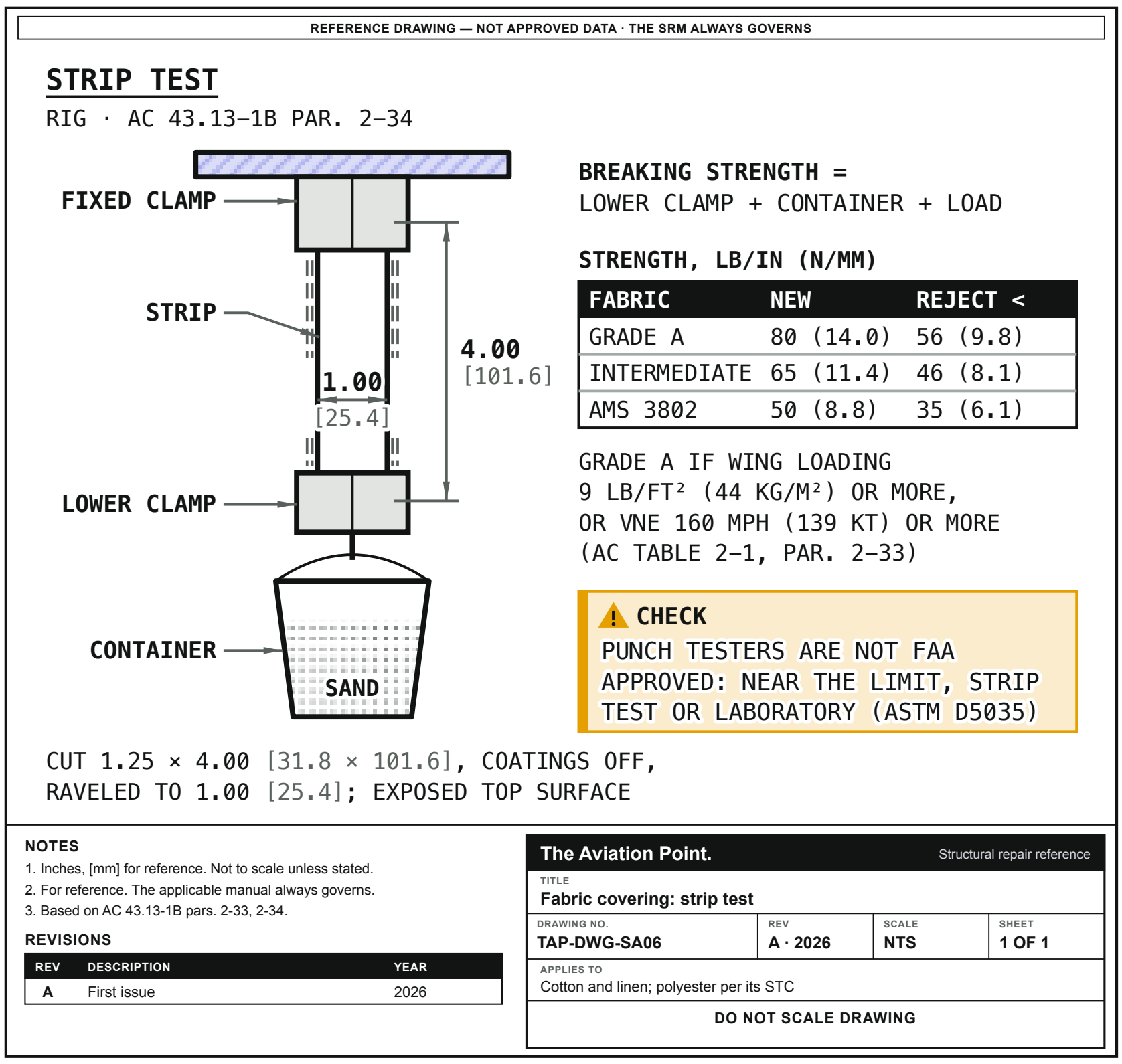
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Aircraft Fabric Covering: Approval, Strength, Inspection and Repairs

Approval · grades · strength · seams and tapes · patches

1 Identification



Rig and limits after AC 43.13-1B pars. 2-33 and 2-34 and Table 2-1. Punch testers only point to the strip test; they are not FAA approved.

2 Allowable damage

Fabric strength: when the covering is unairworthy

Aircraft	Fabric required (new)	Unairworthy below	Source
Wing loading 9 lb/ft² (44 kg/m²) or more, or Vne 160 mph (139 kt) or more	Grade A: 80 lb/in (14.0 N/mm)	56 lb/in (9.8 N/mm)	AC Table 2-1, 2-33 b; H Fig. 3-10
Wing loading under 9 lb/ft² and Vne under 160 mph	Intermediate: 65 lb/in (11.4 N/mm)	46 lb/in (8.1 N/mm), whatever the grade installed	AC Table 2-1, 2-33 b; H Fig. 3-10
Glider or sailplane, 8 lb/ft² (39 kg/m²) or less and Vne 135 mph (117 kt) or less	AMS 3802: 50 lb/in (8.8 N/mm)	35 lb/in (6.1 N/mm), whatever the grade installed	AC Table 2-1, 2-33 c; H Fig. 3-10

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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3 Repair

Repairs to the covering: size, Vne and tape

Damage	Repair	Overlap or tape, in (mm)
Tear, all fabric present	Sew the edges together with a curved needle after removing the dope to the clear coats 2 in (51) each side; clear coat, then finishing tape centered on the stitches	Tape 3 (76); opening 8 to 16 in (203 to 406): 4 (102); over 16 in, on a wing top surface, or Vne over 150 mph: 6 (152)
Opening that cannot be stitched closed	Sewn-in patch: trim square, fold the patch edges 1/2 in (13) under, stitch, wet, one clear coat, tape	Tape 3 (76); 4 (102) and 6 (152) on the same rules as a tear
Opening up to 8 in (203), Vne under 150 mph	Doped-on patch	Overlap 2 (51)
Opening up to 8 in, Vne over 150 mph	Doped-on patch	Overlap 2 (51), plus 2 (51) tape on all sides
Opening 8 to 16 in, Vne under 150 mph	Doped-on patch	Overlap 1/4 of the largest dimension, 4 (102) max
Opening 8 to 16 in, wing top surface, Vne over 150 mph	Doped-on patch	Overlap 4 (102), plus 2 (51) tape on all sides
Opening over 16 in (406)	Doped-on patch	Overlap 4 (102); tape 4 (102) under 150 mph, 6 (152) over
New section edge within 1 in (25) of an attaching member	Extend the section 3 in (76) past the member; duplicate the lacing or attachment without removing the original	—
New fabric section over two adjacent wing ribs	MAJOR REPAIR: logbook entry and FAA Form 337	—
Covering approved under a TC or an STC (not cotton or linen)	The aircraft manufacturer's or the STC holder's repair instructions	—: their manual

1. Identify fabric, coating and approval (records, STC stamps).
2. Inspect: coatings, tapes, lacing, tension, chafe, drains.
3. Judge strength: punch test, then strip test if in doubt.
4. Pick the repair by opening size, location and Vne.
5. Strip pigmented coats to clear dope; sew or patch.
6. Rebuild clear, aluminum and color coats.
7. Record; Form 337 for a major repair.

Key points

- **STC covering:** its manual governs materials, coatings and repairs (AC 2-3 c, 2-42 h).
- **Unairworthy below 70 %** of the strength of the fabric the aircraft requires: 56, 46 or 35 lb/in.
- **Punch testers** are not FAA approved; the strip test or a laboratory (ASTM D5035) decides.
- **Strength is checked** at every 100-hour and annual inspection.
- **Re-covering** is a major repair; another fabric or coating than the original is a major alteration.
- **Finishing tape** 3, 4 or 6 in by opening size, location and Vne.

MAIN SOURCES · AC 43.13-1B with Change 1, Acceptable Methods, Techniques, and Practices: Aircraft Inspection and Repair · FAA-H-8083-31B, Aviation Maintenance Technician Handbook: Airframe, Volume 1, Chapter 3, Aircraft Fabric Covering · 14 CFR Part 43, Appendix A, Major Alterations, Major Repairs, and Preventive Maintenance

SCAN · OPEN THIS GUIDE
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