



# FRONT SUSPENSION UPGRADES: ASTRA IV, CORSA B & ZAFIRA

A beefed-up anti-roll bar, poly bushed bottom wishbone and caster adjustment kit will sort your front-end handling.

One essential way to ensure that your car travels faster is to improve its handling, which doesn't have to cost a fortune. For instance, the improvements we have outlined here could give you change from £200 — they cover an uprated front anti-roll bar, a bottom wishbone overhauled with uprated bushes, a new ball joint and a caster correction kit.

Most modern Vauxhalls are fitted with a front anti-roll bar, which helps reduce the amount of roll and strain applied to the front struts during cornering — the bar acts like a spring and absorbs pressure. The standard anti-roll bar is adequate for a standard car, but engine tweaks and aftermarket springs and dampers all add to the equation of faster cornering. A thicker anti-roll bar is the answer, because it absorbs more forces through the corners.

One of the disadvantages of uprating an anti-roll bar is the work involved in removing it and fitting a new one. The Corsa B's anti-roll bar can be renewed by undoing a few nuts and bolts, but models such as the Astra IV and Vectra must have an engine bed removed before the fixings for the anti-roll bar can be undone. This requires a full day of spanner action and more complex tools, including a two-post ramp and a jig to remove the engine bed (a jig is essential to ensure that the bed is refitted in the same position).

Other reasonably priced front-end upgrades include new polyurethane bushes for the lower wishbone. An eccentric metal sleeve for the rearmost bush is also available which enables you to increase the caster by half a degree, in order to reduce understeer and improve traction.

The bottom wishbone on the Corsa, Astra, Vectra and similar models is fast becoming a throwaway item. It's cheaper to buy a complete



Words and Photos: Rob Hawkins

bottom wishbone than to renew the bushes and ball joint! However, if you are keen to fit aftermarket polyurethane bushes, the ball joint should be renewed. This isn't as straightforward as it should be, because the ball joint is riveted to the bottom wishbone, which is nothing a large 8 mm drill bit won't fix. Fortunately, replacement ball joints don't require the use of an industrial-sized rivet gun and hands the size of a bear — nuts and bolts are the preferred alternative.

The following 21 steps were provided by Courtenay Sport, who recently started to stock an uprated anti-roll bar kit designed by the Australian suspension experts Whiteline. This kit uses a thicker anti-roll bar and a pair of adjustable drop links which provide greater stiffness than standard ones. All these parts are fitted in the same locations as the standard anti-roll bar and drop links.

These drop links are clever because they use threaded ends for adjustment with Teflon-lined rose joints instead of traditional ball joints and these offer better feedback for the steering. Unfortunately, the drop links are only available for the Astra IV, as other models use the standard ones.

The car we are featuring in these photos is an Astra IV. The steps are similar for the Vectra, but we have already covered a more in-depth removal of the engine bed for this car in the September 2006 issue of *Total Vauxhall*, when Courtenay fitted a lightened flywheel to a V6. Please take a look at Courtenay Sport's website [www.courtenaysport.co.uk](http://www.courtenaysport.co.uk) for further technical information on fitting the front anti-roll bar.







**1**

Remove the bumper, which is fitted with a securing screw in each wheelarch, two plastic clips along the top of the bumper and three underneath (extract with a clip remover or small screwdriver). Detach the two foglight connectors underneath the front of the car, then pull the bumper forward.



**2**

Remove the battery. For cars with electric power steering (Astra IV), detach the power steering earth cable, its connector plug and the relevant fuse. Feed the earth cable and connector down through the engine so they can be removed with the engine bed.



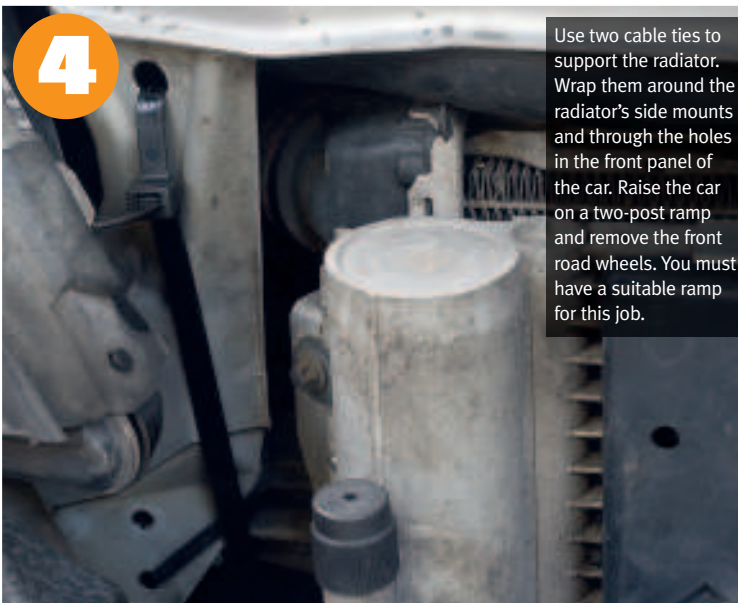
**3**

Undo and remove the bolt where the steering column joins the steering rack. This bolt can be found inside the driver's footwell, behind the clutch and brake pedals. It's usually either a 13 mm or a Torx E10 bolt. Just undo and remove the bolt.



**4**

Use two cable ties to support the radiator. Wrap them around the radiator's side mounts and through the holes in the front panel of the car. Raise the car on a two-post ramp and remove the front road wheels. You must have a suitable ramp for this job.



**5**

Spray penetrating fluid over all suspension ball joints and track rod ends. Undo the 18 mm pinch bolt for the bottom ball joint. This is a tight fit, so use a breaker bar or air gun. Remove the bolt, but don't split the ball joint yet.

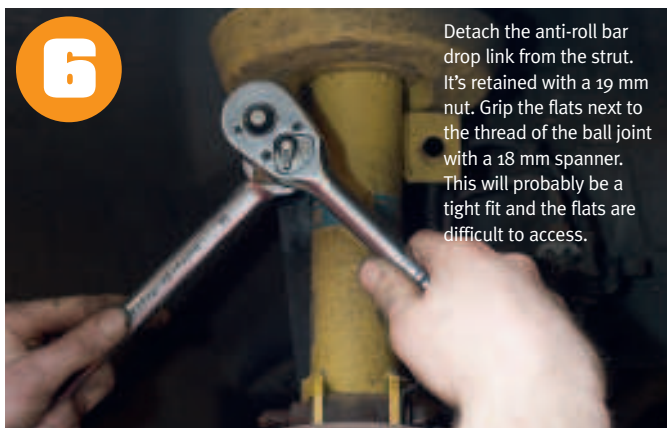






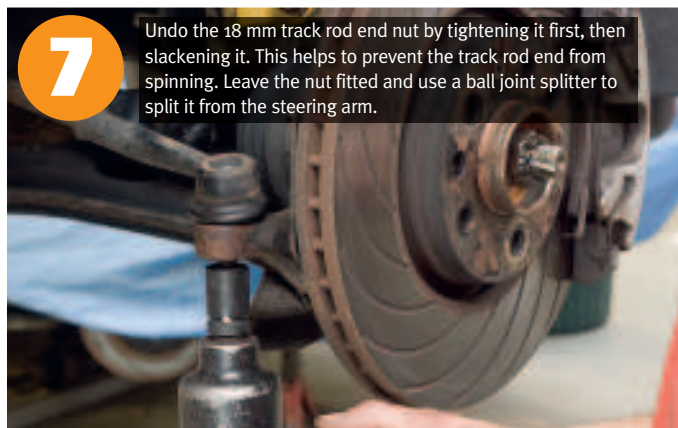
## TECH NOTE

6



Detach the anti-roll bar drop link from the strut. It's retained with a 19 mm nut. Grip the flats next to the thread of the ball joint with a 18 mm spanner. This will probably be a tight fit and the flats are difficult to access.

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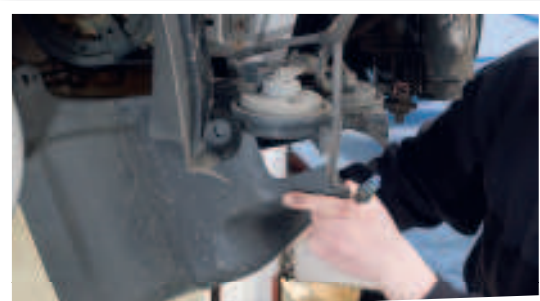


Undo the 18 mm track rod end nut by tightening it first, then slackening it. This helps to prevent the track rod end from spinning. Leave the nut fitted and use a ball joint splitter to split it from the steering arm.

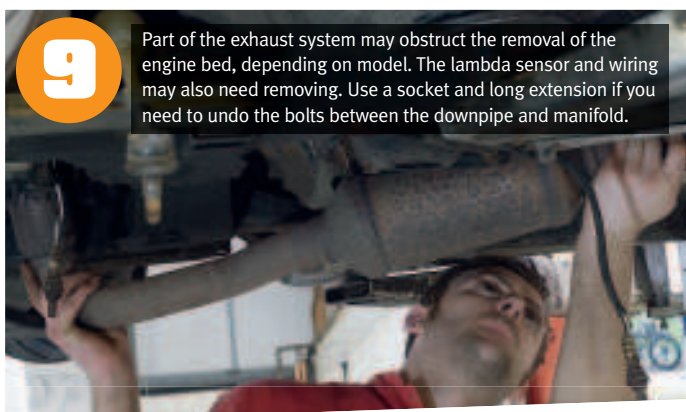
8



Remove the offside plastic engine shield, fitted with four 8 mm bolts (two in the wheelarch and two underneath). Use a hammer and narrow chisel to split the pinch mount for the bottom ball joint. Use a long bar to lever the bottom arm off the ball joint and hub.

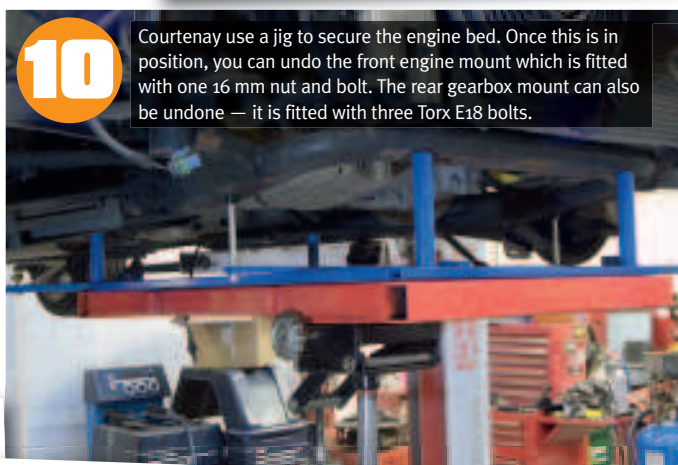


9



Part of the exhaust system may obstruct the removal of the engine bed, depending on model. The lambda sensor and wiring may also need removing. Use a socket and long extension if you need to undo the bolts between the downpipe and manifold.

10



Courtenay use a jig to secure the engine bed. Once this is in position, you can undo the front engine mount which is fitted with one 16 mm nut and bolt. The rear gearbox mount can also be undone — it is fitted with three Torx E18 bolts.





11

There are two triangular engine bed mount plates at the rear of the bed, near the centre of the car. Slacken all three 18 mm bolts, but only undo the front bolt that's attached to the engine bed (the others are fitted to the bodywork).



Undo the four remaining engine bed bolts (usually 18 mm). There's one at each front corner and another one above each driveshaft. The engine bed can now be lowered using the jig. Do this very carefully, ensuring that no cables or parts get trapped or fouled.

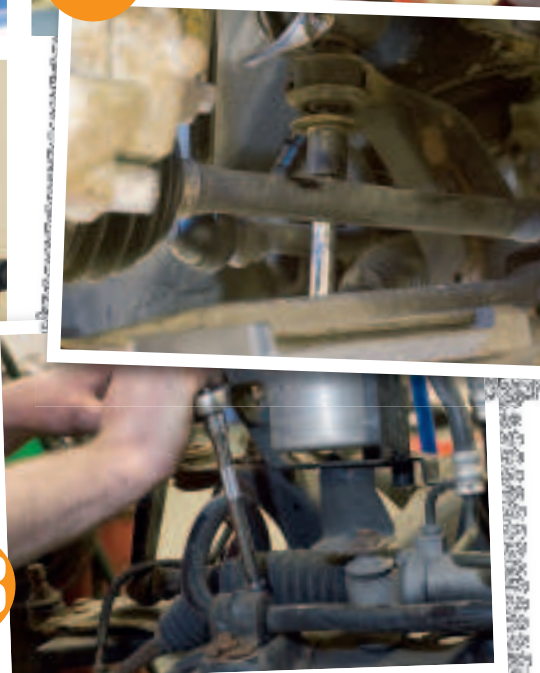
12



With the engine bed separated from the car, undo the two anti-roll bar mounts fitted with four Torx E12 bolts. Apply penetrating fluid before undoing them. The frontmost bolts don't need to be fully removed, as you can slide out the anti-roll bar mounts after slackening them.



13



14

This is a good opportunity to renew the bottom arm ball joints and bushes. If you want to do this, the bottom arms can be removed by undoing two 18 mm nuts and bolts. Use lots of penetrating fluid, as they are a tight fit.







## TECH NOTE

15

The bottom arm ball joint is riveted to the arm. Drill out the three rivets for each ball joint with a 8 mm drill bit. Use a hammer and punch to remove the remaining parts of each rivet. Renew the ball joint and secure with nuts and bolts.



16

A hydraulic press can be used to remove the bottom arm bushes, but usually a hammer is equally effective. You may need to cut off the ends of the bushes with a hacksaw to help remove the bush.



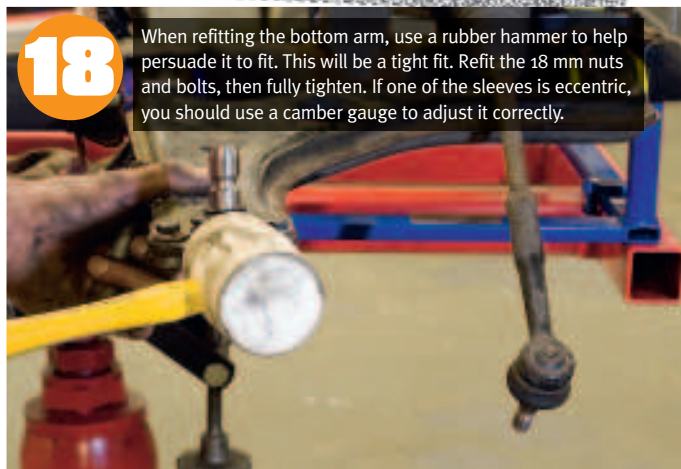
17

Apply some grease inside the bores where the new bushes will sit as well as to the bushes, then fit them. Fit the sleeves inside the bushes. If you are fitting an eccentric sleeve for caster adjustment, fit the hole to the inboard side to push the suspension out.



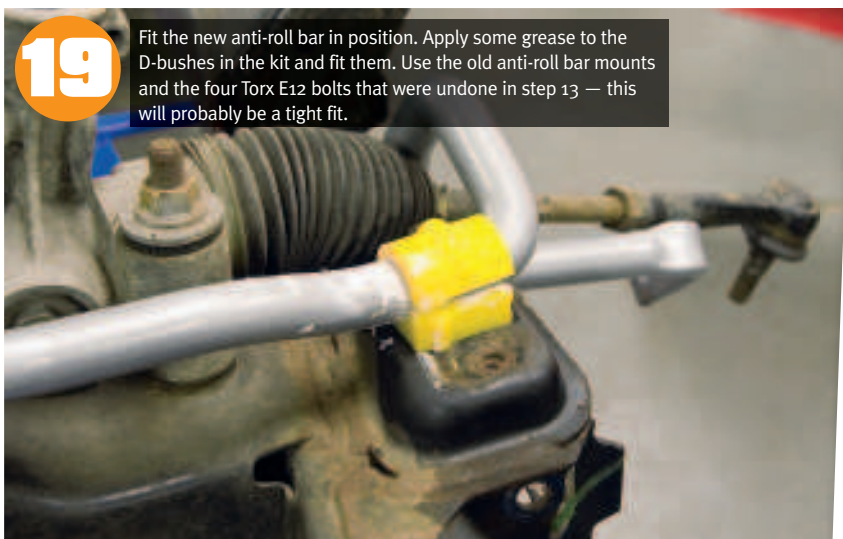
18

When refitting the bottom arm, use a rubber hammer to help persuade it to fit. This will be a tight fit. Refit the 18 mm nuts and bolts, then fully tighten. If one of the sleeves is eccentric, you should use a camber gauge to adjust it correctly.



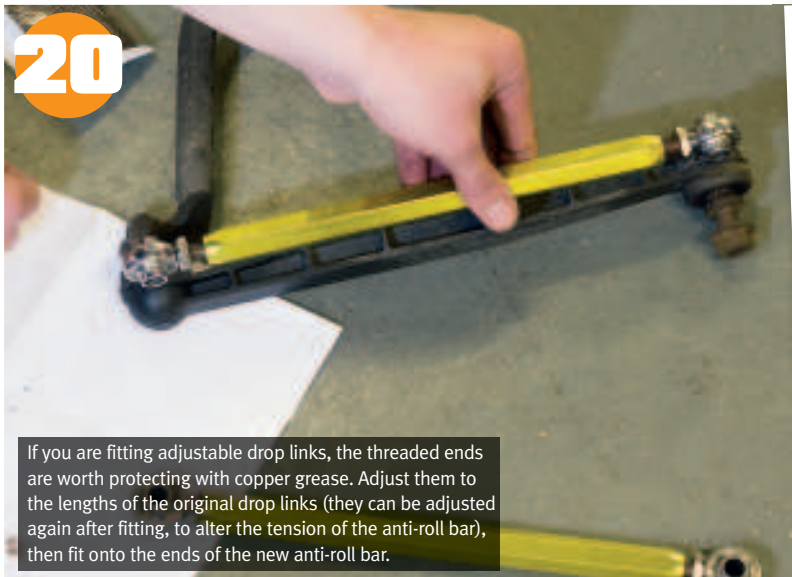
19

Fit the new anti-roll bar in position. Apply some grease to the D-bushes in the kit and fit them. Use the old anti-roll bar mounts and the four Torx E12 bolts that were undone in step 13 — this will probably be a tight fit.





20



If you are fitting adjustable drop links, the threaded ends are worth protecting with copper grease. Adjust them to the lengths of the original drop links (they can be adjusted again after fitting, to alter the tension of the anti-roll bar), then fit onto the ends of the new anti-roll bar.



21



Refit the engine bed with the new anti-roll bar and drop links. All nuts, bolts and other fittings can be refitted and tightened with the car suspended on the ramp, except for the bottom arm bolts, which must be tightened with the car on its wheels.

### THANKS

To Courtenay Sport for props and expertise (01692 404313, [www.courtenaysport.co.uk](http://www.courtenaysport.co.uk)) and Whiteline of Australia for parts and technical help.

### NEXT MONTH

Rear ARB upgrade for same models.

Model	Fixed ARB	Adjustable ARB	Remove engine bed?
Astra IV Hatchback and Coupe	22 mm – £95 Drop links – £87	22 mm – £134 Drop links – £87	Yes
Corsa B	24/27 mm – £95/119	N/a	No
Vectra B	20 mm – £95	N/a	Yes
Zafira A	24 mm – £95	24 mm – £134	Yes

Model	Front lower wishbone bushes (caster adjustment type)	Front lower wishbone bushes (non caster adjustment type)	Ball joints (pair) for lower wishbone
Astra IV	£88	£76	£40

Up-rated front and rear polyurethane suspension bushes are available for most Vauxhall models and prices range from £45 per set.