AEROSPACE STANDARD

AS95234™	REV. B

Issued 2014-08
Revised 2021-09

Superseding AS95234A

(R) Connectors, Electrical, Reverse Bayonet, General Specification for

FSC 5935

RATIONALE

Revision is required to change dimensions in Figure A2; add dimension F values to Table A2; change dimension G and H values in Table A1; change G dimensions in Table A2; remove "class 1" from 3.3.3 description of black anodized finish; change minimum axial force in Table 6 and add note under Table A2; correct reference in 1.2.1; update references in 2.1, 2.2, 2.4, 2.7, 3.2. 3.3, 3.4 and 3.7; add EIA procedures in 2.5; correct appendix reference in 3.4.6.2; correct reference in 3.4.10 and 3.5.16.1; delete AS85049/31 reference from 3.5.16.2; correct reference in Tables 8 and 10; correct metric number in 4.7.8 and 4.7.18; correct EIA reference in 4.7.17; correct references in 4.7.18.1b; correct references in 4.7.24.2 and 6.1.3.2; correct metric numbers in Tables A1, A8, and C1; and correct references in 3.3.2.

1. SCOPE

1.1 Scope

AS95234 includes reverse bayonet coupling, high current electrical connectors that are water tight and principally used in shipboard, ground vehicles and ground support equipment applications at serve voltages from 200 to 3000 Vrms and temperatures between -55 °C and +125 °C (-67 °F and +257 °F). See 6.1.5 for applications details. For aerospace application connectors, refer to AS50881.

1.2 Part Identification Number (PIN) Structure

The PIN shall be identified in each detail specification (see 3.1). The following PIN structure is recommended to be used.

AS95234/1 W 16 - 11 P X

- AS95234/1 — Reverse Bayonet Coupling, Receptacle (See 2.1)
- W — Finish-Shell Material (See 3.3.3 and 3.3.4)
- 16 — Shell Size (See Appendix A)
- 11 — Insert Arrangement (See Appendix B Designated Insert Arrangements) 2/
- P — Contact Designation and Material (See 3.3.1) 1/
- X — Alternate Insert Polarization (Omit for Normal - See Appendix B) 1/

1/ Leave blank for dummy storage receptacles and protective covers (see 2.1).
2/ See 2.1. Leave blank for dummy storage receptacles. For protective covers, change to “R” (rope) or “N” (rope and ring).

SAE Executive Standards Committee Rules provide that: “This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user.”

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2021 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org

SAE WEB ADDRESS: http://www.sae.org

For more information on this standard, visit
https://www.sae.org/standards/content/AS95234B

Documents Document Sharing Hub

Full document details: SAE AS95234B

1.2.1 The SAE International PIN is a copyright part number which cannot be used except for products being qualified by the qualifying activity (see 6.2.1) or is approved for qualification (see 6.2.2).

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2454	Plating, Electroless Nickel, Codeposited with Polytetrafluoroethylene (PTFE)
AMS2700	Passivation of Corrosion Resistant Steels
AMS5640	Steel Corrosion Resistant, Bars, Wire and Forgings, 18Cr-9.0Ni, Free Machining
AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)
AMS-QQ-S-763	Steel, Corrosion Resistant, Bars, Wire, Shapes, and Forgings
AIR1351	Manufacturers' Identification of Aerospace Electrical and Electronic Wiring Devices and Accessories
AIR1329	Electrical Connectors and Wiring, Compatibility of
AIR4789	Aerospace Information Report on Evaluating Corrosion Testing of Electrical Connectors and Accessories for the Purpose of Qualification
AIR5919	Alternatives to Cadmium Plating
AS9100	Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations
AS22759	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
AS23053	Insulation Sleeving, Electrical, Heat Shrinkable, General Specification for
AS23053/5	Insulation Sleeving, Electrical, Heat Shrinkable, Polyolefin, Flexible, Crosslinked
AS23053/8	Insulation Sleeving, Electrical, Heat Shrinkable, Polyvinylidene Fluoride, Semi-Rigid, Crosslinked
AS23053/11	Insulation Sleeving, Electrical, Heat Shrinkable, Fluorinated Ethylene Propylene, Non-Crosslinked
AS23053/12	Insulation Sleeving, Electrical, Heat Shrinkable, Polytetrafluoroethylene
AS23053/18	Insulation Sleeving, Electrical, Heat Shrinkable, Modified Fluoropolymer, Crosslinked
AS31971	Gage Pin for Socket Contact Engagement Test
AS39029	Contacts, Electrical Connector, General Specification For
AS39029/44	Contacts, Electrical Connector, Pin, Crimp Removable (For AS50151 Series AS34001 and AS95234 Connectors)

AVA Documents
Document Sharing Hub
Full document details: SAE AS95234B

AS39029/45	Contacts, Electrical Connector, Socket, Crimp Removable (For AS50151 Series AS34001 and AS95234 Connectors)
AS39029/112	Contact Bushing, Electrical Connector Contact, Wire Barrel
AS50151	Connectors, Electrical, Circular Threaded, AN Type, General Specification For
AS50881	Wiring Aerospace Vehicle
AS81044/12	Wire, Electric, Crosslinked Polyalkene Insulated, Tin-Coated Copper, Light Weight, 600-Volt, 150 °C
AS81969	Installing and Removal Tools, Connector Electrical Contact, General Specification For
AS81969/17	Installing and Removal Tools, Connector Electrical Contact, Type I, Class 1, Composition C
AS81969/19	Installing and Removal Tools, Connector Electrical Contact Type II, Class 1, Composition C
AS85049	Connector Accessories, Electrical, General Specification For
AS85049/11	Connector Accessories, Electrical, Backshell, Environmental, Cable Sealing, Straight, Category 1A (for AS50151 Crimp, MIL-DTL-26482 Series 2, AS81703 Series 3, and MIL-DTL-83723 Series III Connectors)
AS85049/130	Connector Accessories, Electrical Gasketing Material, Conductive/Non-Conductive, Flange Mount, Category 7
AS85049/138	Connector Accessories, Electrical, Cap, Dust, Plastic, Category 9
AS95234/1*	Connector Receptacle, Bayonet Coupling, In Line
AS95234/2*	Connector, Receptacle, Square Flange, Reverse Bayonet Coupling, Box Mount, Front, No Accessory Thread
AS95234/3*	Connector, Receptacle, Reverse Bayonet Coupling, Square Flange, Box Mount, Rear, No Accessory Thread
AS95234/4*	Connector, Receptacle, Reverse Bayonet Coupling, Square Flange, Panel Mount, Front, with Accessory Thread
AS95234/5*	Connector, Receptacle, Reverse Bayonet Coupling, Square Flange, Panel Mount, Rear, with Accessory Thread
AS95234/6*	Connector, Plug, Reverse Bayonet Coupling
AS95234/7*	Connector, Receptacle, Reverse Bayonet Coupling, Jam Nut
AS95234/8*	Connector, Receptacle, Reverse Bayonet Coupling, Jam Nut, with Accessory Threads
AS95234/9*	Connector, Plug, Reverse Bayonet Coupling, Grounding
AS95234/10	Protective Cover, Connector Plug, Reverse Bayonet Coupling
AS95234/11	Aerospace Standard, Protective Cover, Connector Receptacle, Reverse Bayonet Coupling

Documents
Document Sharing Hub
Full document details: SAE AS95234B

AS95234/12	Connector Receptacle, Reverse Bayonet Coupling, Dummy Stowage
AS95234/13	Connector Receptacle, Reverse Bayonet Coupling, Bulkhead Feed-Thru

* AS95234 Detail Specifications

2.2 U.S. Government Publications

Copies of these documents are available online at https://quicksearch.dla.mil/.

MIL-PRF-8625	Anodic Coatings for Aluminum and Aluminum Alloys
MIL-DTL-24640	Cables, Light-Weight, Electric, Low Smoke, for Shipboard Use, General Specification for
MIL-DTL-55330	Connectors, Electrical and Fiber Optic, Packaging of
MIL-DTL-83488	Coating, Aluminum, High Purity
MIL-STD-889	Dissimilar Metals
MIL-STD-1285	Marking of Electrical and Electronic Parts
MS27488	Plug, End Seal, Electrical Connector
SD-6	Provisions Governing Qualification

2.3 ANSI Accredited Publications

Copies of these documents are available online at http://webstore.ansi.org/.

ANSI/NCSL-Z540.3	Laboratories, Calibration, and Measuring and Test Equipment

2.4 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A342/A342M	Materials, Feebly Magnetic, Permeability of
ASTM A582/A582M	Free-Machining Stainless and Heat Resisting Steel Bars
ASTM A967/A967M	Chemical Passivation
ASTM B85/B85M	Aluminum-Alloy Die Castings
ASTM B26/B26M	Aluminum Alloy Sand Castings
ASTM B209	Aluminum and Aluminum Alloy Plate and Sheet
ASTM B211/B221	Aluminum and Aluminum Alloy Bar, Rod, Wire, or Shapes; Rolled, Drawn, Extruded or Cold Finished
ASTM B488	Gold for Engineering Uses, Electrodeposited Coatings of
ASTM B700	Standard Specification for Electrodeposited Coatings of Silver for Engineering
ASTM B841	Standard Specification for Electrodeposited Coatings for Zinc Nickel Alloy Deposits

AVA Documents
Document Sharing Hub
Full document details: SAE AS95234B

2.5 EIA Publications

Available from Electronic Component Association (ECA), 2500 Wilson Boulevard, Arlington, VA 22201-3834, Tel: 703-907-7500, www.eia.org.

EIA-364-02	Air Leakage Test Procedure for Electrical Connectors
EIA-364-05	Contact Insertion, Release and Removal Force Test Procedure for Electrical Connectors
EIA-364-06	Contact Resistance Test Procedures for Electrical Connectors
EIA-364-09	Durability Test Procedure for Electrical Connectors and Contacts
EIA-364-10	Fluid Immersion Test Procedure for Electrical Connectors
EIA-364-13	Mating and Unmating Force Test Procedure for Electrical Connectors and Sockets
EIA-364-17	Temperature Life With or Without Electrical Load Test Procedures for Electrical Connectors and Sockets
EIA-364-20	Withstanding Voltage Test Procedure for Electrical Connectors, Sockets and Coaxial Contacts
EIA-364-21	Insulation Resistance Test Procedure for Electrical Connectors, Sockets, and Coaxial Contacts
EIA-364-25	Probe Damage Test Procedure for Electrical Connectors
EIA-364-26	Salt Spray Test Procedure for Electrical Connectors, Contact and Sockets
EIA-364-27	Mechanical Shock (Specified Pulse) Test Procedure for Electrical Connectors
EIA-364-28	Vibration Test Procedure for Electrical Connectors and Sockets
EIA-364-29	Contact Retention Test Procedure for Electrical Connectors
EIA-364-31	Humidity Test Procedure for Electrical Connectors and Sockets
EIA-364-32	Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors and Sockets
EIA-364-35	Insert Retention Test Procedure for Electrical Connectors
EIA-364-37	Contact Engagement and Separation Force Test Procedure for Electrical Connectors
EIA-364-83	Shell-to-Shell and Shell-to-Bulkhead Resistance Test Procedure for Electrical Connectors

2.6 IPC - Association Connecting Electronics Industries

Available from IPC, 3000 Lakeside Drive, 309 S, Bannockburn, IL 60015, Tel: 847-615-7100, www.ipc.org.

J-STD-001	Requirements for Soldered Electrical and Electronic Assemblies
J-STD-006	Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications Requirements For

2.7 Definitions

Documents
Document Sharing Hub
Full document details: SAE AS95234B

2.7.1 QUALIFICATION INSPECTION

Qualification inspection is a process that demonstrates that a component is capable of fully conforming to all the requirements defined in a standard. Qualification inspection includes definition of the measurements, tests, analysis, and associated data which provides consistent rationale for acceptance of a particular supplier's design as meeting the standard requirements typically prior to acquisition by the purchaser.

2.7.2 QUALIFIED PRODUCTS LIST (QPL)

A Qualified Products List is a list of suppliers (manufacturers) whose products have been evaluated to a defined process and who are authorized to provide those products to a purchaser upon request. When a Qualified Products List is specified, only approved suppliers (manufacturers) are authorized to provide products under the part number defined in the component standard. A Qualified Products List is established and maintained by a qualifying activity.

2.7.3 QUALIFYING ACTIVITY

A qualifying activity is a function established by a purchaser or group of purchasers (i.e., government, etc.) that has a defined process used to consistently evaluate all suppliers' (manufacturers') products in accordance with the component standard.

2.7.4 QUALITY CONFORMANCE INSPECTION

Quality conformance inspection is a process which includes measurements, non-destructive tests, analysis, and associated data that will provide verification that a particular individual component continually conforms to the requirements defined in the standard.

2.7.5 QUALIFICATION BY SIMILARITY

An alternative qualification inspection process accomplished without completing all of the measurements, tests, and analysis requirements defined in the standard. Acceptance and the extent of similarity is determined by the qualifying activity. Similarity is established through a rationale that certain designs, materials, and/or processes are identical to those already approved through qualification of the components. Verification testing for the new product is not required for designs, materials, and/or processes already approved. When a Qualified Products List is being established, the qualification by similarity rationale shall be approved by the qualifying activity prior to initiation of the remaining portions of the qualification inspection process.

2.7.6 PURCHASER

A purchaser is an activity that can issue a purchase order or contract (i.e., government, etc.).

2.7.7 SUPPLIER (MANUFACTURER)

A supplier (manufacturer) is an original component manufacturer or a value added component manufacturer which has design and production control of the processes used to produce the final component in accordance with the standard.

2.7.8 ASSEMBLY PLANT

A plant established by the supplier (manufacturer) or operated by a distributor authorized by the supplier (manufacturer) to perform specified functions pertaining to the supplier's (manufacturer's) identified qualified products in accordance with supplier's (manufacturer's) specified assembly procedures, test methods, processes, controls, and storage, handling, and packaging techniques.

3. REQUIREMENTS

3.1 Detail Specification (see 2.1)

The product requirements shall be as specified herein and in accordance with the applicable detail specification. In the event of any conflict between the requirements of this specification and the detail specification, the latter shall govern.

AVA Documents
Document Sharing Hub

Full document details: SAE AS95234B

3.2 Qualification (see 6.2)

The components shall be a product that has been tested and has passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable Qualified Products List.

3.3 Designations and Materials (see 4.7.1)

3.3.1 Contact Designation and Material

A - Crimp connector with pin contact insert less standard pin contacts (see 6.3.1c).

B - Crimp connector with socket contact insert less standard socket contacts (see 6.3.1c).

C - Solder cup pin contact in accordance with materials specified in Appendix C (see 3.4.2.2).

D - Solder cup socket contact in accordance with materials specified in Appendix C (see 3.4.2.2).

E - Thru Bulkhead fixed pin-pin contact in accordance with materials specified in AS39029 (see 3.4.2.1).

F - Thru Bulkhead fixed socket-socket contact in accordance with materials specified in AS39029 (see 3.4.2.1).

G - Thru Bulkhead fixed pin to socket contact in accordance with materials specified in AS39029 (see 3.4.2.1). Pin facing front of receptacle per Figure A2 (O-ring seal facing front).

H - Thru Bulkhead fixed socket-pin contact in accordance with materials specified in AS39029 (see 3.4.2.1). Socket facing front per Figure A1 (O-ring seal facing front).

P - Crimp pin contact in accordance with materials specified in AS39029 (see 3.4.2.1)

S - Crimp socket in accordance with materials specified in AS39029 (see 3.4.2.1)

3.3.2 Shell and Coupling Ring Material

Aluminum shell and coupling ring shall be made of aluminum alloys in accordance with ASTM B211/B211M, B221, B209 or B26/B26M. Die castings, if specified in the detail specification, shall conform to ASTM B85/B85M, composition number GPASC84B.

Corrosion resisting steel shell and coupling ring shall be 300 series, in accordance with AMS-QQ-S-763, ASTM A582/A582M or AMS5640, Type 1 or 2.

3.3.3 Finish Material and Designation for Aluminum Connector

Aluminum base material and applicable finishes are available for all detail specifications.

A - Black anodize in accordance with MIL-PRF-8625, Type III to withstand 500 hour salt spray.

W - Olive drab cadmium in accordance with AMS-QQ-P-416 over a suitable underplate to withstand 500 hour salt spray. Final finish shall be electrically conductive.

X - Nickel with fluorocarbon polymer additives in accordance with AMS2454 over a suitable underplate to withstand 500 hours of salt spray testing. Color shall be non-reflective. Final finish shall be electrically conductive.

Y - Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 500 hours of salt spray testing. Color shall be non-reflective. Final finish shall be electrically conductive. (Not for use on grounding finger connector.)

Z - Zinc nickel in accordance with ASTM B841 over suitable underplate to withstand 500 hours of salt spray testing. Color shall be black, conductive, and non-reflective. Final finish shall be electrically conductive.

Documents
Document Sharing Hub
Full document details: SAE AS95234B

3.3.4 Finish Material and Designation for Corrosion Resistant Steel Connector

Corrosion resistant steel base material and applicable finishes are available for all detail specifications.

B - Black cadmium in accordance with AMS-QQ-P-416, Type II, Class 3, and designed to withstand 500 hour salt spray testing.

S - Passivated in accordance with ASTM A967 or AMS2700 and designed to withstand 500 hour salt spray testing.

XS - Nickel with fluorocarbon polymer additives in accordance with AMS2454 over a suitable underplate to withstand 500 hours of salt spray testing. Color shall be non-reflective. Final finish shall be electrically conductive.

YS - Pure dense electrodeposited aluminum in accordance with MIL-DTL-83488, Type II, to withstand 500 hours of salt spray testing. Color shall be non-reflective. Final finish shall be electrically conductive (Not for use with grounding finger connectors).

ZS - Zinc nickel in accordance with ASTM B841 over suitable underplate to withstand 500 hours of salt spray testing. Color shall be black, conductive, and non-reflective. Final finish shall be electrically conductive.

3.3.5 Connector Insert

3.3.5.1 Crimp Contact Connector

The mating face of the crimp contact connector pin insert shall be resilient elastomer. Insert material shall be a suitable rigid dielectric material.

3.3.5.2 Solder Contact Connector

Resilient insert material shall be molded with a durometer hardness of from 70 to 90. Plastic insert material shall be a suitable rigid dielectric material.

3.3.5.3 Insert Piece Bonding

Bonding materials shall meet all requirements of this specification.

3.3.6 Accessory (Backshell)

Accessory material shall be in accordance with AS85049.

3.3.7 Bayonet

Bayonet pin material shall be 300 series corrosion resistant steel in accordance with AMS-QQ-S-763, ASTM A582/A582M, or AMS5640, Type 1 or 2.

3.3.8 Dissimilar Metals

When dissimilar metals are employed in intimate contact with each other, suitable protection against electrolytic corrosion shall be provided as specified in MIL-STD-889.

3.4 Design and Construction (see 4.7.1)

Unless otherwise specified, dimensions and tolerances shall be in accordance with ANSI Y14.5-1994. Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

3.4.1 Connector and Accessory Intermateability (Interface) Dimensions

Connector mating and rear accessory mating dimensions shall be in accordance with Appendix A. All connector plugs and receptacles shall be intermateable. The accessory threads shall be the same for all connectors and applicable for the AS85049 accessories listed (see Table A5).

Documents
Document Sharing Hub
Full document details: SAE AS95234B

3.4.2 Contacts

3.4.2.1 Crimp Contacts

Crimp contacts shall conform to AS39029/44 (pin) and AS39029/45 (socket). Contact finish shall be in accordance with the overall gold finish as defined in AS39029 for size 16, type A and B contacts and the overall silver finish as defined in AS39029 for size 12, 8, 4, and 0, type A and B contacts. The mating ends of thru bulkhead contacts (when applicable) shall comply with the mating ends of the AS39029/44 and AS39029/45 contacts (see 6.1.4). If the bulkhead contacts require crimping, the contacts shall be designed to use the same crimp tools as required for AS39029/44 and /45 contacts.

3.4.2.2 Fixed Contacts

Fixed solderable contacts shall conform to Appendix C. Contacts shall be designed so that neither the pin nor socket contacts are damaged during mating of counterpart connectors.

3.4.3 Installing and Removal Tools

The individual contacts shall be positively retained in the connector when installed with the applicable AS81969/17 contact insertion tool. The individual contacts shall be capable of being removed from the connector when using the applicable AS81969/19 contact removal tool.

3.4.4 Insert Design and Construction (see 3.4.6)

3.4.4.1 Removable Contact Inserts

Removable contact inserts shall be installed in the keyway position indicated in the applicable detail specification part number (see Appendix B). The entire insert and wire sealing shall be essentially one integral part (voidless) and configured to provide suitable sealing around the wires. The rigid dielectric shall be one molded piece or no more than two pieces bonded so as to form essentially one integral piece. The contact locking device shall be a metal clip contained in the rigid dielectric insert. Inserts shall be non-removable, and secured to prevent rotation. All pin contact inserts shall have a resilient interface seal bonded to the front face and a resilient wire sealing grommet at the rear insert face.

3.4.4.2 Fixed Soldered Contact Inserts

Solder contact inserts shall contain non-removable contacts. Inserts shall be designed to not be damaged by the solder process and contacts shall be installed in the keyway position indicated in the applicable detail specification part number. Socket contacts are fully seated when mating tips are 0.228 to 0.062 inch (5.79 to 1.57 mm) below top of socket insert. Pin contacts are fully seated when mating tips are 0.312 to 0.219 inch (7.92 to 5.56 mm) below the end of the plug or receptacle body for the size 16 contacts and 0.125 to 0.062 inch (3.18 to 1.57 mm) below the end of the plug or receptacle body for size 16S, 12, 8, 4, and 0 contacts. All solder cup openings shall be oriented to face the terminus of the indexing radius in accordance with Appendix B and shall be perpendicular to the center line coinciding with the indexing radius, within ±15 degrees. The rigid dielectric shall be one molded piece. All pin contact inserts shall have a resilient interface seal bonded to the front and rear faces.

3.4.4.3 Insert Contact Arrangement

Contacts shall be arranged in the insert in accordance with Appendix B. The connector shall show no evidence of breakdown or flashover for each service rating.

3.4.4.4 Insert Contact Alignment

Connector inserts for socket contacts shall provide an overall sideplay of the socket contacts of 0.005 to 0.015 inch (0.13 to 0.38 mm) from the required position to facilitate alignment of mating pin contacts.

3.4.5 Reverse Bayonet Coupling

Reverse bayonet coupling design after plating shall be as defined in Appendix A.

Documents
Document Sharing Hub

Full document details: SAE AS95234B

3.4.6 Shell and Coupling Ring Design

Connector shells shall be seamless.

3.4.6.1 Coupling Ring Retention System

When retaining rings or other devices (i.e., wave spring washer, grounding spring washer, etc.) are used in the coupling ring retention system for plugs, the retention devices shall be metal, positively captivated or utilized in such a manner that the plugs shall remain electrically functional as an assembled connector in the event of a retention device failure.

3.4.6.2 Coupling Ring Engagement and Disengagement

Counterpart connectors of any arrangement and accessories shall be capable of being fully engaged and disengaged without the use of tools. Engagement of connectors shall be defined as full insertion of pins into sockets and proper sealing of the mating insert faces. Full engagement shall be indicated by an audible click at the completion of the coupling cycle, and a positive detent shall be included in the coupling mechanism to lock connectors in the engaged position. Connector pairs shall be coupled by means of a reverse bayonet coupling ring. Coupling shall be accomplished by clockwise rotation of the coupling ring; uncoupling by counterclockwise rotation. The reverse bayonet coupling ring shall be knurled to provide a gripping surface. When the connectors are fully engaged and the coupling ring is in the locked position, mated yellow dots (see Appendix A, paragraph 1.4) shall align on the receptacle and plug.

3.4.6.3 Shell Polarization

Polarization of connectors shall be accomplished by matched integral key and keyway of counterpart connectors. The polarization of counterpart connectors shall take place before coupling rings are engaged.

3.4.6.4 Engagement Seal

Pin contact connectors with resilient interfaces shall contain sealing means so that the engaged contacts meet the requirements herein. The design of the seal shall be such that in mated connectors all air paths between adjacent contacts and between contacts and shells are eliminated. There shall be interfacial mating of the engaged connector insert to provide dielectric under compression. Plug connectors shall have a peripheral seal to ensure shell to shell sealing.

3.4.7 Wire Sealing

Connectors shall be provided with a wire sealing grommet capable of sealing on wires of the sizes specified in Table 1.

Table 1 - Wire range accommodations

Contact Size	Wire Size	Outside Diameter (OD) of Finished Wire in Inches (millimeters)			
		Solder Contact Connectors		Crimp Contact Connectors	
		min 1/	max	min 2/	max
16-16 12-16	20 18 16	0.064 (1.63)	0.130 (3.30)	0.066 (1.68)	0.130 (3.30)
12-12	14 12	0.114 (2.90)	0.170 (4.32)	0.097 (2.46)	0.170 (4.32)
8-8	10 8	0.164 (4.17)	0.255 (6.48)	0.132 (3.35)	0.255 (6.48)
4-4	6 4	0.272 (6.91)	0.370 (9.40)	0.237 (6.02)	0.370 (9.40)
0-0	2 0	0.415 (10.54)	0.550 (13.97)	0.360 (9.14)	0.550 (13.97)

1/ For OD smaller than that specified, see 6.1.3.

Documents
Document Sharing Hub
Full document details: SAE AS95234B

3.4.8 Grommet Sealing Plugs (Crimp Contact Connectors)

Grommets shall be designed to accept sealing plugs in accordance with MS27488, as defined for the AS50151 connector, in lieu of wire where unused contacts are employed.

3.4.9 Intermateable and Interchangeability Characteristics

All plugs and receptacles are intermateable, but performance may vary when different finishes or shell materials are mated together. Connectors having the same part number shall be completely interchangeable with each other with respect to installation (physical) and performance (function) as specified herein.

3.4.10 Water Pressure Resistance

Connectors are designed to withstand a 6 foot column of water when used with an environmental sealed accessory (see 3.5.16 and 6.1.6).

3.4.11 Connector Service Voltage and Temperature Ratings

The connector continuous service voltage rating shall be as specified in Appendix B at the connector continuous temperature usage rating of -55 °C and +125 °C (-67 °F and +257 °F). See 6.1.5 for application details.

3.5 Performance

Connector performance characteristic shall be evaluated in accordance the methods of examination and tests (see 4.7).

3.5.1 Magnetic Permeability for Shell A and Accessories (see 4.7.2)

The relative magnetic permeability of the connector and various individual parts shall not be greater than 2.0.

3.5.2 Temperature Cycling-Thermal Shock (see 4.7.3)

Connectors shall meet the dielectric withstand voltage requirement after being subjected to the specified temperature extremes (see 3.5.23).

3.5.3 Air Leakage - Solder Contact Receptacles (see 4.7.4)

The air leakage rate shall not be greater than 1 atmospheric cubic inch per hour (4.55×10^{-3} cubic centimeters per second).

3.5.4 Contact Retention (see 4.7.5)

The contact shall be retained in the insert when subjected to the minimum axial load. The axial displacement shall not be greater than 0.025 inch (0.64 mm) for crimp connector contacts. No axial displacement is required for fixed connector contacts.

3.5.5 Sine Vibration (see 4.7.7)

Mated connectors shall not be damaged (cracks, breaks, lose parts, etc.) due to vibration. Counterpart connectors shall be retained in full engagement. The interruption of electrical continuity for the Sine Vibration shall be no longer than 10 µs.

3.5.6 Low Impact Shock (see 4.7.8)

Mated connectors shall not be damaged (cracks, breaks, lose parts, etc.) due to shock impact. Counterpart connectors shall be retained in full engagement, and the interruption of electrical continuity shall be no longer than 10 µs.

3.5.7 Humidity (see 4.7.9)

The mated connector shall withstand the dielectric withstanding voltage after humidity at sea level for 5 minutes, -0 seconds, +15 seconds (see 4.7.6.1).

AVA Documents
Document Sharing Hub
Full document details: SAE AS95234B

3.5.8 Solder Contact Resistance (see 4.7.10)

Solder connector contacts in the mated condition shall meet the ambient 25 °C (77 °F) contact resistance requirements of Table 2.

3.5.8.1 Solder Contact Resistance at Temperature

Solder connector contacts in the mated condition shall meet the maximum connector temperature of 125 °C (257 °F) contact resistance requirements of Table 2.

Table 2 - Solder contact resistance with tin and silver plated wire

Wire Size	Test Current Amperes	Maximum Voltage Drop (millivolts)					
		25 °C ± 3 °C (77 °F ± 10 °F)		25 °C ± 3 °C (77 °F ± 10 °F) After Conditioning		+125 °C +3 °C -0 °C (+257 °F +10 °F -0 °F)	
		Max	Max Avg	Max	Max Avg	Max	Max Avg
0	150	21	19	26	23	32	26
1	125	19	18	23	20	29	24
2	100	17	16	21	18	26	21
4	80	23	21	28	24	35	28
6	60	25	23	30	26	38	31
8	46	26	24	32	28	39	32
10	33	33	30	40	37	50	42
12	23	42	38	51	43	63	51
14	17	40	36	48	41	60	48
16	13	49	45	59	51	74	60
18	10	52	48	64	54	79	64
20	7.5	55	50	68	56	83	67

3.5.9 Connector Durability (see 4.7.11)

Counterpart connectors shall show no mechanical or electrical defects detrimental to the operation of the connector after 500 cycles of coupling and uncoupling for crimp contact connectors.

3.5.10 Corrosion (see 4.7.12)

Connectors shall exhibit no exposure of basis material on internal or external surfaces as defined in AIR4789.

3.5.11 Insulation Resistance - Room Temperature (see 4.7.13)

The insulation resistance shall not be less than 5000 MΩ when tested at standard conditions.

3.5.12 Insulation Resistance - Long Term Elevated Temperature (see 4.7.14)

The insulation resistance shall be not less than 50 MΩ at +125 °C, +5 °C, -0 °C (+257 °F +9 °F, -0 °F) after 1000 hours.

3.5.13 Fluid Immersion (see 4.7.15)

Connectors shall mate with their counterpart connectors after fluid immersion, have no damage (cracks, tears, adhesion etc.), and pass the dielectric withstand voltage.

3.5.14 Insert Retention (see 4.7.16)

Inserts shall not be dislocated from their original position or show damage.

Documents
Document Sharing Hub
Full document details: SAE AS95234B

3.5.15 Moisture Resistance (see 4.7.17)

Mated connectors with rear straight accessory hardware assembled shall maintain an insulation resistance of 100 MΩ or greater at 25 °C (77 °F) after being subjected to the moisture resistance test.

3.5.16 Water Pressure (see 4.7.18)

3.5.16.1 Solder Contact Receptacles

When tested in accordance with 4.7.18.1, receptacle connector inserts and panel seal shall show no indication of water leakage. In addition, there shall be no evidence of leakage at the interface of mated connectors and at the end of 48 hours, while still immersed, the insulation resistance shall be greater than 100 MΩ.

3.5.16.2 Crimp Contact Connectors

When tested in accordance with 4.7.18.2, mated connectors assembled with AS85049/11 backshells shall have an insulation resistance greater than 100 MΩ after being subjected to the water pressure test. There shall be no evidence of water intrusion.

3.5.17 External Bending Moment (see 4.7.19)

Connectors shall exhibit no evidence of damage, as revealed by inspection with 3X magnification, when stressed using the applicable bending moment.

3.5.18 Solder Contact Engaging and Separating Forces (see 4.7.20)

The socket contact engaging and separating forces shall be within the applicable limits specified in Table 3.

Table 3 - Solder contact engagement and separation forces

Contact Mating End Size	Minimum Separation Force (ounces) Minimum Diameter AS31971 Pin	Maximum Average Engagement Force (ounces) Maximum Diameter AS31971 Pin	Maximum Engagement Force (ounces) Maximum Diameter AS31971
16	2	33	48
12	3	56	80
8	5	N/A	160
4	10	N/A	240
0	15	N/A	320

NOTE: N/A - Not applicable.

3.5.19 Resistance to Probe Damage for Solder Socket Contacts (see 4.7.21)

After being subjected to the resistance to probe damage, solder socket contacts shall meet the engagement and separation force requirements.

3.5.20 Shell Conductivity for Connectors Except Finish A and S (see 4.7.22)

Mated connectors shall be electrically conductive from the plug accessory thread to the receptacle mounting flange or to the accessory thread on the cable connecting plug. The overall DC resistance shall not be greater than 0.05 Ω prior to performance exposure and 0.10 Ω after performance exposure (see Tables 6 and 7).

3.5.21 Contact Insertion and Removal Forces for Crimp Connectors (see 4.7.23)

The forces required to insert and remove unlocked contacts shall not exceed the requirements specified in Table 4.

Documents
Document Sharing Hub
Full document details: SAE AS95234B

Table 4 - Contact insertion and removal forces

Contact Size	Insertion and Removal Max Pound Force (Newtons)
16	20 (89)
12	25 (111)
8	30 (133)
4	40 (178)
0	40 (178)

3.5.22 Radio Frequency Interference (RFI) (see 4.7.24)

3.5.22.1 RFI Shielding

The RFI shielding capabilities of the designated RFI shells at the specified frequencies shall not be less than that specified in Table 5.

Table 5 - RFI leakage attenuation

Frequency MHz	Leakage Attenuation dB
100	65
150	60
200	60
300	55
400	55
600	50
800	45
1000	45

3.5.22.2 RFI Finger Spring Force

The plug and receptacle axial mating force shall be as specified in Table 6.

Table 6 - RFI spring finger force

Shall Size	Axial Pound Force (Newton)	
	Max	Min Pounds
10	15 (67)	1 (4.5)
14	20 (89)	
16 thru 36	30 (133)	

3.5.23 Dielectric Withstanding Voltage at Sea Level (see 4.7.6)

Connectors shall show no evidence of breakdown or flashover when subjected to the test voltages and altitudes in accordance with 4.7.6. Corona shall not be considered as breakdown.

3.5.24 Marking (see 4.7.1)

Each connector shall be legibly and permanently marked on the shell or coupling ring in accordance with MIL-STD-1285. Marking shall be legible after all tests specified herein. Suppliers' symbols or trademark shall be listed in AIR1351.

3.5.24.1 Insert Marking (see Appendix B)

Inserts shall be marked as specified in appendix B. Supplier's identification is permitted. Raised or depressed characters shall not be used on insert mating faces for any markings of crimp contact connectors.

Documents
Document Sharing Hub

Full document details: SAE AS95234B

3.5.24.2 Contact Designations Marking

Eighty percent of the characters on any face of the connector shall remain identifiable after completion of the tests specified in Tables 7 and 8.

3.5.24.3 Grommet and Insulating Spacers Marking

Wire openings on the rear face of grommets and insulating spacers shall be marked with legible characters corresponding to the insert contact designators. Raised, depressed, or contrasting colored characters shall be used. It is permissible to identify only those wire openings which are located on the vertical centerline of the grommets of solder contact connectors.

3.5.25 Workmanship (see 4.7.1)

Loose contacts, poor molding fabrication, loose materials, defective bonding, damaged or improperly assembled contacts, peeling, or chipping of plating or finish, galling of mating parts, nicks and burrs of metal parts, improper tinning of solder cups (see Appendix C), and warping of the post molding shall be a basis for rejection of items.

4. QUALITY ASSURANCE

4.1 Responsibility for Inspection

Unless otherwise specified herein, the contract or purchase order, the supplier is responsible for the performance of all contract inspection requirements. Except as otherwise specified herein, the supplier may use any facilities suitable for the performance of the inspection requirements. The qualifying activity has the right to perform any of the inspections set forth in the standard where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for Compliance

All items must meet all technical requirements of the product standard. The inspection set forth in this standard shall become a part of the supplier's overall inspection system or quality program. The absence of any inspection requirements in the standard shall not relieve the supplier of the responsibility of assuring that all products comply with all requirements of the contract or purchase order. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the purchaser to acceptance of defective material.

4.1.2 Test Equipment and Inspection Facilities

Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the supplier. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with ANSI/NCSL Z540-3 or equivalent standards.

4.1.3 Quality Assurance Compliance

The supplier's reliability assurance program for (generic name of item*) and assembly procedures shall comply with the AS9100 Aerospace Standard for Quality Management System requirements. Other established and industry recognized quality assurance standards that assure all products produced conform to the contract requirements are acceptable. However, if used, it is the responsibility of the supplier to provide evidence of compliance to AS9100. The qualifying activity (QA) authority reserves the right to monitor, measure, and validate compliance at their discretion.

4.2 Classification of Inspections

The conditions for the inspections are specified as applicable and all test data shall be compiled in accordance with an acceptable method, such as chapter 4 of SD-6. The inspections specified herein are classified as follows:

a. Initial qualification inspection (see 4.3).

b. Retention of qualification inspection (see 4.4).

Documents
Document Sharing Hub
Full document details: SAE AS95234B