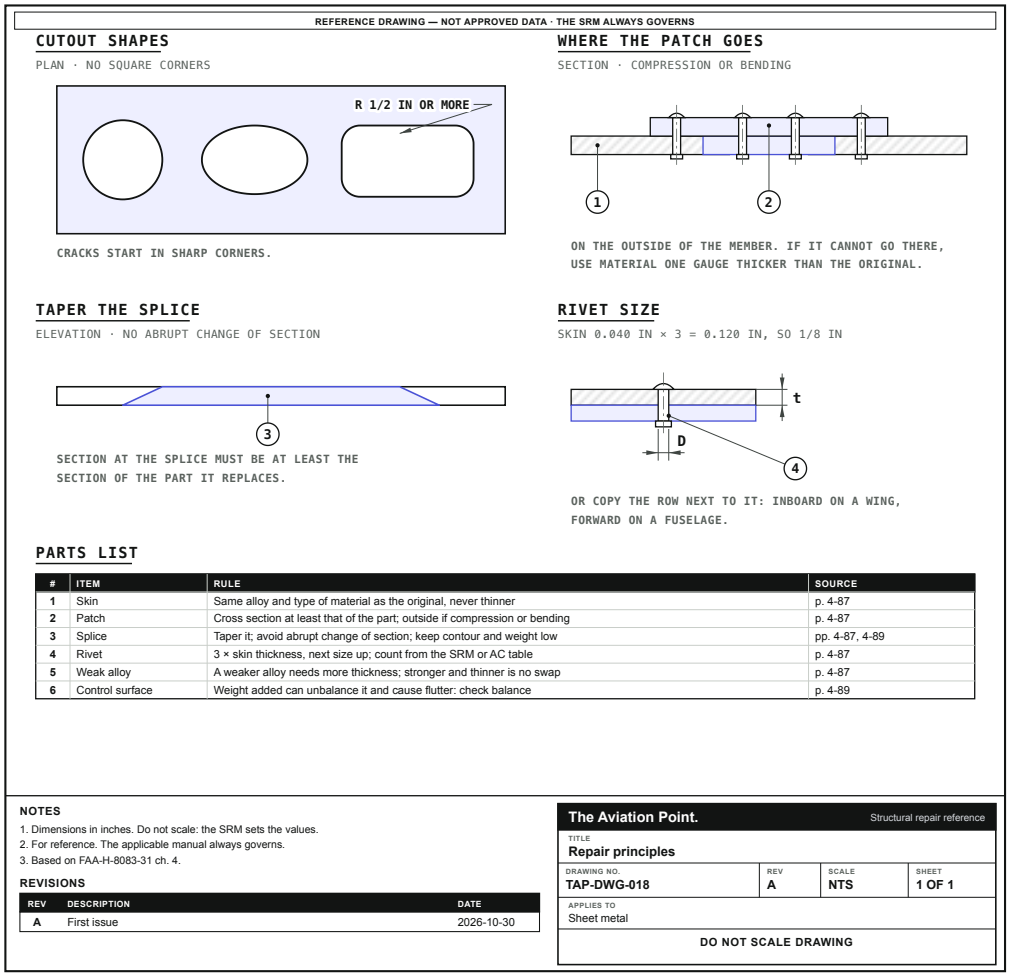
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Structural Repair Principles: The Rules Behind Every Sheet Metal Repair

Strength · contour · weight · balance · approval



After FAA-H-8083-31 pp. 4-87 to 4-94. Typical only: the SRM gives the repair.

Six rules and where they come from

Rule	In practice	Source
Strength	Splice or patch at least the cross-section of the part; taper it	H 4-87
Same material	A weaker alloy needs more thickness; stronger but thinner is not an equal swap	H 4-87, 4-93
Contour	Fit the original contour exactly; critical on smooth skin of high-speed aircraft	H 4-89
Weight	Small patch, no extra rivets; check balance after repairing a control surface	H 4-89
Not too strong	An over-stiff repair is as undesirable as a weak one: structure must flex	H 4-87, 4-88
Corrosion	All corrosion removed first; parts insulated from each other	H 4-94

Key points

- **Never thinner:** a lighter gauge is not allowed even in a stronger alloy.
- **Cross-section** of the splice at least that of the part; taper it.
- **Rivet** = 3 × skin thickness, next size up, or the row beside it.
- **Cutouts** round, oval or rectangular with corners R 1/2 in or more.
- **Approval:** SRM first; AC data only when there is no maker data.

Step by step

1. Inspect the whole load path; find the SRM repair.
2. Choose the material: same alloy, same or thicker.
3. Fix the rivet size and pattern from the manual.
4. Remove corrosion; insulate the faces.
5. Check contour, weight and balance; record the repair.

SOURCES · FAA-H-8083-31, AMT Handbook — Airframe, Volume 1, Chapter 4

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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.

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