



SPECIFICATION

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SPEC. NO.: PS-92410-XXXXX-CA1

REVISION: 1

PRODUCT NAME: 2.2mm PITCH FEMALE CONN.

PRODUCT NO: 92410 SERIES

PREPARED:

Lin Chia Cheng

DATE:

2017/11/05

CHECKED:

Lee Kuang En

DATE:

2017/11/05

APPROVED:

Lee Kuang En

DATE:

2017/11/05



TITLE: **2.2MM PITCH FEMALE CONN.**

RELEASE DATE: **2017.11.05**

REVISION: **1**

ECN No: ECN- 1707338

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Aces P/N: **92410 series**

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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-1802238	NEW SPEC	Lin Chia Cheng	17/11/05

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2 SCOPE

This specification covers performance, tests and quality requirements for **2.2mm Pitch Female Conn.**

3 APPLICABLE DOCUMENTS

EIA-364 ELECTRONICS INDUSTRIES ASSOCIATION
QJD 19202012

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.

4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials

4.2.1 Contact: High performance copper alloy (**Brass**)

4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-HB

4.3 Ratings

4.3.1 Voltage: **12±1 Volts DC (per pin)**

4.3.2 Current: **4 Amperes (per pin)**

4.3.3 Operating Temperature : **-30°C to +105°C**

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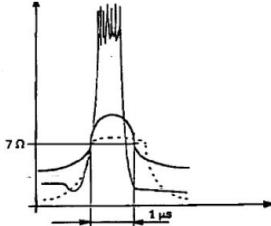
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5 PERFORMANCE

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	Requirement	Standard
Termination Resistance (Low Level)	8mΩ Max. (Initial) 16 mΩ Max. (Final)	Subject mated contacts assembled in housing to 20 mV Max. Open circuit at 10 mA. Fig. 1
Voltage drop	8 mV/A Max. (Initial) 16 mV/A Max. (Final)	Subject mated contacts assembled in housing to 12 V Max. Open circuit at 1 A. Fig. 1
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 3 mA max.	Impressed voltage 1k VAC for 1 min. Mated connector. Fig. 2
Insulation Resistance	100 MΩ Min. (Initial) 100 MΩ Min. (Final)	Impressed voltage 500 VDC Mated connector for 15 sec, Fig. 2
Current Leakage	3 mA Max.	Impressed voltage 14 VDC 
Temperature Rise	60°C Max.	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C Fig. 6
Over Current Loading	No ignition is allowed during the test.	Apply the current to only one position. Applied Current : Fig. 3
MECHANICAL		
Shock	No electrical discontinuity greater than 1 μsec. shall occur.	Acceleration : 980 m/s ² Waveform : Half sine wave Duration : 6 m/sec.Velocity Number of Drops: 3 drops each directions of X,-X, Y,-Y,Z and -Z axes, totally 18 drops Mounting : Fig. 4 

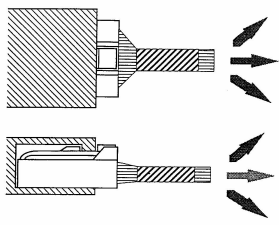
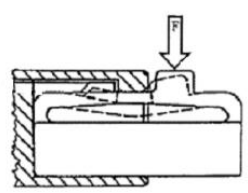
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Vibration (High Frequency)	No electrical discontinuity greater than 1 μ sec. shall occur.	Vibration Frequency : 20→200→20 Hz/3 min. Acceleration : 44.1 m / s ² Vibration Direction : X, Y, Z Duration : 3 hours each Voltage : 12V Current : 1A Mounting: Fig. 4
Connector Mating Force	70 N Max.	Operation Speed : 100 mm/minute. Measure the force required to mate connector.
Connector Unmating Force	70 N Max.	Operation Speed : 100 mm/min. Measure the force required to unmate connectors. (without housing lock)
Connector Locking Strength	100 N Min.	Fit a male housing to female one and fix the one side of the housing with the housing lock operated. When the other housing is pulled at a constant speed of approximately 100 mm/min, measure a load at which the locking system is detached or broken. However, pull the housing in the five directions shown below. Additional measurements shall be made in the directions where are considered to be necessary in terms of the connector structure (NDS05-3.2.8, DATE:JUN.14.2008) 
Force to release latch from prestage position	20 N Max.	Take a pair of connectors that are full of terminals and, after mating, apply a load to the connector at the point where unlocking of the locking structure is most likely to occur according to the connector locking structure, and measure the load required to unlock the lock at the moment. 
Contact Insertion Force	10 N Max. per contact	Measure the force required to insert contact into housing.
Contact Retention Force (Secondary Lock)	100 N Min.	Measure contact retention force with secondary lock set it effect. Operation Speed : 100 mm/min.

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Repeat mating	Satisfy requirements of test item on the "6 sequence".	Repeated mating-unmating by hand in up-down and right-left directions for 10 cycles.
Handling Ergonomics	No abnormalities allowed in manual mating/unmating handling.	Manually operated.
Retention Force of Tab	≥20 N	Measure the retention force between housing and tab contact. Operation speed : 100 mm/min

ENVIRONMENTAL

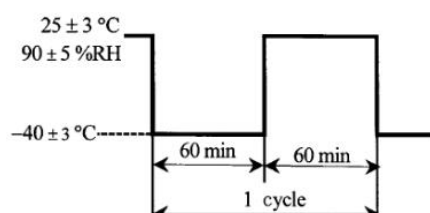
Item	Requirement	Standard
Thermal Shock	See Product Qualification and Test Sequence Group 7.	40°C/30min., 100°C/30min. Making this a cycle, repeat 1000 cycles. Monitor resistance-variation at closed circuit current of 10 mA during the test.
Humidity (Steady State)	See Product Qualification and Test Sequence Group 8. Current Leakage: 3mA Max.	90~95%R. H. , 60°C , 96hours (EIA-364-31, Condition A, Method II)
Temperature Life (Heat Aging)	See Product Qualification and Test Sequence Group 9.	Subject mated connectors to temperature life at 120°C for 96 hours. (EIA-364-17, Test condition A)
Resistance to Cold	See Product Qualification and Test Sequence Group 10.	Subject mated connectors to temperature life at -40°C for 96 hours. (EIA-364-59)
Humidity-Temperature Cycling	Satisfy requirements of test item on the "6 sequence".	Condition : Fig.5 Making this condition a cycle, Repeat 10 cycles. Monitor resistance-variation at closed circuit current of 10 mA during the test.
Compound Environment Resistance	Satisfy requirements of test item on the "6 sequence". No electrical discontinuity greater than 1 μsec. shall occur.	Temperature : 80°C Vibration Frequency : 20→200→20Hz/ 3 Min. (Log) Acceleration : 44.1m/s ² Vibration Direction : X, Y, Z Duration : 300 hours Test Current : Fig. 7 Mounting : Fig. 4 Monitor resistance-variation, and after this test check if instant cutoff occurs for an hour on "vibration"
Condensation	Satisfy requirements of test item on the "6 sequence".	0°C/10min., 80°C/90~95%/ 30min. Making this a cycle, repeat 48 cycles. Monitor current leakage during the test 

Fig. 1

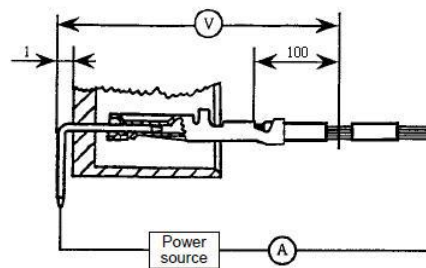


Fig. 2

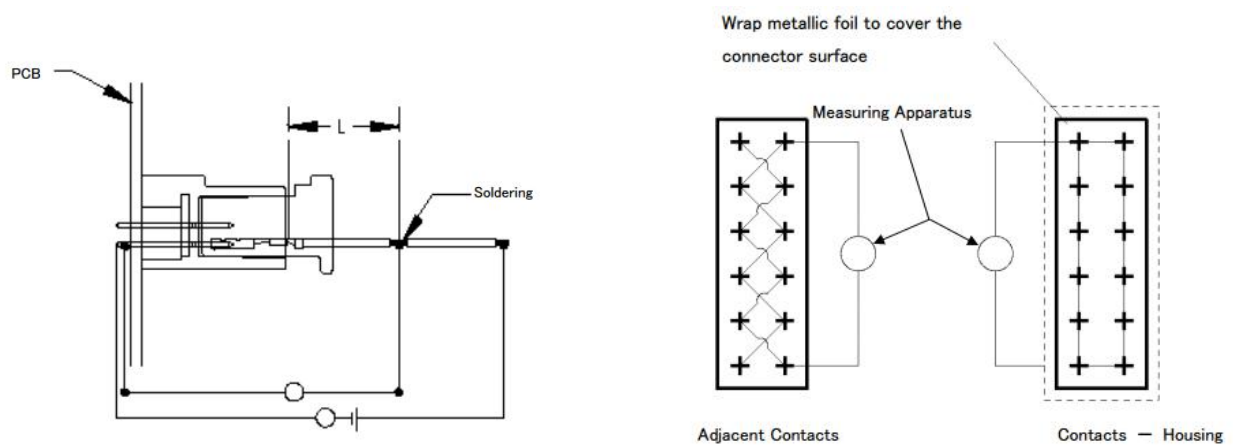


Fig. 3

Wire Size (mm2)	Test Current (A)	Duration
0.5	16.5	60 min
	20.5	200 sec
	22.5	10 sec
	30.0	1 sec

Fig. 4

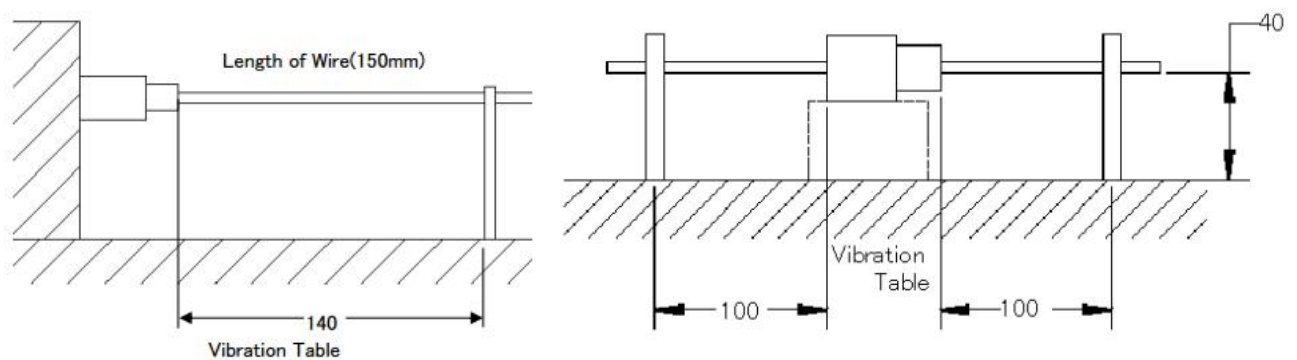


Fig. 5

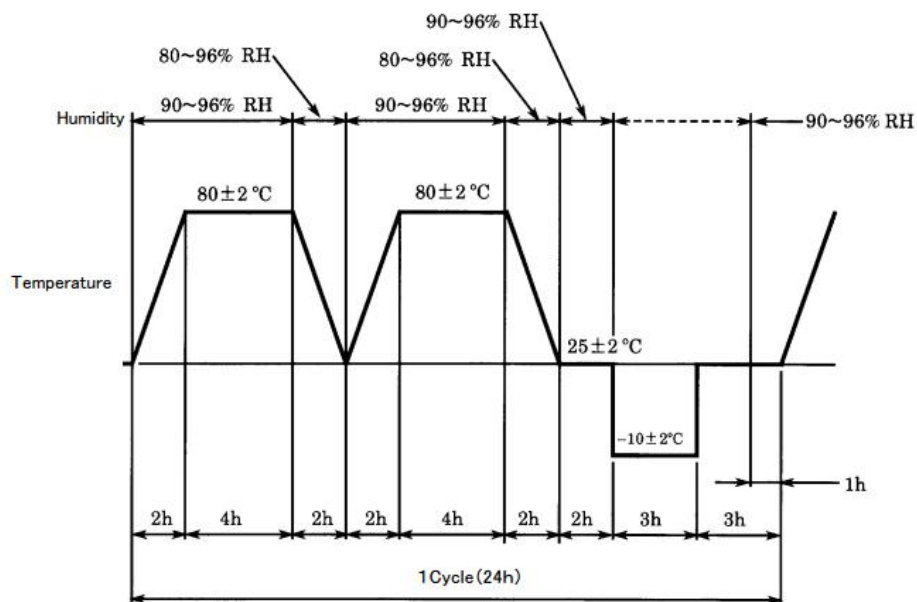


Fig. 6

Kind of Connectors	Wire Size(mm ²)	Test Current(A)	Temperature Rise
8 POS.	0.5	6.05	60°C max.
12 POS.	0.5	5.5	
16 POS.	0.5	4.4	
24 POS.	0.5	3.3	
28 POS.	0.5	3.3	
32 POS.	0.5	2.2	
40 POS.	0.5	2.2	

Fig. 7

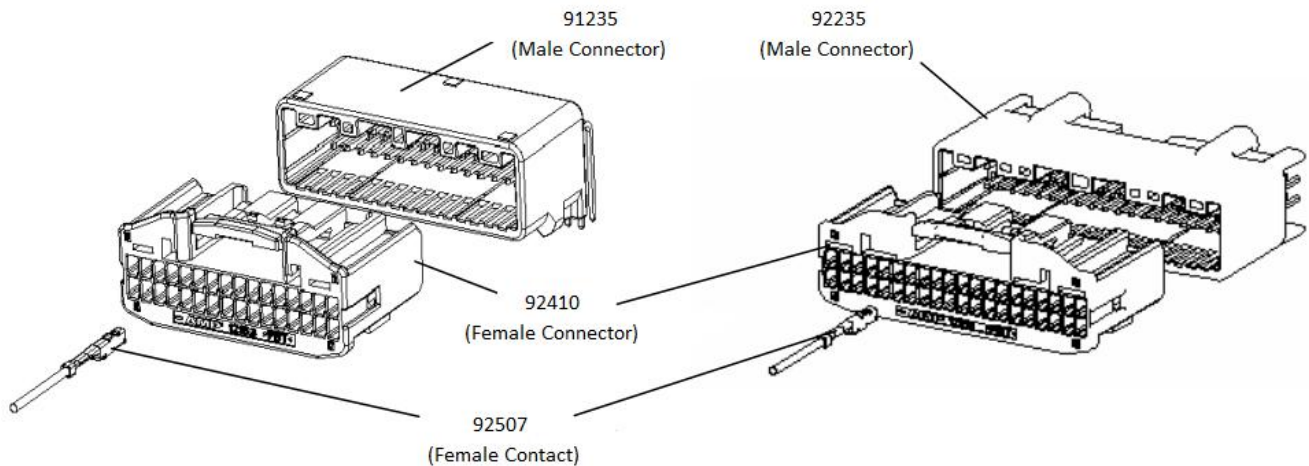
Kind of Connectors	Wire Size(mm ²)	Test Current(A)	Test Time
8 POS.	0.5	3.3	45min.ON、15min.OFF 300cycles
12 POS.	0.5	3	
16 POS.	0.5	2.4	
24 POS.	0.5	1.8	
28 POS.	0.5	1.8	
32 POS.	0.5	1.2	
40 POS.	0.5	1.2	

6 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Test Sequence													
Examination of Product	1	1	1、5	1、6	1、4	1、5	1、5	1、8	1、6	1、3	1、7	1、7	1、5	1
Termination Resistance (Low Level)	3		2、6	2、7				2、9	2、7		2、8	2、8		
Voltage drop	4		3、7	3、8		2、6	2、6	3、10	3、8		3、9	3、9		
Dielectric Withstanding Voltage	7					3、7	3、7	5、12			5、11			
Insulation Resistance	6							4、11			4、10		2、6	
Current Leakage								7					4	
Temperature Rise	5								4、9			5		
Over Current Loading			4											
Shock					3									
Vibration (High Frequency)				5								6		
Connector Mating Force	2													
Connector Unmating Force	8													
Connector Locking Strength		4					10	14	11	5	14			
Force to release latch from prestage position														2
Contact Insertion Force		2												
Contact Retention Force (Secondary Lock)		3					9	13	10		13			
Repeat mating						4								
Handling Ergonomics							8			4	12			
Retention Force of Tab														3
Thermal Shock							4							
Humidity (Steady State)								6						
Temperature Life (Heat Aging)				4	2				5					
Resistance to Cold										2				
Humidity-Temperature Cycling											6			
Compound Environment Resistance												4		
Condensation													3	
	5	5	5	5	5	5	5	5	5	5	5	5	5	5

7 INSTRUCTION SHEET

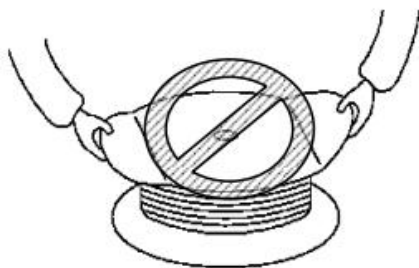
7.1 Components View



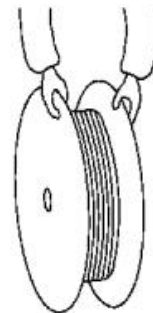
7.2 Storage and Carrying

7.2.1 Contact

- (1) Avoid leaving or carrying the contact reel in an open area without wrapping it in proper material.
- (2) Do not lift up and carry the contact reel by gripping one the side of reel, this may result in damage to the reel, and contacts before use.



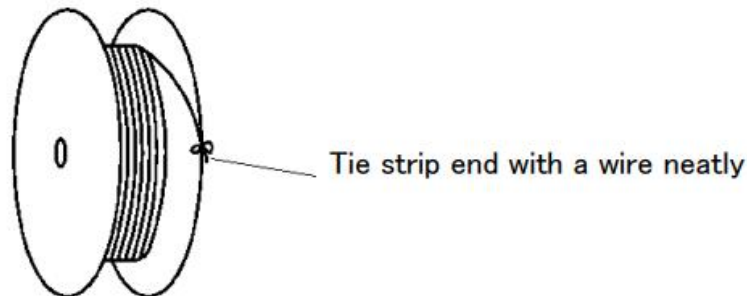
Do not lift up laterally holding one side only.



Acceptable

- (3) Avoid storing the contact reel in a moist or dusty place. Stock the reel in a comparatively dry and clean place (5~ 35°C , 45~85%RH) away from direct sunlight.

- (4) When removing the contact reel from the machine, fasten the end of contact strip onto the edge of the reel with use of proper string or wire.



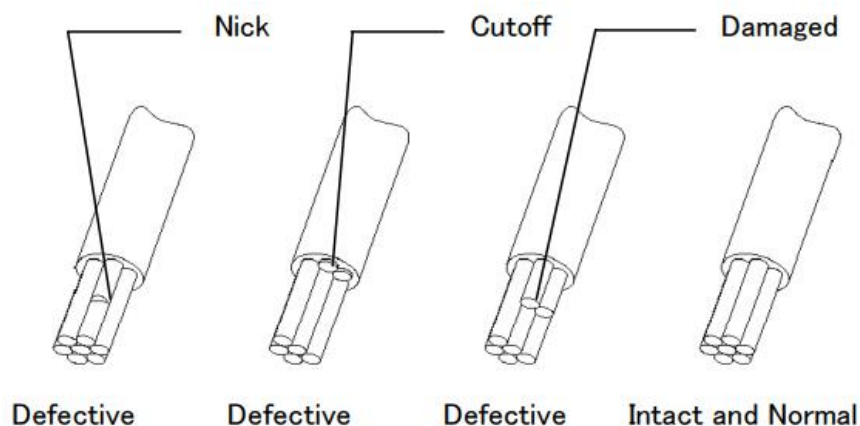
7.2.2 Housing

- (1) Avoid storing the housings in a moist or dusty place. Stock the housings in a comparatively dry and clean place (5~35°C , 45~85%RH) away from direct sunlight.
- (2) Avoid leaving or carrying the housings in an open area without wrapping it in proper material.
- (3) Do not drop or shock the housings when carrying it

7.3 Wire

Any crimping of contacts must be performed by using appropriate tools according to the applicable Instruction Sheet and Specification.

7.3.1 Wire end must be stripped without nick, cutoff, or damage of wire strands.



7.3.2 Storage and Handling of Crimped Products

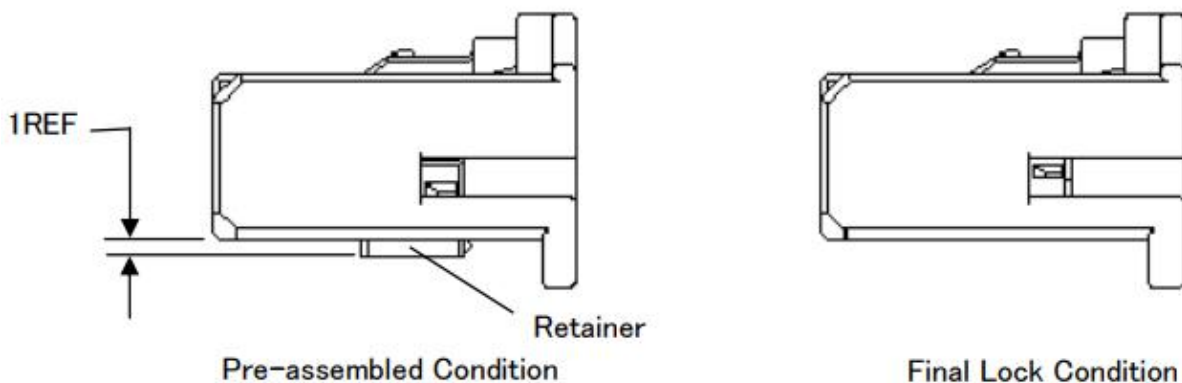
- (1) Store the products in a clean, dry area, cover with proper sheet or paper when placed in an open area until the next day.

- (2) Crimped leads should be processed in bundles of less than 100 pieces. In addition, care should be taken in case the leads catch together or be tangled, causing damage of the products (Specially the lance of 025 Receptacle Contact).
- (3) Avoid stacking and piling up the in-process products in large volume. Deformation of the contact will result in malfunction of contacting parts electrically.

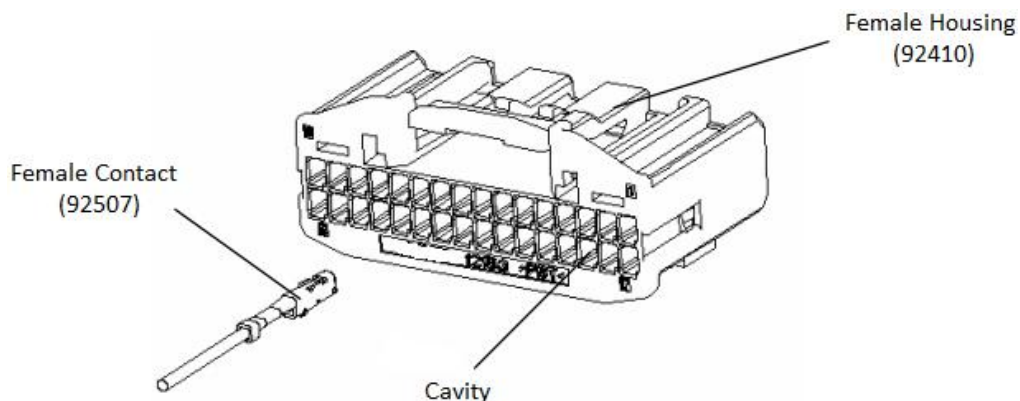
7.4 Harness Making

7.4.1 Procedure for Female Contact Insertion into Housing

- (1) Confirm the retainer is in pre-assembled condition. When the retainer is in final lock condition, it must be unlocked to pre-assembled condition. The contact can not be inserted in final lock condition.



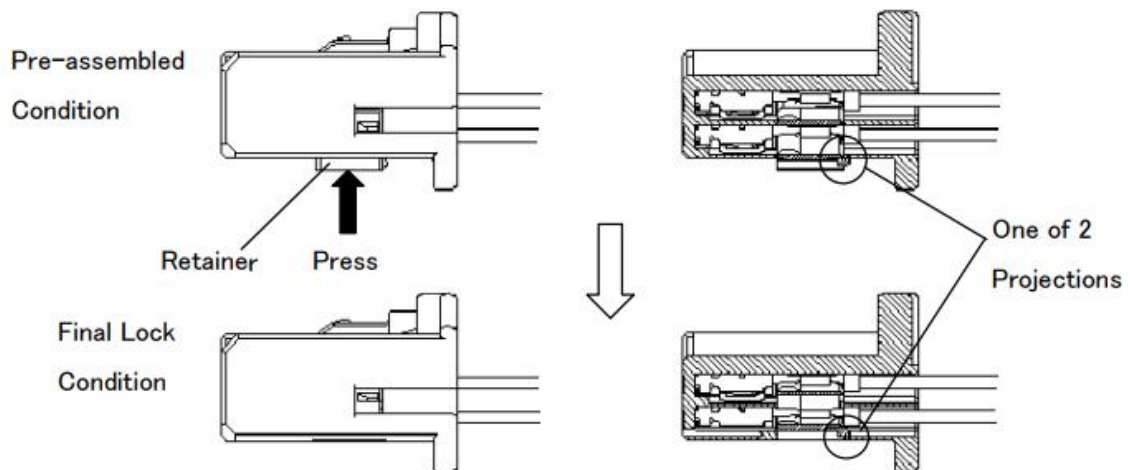
- (2) Confirm type of plating on the contact. It must be the same type of plating on the female contact and on the male contact. The type of plating can be seen on the customer drawing
- (3) Insert the contacts into the housing with same direction as shown. The insertion is finished when the contact is locked and the contact can not be more inserted.



- (4) By pulling the contact by 20N max, check to make sure that the contact can not be with drawn.

7.5 Double Lock (Secondary Lock) Operation

7.7.1 After insertion of all of the contacts, press the retainer for final lock condition. The double lock operation is finished by confirmation that the retainer is kept in the final condition by the 2 projections.



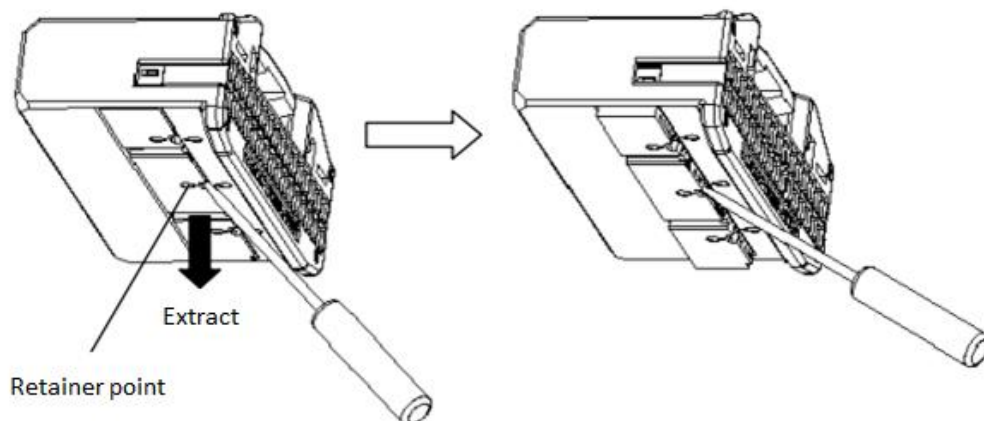
7.7.2 The double lock operation can not be completed if there are any half-inserted contacts. When the retainer can not be pressed to the final condition, do not press by force, find the half inserted contact, and insert it to proper position. See para.7.4.

7.6 How to Unlock Retainer from Final Lock Condition

When the female contact requires insertion or extraction, the retainer must be in the pre-assembled condition. The insertion or extraction can not be done in final lock condition.

7.6.1 Insert a tool such as a 1mm blade screw driver, into the window of the retainer pointed .

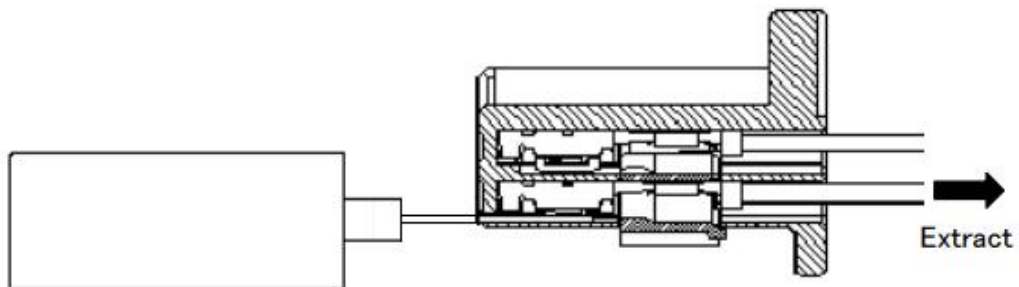
7.6.2 Draw out the retainer, about 1mm, to pre-assembled condition. Confirm that all of the projection is unlocked.



7.7 How to Extract Female Contact

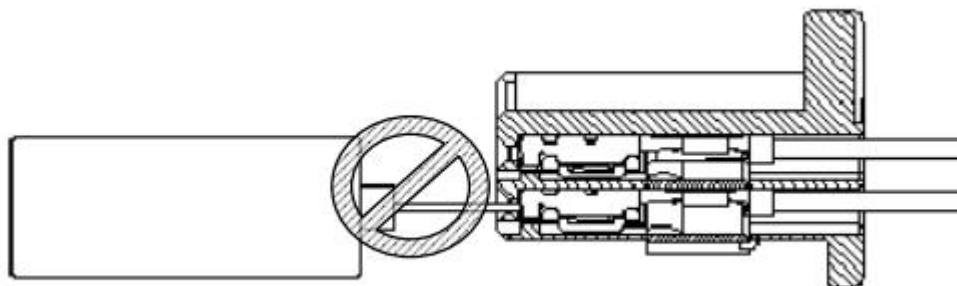
7.7.1 Confirm the retainer is in pre-assembled condition. When the retainer is in final lock condition, it must be changed to pre-assembled condition. See para.7.6. The female contact can not be extracted in final assembled condition.

7.7.2 Insert the tip of a special extractive tool into the proper hole to the end, remove the loaded contact from housing while pull the crimped wire.



7.7.3 When the female contact can not be extracted, do not pull the wire by force but ensure the housing lance is unlocked.

7.7.4 Take care not to insert the screwdriver or the extractive tool into the female contact. If those should be inserted, the female contact must be renewed. Re-using is never allowed



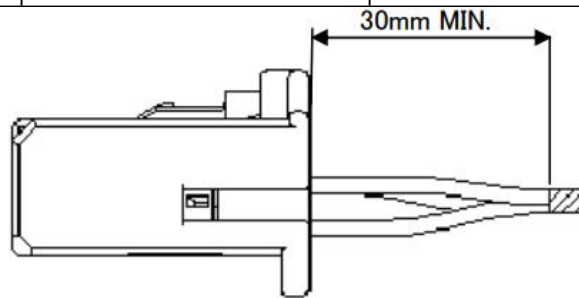
7.8 Harness Control

7.8.1 Handling

Take care not to apply unnecessary force or shock to the connector or the wire.

7.8.2 Taping up Wires

The wires must not be taped up more than 30mm from the end of the housing to avoid applying unnecessary force to the wires.



7.8.3 Electric Circuit Check

- (1) For making a check on electric circuit, the applicable mating half or equivalent product should be used.
- (2) Never insert the probe pin for the inspection into the female contact. The pin must be probed from the wire side. If the probe pin should be inserted, the female contact must be renewed.

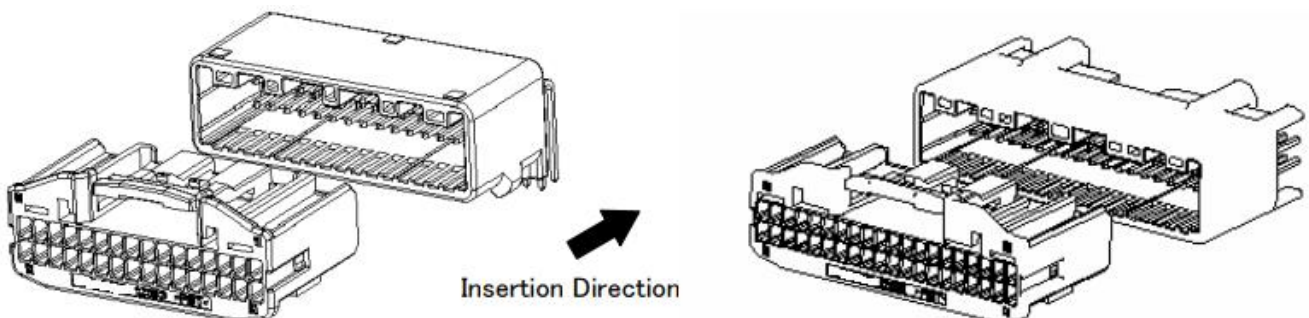
7.8.4 Avoid storing the connector in a moist or dusty place. Stock the connector away from direct sunlight.

7.8.5 The connector should be used with the proper packaging to prevent the ingress of dust, moisture, etc.

7.9 Mating and Extraction of Connector

7.9.1 Mating of Connector

- (1) Check to make sure that the contact is inserted into the housing in proper condition, the wire is taped up from proper position, and the retainer is in final lock condition. If the retainer is in pre-assembled condition, it must be changed to be in final lock condition. See para.7.4
- (2) And then check the contact and the housing into the male housing for defects, deformation, discoloration, damage, rust, crack, deficit, etc. The connector must be renewed if any defects are found.
- (3) Insert the proper female housing into the male housing straight with same direction as shown. The operation is finished when you hear the click sound and can not insert further. When you can not insert the housing, do not insert by force, and check the items in (1), (2)



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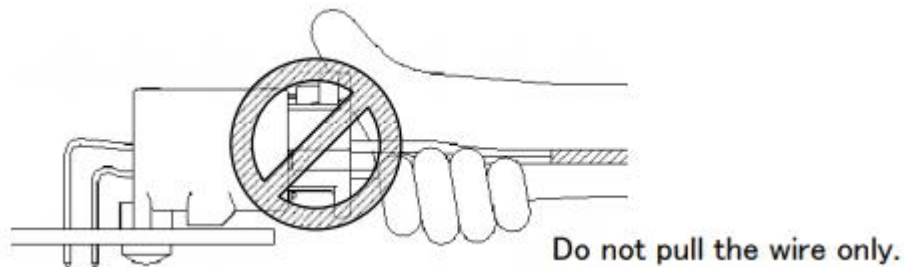
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- (4) By pulling the female connector lightly, check to make sure that the connector can not be with drawn.

7.9.2 Extraction of Connector

Grip the female housing, and then draw straight out while pressing down the locking lever. When the housing can not be drawn out, do not pull it by force but check to make sure if the locking mechanism is released



7.10 General Attention Matters

- 7.10.1 Do not mate and extract the connector unnecessarily.
- 7.10.2 Do not insert any objects except the proper connector.
- 7.10.3 At mating/extraction operation, or after mating operation, take care not to apply unnecessary force or shock to the wire and the connector.