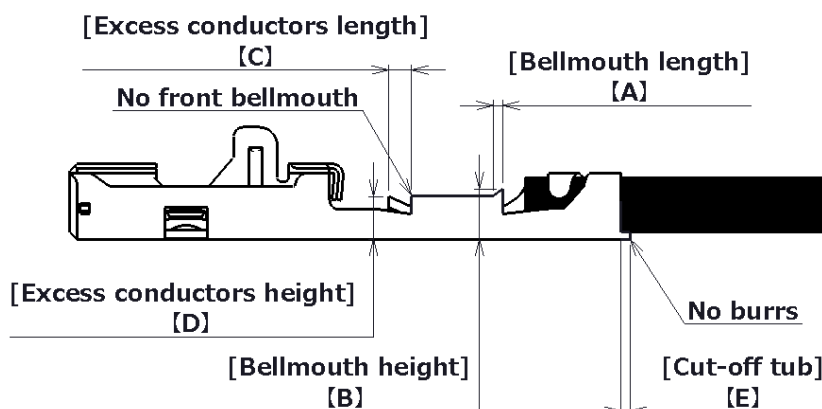


Fig.10. Bellmouth, excess conductors and cut-off tab

Table3.Dimensions: Bellmouth , excess conductors and cut-off tab

Terminal Tab Size	Part No.	Bellmouth length	Bellmouth height	Excess conductors length	Excess conductors height	Cut-off tub
		A	B	C	D	E
0.5mm	VT009-01	0.2 $\begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$ mm	1.1 ± 0.05 mm	0.95mm MAX.	0.50mm MAX.	0.20mm MAX.
	VT009-02					
	VT009-03					
1.5mm	VT011-01	0.3 $\begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$ mm	1.2 ± 0.05 mm	1.30mm MAX.	0.80mm MAX.	0.20mm MAX.
	VT011-02					
	VT011-03					
	VT011-04	0.45 $\begin{smallmatrix} +0.10 \\ -0.05 \end{smallmatrix}$ mm	1.7 ± 0.05 mm	1.50mm MAX.	0.50mm MAX.	0.20mm MAX.

(4) Unaligned wire barrel ends

Unaligned wire barrel ends is 0.1mm MAX..(Fig.11)

※If wire barrel ends are not aligned, resulting in different dimension of excess conductors or bellmouth between the sides, dimensions must be measured on larger side and be satisfied.

(In the case shown in Fig.12, measure excess conductors:[a],bellmouth:[b].)

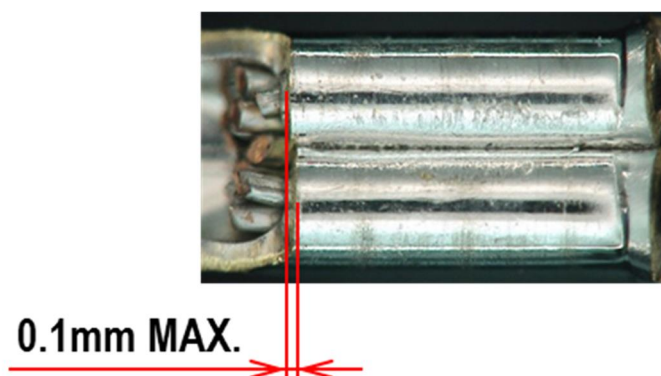


Fig 11. Unaligned wire barrel ends

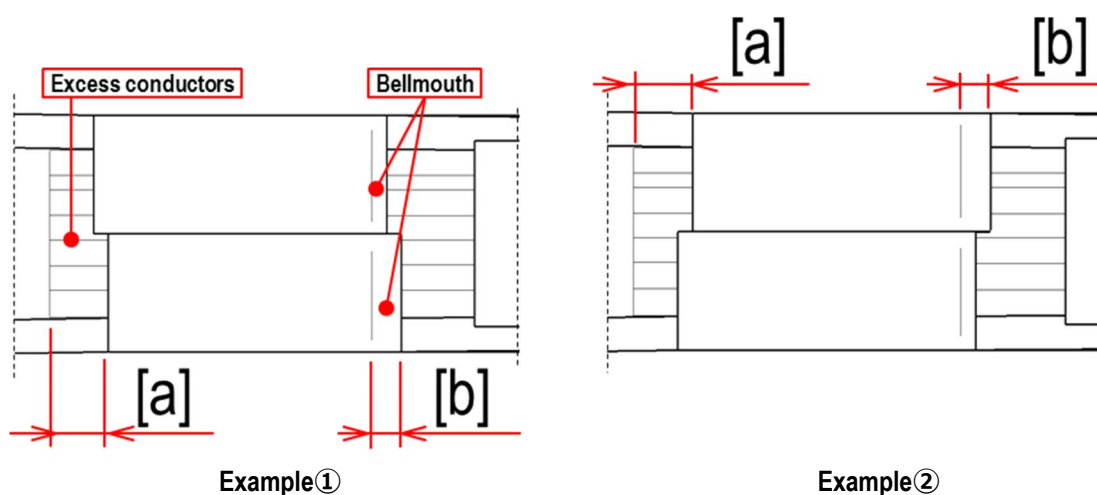


Fig 12. Example of unaligned wire barrel ends

(5) Rolling

Rolling is 3°MAX. from the wire barrel (baseline).(see Fig.13)

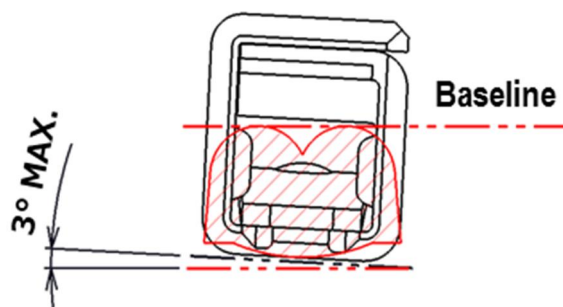


Fig13. Rolling

(6) Terminal twist

Terminal twist is 1.2°MAX. from the wire barrel (baseline). (see Fig. 14)

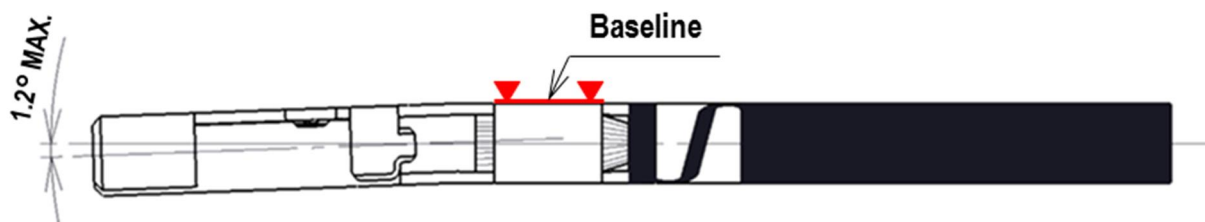


Fig 14. Terminal twist

(7) Bend up and Bend down

Bend up is [VT009-0* : 1.90mm MAX.]

[VT011-0* : 2.10mm MAX.],

and no Bend down,

the hight from the wire barrel(baseline) to the terminal box(measurement point). (see Fig. 15~16)

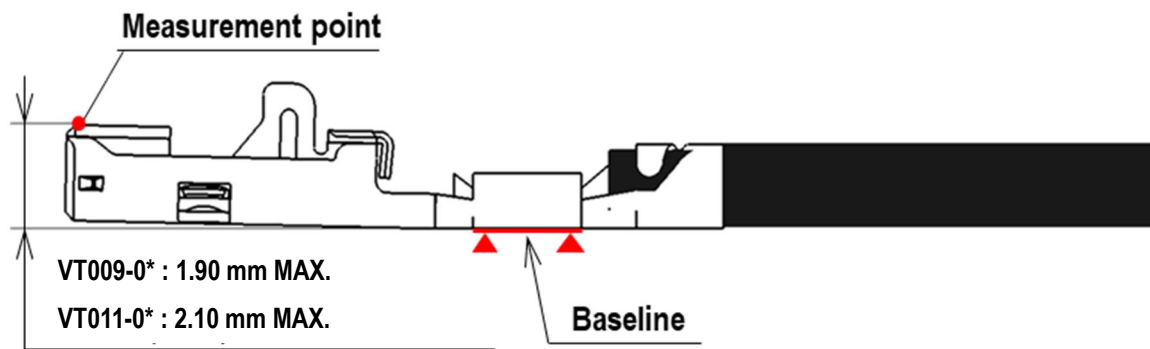


Fig 15. Bend up

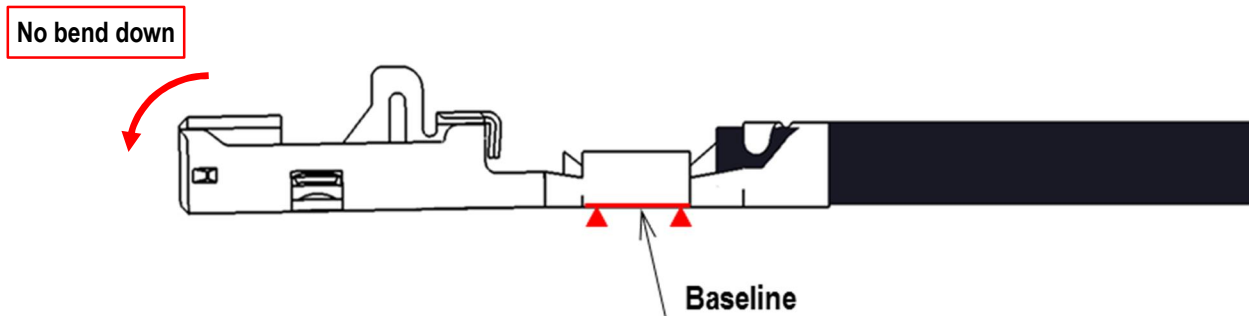


Fig 16. Bend down

3-5. Defective criteria

Terminals with the following conditions are deemed defective.

(1) No rear bellmouth

Rear bellmouth is not formed. (see Fig.17)

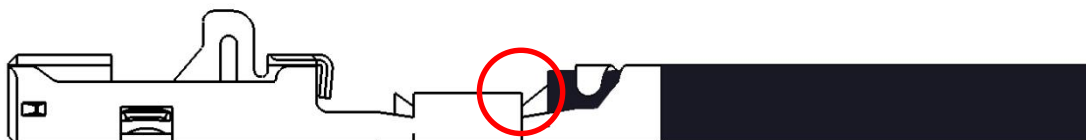


Fig 17. No rear bellmouth

(2) Insufficient conductors insertion

Conductors are insufficiently inserted into the wire barrel. (see Fig.18)

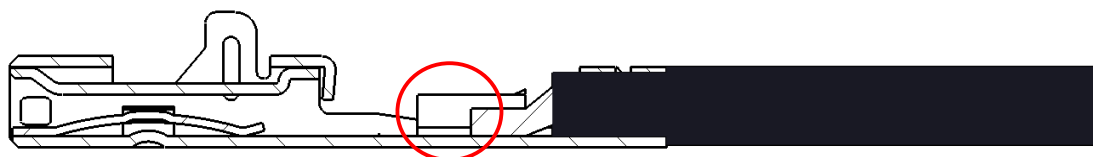


Fig 18. Insufficient conductors insertion

(3) Excessive conductors out

Excess conductors protrude from the wire barrel and does not satisfy the dimension in fig.10 of sheet 8. (Fig.19)

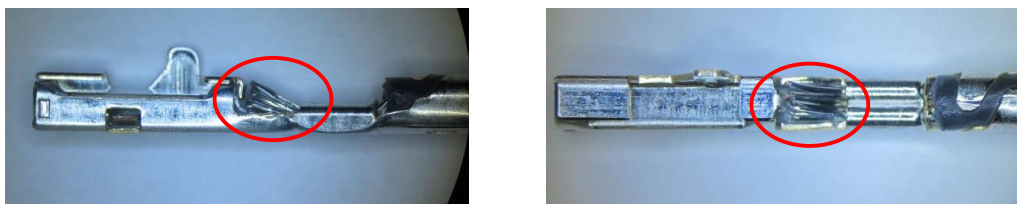


Fig 19 Excessive conductors out

(4) Incomplete conductors crimping

Conductors are not crimped inside the wire barrel, or within the female terminal. (see Fig.20)

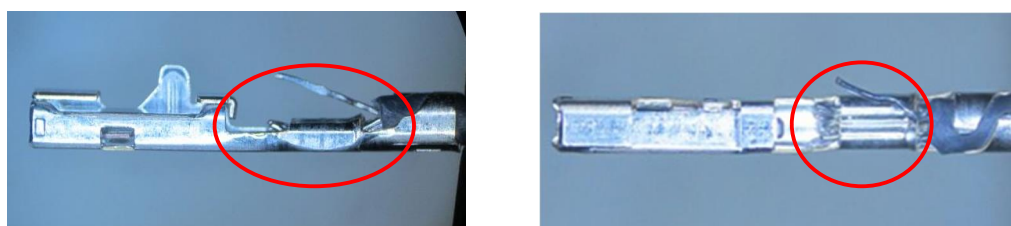


Fig 20. Incomplete conductors crimping

※Description of faults : Excessive conductors out & Incomplete conductors crimping

Please make sure there is no excessive conductors out and incomplete conductors crimping.

When retainer is inserted, excess conductors could push into adjacent terminals, causing short circuit. (see Fig.21)

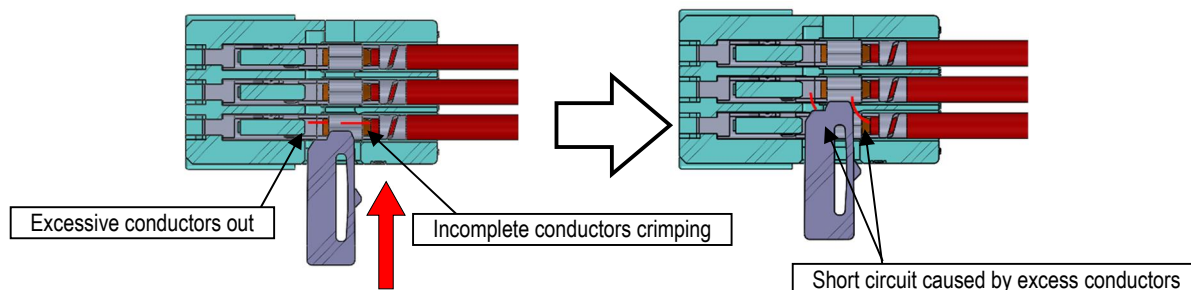


Fig 21. Short circuit caused by excess conductors

(5) Incomplete insulation crimping

Strip length is too short and insulation is crimped inside the wire barrel (see Fig.22).

Strip length is too long and insulation does not fit completely inside the insulation barrel (see Fig.23).

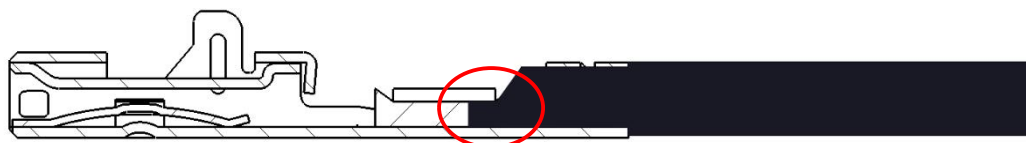


Fig 22.Strip too short

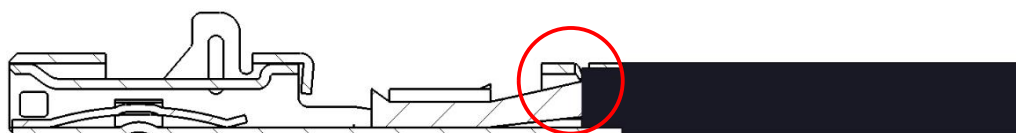


Fig 23.Strip too long

(6) Torn insulation

Insulation is torn by insulation barrel. (see Fig.24)

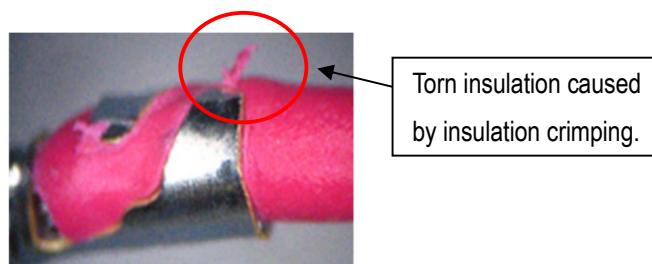


Fig 24. Torn insulation

4. Terminal insertion

- ① Ensure that the terminal is crimped correctly and there is no damage, deform or dirt present.
- ② Hold the wire to insert the female terminal as shown in Fig.25 and 26.
- ③ Insert the terminal into the corresponding corehole of the housing, as deeply as possible, in the orientation as shown in Fig. 25 and 26.
- ④ Once the female terminal is inserted, ensure that the female terminal retention is fastened by pulling the wire lightly towards you.

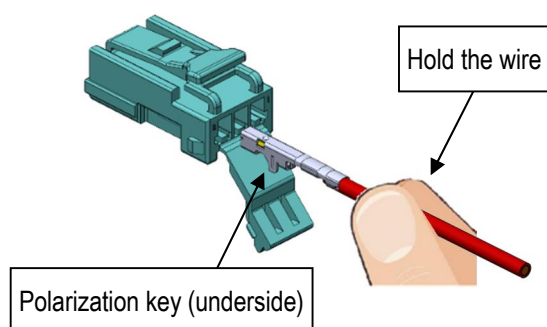


Fig 25. Terminal insertion direction: 1 ROW

Table3. PART NO.: 1 ROW

No. of Poles	Name	PART NO.
3	ISH FEMALE HOUSING 3P	V0113-91003-01
3	ISH-V FEMALE HOUSING 3P	V0037-91003-211
2 (1.5mm)	ISH FEMALE HOUSING 1.5mm 2P	V0170-91002-01

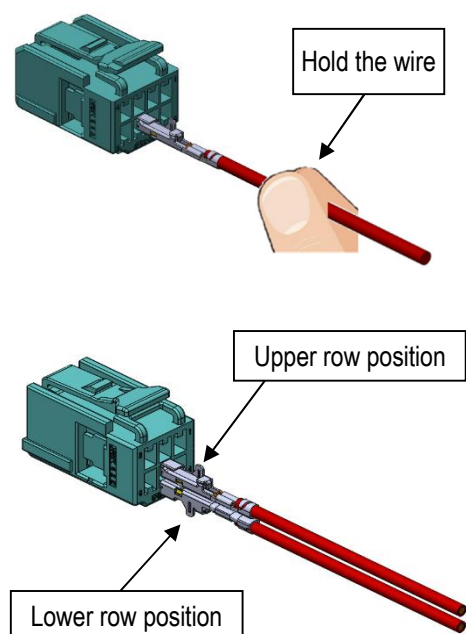


Fig 26. Terminal insertion direction: 2 ROW

Table4. PART NO.:2 ROW

No. of Poles	Name	PART NO.
6	ISH CONNECTOR 6P FEMALE HOUSING	V0116-91006-01 V0116-91006-11
8	ISH CONNECTOR 8P FEMALE HOUSING	V0116-91008-02 V0116-91008-12 V0116-91008-22 V0116-91008-32 V0116-91008-03
8	ISH-V CONNECTOR 8P FEMALE HOUSING	V0027-91008-211
10	ISH CONNECTOR 10P FEMALE HOUSING	V0020-91010-211
12	ISH CONNECTOR 12P FEMALE HOUSING	V0116-91012-01 V0116-91012-11 V0116-91012-21 V0116-91012-02 V0116-91012-12 V0116-91012-22 V0116-91012-31
12	ISH-V CONNECTOR 12P FEMALE HOUSING	V0027-91012-211
16	ISH CONNECTOR 16P FEMALE HOUSING	V0116-91016-01 V0116-91016-02
16	ISH-V CONNECTOR 16P FEMALE HOUSING	V0027-91016-211
20	ISH CONNECTOR 20P FEMALE HOUSING	V0116-91020-01
26	ISH CONNECTOR 26P FEMALE HOUSING	V0020-91026-211
32	ISH CONNECTOR 32P FEMALE HOUSING	V0116-91032-02

- ⑤ Terminals won't fit into the housing coreholes, if inserted in the wrong orientation (see Fig.27).

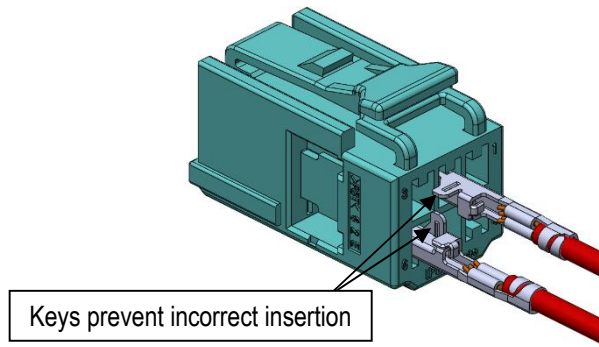


Fig27.FEMALE HOUSING Incorrect terminal insertion

Notes:

- ① Terminals must be inserted in the orientation instructed. Forcibly inserting terminals in any other orientation may result in damage or deformation. Furthermore, if the terminals are inserted with incorrect orientation, terminal key prevents insertion into coreholes. (see Fig.27)
- ② Once the terminal is inserted, do not apply excessive pulling force to the wire.

5. Secondary lock installation

5-1. Secondary lock part

Table5. PART NO.: FEMALE HOUSING

No of Poles	Name	PART NO.
3	ISH FEMALE HOUSING 3P	V0113-91003-01
3	ISH-V FEMALE HOUSING 3P	V0037-91003-211
2 (1.5mm)	ISH FEMALE HOUSING 1.5mm 2P	V0170-91002-01

① After terminal insertion is complete, close the secondary lock part.

You will hear audible click when the secondary lock part is engaged properly.

(The secondary lock part has two engaging portions. Press down to make sure both portions are engaged)

② Check that the secondary lock part is closed in completely, i.e. aligned with the bottom surface of the housing.

When the secondary lock part cannot be closed in completely, do not close forcefully. Check that the terminals are inserted correctly and sufficiently, and repeat the insertion procedure in 4. Insert all the terminals properly, and push the secondary lock part until audible click is heard.

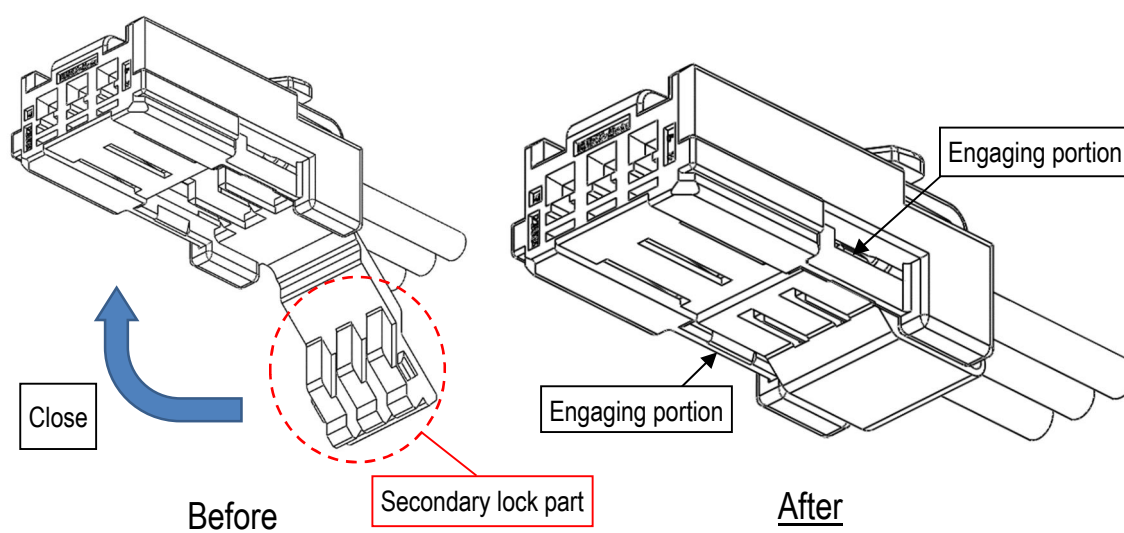


Fig 28. Installation of the secondary lock part

③ When terminal(s) is/are insufficiently inserted as shown in Fig.29, the secondary lock part cannot be closed.

Insert the terminal(s) completely, and close the secondary lock part again.

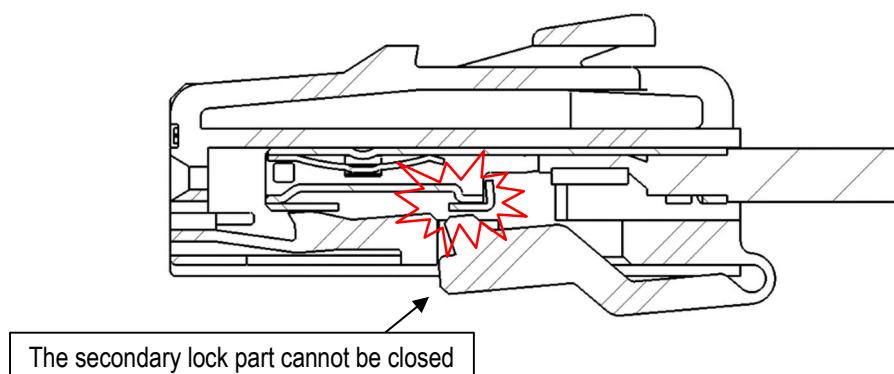


Fig.29. Insufficient the secondary lock part engagement

- ④ Do not use fingertips to install secondary lock part as shown in Fig. 30.

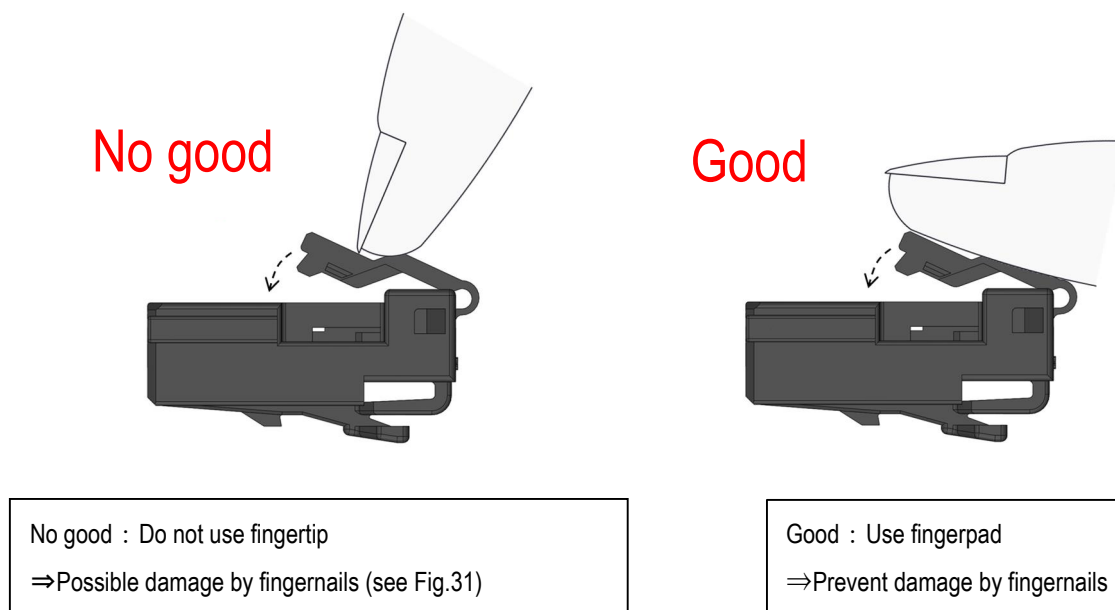


Fig.30. Precautions for secondary lock part installation

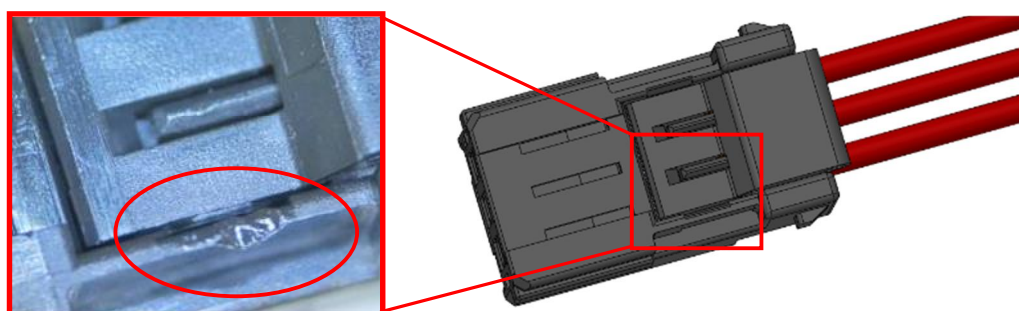
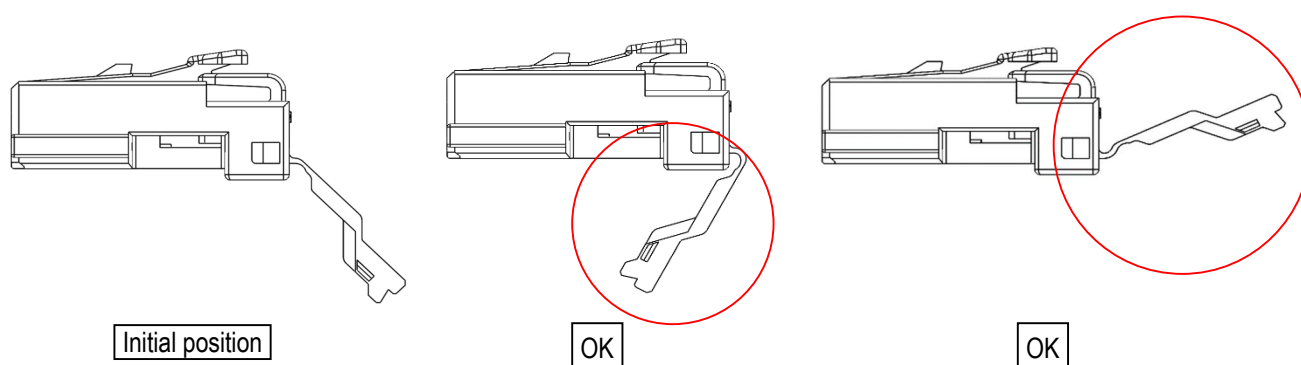


Fig.31. Example of damage on a secondary lock part

Notes:

- ① Initial position of the secondary lock part may be different. This does not affect the quality of the product.



5-2. Retainer

Table6. PART NO.: FEMALE HOUSING,RETAINER

No. of Poles	Name	FEMALE HOUSING PART NO.	FEMALE RETAINER PART NO.
6	ISH CONNECTOR 6P	V0116-91006-01 V0116-91006-11	V0116-92006-01
8	ISH CONNECTOR 8P	V0116-91008-02 V0116-91008-12 V0116-91008-22 V0116-91008-32 V0116-91008-03	V0116-92008-01
8	ISH-V CONNECTOR 8P	V0027-91008-211	V0116-92008-01
10	ISH CONNECTOR 10P	V0020-91010-211	V0116-92012-211
12	ISH CONNECTOR 12P	V0116-91012-01 V0116-91012-11 V0116-91012-21 V0116-91012-02 V0116-91012-12 V0116-91012-22 V0116-91012-31	V0116-92012-01
12	ISH-V CONNECTOR 12P	V0027-91012-211	V0027-92012-211
16	ISH CONNECTOR 16P	V0116-91016-01 V0116-91016-02	V0116-92016-01
16	ISH-V CONNECTOR 16P	V0027-91016-211	V0027-92016-211
20	ISH CONNECTOR 20P	V0116-91020-01	V0116-92020-01
26	ISH CONNECTOR 26P	V0020-91026-211	V0020-92026-211
32	ISH CONNECTOR 32P	V0116-91032-02	V0116-92032-01

① After terminal insertion is complete, install the retainer.

You will hear audible click when the retainer is engaged properly.

② Check that the retainer is pushed in completely, i.e. aligned with the sidewall of the housing.

When the retainer cannot be pushed in completely, do not push forcefully. Check that the terminals are inserted correctly and sufficiently, and repeat the insertion procedure in 4. Insert all the terminals properly, and push the retainer until audible click is heard.

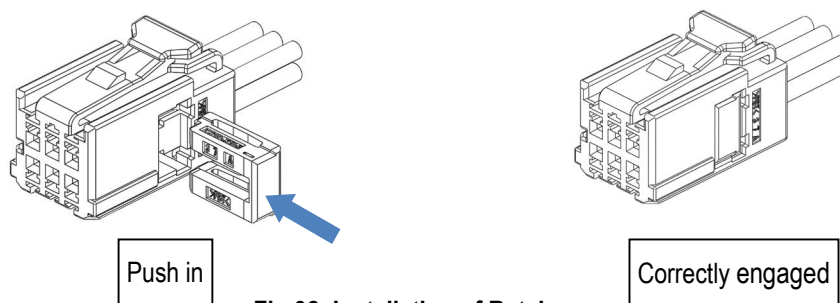
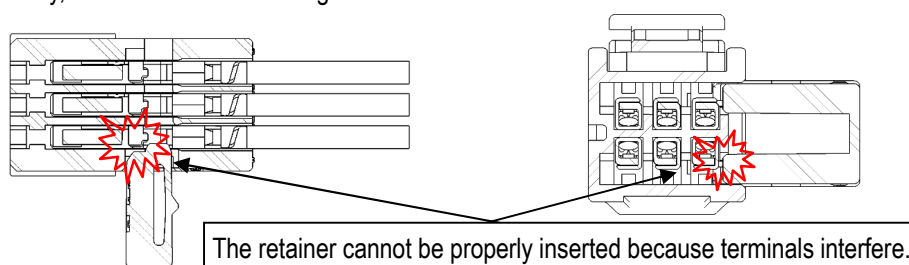


Fig 32. Installation of Retainer

③ When terminal(s) is/are insufficiently inserted as shown in Fig.33, the retainer cannot be installed.

Insert the terminal(s) completely, and install the retainer again.



The retainer cannot be properly inserted because terminals interfere.

Fig33. Insufficient retainer installation

- ④ Do not forcefully insert in any other position than those shown in Fig.34.

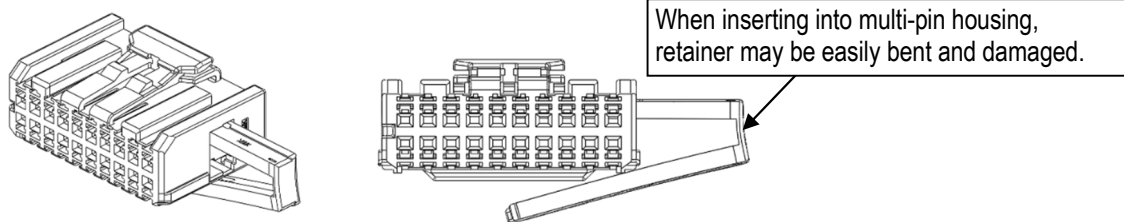


Fig34. Insufficient retainer installation

- ⑤ The retainer cannot be inserted, when it is inserted in incorrect orientation to the female housing, as shown in Fig.35.

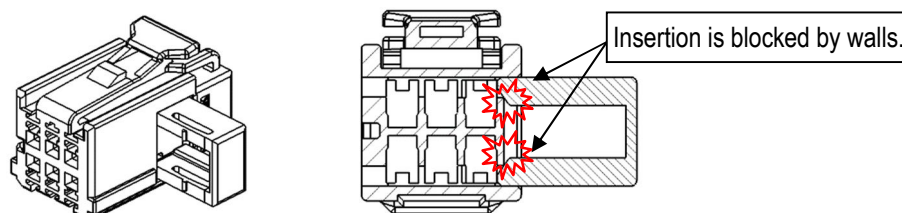


Fig35. Incorrect retainer installation

Notes

- ① Retainer must be inserted in the orientation instructed. Inserting retainer in any other orientation may result in damage or deformation. (see Fig.34,35)
- ② If there is any damage or deformation, do not use the damaged item. Replace the item with a new one.

6. How to release secondary lock

6-1. Secondary lock part

- ① Place the releasing jig into the secondary lock part taper situated at the bottom of the female housing, and move the jig to the direction shown in Fig. 36 to release the secondary lock part (release one side at a time).

Secondary lock part releasing jig: Part No. AP-0004-08-002

Refer to Table 6 for the Part No. that use the secondary lock part releasing jig.

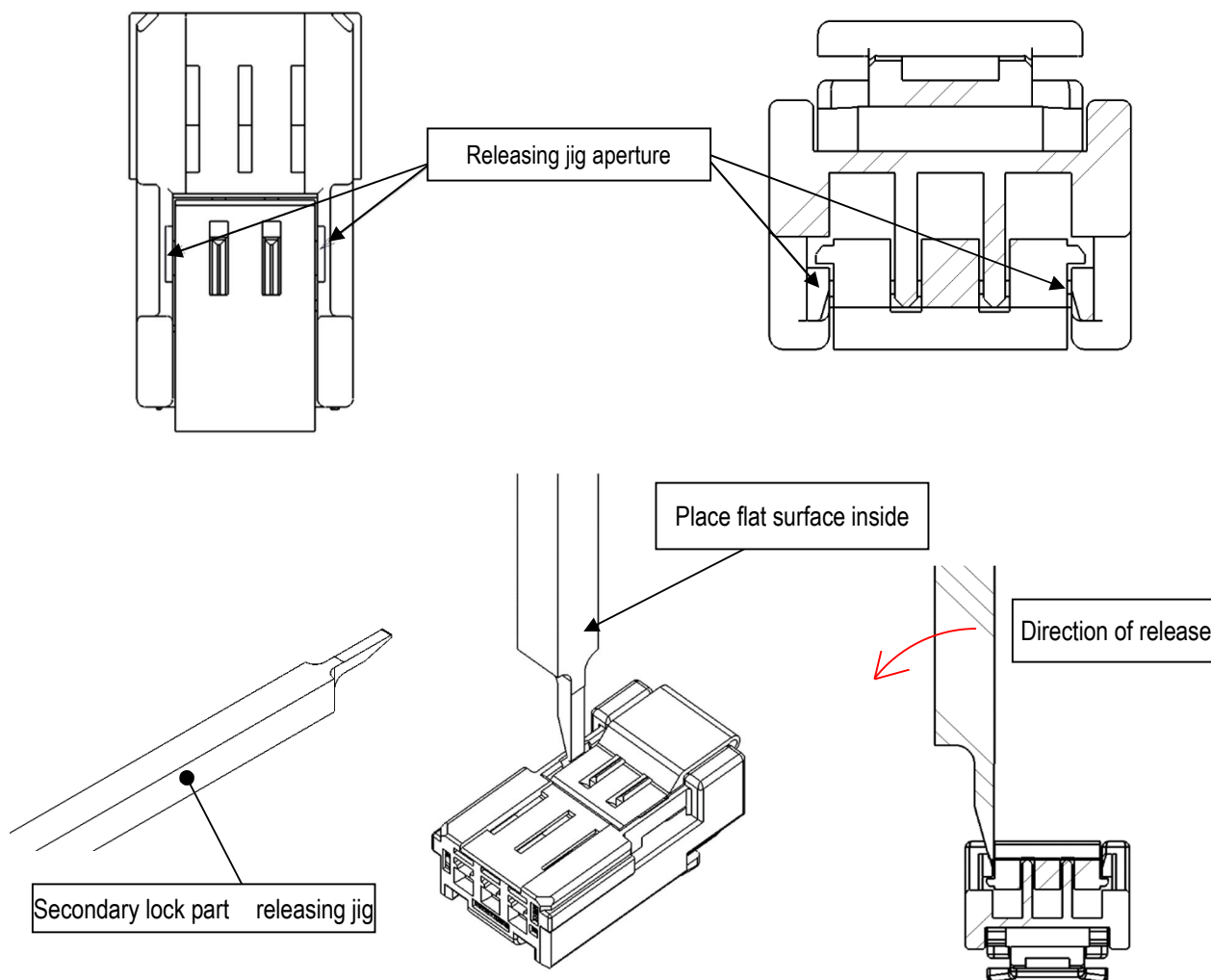


Fig 36. How to release the secondary lock part

Notes

- ① Do not insert the releasing jig into any other incorrect place.
- ② Check for any deformation or damage on both of the secondary lock part and the female housing after releasing the secondary lock part, before continuing any operation.
- ③ If there is any damage or deformation, do not use the damaged item. Replace the item with a new one.
- ④ Only use the secondary lock part releasing jig specified.
- ⑤ Care must be taken when handling the secondary lock part releasing jig (it has very sharp edge)
- ⑥ Care must be taken not to damage edge of the jig (e.g. from dropping, etc.)

6-2. Retainer

- ① Place the releasing jig into the releasing apertures situated on the side of the housing (Pos.1 side), and push out the retainer (see Fig.37).

Retainer releasing JIG: Part No. 91695-0001, (Old : AP0004-02-001)、91696-0001, (Old : AP0031-02-001)

Refer to Table 6 for the Part No. that use retainer releasing jig.

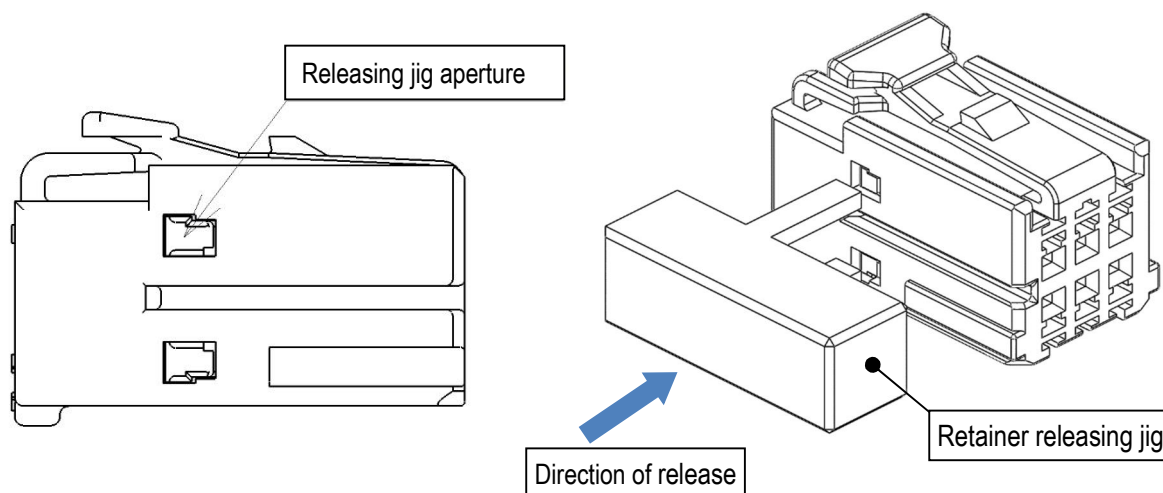


Fig 37. How to release the retainer

Notes

- ① Do not use the releasing jig for any other part of the housing other than the releasing apertures. Doing so may cause damage or reduced performance.
- ② Check for any deformation or damage on both of the retainer and the female housing after releasing the retainer, before continuing any operation.
- ③ If there is any damage or deformation, do not use it.
Replace the item with a new one.
- ④ Only use the retainer releasing jig specified.
- ⑤ Care must be taken not to damage edge of the jig (e.g. from dropping, etc.)

7. How to release female terminals

- ① Ensure that the secondary lock part and the retainer have been removed.
- ② Hold the wire and push in the female terminal lightly. Place the female terminal releasing jig into the releasing apertures of the female housing (see Figs. 38).
- ③ Push the releasing jig fully into the lance, then lever up the lance as shown in Fig.40
Keep the jig in the place and pull the female terminal out by holding the wire.
- ④ If there is any difficulty in pulling out the female terminal, do not pull it forcefully. Check that the jig is in the correct place, that it is pushed fully in, etc. and repeat the procedures ① to ③.

Terminal releasing JIG: Part No. 91691-0001, (Old : AP0004-01-005), 91692-0001 (Old : AP0037-01-001)

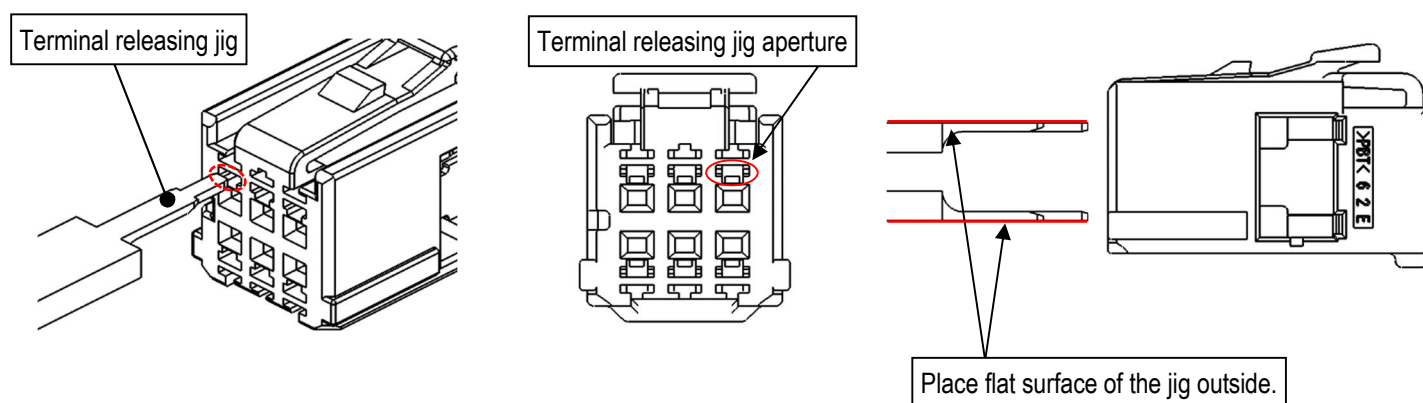


Fig38. Female housing and Direction of release

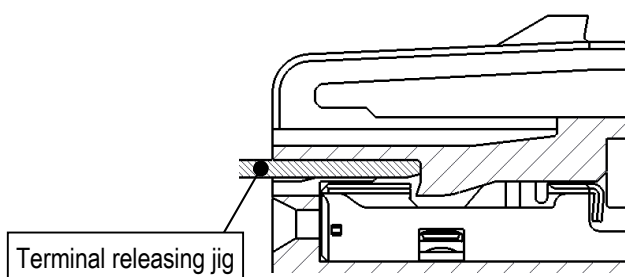


Fig39. Correct orientation of the releasing jig and the housing lance

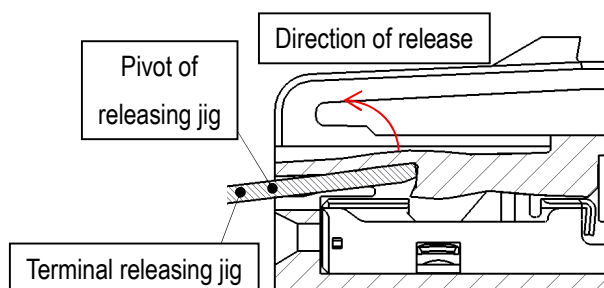


Fig40. Terminal releasing jig in operation

Notes

- ① Do not pry with the releasing jig or female terminals during operation. Check for any deformation or damage on the female terminals and the female housing after releasing the terminals. (see Fig.41)
 - ② Do not continue applying force once the lance has reached the ceiling, or the ceiling will be deformed or releasing jig may be damaged by excessive force. Take sufficient care when handling. (see Fig.42)
 - ③ If there is any damage or deformation on the terminal or the housing, do not use the damaged item. Replace the item with a new one.
 - ④ Only use the terminal releasing jig specified.
 - ⑤ Do not insert the releasing jig into the cavities (see Fig.43)
- If the releasing jig is inserted into the cavities by mistake, the terminal may be damaged. Replace the terminal with a new terminal.

- ⑥ Care must be taken not to damage edge of the jig (e.g. from dropping, etc.)



Fig41 Damage caused by releasing jig

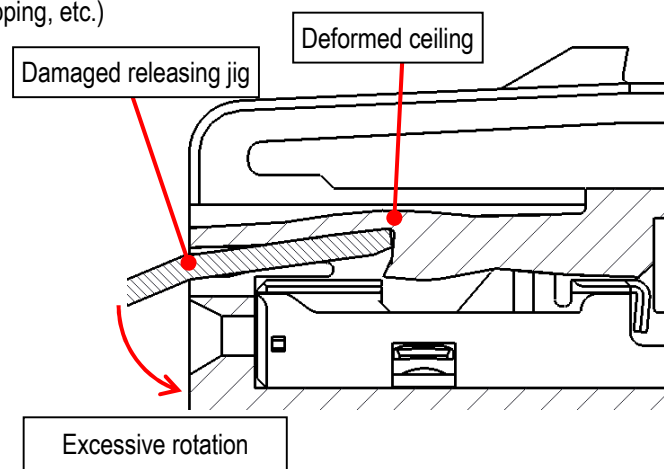


Fig42 Deformed ceiling, Damaged releasing jig

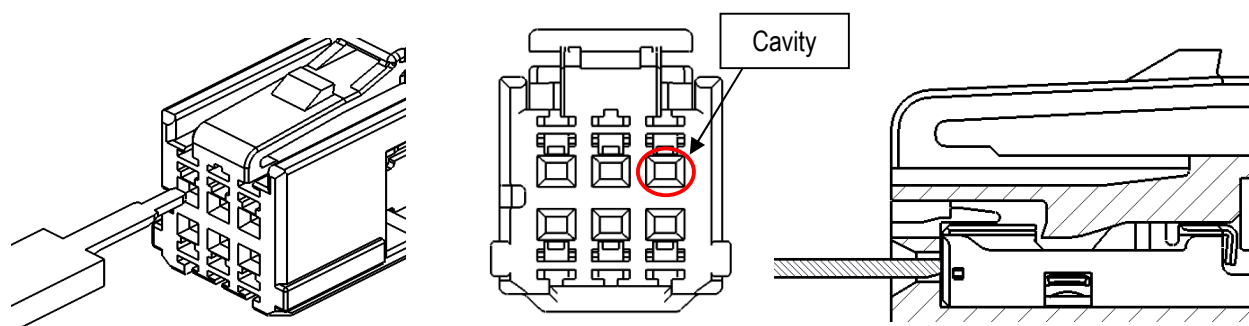


Fig 43 Incorrect insertion of the releasing jig

8. Rear cover installation (Only housing correspond to rear cover)(Rear cover : Individual part)

- ① Verify that pin numbers of the female housing and the rear cover are the same and also the female housing corresponds to rear cover. In addition, check that there is no damage, deform or dirt present.
 - ※ There are two lock portions at right and left side respectively.
- ② Check the directions of the female housing and the rear cover are correct.
- ③ Push the rear cover to female housing horizontally until the rear cover makes an audible click.
 - ※ It is possible to install at 40N to 50N.
 - ※ It is possible to install the rear cover to the female housing which is either inserted or not inserted the terminals. When handling the terminal inserted female housing, it should be careful not to catch the wire between the female housing and the rear cover.
- ④ Cannot remove the rear cover after installed one time.
 - ※ Forcibly remove the female housing and the rear cover, it may result in damage.
 - ※ Do not reuse the forcibly removed female housing and rear cover.

Table 7. REAR COVER & FEMALE HOUSING

No. of Poles	NAME	FEMALE HOUSING PART NO.	REAR COVER PART NO.
8	ISH CONNECTOR 8P	V0116-91008-03	V0116-94008-01
12	ISH CONNECTOR 12P	V0116-91012-02 V0116-91012-12 V0116-91012-22 V0116-91012-31	V0116-94012-01
16	ISH CONNECTOR 16P	V0116-91016-02	V0116-94016-01
20	ISH CONNECTOR 20P	V0116-91020-01	V0116-91020-01

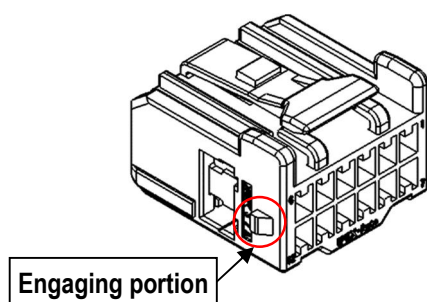


Fig 44. Corresponding Female housing for Rear cover

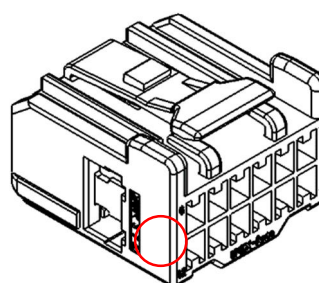


Fig 45. No corresponding Female housing for Rear cover

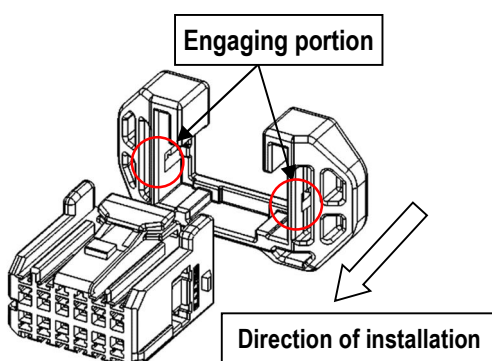


Fig 46. Direction of installation

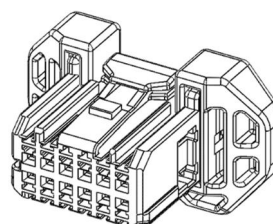


Fig 47. Installation of Rear cover

9. Mating of connector

- ① Push the female connector that has been installed the secondary lock part and the retainer in the direction of mating until makes an audible click(see Fig.48).

While mating the female connector, please do not touch the lock arm to prevent insufficient mating.

- ② After that, pull the female connector lightly to check that the female connector is locked.

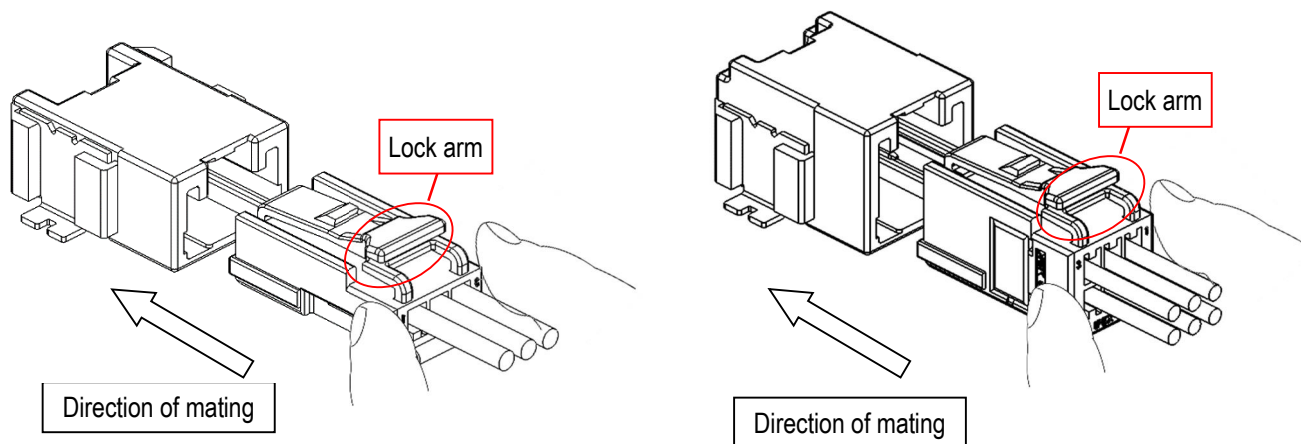


Fig48. Direction of mating

Notes

- ① Only mate the connector in the direction instructed above. Do not forcefully mate in any orientation shown in Fig.49.

Doing so may cause damage or deformation to connectors.

- ② If there is any damage or deformation, do not use the damaged item.

Replace the item with a new one.

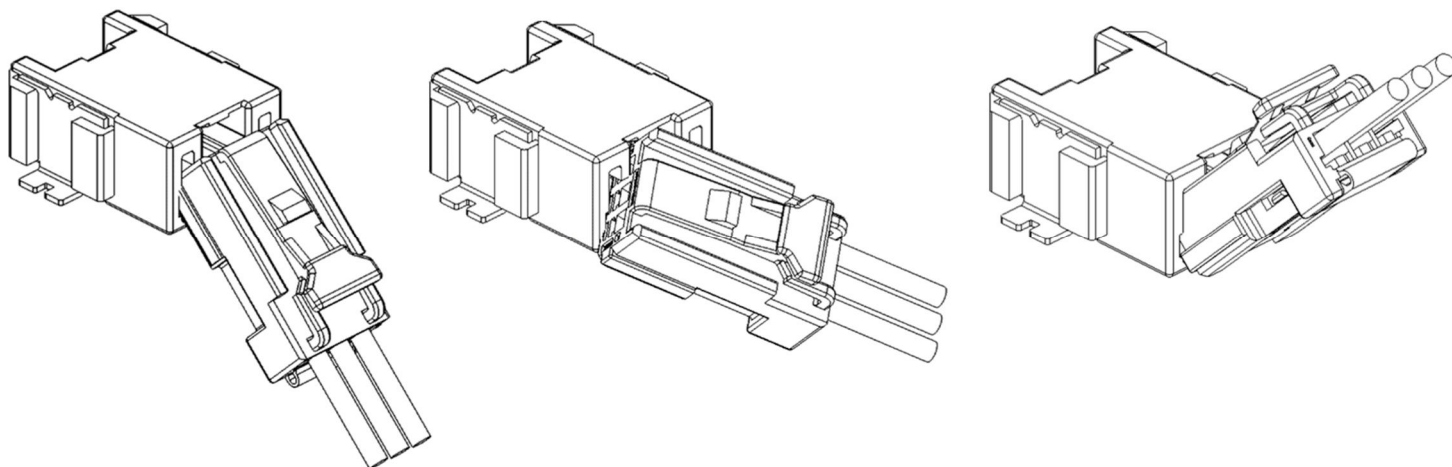


Fig 49. Mating orientations (not advisable)

10. Unmating of connector

- ① Hold the female connector and push it in lightly.
- ② While holding the female connector in, press down fully on the end of the arm (see Fig. 50).
- ③ Keep pressing the lock down, and pull out the female connector.

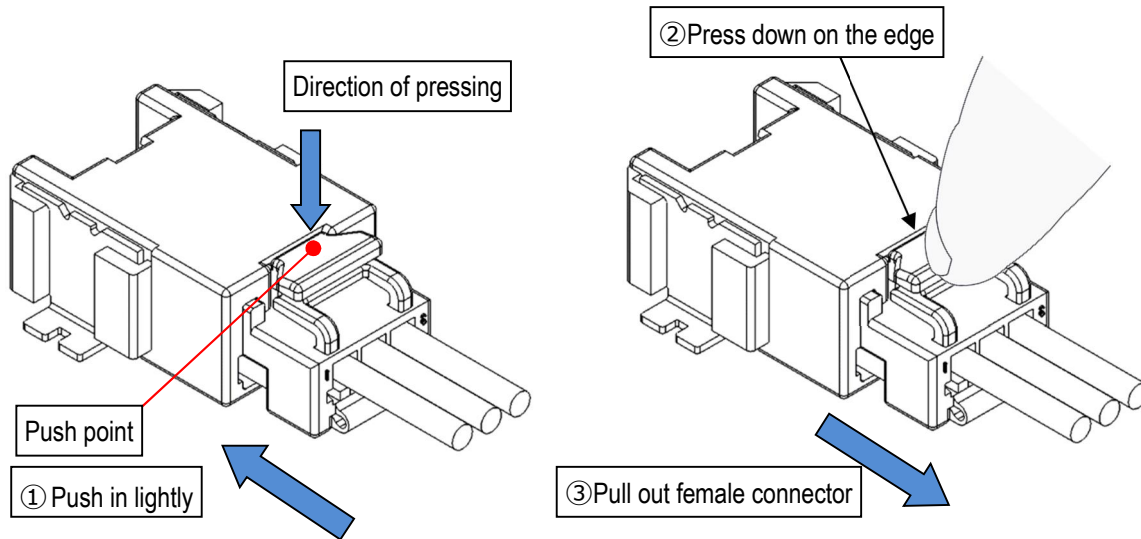


Fig50. Lock arm

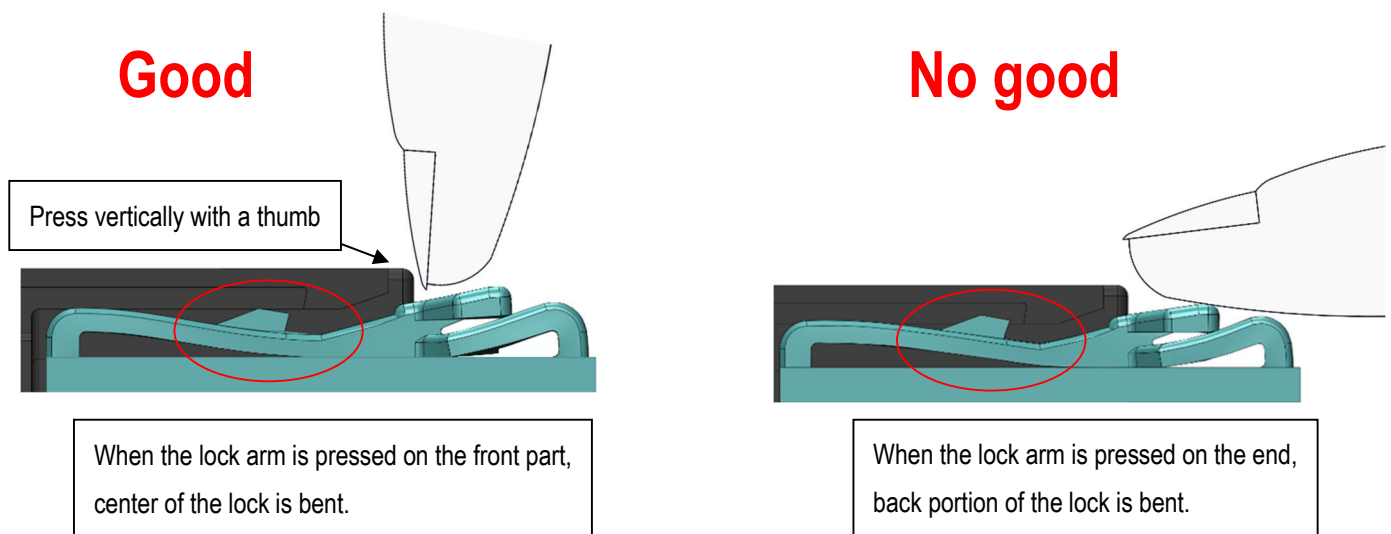


Fig51. Mechanism of the lock

Notes

- ① Do not pull out the female connector without the lock arm fully pressed down.
It may cause damage or deformation to the connector.
- ② Hold and pull the female connector (not the wires), when disengaging the female connectors.
- ③ If there is any damage or deformation, do not use the damaged item.
Replace the item with a new one.
- ④ Pressing down the end of the lock arm may not release the lock fully (See Fig. 51)

11. Handling of Product

11-1. Conductivity test

11-1-1. Male connector

① When carrying out conductivity test of the male connector, place the probe on the tip of the male terminal (Load: 0.5N MAX.)

If load exceeds 0.5N, male terminal(s) may be damaged or deformed. (See Fig. 52)

② If there is any damage or deformation, do not use the damaged item. Replace the item with a new one.

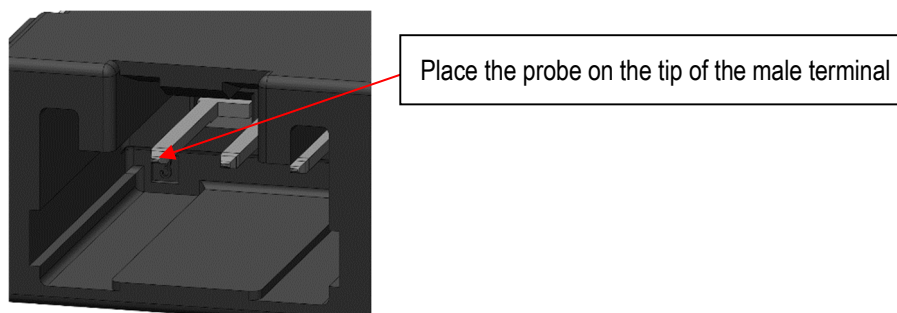


Fig 52. Conductivity test for male terminals (contacts)

11-1-2. Female connector

① Do not recommend to perform a conductivity test using the mated male connector.

If the same male connector is used for conductivity test, the connectors are repeatedly mated and unmated, and the male terminal could be bent. These may cause of the female terminal spring deformation, or the contact failure caused by adhesion the particles of friction according to excessive insertion and removal actions.

② To test electrical conductivity of female connector, place a probe pin at prescribed point (0.5N MAX.) on outside of the female terminal.(See Fig.53)

③ Do not insert a probe pin into female terminal box, as this may damage the terminal spring.

Do not use female terminal, if the probe pin has been inserted. Replace the female terminal.

④ Probe pin must be $\phi 0.55 \sim 0.70\text{mm}$. Must not be smaller than the gap between female housing and female terminal (0.5mm).

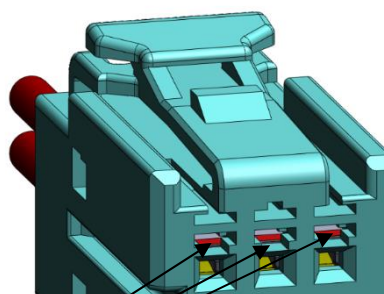
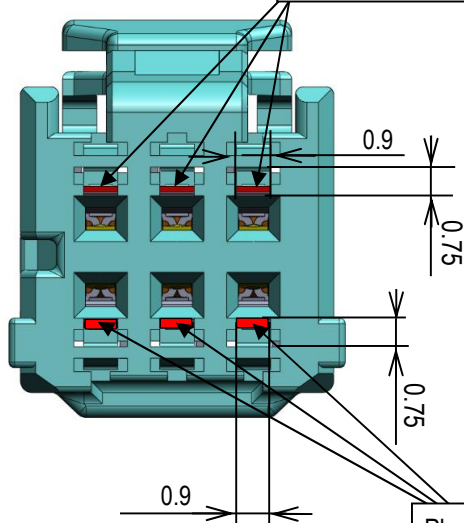
⑤ Once tested, check there is no deformation (e.g. collapse, etc.) of female housing.

Table 8. Recommended Probe Diameter.

Terminal Tab Size	Female Terminal Part No.	Gap between Housing and Terminal	Recommended Probe Pin Diameter
0.5mm	VT009-01 VT009-02 VT009-03	0.50mm	$\phi 0.60\text{mm}$ (0.55~0.70mm)
1.5mm	VT011-01 VT011-02 VT011-03 VT011-04	0.65mm	$\phi 0.75\text{mm}$ (0.70~0.85mm)

(0.5 mm TERMINAL)

Place the probe pins on the red areas



(1.5 mm TERMINAL)

Place the probe pins on the red areas

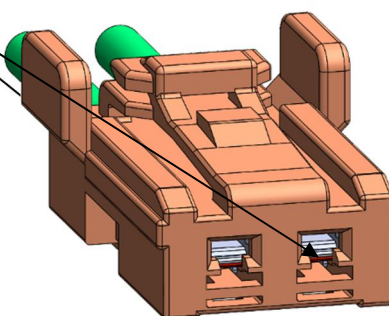
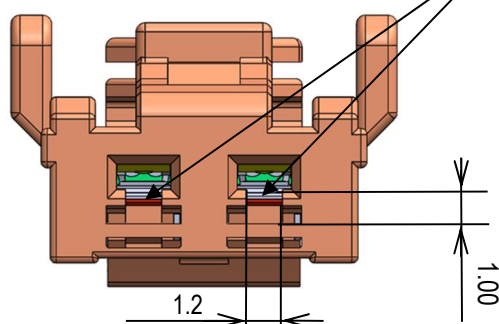


Fig 53. Conductivity test for female terminals (contacts)

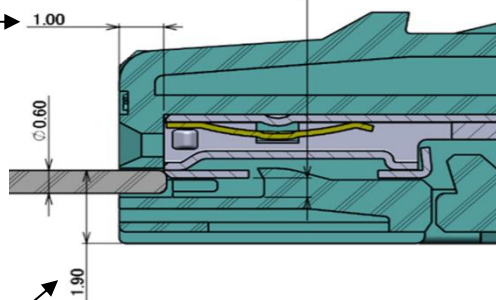
Reference : Probe pin position on female housing

① Female housing - single row

(V0113-91003-01, V0037-91003-211)

Distance between probe pin insert hole bottom surface and female terminal

Housing thickness

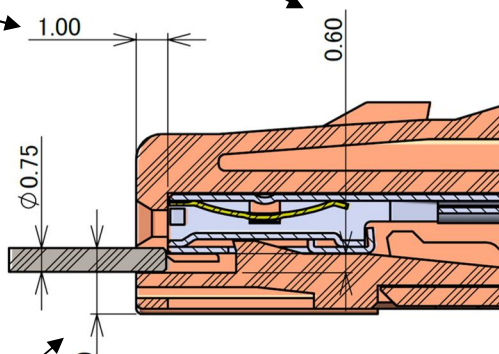


Distance between female housing bottom surface and top surface of probe pin

(V0170-91002-01)

Distance between probe pin insert hole bottom surface and female terminal

Housing thickness



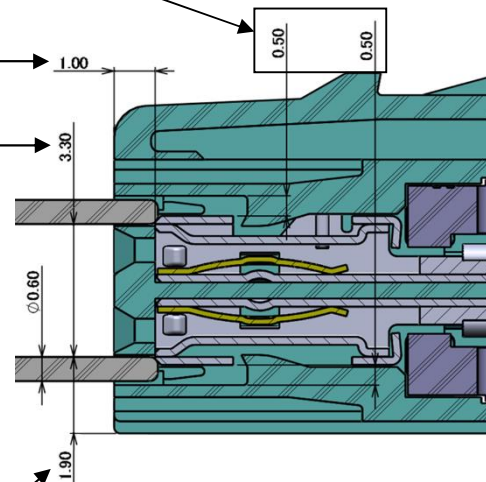
Distance between female housing bottom surface and top surface of probe pin

② Female housing - double row

Distance between probe pin insert hole bottom surface and female terminal

Housing thickness

Distance between
probe pin



Distance between female housing bottom surface and top surface of probe pin

11-2. Arrangement of Wires

- ① When arranging the wires horizontally, to avoid excessive stress to the sidewalls and female terminals, and the female terminal leaning in the core hole, please keep the wires straight (at least 15mm) from connector as shown in Fig.54
- ② Once straight portion is secured, arrange the wires with adequately large R.

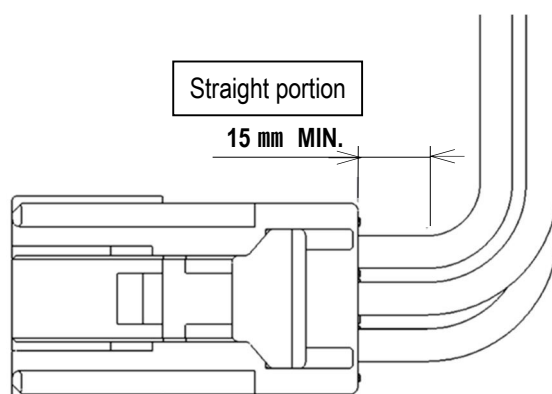


Fig 54. Arrangement of wires

12. Storage of housings and terminals

- ① Store housings and terminals in a warehouse which is controlled temperature and humidity.

(Recommend : Temperature 27°C MAX. , Humidity 65% MAX.)

- ② Store housings in a cardboard box. Avoid storing in a way that may cause damage to the boxes, e.g. placing boxes on top of other boxes or storing in a precarious way to cause the boxes to fall.

Housing may be deformed if the boxes have been damaged.

- ③ Store terminals in a cardboard box. Avoid storing in a way that may cause damage to the boxes, e.g. placing boxes on top of other boxes or storing in a precarious way to cause the boxes to fall.

Reel(s) or terminal(s) may be deformed if the boxes have been damaged.

13. Jig

- ① Use the jig specialized for releasing the secondary lock part, for releasing the retainer and for removing terminals.
- ② Table 9 shows the name of the releasing jig and their part number
- ③ To purchase any of the jigs, please contact the Sales Dept. of our company at the following in 15(Sheet 29).

Table 9. Releasing jig & Part No.

Jig Name	Procedures	Female housing Part No.	Procedures detailed on	Jig Part No.
Female terminal releasing Jig	Remove terminals	All female housings other than 1.5 mm 2P	Sheet 20, 21	91691-0001 (Old : AP0004-01-005)
		ISH 1.5mm 2P: V0170-91002-01		91692-0001 (Old : AP0037-01-001)
Rear holder releasing Jig	Release rear holder	ISH 1.5mm 2P: V0170-91002-01 ISH 3P: V0013-91003-211 ISHV 3P: V0037-91003-211	Sheet 18	AP0004-08-002
Retainer releasing jig	Release retainer	ISH 10P : V0020-91010-211	Sheet 19	91695-0001 (Old : AP0004-02-001)
		ISH 12P : V0116-91012-01		
		V0116-91012-11		
		V0116-91012-21		
		V0116-91012-02		
Retainer releasing jig	Release retainer	V0116-91012-12		
		V0116-91012-22		
		V0116-91012-31		
		ISH 16P : V0116-91016-01		
		ISH 20P : V0020-91020-211		
Retainer releasing jig	Release retainer	ISH 26P : V0020-91026-211	Sheet 19	91696-0001 (Old : AP0031-02-001)
		ISH 6P : V0116-91006-01		
		V0116-91006-11		
		ISH 8P : V0116-91008-02		
		V0116-91008-12		
		V0116-91008-22		
		V0116-91008-32		
		V0116-91008-03		
Retainer releasing jig	Release retainer	ISHV 8P : V0027-91008-211	Sheet 19	91696-0001 (Old : AP0031-02-001)
		ISHV 12P : V0027-91012-211		
		ISHV 16P : V0027-91016-211		
		ISH 20P : V0116-91020-01		
		ISH 32P : V0116-91032-02		

14. Other notes

- ① Handle products with care. Do not place excessive force/impact to connectors main bodies or wires.
- ② Store products in a dry place without any dust or dirt.
Avoid storage for an extended period or any way that may cause damage or deformation to connectors.
- ③ While transporting of products should ensure that no excessive force must be applied to the connectors and wires, and that no rain water, dust and dirt, etc. are present.
- ④ Handle products with care. If there is any damage, deformation, discoloration, etc. to wires, housings, and any other parts, do not use the damaged item. Replace the item with a new one.
- ⑤ Do not touch the contact part of the connector with fingers or with any object.
- ⑥ Do not apply excessive current. Doing so may cause fire and melting damage.
- ⑦ Do not disassemble products.
- ⑧ Do not insert any terminals into housing other than those specified.
- ⑨ Follow this Manual for using the products. Do not use in any way other than instructed.

15. Contact

Yokohama office Sales Dept.

I-PEX Inc.

TEL: +81-45-472-7111