SPECIFICATION

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SPEC. NO.: PS-92415-XXXXX-XXX **REVISION:** A

PRODUCT NAME: 3.0/3.5 mm Auto Female Conn040/070 type

PRODUCT NO: 92415 92527 92528 SERIES

PREPARED:	CHECKED:	APPROVED:
XUYANGYANG	**LIUWEI**	**LIUWEI**
DATE: **2019/12/09**	DATE: **2019/12/09**	DATE: **2019/12/09**

1 REVISION HISTORY

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-2001102	NEW SPEC	XUYANGYANG	2019/12/09

This specification covers performance, tests and quality requirements for WTB Connector /Terminal :92415 /92527 /92528 series

2 APPLICABLE DOCUMENTS

According to the customer request and QC/T 417.1-2001 & CTS-17.01.03-A1-2016 & EIA-364

3 REQUIREMENTS

4.1 Design and Construction

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

4.2 Materials and Finish

4.2.1 Contact: C5210,Planting Ni AND Tin

4.2.2 Housing: PBT

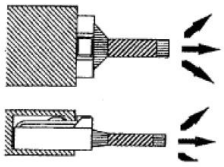
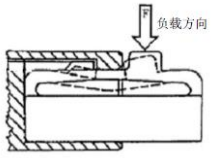
4.3 Ratings

4.3.1 Operating Temperature: -40° to +85°

4.3.2 Current: 3 Amperes (per pin)

4.3.3 Applicable Wires:FLRY-B Nominal cross-section 0.5mm²

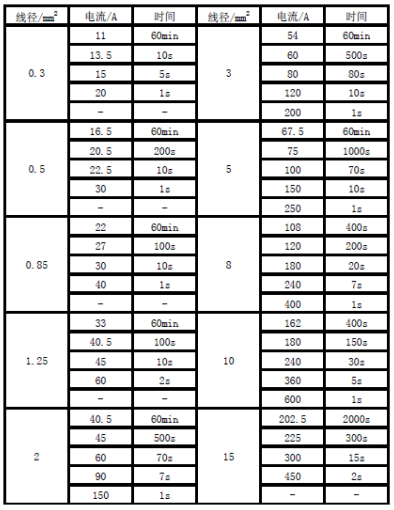
4 PERFORMANCE-1

Item	Requirement	Standard
Visual Examination	Check the terminals, sheath, connectors, no damage, deformation, no cracks, deformation	Visual
MECHANICAL		
Item	**Requirement**	**Standard**
Holding force of terminal	First lock ≥50N Second lock ≥100N	Place a terminal pressed to the wire in the sheath and then pull the wire at 50mm/min in the axial direction to measure the load of the point when the terminal is pulled from the sheath.
Connect / disconnect the touch	There is no obvious blocking or such touch	Hand insert and pull the terminals, the sheath and the connector, and check the touch.
Inserting forces of connector	196MAX	A pair of connectors filled with embedded terminals are taken, one end is fixed, and upon activating the locking device into the other end in the axial direction to measure the load during the binding process.
Separating forces of connector	196MAX	Take a pair of connectors filled with embedded terminals, fix one end and pull the other end in the axial direction to measure the load during dissociation.
Locking force	≥100N	Take a pair of connectors filled with embedded terminals, fix one end, and activate the locking device from the other end at 50mm/min to measure the load necessary for dissociation.According to the connector locking configuration, the direction that is the easiest to unlock the unlocking device is selected in the axis direction and in the 5 directions relative to the surface tilt 45 °.As in Fig 
Unlocking force	≤20N	Take a pair of connectors filled with embedded terminals, apply the load on the connector at the easiest unlocking position of the locking structure, and measure the load required for the unlocking moment of the locking position 
The first insert connector	5mΩ Max.(initial) 10mΩ Max. (final).	Under unlocking state,Manually mating at the rate of 25mm/min~100mm/min.

The first extract to the tenth extrat connector	5mΩ Max.(initial) 10mΩ Max. (final).	Under unlocking state,Manually mating and unmating for 10 cycles at the rate of 25mm/min~100mm/min.
Terminal / Housing Mating Force (Cable Side)	92527-T0XX-CA1/92528-T0XX-CA1: ≤ 15N; 92528-T0XX-CA2: ≤ 30N	1，Attach the wire to the wire attachment as tight as possible in the insertion direction.Plugins must be locked correctly. 2，Inserted with a constant insertion speed between 25mm/min~100mm/min, the speed required to be recorded in the test report.
Terminal / Housing Unmating Force (Cable Side)	40N MIN.	Fixed connector ,. Applying a constant force and keep （10+2/-0）s.
Wire Pull Out Force	≥90N	The terminal is properly pressed to the corresponding wire and secured to the fixture of the pulling machine to pull the wire at the speed of 50 mm/min away in the axial direction at 100mm to measure the load obtained when the wire breaks or pulls out of the bonding site.Foot insulation is not curl for wire sizes less than 0.5mm2.

ELECTRICAL

Item	Requirement	Standard
Low-voltage current tolerance	5 mΩMAX.(initial) 10 mΩ MAX.(final)	Position the connector pair and input a 10 mA current in the open state of maximum 20mV to calculate the contact resistance.
Temperature Rise	30℃ MAX(final)	Take a pair of connector filled with terminals and select the maximum wire diameter adapted for the conductor.Keep it in a horizontal position, pass the current according to a, b (table below), and measure the temperature of the terminal pressure site when the temperature rises to saturation (the temperature deviation does not exceed ± 2℃ within 1 minute), and then obtain the temperature appreciation by subtracting the ambient temperature.During the test, the test environment is no wind free. a) passes the Imax*KD through any well bit in the connector； 电流 7A b）Pass the Imax through all the hole bits of the connector。 孔位数 / 折减系数 1 / 1 2到3 / 0. 75 4到5 / 0. 6 6到8 / 0. 55 9到12 / 0. 5 13到20 / 0. 4 21到30 / 0. 3 >30 / 0. 2 表 6 多孔位连接器的折减系数/Kd
Over current	Appearance appearance allowing slight discoloration of the sheath	Take a connector filled with terminals and select the maximum wire diameter adapted for the terminals.Place the connector horizontally in windconditions for the current specified in the given circuit input sheet.In general, each circuit of the connector shall be tested separately, and each current gear is not continuously tested with the interval of cooling temperature to room temperature; the number of holes exceeding 10 can be tested, the extracted hole position shall include all types of the connector and select the hole in the middle of the connector.

线径/mm²	电流/A	时间	线径/mm²	电流/A	时间
0.3	11	60min	3	54	60min
	13.5	10s		60	500s
	15	5s		80	80s
	20	1s		120	10s
	-	-		200	1s
0.5	16.5	60min	5	67.5	60min
	20.5	200s		75	1000s
	22.5	10s		100	70s
	30	1s		150	10s
	-	-		250	1s
0.85	22	60min	8	108	400s
	27	100s		120	200s
	30	10s		180	20s
	40	1s		240	7s
	-	-		400	1s
1.25	33	60min	10	162	400s
	40.5	100s		180	150s
	45	10s		240	30s
	60	2s		360	5s
	-	-		600	1s
2	40.5	60min	15	202.5	2000s
	45	500s		225	300s
	60	70s		300	15s
	90	7s		450	2s
	150	1s		-	-

Connection Resistance (Voltage drop)	5mΩ Max.(initial) 10mΩ Max. (final).	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max.

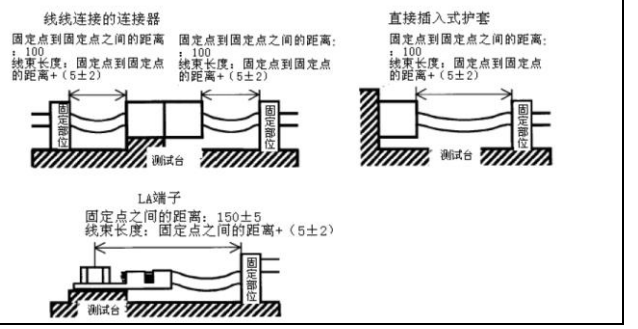
MECHANICAL ENVIRONMENT

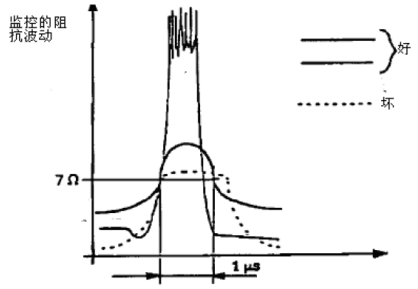
Item	Requirement	Standard
Slow-speed sliding friction resistance	Compliance with the group D test.	At normal temperature, the male terminal was interpolated with the parent terminal according to the table conditions.

滑动距离	滑动频率	滑动次数	开路电压	通电电流
0.23mm	1～2 Hz	10,000次	最大20 mV	10 mA

Prying endurance	Compliance with the group E test.	At normal temperature, one end of a pair of connectors is fixed, and the fixed end is inserted and dissociated on the other end in the axial direction, circulating 50 times.
Vibration resistance	Transient break time ≤ 1ms; impedance rate of connector ≤ 7 Ω/μs	Take a pair of connector filled with terminals and select the maximum wire diameter adapted for the conductor.All holes are connected in series and mounted on the vibration test table (Figure 10).The 6h, vibration standards in the top / bottom, left / right and front / rear directions are shown in Table 9 respectively, and the current at both ends of the series wire passes 12V,1A (voltage below 20mV, current 10mA).Check the test for transient break and impedance changes in connector impedance.

振动类别	振动标准			
直接安装在车体上（不限于引擎部分体或车体内部）	5～15 Hz 10 mm (p-p)	15～25 Hz 44.1 m/s²	25～100 Hz 19.6 m/s²	100～200 Hz 4.9 m/s²



Impact resistance	Transient break time ≤ 1ms; impedance rate of connector ≤ 7 Ω/μs	Take a pair of connector filled with terminals and select the maximum wire diameter adapted for the conductor.Connect all holes in series and install them on the impact test table.An acceleration of 980 m/s2 was applied in the upper, lower, left, right, front, and rear 6 directions, three times in each direction at an interval of 10ms. Check the test process for transient break and connector impedance changes, as shown in Fig 
Combined with temperature vibration	Changes in contact resistance, continuous more than 7 Ω for no more than 1us.	1, Samples were plugged in 5 times. 2, Place the mated samples at 50 thermal shock cycles.Each cycle includes: 30 min. at (-40 ± 2) ℃10s maximum excess time.30 min. at the highest value of the appropriate ambient temperature (grade 2, -40℃~85℃) in Table 310s maximum excess time.3. Vibration test, connect all connections in series, give 100mA current, observe the resistance change during the test process, and conduct the frequency change in a log curve of 1 x frequency per minute.The 16h (48h) were run in three directions perpendicular to each other.Test parameters are selected for grade A. as described in Table 5The vibration test installation method shall be indicated in the test report.

环境和试验温度

分　　级	环境温度,℃		试验温度,℃
	最　小　值	最　大　值	±2
1	−40	70	85
2	−40	85	100
3	−40	100	125
4	−40	125	155
5	−40	155	175

Fig 1

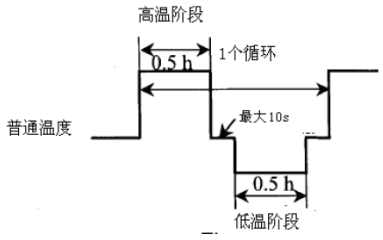
结合温度振动试验参数

等　　级	低频/振幅	高频/加速度	
A	10 Hz～55 Hz /±0.75 mm	>55 Hz～500 Hz/ 10 g	
B	10 Hz～80 Hz /±0.75 mm	>81 Hz～500 Hz/ 20 g	>500 Hz～2 000 Hz/ 10
C	10 Hz～100 Hz /±0.75 mm	>100 Hz～500 Hz/ 30 g	>500 Hz～2 000 Hz/ 20

Fig 5

CLIMATE ENVIRONMENT

Item	Requirement	Standard
Heat resistance	Compliance with the group F test.	Take a pair of connector filled with terminals and select the maximum wire diameter adapted for the conductor.The test temperature specified in Table 11 was tested in the heat incubator for 120h (also increased to 500h as required).For waterproof connectors, tie all wires to tilt with the hydrant at a 30 ° inclination and add 30N load. After the test, remove the connector and adjust it to room temperature.(Gradeselection:IV)

<table>
<tr>
<td></td>
<td></td>
<td>表 11 耐热性操作温度
<table><tr><th>等级</th><th>连接器位置</th><th>耐热试验温度/℃</th></tr><tr><td>I</td><td>靠近热源，安装在排气歧管附近</td><td>155±3</td></tr><tr><td>II</td><td>安装在发动机上</td><td>140±3</td></tr><tr><td>III</td><td>安装在发动机机舱位置</td><td>120±3</td></tr><tr><td>IV</td><td>安装在车内</td><td>100±3</td></tr></table></td>
</tr>
<tr>
<td>Hot and cold impact</td>
<td>Compliance with the group E test.</td>
<td>Take a pair of connector filled with terminals and select the maximum wire diameter adapted for the conductor.The connector was tested according to the type of hot and cold shock shown in Figure 13, with the test temperature shown in Table 12 for repeated 300 cycles.
During the test, check the current transient condition, and the connector impedance fluctuation of more than 7 Ω shall not be more than 1 μs.After the test, the connector was removed and set for 2h, observe the appearance and test.(Grade selection: IV)
表 12 冷热冲击试验温度
<table><tr><th>等级</th><th>高温/℃</th><th>低温/℃</th></tr><tr><td>I</td><td>125±3</td><td rowspan="4">-40±3</td></tr><tr><td>II</td><td>100±3</td></tr><tr><td>III</td><td>85±3</td></tr><tr><td>IV</td><td>70±3</td></tr></table> 
图 13 循环周期</td>
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</table>

5 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test premise：

Prior to testing, the samples shall be kept at room temperature (23 ± 5) ℃ with a humidity temperature of 45% ~ and 75% for 24H, experiments, and the default test tolerance is as follows：

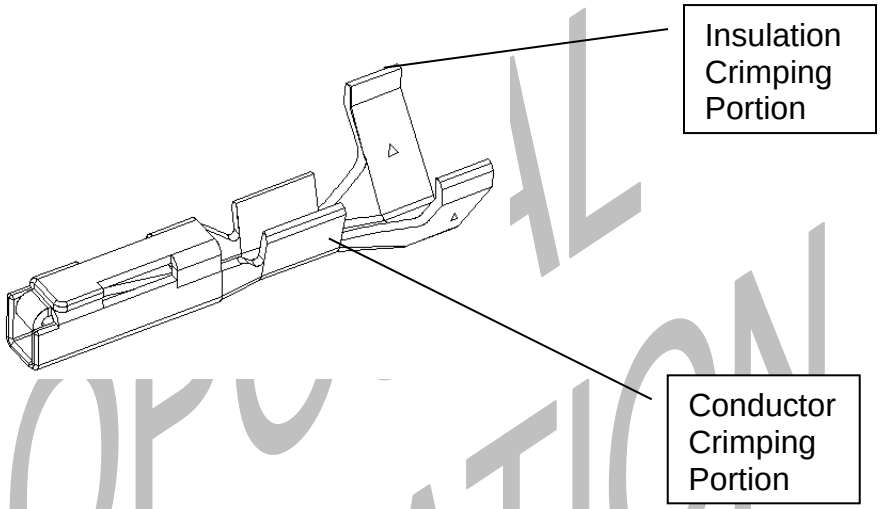
Experimental parameters	Tolerance
temperature	±3℃
Voltage	±2%
Current	±1%
Resistance	±5%
length	±2%
Time	±5%
Force	±5%
Frequency	±5%
Velocity	±5%
Relative humidity	±5%
speed	±5%
Pressure	±5%

Project		Environmental resistance											
		A	B	C	D	E	F	G	H	I	J	K	
Terminal, sheath, and connector appearance / external dimensions		1	1	1，5	1，4	1，10	1，5	1，3	1，4	1，6	1，5	1，3	
MECHANICAL	Holding force of terminal	7				9							
	Connect / disconnect the touch	6				8							
	Inserting forces of connector	2				2							
	Separating forces of connector	5											
	Locking force		3										
	Unlocking force		2										
	The first insert connector									2			
	The first extract to the tenth extrat connector									4			
	Terminal / Housing Mating Force (Cable Side)								2				
	Terminal / Housing Unmating Force (Cable Side)								3				
	Wire Pull Out Force											2	
ELECTRICAL	Low-voltage current tolerance	3		2，4	3	3, 5, 7	2						
	Temperature Rise	4											
	Over current			3									
	Connection Resistance (Voltage drop)									3，5	2，4		
MECHANICAL ENVIRONMENT	Slow-speed sliding friction resistance				2								
	Prying endurance					4							
	Vibration resistance						4						
	Impact resistance							2					

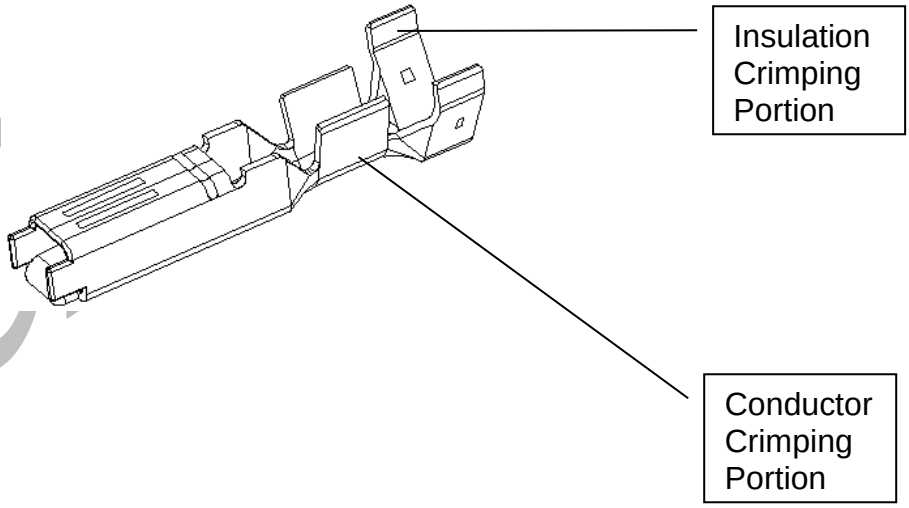
	Combined with temperature vibration										3		
	Heat resistance						3						
	Hot and cold impact					6							
Number of tested samples		3	3	3	3	3	3	3	30	3	3	25	

6 ANATOMY OF CRIMPING TERMINAL

92527



92528

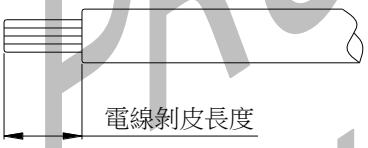


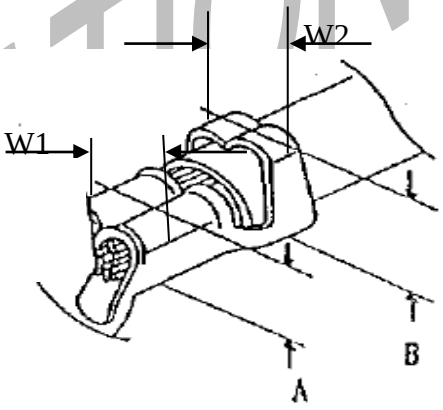
7 APPLICABLE WIRES:

Insulation OD: Φ1.6mm Conductor cross-section : 0.5mm ^{2}

8 CRIMPING CONDITION

CRIMPING CONDITION							
Part Number	AVSS Wire Specification			Crimp Height (±0.05mm)		Crimp Width (mm) (±0.05mm)	
	Sectional area(mm^2)	Copper wire OD(mm)	Insulation OD(mm)	Conductor A	Insulation B	Conductor W1	Insulation W2
92527-T0XX-CA1	0.5 mm^2	1.00	1.7Max	1.20	2.90	1.60	1.95
92528-T0XX-CA1	0.5 mm^2	1.00	1.7Max	1.20	2.80	2.20	2.50





Note:

1、 W1 (Conductor Crimping Width)：W1 As in the table above

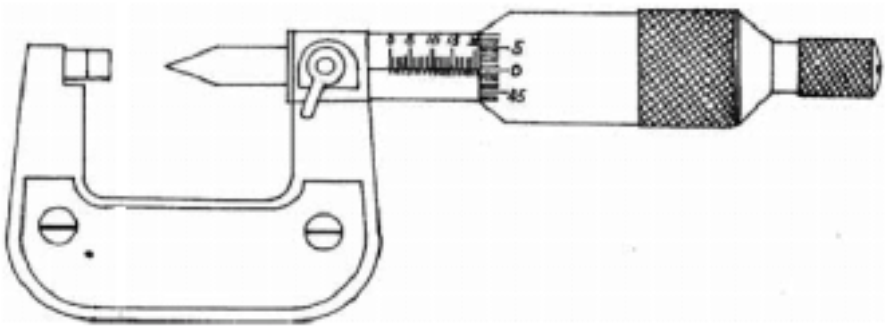
2、 W2 (Insulation Crimping Width)：W2 As in the table above

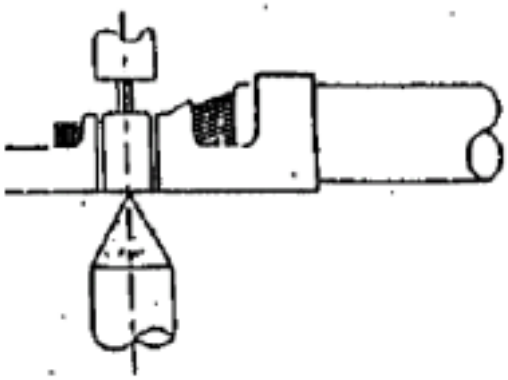
3、 A (Conductor Crimping height)：A As in the table above (Reference value）

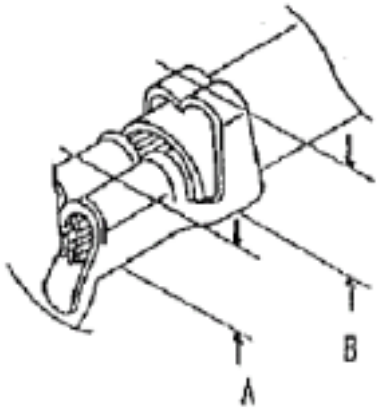
4、 B (Insulation Crimping height)：B As in the table above (Reference value）

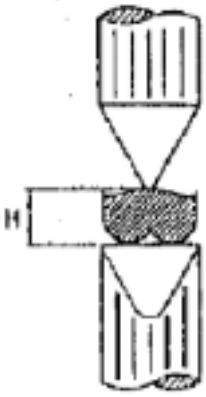
5、 (Strip length)：3.0~3.5mm(Reference value)

9 CRIMPING HEIGHT MEASUREMENT



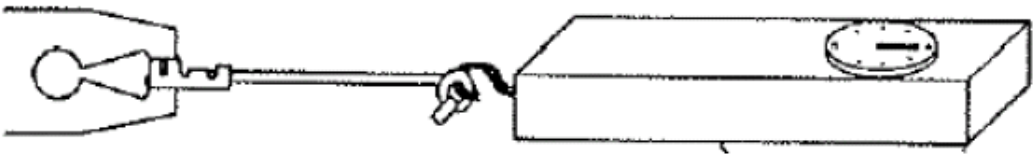






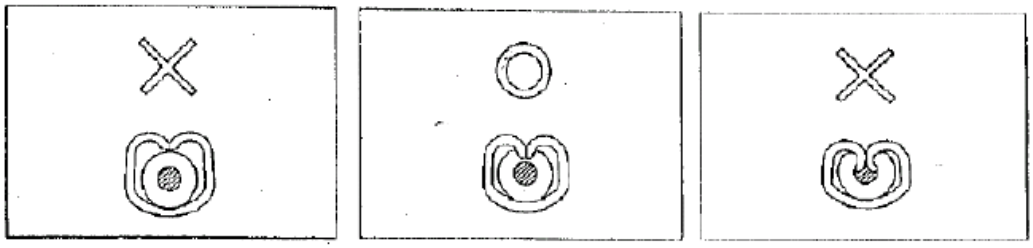
10 PULL FORCE OF CRIMPING SECTION MEASUREMENT

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



Pull Force of Crimp Section Measurement

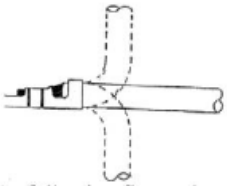
4STANDARD INSULATION CRIMPING



Not enough crimp | Good | Crimp too much

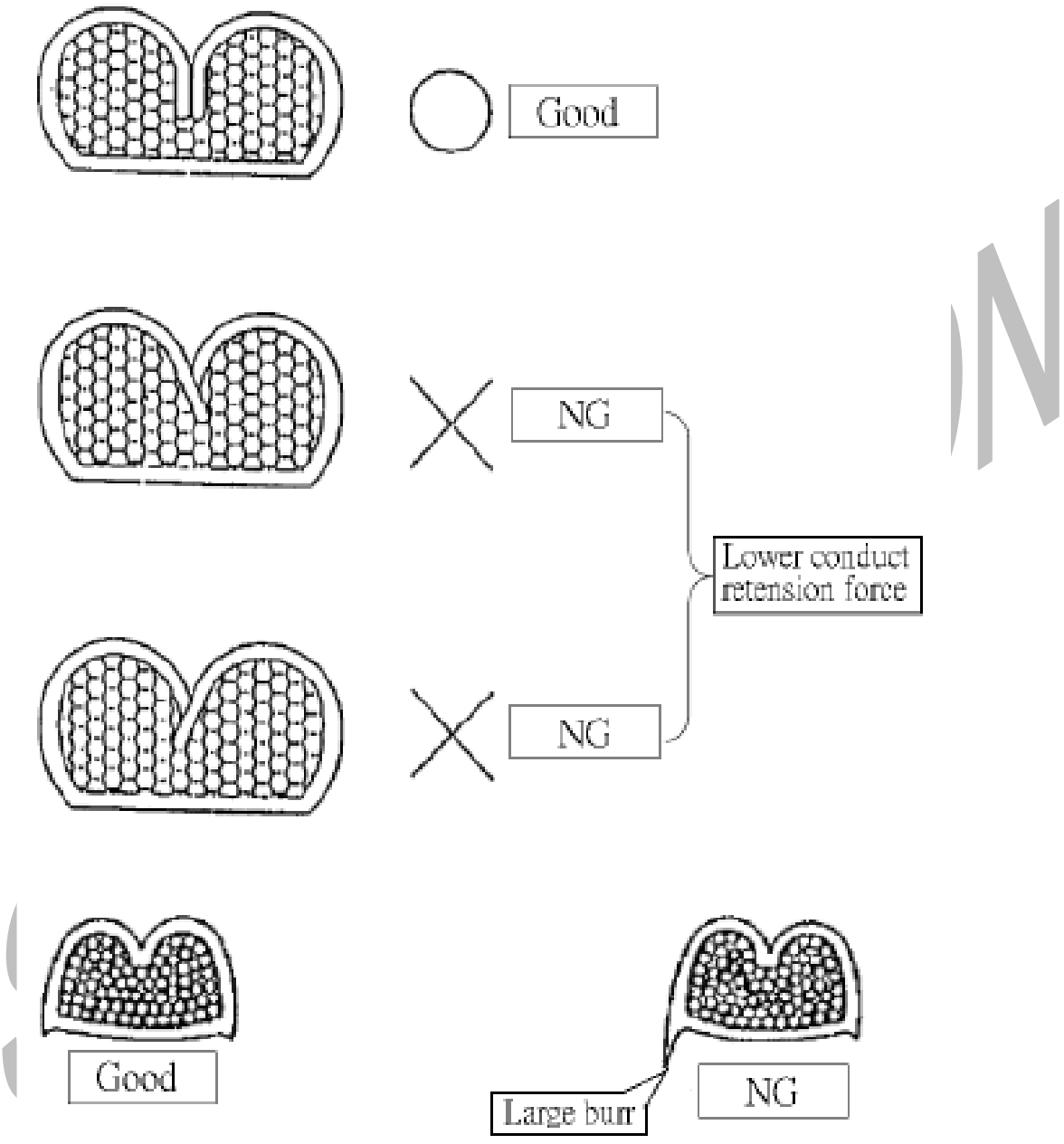
Good | NG

Insulation Crimp Condition

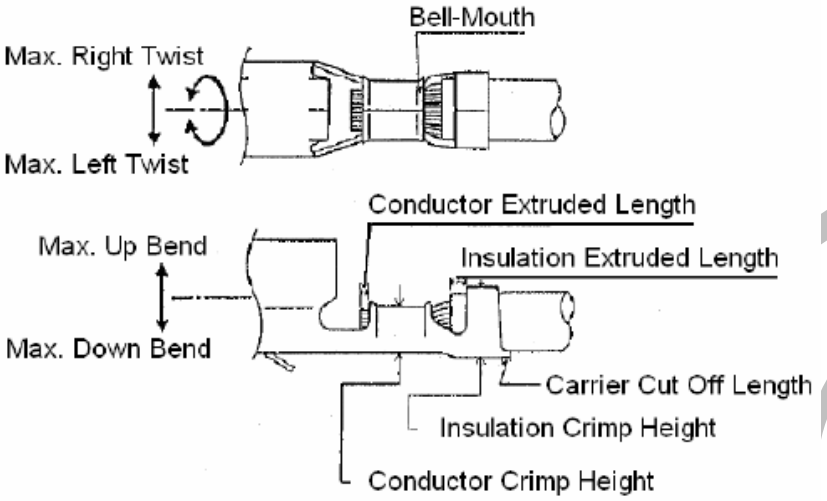


As following figure shown.
It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

11 CONDUCTORS CRIMPING CONDITION



12 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

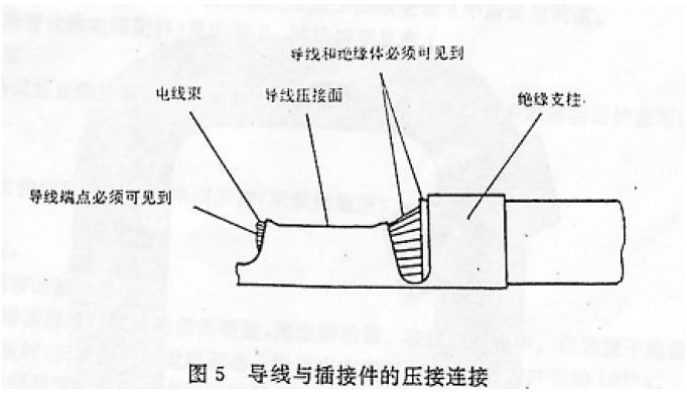


图 5 导线与插接件的压接连接