

DESIGN OBJECTIVES

This product described in this document has not been fully tested to insure conformance to the requirements outlined below. Therefore, AMP do Brasil makes no representation or warranty, express or implied, that the product will comply with these requirements. Further, AMP do Brasil may change these requirements based on the results of additional testing and evaluation. Contact AMP Engineering for further details.

1. SCOPE

1.1. CONTENT

This specification covers product performance requirements and test methods of AMP Superseal connector 3,5 mm pitch for automotive vehicle.

Note:

This specification may change without notice, as a result of product design changes and evaluation testing.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawings.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. AMP DOCUMENTS

- A. 109-1 Rev C: General Requirements for Test Specifications
- B. 109 Series : Test Specifications as indicated in Table 3. (Comply with MIL-STD-202 Rev 01 Apr 80, MIL-STD-1344 Rev 31 Oct 73 and EIA RS-364 Rev 17 Aug 71).
- C. Corporate Bulletin 401-76 Rev A: Cross-reference between AMP Test Specifications and Military or Commercial Documents.
- D. 100-41014 Rev A: Nylon Molding Compound type 6/6 lubricated.

AMP SECURITY CLASSIFICATION:

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				APP <i>EAS</i> Elias A. Sfeir <i>06 DEC 93</i>	LOC AP	NO 108-37021	REV 0	
				SHEET 01 OF 11	TITLE AMP SUPERSEALED CONNECTOR 3,5mm PITCH			
DIST	0	RELEASED	X.P.J.	06 DEC 93				
LTR	REVISION RECORD		APP	DATE				

3. DEFINITION OF TERMS

The following terms describe the terminology used in this specification.

3.1 CONTACT

Contact is a metallic member component of a connector assembly to form electrical contact. It is capsulated in cavities extant in the housing. For this product line only pin receptacle is available.

3.2 HOUSING

Housing is an electrical insulation member of a connector made of plastic material that capsulate contacts in its cavities. For this product line only housing that capsulates pin receptacle is available.

3.3 SPACER

Spacer is an electrical insulation, plastic component member of housing to assurance the contact position in its cavity.

3.4 SINGLE WIRE SEAL

Single Wire Seal is a rubber plug, used on the wire next to wire barrels of the receptacle contact to provide the sealing of connector assembly. It is crimped with the wire isolation.

3.5 CONNECTOR SEAL RING

Connector Seal Ring is a rubber component part attached to the receptacle housing to provide sealing between mating connectors.

3.6 CONNECTOR ASSEMBLY

Connector assembly is an assembly, consisting of housing, connector seal ring and wire-crimped contacts filled in all cavity positions.

Receptacle housing assembly consists of a housing, spacer receptacle contacts and connector seal ring.

4. PRODUCT PART NUMBERS AND DESCRIPTIONS

The products of the following part numbers shall be governed under this specification.

PART NUMBER / REVISION	DESCRIPTION
282438 - Rev 2	Multi Lock Rec. Contact
444040 - Rev D1	Hsg Ass'y 2 Posn, Multi Lock Rec.
444043 - Rev C1	Hsg Ass'y 3 Posn, Multi Lock Rec.
444046 - Rev E	Hsg Ass'y 4 Posn, Multi Lock Rec.
444049 - Rev A1	Single Wire Seal
963530 - Rev 0	Single Wire Seal

TABLE 1

OBS. The mating part dimensions are described in customer dwgs.

5. MATERIALS AND FINISH

5.1. CONTACT

Contact shall be made of pre-tinned bronze phosphorous.

5.2. HOUSING

Housing shall be made of molded 6/6 Nylon resin according to AMP Specification 100-41014 Rev A.

5.3. SPACER

Spacer shall be made of molded 6/6 Nylon resin according to AMP Specification 100-41014 Rev A.

5.4. SINGLE WIRE SEAL

Single Wire Seal shall be made of silicone rubber or fluorsilicone rubber depending of the connector usage.

5.5. CONNECTOR SEAL RING

Connector Seal Ring shall be made of silicone rubber or fluorsilicone rubber depending of connector usage.

6. PRODUCT DESIGN FEATURE, CONSTRUCTION AND DIMENSIONS

6.1. CONTACT

Product design feature, construction and dimensions shall be conforming to the applicable product/customer drawings.

6.2. HOUSING

Product design feature, construction and dimensions shall be conforming to the applicable product drawings. Housings are provided with polarization device to prevent housing from mismatching, and locking mechanism to secure mated housing.

6.3. SPACER

Product design feature, construction and dimensions shall be conforming to the applicable product drawings.

6.4. SINGLE WIRE SEAL

Product design feature, construction and dimensions shall be conforming to the applicable product/customer drawings.

6.5. CONNECTOR SEAL RING

Product design feature, construction and dimensions shall be conforming to the applicable product drawings.

7. PERFORMANCE RATING

7.1. TEMPERATURE RATING

Temperature rating of the connector assemblies shall be within the range of -30 oC and +105 oC, including ambient temperature and temperature rising as a result of loaded current affection.

7.2. CURRENT RATING

WIRE SIZE	TEST CURRENT (DC)
0,5 mm ²	6,00 A
1,0 mm ²	11,00 A

7.3. APPLICABLE WIRE SEAL

The wires of the following sizes, shall be used for the terminating the product connectors.

PART NUMBER	APPLICABLE WIRE SIZE (mm ²)	INSULATION DIAMETER (mm)
282438	0,5 - 1,0 FLKR one - wire crimp	1,4 - 2,1

Note: FLKR - Reduced Wire Insulation

TABLE 2

8. PERFORMANCE AND TEST DESCRIPTION

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Table 3 as tested per the test sequence in Table 4. All tests are performed at ambient environmental conditions per AMP Specification 109-1 Rev C unless otherwise specified.

8.1. TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Examination of Product	Meets requirements of product drawings	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Voltage Drop	3 mv/A max (new and after 10a. insertion)	Measure potential drop of mated contacts assembled in hsg; measure between two points on wires at 1 cm from the hsg; AMP Spec 109-25 Rev B

TABLE 3 (CONT.)

TEST DESCRIPTION	REQUIREMENT	PROCEDURE								
Termination Resistance	3 mΩ (max)	Subject mated contacts assembled in hsg to 100m.A; AMP Spec 109-6-1 Rev F								
Dielectric With Standing Voltage	No break down or flash-over when 1 KV AC is applied for 1 minute.	Test between adjacent contact of mated connector assemblies; AMP Spec 109-29-1 Rev C								
Insulation Resistance	200 megohms minimum initial	Test between adjacent contact of mated connector assembly; AMP Spec 109-28-4 Rev B								
Temperature vs Current	105 oC maximum temperature rise at specified current	Measure temperature rise vs current; AMP Spec 109-45-1 Rev B								
MECHANICAL										
Contact Engaging Force	10 N maximum per contact	Measure force to engage tab contact (fig.1) into rec. cont.								
Contact Insertion Force	10,0 N maximum per contact	Measure force to insert contact into housing; AMP Spec 109-41 Rev A								
Contact Retention	Contacts shall not dislodge 60 N min force. Voltage drop 5 mv/A	Measure terminal ret. force into hsg at a constant speed of 25-100 mm/min; AMP Spec 109-30 Rev C								
Mating Force	2 Pos - 70 N max 3 Pos - 85 N max 4 Pos - 100 N max	Measure force necessary to mate connector ass'y with locking latches; AMP Spec 109-42 cond A Rev A								
Unmating Force	2 Pos - 40 N max 3 Pos - 50 N max 4 Pos - 70 N max	Measure force necessary to unmate connector ass'y with locking latches removed or released; AMP Spec 109-42 cond A Rev A								
Crimp Tensile Strength	<table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>Wire Size</th> <th>T. Strength</th> </tr> <tr> <th>mm²</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>0,5</td> <td>70</td> </tr> <tr> <td>1,0</td> <td>115</td> </tr> </tbody> </table>	Wire Size	T. Strength	mm ²	N	0,5	70	1,0	115	Determine crimp tensile at a rate of 1,0 in/min; AMP Spec 109-16 Rev A
Wire Size	T. Strength									
mm ²	N									
0,5	70									
1,0	115									
Housing Lock Strength	145 N min	Determine strength of housing locking mechanism; AMP Spec 109-50 Rev 0								

TABLE 3 (CONT.)

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Vibration Sinusoidal High Frequency	No electrical discontinuities greater than 1 microseconds voltage drop 5 mv/A	Subject mated conn. to frequency range between 10 to 500 Hz and back to 10 Hz with speed equal to 1/8 per minute. Subject to a simple harmonic motion having displacement of 2 mm peak to peak while varying the frequency between 10 to 80 Hz and 25 G while varying between 80 to 500 Hz
Contact Disengaging Force	2,0 N minimum per contact	Disengage the tab contact (Fig.1) from the rec. contact
ENVIRONMENTAL		
Water Resistance Dynamic Immersion	Insulation resist. 200 m Ω	Mated connectors immersed in water with 5% NaCl 10 cm bellow the water level at 23 \pm 5 oC. Pulled the wire with a force between 1,5 and 2,5 N (see Fig.2) 500.000 cycles. Max frequency:50 cycles/min
Thermal Shock	No visual damages. Insulation resist., dielectric with standing voltage as described above. Voltage drop 5 mv/A. Mating, unmating force and hsg lock strength limited as described above. Water resistance-dynamic immersion limited to 10.000 cycles as described above.	Mated conn. subject to: 14 cycles according to 16 hours at 40 \pm 2 oC 90 - 95 % humidity. 2 hours at -40 \pm 2 oC 2 hours at 90 \pm 2 oC 4 hours at 23 \pm 5 oC (max. time to change condition: 3 min.) 15 ² cycle: exposure for 24 hours at 40 \pm 2 oC, 90 - 95 % humidity. 10 mating and unmating operations.
Temperature Life	No visual damages. Insulation resist., dielectric with standing voltage as described above. Voltage drop 5 mv/A. Mating, unmating force and hsg lock strength limited as described above. Water resistance-dynamic immersion limited to 10.000 cycles as described above.	Subject mated connectors to temperature life at 125 oC for 96 hours duration; AMP Spec 109-43 Rev B 10 mating and unmating operations
TABLE 3 (CONT.)		

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Salt-Spray Corrosion	Insulation resist. as described above. Voltage drop 5 mv/A	Subject mated connectors to 150 h at 5% of concentration NaCl (temperature 35 oC \pm 2 oC); AMP Spec 109-24 Rev 0
Chemical Resistance	No visual damages. Mating, unmating force and hsg strenth as described above.	Mated connectors immersed for 3 min: - brake fluid dot 3 at + 50 \pm 3 oC; - anti-freeze fluid at + 23 \pm 5 oC; - transmission and engine oil at 100 \pm 3 oC; - Cleaner fluid at +23 \pm 5 oC; - Gasoline at +23 \pm 5 oC - Diesel fluid at +23 \pm 5 oC Subject PN 444040-1 to - Methanol, Gasohol 70 hours at 70 oC
Water tight Sealing	No visual damage. Voltage drop 5 mv/A	According to IEC529 , Method IP x.7; Rev 1976
TABLE 3 (END)		

9. TEST SEQUENCE

All the tests shall be performed in the sequence specified in Table 4.

Note : Numbers indicate sequence in which tests are performed.

Test Description	Groups and Sequence										
	A	B	C	D	E	F	G	H	I	J	K
Examination of Product	1,5	1	1	1	1,15	1,5	1,5	1,15	1,10	1,5	1,5
Voltage Drop	2,4	4			4,12	2,4	2,4	4,12	4,7	2,4	
Termination Resistance		5									
Dielectric With Standing Voltage					6,11			6,11			
Insulation Resistance					5,10			5,10			2,4
Temperature vs. Current	3										
Contact Engaging Force		2									
Contact Disengaging Force		3									
Contact Insertion Force			2								
Contact Retention			3								
Mating Force					2,13			2,13	2,8		
Unmating Force					3,9			3,9	3,6		
Crimp Tensile Strength				2							
Housing Lock Strength					14			14	9		
Vibration						3					
Dynamic Imersion					8			8			3
Thermal Shock					7						
Temperature Life								7			
Salt-Spray Corrosion							3				
Chemical Resistance									5		
Water Tight Sealing										3	

TABLE 4

10. QUALITY ASSURANCY PROVISIONS

10.1. QUALIFICATION TESTING

A - Connector housing and contacts shall be prepared in accordance with applicable instructions sheets.

They shall be selected at random from current production. Each group of the sample contacts shall consist of more than 30 sets of prepared contacts and connector sample group shall consist of more than 5 sets of assembled connectors.

B - Qualification inspection shall be verified by testing samples as specified in Table 4.

C - Acceptance

Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product.

When product failures occurs, corrective action shall be taken and samples resubmitted for qualification.

10.2. QUALITY CONFORMANCE INSPECTION

The applicable AMP Quality Inspection Plans will specify the sampling acceptable quality level to be used.

Dimensional and functional requirements shall be in accordance with the applicable product drawing .

AMP	AMP DO BRASIL	LOC AP	SHEET 09 OF 11	NO 108-37021	REV A
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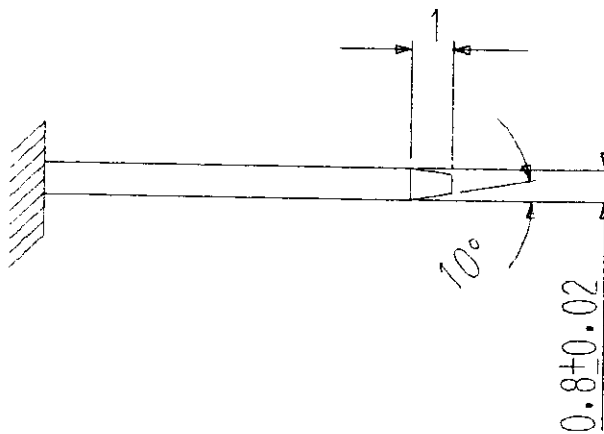
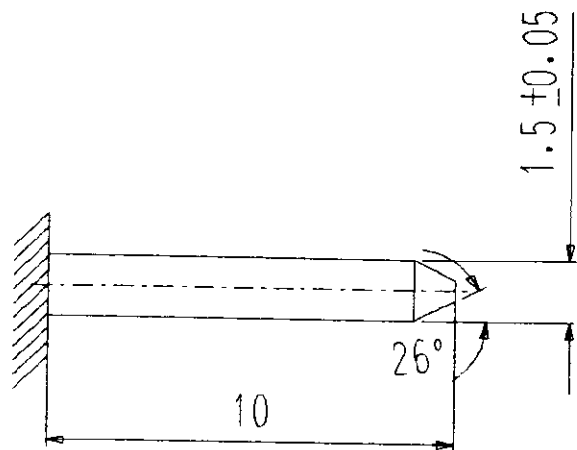


FIG. 1 - TAB INFORMATION

