

## REAR SUSPENSION

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# REAR SUSPENSION

## Minor Maintenance

### Front Wheel Alignment

The tie rods, part of the steering rack assembly, are adjustable for length to permit the setting toe-in and wheel lock angles.

Don't attempt to carry out alignment checks without first making a preliminary check of the serviceability of the front end components.

#### Front Wheel Alignment Check

#### Equipment Installation

Install the wheel alignment equipment on the vehicle and follow the installation, inspection and operating instructions provided by the equipment manufacturer.

Equipment used for front wheel alignment inspection must be accurate. Controlled body height spacers are used when checking camber and caster. The spacers should be omitted when checking toe-in and wheel lock angles.

### Rear Wheel Alignment Independent Rear Suspension

#### Camber and Toe-in

Wheel alignment for the independent suspension is non-adjustable, however often the wheel alignment may be incorrect due to mechanical work having been carried out on the vehicle.

When checking for toe-in, one side can often be excessively out while the other side can be excessively in, this can be caused by the trailing arms having been tightened

when the vehicle was not at kerb height, or the rear crossmember installed when not parallel with the floor pan and body.

### VR Suspension Ride Height - Front and Rear

Suspension Height V6-standard suspension, no options.

| Model          | Sedan<br>Front | Sedan<br>Rear | S'Wagon<br>Front | S'Wagon<br>Rear |
|----------------|----------------|---------------|------------------|-----------------|
| Executive Man  | 613            | 600           | 614              | 588             |
| Berlina Auto   | 606            | 600           | 606              | 589             |
| Calais Auto    | 600            | 602           | ---              | ---             |
| Statesman Auto | 596            | 549           | ---              | ---             |
| Utility        | 632            | 610           | ---              | ---             |

#### IRS Rear Spring ID Code

V6 & V8 Sedan Standard Sus

V6 & V8 Sedan FE 2 Sus

V6 Statesman Standard Sus

V8 Statesman & Caprice

#### ID Code

HH

BM

HH

HM

#### IRS Rear Spring ID Code

V6 & V8 Sedan Standard Sus

V6 & V8 Sedan FE 2 Sus

V6 & V8 Statesman Standard Sus

Caprice

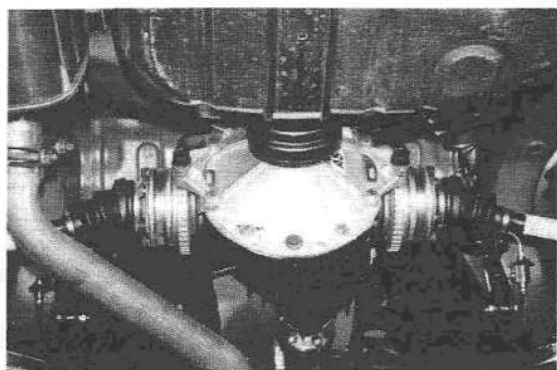
#### ID Code

KC

KF

KC

Bilstein



Correct these by checking the procedure in this manual, that is loosen the rear crossmember and trailing arm to crossmember bolts and nuts, bounce the rear of the car at least three times and allow to settle, bounce the car again two/three times and allow to settle, tighten the bolts and nuts to the correct specification in the order listed below.

**Rear Crossmember Front Bolt specified torque:**

**125Nm + 300-450 turn**

**Rear Crossmember Rear bolt specified torque:30-40Nm**

**Trailing Arm to Rear Crossmember nut specified torque: 95-105Nm**

### Loading Requirements

1. Full tank of fuel.
2. Cooling system filled.
3. Crankcase oil at full.

4. Spare wheel and tyre stowed in design position.
5. Front seat one notch forward from rearmost position.

### Suspension Height Chart

#### Measuring Procedure

1. Position vehicle on level surface at kerb weight.
  2. Roll vehicle at least one wheel revolution backwards or forwards (or both) to allow the vehicle to assume normal attitude.
  3. Bounce the front and rear of the vehicle up and down approx. 50mm in each direction.
  4. With the parking brake disconnected, push the vehicle front end at the centre of the front bumper evenly down, approx. 25mm, and release slowly.
  5. With appropriate instruments measure from the fender opening eyebrow to the lowest wheel rim centre line, as shown in diagram, on both sides and record these measurements.
  6. Raise the vehicle front end at the centre of the front bumper evenly, approx. 25mm, and release slowly.
  7. Repeat number 5.
  8. Average the above measurements for each side and record as front ride heights left and right.
  9. Repeat operations 4 to 8 at the rear end of the vehicle.
- \* Suspension ride height specifications for coil springs must be measured after the springs have settled in after operation. When the new springs are fitted a further 6mm may be added to the max. allowable height (refer to table on page 320). Ride height is also dependant on the options fitted to the base vehicle and the quantity of fuel carried.

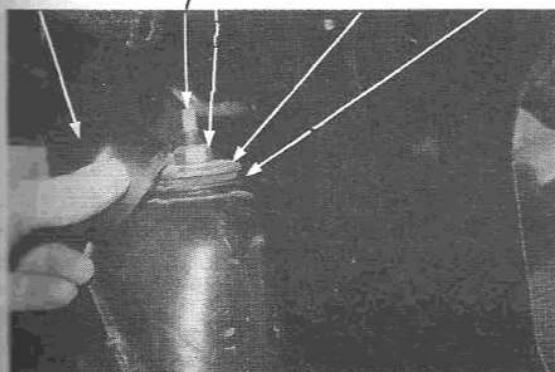
### Rear Shock Absorber - Sedan

#### Remove

1. Open the boot, the top anchor points of the shock absorbers can be seen to the left and right near the rear of the back seat.
2. Remove the shock absorber cover, upper mounting nut, washer and insulator.

Remove protection cap, nut, washer and rubber insulator attaching the shock absorber upper mounting.

Protection Cap    Top of Shock Absorber  
Nut    Washer    Insulator



3. Raise the rear of the vehicle. Position the suspension in the curb load position.

4. Remove nut and bolt attaching the shock absorber lower mounting to the [axle stud - conventional differential][bolt to trunion - independent rear suspension].

5. Remove the shock absorber, then remove the insulator, washer and the bump stop from the shock absorber.

#### Install

1. Install the bump stop, washer and insulator to the top shaft of the shock absorber.

2. Position the shock absorber up into the body mounting hole and the axle mounting bolt. Install the lower mounting and nut to specification.

**Lower Shock Absorber Nut specified torque:105-125Nm**

3. Lower vehicle and install the upper mounting insulator, washer, nut to specification and cover.

**Upper Shock Absorber Nut specified torque:12-16Nm**

4. Install the shock absorber cover in the boot.

### Rear Shock Absorber - Station Wagon and Utility

#### Remove

1. Raise vehicle and support the axle to "unload" the shock absorber.
2. Release the rear latch. Fold the mat rearward, remove the securing philip head screws, remove the cover panel.
3. Remove the nut, outer washer, and insulator from the shock absorber upper mounting to the crossmember.
4. Remove the retaining nut, outer washer and insulator that attach the shock absorber to the axle or trunion. Compress the shock absorber and remove it from the vehicle.

5. Remove the insulators and washers from the shock absorber studs.

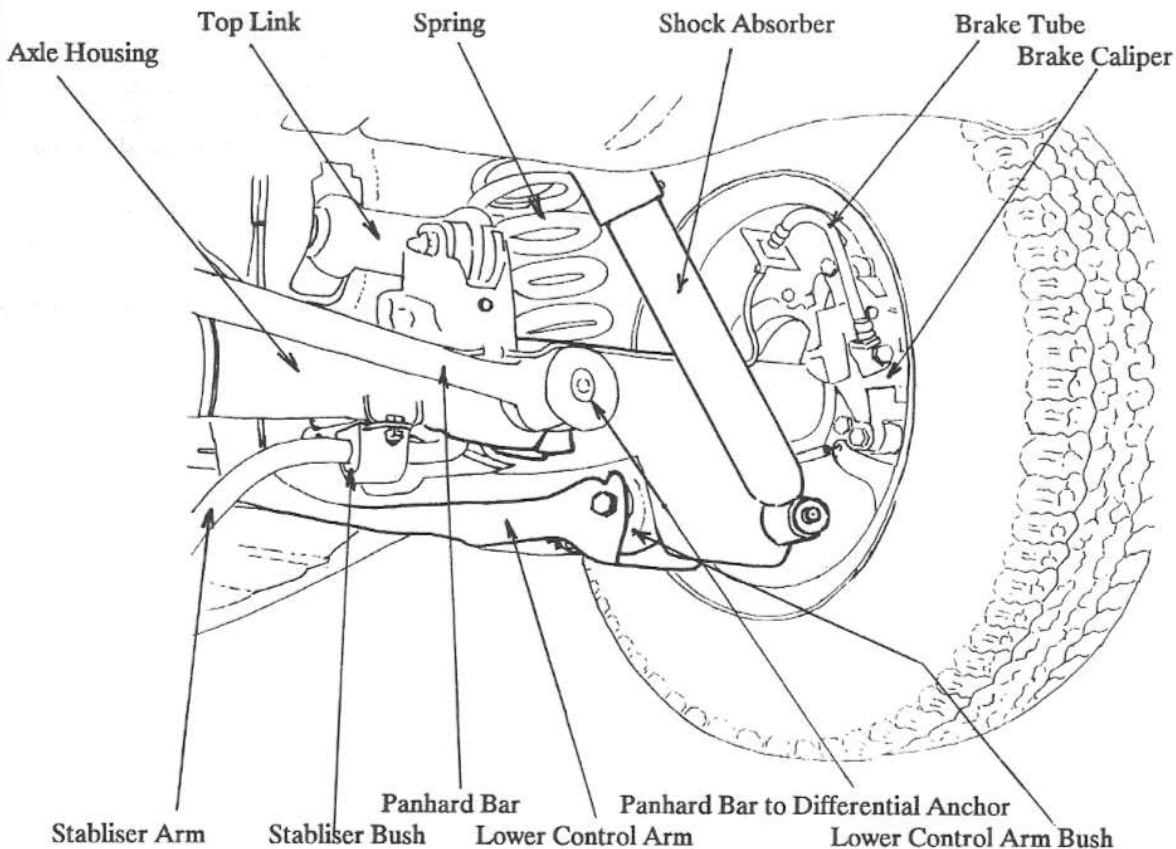
#### Install

1. Place the inner washer and insulator on each shock absorber stud.

Station Wagon upper shock absorber mounting point below plate.



## Rear Suspension as fitted to Conventional Differential



2. Expand the shock absorber and position to the axle or trunion and to the upper crossmember.

3. Connect the lower stud to the axle bolt/stud, and install the insulator washer, and nut on the stud. Tighten nut to specification.

**Lower Shock Absorber Nut specified torque: 105-125Nm**

4. Install the insulator, washer and retaining nut to the upper mounting stud.

**Upper Shock Absorber Nut specified torque: 12-16Nm**

5. Replace the access hole cover, carpet & lower vehicle.

### Stabiliser Bar

#### Remove

Raise the vehicle with the suspension in the curb load attitude. Disconnect the stabilizer bar from each link. Remove both stabilizer bar retaining brackets, and remove the stabilizer bar.

#### Install

Place the bar in position and install the retaining brackets and the links. Make sure that the insulators on the link are correctly in their respective mounting holes. Tighten the nuts to specification.

**Stabilizer Centre Insulator Bracket Nuts & Bolts specified torque: 15-25Nm**

**Stabilizer Bar Nut specified torque: 7-10Nm**

### Stabilizer Bar Centre Insulators

#### Remove

Remove the hardware and brackets attaching the centre section of the stabilizer bar. Remove the insulators from the bar.

#### Install

1. Position the insulators on the stabilizer bar. Make sure that the links on each end of the bar are located at approx. the same angle relative to the centre line of the vehicle and install the attaching brackets, tighten nuts to specification.

**Stabilizer Centre Insulator Bracket Nuts & Bolts:**

**15-25Nm**

2. Lower the vehicle.

### Stabilizer Bar Link Insulators

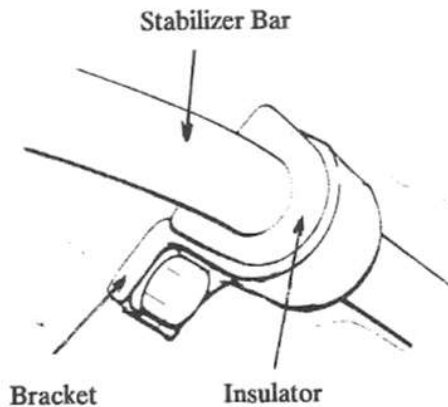
#### Remove

Raise vehicle on a hoist positioning the suspension in the curb load position. Remove the nut, washers, insulators and link bolt attaching the ends of the stabilizer bar.

#### Install

Install the bolt, washers, insulators, spacer and nut as illustrated on next page. Make sure that the insulators are correctly located in the respective mounting holes. Lower vehicle.

**Stabilizer Bar Nut specified torque: 7-10Nm**

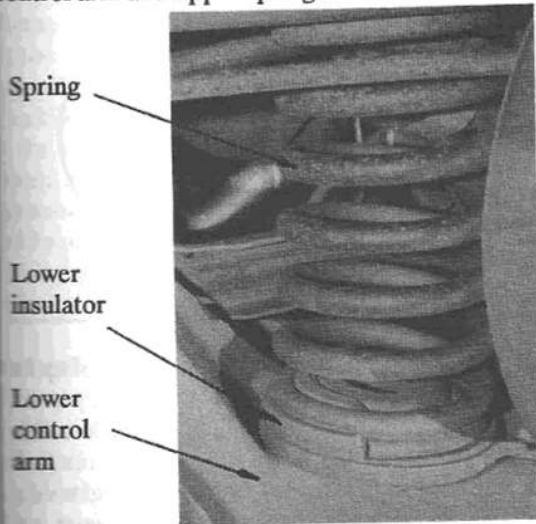
**Stabilizer Bar Centre Insulator**

## Major Suspension Maintenance Conventional Differential

**Rear Spring****Remove**

1. Raise vehicle on an underbody support hoist, place stands beneath the rear axle.

Install the insulators and the spring between the lower control arm and upper spring seat



2. Remove the wheel nuts and remove wheels.
3. Place a jack under the lower control arm sufficiently to remove the weight from the lower control arm.
4. Remove the nut and bolt from the lower control arm to the axle.

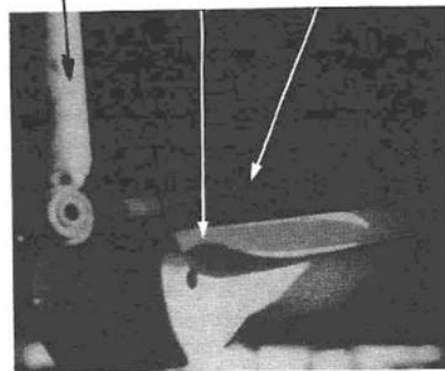
5. Remove the spring and upper and lower insulation bushes.

**Install**

1. Install the insulators and the spring between the lower control arm and upper spring seat. Correctly locate the spring on the lower spring seat (end of spring against the top in the seat).

Remove the nut and bolt from the lower control arm to the axle.

Shock absorber Lower control arm Handbrake cable



2. Position the lower control arm into the correct position with a jack, replace the bolt and nut (finger tight only) to the lower control to the axle.

3. Install the wheel and remove the axle stands and lower the vehicle to the curb load position

**\*The nuts must be tightened with the suspension in the curb load position.**

4. Tighten the lower control arm to the axle housing bolt and nut to correct specification.

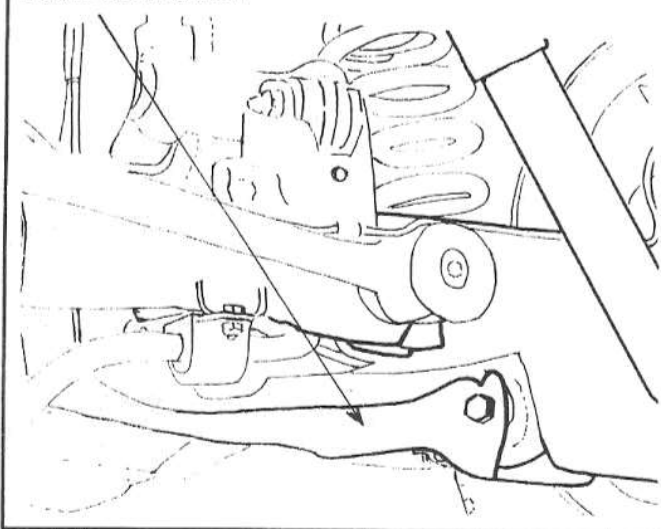
**Lower Control Arm to Axle Housing Bolt and Nut specified torque: 95-110Nm**

5. Tighten the wheel nut to correct specification.

**Wheel Nut specified torque: 100-125Nm**

**Lower Control Arm****Remove**

1. Raise vehicle on an underbody support hoist, place stands beneath the rear axle.
2. Remove the wheel nuts and remove wheels.
3. Place a jack under the lower control arm sufficiently to remove the weight from the lower control arm.
4. Remove the nut and bolt from the lower control to the axle.
5. Remove the spring and upper and lower insulation bushes.
6. Support the lower control arm while you remove the bolt and nut that attaches the lower control arm to the floor pan.

**Lower Control Arm****Install**

1. Install the lower control arm to the body, fit the bolt and nut, only finger tighten the nut at this stage.
2. Install the insulators and the spring between the lower control arm and upper spring seat. Correctly locate the spring on the lower spring seat (end of spring against the top in the seat).
3. Position the lower control arm into the correct position with a jack, replace the bolt and nut (finger tight only) to the lower control at the axle.

4. Install the wheel and remove the axle stands and lower the vehicle to the curb load position

**\* The nuts must be tightened with the suspension in the curb load position.**

5. Tighten the lower control arm to the axle housing bolt and nut to correct specification.

**Lower Control Arm to Axle Housing Bolt and Nut specified torque: 95-110Nm**

6. Tighten the lower control arm to the body bolt and nut to specification.

**Lower Control Arm to Body Bolt and Nut specified torque: 95-110Nm**

7. Tighten the wheel nut to correct specification.

**Wheel Nut specified torque: 100-125Nm**

**Lower Control Arm Rear Bush****Remove and Install**

Remove the rear spring as previously described. Using suitable adaptors press the old bush from the axle housing, lower control arm support bracket. Press the new bush into the lower control arm support bracket from the centre of the differential towards the wheel.

**\* The bush must be installed the correct way that is the grooves of the bush must be in line with the notch on the bracket. The hollow sections must be on a 90° line with the centre line of the lower control arm as shown below.**

Install the lower control arm as previously described.

**Lower Control Arm Front Bush****Remove and Install**

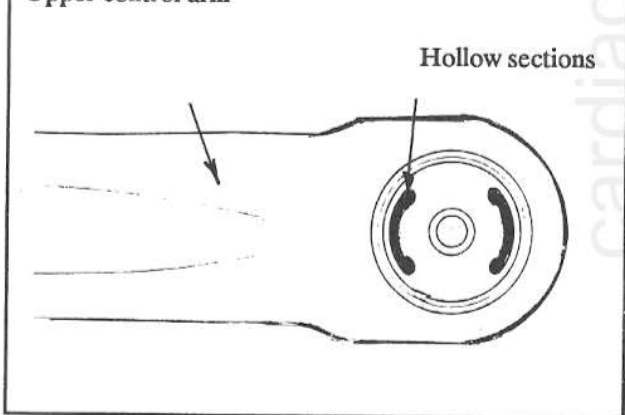
Using suitable adaptors press the old bush from the lower control arm. Press a new bush into the lower control arm.

**\* The bush must be installed the correct way as the holes in the lower control arm are a different size, the hollow sections must be on a 45° line with the centre line of the lower control arm.**

**Upper Control Arm****Remove**

1. Raise vehicle on an underbody support hoist, place stands beneath the vehicle jacking support locations.
2. Remove the wheel nuts and remove wheels.
3. Place a jack under the axle housing and lift sufficiently to remove the spring pressure from the lower control arm.
4. Support the upper control arm while you remove the nut and bolt from the upper control arm to the bracket attached to the floor pan.
5. Support the upper control arm while you remove the nut and bolt from the upper control arm to the bracket attached to the axle assembly.
6. Remove the upper control arm, take note of the position of the bushes and the moulding of the arm, to assist during installation.

The hollow sections of the bush must be at a 90° line with the centre line of the upper control arm as shown.

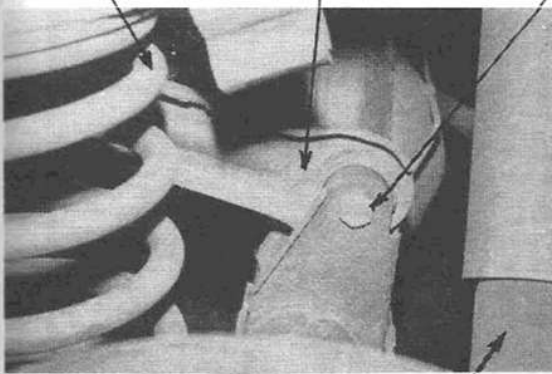
**Upper control arm****Install**

1. Install the upper control arm (hollow section of upper control arm is towards the outside of the vehicle) to the differential (bolt from the outside of the vehicle to the differential centre) and the body support bracket (bolt from centre of vehicle to outside). Nuts finger tight only.
  2. Install the wheel and remove the body stands and lower the vehicle to the curb load position
- \* The nuts must be tightened with the suspension in the curb load position.**
3. Bounce vehicle 2-3 times and allow vehicle to settle.
  4. Tighten the upper control arm to the axle housing bolt and nut to correct specification.

## REAR SUSPENSION

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Upper Control Arm  
Rear spring Upper control arm Upper control arm attaching bolt



Shock absorber

On vehicles with V5W and FE2 type suspension the drivers side front bush has two hollows these are to be positioned so the hollows are vertical to the arm when positioned on a bench

**Upper Control Arm to Axle Housing Bolt and Nut specified torque:** 95-110Nm

5. Tighten the upper control arm to the body bolt and nut to specification.

**Upper Control Arm to Body Bolt and Nut specified torque:** 54-70Nm

6. Tighten the wheel nut to correct specification.

**Wheel Nut specified torque:** 100-125Nm

### Upper Control Arm Bushes

#### Remove

Remove the upper arm as described previously, push out the bush from either side of the arm.

#### Install

Position the bush correctly on the arm.

\* On vehicles with V5W and FE2 type suspension the drivers side front bush has two hollows these are to be positioned so the hollows are vertical to the arm when positioned on a bench.

Using a press install the bush fully into the arm, then replace the upper control arm as described previously.

### Panhard Bar Assembly - Rear Suspension

#### Remove

1. Raise the vehicle, retain the rear suspension in the curb load position.

2. Remove the nut and bolt attaching the left hand side of the panhard bar to the body support

4. Remove the nut and collar attaching the panhard bar to the axle bracket.

5. Remove the panhard bar assembly.

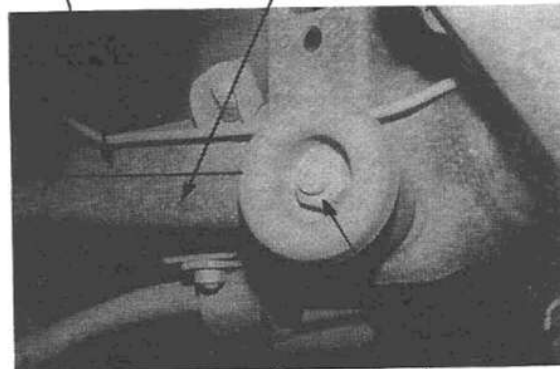
#### Install

1. Place the left side of the panhard bar to the axle housing bracket and install the nut (finger tight only).

**Panhard Bar to Axle Housing Bolt Nut specified torque:** 95-110Nm

Axle housing

Panhard rod



Stabilizer Bar

Stabilizer Bar Insulator

Panhard Rod Nut

2. Lift the panhard bar to the body support bracket and install the bolt and nut (finger tight only).

\* The bolt must be installed from the under side of the vehicle to the rear of the car.

3. Lower the vehicle and tighten the nuts to specification.

\* The nuts must be tightened with the suspension in the curb load position.

**Panhard Bar to Body Support Bracket Bolt and Nut specified torque:** 54-70Nm

**Panhard Bar to Axle Housing Bolt Nut specified torque:** 95-110Nm

### Panhard Bar Bushes

#### Remove

Raise vehicle positioning the rear suspension in the curb load position.

Remove the nuts and bolt attaching the bar to the body and the axle housing as described above, and remove the bar. Using a suitable drift and a support, press the bushes from the arm.

#### Install

Wet the outside diameter of the bush and the bore of the arm with water (Don't use rubber lubricant). Position the bush on the arm and using a soft faced mallet strike the bush smartly and drive the bush into the arm. Make sure that the bush is centrally located in the arm.

Install the arm to the vehicle and with the vehicle in the curb load position install the attaching bolts and nuts.

\* The bolt must be installed from the under side of the vehicle to the rear of the car.

**Panhard Bar to Body Support Bracket Bolt and Nut specified torque:** 54-70Nm

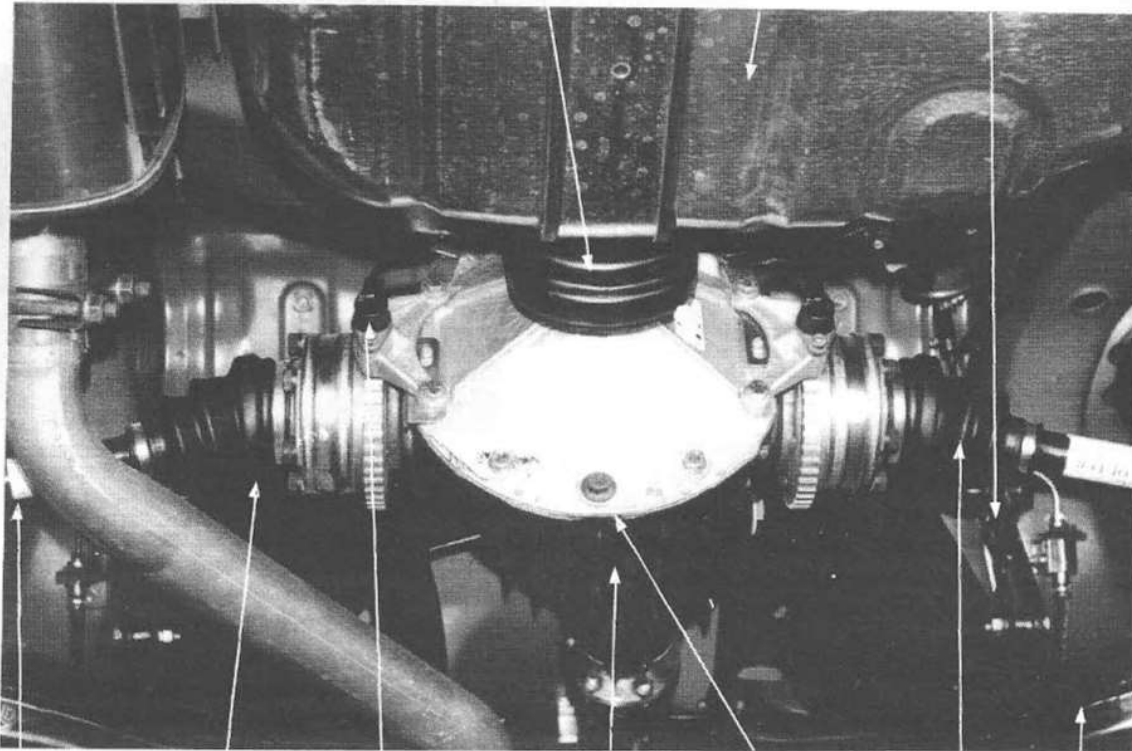
**Panhard Bar to Axle Housing Bolt Nut specified torque:** 95-110Nm

IRS - Independant Rear Suspension

Differential Mount

Fuel Tank

Stabiliser Bar / Link



Axle shaft   Constant velocity joints   ABS sensor   Differential assembly   Drain plug   Dust shield   Trailing Arm

## Major Maintenance

### Independent Rear suspension

#### TRAILING ARM (Axle) - I.R.S. Diff.

##### Remove

1. Before taking off the back wheels or lifting the weight of the vehicle or removing the stabilizer bar loosen and remove axle shaft constant velocity joint to inner axle shaft and trunion flange attaching bolts, if the wheel has been removed and the stabilizer has been removed hold the trunion with a bar so it will not turn.

2. Lift rear of vehicle and remove wheel.

3. Remove rear brake caliper anchor plate to trailing arm attaching bolts, remove caliper from disc. Tie the brake caliper out of the way, do not allow the brake caliper to hang on the brake hose as this will damage the hose.

4. Remove the parking brake equalizer so it is easier to remove the parking brake rod.

5. Remove axle shaft constant velocity joints to inner axle shaft and trunion flange attaching bolts

6. Remove rear brake disc backing plate from the trailing arm.

7. Remove shock absorber from trailing arm.

Loosen and remove axle shaft constant velocity joint to inner axle shaft and trunion flange attaching bolts



Lower the trailing arm just enough to take any pressure off the rear spring and remove the spring.

8. Remove stabilizer bar from trailing arm if it has not been removed.

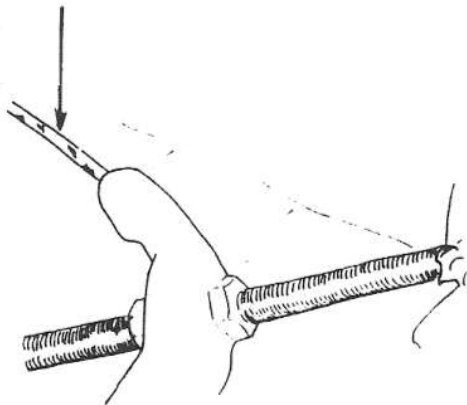
#### Dismantle Trunion / Replace Rear Wheel Bearing

9. Clamp the trunion and remove the trunion flange (hub) attaching nut. Remove the trunion and trunion flange (hub) by clamping the trunion in a press, (hydraulic

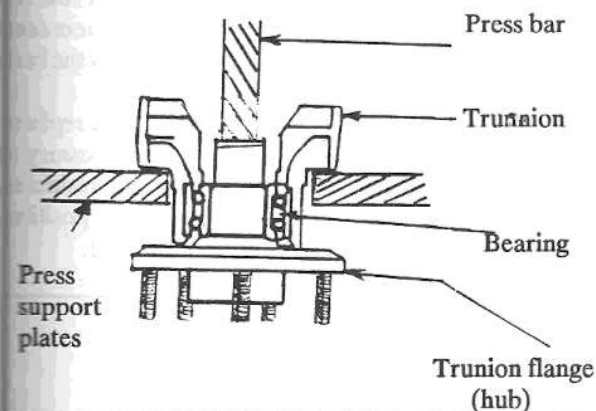
## REAR SUSPENSION

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Remove the parking brake equalizer so it is easier to remove the parking brake rod

**Rear Park Brake Cable**

Remove the trunion and trunion flange by clamping the trunion in a press, (hydraulic preferably) push the trunion flange free of the trunion



preferably) push the trunion flange (hub) free of the trunion.

10. Remove the backing plate, use a torx ratchet.
11. Remove the wheel bearing cir-clip from trailing arm.
12. Using a press, (hydraulic preferably) push the trunion free of the wheel bearing.
13. Press wheel bearing from the trailing arm.

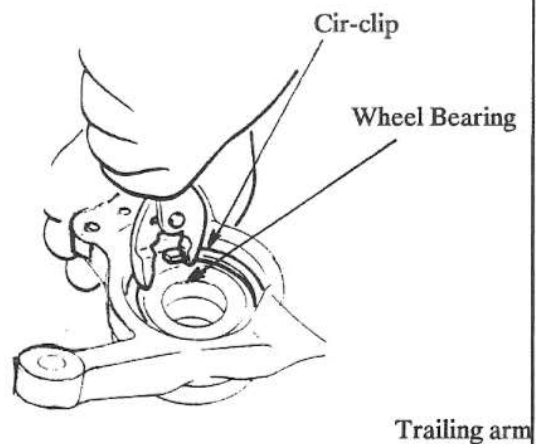
**Install**

1. Press new bearing into Trailing arm.
2. Replace the wheel bearing cir-clip to the trailing arm.
3. Fit new seal to brake bracket, fit backing plate to trailing arm and tighten bolts to specification.

**Brake Bracket and Backing Plate Bolts spec torque:**  
50-60Nm

4. Using a press, (hydraulic preferably) press wheel bearing onto trunion assembly.

Replace the wheel bearing cir-clip to the trailing arm



5. Using a press, (hydraulic preferably) press trunion flange onto trunion assembly. Do not press on the wheel studs.

6. Clamp the trunion and fit new trunion flange (hub) nut and tighten to specification, fit new locking plate to nut.

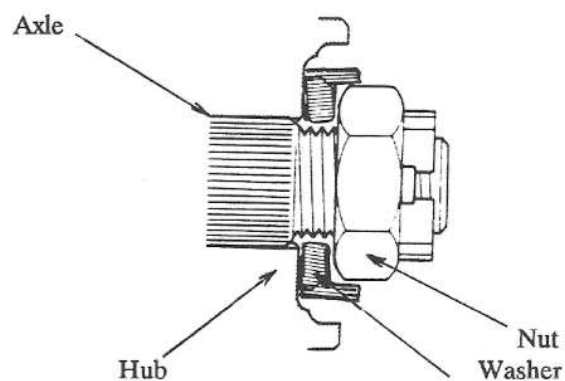
**Trunion Flange Nut specified torque : 295-305Nm**

7. Replace stabilizer bar to the trailing arm and tighten to specification.

**Stabilizer Bar to Trailing Arm nut spec torque: 18-26Nm**

8. Replace trailing arm to crossmember, do not torque bolts until the trailing arm is completely assembled including the rear wheels and the vehicle weight is on the

Fit new trunion flange (hub) nut and tighten to specification



rear suspension.

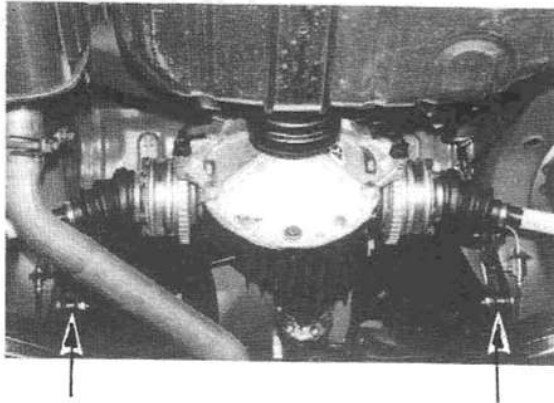
9. Position trailing arm to enable the fitting of the rear spring.

10. Fit shock absorber to trailing arm and tighten to specification.

**Shock Absorber to Trailing Arm spec torque:**

**105-125Nm**

Stabilizer Bar to Trailing Arm nut torque spec: 18-26Nm



11. Reconnect the stabilizer arm to the trailing arm and tighten to specification.

**Stabilizer Arm to Trailing Arm bolt spec torque: 18-26Nm**

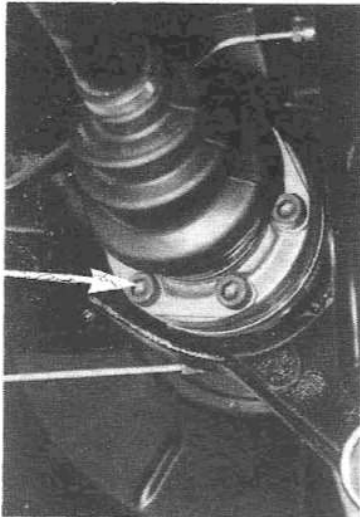
12. Fit the axle shaft constant velocity joint bolts to the trunion flange and tighten to specification.

**Axle Shaft Constant Velocity Joint Bolts to the Trunion Flange specified torque: 50Nm plus 60°-75° turn**

13. Replace the rear brake caliper anchor plate to trailing arm and brake caliper, tighten bolts to correct specification.

**Brake Caliper and Backing Plate Bolt specified torque: 70-100Nm**

Fit the axle shaft constant velocity joint bolts to the trunion flange and tighten to specification.

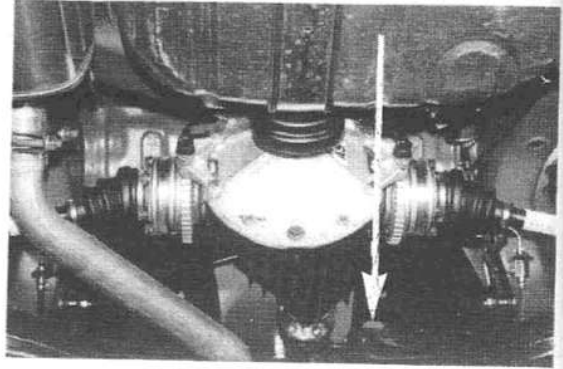


14. Replace wheel and tighten bolts in the correct manner to correct specification.

**Wheel Nut specified torque: 100-125Nm**

15. Tighten trailing arm to crossmember bolts to correct specification.

Tighten trailing arm to crossmember bolts to correct specification.



Trailing Arm to Crossmember specified torque:

**Trailing Arm to Crossmember specified torque:**

**95-105Nm**

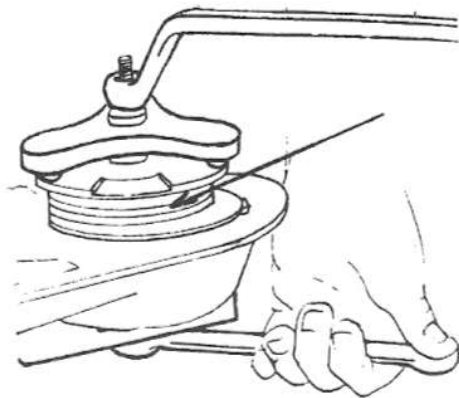
### Bushes

#### Replace

Remove the trailing arm as described above. Press out the old bushes with a press, however it may be necessary to cut the bush along side the trailing arm to allow the bush to be pressed out easily.

Replace the bush with a new bush by pressing a replacement bush into the trailing arm. It may be necessary to place the bush in a warm bucket of water for a few minutes, this will help the new bush to be pressed into position. Replace the trailing arm as previously described.

#### Trailing Arm Bush



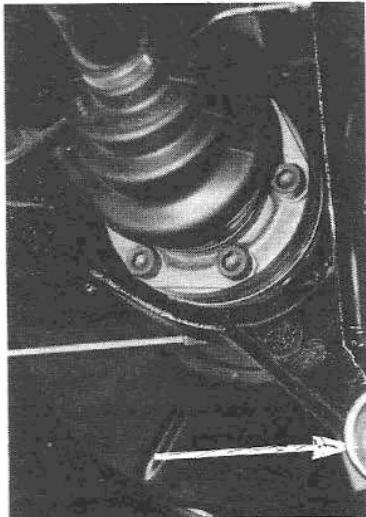
**Rear Spring Remove**

## REAR SUSPENSION

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1. Before taking off the back wheels or lifting the weight of the vehicle or removing the stabilizer bar loosen and remove axle shaft constant velocity joint to inner axle shaft and trunion flange attaching bolts, if the wheel has been removed and the stabilizer has been removed hold the trunion with a bar so it will not turn.
2. Raise vehicle and support underbody on jack stands. Support differential centre with a jack.
3. Remove the wheel nuts and remove wheels.
4. Place a jack under the lower control arm sufficiently to remove the weight from the lower control arm.
5. Remove the lower shock absorber nut and disconnect the shock absorber from the trailing arm.
6. Remove the rear brake caliper from the trailing arm and tie up to the under body.
7. Disconnect the stabilizer arm link from the trailing arm.
8. Disconnect (remove the 6 torx bolts if not removed) the axle shaft constant velocity joint from trunion flange. Tie the axle shaft up to the under body, so it will not hang down and damage the inner velocity joint.
9. Lower the trailing arm and remove the spring and

Remove the lower shock absorber nut and disconnect the shock absorber from the trailing arm



upper and lower insulation bushes.

**Install**

1. Install the insulators and the spring between the lower control arm and upper spring seat. Correctly locate the spring on the lower spring seat (end of spring against the top in the seat).
2. Lift the lower control arm into the correct position with a jack.
3. Fit shock absorber to trailing arm and tighten to specification.

**Shock Absorber to Trailing Arm spec torque:**

**105-125Nm**

4. Fit the stabilizer bar to the trailing arm.

**Stabilizer Bar to Trailing Arm Bolt spec torque: 18-26Nm**

5. Untie the axle shaft and install the axle shaft constant velocity joint bolts to the trunion flange and tighten to specification.

**Axle Shaft Constant Velocity Joint bolts to the Trunion Flange specified torque: 50Nm plus 60°-75° turn**

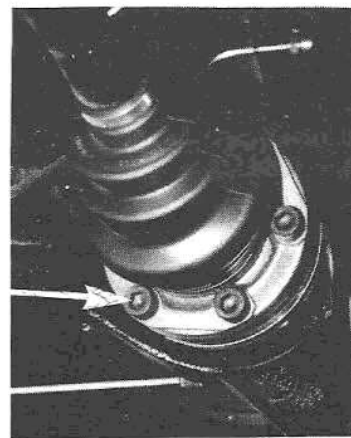
6. Replace the rear brake caliper anchor plate to trailing arm and brake caliper, tighten bolts to correct specification.

**Brake Caliper and Backing Plate bolt specified torque: 70-100Nm**

7. Tighten the wheel nut to correct specification.

**Wheel Nut specified torque: 100-125Nm**

Install the axle shaft constant velocity joint bolts to the trunion flange and tighten to specification.



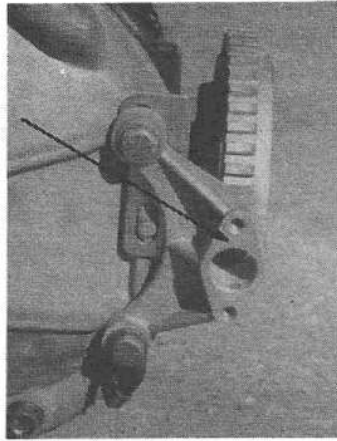
**Axle Shaft Constant Velocity Joint bolts to the Trunion Flange specified torque: 50Nm plus 60°-75° turn**

**IRS Suspension Unit****Remove**

1. Loosen rear wheel nuts, raise vehicle supporting underbody, remove rear wheels.
2. Mark the relationship of the tail shaft and the pinion flange and disconnect the tail shaft from the pinion flange.
3. Remove differential breather hose from differential housing.
4. Remove the exhaust system from the rear of the catalytic converter.
5. Disconnect park brake cable at the equaliser (this will loosen the cable to the rear brakes) and detach the cables from the calipers.
6. Remove caliper lower guide pin locknuts and pins, and pivot the calipers on the upper guide pins until calipers are clear of the discs.
7. Disconnect the brake line from the axle housing. Remove the bracket and caliper assembly and, using a piece of wire, suspend the assembly from the underbody. Leave hydraulic lines attached, but disconnect from axle housing.

**\* Don't strain the brake lines and/or hoses.**

Vehicle is fitted with ABS disconnect the electrical wiring connector



7. If the vehicle is fitted with ABS disconnect the electrical wiring connectors.

8. Support weight of differential carrier with floor jack, mark the location of the rear mounting bracket with a felt pen. Remove rear mount attaching bolts and lower the centre differential 75mm, while positioning two jacks under left and right trailing arms, lift enough to release spring pressure.

9. Disconnect rear shock absorber lower mounting bolts from trailing arms, and remove shock absorber from the trailing arms.

\* The drive shaft constant velocity joint boots will be

Take care and remove rear springs.



damaged if the shock absorbers are disconnected from the trailing arm before the rear of the differential centre has been lowered 75mm.

10. Take care and remove rear springs.

11. Jack up the trailing arms and remove the bolts supporting the front brace of the crossmember and trailing arms.

12. Remove support to vehicle underbody attaching bolts. Remove rear crossmember, lower assembly on jack

and remove from beneath vehicle. With assistant supporting front end of rear crossmember, lower assembly.

13. Remove drive shaft inner constant velocity joint to inner axle shaft attaching bolts (8mm Allen key socket) and plates.

14. Disconnect joints from inner axle shafts.

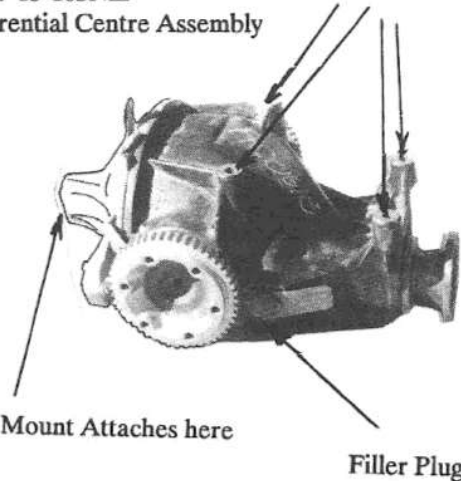
15. Remove differential centre from rear crossmember. Remove rear mounting bracket to rear cover attaching bolts, remove mount bracket.

**Install**

\* When installing a IRS differential centre use new bolts

Differential to Rear Crossmember Bolt specified torque: 85-105Nm

Differential Centre Assembly

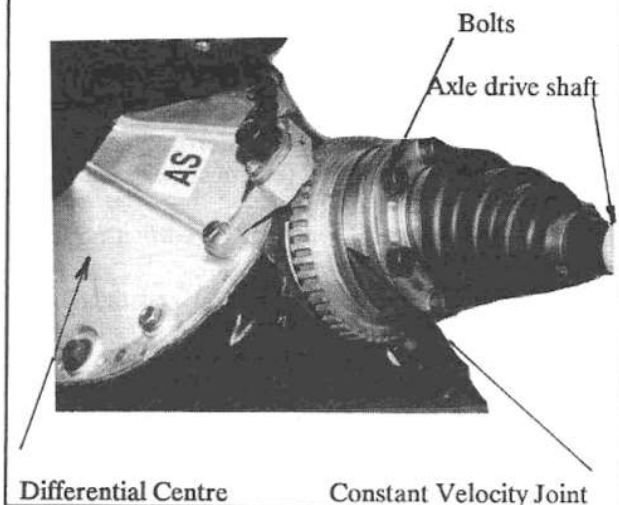


for all mounting brackets either to the differential centre or the floor pan and crossmember.

1. Install rear mounting bracket to rear cover and leave new bolts finger tight. Line up felt pen markings made while removing, tighten to torque specification.

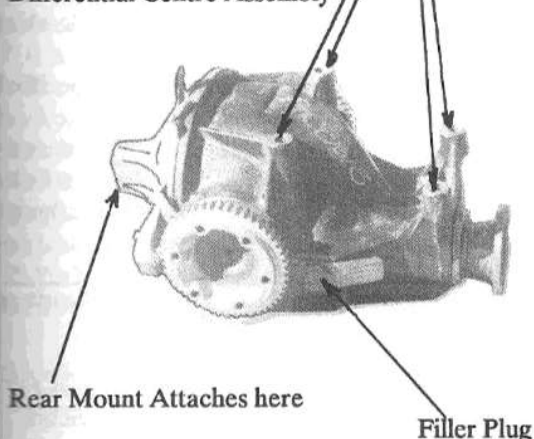
\* This bracket must be parallel to the top mount surface and 56.7mm lower than top mount surface.

Remove drive shaft inner constant velocity joint bolts



**Differential to Rear Crossmember Bolt specified torque: 85-105Nm**

Differential Centre Assembly



**Differential to Rear Crossmember Bolt specified torque: 85-105Nm**

2. Replace new drive shaft constant velocity joint boots. Tighten drive shaft inner constant velocity joint to inner axle shaft attaching bolts to specified torque.

**Drive Shaft Constant Velocity Joint To Trunion Flange bolt spec torque: 50 Nm plus 60-75 degrees:**

3. Lift differential assembly on jack fitting the assembly to the crossmember. Line up felt pen markings made while removing, tighten to torque specification.

**Rear Crossmember Front Mounting bolt torque specified : 125 Nm plus 30-45 degrees**

**Front Brace Bolt specified torque : 60-70 Nm**

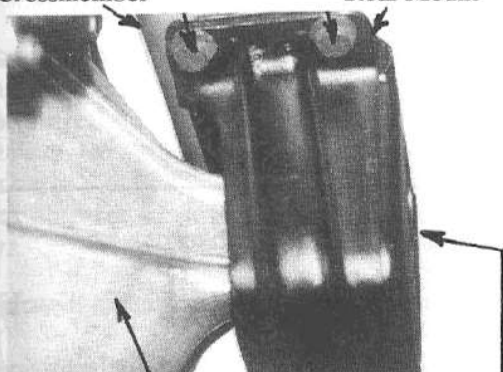
4. Lower rear of assembly to allow access to rear mounting bracket to rear cover bolts. Tighten new bolts to the correct torque specification. Vehicle underbody surface should be parallel to rear crossmember.

**Rear Mount To Rear Cover Bolt spec torque: 95-105 Nm.**

**Rear Mount To Rear Crossmember bolt spec torque: 30-40 Nm**

Rear Crossmember

Rear Mount



**Rear Mount To Rear Cover Bolt spec torque:**

**95-105 Nm.**

5. Lower differential centre and rear crossmember assembly 75mm on jack, to enable you to install rear springs. After installing springs and insulators, use a second floor jack to raise each trailing arm up far enough to allow shock absorber lower mounting to be installed.

Install bolts and washers to shock absorber lower mounts and trailing arms. Tighten bolts to the correct torque specification.

\* Lower the differential centre and crossmember assembly rear mount no more than 75mm from the floor pan. Otherwise you may damage the drive shaft constant velocity joint boots.

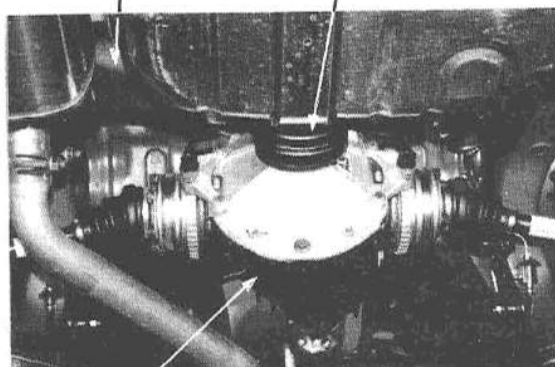
**Shock Absorber Lower bolt spec torque: 105-125 Nm**

6. Lift differential centre and rear crossmember assembly until rear mount contacts vehicle underbody. Line up felt pen markings made while removing, tighten to torque specification.

**Rear Mount To Rear Crossmember bolt spec torque: 30-40 Nm**

Rear Crossmember

Rear Mount



Diff Assembly

\* It is important to align rear mount with previously made marks to ensure rear end 'toe in' setting is maintained.

If rear mount alignment was not marked before removal, it will be necessary to check rear wheel alignment.

7. Vehicle with ABS brakes, connect sensor wiring loom connectors.

8. Check and fill differential lubricant level.

Capacity

1.6 litres

V6

SAE 90 API GL 5

V8

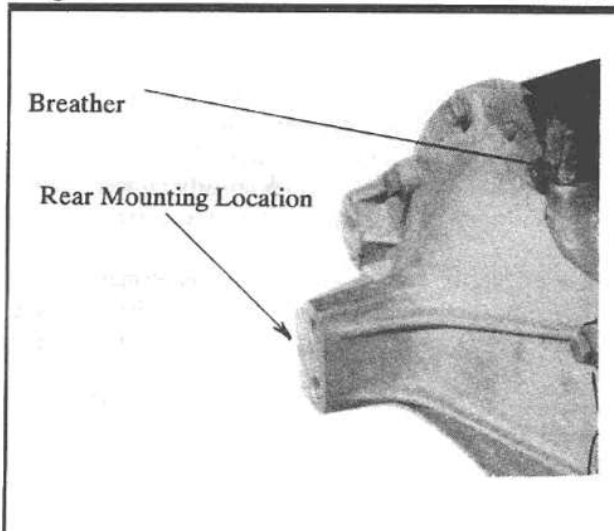
Mobilube SHC 80W-140ID

9. Connect and adjust hand brake adjustment and bleed brake hydraulic system.

### Rear Crossmember Mounting Bracket

#### Remove

1. Jack up the vehicle and support the vehicle on jack stands.



2. Remove differential breather hose from differential housing.

3. Remove the exhaust system from the rear of the catalytic converter.

4. Support weight of differential carrier with floor jack, mark the location of the rear mounting bracket with a felt pen. Remove rear mount attaching bolts and lower the centre differential no more than 75mm, while removing mounting bolts and mounting bracket.

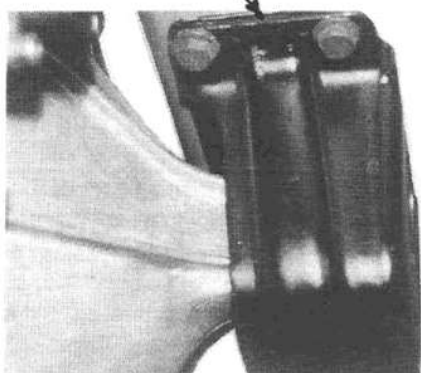
#### Install

\* When installing a IRS differential centre use new bolts for all mounting brackets either to the differential centre or the floor pan and crossmember.

1. Install rear mounting bracket to rear cover and leave new bolts finger tight. Line up felt pen markings made while removing, tighten to torque specification.

\* This bracket must be parallel to the top mount surface and 56.7mm lower than top mount surface.

Remove rear mount attaching bolts and lower the centre differential no more than 75mm, while removing mounting bolts and mounting bracket.



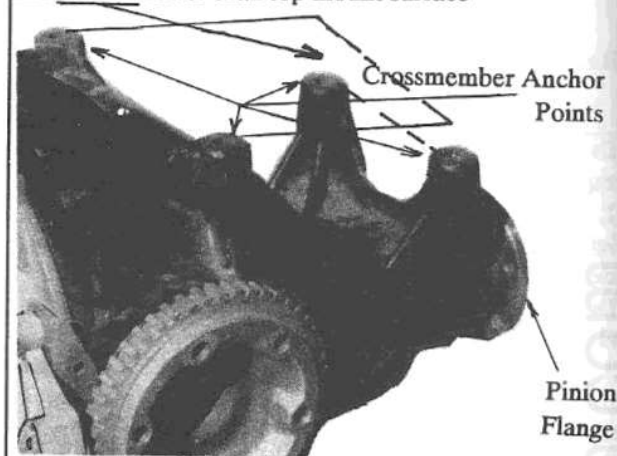
**Differential to Rear Crossmember Bolt specified torque: 85-105Nm**

2. Lift differential assembly on jack fitting the assembly to the crossmember. Line up felt pen markings made while removing, tighten to torque specification.

**Rear Crossmember Front Mounting Bolt specified torque : 125 Nm plus 30-45 degrees**

3. Lower rear of assembly to allow access to rear mounting bracket to rear cover bolts. Check tighten new bolts to the correct torque specification. Vehicle underbody surface should be parallel to rear crossmember.

This bracket must be parallel to the top mount surface and 56.7mm lower than top mount surface



**Rear Mount To Rear Cover bolt torque spec: 95-105 Nm.**

4. Lift differential centre and rear crossmember assembly until rear mount contacts vehicle underbody. Line up felt pen markings made while removing, tighten to torque specification.

**Rear Mount To Floor Pan bolt torque spec: 30-40 Nm**

\* It is important to align rear mount with previously made marks to ensure rear end 'toe in' setting is maintained.

If rear mount alignment was not marked before removal, it will be necessary to check rear wheel alignment.

5. Replace the exhaust system from the rear of the catalytic converter

6. Replace differential breather hose to differential housing.

## Problem Diagnosis

### Inspect for Faulty Shock Absorber.

#### Quick Test

Push down and bounce on each corner of the vehicle 2-3 times and check for result.

\* The vehicle should quickly return to the original position with a movement up and settle down, if not the shock absorber will need to be replaced.

## REAR SUSPENSION

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- \* If the vehicle keeps bouncing or rocking for more than 2-3 movements of the vehicle, replace shock absorbers.
- \* If the vehicle has very little resistance when pushing down or bottoms suddenly, replace the shock absorber.
- \* If there is a squalishing noise of fluid passing through a valve when trying to bounce the vehicle, replace the shock absorber.

Bench Test with Shock Absorber in a Clamp or Vice

- \* While pushing the shock absorber, ensure that the pull throughout the stroke is even, and there is no abnormal resistance or noise.
- \* Push the shock absorber fully and release it. Check that it returns at a constant speed throughout.

## Problem Diagnosis.

### Problem: Wanders/pulls !

Possible Causes & Remedies:

- \* Tyres worn or improperly inflated. Remedy- Replace tyre or inflate tyres to proper pressure.
- \* Wheel alignment incorrect. Remedy- Inspect front wheel alignment.
- \* Wheel bearing worn. Remedy- Replace wheel bearing.
- \* Front or rear suspension parts loose or broken. Remedy- Tighten or replace suspension parts.
- \* Steering linkage loose or worn. Remedy-Tighten or replace steering linkage.
- \* Steering gear out of adjustment or broken. Remedy- Adjust or repair steering gear.

### Problem: Bottoming !

Possible Causes & Remedies:

- \* Vehicle overloaded. Remedy-Inspect loading.
- \* Shock absorber worn out. Remedy-Replace shock absorber.
- \* Springs weak. Remedy-Replace spring.

### Problem: Sways/pitches !

Possible Causes & Remedies:

- \* Tyres improperly inflated. Remedy-Inflate tyres to proper pressure.
- \* Stabiliser bar bent or broken. Remedy-Examine stabiliser bar.
- \* Shock absorber worn out. Remedy-Replace shock absorber.

### Problem: Front Wheel Shimmy !

Possible Causes & Remedies:

- \* Tyres worn or improperly inflated. Remedy-Replace or inflate tyres to correct pressure.

- \* Wheels out of balance. Remedy-Balance wheels.
- \* Shock absorber faulty. Remedy-Replace shock absorber.
- \* Wheel alignment incorrect. Remedy-Inspect front wheel alignment.
- \* Wheel bearings worn. Remedy-Replace wheel bearings.
- \* Ball joints or bushings worn. Remedy-Examine ball joints and bushings.
- \* Steering linkage loose or worn. Remedy-Tighten or replace steering linkage.
- \* Steering gear out of adjustment or broken. Remedy-Adjust or repair steering gear.

### Problem: Abnormal Tyre Wear !

Possible Causes & Remedies:

- \* Tyres improperly inflated. Remedy-Inflate tyres to correct pressure.
- \* Shock absorbers worn out. Remedy-Replace shock absorber.
- \* Wheel alignment incorrect. Remedy-Check wheel alignment.
- \* Suspension parts worn. Remedy-Replace suspension parts.

### Problem: Rear wheel tramp!

Possible Causes and Remedies:

- \* Wheels and tyres out of balance.
- \* Rear shock absorbers operating incorrectly or unevenly, leaking fluid or inoperative. Remedy - Check operation and replace components as necessary.

## Specifications

### Conventional Differential

#### Rear Springs.

|                                | length | ID code |
|--------------------------------|--------|---------|
| V6 & V8 Sedan Standard Susp.   | 370mm  | XS      |
| V6 & V8 Sedan FE2 Susp.        | 336mm  | XM      |
| V6 & V8S' Wagon Standard Susp. | 378mm  | XR      |
| V6 & V8S' Wagon FE2 Susp.      | 364mm  | YB      |

#### Rear Shock Absorbers

|                           | ID code |
|---------------------------|---------|
| V6 Sedan Standard Susp.   | KG      |
| V6 Sedan FE2 Susp.        | GY      |
| V6 Sedan V5W Susp.        | KA      |
| V8 Sedan Standard Susp.   | KG      |
| V8 Sedan FE2 Susp.        | GY      |
| V8 Sedan V5W Susp.        | KA      |
| V6 S'Wagon Standard Susp. | GN      |

