



U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR) GUIDANCE MATERIAL

Subject: ACCEPTABLE METHODS,
TECHNIQUES, AND PRACTICES—AIRCRAFT
INSPECTION AND REPAIR

Date: 9/8/98
Initiated by: AFS-640

AC No: 43.13-1B
Change: 1

1. **PURPOSE.** This advisory circular (AC) contains methods, techniques, and practices acceptable to the Administrator for the inspection and repair of nonpressurized areas of civil aircraft, only when there are no manufacturer repair or maintenance instructions. This data generally pertains to minor repairs. The repairs identified in this AC may only be used as a basis for FAA approval for major repairs. The repair data may also be used as approved data, and the AC chapter, page, and paragraph listed in block 8 of FAA form 337 when:
 - a. the user has determined that it is appropriate to the product being repaired;
 - b. it is directly applicable to the repair being made; and
 - c. it is not contrary to manufacturer's data.
2. **CANCELLATION.** The AC 43.13-1A dated 1988 is canceled.
3. **REFERENCE:** Title 14 of the Code of Federal Regulations part 43, section 43.13(a) states that each person performing maintenance, alteration, or preventive maintenance on an aircraft, engine, propeller, or appliance shall use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, or practices acceptable to the Administrator, except as noted in section 43.16. FAA inspectors are prepared to answer questions that may arise in this regard. Persons engaged in the inspection and repair of civil aircraft should be familiar with 14 CFR part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration, and part 65, Subparts A, D, and E of Certification: Airmen Other Than Flight Crewmembers, and the applicable airworthiness requirements under which the aircraft was type certificated.
4. **ACKNOWLEDGMENTS.** The FAA would like to thank the following persons and organization for their assistance in producing AC 43.13-1B: Richard Finch, Richard Fischer, Michael Grimes, Ray Stits, William A. Watkins, and the SAE, Aerospace Electronics and Electrical Systems Division. Acknowledgment is also extended to all in the aviation community who commented on the document.
5. **COMMENTS INVITED.** Comments regarding this AC should be directed to DOT/FAA; ATTN: Airworthiness Programs Branch, AFS-610; PO Box 25082; Oklahoma City, OK 73125

Acting Deputy Director, Flight Standards Service

SECTION 10. SAFETY METHODS FOR TURNBUCKLES

7-179. GENERAL. Safety all turnbuckles with safety wire using either the double or single-wrap method, or with any appropriately approved special safetying device complying with the requirements of FAA Technical Standard Order TSO-C21. The swaged and unswaged turnbuckle assemblies are covered by AN standard drawings. Do not reuse safety wire. Adjust the turnbuckle to the correct cable tension so that no more than three cable threads are exposed on either side of the turnbuckle barrel.

7-180. DOUBLE-WRAP METHOD. Of the methods using safety wire for safetying turnbuckles, the method described here is preferred, although either of the other methods described is satisfactory. The method of double-wrap safetying is shown in figure 7-26(A).

a. Use two separate lengths of wire. Run one end of the wire through the hole in the barrel of the turnbuckle and bend the ends of the wire toward opposite ends of the turnbuckle.

b. Pass the second length of the wire into the hole in the barrel and bend the ends along the barrel on the side opposite the first. Spiral the two wires in opposite directions around the barrel to cross each other twice between the center hole and the ends.

c. Then pass the wires at the end of the turnbuckle in opposite directions through the hole in the turnbuckle eyes or between the jaws of the turnbuckle fork, as applicable, laying one wire along the barrel and wrapping the other at least four times around the shank of the turnbuckle and binding the laid wires in place before cutting the wrapped wire off.

d. Wrap the remaining length of safety wire at least four turns around the shank and cut it off. Repeat the procedure at the opposite end of the turnbuckle.

e. When a swaged terminal is being safetyed, pass the ends of both wires through the hole provided in the terminal for this purpose and wrap both ends around the shank as previously described. If the hole is not large enough to allow passage of both wires, pass the wire through the hole and loop it over the free end of the other wire, and then wrap both ends around the shank as previously described. Another satisfactory double-wrap method is similar to the previous method, except that the spiraling of the wires is omitted as shown in figure 7-26(B).

7-181. SINGLE-WRAP METHOD. The single-wrap methods described in the following paragraphs and as illustrated in figure 7-26(C) and (D) are acceptable, but are not the equal of the double-wrap methods.

a. Pass a single length of wire through the cable eye or fork, or through the hole in the swaged terminal at either end of the turnbuckle assembly. Spiral each of the wire ends in opposite directions around the first half of the turnbuckle barrel, so as to cross each other twice. Thread both wire ends through the hole in the middle of the barrel so that the third crossing of wire ends is in the hole, again, spiral the two wire ends in opposite directions around the remaining half of the turnbuckle, crossing them twice. Then, pass one wire end through the cable eye or fork, or through the hole in the swaged terminals, in the manner previously described. Wrap both wire ends around the shank for at least four turns each, cutting off excess wire. This method is shown in figure 7-26(C).