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**DEUTSCH\* DTP Series Connector System**

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**1. INTRODUCTION**

## 1.1. Purpose

This report summarizes the results of testing performed on DEUTSCH DTP series connector system to determine conformance to the requirements of product specification 108-151012, rev A.

## 1.2. Scope

This report covers the electrical, mechanical, and environmental performance of the DEUTSCH DTP series connector system. Testing was performed at the DEUTSCH Industrial Products Division Laboratory and DEUTSCH Corporate test Laboratory in 2000 and 2001. The test file numbers for this testing are listed in Figure 1. This documentation is on file at, and available from, DEUTSCH Industrial Products Division Laboratory.

Test Group	Test Report
1	000602-03/1 000602-04/1
2	000602-03/2 000602-04/2
3	000602-03/3 000602-04/3
4	000602-03/4 000602-04/4

**Figure 1**

## 1.3. Conclusion

The DEUTSCH DTP series connector system products listed in Paragraph 1.4 conform to the electrical, mechanical, and environmental performance requirements given in product specification 108-151012, rev A.

## 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.

## 1.5. Environmental Conditions

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

Temperature: 15° to 35°C

Relative humidity: 25 to 75%

DEUTSCH PART NUMBER	DESCRIPTION	TEST GROUP
DTP10-2P	2-Pin Receptacle, Header	1-4
DTP06-2S	2-Pin Plug, Inline	
WP-2S	2-Pin Plug Wedge Lock	
0462-203-12141	Size 12 Solid Socket, Nickel	
DTP10-4P	4-Pin Receptacle, Header	
DTP06-4S	4-Pin Plug, Inline	
WP-4S	4-Pin Plug Wedge Lock	
0462-203-12141	Size 12 Solid Socket, Nickel	

Figure 2

1.6. Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)			
	1	2	3	4
	TEST SEQUENCE (b)			
Inspection to Applicable Drawing	1			
Low Level Contact Resistance	2,6	3,7,11	2,6,10,14	2,6
Contact Resistance	3,7	4,8,12	3,7,11,15	3,7
Insulation Resistance	4,8	5,9,13	4,8,12,16	4,8
Crimp Tensile Strength	9			
Vibration - Random		2		
Contact Retention	10			
Drop	5			
Durability		1		
Thermal Life				5
Fluid Thermal Shock		6		
Salt Spray			9	
Sand and Dust			5	
Thermal Cycle			1	
Chemical Resistance				1
Steam Cleaning/Pressure Wash			13	
Humidity		10		

- (a) Specimens were prepared in accordance production drawings and were selected at random from current production.
  - Groups 1 through 4 specimens consisted of 2-position and 4-position connectors with DEUTSCH solid terminal system size 12 nickel socket contacts with size 12 AWG wire.
- (b) Numbers indicate sequence that tests were performed.

Figure 3

**2. TEST METHODS**

2.1. Inspection to Applicable Drawing

Product was visually inspected for compliance with engineering drawing. Product was inspected for correct use of materials, proper construction, correct part number and insert markings, and over-all quality of workmanship. Poor molding fabrication, loose materials, damaged or improperly manufactured contacts, galling of metal parts, nicks and burrs of metal parts, and torn seals or cracked plastic were considered adequate basis for rejection.

2.2. Low Level Contact Resistance

Applied voltage did not exceed 20 mV open circuit, and the test current was limited to 100 mA.

2.3. Contact Resistance

Applied voltage did not exceed 12 VDC open circuit, and the test current was 25 A.

2.4. Insulation Resistance

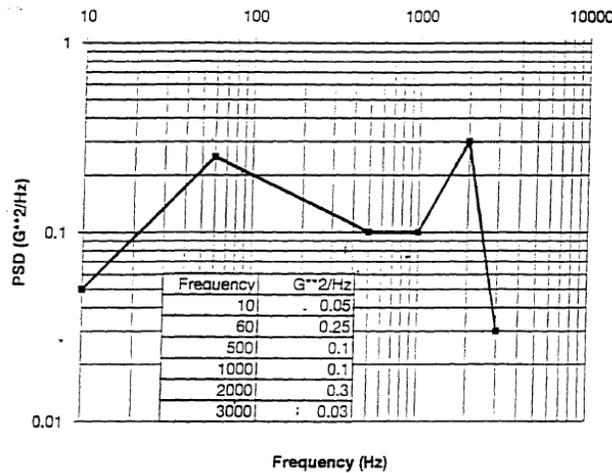
Each contact was checked to all other contacts and the shell, if the shell is conductive. Test was performed using a 100 VDC  $\pm 10\%$  and 500 VDC  $\pm 10\%$ .

2.5. Crimp Tensile Strength

The tensile strength of the crimped connection was tested by using suitable apparatus at a constant speed of  $1 \pm 1/4$  inch per minute.

2.6. Vibration - Random

Test samples subjected to 20 hours of random vibration in each of three mutually perpendicular axes per the vibration profile of Figure 4. Amplitude of vibration was 16.79 grams.



**Figure 4**

2.7. Contact Retention

An axial load applied at a rate of 1.00 lbf per second was applied until a force of 30 lbs was reached. The axial load was then maintained for 30 seconds.

2.8. Drop

Unmated samples were dropped on each of their 6 sides from a height of 1 meter onto a solid concrete surface. This process was repeated a total of 3 times.

2.9. Durability

Test samples were mated and unmated 25 complete cycles at room temperature.

2.10. Thermal Life

The wired mated connectors were subjected to 1000 hours at +125°C without current flowing.

2.11. Fluid Thermal Shock

Mated samples were heated to 125°C for 2 hours in an appropriate oven. Subjects were then submerged in a 0°C water bath to a depth less than 1 meter for 10 minutes. This process was repeated for ten (10) cycles. All samples were inspected at the conclusion of the test for the presence of water at the interface.

2.12. Salt Spray

Nonoperating mated samples were exposed to a 5% salt atmosphere at 35°C for 96 hours.

2.13. Sand and Dust

Nonoperating mated samples were exposed to a constant suspension, 8.5 grams/cubic meter minimum 80 mesh silica flour (i.e. air cleaner test dust) atmosphere for 24 hours. Test samples remained in a sealed chamber with the dust media for the duration of the test.

2.14. Thermal Cycle

Cycled mated connectors from -40° to +125°C. Connectors remained at each temperature extreme for 1 hour followed by a 45 minute transition period of 3°/min. Mated connectors were cycled a total of 20 complete cycles.

2.15. Chemical Resistance

Mated samples were dipped in a specified chemical for a specified dip time followed by a specified air dry time. Specified dip times, dry times, and cycles are given in figure 6. Lithium based grease was then applied to the interface area of unmated samples, samples were then mated and stored for 48 hours. Unmated samples were exposed to contact cleaner for 5 seconds followed by a 24 hour dry time for 10 cycles.

Test Chemical	Dip Cycles	Dip Time	Air Dry Time	Configuration
Motor Oil	80	3 seconds	3 minutes	Mated
Diesel Fuel	80	3 seconds	3 minutes	Mated
Brake Fluid	80	3 seconds	3 minutes	Mated
Antifreeze	80	3 seconds	3 minutes	Mated
Mineral Spirits	1	5 minutes	4 hours	Mated

Figure 6

2.16. Steam Cleaning/Pressure Wash

Test samples were mounted in normal operating position and subjected to 1500 psi + 90°C water spray for 10 minutes with 10% detergent degreaser added to the water wash. Test stand provided 360° coverage of the subject with the nozzle distance maintained at 6-12 inches. Fixture or nozzle rotation ensured direct impact on each side of the specimens under test for approximately 5 minutes a side.

2.17. Humidity

The sample was subjected to ten (10) twenty-four (24) hour cycles of the profile in Figure 5.

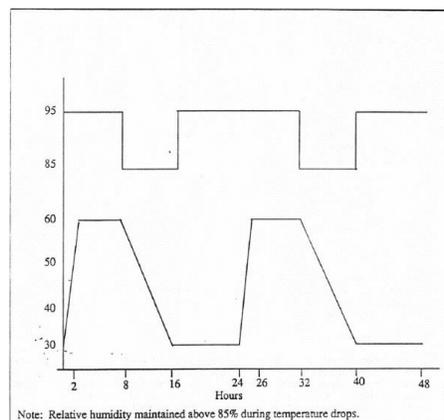


Figure 5

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### 3. SUMMARY OF TESTING

- 3.1. Inspection to Applicable Drawing—Test Groups 1  
All specimens met the drawing requirements of specified DEUTSCH drawings.
- 3.2. Low Level Contact Resistance—All Test Groups  
All low level contact resistance measurements were less than 10 mΩ with a test current of 100 mA.
- 3.3. Contact Resistance—All Test Groups  
All contact resistance measurements were less than 10 mΩ with a test current of 25 A.
- 3.4. Insulation Resistance—All Test Groups  
All insulation resistance measurements were greater than 1000 MΩ.
- 3.5. Crimp Tensile Strength—Test Group 1  
All tensile strength measurements were greater than 111 N.
- 3.6. Vibration Component Level—Test Group 2  
Following vibration testing no contact wear on the specimens which could be detrimental to reliable performance of sample was visible.
- 3.7. Contact Retention—Test Group 1  
All contact retention forces withstood 30 lbs for 30 seconds.
- 3.8. Drop—Test Group 1  
All test samples showed no detrimental damage following the test.
- 3.9. Durability—Test Group 2  
No evidence of damage to the contacts, the contact plating, the connector housing, are seals which could be detrimental to reliable connector performance were visible as a result of the test.
- 3.10. Thermal Life—Test Group 4  
No evidence of physical damage was visible as a result thermal life testing.
- 3.11. Fluid Thermal Shock—Test Group 2  
No evidence of physical damage or water was visible as a result thermal shock testing.
- 3.12. Salt Spray—Test Group 3  
No evidence of corrosion after samples were cleaned with tap water.
- 3.13. Sand and Dust—Test Group 3  
No evidence of physical damage was visible as a result of test.
- 3.14. Thermal Cycle—Test Group 3  
No evidence of physical damage was visible as a result thermal cycling.
- 3.15. Chemical Resistance—Test Group 4  
No evidence of physical damage was visible as a result of exposure to chemicals.
- 3.16. Steam Cleaning/Pressure Wash—Test Group 3  
No evidence of physical damage was visible as a result of High Pressure Wash Test.
- 3.17. Humidity—Test Group 2  
No evidence of physical damage was visible as a result of humidity cycling.