



SPECIFICATION

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SPEC. NO.: PS-51386-XXXXX-XXX

REVISION: C

PRODUCT NAME: 2.0mm WTB Wafer Conn

PRODUCT NO: 51386 52244 51431 SERIES

PREPARED: Ding,shuqin DATE: 2022/07/19	CHECKED: Lu, jingquan DATE: 2022/07/19	APPROVED: Hsieh, fu yu DATE: 2022/07/19
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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-001161-	NEW SPEC	Liang,lin ji	2019/02/14
B	ECN-001921	ADD 52244 SERIES	Zhang,hongjun	2022/05/17
C	ECN-008865	ADD 51431 SERIES	Ding,shuqin	2022/07/19

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2 SCOPE

This specification covers performance, tests and quality requirements for **2.0mm WTB Wafer SMT D/R S/T type**.

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 R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy.
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

4.3 Ratings

- 4.3.1 Working Voltage Less than 36 Volts (per pin)
- 4.3.2 Voltage: [125 Volts AC /DC](#)
- 4.3.3 Current:
 - AWG#24: [2.0 Amperes \(per pin\)](#)
 - AWG#26: [1.5 Amperes \(per pin\)](#)
 - AWG#28: [1.0 Amperes \(per pin\)](#)
 - AWG#30: [0.5 Amperes \(per pin\)](#)
- 4.3.4 Operating Temperature : [-55°C to +105°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	40 m Ω Max.	Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23)
Insulation Resistance	1000 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: 1 mA max.	500 VAC 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-364-70,METHOD1,CONDITION1)
MECHANICAL		
Item	Requirement	Standard
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-364-09)
Crimp Pull out force	AWG # 24 = 3.0 Kgf Min. AWG # 26 = 2.0 Kgf Min. AWG # 28 = 1.0 Kgf Min. AWG # 30 = 0.5 Kgf Min.	Operation Speed : 25.4 ± 3 mm/minute.. Measure the force required to mate/Un-mate connector. (EIA-364-13)
Mating/Unmating Forces	Mating 0.30 kgf Max. (per pin) Unmating 0.04 kgf Min. (per pin)	Operation Speed : 25.4 ± 3 mm/minute.. Measure the force required to mate/unmate connector. (EIA-364-13)



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Contact Retention Force (Board Side)	1.20 kgf (min) Before Solder 0.90 kgf (min) After Solder	Operation Speed : 25.4 ± 3mm/minute. Measure the contact retention force with tester.
Terminal / Housing Retention Force (Cable Side)	1.0 kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing.
Vibration	1 μs 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 μs 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
Resistance to Reflow Soldering Heat (Board Side)	See Product Qualification and Test Sequence Group 10 (Lead Free)	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mated Connector to follow condition for 5 cycles. 1 cycles: -55 +0/-3 °C, 30 minutes +105 +3/-0 °C, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 90~95% RH, 120 hours.

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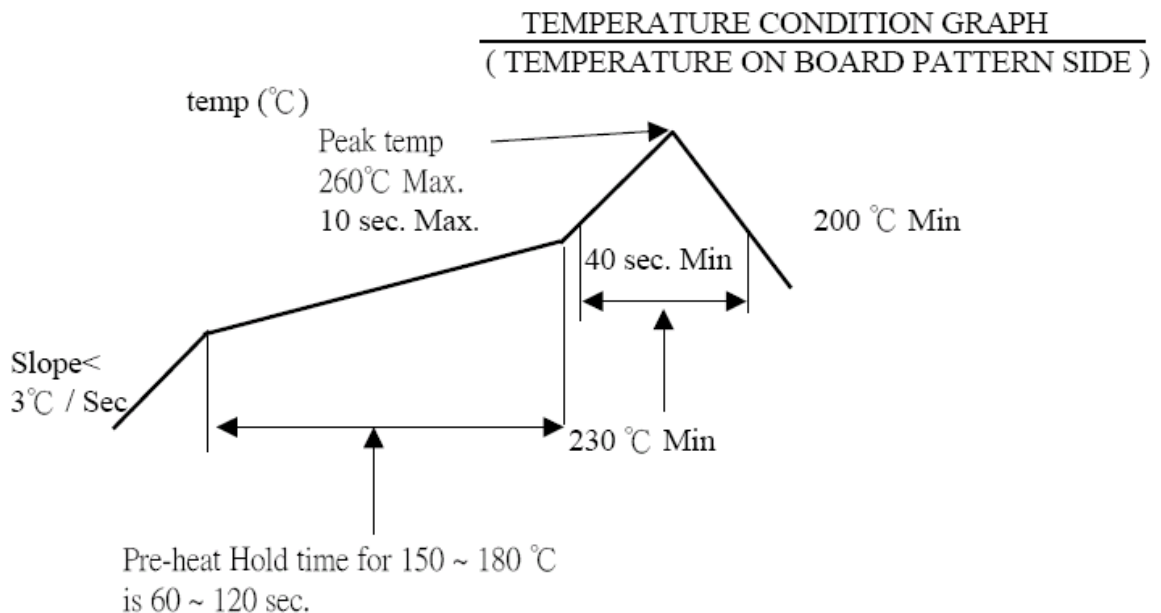
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Temperature Life	See Product Qualification and Test Sequence Group 5	(EIA-364-31, Condition A, Method II) Mated connectors to temperature life at 85°C for 96 hours. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Mated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours (II) Gold plating 5 u" for 96 hours. (EIA-364-26)
Solder ability (Board Side)	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	And then into solder bath, Temperature at 260 ±5°C, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance (Board Side)	Appearance: No damage	T ≥ 350°C, 3sec at least.

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

6 INFRARED REFLOW CONDITION

6.1. Lead-Free Process





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7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence										
Examination of Product	1	1	1	1、7	1、6	1、4	1	1	1	1	1
Low Level Contact Resistance		2、6	2、5	2、8	2、7	2、5			3		
Insulation Resistance				3、9	3、8						
Dielectric Withstanding Voltage				4、10	4、9						
Temperature Rise	2										
Mating / Unmating Forces		3、5									
Durability		4									
Crimp pull out force											2
Contact Retention Force (Board Side)								2			
Terminal/Housing Retention Force (Cable Side)								3			
Vibration			3								
Shock (Mechanical)			4								
Thermal Shock				5							
Humidity				6							
Temperature Life					5						
Salt Spray(Only For Gold Plating)						3					
Solder ability (Board Side)							2				
Resistance to Soldering Heat (Board Side)									2		
Hand Soldering Temperature Resistance (Board Side)										2	
Sample Size	2	4	4	4	4	4	2	4	4	4	4

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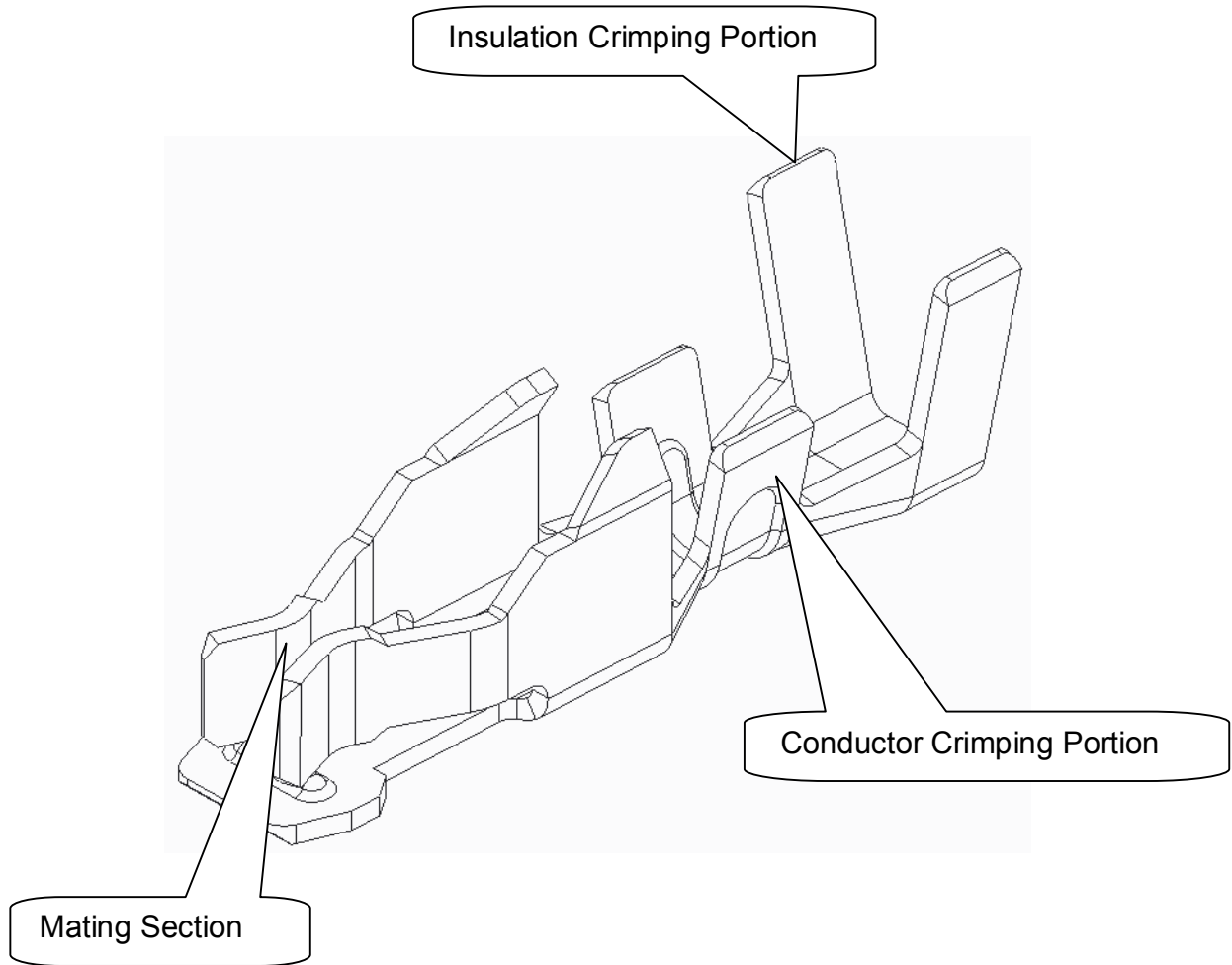
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8 ANATOMY OF CRIMPING TERMINAL



9 APPLICABLE WIRES: UL1007 ETFE WIRE

AWG Size: AWG#24~30

Insulation OD: AWG#24 Φ 1.15mm Max

AWG#30 Φ 0.80mm Max

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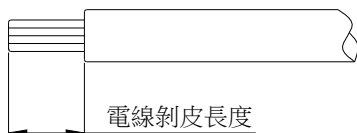
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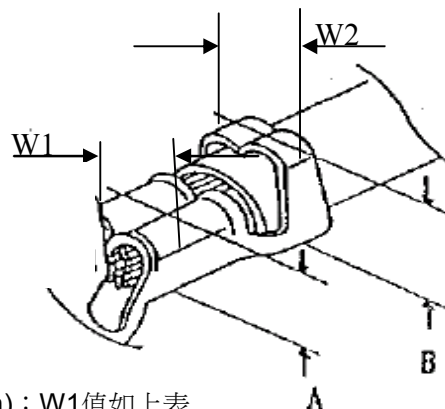
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10 CRIMPING CONDITION

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
51383-Txxx	UL10368	24	1.15	0.70Max	1.2Max	1.10 Max.	1.5 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)：2.5~3.0mm(參考值)

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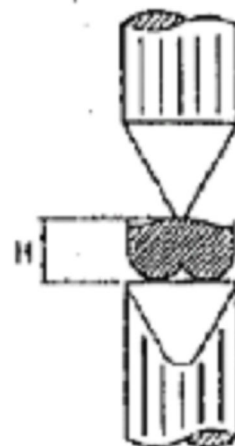
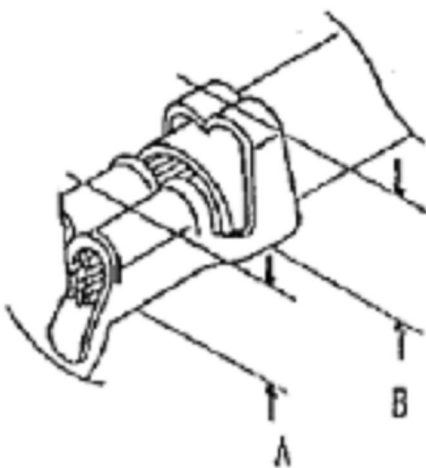
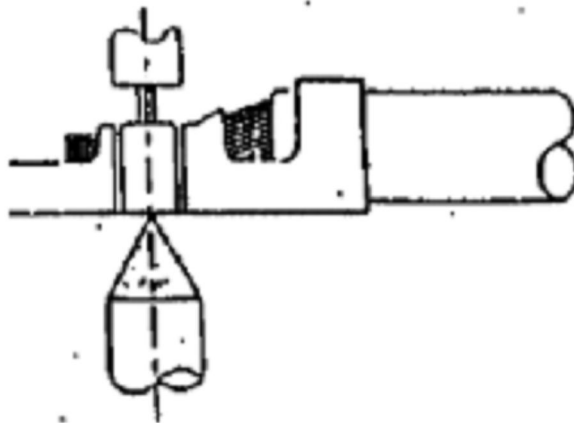
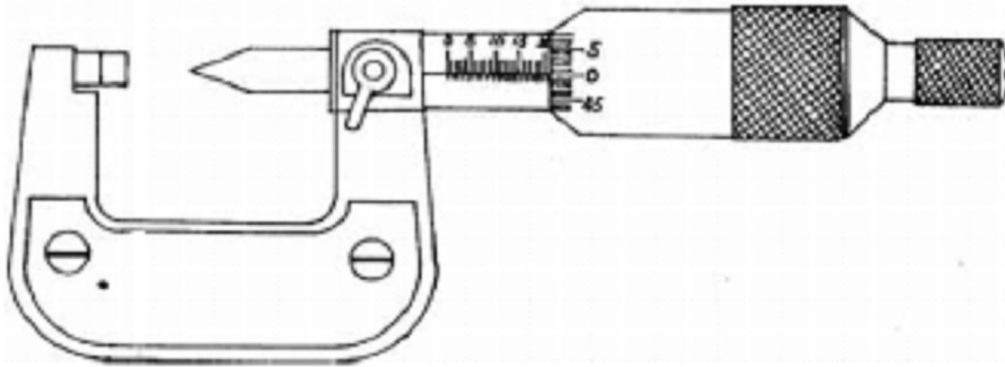
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11 CRIMPING HEIGHT MEASUREMENT



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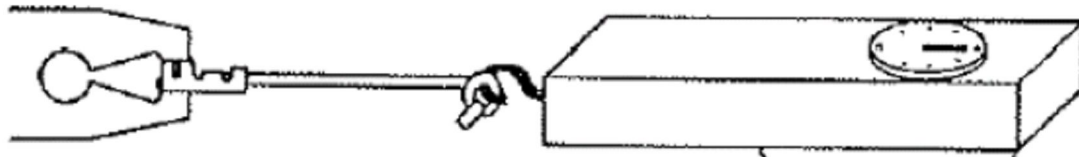
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12 PULL FORCE OF CRIMPING SECTION MEASUREMENT

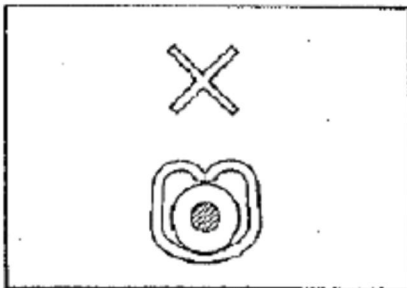


Before test samples, please measure crimp height and do not crimp insulation.

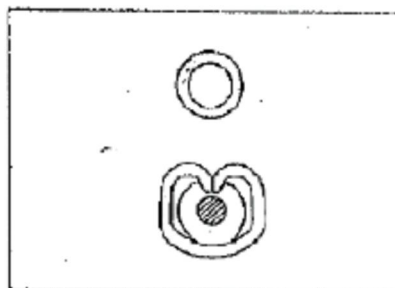


Pull Force of Crimp Section Measurement

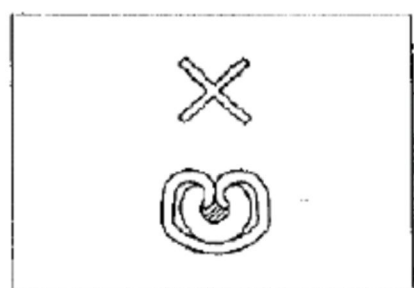
13 STANDARD INSULATION CRIMPING



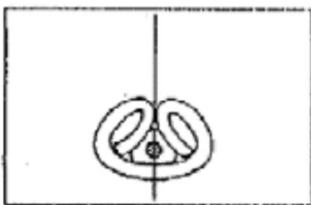
Not enough crimp



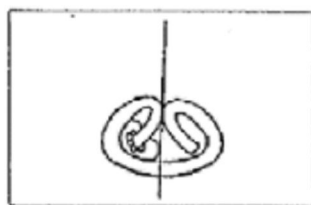
Good



Crimp too much

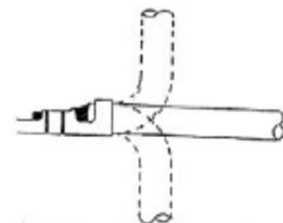


Good



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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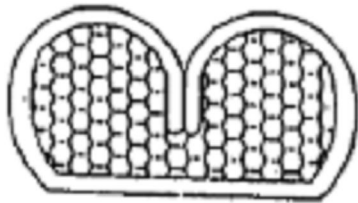
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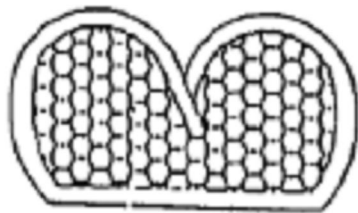
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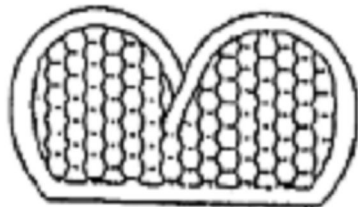
14 CONDUCTORS CRIMPING CONDITION



○ Good



× NG



× NG

Lower conduct retention force



Good



NG

Large burr

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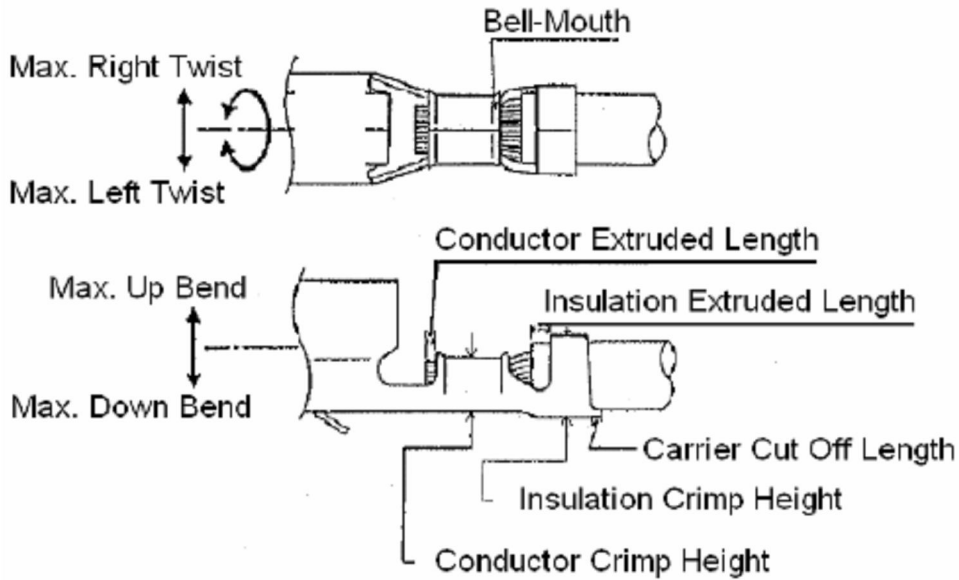
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15 CRIMPING REQUIREMENT



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