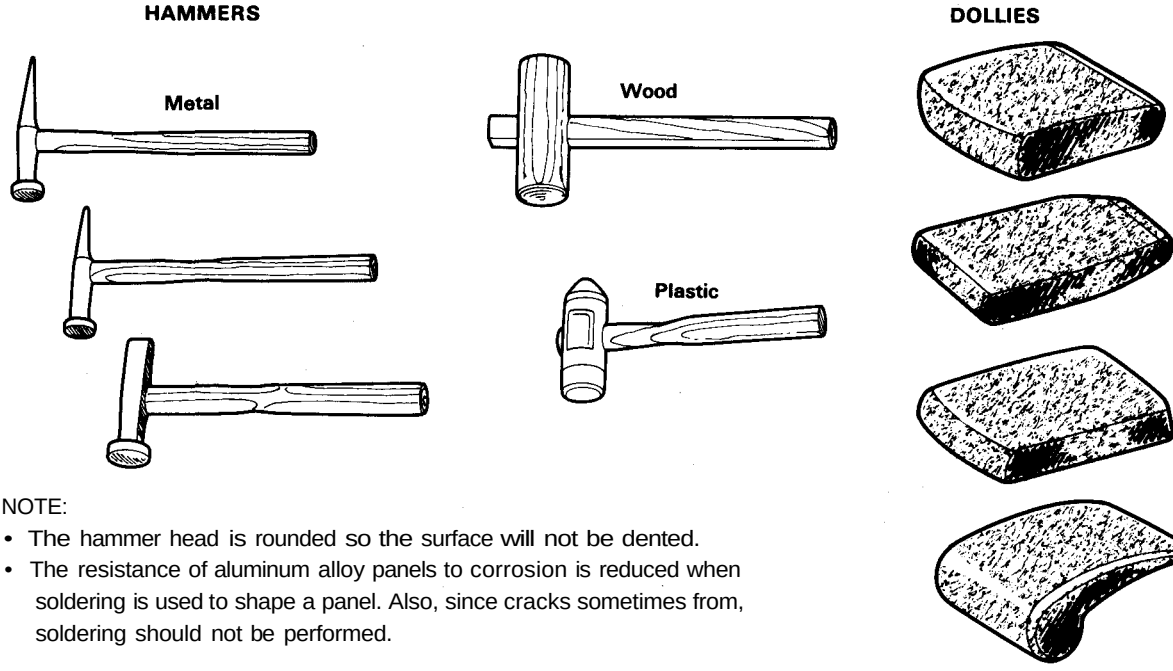
Skin Panel Area Shaping

1. Repairs using hammers and dollies

Hammering methods using hammers and dollies are basically the same as for steel plate.
The hammers and dollies shown below are used for aluminum alloys that have relatively high elongation properties.

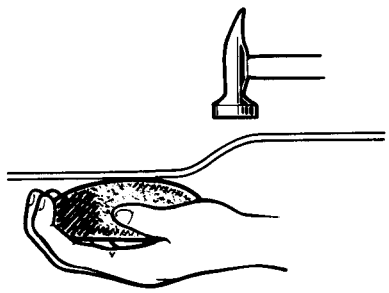


NOTE:
- The hammer head is rounded so the surface will not be dented.
- The resistance of aluminum alloy panels to corrosion is reduced when soldering is used to shape a panel. Also, since cracks sometimes from, soldering should not be performed.

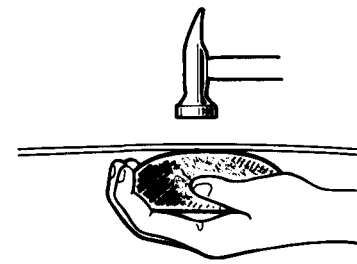
There are two ways of using a dolly when hammering:

"Hammer off dolly" where the hammer and dolly are positioned askew, and "hammer on dolly" where the panel is sandwiched between the hammer and the dolly, and the hammer is used above the dolly.

Hammer off dolly:



Hammer on dolly:



- The "hammer off dolly" method with its minimal elongation and work-hardening is frequently used for aluminum alloys. It is used to hammer down surfaces.

  NOTE: Be careful that the surface does not fall below the contour.

- Aluminum alloys react quickly to hammering with the "hammer on dolly" method, and elongation results. When this method is used, the surface must be tapped very lightly.

- The contact surfaces of the hammer and dolly must be kept clean and polished at all times so that the base metal is not marked or scratched.

(cont'd)

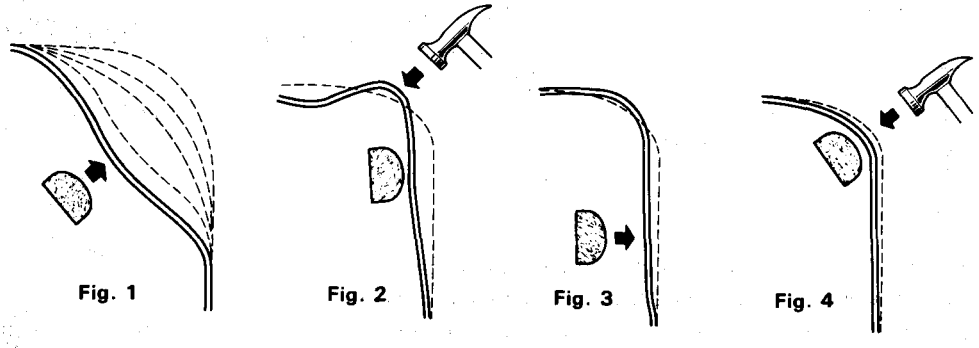
Aluminum Alloy Repair

Skin Panel Area Shaping (cont'd)

Hammering

To shape a deformed panel, use a hammer and dolly to smooth out unevenness. As shown in the figures below, first even out a large indentation close to the original shape.

Use this method to straighten sharp curves from inside. After the shape has been as shown in Fig. 1, use the hammer carefully to prevent panel elongation, then continue as shown in Fig. 2, 3 and 4.



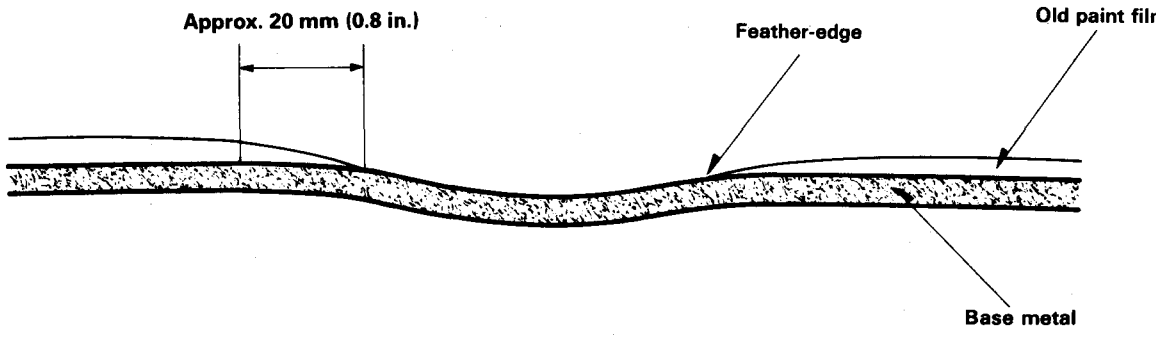
Drawing

As with steel plates, a gas torch can be used to apply heat, then draw the surface area to correct panel warp.
Aluminum alloy does not change color when heated, so it is important for the temperature to be controlled by applying thermopaint so that the panel does not melt.

NOTE: A serrated face drawing hammer used for hammer finishing steel plate should not be used for aluminum alloy because it can cause cracking.

2. Paint film removal and cleaning

Use an #80 to #120 sanding disc to remove the paint film. Hold the disc plate lightly against the surface to avoid inducing strain. Proceed with feather-edging over a wide area bordering on the old paint film.



-1 .Grind down the old paint film using a #80 sandpaper pad over a wider area than the putty area.

-2. When using #120 sandpaper to smooth the sanding marks from the #80 paper, leave an edge measuring between 20~30 mm (0.8 ~ 1.2 in.) and proceed with feather-edging.

-3. Use compressed air to blow away any dust, dirt or moisture on the putty surface. Remove any oil or grease with a wax and grease remover.

- If it is raining or if the humidity is high, warm up the base metal using an infrared lamp or heater to remove the moisture.
- Similarly, warming up the base metal in cold weather (to about 68°F (20°C) also improves putty adhesion and speeds up the drying process).

(cont'd)

Aluminum Alloy Repair

Skin Panel Area Shaping (cont'd)

3. Finishing with putty

Unlike steel plate, putty cannot be applied directly to the bare surface of aluminum alloys. Apply an epoxy primer first, then add the putty. Putty reduces the amount of work time involved in panel repair. With its excellent restorative properties and workability, using putty is better than repairing a panel by hammering it or applying heat.

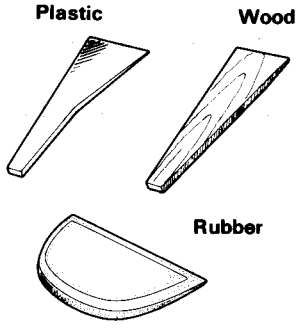
-1. Puttying

The basic instructions for applying putty are: clean the surface of the panel to be repaired, do not allow air to enter the putty, do not apply a thick layer at one time, and apply the putty to conform to the panel shape.

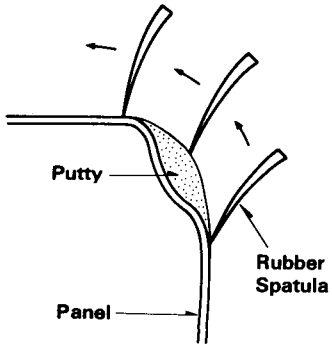
Main points in applying putty

- For flat surfaces, use a harder spatula; for gently curving surfaces, use a softer spatula; for sharply curving surfaces, use a flexible spatula made of rubber.

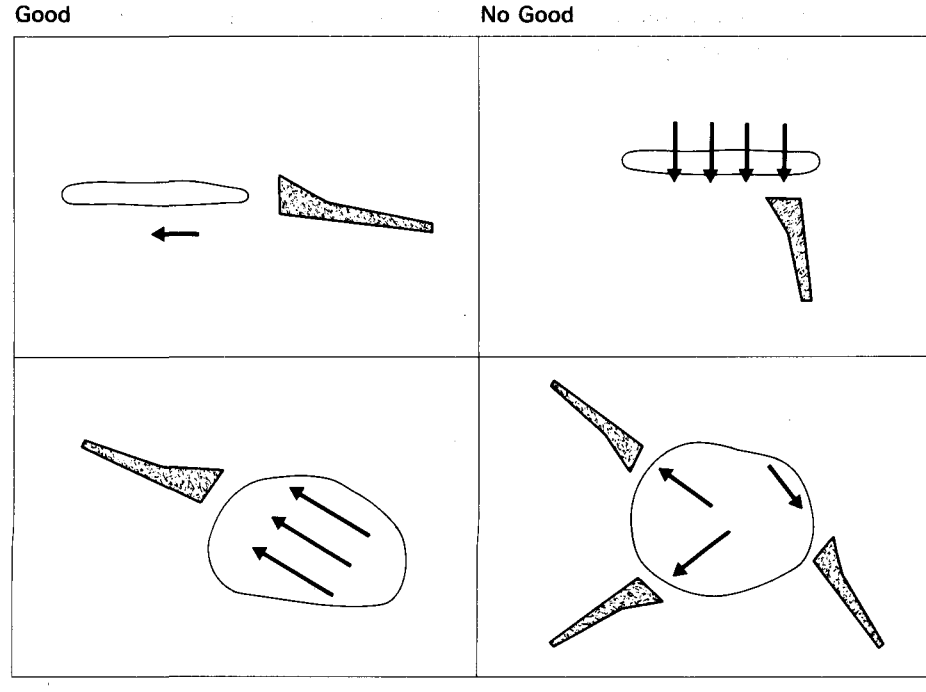
NOTE: Apply the putty from bottom to top, taking care not to reduce the height of the center area.



How to use a spatula on curved areas:



How to use a spatula:

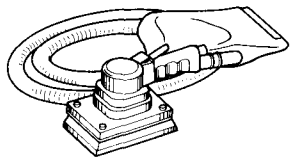


—2. Putty sanding

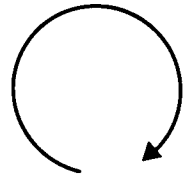
There are three stages in putty sanding: roughing, leveling and border line flattening.

- Sand the putty in all directions.
- Always use an orbital sander or double-action sander.
- Operate a power-driven file by hand for finishing.

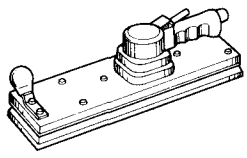
SHORT ORBITAL SANDER



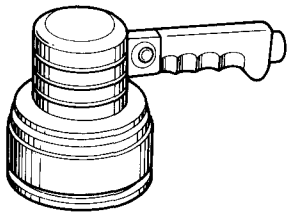
Movement of single-action sandpaper area:



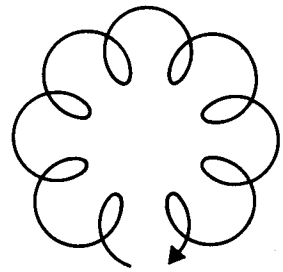
LONG ORBITAL SANDER



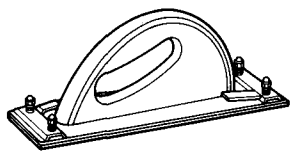
DOUBLE-ACTION SANDER



Movement of double-action *sandpaper area*:

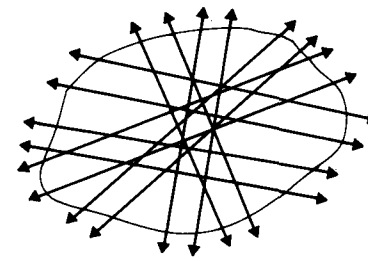


HAND FILE

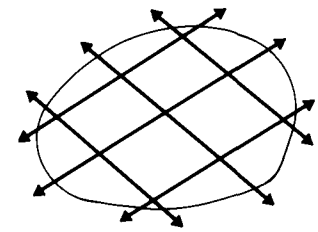


Sander motion:

Sanding a flat surface:
Move in all directions over the surface of the putty.



Sanding a gently curved surface:
Move the sander diagonally in a specific direction only.



Sanding a sharply curved surface:
Move the sander smoothly to roll over the high-point of the curved surface.