

PRODUCT SPECIFICATION

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for AMP\* crimp type VI, contact size 16. These contacts are for use in connectors and other electronic components.

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. 108-10024: Connector, Circular, Plastic
- E. 114-10007: Application Specification
- F. 501-175: 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. Material

- A. Contact: Brass
- B. Housing: Nylon, type 6/6, glass filled

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Product Code: 4961, 5056

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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 <i>Brenda Buckley</i> 5/20/92	<b>AMP</b> AMP Incorporated Harrisburg, PA 17105-3608		
				CHK <i>Allen Traud</i> 5/27/92			
				APP <i>David M. Little</i> 5/20/92	NO 108-10038	REV 0	LOC B
0	Released per ECN BD-6307	<i>B/B</i>	<i>5/27/92</i>	PAGE 1 OF 6	TITLE CONTACT, TYPE VI		
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### 3.3. Ratings

- A. Voltage: 250 volts alternating current
- B. Current: Signal rated, 1.8 amperes, 100% energized using 14 AWG wire, temperature rise will not exceed 30°C.
- C. Operating Temperature
  - (1) -55 to 150°C for gold plated
  - (2) -55 to 90°C for tin plated

### 3.4. Performance and Test Description

Contacts shall be 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. Performance and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meet requirements of product drawing and AMP Spec 114-10007.	Visual, dimensional and functional per applicable inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	32 milliohms maximum.	Subject mated contacts to 50 mv open circuit at 100 ma maximum. See Figure 4. AMP Spec 109-6-1.
Temperature rise vs current.	30°C maximum temperature rise at specified current. See Note (b).	Measure temperature rise vs current. AMP Spec 109-45-2.
Current cycling.	See Note (a).	Subject mated contacts to 500 cycles at 125% specified current for 30 minutes "ON" - 15 minutes "OFF". AMP Spec 109-51.
MECHANICAL		
Contact engaging force.	22 ounces maximum for gold plated contacts. 27 ounces maximum for tin plated contacts.	Measure force to engage using test pin 2 to engagement depth of .170 ± .010. See Figure 3. AMP Spec 109-35.

Figure 1 (cont)

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Test Description	Requirement	Procedure																		
Contact separating force.	1.5 ounces minimum for gold and tin plated contacts.	Size 1 time using test pin 2, insert test pin 1 to separation depth of $170 \pm .010$ and measure force to separate. See Figure 3. AMP Spec 109-35.																		
Crimp tensile.	<table border="1"> <thead> <tr> <th>Wire Size AWG</th> <th>Crimp Tensile pounds minimum</th> </tr> </thead> <tbody> <tr><td>14</td><td>50</td></tr> <tr><td>16</td><td>40</td></tr> <tr><td>18</td><td>25</td></tr> <tr><td>20</td><td>17</td></tr> <tr><td>22</td><td>10</td></tr> <tr><td>24</td><td>7</td></tr> <tr><td>26</td><td>4</td></tr> <tr><td>28</td><td>2.5</td></tr> </tbody> </table>	Wire Size AWG	Crimp Tensile pounds minimum	14	50	16	40	18	25	20	17	22	10	24	7	26	4	28	2.5	Determine crimp tensile at rate of 1 inch per minute. AMP Spec 109-16.
Wire Size AWG	Crimp Tensile pounds minimum																			
14	50																			
16	40																			
18	25																			
20	17																			
22	10																			
24	7																			
26	4																			
28	2.5																			
Durability.	Termination resistance, dry circuit.	Mate and unmate contacts for 500 cycles for gold plated contacts and 25 cycles for tin plated contacts at maximum rate of 300 cycles per hour. AMP Spec 109-27.																		
ENVIRONMENTAL																				
Thermal shock.	See Note (a).	Subject mated connectors to 10 cycles between -55 and 105°C for gold plated contacts and -55 and 90°C for tin plated contacts. 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% RH. AMP Spec 109-23-4, Condition B.																		
Mixed flowing gas.	See Note (a).	Subject mated connectors to environmental class II for 7 days. AMP Spec 109-85-2.																		

Figure 1 (cont)

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Test Description	Requirement	Procedure
Temperature life.	Termination resistance, dry circuit. Contact engaging force. Contact separating force.	Subject mated connectors to temperature life at 105°C for 315 hours for gold plated contacts and 90°C for 1300 hours for tin plated contacts. 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) Continuous current rating for individual contacts cannot be applied directly to the number of contacts as they are dependent on thermal and physical properties of the material. System design shall assure that continuous current rating does not create internal hot spots that exceed temperature designated by connector specification during steady state or transient conditions.

Figure 1 (end)

3.6. Contact Tests and Sequences

Test or Examination	Test Group (a)					
	1	2	3(d)	4(e)	5	6
	Test Sequence (b)					
Examination of product	1,8	1,5	1,5	1,5	1	1,5
Termination resistance, dry circuit	3,7	2,4	2,4	2,4	2,4	2,4
Temperature rise vs current					3	
Current cycling						
Contact engaging force	2					
Contact separating force	5				5	
Crimp tensile						
Durability	4					
Thermal shock	6					
Humidity-temperature cycling				3(c)		
Mixed flowing gas			3(c)			
Temperature life		3(c)				

- (a) See Para 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition gold plated samples with 50 cycles of durability and tin plated samples with 5 cycles of durability.
- (d) Gold plated contacts only.
- (e) Tin plated contacts only.

Figure 2

#### 4. QUALITY ASSURANCE PROVISIONS

##### 4.1. Qualification Testing

###### A. Sample Selection

Contacts shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups 1, 2, 3 and 4 shall each consist of 90 contact pairs (pin and socket) with 45 pairs crimped to maximum wire size and 45 pairs crimped to minimum wire size, 5 housing pairs per wire size. All leads shall be 18 inches minimum length. Housing type C.P.C., series 1 arrangement 13-9. Test group 5 shall consist of 14 AWG wire, 111 contact pairs (pin and socket) in 3 housing pairs. Test group 6 shall consist of 111 contact pairs (pin and socket) per wire size, 3 wire sizes, 28, 20 and 14 AWG are to be tested with 3 housing pairs per wire size. All leads shall be 18 inches minimum length. Housing type C.P.C., series 1, arrangement 23-37.

###### 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.

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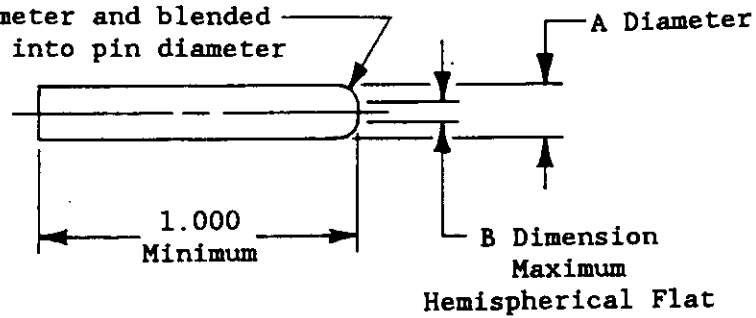
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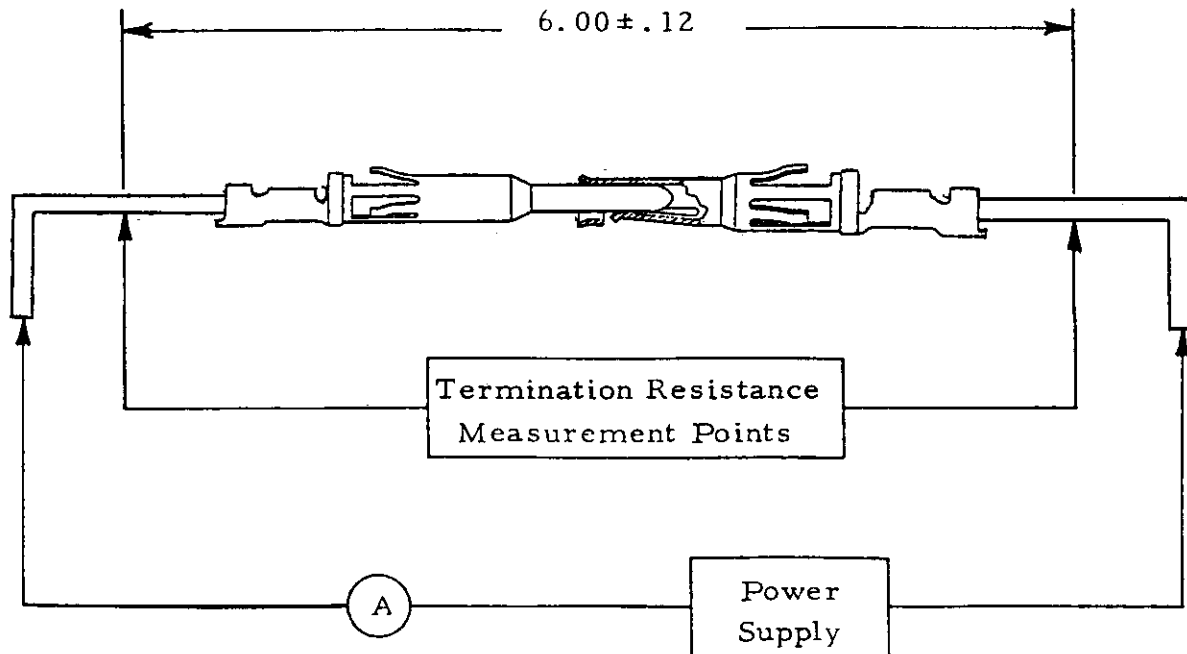
Spherical radius shall be 1/2  
pin diameter and blended  
smoothly into pin diameter



Gage Number	Gage Part Number	A Dimension	B Dimension
1	1-27280-1	.0615 $\begin{matrix} +.0001 \\ -.0000 \end{matrix}$	.015
2	1-27280-2	.0635 $\begin{matrix} +.0000 \\ -.0001 \end{matrix}$	.015

- Note: (1) Contact size 16.  
(2) Finish shall be 6 to 10 microinches.

Figure 3  
Engaging & Separating Gages



Note: Termination resistance equals millivolts divided by test current less resistance of 4.5 inches of wire.

Figure 4  
Termination Resistance Measurement Points.

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