

Dismantling and reassembly of reverse gear for ALBIN marine engines 0-11 and 0-21

If the reverse gear for any reason must be dismantled and reassembled proceed according to the following instruction which applies to engines both with and without raised rear crank start.

Dismantling

Points 5, 6, 7, 8, and 16 apply only to engines with raised rear crank start. The instructions are otherwise similar for engines both with and without raised rear crank start.

- 1 Drain oil from reverse gear casing.
- 2 Release the shaft coupling 1 (Fig. 1) with the propeller shaft.
- 3 Unscrew nut 2 and remove the Waller washer, 3.
- 4 Unscrew bolt 7 and remove the coupling half, 6. (The washer, 4, and the sealing ring, 5, will accompany the coupling half.)
- 5 Remove the cover from the start crank pillar A (Fig. 2).
- 6 Slacken the four bolts which secure the pillar to the case and lower the pillar until the chain is released from the sprockets B and C.
- 7 Remove the cover D from the gear wheel E and knock out the tubular pin F.
- 8 Draw out shaft G aft and remove the gear wheel E.
- 9 Remove the retainer, 8, (Fig. 1) from the ball bearing, 10, and knock out the key, 9.
- 10 Remove the inspection cover and the dipstick.
- 11 Slacken the four bolts, 20, which secure the reverse gear casing 16 to the cylinder block. N.B. Where raised crank start is fitted one of these bolts is located inside the casing, 16. This bolt can be removed via the opening for the gear wheel, E in Fig. 2.
- 12 Put the control lever to forward and, if necessary, tap the projecting control lever shaft, 13, with a lead hammer or similar tool so that the casing, 16, is shifted slightly away from the cylinder block. N.B. Strike the shaft itself, not the sealing ring retainer.
- 13 Move the lock washer, 11, to the rear and unscrew the adjustment nut, 12. Then place the control lever in neutral.
- 14 The casing, 16, can now be fully removed by tapping towards aft on the control lever shaft, 13. (The ball bearing 10, lock washer, 11, adjustment nut, 12, cone, 15, and the brake band will follow with the casing, 16.)
- 15 The gear housing can be removed after unbolting the split securing collar, 18. Be careful to remove the dowel pin, 19, from the shaft.
- 16 Slacken the two screws, I in Fig. 2, and remove the gear wheel, H.

Refitting

Points 1, 9, 10, 11, 12, and 13 refer only to engines with raised crank start. Otherwise, the instructions apply to engines both with and without raised crank start.

- 1 Fit the gear wheel, H, with its pawl, K, Fig. 2. Turn the gear wheel so that the pawl is at its lower position and so that a line through the two screws, I, would be horizontal, as shown in Fig. 2.
- 2 Fit the key, 17, Fig. 1, and set the gear housing in position. The gear housing is secured by the collar, 18. Check that the dowel pin, 19, is fully entered into the shaft hole. Where raised crank start is fitted see that the pawl, K, in Fig. 2, is free from the shoulders of the collar, 18, when at its lower position.
- 3 Dismantle the ball bearing, 10, from the reverse gear casing, 16, and place the cone, 15, in the control fork end, 14. In the event of any change in the brake band adjustment, check that the band is not too tightly adjusted when the reverse gear casing is lifted into place.

- 4 With the control lever in neutral, set the reverse gear casing, 16, in place. (Check the gasket between the casing and the cylinder block.)
- 5 Screw in the four bolts, 20, remembering that the short bolt (shown in Fig. 1) shall be fitted at upper right.
- 6 Fit the adjustment nut, 12, and the lockwasher, 11. The adjustment nut shall be fitted with the bevelled face aft and shall be threaded on as far as the threading allows. See that no locking lips of the lockwasher are folded down before placing this on the shaft.
- 7 Fit the ball bearing, 10, and the key, 9.
- 8 Fit the retainer, 8, and its packing. (Check the sealing ring in the retainer, 8.)
- 9 Check that the gear wheel, H in Fig. 2, is in the position described in point 1 and shown in Fig. 2.
- 10 Fit shaft G and sprocket C simultaneously with the placing of gear E. Check that the hole for the tubular pin F comes in such a position (as shown in Fig. 2) that the pin can be fitted without moving the gear wheel, E.
- 11 Fit the pin, F.
- 12 Fit the chain over the upper sprocket, B, and set up the pillar, A. The start crank should hang vertically, as in Fig. 2. Pass the chain over the lower sprocket C. The sprocket should then be in the position determined by the previous setting of the gear wheel, H, i.e. the position as shown in Fig. 2.
- 13 Fit the cover on the pillar, A, and the cover D.
- 14 Mount coupling 6 (Fig. 1) tight against the ball bearing, 10. Do not tighten the bolt, 7, yet.
- 15 Fit the sealing, 5, and the washer, 4.
- 16 Screw on the nut, 2, but not fit the Waller washer, 3.
- 17 Make sure that the crankshaft is tight against the rear main bearing by knocking the forward crankshaft end a couple of times with a lead hammer. Tighten up nut 2.
- 18 Place the control lever in forward.
- 19 Back off the adjustment nut, 12, so that this nut and the washer, 11, lie tight against the ball bearing, 10.
- 20 Remove nut 2 and slide the coupling half, 6, to the rear a little by tapping it lightly in the aft direction.
- 21 Back off nut 12 a further $\frac{3}{4}$ turn on the shaft and note that one of the grooves in the nut comes exactly opposite one of the locking lips on the lockwasher. Fold down the lip so that the nut is secured. This is easiest done with a small screwdriver.
- 22 Tap the coupling, 6, lightly once or twice so that it moves forward, tight against the ball bearing, 10. Fit the Waller washer, 3, and tighten up nut 2 properly.
- 23 Tighten up the bolt, 7.
- 24 Replace the dipstick and fill the reverse gear casing with oil.
- 25 Refit the inspection cover. Refit the shaft coupling, 1, when the propeller shaft is re-installed.

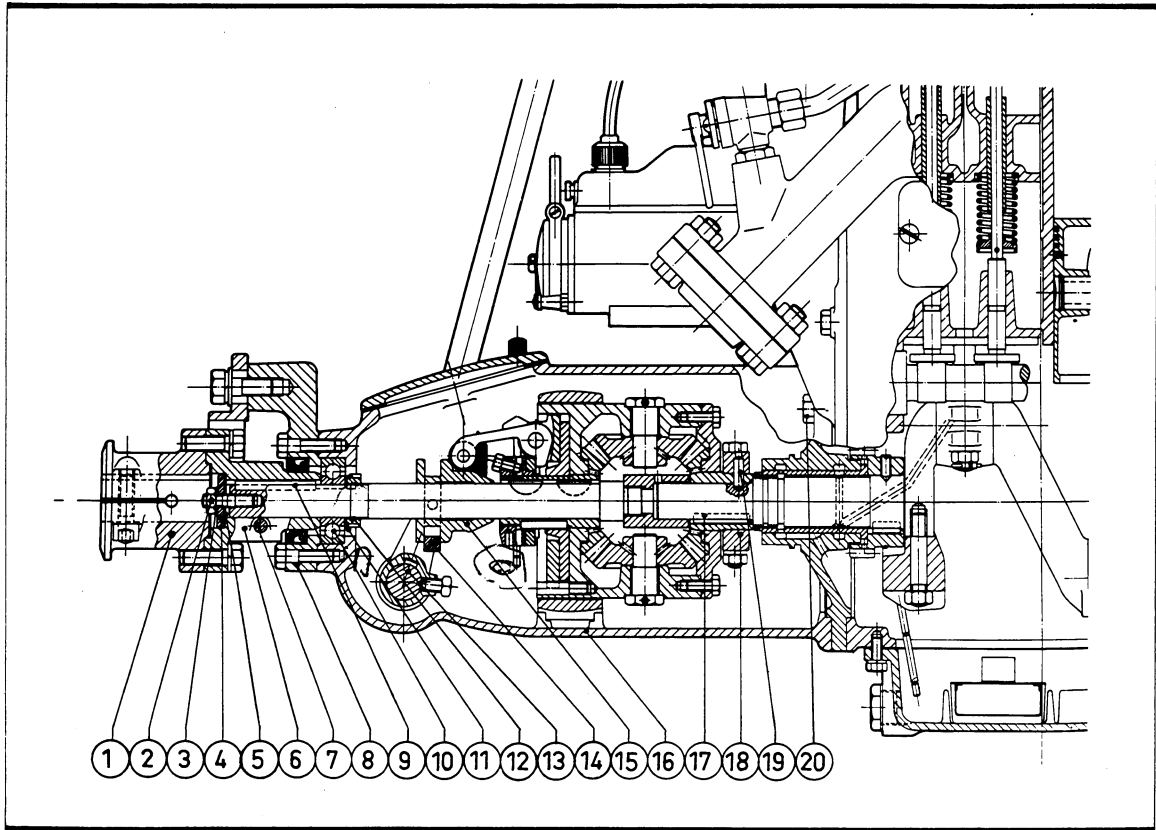


Fig. 1 Section through reverse gear

- | | | |
|--|--------------------------|--------------------|
| 1 Coupling half for propeller shaft | 7 Coupling securing bolt | 15 Engagement cone |
| 2 Nut | 8 Ball bearing retainer | 16 Casing |
| 3 Waller washer | 9 Key | 17 Key |
| 4 Coupling half washer | 10 Ball bearing | 18 Securing collar |
| 5 Sealing | 11 Lockwasher | 19 Dowel pin |
| 6 Coupling half for reverse gear shaft | 12 Adjustment nut | 20 Screws (4) |
| | 13 Control lever shaft | |
| | 14 Control fork end | |

Fig. 2 Raised rear crank start

- A Pillar
- B Upper sprocket
- C Lower sprocket
- D Cover for gear wheel
- E Gear wheel in cover
- F Sprung tubular pin
- G Shaft
- H Gear wheel with pawl
- I Screws (2)
- K Pawl

