

## REAR SUSPENSION - LIVE AXLE

There are two types of axle suitable for the Caterham Seven, the rear wheel drive Ford Escort and the Morris Marina or Ital. Neither of these is available through Caterham Cars, although we can supply spare parts for both axles.

To reiterate the points stated earlier in this manual, we recommend the Marina/Ital option which has been the most recent Caterham specification until its supersession by the De Dion.

Either axle is readily available second hand, although the ideal Escort axle is that fitted to the RS 2000 which is not only stronger but provides larger brake drums and a 3.54 final drive ratio. It is also difficult to obtain!

The best Marina/Ital axle is that from the 1700cc, 1800cc or 2000cc versions which has a 3.64 final drive ratio.

If you obtain an axle from a car breaker, much heartache may be avoided by exchanging it for a reconditioned axle. 'Exchange and Mart' provides a plentiful source of reconditioners.

### 8.1. Preparation of Axle

1.1 Either axle should be drained, thoroughly cleaned and your name painted on the casing before being brought down to Caterham to have the suspension mountings and strengthening

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plate welded on. Note that the Escort axle will also need to be dismantled to a bare casing, with differential, halfshafts, hubs and brakes removed before it can be modified.

1.2 It takes about three weeks to modify your axle and when collected from Caterham, it will need to be painted prior to assembly into the car.

Hammerite is ideal for this purpose since it needs no primer and provides a surface well able to sustain life under the car.

1.3 For either axle we recommend that you use new wheel cylinders and brake shoes and that the handbrake mechanism and brake adjusters are thoroughly overhauled.

### 8.2. Assembly of Axle before Installation

The miscellaneous kit contains all the parts necessary to install the axle into the Seven, and although it is possible to fit the axle into the car first, the following tasks are considerably easier if the axle is out of the car.

2.1 Fit the hydraulic brake pipes to the axle bending to the correct shape as you do so. The long pipe provided in the kit fits between the wheel cylinders and follows the contours of the axle.

The short pipe fits to the offside (driver's side on RHD cars) wheel cylinder and should be bent so that its input end finishes

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adjacent to the mounting provided for the flexible hose. Drill the axle brace to accept the black plastic clips which secure the pipes in place.

Each wheel cylinder is provided with an input and a bleed hole. The offside cylinder dispenses with the bleed nipple and the pipe running across the axle should be connected into the upper hole in the cylinder from which the nipple has been removed.

The nearside cylinder retains its bleed nipple in the upper hole of the cylinder and is used to bleed the entire rear half of the brake system.

2.2 Attach the handbrake strap and its backplate to the bracket provided on the nearside of the axle using two 1/4" bolts, washers and nylocs. Fit the long handbrake rod to this strap with a nut each side of the mounting hole, after passing it through the mounting provided on the axle brace, and attach the other end to the handbrake lever with a clevis pin and lock in place using a small split pin. (see diagram 8.2.2.)

2.3 The handbrake cable can now be fitted with its outer casing located into the handbrake strap and the inner cable attached to the nearside brake lever with a clevis and split pin. Leave the adjustment slack for the time being. (See diagram 8.2.2. for clarity).

2.4 Fit the plastic axle breather to the axle casing in the threaded hole provided.

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### 8.3. Installation of Axle and Rear Suspension

3.1 Hang the coil spring/damper units from the upper mountings provided on the chassis noting that there should be a washer/rubber bush/washer combination both above and below and that there are two 3/8" UNF nuts on each damper.

Do NOT fully tighten these at this stage.

3.2 Using the long 1/2" x 4<sup>1</sup>/<sub>2</sub>" bolts, washers and nylocs, fit the bottom of the dampers to the axle noting that the adjusting screws should face to the rear of the car. The axle should now be suspended by the damper units.

3.3 Attach the radius arms to the outboard end of the same bolt ensuring that there is a plain washer either side of the bush. Secure with the nyloc nut but do not fully tighten at this stage.

3.4 Attach the forward ends of the radius arm to the chassis using the 3/8" x 3<sup>1</sup>/<sub>4</sub>" plated button head bolts, washers and nylocs, passing these bolts outward from the cockpit. Again, do NOT fully tighten yet.

3.5 Fit the 'A' frame to the chassis locating its forward end inside the main lower chassis tubes at the front of the rear axle bay, noting that the central mounting at the rear should face upward.

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This 'A' frame locates the axle laterally and it is important that it is fitted centrally so as to ensure that the axle is also centred. Attach to the chassis using the 1/2" x 4" bolts, washers and nylocs, passing these in from the outside, but centre using the thin 7/8" external diameter washers provided. This should also be used to eliminate any side to side movement of the 'A' frame.

3.6 The 'A' frame is attached to the bracket welded onto the differential casing using a 1/2" x 2<sup>1</sup>/<sub>2</sub>" bolt and nyloc and the split metal/rubber bush. The two halves of the bush are pressed into the socket provided in the 'A' frame and then captured within the axle bracket.

This job can be a little difficult since the two halves of the bush need to be compressed together in order to make it fit. We suggest you coat the outside of the bushes with rubber lube to make compression easier and if it still proves difficult, use a couple of strips of thin aluminium or steel in order to shoehorn the bush into place with either a jack or a soft hammer.

Secure with the bolt and nyloc, but do not fully tighten yet.

### 8.4. Final Tightening

4.1 Before finally tightening the axle and rear suspension mountings, it is advisable to have the car's weight supported by the axle as it would be when on the road in order that no

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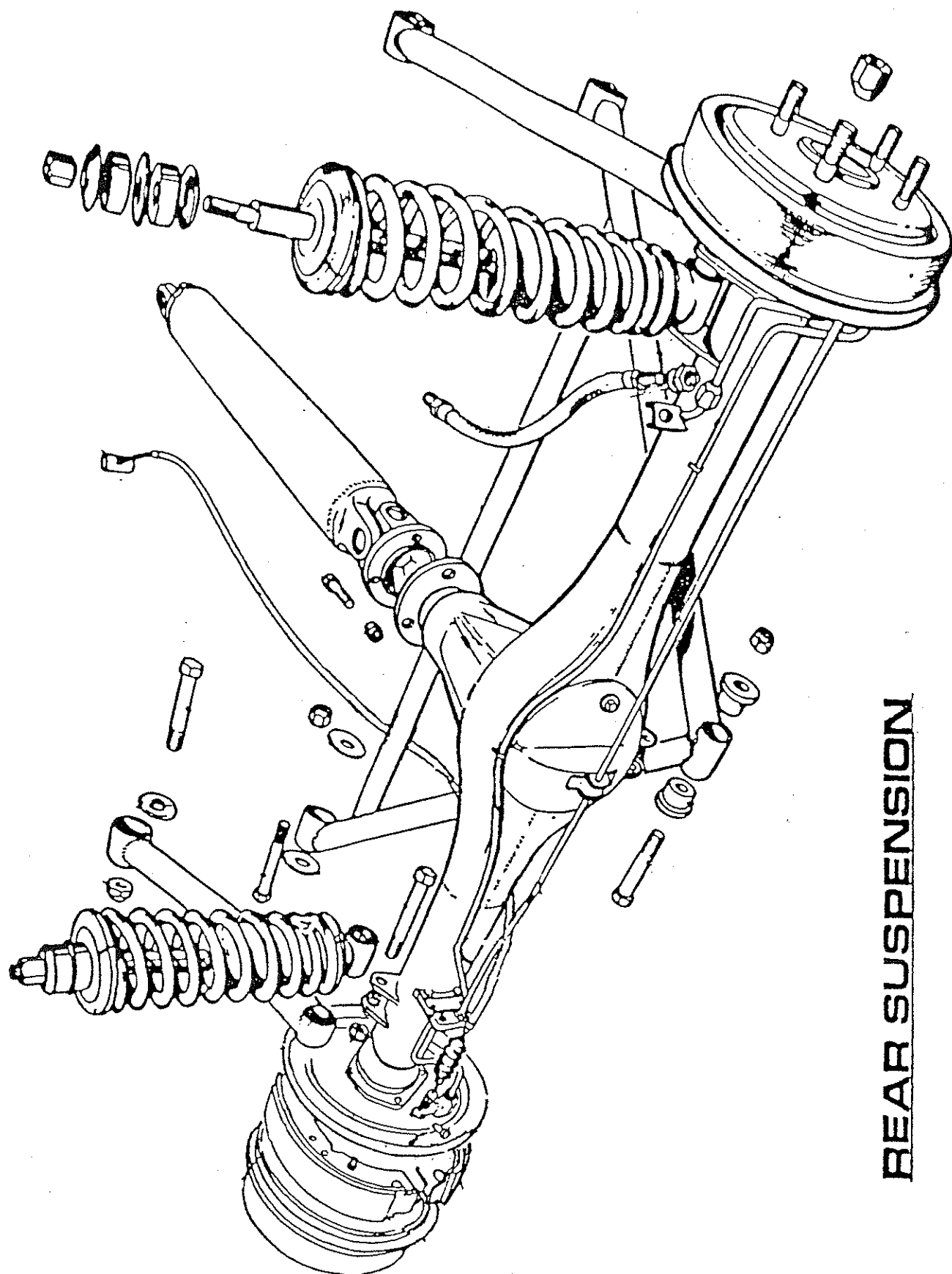
unwanted preloadings are present in the bushes. Axle stands are ideal for this purpose.

4.2 Tighten firstly the damper mountings to the chassis using the lower 3/8" UNF nut until the rubber bush assumes the same diameter as that of the washers holding it. Lock this nut with the second identical one and lastly place a black rubber cap over the protruding thread.

4.3 Tighten all the bolts securing the axle to the following torque settings. The 1/2" bolts should be tightened to 40 lb ft and the 3/8" bolts to 35 lb ft.

4.4 Finally, check the distance between the brake back plates and the lower chassis tubes on both sides. These dimensions should be equal within a tolerance of 3mm.

If they are not, and your back plates are not distorted, the 'A' frame centering can be adjusted by moving spacing washers from one side to the other.



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NB: Axle brace omitted for clarity

## Hand Brake Cable Installation

Live Axle

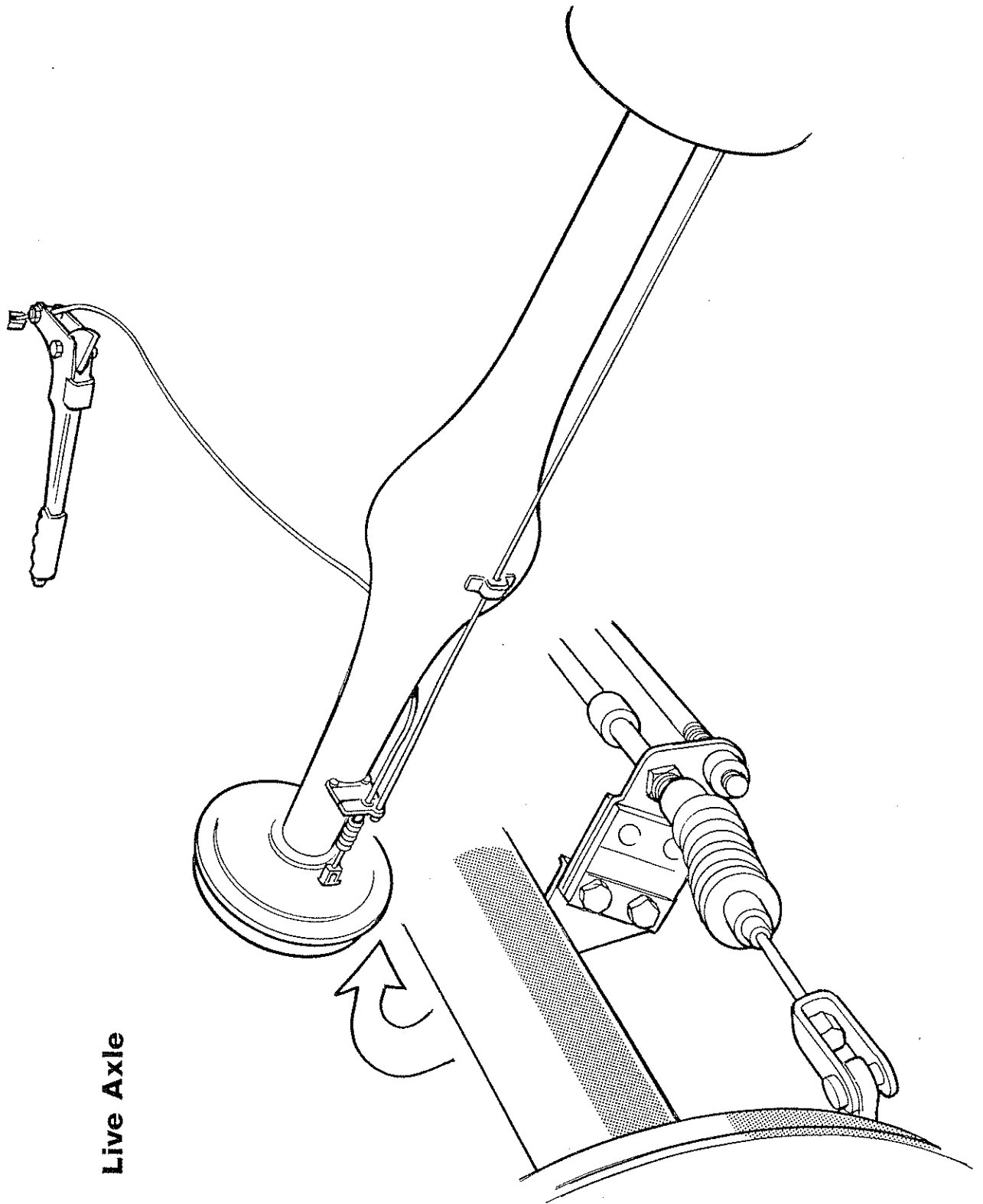


Fig. 8.2.2