

# PRODUCT SPECIFICATION

## 1. SCOPE

### 1.1. Content

This specification covers the performance, tests and quality requirements for the AMP\* type XII contacts assembled in the G series connector housing. These contacts are primarily intended for use where the coupling means is provided separately from the individual contacts.

### 1.2. Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

## 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. AMP Documents

- A. 109-1: General Requirements for Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
- C. Corporate Bulletin 401-76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114-10005: Contact, Type XII, Application Of
- E. 501-143: Test Report

### 2.2. Military Standard

MIL-W-16878: Wire, Electrical, Insulated, High Temperature

## 3. REQUIREMENTS

### 3.1. Design and Construction

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

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O	Release per ECN DF-5376	<i>B/B</i>	<i>12/2/91</i>	PAGE 1 OF 7	TITLE CONTACT, TYPE XII		
LTR	REVISION RECORD	APP	DATE				

### 3.2. Material

Contact: Copper, tin-lead, gold over nickel or silver over nickel plating

### 3.3. Ratings

Temperature:

- (1) -55° to 105°C for tin-lead
- (2) -55° to 125°C for gold over nickel or silver over nickel

### 3.4. Performance and Test Description

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests are performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and applicable AMP application specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination Resistance, Specified Current	1.0 milliohm maximum final Wire Size      Test Current <u>AWG</u> <u>amperes</u> 10                  25 12                  18 14                  15 16                  13	Measure resistance of mated contacts assembled in housing; AMP Spec 109-25, see Figure 3.
Termination Resistance, Dry Circuit	.5 milliohm maximum initial. .6 milliohm maximum final, gold and silver. 4.0 milliohms maximum final, tin-lead.	Subject mated contacts assembled in housing to 50 mv open circuit at 100 ma maximum, see Figure 3; AMP Spec 109-6-1.
Current Cycling	See note (a).	Subject mated contacts to 500 cycles at 125% current specified for applicable wire gage for 15 minutes "ON" and 15 minutes "OFF"; AMP Spec 109-51, cond B, method 2.

Figure 1 (cont)

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Test Description	Requirement	Procedure												
MECHANICAL														
Vibration	No discontinuities greater than 1 microsecond. See note (a).	Subject mated contacts assembled in housing to 15 G's with 100 ma current applied, See Figure 4; AMP Spec 109-21-3 for gold and silver. AMP Spec 109-21-1 for tin-lead. 8 hours in each of 3 mutually perpendicular axis.												
Physical Shock	No discontinuities greater than 1 microsecond. See note (a).	Subject mated contacts assembled in housings to 100 G's sawtooth shock pulses of 6 millisecond duration, 3 shocks in each direction along the 3 mutually perpendicular axis.												
Engaging Force	5.5 pounds maximum.	Measure force to engage at a rate of 1 inch/minute, see Figure 5; AMP Spec 109-35, engagement depth .250 inch.												
Separation Force	.25 pound minimum.	Size each contact 8 times. Measure force to separate at a rate of 1 inch/minute; AMP Spec 109-35, separation depth .250 inch.												
Crimp Tensile	<table><tr><td>Wire Size</td><td>Minimum Crimp Tensile</td></tr><tr><td><u>AWG</u></td><td><u>Pounds</u></td></tr><tr><td>10</td><td>150</td></tr><tr><td>12</td><td>130</td></tr><tr><td>14</td><td>70</td></tr><tr><td>16</td><td>50</td></tr></table>	Wire Size	Minimum Crimp Tensile	<u>AWG</u>	<u>Pounds</u>	10	150	12	130	14	70	16	50	Determine crimp tensile at a rate of 1 inch/minute; AMP Spec 109-16.
Wire Size	Minimum Crimp Tensile													
<u>AWG</u>	<u>Pounds</u>													
10	150													
12	130													
14	70													
16	50													
Durability	See note (a).	Mate and unmate contacts assembled in housing for 500 cycles (gold and silver) and 250 cycles for (tin-lead) at a maximum rate of 300 cycles per hour; AMP Spec 109-27.												

Figure 1 (cont)

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Test Description	Requirement	Procedure
ENVIRONMENTAL		
Humidity-Temperature Cycling	See note (a).	Subject mated contacts assembled in housing to 10 humidity-temperature cycles between 25° and 65°C at 95% RH, AMP Spec 109-23-4, cond B
Mixed Flowing Gas	See note (a).	Subject mated contacts assembled in housings to class III for 20 days; AMP Spec 109-85-3.
Temperature Life	See note (a).	Subject mated contacts assembled in housings to a maximum rated temperature for 240 hours; AMP Spec 109-43.

(a) Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence in Figure 2.

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### 3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Examination of Product	1,9	1,9	1,6
Termination Resistance, Specified Current			2,4
Termination Resistance, Dry Circuit	3,7	2,7	
Current Cycling			3
Temperature Rise vs Current		3,8	
Vibration	5	6	
Physical Shock	6		
Engagement Force	2		
Separation Force	8		
Durability	4		
Crimp Tensile			5
Humidity-Temperature Cycling (e)		4	
Mixed Flowing Gas (c), (d)		4	
Temperature Life		5	

(a) See Para 4.1.A.

(b) Numbers indicate sequence in which tests are performed.

(c) Precondition samples with 10 durability cycles.

(d) Gold over nickel and silver over nickel samples only.

(e) Tin-lead plated samples only.

Figure 2

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Sample Selection

G series connector housings and type XII contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production.

#### B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 2.

### 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 testing, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

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#### 4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

#### 4.4. Quality Conformance Inspection

The applicable AMP quality inspection plan will 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.

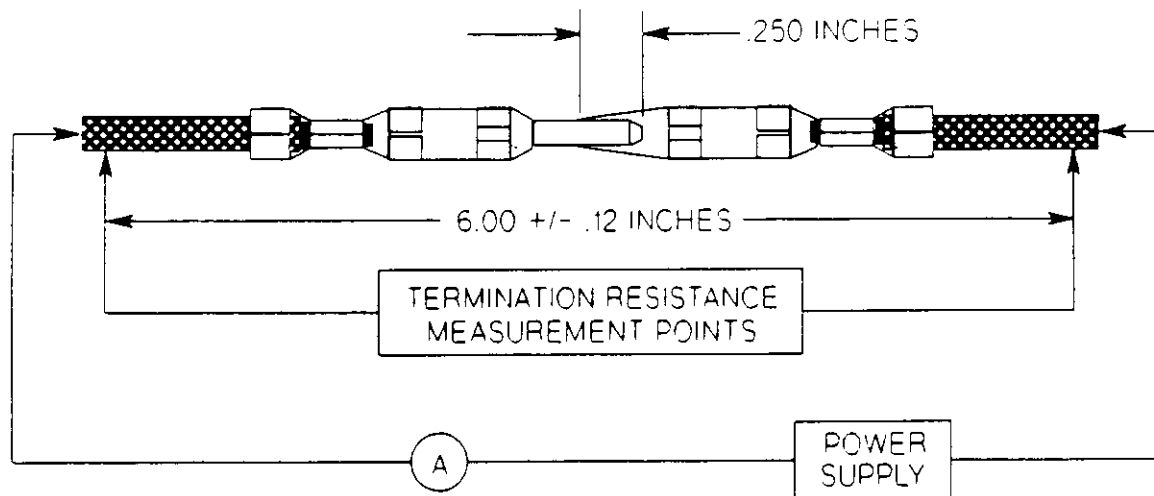
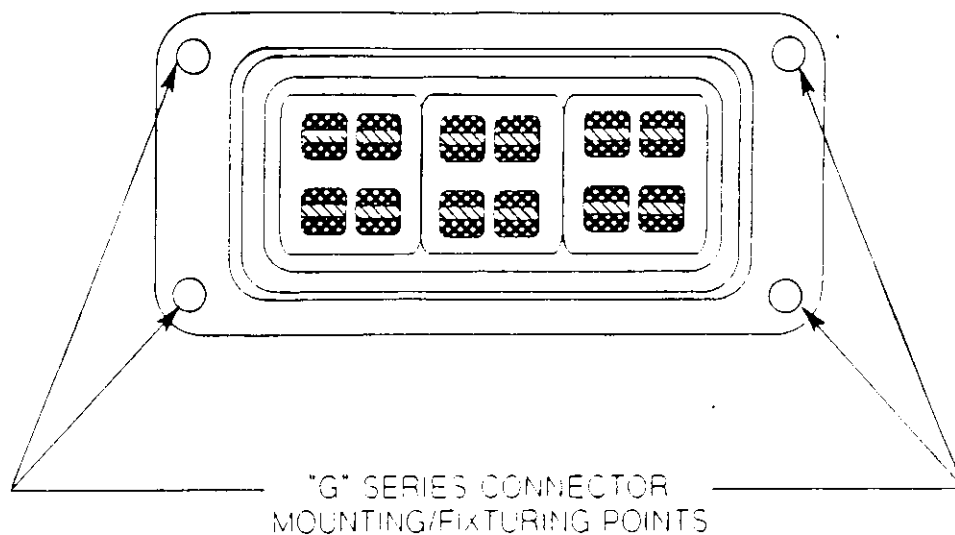


Figure 3

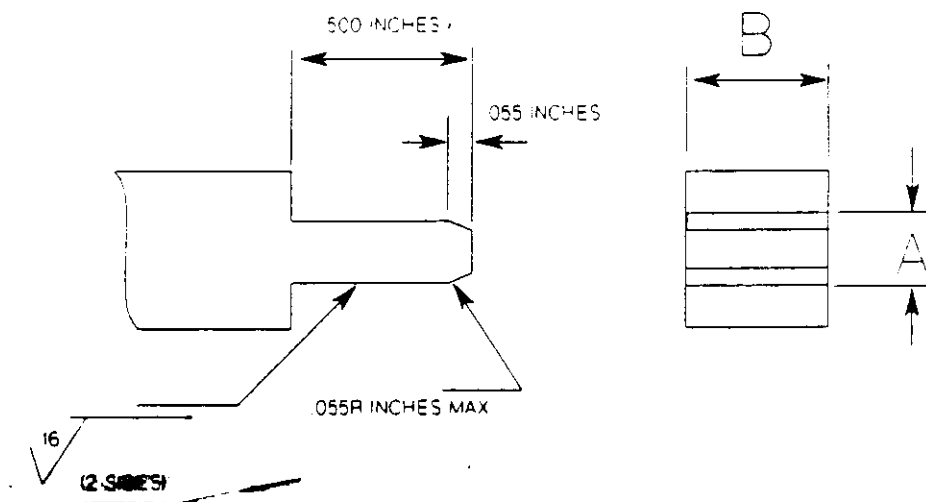
Termination Resistance Measurement Points



Note: Cable tie down. 8 inches from rear of connectors

Figure 4

#### Vibration and Physical Shock Mounting Points



Gage	A	B
1	.110 $\pm$ .0000 -.0001	.250 $\pm$ -.020
2	.100 $\pm$ .0001 -.0000	.250 $\pm$ -.020

Figure 5

#### Engagement and Separating Gages

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