

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers the performance, tests and quality requirements for the ECONOMATE* ACTION PIN* components. Components of this type are intended to be inserted into printed wiring boards having either plated-through or unplated holes. For components installed into plated-through holes, all electrical and mechanical tests shall be applicable. Bonding may be accomplished by either the press fit of the pins or by reflowing the solder plating in the hole. A select solder deposit may be applied to the component prior to the reflow operation. Components designed for TERMI-POINT* applications must be reflowed.

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 Specifications

- 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 76: Cross-reference between AMP Test Specifications and Military or Commercial Documents
- D. 114- :
- E. 501- : Test Report

3. REQUIREMENTS

3.1. Design and Construction

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

*Trademark of AMP Incorporated

				DR R. W. Prescott	AMP AMP INCORPORATED Harrisburg, Pa. 17105			
				CHK J. Edwards				
				APP J. W. Cassarly	NO	108-26003	REV F	LOC B
F	Revised per ECN AD 1236	<i>FK</i>	<i>10/30 86</i>	DIST 14	TITLE CONTACT, ECONOMATE ACTION PIN			
LTR	REVISION RECORD	APP	DATE	PAGE 1 OF 6				

AMP INCORPORATED HARRISBURG PA ALL INTERNATIONAL RIGHTS RESERVED AMP PRODUCTS MAY BE COVERED BY U.S. AND FOREIGN PATENTS AND/OR PATENTS PENDING.

3.2. Materials

Contact: CA-725 copper alloy

3.3. Ratings

- A. Voltage/Current: 3 amperes maximum
- B. Operating Temperature: -55° to 105°C

3.4. Performance and Test Description

Contacts 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 and AMP Spec 114-	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination Resistance, Dry Circuit	0.5 milliohms maximum	Subject test pins to 100 mv open circuit at 50 ma maximum, see Figure 3; AMP Spec 109-6-1.
MECHANICAL		
Vibration (a)	No discontinuities greater than 1 microsecond. No physical damage.	Subject mated connectors to 10-55-10 Hz with 100 ma current applied; AMP Spec 109-21-1.
Pin Retention	Pins shall withstand an axial force of 10 pounds without being dislodged from the printed wiring board.	Test boards shall be held rigidly in a fixture and an axial force applied to each pin in a direction opposite from that of insertion. The required force shall be applied to the pin and maintained for a duration of 5 to 10 seconds.

Figure 1 (cont)

AMP	AMP INCORPORATED Harrisburg, Pa. 17105	PAGE	NO	REV	LOC
		2	108-26003	F	B


Test Description	Requirement	Procedure
Pin Insertion Force	The total force required to fully insert pins into printed wiring board holes shall not exceed 40 pounds per pin.	Test pins shall be inserted into their respective test boards in accordance with the applicable AMP Instruction Sheet. During insertion, the axial force required to fully insert the pins shall be measured.
Torque	Pins shall not move or dislodge from the printed circuit board.	Test boards shall be held rigidly in a fixture and a torque of 2 inch-ounces applied to the base of each pin contact at the connector. The force shall be applied clockwise and then counter-clockwise in a plane perpendicular to the axis of the contact and held in each direction for a duration of 5 to 15 seconds.

ENVIRONMENTAL

Thermal Shock (a)	No physical damage.	Subject test pins to 5 cycles between -55° and 105°C; AMP Spec 109-22.
Humidity, Steady State	No physical damage.	Subject test pins to steady state humidity at 40°C and 90-95% RH; AMP Spec 109-23, method II, cond A.
Corrosion, Salt Spray	No physical damage.	Subject mated connectors to 5% salt concentration for 48 hours; AMP Spec 109-24, cond B.

(a) Shall show no evidence of damage, cracking or chipping.

Figure 1 (end)

 AMP INCORPORATED Harrisburg, Pa. 17105	PAGE	NO	REV	LOC
	3	108-26003	F	B

3.6. Connector Qualification and Requalification Tests and Sequences

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Examination of Product	1	1	1	1
Termination Resistance, Dry Circuit	2,4,7	3,5,7	2,4,6	
Torque	8			
Pin Retention	3,9	4,8	3,7	3,8
Vibration	6			5
Pin Insertion Force		2		2
Thermal Shock	5			4
Humidity, Steady State		6		7
Corrosion, Salt Spray			5	6

(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

Contacts shall be prepared in accordance with applicable Instruction Sheets. They shall be selected at random from current production. Each test group shall consist of three ACTION PIN assemblies, each containing ten pins for test. Test groups 1, 2 and 3 shall be assembled with test boards having plated-through holes. Test group 4 specimens shall be assembled to boards having unplated holes.

B. Test Sequence

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

C. Acceptance

- (1) Test results from development on pre-qualification samples will be used to determine upper and lower one-sided statistical tolerance limits for 99% reliability at 95% confidence, as follows. Let \bar{X} and s denote the sample average and standard deviation, respectively, of the test data. Let k denote the normal distribution one-sided tolerance factor for 95% confidence and 99% reliability. The value of k varies with sample size. Values of k are given in various tables, for example, NBS Handbook 91, Factors for One-Sided Tolerance Limits for Normal Distribution. Suitability of the normal distribution for representing the data shall be verified with normal probability plots, goodness of fit tests, etc.

AMP

AMP INCORPORATED
Harrisburg, Pa. 17105

PAGE NO

4

108-26003

REV

F

LOC

B

Then the upper one-sided tolerance limit for 99% reliability at 95% confidence is given by $\bar{X} + ks$. The interpretation of this tolerance limit is as follows: based on the test data, and assuming a normal distribution for the test data, we can be 95% confident that 99% of the population of values represented by the sample data will not exceed $\bar{X} + ks$. For any test parameter for which there is specified an upper requirement which is not to be exceeded, satisfactory performance of the product is achieved when the value of $\bar{X} + ks$ does not exceed the requirement value.

The lower one-sided tolerance limit for 95% confidence and 99% reliability is given by $\bar{X} - ks$. This has a similar interpretation and corresponding application to lower requirement values.

- (2) 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.

4.2. Requalification Testing

Requalification shall be established by the cognizant divisional engineering function and may consist of all or any part of the overall qualification program provided that it is conducted within the required time period.

4.3. Quality Conformance Inspection

The applicable AMP 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.

AMP

AMP INCORPORATED
Harrisburg, Pa. 17105

PAGE NO

5

108-26003

REV LOC

F

B

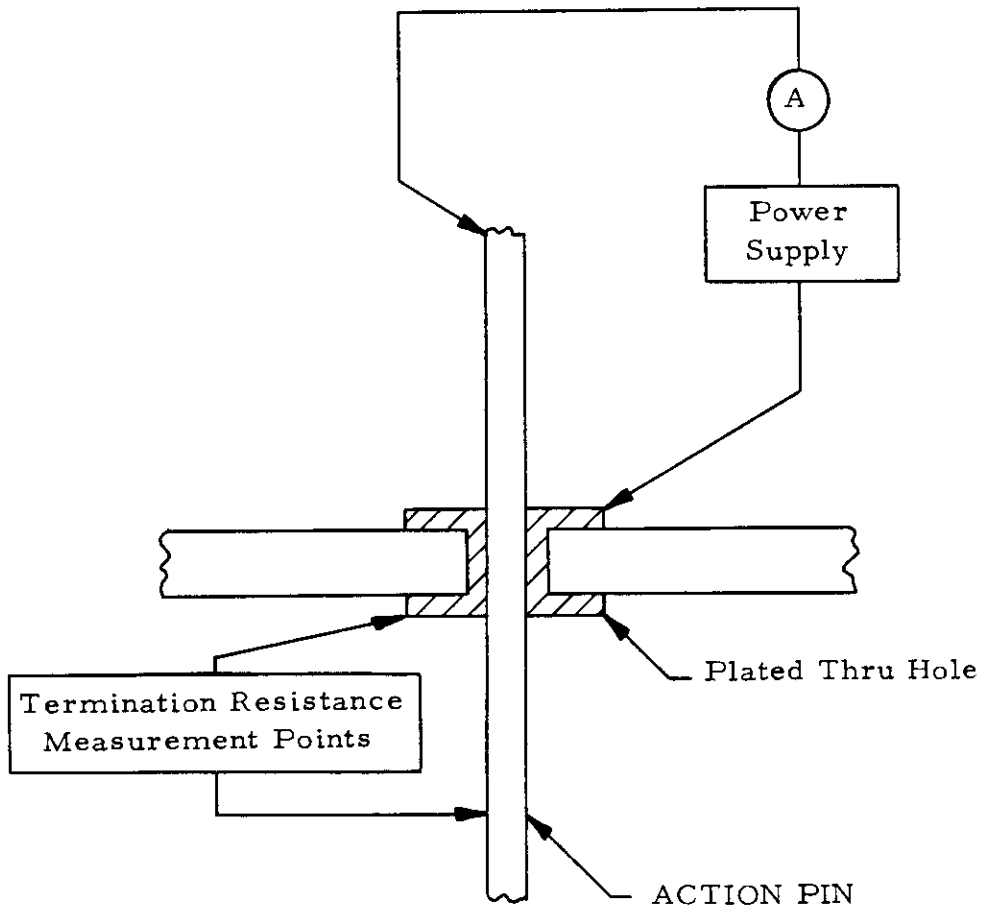


Figure 3
Termination Resistance Measurement Points

AMP AMP INCORPORATED Harrisburg, Pa. 17105	PAGE	NO	REV	LOC
	6	108-26003	F	B