

**Dust and High Pressure Spray Validation Testing of
AMPSEAL* Plug Assemblies**

1. INTRODUCTION

Testing was performed on 8, 14, 23 and 35 position AMPSEAL* plugs and headers to determine their conformance to the requirements of DIN 40050, Part 9 - IP6K9K Dust and High Pressure Spray. Testing was performed at the Global Automotive Division Product Reliability Center. The test file numbers for this testing are 20090096ACL and 20090204ACL. This documentation is on file at and available from the Global Automotive Division Product Reliability Center.

2. TEST SPECIMENS

Test Group	Quantity	Part Number	Description
1	264	770520-1	Tin plated AMPSEAL receptacle contact
	4	770680-1	23 position AMPSEAL plug assembly
	4	776164-1	35 position AMPSEAL plug assembly
	4	776200-1	23 position AMPSEAL vertical header assembly
	4	776231-1	35 position AMPSEAL vertical header assembly
	4	776276-1	8 position AMPSEAL vertical header assembly
	4	776286-1	8 position AMPSEAL plug assembly
2	56	770520-3	Gold plated AMPSEAL receptacle contact
	4	1-776262-1	14 position AMPSEAL vertical header assembly
	4	776273-1	14 position AMPSEAL plug assembly

Figure 1

3. SPECIMEN PREPARATION

The backs of the specimens were sealed using Loctite 5091 NUVA-SIL silicone sealant to prevent the ingress of contaminants around the header pins. Specimens were then mounted to a test plate. The plug wires were cut to a length of 304.8 mm and 20 mm of insulation stripped from the ends. Even and odd position wires were then separated and the stripped ends twisted together and soldered so that the even numbered positions formed 1 connection while the odd numbered positions a second connection. Plugs were then mated to headers.

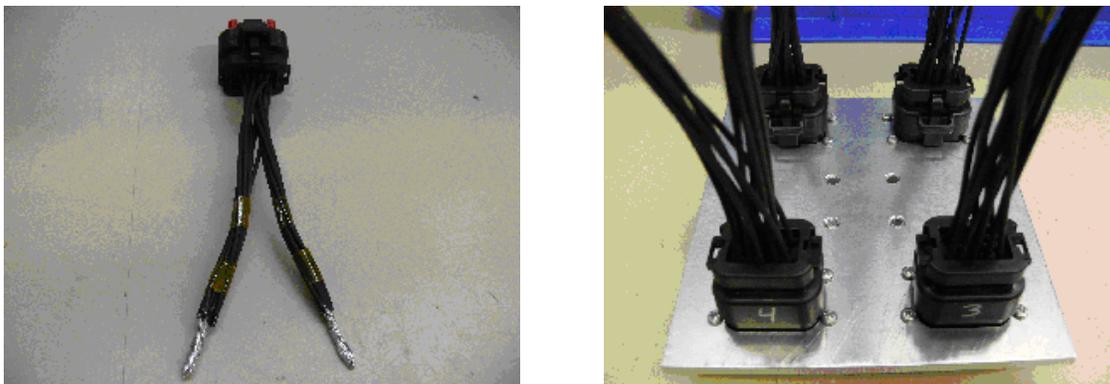


Figure 2

4. ENVIRONMENTAL CONDITIONS

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

- Temperature: 15 to 35°C
- Relative Humidity: 25 to 75%

5. TEST PROCEDURES

5.1. Visual Examination - IEC-60512-1

Specimens were visually examined using the naked eye under cool white fluorescent lighting for any defects that could affect the electrical or mechanical form, fit or function.

5.2. Isolation Resistance - EIA-364-21

Isolation resistance was measured between adjacent contacts of fully loaded and mated specimens. A test voltage of 500 volts DC was applied for 2 minutes before the resistance was measured.

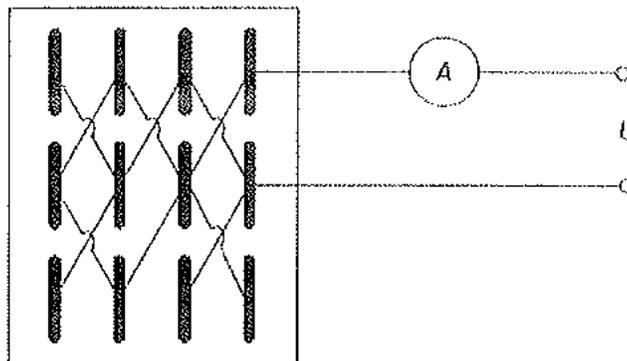


Figure 3

5.3. Dust - DIN 40050, Part 9, Section 7.3

Specimens were placed in a chamber and exposed to 6 second bursts of A2 fine dust conforming to ISO 12103-1 every 15 minutes for a total of 20 cycles, total test time of 5 hours and 2 minutes.



Figure 4

5.4. High Pressure Spray - DIN 40050, Part 9, Section 7.4

Specimens mounted on a rotating fixture were placed in a chamber and exposed to a high pressure water spray from a distance of 130 mm. The spray was delivered at 1300 psi with a flow rate of 15 liters per minute and a temperature of 45°C. As the specimens rotated, they were exposed to the spray from angles of 0, 30, 60 and 90 degrees for 30 seconds at each angle. After testing, the specimens were removed from the chamber and allowed to dry at ambient conditions.

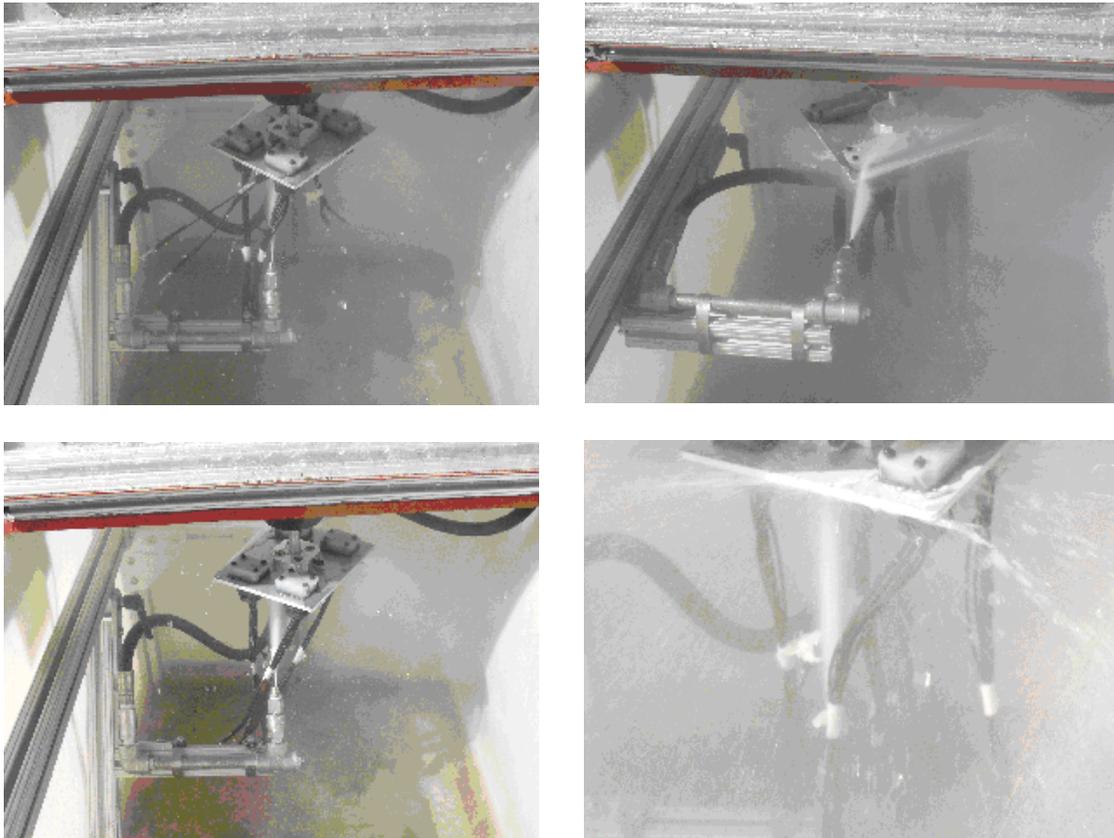


Figure 5

6. TEST RESULTS

6.1. Visual Examination

Specimens were visually examined using the naked eye under cool white fluorescent lighting. No defects that could affect the electrical or mechanical form, fit or function were observed.

6.2. Isolation Resistance

All isolation resistance measurements were greater than 100 megohms.

6.3. Dust

No ingress of dust was visible.

6.4. High Pressure Spray

No ingress of water was visible.