SAE Aerospace
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AEROSPACE STANDARD AMENDMENT

SAE AS85049B-A3

Issued 2009-08

(R) Connector Accessories, Electrical
General Specification For

FSC 5935

THIS AMENDMENT FORMS A PART OF AS85049B DATED 2007-03

1). Present Requirement, paragraph 3.3.7 – specifically finish desingators X, Y & Z:

X – Nickel fluorocarbon polymer. Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 1,000 hours of salt spray testing on aluminum and stainless steel material accessories and 2,000 hours of salt spray testing on composite material accessories; color shall be non-reflective.

Y – Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 500 hours of salt spray testing on aluminum material accessories and 1,000 hours of salt spray testing on composite and stainless steel material accessories; color shall be non-reflective.

Z – Zinc nickel in accordance with ASTM B841 over a suitable underplate to withstand 1,000 hours of salt spray testing on aluminum and stainless steel material accessories and 2,000 hours on composite material accessories; color shall be black, conductive, and non-reflective.

1a). Change requirement, paragraph 3.3.7, finish for aluminum connector accessories shall be as follows:

X – Nickel fluorocarbon polymer. Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 1,000 hours of salt spray (see 3.5.3), color shall be non-reflective. Finial finish shall be electrically conductive, - 65 to + 175°C.

Y – Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 500 hours of salt spray testing (see 3.5.3), color shall be non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C. (Not for use on shield termination type accessories, see 3.3.6).

Z – Zinc nickel in accordance with ASTM B841 over a suitable underplate to withstand 1,000 hours of salt spray testing (see 3.5.3), color shall be black, non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C.

YP - Pure dense electrodeposited aluminum, selective plating, - 65 to + 175°C.

ZP - Zinc nickel, selective plating, - 65 to + 175°C. (Not for use in space application).

1b). Change requirement, add to paragraph 3.3.7, finish for corrosion resistant steel accessories shall be as follows:

XS - Nickel fluorocarbon polymer. Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 1,000 hours of salt spray (see 3.5.3), color shall be non-reflective. Finial finish shall be electrically conductive, - 65 to + 200°C.

YS - Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 1,000 hours of salt spray testing (see 3.5.3), color shall be non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C. (Not for use on shield termination type accessories, see 3.3.6).

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ZS - Zinc nickel in accordance with ASTM B841 over a suitable underplate to withstand 1,000 hours of salt spray testing (see 3.5.3), color shall be black, non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C.

1c). Change requirement, add to paragraph 3.3.7, finish for composite accessories shall be as follows. End fittings and connector interface couplings may be unplated.

XC - Nickel fluorocarbon polymer. Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 2,000 hours of salt spray (see 3.5.3), color shall be non-reflective. Finial finish shall be electrically conductive, - 65 to + 200°C.

YC - Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 2,000 hours of salt spray testing (see 3.5.3), color shall be non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C. (Not for use on shield termination type accessories, see 3.3.6).

ZC - Zinc nickel in accordance with ASTM B841 over a suitable underplate to withstand 2,000 hours of salt spray testing (see 3.5.3), color shall be black, non-reflective. Final finish shall be electrically conductive, - 65 to + 175°C.

YL - Pure dense electrodeposited aluminum, selective plating, - 65 to + 175°C.

ZL - Zinc nickel, selective plating, - 65 to + 175°C. (Not for use in space application).

Rationale: Additional finish designators required to faciliate each connector accessory material group.

Amendment A2: March 2009

1). Present Requirement – None

Change Requirement - Add the following finish designators for aluminum, stainless steel and composite connector accessories (paragraph 3.3.7, Finish):

X – Nickel fluorocarbon polymer. Nickel with fluorocarbon polymer additives over a suitable underplate to withstand 1,000 hours of salt spray testing on aluminum and stainless steel material accessories and 2,000 hours of salt spray testing on composite material accessories; color shall be non-reflective.

Y – Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 500 hours of salt spray testing on aluminum material accessories and 1,000 hours of salt spray testing on composite and stainless steel material accessories; color shall be non-reflective.

Z – Zinc nickel in accordance with ASTM B841 over a suitable underplate to withstand 1,000 hours of salt spray testing on aluminum and stainless steel material accessories and 2,000 hours on composite material accessories; color shall be black, conductive, and non-reflective.

Rationale for Change:

Additional finish designators to accommodate industry user requests to include these options in support of the mating connector specifications now offering these finish alternatives.

2). Present Requirement – Page 19, paragraph 4.3 Qualification Inspection sub-paragraph a:

Qualification inspection shall consist of all of the applicable examinations and tests preformed in the sequence specified in Table 1 on the qualification test samples specified in 4.3.2. Qualification tests shall not begin until authorized by the qualifying activity (see 6.6). The letter of authorization shall specify the conditions under which the qualification test shall be performed and specify the number of tested or untested samples required to be submitted with the test results. Samples shall be provided to the qualifying activity at no cost.

Change Requirement - Paragraph 4.3 Qualification Inspection sub-paragraph a:

Qualification inspection shall consist of all the applicable examinations and test preformed in the group sequence specified in Table 1 on the qualification test samples specified in 4.3.2. The Qualifying Activity (QA) and the Manufacturer (MFR) shall perform the tests specified. The manufacturer (MFR) shall also perform the tests specified on the individual slash sheet where qualification is desired. A request for qualification shall be made to the qualifying activity and testing shall not begin until authorized (see 6.6). The letter of authorization shall specify the conditions under which the qualification test shall be performed and specify the number of tested or untested samples required to be submitted with the test results. Samples shall be provided to the qualifying activity at no cost. For each accessory tested the manufacturer shall use materials, manufacturing processes and methods of inspection as would be used to provide the accessory to a purchaser in accordance with the Quality Conformance Inspection requirements specified herein (see 4.4).
Rationale for Change: Establish Qualifying Activity Requirements

3). Present Requirement – Page 20, paragraph 4.3.2 Sample Size:

Unless otherwise specified by the qualifying activity two (2) sample connector accessories in each shell size range (small range 08 to 16); (medium range 18 to 28 and 61); (large range 32 to 48), for MIL-DTL-5015 and MIL-DTL-22992 accessories, and (small range 08/09 to 12/13); (medium range 14/15 to 18/19); (large range 20/21 to 24/25), for the MIL-DTL-38999 Series I thru IV accessories, and in each finish for which qualification is desired shall be provided for qualification testing. Each part subjected to qualification testing shall be provided with an applicable connector. The counterpart connector supplied for this purpose shall be new, previously qualified connectors. Manufacturers not producing connectors shall submit data substantiating that tests were performed with qualified counterpart connectors. For those tests not requiring indication of connector performance when tested with the connector accessory, a similarly compatible dummy connector, duplicating accessory mating features may be used in place of an actual connector. When a fluid test is required, one untested sample connector accessory for each fluid type of any shell size range regardless of the finish shall be tested.

Change Requirement – Page 20, paragraph 4.3.2 Sample Size

Unless otherwise specified by the qualifying activity two (2) sample connector accessories per each group specified in Table 1 in each shell size range (small range 08 to 16); (medium range 18 to 28 and 61); (large range 32 to 48), for MIL-DTL-5015 and MIL-DTL-22992 accessories, and (small range 08/09 to 12/13); (medium range 14/15 to 18/19); (large range 20/21 to 24/25), for the MIL-DTL-38999 Series I thru IV accessories, and in each finish and material which qualification is desired shall be provided for qualification testing. Each sample subjected to qualification testing shall be provided with an applicable counterpart connector as specified herein. The counterpart connector supplied for this purpose shall be new, previously qualified connectors. Manufacturers not producing connectors shall submit data substantiating that tests were performed with qualified counterpart connectors. When a counterpart connector is required but there are no known qualified sources a commercial counterpart connector may be used as a substitution. For those tests not requiring indication of connector performance when tested with the connector accessory, a similarly compatible dummy connector, duplicating accessory mating features may be used in place of the actual connector. When a fluid test is required, one untested connector accessory for each fluid type of any shell size range in each material and finish qualification is desired shall be tested.

Rationale for Change: Establish Qualifying Activity Requirements

4). Present Requirement – none

Change Requirement – Page 20, add paragraph 4.3.2.3 Qualification Test Report:

The qualifying activity shall provide the manufacturer a data package of all tests preformed in accordance with Table 1. The manufacturer shall combine the qualifying activity test data with the manufacturer's test data into one final report and submit the final report to the qualifying activity for approval. The manufacturer shall not be considered qualified until receipt of the qualifying activity authorization approval letter. The final test report shall remain on file with the manufacturer for a minimum period of six (6) years.

Rationale for Change: Establish Qualifying Activity Requirements

5). Present Requirement – Page 21, 22 & 23 Table 1 Qualification Inspection:

As currently shown

Change Requirement – Page 21, 22 & 23 Table 1 Qualification Inspection:

TABLE 1 QUALIFICATION INSPECTION

Inspection Category 1	Requirement Paragraph	Test Paragraph	Applicable Test Groups				
			QA		MFR		
			1	2	1	2	3
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2		X			
Shell Conductivity	3.5.2	4.6.3		X			
Salt Spray	3.5.3	4.6.4		X			
Shell Conductivity	3.5.2	4.6.3		X			
1/ Vibration – Category 1A	3.5.4	4.6.5.1	X				
Category 1B	3.5.4	4.6.5.2	X				
Category 1C	3.5.4	4.6.5.3	X				
1/ Shock – Category 1A	3.5.5	4.6.6.1	X				
Categories 1B & 1C	3.5.5	4.6.6.2	X				
2/ Water Pressure	3.5.7	4.6.8			X		
Cable Pullout – Categories 1A & 1B	3.5.8	4.6.9			X		
Coupling Thread Strength	3.5.9	4.6.10				X	
External Bending Moment	3.5.10	4.6.11				X	
Safety Wire Holes	3.5.11	4.6.12				X	
3/ Fluid Immersion	3.5.12	4.6.13					X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X

Inspection Category 2	Requirement Paragraph	Test Paragraph	Applicable Test Groups				
			QA		MFR		
			1	2	1	2	3
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2		X			
Temperature Cycling (finish J, L & M)	3.5.14	4.6.16			X		
Hydrolytic Stability (finish J, L & M)	3.5.15	4.6.17			X		
Plating Adhesion (finish J, L & M)	3.5.16	4.6.18			X		
1/ Ozone Exposure (finish J, L & M)	3.5.17	4.6.19			X		
Coupling Thread Strength	3.5.9	4.6.10		X			
Shell Conductivity	3.5.2	4.6.3		X			
Salt Spray	3.5.3	4.6.4		X			
Shell Conductivity	3.5.2	4.6.3		X			
1/ Vibration – Category 2A	3.5.4	4.6.5.1	X				
Category 2B	3.5.4	4.6.5.2	X				
Category 2C	3.5.4	4.6.5.3	X				
1/ Shock – Category 2A	3.5.5	4.6.6.1	X				
Categories 2B & 2C	3.5.5	4.6.6.2	X				
2/ Humidity	3.5.6	4.6.7				X	
Cable Pullout – Categories 2A & 2B	3.5.8	4.6.9				X	
Coupling Thread Strength	3.5.9	4.6.10				X	
External Bending Moment	3.5.10	4.6.11				X	
Safety Wire Holes	3.5.11	4.6.12				X	
3/ Fluid Immersion	3.5.12	4.6.13					X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X

TABLE 1 QUALIFICATION INSPECTION (continued)

Inspection Category 3	Requirement Paragraph	Test Paragraph	Applicable Test Groups				
			QA		MFR		
			1	2	1	2	3
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2	X				
Life Cycling	3.5.13	4.6.15	X				
Temperature Cycling (finish J, L & M)	3.5.14	4.6.16			X		
Hydrolytic Stability (finish J, L & M)	3.5.15	4.6.17			X		
Plating Adhesion (finish J, L & M)	3.5.16	4.6.18			X		
1/ Ozone Exposure (finish J, L & M)	3.5.17	4.6.19			X		
1/ Thermal Vacuum Outgassing (finish G)	3.5.18	4.6.20			X		
Coupling Thread Strength	3.5.9	4.6.10		X			
Shell Conductivity	3.5.2	4.6.3		X			
Salt Spray	3.5.3	4.6.4		X			
Shell Conductivity	3.5.2	4.6.3		X			
1/ Vibration – Category 3A	3.5.4	4.6.5.1	X				
Category 3B	3.5.4	4.6.5.2	X				
Category 3C	3.5.4	4.6.5.3	X				
1/ Shock – Category 3A	3.5.5	4.6.6.1	X				
Categories 3B & 3C	3.5.5	4.6.6.2	X				
Cable Pullout – Categories 3A & 3B	3.5.8	4.6.9				X	
Coupling Thread Strength	3.5.9	4.6.10				X	
External Bending Moment	3.5.10	4.6.11				X	
Safety Wire Holes	3.5.11	4.6.12				X	
3/ Fluid Immersion	3.5.12	4.6.13					X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X

Inspection Category 4	Requirement Paragraph	Test Paragraph	Applicable Test Groups				
			QA		MFR		
			1	2	1	2	3
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2		X			
Life Cycling	3.5.13	4.6.15	X				
Temperature Cycling (finish J, L & M)	3.5.14	4.6.16			X		
Hydrolytic Stability (finish J, L & M)	3.5.15	4.6.17			X		
Plating Adhesion (finish J, L & M)	3.5.16	4.6.18			X		
1/ Ozone Exposure (finish J, L & M)	3.5.17	4.6.19			X		
Coupling Thread Strength	3.5.9	4.6.10		X			
Salt Spray	3.5.3	4.6.4		X			
1/ Vibration – Category 4A	3.5.4	4.6.5.2	X				
Category 4B and 4C	3.5.4	4.6.5.3	X				
1/ Shock – Category 4A, 4B & 4C	3.5.5	4.6.6.2	X				
Cable Pullout – Categories 4A & 4B	3.5.8	4.6.9				X	
Coupling Thread Strength	3.5.9	4.6.10				X	
External Bending Moment	3.5.10	4.6.11				X	
Safety Wire Holes	3.5.11	4.6.12				X	
3/ Fluid Immersion	3.5.12	4.6.13					X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X	X

TABLE 1 QUALIFICATION INSPECTION (continued)

Inspection Category 5	Requirement Paragraph	Test Paragraph	Applicable Test Groups			
			QA		MFR	
			1	2	1	2
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2		X		
Salt Spray	3.5.3	4.6.4		X		
1/ Vibration	3.5.4	4.6.5.3	X			
1/ Shock	3.5.5	4.6.6.2	X			
Coupling Thread Strength	3.5.9	4.6.10			X	
Safety Wire Holes	3.5.11	4.6.12			X	
3/ Fluid Immersion	3.5.12	4.6.13				X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X
Inspection Category 7	Requirement Paragraph	Test Paragraph	Applicable Test Groups			
			QA		MFR	
			1	2	1	2
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1			X	
Inspection Category 8	Requirement Paragraph	Test Paragraph	Applicable Test Groups			
			QA		MFR	
			1	2	1	2
4/ Examination of Product	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X
Magnetic Permeability	3.5.1	4.6.2		X		
Salt Spray	3.5.3	4.6.4		X		
1/ Vibration	3.5.4	4.6.5.3	X			
1/ Shock	3.5.5	4.6.6.2	X			
Water Pressure (category 3A only)	3.5.7	4.6.8			X	
Coupling Thread Strength	3.5.9	4.6.10			X	
Safety Wire Holes	3.5.11	4.6.12			X	
3/ Fluid Immersion	3.5.12	4.6.13				X
Post Examination	3.1, 3.3, 3.4, 3.6 & 3.7	4.6.1	X	X	X	X

1/ only required for initial qualification
2/ only required for accessories having elastomers with cable sealing capabilities
3/ only required for initial qualification or if the MFR changes their process
4/ MFR to perform prior to submission to QA

Rationale for Change: Establish Qualifying Activity Requirements

6). Present Requirement – Page 23, paragraph 4.3.4 Retention of Qualification:

At thirty-six month intervals the manufacturer shall submit retention of qualification data. The qualifying activity shall establish the initial reporting date. Retention of qualification consists of the applicable tests of Table 1, on the sample size specified in 4.3.4.1. Tested and untested connector accessories and materials may be required to be submitted to the qualifying activity (see 6.6) at no cost. Failure to submit to retention of qualification shall result in loss of qualification for previously approved products.

Change Requirement – Page 23, paragraph 4.3.4 Retention of Qualification:

Retention of qualification shall be preformed by the qualifying activity every thirty-six (36) months from the original qualification approval date. Retention of qualification consists of the qualifying activity group tests specified in Table 1, on the sample sizes specified in 4.3.4.1 unless otherwise specified by the qualifying activity. The qualifying activity shall notify the manufacturer of the sample submission due date. The submission date may be modified by the qualifying activity to accommodate qualifying activity schedules. Samples shall be provided to the qualifying activity at no cost. Failure to submit to retention of qualification shall result in loss of qualification for previously approved products.

Rationale for Change: Establish Qualifying Activity Requirements