

FIT & FIDDLE

STORY & PHOTOS PAUL TUZZON

Dented pride

► Even the gnarliest of dents can be fixed with the right tools

THE more you use your street machine, the greater the chance you'll eventually earn some dents. Whether it's your fault or not doesn't really matter – it has to be fixed.

It's relatively easy to gain access to the back of some panels and if this is the case, conventional repairs using a hammer and dolly will work just fine.

However, if the damage occurs in an area with obstructions behind it, the panel will have to be repaired from the outside – that's where pulling comes in.

There are tried and tested methods for pulling dents out of panels, which have been

around for as long as the automobile has existed. However, as with most things in this industry, there have been constant advances in the equipment and techniques used, to achieve better results. Here, we take a look at a handful of different methods used to pull panels back into shape.

The one thing common to all the techniques shown here is that they must be applied to bare metal. The expense of the equipment involved precludes the notion of doing it yourself. However, the repairers we spoke are all enthusiasts and said that they would do one-off jobs for people if asked.





STEP 01 With Air Puller systems, an electrode is mounted to a piston that slides in and out. In one seamless action, the tip is welded to the panel and is then pneumatically drawn away from the panel. This pulls the ring into contact with the panel and from that point the tip pulls the dent out against restraint from the ring. The piston and tip move a constant amount but the depth/height of the ring is adjustable to suit the dent.



STEP 02 There are a number of systems that use levers like this to increase the pulling effort applied to a dent. The Air Puller system has one that can be used with the extended electrode shown. A good earth is essential if these dent removal systems are to work effectively. When each pull is completed, the Air Puller automatically twists a little to break the weld between the panel and the tip, leaving only a shallow weld mark.



STEP 03 With a different tip fitted to the Air Puller, this wavy wire can be spot-welded along a dent. It can follow a straight or curved path, making it extremely versatile. A claw-type hand puller can then be hooked through the loops and used to apply a steady corrective force. Alternatively, the slots in the claw plates allows the handle to slide back and forth, resulting in a slide-hammer type of action.



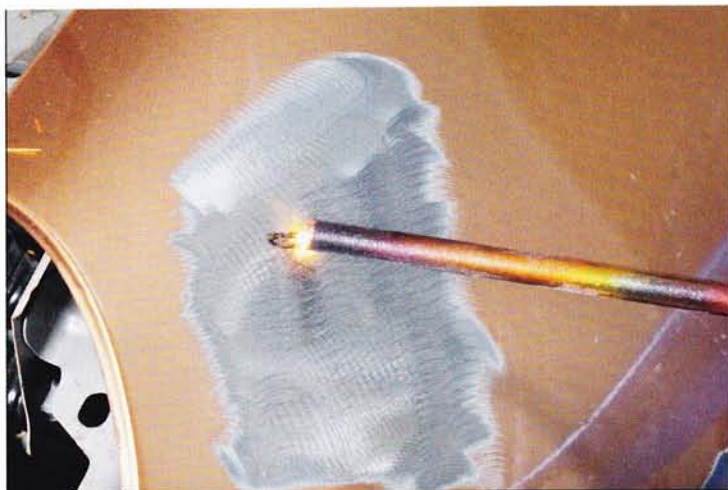
STEP 04 This technique requires access to the rear of a panel. Using a plate like this can sometimes get at the worst of the damage along a line with less distortion in adjacent areas. The chain is attached between the threaded stud shown and a solidly anchored rack. As the dent is pulled, other areas that want to come with it can be hit back down. The system can apply enormous pressure — enough to pull a whole car straight.



STEP 05 Working an area can stretch the metal and result in an 'oil can' effect. Heat-shrinking using oxyacetylene will fix such problems. We've covered the subject in detail before but basically a peak is knocked into the panel and excess material is pulled into the hump. The affected area is then heated and hit flat. As the flattened metal cools, it shrinks and further tightens up the area around it.



STEP 06 A slide hammer is a traditional tool but whereas original types had threaded tips and required holes in panels, new weld-on types cause much less panel damage. A bit of a twist and the tip breaks free. Slide hammers can apply quite a bit of force though their actions can also be very mild — despite advances in equipment, it still comes down to operator feel and skill. This is a Car-O-Liner CR35 compact system.



STEP 07 Modern tools aren't much of an advance if they can't emulate traditional methods when they're required. Fitting the appropriate carbon electrode to the CR35 enables it to apply heat to a selected area, just like an oxyacetylene torch — but no gas, no lighting of torches and no adjustment of regulators is required. Mind you, an oxyacetylene set is still part of the traditional equipment in any panel shop.



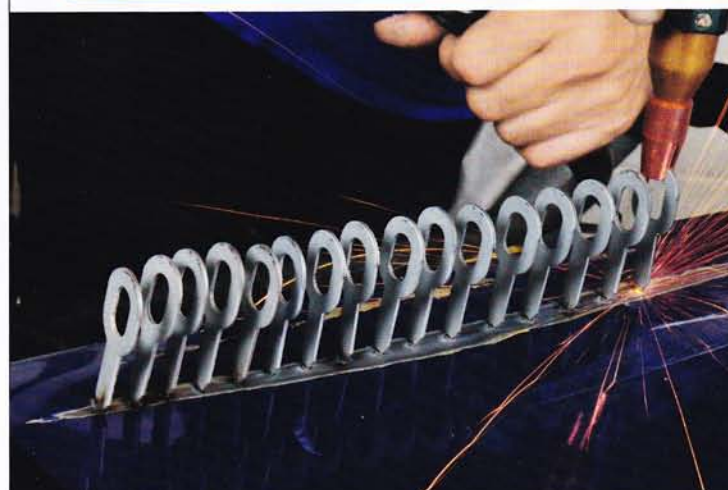
STEP 08 Fitting a different tip again to the Car-O-Liner allows threaded studs to be permanently welded onto a panel or the chassis of a car. These aren't for pulling panels; they're for mounting equipment and components in place without drilling holes. We took these shots of the Car-O-Liner gear at Phil Munday's Panel Works. They'll happily weld a few studs in place on a project car if you can get it to them.



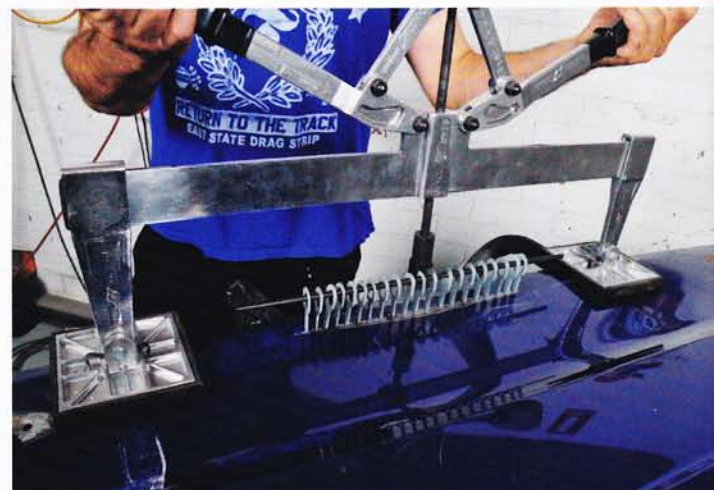
STEP 09 While Car-O-Liner's CR35 is designed for pulling dents, the larger CR500 is designed for spot-welding. A variety of tips allows it to reach into awkward places. Special types are required for high-tensile car body steels. Also shown is a variety of mounting studs for fitting original chrome trims to early models. This is welcome news, as the original mounts can often be quite corroded and fragile.



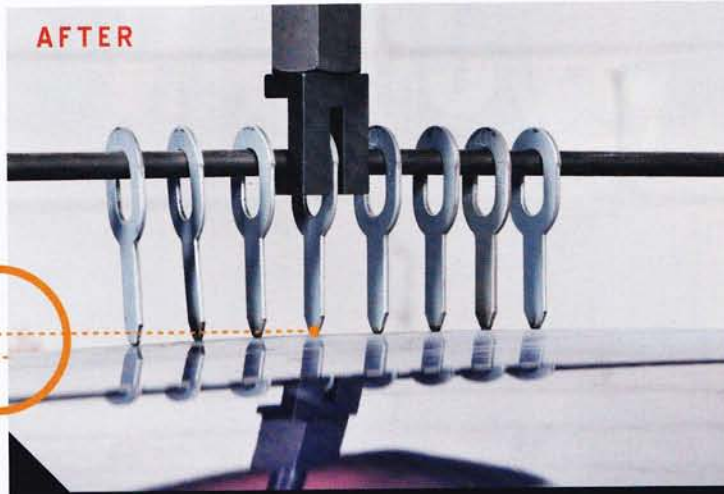
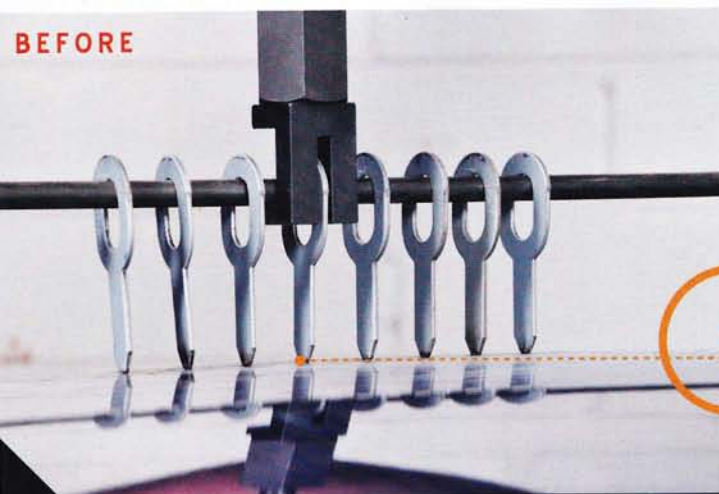
STEP 10 The thing that unites virtually all the techniques here is that they require tips — or in this case washer tabs — to be welded to the surface that's going to be pulled. A sanding disc or wire wheel is used to prepare the surface. This is a tailgate and the curvature of the stripped area shows the length and depth of the dent that has to be pulled out. The area for the welds must be completely clean.



STEP 11 The tabs, or bits as the company calls them, can be welded anywhere, so you can choose the area over which you work. Alchemy Paint & Dent Repair says that placing them roughly a centimetre apart is good. There are bits available with a twist in the shank so that they can be placed in the bottom of fairly deep body creases. The bits are extremely quick to apply — just position them and pull the trigger.



STEP 12 With the bits in place, a lifting bar is inserted through the holes. The pulling mechanism is set in place and connected to the bar. Because the depth of the dent varies, the height of the bits welded into it also vary. As the bar is lifted, it makes contact with the lowest bits first. As it rises it makes contact with the other bits as needed until they're all pulled to the same height.



STEP 13 The camera hasn't moved between here and the next image (Step 14) so you can see how far the panel has been pulled up. Even this small amount of movement requires a fair amount of force but the lever applies it easily. The reactive force is passed into the square pads (Step 12), so they must be placed where there's sufficient strength to support them — in this case the ridge running parallel with the damage.

STEP 14 The lifting nut is usually placed above the deepest part of the dent to ensure that maximum force is applied there. The holes through the bits are elongated and considerably wider than the bar to accommodate variation in placement of the bits. This isn't due to placement error; it's because dents are irregular. Despite the fact that the bits can transfer considerable force, they easily twist off when it's time to remove them.



STEP 15 The system is excellent but sometimes other sections get pulled up along with the dent. If this happens, they have to be knocked back down. Sometimes it's appropriate to hit them down while the puller is still applying tension. If there isn't sufficient strength surrounding the dent to be pulled, extra bracing will be required. A slide-hammer attachment can be used to do finer finishing over the damaged area.

STEP 16 After initial pulling, the slide hammer can lift smaller areas while high spots are tapped down with a hammer. Hammer work has to be very gentle since there's no dolly behind the panel. If used too vigorously, a slide hammer can pull peaks into the metal, creating extra work. A diligent operator would take the time to file-finish this but we're only demonstrating pulling here, so we stopped short of that.

WRAP UP

THE modern methods using the equipment shown here are so much easier than old-school techniques. So if your pride and joy has suffered a hit in an awkward place, don't despair — these guys literally have all the hot tips needed to bring it back to new.

We visited three different businesses to gather the information for this feature. The Air Puller was at prestige smash repairer Europanels (03 5224 2777); the Car-O-Liner machines were at Phil Munday's Panel Works (03 9725 4111) and the Star Strong Puller was at Alchemy Paint & Dent Repair — you can reach the owner, Anthony Salinas, on 0409 395 723.

Despite the fact that these are mainstream smash repair shops, they're owned by enthusiasts. Peter Ruggeri's (Europanels) Saffron Gold VT Commodore even graced the cover of *SM* (Dec '99). Alchemy Paint & Dent Repair also does paintless dent repairs, which we'll cover in another issue. 🛠️

