Project GTI: Anti-roll bar links

Linking it up

Heavy-duty drop links for the front anti-roll bar have removed the final weakness in our suspension set-up.

REGULAR READERS will recall that, some time ago, we fitted our Mk 4 GTI 1.8T with a pair of Eibach anti-roll bars (featured in the November 2004 issue). This resulted in a significant improvement in handling, not only reducing body roll, but enhancing the balance of the car. The larger rear bar also added an element of oversteer which improved turn-in considerably and made the car much more agile. Indeed, on the tight and twisting Curborough sprint track it came close to matching the lap times clocked by a race-prepared Mk 1 GTI, no mean feat for the much larger and heavier Mk 4.

We'd always had reservations, though, about retaining the standard drop links which connect the control arms (wishbones) to the front anti-roll bar. While some anti-roll bar configurations (e.g. Neuspeed) come complete with adjustable couplings, the Eibach bar retains the standard drop links. Not only are they rather flimsy (indeed the composite plastic ones have been known to break) but the rubber bushes degrade with time and use and inevitably become soft, detracting from the enhanced reaction of the stiffer bar.

At the very least, then, it's sensible to fit brand-new standard drop links. We've listed all the original applications and part numbers in the panel accompanying this feature, although the combinations given are only to ensure compatibility when retaining the standard anti-roll bar. With an aftermarket anti-roll bar, the fittings are universal and any of these standard drop links can be used.

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VF Engineering drop links, chosen for Project GTI, provide a noticeable improvement in handling response.

As far as aftermarket drop links are concerned, though, there are basically three types – uprated single-piece links like the heavy-duty aluminium ones from VF Engineering, adjustable two-piece links like the [illegible] or the various motorsport-type adjustable metal ball-jointed assemblies.

The main advantage with the adjustable links comes when the suspension is lowered to a greater degree, as the length of the link can be altered to change the anti-roll bar angle and prevent the possibility of the hoop fouling the driveshaft. This was quite a common problem early on, when enthusiasts first started modifying the Mk 4. When the suspension is substantially lowered, the consequent angle of the driveshaft can bring it into contact with the inside of the anti-roll bar hoop when hard cornering causes high suspension deflections. Indeed, Eibach modified their later anti-roll bars (as fitted to our car), using a larger diameter hoop section, to improve clearance in this area.

Although rather specialised, perhaps more relevant to motorsport or serious track-day usage, there is also the possibility of adjusting the links differentially on either side of the car, to pre-load the anti-roll bar and introduce tension into it in the static position. This could be useful, for instance, on a predominantly right-handed circuit like Mallory Park, enabling you to tension the anti-roll bar more on the left-hand side to help counteract the prevalent suspension load.

In certain circumstances it can also make it much easier to fit the drop links, aligning both ends to their relevant mountings first and then screwing the adjustable sections together to take up the slack. The only reservation we'd have about the adjustable links is the inevitable long-term effect of spray and road dirt on the threaded sections, and the possibility of premature wear of the metal ball-joints unless they're carefully protected by copious amounts of grease or the addition of some sort of rubber boot.

For our car, though, we decided to use the heavy-duty VF Engineering links, available here in the UK from VAG-Tuner.com. Although a very substantial construction, of heavy-duty H-section billet aluminium with polyurethane

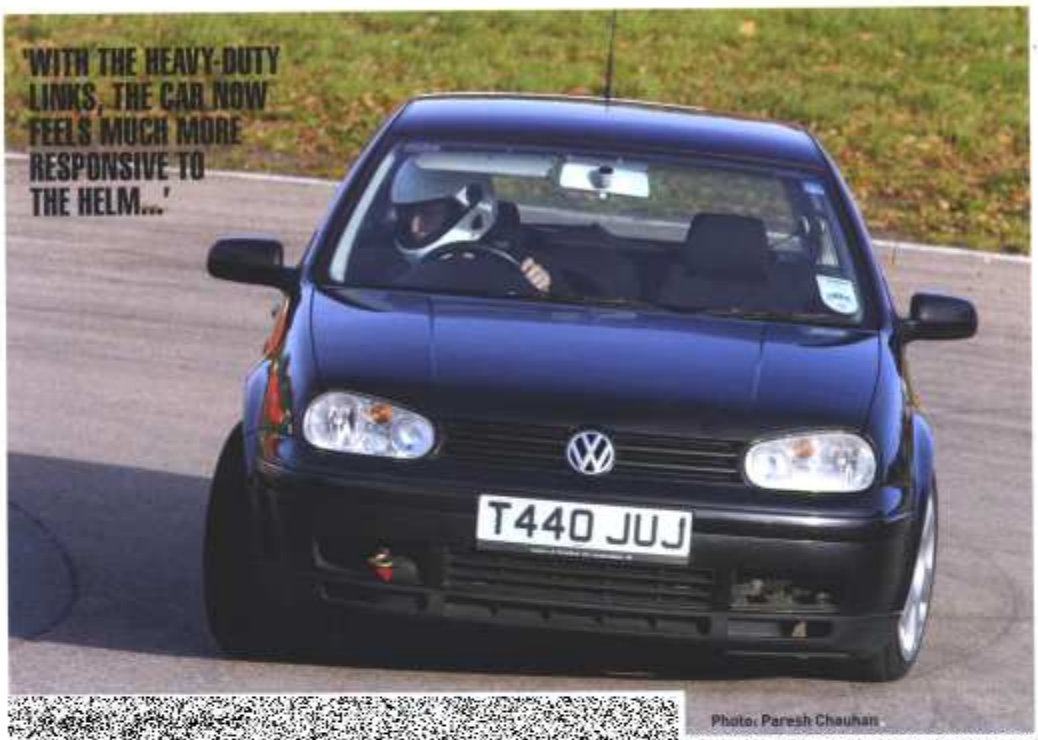

Photo: Paresh Chauhan.

bushes and metal sleeves, they are light in weight and were easy to fit – a direct replacement for the standard drop links.

In fact, this is an easy 30-minute DIY job, using only basic hand tools. The only proviso is that you must have both front wheels at the same height, supported on ramps rather than try to jack up each side in turn, or you'll twist the anti-roll bar and have virtually no chance of aligning the mountings. Even so, there may be some slight misalignment when fitting the new links and so it's preferable to screw in the bottom bolt first, leaving it slightly loose, before fitting the top through-bolt, and then tighten up all the fittings progressively. This technique also ensures that they are fitted in their correct, loaded, position on the car, rather than with the suspension hanging.

Although there was no doubt that the new drop links would be stronger, we were actually pleasantly surprised at the improvement in handling which resulted. Although the original drop links were apparently quite serviceable and would have happily passed an MoT test, there was undoubtedly some sloppiness in the bushes or flex in the stanchion piece. With the heavy-duty links, the car now feels much more responsive to the helm, as the anti-roll bar comes into immediate effect rather than having a delayed reaction. Turn-in when cornering is much more immediate and even straight-line tracking feels more confident.

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'MANUFACTURED FROM BILLET ALUMINIUM, THIS PROVIDES MUCH MORE POSITIVE LOCATION...'

ABOVE: Pendulum mount holds the transmission very securely. There is some extra noise and vibration but it is quite tolerable.

LEFT: VF Engineering produces a range of heavy-duty engine mounts.

With our project GTI, you may recall, we went one step further, utilising the excellent – if rather expensive – aluminium pendulum mount from VF Engineering in the USA. Manufactured from high-strength CNC-machined 6061 billet aluminium, with high durometer polyurethane washers between the separate parts, this provides much more positive location, if at the expense of increased (but far from intolerable) transmission noise and vibration.

Although just as easily fitted as the standard dogbone mount, the VF Engineering item (Part No. VFA02-01) is such a work of art that you might prefer to display it on your mantelpiece rather than bolt it, out of sight, on the car! VF Engineering also manufactures uprated front and side mounts for the engine itself, reducing lateral movement and improving drivetrain location still further, although we've yet to fit these to project GTI.

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Stealth Racing
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VAG-Tuner.com
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