

Section E - Front Suspension

N.B. Suspension part numbers begin with (C)

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A

Upper Wishbones

B

Lower Wishbones

C

Anti-Roll Bar

D

Shocks and Springs

E

Upper Ball Joint

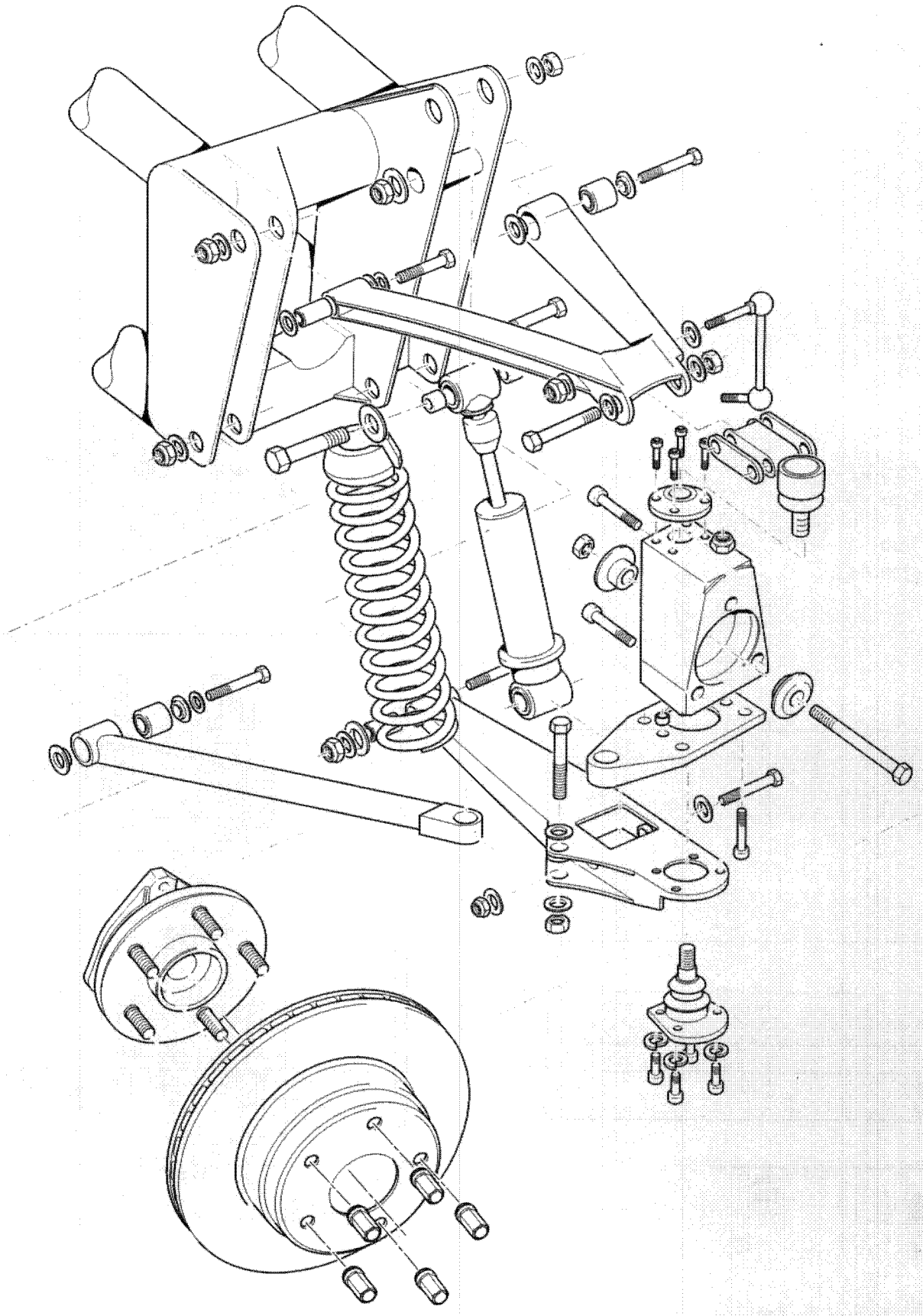
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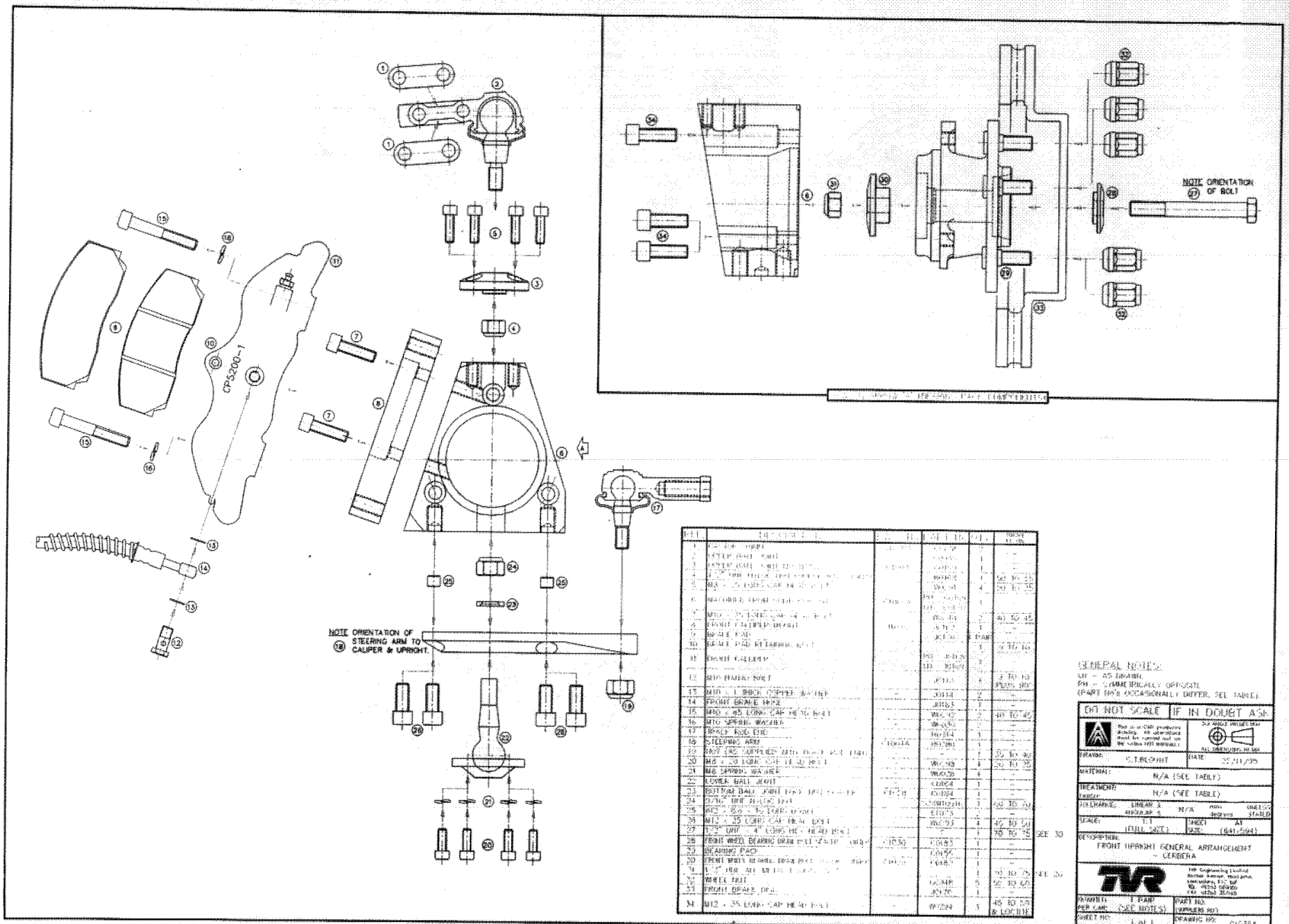
Lower Ball Joint

G

Drop Links

N.B. *- Upper and Lower wishbones are handed.*
- Dampers / Springs only to be replaced in pairs.
- Anti-roll bar drop links are handed.





PART	DESCRIPTION	QTY	PART NO.	QTY.	TORQUE Nm (lb.ft)
1	[illegible]	[illegible]	[illegible]	1	-
2	[illegible]	[illegible]	[illegible]	1	-
3	[illegible]	[illegible]	[illegible]	1	-
4	[illegible]	[illegible]	[illegible]	1	-
5	M8 x 25 [illegible]	[illegible]	[illegible]	4	20 TO 25
6	[illegible]	[illegible]	[illegible]	1	-
7	M10 x [illegible]	[illegible]	[illegible]	2	40 TO 45
8	[illegible]	[illegible]	[illegible]	1	-
9	BRAKE PAD	[illegible]	[illegible]	4 PAIR	-
10	BRAKE PAD RETAINER, [illegible]	[illegible]	[illegible]	1	6 TO 10
11	[illegible]	[illegible]	[illegible]	1	-
12	M10 FLANGE NUT	[illegible]	[illegible]	4	45 TO 50 PLUS 90°
13	M10 x 1.5 HIGH TENSILE STUD	[illegible]	[illegible]	2	-
14	FRONT BRAKE HOSE	[illegible]	[illegible]	1	-
15	M10 x 45 LONG CAP HEAD BOLT	[illegible]	[illegible]	2	40 TO 45
16	M10 SPRING WASHER	[illegible]	[illegible]	2	-
17	BRAKE ROD END	[illegible]	[illegible]	1	-
18	STEERING ARM	CT061A	[illegible]	1	-
19	NUT (SUPPLIED WITH BOLT PART 1760)	[illegible]	-	1	35 TO 40
20	M8 x 30 LONG CAP HEAD BOLT	[illegible]	[illegible]	4	20 TO 25
21	M8 SPRING WASHER	[illegible]	[illegible]	4	-
22	LOWER BALL JOINT	[illegible]	[illegible]	1	-
23	BOTTOM BALL JOINT [illegible]	CP278	[illegible]	1	-
24	0.750" DIA [illegible]	[illegible]	[illegible]	1	60 TO 70
25	M12 x 85 x 3/4 [illegible]	[illegible]	[illegible]	1	-
26	M12 x 35 LONG CAP HEAD BOLT	[illegible]	[illegible]	4	45 TO 50
27	0.75" DIA x 4" LONG HT. HEAD BOLT	[illegible]	[illegible]	1	70 TO 75 SEE 30
28	FRONT WHEEL BEARING DRIVE SHAFT [illegible]	CT030	[illegible]	1	-
29	BEARING PAD	[illegible]	[illegible]	1	-
30	FRONT WHEEL BEARING DRIVE SHAFT [illegible]	CT030	[illegible]	1	75 TO 75 SEE 27
31	1.12" DIA SH [illegible]	[illegible]	[illegible]	1	-
32	WHEEL NUT	[illegible]	[illegible]	5	50 TO 60
33	FRONT BRAKE DISC	[illegible]	[illegible]	1	-
34	M12 x 35 LONG CAP HEAD BOLT	-	[illegible]	5	45 TO 55 & LOCTITE

GENERAL NOTES:
AR = AS DRAWN.
RH & LH ARE MIRRORED OPPOSITE.
(PART NO'S OCCASIONALLY DIFFER, SEE TABLE).

DO NOT SCALE | IF IN DOUBT ASK

This is a CAD produced drawing. All alterations must be carried out on the latest CAD database.

3rd ANGLE PROJECTION

ALL DIMENSIONS IN MM

DRAWN: S.T.BLOMFIT | DATE: 25/11/99

MATERIAL: N/A (SEE TABLE)

TREATMENT: N/A (SEE TABLE)

TOLERANCE: LINEAR ± ANGULAR ± | N/A | mm DECIMALS inches HARD

SCALE: 1:1 (FULL SIZE) | SHEET: A1 SIZE: (841x594)

DESCRIPTION: FRONT UPRIGHT GENERAL ARRANGEMENT - CERBERA

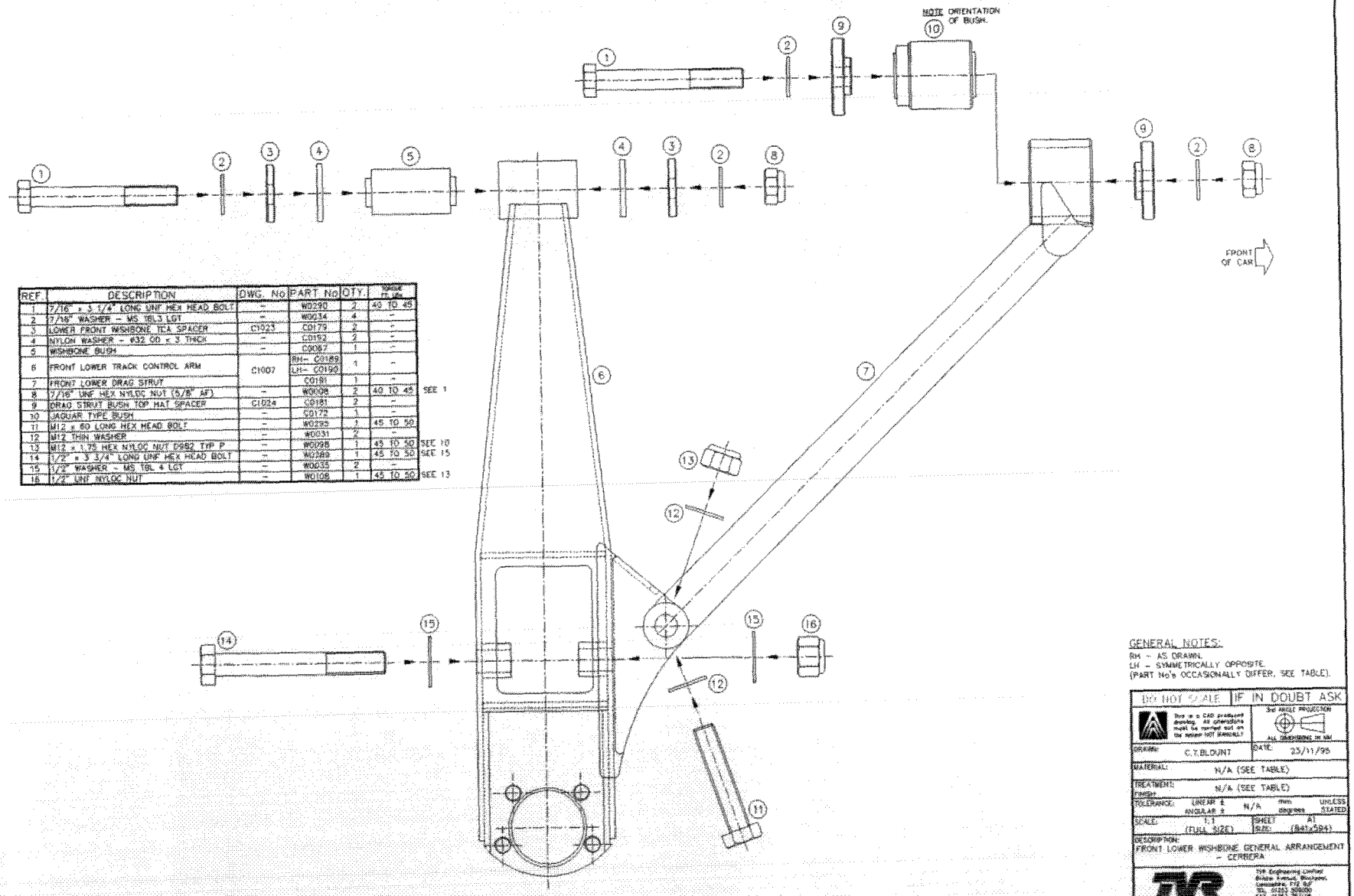
TVR Engineering Limited, Bristol Avenue, Blackpool, FY1 5JF. TEL: 01253 31840 FAX: 01253 357165

QUANTITY: 1 PAIR PER CAR: (SEE NOTE 5)

PART NO: (UPRIGHTS ONLY)

SHEET NO: 1 of 1

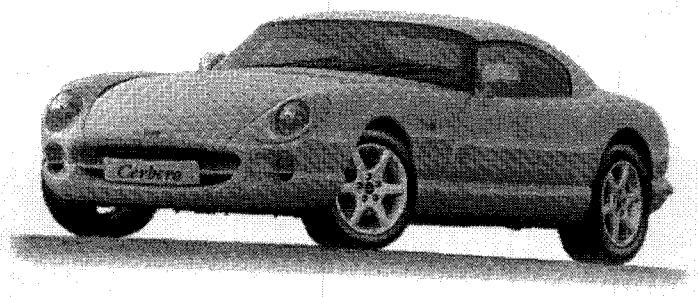
DRAWING NO: CT035A



REF	DESCRIPTION	DWG. No	PART No	QTY	TORQUE ft.lbs	
1	7/16" x 3 1/4" LONG UNF HEX HEAD BOLT	–	WD290	2	40 TO 45	
2	7/16" WASHER – MS 18L3 LGT	–	WD034	4	–	
3	LOWER FRONT WISHBONE TCA SPACER	C1023	C0179	2	–	
4	NYLON WASHER – Ø32 OD x 3 THICK	–	C0193	2	–	
5	WISHBONE BUSH	–	C0087	1	–	
6	FRONT LOWER TRACK CONTROL ARM	C1007	RH– C0189 LH– C0190	1	–	
7	FRONT LOWER DRAG STRUT		C0191	1	–	
8	7/16" UNF HEX NYLOC NUT (5/8" AF)	–	WD008	2	40 TO 45	SEE 1
9	DRAG STRUT BUSH TOP MAT SPACER	C1024	C0181	2	–	
10	JAGUAR TYPE BUSH	–	C0172	1	–	
11	M12 x 80 LONG HEX HEAD BOLT	–	WD295	1	45 TO 50	
12	M12 THIN WASHER	–	WD031	2	–	
13	M12 x 1.75 HEX NYLOC NUT D982 TYP P	–	WD098	1	45 TO 50	SEE 10
14	1/2" x 3 3/4" LONG UNF HEX HEAD BOLT	–	WD289	1	45 TO 50	SEE 15
15	1/2" WASHER – MS 18L 4 LGT	–	WD035	2	–	
16	1/2" UNF NYLOC NUT	–	WD108	1	45 TO 50	SEE 13

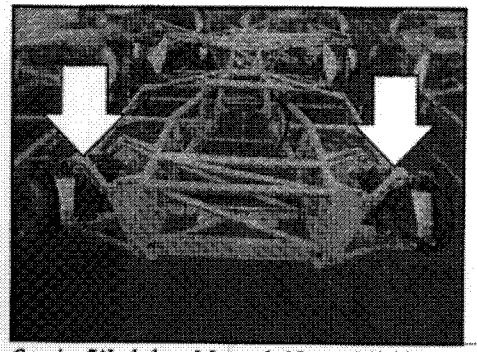
GENERAL NOTES:
RH – AS DRAWN.
LH – SYMMETRICALLY OPPOSITE.
(PART No's OCCASIONALLY DIFFER, SEE TABLE).

DO NOT SCALE	IF IN DOUBT ASK
This is a CAD produced drawing. All alterations must be carried out on the screen NOT MANUALLY	3rd ANGLE PROJECTION ALL DIMENSIONS IN MM
DRAWN: C.Y.BLOUNT	DATE: 25/11/95
MATERIAL: N/A (SEE TABLE)	
TREATMENT:	
FINISH: N/A (SEE TABLE)	
TOLERANCE: LINEAR ± N/A mm UNLESS STATED ANGULAR ± N/A degrees	
SCALE: 1:1 (FULL SIZE)	SHEET SIZE: A1 (841x594)
DESCRIPTION: FRONT LOWER WISHBONE GENERAL ARRANGEMENT – CERBERA	
TVR	TVR Engineering Limited, Bristol Avenue, Blackpool, Lancashire, FY2 0JF. TEL: 01253 50000 FAX: 01253 357105
QUANTITY PER CAR: 1 PAIR (SEE NOTES)	PART NO. (SUPPLIERS REF)
SHEET NO: 1 of 1	DRAWING NO. (INTERNAL USE) C1034A



Service / Workshop Manual

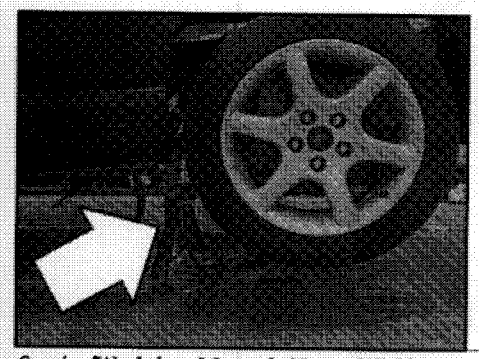
Upper Wishbones - Removal/Replacement Procedure



1

This procedure is to be repeated for both O/S and N/S upper wishbones.

Service/Workshop Manual -Upper Wishbones



2

Raise the car and lower onto axle stands. Making sure to position the stands under the chassis as to leave the wishbones free.

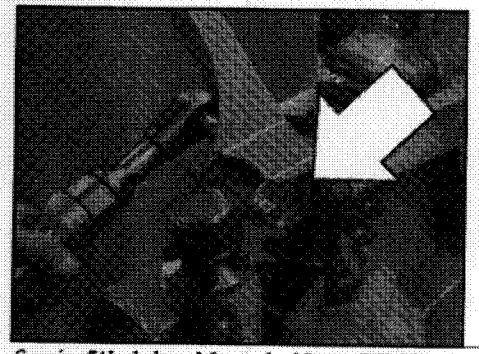
Service/Workshop Manual -Upper Wishbones



3

To gain access to the wishbones the wheel needs to be removed.

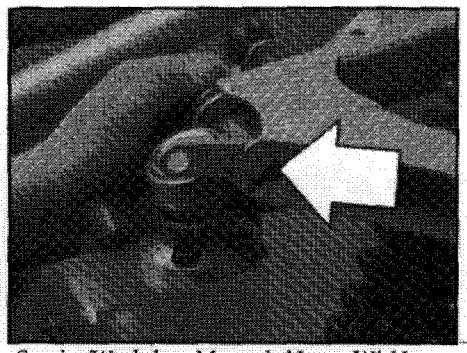
Service/Workshop Manual -Upper Wishbones



4

Once the wheel has been removed you can then remove the 7/16 UNF nut and washers which secure the anti-roll bar drop link to the upper wishbone.

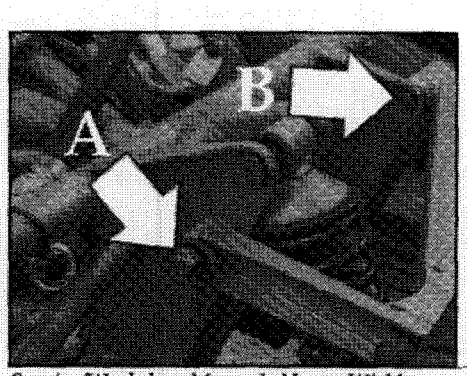
Service/Workshop Manual - Upper Wishbones



5

Service/Workshop Manual -Upper Wishbones

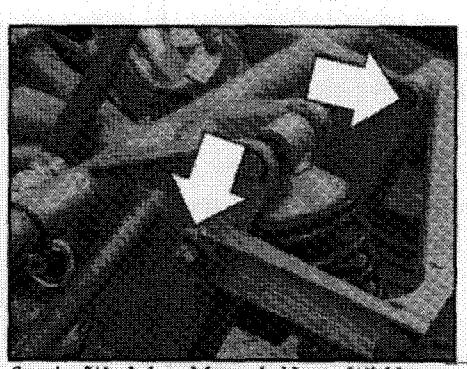
Then remove the 7/16 UNF bolt, washer and nut which secures the top ball joint to the upper wishbone.



6

Service/Workshop Manual -Upper Wishbones

This should then free the wishbone from the upper ball joint. Next the two 7/16 UNF bolts, washers and nuts which secure the wishbone to the chassis are to be removed (A,B). The upper wishbone will then come free. Do not re-use the plastic washers or the plastic thrust washers.



7

Service/Workshop Manual -Upper Wishbones

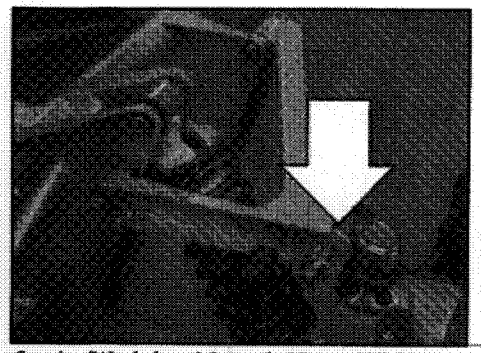
Copper slip the 7/16 UNF securing bolts and refit with new washers and nuts to the chassis. (as shown) Do not tighten at this stage.



8

Service/Workshop Manual -Upper Wishbones

Refitting the Wishbone involves replacing it in the orginal position, complete with new spacers and washers in the correct orientation. Make sure the bolts are put in from the correct sides i.e. from the rear.



Service/Workshop Manual -Upper Wishbones

9

Position the Wishbone so that it is aligned with the holes on the upper ball joint and then copper slip, replace the 7/16 UNF bolt with its washers and replace the shims remembering to copper slip these as well. Lightly tighten on its nut.



Service/Workshop Manual -Upper Wishbones

10

Refit the drop link stud through the inboard upper ball joint hole and keeping the machined flats at its rearward end vertical Lightly tighten the nut. Be sure that there are 1 inch washers fitted between the bolt heads/anti roll bar drop link stud and the wishbone.

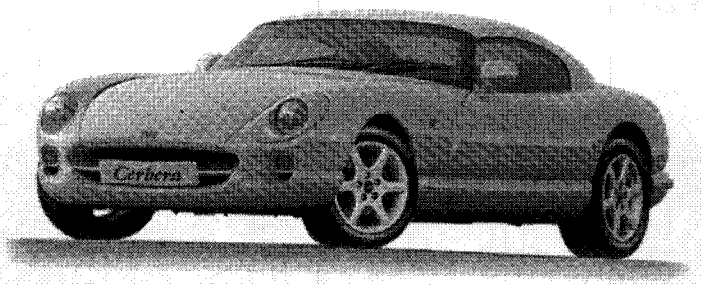


Service/Workshop Manual -Upper Wishbones

11

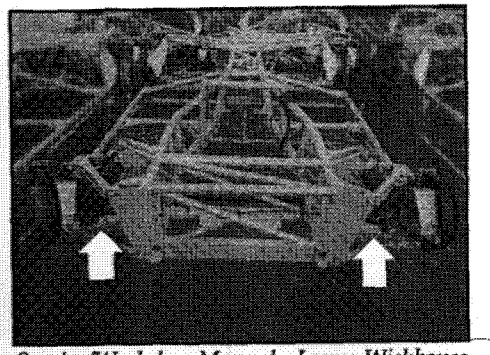
Finally refit the wheel and torque the nuts. With the car settled at ride height, torque the inner wishbone bolts and reset the wheel cambers and tracking. Once correct torque the upper ball joint bolt and anti-roll bar drop link stud, keeping the machined flats vertical.

Notes



Service / Workshop Manual

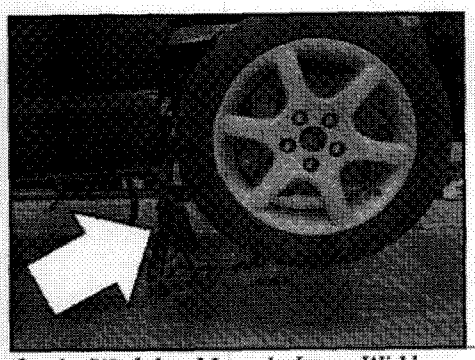
Lower wishbones - Removal/Replacement Procedure



Service/Workshop Manual - Lower Wishbones

1

This procedure is to be repeated for both O/S and N/S Lower Wishbones.



Service/Workshop Manual - Lower Wishbones

2

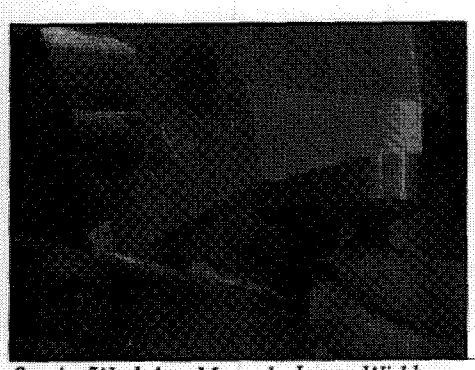
Firstly raise the car and lower onto axle stands. Making sure to position the stands under the chassis so to leave the Wishbones free.



Service/Workshop Manual - Lower Wishbones

3

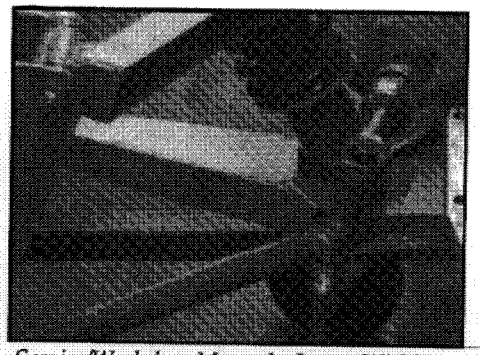
Next, to gain access to the Wishbones the wheel needs to be removed.



Service/Workshop Manual - Lower Wishbones

4

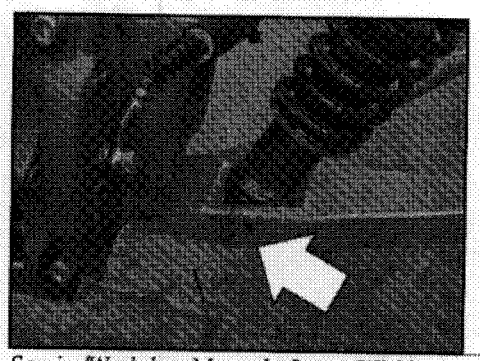
Remove the 4 x M12 capheads that secure the steering arm to the base of the upright. The upright has self locking Helecoil inserts, so keep the steering arm flush with the base of the upright to prevent these inserts from unscrewing themselves. Separate the steering arm from the upright - note the 2 dowels.
N.B. The 4 M12 capheads are fitted using loctite and will be very tight !



Service/Workshop Manual - Lower Wishbones

5

Support the upright assembly so as to not stretch the brake hose. Remove the M12 bolt that secures the drag strut to the track control arm (TCA).



Service/Workshop Manual - Lower Wishbones

6

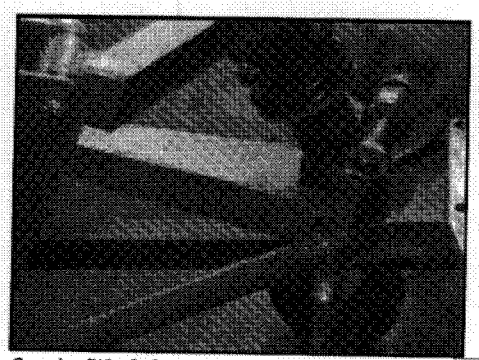
Remove the 1/2 inch bolt that secures the lower damper end to the TCA



Service/Workshop Manual - Lower Wishbones

7

Then remove the 7/16 UNF bolt that secures the inner end of the TCA to the chassis. Do not lose the plastic thrust washers and spacers and note their positions. Remove the TCA complete with ball joint and steering arm.



Service/Workshop Manual - Lower Wishbones

8

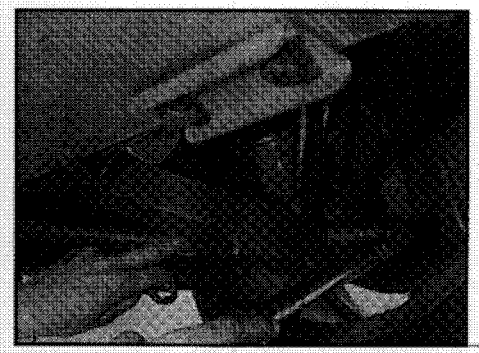
Refit in reverse order to disassembly, being careful to keep spacers etc in correct position. Refer to drawing at beginning of section. Ensure M12 bolt, drag strut to TCA is fitted from above (diagram).



9

Use only a small amount of loctite on the steering arm to upright M12 cap heads.

Service/Workshop Manual - Lower Wishbones



10

Only torque the lower damper and inner TCA bolts when the wheel has been replaced, torqued to 55 ft lb and the car settled at ride height.

Service/Workshop Manual - Lower Wishbones

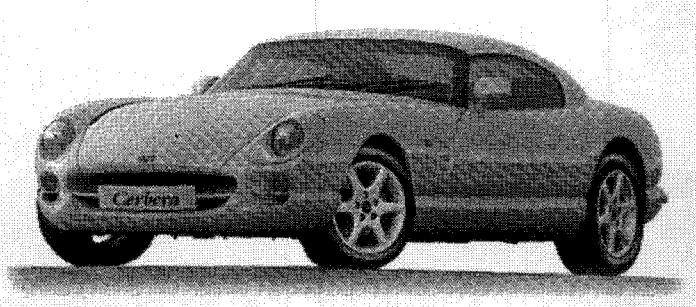


11

Reset front tracking + camber.

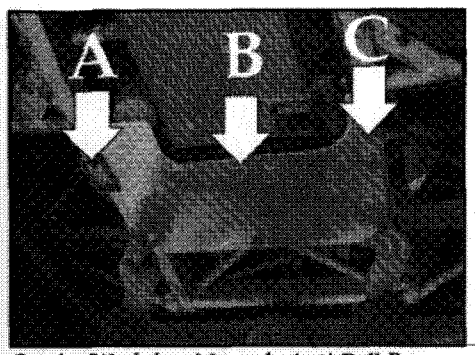
Service/Workshop Manual - Lower Wishbones

Notes



Service / Workshop Manual

Anti-Roll Bar - Removal/Replacement Procedure



1

To remove the anti-roll bar the car has to be raised on a ramp or driven over a pit to gain better access to the underside. The anti-roll bar is hidden by the alloy closing plate (B) beneath the engine and this is futher supported by 2 channel section brackets (A,C) directly beneath the two anti-roll bar two mounts.

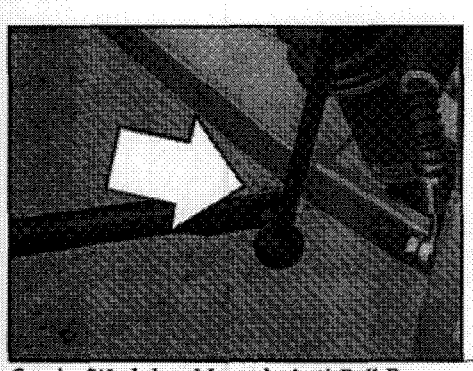
Service/Workshop Manual -Anti-Roll Bar



2

Firstly remove the two smaller brackets from each side of the sump plate (A and C) by removing the M10 bolts and washers.

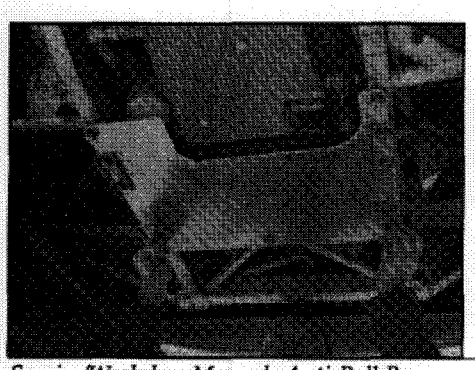
Service/Workshop Manual -Anti-Roll Bar



3

Once these have been removed the anti-roll bar needs to be detached from its two drop links. Do this first. Both roll to drop link to roll bar threads are M10 X 1.0 pitch, not M10 X 1.5.

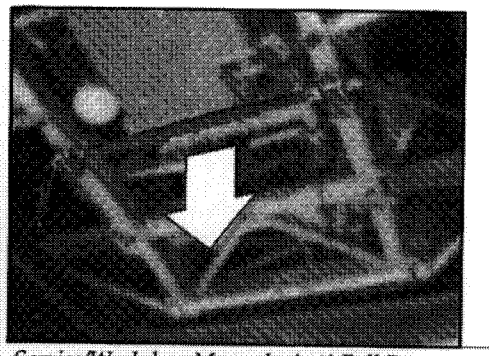
Service/Workshop Manual -Anti-Roll Bar



4

Then remove the remaining 5 x M10 bolts and washers that hold the sump plate in position.

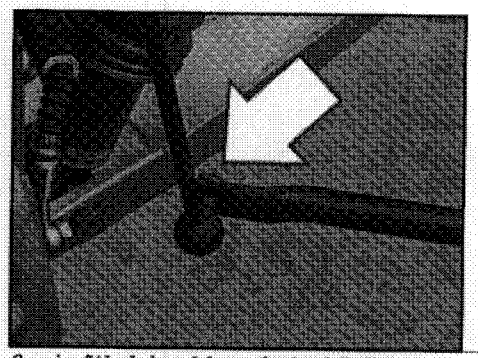
Service/Workshop Manual -Anti-Roll Bar



Service/Workshop Manual -Anti-Roll Bar

5

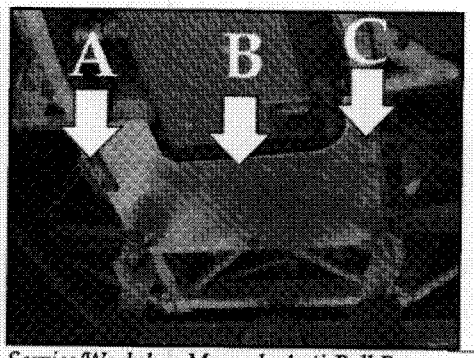
Remove the bar complete with its two horse shoe rubber pivots.



Service/Workshop Manual -Anti-Roll Bar

6

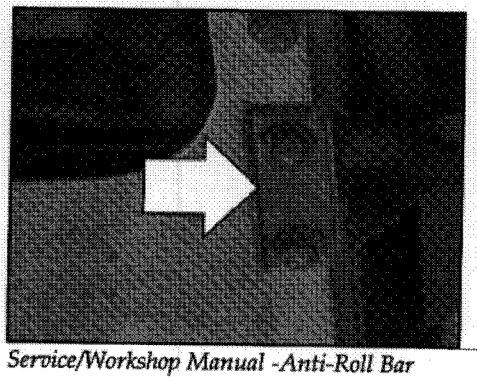
To refit, the new bar should be placed in the orginal position and the two drop links re-attached, remembering to copper slip all the bolts and grease the pivot rubbers inside with a rubber based grease.



Service/Workshop Manual -Anti-Roll Bar

7

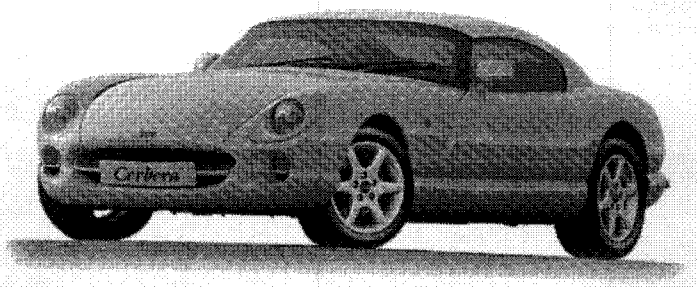
Refit the sump plates (B) with its 5 x M10 bolts and washers, remembering to copper slip all the bolts. Do not tighten fully until all bolts are fitted.



Service/Workshop Manual -Anti-Roll Bar

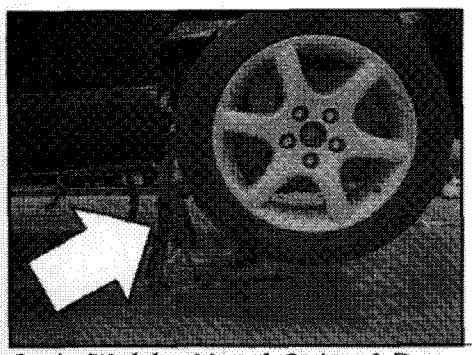
8

Finally refit the two smaller plates, remembering to copper slip the bolts. Tighten all bolts.



Service / Workshop Manual

Springs and Dampers - Removal/Replacement Procedure



1

Firstly raise the car and lower onto axle stands. Making sure to position them under the chassis to leave the suspension free.



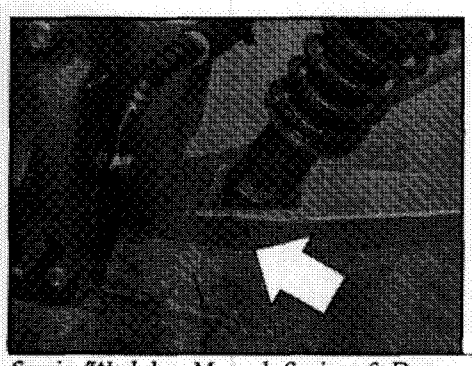
2

Next remove the wheels.



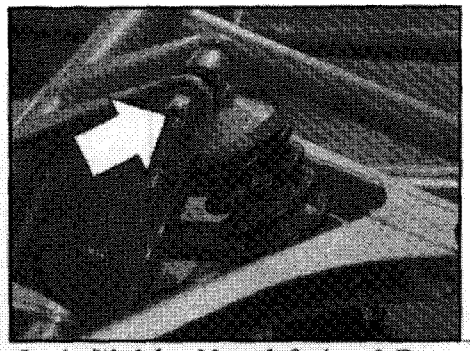
3

Remove the M12 bolt that secures the drag strut to the TCA (see lower wishbone removal.)



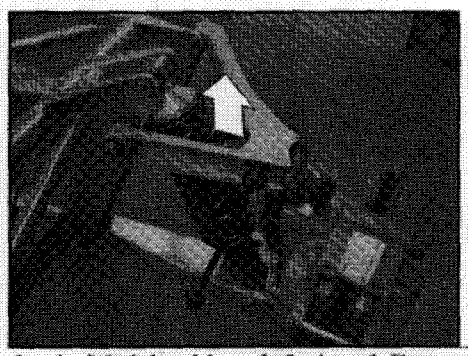
4

Whilst supporting the lower wishbone, remove the 1/2 UNF lower damper bolt.



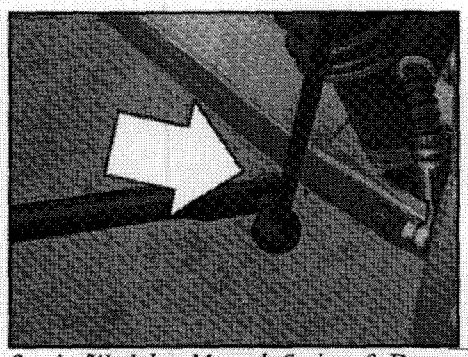
5

Remove upper damper bolt, 1/2 UNF and note the order of the spacers.



6

Carefully ease the damper and spring past the track rod and brake flexible hose.



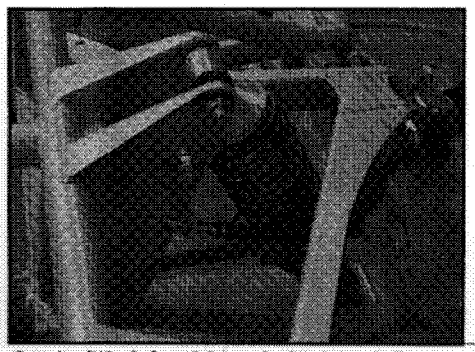
7

However, if it is difficult to free the damper assembly then remove the Lower Drop Link this will allow more room to remove the assembly.



8

If the spring requires replacing, the TVR spring compressor must be used to compress the spring.



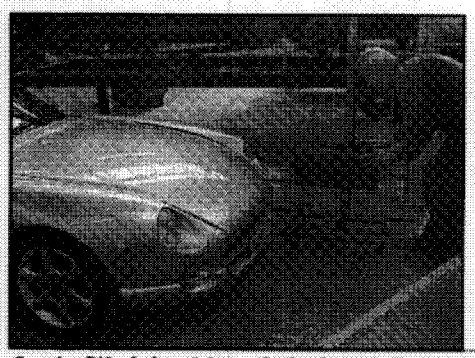
9

To replace, reverse the outlined disassembly procedure using copper slip on damper bolts.



10

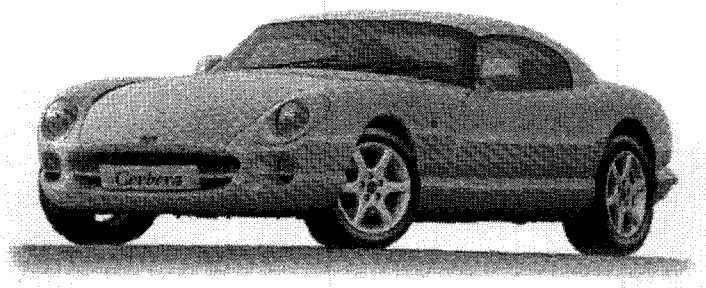
Do not tighten the damper bolts fully. When the car is settled on wheels torque the upper and lower fixing bolts. Torque to 45-50 ft lb.



11

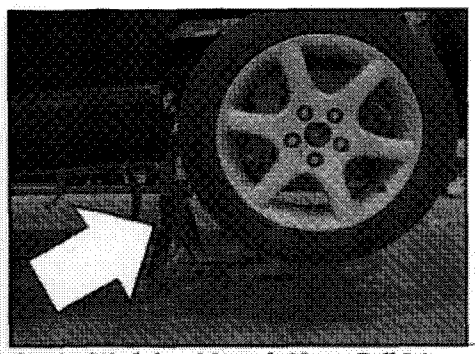
If the springs have been replaced, check that ride height and headlamp aim are within tolerances.

Notes



Service / Workshop Manual

Upper Ball Joint - Removal/Replacement Procedure



Service/Workshop Manual -Upper Ball Joint

1

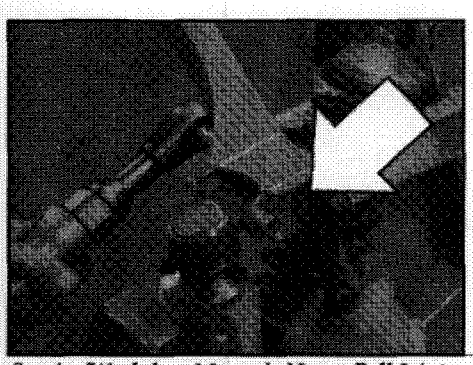
Firstly raise the car and lower onto axle stands. Making sure to position them under the chassis to leave the suspension free.



Service/Workshop Manual -Upper Ball Joint

2

Remove the wheel.



Service/Workshop Manual -Upper Ball Joint

3

Remove upper ball joint bolt and anti-roll bar drop link stud, as described in the section on the "Upper Wishbone" operation 4 and operation 5, noting washer type and position.



Service/Workshop Manual -Upper Ball Joint

4

Next the 4 M8 allen bolts which attach the ball joint mounting to the upright can be undone - if required use a ball ended mounted allen key.



Service/Workshop Manual -Upper Ball Joint

5

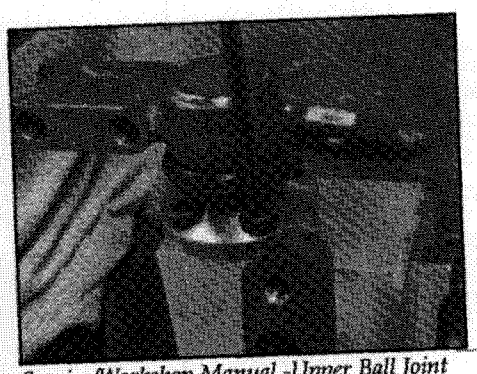
Place 2 scrap M8 bolts in 2 diametrically opposite holes in the mounting plate and clamp the bolt heads in a vice. Undo the 1/2 UNF nyloc and split the ball joint taper with a splitter.



Service/Workshop Manual -Upper Ball Joint

6

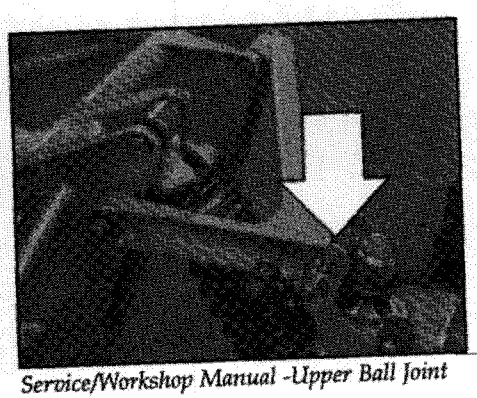
To refit a new ball joint reverse the outlined procedure by attaching a new ball joint back onto a ball joint plate bracket with a new 1/2 UNF nyloc.



Service/Workshop Manual -Upper Ball Joint

7

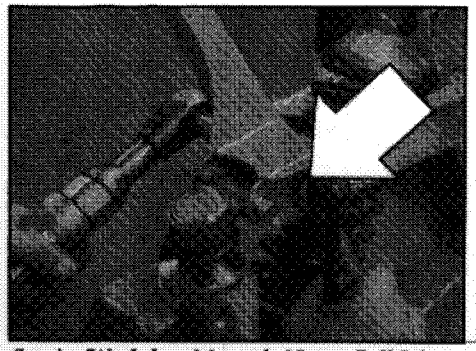
Next attach the mounting plate and ball joint back onto the upright with 4 M8 allen bolts. N.B. The threads into the upright are self lock ing helicoil insets so clean threads and use a minium of loctite.
(see diagram on page 3 of this section for torque valve.)



Service/Workshop Manual -Upper Ball Joint

8

Next the ball joint should be refitted to the wishbone. Position the Wishbone so that it is aligned with the holes on the upper ball joint and then Copper Slip and replace the 7/16 UNF bolt with its washers.Ensuring the castor adjusting shims are refitted. Loosely tighten on its nut.



Service/Workshop Manual -Upper Ball Joint

9

Refit the drop link stud through the inboard upper ball joint hole and keeping the machined flats at its rearward end vertical lightly tighten the nut. Be sure that there are 1 inch washers fitted between the bolt heads/anti roll bar drop link stud and the wishbone.

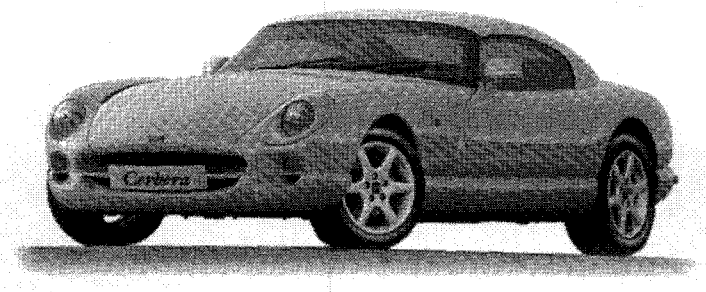


Service/Workshop Manual -Upper Ball Joint

10

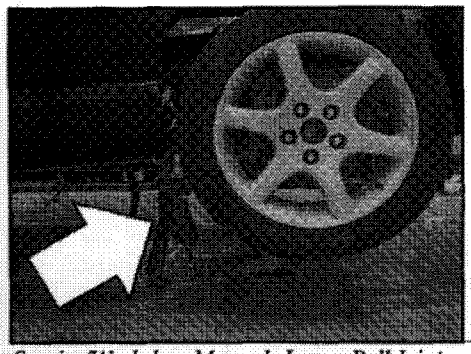
Finally refit the wheel and torque the nuts. With the car settled at ride height set cambers and torque the inner wishbone bolts. Set and adjust tracking. Once correct, torque the upper ball joint bolt and anti-roll bar drop link stud, keeping the machined flats vertical.

Notes



Service / Workshop Manual

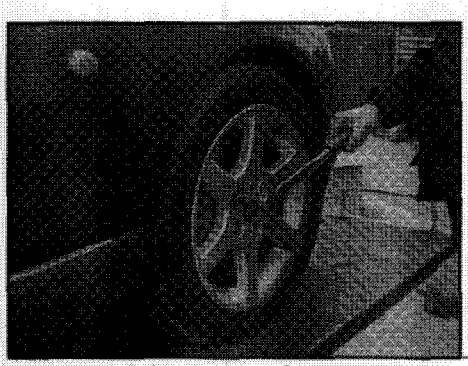
Lower Ball Joint - Removal/Replacement Procedure



Service/Workshop Manual -Lower Ball Joint

1

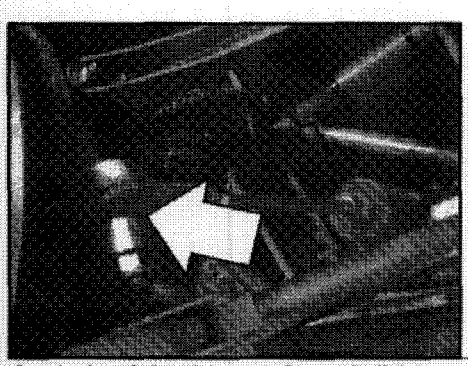
Raise the car and lower onto axle stands. Making sure to position the stands under the chassis.



Service/Workshop Manual -Lower Ball Joint

2

Remove the wheel.



Service/Workshop Manual -Lower Ball Joint

3

Then remove the track rod end nyloc nut and split the from the steering arm. Push track rod taper to one side.



Service/Workshop Manual -Lower Ball Joint

4

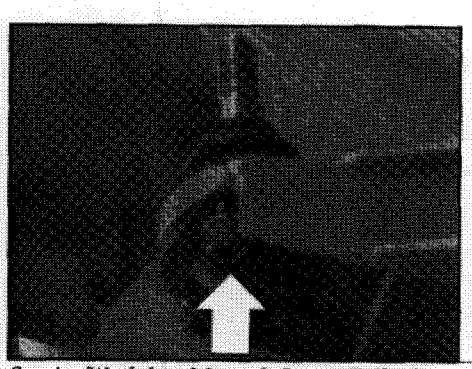
Remove the 4 x M12 capheads that secure the steering arm to the base of the upright.(the cap head bolts are loctited and need to be removed with care.) The upright has self locking Helecoil inserts so keeping the steering arm flush with the base of the upright to prevent these inserts from unscrew themselves. Separate the steering arm from the upright - note the 2 dowels.



Service/Workshop Manual -Lower Ball Joint

5

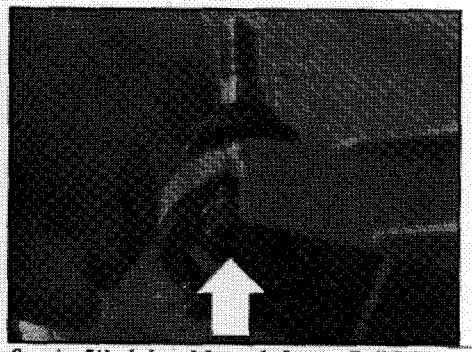
Undo the 9/16 nyloc nut and spacer from the lower ball joint and split the taper to free it from the steering arm.



Service/Workshop Manual -Lower Ball Joint

6

Undo and remove the 4 M8 allen bolts securing the ball joint to the lower wishbone.



Service/Workshop Manual -Lower Ball Joint

7

Replace the ball joint and rebolt it to the lower wishbone with its 4 M8 allen bolts, if the joint base is not flush with the lower wishbone remove the ball joint and carefully chamfer the edges of the ball joint so it clears the weld. The ball joint must sit flush to the face of the wish bone.



Service/Workshop Manual -Lower Ball Joint

8

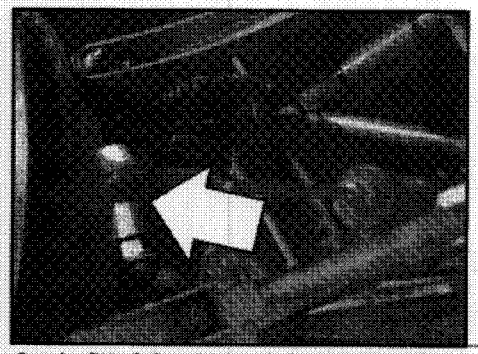
Refit the steering arm to the ball joint, fit the spacer the correct way round (see diagrams on page 3 at front of section item 23) and using a new nyloc nut torque to 60-70ft lb. Refit wheel and roadtest.



Service/Workshop Manual -Lower Ball Joint

9

Refit steering arm to upright with 4 M12 cap heads.Use minium loctite and torque. Ensuring dowels are loctited correctly.

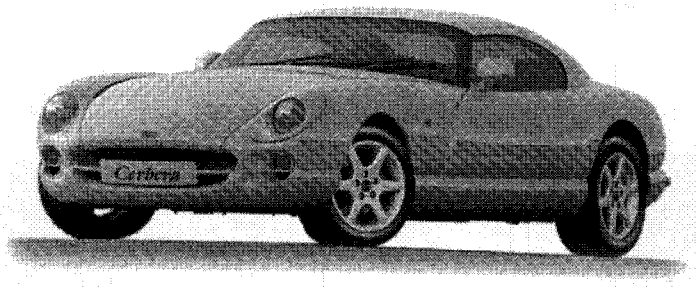


Service/Workshop Manual -Lower Ball Joint

10

Replace the track rod end to the steering arm and fit new Nyloc nut and torque. Finally level car, check tracking and camber.

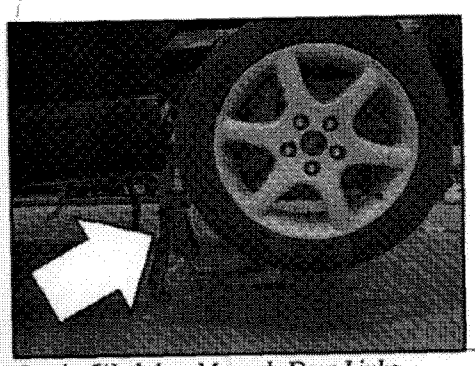
Notes



Service / Workshop Manual

Drop Links - Removal/Replacement Procedure

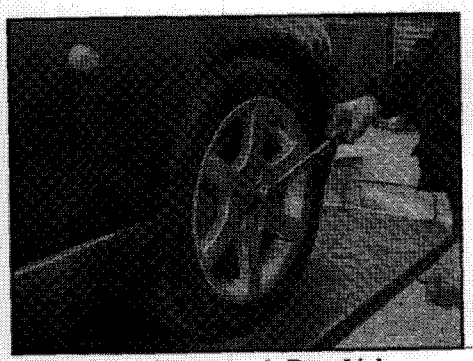
Drop Links- Removal/Replacement Procedure



Service/Workshop Manual -Drop Links

1

Raise the car and lower onto axle stands.
Making sure to position the stands under the chassis.



Service/Workshop Manual -Drop Links

2

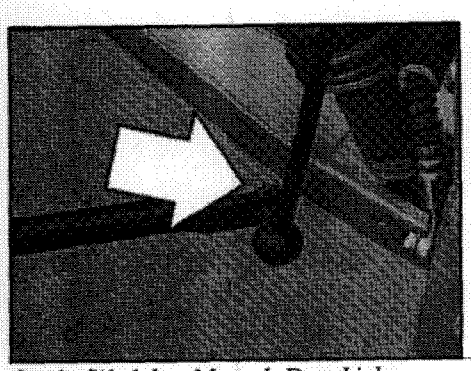
To gain access to the droplinks the wheel needs to be removed.



Service/Workshop Manual -Drop Links

3

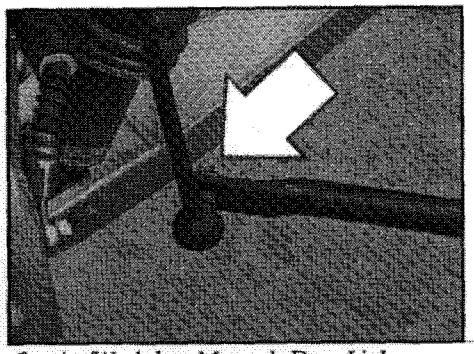
Unbolt anti-roll bar drop link stud from upper ball joint, noting washer thickness.



Service/Workshop Manual -Drop Links

4

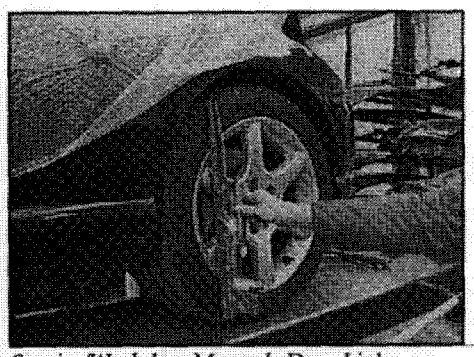
Undo M10 X M1.0 nyloc from drop link at anti-roll bar end and remove drop link.
N.B. Drop links are handed.



Service/Workshop Manual -Drop Links

5

Refit with new drop links in reverse order. Tighten the drop link nuts to the correct torque.



Service/Workshop Manual -Drop Links

6

With the vehicle on the ground, tighten wheel. Re-check cambers.