SPECIFICATION

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SPEC. NO.: PS-50300-xxxxx-xxx **REVISION:** H

PRODUCT NAME: 2.0 mm PITCH WTB CONNECTOR

PRODUCT NO: 50297;50298;50299;50300;50301;50302:50303:50304
50456;50457;51219,51360 SERIES

PREPARED:	CHECKED:	APPROVED:
SHI,YANAN	**BRAVE**	**BRAVE**
DATE: **2019/12/16**	DATE: **2019/12/16**	DATE: **2019/12/16**

1. Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0812218	NEW RELEASE	JASON	2008.12.25
A	ECN-0903182	ADD P/N: 50303;50304	JASON	2009.03.20
B	ECN-0909088	ADD HAND SOLDERING	JASON	2009/09/11
C	ECN-1102129	UPDATED CURRENT RATING	LIUWEI	2011.02.28
D	ECN-1112312	ADD P/N 50456 ;50457	GAVIN	2011.12.19
E	ECN-1304267	ADD P/N 51219	CANDY	2013.04.26
F	ECN-1401180	ADD WORKING VOLTAGE	XUFEI	2014.01.09
G	ECN-1708410	ADD P/N 51360	ChaiYunhe	2017.10.24
H	ECN-1912333	ADD UL10064 AWG#24	SHI,YANAN	2019.12.16

2. SCOPE

This specification covers performance, tests and quality requirements for 2.0mm pitch wire to board connector. Including these product series as belows ：
50297;50298;50299;50300;50301;50302;50303;50304;50456;50457 ;51219;51360 series.

3. APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4. REQUIREMENTS

4.1 Design and Construction

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

4.2 Materials and Finish

4.2.1Contact: High performance copper alloy (Brass)
Finish: (a) Contact Area: Gold plated over all
(b) Under plate: Nickel-plated all over
4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.3 Ratings

4.3.1Working voltage less than 36 volts (per pin)
4.3.2Voltage: 200 Volts AC (per pin)
4.3.3Current: AWG#26 DC 3 Amperes (per pin)
AWG#28 DC 2.5 Amperes (per pin)
AWG#30 DC 1.5 Amperes (per pin)
AWG#24 DC 4.5 Amperes (per pin)
4.3.4Operating Temperature : -40℃ to +85℃

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	25 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℃ Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25℃ (EIA-364-70, METHOD1, CONDITION1)
MECHANICAL		
Item	**Requirement**	**Standard**
Durability	60 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)
Mating / Unmating Forces	Mating Force: See item 8 Unmating Force: See item 8	Operation Speed： 25.4 ± 3 mm/minute.. Measure the force required to mate/Unmate connector. (EIA-364-13)
Contact Retention Force	0.5 Kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.

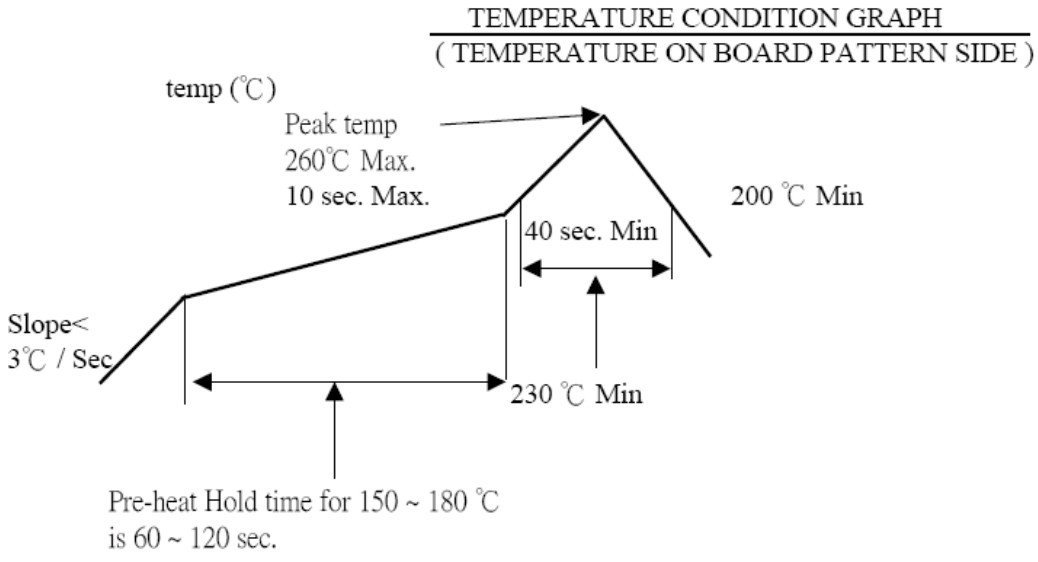
Item	Requirement	Standard
Vibration	1 μs Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 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	See Product Qualification and Test Sequence Group 9 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40℃, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85℃ for 96 hours. (EIA-364-17, Test condition A)

Hand Soldering	Appearance: No damage	T≧350℃, 3sec at least.
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	And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)
Salt Spray	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ for 8 hours. (EIA-364-26,Test condition B)

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

6. INFRARED REFLOW CONDITION

6.1. Lead-free Process



7. PRODUCT QUALIFICATION AND TEST SEQUENCE

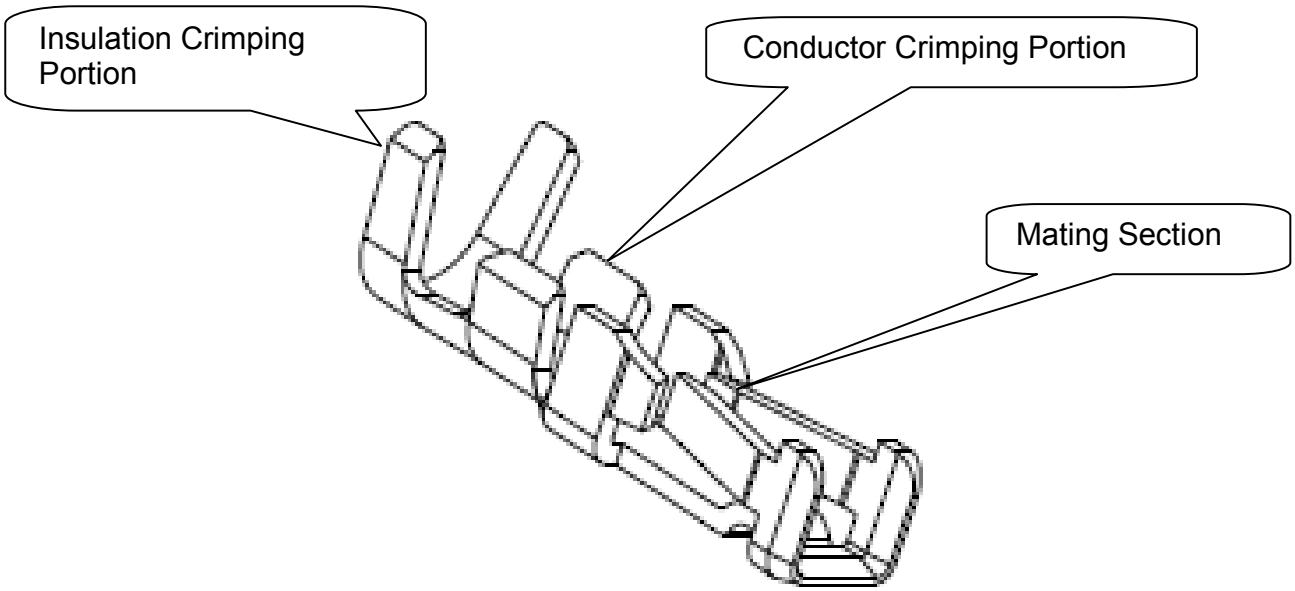
Test or Examination	Test Group								
	1	2	3	4	5	6	7	8	
	Test Sequence								
Examination of Product				1、7	1、6	1、4		1、3	
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5			
Insulation Resistance				3、9	3、8				
Dielectric Withstanding Voltage				4、8	4、7				
Temperature rise	1								
Mating / Unmating Forces		2、4							
Durability		3							
Contact Retention Force								4	
Vibration			2						
Shock (Mechanical)			3						
Thermal Shock				5					
Humidity				6					
Temperature life					5				
Salt Spray						3			
Solder ability							1		
Resistance to Soldering Heat								2	
Sample Size	2	4	4	4	4	4	2	4	

8. Mating / Unmating Force

Units: kgf

Number of circuits	At initial		At 60th
	Mating Force. (MAX.)	Unmating Force (MIN.)	Unmating Force (MIN.)
2	2.00	0.30	0.20
3	2.00	0.30	0.20
4	2.00	0.30	0.20
5	2.50	0.40	0.30
6	2.50	0.40	0.30
7	3.00	0.50	0.40
8	3.00	0.50	0.40
9	3.50	0.60	0.50
10	3.50	0.60	0.50
11	4.00	0.70	0.60
12	4.00	0.70	0.60

9. ANATOMY OF CRIMPING TERMINAL

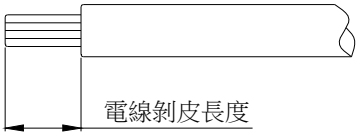


10. APPLICABLE WIRES:

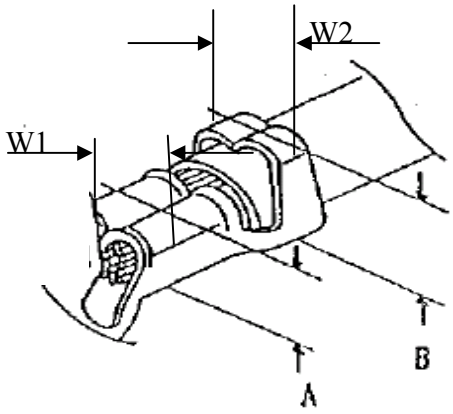
AWG Size:AWG#30~#24
Insulation OD:Φ0.70~0.90mm

11. CRIMPING CONDITION

鉚線條件表 CRIMPING CONDITION							
Part Number	Wire Specification			Crimp Height (mm)		Crimp Width (mm)	
	UL Style	AWG Size	Insulation OD(mm)	Conductor A	Insulation B	Conductor W1	Insulation W2
88301-W	UL1571	26	0.90	0.78~0.83	0.98~1.03	0.90(Ref.)	1.50 max.
	UL1571	28	0.80	0.70~0.75	0.86~0.91	0.80(Ref.)	1.50 max.
	UL1571	30	0.70	0.64~0.69	0.75~0.80	0.70(Ref.)	1.50 max.
	UL10064	24	0.85	0.62~0.67	1.32~1.37	0.85(Ref.)	1.50 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

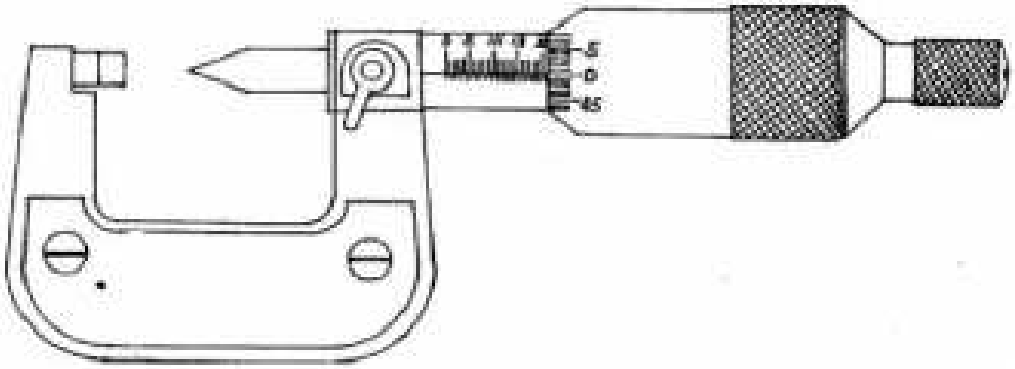
2、W2為電線外被部分鉚壓後之寬度(Insulation Crimping Width)：W2值如上表

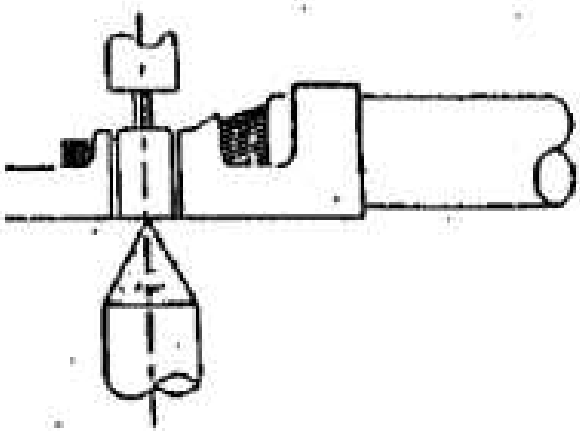
3、A為芯線導體鉚壓後之高度(Conductor Crimping height)：A值如上表(參考值）

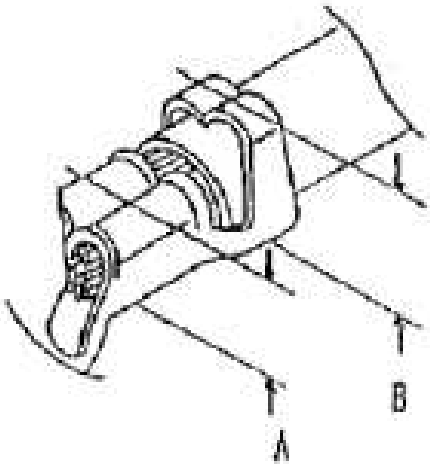
4、B為電線外被鉚壓後之高度(Insulation Crimping height)：B值如上表(參考值）

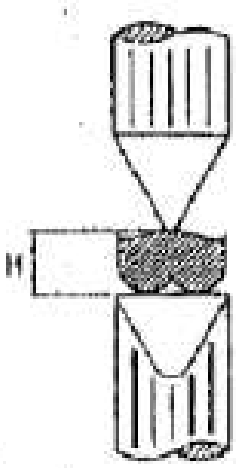
5、電線剝皮長度(Strip length)：1.3~1.7mm(參考值)

12. CRIMPING HEIGHT MEASUREMENT

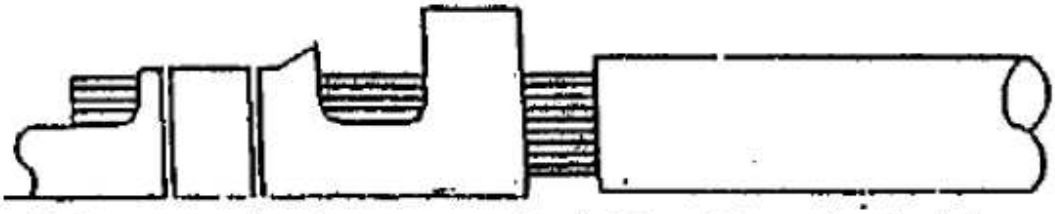




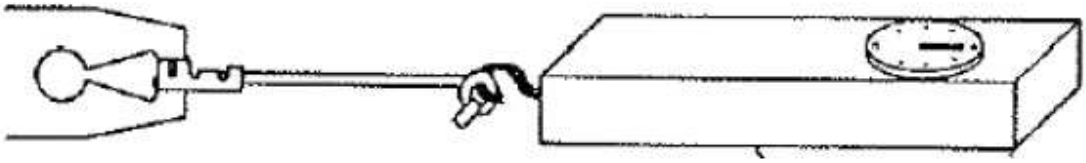




13. PULL FORCE OF CRIMPING SECTION MEASUREMENT

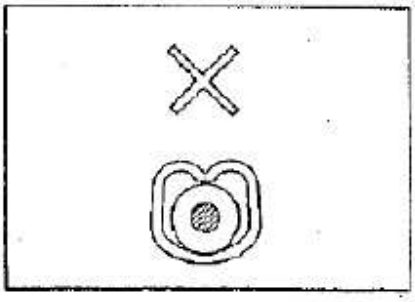


Before test samples, please measure crimp height and do not crimp insulation.

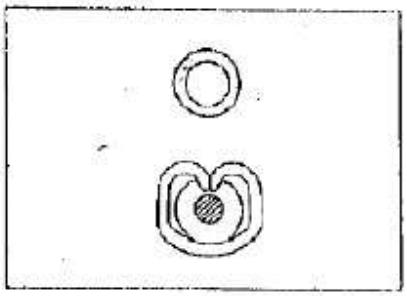


Pull Force of Crimp Section Measurement

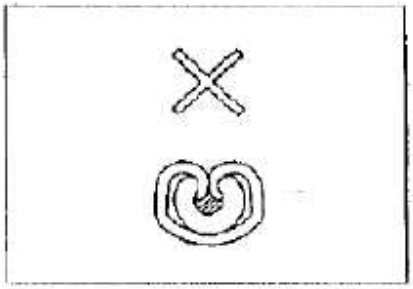
14. STANDARD INSULATION CRIMPING



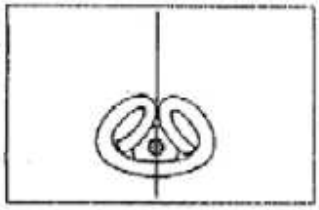
Not enough crimp



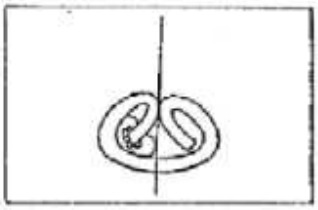
Good



Crimp too much



Good



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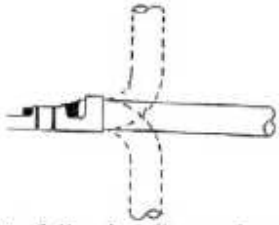
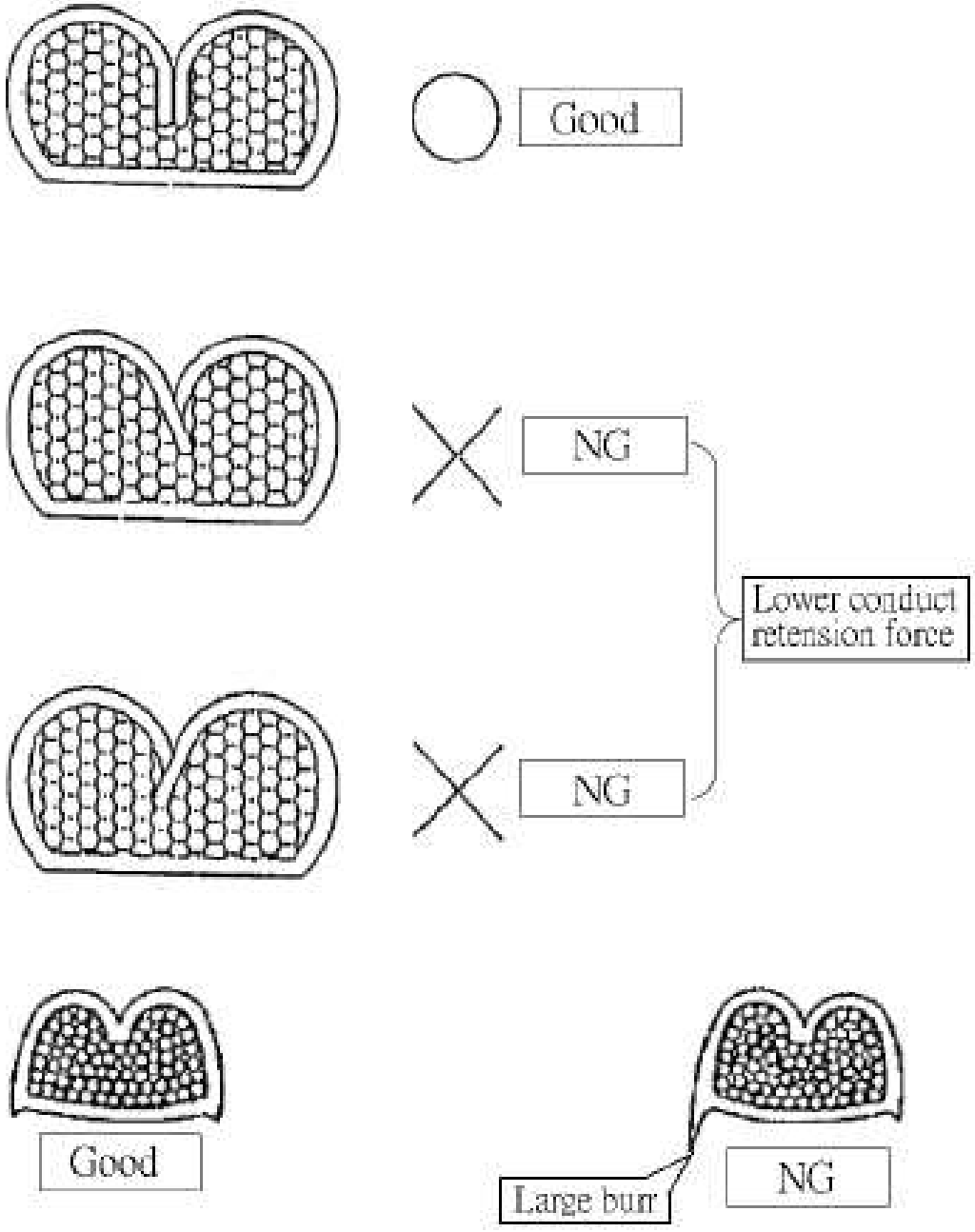
Insulation Crimp Condition

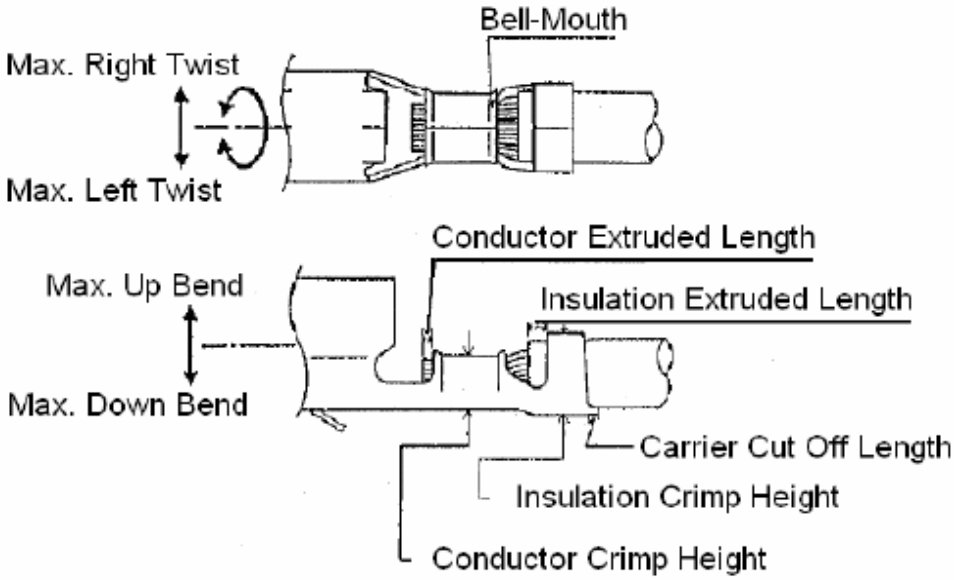


As following figure shown. It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

15. CONDUCTORS CRIMPING CONDITION



16. 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