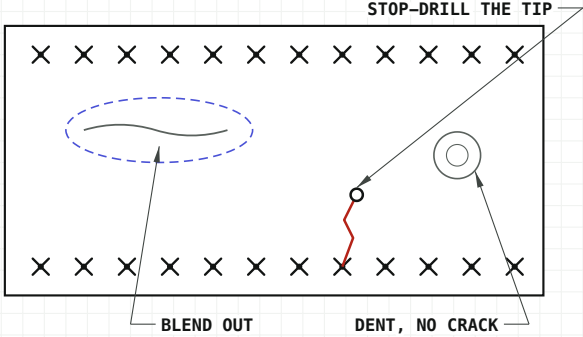


Sheet Metal Damage: Which of the Four Classes Is It?

Negligible • repairable by patching • repairable by insertion • replace

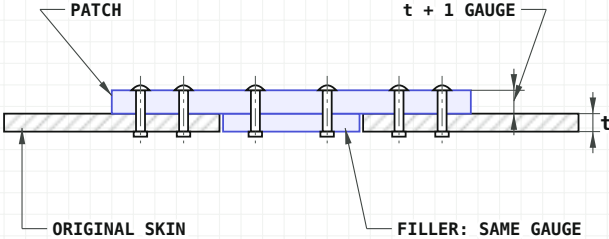
1 • NEGLIGIBLE

PLAN • FIXED WITHOUT ADDING MATERIAL



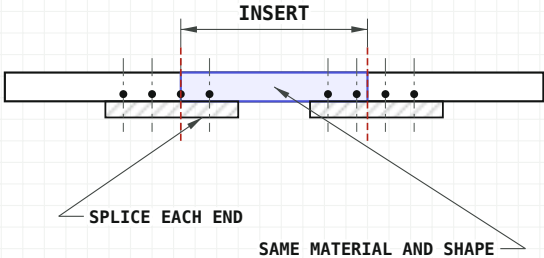
2 • REPAIRABLE BY PATCHING

SECTION • SPLICE MEMBERS BRIDGE THE DAMAGE



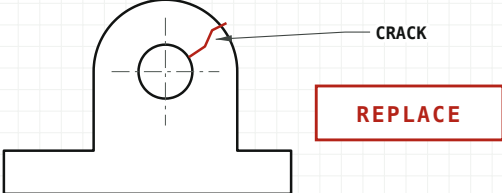
3 • REPAIRABLE BY INSERTION

ELEVATION • DAMAGED LENGTH CUT OUT AND REPLACED



4 • REPLACE THE PART

CASTINGS, FORGINGS, HINGES, SMALL MEMBERS



Repair would not restore the margin of safety, or replacing is quicker and cheaper.

THE AVIATION POINT

GUIDE
Damage classification

AFTER
FAA-H-8083-31 p. 4-91

APPLIES
Sheet metal structure

SCALE
NTS

After FAA-H-8083-31 Vol. 1 pp. 4-91 and 4-92. Typical only: the SRM gives the limits and the repair for each part.

What puts a damage in each class

Class	What it is	Typical fix	Material added
1 • Negligible	Surface damage that does not affect structural integrity, inside the manual's limits	Smooth, sand or blend; stop-drill; hammer out a dent. Then inspect it often	None
2 • Patch	Beyond negligible limits, but a splice member can bridge it	Patch over the damage, overlapping sound structure; filler plate to restore bearing or contour	Patch: same material, one gauge heavier. Filler: same gauge
3 • Insertion	Too large to patch, or a patch would foul the alignment (hinge, bulkhead)	Cut the damaged length out, fit a member identical in material and shape, splice each end	Insert and splices
4 • Replace	Repair impractical, uneconomic, or would not restore the margin of safety	New part: castings, forgings, hinges, small members, highly stressed members	A new part

Damage words, one line each

Word	What it means
Brinelling	Shallow round dents from a small-radius part under high load
Burnishing	Polished by sliding contact; no metal removed
Burr	Thin metal standing past an edge or a hole
Corrosion	Metal lost by chemical or electrochemical action
Crack	Two portions of metal separated, seen as a fine line
Cut	Long, narrow, deep metal loss from a sharp edge
Dent	Indentation from an impact, edges slightly upset
Erosion	Metal worn off by grit or sand, rough and lined
Chattering	Surface broken up by vibration; usually no metal loss

Word	What it means
Galling	Metal torn and welded between parts that rub
Gouge	Groove from heavy pressure; metal lost or pushed aside
Inclusion	Foreign material inside the metal from manufacture
Nick	Local notch on an edge; metal displaced
Pitting	Small, deep, sharp-edged cavities
Scratch	Light, shallow tear in the surface
Score	Deeper tear than a scratch, may be heat-discoloured
Stain	Local change in colour
Upsetting	Material pushed past the normal contour; no loss

Key points

- Limits come from the SRM, per part and per aircraft. Nothing is negligible by default.
- Negligible still needs action to stop it spreading, and frequent inspection.

Step by step

- Inspect the whole member: the load travels its full length.
- Look for working rivets (dark residue), diagonal wrinkles, cracks from rivets, corrosion in pockets.

The Aviation Point • TAP-G-DAMAGE-CLASSIFICATION

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

- **Patch:** same material, one gauge heavier; filler plate same gauge; overlap sound structure.
- **Insertion** when too large to patch, or a patch would foul a hinge or bulkhead.
- **Replace** castings, forgings, hinges, small members, and highly stressed members a repair cannot restore.

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

3. Use eddy current or ultrasonic where the eye cannot prove a crack.
4. Find the part's limits in the SRM.
5. Decide on type of damage, material, location, repair needed and tools available.



SCAN • OPEN THIS GUIDE
theaviationpoint.com/sheet-metal/damage-classification/