

AMP SECURITY CLASSIFICATION Customer Release NUMBER 108-5010

## Design Objectives

### .250 Series FASTIN-FASTON Tab and Receptacle

In case when "product specification" is referred to in this document, it should be read as "design objectives" for all times as applicable.

1. SCOPE

1.1 SCOPE - This specification prescribes the mechanical performance, test methods, etc. for the .250 Series FASTIN-FASTON tab and receptacle. When this specification can not be conformed to its product drawing, the product drawing shall apply.

Product Part No.: 170092-4 Receptacle  
170151-2 Tab

1.2 WIRE RANGE - Applicable for the wire ranges indicated on the respective terminal drawings.

2. MATERIAL AND FINISH

Tab and receptacle shall be fabricated from pre-tinned brass, conforming to Alloy No. 260 of ASTM B36.

3. PRODUCT DESIGN FEATURE, CONSTRUCTION & DIMENSIONS

3.1 CONSTRUCTION

Tab and receptacle have lance structure to lock on housing. Housing must conform to the respective drawings for tab and receptacle housings.

3.2 DESIGN AND DIMENSION

The terminals shall be of the design and dimensions specified on the applicable drawings.

4. PERFORMANCE

**DESIGN OBJECTIVES**

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

4.1

4.1.1 TERMINATION RESISTANCE - When tested in accordance with the test method specified in 6.1, the termination resistance in free air on "crimped area of tab + mating portion + crimped area of receptacle" shall not be greater than those values shown in Table 1.

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	D	Revised				.250 Series FASTIN-FASTON			
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TABLE 1

Wire Size	Test Current (A) DC	Termination Resistance (mV/A)	Temperature Rise (°C)
0.85 mm <sup>2</sup> (AWG #18)	7	3	20
1.25 mm <sup>2</sup> (AWG #16)	10	3	30
2.0 mm <sup>2</sup> (AWG #14)	15	3	30

4.1.2 CONTACT RESISTANCE OF MATING PORTION - When tested in accordance with the test method specified in 6.1, the contact resistance of mating portion shall not be greater than 2 mΩ

4.1.3 TEMPERATURE RISE - When tested in accordance with the test method specified in 6.1, the temperature rise of receptacle shall not be greater than those values shown in Table 1.

4.2 MECHANICAL PERFORMANCE


4.2.1 TENSILE STRENGTH OF CRIMPED AREA - When tested in accordance with the test methods specified in 6.2, the tensile strength of wire crimp in receptacle shall be greater than those shown in Table 2.

TABLE 2

Wire Size	Tensile Strength (kg)
0.85 mm <sup>2</sup> (AWG #18)	15 Min.
1.25 mm <sup>2</sup> (AWG #16)	20 "
2.0 mm <sup>2</sup> (AWG #14)	28 "

4.2.2 CONTACT INSERTION FORCE - When tested in accordance with the tests method specified in 6.3, the contact insertion force shall not be greater than 3.5 kg.

4.2.3 CONTACT EXTRACTION FORCE - When tested in accordance with the tests method specified in 6.4, the contact extraction force shall be greater than 0.5 kg.

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## 5. TEST CONDITION

5.1 ENVIRONMENTAL CONDITIONS - Unless otherwise specified, all the tests shall be performed under any combination of the following test conditions.

Temperature : 15° - 35°  
Relative Humidity : 45 to 75%  
Barometric Pressure: 650 to 800 mmHg

## 5.2 TEST SPECIMENS

5.2.1 TEST SAMPLE - The specimens used for this testing shall be the appropriate terminals crimped with recommended crimp heights on the wires specified in Table 3.

5.2.2 WIRE - The wires specified in Table 3 shall be used to conduct all tests.  
(JIC C 3406, low-voltage cables for automobiles)

TABLE 3

Wire Size Nominal mm <sup>2</sup> (AWG)	Composition of Conductor		
	Cross Sectional Area (mm <sup>2</sup> )	Dia. (mm)	No. of Strand
0.85 (18)	0.88	0.32	11
1.25 (16)	1.28	0.32	16
2.0 (14)	2.09	0.32	26

## 6. TEST METHODS

## 6.1 MILLIVOLT DROP METHOD (See Fig. 1)

The millivolt drop and contact resistance of crimped area shall be measured by Millivolt Drop Method. As shown in Fig. 1, connect D.C. Source to  $Z_1$ - $Z_2$  and supply the test current indicated in Table 1 to the wires in applicable wire size. The lead wire shall have a satisfactory length for heat dissipation.

Tab and receptacle terminated on the wire of same size shall be a unit of test sample. After the temperature rise has stabilized, the millivolt drop  $Y_1 - Y_2$  on "crimped area of receptacle + mating portion of tab and receptacle + crimped area of tab" shall be measured by means of D.C. Voltmeter.

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This measured value includes the millivolt drop of the wire of 75 mm respectively for both tab and receptacle, therefore, the millivolt drop of the wire of 150 mm must be deducted from the measured value.

The contact resistance of mating portion shall be calculated by measuring the millivolt drop of mating position  $X_1 - X_2$  with the test current of DC 4 Amps.

The temperature rise shall be measured by means of iron-constantan thermocouples set up on the position shown in Fig. 1 at the test current shown in Table 1, after the temperature becomes stabilized.

6.2 TENSILE STRENGTH OF CRIMPED AREA

Place the specimens crimped to wires of approx. 100 mm in length in a tensile-testing machine, and apply an axial load by operating machine at a rate of 100 mm per minute. The value of tensile is determined when the wire breaks or is pulled out of the wire crimp of either terminal.

6.3 CONTACT INSERTION FORCE

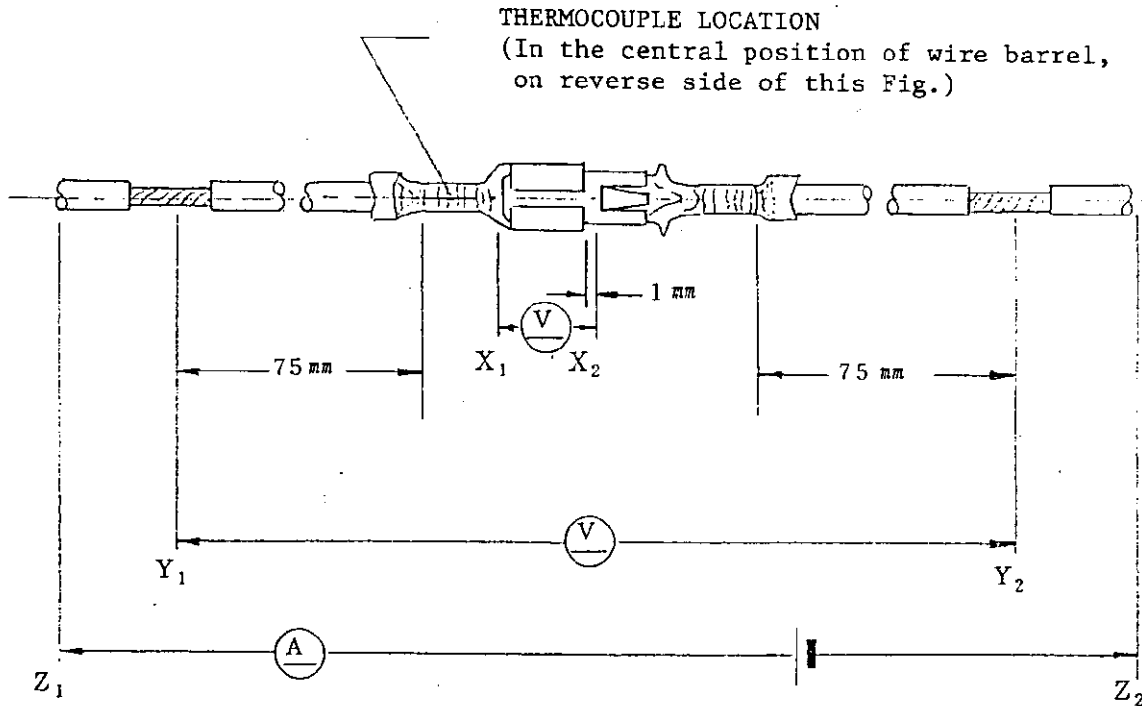
Place the contact in a tensile-testing machine, and the tests shall be conducted by operating the machine at a speed of 100 mm per minute. The value of insertion force is determined when the tab is properly inserted into receptacle.

6.4 CONTACT EXTRACTION FORCE

Place the contact in a tensile-testing machine, and the tests shall be conducted by operating the machine at a speed of 100 mm per minute. The value of extraction force is determined when the tab is pulled out of receptacle.

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Fig. 1



- $X_1$  : Between receptacle and wire barrel.
- $X_2$  : On the mating tab 1 mm from the front edge of the receptacle.
- $Y_1, Y_2$ : 75 mm from each edge of the crimped area of tab and receptacle.  
The probe area on the wire shall be soldered so as to eliminate variables in contact resistance.

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