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（108-115184)

1. 25mm Pitch Wire to Board Connector with Latch

1. Scope:

1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of 1.25mm 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. 501-115199 Test Report

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DIST

LTR	REVISION RECORD	DR	DATE
A1	Share same crimp spec	T.Q	22RD Feb 22
A	INITIAL RELEASE	T.Q	1ST Dec 21

DR Tommy Qian 1st April' 21

CHK Niki Shi 1st April' 21

APP Niki Shi 1st April' 21

TE Connectivity

NO 108-115183 | REV A1 | LOC ES

PAGE 1 of 6

TITLE 1.5mm Pitch Wire to Board Connector

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-2390144-x	Cable Housing of 1.25mm Pitch Wire to Board Connector with Latch
2390147-x	Cable Contact of 1.25mm Pitch Wire to Board Connector with Latch
x-2390138-x	Vertical Type Board Side of 1.25mm Pitch Wire to Board Connector with Latch
x-2390136-x	Right Angle Type Board Side of 1.25mm Pitch Wire to Board Connector with Latch

Fig. 1 (Single row)

Product Part No.	Description
x-2390905-x	Cable Housing of 1.25mm Pitch Double row WTB Connector with Latch
2390914-x	Cable Contact of 1.25mm Pitch Double row WTB Connector with Latch
x-2390892-x	Vertical Type Board Side of 1.25mm Pitch Double row WTB Connector with Latch

Fig. 1 (Double row)

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 # 30~#26: 1 A (per pin)

C. Temperature Rating: -40℃ to +105℃

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	100 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℃ (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 6	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/Metal peg Retention Force of Board side	2N Min. for contact 3N Min. for metal peg	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
3.6.11	Crimping Terminal / Housing Retention Force (Cable Side)	5N 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.

3.6.12	Crimping Pull Out Force (Cable Side)	AWG #26: 20N Min. AWG #28: 10N Min. AWG #30: 5N Min.	Operation Speed： 25.4 ± 3 mm/minute. Fix the crimped terminal, apply axial pull out force on the wire.
3.6.13	Locking Force	2~3pin, 10N Min 4~6pin, 12N Min 7~9pin, 15N Min >10pin, 20N Min	While withdrawing plug & receptacle Without terminal at speed 25.4 ± 3 mm/minute

Fig. 2 (To be continued)

Para	Test Items	Requirements	Procedures
Environmental Requirements			
3.6.14	Thermal Shock	See Product Qualification and Test Sequence Group 6	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 ℃, 30 minutes +105 +3/-0 ℃, 30 minutes (EIA-364-32, test condition A)
3.6.15	Humidity	See Product Qualification and Test Sequence Group 6	Mated Connector 40℃, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
3.6.16	Salt Spray	See Product Qualification and Test Sequence Group 7	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II)PURE TIN for 48 hours (EIA-364-26,Test condition B)
3.6.17	Temperature Life (Heat Aging)	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 105℃ for 96 hours. (EIA-364-17, Test condition A)
3.6.18	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)
3.6.19	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	…	…
	Test Sequence											
Examination of Product	1,3		1,5	1,5	1,6	1,7	1,4	1,3	1,3	1,3		
Low Level Contact Resistance			2,7	2,6	2,7	2,8	2,5			4		
Insulation Resistance					3,8	3,9						
Dielectric Withstanding Voltage					4,9	4,10						
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								
Temperature life					5							
Thermal Shock						5						
Humidity						6						
Salt Spray							3					
Solder ability								2				
Hand Soldering Temperature Resistance									2			
Resistance to Soldering Heat										2		
Sample Size	2	4	4	4	4	4	2	4	4	4		

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	17	0.3	0.3
3	18	0.6	0.6
4	19	0.9	0.9
5	20	1.2	1.2
6	21	1.5	1.5
7	22	1.8	1.8
8	23	2.1	2.1
9	24	2.4	2.4
10	25	2.7	2.7
11	26	3.0	3.0
12	27	3.3	3.3
13	28	3.6	3.6
14	29	3.9	3.9
15	30	4.2	4.2
20	50	5.0	5.0
30	60	6.0	6.0
40	70	7.0	7.0
50	80	8.0	8.0

Table 5

6. INFRARED REFLOW CONDITION

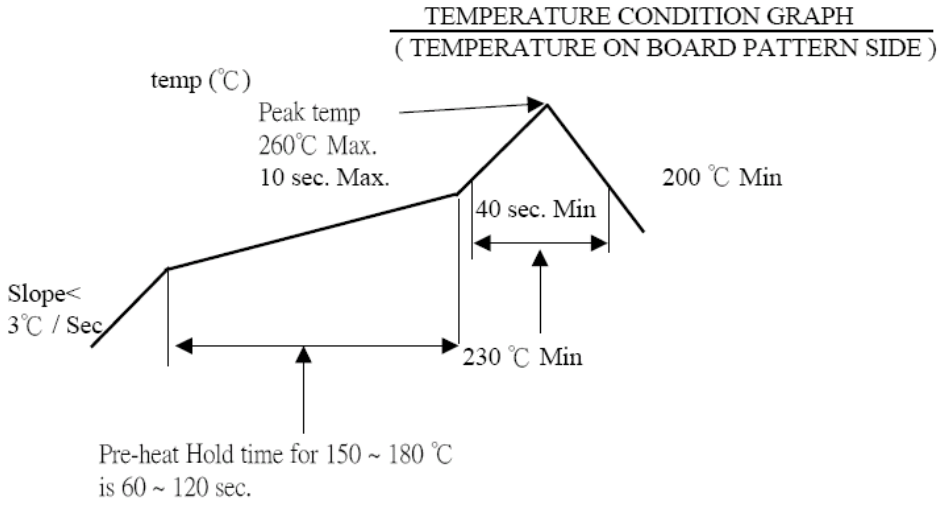


Fig. 6

7. Handing Precautions

7. 1 Precautions for mating operation

(1) In the case of large circuit number， do not mate connector by pressing socket housing at only its both ends as indicated by arrows, because non-mating part may occur partly due to deflection of socket housing.
Be sure to make connector by pressing the whole of socket housing as shown in Fig.-2

When mating connector, align the edge of header with socket housing, and mate connector on the same axis as shown in Fig.-2

(2) There is a “clock” sound (you feel a click) when mating operation is properly completed. When there is no feeling of a click, there is a possibility that mating is not finished completely. Conduct mating operation again.

(The number of mating and unmating operation shall be decreased as much as possible.)

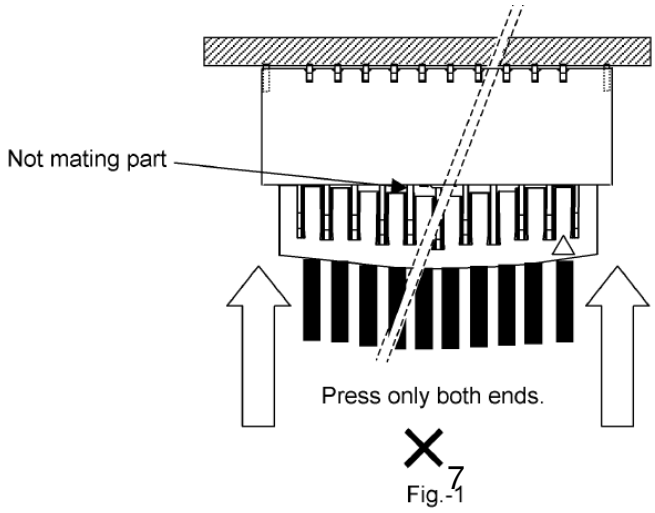


Fig.-1

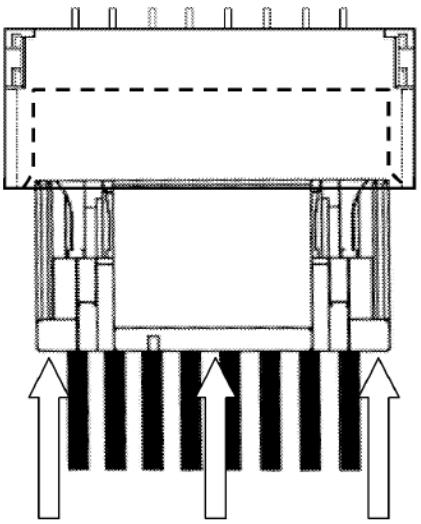


Fig.-2

7. 2 Precautions for unmating operation

(1) Press a protrusion as shown in Fig.-3,hold wire in a bundle and unmate socket housing from header with releasing lock completely.

Do not unmate connector forcibly without releasing lock completely ,because such handling may cause deformation of lock part, and breakage of connector.

(2) Do not unmate socket housing from header from slanting condition as shown in Fig.-4,

because socket housing may be deformed.

When socket housing is unmated with holding only several wires at the end of circuit,

even if socket housing is extracted in a straight line against mating axis, such handling

may cause the same condition as prying connector.

Be sure to hold wires in a bundle, and conduct unmating operation within 20 degrees to each direction with releasing lock completely.

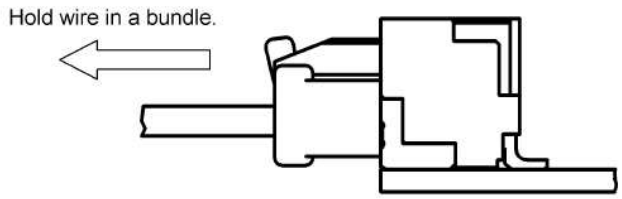


Fig.-3

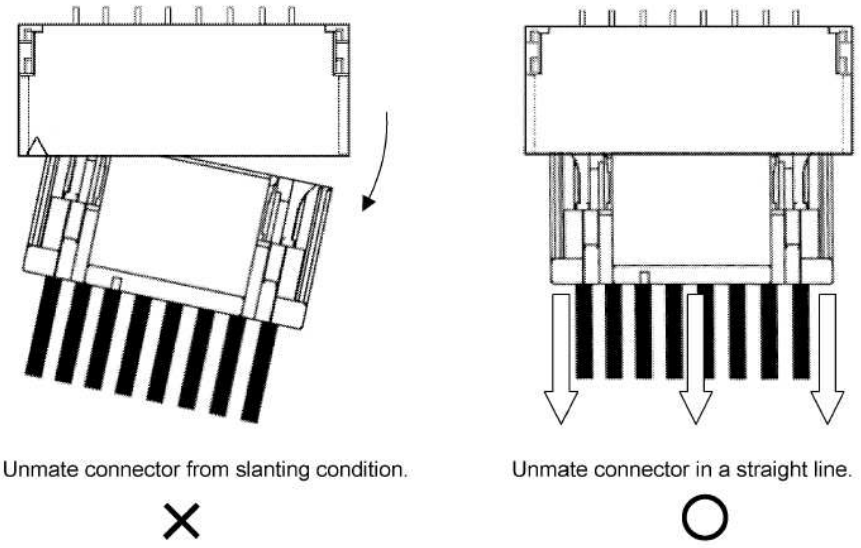
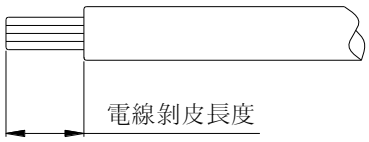


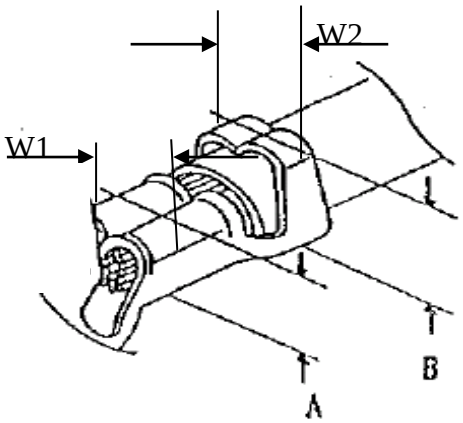
Fig.-4

8. 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
2390914/2390147-x	UL1061	26	1.00	0.55~0.60	1.05~1.10	0.90~0.95	0.95~1.00
2390914/2390147-x	UL1061	28	0.90	0.50~0.55	1.00~1.05	0.88~0.95	0.90~0.98
2390914/2390147-x	UL1571	30	0.70	0.45~0.55	0.95~1.05	0.88~0.95	0.88~0.95



Strip length



Note:

1、W1: Conductor Crimping Width (for reference)

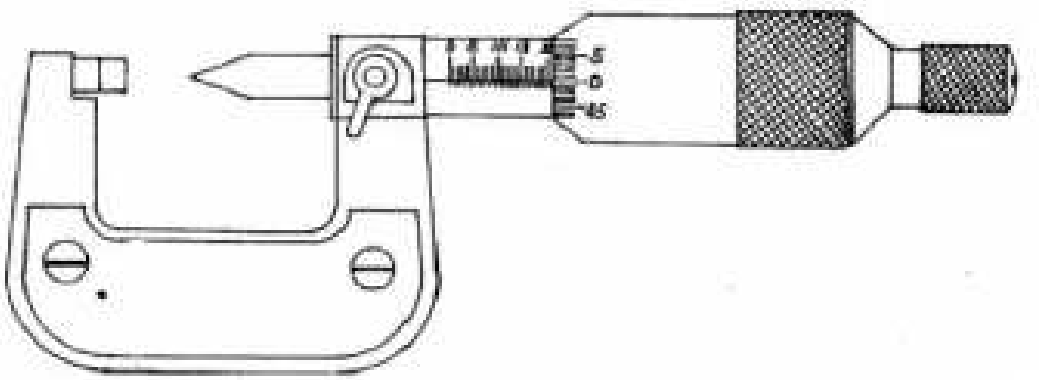
2、W2: Insulation Crimping Width (for reference)

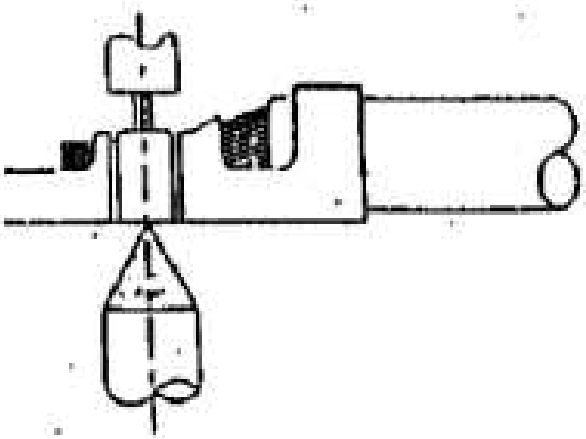
3、A: Conductor Crimping height (for reference)

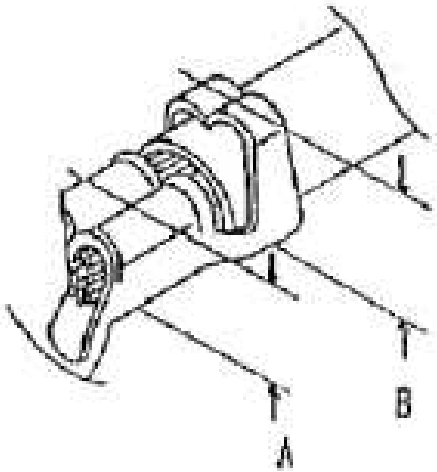
4、B: Insulation Crimping height (for reference)

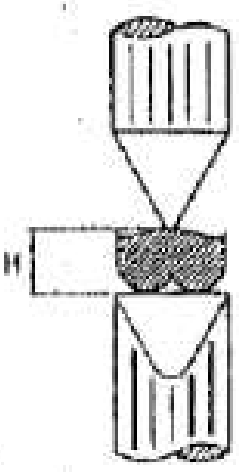
5、Strip length：0.7~1.0mm (for reference)

9. CRIMPING HEIGHT MEASUREMENT

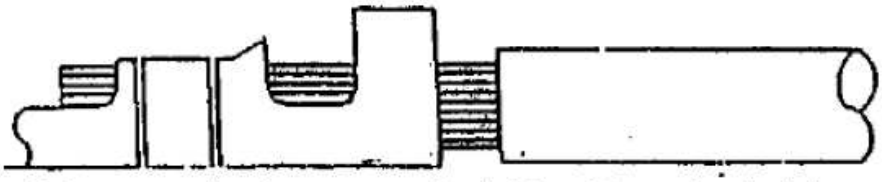




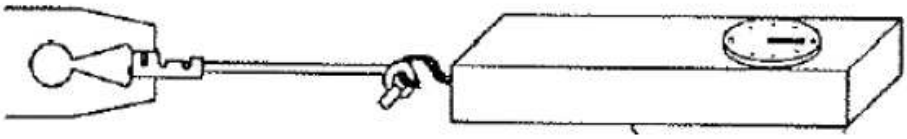




10. PULL FORCE OF CRIMPING SECTION MEASUREMENT

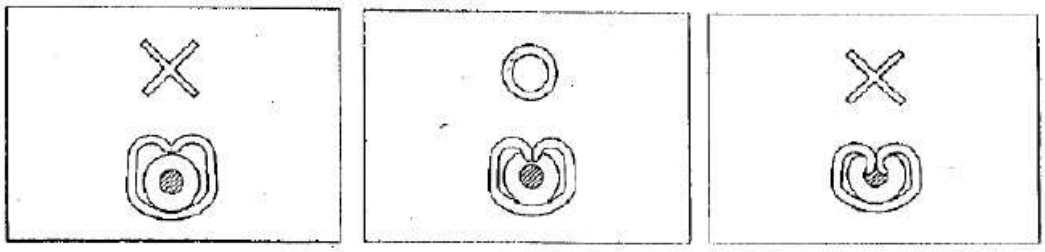


Before test samples, please measure crimp height and do not crimp insulation.

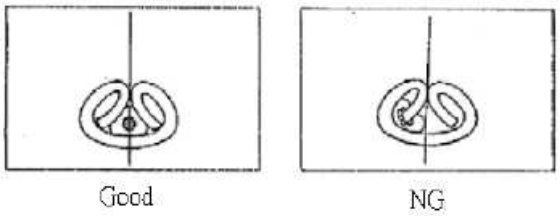


Pull Force of Crimp Section Measurement

11. STANDARD INSULATION CRIMPING

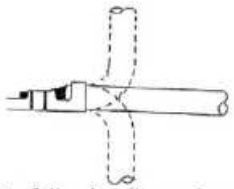


Not enough crimp | Good | Crimp too much



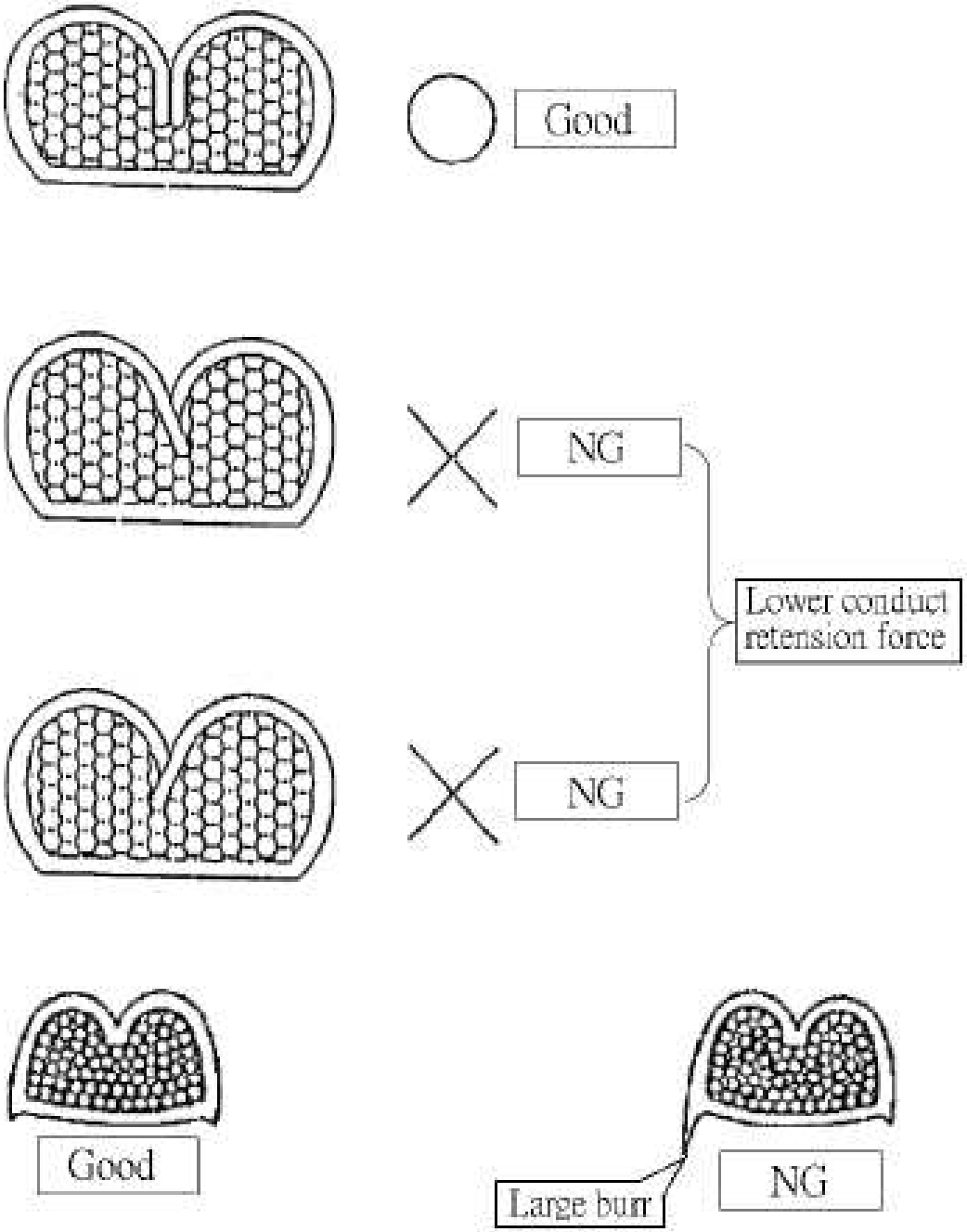
Good | NG

Insulation Crimp Condition

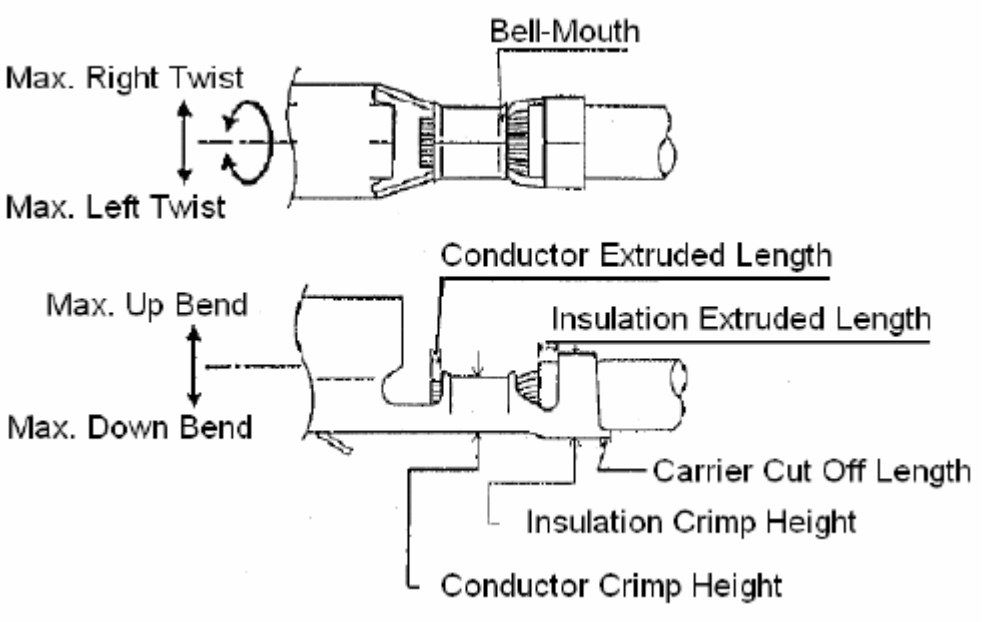


As following figure shown.
It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

12. CONDUCTORS CRIMPING CONDITION



13. 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