SECTION 6

STEERING

Contents

6.1 Standard Rack Fitment

1.1 The steering rack (steel bodied) is held in position by two aluminium mounting blocks which are drilled as pairs. These blocks clamp the rack in position as they are bolted in place on the front rack platform. Initially, therefore, clamp the rack into place loosely using the 1/4" x $2^3/4$" bolts, nylocs and washers ensuring that a washer is placed between the steel bolt heads and the aluminium blocks and the aluminium spacers (provided with Classic live axle cars only) are fitted between the blocks and the rack platform, 1/4"x 3" bolts should be used. The rack will be tightened later when the column is correctly positioned.

1.2 Note that both of the blocks are drilled to take a grub screw and locking nut. This prevents the rack from moving in its mountings and should be left loose for the time being. The steering rack is unique to the Seven and cannot be substituted.

6.2 Aluminium Quick Rack

2.1 When a quick rack is fitted, which can be recognised by the Caterham script cast into the aluminium casing, grub screws are not required to locate the rack. The rack clamps supplied will not have any provision for grub screws. See figure 6.2

2.2 When fitted on live axle cars, two 1/8" rack clamp spacers will be required under each rack clamp to raise the rack.

6.3 Steering Column

3.1 The upper steering column slides over the lower column enabling a small amount of adjustment to suit the individual driver, and also prevent it moving backwards in an accident.

3.2 In view of the width of Rover and Vauxhall engines and for ease of assembly with Ford engines, the steering column should not be fitted until after the

engine has been installed as otherwise it is difficult to install the right hand side engine mounting.

3.3 All chassis are now fitted with an enclosed pedal box assembly through which the steering column passes and since this box is sealed to prevent water ingress, the steering column passes through two rubber grommets. It will be necessary to remove the lid covering this before the lower column can be fitted. (see Fig 6.3)

3.4 Supplied with your basic kit is a flat aluminium plate with a large rubber grommet in the middle. This is used to seal the hole in the front of the footbox through which the steering column passes. Before fitting the lower column therefore the plate should be slid over it, but not secured to the front of the footbox at this stage. The inside of the grommet should be smeared with rubber lube to both prevent wear and ensure water tightness.

3.5 Similarly, a folded aluminium box fits over the steering column at the back of the pedal box containing a second identical grommet which should also be smeared with rubber lube. Again do not secure at this stage (see Fig 6.3).

3.6 Align the rack and column to clear the engine oil filter assembly before securing these plates in place. Both plate and box are pre-drilled therefore the only drilling needed is into the front and top of the footbox/pedalbox. Use the rubber grommets to ensure the column passes through the plates centrally and mark and drill 5/32" holes in order to pop-rivet them into place, using silicone sealant to ensure waterproofing. In order to drill the holes for fixing the rear box a right angled drive drill will be necessary, although as a temporary measure the sealant on its own will hold the box in place.

3.7 The lower half of the column should be positioned first. Slide the column into position through the dashboard, under the brake master cylinder, through the pedal box and down towards the rack, splined end downwards.

3.8 Attach the universal joint to the splined end of the column noting how the clamping 5/16" x $1\frac{3}{8}$" bolt and nyloc fit into the cutaway provided. Fit the lower end of the universal joint onto the rack, again clamping with the bolt and nyloc and tighten both bolts.

3.9 The upper half of the column can now be fitted, but a small amount of preparation is advised first. The column is located into a tube within the dashboard by two rubber/metal/nylon bushes. In order to ensure free movement, it will be helpful if you polish the column where it locates into the bushes with some fine wet and dry paper. The lower bush will already be located in the chassis but the upper

one has to be fitted and this should be a close, but not overtight, fit onto the column, which is where the polishing helps.

3.10 Slide the upper half of the column down through the dashboard and telescope it over the lower half. The two halves are held together by the locking clamp. Tighten the two outer 1/4" x 1 1/2" bolts first with the grub screw loose and then tighten the grub screw with an allen key to eliminate any free play in the steering. Lock the assembly with a 7/16" locknut.

3.11 Fit the upper bush into the locating tube under the dashboard, noting how the rubber bumps on the bush locate it. If the rubber is lightly greased, it should push into place easily, but if trouble is encountered, it will help to chamfer off the inner edge of the rubber bumps with a sharp knife.

6.4 Tightening and Alignment

4.1 Fit the steering wheel onto its centre boss using the nuts and bolts provided. Temporarily fit the wheel onto the splined end of the upper column and check that the boss does not foul the dashboard. Clearance can be adjusted by slackening the clamp and sliding the two halves of the column relative to each other.

4.2 The track rod ends can now be fitted to the rack along with their locking nuts. These will need to be painted with Hammerite or similar first and as an approximate guide should be screwed on by 22 turns each in order to get the tracking roughly correct. The outer ball joints should now be attached to the steering arms and the 9/16" AF nuts tightened to 20-25 lbft, noting that the threaded ends face downward onto the arms.

4.3 Turn the steering from lock to lock and check that the universal joint does not foul any part of the chassis and that the tyres do not foul the body panels. If it does, adjust the position of the rack accordingly. At the same time you should centralise the standard type rack in the chassis as closely as possible by measuring the gap between the tyre and the bodywork on full lock either side. This process is not necessary with a quick rack.

4.4 When you are happy that the rack is correctly positioned, tighten the bolts holding the mounting blocks. Please note that when the engine is installed there is not much clearance between the lower column and the oil pump housing on Ford engines. We advise that final tightening be left until it can be easily checked.

N.B. When cycle wings are specified a different rack has to be fitted to prevent the wings from fouling the bodywork. This rack gives 2 1/4 turns lock to lock as against 2 3/4 turns of the normal version and necessarily a poorer turning circle. Quick racks are suitable for both flared and cycle wing cars

4.5 In addition, to finally secure the standard rack, remove the grub screws and locking nuts from the mounting blocks and drill slight depressions in the rack so as to give the grub screws, when fitted, a good key to prevent the rack either moving from side to side or twisting. Refit the grub screws, tighten with a 2.5 mm allen key and the lock nut with an 8mm spanner, taking care not to overtighten.

4.6 With the engine installed and the wheels on the ground, the tracking can be set by slackening the lock nuts, rotating the track rods and retightening the lock nuts again. Make certain that the adjustment is made at both ends so that the same amount of thread is visible on each track rod.

4.7 Correct wheel alignment should be 20 minutes toe in, see rear of front suspension section.

6.5 Final Assembly

5.1 Before fitting the steering wheel, it will be necessary to fit the horn contact ring into the top of the steering column bush in the chassis. This is an interference fit and will need to be gently tapped into place. The electrical lead from this ring must be connected to the black/purple lead in the wiring loom adjacent to the steering column. This is not used with Momo or Racetech wheels, which have a pushbutton on the dash (see section 9.7)

5.2 Attach the steering wheel to its boss using the small screws and nuts provided taking care not to damage the front faces of the screw heads or to scratch the black anodised finish on Motalita wheels. Slide the horn contact pencil into the hole in the boss.

5.3 If a Momo or Racetech wheel has been specified the boss needs to be fitted to the column before the wheel is fitted. Momo wheels use 6mm x 16mm panhead allen bolts and Racetech wheels use 6mm x 10mm countersunk allen bolts.

5.4 Establish the straight ahead position and fit the steering wheel onto the column over its splines. Lock this in position with the 1/2" half nyloc nut and washer and tighten firmly. Connect the wire from the horn contact pencil to the underside of the spring loaded steering wheel centre cap and finally clip the centre cap into position.

5.5 Before driving the car on the road, recheck the tightness of all nuts and bolts in the steering system.

Bolt Size	Usage	Torque
1/4"UNF x 2 3/4"	Steering rack clamps	5-8 lbft
5/16"UNF x 1 3/8"	Column U.J. bolts	12-15 lbft
1/4"UNF x 1 1/2"	Column clamp bolts	8-10 lbft
9/16" nyloc	track rod end to upright	20-25 lbft

Table 6.1 Steering Component Torques

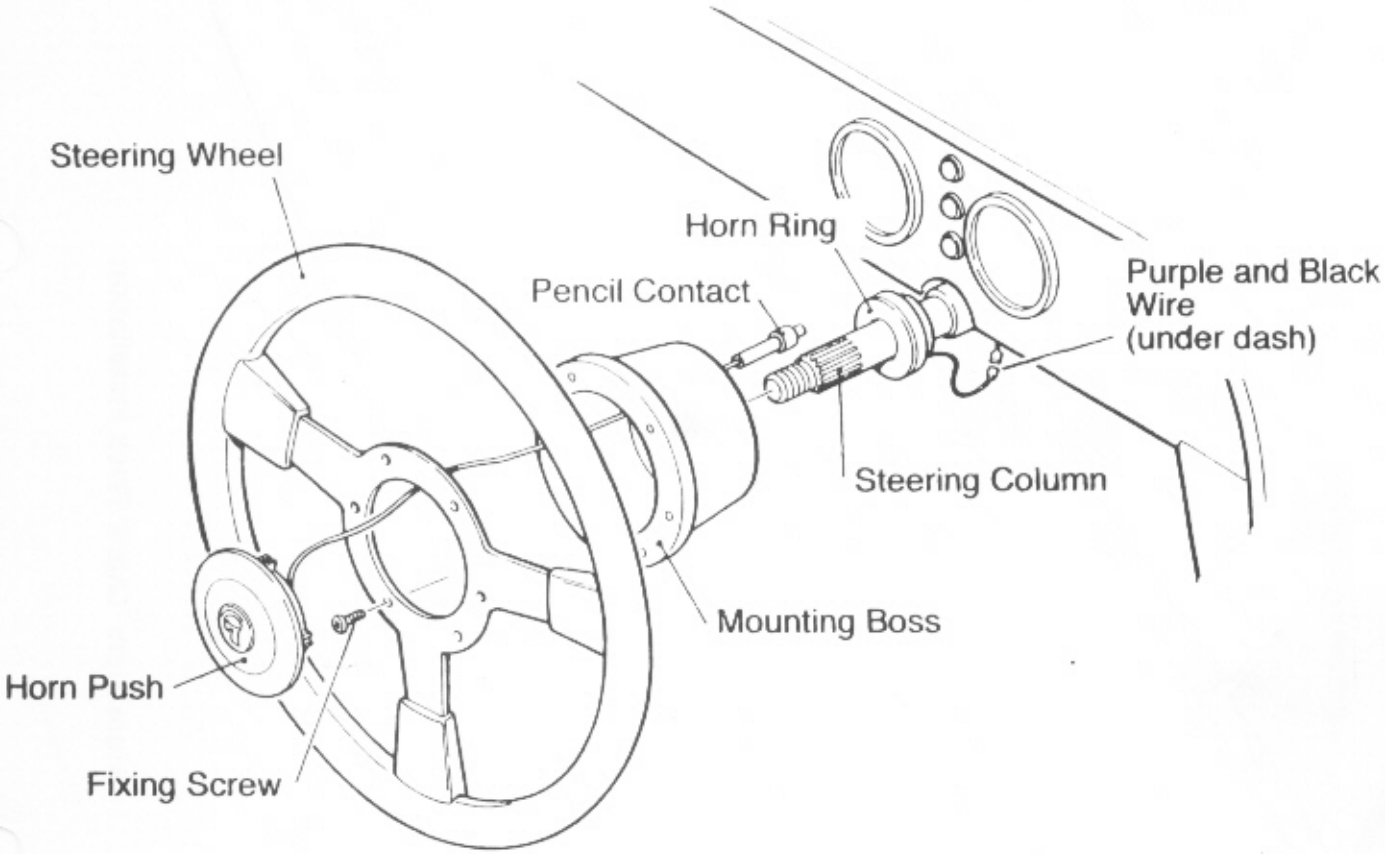

Figure 6.5 Horn Push - Mountney and Motalita Wheels

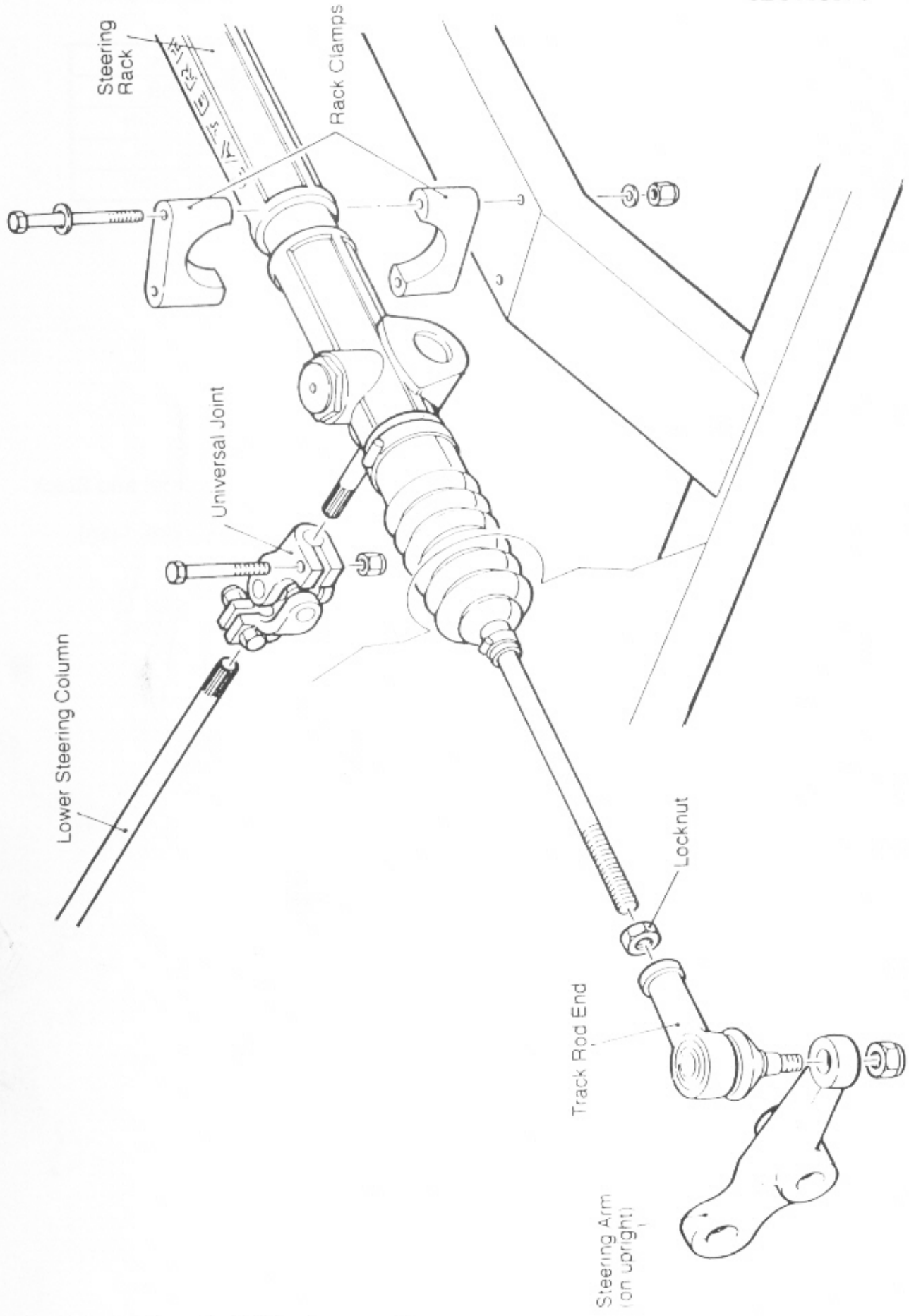

Figure 6.2 Quick Rack Assembly (De Dion)

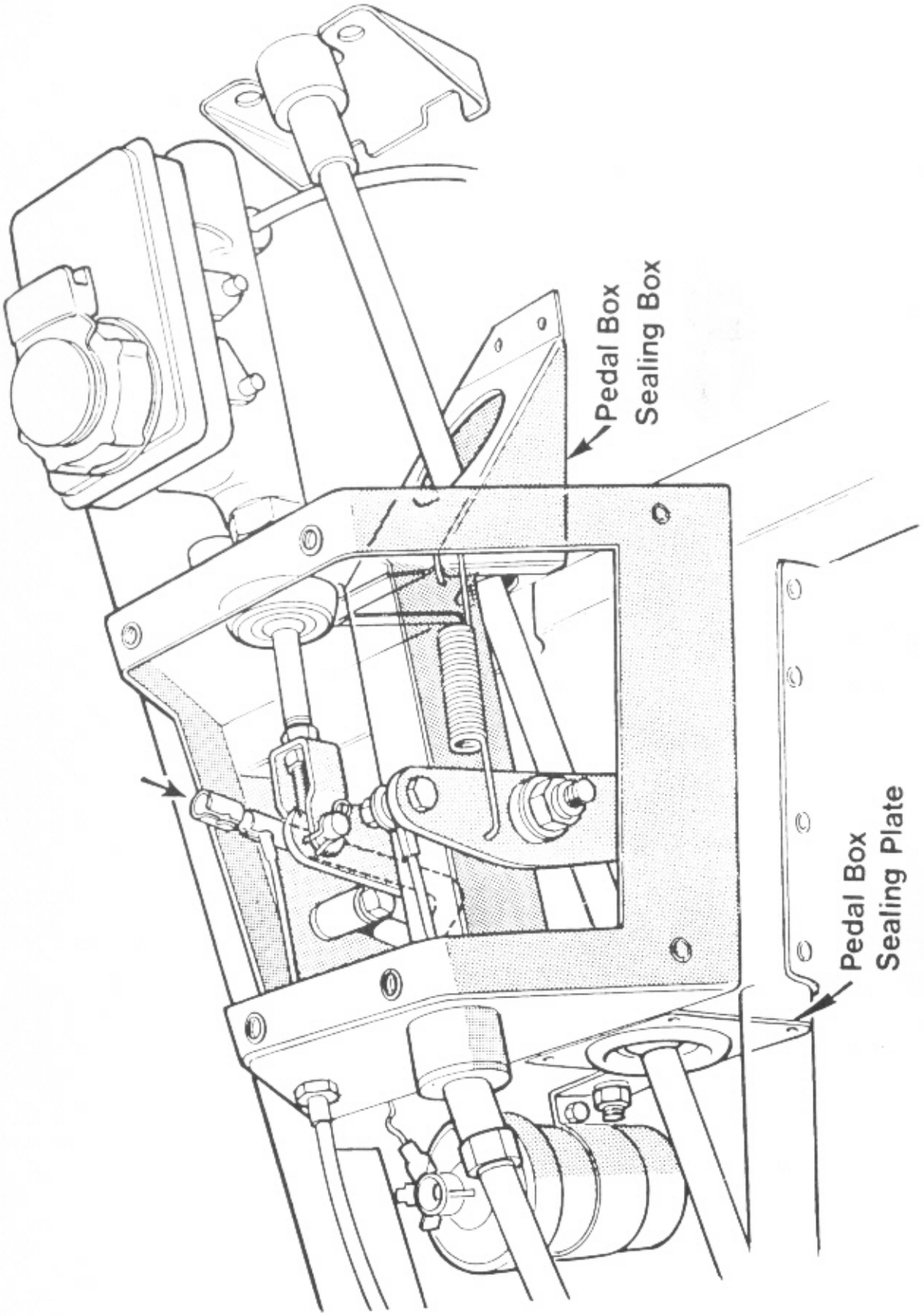

Figure 6.5 Steering Column Through Pedal Box