

1.Scope:

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of AMP Door Mirror Connector.

Applicable product description and part numbers are as shown in Appendix 1.

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 the 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 Specifications:

A. 109-5000 : Test Specification, General Requirements for Test Methods

B. 114-5193 : Application Specification.

Crimping of AMP Door Mirror Series, Tab and Receptacle Contacts

C. 501-5175 : Test Report:

2.2 Commercial Standards and Specifications.

JIS C3406 : Low-Voltage Cables for Automotive Use

3.Requirements:

3.1 Design and Construction:

Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

3.2 Materials :

A. Contact :

Pretin Brass and Pret in Phosphor Bronze

B. Housing :

Polybutylene-terephthalate Molding

3.3 Ratings:

Temperature Rating : -40°C to 105°C

3.4 Performance and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.2. All tests shall be performed in the room temperature, unless otherwise specified.

3.5 Test Requirements and Procedures Summary:

Para.	Test Items	Requirements	Procedures
3.5.1	Examination of Product	Meets requirements of product drawing and AMP Specification 114-5193	Visual inspection No physical damage
Electrical Requirements			
3.5.2	Termination Resistance (Low Level)	10m Ω Max. (Initial) 20m Ω Max. (Final)	Subject mated contacts assembled in housing to closed circuit current of 10mA Max. at open circuit voltage of 20mV Max. Fig.3 AMP Spec. 109-5311-1
3.5.3	Insulation Resistance	100M Ω Min. (Initial) 100M Ω Min. (Final)	Impressed voltage 500V DC. Test between adjacent circuits of mated connectors. AMP Spec. 109-5302
3.5.4	Dielectric with-standing Voltage	No creeping discharge nor flash-over shall occur.	1.0kVAC for 1minute. Test between adjacent circuits of mated connectors. AMP Spec. 109-5301
3.5.5	Current Leakage	0.1mA Max. (Initial) 1.0mA Max. (Final)	12V DC 60 °C, 90~95% R.H. 1Hour AMP Spec. 109-5312 Fig.4
3.5.6	Over Current Loading	No ignition is allowed during the test.	25A Rated current 1 minutes "ON".
3.5.7	Current Cycling	20m Ω Max. (Final) No ignition is allowed during the test.	45 minutes "ON", 15 minutes "OFF" 100 cycles. AMP Spec. 109-5308 See Fig.7
3.5.8	Temperature Rising	60°C Max. under loaded specified current.	Measure temperature rising by energized current. Test current : 5A Max. AMP Spec. 109-5310 Method

Fig.2 (To be continued)

Physical Requirements																		
Para.	Test Items	Requirements	Procedures															
3.5.9	Handling Ergonomics	No abnormalities allowed in manual mating / unmating handling.	Manually operated															
3.5.10	Crimp Tensile Strength	<table border="1"> <thead> <tr> <th>Wire Size</th> <th>mm²</th> <th>(AWG)</th> <th>Crimp Tensil(min.)</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>0.3</td> <td></td> <td>#22</td> <td>59</td> <td></td> </tr> <tr> <td>0.5</td> <td></td> <td>#20</td> <td>88</td> <td></td> </tr> </tbody> </table>	Wire Size	mm ²	(AWG)	Crimp Tensil(min.)	N	0.3		#22	59		0.5		#20	88		Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 100mm/min, AMP Spec. 109-5205 Condition
Wire Size	mm ²	(AWG)	Crimp Tensil(min.)	N														
0.3		#22	59															
0.5		#20	88															
3.5.11	Contact Mating Force	0.98N ~ 6.86N	Head operating speed : 100 mm/min. Measure the force required to mate contacts. AMP Spec. 109-5214															
3.5.12	Contact Unmating Force	0.98 ~ 6.86N	Head operation speed : 100mm/min. Measure the force required to unmate contacts.															
3.5.13	Connector Locking Strength	73.5N Min.	Measure connector locking strength. Operation Speed : 100mm/min. AMP Spec. 109-5210															
3.5.14	Contact Retention Force	34.3N Min.	Apply an axial pull-off load to crimped wire. Operation Speed : 100mm/min. AMP Spec. 109-5212															
3.5.15	Connector Mating Force	7 Pos. 49N Max.	Operation Speed : 100mm/min. Measure the force required to mate connectors. AMP Spec. 109-5206 Condition															
3.5.16	Connector Unmating Force	7 Pos. 9.81 ~ 39.2N	Operation Speed:100mm/min. Measure the force required to unmate connectors, AMP Spec. 109-5206 Condition															

Fig.2 (To be continued)

3.5.17	Durability (Repeated Mate/ Unmating)	20m Ω Max. (Final)	Operation Speed: 100mm/min. No. of Cycles:30 Cycles. AMP Spec.109-5213
3.5.18	Resistance to "Kojiri"	20m Ω Max. (Final)	Manually repeat mating and unmating by "Kojiri" motions for 30 cycles. AMP Spec.109-5215
3.5.19	Vibration+Current Cycle	No electrical discontinuity greater than 1 μ sec. shall occur. 20m Ω Max. (Final)	Vibration Frequency : 20~200 Hz Accelerated Velocity : 44m/s ² Vibration Direction : X,Y,&Z Axes Duration : 100hours X axis, 50Hours each Y & Z Axes Test Current : 45min ON, 15min OFF 4.4A DC See Fig. 6 & 7. 45min. ON, 15min. OFF.
3.5.20	Vibration (High Frequency)	No electrical discontinuity greater than 1 μ sec. shall occur. 20m Ω Max.(Final)	Vibration Frequency : 20~200 Hz Accelerated Velocity : 44m/s ² Vibration Direction : 4 Hrs : X Axis, 2 Hrs each : Y & Z Axes AMP Spec. 109-5202 Fig.6
3.5.21	Thermal Shock	20m Ω Max. (Final)	-30°C/120min.,80°C/120min. Making this a cycle, repeat 5cycles. AMP Spec. 109-5103
3.5.22	Resistance to Cold	20m Ω Max.(Final)	-50°C ±5°C, 120hours AMP Spec. 109-5108
3.5.23	Temperature Life (Heat Aging)	20m Ω Max. (Final)	120°C,Duration:120hours AMP Spec. 109-5104 Condition
3.5.24	Humidity, Steady State	Insulation resistance (Final) 100m Ω Min. Termination resistance 20m Ω Max. (Final) Current Leakage : 1mA max.	Mated Connector, 90~95% R.H. 60°C 96hours AMP Spec, 109-5105
3.5.25	Dust Bombardment	20m Ω Max. (Final)	Subject JIS R5210 cement blow 1.5 kg per 10 seconds in 15 minutets intervals for 60 minutes. AMP Spec. 109-5110
3.5.26	Resistance to Oil	20m Ω Max. (Final)	Immerse mated connectors in oil. 50°C for 2 hours.

Fig. 2 (To be continued)

3.5.27	Resistance to Solvent	20m Ω Max. (Final)	Immerse in solvent 50±2°C for 2 hours. AMP Spec. 109-5114
3.5.28	Resistance to Ozon	20m Ω Max. (Final)	40±2°C, JIS K 6301 Ozon 50±2 ppn. 24 hours. AMP Spec. 109-5115
3.5.29	Water Splash	20m Ω Max. (Final) Current Leakage : 1mA Max.	Expose mated connectors under 80±3°C for 40 minutes, splash Water for 20 minutes. 48 cycles, Test Voltage : 12V AMP Spec. 109-5109 Cndition : JIS D 0203, S1
3.5.30	Waterright Sealing	49 kPa Min. (Initial) 29.4 kPa Min. (Final)	Blow compressed air at 9.8 kPa into mated conn. through a small hole. Increase pressure by 9.8 kPa graduation until air leaks. AMP Spec. 109-5111
3.5.31	Salt Spray	20m Ω Max. (Final)	Subject mated connectors to 5±1% salt concentration for 35±5°C hours : 96Hr.
3.5.32	SO ₂	20m Ω Max. (Final)	Mated connector SO ₂ Gas : 10ppm 90~95 R.H. 40°C 24Hr.
3.5.33	Icing	20m Ω Max. (Final)	Mated connector Immerse boiling water for 60 munites freeze at -30±3°C

Fig.2 (End)

4. Product Qualification Test Sequence.

Test Items	Test Group								
	1	2	3	4	5	6	7	8	9
	Test Sequence (a)								
Confirmation of Product	1	1	1	1	1,7	1,11	1,11	1,13	1,15
Termination Resistance (Low Level)			3		2,4,6	3,6,8	3,6,8	3,6,8,10	2,7,9,14
Dielectric Strength				3					4,12
Insulation Resistance				2					3,11
Current Leakage				4					5,10
Temperature Rising			4						
Current Cycling								9	
Vibration + Current Cycle									
Vibration (High Frequency)								7	
Connector Mating Force			2			2,10	2,10	2,12	
Connector Unmating Force			5			4,9	4,9	4,11	
Connector Locking Strength		2							
Contact Retention Force			6						
Contact Mating Force	2								
Contact Unmating Force	3								
Crimp Tensile Strength	4								
Durability (Repeated Mate/Unmating)									6
Resistance to "Kojiri"							5	5	
Thermal Shock					3				
Humidity(Steady State)					5				8
Industrial SO ₂ Gas									13
Temperature Life (Heat Aging)						5			
Resistance to Cold						7			
Watertight Sealing									
Resistance to Oil									
Dust Bombardment							7		
Resistance to Solvent									
Resistance to Ozon									
Water Splash									
Icing									
Salt Spray									

(a) Numbers indicate the sequence in which the tests are performed.

Test Items	Test Group							
	10	11	12	13	14	15	16	17
	Test Sequence (a)							
Confirmation of Product	1,11	1,7	1,7	1,6	1,5	1,5	1,5	1,5
Termination Resistance (Low Level)	3,6, 8	2,6	2,6	2,5	2,4	2,4	2,4	2,4
Dielectric Strength								
Insulation Resistance		3,5	3,5					
Current Leakage								
Temperature Rising								
Current Cycling					3			
Vibration + Current Cycle	7							
Vibration (High Frequency)								
Connector Mating Force	2,10							
Connector Unmating Force	4,9							
Connector Locking Strength								
Contact Retention Force								
Contact Mating Force								
Contact Unmating Force								
Crimp Tensile Strength								
Durability (Repeated Mate/Unmating)								
Resistance to "Kojiri"	5							
Thermal Shock								
Humidity(Steady State)								
Industrial SO ₂ Gas								
Temperature Life (Heat Aging)								
Resistance to Cold								
Watertight Sealing				4				
Resistance to Oil			4					
Dust Bombardment								
Resistance to Solvent		4						
Resistance to Ozon				3				
Water Splash						3		
Icing								3
Salt Spray							3	

(a) Numbers indicate the sequence in which the tests are performed.

5. Quality Assurance Provisions :**5.1 Test Specimens :**

The test specimens to be used for the tests shall be prepared in accordance with 114-5193, Application Specification, Crimping of AMP Door Mirror Series, Tab and Receptacle Contacts.

5.2 Test Conditions :

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions.

Temperature : 15 ~ 35°C

Relative Humidity : 45 ~ 75%

Atmospheric Pressure : 86.7 ~ 107kPa

The applicable product descriptions and part numbers are as shown in Appendix. 1

Prod. P/N	Description
917308	Receptacle Contact (0.3~0.5mm ²)
917309	Tab Contact (0.3~0.5mm ²)
917318	7 Position, Plug Housing Ass'y
917319	7 Position, Cap Housing Ass'y

Appendix. 1

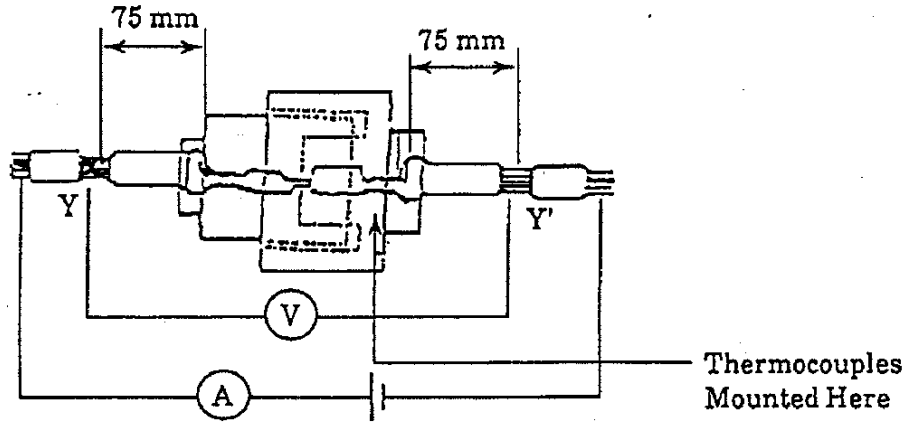


Fig.3

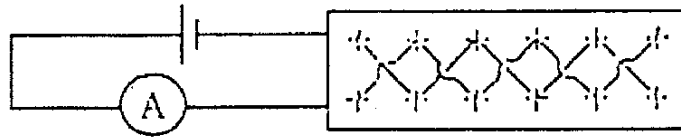


Fig.4

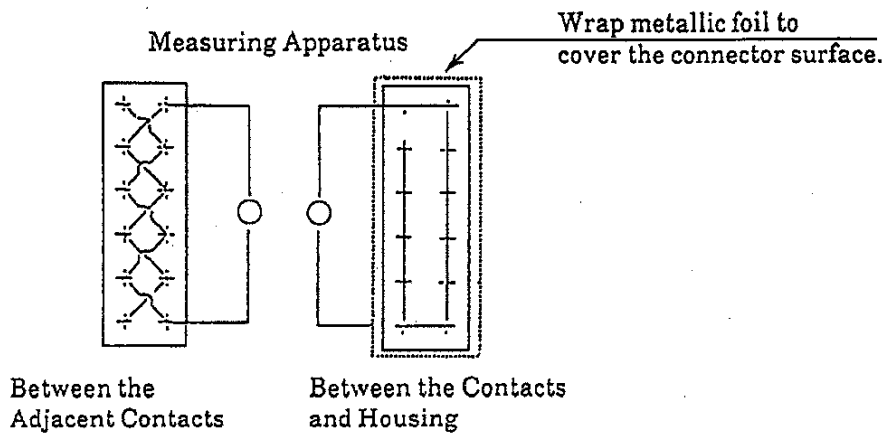


Fig.5

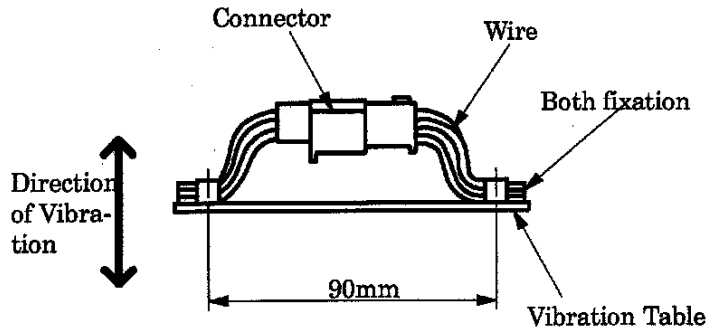


Fig.6

Applied Current : 1 MAX. kd
Reduction Co-efficient (Kd)

Wire Size(mm ²)	Allowable Current Max. (DC A)
0.3	8
0.8	11

Number of Energized Contacts	Reduction Coefficient
1	1
2~3	0.75
4~5	0.6
6~8	0.55
9~12	0.5
13~	0.4

Note: The acceptable maximum current capacity is obtained by the maximum rated current for the wire size applied, multiplied by the reduction co-efficient for the applicable number of loaded contacts.

Fig. 7

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