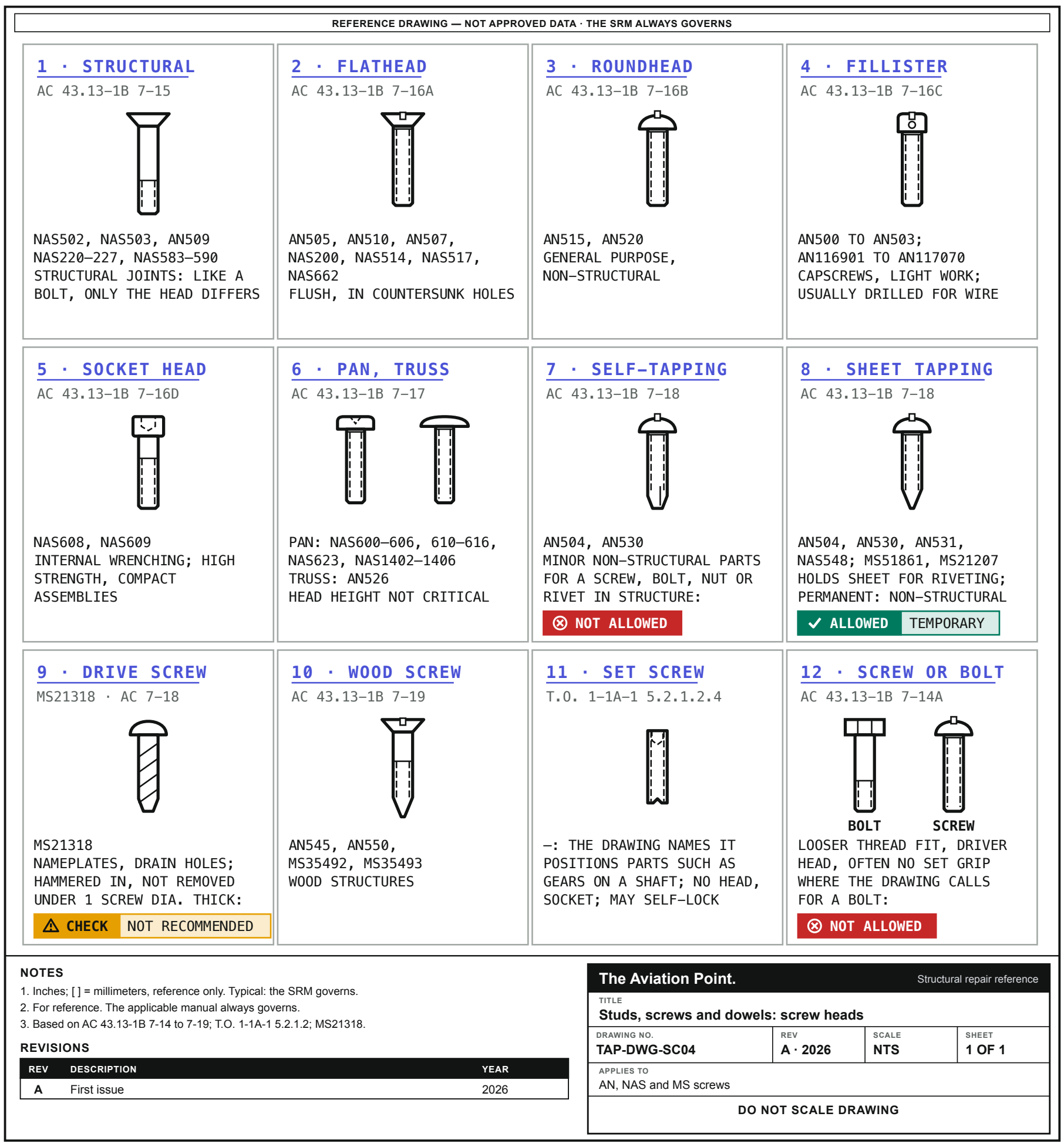
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Studs, Screws and Dowels: What Goes Where

Screws by number · where they may go · studs and pins · fitting and removal

1 Identification



Identify by head and number first. Shapes are schematic: the AN, NAS or MS drawing gives the dimensions. Paragraphs are AC 43.13-1B 7-14 to 7-19.

Screws by number

Group	Standards	Source
Structural screws	NAS502, NAS503, AN509, NAS220 to NAS227, NAS583 to NAS590	AC 43.13-1B 7-15
Flathead machine screws	AN505, AN510, AN507, NAS200, NAS514, NAS517, NAS662 (data sheets: AN505, AN507, AN510)	7-16a
Roundhead machine screws	AN515, AN520	7-16b
Fillister head machine screws	AN500 to AN503 and the AN116901 to AN117070 ranges	7-16c
Socket head machine screws	NAS608, NAS609	7-16d; T.O. 1-1A-1 5.2.1.2.2.4
Panhead and truss head	NAS600 to NAS606, NAS610 to NAS616, NAS623, NAS1402 to NAS1406; truss head AN526	AC 43.13-1B 7-17
Self-tapping machine screws	AN504, AN530	7-18
Self-tapping sheet metal screws	AN504, AN530, AN531, NAS548; also MS51861, MS21207 (data sheets)	7-18; data sheets
Drive screws	MS21318	7-18
Wood screws	AN545, AN550, MS35492, MS35493	7-19
Set screws	—: the drawing names them	T.O. 1-1A-1 5.2.1.2.4

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

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May it go there?

Case	Status	Source
Self-tapping screw in place of a standard screw, nut, bolt or rivet in any aircraft structure	NOT ALLOWED	AC 43.13-1B 7-18, caution
Self-tapping sheet metal screw to hold sheet temporarily for riveting	ALLOWED	7-18
Drive screw in material thinner than one screw diameter	CHECK: not recommended by the standard	MS21318 Rev. A, note
Self-locking nut on a stud or screw holding a panel opened before or after each flight	NOT ALLOWED	7-64d
Fiber or nylon locknut where the temperature exceeds 250 °F (121 °C)	NOT ALLOWED	7-64f
Speed nut with self-tapping screws	ONLY where it was used in the original assembly	7-72
Spring pin where its loss or failure might endanger safe flight	NOT ALLOWED	7-104a
Spring pins mixed with other structural fasteners in one joint	NOT ALLOWED	7-104b
Spring pin as a substitute for a cotter pin	NOT ALLOWED	7-104c

2 Allowable damage

Inspection and acceptance

Check	Reject or act	Source
Thread past a self-locking nut on a bolt or stud	Fit the length the IPC calls for	AC 43.13-1B 7-64f
Prevailing torque of a self-locking nut	Below it: replace the nut	7-64f, 7-122c
Tapped hole for a stud or screw	Weak, worn or stripped: helical coil insert, or a threaded bushing where an insert cannot be used	T.O. 1-1A-1 3.10
Spring pin and its hole	Pin gap closed by misalignment, or excess force to insert: do not use the pin	7-104b, c
Magnetic particle check of steel studs and screws	Thread roots, keyways and drilled holes can give nonrelevant indications: confirm before rejecting	5-40b(2)
Drive screw	Not made to be removed: replacement as the drawing or SRM says	7-18
Stud height, run-out, looseness	—: the engine or component manual sets the limits	—

3 Repair

1. Identify by the IPC number.
2. Check the tapped hole; insert or bushing if stripped.
3. Fit, torque, check one thread past.
4. Lock as the drawing says.

Key points

- Never a self-tapping screw for a standard screw, bolt or rivet in structure (AC 43.13-1B 7-18).
- Self-locking nut: one thread past; fiber or nylon not above 250 °F (121 °C) (7-64f).
- Stud setting height and torque: the engine or component manual.

MAIN SOURCES · FAA AC 43.13-1B CHG 1, Acceptable Methods, Techniques, and Practices: Aircraft Inspection and Repair · T.O. 1-1A-1 / NAVAIR 01-1A-1, General Manual for Structural Repair · MS21318 Rev. A, Screw, Drive, Round Head, Type U · MIL-P-21143, Pin, Straight, Headless, General Specification for · ASME B18.8.2, Taper Pins, Dowel Pins, Straight Pins, Grooved Pins, and Spring Pins · ASME B18.31.2, Continuous Thread Stud, Double-End Stud, and Flange Bolting Stud

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