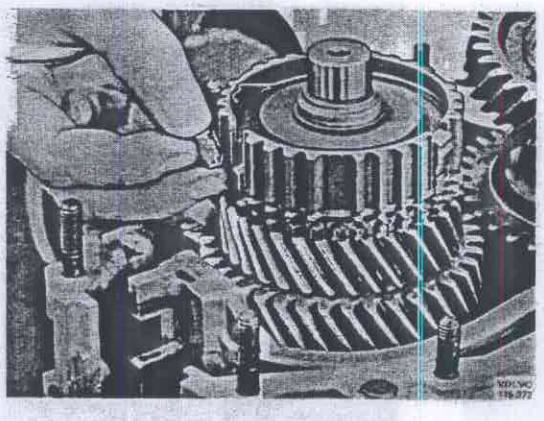


Fig. 43–110. Fitting lock units

Fig. 43–113. Fitting roller bearing and cone

12. Fit the bearing pins in the selector forks for reverse and 1st–2nd, see Fig. 43–111. There are three types of bearing pins, see Fig. 43–112.
13. Place the roller bearing and synchronizing on the output shaft, Fig. 43–113. Fit the input shaft in position.
14. Place a new gasket on the gearbox housing. Check that the countershaft is fitted properly, Fig. 43–114.
    Grease the lock pin for 3rd–4th.
15. Place the spring and pin in the front housing half.
16. Fit the two sections together. Check that the interlock for 3rd–4th selector fork takes up its correct position.
    Fit all washers and nuts holding the housing halves together. Knock in the guide pins. Tighten the nuts to a torque of 20–25 Nm (2.0–2.5 kpm =

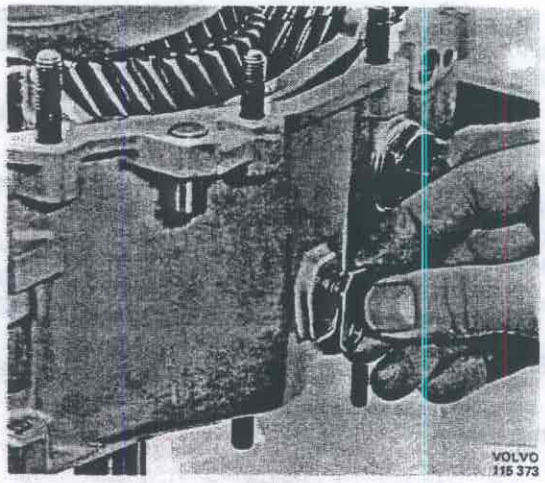


Fig. 43–111. Fitting bearings pins

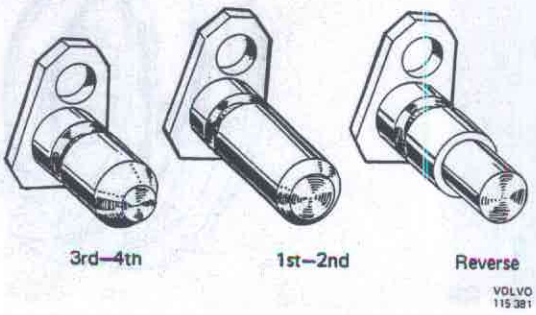


Fig. 43–112. Bearing pins

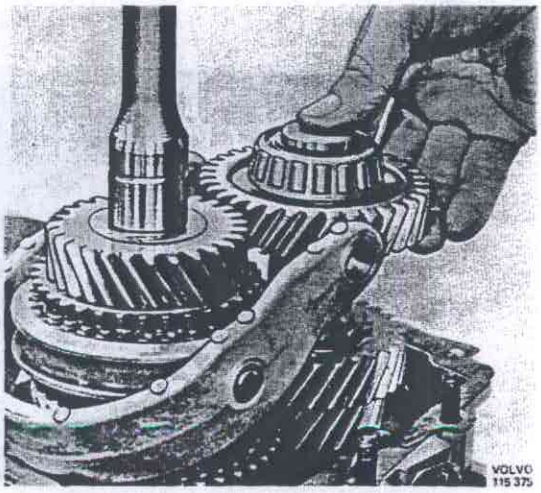


Fig. 43–114. Checking countershaft

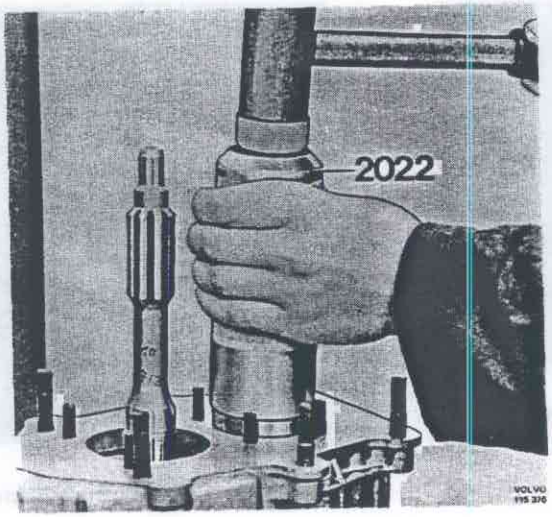


Fig. 43–115. Driving in outer race

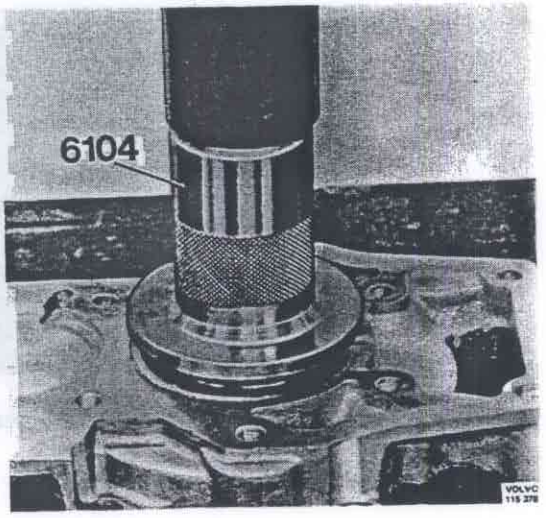


Fig. 43–117. Driving in seal

14–18 lbftf) and the Allen bolts to a torque 8–12 Nm (0.8–1.2 kpm = 5.8–8.7 lbftf).

17. Fit the bearing pins for 3rd–4th selector fork. Fit the bolts.
18. Drive in the outer race for the countershaft front bearing with 2022, Fig. 43–115.
19. Turn round the gearbox and drive in the outer race for the rear bearing with 2022. Engage two gears.
20. Remove press tool 6103 from the output shaft. Place the bearing inner race on the shaft. Fix on the tool and press in the race, Fig. 43–116. Remove the tool.
21. Place a new seal for the rear cover on the gearbox. Check that the countershaft bearing is in its bottom position.
22. Drive new seals into the rear cover, Fig. 43–117, with 6104. Measure the depth of the machined recess in the rear cover for the output shaft bearing, Fig. 43–118. Measure the distance between the bearing and the face of the seal, Fig. 43–118. The difference between the two measurements may be ±0.05 mm (0.002"). Shims are available in the following sizes: 0.2, 0.5, 0.6, 0.7, 0.8, 0.9 and 1.0 mm (0.016, 0.020, 0.024, 0.028, 0.032, 0.036 and 0.039"). Grease the seal in the cover and fit on the cover.

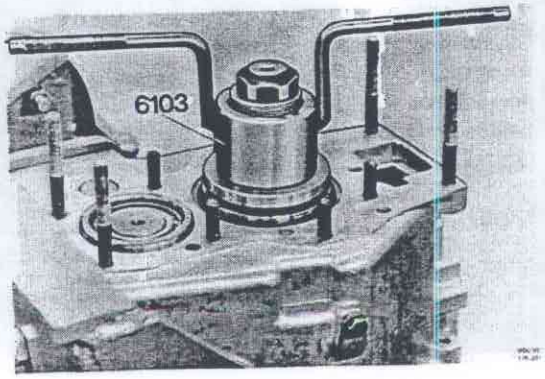


Fig. 43–116. Pressing in inner race

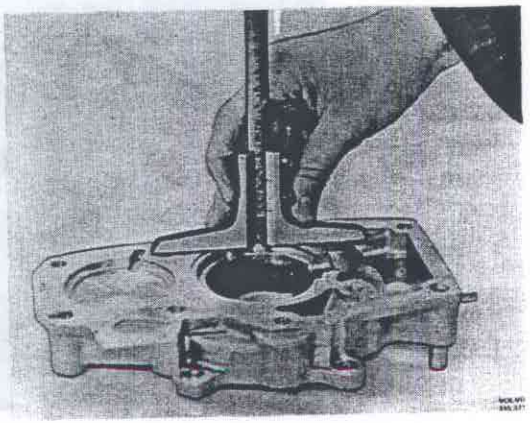


Fig. 43–118. Calcualting clearance

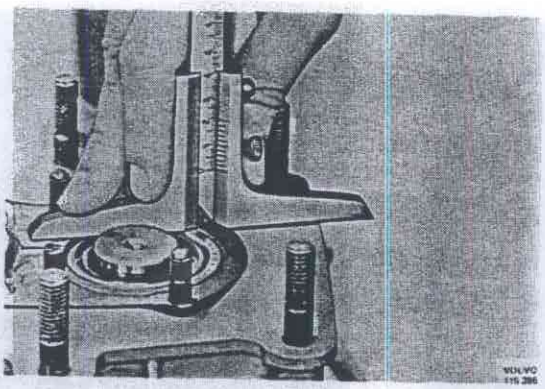


Fig. 43–119. Calcualting clearance

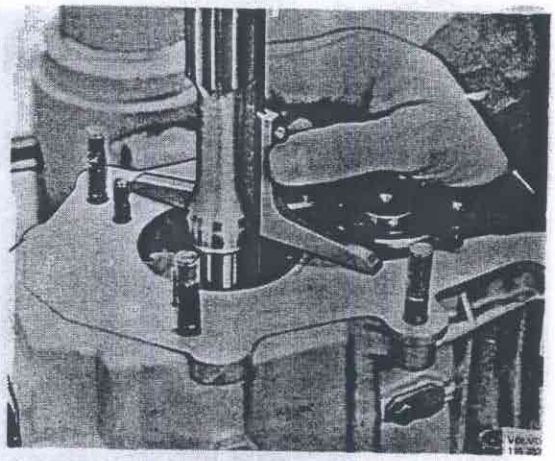


Fig. 43–121. Calcualting clearance

23. Place the shim on the bearing. Fit the wear ring, Check that the cover bottoms properly against the gearbox before fitting the washers and nuts in position. Tighten the nuts to a torque of 20–25 Nm (2.0–2.5 kpm = 14–18 lbftf).

24. Fit on the gear and the nut. Tighten the nut to a torque of 140–160 Nm (14–16 kpm = 101–115 lbftf). Lock the nut by peening the edge of the nut, Fig. 43–120.

25. Turn the gearbox. Disengage the gears and rotate the input shaft.

26. Measure the distance from the gearbox housing, Fig. 43–121, to the contact surface of the bearing on the input shaft.

    Fit the circlip on the bearing and measure the distance from the circlip to the edge of the bearing, Fig. 43–122. The difference between the two measurements may be 0.5–0.7 mm (0.020–0.028''), which is the clearance. If the distance is greater, fit a shim of corresponding size on the input shaft.

    Shims are available in the following sizes: 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4 and 1.5 mm (0.020, 0.024, 0.028, 0.032, 0.036, 0.039, 0.044, 0.048, 0.052, 0.056 and 0.060'').

27. Engage two gears.

    Place the inner race and outer race on the input shaft. Place the inner race on the bearing and check that it fits properly on the bearing. Turn the thread insert in the tool. Fix in position the press tool with the tool stop washer between the spline and the tool, Fig. 43–123. Press the bearing into the housing. Then tap on the end of

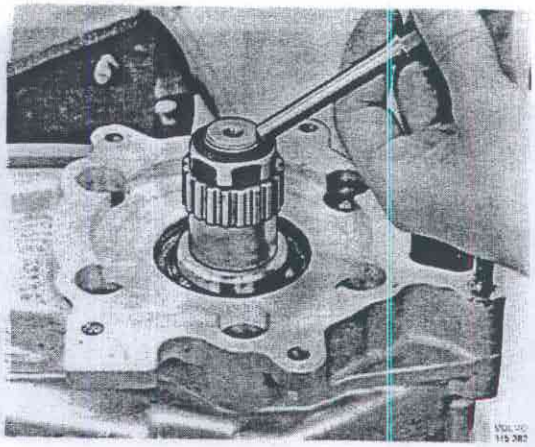


Fig. 43–120. Nut locking

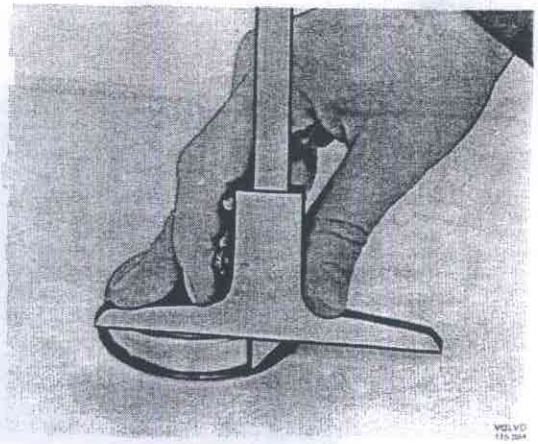


Fig. 43–122. Calculating clearance

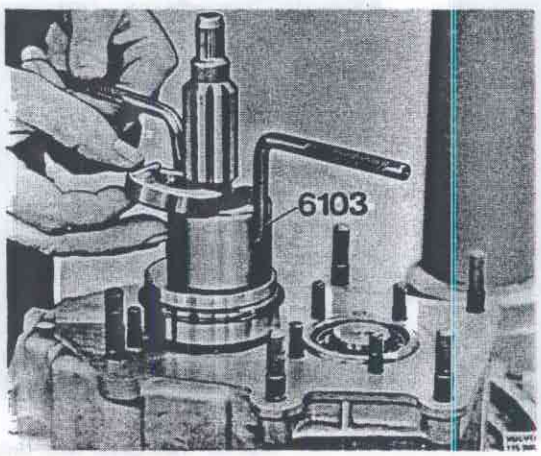


Fig. 43—123.Pressing in bearing

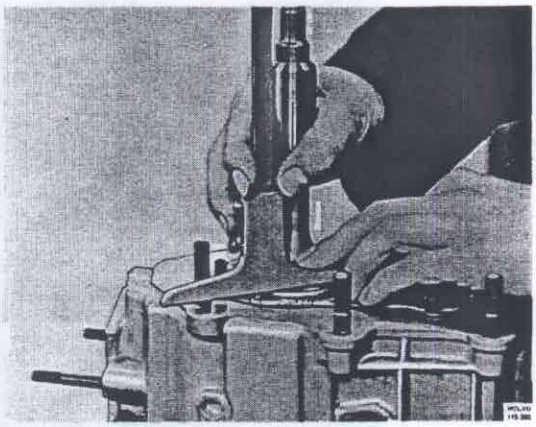


Fig. 43—124. Calculating clearance

the input shaft a plastic maller so that the bearing circlip goes down against the housing.

28. Remove the press tool. Place the shim between the bearing and circlip which gives minimum clearance. The adjuster washer is of the same type as that placed behind the bearing.

29. Disengage the gears.

    Tap in the countershaft to the bottom while rotating the input shaft at the same time. Knock down the outer race. Place a new seal for the front cover on the gearbox. Measure the distance from the outer race on the input shaft bearing to the seal. Measure the distance from the outer race on the countershaft bearing to the seal. Fig. 43—124.

30. Measure the distance from the contact face on the cover to the recesses for the outer races for the bearings, Fig. 43—125. The difference between the measurements obtained may be ±0.05 mm (0.002") for the input shaft and from 0 to +0.1 mm (0.0039") on the countershaft.

    Shims are available in the following sizes: Input shaft: 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 and 1.0 mm (0.016, 0.020, 0.024, 0.028, 0.032, 0.036 and 0.039"). Countershaft: 0.5, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4 and 1.5 mm (0.020, 0.028, 0.032, 0.036, 0.039, 0.044, 0.048, 0.052, 0.056 and 0.060").

31. Drive a new seal into the cover.

    Place the shims required on the bearings for the input shaft and countershaft. Fit the cover and make sure that it is fitted properly against the gearbox before tightening up the bolts with the washers. Tighten the bolts to a torque of 22—25 Nm (2.2—2.5 kpm = 16—18 lbftf).

32. Fit the clutch casing and all washers and nuts. Tighten the nuts to a torque of 41—51 Nm (4.1—5.1 kpm = 30—37 lbftf).
    Grease the throw-out shaft and insert it in the casing while placing in position the throw-out fork. Grease the neck of the input shaft cover and fit on the throw-out bearing. Tighten the fork bolts.

33. Turn the gearbox to the horizontal position. Place the gear shift bar for 1st—2nd in position. Place a new gasket for the selector shaft housing on the gearbox.

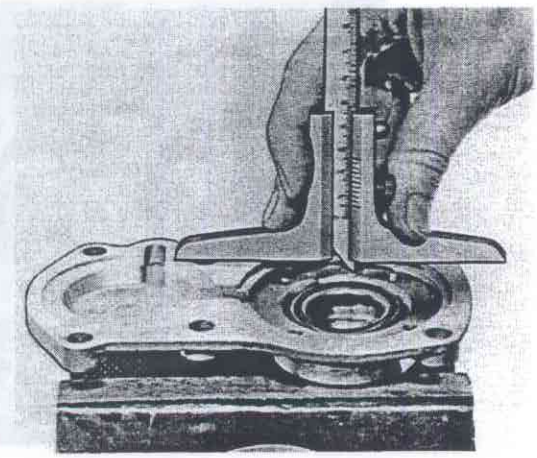


Fig. 43—125. Calculating clearance

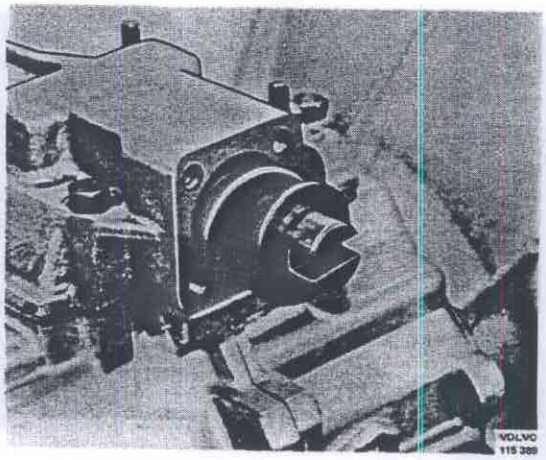


Fig. 43–126. Small spring with spacer rings

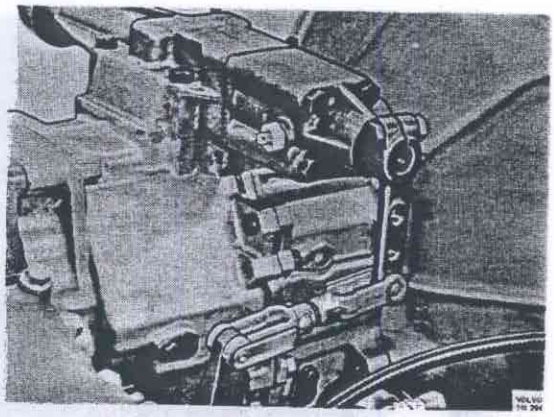


Fig. 43–128. Lever with link

34. Fit on the selector shaft housing. Fit washers and bolts. Grease the selector shaft and place it in the housing. Fit the lock pin and the lock ring in the housing. Fit the spacer ring, the small spring, washer, spacer ring, Fig. 43–126, the large spring, washer, Fig. 43–127, and the lock ring. Place the lug in position and drive in the tubular pin on the shaft.
35. Fit the selector shaft housing outer part. Fit the bolts and tighten them to a torque of 100–120 Nm (10.0–12.0 kpm = 72–86 lbftf).
    Fit the reverse inhibitor pawl on the selector shaft housing. Place the cover and lever on the selector shaft.
36. Coat the outer cover on the gearbox with sealing agent and oil the drive on the output shaft. Fit the auxiliary gearbox and all nuts and washers. Tighten up the nuts. Fit the cover on the auxiliary gearbox using a new gasket.
37. Place the lever on the gearbox selector shaft housing and the auxiliary gearbox in neutral. The hole in the gearbox lever and link should coincide so that the lock pin fits easily, compare Fig. 43–128. If necessary adjust the link fork.

Installing the gearbox

Special tool: 6128, 6136

1. Place the gearbox on a jack, see Fig. 43–129.

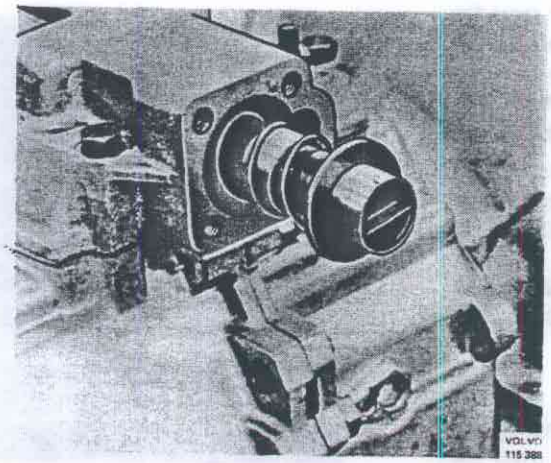


Fig. 43–127. Large spring with washer

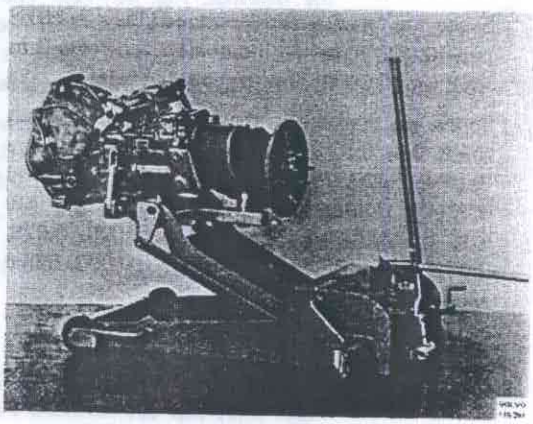


Fig. 43–129. Gearbox on jack

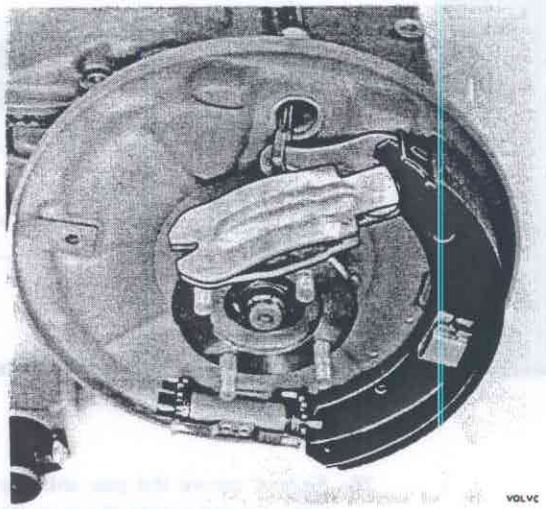


Fig. 43–130. Fitting brake shoe

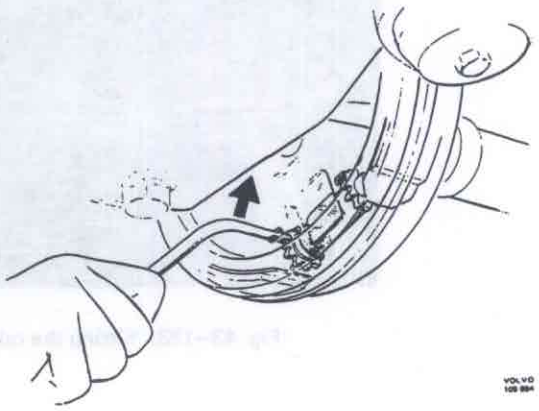


Fig. 43–131. Adjusting brake shoe

2. Push the gearbox on the jack in under the vehicle. Jack up the gearbox so that the input shaft comes opposite the clutch disc lands.
3. Engage a gear. Rotate the output shaft on the auxiliary gearbox while pushing the gearbox at the same time. Place in position the plate for the exhaust manifold bracket.
4. Fit the other bolts round the casing.
5. Place the starter motor in position and fit and tighten up the bolt.
6. Mount the bracket for the exhaust manifold. Fit the parking brake wire in position.
7. Fit and screw tight the bolts for the rear engine mounts. Remove the gearbox jack or lifting tool 6136 from the auxiliary gearbox.
8. Fit the lower bolts round the clutch casing. Fix the earth connection (pleat) to the casing.
9. Assemble the propeller shaft brake. Fit first the lower brake shoe. The fit the lever, Fig. 43–130, the upper return spring, the upper shoe, the lower return spring and the drum.
10. Adjust out one of the brake shoes with a screwdriver, Fig. 43–131, until it is just possible to rotate the drum. The drum should be fixed with nuts. Slacken the adjuster screw until the drum rotates freely, but max. five teeth. Adjust the other brake shoe in the same way.
11. Check the function of the parking brake lever. If the parking brake does not function properly at the 4th ratchet in spite of the fact that the propeller shaft brake has been properly adjusted, alter the length of the wire by means of the nut at the front end.
12. Install the front and rear propeller shafts.
13. Install the silencer. Screw tight the flange bolts. Fit the attachment for the exhaust manifold.
14. Remove the attaching plate and tighten up the cylinder head bolts to a torque of 90 Nm (9 kpm = 65 lbftf).
15. Fit and secure the clutch wire sleeve on the clutch casing. Tighten up the nuts. Fit and secure the fork on the clutch lever. Adjust the lever play with the help of the sleeve nuts. The play should be 4–5 mm (0.16–0.20"), see Fig. 43–132.

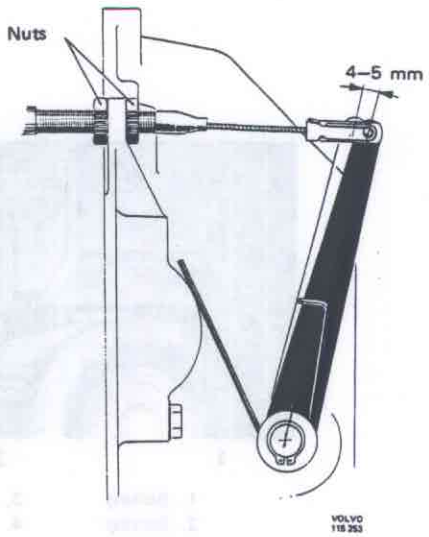


Fig. 43–132. Clutch clearance

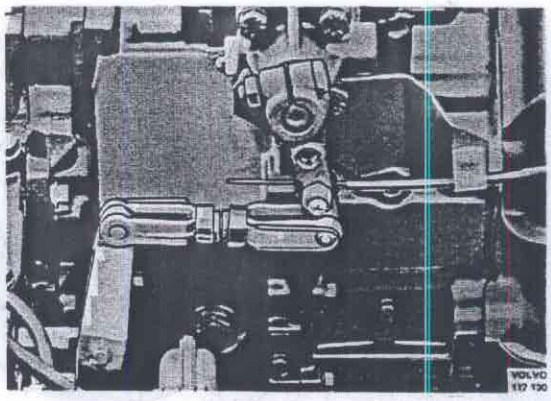


Fig. 43—133. Fitting the cable

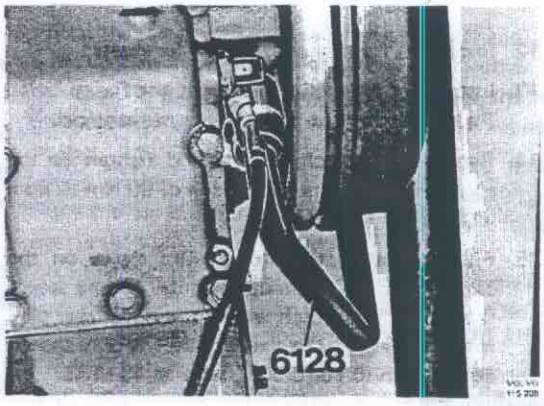
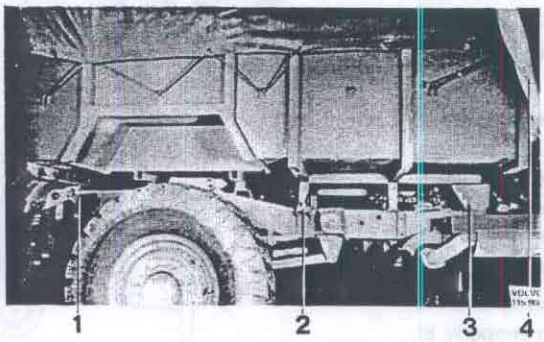


Fig. 43—134. Fitting speedometer wire



1. Bolting
2. Bolting
3. U-bolts
4. Hoist straps

Fig. 43—135. Fitting the platform

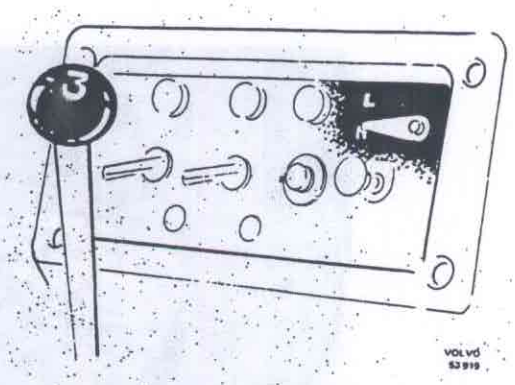


Fig. 43—136. Fitting the indicator arrow

16. Fit and secure the gear shift bar to the gearbox lever. Fit and secure the cross stay.
17. Place the axuliary gearbox in neutral. Fix the cable for the gear position indicator in the lever, see Fig. 43—133.
18. Screw tight the speedometer wire with 6128. See Fig. 43—134.
19. Connect up the evacvation hoses to the gearbox, auxiliary gearbox and clutch casing.
20. Fit the hose to the control mechanism on the auxiliary gearbox. Connect the cables to the senders on the gearbox auxiliary gearbox.
21. Fill the gearbox and auxiliary gearbox with oil, if these units have been emptied of oil. Concerning quantity and quality, see under "Data".
22. Place the platform, see Fig. 43—135, in position and tighten the bolts and U-bolts.
23. Check that the indicator arrow, see Fig. 43—136, points to N, when the auxiliary gearbox is in neutral. If necessary, adjust the arrow by slackening the nut and turning the arrow to point to N. Tighten up the nut again.
24. Connect up the earth cable to the battery and fit on the cover.

AUXILIARY GEARBOX

Removing the auxiliary gearbox

Special tools: 2116, 6128

1. Drain the oil from the auxiliary gearbox. Engage reverse and low gear.
2. If the gearbox is removed with a block and tackle and the vehicle has a platform superstructure, the platform must be removed. This is done after removing the bolts and U-bolts, see Fig. 43—138. Remove the platform with a hoist straps which is fixed to the lifting eyelets, see Fig.

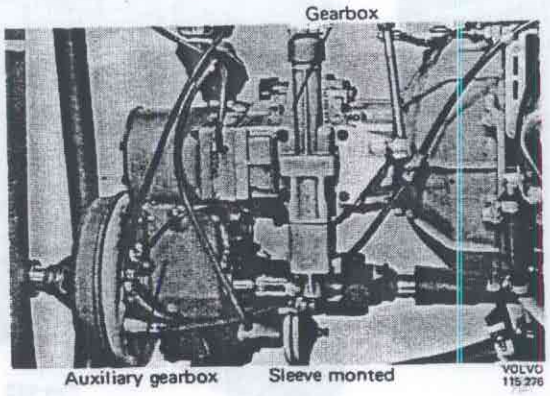


Fig. 43–137. Auxiliary gearbox in vehicle

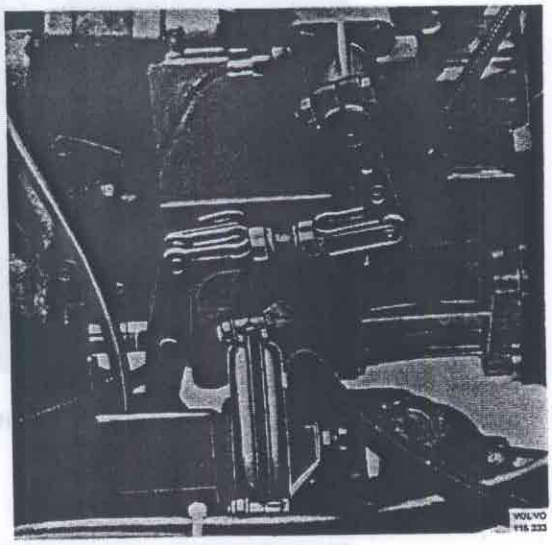
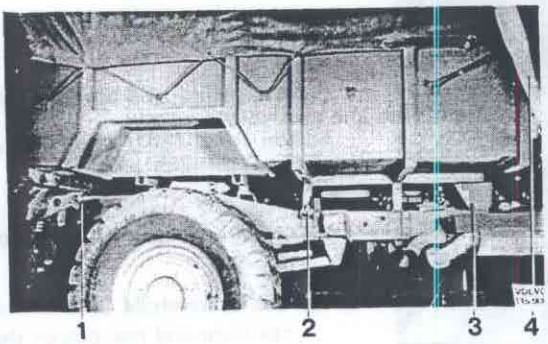


Fig. 43–139. Link between gearbox and auxiliary gearbox

3. Remove the link, Fig. 43–139, from the auxiliary gearbox. Remove the wire from the shift indicator, see Fig. 43–133, from the outer gear shaft housing.
4. Remove the evacution and vacuum hoses for the auxiliary gearbox control mechanism. Disconnect the electric cable for the auxiliary gearbox sender.
5. Unscrew the speedometer cable with 6128, Fig. 43–140.
   If the wire does not loosen from the bearing, remove the lock bolt for the bearing and remove the bearing from the auxiliary gearbox. Make sure dirt does not get into the gearbox.

   Fit the attaching plate 6129 to the cylinder head bolts and place lift tool 6136 as shown in Fig. 43–141.
6. Release the parking brake. Remove the rear propeller shaft from the auxiliary gearbox and differential carrier. Remove the front propeller shaft from the auxiliary gearbox. Remove the exhaust pipe outer attachment. Remove the bolts at the flange on the silencers. Remove the silencers and the rear exhaust pipe section.
7. Remove the propeller shaft brake drum. Remove the brake shoes. Disconnect the wire from the lever on the propeller shaft brake.



1. Bolting
2. Bolting
3. U-bolts
4. Hoist straps

Fig. 43–138. Removing the platform

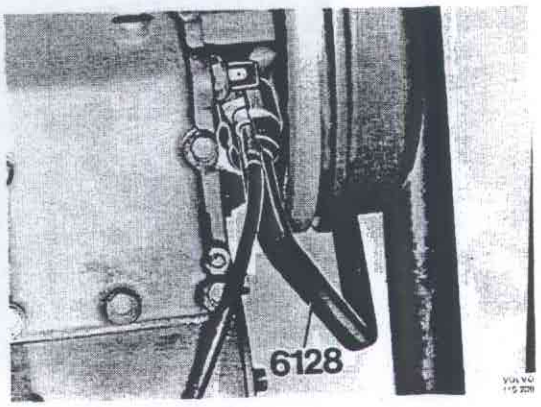


Fig. 43–140. Removing speedometer wire