SECTION 2. SCREWS

7-14. GENERAL. In general, screws differ from bolts by the following characteristics.

a. Screws usually have lower material strength, a looser thread fit, head shapes formed to engage a screwdriver, and the shank may be threaded along its entire length without a clearly defined grip. Screws may be divided into three basic groups: structural screws, machine screws, and self-tapping screws. Screws are marked as required by the applicable Army Navy (AN), National Aerospace Standard (NAS), or Military Standard (MS) drawing. Normally a manufacturer places his trademark on the head of the screw. Several types of structural screws are available that differ from the standard structural bolts only in the type of head.

b. It would be impossible to cover all screws that are available to the aviation market; therefore, only the most frequently used screws will be discussed in this text. Design specifications are available in MIL-HDBK-5, or U.S.A.F./Navy T.O.1-1A-8/NAVAIR 01-1A-8, Structural Hardware.

c. Typical screw types are shown in table 7-11.

7-15. STRUCTURAL SCREWS. NAS502, NAS503, AN509, NAS220 through NAS227, and NAS583 through NAS590, may be used for structural applications, similar to structural bolts or rivets. These screws are fabricated from a material with a high-tensile strength and differ from structural bolts only in the type of head.

7-16. MACHINE SCREWS. These screws are available in four basic head styles: flathead (countersunk), roundhead, fillister, and socket head.

a. Flathead machine screws (AN505, AN510, AN507, NAS200, NAS514, NAS517, and NAS662) are used in countersunk holes where a flush surface is desired.

b. Roundhead machine screws (AN515 and AN520) are general-purpose screws for use in nonstructural applications.

c. Fillister head machine screws (AN500 through AN503, AN116901 through AN116912, AN116913 through AN116924, AN116962 through AN116990, AN117002 through AN117030, and AN117042 through AN117070) are general-purpose screws that may be used as capscrews in light mechanical applications and are usually drilled for safety wire.

d. Socket head machine screws (NAS608 and NAS609) are designed to be driven into tapped holes by means of internal wrenches. They may be used in applications requiring high strength, compactness of assembled parts, or sinking of heads below surfaces into fitted holes.

7-17. PANHEAD SCREWS (NAS600 THROUGH NAS606, NAS610 THROUGH NAS616, NAS623, AND NAS1402 THROUGH NAS1406). Flathead screws (MS35188 through MS35203), panhead machine screws (MS35024 through MS35219), and truss-head screws (AN526) are general-purpose screws used where head height is not important.

7-18. SELF-TAPPING SCREWS. The self-tapping screw taps their own mating thread when driven into untapped or punched holes slightly smaller than the diameter of the screw. Self-tapping machine screws (AN504 and AN530), may be used to attach minor

nonstructural parts. Self-tapping sheet metal screws (AN504, AN530, AN531 and NAS548) may be used in blind applications for the temporary attachment of sheet metal for riveting and the permanent assembly of nonstructural assemblies. The MS21318 is a roundhead drive screw used in the attachment of nameplates or in sealing drain holes, and is not intended to be removed after installation. They are normally installed by driving the screw into a drilled hole with a hammer.

CAUTION: Self-tapping screws should never be used as a replacement for standard screws, nuts, bolts, or rivets in any aircraft structure.

7-19. WOOD SCREWS AN545 and AN550, MS35492 and MS35493 are screws used in wood structures of aircraft.

7-20.—7-33. [RESERVED.]