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How to Use Safety Wire Pliers

Safety wire locks a bolt, nut or screw so that any tendency to loosen is met by the wire tightening.

The rules

Rule	Detail	Source
`Method`	Double twist is the most common. Single wire is for small screws in a closely spaced closed pattern, electrical parts, and hard-to-reach places	H-30B p. 7-77
`Twists`	Six to eight twists per inch of wire, pulled taut while installing	H-31 p. 2-53
`Pigtail`	1/4 to 1/2 in (three to six twists) at the end, bent back or under so it does not snag	H-30B p. 7-80
`New wire`	Must be new for each application	H-30B p. 7-80
`Direction`	All the pull on the wire must tend to tighten the nut; the loop around the head stays down	H-30B p. 7-80
`Tension`	Tight, but not so tight that normal handling or vibration breaks it	H-30B p. 7-80
`How many in a run`	Widely spaced bolts, double twist: maximum three in series. Closely spaced: as many as a 24 in length of wire will do	H-30B p. 7-77
`Torque first`	Torque to the recommended value, align the holes; never over-torque or loosen a torqued nut to align the holes	H-30B p. 7-77

Typical mistakes

Mistake	What happens	Fix
`Reusing wire`	Fatigued wire breaks	New wire every time
`Pull in the loosening direction`	Wire lets the part turn	Route so the pull tightens
`Slack loop over the head`	Loop rides up, wire goes slack	Twist so the loop stays down
`Too much tension`	Wire breaks in handling or vibration	Taut, not over-twisted
`Loosening a nut to align the hole`	Wrong torque	Never; change parts or follow the manual instead
`Safety wire on emergency equipment`	Must break by hand	Single copper 0.020 in or aluminum 0.031 in wire (H-31 p. 2-53)

Key points

- **Not approved data.** The maintenance manual may specify the method, wire and routing for a given component, especially for light sport aircraft.
- **Wire sizes.** No size table is reproduced here; see the safety wire chart.

SOURCES · FAA-H-8083-30B, AMT Handbook: General · FAA-H-8083-31B, AMT Handbook: Airframe

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Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.