SPECIFICATION

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SPEC. NO.: PS-51306-XXXXX-XXX **REVISION:** A

PRODUCT NAME: 2.0 mm PITCH WTB CONNECTOR SMT R/A TYPE

PRODUCT NO: 51306-SERIES, 50459-T07XSERIES, 50459-SERIES

PREPARED:	CHECKED:	APPROVED:
JUGG	**BRAVE**	**FRANK**
DATE: **2016/09/14**	DATE: **2016/09/14**	DATE: **2016/09/14**

1 REVISION HISTORY

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-1601074	PROPOSAL	JUGG	2015/12/21
A	ECN-1609196	Update Current	JUGG	2016/09/14

2 SCOPE

This specification covers performance, tests and quality requirements for 2.0 mm pitch WTB connector.

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

4.2.3 Shell: Nickel Silver Alloy.

4.3 Ratings

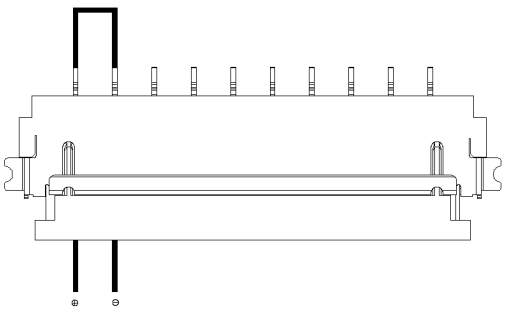
4.3.1 Working voltage less than 36 volts (per pin)

4.3.2 Voltage: 50 Volts AC (per pin)

4.3.3 Current:
AWG #24, 4.0 A(Over 2 circuits shell be conduct by customer request)
AWG #26, 4.0 A(Over 2 circuits shell be conduct by customer request)
AWG #28, 3.0 A(Over 2 circuits shell be conduct by customer request)

4.3.4 Operating Temperature : -40℃ to +80℃

Temperature rise test:



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 △R 20 m Ω Max.	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	500 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.	300V AC 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,CONDITION2)
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.
Durability for inspection process usage (only for wafer side)	Recommended to replace a new wafer after 2000 cycles usage	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. (The test is only for reference)
Mating / Unmating Forces	Mating Force: 2.0 Kgf Max. Unmating Force: 0.5 Kgf Min.	Operation Speed： 25.4 ± 3 mm/minute.. Measure the force required to mate/unmated connector. (EIA-364-13)
Contact Retention Force (Board Side)	0.30 Kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force

		with tester.
Shell /Housing Retention Force	0.20 Kgf Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the fitting nail assembled in the housing.
Crimping Terminal / Housing Retention Force (Cable Side)	0.8 Kgf Min. per pin	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing.
Crimping Pull Out Force	AWG# 24: 2.0Kgf Min. AWG# 26: 1.0Kgf Min. AWG# 28: 1.0Kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Fix the crimped terminal, apply axial pull out force on the wire.
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)

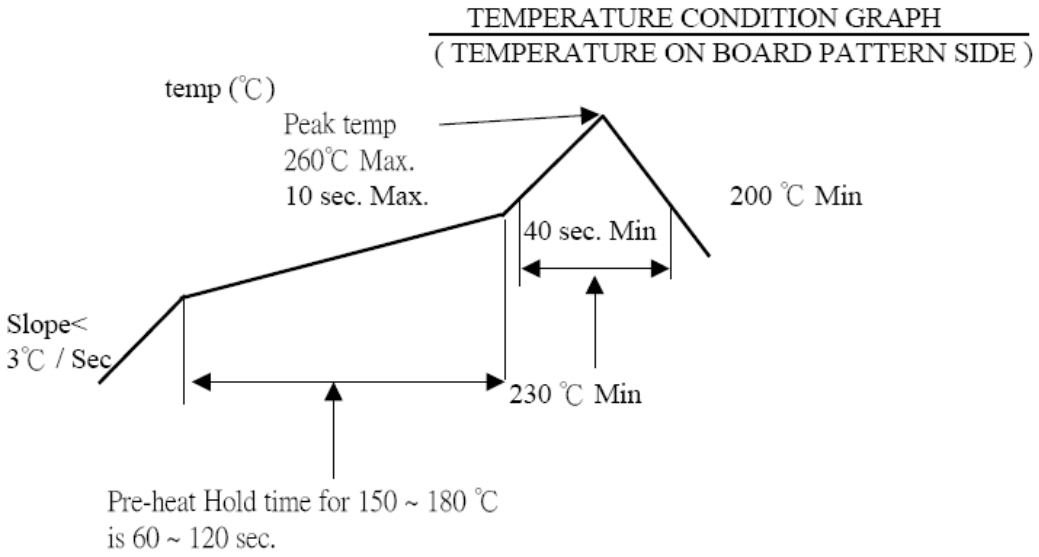
ENVIRONMENTAL

Item	Requirement	Standard
Resistance to **Reflow** Soldering Heat (Board Side)	See Product Qualification and Test Sequence Group 10 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max. Reflow number cycle: 2 times (EIA-364-56)

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)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (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 245 ±5℃, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance (Board Side)	Appearance: No damage	T≧350℃, 3 sec at least.

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

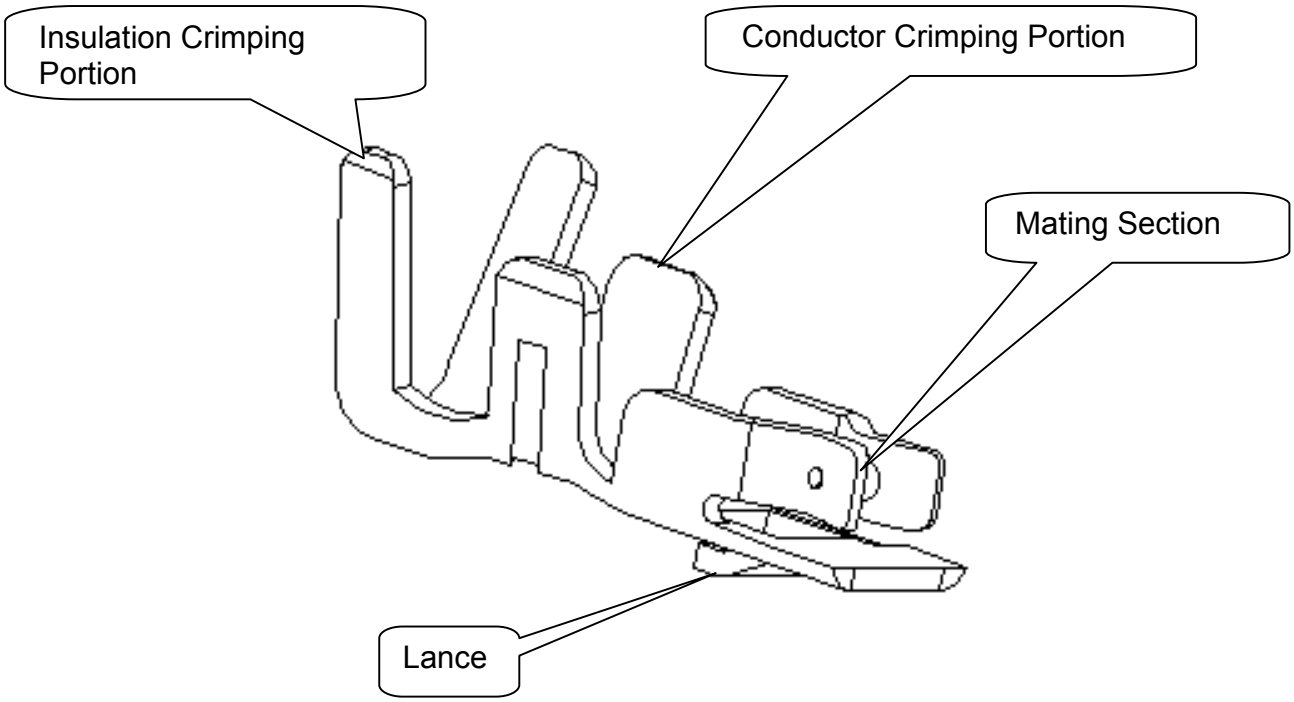
6 INFRARED REFLOW CONDITION



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、7	1、6	1、4				1	1
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5				3	
Insulation Resistance				3、9	3、8						
Dielectric Withstanding Voltage				4、8	4、7						
Temperature Rise	1										
Mating / Unmating Force		2、4									
Durability		3									
Contact Retention Force (Board Side)									3		
Vibration			2								
Shock (Mechanical)			3								
Thermal Shock				5							
Humidity				6							
Temperature Life					5						
Salt Spray(Only For Gold Plating)						3					
Solder ability							1				
Crimping Pull Out Force								1			
Crimping Terminal / Housing Retention Force (Cable Side)									1		
Fitting Nail /Housing Retention Force									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

8 ANATOMY OF CRIMPING TERMINAL



9 APPLICABLE WIRES: UL3302ETFE WIRE

AWG Size:AWG#24 , AWG#26， AWG#28

Insulation OD: Φ1.1mm ,Φ1.0mm，Φ0.90mm

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
50459-T07X	UL3302	24	1.1	0.65~0.78	1.25~1.30	1.3Max.	1.45Max.
	UL3302	26	1.0	0.62~0.68	1.20~1.25	1.3Max.	1.45Max.
	UL10368	28	0.90	0.55~0.65	1.20~1.25	1.3Max.	1.45Max.

Note:

1、W1為芯線導體鉚壓後之寬度(Conductor Crimping Width)：W1值如上表

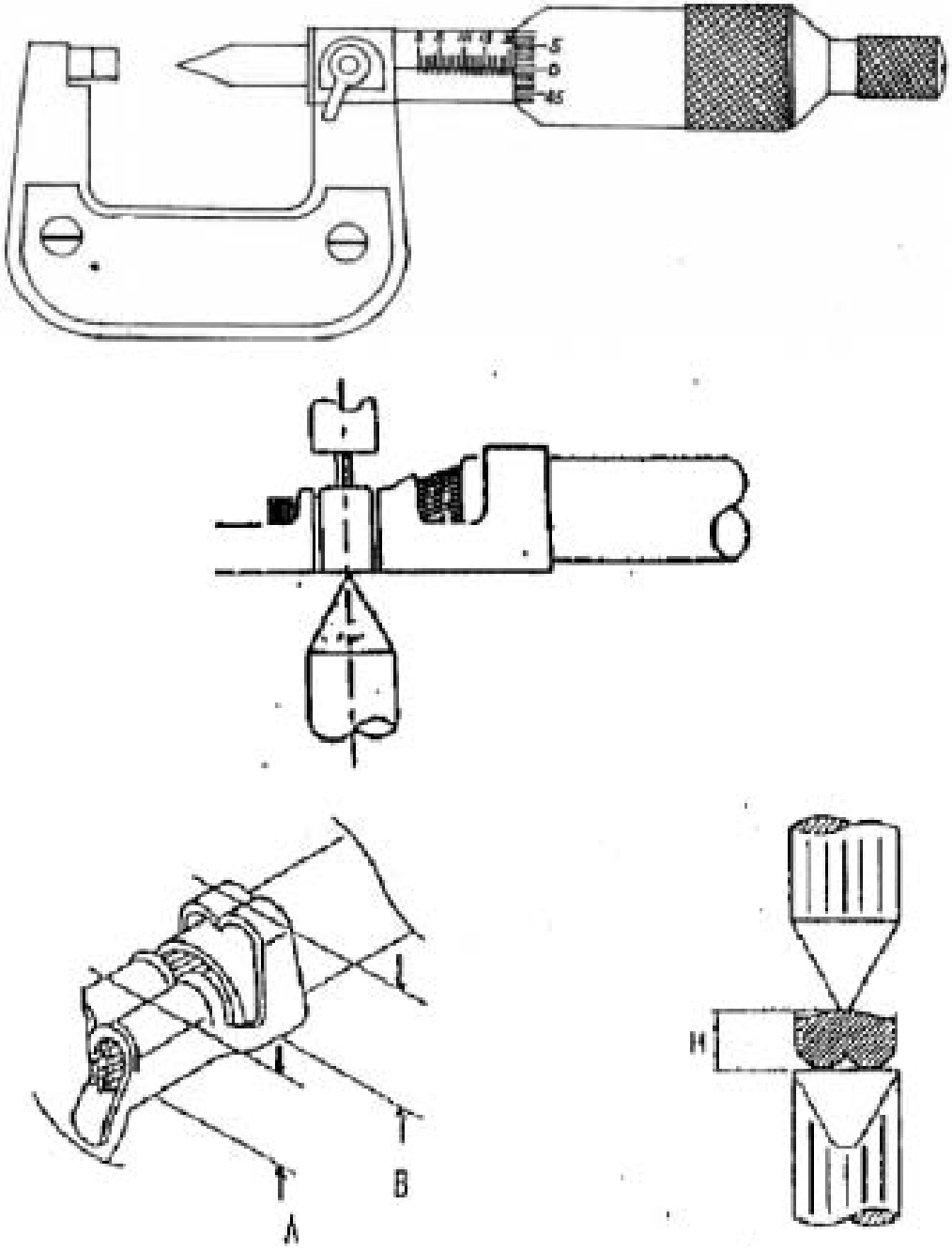
2、W2為電線外被部分鉚壓後之寬度(Insulation Crimping Width)：W2值如上表

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)

11 CRIMPING HEIGHT MEASUREMENT

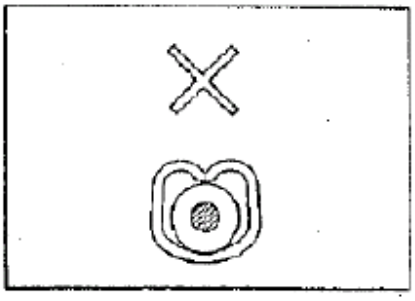


12 PULL FORCE OF CRIMPING SECTION MEASUREMENT

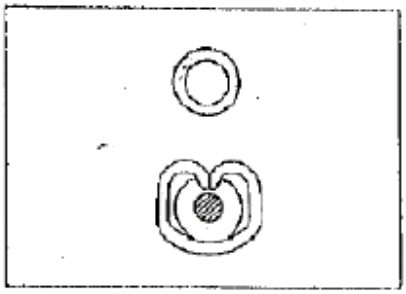
Before test samples, please measure crimp height and do not crimp insulation.

Pull Force of Crimp Section Measurement

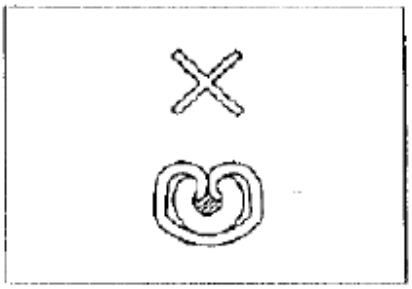
13 STANDARD INSULATION CRIMPING



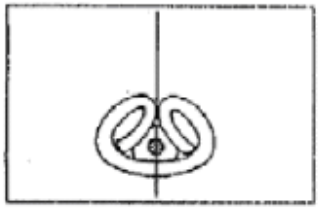
Not enough crimp



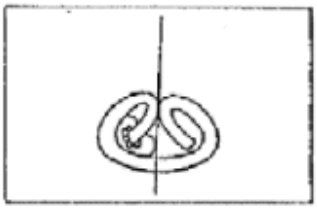
Good



Crimp too much



Good



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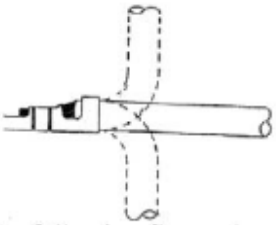
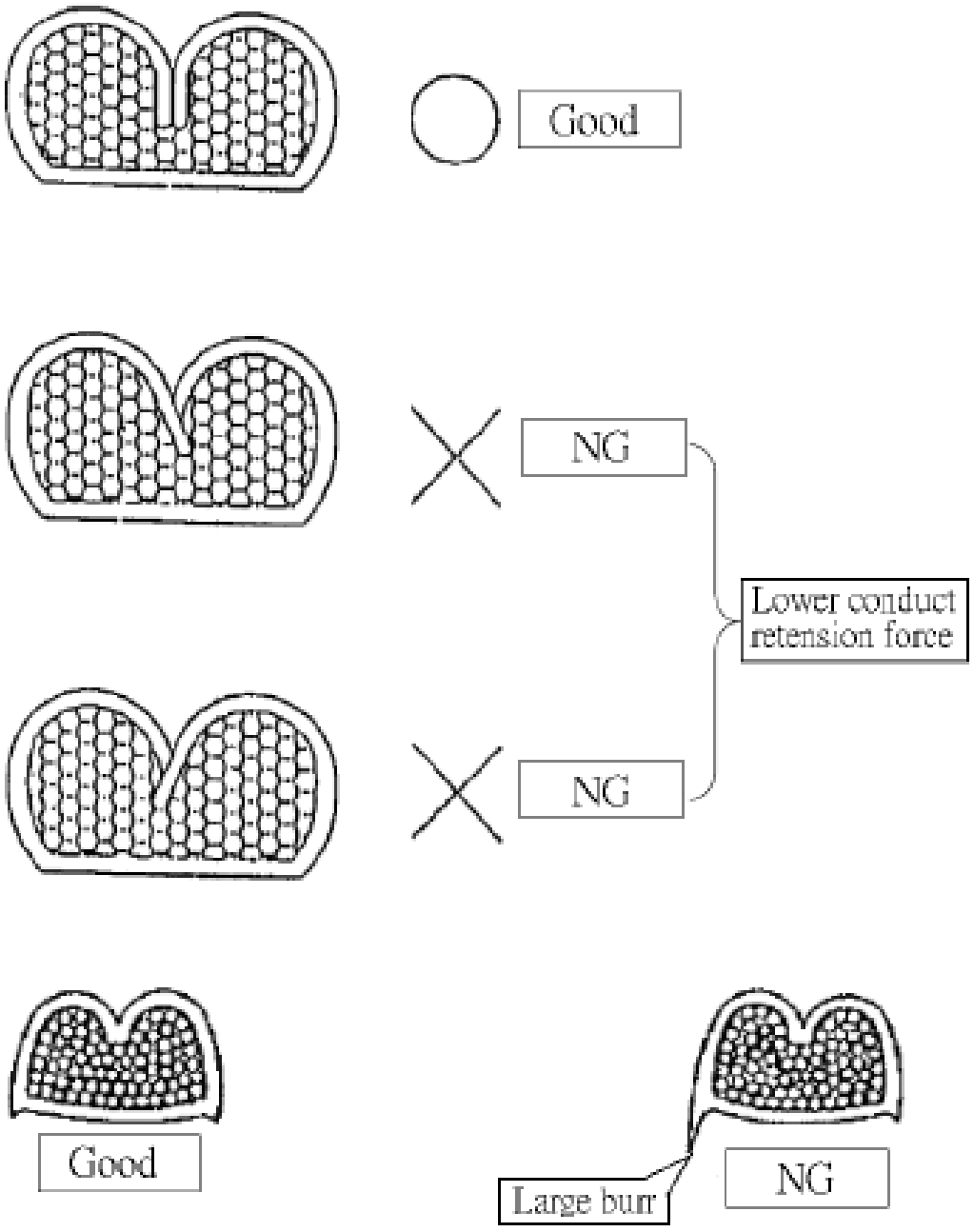
Insulation Crimp Condition

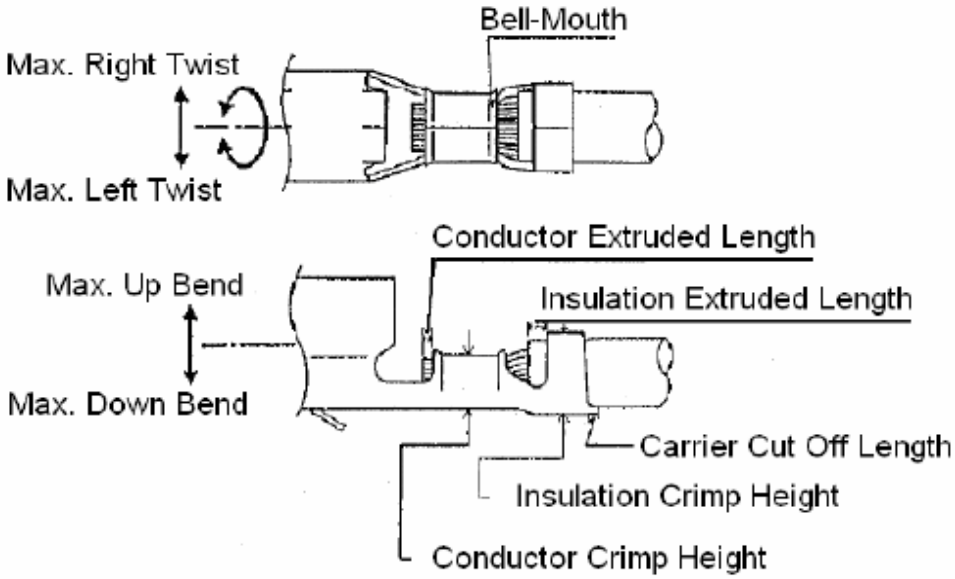


As following figure shown. It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

14 CONDUCTORS CRIMPING CONDITION



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