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CHAPTER 3

OVERHAUL

SECTION 1 — GEARBOX — TO REMOVE AND FIT

Gearbox — To remove

S2 and S3 cars

Run the car over a pit or on to a ramp; this is necessary to enable the gearbox to be lowered when disconnected from the engine. To prevent the car from moving, chock both front wheels and one of the rear wheels with wooden blocks.

Jack the other rear wheel clear of the ground so that the propeller shaft can be rotated.

Disconnect the battery.

Remove the setscrews and washers securing the inner left and inner right-hand undersheets to the chassis frame; remove the undersheets (see Fig. 38).

Gearbox and throttle controls — To remove

S2 and S3 cars

Note Care must be taken not to bend or alter the lengths of any of the control rods when they are being removed.

On left-hand drive cars, to remove the controls remove the nut and washer retaining the rubber mounted isolating stay. Withdraw the isolating stay from its anchor bolt fitted forward of the valve box cover.

Disconnect the ball socket from the selector lever on the side of the gearbox. The gearbox control assembly can then be lifted clear on to the chassis frame.

Release the throttle valve lever pinch bolt and withdraw the lever from its shaft.

Remove the bolt, washers and nut at the lower end of the connecting link.

Slacken the pinch bolt and adjusting screw at the upper end of the throttle control rod, then remove the ball socket from the control rod lever mounted on the engine.

Remove the split pin, castellated nut and washers securing the throttle levers to the bell housing.

The throttle levers can then be lifted clear of the gearbox without further dismantling.

On right-hand drive cars, remove the gearbox control cross-shaft by disconnecting the four ball joints.

Unscrew the setscrews securing the gearbox control assembly stay to the chassis right-hand side member.

Remove the nut, bolt, washers and distance tube from the gear selector control pivot; remove the control assembly.

Disconnect the T.V. rod from the T.V. lever by removing the split pin and clevis pin.

Disconnect the coupling rod from the throttle control cross-shaft lever by removing the split pin.

Slacken the pinch bolt and adjusting screw at the lower end of the throttle control rod.

Remove the control rod from the throttle lever, mounted on the bell housing.

Remove the nut, bolt and washer at the cross-shaft bracket; disconnect the rubber mounted connecting link.

Brake control rods and servo motor — To remove

S2 and S3 cars

Refer to Figure 39 for identification of the control rods and levers.

On left-hand drive cars, remove the intermediate rod (12) as follows

Remove the split pin and clevis pin from the bell crank lever fitted on the chassis left-hand side member.

Slacken the lock-nut and unscrew the intermediate rod from the jaw (13) fitted to the bell crank lever on the chassis right-hand side member; the lock-nut must be retained in position approximately relative to the intermediate shaft to facilitate adjustment on re-assembly.

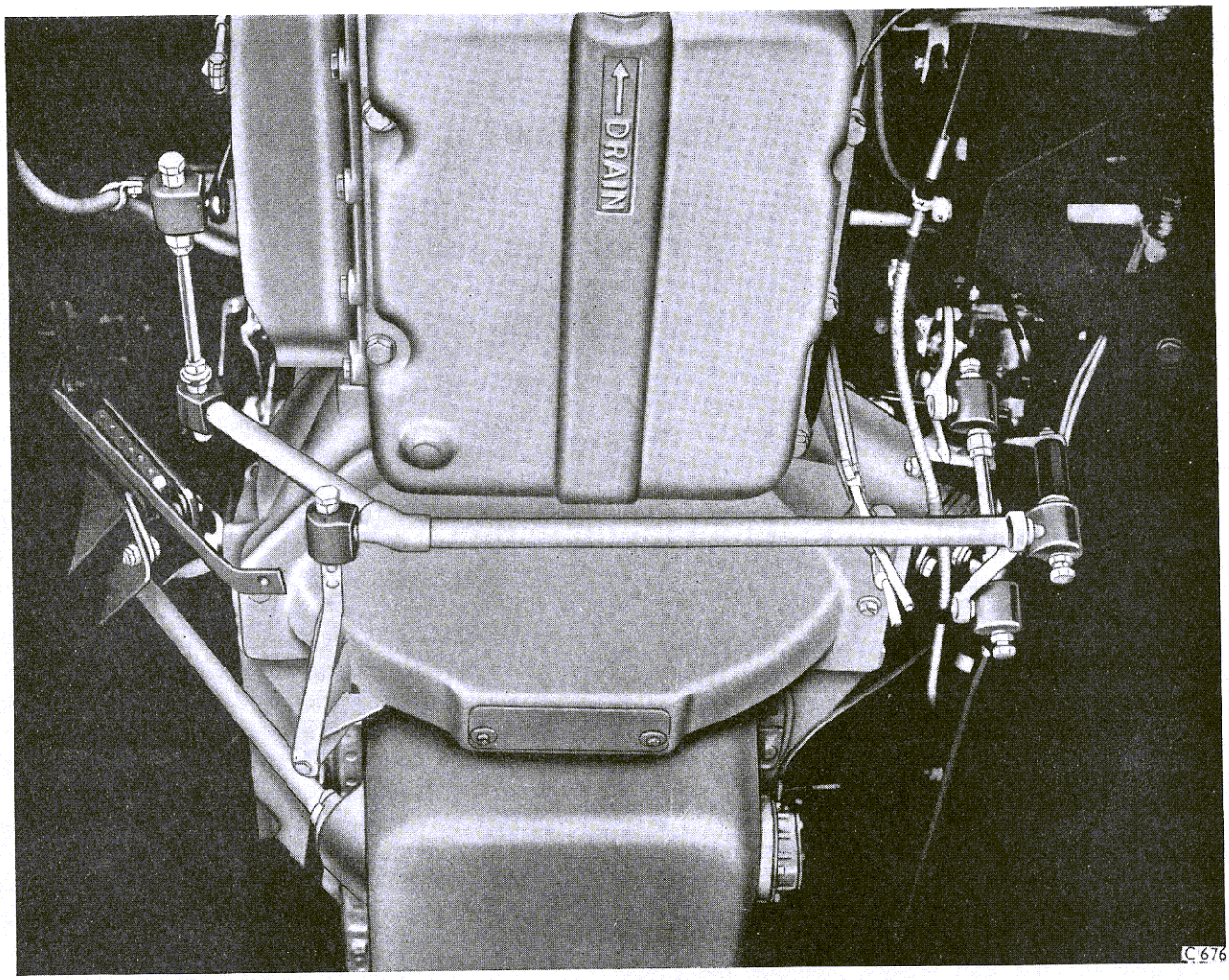

Fig. 38 Undersheets removed

On right-hand drive cars, unhook the pull-off spring (9) from the on-stop bracket (6).

On all cars, uncouple the hand brake cable from lever (3) by removing the split pin, washer and clevis pin.

Remove the 2 B.A. nut and bolt securing the hand brake cable clip to the engine right-hand rear mounting, then lift the cable clear of the servo motor and adjacent components.

Disconnect the brake rod (7) as follows

Remove the setscrew retaining the locking plate on the rear end of the brake rod (7) and remove the locking plate. Withdraw the clevis pin and lift the brake rod clear of the servo levers.

Disconnect the rear brake linkage control rod (4) at the outer servo lever (5) by removing the setscrew retaining the locking plate and withdrawing the clevis pin. Lift the control rod clear of the servo levers.

Disconnect and remove the forward and reverse brake rods (fitted between the servo levers and the master cylinder operating lever) as follows

Remove the setscrews retaining the locking plates on the forward ends of the upper and lower brake rods; remove the locking plates and withdraw the clevis pins.

Remove the nut, bolt, washers and distance pieces securing the rear end of each of the brake rods to the

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master cylinder operating lever, noting the positions of the distance pieces.

Scribe a mark showing the alignment of the chassis frame and the on-stop bracket (6). Remove the nut and bolt from the front of the on-stop bracket, slacken the rear nut and bolt and swing the on-stop bracket clear of the servo levers.

Remove the setscrew securing the servo motor to the gearbox, then remove the servo motor complete with sealing washer.

Engine and gearbox components — To remove

S2 and S3 cars

Release the worm drive clip securing the rubber hose to the engine induction manifold and detatch the hose. Unscrew the two nuts and bolts securing the air cleaner to the bonnet, then remove the air cleaner.

Uncouple the two fuel breather pipes at the unions adjacent to the distributor.

Remove the setscrew and clip from the rear of the crankcase.

Remove the clip from the bell housing bottom cover and withdraw the two fuel breather pipes.

The following two paragraphs apply to 'S2' cars only.

Remove the setscrew securing the distributor wiring clip to the left-hand cylinder head and move the leads aside to gain access to the crankcase breather.

Remove the two setscrews securing the crankcase breather to the crankcase, then remove the two setscrews securing the breather pipe assembly to the flywheel bottom cover; withdraw the breather pipe assembly from beneath the car.

Remove the six setscrews retaining the flywheel bottom cover and remove the cover.

Remove the gearbox drain plug and aluminium sealing washer; drain the fluid into a suitable container then refit the plug.

Rotate the engine flywheel to bring the fluid coupling drain plug to its lowest position, then remove the plug and sealing washer. Drain the fluid from the coupling into a suitable container, then refit the drain plug.

Disconnect the speedometer drive at the gearbox end.

Remove the four nuts securing the propeller shaft to the gearbox output flange. (To prevent the propeller shaft from turning whilst unscrewing these nuts, select Reverse gear by moving the selector lever on the gearbox as far as possible towards the rear of the car).

Remove the split pin and castellated nut securing the propeller shaft centre bearing support bracket to the chassis frame; slide the shaft towards the rear of the car.

Disconnect the starter motor lead at the motor. Remove the three setscrews retaining the starter motor; remove the motor.

Remove the setscrews securing the fluid coupling outer cover to the engine flywheel, taking care not to misplace the balance weights (if fitted).

Remove the nuts, bolts and washers securing the engine rear mountings to the chassis frame.

Place a jack under the engine sump, using a suitable block between the jack head and the sump to spread the load. Raise the engine by means of the jack until the metal and bonded rubber plate can be removed from between each of the engine rear mountings and the chassis frame.

On some cars, metal packing pieces are fitted between the chassis frame and the mounting plates for alignment purposes; in these cases, the metal packings should be marked so that they can later be refitted in their original positions.

Remove the two nuts, bolts and washers securing each of the engine rear mounting blocks to the mounting brackets on the bell housing.

Remove the two setscrews and washers retaining each of the engine rear mounting brackets; remove the brackets.

Before finally disconnecting the gearbox from the engine, support the gearbox in a cradle attached to the lifting platform of a trolley jack (see Fig. 40).

With the gearbox supported in the cradle, remove the eight setscrews securing the bell housing and gearbox to the engine.

Carefully ease the gearbox away from the engine until the fluid coupling assembly is clear of the two dowels in the engine flywheel and the centre spigot is clear of the flywheel bearing. Note that two dowel pins in the bell housing joint face locate in holes in the rear joint face of the engine crankcase.

Remove and discard the joint fitted between the flywheel and the fluid coupling outer cover.

When the gearbox is fully withdrawn, lower it and remove it from beneath the car.

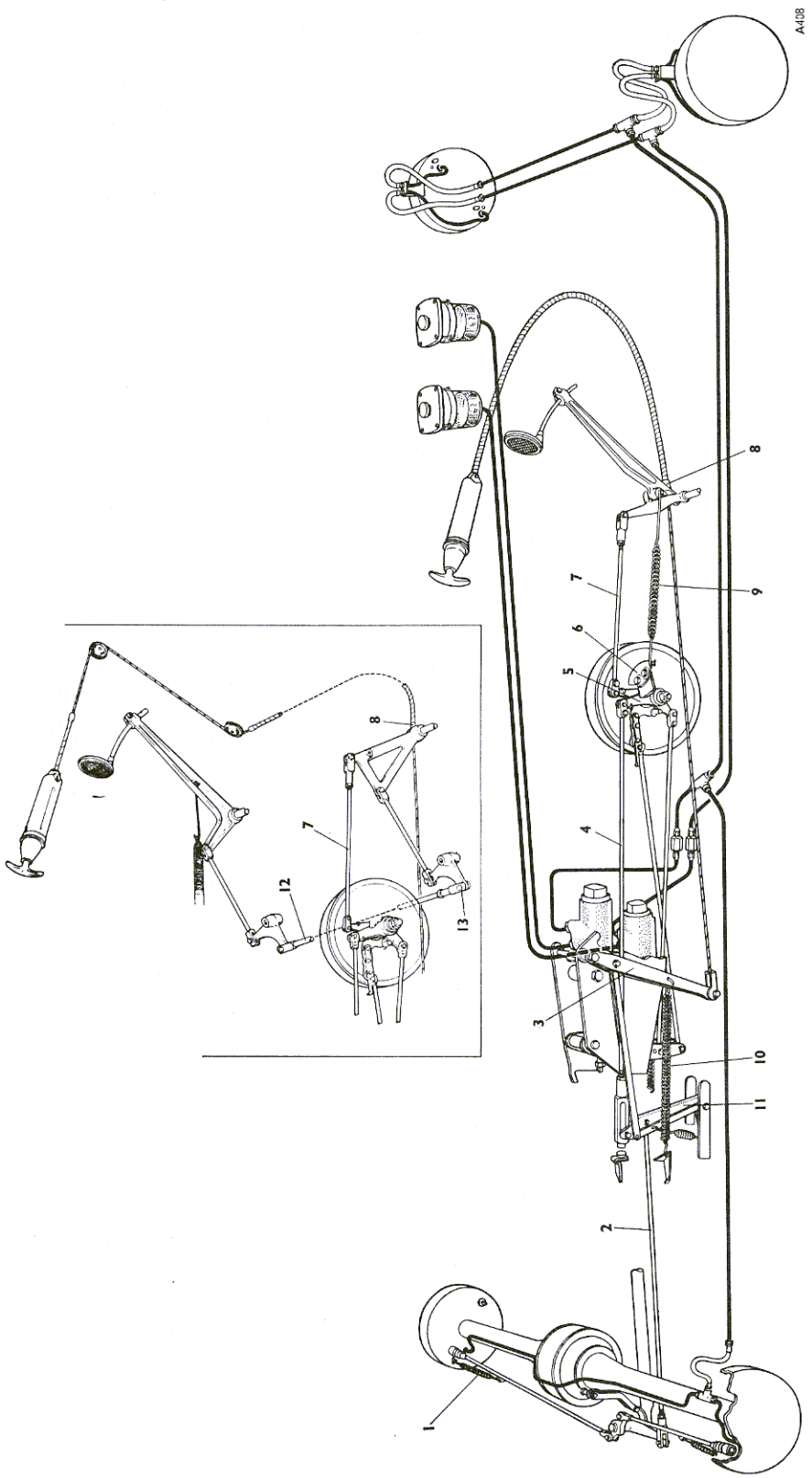

Fig. 39 Brake rod disconnecting points—'S' series cars.

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Notes on changing a gearbox or engine

S2 and S3 cars

A replacement gearbox is supplied less fluid coupling and bell housing. The fluid coupling outer cover is fitted to the engine flywheel for crankshaft balancing purposes therefore, when fitting a replacement gearbox, the bell housing, fluid coupling outer cover and the driving and driven torus member must be transferred from the old gearbox to the replacement unit. as described in 'Chapter 3—Section 2'.

If the gearbox is to be retained and the engine renewed, the fluid coupling outer cover must be retained with the engine flywheel with which it was originally balanced; remove the cover as described in 'Chapter 3—Section 2'.

In order to maintain a balanced assembly, it is important that the components of the flywheel assembly be kept together. Should it be necessary to renew a component such as the starter ring, a replacement unit may be fitted provided that the vibration characteristics prove satisfactory on engine and road tests.

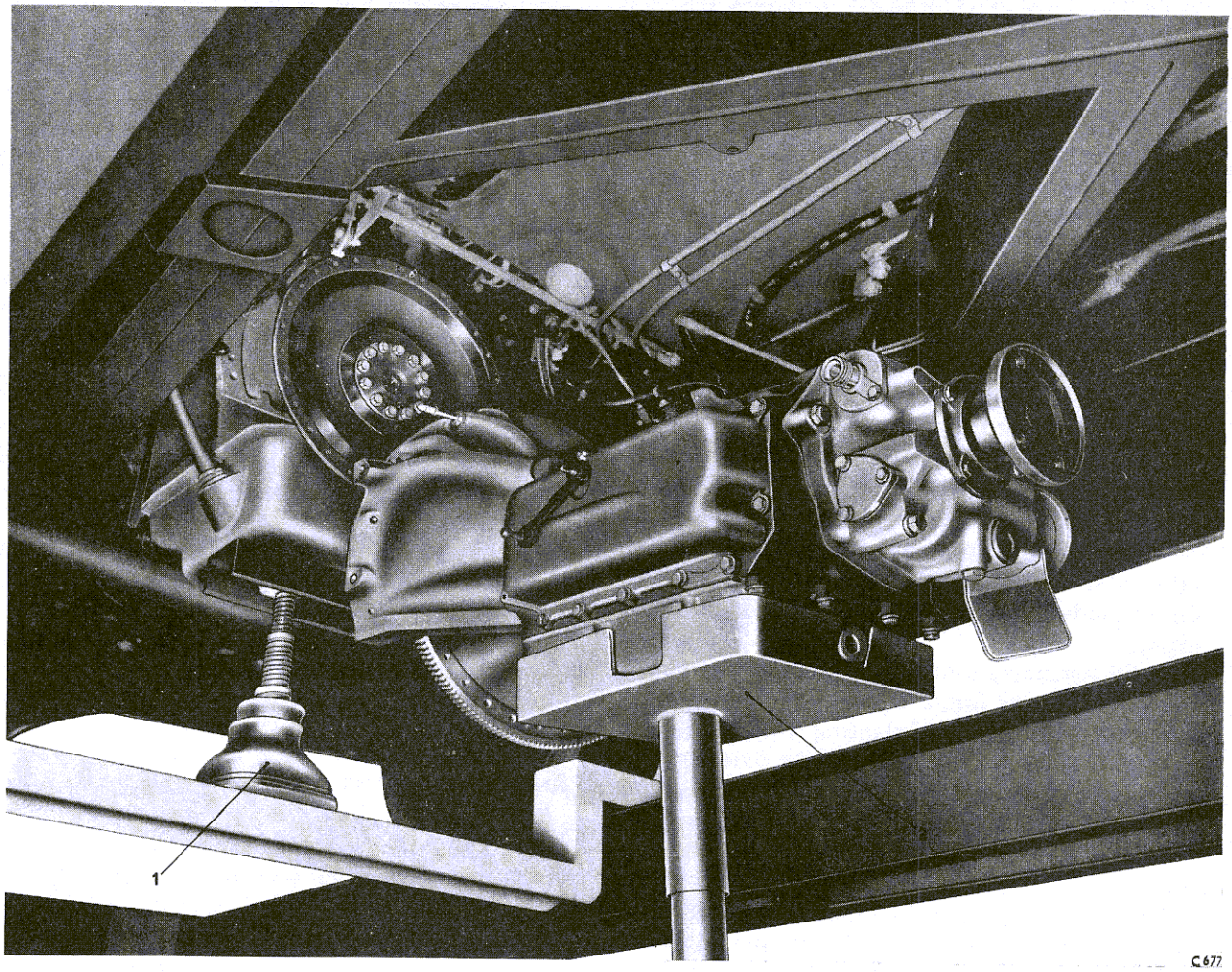

Fig. 40 Removing the gearbox

1 ENGINE SUPPORT JACK 2 TROLLEY JACK CRADLE

Gearbox — To fit

S2 and S3 cars

Assemble the fluid coupling as described in 'Chapter 3—Section 2'.

Fit the fluid coupling and gearbox drain plugs using new sealing washers. Care must be taken not to overtighten the plugs.

To ensure correct balance of the crankshaft assembly, the fluid coupling outer cover can be fitted to the engine flywheel in one position only, one dowel being larger than the other.

Ensure that the joint faces of the engine flywheel and the fluid coupling outer cover are clean and free from burrs. Smear a little petroleum jelly on to the joint face of the flywheel and fit a new gasket.

Rotate the flywheel until the small dowel and fouling pin are in the lowest position possible, then rotate the fluid coupling outer cover until the dowel sockets are aligned with the dowels.

Support the gearbox in a cradle attached to the lifting platform of a trolley jack, then raise the gearbox to a position in line with the engine. Ease the gearbox forward until the centre spigot is located in its bearing and the dowels in the bell housing and the engine flywheel are located in their respective sockets. Check that the flywheel gasket has not been disturbed, then fit two setscrews into horizontally opposed holes in the fluid coupling outer cover and flywheel; tighten them evenly.

Fit the eight setscrews securing the bell housing to the engine. Note that the two lower setscrews on the left-hand side and the lowest setscrew on the right-hand side of the bell housing are larger than the other five screws.

Fit the remaining torus cover setscrews and tighten them evenly to the torque figure shown in the 'Summary of Repair Data'. If balancing weights are to be fitted, they must be attached with the fluid coupling setscrews, paying particular attention to the numbers stamped on each weight and on the coupling cover.

Remove the cradle and jack from beneath the gearbox.

The gearbox and engine can then be manoeuvred as a unit to facilitate assembly of the rear mountings.

Fit each of the engine rear mounting brackets to the bell housing, then fit the mounting blocks to these brackets.

Fit one 'L'-shaped metal and bonded rubber plate between each of the engine rear mounts and the chassis frame; the upturned portion should face towards the front of the engine. If metal packing pieces were originally fitted under the engine rear mountings, ensure that they are refitted to the same mountings from which they were removed.

Fit the remaining components by reversing the procedure described for their removal, noting the following points.

Control rods and servo motor — To fit

S2 and S3 cars

When fitting the servo motor to the gearbox, ensure that the sealing washer and drive pins are correctly located before tightening the centre setscrew.

All control rod ends and pivot pins should be greased on assembly and the pivot pins locked with locking plates or with new split pins, as applicable.

When connecting the control rod between the upper servo lever and the lower connecting point of the master cylinder operating lever, the shorter distance piece must be fitted between the control rod and the right-hand member of the master cylinder operating lever (when viewed from the rear of the car). The longer distance piece must be fitted between the control rod and the left-hand member of the lever.

The control rod from the lower servo lever must be fitted to the upper connecting point of the master cylinder operating lever with the shorter distance piece between the control rod and the left-hand member of the lever; the longer distance piece must be fitted between the control rod and the right-hand member of the lever.

After fitting the servo motor and controls, check the adjustment of the servo as described in **Section G4 of TSD 729, S1 and S2 Workshop Manual. For S3 Cars see TSD 729 Workshop Manual — Supplement 2003.**

Breather pipes — To fit

S2 cars only

To simplify the fitting of the breather pipe assembly, slide the right-hand fuel breather pipe from the assembly clip.

Ensure that the joint face of the engine breather and its mating face on the crankcase are clean, then fit a new 'Klingerit' joint to the breather.

Working from beneath the car, fit into position the left-hand fuel breather and engine breather pipes.

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Similarly, position the right-hand fuel breather and slide it into the assembly clip adjacent to the flywheel cover. Connect the fuel breather pipe unions, then fit and tighten the setscrews securing the engine breather to the engine.

On S3 cars only fit the two fuel breather pipes by reversing the procedure given for dismantling.

Throttle and selector controls — To fit

S2 and S3 cars

Grease the control joints during assembly; they must be free without excessive movement.

On right-hand drive cars, assemble the gear selector control pivot as follows

Insert the pivot bolt through the chassis frame bracket from the outer side. Fit in the following order, one plain washer, distance piece, pivot bracket and second plain washer on to the bolt, then fit and tighten the nut. The pivot must be free but without excessive movement.

On all cars connect the remaining gear and throttle controls in the reverse order given for dismantling.

Control adjustment should be carried out as explained in 'Chapter 2 — Servicing — Controls — To adjust'.

Road test

S2 and S3 cars

Before testing the car, fill the gearbox with Automatic Transmission Fluid as described in 'Chapter 2 — Servicing — To drain and re-fill'.

Test the car on the road, the change points being carefully noted and compared with the change points table shown in 'Chapter 2 — Servicing'.

If correct automatic changes are not obtained after adjustment of the controls, it may be necessary to remove the sump and adjust the bands as described in 'Chapter 3—Section 6'.

When the automatic gear changes are obtained satisfactorily, check that there are no fluid leaks, then fit the undersheets.

Gearbox — To remove

S1 cars

The procedure for the removal and fitting of the gearbox on 'S1' series cars is similar to the description for the removal of 'S2' and 'S3' series gearboxes, therefore the following paragraphs will describe the operation briefly and the major differences in more detail.

Run the car over a pit or on to a ramp to enable the gearbox to be lowered on removal. Chock the front wheels and jack up one rear wheel to enable the propeller shaft to be turned.

Disconnect the battery.

Remove the undersheets.

Disconnect the selector controls.

Throttle controls — To remove

S1 cars

On right-hand drive cars disconnect the rod from the dynamo bracket lever to the right-hand gearbox cross-shaft lever.

On left-hand drive cars disconnect the rod from the accelerator pedal to the bell crank lever on the bell housing, also the rod from the bell crank lever to the left-hand cross-shaft lever.

Disconnect the hand brake cable at the lever adjacent to the brake master cylinder and tie the cable to a convenient point to keep it clear of the servo motor. Disconnect the brake rods from the servo motor, remove the motor central retaining setscrew and withdraw the servo motor from the gearbox.

Disconnect the speedometer drive cable.

Remove the bell housing bottom cover.

Remove the torus cover drain plug and drain the torus.

Remove the gearbox sump plug and drain the gearbox; refit and tighten the torus cover and gearbox drain plugs.

Disconnect the propeller shaft at the gearbox end; disconnect the propeller shaft centre bearing and slide the shaft rearward.

Remove the L.T. lead from the forward end of the starter motor. Unscrew the four setscrews retaining the starter motor to the bell housing then, supporting the starter motor, remove the setscrews and 'U' brackets and withdraw the starter motor. Remove also the blanking plate from the alternative starter position on the opposite side of the bell housing.

Disconnect the torus cover from the flywheel by removing the setscrews also, if fitted, remove the dowel cover strips and numbered balance weights.

At this point the weight of the engine and gearbox should be supported.

Fit a jack into position under the engine sump just forward of the flywheel. Use a suitable block between the jack head and the sump in order to spread the load.

Disconnect the gearbox at the rear end then, with the gearbox supported in a trolley jack, remove the setscrews securing the halves of the bell housing together. To obtain access to the top setscrews remove the cover screwed to the floor board.

Finally, drive out the two dowel bolts, fitted one on each side of the bell housing, then remove the gearbox, ensuring that the gearbox mainshaft is clear of its nose bearing in the flywheel before lowering the gearbox.

Notes on changing a gearbox or engine

S1 cars

The notes given under the above heading for 'S2' and 'S3' cars apply to 'S1' cars but with the following additions.

If the gearbox is to be retained in the car but a replacement engine is to be fitted, the front half of the bell housing, secured to the engine by eight screws, must be transferred from the old engine to the new one.

It is important that the torus cover be retained with the flywheel as flywheel assemblies vary; some are fitted with an enertia ring, and some without.

In order to maintain a balanced assembly, it is important that parts of the flywheel should be kept together and only in extreme necessity should separate parts be fitted and only then if vibration characteristics prove satisfactory on road test.

Gearbox — To fit

S1 cars

To fit the gearbox reverse the procedure for dismantling, noting the following points.

Ensure that the flywheel and torus cover faces are clean before fitting a new gasket.

Torque tighten the setscrews evenly.

Lubricate all control joints when refitting and if control setting is required refer to 'Chapter 2 — Servicing — Controls — To adjust'.

Gearbox — To remove

'R' series cars

Removal procedure for 'R' series gearboxes differs very little from the description in the previous paragraphs for the removal of 'S' series gearboxes. Any points of major difference which arise will be explained in more detail.

Run the car over a pit or on to a ramp, chock the front wheels and jack up one rear wheel.

Disconnect the battery.

Remove the undersheets and the section of exhaust pipe which runs along the left-hand side of the gearbox. Disconnect at the manifold flange and at the silencer. Release the pipe steady brackets and remove the exhaust pipe downward, taking care to retain the corrugated flange joints.

On cars other than Wraith there are two exhaust pipes and it may be necessary to remove both to simplify gearbox removal.

Slacken the pinch bolts and remove the gear change lever and the T.V. lever from the side of the gearbox.

On left-hand drive cars the rods and levers can be tied to a convenient point out of the way, without further disconnection.

On right-hand drive cars disconnect and remove the manual selector cross-shaft which runs beneath the gearbox.

Remove the ride control operating lever.

On left-hand drive cars unscrew the 2 B.A. nut and bolt and remove the bracket completely.

On right-hand drive cars, disconnect the operating rod from the lever at the base of the steering column and from the bracket at the front end of the fore-and-aft tie rod.

Remove the brake rods and servo motor by disconnecting at the points shown in Figure 41.

Disconnect the speedometer cable and the earthing strip in the vicinity of the ride control oil pipe.

Disconnect the propeller shaft at the gearbox end then at the centre bearing; slide it toward the rear of the car.

Remove the starter motor in the manner described for 'S1' cars.

On '1952' cars remove the four nuts on the starter motor drive cover, draw aside the bonding strip and withdraw rearward the engaging mechanism, distance piece and gaskets, then remove the starter motor forward.

Remove the bell housing bottom cover and remove the torus drain plug; drain the torus cover and refit and tighten the drain plug.

Remove the sump plug and drain the sump; refit and tighten the drain plug.

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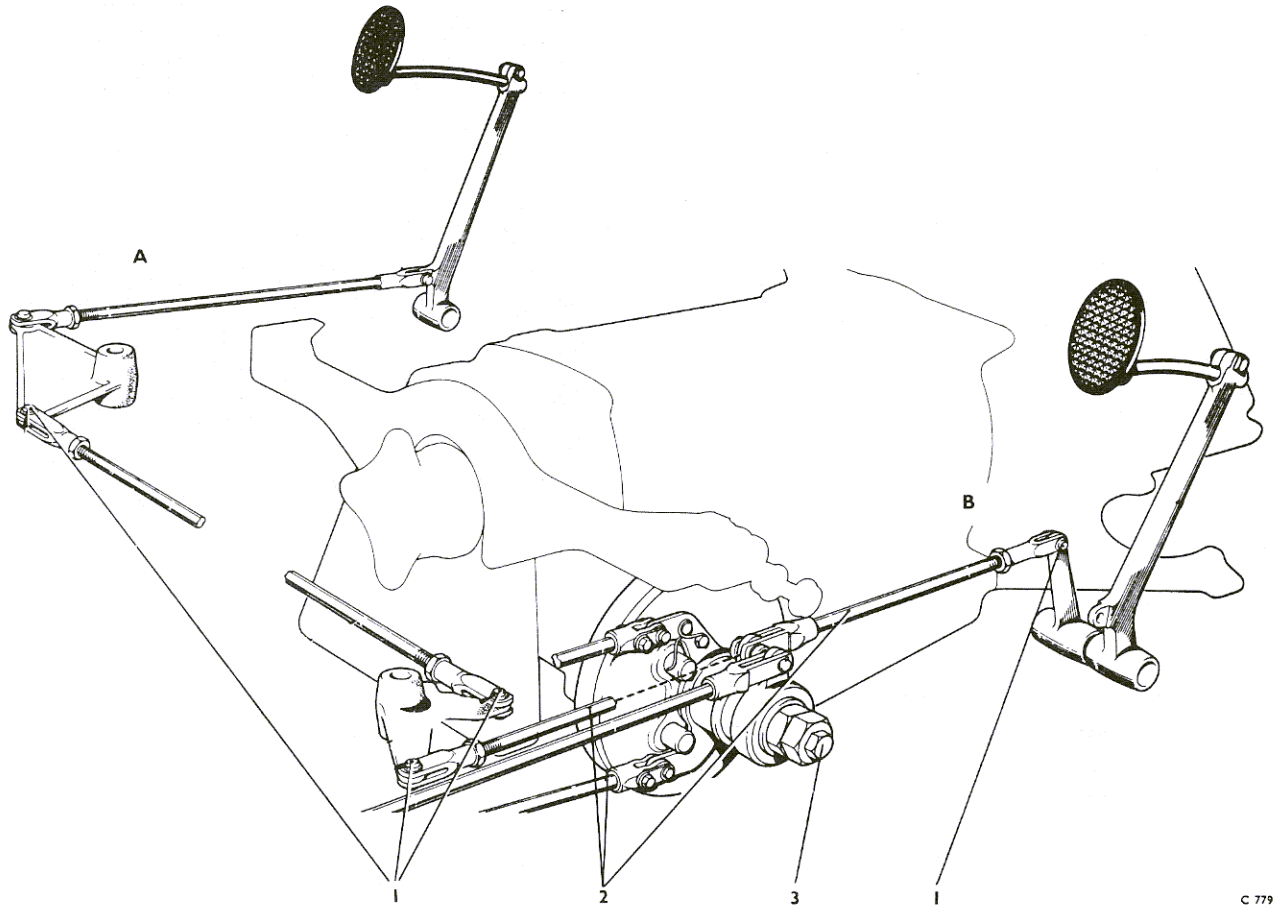

Fig. 41 Brake rod disconnecting points — 'R' series cars

A LEFT-HAND DRIVE LINKAGE

1 CLEVIS PINS
2 FORKED END RODS
3 CENTRE SECURING SETSCREWS

B RIGHT-HAND DRIVE LINKAGE

In addition to the rear mounting, the gearbox is located at its rear end by a fore-and-aft tie rod and a transverse torque reaction bracket (see Fig. 42).

On left-hand drive cars a chassis frame stiffening tube, retained by two 0·437 in. bolts under the front universal joint, must be removed before disconnecting the tie rod and reaction bracket; the rear mounting transverse support cannot be removed until the gearbox and engine unit has been raised slightly.

Remove the fore-and-aft tie rod by unscrewing the two 0·312 in. nuts and washers securing the tie rod flange to the gearbox; then remove the three bolts, washers and nuts securing the tie rod rear bracket to the cruciform gusset.

Remove the tie rod and bracket, collecting the triangular packing piece fitted under the bracket. The nuts on the tie rod itself need not be disturbed.

On some chassis with riveted frames, the tie rod is retained at the rear end by a flange which is bolted to a transverse bracket integral with the frame.

Remove the torque reaction bracket by slackening the inner nut on each end of the bracket to remove the oval rubbers from their retaining cups; disconnect from the gearbox by removing the seven retaining screws and allow the bracket to rest on the chassis frame.

Disconnect the gearbox rear mounting from its support bracket by removing the two 0·312 in. nuts, spring washers and bolts. The nuts are accessible through holes in the bracket.

Support the engine by fitting a jack in position under the sump, just in front of the flywheel. Use a suitable block between the head of the jack and the sump to spread the load. Raise the jack sufficiently to take the load off the gearbox rear support bracket, which can be disconnected from the chassis frame by removing four nuts, spring washers and bolts. Remove the bracket.

Disconnect the torus cover from the flywheel, retaining any dowel strips and balance weights which may be fitted.

Support the gearbox in a cradle attached to a trolley jack then disconnect the halves of the bell housing by removing eight setscrews. Move the cover attached to the front floor board to gain access to the top two setscrews. Finally, drive out the two dowel bolts, one either side of the bell housing; the gearbox is then ready for removal.

Move the gearbox rearward to draw the gearbox mainshaft out of its locating bearing in the flywheel then lower and draw the gearbox out from under the car.

Notes on changing a gearbox or engine

'R' series cars

The instructions given for 'S1' cars apply to 'R' series cars also.

Gearbox — To fit

'R' series cars

To fit the gearbox, reverse the procedure given for removal, noting the following points.

Before fitting the gearbox to the engine, place the torque reaction bracket in position across the chassis frame.

Ensure that the flywheel and torus cover faces are clean and free from damage marks and that a new flywheel-to-torus cover gasket is fitted.

When fitting the bell housing halves together fit the two dowel bolts first, fit and tighten the remaining setscrews, then finally tighten the dowel bolts, torque loading to the correct figures in the 'Summary of Repair Data'.

If, when fitting the torque reaction bracket, the outer nuts have been disturbed, slacken all the nuts then tighten the inner nuts evenly two full turns beyond the point at which the rubbers are felt to be nipped. Lock by tightening the outer nuts.

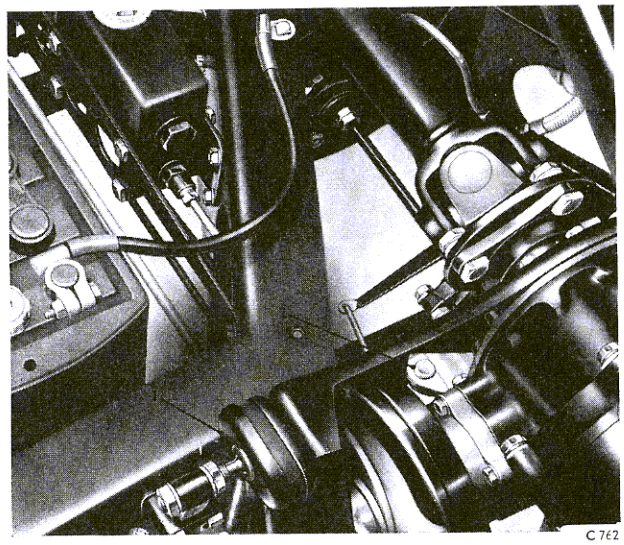

Fig. 42 Rear mounting—'R' series cars

1 TORQUE REACTION BRACKET
2 REAR MOUNTING BOLTS
3 TIE ROD BOLT

Connect the propeller shaft to the gearbox, ensuring that the centre bearing is positioned centrally.

Assembly of the brake rods is straightforward. Before fitting the servo motor take care to fit the friction washer with its chamfer towards the gearbox and to locate the driving pins before tightening the centre retaining setscrew.

Prime the ride control system after fitting the gearbox linkage. The procedure for priming is explained in Chapter 2.

Grease all controls joints when refitting and if the controls need resetting refer to 'Chapter 2 — Servicing — Controls — To adjust'.

When fitting a '1952' starter motor, fit a new joint on each side of the distance piece.

After fitting a gearbox and before road testing fill up the gearbox as described in Chapter 2 and run the engine with the control lever in Neutral for a few minutes to check for leaks.

Road test the car taking particular note of the gear changes and, if satisfactory, fit the undersheets.

If the gearbox is to be further dismantled, examine the exterior of the bell housing-to-gearbox mating faces for signs of oil which may indicate a leaking front pump cover or front pump seal.

Remove the four setscrews securing the bell housing to the gearbox casing and withdraw the housing. **Note** Early bell housings are in two parts and must be kept 'mated' as a unit.

Check the torus relief valve for freedom and full travel in the retainer. If the valve appears to be serviceable and no complaint has been received of slip as described in Chapter 2, cleaning without dismantling should be sufficient. If, however, it is considered necessary, the torus relief valve and spring can be removed from the driven torus by turning back the locking tabs on the retainer, unscrewing the setscrews and lifting the retainer, relief valve and spring from the recess in the torus hub (see Fig. 46).

Clean all parts thoroughly, using paraffin or a degreasing agent.

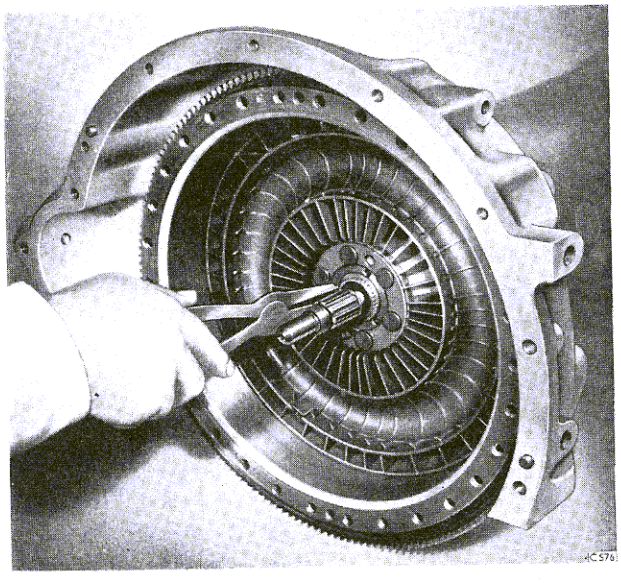

Fig. 44 Removing intermediate shaft snap ring

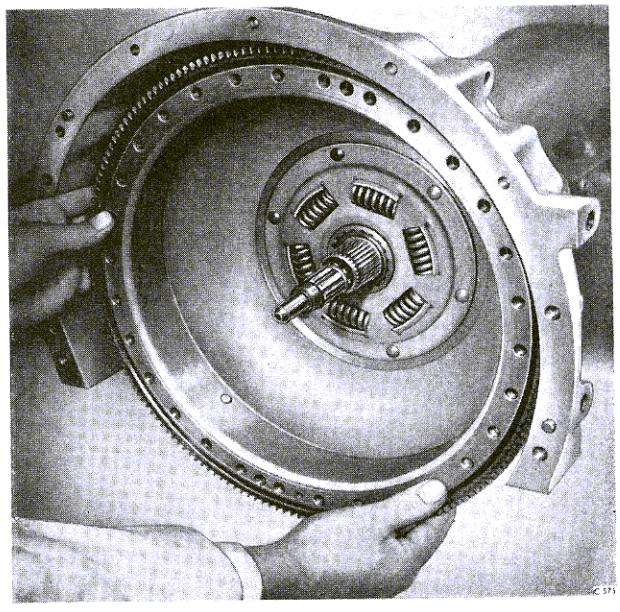

Fig. 45 Withdrawing the torus cover

Fluid coupling — To inspect

Examine the splines for signs of wear and damage; check the torus members and the hub of the spring drive in the torus cover for fit on their respective splines.

Examine all rivets, also the torus vanes, for slackness.

Examine the inner and outer surfaces of the torus cover oil seal neck for scores and other damage.

Examine the torus cover-to-flywheel joint face, for damage and distortion which may allow oil leakage.

Examine the starter ring teeth for wear and damage.

Examine the bell housing for cracks and other damage.

Examine for scoring the bearing face of the relief valve, the inside diameter of the valve and the seating on the end of the intermediate shaft.

Examine the spring for distortion. If the valve has not been removed check the retainer setscrews for security.

Remove the oil seal rings from the front drive-shaft and fit them in the bore of the torus cover oil seal neck. Check that the gap is within the limits given in the 'Summary of Repair Data'.

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Fluid coupling — To fit

The assembly of the fluid coupling and the refitting to the gearbox casing are straightforward, but the following points must be borne in mind.

Ensure that all locking devices, including spring rings, are correctly positioned as the work proceeds.

Fit a new relief valve retainer if it has been disturbed, and a new mainshaft lock-washer.

Ensure that all nuts and bolts are tightened to the correct torque loading as given in the 'Summary of Repair Data' at the front of this Chapter.

Fit a new torus cover oil seal into the housing in the front pump cover as described in Section 9. Care must be taken to avoid damage to the piston-ring type oil seals when fitting the torus cover.

When fitting the starter ring, care must be taken to ensure that it is fitted the correct way round. A fouling pin is fitted to the starter ring on 'S2' and 'S3' series cars to ensure that this does not happen but, if a new starter ring is being fitted, a check should be made to see that a fouling pin is fitted to the starter ring.

If the bell housing has been renewed, check the 'nip' on the front oil pump flange as described in Section 9.

Check the end float of the intermediate shaft before fitting the rear torus. Renew the steel washer, if necessary.

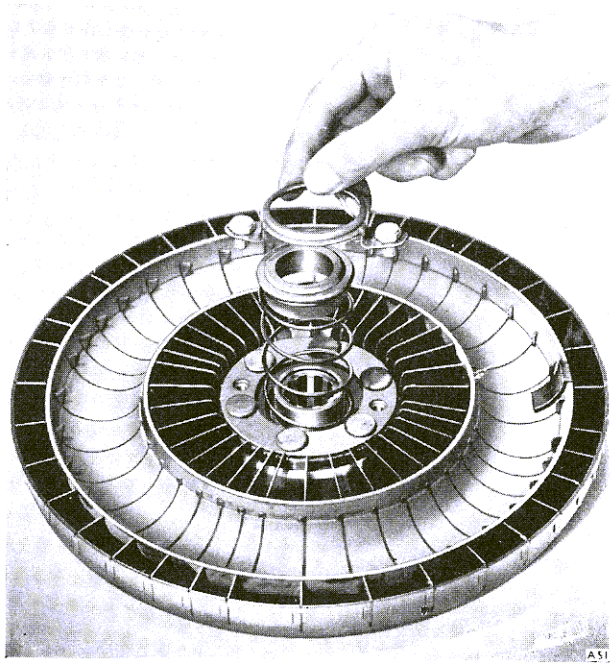

Fig. 46 Removing torus check valve

Lock the gearbox against rotation by placing the selector lever in 'Reverse' before tightening and locking the mainshaft nut.