

## SECTION 4. NUTS

**7-63. GENERAL.** Aircraft nuts are available in a variety of shapes, sizes, and material strengths. The types of nuts used in aircraft structures include castle nuts, shear nuts, plain nuts, light hex nuts, checknuts, wingnuts, and sheet spring nuts. Many are available in either self-locking or nonself-locking style. Typical nut types are shown in table 7-13. Refer to the aircraft manufacturer's structural repair manual, the manufacturer's engineering department, or the FAA, before replacing any nut with any other type.

**7-64. SELF-LOCKING NUTS.** These nuts are acceptable for use on certificated aircraft subject to the aircraft manufacturer's recommended practice sheets or specifications. Two types of self-locking nuts are currently in use, the all-metal type, and the fiber or nylon type.

**a. DO NOT** use self-locking nuts on parts subject to rotation.

**b. Self-locking castellated nuts** with cotter pins or lockwire may be used in any system.

**c. Self-locking nuts** should not be used with bolts or screws on turbine engine airplanes in locations where the loose nut, bolt, washer, or screw could fall or be drawn into the engine air intake scoop.

**d. Self-locking nuts** should not be used with bolts, screws, or studs to attach access panels or doors, or to assemble any parts that are routinely disassembled before, or after each flight. They may be used with anti-friction bearings and control pulleys, provided the inner race of the bearing is secured to the supporting structure by the nut and bolt.

**e. Metal locknuts** are constructed with either the threads in the locking insert, out-of-round with the load-carrying section, or with a saw-cut insert with a pinched-in thread in the locking section. The locking action of the all-metal nut depends upon the resiliency of the metal when the locking section and load-carrying section are engaged by screw threads. Metal locknuts are primarily used in high temperature areas.

**f. Fiber or nylon locknuts** are constructed with an unthreaded fiber or nylon locking insert held securely in place. The fiber or nylon insert provides the locking action because it has a smaller diameter than the nut. Fiber or nylon self-locking nuts are not installed in areas where temperatures exceed 250 °F. After the nut has been tightened, make sure the bolt or stud has at least one thread showing past the nut. **DO NOT** reuse a fiber or nylon locknut, if the nut cannot meet the minimum prevailing torque values. (See table 7-2.)

**g. Self-locking nut plates** are produced in a variety of forms and materials for riveting or welding to aircraft structures or parts. Certain applications require the installation of self-locking nuts in channel arrangement permitting the attachment of many nuts in a row with only a few rivets.

**7-65. NUT IDENTIFICATION FINISHES.** Several types of finishes are used on self-locking nuts. The particular type of finish is dependent on the application and temperature requirement. The most commonly used finishes are described briefly as follows.