

<b>IVECO</b> <b>Standard</b> PERFORMANCE STANDARD	<b>RESISTANCE TEST</b> <b>INSULATION OF ELECTRICAL COMPONENTS</b>		<b>16-2104</b> Page 1/2 Date 21.10.2009
<p><b>Supervisor:</b> IVECO STD. 19-0201</p> <p><b>Manager:</b> IVECO STD. 19-0201</p> <p><b>1 PURPOSE</b></p> <p>To specify resistance test procedure for specific electrical components. Resistance shall be measured across metal parts, e.g. ground and laminations separated by insulating material.</p> <p><b>2 PURPOSE</b></p> <p>The test gives an indication of surface current leakage through insulation interposed between metal parts subjected to potential difference to provide information as to the level of insulation of system and materials. The test shall ensure a minimum level of resistance as needed to prevent current flow across galvanic insulated circuits and the conductive parts of the device under test.</p> <p><b>3 TEST APPARATUS AND TEST PROCEDURE</b></p> <p>Depending on type and accuracy required select the most suitable test method from those given in paras.3.1 - 3.3 together with the associated test apparatus.</p> <p><b>3.1 Test method using MEGAOHMETER rated at 500 V D.C.</b></p> <p>This is the most popular test method for insulation resistance readings of up to <math>10^6</math> ohm.</p> <p><b>3.2 Test method using TERAOHMMETER rated at 500 V D.C.</b></p> <p>This test method complements the above method for insulation resistance readings of up to <math>10^{14}</math> ohm.</p> <p><b>3.3 Test method using MEGAOHMETER rated at 100 V D.C.</b></p> <p>This test method is recommended only for special cases and shall be specified case by case in drawings and/or procurement specifications in agreement with supplier and manufacturer.</p>			
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#### 4 TEST CONDITIONS

Test environment temperature shall be constant ( $\pm 0,5$  °C) between 18 and 28 °C.

Relative humidity shall be 45 to 65%.

Components and devices to be tested, together with the test circuit, shall be conditioned for 0.5 h in test environment.

Prior to the insulation resistance test of electrical components submit the system under test to a humid heat test followed by conditioning for 0.5 h in the test environment.

#### 5 TEST PROCEDURE

5.1 Rest the component or device under test on test setup with insulated top to and connect terminals to a suitable tester, selected from among those specified in para.3.  
For connection, use leads from the same megaohmmeter.

5.2 The readings shall be taken across body or fasteners and all connections, ground included, i.e. at the following application points:

- Across terminals and galvanic insulated parts.
- Across terminals and conductive case with galvanic insulated parts.
- Across terminals and electrodes wrapped around the case (e.g. in metal foil) for plastic body.

5.3 Apply specified voltage (usually 500 V as mentioned in para.3 and hold for 60 s minimum then take an insulation resistance reading on the megaohmmeter and enter in the form of the part or device under test.

5.4 This test does not apply to devices with metal body, the efficient operation of which is assured through ground connection of return lead and on which the ground lead cannot be disconnected for testing.

#### 6 EXPRESSION OF RESULTS

Repeat the tests as specified on drawings and/or procurement specification, on the specified number of parts or electrical devices and compare actual to target readings. No reading shall be below target, i.e. insulation resistance shall be  $\geq 10^6$  Mohm.

Enter the following parameters in test form:

- Applied voltage.
- Actual insulation resistance.
- Test method used.
- Parts to which voltage was applied.
- Part condition.

**NOTE :** As tests may be carried out on new specimens or subsequent to other tests (climatic, fatigue, etc.), the final report shall specify the condition of parts and assemblies to which test results refer.