



SPECIFICATION

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SPEC. NO.: PS-52231-XXXXX-XXX

REVISION: C

PRODUCT NAME: 1.25 PITCH WTB CONN.

PRODUCT NO: 52231 ,52302Series

PREPARED: GAO. LI DATE: 2023.06.05	CHECKED: XUZHUYONG DATE: 2023.06.05	APPROVED: XUZHUYONG DATE: 2023.06.05
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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-005422	NEW SPEC Proposal	Liu,Hua	2021.09.13
B	ECN-008336	ADD AWG #26 1.5A(max),AWG#28 1.3A ADD 16pin Series, ADD 30Pin Series.	Wan.Bo	2022.6.10
C	ECN-010884	ADD 52302 Series.	GaoLi	2022.06.05

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2 SCOPE

This specification covers performance, tests and quality requirements for **1.25 PITCH WTB CONN.**

Female Board P/N : **52231**

Male Cable P/N : **52302**

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.

4.1.2 All materials conform to RoHS. And the standard depends on TQ-W1-140101

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy (**Phosphor Bronze**)

- Finish:
- (a) Contact Area: **Refer to the drawing.**
 - (b) Under plate: **Refer to the drawing.**
 - (c) Solder area: **Refer to the drawing.**

4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.2.3 Fitting Nail: Copper Alloy

- Finish:
- (a) Under plate: **Refer to the drawing.**

4.3 Ratings

4.3.1 Working voltage less than 36 volts(per pin)

4.3.2 Voltage: 50 Volts AC (r.m.s)

CURRENT (MAX.) :See Table

Wire Size	Rate Current(MAX)
AWG#26	1.5A
AWG#28	1.3A
AWG#30	1.1A

4.3.3 Operating Temperature : **-55°C to +85°C**

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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	20 m Ω Max.(initial) per contact 40 m Ω Max.(finish)	Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23)
Insulation Resistance	100 M Ω Min.	Unmated connectors, apply 250 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 2 mA max.	500 V AC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature rise	30°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 (EIA-364-70B,METHOD1,CONDITION1)

Note. High Frequency Test shell be conduct by customer request.



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MECHANICAL

Mating / Unmating Forces	See item 6		Operation Speed : 25.4 ± 3 mm/minute.. Measure the force required to mate/unmate connector. (If with Lock Release Lock) (EIA-364-13D)
Fitting Nail & Terminal / Housing Retention Force	2.94 N(0.3kgf) Min.		Operation Speed : 25.4 ± 3 mm/minute.. Measure the contact retention force with tester. (EIA-364-29C)
Crimping Terminal / Housing Retention Force (Cable Side)	9.8 N (1.0kgf)MIN.		Operation Speed : 25.4 ± 3 mm/minute.. Measure the contact retention force with tester.
Crimping Pull Out Force	AWG# 26: 19.6 N (2.0kgf) Min. AWG# 28: 9.8 N (1.0kgf) Min. AWG# 30: 4.9 N (0.5kgf) Min.		Operation Speed : 25.4 ± 3 mm/minute.. Fix the crimped terminal, apply axial pull out force on the wire.
Locking Strength	8-12 CKT	19.6 N (2.0kgf)MIN.	Operation Speed : 25.4 ± 3 mm/minute.. Measure the contact retention force with tester
	14~20CKT	49 N(5.0kgf) MIN	
	22~28CKT	68.6N(7.0kgf) MIN	
	30-36 CKT	78.4 N {8.0 kgf} MIN.	
Durability	30 cycles.		The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3mm/min. (EIA-364-09C)



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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-364-28E 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-364-27B, test condition A)

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ENVIRONMENTAL		
Item	Requirement	Standard
Heat Resistance	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at $105\pm 2^{\circ}\text{C}$ for 96 hours . (EIA-364-17, Test condition A)
Cold Resistance	See Product Qualification and Test Sequence Group 6	Subject mated connectors to temperature life at $-40\pm 3^{\circ}\text{C}$ for 96 hours . (EIA-364-17, Test condition A)
Temperature Cycling	See Product Qualification and Test Sequence Group 7	Mate module and subject to follow condition for 5 cycles. 1 cycles: $-40 \pm 3^{\circ}\text{C}$, 30 minutes $+105 \pm 2^{\circ}\text{C}$, 30 minutes Transform 5 minutes (EIA-364-32E, test condition A)
Humidity	See Product Qualification and Test Sequence Group 8	Mated Connector $60+2/-2^{\circ}\text{C}$, 90~95% RH, 96 hours (EIA-364-31C, Condition A, Method II)
Salt Spray	See Product Qualification and Test Sequence Group 9 Contact Resistance: $40\text{ m}\Omega$ Max.	Subject mated/unmated connectors to $5\pm 1\%$ salt-solution concentration, $35\pm 2^{\circ}\text{C}$, Spray time : 48 ± 4 hours (EIA-364-26, Test condition B)
Solder ability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage Sequence Group 10	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at $245 \pm 3^{\circ}\text{C}$, for 5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage Sequence Group 11	$T \geq 350^{\circ}\text{C}$, 5sec Max.
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 12 (Lead Free) 2 cycles Sequence Group 12	Pre Heat : $150\sim 180^{\circ}\text{C}$, 60~90sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.

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

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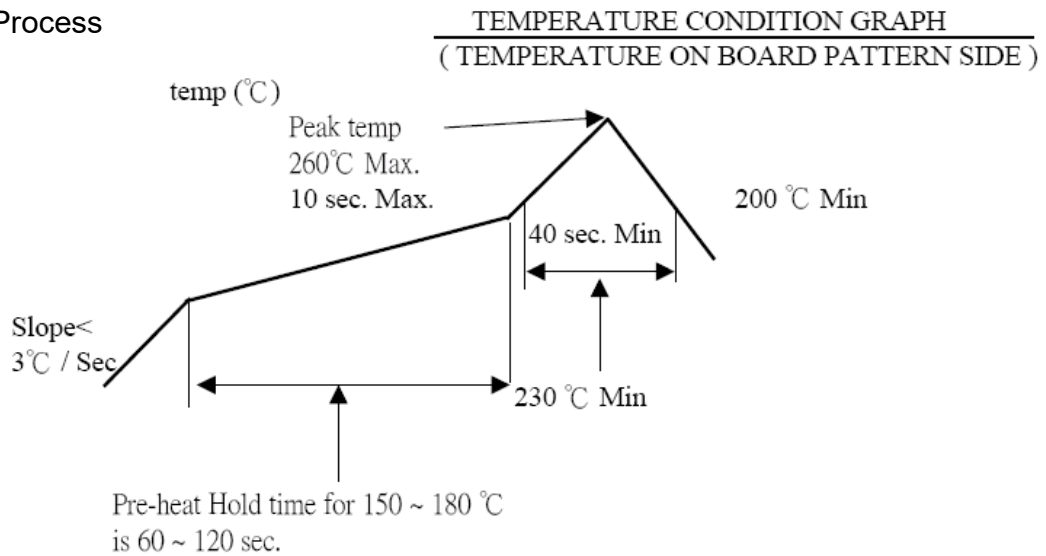
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6 Insertion / Extraction Force

NO. OF Ckt.	Initial		After 30 th Cycle	
	Insertion Force (Max.)	Extraction Force (Min.)	Insertion Force (Max.)	Extraction Force (Min)
10	24.0N / 2.40 Kgf	1.5N / 0.15 Kgf	33.6 N / 3.36 Kgf	1.5N / 0.15Kgf
14	33.6N / 3.36 Kgf	2.1 N / 0.21 Kgf	43.2 N / 4.32 Kgf	2.1 N / 0.21 Kgf
16	38.4N / 3.84kgf	2.4N / 0.27kgf	48 N / 4.80 Kgf	2.4 N / 0.27 Kgf
24	57.6N / 5.76 Kgf	3.6 N / 0.36 Kgf	67.2 N / 6.72 Kgf	3.6 N / 0.36 Kgf
30	72.0N / 7.20 Kgf	4.5 N / 0.46 Kgf	81.6 N / 8.16 Kgf	4.5 N / 0.45 Kgf

7 INFRARED REFLOW CONDITION

Lead-free Process



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8.PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group											
	1	2	3	4	5	6	7	8	9	10	11	12
	Test Sequence											
Examination of Product	1,3		1,5	1,5	1,6	1,6	1,6	1,6	1	1,3	1,3	1,3
Low Level Contact Resistance			2,7	2,6	2,7	2,7	2,7	2,7	2,4			4
Insulation Resistance					3,8	3,8	3,8	3,8				
Dielectric Withstanding Voltage					4,9	4,9	4,9	4,9				
Temperature rise	2											
Mating / Unmating Forces			3,6									
Contact Retention Force		1										
Fitting Nail Retention Force		2										
Crimping Pull Out Force		3										
Crimping Terminal / Housing Retention Force		4										
Durability			4									
Vibration				3								
Shock (Mechanical)				4								
Heat Resistance					5							
Cold Resistance						5						
Temperature Cycling							5					
Humidity								5				
Salt Spray									3			
Solder ability										2		
Hand Soldering Temperature Resistance											2	
Resistance to Soldering Heat												2
Sample Size	2	4	4	4	4	4	4	4	4	4	4	4

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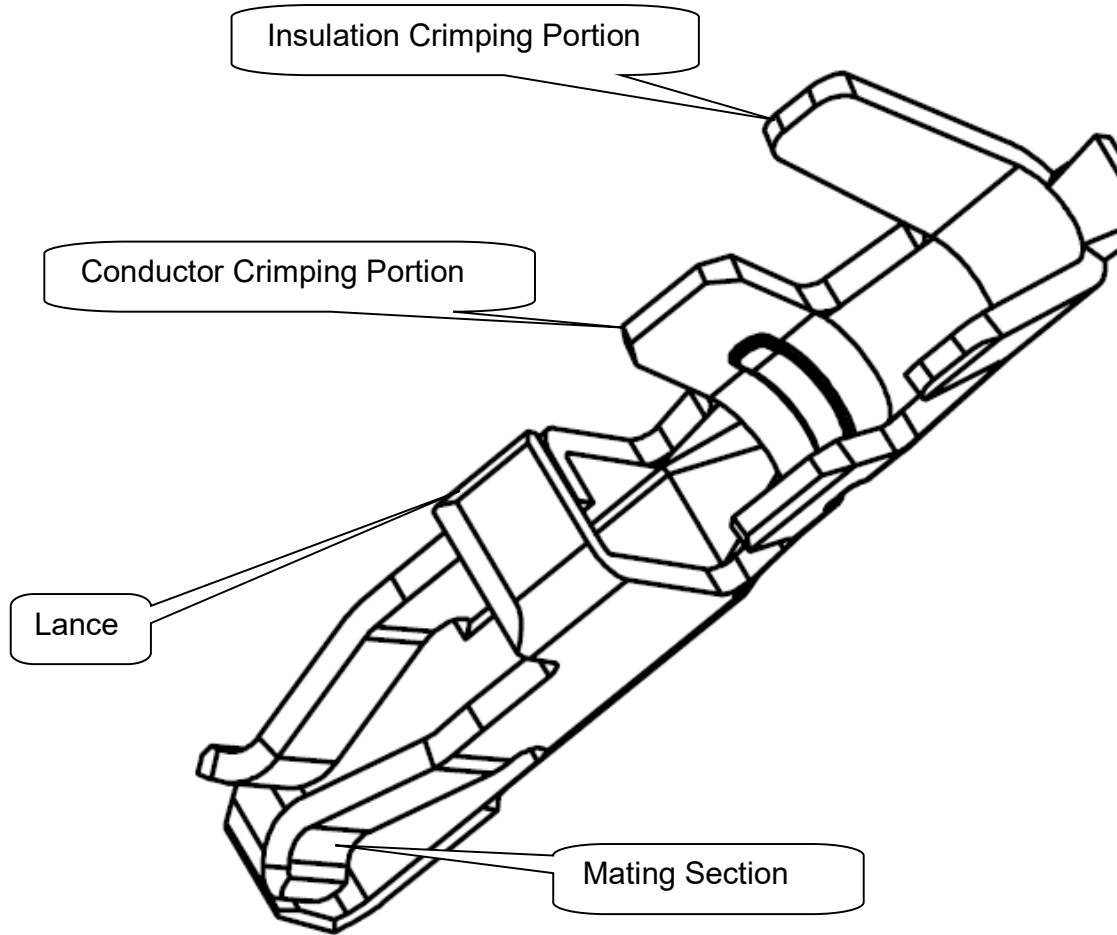
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9.ANATOMY OF CRIMPING TERMINAL



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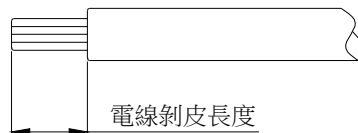
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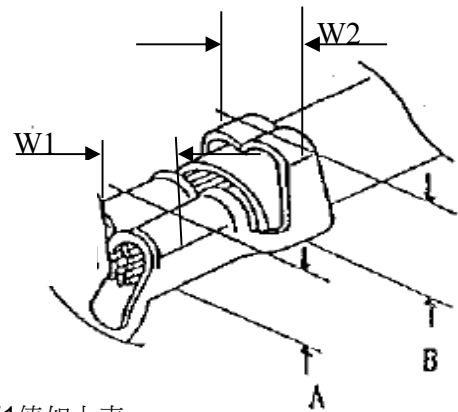
10. CRIMPING CONDITION

鉚線條件表 CRIMPING CONDITION

Part Number	Wire Specification			Crimp Height (mm)		Crimp Width (mm)	
	UL Style (REF.)	AWG Size	Insulation OD(mm)	Conductor A	Insulation B	Conductor W1	Insulation W2
52302-Txxx-xxx	UL10368	30	0.8	0.53~0.63	1.0~1.35	1.02 Max.	0.98 Max.
	UL10368	28	0.9	0.55~0.65	1.0~1.35	1.02 Max	0.98 Max.
	UL10368	26	1.0	0.60~0.67	1.0~1.35	1.02 Max	0.98 Max.



Strip length



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)：1.5~1.9mm(參考值)

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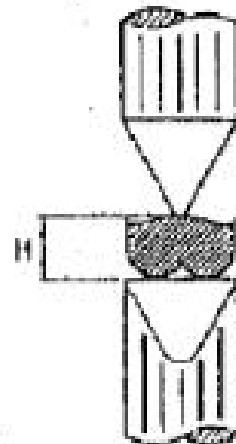
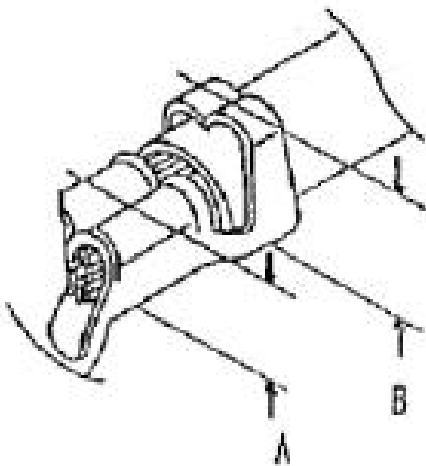
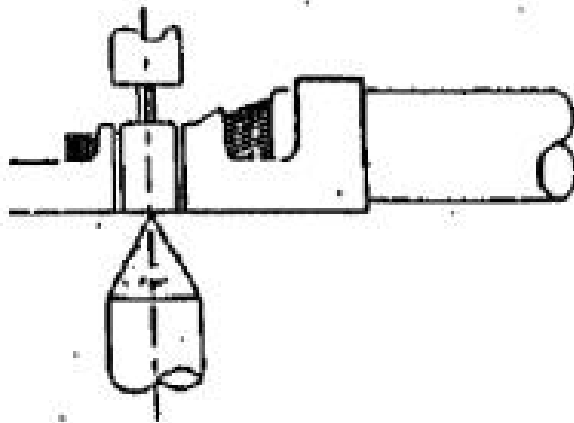
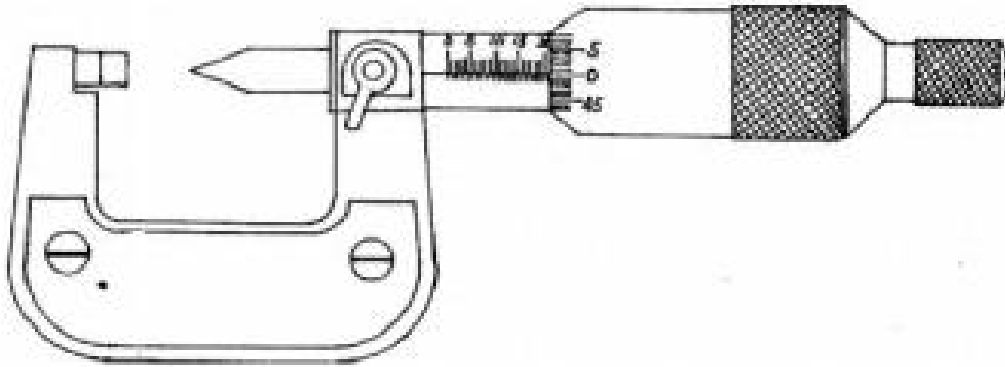
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11 CRIMPING HEIGHT MEASUREMENT



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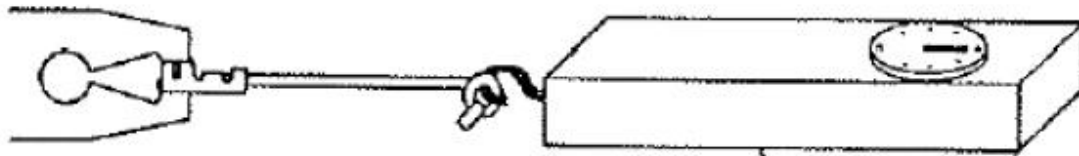
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12. PULL FORCE OF CRIMPING SECTION MEASUREMENT

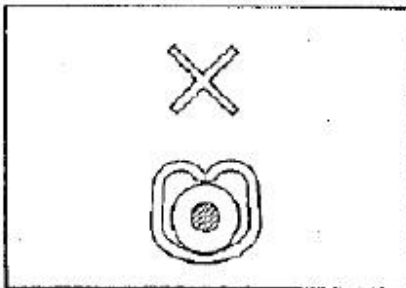


Before test samples, please measure crimp height and do not crimp insulation.

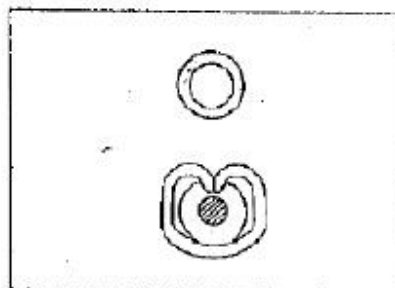


Pull Force of Crimp Section Measurement

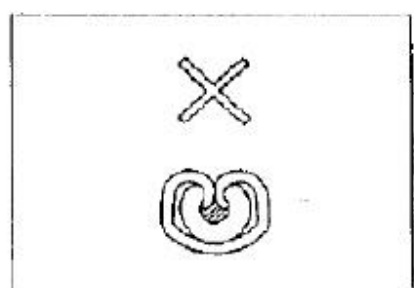
13. STANDARD INSULATION CRIMPING



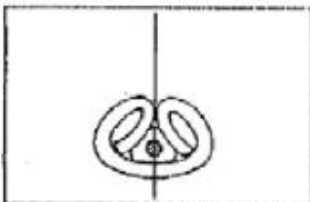
Not enough crimp



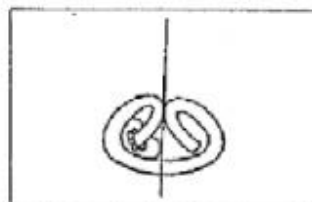
Good



Crimp too much

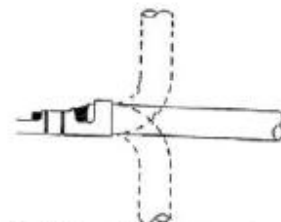


Good



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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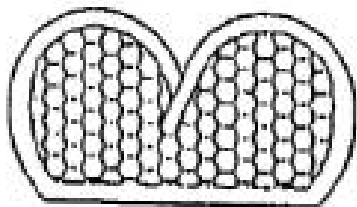
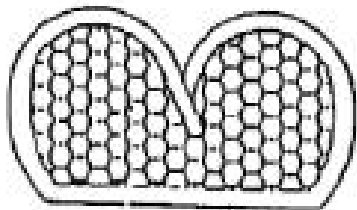
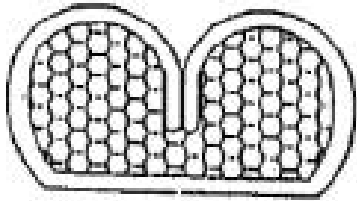
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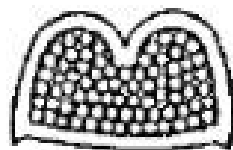
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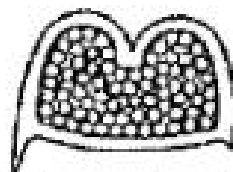
14. CONDUCTORS CRIMPING CONDITION



Lower conduct retention force



Good



Large burr

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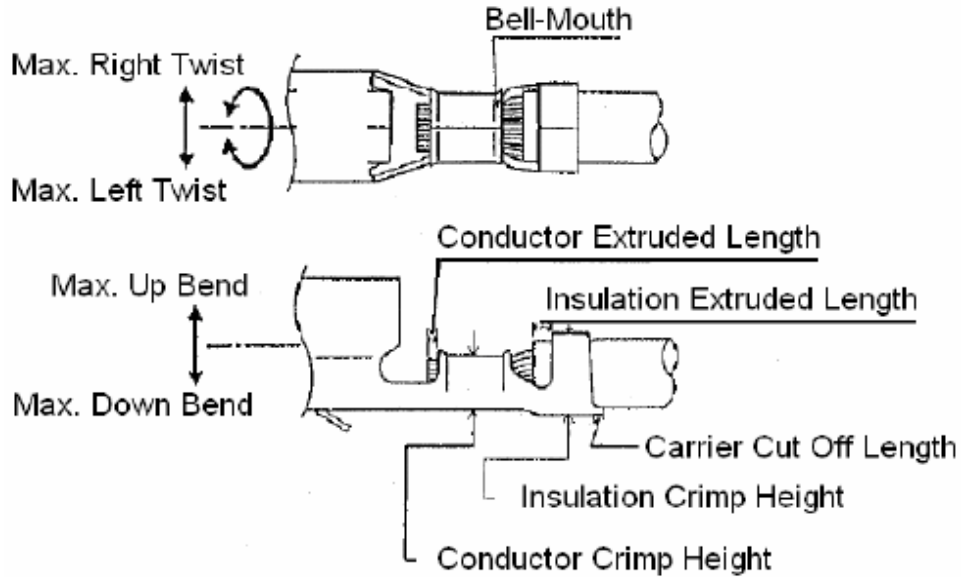
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15. CRIMPING REQUIREMENT



Item	Range(Ref.)
Max. Up Bend	6°
Max. Down Bend	6°
Max. Left Twist	5°
Max. Right Twist	5°
Bell-Mouth Length	0.1~0.3mm
Carrier Cut Off Length	0~0.2mm
Conductor Extruded Length	0.05~0.2mm