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**Two Circuit Heavy Duty Burner Connector**

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**1. SCOPE**

## 1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics two circuit heavy duty burner connector. This connector system provides a reliable means of connect/disconnect for range surface burner units.

## 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

## 1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 31Jan92. The Qualification Test Report number for this testing is 501-165. This documentation is on file at and available from Engineering Practices and Standards (EPS).

**2. APPLICABLE DOCUMENTS**

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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. Tyco Electronics Documents

- 109-1: General Requirements for Test Specifications
- 109 Series: Test Specifications as indicated in Figure 1
- 114-1028: Application Specification
- 501-165: Qualification Test Report

**3. REQUIREMENTS**

## 3.1. Design and Construction

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

## 3.2. Material

- Contact: Copper alloy, high temperature
- Housing:
  - Phenolic, black, heat resistant grade, UL 94V-0
  - Silicate ceramic, natural

3.3. Ratings

- Voltage: 300 volts AC
- Current: See Figure 2 for applicable current carrying capability
- Temperature: -40 to 200°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests are performed at ambient environmental conditions per Test Specification 109-1.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and Application Specification 114-1028.	Visual, dimensional and functional per applicable quality inspection plan.
<b>ELECTRICAL</b>		
Termination resistance, dry circuit.	$\Delta R$ 5 milliohms maximum between initial and final readings.	AMP Spec 109-6-1. Subject mated contacts assembled in housing to 50 millivolts open circuit at 100 milliamperes. See Figure 3.
Dielectric withstanding voltage.	No breakdown or flashover.	AMP Spec 109-29-1. 1600 volts AC. Test between adjacent contacts of unmated connector assemblies.
Insulation resistance.	5000 megohms minimum.	AMP Spec 109-28-4. Test between adjacent contacts of unmated connector assemblies.
Current cycling.	See Note.	AMP Spec 109-51, Condition B, Test Method 2. Subject mated contacts to 3500 cycles at 125% of rated current for 15 minutes ON and 15 minutes OFF.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	AMP Spec 109-45-1. Measure temperature rise vs current. See Figures 4 and 3.
<b>MECHANICAL</b>		
Vibration, random.	Discontinuities shall not be measured. See Note.	AMP Spec 109-21-7, Test level B. Subject mated connectors to 2.22 G's rms for 2 hours in each of 3 mutually perpendicular planes. See Figure 5.

Figure 1 (cont)

Test Description	Requirement	Procedure								
Physical shock.	Discontinuities shall not be measured. See Note.	AMP Spec 109-26-1. Subject mated connectors to 50 G's half-sine shock pulses of 1 millisecond duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5.								
Mating force.	12 pounds maximum.	AMP Spec 109-42, Condition A. Measure force necessary to mate connector with burner unit using free floating fixtures at rate of .25 inch per minute.								
Unmating force.	1.5 pounds minimum.	AMP Spec 109-42, Condition A. Measure force necessary to unmate connector from burner unit at rate of .25 inch per minute.								
Contact insertion force.	6 pounds maximum per contact.	AMP Spec 109-41. Measure force necessary to insert contact into housing.								
Contact retention.	Contacts shall not dislodge.	AMP Spec 109-30. Apply axial load of 25 pounds to contact by pulling on wire.								
Crimp tensile.	<table border="1"> <thead> <tr> <th>Wire Size (AWG)</th> <th>Crimp Tensile (Lbs min)</th> </tr> </thead> <tbody> <tr> <td>18</td> <td>30</td> </tr> <tr> <td>16</td> <td>45</td> </tr> <tr> <td>14</td> <td>60</td> </tr> </tbody> </table>	Wire Size (AWG)	Crimp Tensile (Lbs min)	18	30	16	45	14	60	AMP Spec 109-16. Determine crimp tensile at a rate of 1 inch per minute.
Wire Size (AWG)	Crimp Tensile (Lbs min)									
18	30									
16	45									
14	60									
Durability.	See Note.	AMP Spec 109-27, except use test tab. Mate and unmate connector assemblies for 3500 cycles at a maximum rate of 600 cycles per hour. See Figure 6.								

ENVIRONMENTAL

Thermal shock.	See Note.	AMP Spec 109-22. Subject mated connectors to 25 cycles between -40 and 200°C.
Humidity-temperature cycling.	See Note.	AMP Spec 109-23-3, Condition B. Subject mated connectors to 10 humidity-temperature cycles between 25 and 65°C at 95% RH.
Temperature life.	See Note.	AMP Spec 109-43. Subject mated connectors to temperature life at 200°C for 500 hours.

**NOTE**

Shall meet visual requirements, show no physical damage and shall meet the requirements of additional tests as specified in the Test Sequence in Figure 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)			
	1	2	3	4
	Test Sequence (b)			
Examination of product	1	1,9	1,8	1,5
Termination resistance, dry circuit	4,8	2,7		
Dielectric withstanding voltage			3,7	
Insulation resistance			2,6	
Current cycling				3
Temperature rise vs current		3,8		2,4
Vibration, random	6	6(c)		
Physical shock	7			
Mating force	3			
Unmating force	9			
Contact insertion force	2			
Contact retention	10			
Crimp tensile	11			
Durability	5			
Thermal shock			4	
Humidity-temperature cycling		4(d)	5	
Temperature life		5		

- NOTE**
- (a) See paragraph 4.1.A.
  - (b) Numbers indicate sequence in which tests are performed.
  - (c) Discontinuities shall not be measured. Energize at 18 °C level for 100% loading as determined in Test Specification 109-151.
  - (d) Precondition samples with 10 cycles durability.

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 group 1 shall consist of 5 assemblies loaded with 1 contact on 18 AWG wire and 1 contact on 16 AWG wire. Test group 2 shall consist of 5 assemblies (10 contacts) on 18 AWG wire and 5 assemblies (10 contacts) on 14 AWG wire. Test group 3 shall consist of 5 assemblies (10 contacts) on 16 AWG wire. Test group 4 shall consist of 5 assemblies (10 contacts) on each wire size.

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 the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that product meets the requirements of Figure 1. 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. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality 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.

4.5. Certification

This product has been recognized under the Component Recognition Program of Underwriters' Laboratories Inc., Electrical File Number E-70200 and Certified by the Canadian Standards Association, Certification Number LR-7189.

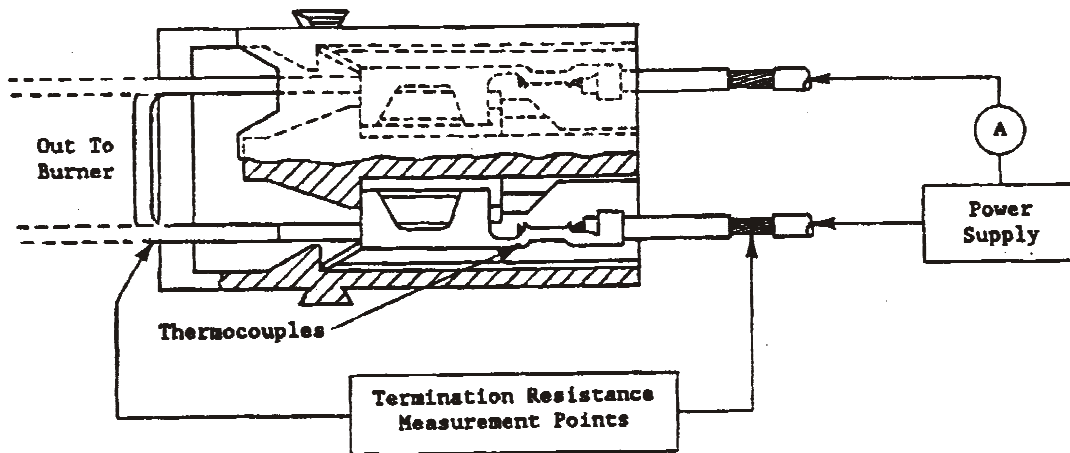


Figure 3  
Temperature And Resistance Measurement Points

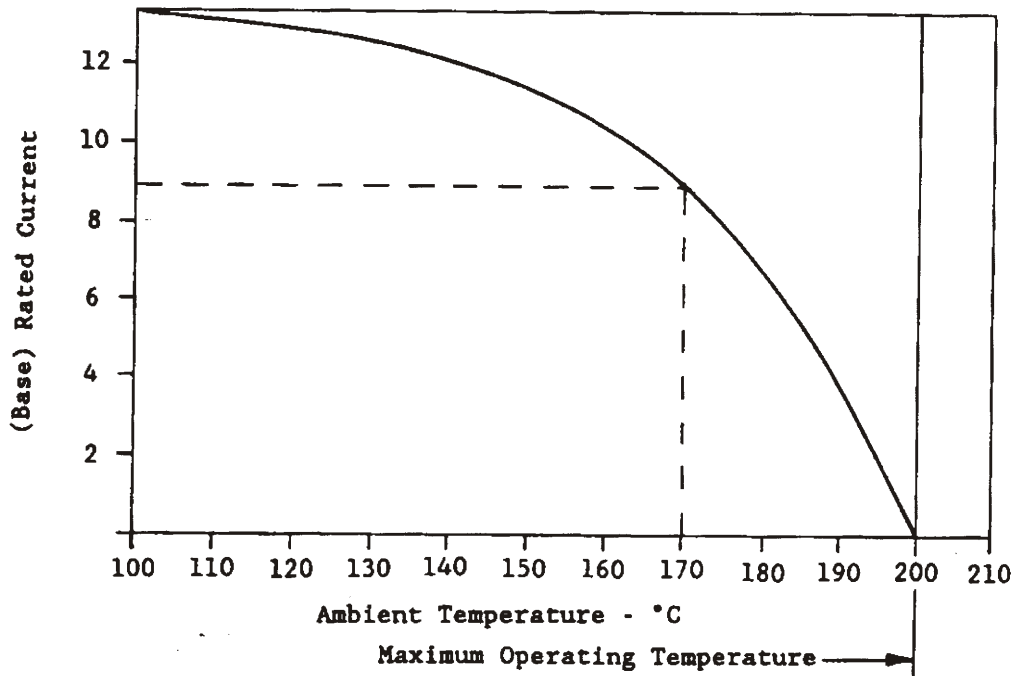


Figure 4  
Current Carrying Capability

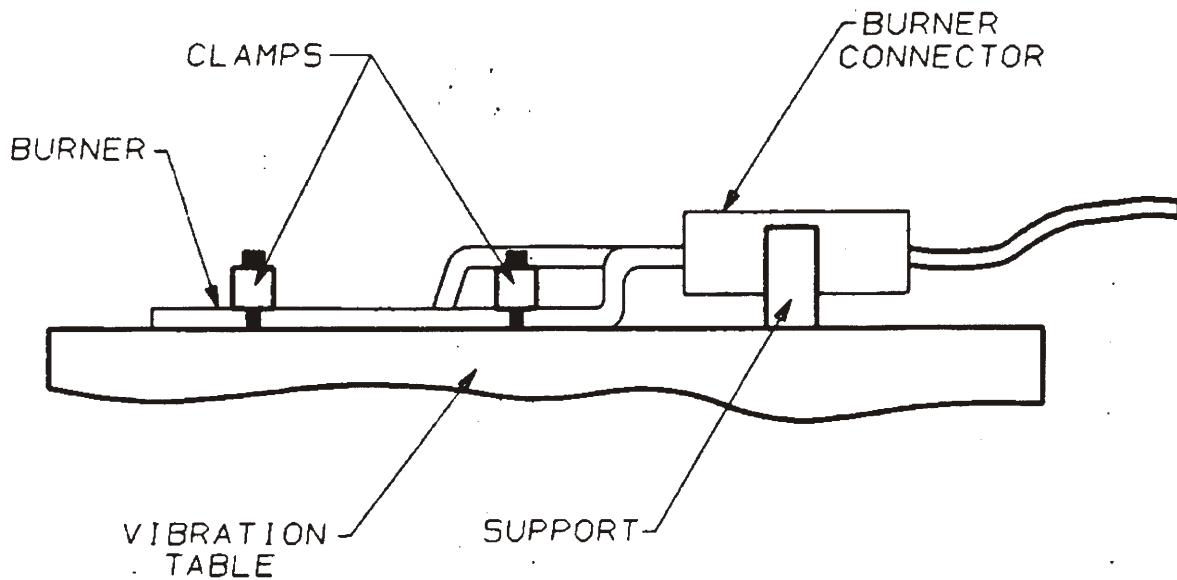
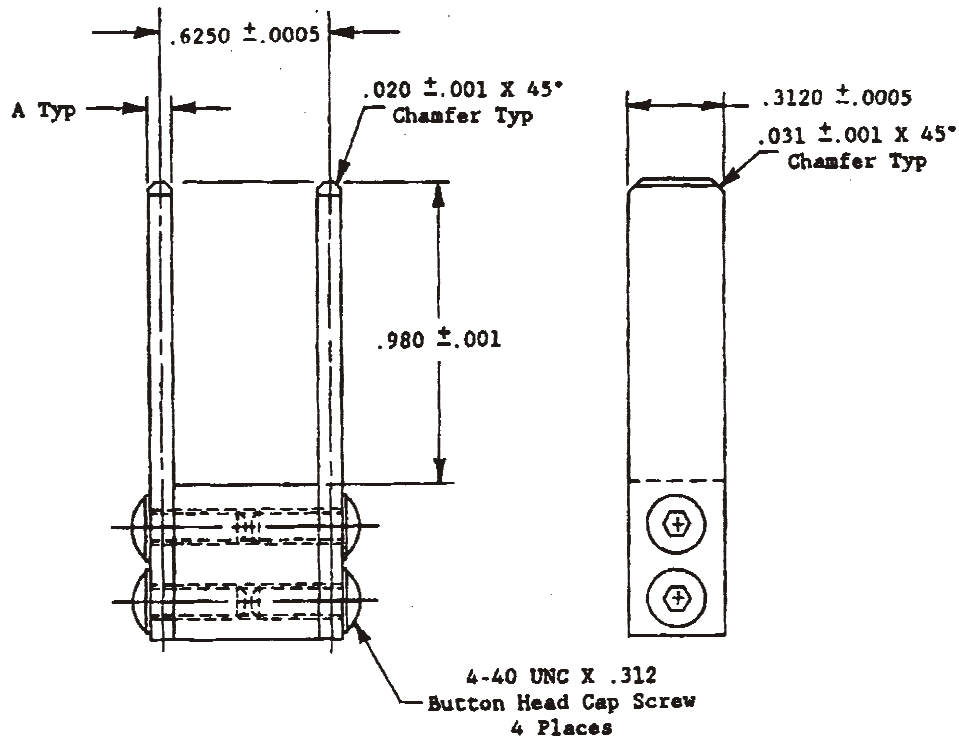


Figure 5  
Mounting & Clamping Location For Vibration & Physical Shock



Part Number	A Dimension
103836-3	$.0950 \pm .0005$

**NOTE**

- (a) All dimensions are in inches.
- (b) Material shall be steel AISI type 01 with a Rockwell hardness of C60-62 and a finish of 10 microinches.

Figure 6  
Durability Test Gage