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Step Drills and Hole Saws for Larger Holes

Holes larger than a rivet hole are made in steps.

Which tool for which hole

Tool	Use	Source
Pilot, then larger drill	Standard method for holes larger than 3/16 in: pilot with a No. 40 or No. 30, then oversize	H-31 p. 4-16
Step drill	A smaller pilot point drills the first hole; the next step enlarges it to size. Works in most metals, plastic and wood, best in soft materials, usable on very thin sheet metal; can also deburr	pp. 4-16 to 4-17
Hole saw	Named for cutting lightening holes	p. 4-81
Punch	Lightening holes	p. 4-81
Fly cutter	Lightening holes; for composites, only in a drill press	pp. 4-81, 7-50

Typical mistakes

Mistake	What happens	Fix
Step drill in hard or thick metal	Poor hole, damaged tool	The Handbook rates it for softer materials and very thin sheet
No pilot for a big bit	Walks, tears the sheet	Pilot first, then enlarge
Unclamped sheet	Sheet spins on the tool	Clamp, with backup
Sharp edges left in a lightening hole	Cracks and tears start there	File the edge smooth

Key points

- **Not approved data.** The SRM or drawing says whether a hole may be made, and its size.
- **No hole saw procedure.** The FAA handbooks name the hole saw but do not describe its use in structural metal, so none is given.

SOURCES · FAA-H-8083-31B, AMT Handbook: Airframe, Chapter 4 · 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.