

PRODUCTION SPECIFICATION

1. SCOPE

1.1 Content

This specification covers the performance, tests and quality requirements for the AMP 070 Multilock Shorting Connector.

1.2 Qualification

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used unless otherwise specified. All inspections shall be performed using the applicable inspection plans and product drawings.

2.0 APPLICABLE DOCUMENTS.

The following documents form 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

2.1.1 109-1:
General Requirements for Test Specifications.

2.2 Other Documents

2.2.1 Specification RES 62.21.712.

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3.0 DEFINITION OF TERMS

For the purpose of this specification, the following terms shall apply:

3.1 Contact

An electrically conductive metal member, used as a component of a connector assembly to form a circuit connection.

3.2 Housing

A dielectric component member of a connector, made of insulating material that encapsulates contacts in its cavities.

3.3 Connector

A connector is an assembly comprising, a main housing containing three formed contacts, an inductive coil and a protective lid.

4.0 MATERIALS.

4.1 Mouldings:

Unfilled PA66.

4.2 Contacts:

Phosphor Bronze, (All over nickel, selective Gold plated)

4.3 Shorting Link:

Stainless steel, selectively gold plated.

5.0 RATINGS

5.1 Voltage:

6-18V

5.2 Temperature:

-40 to +85 C

Storage Temp:

-40 to +90 C (+100 C, 1h)

5.3 Relative Humidity: Up to 95%

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6.0 TEST SAMPLES

Description of Samples										
	Test Group									
	1	2	3	4	5	6	7	8	9	10
Receptacles 2-173630-2	16	10	10	16	8	8	16	8	16	16
Tabs 345210-2	16	10	10	16	8	8	16	8	16	16
Receptacle Housing 348793-1	4	5	5	4	2	4	4	2	4	4
Receptacle Housing 348793-2	4			4	2		4	2	4	4
Tab Housing 348794-1	4	5	5	4	2	4	4	2	4	4
Tab Housing 348794-2	4			4	2		4	2	4	4
Body Clip 345484-1								2		
Terminals to be crimped to 150mm long 0.5mm ² thin wall pvc insulated cable.										

Mechanical		
Test	Requirement	Method
7.1 Engagement force	30N max	Samples to be mated at a speed rising to 25mm/max until latches are fully engaged.
7.2 Disengagement force	5N min. Make before break displacement = 0.5mm min.	Samples to be unmated at a speed rising to 25mm/min make before break with the housing latches distance 0.5mm min rendered inoperative. The distance at which the receptacles are shorted together prior to breaking contact with the tabs, shall be measured.
7.3 Contact retention force, secondary lock operative.	90N min.	The force required to pull out terminals from the housing shall be measured, by pulling on the wire at a speed of 25mm/min. Secondary lock features to be latched in position.
7.4 Contact retention force, secondary lock inoperative.	70N min.	As in 7.3 above, but with the secondary lock not latched in position.
7.5 Unintentional disengagement.	120N min.	The force required to unmate a connector shall be measured. The force shall be applied at a rate of 25mm/min with the housing latch not operated.

Test	Requirement	Method
7.6 Misaligned insertion.	There shall be no damage to housings, terminals or shorting links likely to detrimentally affect the performance of the connector.	The receptacle housing shall be misaligned by 10° and a force of 35N applied to attempt to mate it with a tab housing. The misalignment angle shall be reduced in 2° increments until mating is achieved. Samples shall be examined for any signs of damage following the test. The test shall be repeated with new samples for three further planes as shown in figure 1.
7.7 Engagement and disengagement.	Shall meet the requirements of subsequent tests.	Samples shall be disengaged and engaged 20 times, by hand, with housing latches operated by hand.
Electrical		
8.1 Contact resistance, mated contacts.	5mΩ max after tests.	The resistance of mated contacts shall be measured at point 150mm from the rear of the insulation barrel of the terminals. From measuring the resistance of a sample of the wire at least 1m long, appropriate amounts shall be deducted from each measurement to allow for the resistance of the wire on the samples. The measurements shall be made using dry circuit conditions, i.e. 20mV max open circuit voltage 100mA max current.

Test	Requirement	Method
8.2 Contact resistance, unmated receptacle housings.	50mΩ max initial. Maximum increase in resistance after test to be 10mΩ max.	As in 8.1 except the measurement shall be between receptacles (through the shorting link) on unmated receptacle housings.
Environmental Tests		
9.1 Thermal shock.	Shall meet the requirements of subsequent tests.	Subjected mated samples to 20 thermal shocks, each cycle comprising 105±2°C for 15 minutes followed by plunging into iced water for 15 minutes. Transfer time to be 2 minutes max.
9.2 Thermal ageing.	Shall meet the requirements of subsequent tests.	Subject mated samples to 70°C±2°C dry heat for 40 days.
9.3 Dust.	Shall meet the requirements of subsequent tests.	Subject samples to 20 dust cycles as specified in B.L.S. 30.EE.10.1.
9.4 Bump.	There shall be no discontinuity of 10kΩ for >1μs. Parts shall not become dislodged, damaged or broken.	The housings (in stacked pairs) shall be mounted onto the table or a bump machine via the body mounting clip, and the wires secured at their ends onto the table. Subject to 4000 bumps of 40gn with a pulse duration of 6ms to BS2011. Part 2.1 Eb in each of three mutually perpendicular axes. Contacts to be wired in series for discontinuing monitoring.

Test	Requirement	Method
9.5 Sulphur Dioxide.	Shall meet the requirements of subsequent tests.	Subject samples to test as per BS2011 Part 2.1 Kc. During exposure half of the samples shall be mated and half unmated. Mated samples exposed for 21 days and unmated samples exposed for 10 days.
10.1 Visual examination.	There shall be no damaged likely to adversely affect the performance of the connector.	Examine housings and terminals at a magnification of 8X.

11.0 Test groups and test sequences

Test Matrix											
		1	2	3	4	5	6	7	8	9	10
7.1	Engagement force	3,8			3				7		5
7.2	Disengagement force	5,10			4			6	5	5	
7.3	Contact retention with second lock		2								
7.4	Contact retention without second lock			2							
7.5	Unintentional disengagement					2					
7.6	Misaligned insertion				2						
7.7	Engagement and disengagement	6									
8.1	Contact resistance mated contacts	4,9					3,5	3,5	3,9	2,4	6
8.2	Cont.res. through shorting link	2,7					2,6	2,7	2,6,10	6	2,4
9.1	Thermal shock						4				
9.2	Thermal ageing							4			
9.3	Dust								4		
9.4	Dump								8		
9.5	Sulphur dioxide									3	3
10.1	Visual	1,11	1	1	1,5	1	1,7	1,8	1,11	1	1

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