DEUTSCH* DTHD Series Connector System

1. INTRODUCTION

1.1. Purpose

This report summarizes the results of testing performed on DEUTSCH DTHD series connector system to determine conformance to the requirements of product specification 108-151020.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the DEUTSCH DTHD series connector system. Testing was performed at the DEUTSCH Industrial Products Division Laboratory in 1999. The test file numbers for this testing are listed in Figure 1. This documentation is on file at, and available from Product Engineering, Industrial Commercial Transportation (ICT) Laboratory.

Size	Test Report
4	990630-01/04 990702-02/04 990712-01/03 990714-01/02 991029-02/03
8	990721-02/05 990722-01 990723-01/02 991022-01
12	990812-02/04 991013-01/06 991015-01/02

Figure 1

1.3. Conclusion

The DEUTSCH DTHD series connector system products listed in Paragraph 1.4 conform to the electrical, mechanical, and environmental performance requirements given in product specification 108-151020.

1.4. Test Specimens

Test specimens were representative of normal production lots. Specimens identified with the part numbers given in Figure 2 were used for testing.

DEUTSCH PART NUMBER	DESCRIPTION
DTHD04-1-4P	Receptacle, 1P, Black, N, Size 4
DTHD06-1-4S	Plug, 1P, Black, N, Size 4
DTHD04-1-8P	Receptacle, 1P, Black, N, Size 8
DTHD06-1-8S	Plug, 1P, Black, N, Size 8
DTHD04-1-12P	Receptacle, 1P, Black, N, Size 12
DTHD06-1-12S	Plug, 1P, Black, N, Size 12
0460-204-0490	Size 4 Solid Pin, Nickel
0462-203-04141	Size 4 Solid Socket, Nickel
0460-204-08141	Size 8 Solid Pin, Nickel
0462-203-08141	Size 8 Solid Socket, Nickel
0460-204-12141	Size 12 Solid Pin, Nickel
0462-203-12141	Size 12 Solid Socket, Nickel

Figure 2

1.5. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15° to 35°C

Relative humidity: 25 to 75%

2. TEST METHODS AND RESULTS

2.1. Examination of Product

A. Procedure: Not Applicable

B. Method: A visual examination for identification of product, torn seals, cracked plastic, etc.

C. Requirement: The connectors shall be correctly constructed, marked and shall show good quality and workmanship.

D. Result: **PASSED.**

2.2. Insulation Resistance

A. Procedure: Not Applicable

B. Method: Check each contact to all other contacts. Test to be performed using a 500 VDC megohmmeter.

C. Requirement: 1000 MΩ minimum for mated connectors

D. Result: **PASSED.**

2.3. Dielectric Withstanding Voltage

A. Procedure: Not Applicable

B. Method: Check each contact to all other contacts and the shell to determine current leakage.

C. Requirement: Current leakage not to exceed 2.0 mA for mated connector.

D. Result: **PASSED.**

2.4. Maintenance Aging

A. Procedure: Not Applicable

B. Method: Ten complete cycles of contact removal

C. Requirement: There shall be not visible change or damage to the contact cavities.

D. Result: **PASSED.**

2.5. Temperature Life

A. Procedure: Not applicable

B. Method: Wired and mated connectors subjected to 1000 hours at +125°C.

C. Requirement: Connectors to show no visible damage.

D. Result: **PASSED.**

2.6. Contact Retention

A. Procedure: Not Applicable

B. Method: The same cavities used for maintenance aging are subjected to a load pulling the terminal from the rear of the connector.

C. Requirement: Minimum pull out force shall be 35 lbf (size 4 & 8) and 30 lbf (size 12).

D. Result: **PASSED.**

2.7. Durability

A. Procedure: Not Applicable

B. Method: The connector is mated and unmated 100 cycles.

C. Requirement: No evidence of damage to the terminals, terminal plating, connector housing or seals which may be detrimental to reliable connector performance.

D. Result: **PASSED.**

2.8. Tool Abuse

A. Procedure: Not Applicable

B. Method: The removal tool is inserted into the connector, rotated 180° and then removed along with the terminal.

C. Requirement: Inspect cavity for torn grommet, missing contact retention fingers or any other damage that may be detrimental to reliable connector performance.

D. Result: **PASSED.**

2.9. Salt Spray

A. Procedure: Not Applicable

B. Method: The connector is mated and submerged in a fine mist of 5% by weight salt solution for 96 hours.

C. Requirement: There should be no evidence of corrosion on the connector or terminals after the connector is removed from the test and cleaned with tap water.

D. Result: **PASSED.**

2.10. Fluid Immersion

A. Procedure: Not Applicable

B. Method: Each sample to one fluid only. Mated connectors are submerged 5 minutes each day for 5 days in the following fluids
- Motor Oil at +25°C
- Brake Fluid at +60°C
- Gasoline at +25°C
- Diesel Fuel at +60°C
- 50/50 Antifreeze/Water at +60°C

C. Requirement: Connectors to show no visible damage.

D. Result: **PASSED.**

2.11. Thermal Cycle

A. Procedure: Not Applicable

B. Method: Cycle mated connectors from -55°C to +125°C at a rate of 3° per minute. Connectors remain at each temperature extreme for one hour minimum. Connectors subjected to 20 cycles.

C. Requirement: No evidence of cracking, chipping or other damage detrimental to the normal operation of the connector.

D. Result: **PASSED.**

2.12. Vibration

A. Procedure: Not Applicable

B. Method:

- Sine Sweep: 10 to 2000 Hz
- Initial Displacement: .007 inch DA
- Max Acceleration: 20 G's
- Test Duration: 12 hours
- Time Per Axis X, Y, Z: 4 hours. Current applied for the first three hours. During the last hour monitor for discontinuities in excess of 1 microsecond at 20mV and 100µA.

C. Requirement: Discontinuity not to exceed 1 µs at 100 mA during last hour of vibration in each axis.

D. Result: **PASSED.**

2.13. Impact

A. Procedure: Not Applicable

B. Method: Wired and mated connectors dropped from four feet on cement floor a total of five times.

C. Requirement: There shall be no evidence of cracking, distortion or detrimental damage to the connector following the test. Small chips and dents that do not adversely affect the connector shall be disregarded.

D. Result: **PASSED.**

2.14. Insert Retention

A. Procedure: Not Applicable

B. Method: Apply a 25 lb. load to the wires that exit the rear for one minute.

C. Requirement: There shall no evidence of cracking, distortion or detrimental damage to the connector following the test.

D. Result: **PASSED.**

2.15. Water Immersion

A. Procedure: Not Applicable

B. Method: Heat mated connectors to +125°C for two hours. Submerge connectors in water to a depth of 3 feet for four hours.

C. Requirement: Test samples must meet insulation resistance.

D. Result: **PASSED.**

2.16. Low Level Contact Resistance

A. Procedure: Not Applicable

B. Method: Test sample connectors to MIL-STD-1344, Method 3002.1

C. Requirement: 6 mΩ max.

D. Result: **PASSED.**

2.17. Contact Resistance

A. Procedure: Not Applicable

B. Method: Test per MIL-STD-1344, Method 3004.1 using test current below

a. 6 AWG: 100A; 8 AWG: 60A; 10 AWG: 40A; 12 AWG: 25A; 14 AWG: 18A

C. Requirement: 60 mV max

D. Result: **PASSED.**

3. REVISION HISTORY

Rev Ltr	Brief Description of Change	Date	Dwn	Apvd
A	Initial Release	13-Aug-2021	DM	IG