Chapter 4
Basic panel removal

The principles of panel removal and replacement hold true for any panel. Removing a structural member or the roof, however, will obviously require special considerations beyond that of removing a simple wing. Nevertheless, your wing, sill and roof are attached using the same methods, and will require the same techniques to replace.

A VERY SIMPLE PANEL

This deck panel sits between the tonneau cover and the boot lid. It is attached by spot welds which, for the most part, are easily accessible when the adjacent panels are unbolted. The welds at either side, however, are concealed, and the seam that they form is a bit of a water trap. A small amount of braze has been used to supplement the spot welds where the panel joins to the boot aperture.

This small panel is easily replaced, though care is needed since any misalignment will result in fouling of the boot lid and/or the tonneau cover. The quality of the replacement panel is not brilliant in this case, so I've put location marks on the adjacent panels at each end.

The exposed spot welds are now drilled out, leaving the base metal intact. The seams at the side cannot be drilled until after the bulk of the panel has been removed, so an incision is made using a cutting disc on a grinder just inside the seam, and this is continued, using a hacksaw, into the boot aperture on the inside of the overlap. In theory, the old panel will now fall off. In reality, however, it will probably need a little bit more persuasion. If necessary, split around the lower crease of the panel with a sharp mortise chisel.

Once the panel is free and can be removed (with care), any remnants of the seam weld can be lifted with a chisel and mole grips. Very stubborn bits, or any traces of braze, can be ground off, taking care not remove any of the base metal.

FRONT WING

A car's front wings are its most vulnerable panels and, as such, the most frequently replaced. As a jobbing tin-basher of many years standing, I have straightened more offside fronts than I wish to remember.

Pictures 4-1a to 4-1k. Wing replacement sequence.

4-1a. Stripping trim.

4-1b. True state of wing.

4-1c. Drill out weld on door edge ...

8-23. ... and more rot.

8-24. Ed opens window in RQP ...

8-25. ... to reveal ...

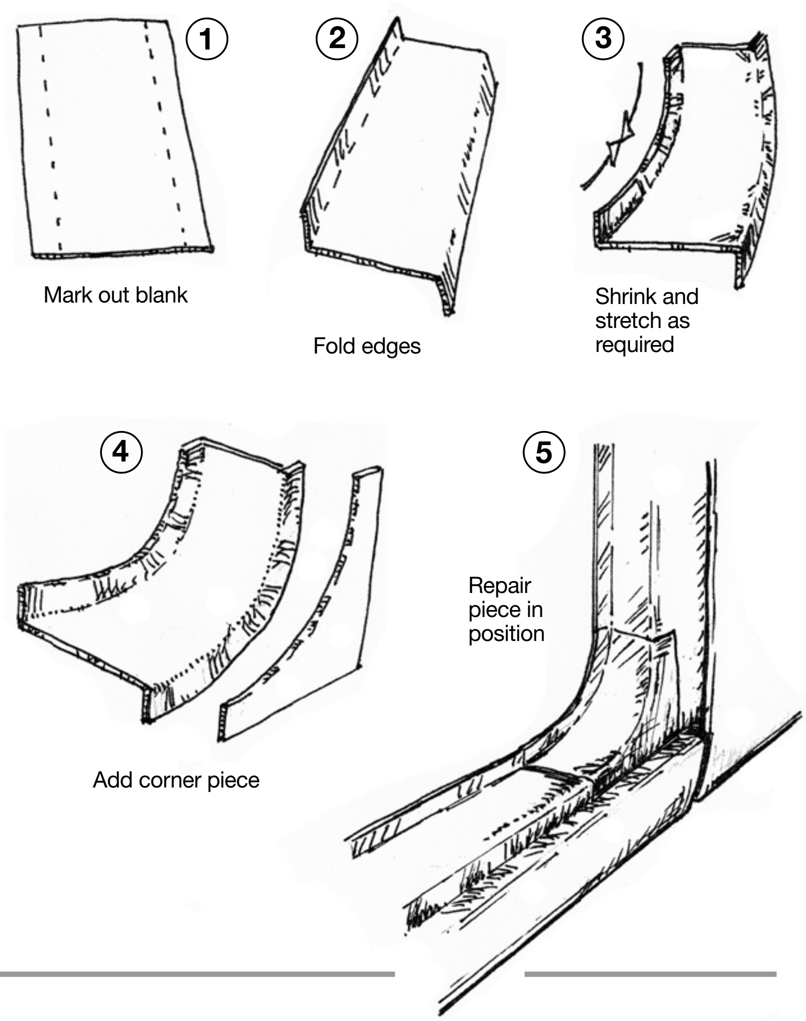
8-26. ... a nice surprise – internals, not bad ...

8-27. ... unlike post feet which show rot.

8-28. Original red oxide is a good sign. Note expanding brace.

The outer sill panel is the same length as the inner, and nearly as heavy. It has a pronounced taper, thinning toward the rear, and the flat on its topside continues beyond the span of the door aperture. Behind the door, the rear quarter panel sits atop the sill, as does the foot of the B-post. Forward of the door, the A-post also sits on the outer sill, while the front wing wraps around it, and is fixed along the lower edge. Therefore, to replace the outer sill, it's necessary to remove part of the front wing and open a window in the rear quarter panel. In practice, however, the section of the rear quarter panel that sits above the sill is a water trap, and always requires replacement at the same time.

The story at the front, however, is not so fortuitous as it's not uncommon to find cars whose sills have been replaced without the removal of the front wings. In many of these cases, the sills have simply been chopped and tucked with no regard to structural integrity. In other cases, upon removing a wing for replacement, for example, the sills have been found to be rotten because the lower part of the wing tends to hold water and dirt against the outer face of the sill.

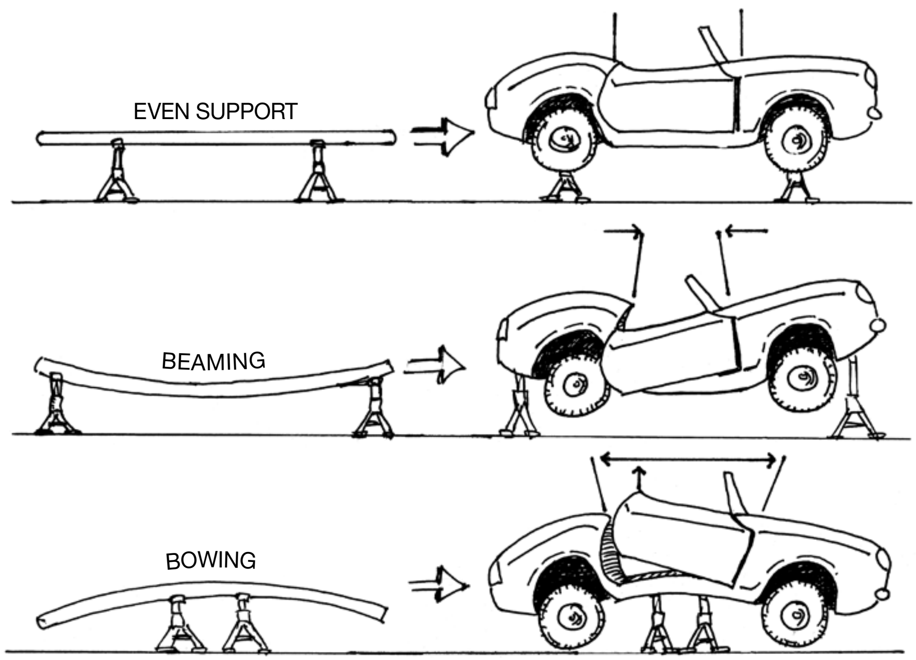


Top left: 13-6. A single pull produces a small effect.

Above: 13-7. Metal moved along and action repeated to create an even radius.

Top right: 13-8. Shrinking and stretching examples give an idea of what can be achieved from this very useful machine.

Right: Typical A-post repair piece.



17-5. Even support, beaming and bowing diagram.

When working on a Stag, I will keep it on its wheels as much as possible, and only check panel alignment when the car is squarely on the floor.

Most other vehicles can be safely set at a comfortable working height on axle stands, but it is always worth making it level, if your floor is not, especially if there is any risk that your working will compromise the structural integrity (ie sill removal).

In most cases, two pairs of axle stands will suffice, but it never hurts to add more support as the job progresses. A block or scissor jack under the dash/scuttle is a good idea if the A-post is to be disturbed. An extra set of axle stands under the chassis midway along the car is a must if both the chassis rails and sills are being cut.

Again, forethought is key. Look at the car, where is the weight? How will it move if one or other member is cut or removed? Trestles and wooden beams can be put to good use. You cannot have too much support.

Ramps, lifts & body-rollers

Standard ramps are an easy way of gaining height for working under the car, but don't usually give a huge amount of lift. One pair of ramps used in conjunction with a trolley jack and a pair of axle stands will do for a variety of jobs. Large ramps (as shown in the accompanying photos) require a large area of level floor, but ensure good lift and a stable platform.

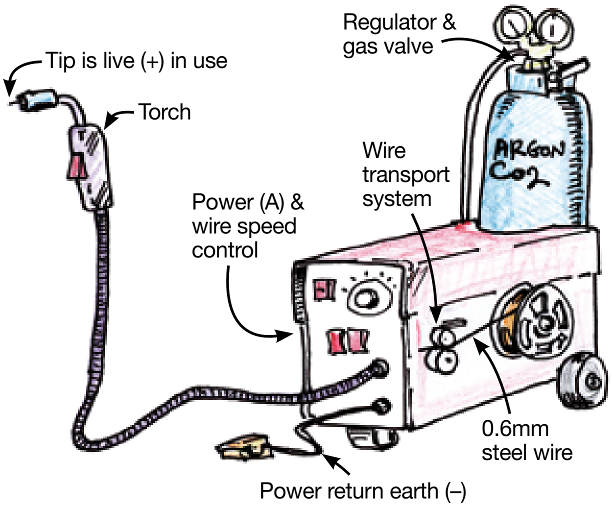
Two and four post hydraulic lifts, as used in garages, are lovely for working under the car, but have certain drawbacks for general bodywork. The flat folding ramp, as used in the section featuring Dorian's spoiler (page 104), is an elegant solution to most of our lifting problems.

Body rollers are advertised as a means of working on the underside of a vehicle. Typically, the bodyshell is mounted on the roller by the bumper mounts, which are usually at the ends of the chassis rails. I would have to advise extreme caution when considering the use of these devices, as they rely entirely on the ability of the chassis rails to support the cars weight without beaming or bowing. Given that many vehicles are designed with the roof acting as a compression member, don't be surprised if it cannot fulfil this role if the structure is inverted. Likewise, the removal of any critical member might mean serious damage. Also, many of our cars do not actually have any chassis beyond the rear axle, so the bumpers are effectively mounted onto a big hollow box, which is the boot. Other models have chassis rails that run only to an area below the seats where the load is transferred to the sills via out riggers.

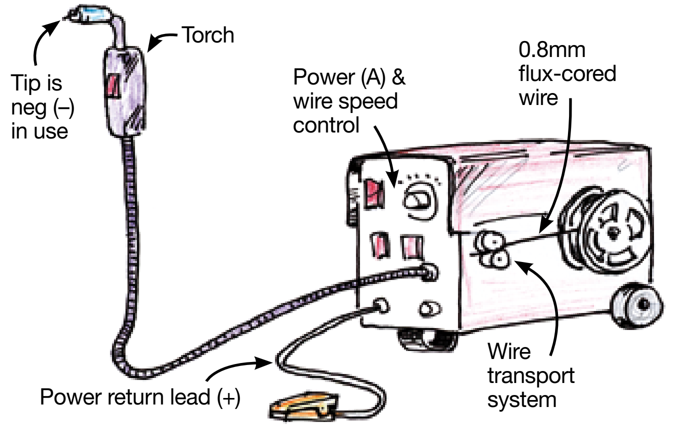
17-6-17-9. Supporting an MGB on ramps.

17-6. These giant ramps require a lot of space.

17-7. Gently does it ...



18-8. Drawing of MIG welder



18-10. Drawing of gasless MIG welder.

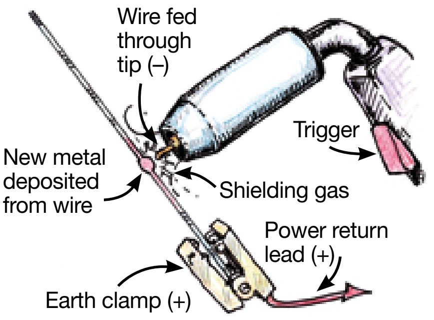
GASLESS MIG WELDING

Gasless MIG relies on a flux-cored wire to produce a shielding gas on contact with the arc. The advantages of gasless MIG are firstly that you obviously do not have to pay for gas. Less obvious, but more practical, is that the shielding gas is less likely to blow away in outdoor situations; making the gasless system a good choice for site work. The lack of a heavy gas bottle also helps greatly with portability. However, the downside is that the wire is far more costly than standard MIG wire, and this method creates a lot of nasty toxic smoke, plus the flux will leave a glazed residue on the weld, making over-welding more difficult.

Gasless welders differ when compared to the standard system in that the polarity is reversed. Dual polarity gas/no gas machines are available and offer greater flexibility at no extra cost. The 150amp SIP machine (shown) is a good all-round unit.

MIG welding aluminium is a practical option, as small reels of aluminium wire and disposable bottles of suitable gas are available from many high street outlets. Aluminium requires 25 per cent more power than steel to weld, and is more demanding in terms of skill because the weld is reluctant to initiate, and when it does you have to work pretty fast to stop it blowing holes in the metal. Another quirk of this material is a tendency to distort some time after the process has been completed. Controlled cooling should be considered.

18-11. Gasless MIG is well suited to outdoor situations.



18-9. Gasless MIG welding detail.

Cost & equipment

Domestic MIG welders are rated at between 100 and 180A and cost in the region of £150-£300. When selecting a welder you would do well to look at the 'duty-cycle,' often printed on the side of the machine. This will tell you what percentage of the time the machine is actually running at a given amperage. Stable power is far more important than big power in a domestic MIG, so at the lower outputs you would want to see your welder running at 100 per cent. A good 130A machine is ample for our needs.

Shielding gas, usually Argon/Co2, can be supplied by BOC for a yearly rental cost for the bottle and paid for as used. I would suggest the Y-size cylinder at 93cm tall and 40kg or the X at the same height, but slimmer. This will cost about £60 for the rental and the same again for the gas. Alternatively, disposable bottles can be bought from many high street outlets at about £12-15 each or larger refillable bottles are available from Sealy for about £60, with subsequent refills costing about the same amount. As with most things, the economy is not always obvious and depends on exactly how much gas you are likely to use. If planning to do paid jobs for family and friends you may want to include the cost of a bottle each time. This may well provide you all the gas you will need. Learning to weld using disposable bottles will prove very costly.

MIG wire is supplied in 0.6 and 0.8mm copper-coated reels of 0.7kg and 5kg, expect to pay around £16 for 5kg of 0.6mm.

18-12. Reel of copper-coated 0.6mm wire.