



SPECIFICATION

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SPEC. NO.: PS-92201-XXXXX-XXX REVISION: G

PRODUCT NAME: 2.4 mm PITCH WTW CONNECTOR

PRODUCT NO: 92201、92202 SERIES

PREPARED: TANGBO DATE: 2023/07/04	CHECKED: LIUWEI DATE: 2023/07/04	APPROVED: LINZHANGMING DATE: 2023/07/04
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TITLE: **2.4 mm PITCH WTW CONNECTOR**

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ECN No: 012995

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1 REVISION HISTORY

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-1401159	REV O	ALEX	2014/01/14
A	ECN-1411367	UPDATED	SNOW	2014/11/25
B	ECN-1501109	UPDATED	LERRY	2015/01/13
C	ECN-1503392	UPDATED	LERRY	2015/03/30
D	ECN-1708375	UPDATED	Liao Szu Ting	2017/08/22
E	ECN-2001232	Add product description and part number of rubber parts	Chen PoYang	2020/01/14
F	ECN-004531	Add product AWG# 26	Hsu Cheng Hsing	2021/08/19
G	ECN-012995	ADD REMARK	TANGBO	2023/07/04

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2 SCOPE

This specification covers performance, tests and quality requirements for **2.4 mm pitch WTW connector**.

The applicable product descriptions and part numbers are as below:

Plug Conn. P/N: 92201-XXXXX-XXX

Rcpt. Conn. P/N: 92202-XXXXX-XXX

TAB Contact P/N: 92201-T0XX

REC Contact P/N: 92202-T0XX

Rubber 1 P/N: 92201-XXXR1XX

Rubber 2 P/N: 92201-XXXR2XX

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

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

4.2 Materials

- 4.2.1 Contact: Pre-Tin Brass and Pre-Tin Phosphor Bronze
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94 HB
- 4.2.3 Rubber: Silicone

4.3 Ratings

- 4.3.1 Operating Temperature: **-40** to **+105°**
- 4.3.2 Test Current: **5A** Max. AWG #20
2A Max. AWG #26

4.4 Storage life: one year, Storage environment:10°C~30°C, Humidity<75%

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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
Low Level Contact Resistance	10 m Ω Max.(initial)per contact 20 m Ω Max. After test.	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	100 M Ω Min.	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. (Current leakage: 1mA Max.)	1000V AC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature Rise	60°C Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C Test Current: 5A(#20) Max 2A(#26) Max. (EIA-364-0,METHOD1,CONDITION1)
MECHANICAL		
Item	Requirement	Standard
Handing Ergo-nomics	No abnormalities allowed in manual mating/unmating handling	Manually operated
Durability	20 m Ω Max. (final)	Under unlocking state ,manually repeat mating and unmating for 30 cycles.
Crimp Tensile Strength	AWG#20: 88N Min. AWG#22: 59N Min. AWG#26: 14.7N Min.	Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed:100mm/min
Contact Mating Force	0.98N~6.86N Max.	Head operating speed: 100mm/min. Measure the force required to mate contacts.

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Contact Unmating Force	0.98N~6.86N Max.	Head operating speed: 100mm/min. Measure the force required to mate contacts.
Connector Locking Strength	73.5N Min.	Measure connector locking strength. Operation speed:100mm/min.
Contact Retention Force (Insulator & Contact)	34.3N Min.	Apply an axial pull-off load to crimped wire, Operation speed:100mm/min
Connector Mating Force	7 Pos.49N Max. 12 Pos.80N Max.	Under unlocking state, Measure the force required to mate connectors. Operation speed:100mm/min
Connector Unmating Force	7 Pos. 9.81~39.2N 12 Pos.30N Min.	Under unlocking state, Measure the force required to mate connectors. Operation speed:100mm/min
Vibration	1 μ s Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz . The entire frequency range, from 10 to 55 Hz and return to 10 Hz , shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions. (EIA-364-28 Condition I)
Shock (Mechanical)	1 μ s Max.	Subject mated connectors to 50 G's (peak value) half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be 100mA maximum for all contacts. (EIA-364-27, test condition A)
ENVIRONMENTAL		
Item	Requirement	Standard
Thermal Shock	20 m Ω Max. (final)	Mate module and subject to follow condition for 5 cycles. 1 cycles: -30 +0/-3 $^{\circ}$C , 120 minutes +80 +3/-0 $^{\circ}$C , 120 minutes (EIA-364-32, test condition I)
Resistance to Cold	20 m Ω Max. (final)	Subject mated connectors to temperature life -50 \pm5$^{\circ}$C , 120 hours.
Humidity	Insulation resistance (final)	Mated Connector

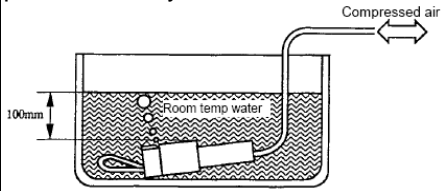
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	<p>100m Ω Min. Termination resistance (final) 20 m Ω Max. Current Leakage (final) 1.0mA Max</p>	<p>60°C, 90~95% RH, 96 hours. (EIA-364-31, Condition A, Method II)</p>
Temperature Life	<p>20 m Ω Max. (final)</p>	<p>Subject mated connectors to temperature life at 120°C, 120 hours. (EIA-364-17, Test condition A)</p>
Water right Sealing (For 92201-XXXXX-005 / 92201-XXXXX-006)	<p>The connector shall be neither water enter nor air leak.</p>	<p>Put the connector in the water to a depth about 100mm, and raise the pressure every 49kPa for 30s.</p> 

Note. Flowing Mixed Gas shall be conduct by customer request.

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6 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group										
	1	2	3	4	5	6	7	8			
	Test Sequence										
Examination of Product	1	1	1	1,11	1,11	1,5	1.6	1			
Low Level Contact Resistance			3	2,6,8	3,6,8	2,4	2.5				
Insulation Resistance				3,9							
Dielectric Withstanding Voltage				4,10							
Temperature Rise			4								
Connector Mating Force			2		2,10						
Connector Unmating Force			5		4,9						
Connector Locking Strength		2									
Contact Retention Force			6								
Contact Mating Force	2										
Contact Unmating Force	3										
Crimp Tensile Strength	4										
Vibration								3			
Shock (Mechanical)								4			
Durability(Contact Mate/Unmating)							3				
Thermal Shock					5						
Humidity (Steady State)					7						
Temperature Life (Heat Aging)						5					
Resistance to Cold						7					
Water right Sealing								2			
Sample Size	4	4	4	4	4	4	2	5			

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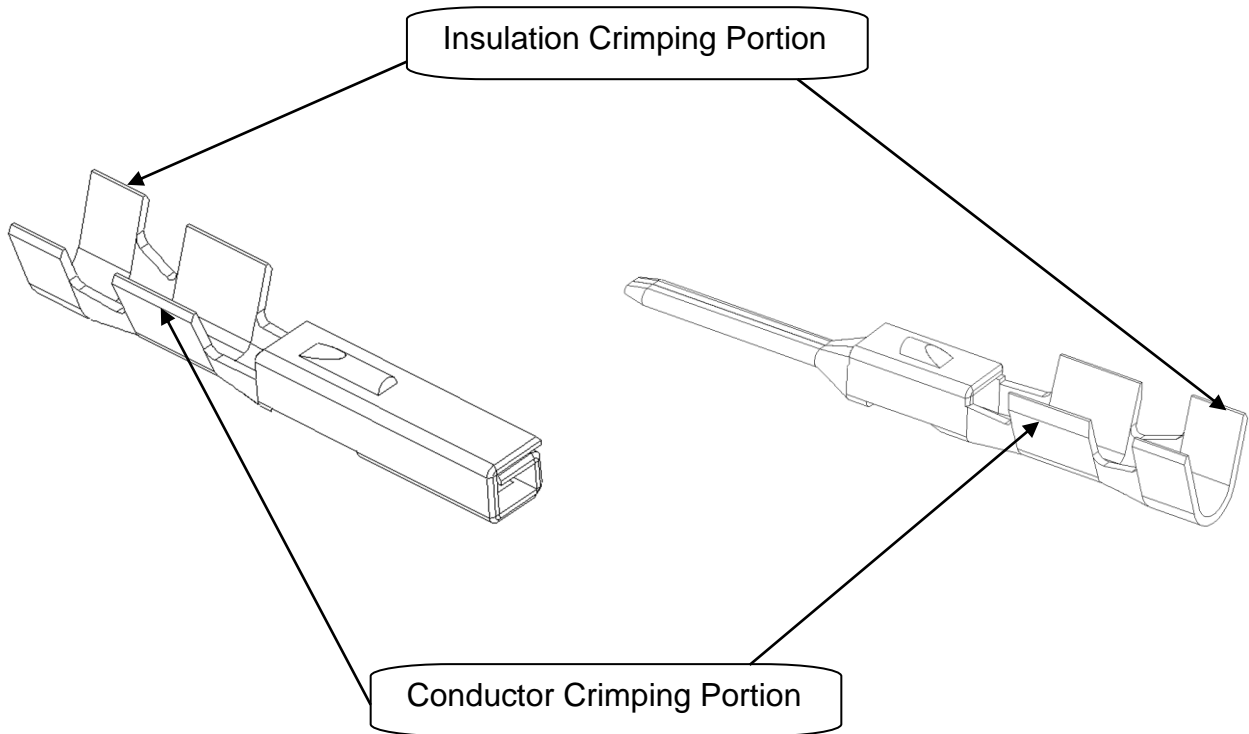
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7 ANATOMY OF CRIMPING TERMINAL



8 APPLICABLE WIRES:

AWG Size: 0.3~0.5mm²(AWG#22~20) Insulation OD: Φ1.4~1.7mm
 0.13mm² (AWG#26) Insulation OD: Φ0.97~1.03mm

MODEL NO.	NAME	APPLICABLE WIRES			
		WIRE TYPE	0.3	0.5	0.13
92201-T0xx	TAB CONTACT	CAVS	○	○	
		AVSS	○	○	
		AVSS F	○	○	
92202-T0xx	REC. CONTACT	CAVS	○	○	
		AVSS	○	○	
		AVSS F	○	○	
92202-T0xx-CA1	REC. CONTACT	UL10368			○

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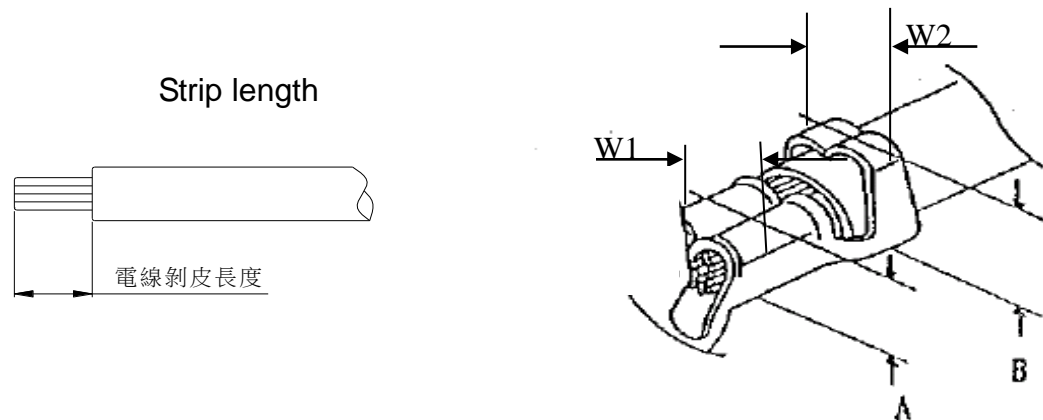
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9 CRIMPING CONDITION

鉚線條件表 CRIMPING CONDITION

Part Number	Wire Specification		Crimp Height (mm)		Crimp Width (mm)		Crimp Tensile Strength (N)(min.)
	AWG Size	Insulation OD(mm)	Conductor A	Insulation B	Conductor W1	Insulation W2	
92201-T0xx & 92202-T0xx	22	1.4~1.5	0.85~1.03	1.9 Max.	1.27~1.37	1.45~1.55	59
	20	1.6~1.7	0.95~1.13				88
92202-T0xx-CA1	26	0.97~1.13	0.55~0.73	1.4 Max.	0.95~1.05	1.30~1.40	14.7



Note:

- 1、W1為芯線導體鉚壓後之寬度(Conductor Crimping Width)：W1值如上表
- 2、W2為電線外被部分鉚壓後之寬度(Insulation Crimping Width)：W2值如上表
- 3、A為芯線導體鉚壓後之高度(Conductor Crimping height)：A值如上表(參考值)
- 4、B為電線外被鉚壓後之高度(Insulation Crimping height)：B值如上表(參考值)
- 5、電線剝皮長度(Strip length)：3.0~3.5mm(參考值)

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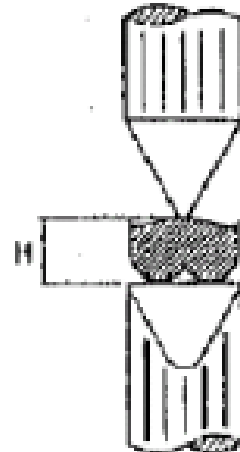
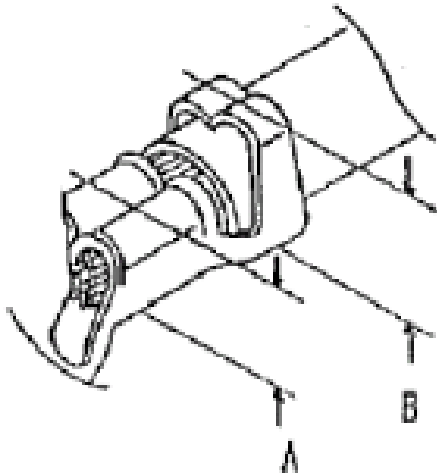
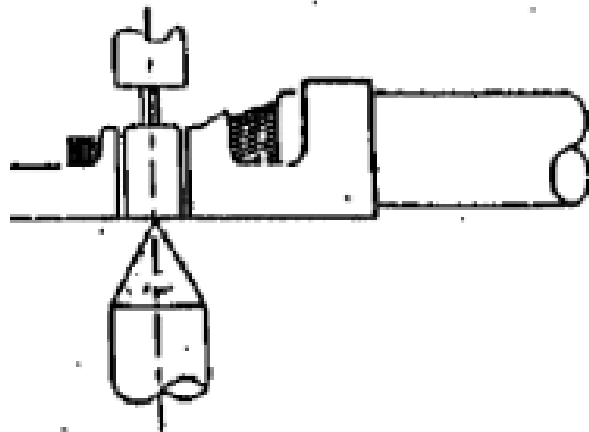
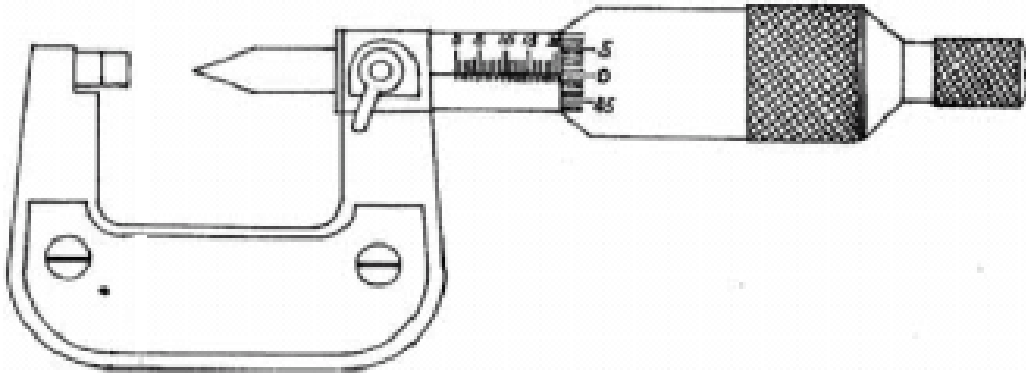
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10 CRIMPING HEIGHT MEASUREMENT



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11 PULL FORCE OF CRIMPING SECTION MEASUREMENT

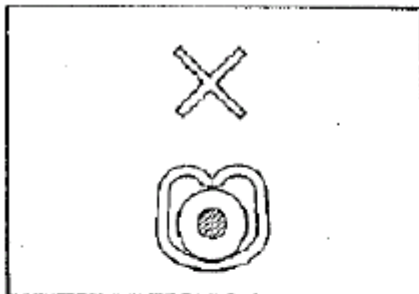


Before test samples, please measure crimp height and do not crimp insulation.

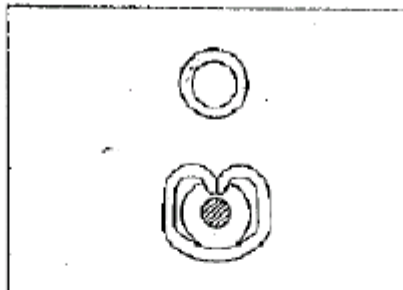


Pull Force of Crimp Section Measurement

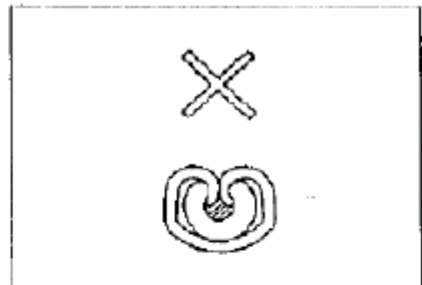
12 STANDARD INSULATION CRIMPING



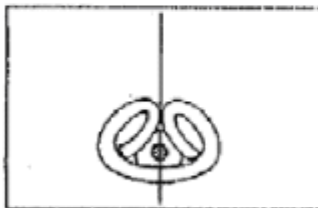
Not enough crimp



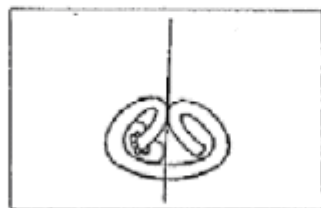
Good



Crimp too much

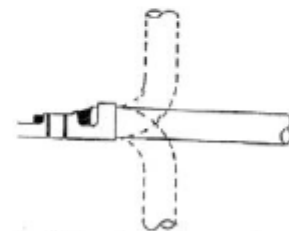


Good



NG

Insulation Crimp Condition



As following figure shown. It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

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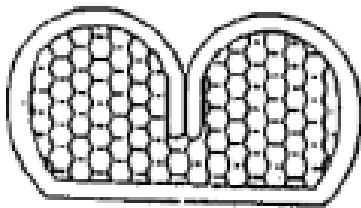
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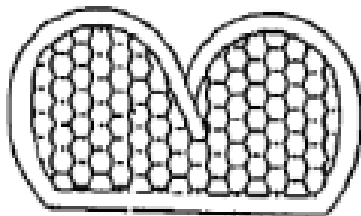
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13 CONDUCTORS CRIMPING CONDITION

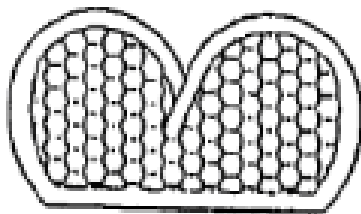


Good

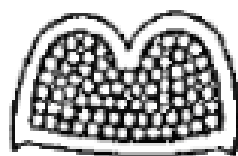


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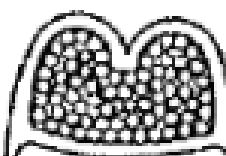
Lower conduct
retension force



NG



Good



Large burr

NG

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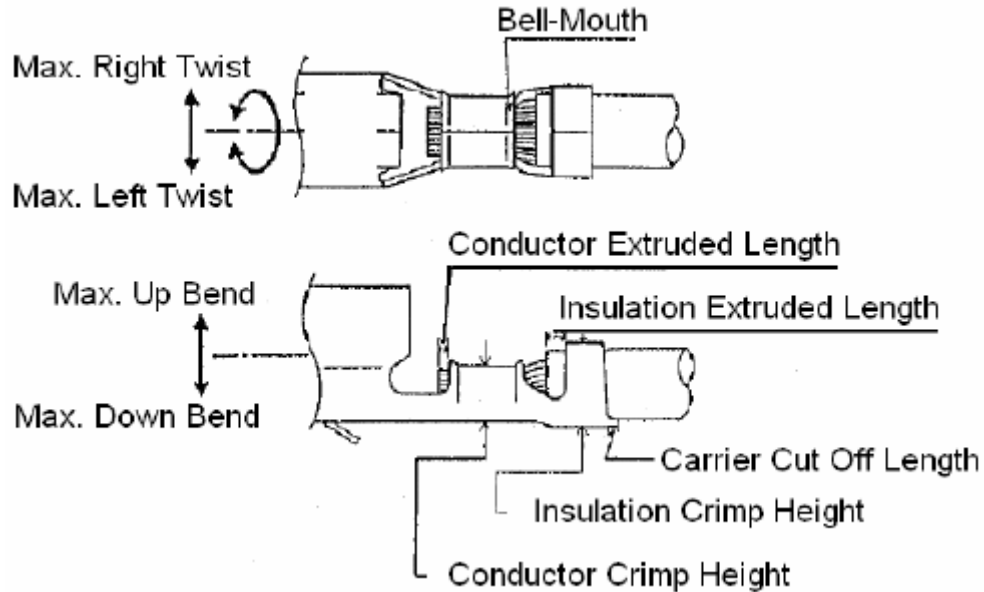
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14 CRIMPING REQUIREMENT



Item	Range(Ref.)
Max. Up Bend	4°
Max. Down Bend	4°
Max. Left Twist	3°
Max. Right Twist	3°
Bell-Mouth Length	0.2 max.
Carrier Cut Off Length	0~0.5mm
Conductor Extruded Length	0~1mm

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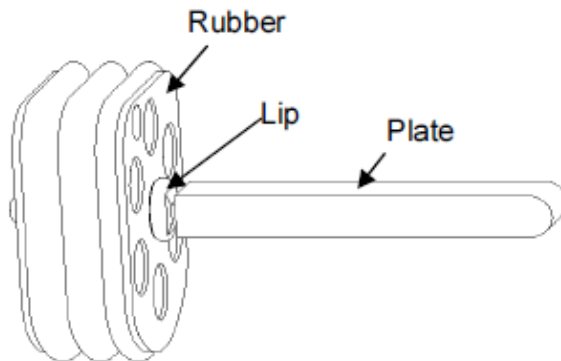
PAGE: **15** OF **17****15. Insertion of the Dummy Plug.**

Insert a dummy plug in each of the holes, if it is not to be used.

Work sequence:

- (1) Insert the dummy plug into the rubber plug.

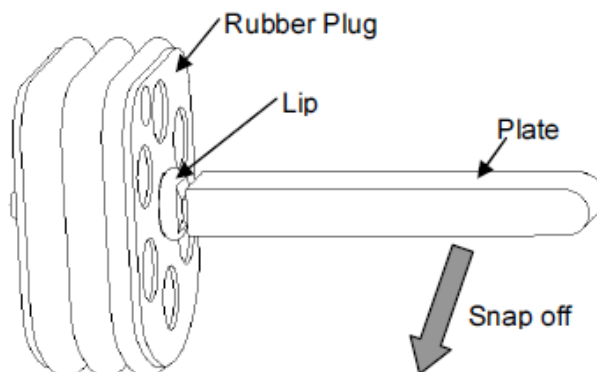
Hold the plate and insert the dummy plug until its rear end comes out of the rubber plug.



- (2) Snap off the plate.

Pay attention not to allow the plate to migrate into the products.

Confirm that the rear end lip of the dummy plug (yellow) is now visible.

**16. MANUFACTURING HARNESS ASSEMBLIES**

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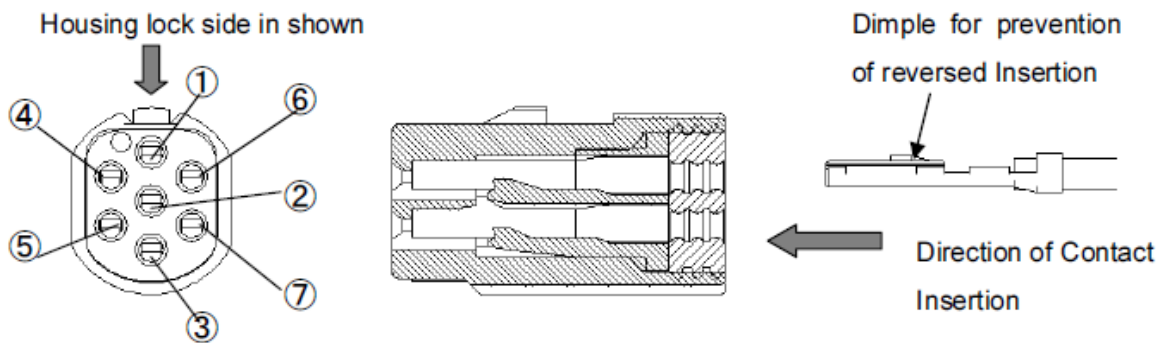
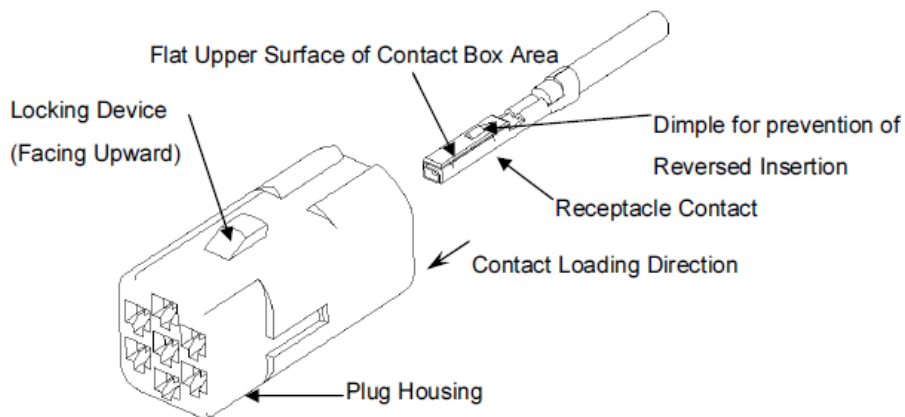
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16.1 Plug Housing

Hold the plug housing with its locking device side facing upward, insert receptacle contact into housing cavities, with the receptacle contacts held with its contacting end first, and the flat upper surface of contact box portion facing upward, as far as it goes into the cavity and lock in the position.



16.2 Cap Housing

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Hold the cap housing with its locking device facing downward, insert tab contact into housing cavities, with the tab contact held with its contacting end first and the flat upper surface of contact box portion facing upward, as far as it goes into the cavity and lock in the position.

