EO 05-1-2AQ

ROYAL CANADIAN AIR FORCE

DESCRIPTION AND MAINTENANCE INSTRUCTIONS

SAFETY WIRING ALL AIRCRAFT

(This EO replaces EO 05-1-2AQ dated 2 May 55)

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

26 JAN 56

LIST OF RCAF REVISIONS

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PART 1

WIRE LOCKING GENERAL

General:

1 Drilled-head bolts, castellated or slotted nuts in series, fillister head screws, wing nuts, plugs, drain cocks, filler caps, valves and turnbuckles are to be safety wired. The following is a general application of safety wiring material recommended for the under-mentioned purposes.

(a) Copper wire - Spec QQW341A, for locking emergency release devices, emergency and safety equipment.

(b) Brass wire - Spec QQW321 annealed, for general wire locking.

(c) Monel metal wire - Spec AMS4730B, for locking in heat areas between 200° F - 800° F.

(d) Inconel wire - Spec AMS5687A, - For locking in heat areas over 800° F.

IMPORTANT

This is a general instruction only. When wire is to be replaced, the replacement wire, must be equivalent to the original specification used, or as called up in the engineering order related to the aircraft or the equipment concerned.

2 The size of safety wire for bolts, screws, wing nuts, plugs, drain cocks and filler caps, unless laid down in the relevant maintenance manual or Engineering Order, is determined by the size of the hole provided for the wire. The wire should fill approximately 75% of the hole. When it is necessary to substitute monel wire for copper or brass wire the monel wire should be of such size as to fill 50% of the hole.

3 The length of wire required for general safety wiring is approximately 2 1/3 times the distance between the screw heads, nuts or plugs being safetied.

4 Copper wire (.020 inch maximum diameter) should be used for safety wiring emergency release devices. The size of the wire will depend upon the breaking or shearing load the operator is about to apply and should conform to the size recommended in the appropriate Engineering Order or as recommended by the manufacturer. Inconel or Monel wire should never be used in the locking of safety devices.

5 Safety wire must not be overstressed. Extreme care must be used when twisting wire, particularly when completing the final locking, to ensure that it is tight but not overstrained to the point where breaking will occur under slight load or vibration.

6 The finished end of the wire in a wire locking is to have a minimum of 3 turns (see Figure 1-1). The end is to be bent toward the body of the fitting being safetied to prevent injury to personnel working on the equipment. For clarity the ends in Figure 1-1 are shown before being bent toward the body of the fitting.

7 Parts to be safety wired should be torqued to the recommended values before safety wiring. Loosening or overtorquing to align the safety wire holes is not permitted.

8 When safety wiring filler caps, plugs, valves, drain cocks, wing nuts and single drilled head bolts and fillister head screws the wire is anchored to an adjacent fillister head screw or anchorage lip when such is provided. When such provision is not available the safety wire is fastened to some adjacent part of the assembly.

9 When drilled-head bolts, screws, or other parts, are grouped together, they are conveniently safety wired to each other or in a series rather than individually.

(a) The number of bolts, screws and nuts, that may be safety wired together is dependent

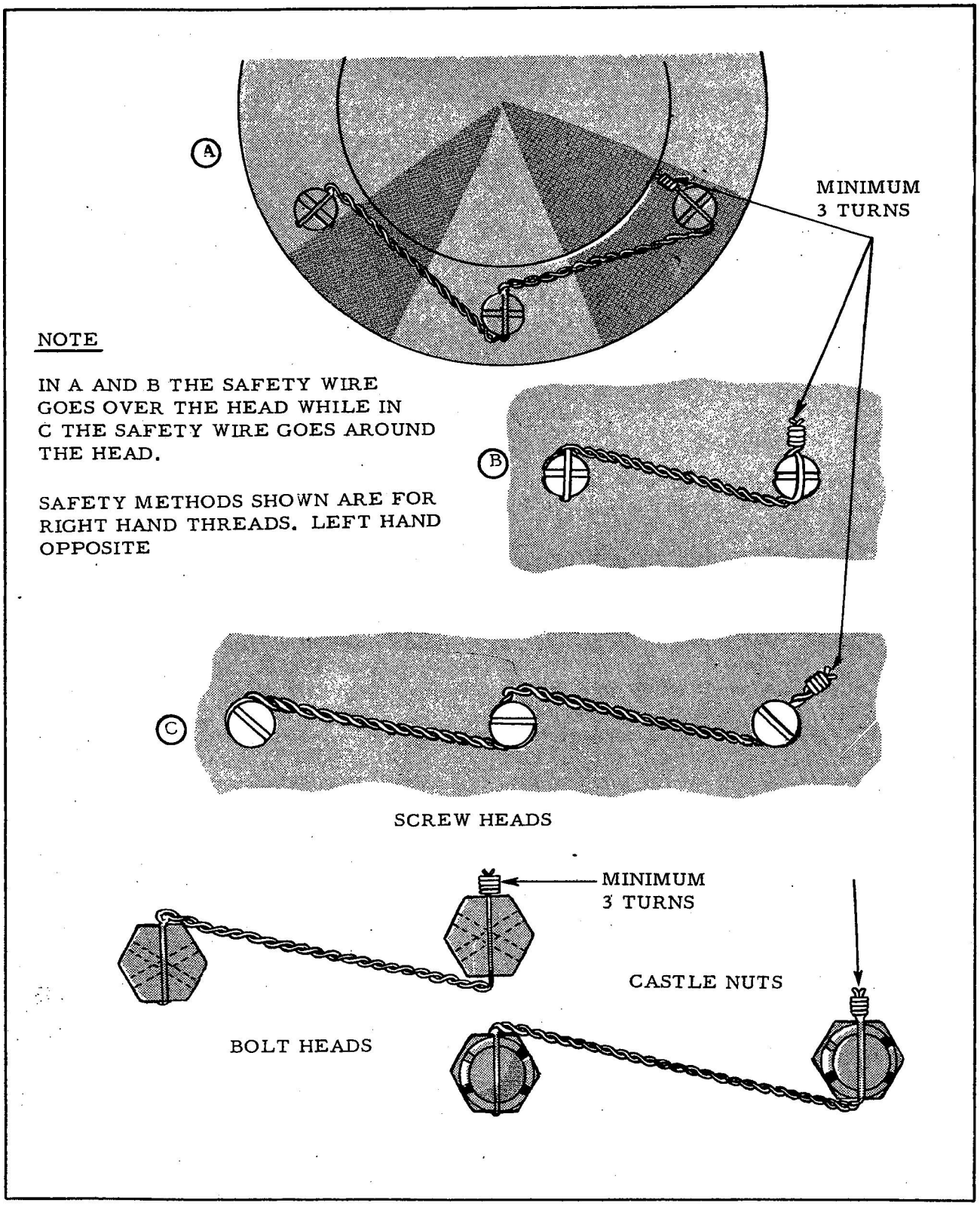

Figure 1-1-Safety Wiring (Screws, Nuts, and Bolts)

upon the application, and is generally determined by the length of wire that may be easily worked.

(b) Any number of bolts or screws may be safety wired together, but as a general rule, a group of three or four is more convenient to handle and facilitates wire replacement.

(c) The methods by which these items are safety wired is shown in Figure 1-1.

(d) The wire is arranged in such a manner that if either a bolt, screw, or a threaded item begins to loosen, it will have force applied in the tightening direction.

PART 2

SAFETYING OF TURNBUCKLES

1 In order to ensure the correct locking of turnbuckles, the following instructions are to be followed.

2 All lock wire used in the safetying of turnbuckles shall be nickel copper alloy (Monel Annealed) to Specification AMS 4730B. The minimum lock wire diameter shall be in accordance with the table shown below.

3 Prior to safetying, both threaded terminals shall be screwed an equal distance into the turnbuckle barrel and shall be screwed in at least so far, that not more than three threads of any terminal are exposed outside the barrel.

4 After the turnbuckle has been adjusted to its locking position, two safety wires shall be passed through the hole in the center of the turnbuckle barrel, and the ends of the wire shall be bent 90° towards the end of the turnbuckle barrel, as shown in Figure 2-1.

5 The ends of the wire shall be passed through the hole in the turnbuckle eyes or between the jaws of the turnbuckle fork as applicable.

6 The wires shall then be bent back towards the center of the turnbuckle and each wrapped four times around the shank, binding the wrapping wires in place as shown in Figure 2-1.

7 When the swaged terminal is being safetied, one wire shall be passed through the hole provided for this purpose in the terminal, looped over the free end of the other wire and both ends shall be wrapped around the shank as shown in Figure 2-2.

8 When safety wiring English swaged type turnbuckles, as shown in Figure 2-3, not more than three threads are to be showing at each end. Also the ends of the wires will be given three complete twists before being considered in safety. All other English type turnbuckles shall be safetied in the same manner as AN turnbuckles.

Cable Diameter	1/16	3/32 or 1/8	5/32, 3/16, 7/32, 1/4 9/32 or 5/16
Turnbuckle AN 155 Dash No.	5S 8S 8L	16S 16L -32S -32L	-32S, -32L, -46S, -46L, -80L, -125L, -175L
Lock Wire Min. Diameter	.020	.032	.040

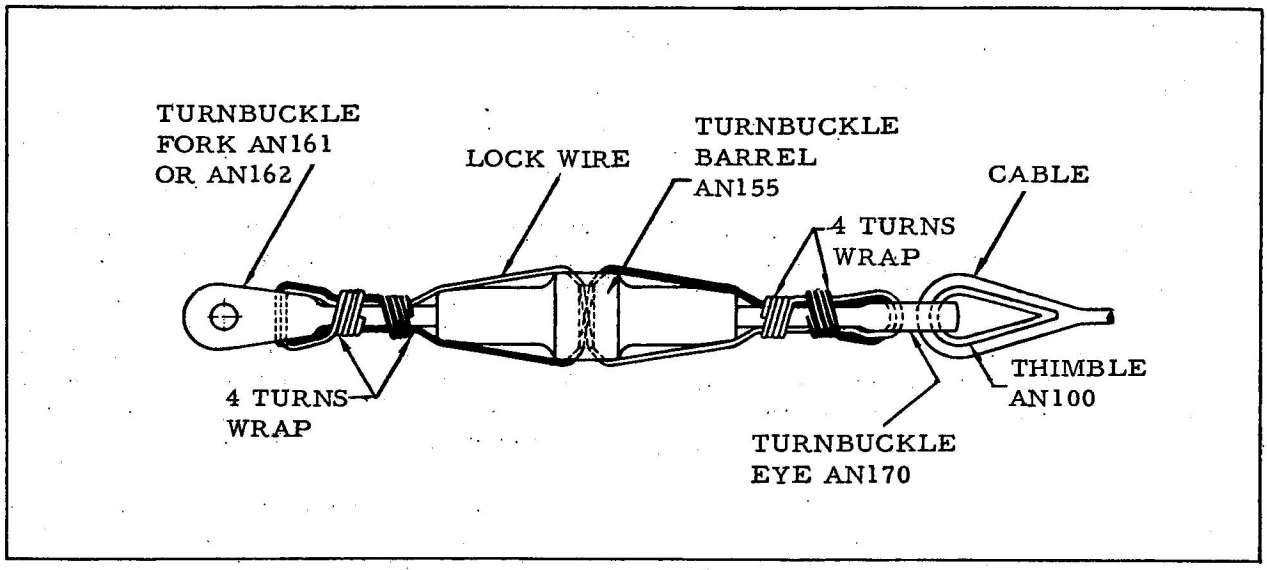

Figure 2-1

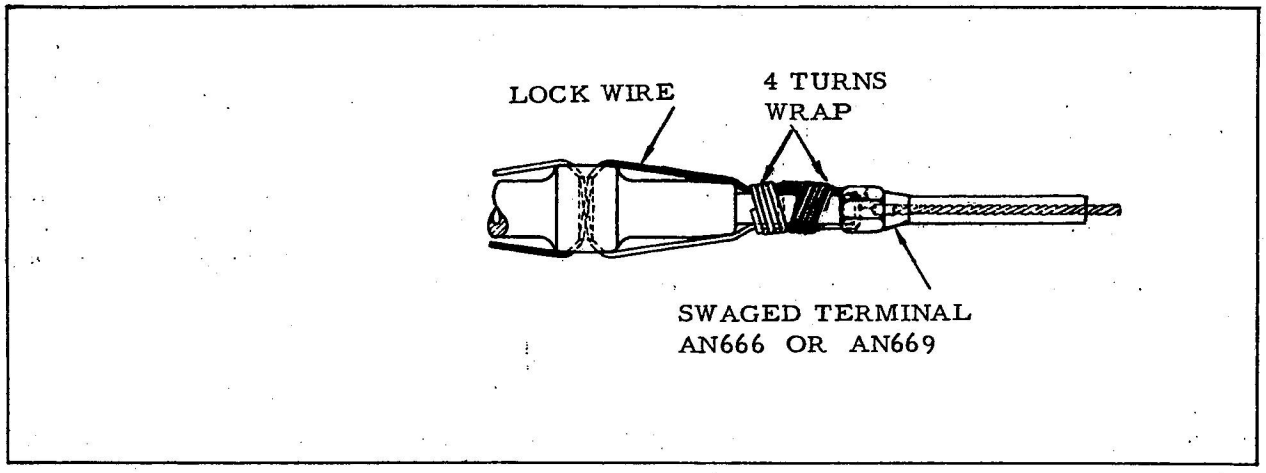

Figure 2-2

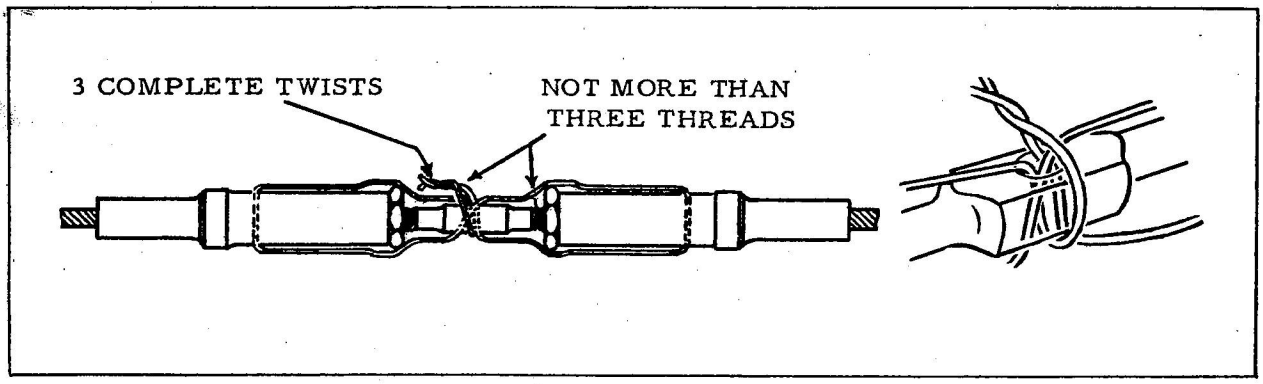

Figure 2-3