

**NOTE**

The product described in this document has not been fully tested to ensure conformance to the requirements outlined below. Therefore, TE Connectivity (TE) makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, TE may change these requirements based on the results of additional testing and evaluation. Contact TE Engineering for further details.

CLUSTER CONNECTORS, .090" dia PIN.**1. SCOPE**

1.1. Content

This specification covers general description and performance requirements for TE Cluster block assemblies designed for .090 inch diameter pins. The assembly consists of a 3 circuit housing accepting terminals with 18-16 AWG wire range & 1.5-2.6 mm dia. Insulation range.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure1 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 has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

2. APPLICABLE DOCUMENTS AND FORMS

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. TE Connectivity Specifications

114-2019	Application Specification
114-20107	Application Specification
502-134133	Engineering Test Report

2.2. Commercial Standards and Specifications

IEC 61984	International Standard – Safety Requirements and Tests
IEC 60335	International Standard – Safety of Household and Similar Appliance
IEC 60512	International Standard – Connectors for Electronic Equipment – Tests and Measurements
IEC 60695	International Standard – Fire Hazard Testing
UL 1977	Safety Standards – Component Connectors for Use in Data, Signal, Control, and Power Applications
EIA-364	Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Documents

109-1	General Requirements for Testing
102-950	Qualification of Separable Interface Connectors

3. REQUIREMENTS

3.1. Design and Construction

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

Product involved

CLUSTER BLOCK HOUSING:

P/N: 281006-0; 281006-2; 281006-3; 281006-4

RECEPTACLE CLUSTER CTC.:

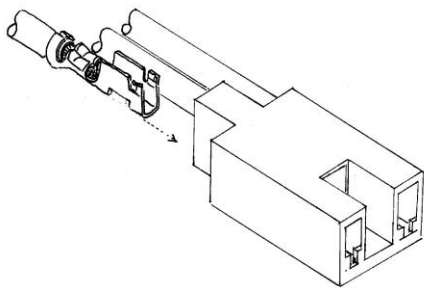
P/N: 62131-3

CLUSTER BLOCK REVERSE HOUSING:

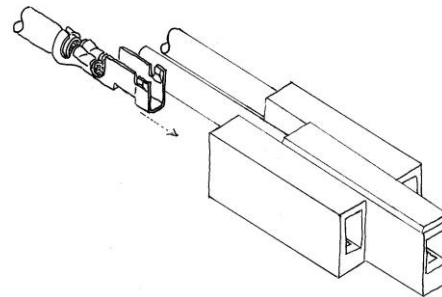
P/N: 284406-1; 284406-3

SPECIAL RECEPTACLE CLUSTER CTC.:

P/N: 284633-1; 62131-3



Standard version



Reverse version

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable customer drawing.

3.3. Ratings

A. Voltage Rating: 115/230 volts

B. Current Rating: the maximum rating current that can be carried by this product is limited by the maximum operating temperature of the housings and the temperature rise of the contacts. Variables which shall be considered for each application are wire size, connector size, contact material and ambient temperature.

3.4. Performance Requirements and Test Description

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions otherwise specified.

3.5. Test Requirements and Procedure Summary

Test Description	Requirement		Procedure
Examination of product	Meets requirements of product drawing and TE Spec 114-2019.		Visual, dimensional and functional per applicable Inspection plan.
Electrical			
Dielectric withstanding voltage.	2700 V max. AC at see level. 1 second hold.		IEC 60512-4-1. Test between adjacent terminals of mated samples.
Impulse voltage	3000 V max.		IEC 60512-2. Test between two terminals of mated samples, covering all combinations.
Mechanical			
Test description	Requirement		Procedure
Crimp tensile.	Stranded wire	Tensile	IEC 60512-16-4. Determine crimp tensile at a rate of 25 mm per minute
	Size (AWG)	(N. min.)	
	18	111	
	16	164	
Contact retention in housing.	22 N min. for standard version. 20 N min. 62131-3 + 284406-3 30 N min. 62131-3 + 284406-1 30 N min. 284633-1 + 284406-1		TE Spec. 109-30. Apply an axial load to crimped contacts in housing by gripping the wire.
Mating force onto Fusite counterpart.	133 N. maximum per Cluster block assembly using typical pin shape (See Figure 3). 150 N maximum per Cluster block assembly using alternative pin shape (See Figure4). As I° IN		TE Spec. 109-35. Measure force necessary to mate Fusite counterpart using appropriate gage (3 pin .090" dia. equally spaced on a .530 +/- .001 inch diameter circle) from header. (See Figures 3 & 4)
Unmating force from Fusite counterpart.	39 N min. per Cluster block assembly, as I° OUT & V° OUT		TE Spec. 109-35. Measure force necessary to unmate appropriate gage (3 pin .090" dia. equally spaced on a .530 +/- .001 inch diameter circle) from header. (See Figure 3 & 4)
Contact separating force from pin gage (for ref. only).	9 N min. per single contact. As I° OUT & V° OUT		TE Spec. 109-35. Measure force necessary to separate appropriate pin gage from contact (See Figure 5)
Environmental			
Test description	Requirement		Procedure
Heat resistance.	No signs of blistering, delamination or degradation of physical properties.		Subject connector housings to 163°C for 6 hours.
Weight loss.	15 milligrams maximum for 1 or 2 piece Cluster block assembly. 5 milligrams maximum for cover plate.		Determine weight loss as the average of no less than 12 samples using the following procedure: 1. Suspend the samples in a vacuum oven and bake at 149°C for 6 hours to remove moisture.

		<ol style="list-style-type: none"> 2. Remove the samples from the oven and quickly place them in a desiccator containing anhydrous magnesium perchlorate to cool for 1 hour. 3. Weight the sample lot. 4. Replace the samples in the vacuum oven and bake at 121°C for 24 hours. 5. Remove the samples from the oven and quickly place them in a desiccator containing anhydrous magnesium perchlorate to cool for 1 hour. 6. weight the sample lot. 7. Calculate the average weight loss by subtracting the value recorded in step 3 from the value recorded in step 6 and dividing by the number of the samples.
Ethanol test see note (c)	Characterizing method of paraffin oil, vegetable and animal oil, additive and other non miscible compounds with coolant HFC-134a, for plastic (raw material and finish products).	See Embraco aspera product engineering norm NTB02353 dated 15 MAR 99
Miscibility/flocculation test of lubricating, protective, ecc. oil. see note (c)	Test method to determine the Miscibility/flocculation point of paraffin oil, vegetable and animal oil, additive and other. Over -35°C no solid pulp or liquid precipitation.	See Embraco aspera product engineering norm NTB01549 dated 17 MAR 99

Figure 1

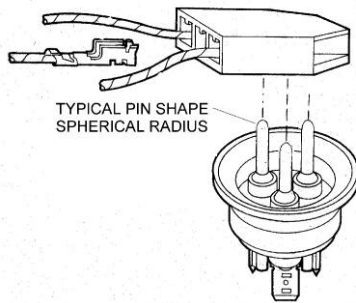


Figure 3

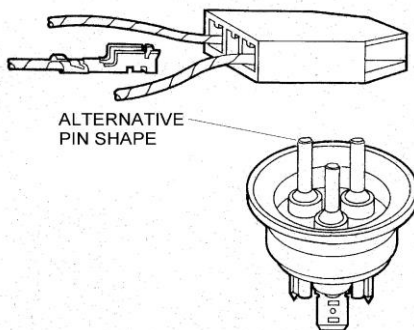
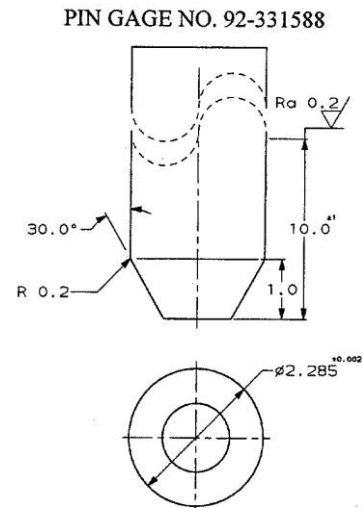


Figure 4



Material: NORM HSS HRC 58-60

Figure 5



NOTE

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

3.6. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)									
	1	2	3	4	5	6	7	8	9	10
	TEST SEQUENCE (b)									
Examination of product	1	1	1	1	1	1	1	1	1	1
Dielectric withstanding voltage	2									
Impulse voltage		2								
Crimp tensile					2					
Contact retention in housing			2							
Mating force onto fusite				2						
Unmating force from fusite				3						
Contact separating force from pingage							2			
Heat resistance								2		
Weight loss						2				
Ethanol test. see note (c)									2	
Miscibility/flocculation test. see note(c)										2

Figure 2



NOTE

- (a) See paragraph 4.2.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Test to be performed for P/N.s 281006-4 & 284406-1 only
- (d) 284406-3 not tested for Ethanol tests and Miscibility/flocculation tests which are to be tested at Customer place.

4. QUALITY ASSURANCE PROVISIONS

4.1. Test Conditions

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Figure 6.

Temperature	15°C – 35°C
Relative Humidity	45% – 75%
Atmospheric Pressure	86.6 – 106.6 kPa

Figure 6

4.2. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production. All test groups shall each consist of 10 Cluster block housings or assemblies, 1 assembly per wire size.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 6.

4.3. 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.

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements in Figure 6. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.5. Quality Conformance Inspection

The applicable quality inspection plan shall 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.