



**DT 12pin Flange Receptacle Connector Series**

**1. INTRODUCTION**

1.1. Purpose

This report summarizes the results of testing performed on DT 12pin Flange Receptacle Connector system to determine conformance to the requirements of product specification 108-151009.

1.2. Scope

This report covers the electrical, mechanical and environmental performance of the DT 12pin Flange Receptacle Connector system. Testing was performed at the TE Connectivity Greensboro Product Test Laboratory in 2020-2021. The test file number for this testing is listed in Figure 1. This documentation is on file at TE Connectivity Greensboro Product Test Laboratory.

Test Group	Test Report
1	2005114
	2101015
2	2005114

**Figure 1**

1.3. Conclusion

The DT 12pin Flange Receptacle connector system products listed in Paragraph 1.4 conform to the electrical and environmental performance requirements given in product specification 108-151009.

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.

PART NUMBER	DESCRIPTION	TEST GROUP
DT04-12PA-BL04	12 Way Receptacle with Enhanced Key and Flange DT Series	1-2
DT06-12SA-B016	12 Way Plug Mod - B016 DT Series	
DT04-12PA-CL03	12 Way Receptacle Flange E Seal DT Series	
DT06-12SA-C015	12 Way Plug with Reduced Wire Seal – C015 Mod DT Series	
0460-202-16141	Size 16 Pin Terminal	
0462-202-16141	Size 16 Soc Terminal	
W12P	Pin Wedge	
W12S	Socket Wedge	
DT12P-BT	Boot, Receptacle, 12Pin DT Series	
DT12S-BT	Boot, Plug, 12Pin DT Series	

**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%

1.6. Qualification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)	
	1	2
	TEST SEQUENCE (b)	
Examination of Product	1,8	1,10
Insulation Resistance		2,4,7,9
Term-Conn Insertion/Retention Method 2	2	
Conn-Conn Mating	3	
Maintenance Aging	5	
Conn-Conn Retention Force	6	
Conn-Conn Un-Mating Force	7	
Thermal Shock		5
Temperature Life	4	
Water Immersion (IPX7)		3
Water Immersion (IPX8)		6
High Pressure Wash / Steam Jet Cleaning (IPX9K)		8

- (a) Specimens were prepared in accordance production drawings and were selected at random from current production.
- Group 1 specimens consisted 8 samples each with DEUTSCH solid terminals size 16 nickel pins and sockets with 16 GXL wire.
    - DT04-12PA-BL04, DT04-12PA-CL03, W12P
    - DT06-12SA-B016, DT06-12SA-C015, W12S
  - Group 2 specimens consisted 8 samples each with DEUTSCH solid terminals size 16 nickel pins and sockets with 16 GXL wire.
    - DT04-12PA-BL04, DT04-12PA-CL03, W12P, DT12P-BT
    - DT06-12SA-B016, DT06-12SA-C015, W12S, DT12S-BT
- (b) Numbers indicate sequence that tests were performed.

**Figure 3**

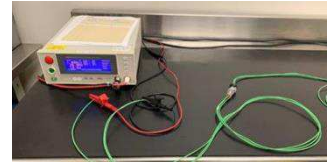
**2. TEST METHODS AND RESULTS**

2.1. Examination of Product (Group 1-2)

- A. Procedure: 109-151022 Rev D2
- B. Method: Conduct a visual examination for identification of product, torn seals, cracked plastic, etc.
- C. Requirement: The connectors shall be correctly constructed, marked and show good quality and workmanship. Connector after conditioning shall not show signs of damage or any detectable loss of function.
- D. Result: **PASSED.**

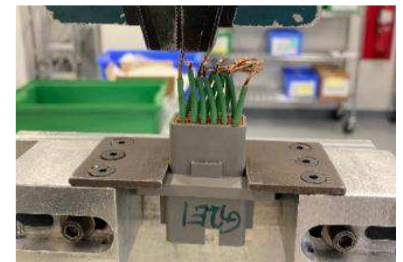
2.2. Insulation Resistance (Group 2)

- A. Procedure: 109-151022 Rev D2
- B. Method: Using a 1000 VDC megohmmeter check the insulation resistance between each contact to each adjacent contact
- C. Requirement: > 20 MΩ
- D. Result: **PASSED.**



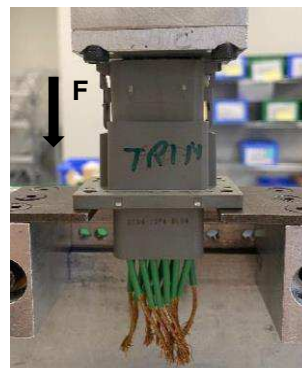
2.3. Term-Conn Insertion/Retention Method 2 (Group 1)

- A. Procedure: 109-151022 Rev D2
- B. Method:
  - a. Insertion Force:  
Insert the terminal straight into the connector at a uniform rate of 1.00 in/min [25.4 mm/min]. Stop the test before hitting the forward stop or a false force reading may occur.
  - b. Retention Force:  
The contacts shall be subjected to a direct pull of 110N for 1 minute. The terminal shall maintain its original position in the connector throughout the test. The secondary-locking device is needed.
- C. Requirement:
  - a. Insertion Force:  $F \leq 6 \text{ lbf}$  [27 N]
  - b. Retention Force:  $F \leq 25 \text{ lbf}$  [111 N]
- D. Result: **PASSED.**



2.4. Connector – Connector Mating Force (Group 1)

- A. Procedure: 109-151022 Rev D2
- B. Method: Insert the plug straight into the receptacle connector with increasing the mating force at a uniform rate of 1.00 inch [25.4] per minute until complete mating occurs. Stop test when an audible click of plug latch occurs.
- C. Requirement:  $F \leq 32 \text{ lbf}$  [142N]
- D. Result: **PASSED.**

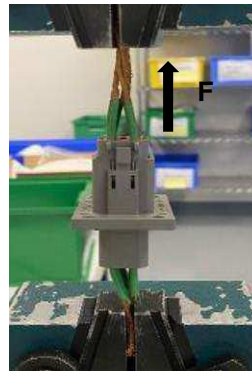


2.5. Maintenance Aging (Group 1)

- A. Procedure: 109-151022 Rev D2
- B. Method: Subject at least 10% of the cavities to 10 cycles of inserting and removing its respective contact. The 10th cycle shall include any disassembly required to remove the contacts. The connectors shall be mated and unmated during each cycle.
- C. Requirement: There shall be no visible change or damage to the contact cavity
- D. Result: **PASSED.**

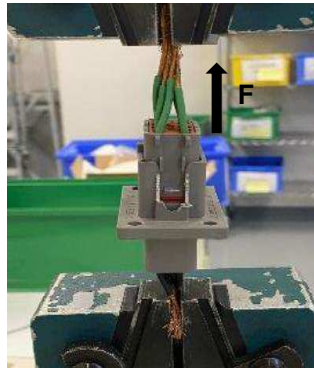
2.6. Conn-Conn Retention Force (Group 1)

- A. Procedure: 109-151022 Rev D2
- B. Method: Secure the wired connector in the appropriate fixture of the force tester. Apply a direct load of 50 lbf in a direction tending to pull the contact out of the rear of the connector and hold for 1 minute.
- C. Requirement: The plug and receptacle shall remain together and  $F \geq 50 \text{ lbf}$  [222 N]
- D. Result: **PASSED.**



2.7. Connector – Connector Un-Mating Force (Group 1)

- A. Procedure: 109-151022 Rev D2
- B. Method: The maximum force required to separate the plug and receptacle with the latch mechanism fully disengaged.
- C. Requirement:  $F \leq 32 \text{ lbf}$  [142N]
- D. Result: **PASSED.**



- 2.8. Thermal Shock (Group 2)
- A. Procedure: 109-151022 Rev D2
  - B. Method: Test samples were subjected to 10 cycles. One cycle consisted of a soak time at  $-55^{\circ}\text{C}$ , then transitioned within 2 minutes to an ambient temperature of  $+125^{\circ}\text{C}$  with a soak time, and then transition back to  $-55^{\circ}\text{C}$  within 2 minutes. The soak times were established as the time necessary to bring the internal connector temperature on test to within  $5^{\circ}\text{C}$  of each of the ambient temperatures.
  - C. Requirement: No evidence of cracking, chipping, or other damage detrimental to the normal operation of the connector.
  - D. Result: **PASSED.**
- 2.9. Temperature Life (Group 1)
- A. Procedure: 109-151022 Rev D2
  - B. Method:  $125^{\circ}\text{C}$  for 1000 hours
  - C. Requirement: No evidence of cracking, chipping, or other damage detrimental to the normal operation of the connector.
  - D. Result: **PASSED.**
- 2.10. Water Immersion (IPX7) (Group 2)
- A. Procedure: 109-151022 Rev D2
  - B. Method: Submerge the wired mated connector in room temperature water tank to a depth of 1.00 m  $\pm$  50 mm for  $30 \pm 5$  minutes.
  - C. Requirement: Must meet insulation resistance and visually inspect for moisture inside the connector.
  - D. Result: **PASSED.**
- 2.11. Water Immersion (IPX8) (Group 2)
- A. Procedure: 109-151022 Rev D2
  - B. Wired mated connectors were submerged in room temperature water tank to a depth of 1.00 m  $\pm$  50 mm for 4 hours  $\pm$  15 minutes.
  - C. Requirement: Must meet insulation resistance and visually inspect for moisture inside the connector.
  - D. Result: **PASSED.**
- 2.12. High Pressure Wash / Steam Jet Cleaning (IPX9K) (Group 2)
- A. Procedure: 109-151022 Rev D2
  - B. Method: Mated assemblies were attached to a rotating table. The rotation speed of the table was set at  $5 \pm 1$  RPM. The sample was sprayed with a flat fan type nozzle for 30 seconds from approximately 5 inches (127 mm) while rotating. The water temperature was approximately  $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . The spray nozzle was positioned at an angle of  $0^{\circ}$  to the test sample. This procedure was repeated three more times with the spray nozzle repositioned each time to spray at an angle of  $30^{\circ}$ ,  $60^{\circ}$ , and  $90^{\circ}$  to the test sample. The water flow rate was measured at approximately 14.5 LPM, and the water pressure measured at approximately 8274 KPa (1200 psi).
  - C. Requirement: Must meet insulation resistance and visually inspect for moisture inside the
  - D. Result: **PASSED.**



**3. REVISION HISTORY**

Rev Ltr	Brief Description of Change	Date	Dwn	Apvd
A	Initial Release	18-Aug-2021	PMV	IG