SuperNine® Glass seal hermetic

Performance Specifications

MIL-DTL-38999 Series III Type

Performance Specifications, IAW MIL-DTL-38999 Series III REV. M, Glenair SuperNine	
Test	**Test Requirements**
Fungus	Materials used in the construction of these connectors shall be fungus inert per certification of method 508.4 of MIL-STD-810
Contact Plating Thickness	Plating thickness of contacts used in hermetic connectors shall be in accordance with MIL-DTL-45204
Supported Wire Size	<table><tr><td>**Contact Size**</td><td>23-22</td><td>22D</td><td>20</td><td>16</td><td>12</td><td>10</td></tr><tr><td>**Wire Gauge**</td><td>26, 24, 22</td><td>28, 26, 24, 22</td><td>24, 22, 20</td><td>20, 18, 16</td><td>14, 12</td><td>10</td></tr></table>
Thermal Shock	Unmated receptacles shall be subjected to 10 cycles of thermal shock
Air Leakage	When tested as specified, there shall be no evidence of leakage in excess of .01 micron ft^3/h (1E-7 cm^3/s).
Coupling and Uncoupling Torque	The coupling torque for mating and unmating of the counterpart connectors and protective covers shall meet the requirements of the table shown below. **Coupling and Uncoupling Torque** Shell Size / Maximum Engagement and Disengagement (Pound inch) / Minimum Disengagement (Pound inch) 9: 8: 2 11: 12: 2 13: 16: 2 15: 20: 3 17: 24: 3 19: 28: 3 21: 32: 5 23: 36: 5 25: 40: 5
Durability	No electrical or mechanical defects after 500 cycles of engagement and disengagement
Insulation Resistance	**At Ambient Temperature** insulation resistance between any pair of contacts and between any contact and the shell shall be greater than 5,000 megohms. Insulation resistance after altitude immersion shall be 1,000 megohms minimum. Insulation resistance after humidity shall be 100 megohms minimum. IAW EIA-364-21. **At Elevated Temperature** Unmated connectors shall be greater than 200 megohms when tested in accordance with test procedure EIA/ECA-364-21

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<table>
<tr><th colspan="2">Performance Specifications, IAW MIL-DTL-38999 Series III REV. M, Glenair SuperNine</th></tr>
<tr><th>Test</th><th>Test Requirements</th></tr>
<tr><td>Dielectric Withstanding Voltage</td><td>When tested as specified, the maximum leakage current shall be 2 milliamperes, and there shall be no evidence of electric breakdown or flashover. The magnitude of the test voltage shall be as specified below
(see MIL-STD-1560 for service rating of insert arrangement)
<table>
<tr><th colspan="5">Test Voltages, AC RMS, 60 Hz</th></tr>
<tr><th>Altitude</th><th>Service Rating M</th><th>Service Rating N</th><th>Service Rating I</th><th>Service Rating II</th></tr>
<tr><td>Sea level</td><td>1300</td><td>1000</td><td>1800</td><td>2300</td></tr>
<tr><td>50,000 feet</td><td>550</td><td>400</td><td>600</td><td>800</td></tr>
<tr><td>70,000 feet</td><td>350</td><td>260</td><td>400</td><td>500</td></tr>
<tr><td>100,000 feet</td><td>200</td><td>200</td><td>200</td><td>200</td></tr>
</table></td></tr>
<tr><td>Insert Retention</td><td>Unmated connectors shall retain their inserts in their proper location in the shell and there shall be no evidence of cracking, breaking, separation from the shell, or loosening of parts when subjected to 100 psi with a 25 psi minimum force.</td></tr>
<tr><td>Salt Spray (Corrosion)</td><td>When tested in accordance with EIA-364-26, meets appropriate electrical and mechanical requirements and shows no exposure of base metal after 500 hours of salt spray</td></tr>
<tr><td>Contact Resistance at 25° C</td><td>Contacts in the mated condition shall meet the contact resistance requirements of the table shown below. Appropriate compensation may be made for resistance in the measured value which is due to an additional length of wire included in the measurement.
<table>
<tr><th rowspan="2">Class</th><th rowspan="2">Contact Size</th><th rowspan="2">Wire Size</th><th rowspan="2">Test Amperes</th><th colspan="2">Millivolt Drop Maximum</th></tr>
<tr><th>Initial</th><th>After Conditioning</th></tr>
<tr><td rowspan="5">H, N and Y</td><td>12</td><td>12</td><td>17</td><td>85</td><td>100</td></tr>
<tr><td>16</td><td>16</td><td>10</td><td>85</td><td>100</td></tr>
<tr><td>20</td><td>20</td><td>5</td><td>60</td><td>75</td></tr>
<tr><td>22D</td><td>22</td><td>3</td><td>85</td><td>95</td></tr>
<tr><td>23-22</td><td>22</td><td>3</td><td>85</td><td>95</td></tr>
</table></td></tr>
<tr><td>Contact Retention</td><td>The axial displacement of the contact shall not exceed .012 inch (0.30 mm).
No damage to contacts or inserts shall result.</td></tr>
<tr><td>Vibration</td><td>There shall be no electrical discontinuity and there shall be no disengagement of the mated connectors, backing off of the coupling mechanism, evidence of cracking, breaking, or loosening of parts.</td></tr>
<tr><td>Shock</td><td>There shall be no electrical discontinuity and there shall be no disengagement of mated connectors, evidence of cracking, breaking, or loosening of parts
Standard shock (all series). Connectors shall be tested in accordance with test procedure EIA-364-27 and any additional details noted.
High-impact shock. Applicable to series I, III and IV only. Wired and mated connectors shall be tested in accordance with MIL-S-901, grade A and in accordance with any modifications or additions noted. The wire bundle shall be provided with a straight, environmental, backshell, category 2B in accordance with SAE-AS85049, the longest length available per shell size. Discontinuity monitoring shall be performed in accordance with EIA-364-46.</td></tr>
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<tr><th>Test</th><th>Test Requirements</th></tr>
<tr><td>EMI Ground Spring Forces</td><td>The forces necessary to engage and separate EMI plugs with receptacle shells shall be within the values specified in the table shown below:
<table>
<tr><th colspan="5">Axial force for Series III</th></tr>
<tr><th rowspan="2">Shell size</th><th>Maximum</th><th>Minimum</th><th>Maximum</th><th>Minimum</th></tr>
<tr><th>Pounds</th><th>Newtons</th><th>Pounds</th><th>Newton</th></tr>
<tr><td>8/9</td><td>25</td><td>111</td><td>0.5</td><td>2</td></tr>
<tr><td>10/11</td><td>25</td><td>111</td><td>0.5</td><td>2</td></tr>
<tr><td>12/13</td><td>30</td><td>133</td><td>0.5</td><td>2</td></tr>
<tr><td>14/15</td><td>30</td><td>133</td><td>0.5</td><td>2</td></tr>
<tr><td>16/17</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>18/19</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>20/21</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>22/23</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
<tr><td>24/25</td><td>35</td><td>156</td><td>0.5</td><td>2</td></tr>
</table></td></tr>
<tr><td>EMI Shielding</td><td>Effective over a range of 100 MHz to 10 GHz with a minimum 50dB effectiveness at 10GHz, in accordance with test method EIA-364-10
<table>
<tr><th rowspan="2">Frequency MHz</th><th>Leakage Attenuation (dB) Minimum</th></tr>
<tr><th>Series III & IV (Class H &Y)</th></tr>
<tr><td>100</td><td>80</td></tr>
<tr><td>200</td><td>75</td></tr>
<tr><td>300</td><td>73</td></tr>
<tr><td>400</td><td>71</td></tr>
<tr><td>800</td><td>66</td></tr>
<tr><td>1,000</td><td>65</td></tr>
<tr><td>1,500</td><td>59</td></tr>
<tr><td>2,000</td><td>55</td></tr>
<tr><td>3,000</td><td>52</td></tr>
<tr><td>4,000</td><td>50</td></tr>
<tr><td>6,000</td><td>48</td></tr>
<tr><td>10,000</td><td>45</td></tr>
</table></td></tr>
<tr><td>Fluid Immersion</td><td>Designed to function in all fluids encountered in any modern military or aerospace environment. Tested in accordance with test procedure EIA-364-10. Connectors shall be tested for coupling torque and dielectric withstanding voltage at sea level within 3 hours of fluid immersion cycles.</td></tr>
<tr><td>Contact Engagement and Separating Forces</td><td>Contact engagement and separating forces shall be within the limits, applicable to hermetically sealed connectors with sockets only. As specified in SAE-AS39029.</td></tr>
<tr><td>Resistance to Probe Damage</td><td>Contacts shall withstand the bending moment and depth of test probe insertion without evidence of damage that would interfere with the mechanical or electrical performance.</td></tr>
</table>

MIL-DTL-38999 Contact Materials and Specifications		
Component	**Material**	**Notes**
Pin Contact, Hermetic	Nickel-iron alloy per ASTM F30 (Alloy 52),50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches	Ferromagnetic material.
Socket Contact	Beryllium copper alloy per ASTM B197, 50 microinches gold plated per ASTM B488 Type II Code C Class 1,27 over nickel plate per QQ-N-290 Class 2, 50-100 microinches.	Approved for Space Flight
Socket Contact Hood	Stainless steel, passivated per AMS-QQ-P-35	Approved for Space Flight

COAX, TWINAX AND QUADRAX CONTACT PERFORMANCE

Contact Performance	
Size and Type	**Frequency**
16 Coax	up to - 500 Mhz
12 Coax	up to - 2 GHz
8 Coax	up to - 1 GHz
8 Twinax (Conc.)	up to - 20 MHz
8 Quadrax	up to - 1 GHz

Contact performance varies and is dependent on wire type and contact selection. Due to the wide selection of wire and contact combinations available, Glenair recommends contacting the factory regarding your specific application and setup.

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