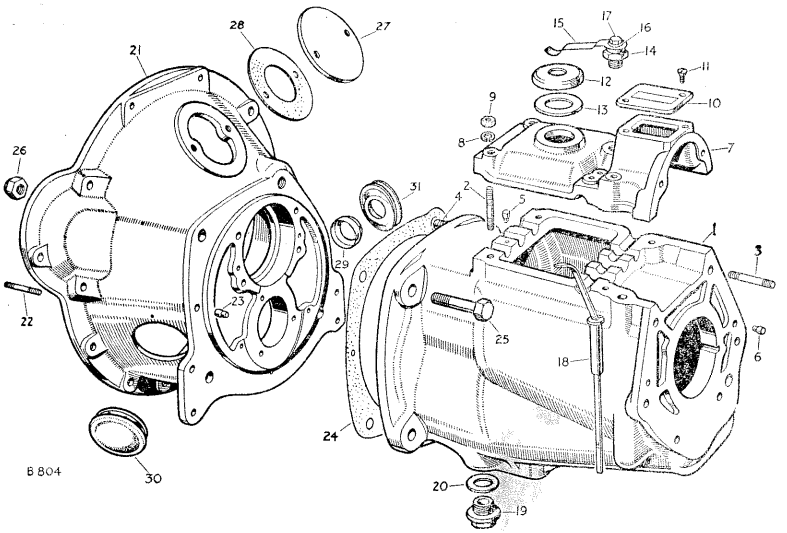
Section C
GEARBOX UNIT — ALL MODELS

INDEX

LIST OF ILLUSTRATIONS



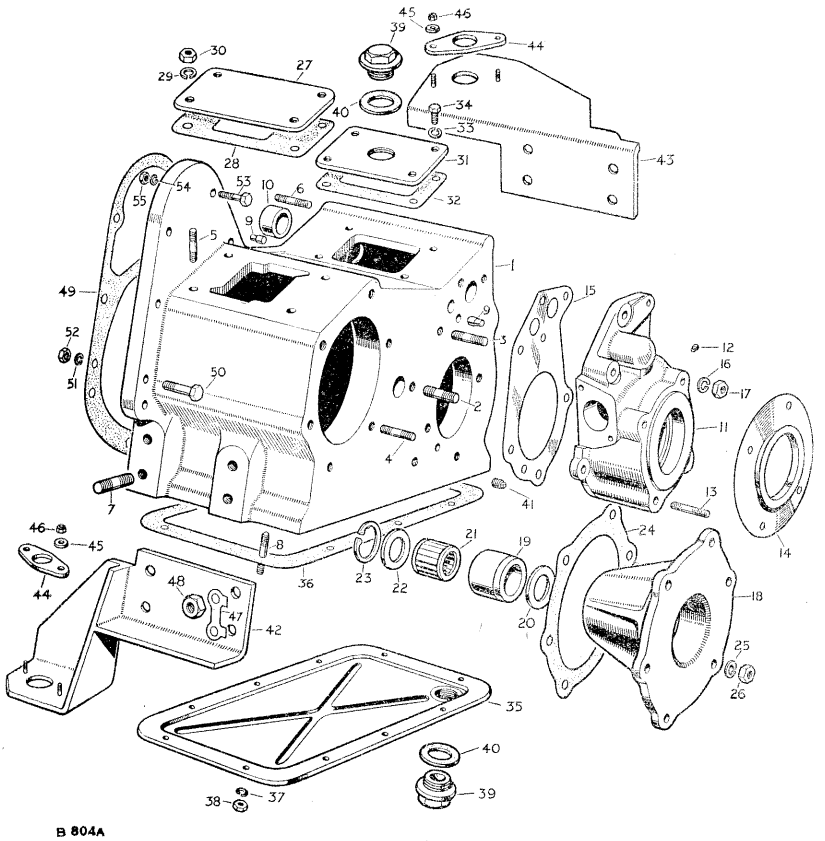


Fig. C-1—Layout of the gearbox unit casings

Key to Fig. C-1

1 Gearbox casing assembly
2 Stud for top cover and gear change plate
3 Stud, short, for transfer casing
4 Stud for bell housing
5 Dowel locating top cover
6 Dowel locating transfer casing
7 Top cover for gearbox
8–9 Fixings for top cover
10 Inspection cover plate for selectors
11 Set screw fixing cover plate
12 Oil filler cap
13 Joint washer for cap
14 Plug for retaining spring
15 Retaining spring for cap
16–17 Fixings for spring
18 Oil level dipstick
19 Drain plug for gearbox
20 Washer for plug
21 Bell housing assembly
22 Stud for withdrawal race housing
23 Dowel locating gearbox
24 Joint washer, bell housing to gearbox
25-26 Fixings for gearbox casing
27 Top cover for bell housing
28 Rubber seal for top cover
29 Centre for dust cover
30 Grommet for bell housing hole
31 Grommet for bell housing shaft

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1 Transfer box casing assembly
2 Stud for intermediate shaft
3 Stud for speedometer housing, short
4 Stud for mainshaft housing
5 Stud for top cover plate
6 Stud, short, for transfer shaft housing
7 Stud for engine mounting
8 Stud for bottom cover
9 Dowel locating speedometer housing
10 Bush for shaft guide
11 Housing assembly for speedometer pinion
12 Insert for pinion
13 Stud for transmission brake
14 Mudshield for housing
15 Shim for speedometer pinion housing
16–17 Fixings for housing
18 Housing assembly, rear mainshaft bearing
19 Bush for housing
20 Retaining plate, inner
21 Bearing for mainshaft
22 Retaining plate, outer
23 Circlip fixing bearing
24 Joint washer for bearing housing
25–26 Fixings for housing
27 Cover plate for P.T.O. selector
28 Joint washer for cover plate
29–30 Fixings for cover plate
31 Cover plate for transfer gear change
32 Joint washer for cover plate
33–34 Fixings for plate
35 Cover plate, bottom, for transfer box
36 Joint washer for bottom cover
37–38 Fixings for cover
39 Plug, top and bottom
40 Joint washer for plug
41 Oil level plug
42 Rear mounting foot L.H.
43 Rear mounting foot R.H.
44 Adjuster for mounting foot
45 Plain washer } For
46 Self-locking nut } adjuster
47–48 Fixings for feet
49 Joint washer, transfer box to gearbox
50–52 Fixings for transfer box
53–55 Fixings for transfer box

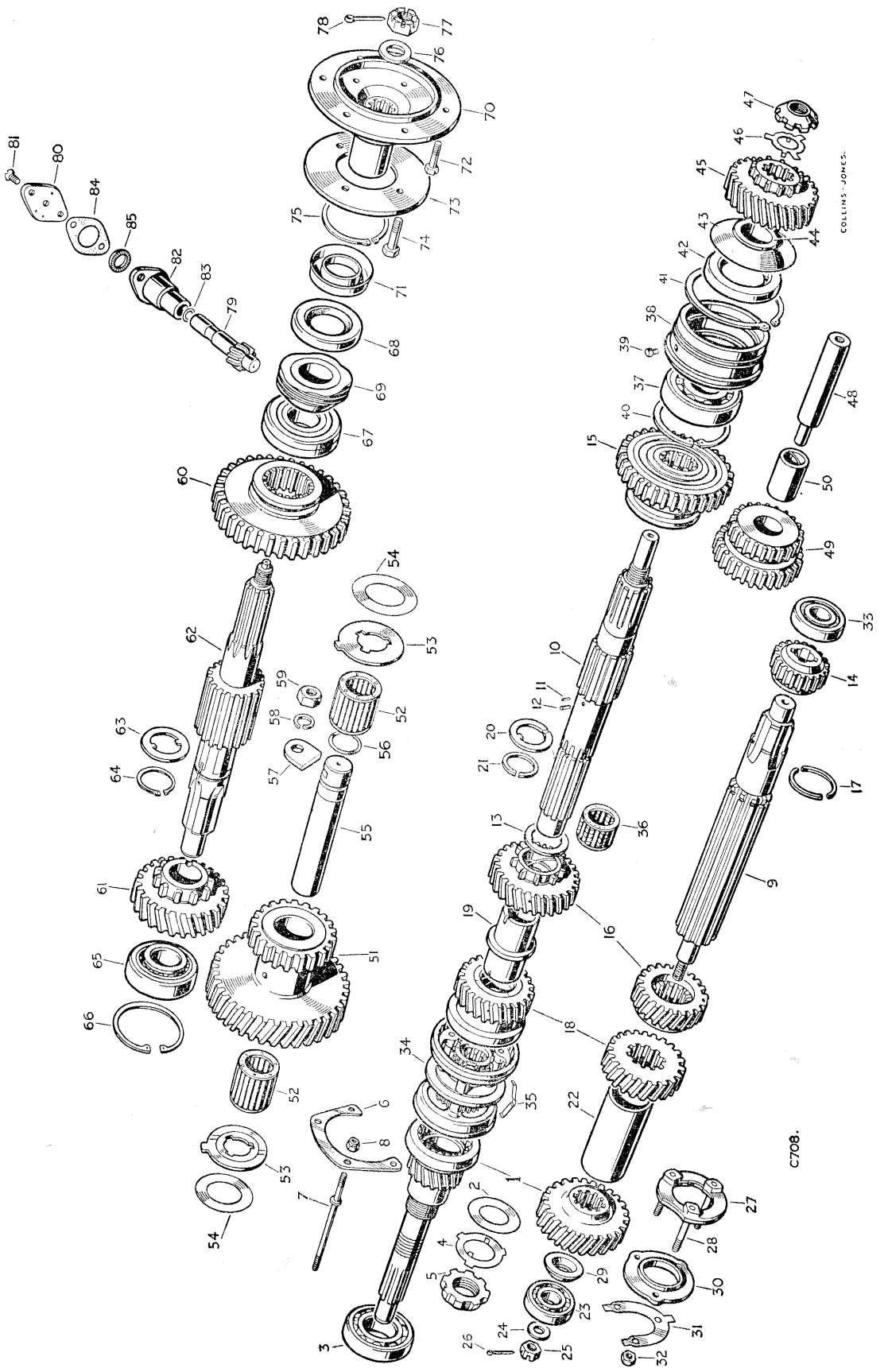
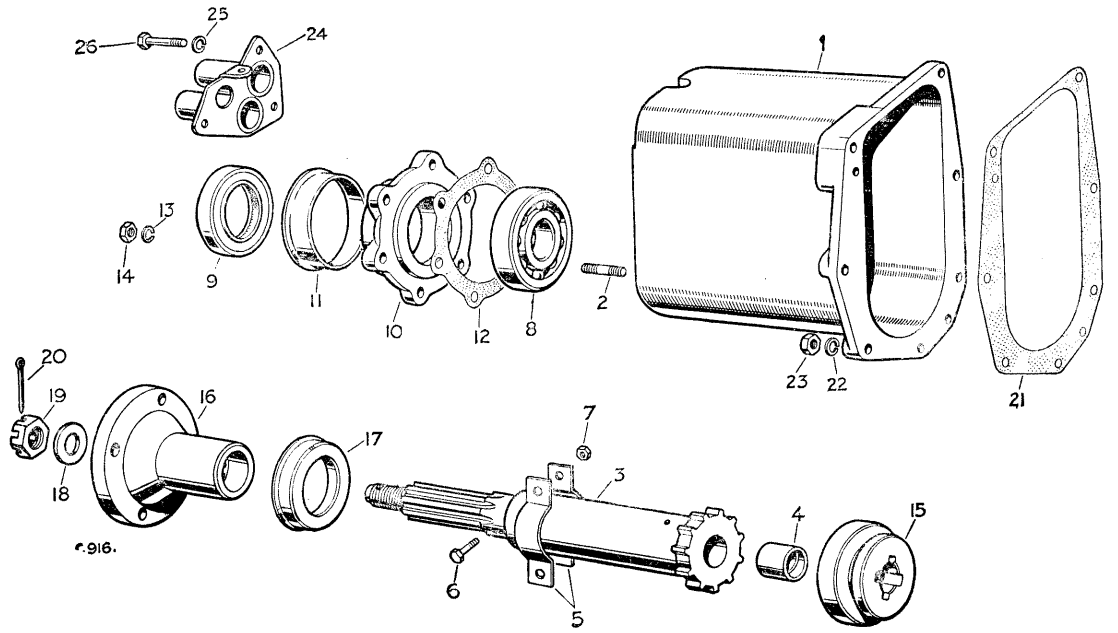


Fig. C-2—Layout of the gearbox units: shafts and gears

Key to Fig. C-2

1 Primary pinion and constant gear
2 Shield for primary pinion
3 Ball bearing for primary pinion
4–5 Fixings for bearing
6–8 Fixings for bearing
9 Layshaft
10 Mainshaft
11 Peg for 2nd gear thrust washer
12 Peg for mainshaft distance sleeve
13 Thrust washer for 2nd speed gear
14 1st speed layshaft gear
15 1st speed mainshaft gear
16 2nd speed layshaft and mainshaft gear
17 Split ring for 2nd speed layshaft gear
18 3rd speed layshaft and mainshaft gear
19 Distance sleeve for mainshaft
20 Thrust washer for 3rd speed mainshaft gear
21 Spring ring fixing 2nd and 3rd mainshaft gears
22 Sleeve for layshaft
23 Bearing for layshaft, front
24–26 Fixings for bearing to layshaft
27 Bearing plate assembly for layshaft
28 Stud for bearing cap
29 Distance piece for layshaft
30 Retaining plate for layshaft front bearing
31–32 Fixings for cap and bearing
33 Bearing for layshaft, rear
34 Synchronising clutch
35 Detent spring for clutch
36 Roller bearing for mainshaft
37 Ball bearing for mainshaft
38 Housing for mainshaft bearing, rear
39 Peg, housing to casing
40 Circlip, bearing to housing
41 Circlip, housing to casing
42 Oil seal for rear of mainshaft
43 Oil thrower for mainshaft
44 Distance piece, rear of mainshaft
45 Mainshaft gear for transfer box
46–47 Fixings for gear
48 Shaft for reverse gear
49 Reverse wheel assembly
50 Bush for reverse wheel
51 Gear, intermediate
52 Roller bearing for intermediate gear
53 Thrust washer for intermediate gear
54 Shim for intermediate gear
55 Shaft for intermediate gear
56 Sealing ring for intermediate gear
57 Retaining plate for shaft
58–59 Fixings for plate
60 Low gear wheel
61 High gear wheel
62 Output shaft, rear drive
63 Thrust washer for high gear wheel
64 Circlip fixing washer to shaft
65 Bearing for output shaft, front
66 Circlip fixing bearing to case
67 Bearing for output shaft, rear
68 Oil seal for output shaft
69 Speedometer worm complete
70 Flange for output shaft, rear drive
71 Mudshield for flange
72 Fitting bolt for brake drum
73 Retaining flange for brake drum bolts
74 Fitting bolt for propeller shaft
75 Circlip retaining bolts and flange
76–78 Fixings for flange
79 Speedometer pinion
80 Retaining plate for pinion
81 Screw fixing plate to housing
82 Sleeve for pinion
83 Sealing ring for sleeve
84 Joint washer for sleeve
85 Oil seal for pinion



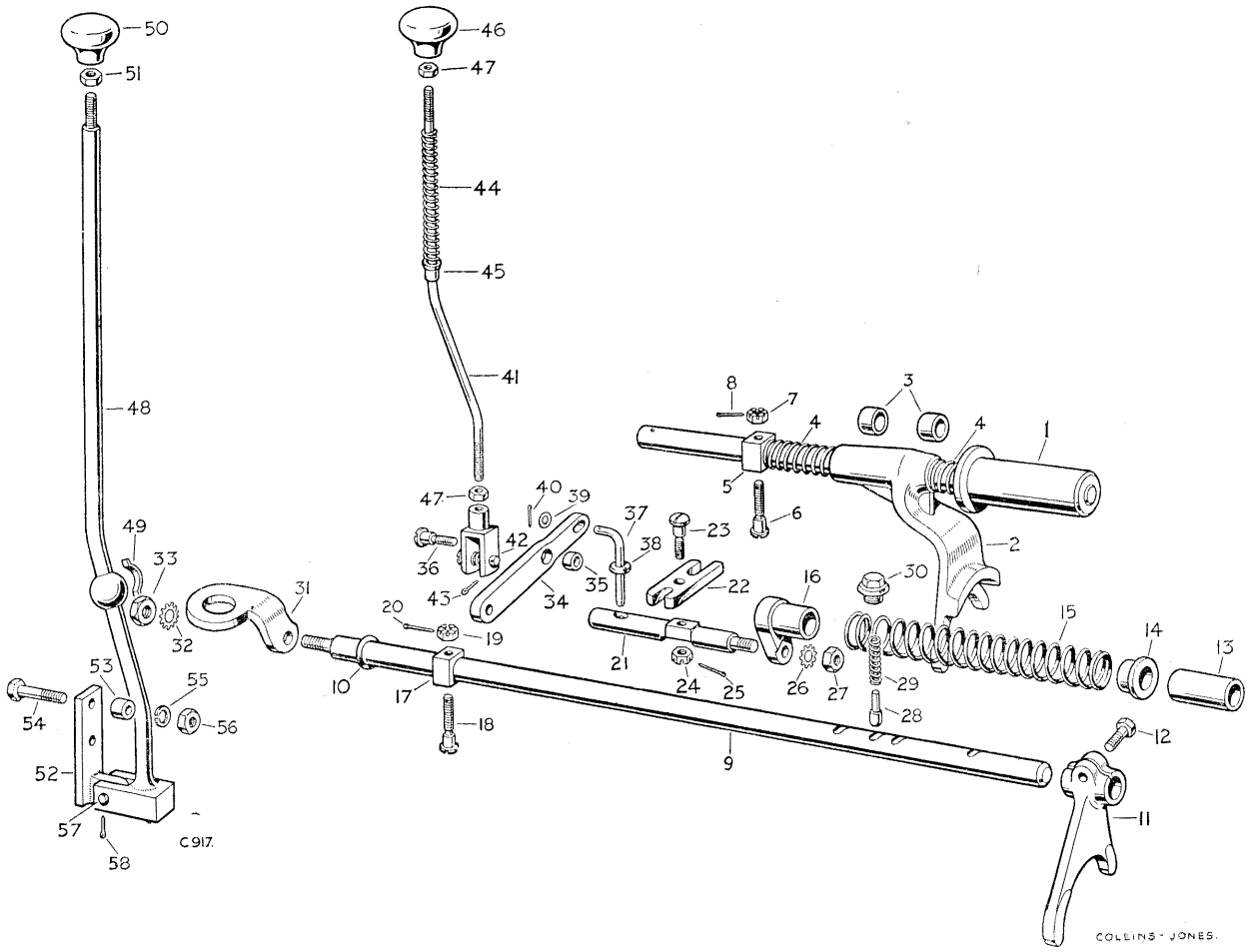


Fig. C-3—Layout of the gearbox unit: front wheel drive, transfer gear controls and front output shaft and housing

Key to Fig. C-3

1 Output shaft housing assembly
2 Stud for oil seal retainer
3 Front output shaft assembly
4 Bush for shaft
5 Oil thrower for output shaft
6–7 Fixings for oil thrower
8 Bearing for front output shaft
9 Oil seal for shaft
10 Retainer for oil seal
11 Mudshield for retainer
12 Joint washer for retainer
13–14 Fixings for retainer
15 Locking dog, four wheel drive
16 Flange for transfer shaft
17 Mudshield for flange
18–20 Fixings for flange
21 Joint washer for transfer housing
22–23 Fixings for housing
24 Dust cover plate for selector shafts
25–26 Fixings for dust cover

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1 Selector shaft, four wheel drive
2 Selector fork complete, four wheel drive
3 Bush for selector fork
4 Spring for selector fork
5 Block for selector shaft
6–8 Fixings for block
9 Selector shaft, transfer gear change
10 Sealing ring for transfer gear change shaft
11 Selector fork, transfer gear change
12 Set bolt fixing fork
13 Distance tube for transfer selector shaft
14 Locating bush for selector shaft spring
15 Spring for gear change selector shaft
16 Connector, gear change to pivot shaft
17 Block for selector shaft
18–20 Fixings for block
21 Pivot shaft for selector shafts
22 Coupling, selector shafts to pivot
23–25 Fixings for coupling
26–27 Fixings for pivot shaft
28 Plunger for transfer selector shaft
29 Spring for plunger
30 Plug
31 Link for selector shaft
32–33 Fixings for link
34 Lever assembly, four wheel drive
35 Bush for lever
36 Special bolt, lever to housing
37 Locking pin, four wheel drive lever
38 Sealing ring, four wheel drive locking pin
39–40 Fixings for locking pin
41 Selector rod, four wheel drive
42 Clevis complete for rod
43 Split pin for clevis
44 Spring for selector rod
45 Special bush for spring
46 Control knob for rod
47 Locknut for knob and clevis
48 Transfer gear change lever complete
49 Spring for transfer gear change lever
50 Knob for gear change lever
51 Locknut for knob
52 Bracket for gear change lever
53 Distance piece for bracket
54–56 Fixings for bracket
57–58 Fixings for gear lever

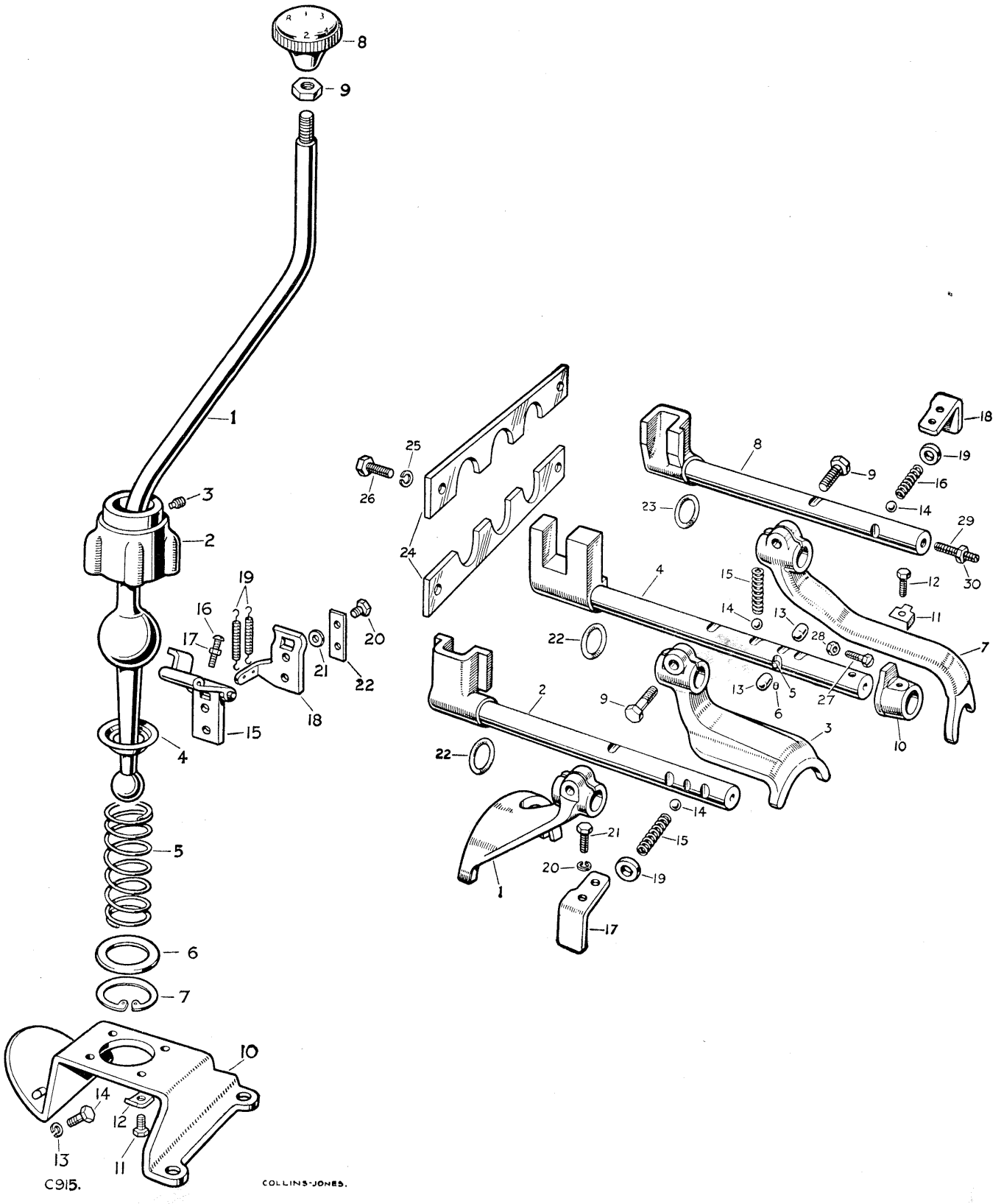

Fig. C-4—Layout of the gearbox unit: main gear change lever and selectors

Key to Fig. C-4

1 Gear change lever
2 Housing for lever
3 Locating pin for lever ball
4 Spherical seat for gear lever
5 Retaining spring for lever
6 Retaining plate for spring
7 Circlip fixing retaining plate
8 Knob for lever
9 Locknut for knob
10 Mounting plate for gear change
11–12 Fixings for housing
13–14 Fixings for mounting plate
15 Reverse stop hinge complete
16 Adjusting screw } For hinge
17 Locknut }
18 Bracket for reverse stop spring
19 Spring for reverse stop
20–22 Fixings for hinge and bracket

1 Selector fork, 3rd and 4th speed
2 Shaft for fork, 3rd and 4th speed
3 Selector fork, 1st and 2nd speed
4 Shaft assembly for fork, 1st and 2nd speed
5 Interlocking pin
6 Peg fixing interlocking pin
7 Selector fork, reverse
8 Shaft for fork, reverse
9 Set bolt fixing forks to shafts
10 Stop for 2nd speed
11–12 Fixings for stop
13 Interlocking plunger
14 Steel ball for selectors
15 Selector spring, forward
16 Selector spring, reverse
17 Retaining plate L.H. } For selector springs, side
18 Retaining plate R.H. }
19 Rubber grommet }
20–21 Fixings for retaining plates
22 Seal for selector shafts
23 Cork seal for reverse shaft
24 Retaining plate for sealing ring
25–26 Fixings for retaining plate
27 Set bolt } In cover for 2nd gear stop
28 Locknut }
29 Adjustable stop for reverse selector shaft
30 Locknut for stop

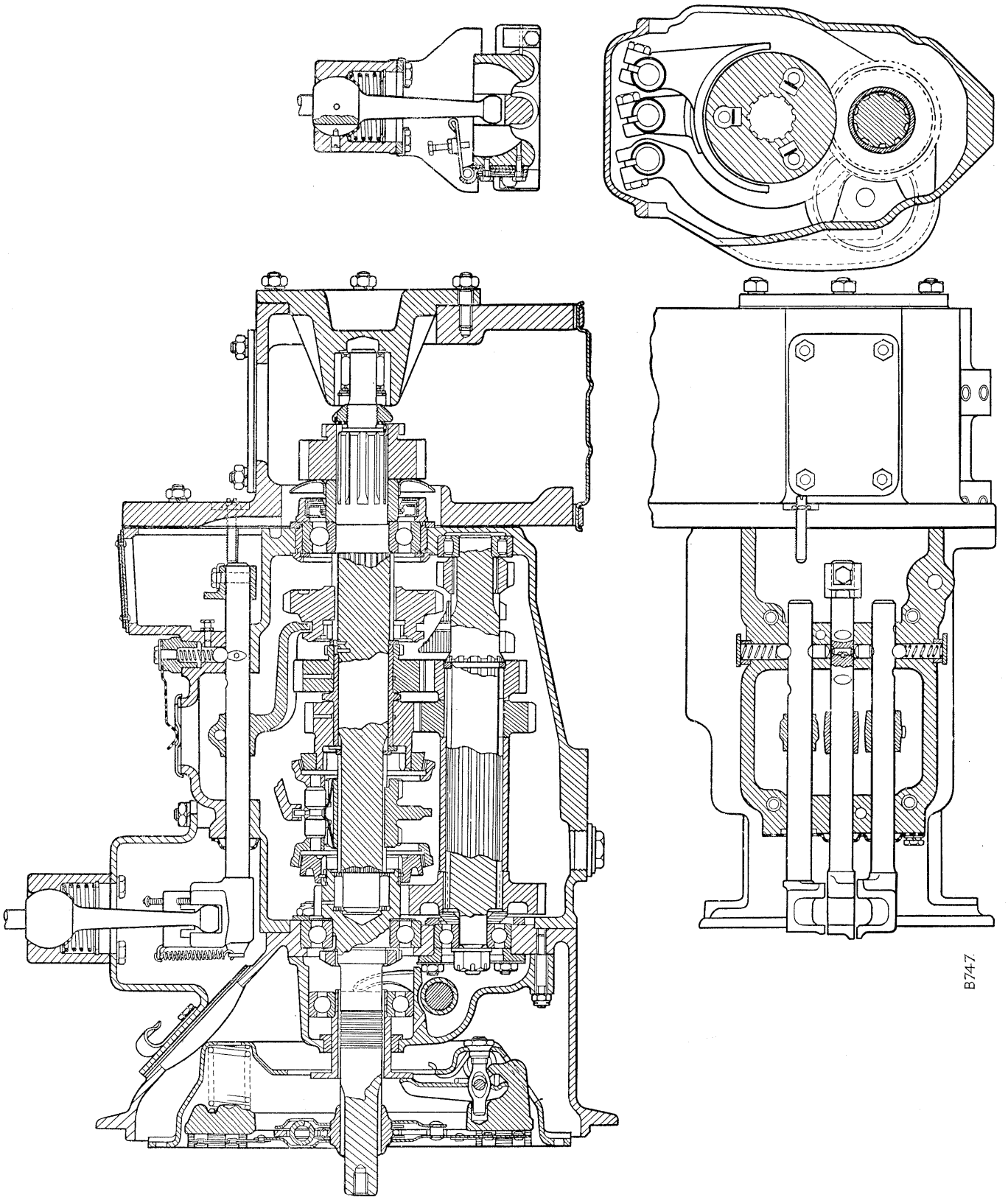

Fig. C-5—Cross-section of gearbox unit: elevation

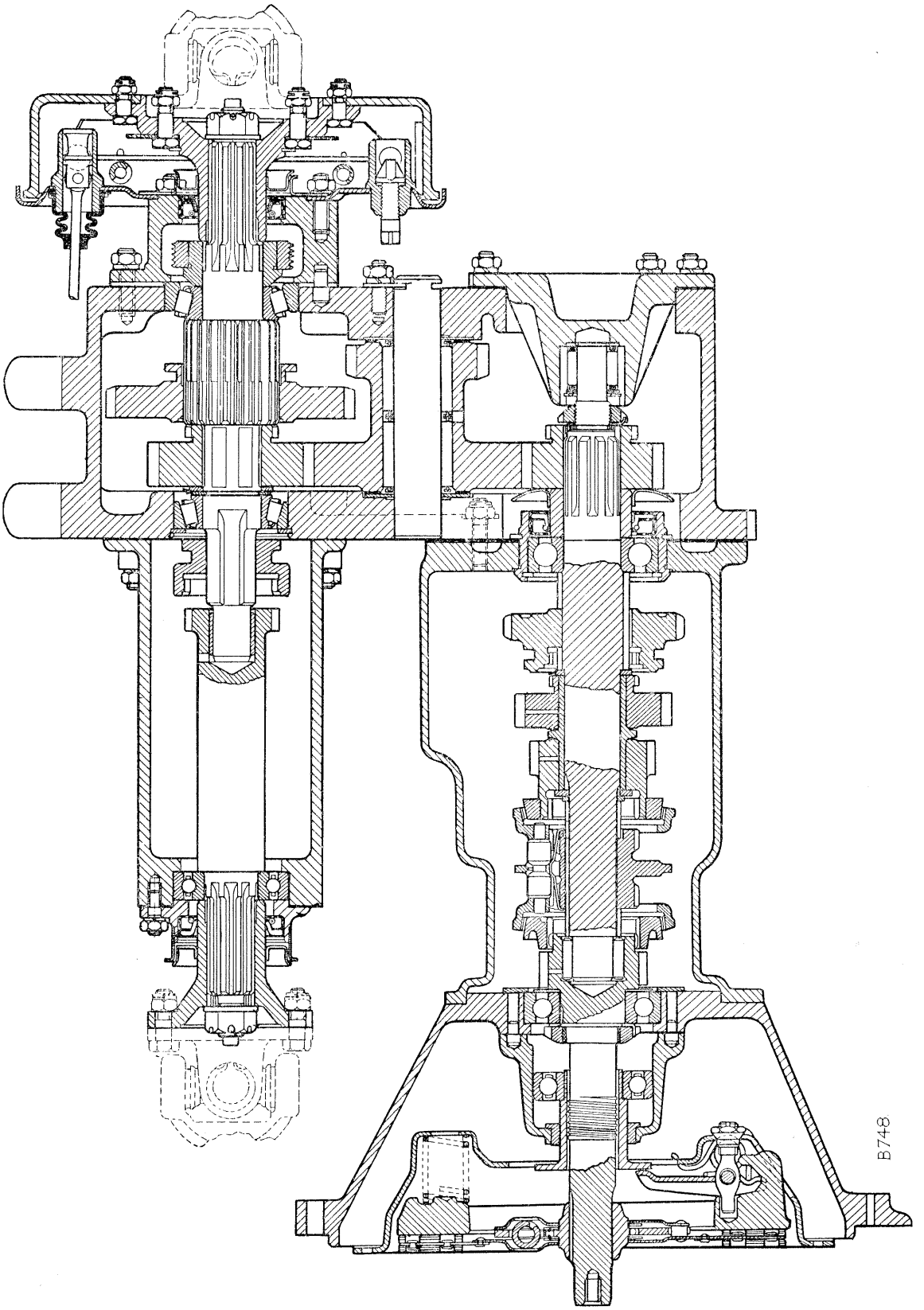

Fig. C-6—Cross-section of gearbox unit: plan

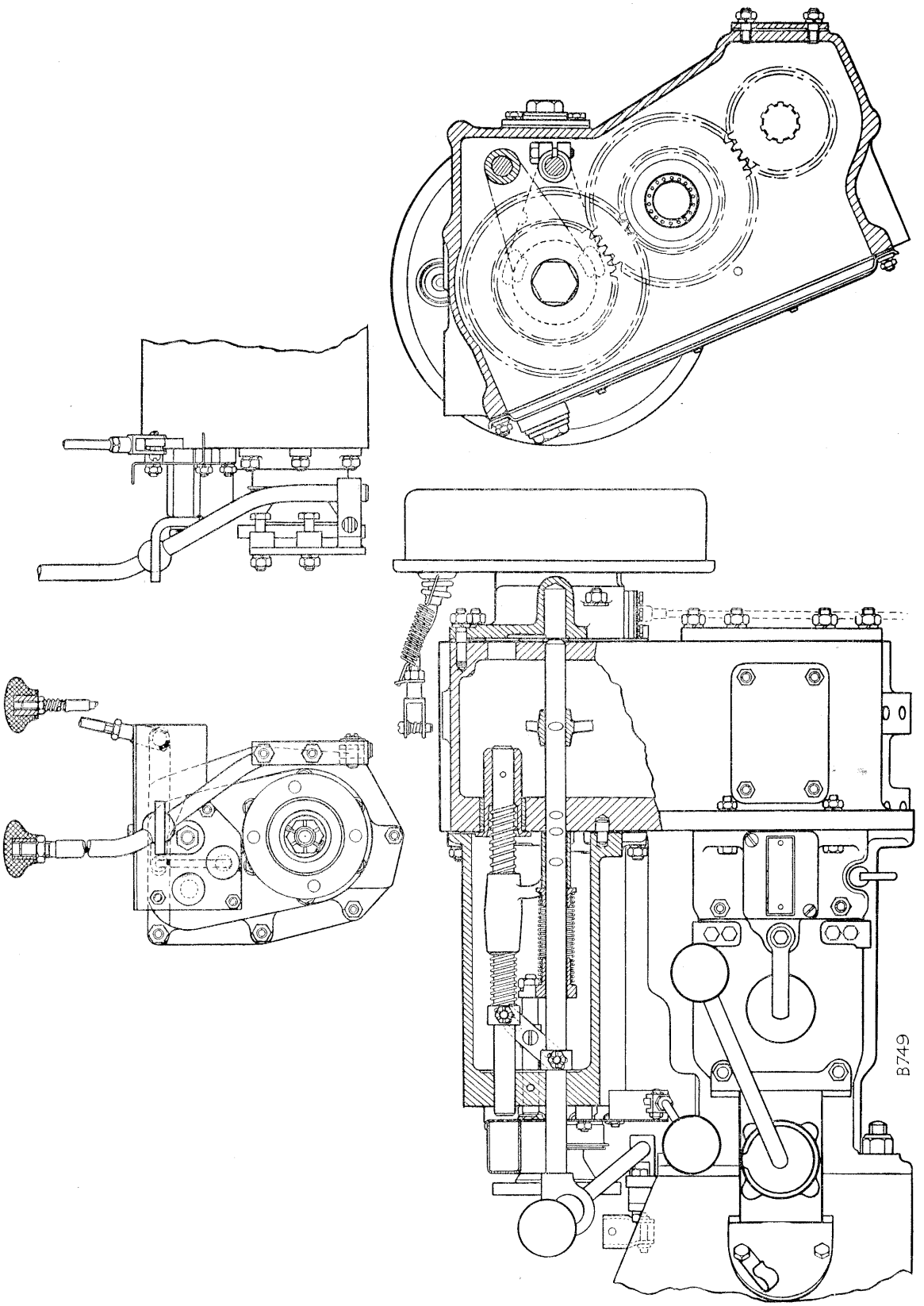

Fig. C-7—Cross-section of gearbox unit: controls

Gearbox and transfer box assembly

To remove **Operation C/2**

1. Remove the hood, hard top or cab, for convenience in working.
2. Remove the front wheel drive control knob, locknut and spring; remove the knob and locknut from the transfer gear change lever.
3. Remove the floor board assembly and gearbox cover. Section R.
4. Remove the seat box complete. Section R.
5. **L.H.D. models only.** Remove the hand brake lever and linkage. Section H.
6. **R.H.D. models only.** Remove the hand brake rod and the expander rod from the relay lever.
7. Disconnect the front axle propeller shaft, rear axle propeller shaft and rear power take-off propeller shaft (if fitted), at the gearbox end.
8. Disconnect the clutch operating hose at the slave cylinder, remove the split pin and withdraw the pin fixing the connecting tube to the clutch cross and operating shafts, then remove the nuts and washers securing the bracket to the bell housing and remove the bracket complete with slave cylinder.
9. Disconnect the speedometer cable at the gearbox and withdraw the cable clear of the gearbox. Disconnect the earth lead at the transfer box.
10. Remove the remaining nuts and plain washers fixing the bell housing to flywheel housing, then remove the gearbox unit bearer bolts, top bearer rubbers, washers, shims and distance tubes.
11. Place a suitable sling around the gearbox unit, raise it approximately 1 inch.
12. Place a jack under the rear end of the engine; this prevents any strain being taken on the primary pinion shaft.
13. Withdraw the gearbox unit and remove it from the vehicle.

To refit **Operation C/4**

1. Reverse the removal procedure.

2 LITRE PETROL ONLY

2. The nip on the gearbox unit mounting rubber pads is adjusted by the addition or removal of shims on the top of the central distance tube.

   The correct setting is with the top shim approximately 1/16 in. (1,5 mm) below the top face of the upper rubber pad.

ALL MODELS

Note: The rear mounting brackets are adjustable laterally, to facilitate alignment with the mounting rubbers.

3. If necessary, refill the main gearbox, $2\frac{1}{2}$ pints (1,5 litres) and transfer box, $4\frac{1}{2}$ pints (2,5 litres) with oil.
4. Adjust the transmission brake. Section H.
5. Adjust the four-wheel drive control rod. Operation C/28.
6. Bleed the clutch system, and adjust the pedal movement as necessary. Section B.

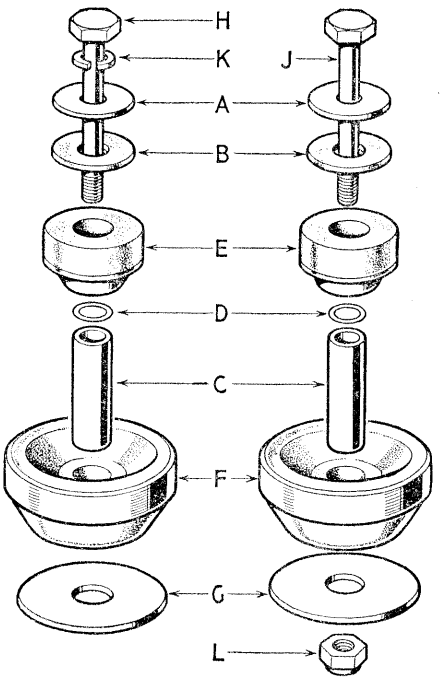

Fig. C-8—Gearbox unit mounting bolts and pads—2 litre petrol only

A—Plain washer (upper)
B—Rubber washer
C—Distance tube
D—Shim
E—Top rubber
F—Bottom rubber
G—Plain washer (lower)
H—Front bolt
J—Rear bolt
K—Spring washer
L—Self-locking nut

Main gearbox

To remove **Operation C/6**

1. For removal procedure, see Operation C/2.

To strip **Operation C/8**

1. Mount the gearbox on a suitable stand.
2. Drain off the gearbox and transfer box oil.
3. Remove the main gear change lever assembly, then the reverse stop hinge. Operation C/30.
4. Remove the transfer box and front output shaft housing complete. Operation C/14.

Dismantle the main gearbox as follows:

5. Disconnect the connecting tube from the clutch cross-shaft.
6. Remove the dust-proofing grommets from the bell housing apertures.
7. Remove and strip the clutch withdrawal unit from the bell housing, Section B.
8. Remove the oil filler cap and joint washer from the gearbox top cover.
9. Remove the filler cap retaining clip.
10. Remove the plug retaining the 1st/2nd speed selector spring in the top cover and withdraw spring.

    Note: To prevent the selector ball falling into the gearbox, with the top cover removed, pack the hole with grease.

11. Remove the retaining plates for the side selector springs, the rubber grommets and the 3rd/4th and reverse selector springs.
12. Remove the selector cover plate from the gearbox top cover.
13. Remove the two selector shaft end cover securing set bolts.
14. Remove the gearbox top cover, together with the upper selector end cover. Remove the two selector balls and locking plunger from the gearbox and the 1st/2nd speed selector ball from the top cover. Remove the 2nd gear stop from the top cover.
15. Select 1st gear (centre selector to rear); remove the reverse gear selector by lifting and turning the selector shaft one quarter of a turn to the left. Move the 1st/2nd speed selector to the neutral position and remove it; remove the 3rd/4th selector. Remove the lower selector end cover.
16. Withdraw the reverse selector fork and the rubber sealing ring from the shaft.
17. Remove the 2nd speed stop from the end of the 1st/2nd selector shaft. Withdraw the selector fork and the rubber sealing ring from the shaft.
18. Withdraw the 3rd/4th selector fork and the rubber sealing ring from the shaft.
19. Remove the castle nut from the front of the layshaft. (To lock the shaft for nut removal, select top and 2nd speeds simultaneously.)

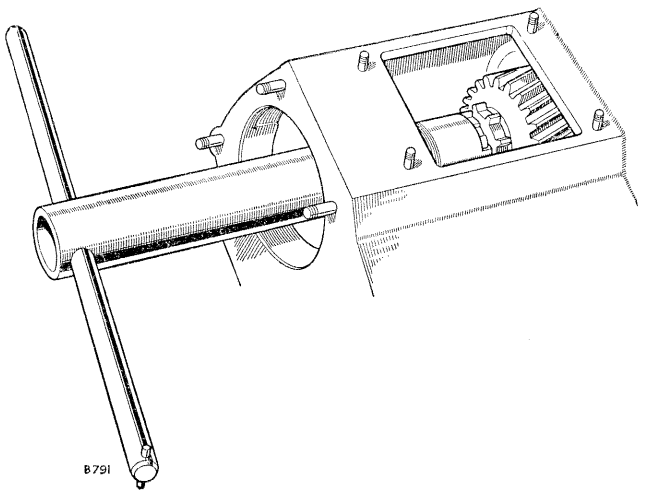

Fig. C-9—
Removing the transfer drive gear securing nut

20. Remove the nut at the rear of the mainshaft retaining the transfer drive gear. Withdraw the gear and distance piece and oil flinger from the mainshaft.
21. Remove the bell housing complete with joint washer, tapping the layshaft out of the front bearing, so that it remains in the gearbox. Remove the needle roller bearing from the front end of the mainshaft. Remove the constant gear and conical distance piece from the bell housing.
22. Remove the layshaft front bearing retaining plate.
23. Remove the layshaft bearing plate; press out the layshaft front bearing, remove the pinion bearing retaining plate. Press out the primary pinion and bearing from the bell housing. Remove the nut securing the primary pinion bearing; press the bearing and shield off the pinion shaft. (The nut has a left-hand thread.)
24. Remove the synchronising clutch unit from the mainshaft and then withdraw the layshaft complete from the gearbox and strip it as follows:
25. Remove the distance sleeve. Remove the 3rd and 2nd speed gears. Remove the split ring retaining the 2nd speed gear. Press off the rear bearing and 1st speed gear.
26. Drive out the mainshaft complete from the rear and strip it as follows:
27. Remove the 1st speed gear. Prise out the spring ring inside the 3rd speed gear cone and discard it; remove the 3rd speed gear thrust washer and gear. Remove the distance sleeve and 2nd speed gear. Remove the peg locating the distance sleeve and withdraw the located 2nd speed gear thrust washer.
28. Remove the circlip retaining the mainshaft rear bearing housing to the rear face of the gearbox casing. Tap out the peg-located bearing housing complete from the rear. Remove the oil seal from the housing. Remove the circlip retaining the bearing in the housing and press out the bearing.
29. Drive out the reverse gear shaft from inside the gearbox; the gearbox casing must be warmed to facilitate this operation. Remove the reverse gear and, if necessary, press out the bush from the gear.
30. To remove the outer race of the layshaft rear bearing from the gearbox casing, proceed as follows:

    Make a plunger (preferably from hardwood) about 12 in. (300 mm) long and approximately $1\frac{11}{16}$ in. (43,50 mm) in diameter, i.e. to just fit

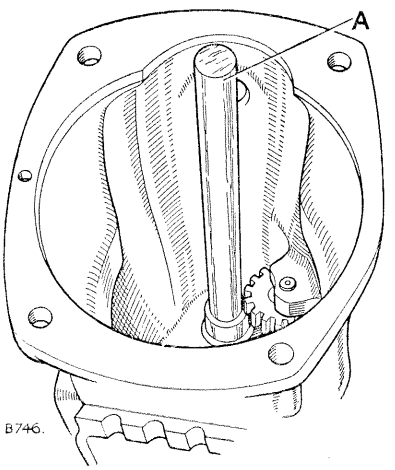

Fig. C-10—
Removing layshaft rear bearing outer race
A—Plunger

into the outer race. Stand the gearbox casing on end and fill the race housing with thick oil, insert the plunger and tap it down sharply. In most cases the oil will force the outer ring upwards out of the casing; if necessary, the gearbox casing may be warmed to facilitate removal of the race.

To assemble **Operation C/10**

1. Wash all the component parts thoroughly and lay them out for inspection. Renew all lock-washers, split pins and spring rings.
2. Check all the bearings for wear and damage, and renew them as necessary.
3. Check all the gears for damage marks and rectify or renew them as necessary. The constant, second and third speed gears are only supplied in mated pairs; all other gears may be replaced singly.
4. Examine the casing for signs of damage or cracks and renew it as necessary. A casing may also be scrap as a result of excessive wear in a bearing bore; such wear will be obvious during the course of assembly.
5. Press the layshaft rear bearing outer race into the gearbox casing with the lipped edge to the rear. It must be a *drive fit*. It may be necessary to warm the casing to assist in this operation.
6. If necessary, renew the reverse gear bush, bell out its extremities and ream it in position to .812 in. (20 mm). The bush should be a *press fit* in the gear. Place the reverse gear (with the smaller wheel to the rear) in position in the gearbox and drive the shaft through the gearbox casing and the gear. It will be necessary to warm the casing to assist in this operation. The shaft must be a *drive fit* in the casing.
7. Press the mainshaft rear bearing into the bearing housing until it abuts the flange in the housing bore; the bearing must be a *press fit* in the housing. Secure the bearing with a circlip.
8. Smear the outer diameter of the oil seal with jointing compound and press it into the other end of the housing, with the knife edge inwards
9. Fit the location peg in the bearing housing and push the complete housing into the gearbox casing from the inside, until the housing flange abuts the casing. The housing must be a *push fit* in the casing; secure the housing with a circlip.

Mainshaft

10. If removed, replace the rear thrust washer. Do not fit the large bush locating peg at this stage.
11. Slide on the mainshaft bush with the large locating slot to the rear, together with the second speed gear, synchromesh cone to the rear.
12. Place the third speed gear on the bush with the gear wheel against the shoulder, and secure with the second thrust washer and the old spring ring.
13. While pressing the third speed gear hard against the bush shoulder, the end-float of the second speed gear, measured between the gear and the bush shoulder, should be .004 to .007 in.

    The third speed gear end-float should be the same, measured with the second speed gear pressed hard against the bush shoulder.

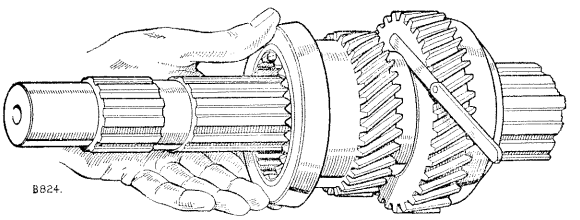

Fig. C-11—Measuring mainshaft gear end-float

14. If the end-float of either gear is insufficient, a new mainshaft bush must be fitted; if excessive, it may be reduced by rubbing down the end face of the bush.
15. Remove the spring ring, take off the thrust washer, bush and gears, and replace the bush and washer, securing with the old spring ring.
16. An end-float of .001 to .008 in. for the mainshaft bush is allowed, but this should be kept as low as possible by the use of the thrust washers, which are supplied in four thicknesses—.125 in., .128 in., .130 in. and .135 in.

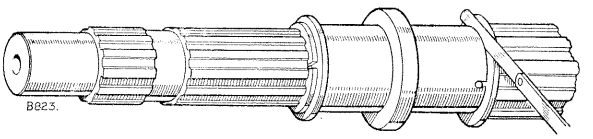

Fig. C-12—Measuring mainshaft bush end-float

17. When the end-floats are correct, fit the rear thrust washer and the bush locating peg. Assemble the bush and gears and slide on the front thrust washer with its groove in line with the small slot in the bush.
18. Secure the assembly with a *new* spring ring.
19. Slide the first speed mainshaft gear over the mainshaft splines with its internally splined flange to the front; check that the internal splines mesh easily with the second speed gear at all positions of a complete revolution.
20. Insert the mainshaft complete into the gearbox casing and tap the rear end of the shaft home into its bearing; the shaft must be a *drive fit* in the bearing.
21. Assemble the layshaft as follows:

    Slide the first speed layshaft gear over the splines on the rear of the layshaft with the chamfered end of the teeth to the front and fit the rear bearing inner race on to the shaft. The bearing must be a *tap fit* on the shaft.

Fit the split ring retaining the 2nd speed gear and slide the gear on to the shaft, with its flange to the front, over the split ring; ensure that the ring beds well into its groove and does not foul or tilt the gear. Slide the 3rd speed gear on to the shaft with its flange to the front, followed by the distance tube, constant gear and conical distance piece. Press the layshaft front bearing on to the end of the layshaft and lock up the whole assembly tightly by means of the plain washer and castle nut. Ensure that the layshaft assembly is locked up tightly and that the gears are not tilted by excessive run-out, either on their faces or those of the distance sleeve.

22. Should the gears have any end-float, this condition must be rectified by fitting a new distance tube.

23. Remove the castle nut, plain washer, bearing, conical distance piece and constant gear from the end of the shaft and fit the rest of the assembly in the gearbox casing, engaging the constant mesh gears.

Assemble the primary shaft as follows:

24. Press the primary pinion bearing on to the pinion shaft until it abuts the shoulder. The bearing must be a *light press fit* on the shaft. Secure the bearing by means of the lockwasher and locknut.

Assemble the bell housing as follows:

25. Press the primary shaft and bearing into the bell housing. The bearing must be a *press fit* in the housing. It may be necessary to warm the bell housing to assist in this operation.

26. Fit the pinion bearing retaining plate.

27. Press the layshaft front bearing into the bell housing until it is flush with the rear face of the housing. The bearing must be a *press fit* in the housing; it may be necessary to warm the bell housing to assist in this operation. Fit the layshaft bearing plate.

28. Check and renew the synchronising clutch unit detent spring, if necessary. Fit the synchronising clutch assembly over the mainshaft splines, with the recessed portion towards the 3rd speed gear (Fig. C-13).

29. Place the needle roller bearing over the front of the mainshaft and place the conical distance piece and constant gear in position in mesh with the primary pinion on the rear face of the bell housing. Offer the bell housing and joint

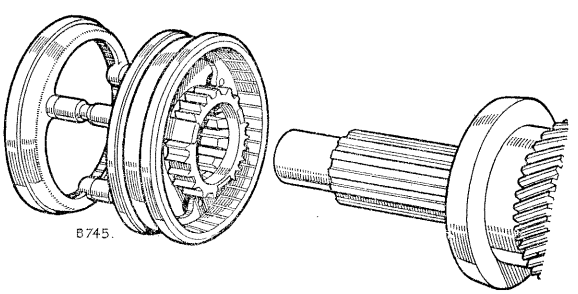

Fig. C-13—Fitting synchronising clutch assembly

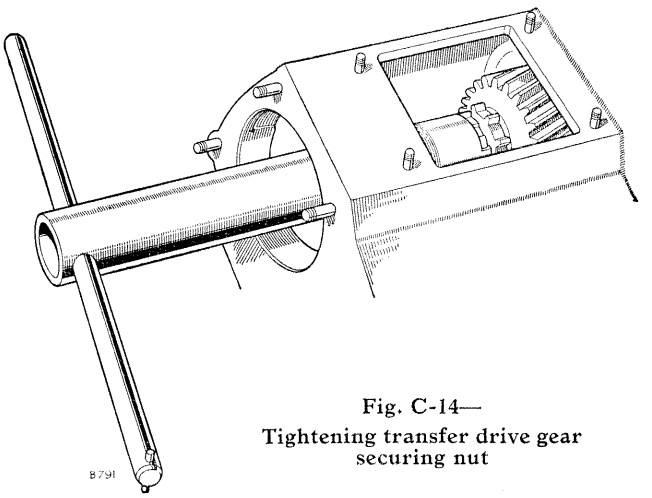

Fig. C-14—
Tightening transfer drive gear securing nut

washer to the gearbox casing, locating the dowel and entering the housing lip into the casing; the front end of the layshaft is a *sliding fit* in the bearing inner member. Secure the housing to the gearbox casing.

Special fitting bolts are used for securing and locating the gearbox to bell housing.

These bolts are accurately machined and **must not** be replaced by standard bolts.

30. With the bell housing secured, and the layshaft front bearing retaining plate fitted but not tightened, ensure that a minimum layshaft movement of .005 in. (0,13 mm) is present, to ensure adequate bearing clearance. If the layshaft bearings are binding, remove the bell housing and retaining plate and fit a thinner conical distance washer from the range available, *i.e.*, .312 in. (8 mm), .332 in. (8,5 mm) and .352 in. (9 mm).

Refit the bell housing and retaining plate over the layshaft front bearing and secure. Lock the layshaft by selecting top and second simultaneously, and tighten the layshaft securing nut to 75 lb/ft (10 kg/m), if necessary tightening to the next split pin hole. This will draw the layshaft forward, so allowing a minimum of .005 in. (0,13 mm) clearance for the end bearing.

31. Examine the distance piece for the rear end of the mainshaft, this acts also as a track for the oil seal and must be rectified or renewed if damaged in any way on its outer diameter. Place the distance piece and oil flinger over the shaft and fit the transfer drive gear with its splined flange to the rear; secure the gear with the tab washer, shim and nut using special spanner Part No. 263056 (Fig. C-14).

Assemble the main selectors as follows:

32. Fit the rubber sealing ring and 3rd/4th selector fork to the selector shaft; fit the rubber sealing ring and 1st/2nd selector fork to the selector shaft and fit the 2nd speed stop to the end of the shaft. Fit the rubber sealing ring and reverse selector fork to the selector shaft.

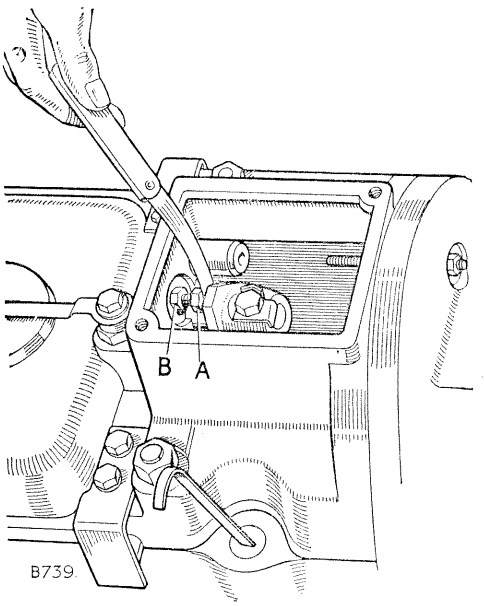

Fig. C-15—Adjusting 2nd speed gear bolt
A—Stop bolt B—Locknut

33. Place the lower selector end cover in position on the gearbox. Fit the 3rd/4th and 1st/2nd selectors; move the 1st/2nd selector to the 1st speed position (to the rear) and fit the reverse gear selector; move the 1st/2nd speed selector to the neutral position.
34. Fit the locking plungers between the selector shafts.
35. Fit the gearbox top cover. Fit the upper selector end cover and secure both halves.
    Note: The gearbox casing and top cover are machined together and must not be renewed separately.
36. Replace the reverse and 3rd/4th speed selector balls and springs (the reverse spring is the stronger of the two); fit the rubber grommets and retaining plates.
37. Replace the 1st/2nd speed selector ball and spring in the top cover and fit the filler cap spring plug and spring.
38. Ensure that the operation of the selector mechanism is correct.
39. Fit the set bolt and locknut (acting as a 2nd speed stop) in the top cover. Select 2nd gear and adjust the stop bolt so that there is .002 in. (0,05 mm) clearance between the bolt head and the stop on the selector shaft; tighten the locknut (Fig. C-15). The reverse stop bolt cannot be adjusted until the transfer box has been fitted. Operation C/20.
40. Assemble the clutch withdrawal unit. Section B.
41. Fit the clutch withdrawal unit to the bell housing.
42. Fit the dust-proofing grommets.
43. Fit the connecting tube to the clutch cross-shaft.
44. Refit the transfer box and front output shaft housing complete. Operation C/20.
45. Refit main gear change lever. Operation C/30.
46. Fit and adjust reverse stop hinge. Operation C/32.

To refit **Operation C/12**

1. Replace the complete gearbox and transfer box assembly in the vehicle. Operation C/4.

Transfer box

To remove **Operation C/14**

1. Drain off the transfer box oil.
2. Remove the floor board assembly and gearbox cover. Section R.
3. Remove seat box. Section R.
4. Disconnect the front propeller shaft at the output shaft housing end.
5. Disconnect the rear propeller shaft and rear power take-off propeller shaft (if fitted) at the gearbox end.
6. **R.H.D. models.** Disconnect the hand brake expander rod from the relay lever.
7. **L.H.D. models.** Disconnect the hand brake rods from the relay lever. Remove the hand brake cross-shaft. Section H.
8. Disconnect the speedometer cable.
9. Remove the transfer box output shaft driving flange complete with brake drum.
10. Remove the brake back plate and shield from the speedometer drive housing.
11. Remove the transfer box bottom cover and joint washer.
12. Remove the nut and spring washer securing the intermediate gear shaft retaining plate; extract the retaining plate stud and remove the plate.
13. Remove the mainshaft rear bearing housing—or, if fitted, the power take-off drive unit assembly (Section T) and joint washer, and extract the intermediate gear shaft, complete with rubber seal, using special extractor Part No. 262772.
14. Remove the intermediate gear cluster through the base of the casing, complete with a needle roller bearing at each end of its bore. Remove the bearings from the gear. Remove also the thrust washer and if fitted, a shim.
15. Disconnect the earth lead at the transfer box.

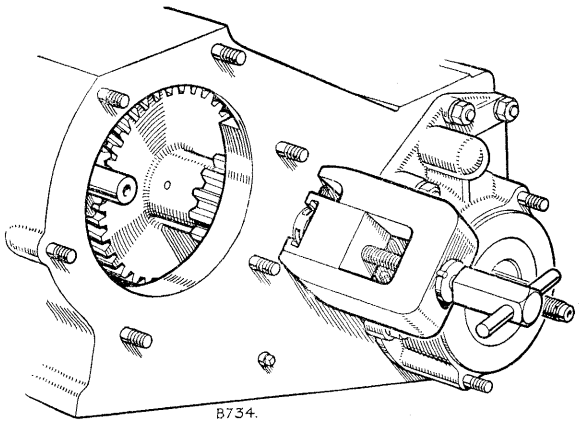

Fig. C-16—Removing intermediate gear shaft

16. Disconnect the two gearbox unit bearer bolts, the top plain washers, rubber washers, shims, if fitted, top rubbers and distance tubes.
17. Remove the transfer lever from the bracket fixed to the bell housing.
18. Position a jack under the gearbox and raise it sufficiently to enable withdrawal of transfer box and front output shaft housing unit.
19. Detach the transfer casing from the main gearbox, noting *that the three self-locking securing nuts are located inside the transfer casing.* Remove the transfer casing and front output shaft housing unit complete from the vehicle.

To strip **Operation C/16**

1. Remove the speedometer drive pinion unit. Withdraw the pinion from the sleeve. If necessary, remove the oil seal from the pinion sleeve. Remove rubber 'O' ring.
2. Remove the speedometer drive housing complete with shims, which should be preserved. If necessary, remove the front output shaft oil seal from the housing.
3. Withdraw the speedometer drive worm from the transfer box output shaft; this is a *sliding fit* on the shaft.
4. Remove the front output shaft housing complete with output shaft, front wheel drive dog clutch, dog clutch selector shaft and fork and the joint washer.
5. Remove the top cover plate from the transfer box.
6. Remove the transfer gear selector fork and shaft.
7. Remove the circlip retaining the front bearing outer race in the transfer casing.
8. Drive out the transfer box output shaft rear bearing outer race from the transfer casing.

   Note: Protect the transfer casing output shaft bearing bores with pads of rag to prevent damage during the following operations.

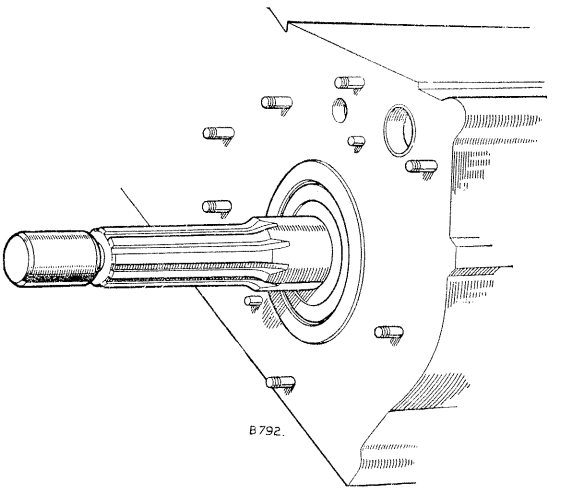

Fig. C-17—Fitting transfer box output shaft protection cap

9. Fit the protection cap (Part No. 243241) over the threaded portion of the transfer box output shaft and tap the shaft forward as far as possible to drive the front bearing outer race from the casing. Slide the shaft to the rear and insert an appropriate packing piece (Fig. C-18), between the front bearing rollers and the outer race; this packing piece may be fashioned from a scrap bearing outer race, the outer diameter of which should be ground to give free movement in the transfer box, and a portion cut away so that it may be fitted over the shaft. Tap the shaft forward again, when the bearing outer race should be driven clear of the casing.

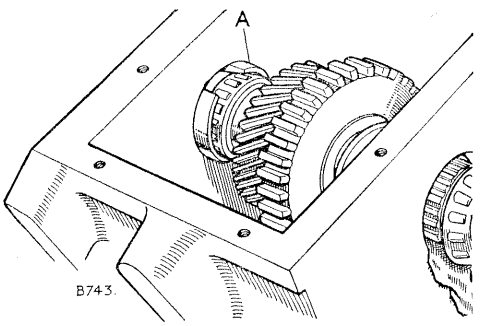

Fig. C-18—Removing transfer box output shaft front bearing outer race
A—Packing piece

10. Part the front bearing inner race from the circlip retaining the high speed gear thrust washer by means of a mild steel chisel (Fig. C-19), then drive the front bearing inner race from the output shaft by means of brass drift.
11. Remove the circlip and thrust washer from the output shaft in front of the high speed gear, and push the output shaft through the gears clear of the casing; the high and low speed gears can then be withdrawn through the bottom of the casing.

12. If required, remove the rear bearing inner race from the output shaft by means of a suitable extractor.

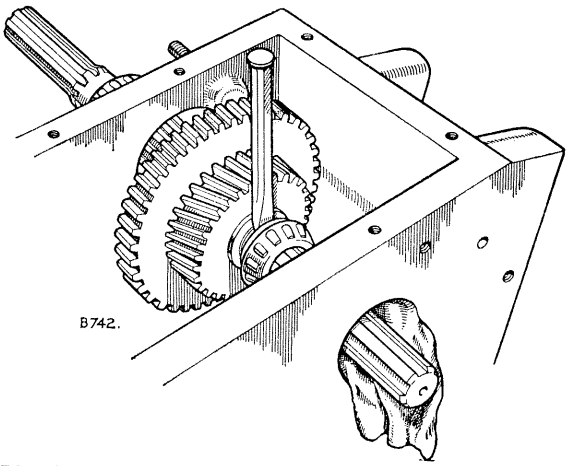

Fig. C-19—Removing transfer box output shaft front bearing inner race

13. Remove the top cover plate or the power take-off selector assembly (Section T) and joint washer from the transfer casing.

14. Remove the mainshaft rear bearing assembly or the power take-off drive unit assembly and dog clutch (Section T) and joint washer from the rear of the transfer casing.

15. Remove the circlip securing the bearing in the mainshaft housing and withdraw the retaining plate and needle roller bearing. If necessary, remove the hardened steel bush from the housing, when the second plate can be withdrawn.

16. If necessary, remove the engine support brackets from the transfer casing.

17. If necessary, remove the dog clutch selector shaft bush from the transfer casing. If necessary, remove the reverse gear stop bolt and locknut from the transfer casing.

18. If necessary, remove the driving flange complete from the brake drum.

19. If necessary, remove the dust shield, circlip, bolts and retaining plate from the flange.

To assemble — Operation C/18

1. If necessary, renew the oilite bush in the transfer casing which carries the dog clutch selector shaft. The bush is made to an *interference fit* in the casing, and must be reamed to 1.148 in. (29,17 mm) after fitting.

2. Fit the two output shaft gears on the shaft and check that they mesh easily at every point of a complete revolution.

3. Remove the two gears from the shaft and place them in position in the transfer casing; the smaller (high-speed gear) should be fitted at the front with its engaging teeth to the rear and the large (low-speed gear) at the rear with its selector flange to the rear.

4. Insert the output shaft through the casing and gears from the rear, engaging the splines in the low-speed gear.

5. Fit the located thrust washer in front of the high-speed gear and secure it with a circlip.

6. Fit the inner members of the two output shaft bearings to the shaft (smaller bearing at the front). The bearings must be a *light press fit* on the shaft.

7. Fit the front bearing outer race and secure it with a circlip. The bearing must be a *drive fit* in the transfer casing.

8. Fit the rear bearing outer race to the transfer casing. The bearing must be a *drive fit* in the casing.

9. Place the protection cap (Part No. 243241) on the threaded portion of transfer box output shaft (Fig. C-17) and drive the shaft until the front bearing is hard against the circlip. Lightly tap the rear bearing outer race until all the end-float of the output shaft has been taken up.

10. Ensure that the high speed gear has .004 to .008 in. (0,10 to 0,20 mm) end-float on the shaft, by checking with feeler gauges between the two gears. The end-float can be increased if necessary, by grinding the located thrust washer.

11. The end-float of the transfer box output shaft must be adjusted to zero by means of shims between the transfer casing and speedometer drive housing. (Fitted at a later stage.)

12. Engage the transfer gear selector fork with the groove in the low speed gear, with the threaded end of the pinch bolt hole to the left-hand side.

13. Slide the selector shaft through the transfer casing and fork and secure the fork.

14. If necessary, renew the transfer box output shaft oil seal in the speedometer drive housing, with the knife edge inwards. The outer diameter of the seal should be smeared with jointing compound and the housing warmed before assembly.

15. If necessary, renew the oil seal in the speedometer drive pinion sleeve; the seal should be fitted with the knife edge inwards. Fit the pinion in the sleeve and fit the assembly to the drive housing, with the "flat" on the sleeve to the bottom. The pinion should be a *sliding fit* in the sleeve. Check that the drive functions correctly. Replace rubber 'O' ring.

16. Slide the speedometer drive worm over the transfer box output shaft with its conical end inwards and fit the dowel-located speedometer drive housing to the transfer casing, complete with suitable shims for adjustment of the transfer box output shaft bearing end-float. The

shims, which are available .003 in. (0,08 mm), .005 in. (0,13 mm), .010 in. (0,25 mm) and .015 in. (0,38 mm) thick, should be selected so that the face of the rear bearing lies .002 in. (0,05 mm) below the face of the outer shim, Fig. C-20. Secure the drive housing to the transfer casing. Drive the output shaft towards the rear and ensure that it turns quite freely, but that no end-float is present; check also that the high speed gear end-float is retained.

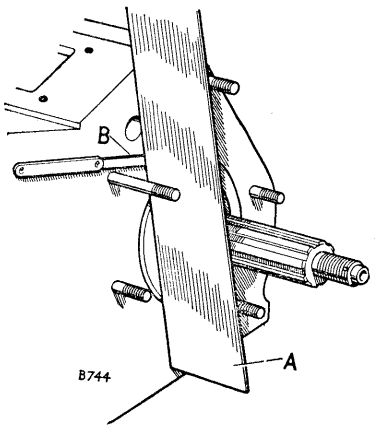

Fig. C-20—Adjusting transfer box output shaft end-float
A—Straight-edge
B—Feeler gauge

17. Place the two intermediate shaft thrust washers in the transfer casing and retain them with a film of grease; the washers should be fitted with their bronze faces inwards and located in the casing by means of the tabs.
18. Fit the two needle roller bearings in the intermediate cluster gear and offer the gear into position, meshing it with the mainshaft and output shaft gears, i.e., with the larger wheel to the front.
19. Fit the intermediate shaft, from the rear through the casing, thrust washers and gear, tapping it lightly home when the register engages. The shaft must be a *light tap fit* in the casing.
20. Ensure that the gear has .004 in. to .008 in. (0,10 to 0,20 mm) end-float in the casing; if incorrect, the float can be adjusted by grinding the thrust washers or fitting a shim (.010 in. thick) behind one washer. When the end-float is correct, withdraw the shaft and remove the gear cluster from the casing complete with needle rollers and thrust washers.
21. Examine the outer diameter of the rear axle drive flange for damage which may have caused failure of the transfer box output shaft oil seal and rectify or renew the flange as necessary.
22. If removed, insert the six fitting brake drum securing bolts in the outer flange holes and fit the retaining plate over the flange. Fit the four propeller shaft securing bolts in the inner holes and secure them with a circlip.
23. Fit the dust excluder over the outer diameter of the rear axle drive flange, with the open end towards the flange.
24. Replace the front output shaft housing assembly. Operation C/24.
25. Fit the retaining plate and hardened steel bush in the main shaft bearing housing; fit the needle roller bearing and second retaining plate and secure with a circlip.
26. Fit the complete bearing housing (or power take-off drive unit—see Section T) to the transfer casing, together with a joint washer.
27. Fit the top cover plate (or power take-off selector assembly—see Section T) to the transfer casing, together with a joint washer.
28. Fit the gearbox unit support brackets to the transfer casing.

To refit **Operation C/20**

1. Fit the complete transfer casing and joint washer to the main gearbox, locating it with two dowels. NOTE—*Three self-locking nuts inside the transfer casing.*
2. Replace the intermediate shaft retaining plate stud in the transfer casing.
3. Fit the intermediate shaft and cluster gear. Operation C/18—(17) and (18).
4. Fit the intermediate shaft together with the retaining plate in its deepest slot through the casing, thrust washers and gear, tapping it lightly home when the register engages.

   A rubber seal is fitted to the intermediate gear shaft. This seal must be examined for wear and signs of deterioration. Renew if necessary, before refitment.
5. Fit the transfer casing bottom cover, together with a joint washer and drain plug.
6. Fit the complete transmission brake (Section H) and shield, to the speedometer drive housing, with the expander rod on the right-hand side.

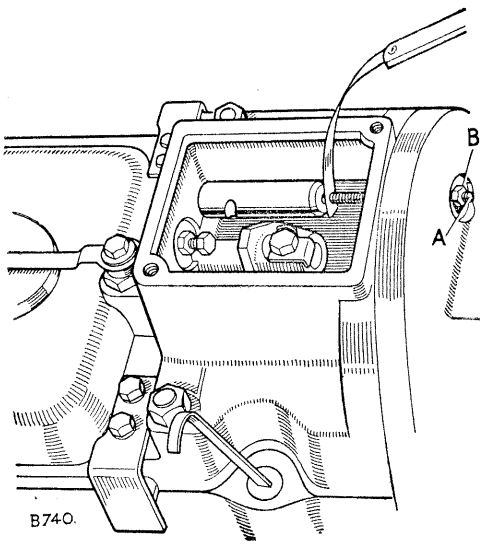

Fig. C-21—Adjusting reverse gear stopbolt
A—Stop bolt B—Locknut

7. Slide the complete drive flange over the front output shaft and secure.
8. Ensure that the drive flange abuts the speedometer drive worm and gives a positive drive to the pinion.
9. Fit the transmission brake drum. Adjust the brake—Section H.
10. Select reverse gear in the main gearbox, and adjust the stop bolt in the transfer casing so that there is .002 in. (0,05 mm) clearance between the selector shaft and bolt.
11. Replace the oil level dipstick and refill with oil. Fit the main gearbox selector cover plate.
12. Complete the assembly by reversing the removal procedure
13. Adjust the gearbox unit mounting rubbers. Operation C/4.
14. Adjust the front wheel drive rod. Operation C/24.

Front output shaft housing assembly

To remove **Operation C/22**

1. Drain off the transfer box oil.
2. Remove floor board assembly and gearbox cover. Section R.
3. Remove seat box central panel.
4. Remove front propeller shaft. Section D.
5. Remove the hand-brake expander rod from the relay lever.
6. Remove the slave cylinder bracket assembly. Operation C/2.
7. Remove the gearbox mounting securing nuts, plain washers, rubber washers, shims (if fitted) and top rubbers.
8. Remove the transfer control link from the selector shaft; remove the transfer lever.
9. Remove the dust cover from the front of the output shaft housing.
10. Remove the front wheel drive control lever assembly. Remove the locking peg from the lever. Disconnect the operating rod from the lever (spring-loaded clevis). If necessary, press out the bush from the lever.
11. Place a jack under the gearbox and raise it as much as possible and remove the front output shaft housing complete with output shaft, front wheel drive dog clutch, the dog clutch selector shaft and fork and a joint washer. Withdraw the dog clutch selector shaft and dog clutch from the rear of the housing. Remove the top cover plate from the transfer box, hold in low transfer and slide the output shaft housing downwards and to the rear, and remove from under the vehicle. Leave the transfer selector shaft and link in position protruding from the transfer box.

To strip **Operation C/24**

1. Remove the block from the transfer selector shaft.
2. Slide the following parts from the transfer selector shaft:—

   Link, link pin and connector assembly, spring, spring locating bush, and distance tube.
3. Detach the link from the link pin.

   Note: The connector should not be removed from the link pin unless absolutely necessary, as difficulty will be experienced in effecting correct alignment on reassembly.
4. Carefully remove the front axle drive flange complete with mudshield, avoiding damage to the oil seal.
5. Remove the output shaft from the output shaft housing.
6. Remove the block from the dog clutch selector shaft.
7. Slide the two springs and selector fork from the dog clutch selector shaft.
8. If necessary, remove the two bushes from the selector fork boss.
9. If necessary, remove the spigot bush from the rear end of the front output shaft.
10. Remove the oil seal retainer complete with oil seal, joint washer and mudshield.
11. If necessary, remove the oil seal from the retainer.
12. If necessary, remove the mudshield from the oil seal retainer.
13. If necessary, withdraw the output shaft front bearing from the front output shaft housing.
14. Remove the rubber seals in front output shaft housing for transfer gear change shaft and four-wheel drive locking pin.

To assemble **Operation C/26**

1. If necessary, replace the front output shaft front bearing in the front output shaft housing. The bearing must be a *push fit* on the shaft and a *light drive fit* in the housing. Renew the shaft, bearing and housing as necessary.

Examine the rubber seals for transfer gear change shaft and four-wheel drive locking pin, for signs of wear or deterioration. Renew seals if necessary and replace in respective bores.

2. If removed, fit a new oil seal in the retainer with its knife edge inwards. The external diameter of the oil seal must be smeared with jointing compound and the retainer warmed before assembly.

3. If removed, replace the mudshield on the oil seal retainer.

4. If removed, replace the spigot bush in the rear end of the front output shaft, pressing it in flush with the face of the shaft.

   The bush must be reamed in position to .8755+.0005 (22,2 mm+0,013), and should be a *sliding fit* on the transfer box output shaft.

5. If removed, renew the two oilite bushes in the dog clutch selector fork boss, pressing them flush with the end faces of the boss. They must be reamed in position to .6255 in.+.0005 (15,887 mm+0,012) and should be a *sliding fit* on the selector shaft.

6. Check the two dog clutch selector springs and renew as necessary. Free length should be 2.75 in. (69,8 mm).

7. Check the transfer selector shaft spring and renew as necessary. Free length should be 7.156 in. (181,76 mm).

8. Replace the oil seal retainer on the front output shaft housing.

9. Fit the two springs and selector fork (crank to the rear) over the dog clutch selector shaft.

10. Replace the block on the selector shaft.

11. If the connector has been detached from the link pin, replace it with the hole for the locking peg vertical and the cutaway on the link pin underneath; ensure that the connector is square with the pin and secure *lightly* with the nut and shakeproof washer.

12. Secure the link to the link pin by means of the special screw, castle nut and split pin. The threaded end of the screw must be downwards and the shorter end of the link towards the transfer selector, with the longer arm of the jaw at the opposite end to the rear.

13. Replace the transfer shaft selector spring and plunger and secure with the plug and joint washer.

14. Slide the following parts on to the transfer selector shaft:—

    Distance tube, spring locating bush with its smaller diameter to the front, and spring. Compress the spring and fit the link and connector assembly until the block is over the hole in the shaft. Fit the special screw from the bottom, through the coupling jaw, block and selector shaft and secure with the castle nut and split pin.

15. If they have been separated, the position of the connector and link pin should now be adjusted as follows:—

16. (*a*) The most efficient method of carrying out this operation is to use a dummy front output shaft housing with a large aperture in the side through which the connector securing nut can be tightened. Place the dummy housing over the selector shafts and locate the link pin by means of the locking peg. Tighten the connector securing nut, withdraw the peg, and remove the housing.

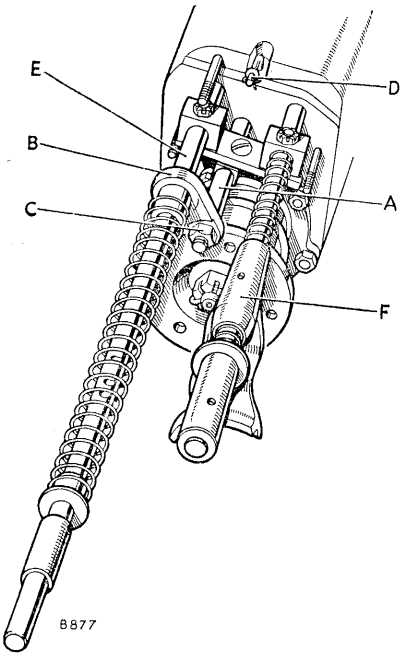

Fig. C-22—Setting the link pin

A—Link pin
B—Connector
C—Link pin securing nut
D—Locking peg
E—Transfer selector shaft
F—Dog clutch selector shaft

(*b*) If a dummy housing is not available, the actual output shaft housing can be used to align the selectors by sliding it over the shafts back to front. Proceed as follows:—

Remove the pinch bolt securing the selector fork to the transfer selector shaft and withdraw the shaft. Engage the transfer selector shaft, link pin and dog clutch selector shaft into the front face of the front output shaft housing ensuring that the link engages the pivot screws of the transfer and dog clutch selector shafts. Locate the link pin in the housing by means of locking peg and tighten the connector nut.

Remove the locking peg and withdraw the shafts and link pin from the housing. Slide the transfer selector shaft through the transfer casing and fork, and secure the fork.

17. Fit the output shaft in its housing. Examine the outer diameter of the front axle drive flange for damage which may have caused failure of the original oil seal; rectify or renew as necessary. Fit the flange and dust shield to the front output shaft.

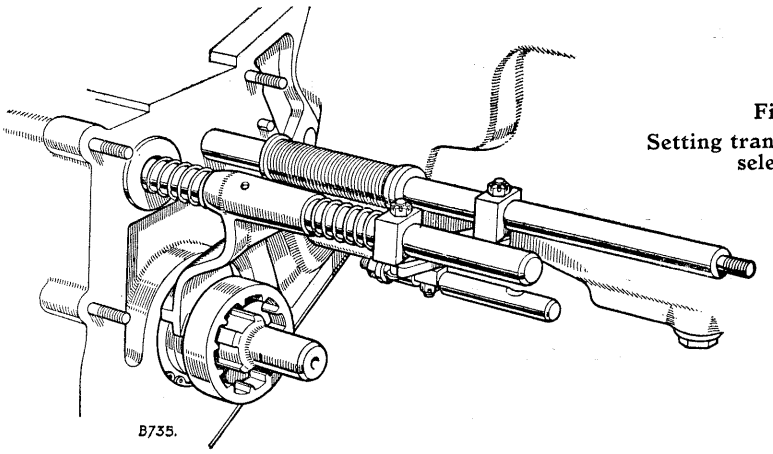

Fig. C-23—
Setting transfer and dog clutch selector shafts

To refit **Operation C/28**

1. Fit the front output shaft housing joint washer.
2. Engage the dog clutch selector fork with the groove in the locking dog.
3. Engage the selector shaft into the bush in the transfer box, and at the same time slide the dog clutch over the splines on the transfer box output shaft, ensuring that the link engages the screw correctly.
4. Select low transfer (through the aperture in the transfer box). Place the housing over the selector shafts (from under) and secure to the transfer casing, picking up the earth lead under one of the nuts.
5. If necessary, renew the bush in the front wheel drive control. Connect the operating rod and locking peg to the lever.
6. Replace the control lever assembly.
7. The joint faces of dust cover shield and front output shaft housing should be smeared with Bostik sealing before refitment. Secure cover using three set bolts.
8. Replace the transfer lever. Secure the lever to the selector shaft by means of the control link.
9. Reconnect hand brake expander rod to the relay lever.
10. Replace the transfer gear change cover plate.
11. Refill the transfer box with oil of the correct grade.
12. Complete the assembly by reversing the sequence of removal operations.
13. Adjust the gearbox unit mounting rubbers. Operation C/4.
14. Adjust the front wheel drive rod to ensure sufficient extraction and replacement of the locking peg; proceed as follows:—
    (*a*) Depress the four-wheel drive control rod.
    (*b*) Screw down the knob locknut until the compressed spring length is $2\frac{5}{16}$ in.—$\frac{1}{16}$ (58 mm—1).
    (*c*) Fit knob and tighten locknut.

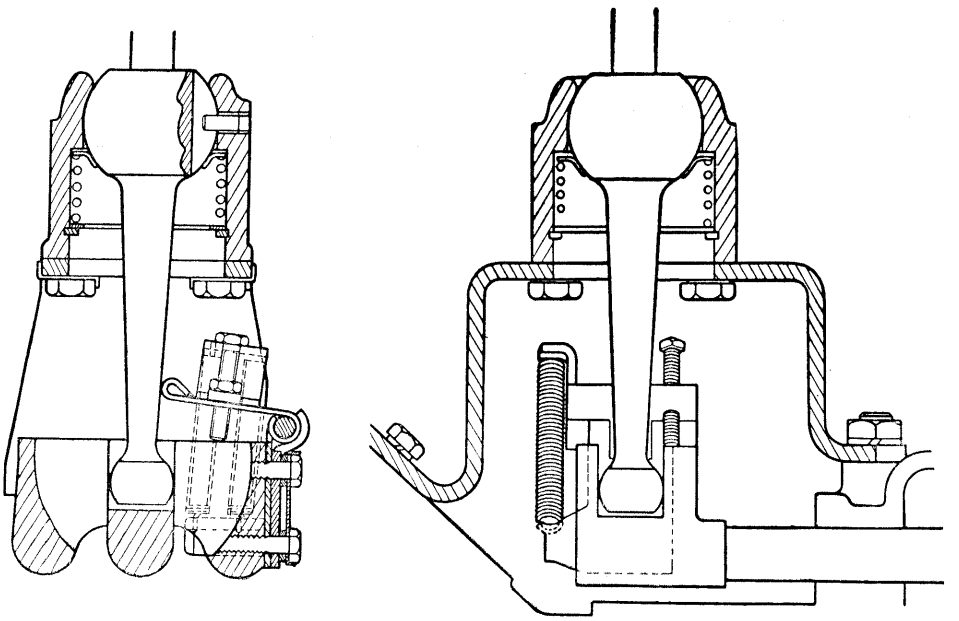

Fig. C-24—
Cross-section of reverse stop

Main gear change lever

To overhaul **Operation C/30**

1. Remove front wheel drive control knob, locknut and spring; remove the knob and locknut from the transfer gear change lever.
2. Remove the floor board assembly and gearbox cover—Section R.
3. Remove the gear change mounting plate and gear change lever complete.
4. Remove the gear change lever housing from the mounting plate.
5. Remove the circlip from the lever housing and draw out the spring retaining washer, spring and spherical seat; withdraw the gear lever from the housing. If necessary, remove the lever ball locating pin from the housing.
6. Detach the two springs from the reverse stop hinge. Remove the reverse stop hinge (complete with adjusting screw and locknut) and the spring bracket from the reverse selector.
7. Renew the worn components.
8. Replace the lever ball locating pin in the housing (if removed on stripping) and secure it by staking.
9. Fit the gear change lever in the housing; replace the spherical seat, spring and retaining washer and secure the whole with a circlip.
10. Fit the housing to the mounting plate with the locating pin on the right-hand side.
11. Fit the reverse stop hinge and spring bracket to the reverse selector and secure them by means of two plain washers, one lockplate and two set bolts (the plain washers should be fitted under the lockplate). Replace the two reverse stop springs.
12. Fit the mounting plate to the gearbox unit.
13. Adjust the reverse stop. Operation C/32.
14. Replace the floor board assembly and gearbox cover—Section R.
15. Replace the front wheel drive control knob, locknut and spring; replace the locknut and knob on the transfer gear change lever.

Reverse stop

To adjust **Operation C/32**

1. The screw and locknut on the reverse stop hinge should be adjusted so that:—
   (*a*) The hinge rides easily up the gear lever when reverse gear is selected, and
   (*b*) Appreciable resistance is felt on moving the gear lever to the reverse position.
2. This adjustment should be carried out on any gearbox removed for attention, before the gearbox cover is fitted.
3. It can be carried out at any time after:
   selecting reverse gear and sliding the access panel up the front wheel drive control rod.

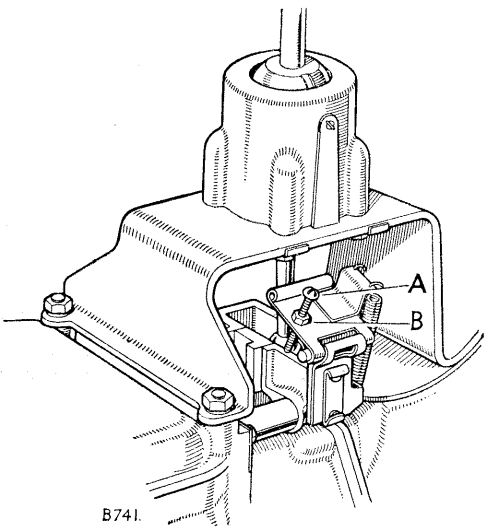

Fig. C-25—Adjusting reverse stop
A—Adjusting screw B—Locknut

DEFECT LOCATION

(Symptom, Cause and Remedy)

A—GEARBOX NOISY IN NEUTRAL

1. Primary pinion bearing worn—*Renew.*
2. Constant mesh gears incorrectly matched or badly worn—*Renew.*
3. Layshaft bearing worn—*Renew.*
4. Insufficient oil in gearbox or incorrect grade of oil—*Replenish.*

B—GEARBOX NOISY IN GEAR

1. Worn speedometer gear—*Renew. See Section Q.*
2. If the gearbox is noisy in all gears except top, the constant mesh gears may be worn or incorrectly paired or the layshaft bearings may be worn—*Renew the constant mesh gears or the layshaft bearings.*
3. Noise in either the 1st, 2nd or 3rd speed gear only, due to wear—*Renew the gear or pair of gears.*
4. Noise in all gears in all probability denotes worn primary or mainshaft bearings—*Renew bearings and check gear teeth for wear.*

C—OIL LEAKS FROM THE GEARBOX

1. Lubricant level too high—*Correct level.*
2. Damaged, incorrectly fitted or missing joint washers—*Renew.*
3. Damaged or incorrectly fitted oil seals—*Renew.*
4. Drain or level plugs loose or threads damaged—*Rectify.*
5. Cracked or broken gearbox housing—*Renew.*

D—DIFFICULTY IN ENGAGING GEARS

1. Incorrect adjustment of the gear change mechanism—*Adjust.*
2. Failure to release the clutch completely—*In the hands of the operator.*
3. Clutch spinning or sticking on the pinion shaft—*Section B.*

E—DIFFICULTY IN DISENGAGING GEARS

1. Incorrect adjustment of the gear change mechanism—*Adjust.*
2. Failure to release the clutch completely—*In the hands of the operator.*
3. Distorted or damaged mainshaft splines—*Renew.*

F—DIFFICULTY IN ENGAGING REVERSE

1. Bush loose in gear—*Replace.*
2. Faulty stop setting on selector forks—*Adjust.*

G—GEAR LEVER GOING INTO REVERSE TOO EASILY AND NOT INTO FIRST

1. Stop requires setting on selector shafts—*Adjust.*

H—TRANSFER OF OIL FROM TRANSFER BOX TO GEARBOX, TO CLUTCH

1. Faulty oil seal, gearbox to transfer box—*Fit new seal and sleeve.*

J—JUMPING OUT OF HIGH TRANSFER

1. Selector spring too weak—*Renew.*

K—JUMPING OUT OF LOW TRANSFER

1. Transfer selector fork assembled wrongly on shaft—*Assemble fork with set towards rear of vehicle.*
2. Too much end-float on intermediate gear—*Adjust.*
3. Selector spring too weak—*Renew.*

L—NOISY TRANSFER BOX

1. Too much end-float on intermediate gear—*Adjust.*
2. End-float on output shaft—*Adjust.*
3. Worn bearings—*Renew.*

M—CANNOT ENGAGE FOUR-WHEEL DRIVE

1. Maladjustment of return spring for yellow knob—*Adjust.*
2. Shafts sticking in bores of casing—*Rectify.*

GENERAL DATA

Main gearbox

Type .... Four speed and reverse
Oil capacity .... 2½ pints (1,5 litres)
Early models:
Dipstick position .... L.H. rear of casing
Late models:
Oil level plug .... L.H. side of casing

Gear ratios:

Top .... 1 to 1
Third .... 1.377 to 1
Second .... 2.043 to 1
First .... 2.996 to 1
Reverse .... 2.547 to 1

Transfer gearbox:

Type .... Two-speed gear in main gearbox output, in unit with main gearbox
Oil capacity .... 4½ pints (2,5 litres)

Gear ratios:

High .... 1.148 to 1
Low .... 2.888 to 1

Overall gear ratios:

Main gearbox	Transfer box	
	High ratio	Low ratio
Top gear	5.396	13.578
Third gear	7.435	18.707
Second gear	11.026	27.742
First gear	16.171	40.688
Reverse gear	13.745	34.585

Front axle drive:

Type .... Dog clutch in transfer box
To engage .... Depress yellow knob on gearbox cover
To dis-engage .... Automatic by selecting low transfer, then reverting to high transfer. Automatically engaged on selection of low transfer

Speedometer drive:

Ratio .... 5 to 11
Position .... At rear of transfer box

Transmission brake:

Type .... Mechanical. (See Section H.) On transfer box output shaft

DETAIL DATA

Main gearbox:

Reverse gear bush—
- Reamed bore .... .812 in. + .001 (20 mm + 0,025 mm)

Mainshaft bush—
- Fit in gears .... .0015 to .002 in. (0,0375 to 0,051 mm) clearance
- Fit on shaft .... .005 to .002 in. (0,0125 to 0,051 mm) clearance
- End-float .... .001 to .008 in. (0,025 to 0,20 mm)

2nd and 3rd speed gears—
- End-float on distance sleeve .... .004 to .007 in. (0,10 to 0,177 mm)

Synchronising clutch-load .... 15-20 lb. (6,5-9 kg)

2nd gear stop—
- Adjustment .... .002 in. (0,05 mm) clearance

Reverse gear stop—
- Adjustment .... .002 in. (0,05 mm) clearance

Transfer gearbox:

Dog clutch selector shaft bush—
- Reamed bore .... 1.148 in. — .001 (29,17 mm — 0,025)

Output shaft front and rear bearings—
- End-float .... Zero

High-speed gear—
- End-float .... .004 to .008 in. (0,10 to 0,20 mm) (after adjusting output shaft end-float)

Intermediate gear—
- End-float .... .004 to .008 in. (0,10 to 0,20 mm)

Front output shaft housing assembly:

Transfer selector shaft, spring—
- Free length .... 7.156 in. (181,76 mm)
- Length in position 3.875 in. (98,43 mm)
- Load in position .... 24 lb. (10,89 kg)

Dog clutch selector springs—
- Free length .... 2.75 in. (69,8 mm)
- Solid length .... .64 in. (16,2 mm)
- Maximum load .... 13 lb. (5,9 kg)