JOINT SERVICES WIRING ACTION GROUP

Fall 2012 Edition **JSWAG Newsletter** *Vol. 4, Issue 4*

Announcements

The next JSWAG/JFOWG Technical Interchange Meeting is scheduled for March 19-21, 2013 in Lexington Park, MD. Please contact a committee chair if interested in attending or send an email to jswag@navy.mil as seating is limited.

Voting for the 2012 Lu Roberts award recipient has begun. Please visit https://jswag.navair.navy.mil/ to make your selection. Voting will close March 5. The winner will be announced at the 2013 Spring JSWAG/JFOWG Technical Interchange Meeting.

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.

Newsletter Contact

JSWAG Coordinator

jswag@navy.mil

Wire Cutter Standard

The NAVAIR Wiring Systems Team (AIR-4.4.5.3) in cooperation with SAE (Society of Automotive Engineers) is working to standardize wire cutters. Wire cutters made by various manufacturers have new features such as: gripping teeth to form wire, integral lace tie or plastic zip tie cutter teeth, curved jaws for cutting larger wire bundles, and a notch in the cutter blade to improve cutting of smaller size wire. None of these features are currently defined and are unique to the particular manufacturer. Wire cutters used by DoD/Commercial Maintainers are currently procured using the manufacturer's part number, and there is no standard, which defines the wire cutter performance.

Manually actuated, mechanical wire cutters for round wire using compression type cut blade design are commonly referred to as diagonal wire cutters or side cutters. They use compression force of opposing cutting edges to cut the wire by indenting and forcing the metal of the wire out of their way. They deform the wire and do not cut flush. A shear type cutter is one where the blades pass each other. This type cutter will preserve the symmetry of the wire. Only shear type wire cutters are suitable for aviation applications.

Working with industry, NAVAIR developed performance requirements and test procedures. The main emphasis was to define how much the wire cutter deforms the wire when it is being cut and how much force it takes to cut the wire. Testing was conducted to ensure that the best suited wire cutters were able to meet these requirements. Additional performance requirements included: Shock, Humidity, Life and Workmanship.

The new SAE Aerospace Standard AS6173 was published, while the AS6173/2 thru /4 are going thru the process. The publication of the AS6173/1 is delayed indefinitely due to a U.S. Patent restriction. The slash sheets include the following configurations:

a. AS6173/1 – Wire Cutter with integral Lace Tie/Plastic Tie Strap Cutter (Figure 1)

b. AS6173/2 – Wire Cutter with integral gripping teeth to form the wire. (Figure 2)

c. AS6173/4 – Wire Cutter for smaller size wires (sizes 26 – 16), which also has a notch in the blade to better form the wire when cutting. (Figure 3)

see Wire Cutter, page 2

Wire Cutter from page 1

d. AS6173/3 – Wire Cutter curved jaw to cut larger wire sizes and bundles. (Figure 4)

The NA 01-1A-505-1 joint services wiring maintenance manual, in WP 009 00, upon the next release will identify these new wire cutters.

LIGHT GAGE OR COPPER ALLOY. Copper wire or copper alloy of light gage should be cut with a shear type cutter to ensure the cut is clean, square and not deformed. Wire sizes 8 and larger should be cut with cable shears.

a. Light Wire Cutter. The AS6173/1 wire cutter features hardened steel, shear type blades which cut Copper wire from 26 - 10 gauge. The primary application is construction/maintenance production (Figure 1). Its hook tips are designed, and very well suited for, cutting not only wire, but also plastic ties and lacing tape/tie string without causing damage to adjacent wiring.

Figure 1- Wire Cutter with Lace Tie Cutter

b. Light Wire Cutter. The AS6173/2 wire cutter features hardened steel, shear type blades which cut Copper wire from 26 - 10 gauge. The primary application is construction/maintenance production (Figure 2).

Figure 2- Wire Cutter with Gripping Teeth

c. Miniature Wire Cutter with V- Notch. The AS6173/4 wire cutter features hardened steel, shear type blades which cut Copper wire from 26 - 16 gauge. Its primary application is construction/maintenance production (Figure 3). Its notched blade design is extremely well suited for cutting small gauge Copper wire.

Figure 3- Wire Cutter for Small Wire

HEAVY GAGE. Copper wire, size 8 AWG and larger should be cut with a shear type cutter, or a hacksaw to ensure the cut is clean, square and not deformed.

a. Heavy gage wire may be cut with a fine tooth hacksaw. A fine tooth hacksaw blade consists of 20 teeth or more per inch. A bench vise may be used to protect the wire and to avoid personnel injury.

b. Large Wire Shear Cutter. The AS6173/3 wire cutter features hardened steel, shear type blades which cut Copper or Aluminum wire from 26 - 1/0 gauge. Its primary application is construction/maintenance production (Figure 4). Its curved jaw is designed, and very well suited for cutting a wide range of small to large wire sizes.

Figure 4- Wire Cutter with Curved Jaw

COAXIAL CABLE. When cutting coaxial cable or triaxial cable, care must be exercised not to damage the dielectric as severe system degradation will occur. A diagonal type cutter shall not be used as crimping will occur before the cutting action and is not repairable. A fine tooth hacksaw maybe used to cut cable, but the use of a vise is not recommend, as pressure applied will damage the dielectric. A swivel−blade stripper or shear type cutter maybe used as a clean cut is afforded, at a controlled rate.