The product described herein has not been fully tested to ensure conformance to the requirements outlined below. TE Connectivity makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, TE may change these requirements based on the results of additional testing and evaluation. Contact TE Engineering for further details.

Design Objective (108-115183)

1.5mm Pitch Single Row WTB with Latch

1. Scope:

1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of 1.5mm Pitch Wire to Board Connector with Latch

Applicable product description and part numbers are as shown in Fig.1.

2. Applicable Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements this specification and referenced documents, this specification shall take precedence.

2.1 AMP Specifications:

A. 109-5000	Test Specification, General Requirements for Test Methods
B. 501-115198	Test Report

2.2 Commercial Standards and Specifications:

A. EIA-364: Test Methods for Electronic and Electrical Component Parts.

(Always use latest version for test)

The application product descriptions and part numbers are as shown in Fig. 1

Product Part No.	Description
x-2380312-x	Cable Housing of 1.5mm Pitch Wire to Board Connector with Latch
2380403-x	Cable Contact of 1.5mm Pitch Wire to Board Connector with Latch
x-2380320-x	Vertical Type Board Side of 1.5mm Pitch Wire to Board Connector with Latch
x-2381626-x	Right Angle Type Board Side of 1.5mm Pitch Wire to Board Connector with Latch

Fig. 1 (End)

DR	Tommy Qian	1st April' 19	**TE Connectivity**
CHK	Wenke He	1st April' 19	
APP	Wenke He	1st April' 19	**NO** 108-115183 · **REV** A · **LOC** ES
PAGE 1 of 6			**TITLE** **1.5mm Pitch Wire to Board Connector**

LTR	**REVISION RECORD**	**DR**	**DATE**
A	INITIAL RELEASED	T.Q	1ST Dec 20

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3. Requirements:

3.1 Design and Construction:

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

3.2 Materials:

A. Board side:

Contacts:	Gold plating or Tin plating, Copper Alloy
Housing:	LCP, UL94V-0, Natural or Black
Metal Peg:	Tin plating, Copper Alloy

B. Cable side:

Contacts:	Gold plating or Tin plating, Copper Alloy
Housing:	Nylon, UL94V-0, Natural or Black

3.3 Ratings:

A. Voltage Rating: 50 Volts AC (per pin)

B. Current Rating (Maximum)

AWG # 24: 3.0 A (per pin) *

AWG # 26: 3.0 A (per pin)

AWG # 28: 2.5 A (per pin)

AWG # 30: 1.5 A (per pin)

*The current rating was loaded in parallel by all pins for 15pos parts.

C. Temperature Rating: -40°C to +105°C

The upper limit of the temperature includes the temperature rising resulted by the energized electrical current.

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.2. All tests shall be performed in the room temperature unless otherwise specified.

3.5 Test Requirements and Procedures Summary:

Para.	Test Items	Requirements	Procedures
3.6.1	Examination of product	Product shall be confirming to the requirements of applicable product drawing and applicable Specification	Visual and Dimensional Inspection Test Procedure for Electrical Connectors. EIA-364-18
Electrical Requirements			
3.6.2	Termination Resistance (Low Level)	20 mΩ Max. (Initial) ΔR<10 mΩ (Final)	Subject mated contacts assembled in housing to 20mV Max. open circuit at 10 mA. EIA-364-23
3.6.3	Dielectric withstanding voltage	No creeping discharge or flashover shall occur. Current leakage: 1mA Max.	500 VAC Min. at sea level for 1 minute Test between adjacent contacts of unmated connectors. (EIA-364-20)
3.6.4	Insulation Resistance	1000 MΩ Min	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
3.6.5	Temperature Rising	30°C max, when apply current rate	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70 METHOD 2)

Fig.2. To be continued

Para.	Test items	Requirements	Procedures
Mechanical Requirements			
3.6.6	Connector Mating/Unmating Force	See item 5	Operation Speed： 25.4 ± 3 mm/minute.. Measure the force required to mate/unmated connector. Unmated connector angle θ is +/-20 degree max. See figure 1 (EIA-364-13)
3.6.7	Durability (Repeated Mate/Unmating)	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)
3.6.8	Vibration (Low Frequency)	1 us 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)
3.6.9	Physical Shock	1 us 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)
3.6.10	Contact Retention Force of Board side	0.50 kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.

3.6.11	crimping Terminal Pull Strength of the housing (Cable size)	0.50 kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the Terminal retention force with Tensile strength tester.
3.6.12	Wire Crimping Strength	AWG# 24: 2.0Kgf Min AWG# 26: 1.5Kgf Min AWG# 28: 1.0Kgf Min AWG# 30: 0.5Kgf Min.	Pull wire axially from at the speed rate of 25.4 ± 3 mm/min.

Fig. 2 (To be continued)

Para	Test Items	Requirements	Procedures
Environmental Requirements			
3.6.11	Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition A)
3.6.12	Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40℃, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
3.6.13	Salt Spray (Only for GOLD)	See Product Qualification and Test Sequence Group 9	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ for 24 hours. (EIA-364-26,Test condition B)
3.6.14	Temperature Life (Heat Aging)	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)
3.6.15	Solderability	Solder able area shall have minimum of 95% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)
3.6.16	Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 6 (Lead Free)	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max.

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

Fig. 2 (End)

4. 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				**1,7**	**1,6**	**1,4**						**1,4**
Low Level Contact Resistance		**1,5**	**1,4**	**2,10**	**2,9**	**2,5**						**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（Board Side）								**1**				
Vibration			**2**									
Shock (Mechanical)			**3**									
Thermal Shock				**5**								
Humidity				**6**								
Temperature life					**5**							
Salt Spray												**3**
Crimping Terminal Pull Strength of the housing (Cable size)									**1**			
Board Lock Pull Strength of Wire Lock										**1**		
Wire Crimping Strength											**1**	
Solder ability							**1**					
Resistance to Soldering Heat						**3**						

Numbers indicate sequence in which the tests are performed.

5. Mating / Unmating Force:

Unit: N

Pos. No.	At initial		At 30th
	Mating Force. (Max)	Unmating Force (Min)	Unmating Force (Min)
2	20	2	2
3	20	2	2
4	20	2	2
5	30	3	3
6	30	3	3
7	30	3	3
8	40	4	4
9	40	4	4
10	40	4	4
11	50	5	5
12	50	5	5
13	50	5	5
14	60	6	6
15	60	6	6

Table 5

6. INFRARED REFLOW CONDITION

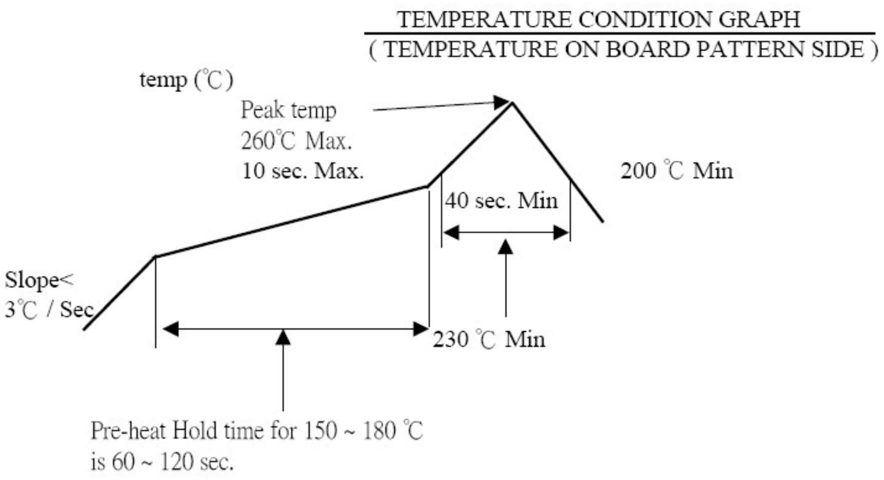
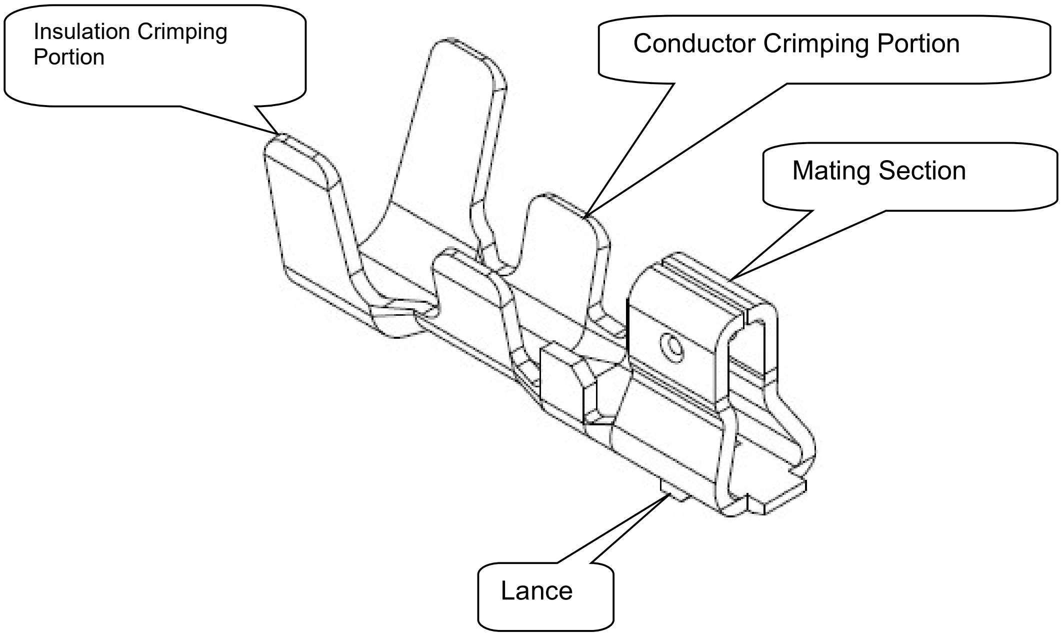


Fig. 6

7. ANATOMY OF CRIMPING TERMINAL



8. APPLICABLE WIRES: UL10584 ETFE WIRE

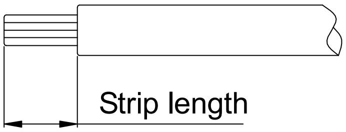
AWG Size:AWG#30~#24

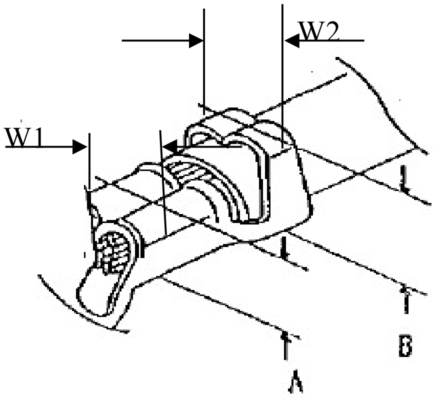
Insulation OD: Φ0.70~1.00mm

9. CRIMPING CONDITION

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
2380403-*	UL1061	24	1.10	0.52~0.58	1.57~1.63	0.90(Ref)	1.05 max.
	UL1061	26	1.00	0.52~0.58	1.47~1.53	0.80(Ref.)	1.05 max.
	UL1061	28	0.90	0.52~0.58	1.37~1.43	0.70(Ref.)	1.05 max.
	UL1061	30	0.70	0.52~0.58	1.25~1.31	0.60(Ref.)	1.05 max.





Note:

1、 W1: Conductor Crimping Width

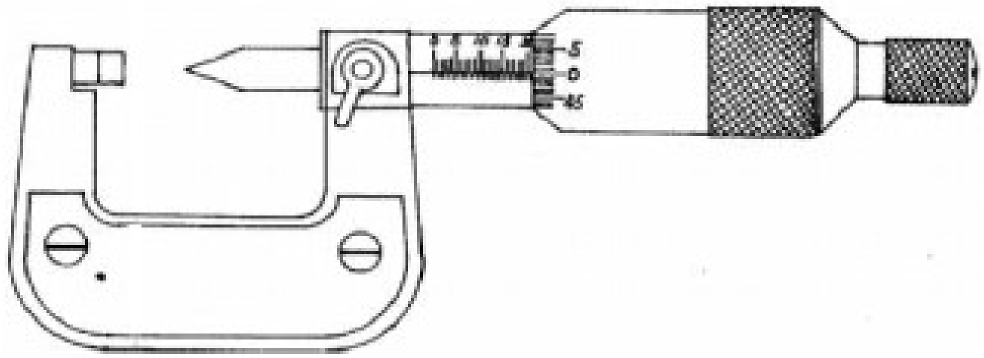
2、 W2: Insulation Crimping Width

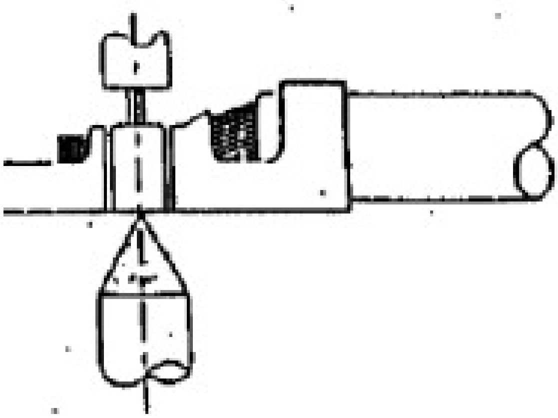
3、 A: Conductor Crimping height

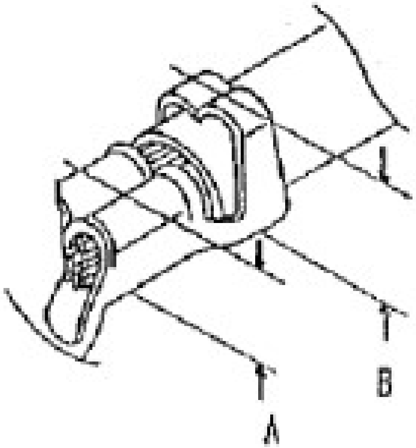
4、 B: Insulation Crimping height

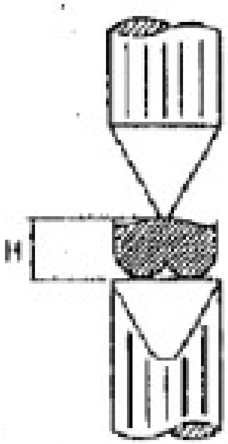
5、 Strip length：1.2~1.6mm

10. CRIMPING HEIGHT MEASUREMENT



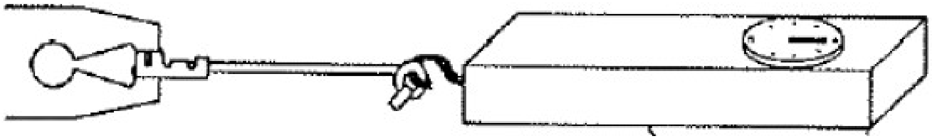






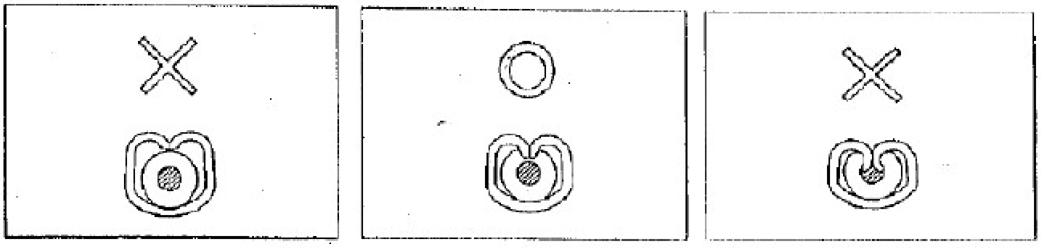
11. PULL FORCE OF CRIMPING SECTION MEASUREMENT

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



Pull Force of Crimp Section Measurement

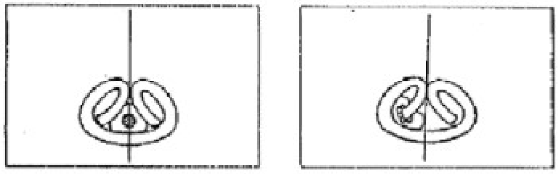
12. STANDARD INSULATION CRIMPING



Not enough crimp

Good

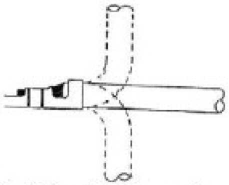
Crimp too much



Good

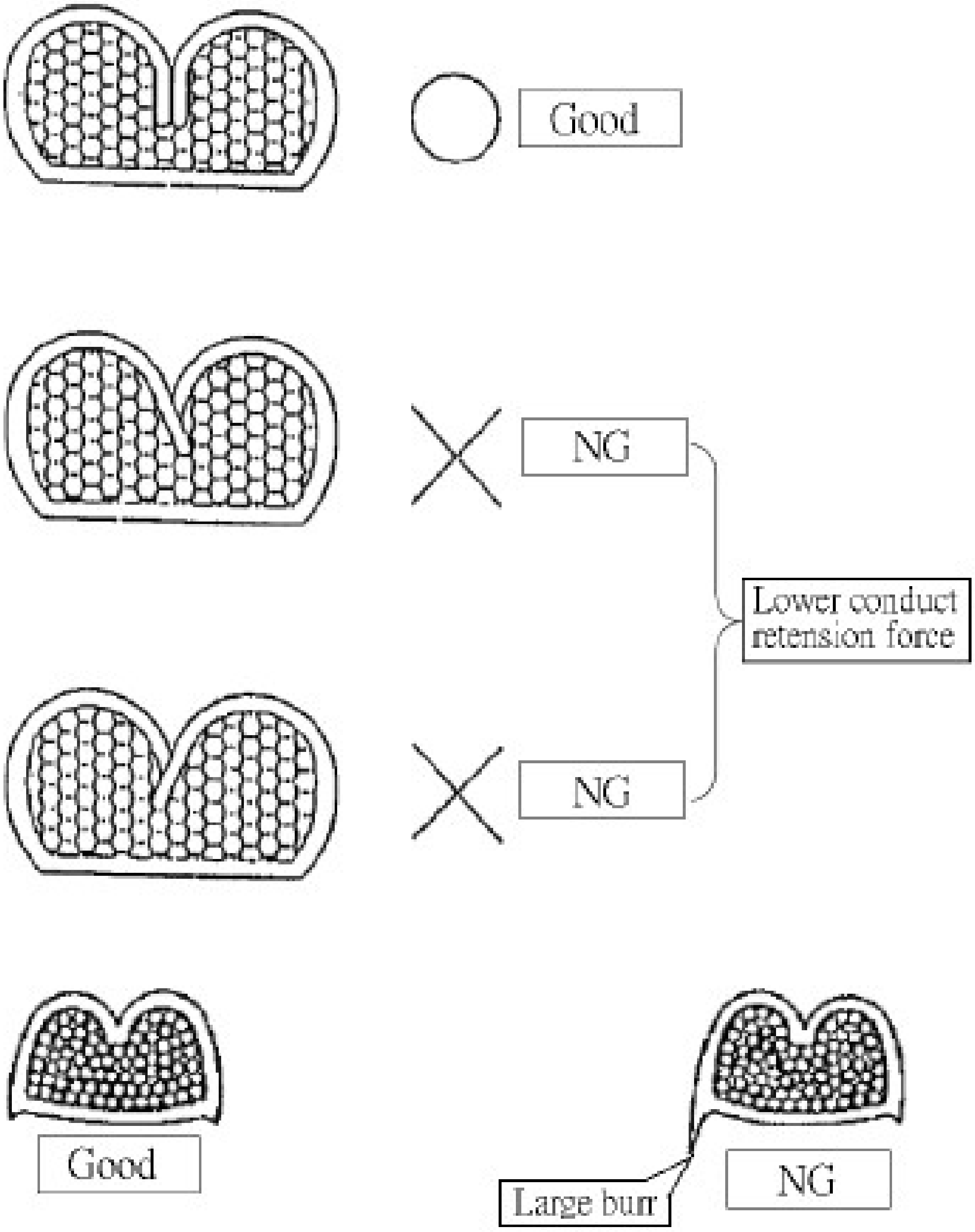
NG

Insulation Crimp Condition

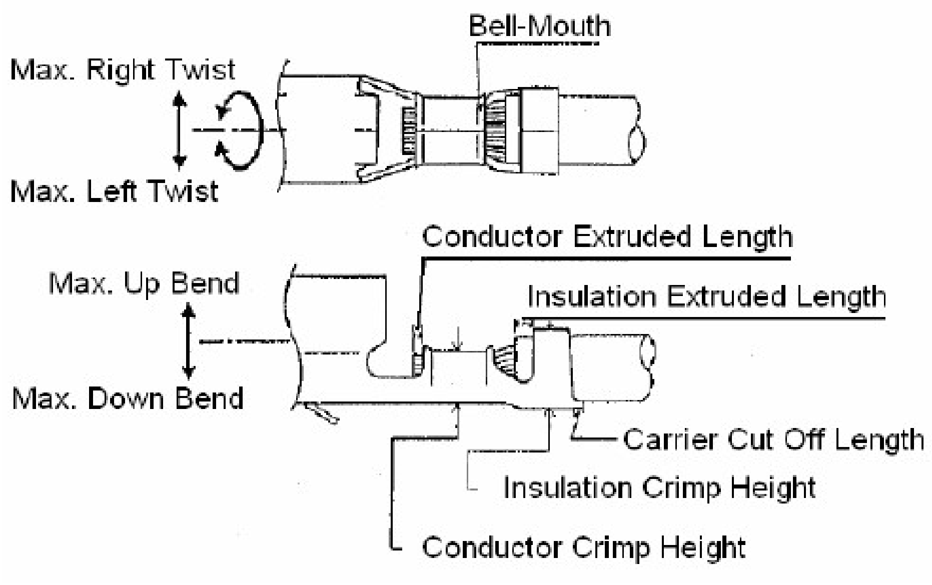


As following figure shown.
It is no problem if wire bent
up down 90 degrees 1 cycle
and insulation position still
in ideal position.

13. CONDUCTORS CRIMPING CONDITION



14 CRIMPING REQUIREMENTS



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	0.1~0.3mm