

DENT and BULGE removal

IN SHEET-METAL WORK repairs, involving shapes with double curvature, the principles resemble those in panel beating in regard to obtaining the desired contour—stretching, shrinking or compressing the metal, planishing and finishing.

In some instances, repairs may seem more difficult than straightforward hollowing or raising of a sheet, owing to constraint to a given shape, and to the metal often being rolled iron or steel which flows less easily than annealed brass or copper. The presence of paint may also be a complicating factor, as may the difficulty or impossibility—owing to space limitations—of directing on to the damaged area just the type of blow required.

Simple damage, as to a car mud-guard or panel, starts as a dent; but should the metal require considerable working to remove the dent, the result is generally a bulge, in turn demanding removal.

A moderate-sized dent—not too

small—on a well-defined double curvature is sometimes very easily removed. The metal having retained a tendency to the original contour will spring out again, as an oil can bottom, when a discreet blow is struck from behind with a wood or rubber mallet. Supporting with a small sandbag or rubber block from behind, the perimeter of the dent—if still visible—may be lightly tapped round with a small hammer or mallet, though care is necessary if the paint is undamaged.

Where a direct blow may be difficult to strike, a piece of wood, shaped to approximate curvature at the end, may on occasion be used as a “punch” with a hammer, or in conjunction with a jack, to push the dent out—a method which usually does not damage the paint on the outside. A dent too small to spring out may also respond to this treatment.

A fairly large shallow dent, A, may be driven out with a mallet, supporting from the opposite side with a block of wood covered with cloth. Then with the metal at approximate curvature, it is necessary to avoid producing numerous small bulges on the outside—though the difficulty is to know where to strike. Bend a stick of solder as a curvature gauge and from below to rub the area and reveal the “high spots”—dents from above—which should be tapped with a small panel hammer.

Severe damage

When damage is considerable and repainting required afterwards, knocking out should be on a panel-beating principle. Instead of directing blows to the centre of the area and so producing bulges or even sharp bends, to stretch or crack the metal, a sandbag should be placed on top and a start made at the outside edges, B, to bring the shape back gradually, working in diminishing circles to the centre.

When metal has been pushed in acutely, C, it is weakened at the apex of the bend, if not actually cracked, and if struck at that point will fold or break. Hence blows are advisable as at (1) to begin to restore the curvature, then as at (2) to continue the process, supporting from the top with a sandbag.

To eliminate a bulge due to the metal's stretching, support from behind or below with a sandbag is necessary; and on a car mudguard, a jack and block can be used D. Work should proceed from the perimeter to the centre of the bulge in diminishing circles.

Planishing to remove small marks requires a flat hammer and a steel block of approximate curvature E; and the whole area should be gone over lightly to avoid stretching. In all working, a check can be kept with a gauge of bent solder, and if necessary low areas filled in, F.

Shrinkage of a bulge can be hastened when it is possible to apply concentrated heat from a welding torch. Beginning at G (1), the top of the bulge is heated bright red then knocked down with the mallet, and after a time cooled with a wet cloth. This leaves a circular crater (2), which is heated all round at the top, knocked down (3) and cooled; after which, the metal is planished (4) and (5) using a hammer and block, E. ■

