

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the AMP\* line of Test Probe Receptacles. These receptacles permit a low cost method of circuit testing on printed circuit boards without interruption of operating currents.

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. 114-1050 : Application Specification
- E. 501-116 : Test Report

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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Product Code:1335

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				CHK R.Swab 1/21/83			
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B	Revise per ECN AG-1978	<i>fl</i>	8-2 90	PAGE 1 OF 9	TITLE RECEPTACLE, TEST PROBE		
LTR	REVISION RECORD	APP	DATE				

### 3.2. Material

- A. Contact: Brass with gold, silver or tin-lead plating
- B. Housing: Nylon 6/6, UL94V-2

### 3.3. Ratings

- A. Voltage: 600vac
- B. Current: See Figure 2 for applicable current carrying capability
- C. Temperature: -55° to 85°C

### 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 temperature unless otherwise specified.

### 3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing and AMP Spec 114-1050.	Visual, dimensional and functional per applicable quality inspection plan.
<b>ELECTRICAL</b>		
Termination Resistance, Dry Circuit	7 milliohms maximum initial. 20 milliohms maximum final.	Subject mated contact assembled in housing to 20 mv open circuit at 100 ma maximum, see Figure 6; AMP Spec 109-6-6.
Dielectric Withstanding Voltage	1800 vac dielectric withstanding voltage, one minute hold. 5 milliamperes maximum leakage current.	Test between contacts of adjacent unmated connector assemblies; AMP Spec 109-29-1.
Insulation Resistance	10,000 megohms minimum initial.	Test between contacts of adjacent unmated connector assemblies; AMP Spec 109-28-4.
Capacitance	1 picofarad maximum.	Test between circuits of adjacent unmated connectors; AMP Spec 109-47, cond E.
Corona	1000 volts rms minimum at 5 picocoulombs.	Measure connectors for corona at sea level simulated altitude; AMP Spec 109-40.
Temperature Rise vs Current	Maximum temperature rise at 4.75 amperes dc, 30°C. Reference Figure 2.	Measure temperature rise vs current; AMP Spec 109-45-1. See Figure 6.

Figure 1 (cont)

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Test Description	Requirement	Procedure								
<b>MECHANICAL</b>										
Vibration Sinusoidal Low Frequency	Shall not show any evidence of damage, cracking or chipping.	Subject unmated connector to 10-55-10 Hz traversed in 1 minute at 0.06 inches total excursion; 2 hours in each of 3 mutually perpendicular planes; AMP Spec 109-21-1. Mount per Fig. 5								
Physical Shock	Shall not show any evidence of damage, cracking or chipping.	Subject unmated connector to 50 G's sawtooth shock pulses of 11 millisecond duration; 3 shocks in each direction applied along the 3 mutually perpendicular planes total 18 shocks; AMP Spec 109-26-7. Mount per Fig. 5.								
Contact Engaging Force	100 ounces maximum per contact.	Measure force using gage A, as indicated in Figure 7; AMP Spec 109-35, engagement depth .400.								
Contact Separating Force	16 ounces minimum per contact initially. 3 ounces minimum per contact final.	Size 3 times using gage A, as indicated in Figure 7, insert gage B and measure force to separate; AMP Spec 109-35, separation depth .400.								
Durability	See note (a).	Mate and unmate using gage A, see Figure 7, for number of cycles listed at a maximum rate of 600 cycles/hour; AMP Spec 109-27. <table border="1" data-bbox="1087 1346 1445 1467"> <thead> <tr> <th>Plating</th> <th>Cycles</th> </tr> </thead> <tbody> <tr> <td>Gold</td> <td>100</td> </tr> <tr> <td>Silver</td> <td>25</td> </tr> <tr> <td>Tin-Lead</td> <td>25</td> </tr> </tbody> </table>	Plating	Cycles	Gold	100	Silver	25	Tin-Lead	25
Plating	Cycles									
Gold	100									
Silver	25									
Tin-Lead	25									
Solderability	Solderable area shall have a solder coverage of 95% minimum.	Subject contacts to solderability; AMP Spec 109-11-5.								
Figure 1 (cont)										
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Test Description	Requirement	Procedure	
Resistance to Soldering Heat	No physical damage.	Subject product mounted on printed circuit board to solder bath at 280°C for 30 seconds; AMP Spec 109-63-5.	
ENVIRONMENTAL			
Thermal Shock	See note (a).	Subject unmated connector to 5 cycles between -55° and 85°C; AMP Spec 109-22	
Humidity-Temperature Cycling	See note (a).	Subject unmated connector to 10 humidity-temperature cycles between 25° and 65°C at 95% RH; AMP Spec 109-23, method III, cond B, with low frequency vibration, and cold shock at -10°C	
Industrial Mixed Flowing Gas	See note (a).	Subject unmated connector to environmental class II for 20 days; AMP Spec 109-85-2.	
Temperature Life	See note (a).	Subject mated connectors to temperature life; AMP Spec 109-43, test level 3, test duration A.	
<p>(a) Shall meet visual requirements, show no physical damage, and shall meet requirements of additional tests as specified in the Test Sequence in Figure 3.</p> <p style="text-align: center;">Figure 1 (end)</p>			
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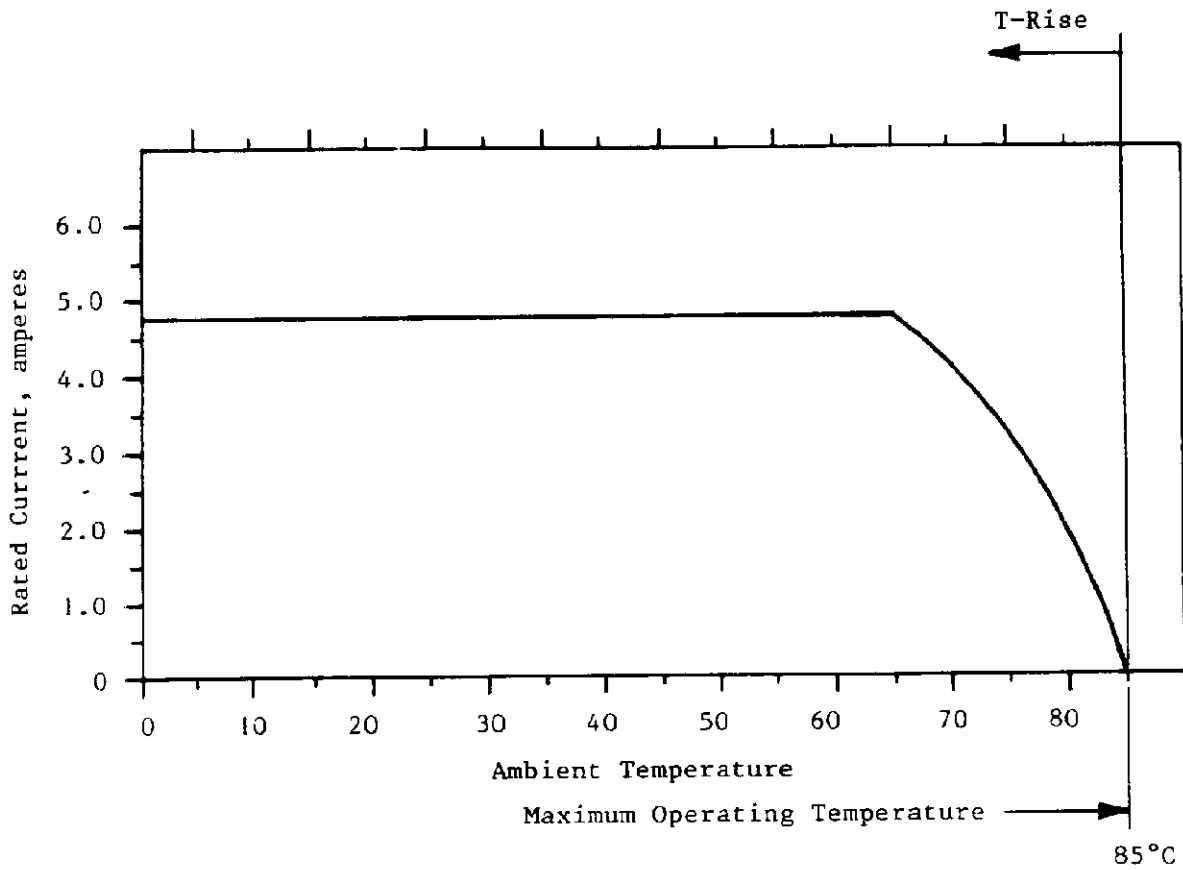


Figure 2  
Current Verses Temperature Rating

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### 3.6. Product Qualification and Requalification Tests and Sequences

Test or Examination	Test Group (a)					
	1(f)	2(d)	3	4	5	6
	Test Sequence (c)					
Examination of Product	1,9	1,9	1,9	1,10	1,4	1,3
Termination Resistance, Dry Circuit	2,7	2,7	3,7	3,7		
Dielectric Withstanding Voltage				8		
Insulation Resistance				2,6		
Capacitance					2	
Corona				9		
Temperature Rise Vs Current	3,8	3,8				
Vibration	4(b)	4(b)	5			
Physical Shock			6			
Contact Engaging Force			2			
Contact Separating Force			8			
Durability			4			
Solderability					3	
Resistance to Soldering Heat						2
Thermal Shock				4		
Humidity-Temperature Cycling	5(e)			5		
Industrial Mixed Flowing Gas		5(e)				
Temperature Life	6	6				

- (a) See Para 4.1.A
- (b) Discontinuities shall not be measured. Energize at the 18°C level for 100% loading as described in AMP Specification 109-151.
- (c) Numbers indicate sequence in which tests are performed
- (d) This test group is only for gold and silver platings
- (e) Precondition samples with 10 cycles durability
- (f) This test group is only for tin-lead plating

Figure 3

### 3.7. Product Retention Tests and Sequences

Test or Examination	Test Group (a)		
	1	2(e)	3(c)
	Test Sequence (b)		
Examination of Product	1,8	1,7	1,7
Termination Resistance, Dry Circuit		3,6	3,6
Dielectric Withstanding Voltage	3,7		
Insulation Resistance	2,6		
Contact Engaging Force		2	2
Contact Separating Force		4	4
Thermal Shock	4		
Humidity-Temperature Cycling	5	5(d)	
Industrial Mixed Flowing Gas			5(d)

- (a) See Para 4.1.A
- (b) Numbers indicate sequence in which tests are performed
- (c) This test group is only for gold and silver platings
- (d) Precondition samples with 10 cycles durability
- (e) This test group is only for tin-lead plating

Figure 4

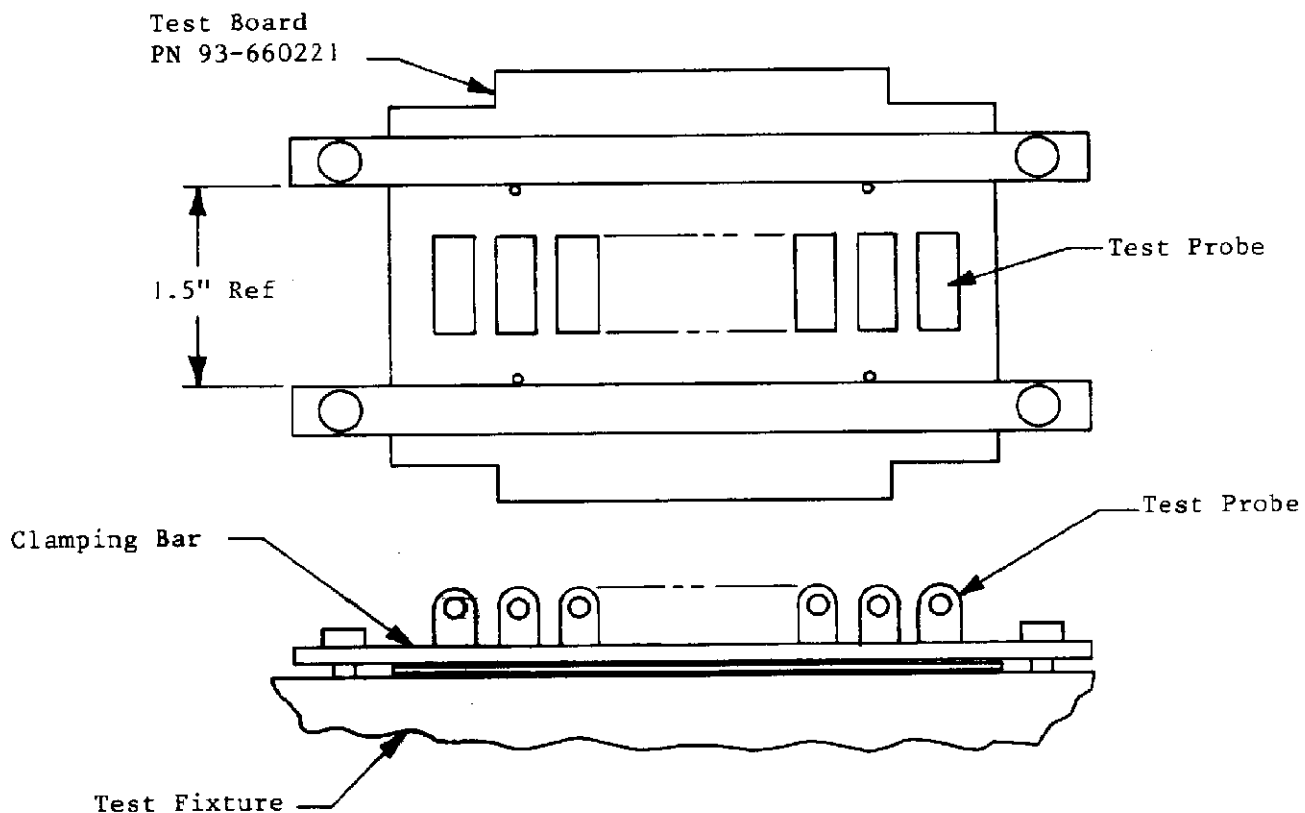


Figure 5  
Mounting and Clamping Location for  
Vibration and Physical Shock

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#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Sample Selection

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test groups shall consist of 5 test probe receptacles minimum of each currently available style and plating

###### B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Figure 3.

##### 4.2. Retention of Qualification

If, in a five-year period, no changes to the product or process occur, the product shall be subjected to the 3 groups of the testing described in the test sequence, see Figure 4. Justification for exceeding this time limit must be documented and approved by the division manager.

##### 4.3. 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.

##### 4.4. 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.

##### 4.5. 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.

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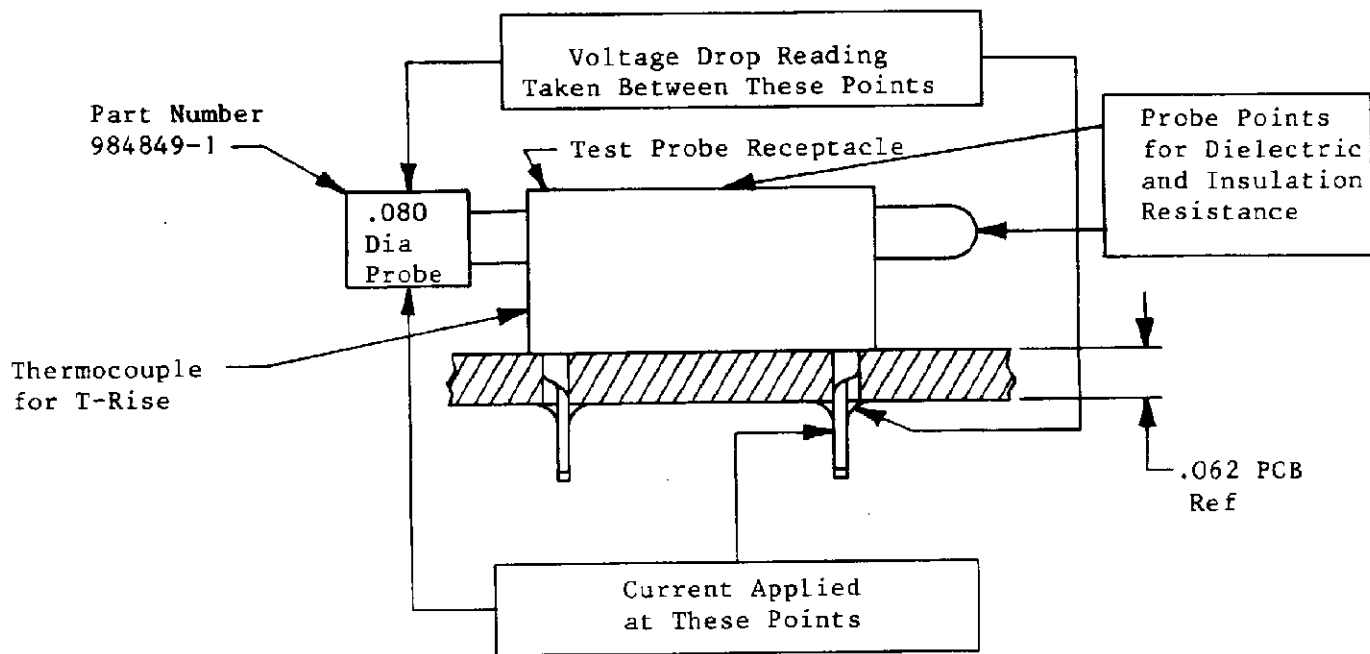
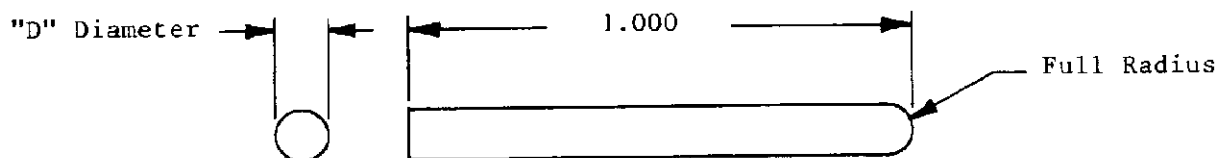


Figure 6  
Resistance and Temperature Measurement Points



Gage	Diameter "D"	Part Number
A	+ .0000	730191-2
	.0810	
B	- .0005	730191-1
	+ .0005	
	.0790	
	- .0000	

Note:  
Do not change size or finish diameter, where spherical radius blends.  
Precision wire class B

Figure 7  
Engaging and Separating Gages

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