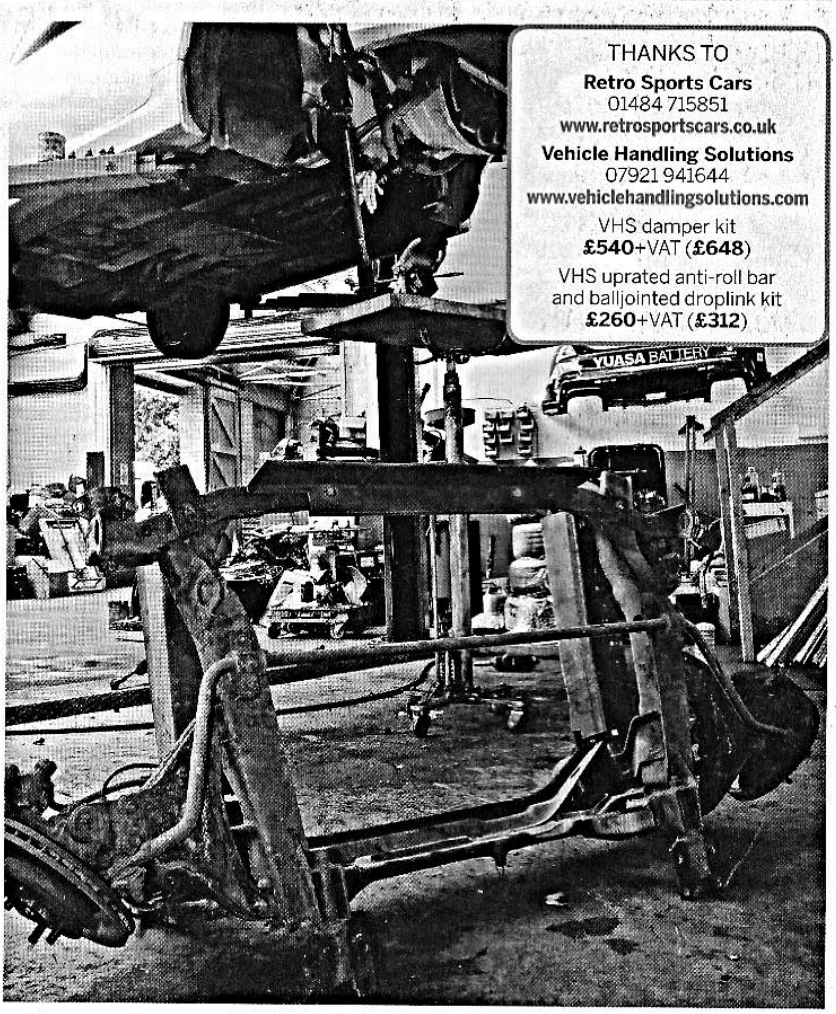
SUBFRAME replacement MGF & TF

PART ONE: In the first of a two-part series, **Rob Hawkins** watches as Retro Sports Cars and Vehicle Handling Solutions replace the front subframe on an MG TF.



THANKS TO
Retro Sports Cars
01484 715851
www.retrosportscars.co.uk
Vehicle Handling Solutions
07921 941644
www.vehiclehandlingsolutions.com
VHS damper kit
£540+VAT (**£648**)
VHS uprated anti-roll bar and balljointed droplink kit
£260+VAT (**£312**)

MG's two-seater, mid-engined F and TF manufactured between 1995 and 2005 share similar components underneath the all-steel bodywork, which can be largely removed by extracting the front and rear subframes. Anyone who has worked on Minis and Metros will recognise the layout of the MGF/TF, whose subframes are similar to the front assembly from a Metro.

With a Rover K-series engine in the rear (1.6- or 1.8-litre) mated to a PG1 five-speed manual gearbox or CVT and disc brakes all-round, the only major difference between the MGF and TF concerns the suspension. The F uses Hydragas, which consists of a liquid-filled system with displacers at each corner, whereas the TF has traditional coilovers. Other suspension components are similar, such as the single upper arm at each corner, lower arms at the front (which are prone to corrosion), rear track control arms and anti-roll bars at the front and rear.

Collective corrosion

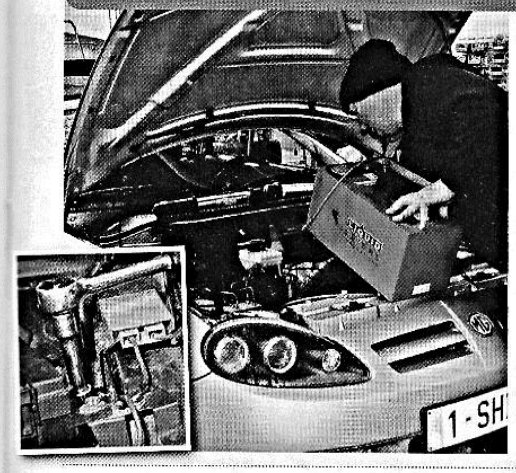
Typical of many a vehicle from MG Rover, corrosion is a major problem with the MGF and TF, ranging from the aforementioned front lower suspension arms to parts of the front subframe. The rear subframe seems to be less susceptible to corrosion, but many jobs, such as renewing brake pipes, the clutch and fixing a corroded clutch arm, are best conducted with the subframe, engine and gearbox removed.

At present, there's a seemingly plentiful supply of used MGFs and TFs with prices ranging from a few hundred quid to a couple of grand, and there's also plenty of standard and uprated parts to fix them. So, we wanted to know whether these sports cars are worth dismantling and repairing – and asked independent MG Rover specialist Chris Flanagan of Retro Sports Cars to help show us what's involved in replacing the subframes on an MGF and TF. He called on the expertise of Vehicle Handling Solutions to offer advice on some of its upgrades.

After several trips to Retro Sports Cars, we've produced a two-part comprehensive guide to removing, dismantling, repairing and refitting these subframes. In this issue, we're looking at the front subframe on a TF, showing how to replace it with one that has been cleaned and powder-coated – and equipping it with some upgrades from Vehicle Handling Solutions. The F is very similar, except the Hydragas system will need to be depressurised (degassed).

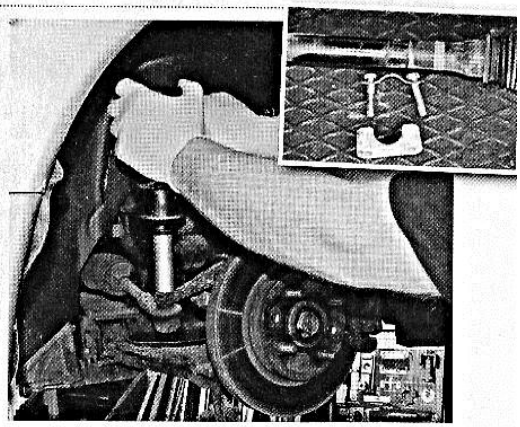
In all cases, Chris prefers to leave the steering rack on the vehicle when replacing the subframe, which means the steering isn't disturbed, though the geometry will need to be checked afterwards, especially if a new or replacement subframe has been fitted – or the old one has been overhauled.

REMOVING FRONT SUBFRAME



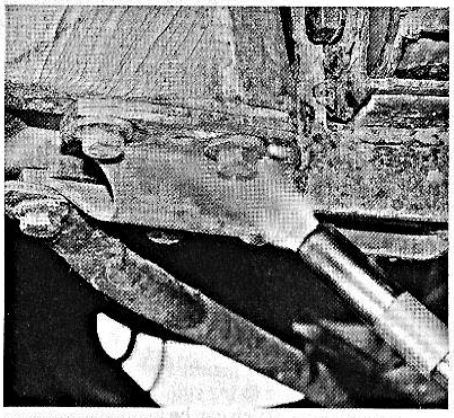
1 ◀ On the MGF, the Hydragas suspension system needs to be degassed using a suitable pump (it's pumped up to around 400psi). There are two Schrader valves for the Hydragas, located under the bonnet. The upper mounting nuts for the front dampers also need to be undone from under the bonnet.

2 ▶ After draining the coolant by releasing one of the coolant pipes underneath, Chris continued to work underneath the bonnet, removing the plastic liner by undoing a series of 10mm nuts, and detaching the ABS wiring to allow the wires to the front wheel speed sensors to be fed through the wheelarches.



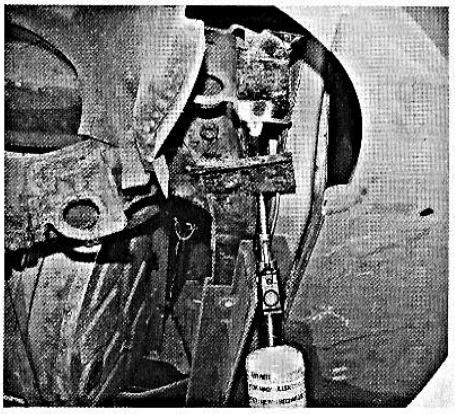
3 ◀ The washer reservoir is hooked on to the front subframe, so Chris detached it but left it inside the front compartment. The battery is disconnected – the main power lead is pulled through to the underneath of the MG. On the TF, the live lead to the fusebox also needs to be detached.

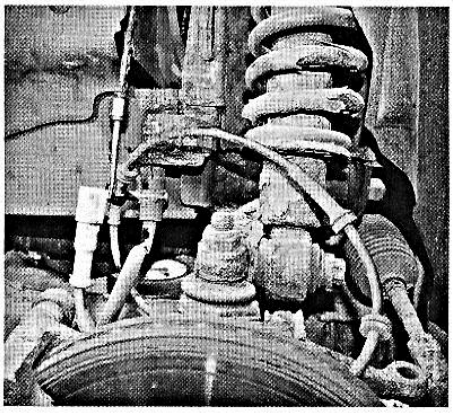
4 ▶ Underneath the MG, Chris removed the steering rack mounts, which consist of two 13mm nuts attached to bolts. On the offside, there's a U-shaped bolt. Next, he removed the front road wheels and detached the track rod ends by undoing their 17mm nuts and separating the track rod end from the steering arm.



5 ◀ There are four 13mm bolts that secure each rearmost mount for the front subframe. These are known to shear, so Chris warmed them up with a blowtorch to soften their thread lock, then he successfully loosened all of them.

6 ▶ On the TF, there's a brace bar fitted underneath the front subframe, which is secured to the rearmost mounts and to the front corners of the front subframe with two more 13mm bolts. Chris wisely warmed these up before attempting to undo them. The brace bar was then removed.

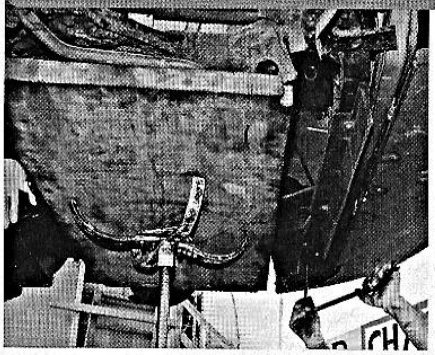




7 ◀ At the front corners of the front subframe, there are two 10mm bolts for the frontmost mounts. These were also heated up before Chris attempted to undo them because they can easily shear. With all of the subframe's mounting bolts loosened, there were a few more items to detach before the subframe could be removed.

8 ▶ Chris made sure the wiring for the wheel speed sensors was pulled through to each wheel hub. He then detached the brake pipes at their flexi-hoses and fitted a short length of pipe that was crushed to help stop brake fluid leaking out.

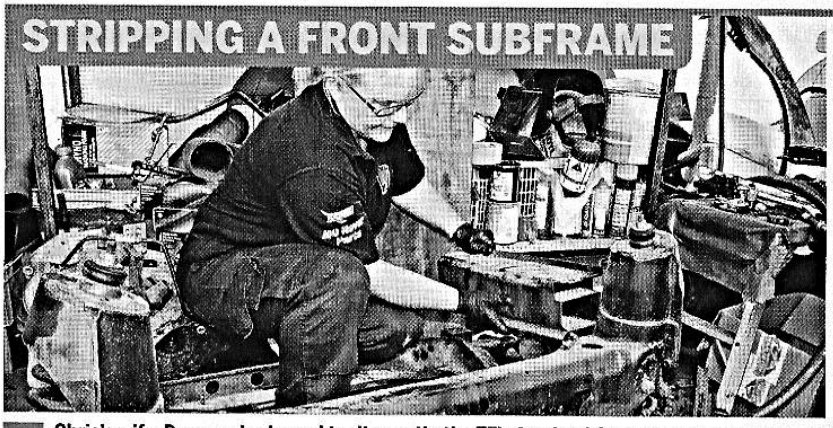
REMOVING FRONT SUBFRAME CONTINUED



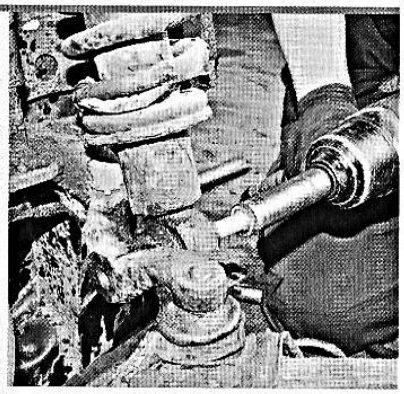
9 ◀ Using a large piece of wood and transmission jack, Chris supported the front subframe, then removed all of the bolts for its four mounting points. He used a long screwdriver and hammer to help persuade the subframe to part from the underneath of the MG.

10 ▶ Eventually, the front subframe was released and the transmission jack was carefully lowered. This part of the job required two people to hold the subframe and then lift it off. With the brakes and suspension still attached, it's quite heavy.

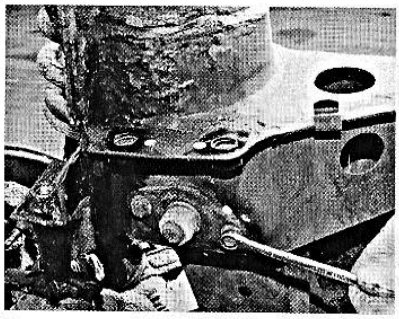
STRIPPING A FRONT SUBFRAME



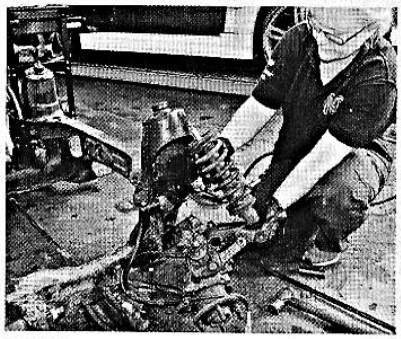
1 Chris's wife, Dawn, volunteered to dismantle the TF's front subframe, so she started by spraying over all the fittings to be undone with plenty of penetrating fluid. She then moved on to removing the crash tubes, which are each secured with three 13mm bolts (sometimes 15mm instead).



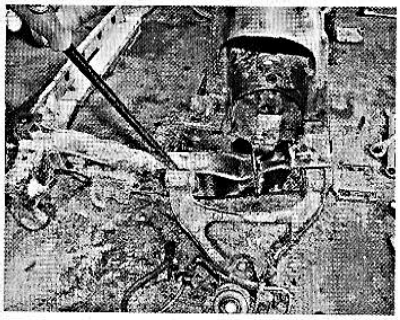
2 The 18mm nut for the upper arm and balljoint was undone using an impact driver, followed by the long 15mm bolt that secures the bottom of the coilover (damper only on the MGF) to the upper arm.



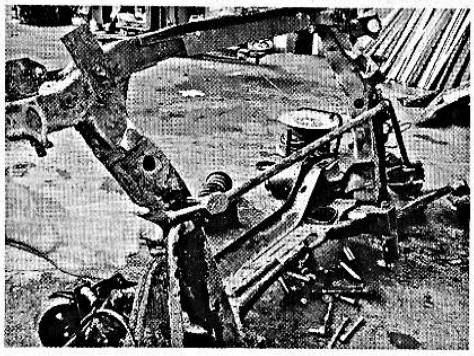
3 Before the upper arm could be released from the subframe, a small closing plate had to be removed, which is secured with 8mm and 10mm nuts and bolts. A long 21mm bolt and 19mm nut secure the upper arm in position, so these were undone and drifted out.



4 The upper arm and coilover could be removed together. First, the coilover's upper 17mm mounting nut had to be undone. Finally, the coilover and upper arm were released together and separated from each other on a workbench.

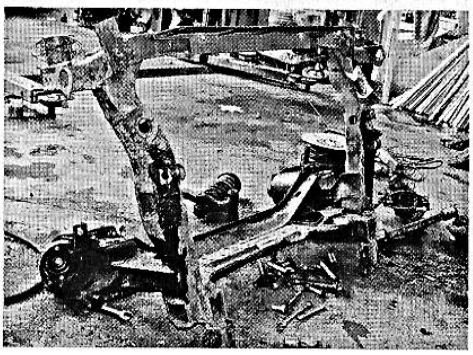


5 The lower arm, hub and brakes remained and could be detached together, then dismantled later. Each lower arm is secured to the subframe with two 19mm bolts, which can be undone using a socket and extension bars. We had to lever the arms out of the subframe.

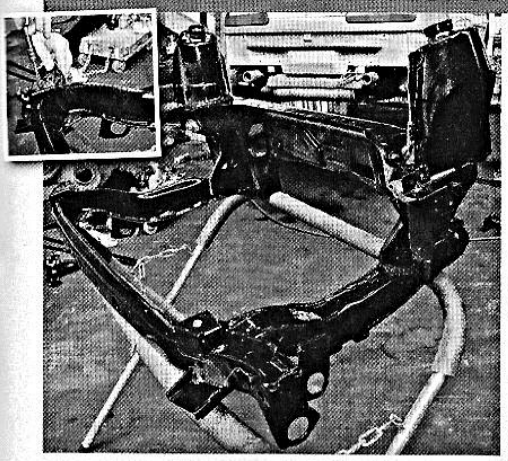


6 ◀ We realised the anti-roll bar's droplinks were still attached, so they were undone using a 15mm socket and 13mm spanner. The anti-roll bar was also removed by undoing two 10mm bolts for each mount.

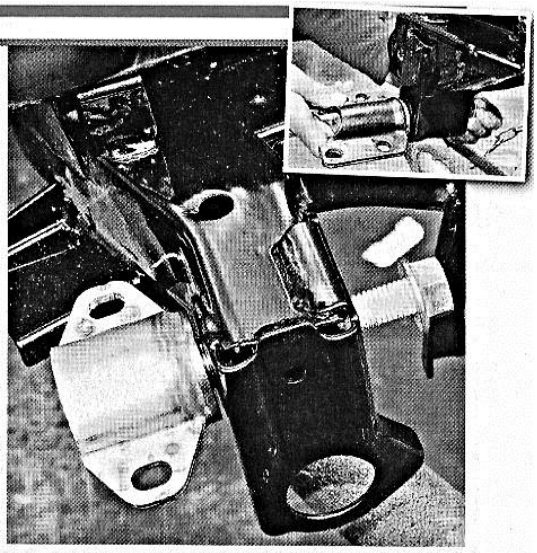
7 ▶ With the exception of the subframe's mounts, which were seized and would need warming up or possibly cutting off, the front subframe was fully stripped and ready to be sent away for blasting and powder-coating.



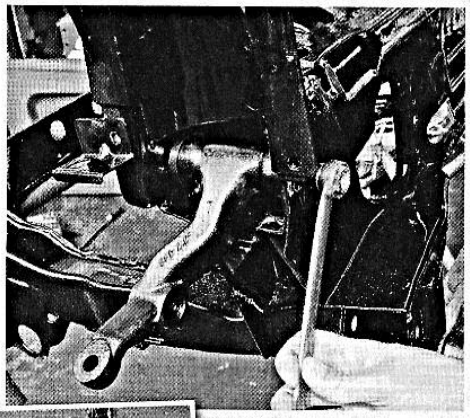
ASSEMBLING A FRONT SUBFRAME



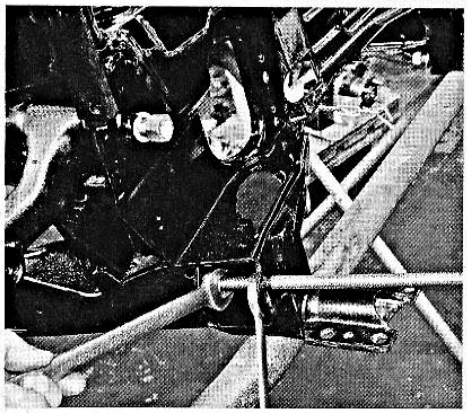
1 ◀ A powder-coated secondhand subframe was ready and waiting to be reassembled, and Andy and Alan from Vehicle Handling Solutions Ltd came along to help assemble it and outline some of their upgrades. They started by cleaning its threads to remove any excess powder-coating.



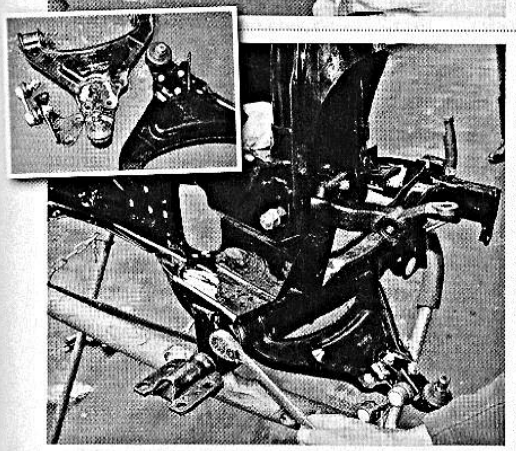
2 ▶ Two new front mounts were fitted to the subframe, securing each one with a 19mm bolt and a 21mm nut. The rearmost mounts were also changed, securing each one with a 21mm nut. All of these fastenings must not be fully tightened until the subframe is fitted.



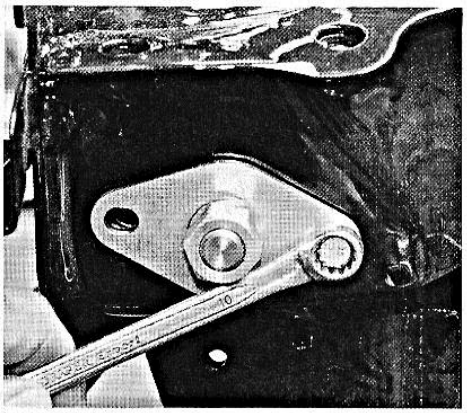
3 ◀ Each upper arm was trial-fitted to make sure it and its inner mounting bolt could be fitted. A round file was used to clean the powder-coating from the hole in the subframe. Fitting each upper arm is quite fiddly. There's a rear thrust washer and seal to fit first, whereas the rearmost seal must be manoeuvred into position.



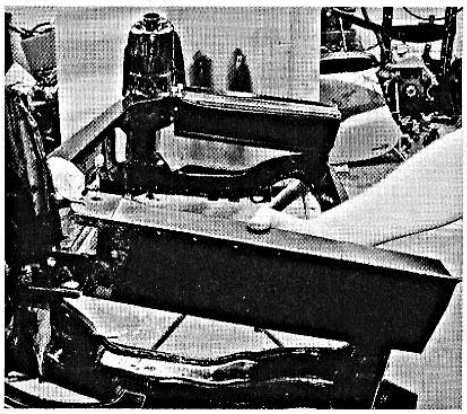
4 ▶ The lower arms were a very tight fit into the subframe, so Alan at VHS showed how to use a length of threaded bar and two large nuts to open out the enclosure on the subframe. We only needed a millimetre or two of extra room.



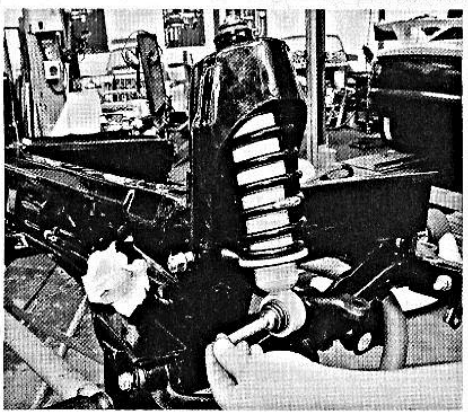
5 ◀ VHS has calculated how to adjust the camber of the front wheels by adjusting the mounting of the lower arm's outer balljoint. This is offered to customers who need to supply their old arms and existing camber measurements. In this case, no prior geometry was available, so the lower balljoints were left loose and not tightened until the four-wheel alignment stage.



6 ▶ After fully tightening each upper arm's inner mounting bolt, a new end plate was fitted and secured with 8mm and 10mm nuts and bolts.

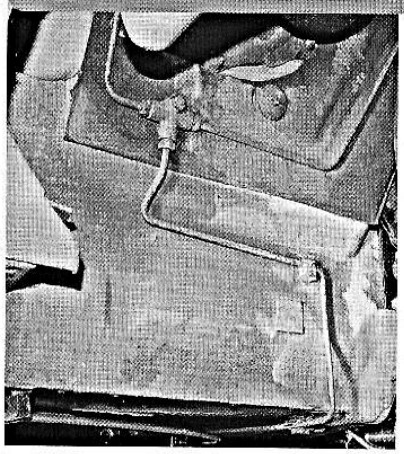


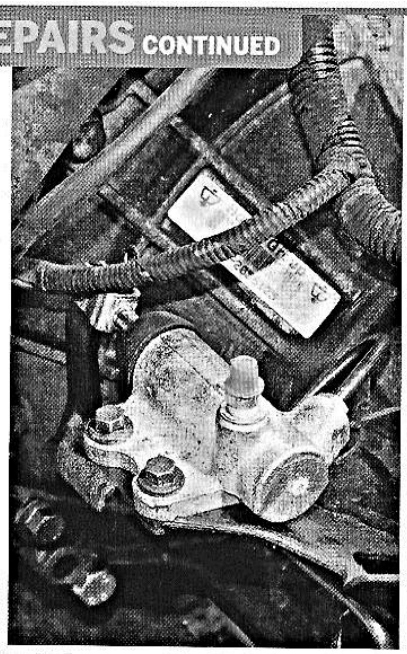
7 ◀ A pair of cleaned and powder-coated crash tubes was fitted on to the subframe, each one being secured with three 15mm bolts.



8 ▶ A new set of Bilstein coilovers, as supplied by VHS, was fitted to the subframe, securing them to the turret and the upper arm using new or reconditioned bolts (providing the old mounting bolts are in good condition).

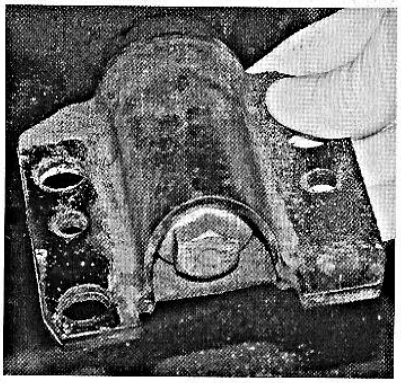
REAR SUBFRAME REPAIRS CONTINUED





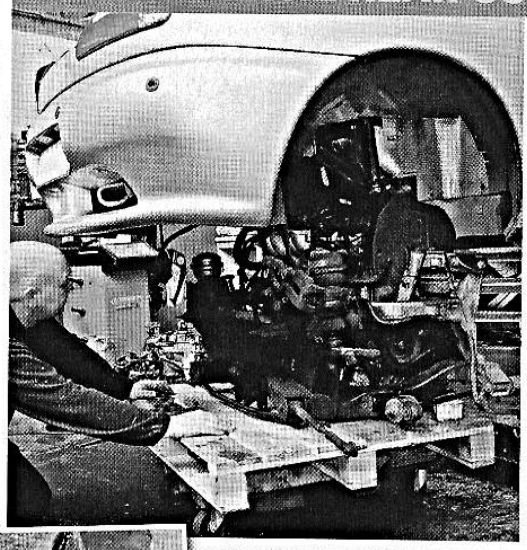
3 The front-to-rear brake pipes are known to corrode, so now's the chance to renew them if they are starting to deteriorate. The pipework and connection secured to the engine bulkhead are especially hard to change when the engine is in situ.

4 ◀ On the manual gearbox, the clutch arm corrodes and seizes, so it's worthwhile fitting a new clutch arm for around £35 and even a new slave cylinder for around £40. Similarly, a new clutch kit costs around £60.



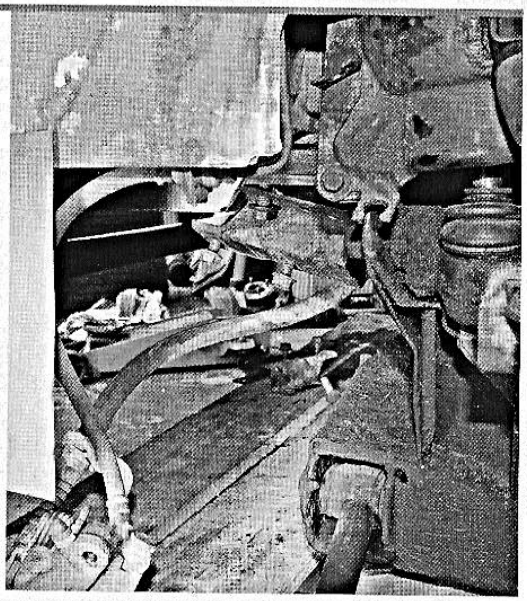
5 The rear subframe mounts are similar to those fitted on the front subframe, and they can be replaced by undoing their respective nuts and bolts.

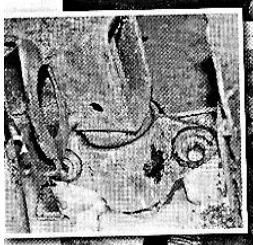
REFITTING THE REAR SUBFRAME



1 ◀ When Chris was ready to refit the rear subframe, he positioned it on the wooden pallet and trolley, then carefully lowered the MGF back down over it, making sure nothing was in the way.

2 ▶ The rearmost mounts were loosely fitted at first, ensuring the handbrake cable wasn't in the way. When Chris was satisfied the rear subframe was correctly positioned, he further tightened all the nuts and bolts for each of these mounts.





3 ◀ Raising the whole vehicle on the two-post ramp, Chris secured the frontmost mounts to the underside of the bodywork.

4 ▶ He then returned to the rearmost mounts and fully tightened all the nuts and bolts for each of them. All remaining parts were now refitted in reverse order of removal.