

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP-LATCH* card edge, round conductor flat cable conductor assembly, bifurcated, single beam and split beam contacts.

1.2. Connector Assembly Definition

Card Edge: Card edge contacts in housings crimped on .050 inch centerline ribbon cable having #30, 28 and 26 solid or #28 stranded AWG conductors. Complete assemblies are mated to .062 inch printed circuit boards with .100 inch centerline conductor traces.

1.3. Qualification

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

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the document applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and 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. 114-40005: Application Specification
- E. 501-139, Rev A: Test Report

3. REQUIREMENTS

3.1. Design and Construction

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

* Trademark

Product Code: 5135

CONTROLLED DOCUMENT This specification is a controlled document per AMP Specification 102-21. It is subject to change and Corporate Standards should be contacted for latest revision.				DR B. Beckley 13 Jan 94		AMP AMP Incorporated Harrisburg, PA 17105-3608	
				CHK K. Dowhower 17 Jan 94			
APP D. Little 17 Feb 94		NO 108-46000		REV A	LOC B		
A	Revised per EC 0020-005-94	BHB	16 FEB 94	PAGE	TITLE		
LTR	REVISION RECORD	APP	DATE	1 OF 7	CONNECTOR, AMP-LATCH, FLAT CABLE, ROUND CONDUCTOR, CARD EDGE		

3.2. Material

- A. Contacts: Phosphor bronze
- B. Housings: Black thermoplastic, UL94V-0

3.3. Ratings

- A. Voltage:
 - (1) Rated to 250 volts alternating current or direct current per Underwriters Laboratories
 - (2) Rated to 30 volts alternating current or direct current per CSA
- B. Current: 1 ampere maximum single circuit, see Para 3.5.(b)
- C. Temperature: -65 to 105°C, gold duplex plated contacts, see Para 3.5.(c)

3.4. Performance and Test Description

Product is designed to meet 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 AMP Spec 114-40005.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, specified current.	15 milliohms maximum. See Note (b).	Measure potential drop of connectors mated to test board at 1 ampere maximum. See Figure 3. AMP Spec 109-25.
Termination resistance, dry circuit.	15 milliohms maximum.	Subject connectors to 50 mv open circuit at 100 ma maximum. See Figure 3. AMP Spec 109-6-1.
Dielectric withstanding voltage.	1 kvac (rms) at sea level. 1 minute hold. No breakdown or flashover. 2 milliamperes maximum leakage current.	Test between adjacent contacts of unmated connectors. AMP Spec 109-29-1.
Insulation resistance, unterminated.	5000 megohms minimum initial. 100 megohms minimum final.	Test between adjacent contacts of unmated connectors. AMP Spec 109-28-4.

Figure 1 (cont)

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Test Description	Requirement	Procedure
MECHANICAL		
Vibration.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors to 9 G's rms. See Figure 4. AMP Spec 109-21-5, Test level C, Duration 20 minutes.
Physical shock.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors to 75 G's sawtooth shock pulses of 6 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4. AMP Spec 109-26-8.
Mating force.	16 ounces maximum per contact pair.	Measure force necessary to mate connector assembly with test board. Calculate force per contact by dividing connector mating force by 1/2 number of contacts. See Figure 5. AMP Spec 109-42, Condition A.
Unmating force.	.75 ounce minimum per contact pair.	Measure force necessary to unmate connector assembly from test board. Calculate force per contact pair by dividing connector unmating force by 1/2 number of contacts. AMP Spec 109-42, Condition A.
Durability.	See Note (a).	Mate and unmate connector assemblies for 100 cycles for 30 μ gold duplex, 50 cycles for 15 μ gold duplex and 15 cycles for 8 μ gold duplex at maximum rate of 150 cycles per hour. AMP Spec 109-27.

Figure 1 (cont)

Test Description	Requirement	Procedure
ENVIRONMENTAL		
Thermal shock.	See Note (a). See Note (c).	Subject unmated connectors to 5 cycles between -65 and 105°C. AMP Spec 109-22.
Humidity-temperature cycling.	See Note (a).	Subject unmated connectors to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. AMP Spec 109-23-4, Condition B.
Mixed flowing gas.	See Note (a).	Subject mated connectors to environmental class II for 14 days. AMP Spec 109-85-2.
Temperature life.	See Note (a).	Subject mated connectors to temperature life at 105°C for 1000 hours. AMP Spec 109-43.

- (a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in Test Sequence in Figure 2.
- (b) Maximum current that can be carried in any one given connector is limited by maximum working temperature of housing material and influenced by wire size, conductor size (number of cavities operating) and ambient temperature in which connector is operating.
- (c) Unless limited by temperature rating of cable used.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)				
	1	2	3	4	5
	Test Sequence (b)				
Examination of product	1,9	1,8	1,5	1,5	1,6
Termination resistance, specified current					5
Termination resistance, dry circuit	3,7		2,4	2,4	2,4
Dielectric withstanding voltage		3,7			
Insulation resistance		2,6			
Vibration	5				
Physical shock	6				
Mating force	2				
Unmating force	8				
Durability	4				
Thermal shock		4			
Humidity-temperature cycling		5	3		
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

Connector housings and contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups 1, 3, 4 and 5 shall consist of a minimum of 2 connectors each. 15 contacts in each connector shall be randomly selected and identified. These contacts shall be used for all measurements unless otherwise specified. Test group 2 shall consist of a minimum of 6 connectors. All contacts shall be used for all measurements. All connectors shall be terminated to ribbon cable in accordance with AMP Specification 114-40005 unless otherwise specified.

B. Test Sequence

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

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4.2. Requalification Testing

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

4.3. Acceptance

Acceptance is based on verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify 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

Applicable AMP quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.

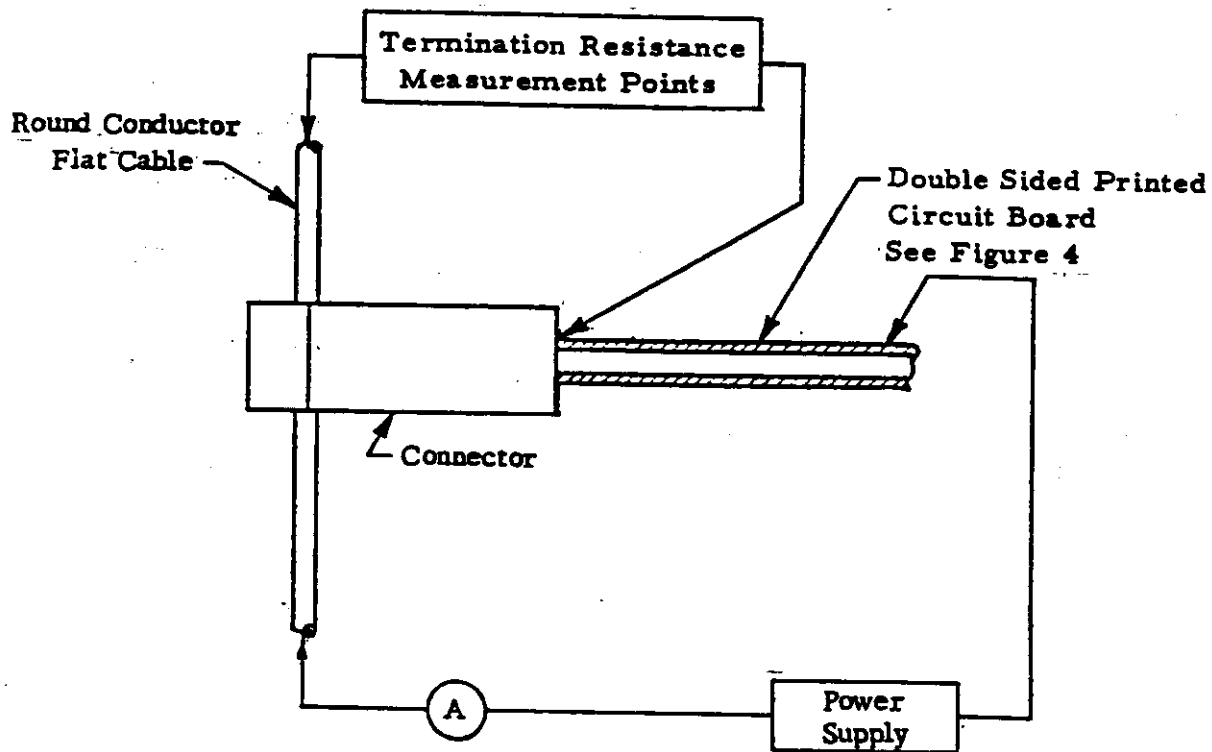


Figure 3
Termination Resistance Measurement Points

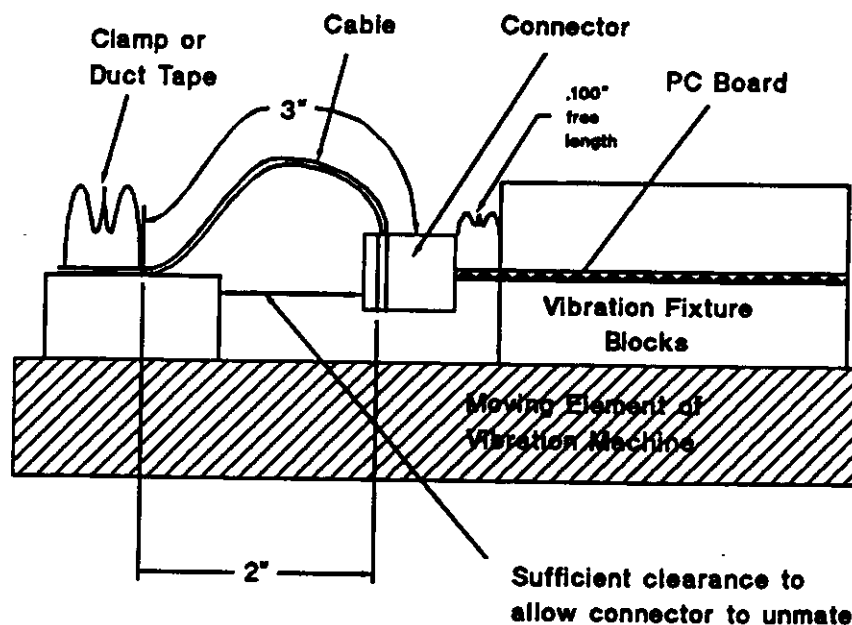
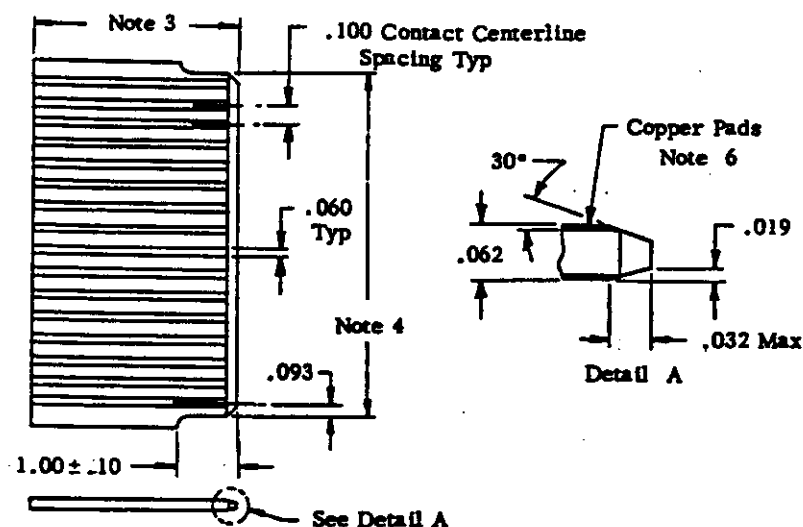


Figure 4
Vibration & Physical Shock Mounting



- Note: (1) Tolerances: $\pm .005$ unless otherwise specified
 (2) Material: Glass epoxy FR-4
 (3) Number of contacts shall be same as on corresponding printed circuit connector.
 (4) Printed wiring shall be identical on both sides.
 (5) Pads shall be 2 ounce copper, surface finish 20μ before plating. Gold plate pads .000030 minimum thick per MIL-G-45204, Type I, Grade C over .000050 thick nickel.
 (6) All dimensions are in inches.

Figure 5
Printed Circuit Test Board