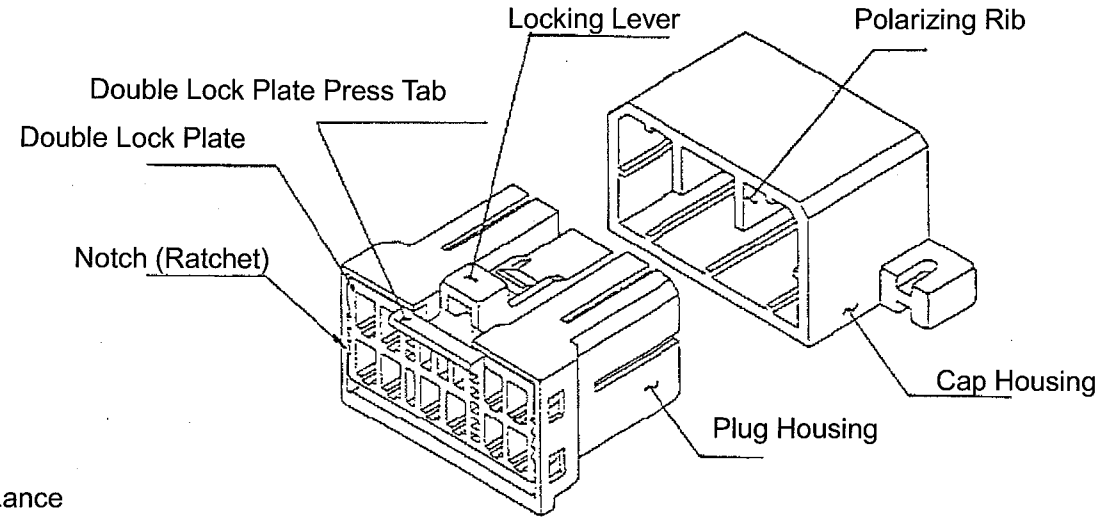
.070 Series Multi-Lock I/O Connector MK-II

This specification is English version of 412-5477 Rev. A. Please refer to original version if latest Rev. of original is different from English, although this is controlled along with original. And in the event of conflict between the original version and English one, the original version shall take precedence.

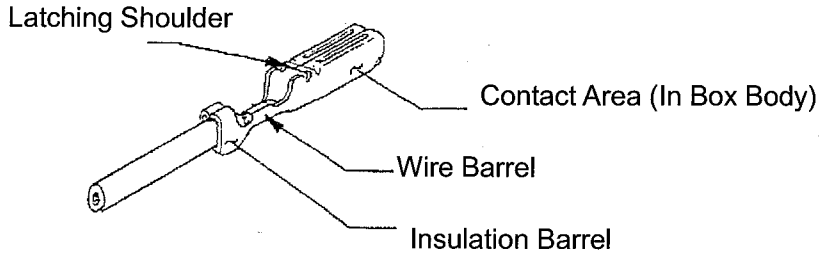
Contents

1. Part Name and Part Number

1.1 Housing



1.2 Contact



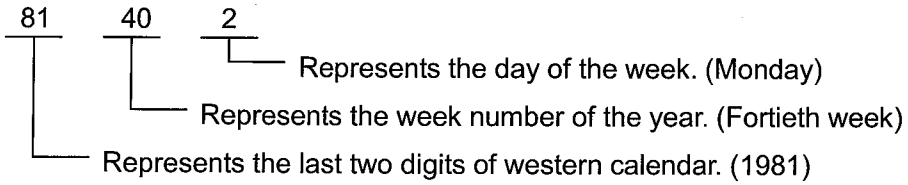
1.3 Product Part Number

Name	Tyco Part Number
.070 Receptacle (AVS 0.2 to 0.3sq)	173630 - ☐
.070 Receptacle (AVS 0.5 to 1.25sq)	173631 - ☐
8 Pos. Plug Housing	176113 - ☐
10 Pos. Plug Housing (Double)	176114 - ☐
10 Pos. Plug Housing (Single)	176115 - ☐
12 Pos. Plug Housing	176116 - ☐
14 Pos. Plug Housing	176117 - ☐
18 Pos. Plug Housing	176118 - ☐
20 Pos. Plug Housing	176119 - ☐
8 Pos. Cap Housing Horizontal Type	☐ - 173856 - ☐
10 Pos. Cap Housing Horizontal Type (Single)	☐ - 174467 - ☐
12 Pos. Cap Housing Horizontal Type	☐ - 173858 - ☐
14 Pos. Cap Housing Horizontal Type	☐ - 173860 - ☐
18 Pos. Cap Housing Horizontal Type	☐ - 173862 - ☐
24 Pos. Cap Housing Horizontal Type	☐ - 173864 - ☐
30 Pos. Cap Housing Horizontal Type	☐ - 173866 - ☐

2. Inspection of Contact and Housing

2.1 Tyco Shipping Inspection

We conduct inspections referring to specific standards, under strict statistical management and according to our quality control regulations, to maintain an overall lot control. In principle, each package is marked with manufacturing date to facilitate tracing production history using inspection, manufacturing and machinery adjustment records. Manufacturing date code (denoted as date code) is as follows.



2.2 Customer Receiving Inspection

In addition, the customers should conduct at least the following receiving inspections based on the specific customer drawings.

<<Terminal>>

Item	Inspection Description and Methods	Measuring Instrument
Visual Inspection	1) Shape	Visual Inspection
	2) Plated condition	Visual Inspection
	3) Reeled condition	Visual Inspection
Dimension Inspection	1) Wire barrel width and height	Vernier Calipers
	2) Insulation barrel width and height	Vernier Calipers
	3) Locking lever height	Vernier Calipers

When reels are delivered, each reel is classified by date code and inspected visually for AQL 4% based on II (MIL-STD-105) standards, including additional inspection of 5 contacts on reel ends. The lot may be accepted if all reels successfully pass the inspection.

<<Housing>>

Item	Inspection Description and Methods	Measuring Instrument
Visual Inspection	1) Burrs, Discoloring and Deformation	Visual Inspection
	2) Cracks, Fissure or Chipping	Visual Inspection
Functional Inspection	3) Mating/Unmating: Corresponding tabs fit into each other to allow them to lock. The unlocking leg can be smoothly pulled out while being depressed.	By hand

Each package is classified by date code and inspected for appearance for AQL 40% based on Level II (MIL-STD-105) standards and then inspected for the functions of 5 pieces in each package. The lot may be accepted if all of them successfully pass the inspection.

3. Crimping Operation

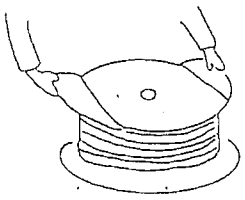
Any crimping of contacts must be performed by using appropriate Tyco tools according to the applicable instruction sheet and specification.

The part numbers and date code (such as the above example, 81042) should be recorded for future reference.

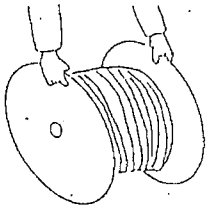
3.1 Storage and Handling

1) Avoid leaving and carrying unpacked products.
2) Carrying reels with only one flange could damage the reel and makes it unusable because the damage makes it impossible for us to set the reel on the crimping machine.

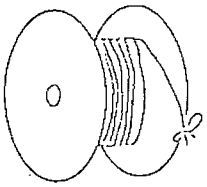
Do not carry the reel horizontally holding only one flange.



Recommended method



3) Do not place reels in places with high humidity. Reels should be stored in a relatively dry, clean room where they will not be exposed to direct sunlight and maintained at normal temperature and humidity. (5 to 35 degrees and 45 to 85% relative humidity)
4) When you stop operation and reels are temporarily taken off the crimping machine, tie the reel end to the flange with suitable string to prevent the reel from loosening.



Tie reel end to prevent them from loosening.

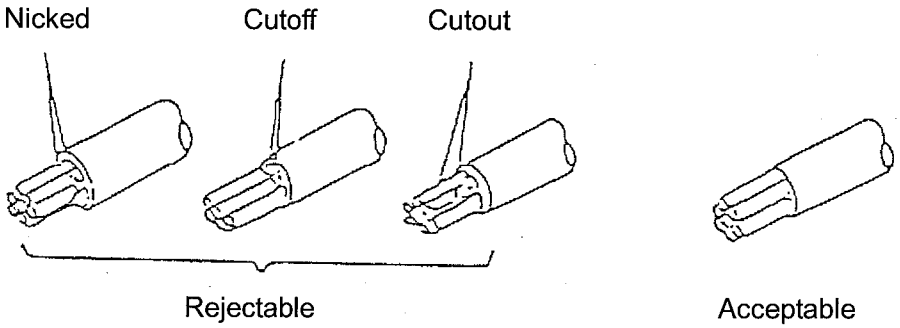
3.2 Crimping Procedure Control

Regarding procedure control, refer to the following documents.

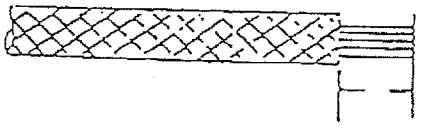
Instruction Sheet	411-5287 (IS-287)
Application Specification	114-5091
Automatic Machine Customer Manual	CM-022J
Applicator Instruction	408-8025 (AI-8025)

The following is especially important.

(1) When striping the wire, be careful not to nick, cut or scrape the conductors.

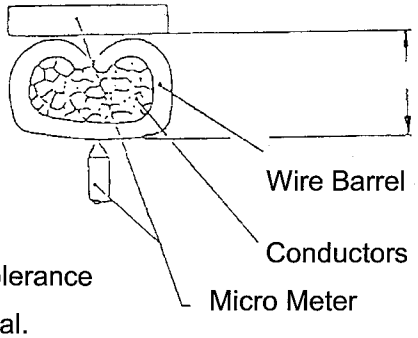


(2) Wire Insulation Stripping Length



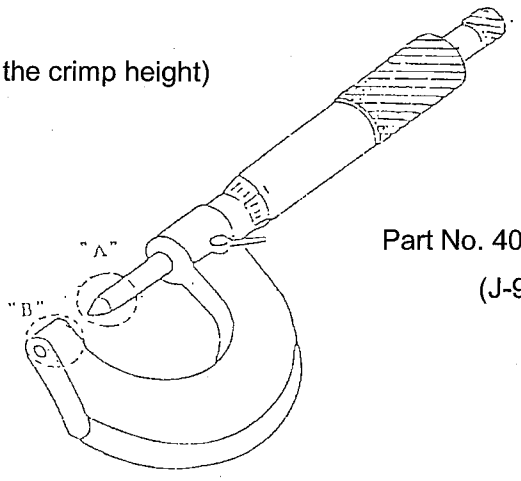
The length of the wire barrel of the contact used + 0.5 to 1.0mm is applicable.

(3) Crimp Cross-section Diagram



Note: The crimping height tolerance depends on the terminal.

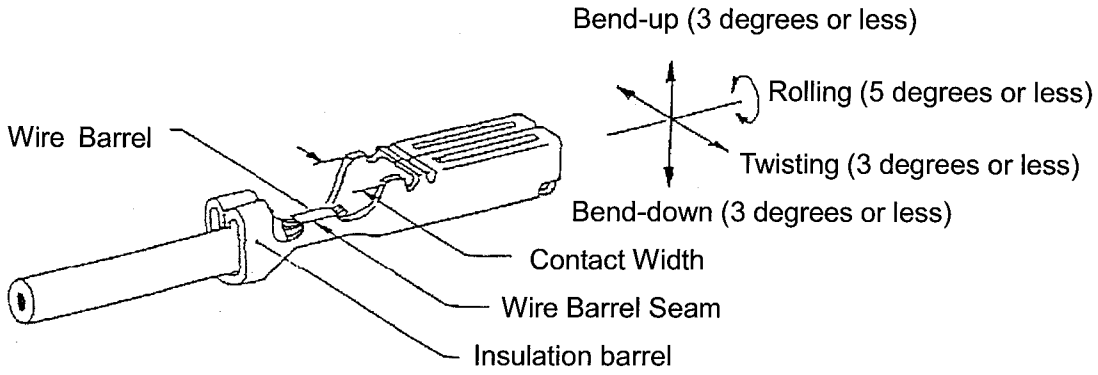
(4) Micrometer (For measuring the crimp height)

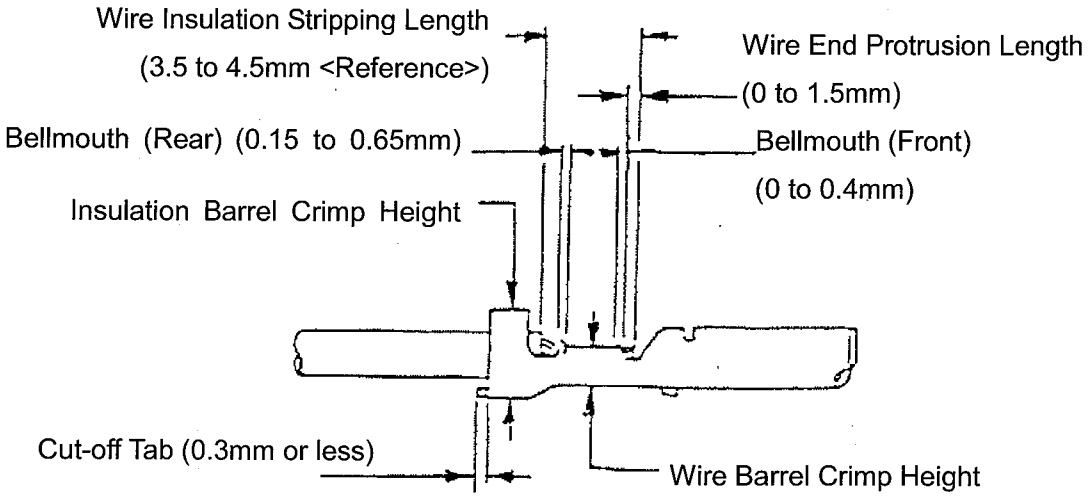


Part No. 4001
(J-980A2-2)

3.2.1 Inspection of Wire-crimped Contact

(Refer to application spec. of .070 for details.)





3.2.2 Crimping Data (Applicator numbers and dimensions are as follows. Make sure to check the following table before starting operation.)

.070 Series Receptacle

Contact P/N (Strip Form)	Wire Size (Nominal)	Applicator Part No.	Wire Barrel Crimp			Insulation Barrel Crimp			Crimp Tensile Strength (kg)
			Width (mm)	Height (Note 1) +/- 0.05mm (Fig.1-9)	Disk	Width (mm)	Height (Note 1) (Fig.1-10)	Disk (Ref.)	
173630	0.2	1-755758-2	1.78 "F"	0.96	D	2 "S"	3.8 +/- 0.1	2	7 Min. (Note:1)
	0.3			1.03	C			3	8 Min. (Note:1)
173631	0.5	755769-2	2.29 "F"	1.25	C	2.6 "F"	3.8 +/- 0.1	3	9 Min.
	0.85			1.37	B			4	13 Min.
	1.25			1.52	A			5	18 Min.

Note: 1 Crimp tensile strength includes the strength with the support of the insulation.

2 Applicable wire: Low voltage cables for automobiles, AVS 0.2 to 1.25

3.3 Inspection and Storage of Crimped Lead

3.3.1 Inspection

We recommended that crimped products be inspected according to the following table regarding one product as an inspection unit, and the group produced under the same condition, that is, produced continuously without adjustment of the crimp machine or did in a working day, as one lot.

Type of Inspection	Timing	Inspection Item
First Piece Inspection	When applicator is set up for a specific wire for the first time.	Appearance and Dimensional Inspection. (All items described below)
Lot Inspection	When daily operation starts.	Same above
	Any time during successive manufacturing processing.	Appearance (All items below) and Dimensional Inspection (Section 3)

Item	Inspection Standards and Methods	Measuring Methods
Appearance Inspection	1. Wire conductors not gripped in wire or cut conductor(s)	Visual Inspection
	2. Crimp form defect (Bellmouth) (Wire-end protrusion)	Visual Inspection
	3. Flash edges of formed contact bottom	Visual Inspection
	4. Insulation not gripped in insulation barrel.	Visual Inspection
	5. Defective shape of contact area of contact	Visual Inspection
	6. Locking lever falling	Visual Inspection
Dimensions Inspection	1. Cut-off tab dimension: 0.5mm Max.	Calipers
	2. Terminal Deformation (Bending, Rolling and Twisting)	Magnifying glass
	3. Crimp Height	Micrometer
	4. Front and Rear Bellmouth at core crimp area Front: 0 to 0.7mm, Rear: 0.2 to 0.7mm	Calipers
	5. Locking Lever Height: 3.5mm Min.	Calipers

*Caliper is "Vernier Calipers" or other equivalent measuring instruments.

3.3.2 Storage

a) Storage must be done in a dry and clean place. Products must be covered if stored for more than one day.

b) When you bundle wires together in a group, the limit is 100 wires.

c) Stacking large amounts of crimped wire leads can damage the contact because protruding portions are hit or because of heavy weight. These will cause contact failure.

d) Be careful that the terminals do not be intertwined when separating the wire from the bundle.

4. Harness Assembly Operation

4.1 Contact Insertion Operation into Housing

(1) Before inserting contacts into the housing, verify that there are no incomplete crimps and then place the crimp area of the contact and the locking lever facing up as shown in Fig.1 and insert the contact straight until it stops at the end of housing cavity.
If the contact is not easily seated in housing, do not squeeze it and make sure if the contact faces the right direction.
Squeezing the contact upside down can scrape the housing lance off.

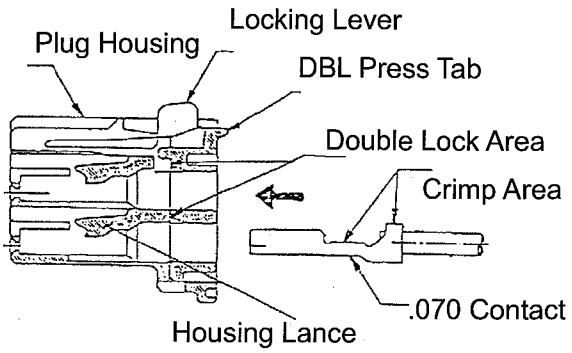


Fig. 1

(2) Verify that the contact has been firmly locked to the housing lance.
If the crimp area is located at the center of the retainer when inserting the contact as shown in Fig.2, the contact is not fully mounted in the housing and it will fall off. Therefore push the contact into the housing as shown in Fig.3.
When the contact is fully locked with the housing lance, the lance clicks.
After inserting the contact in place, check if the contact is fully mounted in the housing by pulling the crimped wire backward lightly. Whenever the contact has to be removed for remounting, use the specified extraction tool.

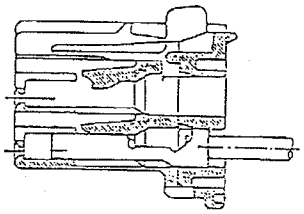


Fig. 2 Contact is not locked.

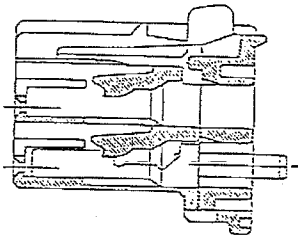


Fig. 3
Contact is correctly locked.

4.2 Double Lock

(1) A double lock is used to reinforce the contact retention force. The insulation barrel is retained at retainer type double lock area. (See Fig.4)

(2) If the contact is not mounted correctly inside the housing, double lock may not lock completely or lock the contact at improper position, so the effect is not achieved. (See Fig. 2 and 6.)

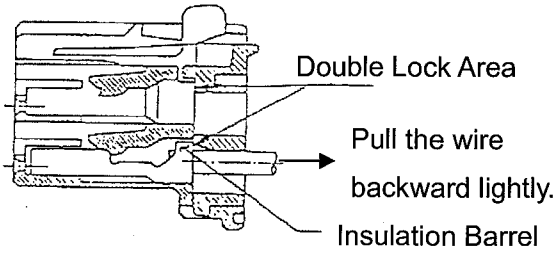


Fig. 4
Double lock is completed.

(3) After completing the operation of contact insertion (1) and (2), press the double lock plate press tab down.
The retainer moves downward and the ratchet clicks to be released.
At the end of the operation, verify that the double lock is firmly locked by pulling the wire lightly.
The conditions in Fig. 4 and 5 will be seen if the retainer is set up correctly.
If any contacts are not completely mounted (Fig.2), the retainer doesn't work properly resulting in the condition shown in Fig. 6.
(The retainer is effective on only one side and the ratchet notch on the other side is lifted.)
In such a case, use the extraction tool to extract the contact and remount it in the proper position.

There is clearance when correctly mounted.

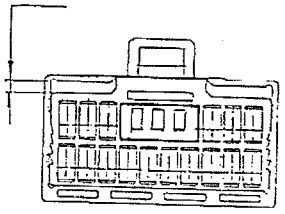


Fig. 5
Double lock is completed.

Slot for inserting the extraction tool

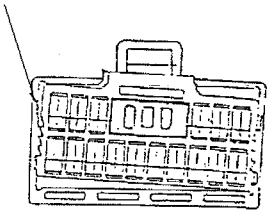


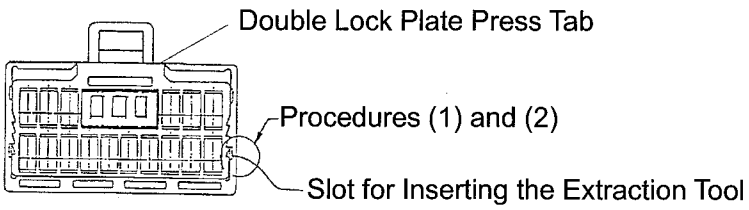
Fig. 6
Double lock is incomplete.
(Ratchet notch is effective on only one side.)

4.3 Extraction of Contact

Extraction Tool Part Number: 755430-2

This tool is used to extract the contact of .070 series MLC I/O connector MK-II from the plug housing.

4.3.1 Unlocking the Double Lock Ratchet

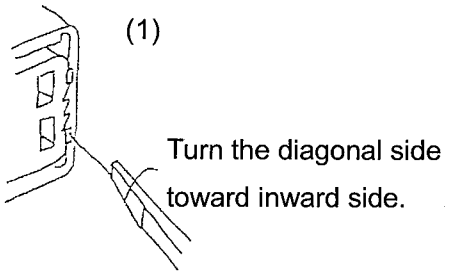


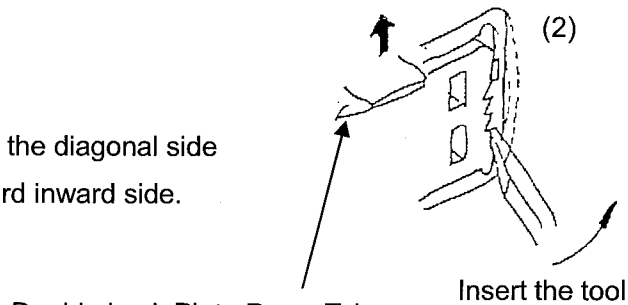
[Procedures]

Unlock the detent lock.

(1) Insert the tool into insertion slot.

(2) Bow the housing wall by turning the tool in the direction of the arrow and as-is lift the double lock plate press tab, then the ratchet notch will be released. Repeat the same procedure for the other side as well.





Note: Be careful not to break the wall by bowing it unduly.

4.3.2 Extraction of Contact

Extract the contact by inserting the tool from the mating side of the connector to lift up the connector lance housing.

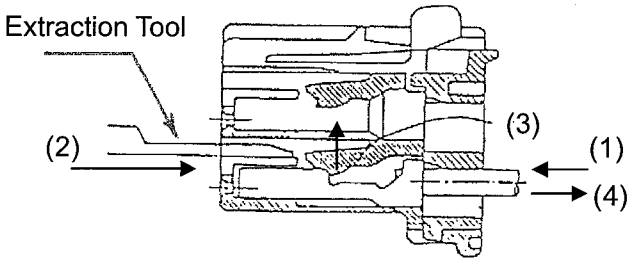
[Procedures]

(1) Push the contact in the direction of the arrow.

(2) Insert the extraction tool

(3) Lift up the lance.

(4) Extract the contact.



Note: Be careful not to insert the tip of the tool into the contact area of the receptacle contact. (To prevent the contact leaf deforming)

4.4 Harness Product Control

4.4.1 Inspection

The completed harness product is an inspection unit and total inspection is required.

And the following requirements must also be satisfied.

a) Corresponding tab or its equivalent should be used as a probe to check the entire circuit in the connector.

b) It is prohibited to insert the inspection probe into the contact since it may cause the deformation of the mating area of the contact. If necessary, make sure to insert the probe from wire side to conduct the check.

4.4.2 Storage

a) Should be stored in a dry and clean area. And the product must be covered if stored for more than one day.

4.4.3 Shipment and Transportation

a) Use appropriate packaging cartons to avoid dust, rainwater, etc. and handle the cartons with care.

b) Cartons must have the necessary information on them.

5. Mounting on Vehicles

5.1 Receiving Inspection

At least, the following points should be inspected.

a) Bundling location of each wire protruding out of the housing.
(Min. 20mm for unbent wire and Min. 10mm for bent wire)

b) Condition that the contact is mounted in the housing.

c) Impact scar, extreme discoloration, scratch and deformation.

d) Cracks, defects and discoloration etc. of the housing

e) Confirmation of defective parts.

5.2 Mounting Operation Control Point

a) Mating operation should be done in a straight line along the mating axis. Then, confirm that the locking mechanism works correctly. Complete lock makes the click. Also, pull the connector lightly after mating to make sure they are locked.

b) Do not repeat unnecessary mating and unmating connectors.

c) When extracting the contact from the housing during the operation, use the specified extraction tool and follow the paragraph 4.3.

d) When checking the circuit, use the corresponding tab or its equivalent.

e) Take extra care to handle the harness. The following handling is unaccepted.

1. Rough handling such as throwing around.
2. To drag on the floor
3. To pull the connector to carry the harness.
4. To handle in such a way that the wire catches the connector and the wire put unnecessary force on the connectors

f) When unmating the connector, follow the paragraph 5.3.

5.3 Unmating Connector

Hold the housing locking lever and push it down. While pushing it down, pull the connector straight out.

Note: *Do not pull the wires to unmate the connector.
*Pull the connector straight out.