

Blower Motor 3P Connector

1. Scope

1.1 Content

This specification covers the requirements for product performance, test methods and quality assurance provisions of Blower Motor 3P 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. 114-5203 : Application Specifications
- C. 501-61076 : Qualification Test Report
- D. 502-106584: Qualification Test Report

3. Requirements

3.1 Design and Construction

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

3.2 Material

- A. Receptacle Contact : Pre-tin Copper Alloy (Tin PL 0.8 μm min)
- B. Plug Housing : PET/PC or PER/PC (UL94 V-0, GWT 750)
- C. Seal : Silicone (UL94 V-0), Hardness 45 ± 5
- D. TPA : 6/6 NYLON (UL94 V-0)
- E. Header Assembly :
 - (1) Header Housing : 6/6 NYLON (UL94 V-0, GWT 750)
 - (2) Post Contact : Tin Plated Copper Alloy (Post Tin PL. 2.0 μm min)

3.3 Ratings :

- A. Voltage Rating : 250 VAC
- B. Current Rating : 3A (Refer to Fig. 1 for maximum allowable current to be applied.)
- C. Temperature: -30°C to 75°C
- D. Minimum Rating : 1mV, 1 μ A Minimum
- E. Applicable P.C.B : Thickness 1.6mm
 Diameter of Thru Hole
 For Tine : 0.8 +0.1/-0mm (Punched Hole)
 1.0 \pm 0.05mm (Drilled Hole)
 For Boss : 1.7 \pm 0.1mm (Punched & Drilled Hole)

Wire Size	Maximum Allowable Current(A)
	4.1mm Pitch
AWG 22 & AWG 20	3.0
AWG 24	2.2
AWG 26	2

Fig.1

3.4 Performance Requirement 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 114-5203.	Visual inspection No Physical damage	
Electrical Requirements				
3.5.2	Termination Resistance (Low Level)	10 m Ω Max. (Initial) 20 m Ω Max. (Final)	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA.	
3.5.3	Dielectric withstanding Voltage	No creeping discharge nor flashover shall occur. Current leakage : 5mA Max.	1.5k VAC for 1 minute. (4.1mm Pitch) Test between adjacent circuits of mated. AMP Spec. 109-5301	
3.5.4	Insulation Resistance	500 M Ω Min. (Initial) 500 M Ω Min. (Final)	Impressed voltage 500VDC. Test between adjacent circuits of mated. AMP Spec. 109-5302-4	
3.5.5	Temperature Rising	30 °C Max. under loaded specified current or rating current.	Measure temperature rising by energized current. Fig. 5.7 AMP Spec. 109-5310-1	
Mechanical Requirements				
3.5.6	Crimp Tensile Strength	Wire Size	Crimp Tensile N(kgf) Min. Apply an axial pull-off load to crimped wire of contact secured on the tester, Operation Speed : 100mm/min AMP Spec.109-5205 Condition B	
		mm2		AWG
		0.14		26
		0.22	24	29.4(3.0)

		0.31	22	49.0(5.0)	But Operation Speed shall be applicable to the above.
3.5.7	Post Retention Force	Mating Side 19.6N (2.0kgf) Min.			Measure post retention force. Operation Speed : 100mm/min.
3.5.8	Contact Retention Force	Housing Material 6/6 Nylon(UL94V-0) 14.7N (1.5Kgf)Min. per contact			Apply an axial pull-off load to crimped wire. Operation Speed : 100 mm/min
3.5.9	Contact Insertion Force	Housing Material 6/6 Nylon (UL94V-0) 7.84N (0.8kgf) Max. per contact			Measure the force required to insert contact into housing
3.5.10	Connector Mating Force	Initial & After 30 Cycles 34.3N (3.5Kgf) Max			Operation Speed : 100 mm/min. Measure the force required to mate Connectors at initial and after 30 cycles. AMP Spec. 109-5206 Condition B But operation speed and measurement timing shall be applicable to the above.
3.5.11	Connector Unmating Force	Initial : 1.96N (0.2 Kgf) Min. After 30 Cycles 1.18N (0.12 Kgf) Min.			Operation Speed : 100 mm/min. Measure the force required to unmate connector at initial and after 30 cycles. AMP Spec.109-5206 Condition B. But operation speed and measurement timing shall be applicable to the above.
3.5.12	Durability (Repeated Mate/Unmating)	20 mΩ Max.(Final)			No. of Cycles : 30 cycles AMP Spec. 109-5213 But No. of cycles shall be applicable to the above.
3.5.13	Vibration (Low Frequency)	No electrical discontinuity greater than 1 μ sec. shall occur. 20 mΩ Max.(Final)			Subject mated connectors to 10-55-10Hz traversed in 1 minute at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. 100mA applied. Mounting : Fig.7 AMP Spec. 109-5201
3.5.14	Physical Shock	No electrical discontinuity greater than 1 μ sec. shall occur. Final 20 mΩ Max.			Accelerated Velocity : 490 m/s ² (50G) Waveform : Half sine curve Duration : 11 m sec. Velocity Change : 3.4 m/s Number of Drops : 3 drops each to normal and reversed directions of X.Y and Z axes, totally 18 drops. Mounting : Fig. 7 AMP Spec. 109-5208 Condition A
3.5.15	Solderability	Wet Solder Coverage : 95 % Min.			Solder Temperature : 230±5°C Immersion Duration : 3±0.5 seconds Flux : Alpha 100 AMP Spec.109-5203 But test condition shall be applicable to the above.

3.5.16	Connector Locking Strength	24.5N (2.5 kgf) Min.	Measure connector locking strength. Operation Speed : 100 mm/min.
3.5.17	Contact Mating Force	5.88N (0.6 kgf) Max	Measured by gauge tab (Fig.8) Operation Speed : 100 mm/min. Measurement timing : Initial AMP Spec. 109-5206 But operation speed measurement timing shall applicable to the above.
3.5.18	Contact Unmating Force	Initial : 0.2N (20gf) Min. After 30 Cycle : 0.1N (10gf) Min.	Measured by gauge tab (Fig.8) Operation Speed : 100 mm/min. Measurement timing : Initial and after 30 cycles. AMP Spec. 109-5206 But operation speed and measurement timing shall be applicable to the 7above.
3.5.19	Resistance to Cold	20 mΩ Max. (Final)	Mated connector -30°C ±3°C, 96 hours AMP Spec. 109-5108-3 Condition D But temperature shall be applicable to the above.
3.5.20	Thermal Shock	20 mΩ Max. (Final)	Mated connector -55°C/30 min., 85°C/30min. Making this a cycle, repeat 25 cycles. AMP Spec. 109-5103 Condition A
3.5.21	Humidity-Temperature Cycling	Insulation resistance(final) 500 MΩ Min. Termination resistance 20 mΩ Max. (Final)	Mated connector, 25~65°C, 90~95% R.H. 10 cycles Cold shock -10°C performed AMP Spec. 109-5106
3.5.22	Salt Spray	20 mΩ Max. (Final)	Subject mated connector to 5% salt concentration for 48 hours. AMP Spec. 109-5101 Condition A
3.5.23	Temperature Life (Heat Aging)	20 mΩ Max.(Final)	Mated connector 105°C, Duration : 4 days AMP Spec. 109-5104-3 Condition A

Fig. 2

3.6 Product Qualification and Test Sequence

Test Examination	Test Group																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Test Sequence (a)																	
Examination of Product	1,3	1,4	1,3	1	1,3	1,4	1,7	1,7	1,4	1,4	1,4	1,4	1,4	1,4	1,3	1,3	1,3	1,3
Termination Resistance (Low Level)							2,4,6	3,6	2,5	2,5	2,5	2,5	2,5	2,5	2,4			
Dielectric withstanding Voltage						3				7								
Insulation Resistance						2				6								
Temperature Rising					2													
Vibration (Low Frequency)							5											
Physical Shock							3											
Connector Mating Force								2										
Connector Unmating Force								4										
Connector Locking Strength			2															
Contact Insertion Force				2														
Contact Retention Force						5												
Contact Mating Force		2																
Contact Unmating Force		3																
Crimp Tensile Strength	2																	
Durability (Repeated Mate/Unmating)								5										
Post Retention Force																2		
Solderability																	2	
Humidity-Temperature Cycling										3								
Thermal Shock									3									
Salt Spray											3							
Temperature Life (Heat Aging)												3						
Resistance to Cold													3					

Fig.3

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

4. Quality Assurance Provisions :

4.1 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	86.6 ~ 106.6 Kpa

Fig. 4

4.2 Tests :

4.2.1 Test Specimens :

The test specimens to be employed for the tests shall be conforming to the requirements Specified in the applicable product drawing. The crimped contacts shall be prepared in accordance with the requirements of applicable application Specification, 114-5203 crimping of 2.5 mm Signal DBL-Lock Contacts on the wires specified in Fig. 5

4.2.2 Applicable Wires

The wires to be used for crimping the samples for performance testing shall be conforming to the requirements specified in Fig. 5

Terminal	Calculated Cross Sectional Area (mm ²)	AWG	Diameter of a Conductor (mm)	Number of Conductors	Insulation Outer Diameter(mm)
917684-1	0.14	26	0.16	7	1.3
	0.22	24	0.16	11	1.4
	0.34	22	0.16	17	1.5
917683-1	0.53	20 and 22	Refer to 114-5203	Refer to 114-5203	1.4-1.8

Fig. 5

The applicable product description and part numbers are shown on Appendix 1

Without TPA with Seal version

Product Part Number	Description
1743490-X	Header Asm.
1743492-X	Plug Hsg.
917684-1	Receptacle Contact
1743493-X	Rear Seal

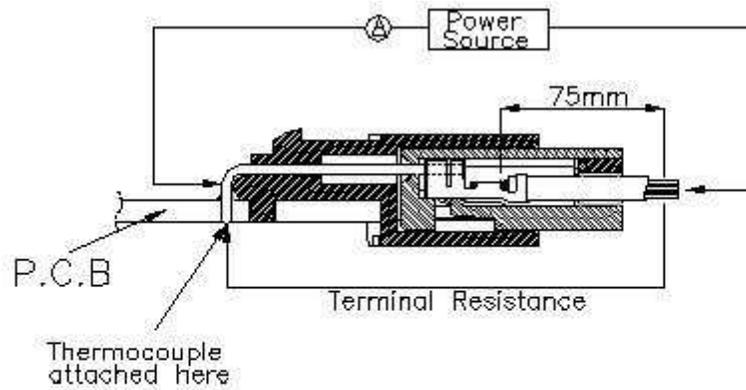
With TPA version

Product Part Number	Description
1743490-X	Header Asm.
2005542-X	Plug Hsg.
917684-1	Receptacle Contact
2005543-X	TPA

Without TPA without Seal version

Product Part Number	Description
1743490-X	Header Asm.
1743492-X 2005542-X	Plug Hsg.
917684-1 917683-1	Receptacle Contact

Appendix



Terminal Resistance (Low Level) and Temperature Rising Vs. Current Measuring Methods

Fig.6

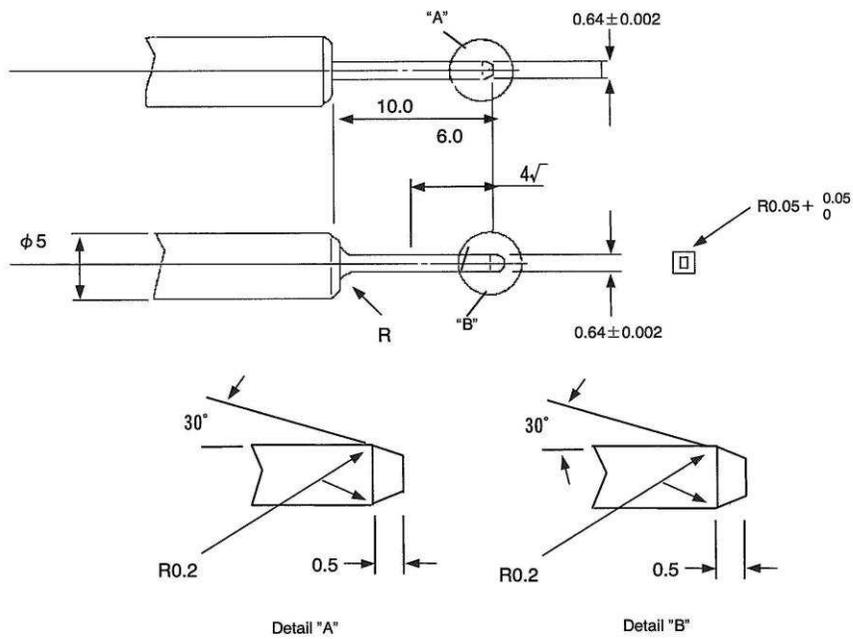
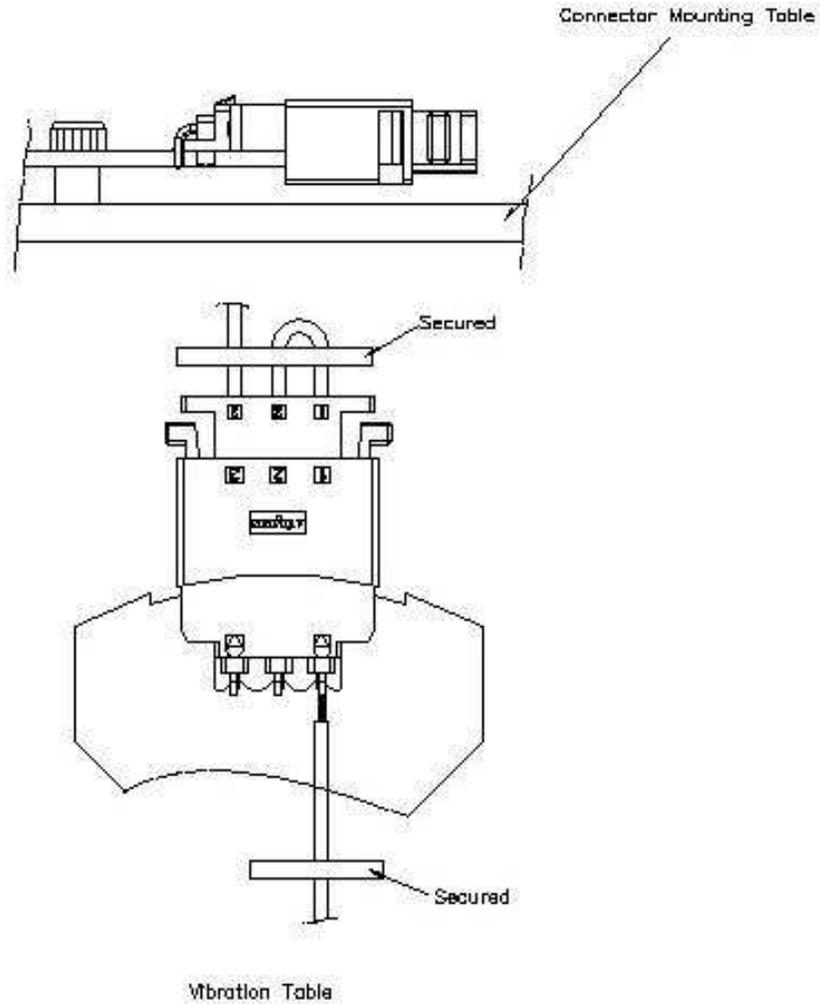


Fig.8



Connector Mounting Methods of
Low Frequency Vibration
& Physical Shock Tests

Fig.7