



Announcements

The next JSWAG/JFOWG Technical Interchange Meeting will be held 23-26 March 2015 at Robins Air Force Base, GA. To register, please visit <https://jswag.navair.navy.mil>.

We also welcome the following new co-chairs-
Tricia Hicks (AF)- Design & Install
Dat Le (AF)- Maintenance
ATCS Dave Shipman (Navy)-
Training

Resources

- Aircraft Wiring Systems Awareness DVD- Defense Imagery PIN #806881.
- Fiber Optic Awareness DVD- Defense Imagery PIN #806707.
- Joint Services Wiring Manual Maintenance Techniques DVD- Defense Imagery PIN #806994.
- MIL-HDBK-522- Guidelines for Inspection of Aircraft Wiring Interconnect Systems- <https://assist.daps.dla.mil>.
- MIL-HDBK-525- Electrical Wiring Interconnect System (EWIS) Integrity- <https://assist.daps.dla.mil>.
- Need help locating information on connectors, contacts or accessories? If so, email us at jswag@navy.mil.

Newsletter Contact

JSWAG Coordinator
jswag@navy.mil

Splice Update

Splice repairs are the most commonly affected wire repairs. The NAVAIR Wiring Systems Team (AIR-4.4.5.3) is continuing to work with industry to improve and develop new wiring devices for the repair of aircraft wiring. As a result of these efforts and in cooperation with the SAE (Society of Automotive Engineers), nine new splice detail specifications have been published. These new specifications detail the requirements for high temperature (200°C), multi-wire (2 to 10 conductors) and heatless (cold applied) splices. These new splices greatly expand the performance capabilities beyond that of the most commonly used environmental resistant splices meeting AS81824/1 which are rated to 150°C. In addition, NAVAIR is working with industry to develop a Matched Impedance Splice for limited coaxial cable repairs. The specification for this splice will be a military performance specification and is due out for publication early this year.

New heatless splice – NAVAIR has been working with industry to develop a new heatless (cold applied) splice. Its performance is detailed in the recently published SAE standard AS81824/14 (Fig 1). This splice is a two piece design consisting of a metal crimp barrel and sealing sleeve. Different than the AS81824/12 heatless splice (Fig 2) which uses a gel to provide the environmental sealing, this new heatless splice uses a sealing gland which is integral to the sealing sleeve to provide environmental sealing. The sealing gland is similar in design to that on the back of an environmental connector. In addition, this new splice employs the same crimp tool (M22520/37) used for the conventional AS81824/1 environmental splice. This splice is a permanent install splice which is an alternative to the M81824/1 splice. It is rated to 175°C and is for single wire to wire splicing applications due to the sealing gland design. This splice has completed qualification testing and is approved for use once the upcoming change to the NA 01-1A-505-1 is released.

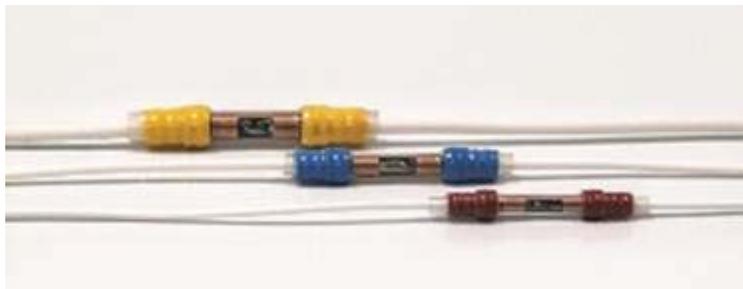


Figure 1 - AS81824/14 Heatless Splice

Heatless splice (see JSWAG Newsletter Fall 2010) – SAE standard AS81824/12 was published in 2011, detailing the requirements for

Splices from page 1

a 150°C rated splice, which does not require a heat gun to shrink the sealing sleeve (Fig 2). It is a one piece splice, which requires a new tool for crimping the combined metal crimp sleeve and sealing sleeve. Environment resistance protection is provided by an encapsulated transparent cross-linked gel. Several development and production challenges have resulted in the delay of qualification of this splice. Two sources of supply for the new crimp tool and inspection crimp gage required for this splice have been qualified and added to the Qualified Products List. The M81824/12-1 (red, sizes 20 to 26 wire) splice has completed qualification and was added to the QPL in November 2014. The NAVAIR QA is currently waiting for delivery of the blue and yellow size splices. Qualification is anticipated during 2015.



Figure 2- AS81824/12 Heatless Splice

High temperature splice (see JSWAG Newsletter Winter 2012) – The AS81824/11 standard was published in 2011 detailing the requirements for a 200°C environment resistant splice (Fig 3). This two-piece splice uses a nickel plated copper metal crimp splice and cross-linked Fluoropolymer sealing sleeve to permit use in higher temperature operating environments. This splice is currently undergoing qualification testing by NAVAIR QPL.



Figure 3- AS81824/11 High Temperature Splice

Multi-wire splices (see JSWAG Newsletter Winter 2012) – The AS81824/6 thru /10 standards were published in 2012. They are designed to splice different combinations of wire sizes in a single splice (Fig 4) with full environmental sealing. These splices are available in two temperature ranges; 150°C and 175°C, which use tin plated and nickel plated copper metal crimp splice,

respectively, to meet the temperature requirements. Multi-wire sealing is accomplished by using a multi-hole seal to environmentally enclose three or more wires. These splices are also currently undergoing qualification by the NAVAIR QPL.



Figure 4- AS81824/6 thru /10 Multi-Splice

Stub Splice – The AS81824/13 standard, published in 2012, details the performance requirements for terminating single or splicing multiple wires and is rated to 175°C (Fig 5). These splices will be capable of terminating, in parallel, wire sizes 12 to 26 and two wire combinations of wire sizes 26, 24, 22, 20, 18 and 12. These splices were qualified by similarity.



Figure 5- AS81824/13 Stub Splice

Matched impedance splice – A new military performance specification has been drafted and is undergoing review with an anticipated publication of Spring 2015. It details the requirements for splicing selected sizes of MIL-DTL-17 coaxial cables (Fig 6). This splice is designed to match the impedance of the coaxial cable to ensure signal integrity. NAVAIR’s engineering evaluation has validated that the splice can match the cable impedance to within +10 to -3 percent.



Figure 6- Matched Impedance Splice