PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the AMP* BNC printed circuit board straight and right angle jack connectors

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. 501-132 : Test Report

2.2. Military Specification

MIL-C-17: Cables, Radio Frequency, Flexible and Semirigid, General Specification for

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:3133

LTR	REVISION RECORD	APP	DATE
0	Release per ECN AJ 5574	[signature]	6/24/91

DR [signature] 6/13/91
CHK Andrew Galvany 6/17/91
APP [signature]

AMP Incorporated
Harrisburg, PA 17105-3608

NO 108-12078 REV 0 LOC B

TITLE CONNECTOR, PRINTED CIRCUIT BOARD, BNC, STRAIGHT AND RIGHT ANGLE JACKS

3.2. Material

A. Contact: Phosphor bronze or beryllium copper, bright tin/lead over nickel, gold over nickel, or silver plating
B. Shell: Zinc, die cast, bright nickel or bright copper cyanide
C. Insulator: Thermoplastic
D. Dielectric: Polypropylene or polytetrafluoroethylene

3.3. Ratings

A. Operating Temperature: -55° to 85°C
B. Nominal Impedance: 50 ohms
C. Frequency Range: 0 to 4 GHz
D. Operating Voltage: 500 volts (rms) sea level

3.4. Performance and Test Description

Connectors shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of Product	Meets requirements of product drawing.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination Resistance,	12 milliohms maximum initial, 16 milliohms maximum final for center contact. 6 milliohms maximum initial, 9 milliohms maximum final for outer contact.	Measure potential drop of mated contacts at 100 milliamperes dc, see Figure 3; AMP Spec 109-6-1.
Dielectric Withstanding Voltage	1500 vac (rms) dielectric withstanding voltage, one minute hold. No evidence of breakdown or flashover.	Test between adjacent contacts of unmated jacks; AMP Spec 109-29-1.
Insulation Resistance	5000 megohms minimum.	Test between center contact and outer shell of unmated jack; AMP Spec 109-28-4.

Figure 1 (cont)

Test Description	Requirement	Procedure
R.F.High Potential	No evidence of dielectric breakdown or flashover.	Apply a frequency stabilized R.F. potential of 1000 volts (rms) and 5MHz between center contact and body of mated connector, hold for 1 minute. Sine wave output shall have minimum harmonic content; AMP Spec 109-29-1.
Permeability	Shall not exceed 2 μu.	Measure magnetic permeability using 2 μu pellet; AMP Spec 109-88.
	MECHANICAL	
Vibration	No discontinuities greater than 1 microsecond. No physical damage.	Subject mated connectors to 10-55-10 Hz traversed in 1 minute at .06 inch total excursion, 2 hours in each of 3 mutually perpendicular planes, see Figure 5; AMP Spec 109-21-1.
Physical Shock	No discontinuities greater than 1 microsecond. No physical damage.	Subject mated connectors to 100 G's sawtooth in 6 milliseconds; 3 shocks in each direction applied along the 3 mutually perpendicular planes, total 18 shocks, see Figure 5; AMP Spec 109-26-9
Contact Engaging Force	32 ounces maximum	Measure force to engage using gage 1, as indicated in Figure 4; AMP Spec 109-35, engagement depth .125 inch.
Contact Separating Force	2 ounces minimum	Size 3 times using gage 1, as indicated in Figure 4, insert gage 2 and measure force to separate; AMP Spec 109-35, separation depth .125 inch.

Figure 1 (cont)

Test Description	Requirement	Procedure
Durability	16 milliohms maximum center contact; 6 milliohms maximum for outer contact termination resistance; dielectric withstanding voltage.	Mate and unmate connector assemblies for 500 cycles at a maximum rate of 12 cycles per minute; AMP Spec 109-27
Connector to Board Retention	No evidence of mechanical failure, breaking or loosening of parts or electrical discontinuities	Apply an axial force of 30 pounds to connector jack in direction away from the board hole 30 seconds. Test for electrical continuity using a simple low voltage lamp circuit.
Solderability	Tabs shall have a solder coverage of 95% minimum.	Subject connectors to solderability; AMP Spec 109-11-2.
ENVIRONMENTAL		
Thermal Shock	See note (a).	Subject unmated jacks to 5 cycles between -55° and 85°C; AMP Spec 109-22
Humidity-Temperature Cycling	See note (a).	Subject mated connectors to 10 humidity-temperature cycles between 25° and 65°C at 95% R.H; AMP Spec 109-23-3, cond B.
Industrial Mixed Flowing Gas	See note (a).	Precondition connectors to 10 durability cycles. Subject mated connectors to environmental class III for 20 days; AMP Spec 109-85-3.
Temperature Life	See note (a).	Subject mated connectors to temperature life; AMP Spec 109-43, test level 55° C for 96 hours.

Figure 1 (end)

3.6. Product Qualification and Requalification Tests and Sequences

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Examination of Product	1,10	1,5	1,5	1,8	1
Termination resistance	3,7	2,4	2,4		
Dielectric Withstanding Voltage				3,7	
Insulation Resistance				2,6	
R.F.High Potential					2
Permeability					3
Vibration	5				
Physical Shock	6				
Contact Engaging Force	2				
Contact Separating Force	8				
Durability	4				
Connector to Board Retention	9				
Solderability					4
Thermal Shock				4	
Humidity-Temperature Cycling				5	
Industrial Mixed Flowing Gas			3		
Temperature Life		3			

(a) See Para 4.1.A
(b) Numbers indicate sequence in which tests are performed

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Sample Selection

Connectors shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Test group 1-5 except test group 4 shall consist of 10 jacks and 10 plugs. The jacks shall be mounted on .125 inch thick printed circuit boards. The plugs shall be crimped to 12 inch lengths of RG-58 c/u coaxial cable with equalizers placed at the center conductor and braid as shown in Figure 4. All coaxial cable shall conform to MIL-C-17.

B. Test Sequence

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

4.2. Requalification Testing

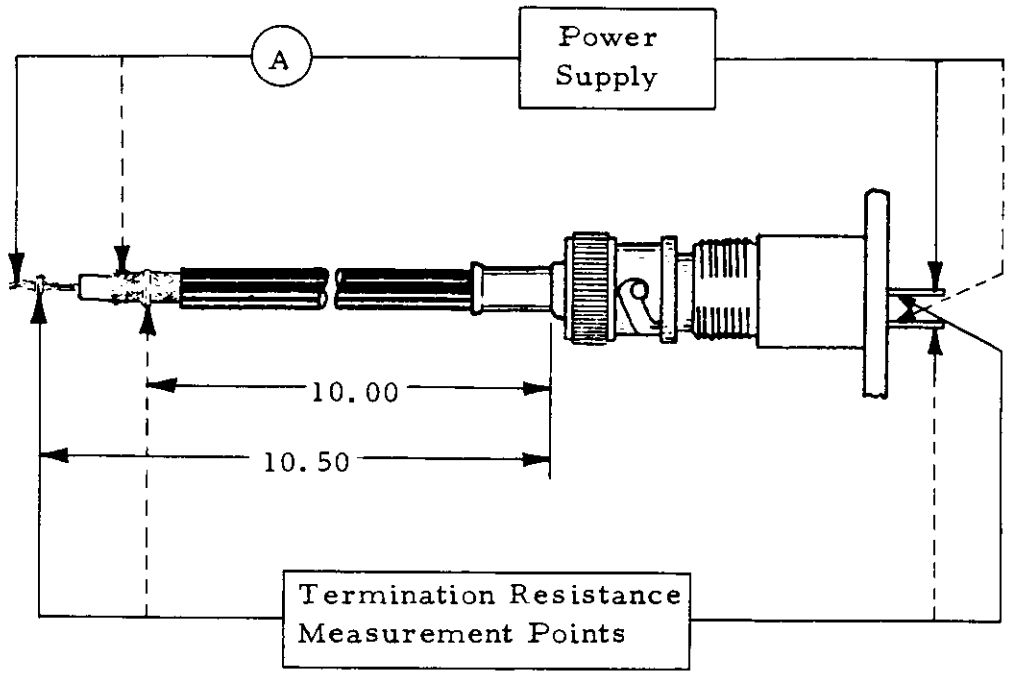
If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality, and reliability engineering.

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 resubmittal2

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.



Straight Jack

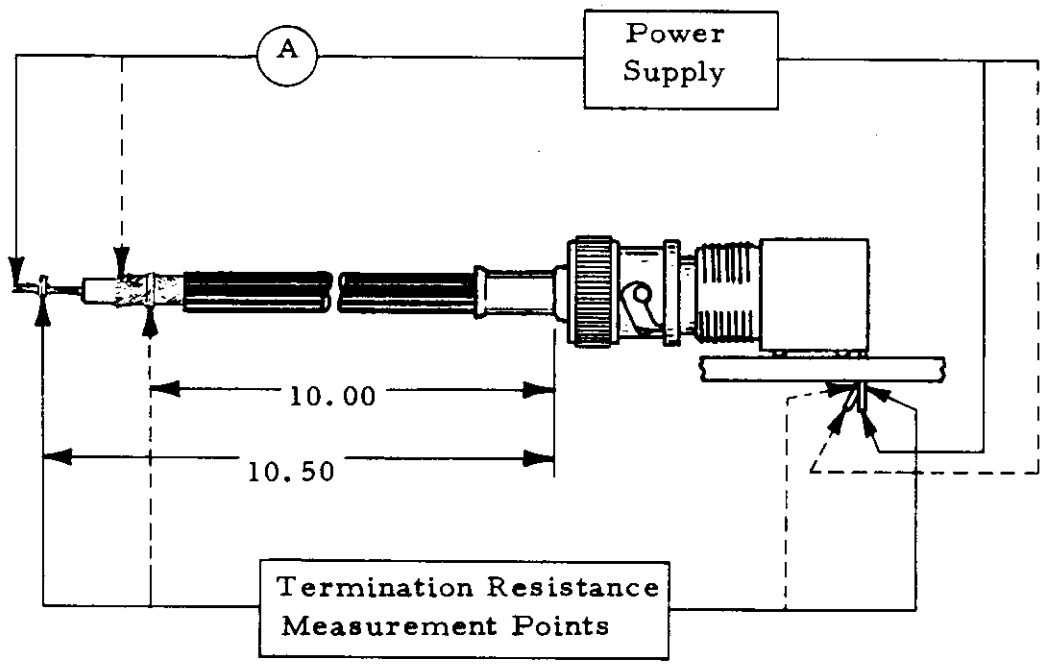
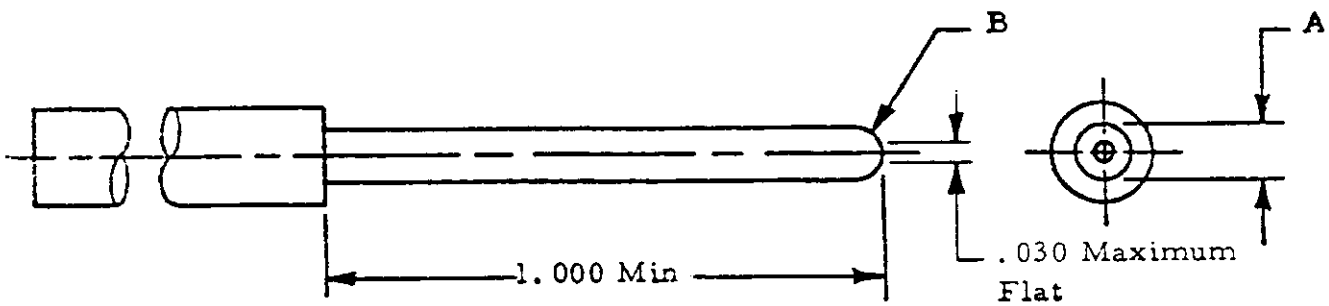


Figure 3
Termination Resistance Measurement Points, Typical



Gage Number	A
1	.0540 +.0000 -.0001
2	.0520 +.0001 -.0000

Figure 4
Engaging and Separating Gages

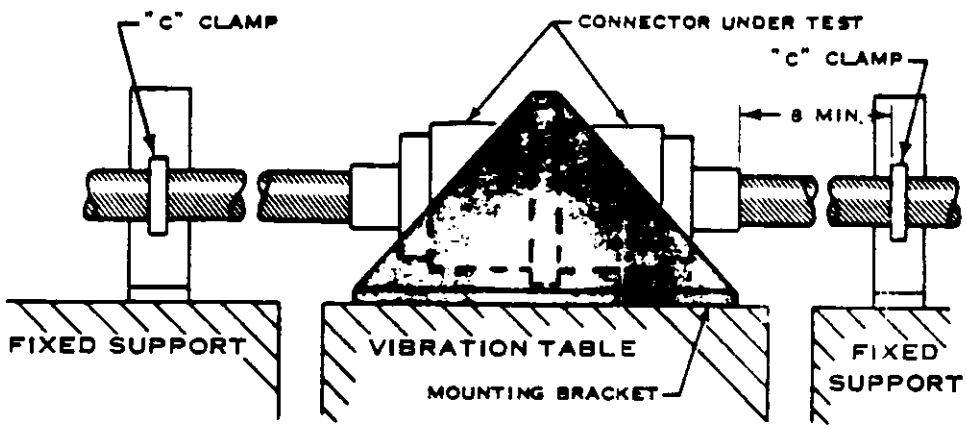


Figure 5
Vibration and Shock