PRODUCT SPECIFICATION

## 1. SCOPE

### 1.1. Content

This specification covers performance, tests and quality requirements for AMP DURABAK* header connector. The header consists of .025 square posts in plastic shrouded housings and is mateable to AMP-LATCH* receptacles, PRO-G* receptacles or similar connectors with a .100 X .100 grid mating face and .576 latch height.

### 1.2. 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. 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. 501-197: Test Report

## 3. REQUIREMENTS

### 3.1. Design and Construction

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

### 3.2. Materials

A. Contact: Phosphor bronze, gold over nickel plating on mating end, tin over nickel on solder tail end
B. Housing: LCP thermoplastic, UL 94V-0

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Product Code: 4863



| CONTROLLED DOCUMENT<br>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 Brent A. Beckley 11/12/92<br>CHK [illegible] 11/16/92<br>APP [illegible] 11-17-92 | AMP Incorporated<br>Harrisburg, PA 17105-3608 | | |
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| | | NO 108-1369 | REV 0 | LOC B |
| 0 Released per ECN CF-1013 — B+B — 11/23/92 | PAGE 1 OF 7 | TITLE HEADER, AMP DURABAK | | |
| LTR REVISION RECORD — APP — DATE | | | | |

3.3. Ratings

A. Voltage: 240 volts alternating current
B. Current: Signal rated only
C. Temperature: -65 to 105°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. | Visual, dimensional and functional per applicable quality inspection plan. |
| ELECTRICAL | | |
| Termination resistance, dry circuit. | 15 milliohms maximum. | Subject mated contacts assembled in housing to 50 mv open circuit at 100 ma. See Figure 6. AMP Spec 109-6-1. |
| Dielectric withstanding voltage. | 1.0 kvac dielectric withstanding voltage. 1 minute hold. No breakdown or flashover. | Test between adjacent contacts of unmated connector assemblies. AMP Spec 109-29-1. |
| Insulation resistance. | 5000 megohms minimum. | Test between adjacent contacts of unmated connector assemblies. AMP Spec 109-28-4. |
| MECHANICAL | | |
| Vibration, sinusoidal, high frequency. | No discontinuities greater than 1 microsecond. See Note (a). | Subject mated connectors to 15 G's, between 10-2000 Hz traversed in 20 minutes. 4 hours in each of 3 mutually perpendicular planes. See Figure 3. AMP Spec 109-21-3. |

Figure 1 (cont)

| Test Description | Requirement | Procedure |
|---|---|---|
| Physical shock. | No discontinuities greater than 1 microsecond. See Note (a). | Subject mated connectors to 100 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 3. AMP Spec 109-26-9. |
| Mating force. | 12 pounds maximum. | Measure force necessary to mate connector assemblies with locking latches a distance of .125 inch from point of initial contact using free floating fixtures at rate of .5 inch per minute. AMP Spec 109-42, Condition A. |
| Unmating force. | 6 pounds minimum. | Measure force necessary to unmate connector assemblies with locking latches removed or released, at rate of .5 inch per minute. AMP Spec 109-42, Condition A. |
| Contact retention, header only. | Contacts shall not move or dislodge a distance greater than .125 inch. | Apply axial load of 2 pounds to contacts in axial direction opposite insertion. See Figure 4, AMP Spec 109-30. |
| Durability. | See Note (a). | Mate and unmate connector assemblies for 100 cycles at maximum rate of 300 cycles per hour. AMP Spec 109-27. |
| Solderability. | Solderable area shall have minimum of 95% solder coverage. | Subject contacts to solderability. AMP Spec 109-11-1. |
| Incompatibly keyed. | 25 pounds minimum. | Determine force necessary to mate connectors when keys are not compatible. |
| Connector retention, ejection style, riveted edge. | 20 pounds minimum axial. 10 pounds minimum radial. 11 pounds minimum radial on latch. See Note (a). | Apply required force to mated connector along nominal axis of cable up to 90° radially to axis from where cable exits strain relief. See Figure 5. |

Figure 1 (cont)

| Test Description | Requirement | Procedure |
|---|---|---|
| ENVIRONMENTAL | | |
| Thermal shock. | See Note (a). | Subject mated connectors to 5 cycles between -65 and 105°C. AMP Spec 109-22. |
| 4-4-16 humidity. | See Note (a). | Subject mated connectors to 50 cycles humidity. AMP Spec 109-1006-1. |
| Mixed flowing gas. | See Note (a). | 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 at 105°C for 500 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.

Figure 1 (end)

3.6. Product Qualification and Requalification Tests and Sequences

| Test or Examination | Test Group (a) | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| | Test Sequence (b) | | | | | |
| Examination of product | 1,9 | 1,4 | 1,4 | 1,5 | 1,5 | 1,8 |
| Termination resistance, dry circuit | 3,7 | | | 2,4 | 2,4 | |
| Dielectric withstanding voltage | | | | | | 3,7 |
| Insulation resistance | | | | | | 2,6 |
| Vibration | 5 | | | | | |
| Physical shock | 6 | | | | | |
| Mating force | 2 | | | | | |
| Unmating force | 8 | | | | | |
| Contact retention, header only | | 2 | | | | |
| Durability | 4 | | | | | |
| Solderability | | | 3 | | | |
| Incompatibly keyed | | 3 | | | | |
| Connector retention, ejection style | | | 2 | | | |
| Thermal shock | | | | | | 4 |
| 4-4-16 humidity | | | | | | 5(c) |
| Mixed flowing gas | | | | 3 | | |
| Temperature life | | | | | 3 | |

(a) See Figure 4.1.A.
(b) Numbers indicate sequence in which tests are performed.
(c) Connector shall be mated/unmated for 8 cycles prior to exposure.

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. All test groups shall consist of 5 samples. Test group 3 is composed of ejection style, riveted latch only.

#### 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 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.

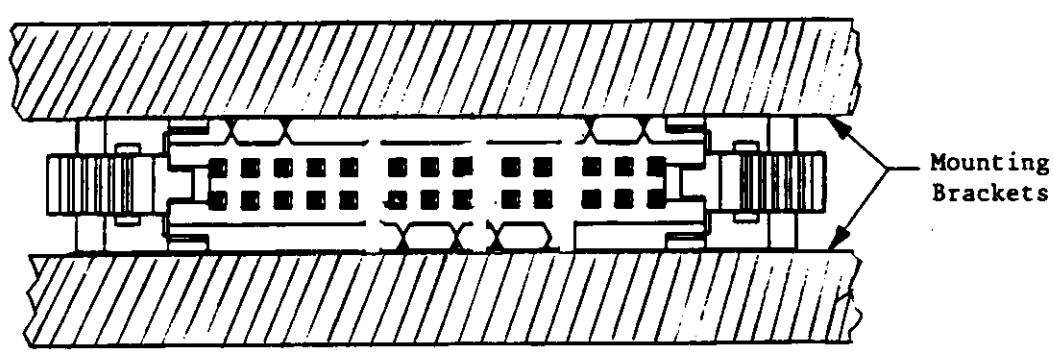


Figure 3
Mounting & Clamping Location For Vibration & Physical Shock

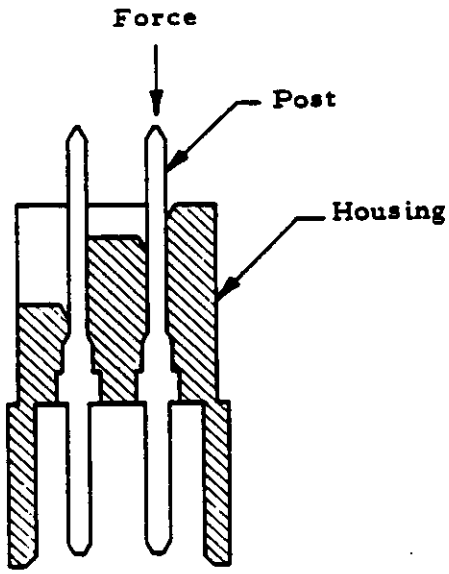


Figure 4
Contact Retention

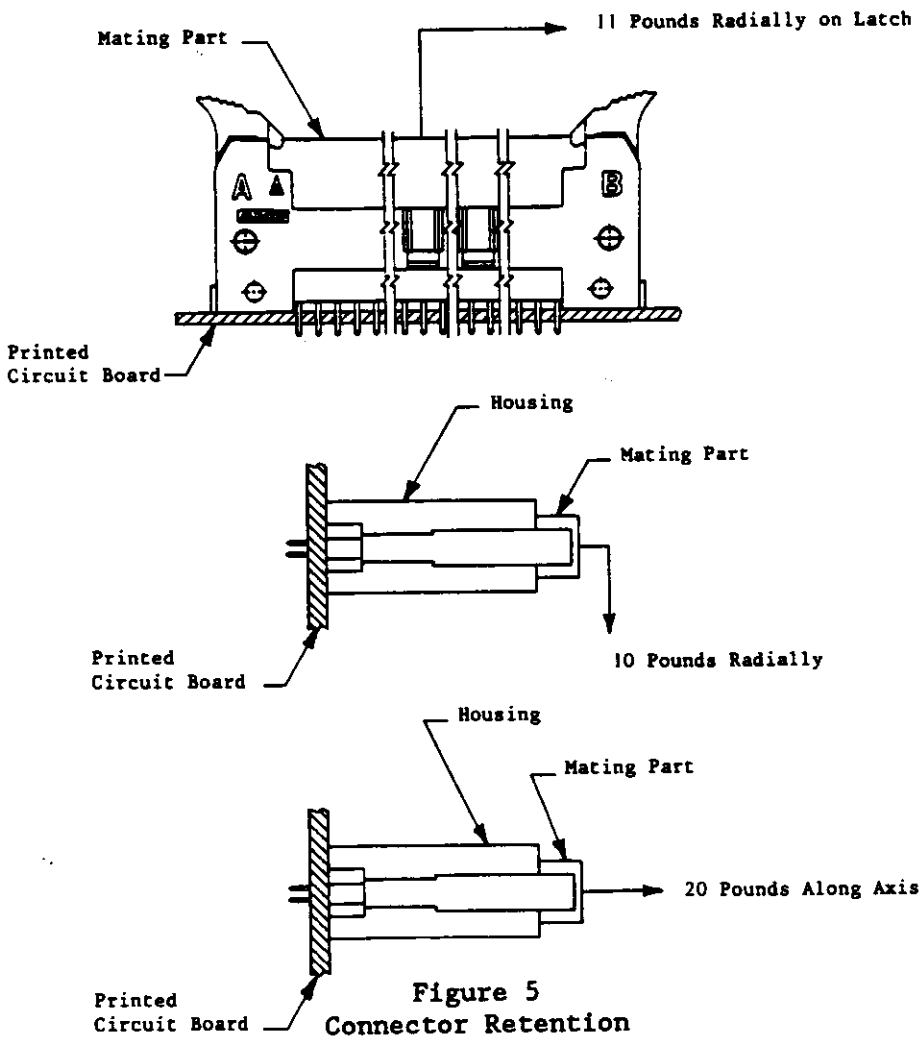


Figure 5
Connector Retention

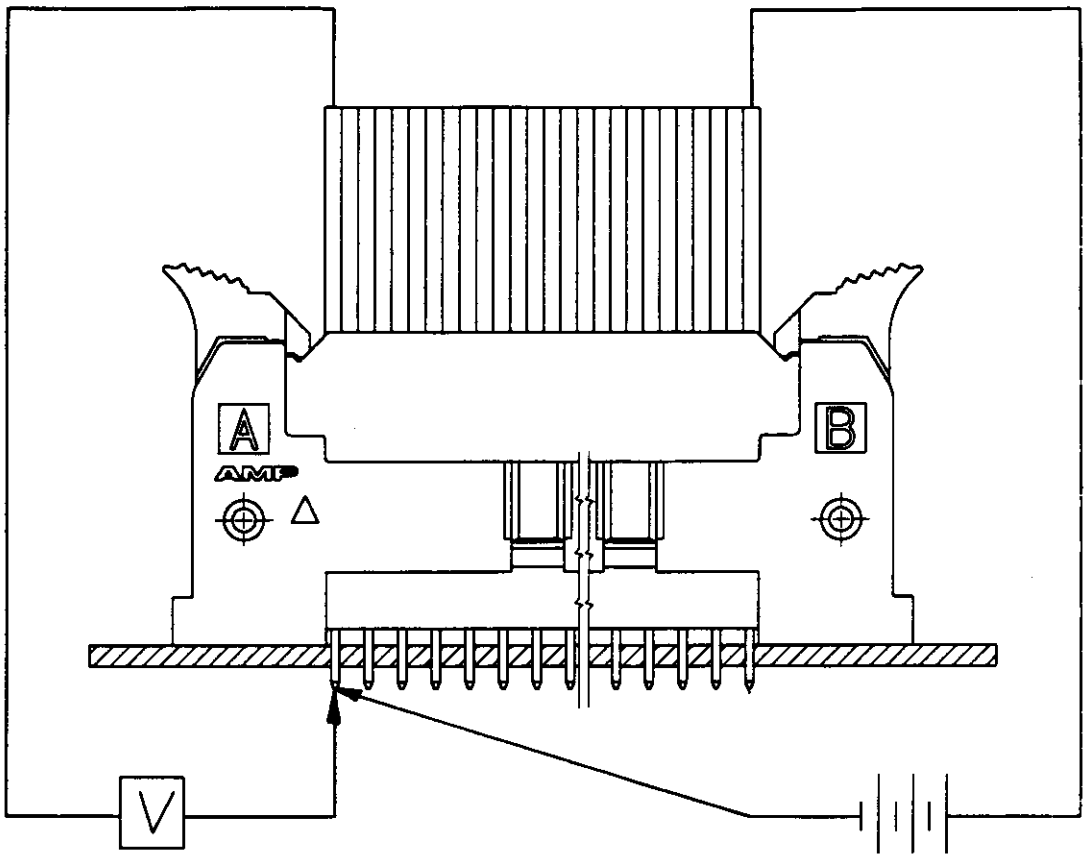


Figure 6
Termination Resistance Measurement Points.