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**SIZE (2.8) AMPLIVAR TERMINALS**

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

**1. SCOPE**

**1.1. Content**

This specification covers the performance, tests and quality requirements for the 110 Series FASTON Receptacle. Applicable product part numbers are as follows,

Applicable P/N	Applicable Wire range (Enamel wire) $\varnothing$ mm	Material
1494211-1	0.45 ~ 0.75	Phosphor Bronze
1494211-2	0.45 ~ 0.75	Phosphor Bronze
1494211-3	0.45 ~ 0.75	Phosphor Bronze
1494212-1	0.45 ~ 0.75	Phosphor Bronze
1494212-2	0.45 ~ 0.75	Phosphor Bronze
1930002-1	0.68~1.09	Phosphor Bronze
1930003-1	0.64~0.93	Phosphor Bronze
1930003-2	0.64~0.93	Phosphor Bronze

Table 1

**1.2 Qualification**

When tests are performed on the subject product line, the procedures specified in EIA-364 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawings.

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DR	DATE	APVD	DATE
Boris Wong	18-Sep-2002	S. F. Shum	20-Sep-2002

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## 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 of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

### 2.1 Tyco Electronics Specifications

- a. 109-1: General Requirements for Test Specifications
- b. 109 Series: Test Specifications as indicated in Table 2.
- c. 114-58501/114-58502: Application Specifications.
- d. 501-58502: Test Report

## 3. REQUIREMENTS

### 3.1 Design and Construction

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

### 3.2 Materials

Terminals shall be made of copper alloy, refer to Table 1.

### 3.3 Current Rating:

<u>Wire Size</u>	<u>Current</u>
Ø 0.45~0.50 mm	1 AMPERES
Ø 0.60~0.70 mm	2 AMPERES
Ø 0.75~0.85 mm	3 AMPERES
Ø 0.95~1.09 mm	4 AMPERES

### 3.4 Performance and Test Description

Receptacles and Tab shall be designed to meet the Electrical, Mechanical and Environmental performance requirements specified in Table 2.

#### TEST REQUIREMENTS AND PROCEDURES SUMMARY

Para.	Test Description	Requirements	Procedures
<b>APPEARANCE AND DIMENSIONS</b>			
3.4.1	Examination of Product	Meet requirements of product drawing and applicable inspection plan and 114-58501.	Visual, dimensional and functional per applicable Tyco inspection plans and EIA-364-18A.
<b>ELECTRICAL</b>			
3.4.2	Termination Resistance between terminal and crimped wire	Termination Resistance shall be not greater than 3mΩ.	The termination resistance is measured by millivolt drop method. The terminals shall be connected with wire in specified size. Apply the DC supply shown according to Table 3 between the points A-B. Measure the millivolt drop between points C-D and calculate the resistance ( $R_{C-D}$ ). See Fig. 1. Per 209-10.
3.4.3	Contact Resistance of mating area	The contact resistance shall not be greater than 2mΩ.	Contact Resistance is measured by millivolt drop method after 3 mating & unmating cycles. Mate the receptacle and the tab (in every p/n) without wiring, and apply the 2A DC supply between the points A-B. See Fig. 2 Measure the millivolt drop between points C-D, and calculate the Contact Resistance ( $R_{C-D}$ ). Per 209-10.

Para.	Test Description	Requirements	Procedures												
3.4.4	Temperature Rise	The temperature rise of the crimping area shall not be greater than 30 °C.	Temperature rise must be measured by using a set of thermocouples. The terminals shall be connected with wire in specified size, at least 508 mm in length. The specimens shall be soldered or mated together. See Figure 3. Record the reading after temperature rising becomes stabilized (+/- 0.5°C during more than 5 minutes) under rate current. Per EIA-364-70.												
3.4.5	Current cycling	Temperature rise < 85°C. Temperature rise during 500 <sup>th</sup> cycle shall not be more than 15 °C higher than the temperature rise during 24 <sup>th</sup> cycle. Termination resistance shall not be greater than 5 mΩ.	The terminals shall be connected with wire in specified size. The specimens shall be soldered or mated together. Subject specimens to 500 cycles at 200% of the rated current for 45 minutes "On", 15 minutes "Off" per EIA-364-55, testing condition D, testing method 4.												
<b>MECHANICAL</b>															
3.4.6	Crimp Tensile Strength	<p>Crimp tensile Strength</p> <table border="1"> <thead> <tr> <th><u>Wire Size(mm)</u></th> <th><u>N (Min)</u></th> </tr> </thead> <tbody> <tr> <td>∅ 0.45~0.50</td> <td>30</td> </tr> <tr> <td>∅ 0.60~0.70</td> <td>36</td> </tr> <tr> <td>∅ 0.75~0.85</td> <td>58</td> </tr> <tr> <td>∅ 0.85~0.95</td> <td>74</td> </tr> <tr> <td>∅ 1.00~1.09</td> <td>89</td> </tr> </tbody> </table>	<u>Wire Size(mm)</u>	<u>N (Min)</u>	∅ 0.45~0.50	30	∅ 0.60~0.70	36	∅ 0.75~0.85	58	∅ 0.85~0.95	74	∅ 1.00~1.09	89	Fasten the stripped free end of the crimped wire (90mm in length) to the tensile testing machine gripper, and apply an axial pull-off load along the wire with travel rate of 25.4 mm per minute, see Fig. 4. Record the crimping max, slack loading per EIA-364-8A. Insulation barrel opened.
<u>Wire Size(mm)</u>	<u>N (Min)</u>														
∅ 0.45~0.50	30														
∅ 0.60~0.70	36														
∅ 0.75~0.85	58														
∅ 0.85~0.95	74														
∅ 1.00~1.09	89														

Para.	Test Description	Requirements	Procedures
3.4.7 (**)	Contact Mating Force (Receptacle)	53.0 N Max.	Fasten a receptacle contact to the head of tensile testing machine, and operate the head to insert gage tab (Figure 5.) into receptacle contact with the speed at a rate of approximately 25.4 mm per minute. Record the max. contact mating force per EIA-364-05.
3.4.8 (**)	Contact Unmating Force (Receptacle)	Initial: 13N Min. At 6th. Cycle: 9.0 Min	Fasten a receptacle contact, which is mated with counterpart gage tab (Figure 5.) to the head of tensile testing machine, and operate the head to extract gage tab from the receptacle contact with the speed at a rate of approximately 25.4 mm per minute. Record the max. contact unmating force per EIA-364-05.
<b>ENVIRONMENTAL</b>			
3.4.9	Temperature life	Termination resistance of the mated wire-crimped terminals shall not be greater than 5 mΩ.	The terminals shall be connected with wire in specified size. Subject the specimens at the rate current under 90°C for 250 hours. EIA-364-17B, method B.

\*\* For part of 1930002-1 and 1930003-1, the test tab's insertion direction as Figure 6.

Table 2

Wire Size (Nominal) DIA.	Test current (A)
Ø 0.45~0.50 mm	3.00
Ø 0.60~0.70 mm	9.00
Ø 0.75~0.85 mm	11.00
Ø 0.95~1.09 mm	16.00

Table 3

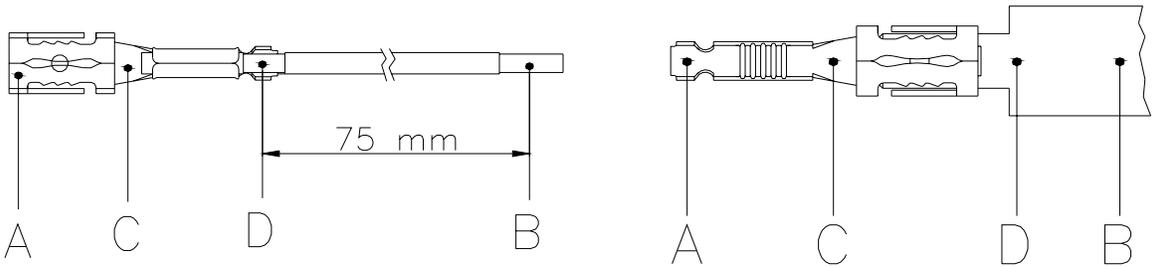


Figure 1

Figure 2

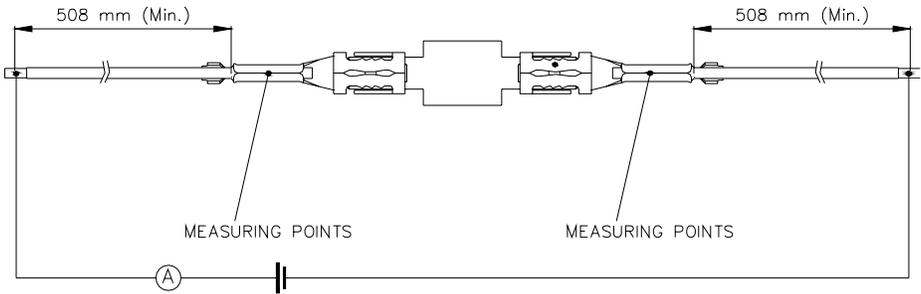
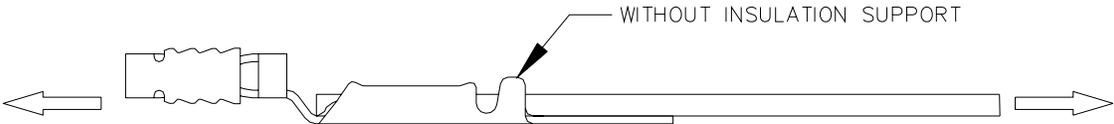


Figure 3



TENSILE STRENGTH TESTING SPEED: 25.4mm/Min.

Figure 4

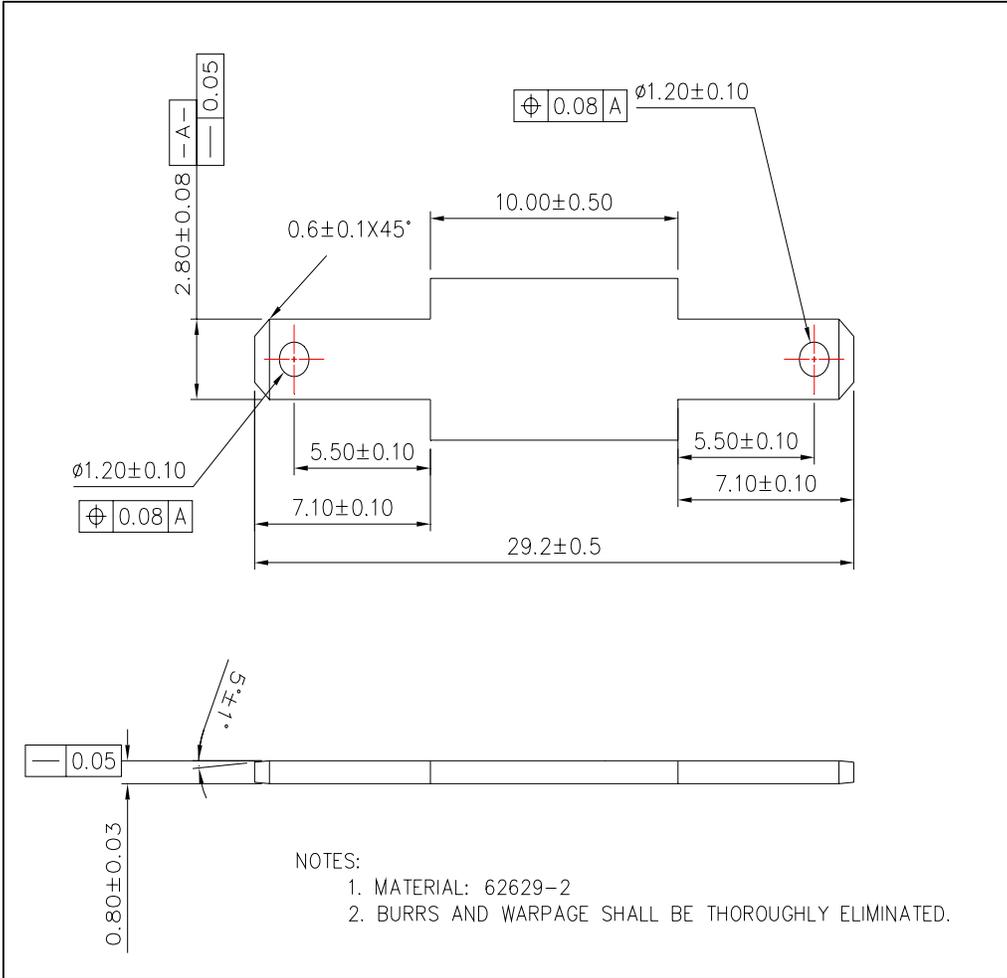


Figure 5 (Gage Tab)

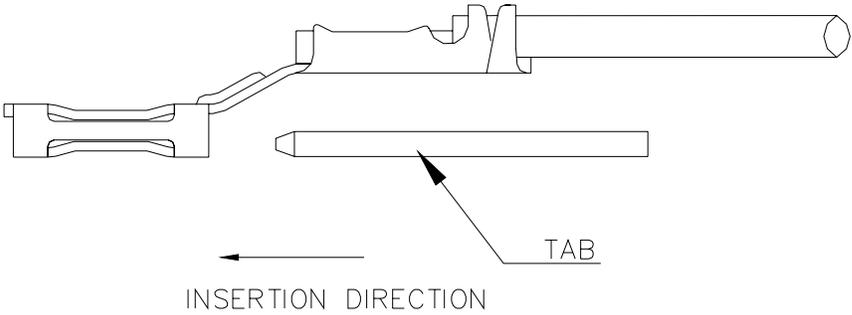


Figure 6 (For 1930002-1, 1930003-1/-2)

### 3.5 Testing Condition

- 1) Unless otherwise specified, tests shall be carried out at room temperature 15~35°C, relative humidity 45~75% and atmospheric pressure 86.7~106.7kPa.
- 2) For the test of Para. 3.4.3, Para. 3.4.7, Para. 3.4.8, a receptacle and a tab not connected with wire shall be used. If there is not specified, the wire crimped to the terminal is about 100 mm. Number of specimens for all test groups shall be as shown in Table 4.

Test Group	Number of Specimens (Pcs)
1	5 per Wire Size per P/N
2	10 mated receptacles and tabs without wiring
3	5 per Wire Size per P/N
4	5 per P/N without wiring
5	5 per Wire Size per P/N

Table 4

### 3.6 Test Sequence

Para.	Test Item	Test Group				
		1	2	3	4	5
		Test Sequence (1)				
3.4.1	Examinations of Product	1	1	1	1,4	1,5
3.4.2	Termination Resistance between terminal and crimped wire	2,5				2,4
3.4.3	Contact Resistance of mating area		2			
3.4.4	Temperature Rise	3				
3.4.5	Current cycling	4				
3.4.6	Crimp Tensile Strength			2		
3.4.7	Contact Insertion Force				2	
3.4.8	Contact Removal Force				3	
3.4.9	Temperature life					3

Note

- (1) Numbers indicated sequences in which tests are performed.

Table 5

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Qualification Testing

a. Sampling

The product specimens to be employed for the tests shall be prepared in accordance with the specified crimping procedures having correct crimp height with the use of the wires of correct sizes specified in Table 1. No specimens shall be reused unless otherwise specified. All the specimens shall be selected randomly from current production.

b. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Para.3.6 Table 5.

c. Acceptance

(1) All specimens tested in accordance with this specification shall meet all requirements listed.

(2) Failures attributed to equipment, test set up, or operator deficiencies shall not disqualify the product. When product failures occur, corrective action shall be taken and specimens resubmitted for qualification.

### 4.2 Requalification Testing

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification tests, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

### 4.3 Quality Conformance Inspection

Applicable Tyco Electronics quality inspection plans shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.