

108-5490

Product Specification
Self Aligning Inter Connector

NUMBER: 108-5490

SECURITY CLASSIFICATION:

Customer Release

1. Scope :

1.1 Contents :

This specification covers the requirements for product performance, test methods and quality assurance provisions of Self Aligning Inter 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. 114-5159, 5160 Application Specification, Crimping 040/070 Tab and Receptacle Contacts.
- C. 501- 5156 Test Report :

PRINT	DIST.	DR. 26 JUL 95 <i>S. Amemiya</i>				SHEET 1 OF 9	 AMP (Japan), Ltd. Kawasaki, Japan			REV. 0
		CHK. 26 JUL 95 <i>J. K. Stein</i>								
		APP. 26 JUL 95 <i>K. Odo</i>				NAME Self Aligning Inter Connector				
0	FJ00-2853-95	SA	<i>JK</i>	26 95						
LTR	REVISION RECORD	DR	CHK	DATE						

07/26/95

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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 :

a. Tab Receptacle Contact : Pre-tinned Brass or Pre-tinned phosphor bronze

B. Housing :

a. Plug Housing PBT

b. Cap Housing PBT

c. Double Lock Plate PBT

d. Moving Plate PBT

C. Others :

a. Wire Cover PP

b. M6 Bolt Carbon Steel

c. Bolt Case PBT

d. Indicator Pin PBT

e. Bolt Stopper Plate Stainless Steel

f. Nut Carbon Steel

3.3 Ratings :

A. Voltage Rating : 13 VAC

B. Current Rating : .040 1 A, .070 10 A, allowable current to be applied.

C. Temperature Rating : - 30 °C to 105 °C

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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	Confirmation of Product	Product shall be conforming to the requirements of applicable product drawing and Application Specification .	Visually, dimensionally and functionally inspected per applicable quality inspection plan.
Electrical Requirements			
3.5.2	Termination Resistance (Low Level)	.040 10 mΩ Max. (Initial) 20 mΩ Max (Final) .070 3 mΩ Max (Initial) 6 mΩ Max (Final)	Subject mated contacts assembled in housing to closed circuit current of 10 mA Max. at open circuit voltage of 20 mV Max. Fig. 3. AMP Spec. 109-5311-1
3.5.3	Dielectric Strength	No creeping discharge nor flashover shall occur. Current leakage : ____ mA Max.	1 kVAC for 1 minute. Test between adjacent circuits of mated connectors.
3.5.4	Insulation Resistance	.040 .070 100 MΩ Min.	Impressed voltage 500 V DC. Test between adjacent circuits of mated connectors. Fig. 4
3.5.5	Current Leakage	10 μA (Initial) 1 mA Max. (Final)	13 V DC impressed. After exposure in test chamber in 60 ± 5 °C, 90~95% RH. for 1 hour, measure current leakage.

Fig. 2 (CONT)

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Para.	Test Items	Requirements	Procedures												
3.5.6	Temperature Rising	.040-25 °C (Initial) .070-35 °C Max. under loaded (Initial) specified current.	After having a half number of the contacts series-wired, apply the specified current to the connector in the draft-free test chamber and after reaching the stabilized temperature, measure the temperature of the wire crimp of the contact. .040-1 A .070-10 A												
3.5.7	Fuse Matting	Fusion of the housing or ignition of the connector must not occur.	Atmosphere temperature 60 °C After having a half number of contacts series-wired apply the test current "α" for 24 hours, then apply current "β" for 1 hour. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>current α</th> <th>current β</th> <th>wire size</th> </tr> </thead> <tbody> <tr> <td>.040</td> <td>11 A</td> <td>14 A</td> <td>0.5 mm²</td> </tr> <tr> <td>.070</td> <td>22 A</td> <td>27 A</td> <td>1.25 mm²</td> </tr> </tbody> </table>		current α	current β	wire size	.040	11 A	14 A	0.5 mm ²	.070	22 A	27 A	1.25 mm ²
	current α	current β	wire size												
.040	11 A	14 A	0.5 mm ²												
.070	22 A	27 A	1.25 mm ²												
3.5.8	Current Cycling	Termination Resistance (Low Level) .040 20 mΩ Max. (Final) .070 6 mΩ Max. (Final) No ignition is allowed during the test.	After having a half number of contacts series-wired apply the following test current for 45 minutes and deenergize for 15 minutes. in ambient. Temperature of 70 °C, making this a cycle, repeat for 300 cycles.												
3.5.9	Lash Current	Termination Resistance (Low Level) .040 30 mΩ Max. (Final) .070 6 mΩ Max. (Final) Temperature Rising : .040 30 °C Max. (Final) .070 40 °C Max. (Final)	Apply test potential of 13 V in 60 °C ambient atmosphere. 1) Repeat 1,000 cycles of overload current, each cycle consisting of : 200% rated current 1 minute ON, 9 minutes OFF. 2) Repeat 1,000 cycles of overload current, each cycle consisting of : 500% rated current 10 seconds ON, 590 seconds OFF. The test modes (1) and (2) shall be performed independently.												

Fig. 2 (CONT)

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Para.	Test Items	Requirements	Procedures			
3.5.10	Insertion / Extraction Current Cycling	Termination Resistance (Low Level) .040 20 mΩ Max. (Final) .070 6 mΩ Max. (Final) Temperature Rising : .040 30 °C Max. (Final) .070 40 °C Max. (Final)	After applying repeated mating unmating preconditioning per Para. 3.5.15, apply current cycling test per Para. 3.5.8.			
Physical Requirements						
3.5.11	Vibration (High Frequency)	No electrical discontinuity greater than 10 μsec. shall occur. .040 20 mΩ Max. (Final) .070 6 mΩ Max. (Final)	Vibration Frequency : 10~50 Hz / 8 min. Accelerated Velocity : 66.6 m / s ² (6.8 G) Vibration Direction : X. Y. Z Duration : 8 hours each X 2 hours Y 4 hours Z 2 hours			
3.5.12	Contact Retention Force	39.2 N (4 kgf) Min. (Plug) 39.2 N (4 kgf) Min. (Cap)	Apply an axial pull-off to crimped wire. Operation Speed : 200 mm / min. AMP Spec 109-5212			
3.5.13	Contact Retention Force (Secondary Lock)	98 N (10 kgf) Min.	Measure contact retention force with secondary lock set it effect. Operation Speed : 200 mm / min.			
3.5.14	Crimp Tensile Strength	Wire size Tensile Strength				Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 200 mm / min. Amp. Spec. 109-5205 Condition
		mm ²	(AWG)	N	(kgf)	
		0.3	#22	58.8	6	
		0.5	#20	88.2	9	
		0.85	#18	127.4	13	
		1.25	#16	166.6	17	
		2	#14	245	25	
3.5.15	Durability (Repeated Mate / Unmating)	.040 20 mΩ max. (Final) .070 6 mΩ Max. (Final) Temperature Rising : .040 30 °C (Max.) .070 40 °C (Max.)	No. of Cycles : 50 cycles. AMP Spec. 109-5213			

Fig. 2 (CONT)

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Para.	Test Items	Requirements	Procedures
3.5.16	Contact engaging and separating force.	.040 0.98~5.88 N (0.1~0.6 kgf)Initial 0.69~5.88 N (0.07~0.6 kgf)Final .070 2.45~5.88 N (0.25~0.6 kgf Min.) Initial 1.47~4.90 N (0.15~0.5 kgf Min.) Final	Measure the force required to insert male contact into female contact to the designated depth. Them, unmate. Head operating speed : 20 mm a minute Measure initially and after durability test conditioning.
3.5.17	Bolt Tightening Torque :	4.9 N · m (50 kgf cm) Max.	After setting contact in preparatory position to mate, measure the maximum titening torque to have the pair of contacts to be fully mated as designated.
3.5.18	Bolt Break-off Tensile Strength :	12.7~17.6 N · m 130~180 kgf · cm	Measure the force at which the bolt is broken off when tested by applying torque force.
3.5.19	"Kojiri"	After mated by tightening the bolt, connector shall show normal mechanical / electrical functions.	Subject assembled plug connector to repeated Kojiri motions of 80 N as shown in Fig. 6 to travel mating by tightening the bolt with the rotating torque of 4.9 N · m.
Environmental Performance			
3.5.20	Temperature Life	Termination Resistance (Low Level) .040 20 mΩ Max. (Final) .070 6 mΩ max. (Final) Temperature Rising : .040 30 °C Max. (Final) .070 40 °C Max. (Final)	Subject mated connectors to exposure under elevated temperature at 100 °C for 120 hours.
3.5.21	Humidity Steady State	Termination Resistance (Low Level) .040 20 mΩ Max. (Final) .070 6 mΩ max. (Final) Current Leakage : 1 mA Max. (Final)	Subject mated connectors to exposure under elevated temperature at 60 °C with 90% relative humidity for 1 hour with the connector in vehicle-equipped condition.

Fig. 2 (END)

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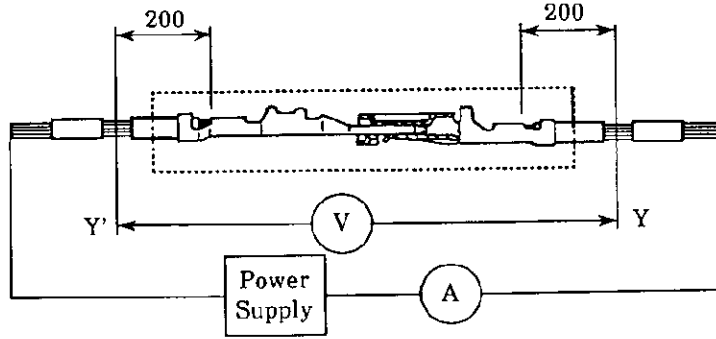


Fig. 3

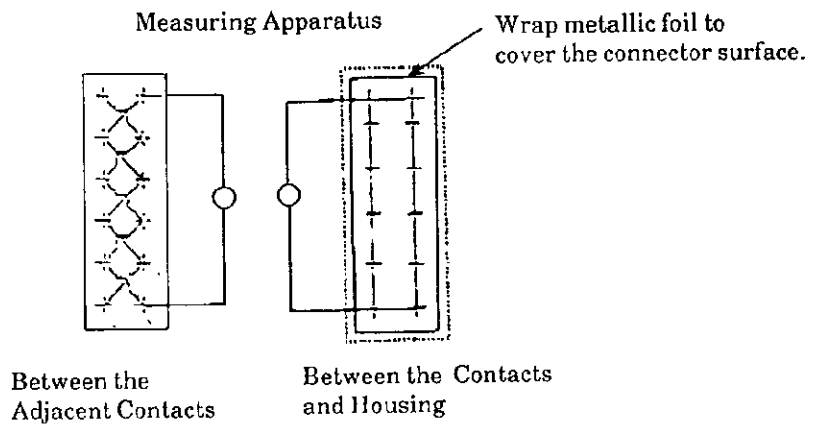


Fig. 4

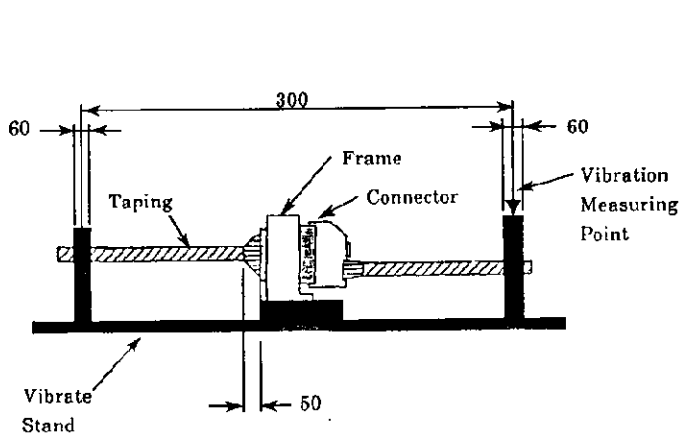


Fig. 5

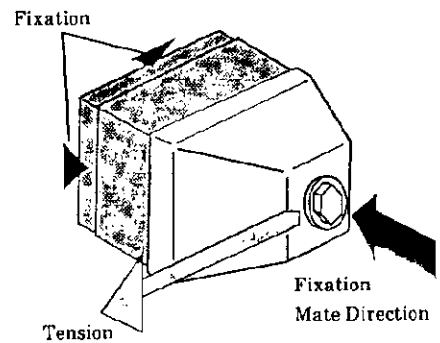


Fig. 6

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2. Product Qualification Test Sequence

Test or Examination	Test Group															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Test Sequence (a)															
Examination of Product	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Termination Resistance (Low Level)	2					2, 4 6	2, 5	2, 4							2, 5	2, 5
Dielectric Strength Voltage		2														
Insulation Resistance			2													
Current Leakage				2												4
Temperature Rise Vs. Current	3					7	4								4	
Fuse Matting					2											
Current Cycling						5										
Over Current Loading							3									
Vibration (High Frequency)								3								
Contact Unmating											2					
Contact Retention Force									2							
Contact Retention Force (Secondary lock)										2						
Crimp Tensile Strength																
Durability (Repeated Mate / Unmating)						3										
Bolt Tightening Torque												2				
Bolt Torque Tensile Strength													2			
"Kojiri"														2		
Temperature Life															3	
Humidity, Steady State																3

- (a) Discontinuities shall not take place in this test group, during tests.
- (b) Numbers indicate sequence in which tests are performed.

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CLASSIFICATION: JUS L00161 Release 100-10430

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SECURITY CLASSIFICATION:

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

Appendix 1

Prod. P/N	Description
175265	.040 II Series "S" Receptacle Contact Pre-Tinned
917067	.040 II Series "S" Tab Contact Pre-Tinned
175268	.070 II Series "S" Receptacle Contact Pre-Tinned
175272	.070 II Series "S" Tab Contact Pre-Tinned
175269	.070 II Series "M" Receptacle Contact Pre-Tinned
175273	.070 II Series "M" Tab Contact Pre-Tinned
177654	.070 II Series "ML" Receptacle Contact Pre-Tinned
179239	.070 II Series "ML" Tab Contact Pre-Tinned
179264	70 Pos. Cap Housing Ass'y
179220	100 Pos. Cap Housing Ass'y
179263	70 Pos. Plug Housing Ass'y
179216	100 Pos. Plug Housing Ass'y
179545	Bolt Case Ass'y
179597	Wire Cover For 70 Pos.
179544	Wire Cover For 100 Pos.

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